Section Cranston Machinery Econorap

OPERATION AND MAINTENANCE MANUAL

Purchase Order No:67768
CONTRACT 22018000

BALE FINISHING LINE & ACCESSORIES

CUSTOMER
BULK HANDELING SYSTEMS

KEEP THIS MANUAL FOR FUTURE REFERENCE

NOTICE

THE EQUIPMENT COVERED BY THIS MANUAL IS DESIGNED AND MANUFACTURED BY CRANSTON MACHINERY CO., INC., OAK GROVE, OREGON

THIS MANUAL MAY NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF CRANSTON MACHINERY CO., INC.

WARNING

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Additional field service labor and parts may be invoiced for unauthorized actions including but not limited to: Damage to machinery, troubleshooting and adjustments to return machinery or programs to preset factor settings.

For Technical Support contact:

CRANSTON MACHINERY CO. INC.
1-800-547-1012 OR 1-503-654-7751
www.cranston-machinery.com

ATTENTION

THIS EQUIPMENT IS SUPPLIED TO THE USER WITH THE UNDERSTANDING THAT ALL INDIVIDUALS RELATED TO ITS INSTALLATION, START-UP, OPERATION OR MAINTENANCE SHALL BE OF COMPETENT ABILITY AND WILL BE PROPERLY TRAINED BEFORE WORKING AROUND OR WITH THIS EQUIPMENT.

THIS INSTALLATION, START-UP, OPERATION AND MAINTENANCE TRAINING AND TESTING IS THE USER'S EXCLUSIVE RESPONSIBILITY.

THIS MANUAL IS CRANSTON'S GUIDE TO PROPER CARE AND OPERATION. IT MUST BE COMPLETELY REVIEWED AND APPROPRIATELY UNDERSTOOD BEFORE INSTALLING, OPERATING OR SERVICING THE EQUIPMENT.

THIS MANUAL INCLUDES OPERATING AND MAINTENANCE INSTRUCTIONS FOR THE NOTED MACHINE OR MACHINES.

THIS IS CRANSTON'S INSTRUCTION TO THE OWNER TO PROPERLY FAMILIARIZE ALL RELATED PERSONNEL WITH THE INTENDED USE, OPERATION AND MAINTENANCE OF THIS EQUIPMENT OR SYSTEM BEFORE INSTALLATION, START-UP, OR OPERATION OF THE EQUIPMENT. PROPER TRAINING IS REQUIRED BEFORE MAKING ADJUSTMENTS, TROUBLE SHOOTING, LUBRICATING, OR MAINTAINING THIS EQUIPMENT. OPERATORS MUST BE PROPERLY TRAINED.

CRANSTON'S SERVICE DEPARTMENT IS EAGER TO ASSIST YOU. PLEASE CONTACT: SERVICE MANAGER, AT (503) 654-7751, FAX NO.: (503) 654-6172.

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WARNING

TO ALL PLANT PERSONNEL

CAUTION: THIS EQUIPMENT IS DESIGNED TO OPERATE AUTOMATICALLY WITH LIMITED SEMI-AUTOMATIC AND MANUAL CONTROLS.
IT MAY BE STARTED OR OPERATED BY AN INDIVIDUAL, OTHER RELATED EQUIPMENT AND/OR THE PRODUCT.

READ AND COMPLY WITH ALL DETAILS BELOW

1. ONLY APPROPRIATELY SKILLED AND FULLY TRAINED PERSONNEL MAY INSTALL, OPERATE OR SERVICE THIS EQUIPMENT.

2. ALL GUARDS, WARNING/CAUTION/SAFETY NOTICE LABELS MUST BE IN PLACE WHEN OPERATING OR SERVICING THIS EQUIPMENT. THE LABELS ARE OF UTMOST IMPORTANCE AS A MEANS OF ALERTING PEOPLE TO POSSIBLE HARM. WORN, MISSING, OR DAMAGED LABELS SHOULD BE REPLACED IMMEDIATELY AND ARE AVAILABLE FROM CRANSTON MACHINERY CO., INC.

3. ELECTRICAL POWER AND CONTROLS MUST BE LOCKED OUT (OFF) BEFORE SERVICING THIS EQUIPMENT. (USE APPROPRIATE LOCK OUT PRECAUTIONS AND WARNINGS IN COMPLIANCE WITH OSHA 1910.147.)

4. HYDRAULIC AND/OR PNEUMATIC PRESSURE MUST BE RELIEVED BEFORE SERVICING THE EQUIPMENT AND PROCEDURES MUST BE IN COMPLIANCE WITH OSHA 1910.147.

5. MAKE CERTAIN THE EQUIPMENT IS OFF BEFORE MAKING ADJUSTMENTS.

6. ALWAYS REPLENISH SUPPLIES WHEN MACHINE IS IN MANUAL MODE OR OFF.

7. ALWAYS ADJUST, REMOVE OR ADD PRODUCT INTO THIS MACHINE WHEN IN MANUAL MODE OR OFF.

8. ALWAYS LUBRICATE THIS EQUIPMENT WHEN IT IS IN THE OFF POSITION.

9. ANY FIELD WELDING MUST BE PROPERLY GROUNDED. (DO NOT ALLOW CURRENT TO PASS THROUGH CYLINDERS, BEARINGS, CONTROL HARDWARE, ETC.) ALWAYS DISCONNECT CONTROL PROCESSORS PRIOR TO WELDING ANYWHERE ON MACHINE. MACHINE WELDING MAY DAMAGE PROCESSOR.

10. ALL FIELD WIRING MUST BE PROPERLY POLARIZED.

11. AFTER INSTALLATION BUT PRIOR TO STARTING UP EQUIPMENT, CHECK, PUMP/MOTOR COUPLING ALIGNMENT. COMPONENTS MAY HAVE SHIFTED DURING SHIPMENT/INSTALLATION.

12. EMERGENCY STOP BUTTON (RED) - PUSH TO STOP, PULL TO RESET. THE PURPOSE OF THIS SWITCH IS TO REMOVE POWER FROM ALL OUTPUT CIRCUITRY CONNECTED TO MOTOR STARTERS, SOLENOID VALVES, OR OTHER DEVICES CAPABLE OF INITIATING MACHINE MOVEMENT. **CAUTION:** POWER WILL BE MAINTAINED TO ALL INPUT CIRCUITRY AND TO THE CONTROLLER. EQUIPMENT WILL NOT OPERATE IN AUTOMATIC OR MANUAL MODE WHEN THE EMERGENCY STOP BUTTON IS PUSHED IN.

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WARNING
TO ALL PLANT PERSONNEL

13. ALL PERSONNEL BARRIERS, FENCES, RAILINGS, OR OTHER FORMS OF POSITION/LOCATION GUARDS AS SHOWN ON CRANSTON MACHINERY ASSEMBLY AND/OR INSTALLATION DRAWINGS WHETHER FURNISHED BY CRANSTON MACHINERY OR BY CUSTOMER, MUST BE IN PLACE PRIOR TO START-UP OR OPERATION OF EQUIPMENT. IN AREAS WHERE BARRIERS WOULD BE IMPRACTICAL, PROMINENT AND LEGIBLE WARNING SIGNS SHALL BE POSTED NEAR THE EQUIPMENT, AND WHERE FEASIBLE, LINES SHALL BE PAINTED ON THE FLOOR DELINEATING THE HAZARD AREA. THE AFOREMENTIONED BARRIERS OR PAINTED FLOORS MUST BE MAINTAINED AND REPAIRED WHEN DAMAGED.

14. IF YOUR EQUIPMENT INCLUDES MACHINES THAT USE STRAPPING WIRE, I.E., WIRE STRAPPERS, UNITIZERS, WIRE COILERS, WIRE CUTTERS, ETC., ALWAYS WEAR PROTECTIVE SAFETY GLOVES AND/OR SLEEVES THAT ARE CUT RESISTANT TO PREVENT CUTS AND/OR SCRATCHES TO HANDS AND ARMS.

CAUTION!

DO NOT OPERATE THIS

MACHINE WITHOUT

EYE PROTECTION

CRANSTON MACHINERY BUSINESS HOURS ARE 8:00 A.M. TO 4:30 P.M. PST.

IF YOU REQUIRE SPARE PARTS, SERVICE, OR OTHER ASSISTANCE ON AN EMERGENCY BASIS, OUR TELEPHONE NUMBER (503) 654-7751 IS MONITORED BY AN ANSWERING SERVICE AFTER OFFICE HOURS. THE ANSWERING SERVICE WILL CONTACT THE APPROPRIATE PERSONNEL TO ASSIST YOU.

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INTRODUCTION TO CRANSTON MANUALS

THE CRANSTON OPERATION AND MAINTENANCE MANUALS CONTAIN IMPORTANT INFORMATION REGARDING THE EQUIPMENT YOU HAVE PURCHASED. THE EQUIPMENT OPERATORS, MAINTENANCE PERSONNEL AND PURCHASING PERSONNEL SHOULD BE FAMILIAR WITH THE DATA CONTAINED HEREIN AND KNOW HOW TO EFFECTIVELY USE THE MANUALS.

THE PRIMARY FACTOR IN BEING ABLE TO WORK EFFECTIVELY WITH THE MANUALS IS HAVING A GOOD UNDERSTANDING OF HOW THEY ARE ASSEMBLED AND HOW THE INFORMATION IS PRESENTED.

BASED ON THE SIZE AND COMPLEXITY OF THE EQUIPMENT SYSTEM YOU HAVE PURCHASED, THE NUMBER OF VOLUMES PER SET OF MANUALS WILL BE DIRECTLY PROPORTIONAL. SMALL SYSTEMS MAY BE COVERED IN ONLY ONE OR TWO VOLUMES WHILE LARGE SYSTEMS MAY REQUIRE SEVERAL VOLUMES.

IN CASES OF MULTIPLE VOLUMES, THERE IS IN THE FRONT OF EACH VOLUME, DIRECTLY BEHIND THE COVER PAGE, AN INDEX WHICH LISTS ALL OF THE EQUIPMENT AND WHICH VOLUME IT IS COVERED BY. THIS INDEX IS FOLLOWED BY A SYSTEM ARRANGEMENT THAT SHOWS ALL OF THE EQUIPMENT AND THE LAYOUT FOR THE MACHINES. EACH MACHINE ON THE DRAWING IS IDENTIFIED BY A THREE DIGIT NUMBER IN A CIRCLE. THIS THREE DIGIT NUMBER IS THE LAST THREE NUMBERS OF THE MACHINE SERIAL NUMBER. THE FIRST FIVE DIGITS OF THE MACHINE SERIAL NUMBER ARE THE CRANSTON CONTRACT NUMBER. FOR EXAMPLE, ON CRANSTON CONTRACT 22030, THE SERIAL NUMBER FOR ALL MACHINES STARTS WITH 22030. THE SERIAL NUMBER FOR THE FIRST MACHINE IS 22030001, THE SECOND MACHINE IS 22030002, ETC.

THE INDIVIDUAL SECTIONS OF THE MANUALS CONTAIN THE FOLLOWING INFORMATION:

A. A WRITTEN DESCRIPTION OF THE MACHINE, WHAT IT DOES, HOW TO ADJUST IT, AND HOW TO MAINTAIN IT.
B. THE COMPLETE PARTS LIST FOR THE MACHINE.
C. AN ARRANGEMENT DRAWING FOR THE MACHINE WITH PERTINENT DIMENSIONS.
D. MACHINE WIRING DIAGRAM, PNEUMATIC SCHEMATIC, HYDRAULIC SCHEMATIC, ELECTRICAL SCHEMATIC (AS APPLICABLE)
E. SUB-ASSEMBLY DRAWINGS AS NECESSARY TO IDENTIFY PARTS.

THE INDIVIDUAL MACHINES ARE GROUPED INTO THE MANUALS AND ARE IDENTIFIED BY TABS FOR QUICK REFERENCE. MOST MACHINES WILL HAVE THEIR OWN INDIVIDUAL SECTIONS. HOWEVER, IN THE CASE OF CHAIN CONVEYORS, ALL OF THE CHAIN CONVEYORS WILL BE COVERED BY ONE SECTION. THE PARTS LISTS FOR EACH CONVEYOR WILL BE IN ASCENDING SERIAL NUMBER ORDER AND AFTER EACH PARTS LIST WILL BE THE APPROPRIATE MACHINE ARRANGEMENT DRAWING AND APPLICABLE SCHEMATICS.

THE PARTS LIST FOR THE MACHINE STARTS WITH AN ASSEMBLY LIST AND THE ASSEMBLY LIST MAY BE ONLY ONE PAGE OR COULD BE SEVERAL PAGES. THE ARRANGEMENT DRAWING CALLED OUT IN THE UPPER RIGHT CORNER IS THE MAIN ARRANGEMENT DRAWING FOR THE MACHINE AND WILL BE THE FIRST DRAWING IMMEDIATELY AFTER THE PARTS LIST. THE ITEM NUMBERS ON THE MACHINE ASSEMBLY LIST CORRESPOND TO THE NUMBERS IN CIRCLES ON THE ARRANGEMENT DRAWING. THIS IDENTIFIES THE SUB-ASSEMBLIES THAT MAKE UP THE MACHINE. ALSO NOTICE ON THE MACHINE ASSEMBLY LIST, THERE IS A PARTS LIST NUMBER SHOWN (STARTS WITH A "P") AND AN ARRANGEMENT DRAWING NUMBER SHOWN FOR THE SUB- ASSEMBLY. THIS IDENTIFIES THE PARTS LIST NUMBER AND SUB-ASSEMBLY DRAWING NUMBER FOR THAT PARTICULAR ITEM ON THE MACHINE ASSEMBLY LIST.

INTRODUCTION TO CRANSTON MANUALS

THE REMAINDER OF THE PARTS LIST IS THE INDIVIDUAL PARTS LISTS OF THE SUB-ASSEMBLIES AND ARE ARRANGED IN THE SAME ORDER AS LISTED ON THE MACHINE ASSEMBLY LIST. THE ITEM NUMBERS ON THESE LISTS MATCH THE NUMBERS IN CIRCLES SHOWN ON THE SUB-ASSEMBLY DRAWINGS. THE MAIN ARRANGEMENT DRAWING WILL ALWAYS BE THE FIRST DRAWING FOLLOWING THE PARTS LIST. THE NEXT DRAWINGS WILL BE IN ORDER AS LISTED ON THE MACHINE ASSEMBLY LIST.

EXAMPLE OF HOW TO FIND A REPLACEMENT PART NUMBER

SITUATION: A SPROCKET ON A PARTICULAR MACHINE NEEDS REPLACEMENT.

1. FIND THE SERIAL NUMBER OF THE MACHINE. EVERY MACHINE HAS A 3-1/2” X 6" SERIAL PLATE PERMANENTLY ATTACHED IN A CONSPICUOUS LOCATION.

2. USING THE INDEX IN THE FRONT OF ANY VOLUME, FIND THE CORRECT VOLUME COVERING THE SERIAL NUMBER OF THE MACHINE. NOTE: IF ONLY ONE VOLUME, THERE WILL NOT BE AN INDEX.

3. IN THE APPROPRIATE VOLUME, GO TO THE TABBED SECTION COVERING THE MACHINE. ON THE MACHINE ARRANGEMENT DRAWING BEHIND THE SERIALIZED PARTS LIST, VISUALLY FIND THE SUB-ASSEMBLY THAT THE SPROCKET IS PART OF AND MAKE NOTE OF THE NUMBER IN THE CIRCLE THAT IS POINTING TO THAT SUB-ASSEMBLY.

4. ON THE MACHINE ASSEMBLY LIST, USE THE ITEM NUMBER FROM STEP 3 ABOVE TO IDENTIFY THE PARTS LIST NUMBER (STARTS WITH A "P") AND THE ARRANGEMENT DRAWING NUMBER FOR THE SUB-ASSEMBLY.

5. FIND THE SUB-ASSEMBLY DRAWING AND LOCATE THE SPROCKET. NOTE THE NUMBER IN THE CIRCLE THAT POINTS TO THE SPROCKET.

6. IN THE PARTS LIST, FIND THE APPROPRIATE PARTS LIST NUMBER THAT YOU FOUND IN STEP 4 ABOVE. LOOK THRU THIS PARTS LIST UNTIL YOU COME TO THE ITEM NUMBER FOR THE SPROCKET THAT YOU FOUND IN STEP 5. THIS WILL IDENTIFY THE SPROCKET.

QUESTIONS REGARDING MACHINE OPERATION, SERVICE, OR REPLACEMENT PARTS SHOULD BE DIRECTED TO CRANSTON MACHINERY OR THE SALES AGENT THAT THE EQUIPMENT WAS PURCHASED FROM.

IN ORDER TO RESPOND QUICKLY AND EFFICIENTLY TO YOUR INQUIRIES/PARTS ORDERS, WE NEED THE CRANSTON SERIAL NUMBER OF THE MACHINE. PLEASE INCLUDE THE SERIAL NUMBER WITH ALL CORRESPONDENCE.

CRANSTON MACHINERY CO. INC.

2251 S.E. OAK GROVE BLVD., OAK GROVE, OREGON 97267, USA

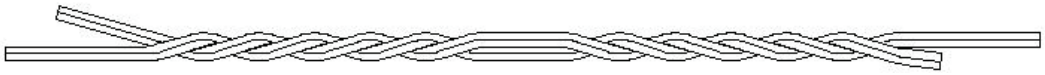
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Cranston Specification #CS-003

Recommended Wire Specifications

SCOPE:

These details cover the normal recommended specifications for wire strapping with a twisted joint to be used in securing high density packages, bundles or bales in groups or units as used in a Cranston wire strapping machine of a specified model. Cranston machines and wire dispensing equipment are designed for this type of wire and coil.



TYPICAL CRANSTON TWISTED JOINT: 900 SERIES

WIRE TENSILE AND STRENGTH:

WIRE SIZES:	TENSILE STRENGTH:	NOTES:
15 to 13-1/2 gauge	130,000 to 160,000 psi	Another common strength specification is expressed in breaking strength.
13-1/4 to 11 gauge	145,000 to 170,000 psi	
10-3/4 to 8 gauge	150,000 to 175,000 psi	Wire gauge based on American Steel & Wire Co. (Washburn & Moen).

ELONGATION: Minimum 7% in 10 inches

SIZE TOLERANCE:

The wire shall have a diameter tolerance of ± .002” for all sizes.

TORSIONAL STRENGTH:

The wire must have the ability to withstand at least 25 twisted turns in a wire length of 100 times the wire diameter without breaking.

COATING:

Hot dipped galvanized and pad wiped with approximately .2 oz. of zinc per square foot of wire surface. The coating must adhere to the wire so as not to peel when wrapped around its own diameter at least four times.

FINISH:

The wire may be quoted with a 3% to 5% solution such as industrial compound No. 22 or Galvaseal “J”. Other coatings such as wax, oil, etc. which may adversely affect the knot strength, wire feed or tension in the wire strapping machine, are not acceptable.

GENERAL QUALITY:

The wire shall have a uniform chemical composition free from undue segregation and inclusions. The wire shall be free of surface defects such as laps, seams, fins, roughness, etc. which may impair its use in Cranston’s strapping machines.

NUMBER OF TESTS:

Testing must be in accordance with sound statistical quality control principles. In no case shall the number of tests be less than four selected from each ten tons of wire produced within a single lot.

COILING:

The wire should be coiled in the largest quantity deemed reasonable for shipping and handling purposes.

Normally a maximum of one wire splices per coil of wire will be accepted. Any welds must be of top quality, fully ground and dressed to wire size to assure proper strength and size to run through the strapping equipment. There shall be no loose ends in a coil except at the lead and tail ends. The wire must be coiled with forward or positive cast. To test this, a single wrap must be cut from the coil and suspended with the cut gap at the bottom. The amount of cast can be measured by lateral distance between the cut ends. This distance should be approximately 3”. The wire is drawn from this coil from the top.

Wire must be coiled by drop cast coilers with the dead cast set approximately 8” larger than the core on which it is carried.

Coils should be cast on cores or stands having proper support for storage, shipping and dispensing.

Identification tags should be secured to the leading end of each coil. These tags should display wire gauge or size, tensile strength, coil weight, manufacturing date and the manufacturer's production lot identification number.

Each coil should be covered with poly film to shelter it from dust and moisture. The bottom of the package must be left open to provide adequate breathing.

STORAGE:

Wire must always be transported and stored in a covered area, kept dry and free of dust, oil and other contaminating atmospheres. Wire should be consumed as soon as possible. Recommended maximum storage is 60 to 90 days.

WIRE PACKAGING OR CORE DETAIL:

Typical pipe or tubular carriers are fabricated in various ways and the tops of the tubes are approximately 48" high for Cranston machines.

Outside diameters of coil should not exceed that of the base of the carrier on which it is carried. Either cardboard or plastic sleeves should be put over upright sections to prevent the wire from chafing against the core.

A distance of 10" to 12" must be maintained from the top of the free wire coil and the top of the carrier on which it is carried.

Cores must be made with adequate height and diameter to maintain proper coil retention and support when in a free stack (not banded or wrapped). The height must be appropriate for feeding into the strappers.

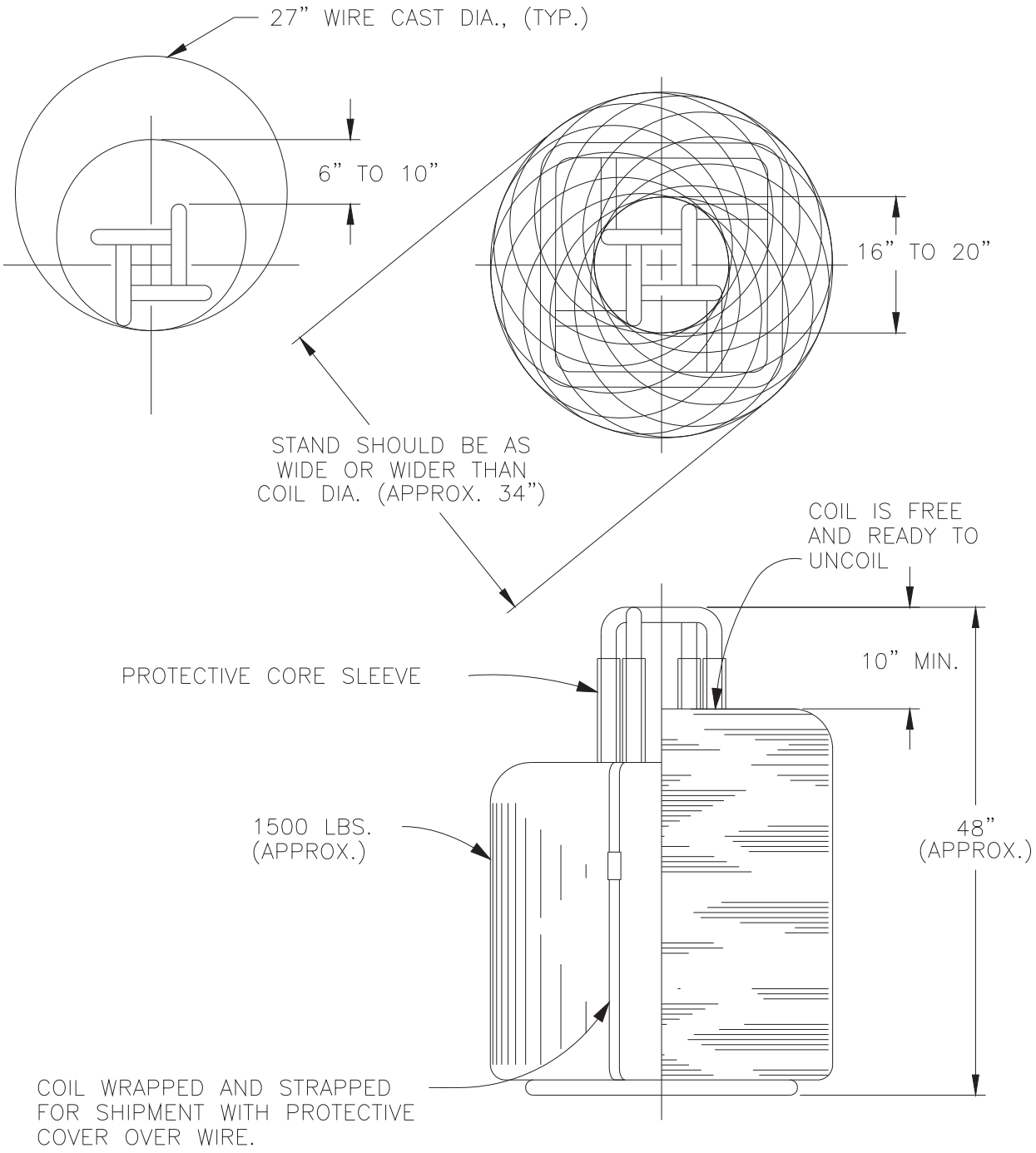
Coils should be compressed and bound or strapped in four places at 90° positions to prevent bounce, chafing or interleaving of wires during shipment.

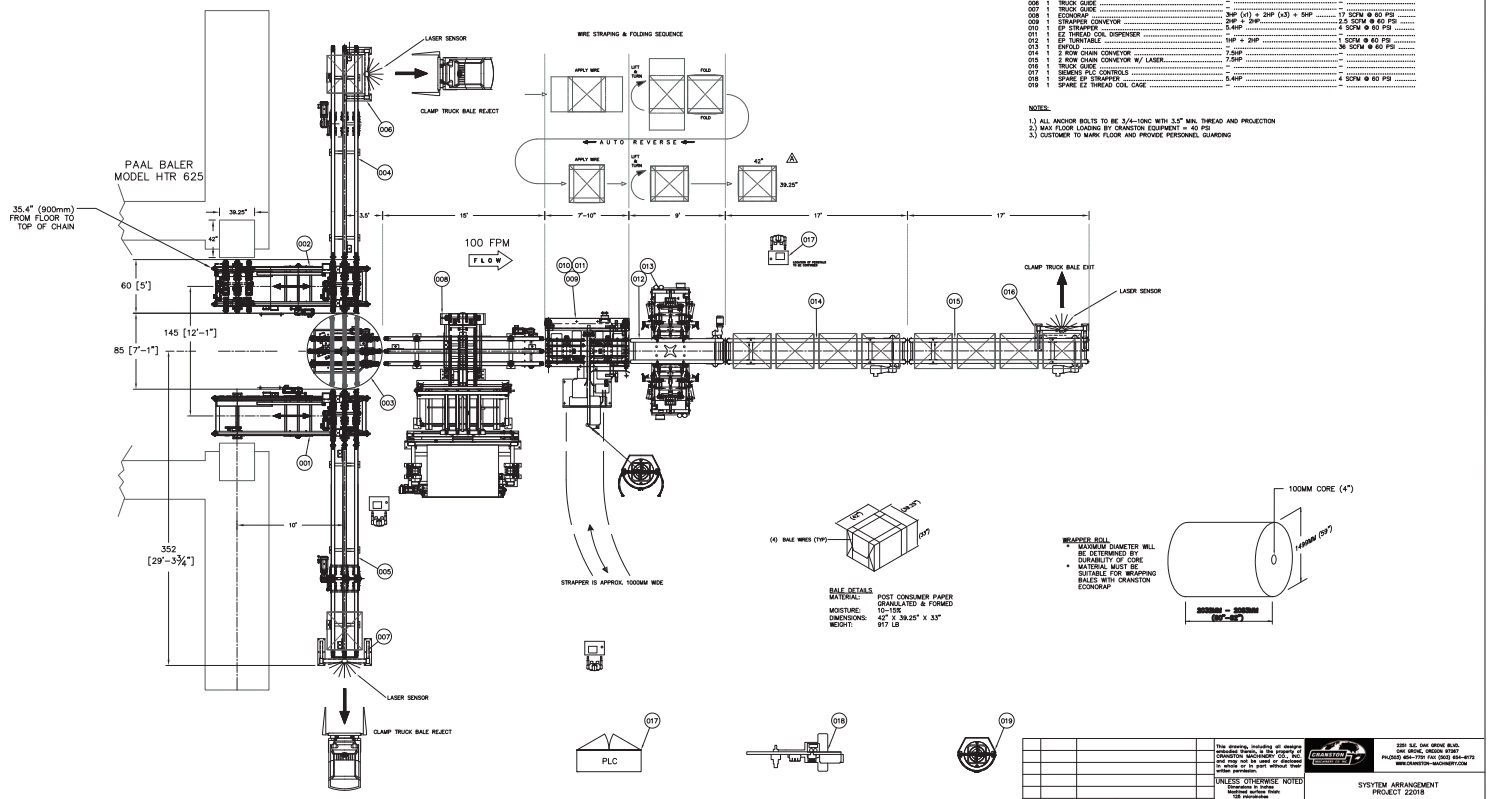
As an alternate, coils may be on pallets with fiber cores, in which case the producer must assure and provide the packaging. Special dispensing cores must be used.

COIL WEIGHT:

Coil weight is approximately 1,800 lbs. (835 Kg) ± 15%.

ILLUSTRATION OF TYPICAL WIRE COIL





PRODUCTION:
CRANSTON EQUIPMENT WILL PROCESS 60 BALES PER HOUR

ITEM	QTY	DESCRIPTION	MOTORS	AIR REQUIREMENTS
001	1	SHUTTLE W/ 3 ROW CHAIN CONVEYOR	2HP + 2HP	–
002	1	SHUTTLE W/ 3 ROW CHAIN CONVEYOR	2HP + 2HP	–
003	1	3 ROW TURN CONVEYOR	2HP + 2HP	–
004	1	3 ROW CHAIN CONVEYOR W/ LASER	7.5HP	–
005	1	3 ROW CHAIN CONVEYOR W/ LASER	7.5HP	–
006	1	TRUCK GUIDE	–	–
007	1	TRUCK GUIDE	–	–
008	1	STRAPPER	3HP (x1) + 2HP (x3) + 5HP	17 SCFM @ 80 PSI
009	1	STRAPPER CONVEYOR	2HP + 2HP	2.5 SCFM @ 60 PSI
010	1	EP STRAPPER	5.4HP	4 SCFM @ 60 PSI
011	1	EZ THREAD COIL DISPENSER	–	–
012	1	EP TURNTABLE	1HP + 2HP	1 SCFM @ 60 PSI
013	1	ENFOLD	–	36 SCFM @ 60 PSI
014	1	2 ROW CHAIN CONVEYOR	7.5HP	–
015	1	2 ROW CHAIN CONVEYOR W/ LASER	7.5HP	–
016	1	TRUCK GUIDE	–	–
017	1	SIEMENS PLC CONTROLS	–	–
018	1	SPARE EP STRAPPER	5.4HP	4 SCFM @ 60 PSI
019	1	SPARE EZ THREAD COIL CAGE	–	–

NOTES:

1.) ALL ANCHOR BOLTS TO BE 3/4-10NC WITH 3.5" MIN. THREAD AND PROJECTION
2.) MAX FLOOR LOADING BY CRANSTON EQUIPMENT = 40 PSI
3.) CUSTOMER TO MARK FLOOR AND PROVIDE PERSONNEL GUARDING

BALE DETAILS
MATERIAL: POST CONSUMER PAPER GRANULATED & FORMED
MOISTURE: 10-15%
DIMENSIONS: 42" X 39.25" X 33"
WEIGHT: 917 LB

WRAPPER ROLL
* MAXIMUM DIAMETER WILL BE DETERMINED BY DURABILITY OF CORE
* MATERIAL MUST BE SUITABLE FOR WRAPPING BALES WITH CRANSTON ECONORAP

SYM	DATE	REVISION	BY
2	6NOV2023	REMOVED YD/S, UPDATED ROLL INFORMATION	JMH
1	18SEPT2023	UPDATED BALE ORIENTATION CHART ADDED BALE SCALE TO 008	CJM

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UNLESS OTHERWISE NOTED
Dimensions in Inches
Tolerances:
.125 millimeters
Tolerances:
Machined Surfaces:
Welding: ± 1/16
Assembly:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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SYSYTEM ARRANGEMENT
PROJECT 22018

SCALE:	DRAWN BY:	DRAWING NO.	REV
NONE	CJM	DB9493	B
DATE: 4/12/2023	APPROVED: CJM	SHT 1 OF 1	

Ref Master Dwg DB9000

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SHUTTLE CONVEYOR - MODEL 20G066

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON SHUTTLE CONVEYOR IS BASICALLY A CHAIN CONVEYOR MOUNTED ON TOP OF ANOTHER CHAIN CONVEYOR. THE SHUTTLE CONVEYOR IS DESIGNED TO TRANSPORT A PULP PERPENDICULAR TO THE BALE LINE FLOW AND CAN ACCOMMODATE A CHANGE IN ELEVATION. THE TOP CONVEYOR THAT ACTUALLY CARRIES THE PULP BALE USES THREE ROWS OF ONE INCH PITCH CONVEYING CHAIN. (ON MODEL 20G066, THERE ARE THREE DOUBLE ROWS OF ONE INCH PITCH CONVEYING CHAIN). THE LOWER CONVEYOR THAT TRANSPORTS THE UPPER CONVEYOR USES TWO ROWS OF TWO INCH EXTENDED PITCH CONVEYING CHAIN.

THE CONVEYING CHAINS RIDE ON REPLACEABLE WEAR STRIPS. CHAINS RETURN THROUGH THE FRAME TUBES OVER CLEAR FIR WEAR STRIPS. (NOTE: SOME SHORT CONVEYOR LENGTHS WILL NOT NEED RETURN WEAR STRIPS.)

THE ELECTRIC CONVEYOR DRIVES CONSIST OF A SHAFT MOUNTED REDUCER WITH A "C" FACE MOTOR. THIS ARRANGEMENT ELIMINATES SLIDE BASES, TRANSFER CHAIN DRIVES, AND CHAIN GUARDS. THE LOWER CONVEYOR DRIVE INCLUDES A BRAKE-MOTOR AND THIS DRIVE IS CONTROLLED BY A VARIABLE FREQUENCY DRIVE SUPPLIED BY THE CUSTOMER.

DRIVE SPROCKETS ARE INSTALLED ON THE SHAFTS WITH BIKON BUSHINGS. THE DESIGN OF THE BIKON BUSHING ALLOWS INSTALLING SPROCKETS TO THE DRIVE SHAFT WITHOUT KEYING.

ON THE UPPER CONVEYOR, EACH CONVEYING CHAIN IS EQUIPPED WITH ADJUSTABLE IDLE SPROCKETS LOCATED NEAR THE DRIVE SHAFT FOR CHAIN TAKE-UP. ON THE LOWER CONVEYOR, THE CONVEYING CHAINS ATTACH TO THE SLED WITH THREADED CHAIN COUPLERS FOR TAKE-UP.

1.2--DESCRIPTION OF OPERATION

AT THE BEGINNING OF THE CYCLE, THE UPPER CONVEYOR IS AT THE LOAD POSITION AND THE CONVEYORS ARE NOT RUNNING. WHEN THE MACHINE RECEIVES THE SIGNAL FROM THE SYSTEM CONTROLS THAT A BALE IS READY TO DISCHARGE FROM THE BALER, THE UPPER CONVEYOR STARTS RUNNING FORWARD AND THE BALE COMES ONTO THE CONVEYOR. AS THE BALE COMES IN, IT ACTUATES A CONVEYOR BED SWITCH AND STARTS A TIMER. WHEN THE TIMER TIMES OUT, THE CONVEYOR STOPS WITH THE BALE APPROXIMATELY CENTERED ON THE UPPER CONVEYOR.

NEXT THE BRAKE (IF EQUIPED) ON THE LOWER CONVEYOR DRIVE IS RELEASED AND THE DRIVE STARTS IN THE FORWARD DIRECTION. THE UPPER CONVEYOR IS MOVED TOWARD THE DISCHARGE POSITION. AS IT NEARS THE DISCHARGE POSITION, THE UPPER CONVEYOR ACTUATES A PROXIMITY SWITCH AND THE DRIVE SHIFTS TO A SLOWER SPEED. WHEN THE UPPER CONVEYOR ACTUATES THE DISCHARGE POSITION SWITCH, THE LOWER CONVEYOR DRIVE STOPS AND THE BRAKE IS SET TO HOLD POSITION.

WHEN THE RECEIVING CONVEYOR(S) AT THE DISCHARGE POSITION ARE READY FOR A BALE TO ENTER, THE UPPER CONVEYOR DRIVE STARTS AND THE BALE IS DISCHARGED.

1.2--DESCRIPTION OF OPERATION

ONCE THE BALE IS CLEAR OF THE UPPER CONVEYOR, THE DRIVE STOPS. THE BRAKE IS RELEASED ON THE LOWER CONVEYOR DRIVE AND IT STARTS IN THE REVERSE DIRECTION. AS THE UPPER CONVEYOR APPROACHES THE LOADING POSITION IT ACTUATES A PROXIMITY SENSOR AND THE DRIVE SHIFTS TO A SLOWER SPEED. WHEN THE UPPER CONVEYOR REACHES THE LOADING POSITION, IT ACTUATES THE LOADING POSITION SWITCH. THE LOWER CONVEYOR DRIVE STOPS AND THE BRAKE IS SET TO HOLD POSITION.

THE MACHINE IS NOW READY TO BEGIN THE NEXT CYCLE.

SHUTTLE CONVEYOR - MODEL 20G065 AND 20G066

SECTION 2--ADJUSTMENTS

2.1--CONVEYING CHAIN TENSION

SLED (UPPER CONVEYOR):

EACH CONVEYING CHAIN IS EQUIPPED WITH INDIVIDUAL SLACK CHAIN TAKE-UP. THE CONVEYING CHAINS SHOULD RUN SNUGLY AND SMOOTHLY. TO ADJUST CONVEYING CHAIN TENSION, TIGHTEN THE CHAIN UNTIL IT JUST BEGINS TO CLICK, THEN LOOSEN THE CHAIN UNTIL IT RUNS NOISELESSLY. IF THE CHAIN CLICKS DURING OPERATION, IT IS TOO TIGHT; IF IT DRAGS OR JUMPS, IT IS TOO LOOSE.

LOWER CONVEYOR:

THE CONVEYING CHAINS CONNECT TO THE SLED WITH THREADED CHAIN COUPLERS. ADJUST CHAIN TENSION USING THE THREADED CONNECTORS AND LOCK IN PLACE THE JAM NUTS.

2.2--CONVEYOR MOUNTED PROXIMITY SWITCHES

PROXIMITY SWITCHES ARE MOUNTED ON THE CONVEYOR TO DETECT AND CONTROL THE UPPER CONVEYOR MOVEMENT, AND PRODUCT MOVEMENT. SENSOR BRACKETS ARE MOUNTED ON UNISTRUT CHANNEL TO ALLOW ADJUSTABILITY OF LOCATION ALONG THE CONVEYOR.

- FOR M30 STYLE SENSORS, THE MOUNTING BRACKET CAN BE ADJUSTED ALONG THE UNISTRUT CHANNEL USING A 10MM ALLEN KEY TO LOOSEN AND TIGHTEN THE RETAINING NUT WITHIN THE CHANNEL. ORIENTATION AND DIRECTION OF THE SENSOR CAN BE ADJUSTED USING A 4MM ALLEN KEY TO LOOSEN THE HEAD OF THE MOUNTING BRACKET AND ALIGN IN A PREFERRED DIRECTION.

  THE PRODUCT DETECTION SENSORS SHOULD BE ADJUSTED TO PROPERLY DETECT A BALE WHEN ENTERING THE CONVEYOR AND WHEN THE BALE IS FULLY ON THE CONVEYOR.

  A SENSITIVITY ADJUSTMENT DIAL IS LOCATED ON THE SIDE OF THE SENSOR TO INCREASE/DECREASE SENSITIVITY OF THE SENSOR, ALLOWING DETECTION OF THE PRODUCT WITHOUT SENSING THE SURROUNDING PORTION OF THE CONVEYOR. THE SENSOR SHOULD BE LOCATED APPROXIMATELY 1 INCH BELOW THE CHAIN LEVEL.

- FOR 40MM X 40MM STYLE SENSORS, A 3/8-16 BOLT CAN BE LOOSENED AND TIGHTENED TO ADJUST THE SENSOR ALONG THE CHANNEL.

  TWO SENSORS DETECT THE STOP POSITION FOR THE UPPER CONVEYOR WHILE TRAVERSING AND SHOULD BE POSITIONED SUCH THAT THE UPPER CONVEYOR IS LINED UP WITH THE UPSTREAM OR DOWNSTREAM CONVEYORS WHEN ACTIVATED.

  TWO SENSORS DETECT THE APPROACH OF THE UPPER CONVYEOR WHILE TRAVERSING AND ACT TO SLOW THE TRAVERSING SPEED BEFORE ACTIVATING THE STOP POSITION SENSORS. THESE SENSORS SHOULD BE ADJUSTED TO ALLOW FULL TRANSITION TO SLOW SPEED BEFORE ACTIVATING THE STOP POSITION SENSORS. THE VFD SETTINGS FOR SPEED AND ACCEL/DECEL RAMP RATES MAY AFFECT PROPER POSITIONING OF THESE SENSORS.

SHUTTLE CONVEYOR - MODEL 20G065 AND 20G066

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT TO DO
GEAR REDUCER	MONTHLY	CHECK OIL LEVEL.
DRIVE SHAFT BEARINGS	BI-MONTHLY	APPLY GREASE TO LUBE FITTINGS. AVOID OVER LUBRICATION.
CONVEYING CHAINS	BI-MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL EVERY 60 DAYS. AVOID OVER-OILING; EXCESS OIL WILL MARK THE PRODUCT.
GEAR REDUCER	ANNUALLY	CHANGE OIL FILL EVERY 12 MONTHS OR AS NEEDED*

* IF OIL IS CONTAMINATED, BURNED OR WAXED, CHANGE THE OIL IMMEDIATELY AND FLUSH OUT THE UNIT, IF NECESSARY.

3.2--LUBRICANT SELECTION GUIDE

GEAR REDUCER--USE GEAR OIL RECOMMENDED BY REDUCER MANUFACTURER. SEE VENDOR DATA SECTION.

CHAIN OIL--USE ANY HIGH POLARITY FACTOR CHAIN OIL.

GREASE--USE ANY HIGH QUALITY BEARING GREASE.

SECTION 3--MAINTENANCE (CONTINUED)

3.3--CONVEYOR WEAR STRIP REPLACEMENT

REPLACE THE WEAR STRIPS UNDER THE CONVEYING CHAINS WHEN NEEDED IN THE FOLLOWING MANNER:

1. LOOSEN THE CONVEYING CHAINS TO ALLOW ACCESS TO THE WEAR STRIPS.

2. REMOVE THE FASTENERS THAT ANCHOR THE WEAR STRIPS PIECES TO THE TUBES.

3. SLIDE OUT THE OLD WEAR STRIPS FROM UNDER THE CHAIN AND SLIDE IN THE NEW PIECES.

4. FASTEN EACH WEAR STRIP PIECE TO THE TUBE, BEING SURE TO LEAVE ABOUT 1/2" CLEARANCE BETWEEN PIECES. FASTEN AT ONE END ONLY.

5. RE-TIGHTEN CONVEYING CHAINS. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1).

3.4--IDLE SPROCKET REPLACEMENT

THE IDLER SPROCKETS AT EITHER THE END OF THE CONVEYOR OR AT THE TAKE-UPS ARE IDENTICAL. THE SPROCKET IS A TYPE "C" HUB WITH A DOUBLE ROW BALL BEARING HELD IN PLACE WITH A SNAP RING ON EACH SIDE. TWO SPACERS ARE USED ON EACH SIDE OF THE SPROCKET TO KEEP IT POSITIONED IN THE CENTER OF THE TUBE. THE SPACERS NEXT TO THE SPROCKET HAVE A SHOULDER THAT CLAMPS ON THE INNER RACE OF THE BEARING. A BOLT PASSES THROUGH ALL FOUR SPACERS AND THE SPROCKET.

TO REPLACE AN IDLE SPROCKET, FIRST LOCK OUT POWER TO THE MOTOR. USING THE TAKE-UPS, LOOSEN THE CONVEYING CHAIN OR BREAK THE CHAIN AT THE CONNECTING LINK. PULL OUT THE BOLT THAT GOES THROUGH THE SPROCKET. WHEN THE BOLT IS PULLED, THE SPACERS SHOULD FALL OFF INTO THE BOTTOM OF THE CONVEYOR TUBE. IF THE SPROCKET IS AT THE END OF THE CONVEYOR, PULL THE SPROCKET UP THROUGH THE CUT-OUT IN THE TOP OF THE TUBE. IF THE SPROCKET IS AT THE TAKE-UP, THE SPROCKET COMES OUT OF THE CUT-OUT IN THE BOTTOM OF THE TUBE.

PUT THE NEW SPROCKET INTO THE TUBE AND PUT THE SPACERS INTO POSITION. BE SURE THAT THE TWO SPACERS WITH THE SHOULDER ARE INSTALLED WITH THE SMALLER DIAMETER TOWARD THE BEARING. REPLACE THE THROUGH BOLT. PUT THE CHAIN BACK ONTO THE SPROCKET AND RE-CONNECT CHAIN AND/OR TIGHTEN CHAIN AT TAKE-UP.

CONNECT POWER BACK TO THE CONVEYOR MOTOR AND START CONVEYOR. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1 OF THIS MANUAL).

SECTION 3--MAINTENANCE (CONTINUED)

3.5--DRIVE SPROCKET REPLACEMENT

IN ORDER TO REPLACE DRIVE SPROCKETS, IT IS NECESSARY TO LOWER THE DRIVE SHAFT ASSEMBLY OUT OF THE CONVEYOR. IT IS NOT NECESSARY TO REMOVE THE SHAFT MOUNTED DRIVE REDUCER FROM THE SHAFT UNLESS DESIRED TO DECREASE THE AMOUNT OF WEIGHT THAT MUST BE HANDLED. A FORK TRUCK WITH LIFTING SLING OR STRAP MAY BE REQUIRED TO LOWER DRIVE SHAFT ASSEMBLY OUT OF THE CONVEYOR.

LOCK OUT POWER TO THE MOTOR AND DISCONNECT WIRING TO THE MOTOR CONDUIT HOUSING. USING THE TAKE-UPS, LOOSEN THE CHAINS OR BREAK CHAINS AT CONNECTING LINKS. DISCONNECT REDUCER TORQUE ARM FROM CONVEYOR FRAME.

PULL THE BOLTS THAT HOLD THE DRIVE SHAFT BEARINGS TO THE CONVEYOR FRAME. THE ENTIRE DRIVE SHAFT ASSEMBLY SHOULD NOW BE FREE TO LOWER OUT OF THE CONVEYOR. SLIDE THE NON-DRIVE SIDE BEARING OFF OF THE SHAFT.

THE DRIVE SPROCKETS ARE MOUNTED TO THE SHAFT WITH BIKON LOCKING BUSHINGS. THE SOCKET HEAD CAP SCREWS IN THE BUSHING ARE METRIC. IF THE DRIVE SHAFT OF THE CONVEYOR IS 2-15/16" DIAMETER, THE SCREWS IN THE BUSHING ARE M10 X 30 AND WILL REQUIRE AN 8 MM HEX BIT SOCKET. IF THE DRIVE SHAFT OF THE CONVEYOR IS 1-15/16" OR 2-7/16" DIAMETER, THE SCREWS IN THE BUSHING ARE M8 X 25 AND WILL REQUIRE AN 6 MM HEX BIT SOCKET.

RELAX ALL LOCKING SCREWS ON THE BIKON BUSHING BY AT LEAST TWO TURNS AND TRANSFER SCREWS TO ALL PUSH-OFF THREADS PROVIDED IN THE FACE OF THE RING. RELEASE THE CONNECTION BY PROGRESSIVELY TIGHTENING ALL PUSH-OFF SCREWS IN A DIAMETRICALLY OPPOSITE SEQUENCE EXCEPT FOR SCREWS ADJACENT TO THE SLIT IN THE RING, WHICH SHOULD BE TIGHTENED ONE AFTER THE OTHER. ONCE THE BUSHING IS LOOSENED, PULL OFF THE DRIVE SPROCKETS THAT ARE TO BE REPLACED.

DO NOT USE MOLYBDENUM DISULFIDE, MOLYKOTE, NEVER-SEEZE OR SIMILAR LUBRICANTS IN ANY LOCKING ASSEMBLY INSTALLATION.

TO INSTALL THE NEW SPROCKETS, LOOSEN ALL LOCKING SCREWS BY A MINIMUM OF TWO TURNS AND TRANSFER AT LEAST THREE EQUALLY SPACED SCREWS TO THE CLAMP FLANGE PUSH-OFF THREADS IN ORDER TO KEEP THE TWO PARTS SPACED APART FOR EASY INSERTION OF LOCKING ASSEMBLY AND SPROCKET ONTO SHAFT. MOVE SPROCKET INTO POSITION ON SHAFT. RELOCATE LOCKING SCREWS FROM PUSH-OFF THREADS BACK TO LOCKING SCREW THREADS. TIGHTEN LOCKING SCREWS SUFFICIENTLY TO HOLD SPROCKET IN PLACE.

SLIDE THE BEARING BACK ONTO THE SHAFT AND RAISE THE DRIVE ASSEMBLY BACK INTO POSITION. PUT BACK IN THE BEARING MOUNTING BOLTS. CHECK DRIVE SPROCKET ALIGNMENTS AND ADJUST AS NECESSARY.

SECTION 3--MAINTENANCE (CONTINUED)

3.5--DRIVE SPROCKET REPLACEMENT (CONTINUED)

AFTER SPROCKETS ARE ALIGNED, TIGHTEN LOCKING SCREWS IN BUSHINGS IN SEVERAL STAGES TO A TORQUE VALUE OF 30 FT-LBS (60 FT-LBS FOR 2-15/16" DIAMETER SHAFT) USING A DIAMETRICALLY OPPOSITE TIGHTENING SEQUENCE. THIS APPLIES TO ALL LOCKING SCREWS EXCEPT THOSE ADJACENT TO THE SLIT IN THE INNER RING, WHICH SHOULD BE TORQUED ONE AFTER THE OTHER.

AFTER COMPLETING INSTALLATION , CHECK LOCKING SCREWS AGAIN IN A CLOCKWISE OR COUNTER-CLOCKWISE SEQUENCE AND MAKE SURE NONE OF THE BOLTS CAN BE TURNED AT THE SPECIFIED TIGHTENING TORQUE. IT IS NOT NECESSARY TO RECHECK THE TIGHTENING TORQUE AFTER EQUIPMENT HAS BEEN PUT BACK INTO OPERATION.

RECONNECT CONVEYING CHAINS, RECONNECT THE REDUCER TORQUE ARM TO THE CONVEYOR FRAME, RECONNECT MOTOR CONDUIT BOX WIRING, IF APPLICABLE, AND TURN POWER BACK ON TO MOTOR. START CONVEYOR AND CHECK THAT THE DRIVE SPROCKETS ARE CORRECTLY ALIGNED. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1 OF THIS MANUAL)

3.6--REDUCER REPLACEMENT

THE EURODRIVE GEAR REDUCER IS A SHAFT MOUNTED UNIT. THE ELECTRIC MOTOR IS CONNECTED TO THE REDUCER BY AN ADAPTER MADE FOR A "C" FACE MOTOR. THE ADAPTER INCLUDES A SPECIAL EURODRIVE COUPLING FOR CONNECTING THE MOTOR TO THE HIGH SPEED SHAFT OF THE REDUCER. THE REDUCER ALSO HAS A TORQUE ARM THAT IS BOLTED TO THE FACE OF THE REDUCER AND IS THEN CONNECTED TO THE CONVEYOR FRAME WITH A FLEXIBLE CONNECTION THAT ALLOWS SOME MOVEMENT. IF DURING OPERATION OF THE DRIVE, YOU SEE "ORBITING" MOTION OF THE MOTOR, THIS IS NORMAL AND SHOULD NOT BE A CAUSE OF CONCERN.

TO REMOVE OR REPLACE THE GEAR REDUCER, FIRST LOCK OUT POWER TO THE MOTOR. DISCONNECT THE WIRING CONNECTION TO THE MOTOR. UNBOLT THE MOTOR FROM THE REDUCER AND SET IT ASIDE. NEXT, FULLY LOOSEN THE SET SCREWS FROM THE TORQUE ANCHOR CONNECTION ON THE CONVEYOR FRAME AND REMOVE THE STEEL AND RUBBER SPACERS. THEN REMOVE THE SHAFT COVER ON THE OUTSIDE FACE OF THE REDUCER. THERE IS A 1/2-13NC BOLT IN THE END OF THE DRIVE SHAFT. REMOVE THIS BOLT, LOCK WASHER, AND SPACER AND SET ASIDE. REMOVE THE SNAP RING THAT WAS BEHIND THE SPACER AND SAVE FOR RE-ASSEMBLY. THE REDUCER SHOULD PULL OFF OF THE SHAFT WITHOUT MUCH DIFFICULTY. HOWEVER, IF NECESSARY, ATTACH A PULLER AND PULL THE REDUCER OFF OF THE SHAFT.

BEFORE REPLACING THE REDUCER, WE RECOMMEND USING ANTI-SEIZE OR EQUAL ON THE SHAFT. RE-ASSEMBLE GEAR REDUCER TO CONVEYOR BY REVERSING THE ABOVE PROCEDURE.

MACHINE ASSEMBLY LIST

MODEL NO.: **20G066**

Title: SHUTTLE CONVEYOR
Description:

Issued for Serial No.: 22018001
Arrangement Drawing: DB9472000
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	1		CB6582000	MACHINE WIRING DIAGRAM
1	1	-----	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO.: 22018001
				MODEL NO.: 20G066
				DWGS: ARRANGEMENT: DB9472000
				PNEUMATIC SCHEMATIC: CB6612000
				WIRING DIAGRAM: CB6582000
				DIMENSIONS: 64" W X 34" H X 178" L
				WEIGHT 2360 LBS
				VOLTAGE/POWER: 480/3PH/60HZ
				POWER: 2HP, 2HP
	4			DRIVE SCREW, #6 (.136) X 1/4" LG
2	1	PA9560	DB9464000	SHUTTLE MODULE
3	1	PA9561	BB9798000	SLED ASSEMBLY
4	1	PA9562	DB9463000	SHUTTLE CONVEYOR ASSEMBLY

MACHINE ASSEMBLY LIST

MODEL NO.: **20G066**

Title: SHUTTLE CONVEYOR
Description:

Issued for Serial No.: 22018001
Arrangement Drawing: DB9472000
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
5	1			NOT USED
6	4		E16600154	PROXIMITY SENSOR, EFECTOR: IM5123
	8			SOCKET HEAD MACHINE SCREW, #10-32 X 1-1/2 LG
	8			LOCKWASHER, STD #10
7	4		BB9809000	BRACKET, SENSOR MOUNTING
8	4		E16700120	CORD SET
9	2	PA9559	CB5687000	BED SWITCH

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	2	M25000018		CORPORATE PLATE
	16			DRIVE SCREW, #6 (.136) X 1/4" LG.
2	4	AA6140000		WARNING LABEL
3	4	AA6142000		SAFETY LABEL
4	4	AA6141000		CAUTION LABEL
5	1	DB9468000		FRAME
6	2	M10100080	*	BEARING, SKF: FY 1-15/16 TF
	8			HEX HD CAP SCREW, 9/16-12NC X 1-1/2 LG.
	8			LOCK WASHER, 9/16-STD.
7	1	DA8819200		DRIVE SHAFT
	1			KEY, 3/8 SQ X 2-1/2 LG.
8	2	DB1070000	*	DRIVE SPROCKET
9	2	M20500079	*	BUSHING, BIKON: #B106-IN, FOR 1-15/16 DIA SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1	DA9050006		FLAT WASHER
	1			LOCK WASHER, 1/2" STD.
	1			HEX HD CAP SCREW, 1/2-NC X 1-1/2 LG.
11	8	DA8831006	*	SPROCKET
	8			HEX HD CAP SCREW, 5/8-11NC X 5-1/2 LG.
	16			FLAT WASHER, 5/8-STD.
	8			ESNA NUT, HALF, 5/8-11NC
12	16	DA8808001		SPACER
13	16	DA9050000		SPACER
14	4	DB6394089	*	WEAR STRIP
	4			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG.
15	2	M11200008	*	CHAIN, ANSI STD.: #C2080H X 167 PITCHES =334" LG.
16	4	M11400004	*	CONNECTING LINK, ANSI STD.: #C2080H

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17	1	CB3719000		TORQUE ARM
	4			HEX HD CAP SCREW, M12 X 1.75 X 30MM LG.
	4			LOCK WASHER, M12-STD.
	4			FLAT WASHER, M12-STD.
18	2	AA6847000		RUBBER DISK
	2			SOC HD SET SCREW, 5/8-11NC X 2 LG. HALF DOG POINT
	2			ESNA NUT, HALF, 5/8-11NC
19	2	AA6846000		STEEL DISK
20	1	M22500160	*	GEARMOTOR, 2 HP, EURODRIVE SA67DRN90L4, 36.85:1 RATIO, 1-1/2" BORE SIDE B, CONDUIT ENTRY 0/X, M1 MOUNTING, 480V/3PH/60HZ
21				NOT USED
22				NOT USED
23				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
24				NOT USED
25	1	BB9219000		TERMINAL BOX ASSEMBLY (TB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
26	1	BB9457000		TERMINAL BOX ASSEMBLY (MTB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
27	1			NOT USED
28	1	E52000019	*	CABLE, OLFLEX-FD: CLASSIC 810 #26181, 4-COND., #12 AWG X 25 FT. LG.
29	1	E52000020	*	CABLE, OLFLEX-FD: CLASSIC 810 CY #26272, 5 COND., #14 AWG X 20 FT. LG.
30	2	DA9192134	*	WEAR STRIP
	4			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG.
31	2	DA9192018		WEAR STRIP
	4			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
32				NOT USED
33	1	E36600054		E-CHAIN POWER TRACK, IGUS: 2.208M-2400-05-175-0
	8			HHCS 1/4-20NC X 1" LG.
	8			FLATWASHER, 1/4"-STD
	8			LOCKWASHER, 1/4"-STD.
34	1	E36600055		MOUNTING BRACKET (SET), IGUS: 200-32-1

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9561 **Drawing: BB9798000**

Title: SLED ASSEMBLY
Description:

Issued for Serial No.: 22018001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB5164000		SLED FRAME
2	2	BB7831000		RUNNER
	8			SOC HD CAP SCREW, 1/2-13NC X 1 LG.
	8			LOCK WASHER, 1/2-HI COLLAR
3	2	BB7830000	*	WEAR BAR
	12			HEX HD CAP SCREW, 5/16-18NC X 1-1/4 LG.
	12			LOCK WASHER, 5/16-STD.
4	4	AA8660000		CHAIN COUPLER
	4	M69100027		ROLL PIN, SPIROL: CLDP .125 X 1.250 MBK
5	4	CA7456046		THREADED ROD
	8			HEX JAM NUT, 3/4-16NF

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

F-12-87

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018001		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	M25000018		CORPORATE PLATE
	5			DRIVE SCREW, #6 (.136) X 1/4" LG.
2	2	AA6140000		WARNING DECAL
3	2	AA6141000		CAUTION DECAL
4	2	AA6142000		SAFETY DECAL
5	1	DB9469000		WELDMENT, SHUTTLE CONVEYOR
6	2	M10100080	*	BEARING, SKF: #FY 1-15/16 TF
	8			HEX HD CAP SCREW, 9/16-12NC X 1-1/2 LG.
	8			LOCK WASHER, 9/16-STD.
7	1	DA8819224		SHAFT 1-15/16
	1			KEY, 5/16" SQ X 2" LG.
8	6	BB8059004	*	SPROCKET
9	6	M20500079		BUSHING, BIKON: #B106-IN, FOR 1-15/16 DIA SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018001		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1	DA9050005		FLAT WASHER
	1			LOCK WASHER, 1/2-STD.
	1			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
11	24	M21000750	*	SPROCKET, BLACK STAR 80BB12
	12			HEX HD CAP SCREW, 5/8-11NC X 5-1/2 LG.
	12			FLAT WASHER, 5/8-STD.
	12			ESNA NUT, HALF, 5/8-11NC
12	12	AA9083000		SPACER,INNER
13	24	AA9084000		SPACER,OUTER
14	3	CB1691139	*	WEAR STRIP
	3	CB1691124	*	WEAR STRIP
	6			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG.
15	6	M11200008	*	CHAIN, ANSI STD.: #C2080H X 132 PITCHES = 264" LG. (NOT INCL. CONNECTING LINK)
16	6	M11400004	*	CONNECTING LINK, ANSI STD.; #C2080H

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018001		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17	1	CB3721000		TORQUE ARM
	4			HEX HD CAP SCREW, M8 X 1.25 X 25MM LG.
	4			LOCK WASHER, M8-STD.
	4			FLAT WASHER, M8-STD.
18	2	AA6847000		RUBBER DISK
	2			SOC HD SET SCREW, 5/8-11NC X 2 LG., HALF DOG POINT
	2			ESNA NUT, HALF, 5/8-11NC
19	2	AA6846000		STEEL DISK
20	1	M22500157	*	GEARMOTOR, EURODRIVE: KA47DRN90L4, 2HP, 29.32:1 RATIO, 1-3/8" BORE SIDE B, CONDUIT 0/X, M1 MOUNTING, 480V/3PH/60HZ
21				NOT USED
22	4	M45000011		CLEVIS, P.H.: #50942
	2			HEX HD CAP SCREW, 3/4-16NF X 1-1/2 LG.
	2			LOCK WASHER, 3/4-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018001		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
23	4	M45000013		PIN, P.H.: #68369 (WITH RETAINER RINGS)
24	2	CA7456046		THREADED ROD
	4			HEX JAM NUT, 3/4-16NF
25	2	BB7815000		PIVOT PIN
	4			(REF) COTTER PIN, 1/8 DIA X 2 LG.
26	1	BB9177000		TERMINAL BOX ASSEMBLY
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
27	12	AA8665000		TAKE-UP BRACKET
28	12	BA8328043		TAKE-UP SCREW
	24			FLAT WASHER, 1/2-SAE
	12			HEX NUT, 1/2-13NC
	12			HEX JAM NUT, 1/2-13NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9559 **Drawing: CB6587000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018001		
Description:	CAPACITIVE SWITCH	**Master by:**	BH	**DATE:**	11/3/2022
		Issued By:	FRB	**DATE:**	1/15/2023
		Revision:	C	**DATE:**	11/30/2023

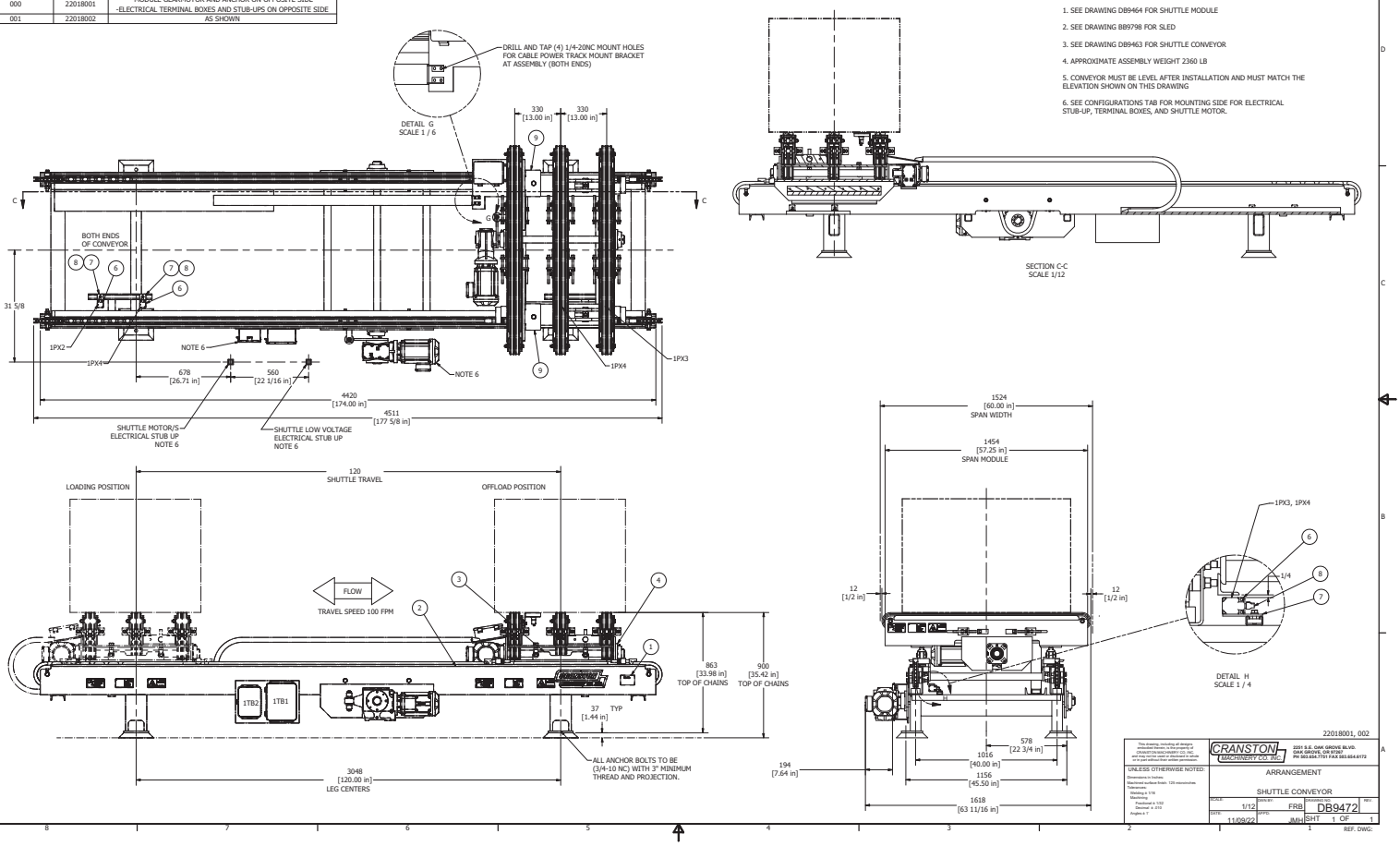
ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	E16600159	*	PROXIMITY SWITCH , CAPACITIVE, IFM, KI5309
	1	E16700105		CORDSET-FEMALE-M12-RT-4P-10M , EFE-EVC006
2	1	E16400029		MOUNTING BRACKET, IFM #E20874
3	1	BB9874000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CONFIGURATIONS		
TAB	SERIAL NUMBER	CONFIGURATION
000	22018001	-MODULE GEARMOTOR AND ANCHOR ON OPPOSITE SIDE -ELECTRICAL TERMINAL BOXES AND STUB-UPS ON OPPOSITE SIDE
001	22018002	AS SHOWN

NOTES:

1. SEE DRAWING DB9464 FOR SHUTTLE MODULE
2. SEE DRAWING BB9798 FOR SLED
3. SEE DRAWING DB9463 FOR SHUTTLE CONVEYOR
4. APPROXIMATE ASSEMBLY WEIGHT 2360 LB
5. CONVEYOR MUST BE LEVEL AFTER INSTALLATION AND MUST MATCH THE ELEVATION SHOWN ON THIS DRAWING
6. SEE CONFIGURATIONS TAB FOR MOUNTING SIDE FOR ELECTRICAL STUB-UP, TERMINAL BOXES, AND SHUTTLE MOTOR.



22018001, 002

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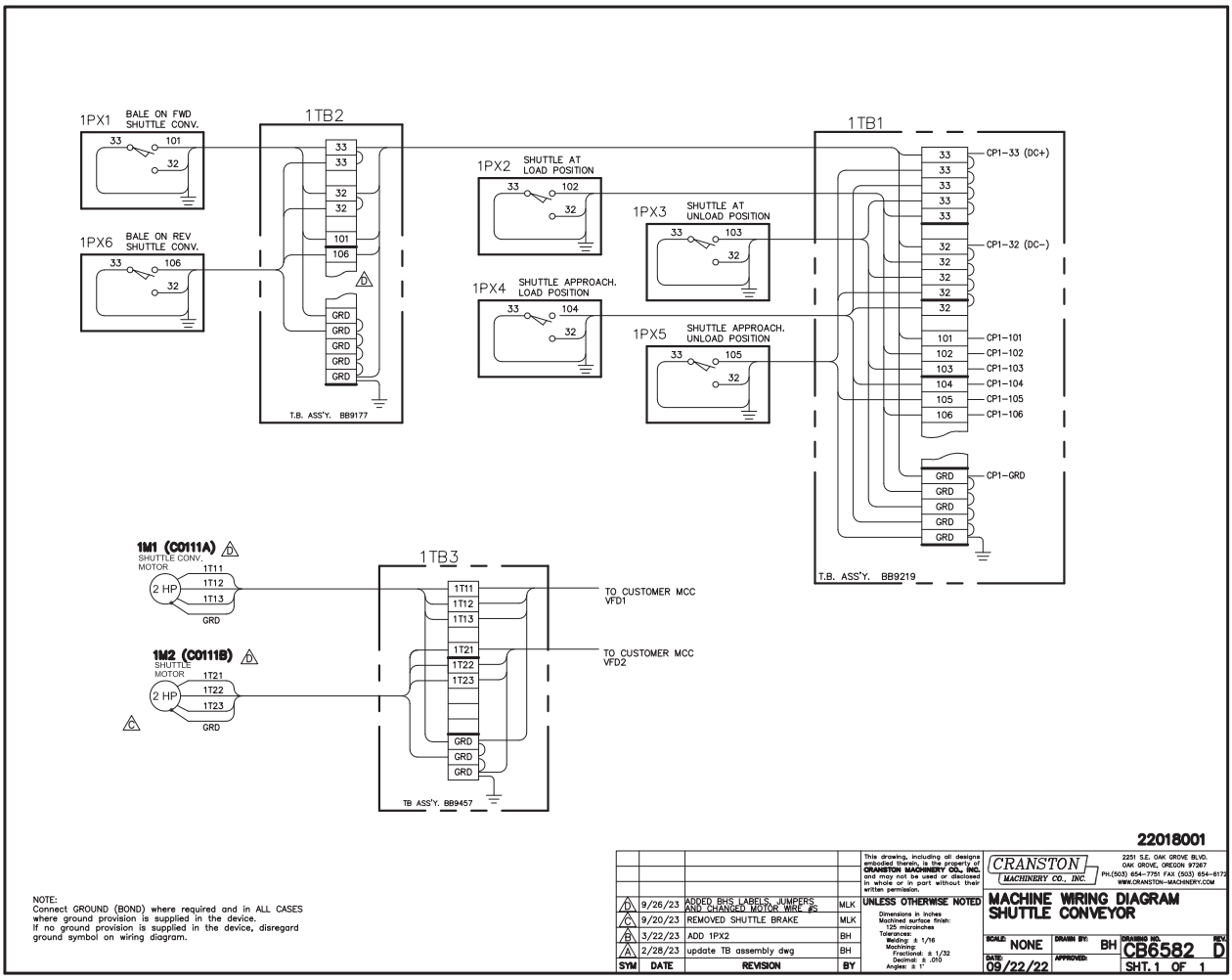
UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional ± 1/16
Machining:
Positional ± 1/32
Decimal ± .010
Angles ± 1°

ARRANGEMENT

SHUTTLE CONVEYOR

SCALE:	1/12	DRAWN BY:	FRB	Assembly No.	DB9472	REV:
DATE:	11/09/22	APPD:	JMH	SHT	1 OF	1

REF. DWG:



22018001

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY
D	9/26/23	ADDED BHS LABELS, JUMPERS AND CHANGED MOTOR WIRE #S	MLK
C	9/20/23	REMOVED SHUTTLE BRAKE	MLK
B	3/22/23	ADD 1PX2	BH
A	2/28/23	update TB assembly dwg	BH

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Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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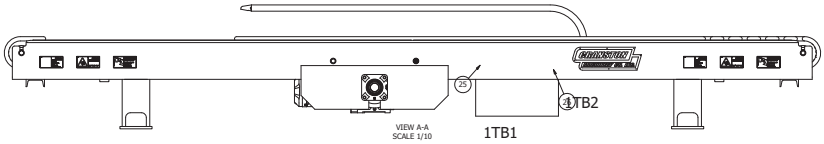
MACHINE WIRING DIAGRAM SHUTTLE CONVEYOR

SCALE: NONE
DRAWN BY: BH
DRAWING NO.: CB6582
REV.: D
DATE: 09/22/22
APPROVED:
SHT. 1 OF 1

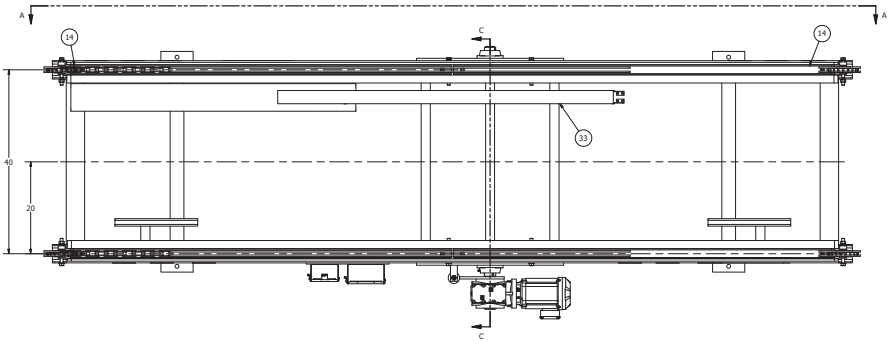
NOTE:

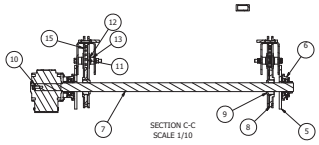
1. APPROXIMATE ASSEMBLY WEIGHT 1437 LB

2.

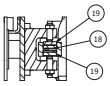


VIEW A-A
SCALE 1/10

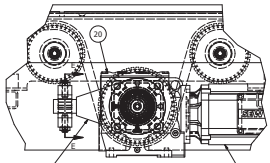




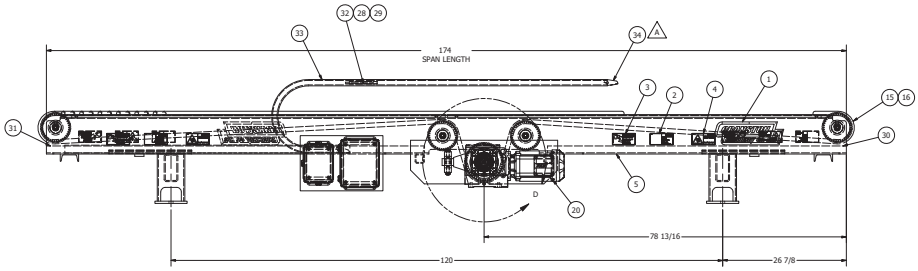
SECTION C-C
SCALE 1/10

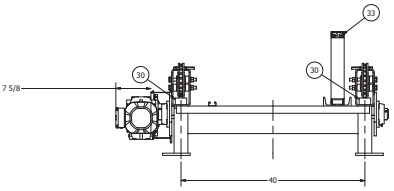


SECTION E-E
SCALE 1 / 5



DETAIL D
SCALE 1 / 5





REV	DESCRIPTION	DATE	DESIGNER
A	ADDED BALLOON ITEM 34	01/32/2023	FRB

REVISION HISTORY

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Tolerances:
Fractional: ± 1/16
Machining:
Fractional ± 1/32
Decimal: ± .010
Angles ± 1°

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ARRANGEMENT

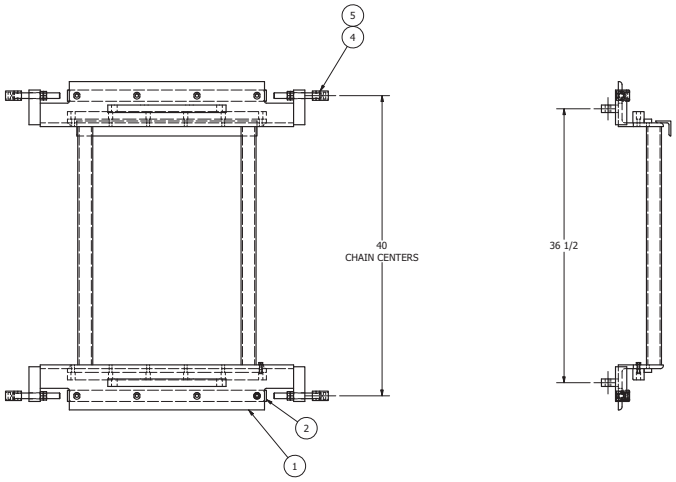
SHUTTLE MODULE

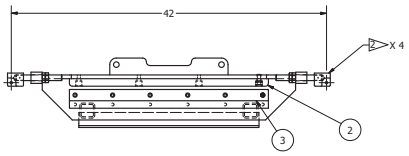
SCALE:	DRAWN BY:	Assembly No.	REV
1/10	FRB	DB9464	A
DATE: 10/31/2022	APPD: JMH	SHT 1 OF 1	

REF. DWG:

NOTE:

1. APPROXIMATE ASSEMBLY WEIGHT: 195 LB
2. DRILL FOR 1/8"DIA ROLL PIN AT ASSEMBLY





REV	DESCRIPTION	DATE	DESIGNER

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Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

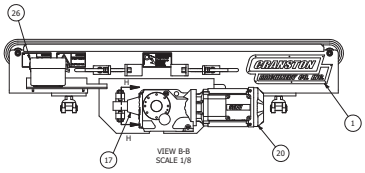
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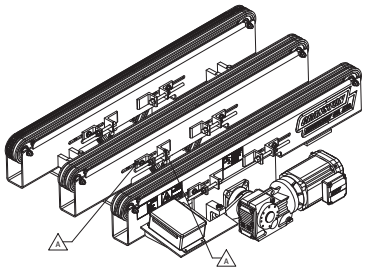
SUB-ASSEMBLY

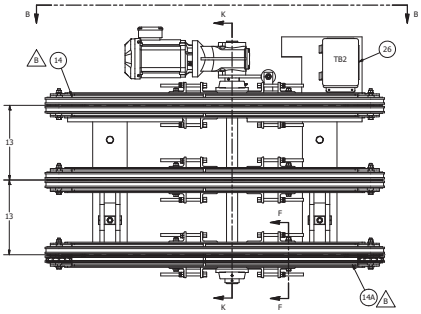
SLED

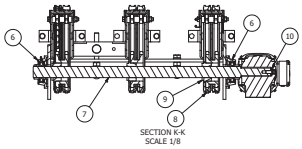
SCALE:	DWN BY:	DRAWING NO.	REV:
1/8	FRB	BB9798	
DATE: 11/28/2022	APPD:	SHT 1 OF 1	

REF. DWG:







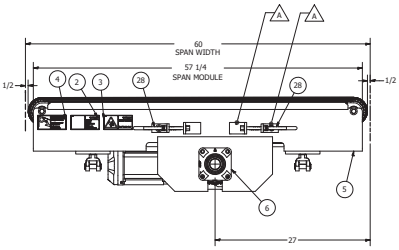


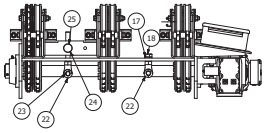


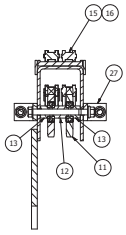
NOTE:

1.

2.







REV	DESCRIPTION	DATE	DESIGNER
B	Wear strip item 14 Qty 3 was 6, Added wear strip 14A Qty 3	09/21/2023	FRB
A	Pictorially updated assembly view to show correct configuration for takeup brackets	11/8/2022	FRB

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Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional: ± .1/32
Decimal: ± .010
Angles: ± ½

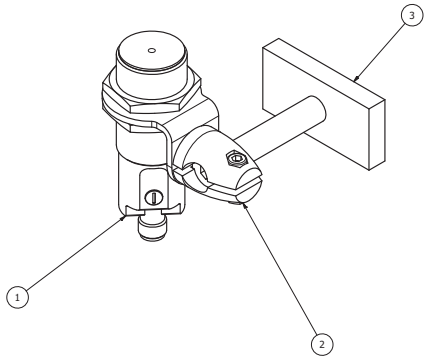
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ARRANGEMENT

SHUTTLE CONVEYOR

SCALE:	DRAWN BY:	Assembly No.	REV.
1/8	FRB	DB9463	B
DATE:	APPD:	SHT 1 OF 1	
11/8/2022	JMH		

REF. DWG:



NOTE:

1.

2.

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Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1 c

REV	DESCRIPTION	DATE	DESIGNER
A	REMOVED SHEET METAL BRACKET	11/30/24	JMH

REVISION HISTORY

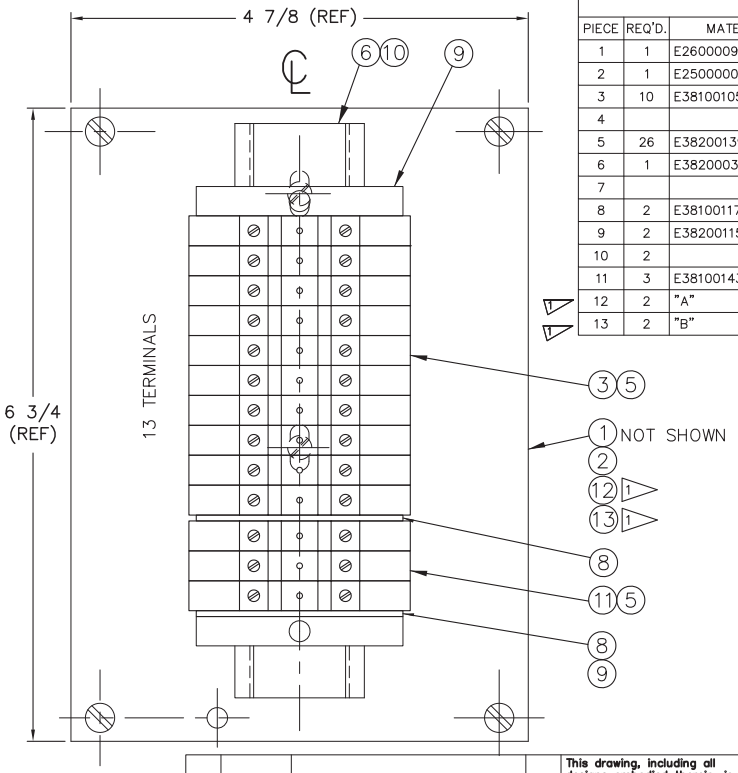
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BED SWITCH ARRANGEMENT
CAPACITIVE SWITCH

SCALE:	DWN BY:	DRAWING NO.	REV:
1 : 1	BH	CB6587	A
DATE: 11/3/2022	APPD: JMH	SHT 1 OF 1	

REF. DWG:

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000094	ENCLOSURE, HOFFMAN #A-806CHNF
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	10	E38100105	TERMINAL, ALLEN BRADLEY #1492-J6
4			
5	26	E38200139	MARKER STRIP, ALLEN BRADLEY #1492-MR8X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	3	E38100143	TERMINAL, ALLEN BRADLEY #1492-JG6
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
A	3/23/23	CHANGE MARKER STRIP NUMBER	BH

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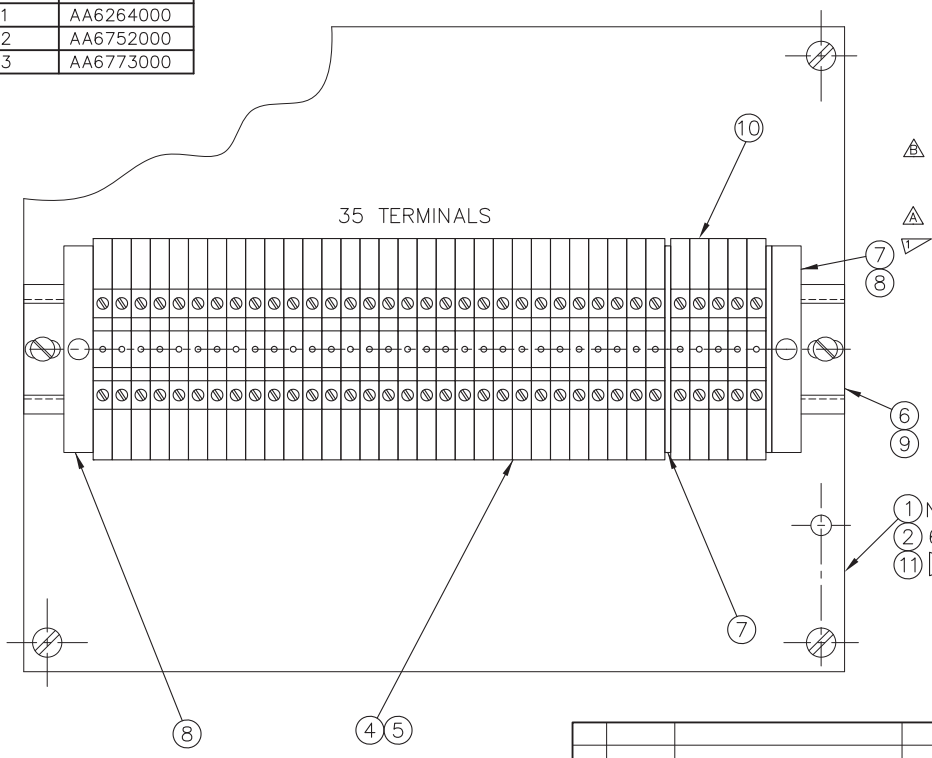
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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
10 GRAY, 3 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	JMH	BB9457	A
DATE: 1/17/2018	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB9312

TAB. NO.	"A"
000	AA6144000
001	AA6264000
002	AA6752000
003	AA6773000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	SIZE
1	1	E26000005	ENCLOSURE, HOFFMAN #A-1008CH
2	1	E25000005	PANEL, HOFFMAN #A-10P8
3			
4	30	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
5	70	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
8	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
9	3		SLOT HD, MACH. SCREW, #8-32 x 3/8 LG.
10	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
11	2	"A"	WARNING DECAL

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER

SYM	DATE	REVISION	BY
A	3-23-23	CHANGE ITEM 7	BH
A	1-26-15	CORRECT GROUND TERMINAL NUMBER	BH

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Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

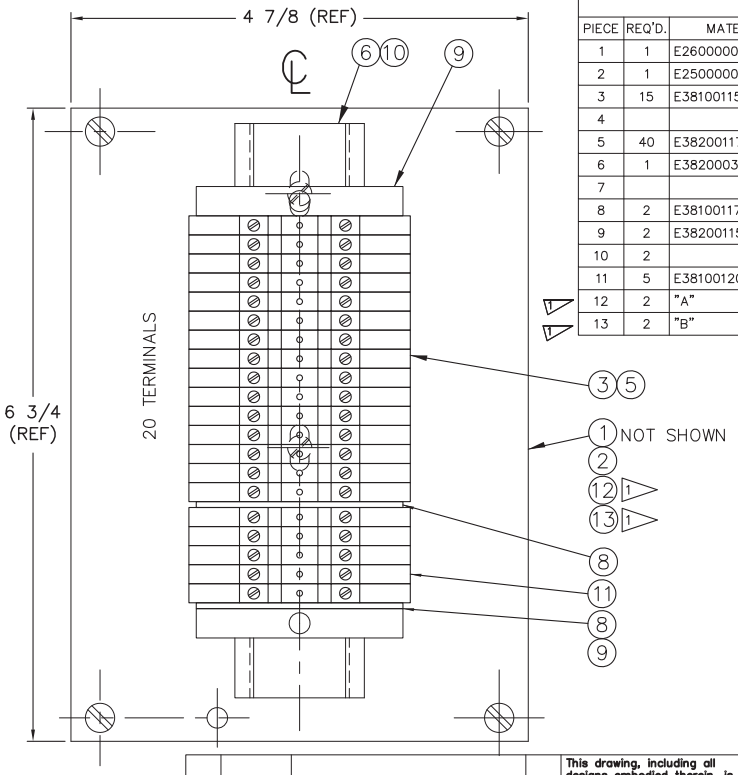
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TERMINAL BOX ASSEMBLY
10 x 8 x 4 ENCLOSURE
(30 GRAY, 5 GROUND TERMINALS)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9219	B
DATE: 10/26/09	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB8239

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000004	ENCLOSURE, HOFFMAN #A-806CH
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4			
5	40	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	3/23/23	ADD GRD TERMINAL NOTE	BH
A	1/26/15	ADD HIGH VOLTAGE DECAL	BH

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NOTE:
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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY, 5 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9177	B
DATE: 8/27/14	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB8473

MACHINE ASSEMBLY LIST

MODEL NO.: **20G066**

Title: SHUTTLE CONVEYOR
Description:

Issued for Serial No.: 22018002
Arrangement Drawing: DB9472001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	1		CB6583000	MACHINE WIRING DIAGRAM
1	1	-----	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO.: 22018002
				MODEL NO.: 20G066
				DWGS: ARRANGEMENT: DB9472000
				PNEUMATIC SCHEMATIC: CB6612000
				WIRING DIAGRAM: CB6583000
				DIMENSIONS: 64" W X 34" H X 178" L
				WEIGHT 2360 LBS
				VOLTAGE/POWER: 480/3PH/60HZ
				POWER: 2HP, 2HP
	4			DRIVE SCREW, #6 (.136) X 1/4" LG
2	1	PA9560	DB9464000	SHUTTLE MODULE
3	1	PA9561	BB9798000	SLED ASSEMBLY
4	1	PA9562	DB9463000	SHUTTLE CONVEYOR ASSEMBLY

MACHINE ASSEMBLY LIST

MODEL NO.: **20G066**

Title: SHUTTLE CONVEYOR
Description:

Issued for Serial No.: 22018002
Arrangement Drawing: DB9472001
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
5	1			NOT USED
6	4		E16600154	PROXIMITY SENSOR, EFECTOR: IM5123
	8			SOCKET HEAD MACHINE SCREW, #10-32 X 1-1/2 LG
	8			LOCKWASHER, STD #10
7	4		BB9809000	BRACKET, SENSOR MOUNTING
8	4		E16700120	CORD SET
9	2	PA9559	CB5687000	BED SWITCH

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018002
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	2	M25000018		CORPORATE PLATE
	16			DRIVE SCREW, #6 (.136) X 1/4" LG.
2	4	AA6140000		WARNING LABEL
3	4	AA6142000		SAFETY LABEL
4	4	AA6141000		CAUTION LABEL
5	1	DB9468000		FRAME
6	2	M10100080	*	BEARING, SKF: FY 1-15/16 TF
	8			HEX HD CAP SCREW, 9/16-12NC X 1-1/2 LG.
	8			LOCK WASHER, 9/16-STD.
7	1	DA8819200		DRIVE SHAFT
	1			KEY, 3/8 SQ X 2-1/2 LG.
8	2	DB1070000	*	DRIVE SPROCKET
9	2	M20500079	*	BUSHING, BIKON: #B106-IN, FOR 1-15/16 DIA SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018002
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1	DA9050006		FLAT WASHER
	1			LOCK WASHER, 1/2" STD.
	1			HEX HD CAP SCREW, 1/2-NC X 1-1/2 LG.
11	8	DA8831006	*	SPROCKET
	8			HEX HD CAP SCREW, 5/8-11NC X 5-1/2 LG.
	16			FLAT WASHER, 5/8-STD.
	8			ESNA NUT, HALF, 5/8-11NC
12	16	DA8808001		SPACER
13	16	DA9050000		SPACER
14	4	DB6394089	*	WEAR STRIP
	4			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG.
15	2	M11200008	*	CHAIN, ANSI STD.: #C2080H X 167 PITCHES =334" LG.
16	4	M11400004	*	CONNECTING LINK, ANSI STD.: #C2080H

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018002
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17	1	CB3719000		TORQUE ARM
	4			HEX HD CAP SCREW, M12 X 1.75 X 30MM LG.
	4			LOCK WASHER, M12-STD.
	4			FLAT WASHER, M12-STD.
18	2	AA6847000		RUBBER DISK
	2			SOC HD SET SCREW, 5/8-11NC X 2 LG. HALF DOG POINT
	2			ESNA NUT, HALF, 5/8-11NC
19	2	AA6846000		STEEL DISK
20	1	M22500160	*	GEARMOTOR, 2 HP, EURODRIVE SA67DRN90L4, 36.85:1 RATIO, 1-1/2" BORE SIDE B, CONDUIT ENTRY 0/X, M1 MOUNTING, 480V/3PH/60HZ
21				NOT USED
22				NOT USED
23				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018002
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
24				NOT USED
25	1	BB9219000		TERMINAL BOX ASSEMBLY (TB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
26	1	BB9457000		TERMINAL BOX ASSEMBLY (MTB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
27	1			NOT USED
28	1	E52000019	*	CABLE, OLFLEX-FD: CLASSIC 810 #26181, 4-COND., #12 AWG X 25 FT. LG.
29	1	E52000020	*	CABLE, OLFLEX-FD: CLASSIC 810 CY #26272, 5 COND., #14 AWG X 20 FT. LG.
30	2	DA9192134	*	WEAR STRIP
	4			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG.
31	2	DA9192018		WEAR STRIP
	4			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9560 **Drawing: DB9464000**

Title: SHUTTLE MODULE
Description:

Issued for Serial No.: 22018002
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: A **DATE:** 2/1/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
32				NOT USED
33	1	E36600054		E-CHAIN POWER TRACK, IGUS: 2.208M-2400-05-175-0
	8			HHCS 1/4-20NC X 1" LG.
	8			FLATWASHER, 1/4"-STD
	8			LOCKWASHER, 1/4"-STD.
34	1	E36600055		MOUNTING BRACKET (SET), IGUS: 200-32-1

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9561 **Drawing: BB9798000**

Title: SLED ASSEMBLY
Description:

Issued for Serial No.: 22018002
Master by: FRB **DATE:** 12/5/2022
Issued By: FRB **DATE:** 1/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB5164000		SLED FRAME
2	2	BB7831000		RUNNER
	8			SOC HD CAP SCREW, 1/2-13NC X 1 LG.
	8			LOCK WASHER, 1/2-HI COLLAR
3	2	BB7830000	*	WEAR BAR
	12			HEX HD CAP SCREW, 5/16-18NC X 1-1/4 LG.
	12			LOCK WASHER, 5/16-STD.
4	4	AA8660000		CHAIN COUPLER
	4	M69100027		ROLL PIN, SPIROL: CLDP .125 X 1.250 MBK
5	4	CA7456046		THREADED ROD
	8			HEX JAM NUT, 3/4-16NF

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018002		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:	FRB	**DATE:**	1/15/2023
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	M25000018		CORPORATE PLATE
	5			DRIVE SCREW, #6 (.136) X 1/4" LG.
2	2	AA6140000		WARNING DECAL
3	2	AA6141000		CAUTION DECAL
4	2	AA6142000		SAFETY DECAL
5	1	DB9469000		WELDMENT, SHUTTLE CONVEYOR
6	2	M10100080	*	BEARING, SKF: #FY 1-15/16 TF
	8			HEX HD CAP SCREW, 9/16-12NC X 1-1/2 LG.
	8			LOCK WASHER, 9/16-STD.
7	1	DA8819224		SHAFT 1-15/16
	1			KEY, 5/16" SQ X 2" LG.
8	6	BB8059004	*	SPROCKET
9	6	M20500079		BUSHING, BIKON: #B106-IN, FOR 1-15/16 DIA SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018002		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:	FRB	**DATE:**	1/15/2023
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1	DA9050005		FLAT WASHER
	1			LOCK WASHER, 1/2-STD.
	1			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
11	24	M21000750	*	SPROCKET, BLACK STAR 80BB12
	12			HEX HD CAP SCREW, 5/8-11NC X 5-1/2 LG.
	12			FLAT WASHER, 5/8-STD.
	12			ESNA NUT, HALF, 5/8-11NC
12	12	AA9083000		SPACER,INNER
13	24	AA9084000		SPACER,OUTER
14	3	CB1691139	*	WEAR STRIP
	3	CB1691124	*	WEAR STRIP
	6			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG.
15	6	M11200008	*	CHAIN, ANSI STD.: #C2080H X 132 PITCHES = 264" LG. (NOT INCL. CONNECTING LINK)
16	6	M11400004	*	CONNECTING LINK, ANSI STD.; #C2080H

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018002		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:	FRB	**DATE:**	1/15/2023
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17	1	CB3721000		TORQUE ARM
	4			HEX HD CAP SCREW, M8 X 1.25 X 25MM LG.
	4			LOCK WASHER, M8-STD.
	4			FLAT WASHER, M8-STD.
18	2	AA6847000		RUBBER DISK
	2			SOC HD SET SCREW, 5/8-11NC X 2 LG., HALF DOG POINT
	2			ESNA NUT, HALF, 5/8-11NC
19	2	AA6846000		STEEL DISK
20	1	M22500157	*	GEARMOTOR, EURODRIVE: KA47DRN90L4, 2HP, 29.32:1 RATIO, 1-3/8" BORE SIDE B, CONDUIT 0/X, M1 MOUNTING, 480V/3PH/60HZ
21				NOT USED
22	4	M45000011		CLEVIS, P.H.: #50942
	2			HEX HD CAP SCREW, 3/4-16NF X 1-1/2 LG.
	2			LOCK WASHER, 3/4-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9562 **Drawing: DB9463000**

Title:	SHUTTLE CONVEYOR - MID DRIVE	**Issued for Serial No.:**	22018002		
Description:	3 ROW, 2" E.P., DOUBLE CHAIN, NO LEGS	**Master by:**	FRB	**DATE:**	12/5/2022
		Issued By:	FRB	**DATE:**	1/15/2023
		Revision:	A	**DATE:**	9/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
23	4	M45000013		PIN, P.H.: #68369 (WITH RETAINER RINGS)
24	2	CA7456046		THREADED ROD
	4			HEX JAM NUT, 3/4-16NF
25	2	BB7815000		PIVOT PIN
	4			(REF) COTTER PIN, 1/8 DIA X 2 LG.
26	1	BB9177000		TERMINAL BOX ASSEMBLY
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
27	12	AA8665000		TAKE-UP BRACKET
28	12	BA8328043		TAKE-UP SCREW
	24			FLAT WASHER, 1/2-SAE
	12			HEX NUT, 1/2-13NC
	12			HEX JAM NUT, 1/2-13NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

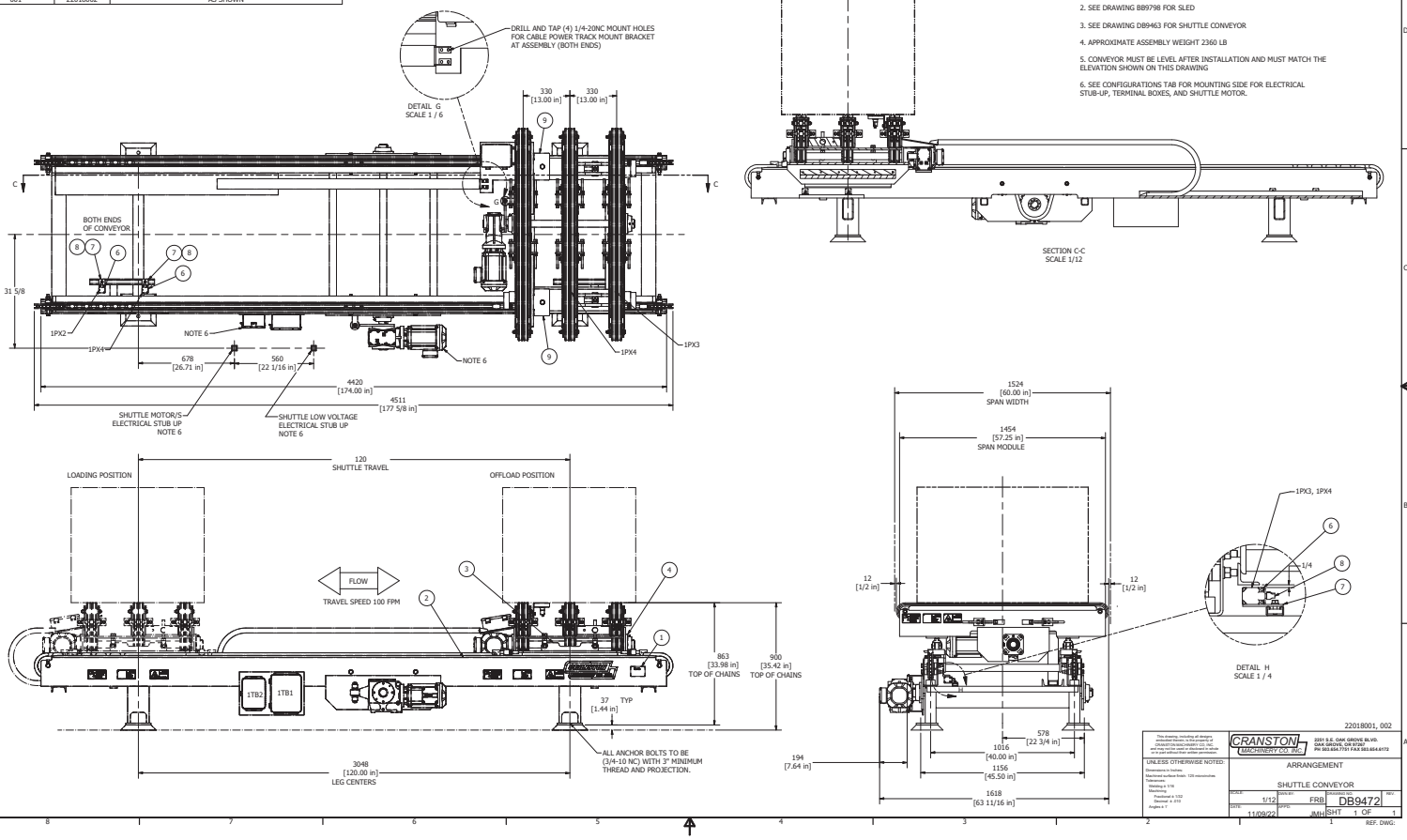
PA9559 **Drawing: CB6587000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018002		
Description:	CAPACITIVE SWITCH	**Master by:**	BH	**DATE:**	11/3/2022
		Issued By:	FRB	**DATE:**	1/15/2023
		Revision:	C	**DATE:**	11/30/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	E16600159	*	PROXIMITY SWITCH , CAPACITIVE, IFM, KI5309
	1	E16700105		CORDSET-FEMALE-M12-RT-4P-10M , EFE-EVC006
2	1	E16400029		MOUNTING BRACKET, IFM #E20874
3	1	BB9874000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CONFIGURATIONS		
TAB	SERIAL NUMBER	CONFIGURATION
000	22018001	-MODULE GEARMOTOR AND ANCHOR ON OPPOSITE SIDE -ELECTRICAL TERMINAL BOXES AND STUB-UPS ON OPPOSITE SIDE
001	22018002	AS SHOWN



NOTES:

1. SEE DRAWING DB9464 FOR SHUTTLE MODULE
2. SEE DRAWING BB9798 FOR SLED
3. SEE DRAWING DB9463 FOR SHUTTLE CONVEYOR
4. APPROXIMATE ASSEMBLY WEIGHT 2360 LB
5. CONVEYOR MUST BE LEVEL AFTER INSTALLATION AND MUST MATCH THE ELEVATION SHOWN ON THIS DRAWING
6. SEE CONFIGURATIONS TAB FOR MOUNTING SIDE FOR ELECTRICAL STUB-UP, TERMINAL BOXES, AND SHUTTLE MOTOR.

22018001, 002

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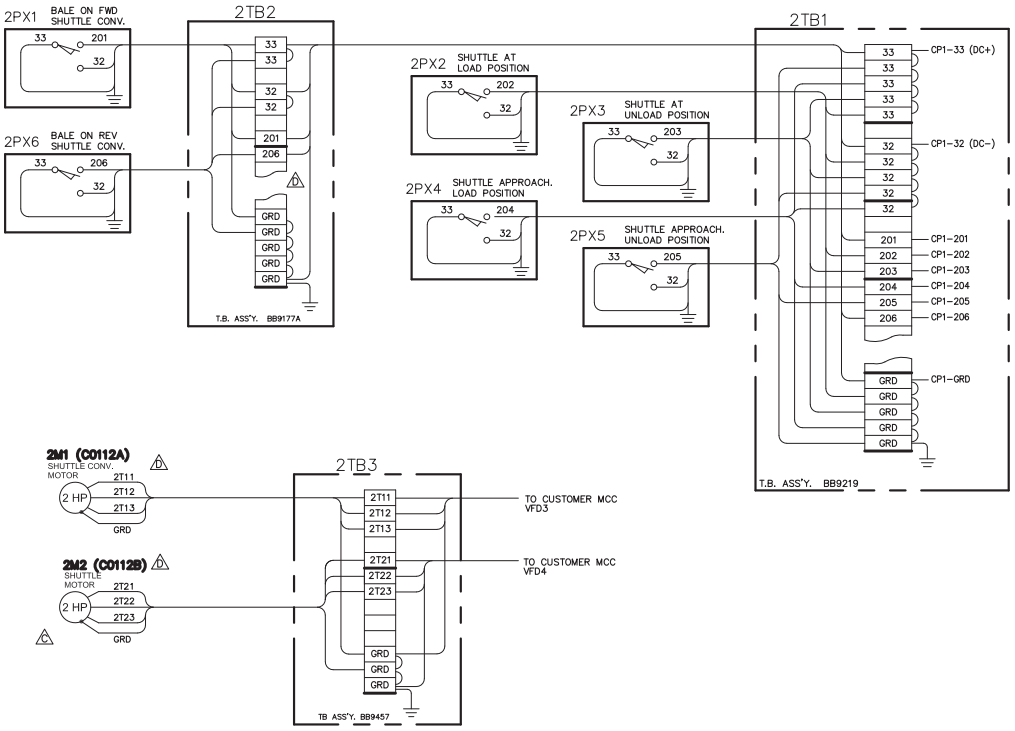
UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional ± 1/16
Machining:
Positional ± 1/32
Decimal ± .010
Angles ± 1°

ARRANGEMENT

SHUTTLE CONVEYOR

SCALE:	1/12	DRAWN BY:	FRB	Assembly No.	DB9472	REV:
DATE:	11/09/22	APPD:	JMH	SHT	1 OF	1

REF. DWG:



22018002

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY
D	9/26/23	ADDED BHS LABELS, JUMPERS AND CHANGED MOTOR WIRE #S	MLK
C	9/20/23	REMOVED SHUTTLE BRAKE	MLK
B	3/22/23	ADD 2PX2	BH
A	2/28/23	update TB assembly drawing	BH

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UNLESS OTHERWISE NOTED
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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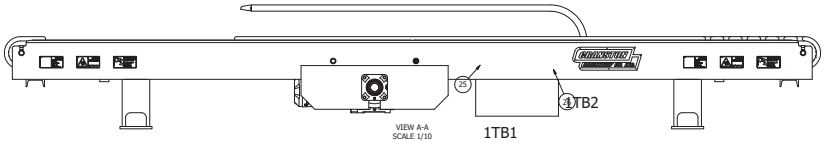
MACHINE WIRING DIAGRAM
SHUTTLE CONVEYOR

SCALE: NONE | DRAWN BY: BH | DRAWING NO. CB6583 | REV. D
DATE: 09/22/22 | APPROVED: | SHT. 1 OF 1

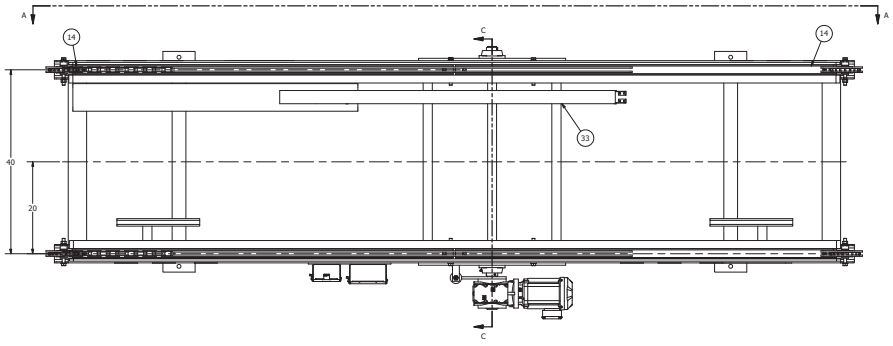
NOTE:

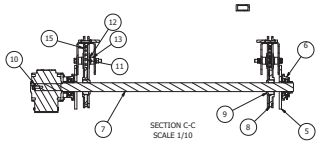
1. APPROXIMATE ASSEMBLY WEIGHT 1437 LB

2.

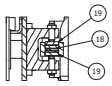


VIEW A-A
SCALE 1/10

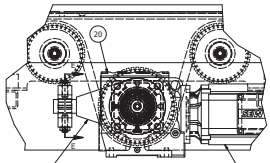




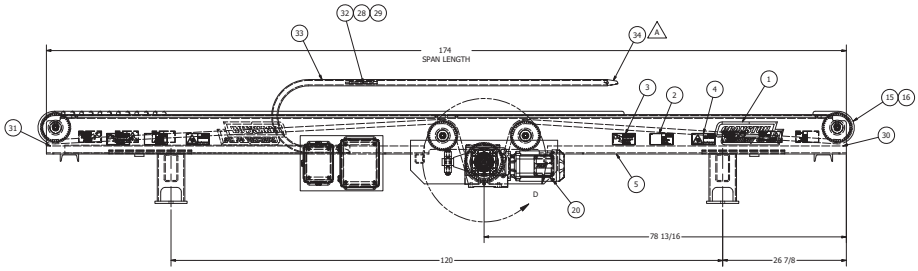
SECTION C-C
SCALE 1/10

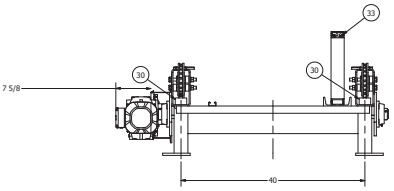


SECTION E-E
SCALE 1 / 5



DETAIL D
SCALE 1 / 5





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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positioned ± 1/32
Decimal: ± .010
Angles ± 1°

REV	DESCRIPTION	DATE	DESIGNER
A	ADDED BALLOON ITEM 34	01/32/2023	FRB

REVISION HISTORY

CRANSTON MACHINERY CO. INC.
3351 S.E. OAK GROVE BLVD.
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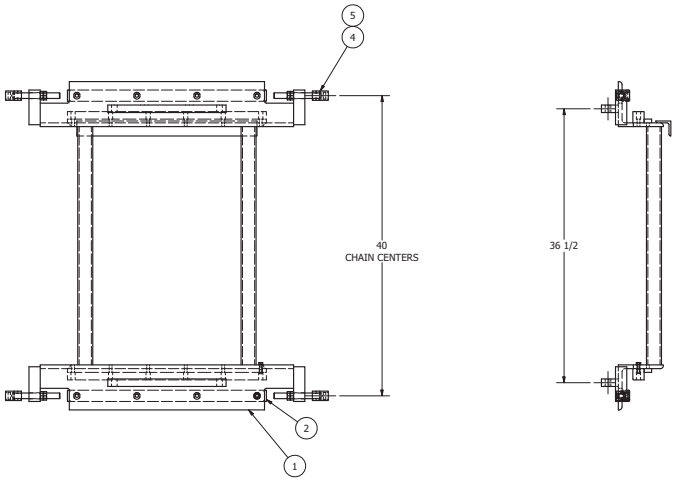
ARRANGEMENT

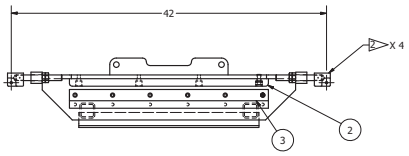
SHUTTLE MODULE

SCALE:	DRAWN BY:	Assembly No.	REV
1/10	FRB	DB9464	A
DATE: 10/31/2022	APPD: JMH	SHT 1 OF 1	REF. DWG:

NOTE:

1. APPROXIMATE ASSEMBLY WEIGHT: 195 LB
2. DRILL FOR 1/8"DIA ROLL PIN AT ASSEMBLY





REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY

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UNLESS OTHERWISE NOTED:
Dimensions in Inches:
Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

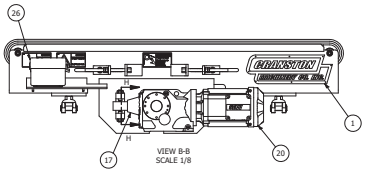
CRANSTON MACHINERY CO. INC.
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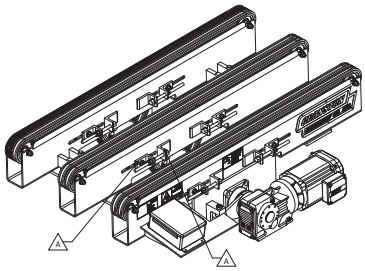
SUB-ASSEMBLY

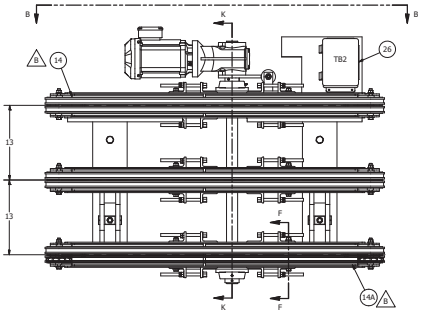
SLED

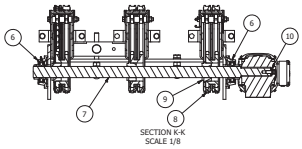
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1/8	FRB	BB9798	
DATE:	APPD:	SHT 1 OF 1	
11/28/2022			

REF. DWG:







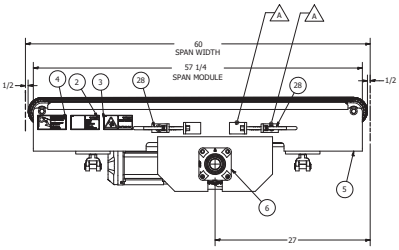


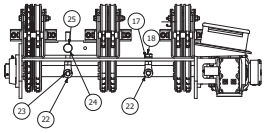


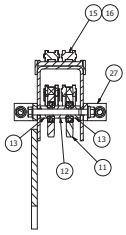
NOTE:

1.

2.







REV	DESCRIPTION	DATE	DESIGNER
B	Wear strip item 14 Qty 3 was 6, Added wear strip 14A Qty 3	09/21/2023	FRB
A	Pictorially updated assembly view to show correct configuration for takeup brackets	11/8/2022	FRB

REVISION HISTORY

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Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional: ± .1/32
Decimal: ± .010
Angles: ± ½

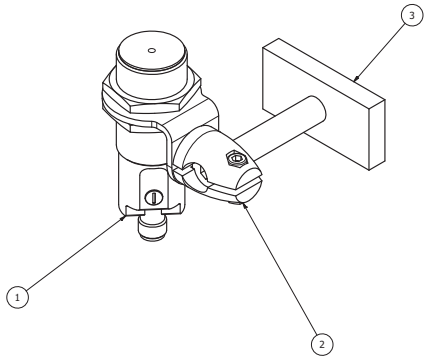
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3201 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.0172

ARRANGEMENT

SHUTTLE CONVEYOR

SCALE:	DRAWN BY:	ASSEMBLY:	REV:
1/8	FRB	DB9463	B
DATE:	APPD:	SHT 1 OF 1	
11/8/2022	JMH		

REF. DWG:



NOTE:

1.

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Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1 c

REV	DESCRIPTION	DATE	DESIGNER
A	REMOVED SHEET METAL BRACKET	11/30/24	JMH

REVISION HISTORY

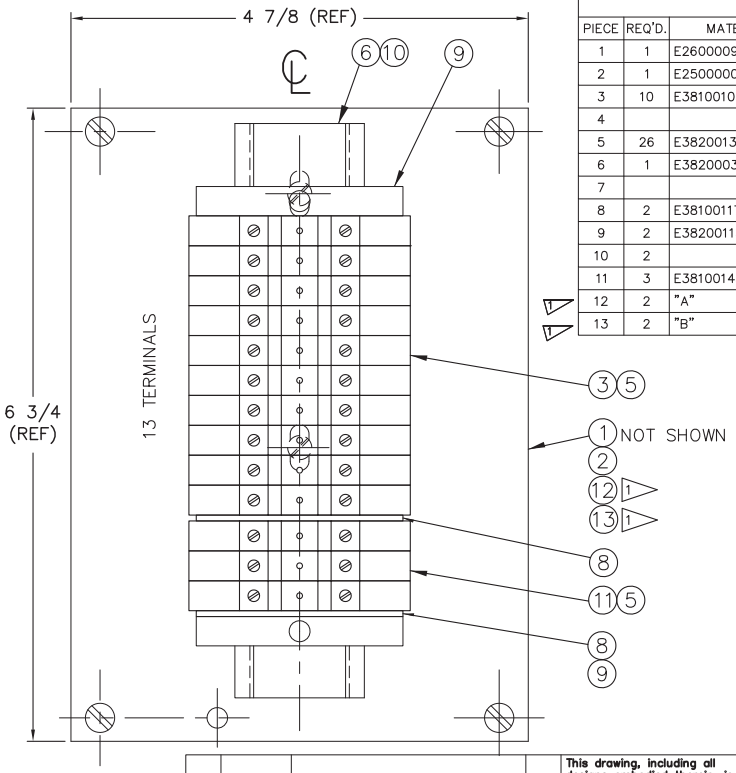
CRANSTON MACHINERY CO. INC.
2261 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 800.854.7701 FAX 503.654.8172

BED SWITCH ARRANGEMENT
CAPACITIVE SWITCH

SCALE:	DWN BY:	DRAWING NO.	REV:
1 : 1	BH	CB6587	A
DATE: 11/3/2022	APPD: JMH	SHT 1 OF 1	

REF. DWG:

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000094	ENCLOSURE, HOFFMAN #A-806CHNF
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	10	E38100105	TERMINAL, ALLEN BRADLEY #1492-J6
4			
5	26	E38200139	MARKER STRIP, ALLEN BRADLEY #1492-MR8X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	3	E38100143	TERMINAL, ALLEN BRADLEY #1492-JG6
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
A	3/23/23	CHANGE MARKER STRIP NUMBER	BH

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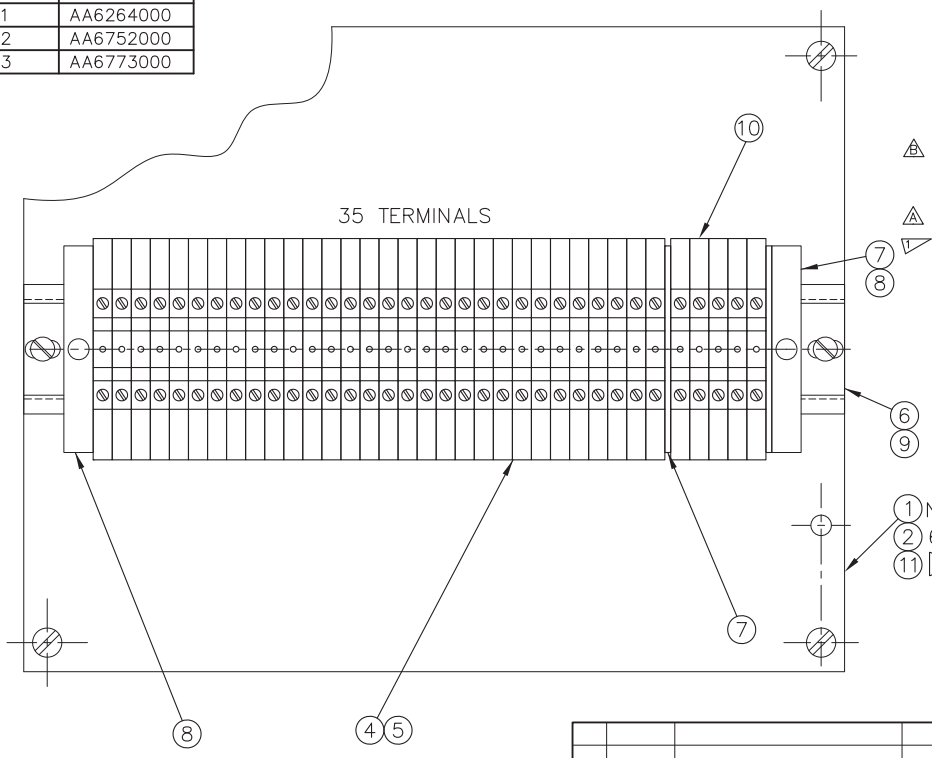
CRANSTON MACHINERY CO., INC.
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OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
10 GRAY, 3 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	JMH	BB9457	A
DATE: 1/17/2018	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB9312

TAB. NO.	"A"
000	AA6144000
001	AA6264000
002	AA6752000
003	AA6773000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	SIZE
1	1	E26000005	ENCLOSURE, HOFFMAN #A-1008CH
2	1	E25000005	PANEL, HOFFMAN #A-10P8
3			
4	30	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
5	70	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
8	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
9	3		SLOT HD, MACH. SCREW, #8-32 x 3/8 LG.
10	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
11	2	"A"	WARNING DECAL

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER

SYM	DATE	REVISION	BY
A	3-23-23	CHANGE ITEM 7	BH
A	1-26-15	CORRECT GROUND TERMINAL NUMBER	BH

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Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

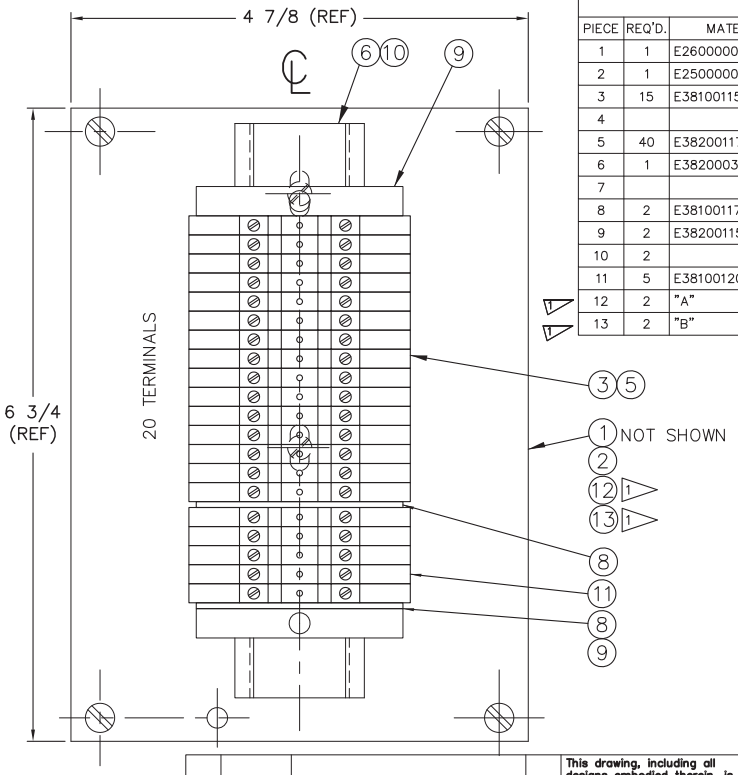
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TERMINAL BOX ASSEMBLY
10 x 8 x 4 ENCLOSURE
(30 GRAY, 5 GROUND TERMINALS)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9219	B
DATE: 10/26/09	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB8239

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000004	ENCLOSURE, HOFFMAN #A-806CH
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4			
5	40	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	3/23/23	ADD GRD TERMINAL NOTE	BH
A	1/26/15	ADD HIGH VOLTAGE DECAL	BH

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NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY, 5 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9177	B
DATE: 8/27/14	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB8473

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90 DEGREE TURN CONVEYOR

MODEL 20G071

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90 DEGREE TURN CONVEYOR
MODEL 20G071

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON 90 DEGREE TURN CONVEYOR IS A MODULAR CHAIN CONVEYOR THAT IS ELECTRICALLY ROTATED 90 DEGREES. EACH TUBE OF THE CONVEYOR HAS TWO ROWS OF 1” PITCH CONVEYING CHAIN FOR CARRYING THE PRODUCT. CONVEYOR CONTROL MAY BE AUTOMATIC, SEMI-AUTOMATIC, OR MANUAL PUSHBUTTONS, DEPENDING ON SPECIFIC APPLICATION AND SYSTEM REQUIREMENTS.

THE TURN CONVEYOR INCLUDES THE FOLLOWING:

AN ELECTRIC CONVEYOR DRIVE, LOCATED TOWARD THE DISCHARGE END OF THE CONVEYOR. THE GEAR REDUCER IS SHAFT MOUNTED ALONG THE SIDE OF THE CONVEYOR.

1" PITCH ROLLER CHAIN CONVEYING SURFACE. THE CONVEYING CHAINS RIDE ON REPLACEABLE UHMW WEAR STRIPS. CHAINS RETURN THROUGH THE FRAME OVER FIR WEAR STRIPS.

INDIVIDUAL CHAIN SLACK TAKE-UP. EACH CONVEYING CHAIN HAS ITS OWN SLACK TAKE-UP, LOCATED NEAR THE DRIVE SHAFT.

A FLOOR MOUNTED ROTATION MODULE THAT IS ATTACHED TO THE CONVEYOR AND TO THE FLOOR. BETWEEN THE BASE PLATE AND THE CONVEYOR MOUNT THERE IS A RING BEARING WITH EXTERNAL GEAR THAT THE CONVEYOR ROTATES ON. ROTATION IS ACCOMPLISHED BY A PINION MOUNTED ON A REDUCER WITH ELECTRIC BRAKEMOTOR. CUSTOMER TO PROVIDE A VARIABLE FREQUENCY DRIVE FOR THE ROTATION MOTOR.

TWO (2) SETS OF PROXIMITY SENSORS ARE LOCATED ON THE BASE PLATE FOR POSITIONING THE CONVEYOR AT THE LOAD AND DISCHARGE POSITIONS.

THE TURN CONVEYOR CONTROLS ARE ELECTRICALLY INTERLOCKED WITH ADJACENT EQUIPMENT.

1.2--DESCRIPTION OF OPERATION

WHEN THE TURN CONVEYOR RECEIVES A SIGNAL FROM THE UPSTREAM CONVEYOR THAT BALES ARE READY TO FEED ONTO IT, THE TURN CONVEYOR DRIVE STARTS AND THE BALES FEED ONTO IT. THE LEADING BALE ACTUATES A BED MOUNTED PROXIMITY SWITCH LOCATED NEAR THE DISCHARGE END OF THE CONVEYOR AND THE CONVEYOR DRIVE STOPS. THE ROTATION DRIVE STARTS AND ROTATES THE CONVEYOR TOWARD THE DISCHARGE POSITION. AS IT NEARS THE POSITION, IT ACTUATES A PROXIMITY SENSOR TO INDICATE IT IS NEAR THE DISCHARGE POSITION AND THE VARIABLE FREQUENCY DRIVE REDUCES THE ROTATION SPEED TO A SLOW SPEED UNTIL THE DISCHARGE POSITION SWITCH IS ACTUATED AND THEN THE DRIVE STOPS AND THE BRAKE IS ENGAGED.

90 DEGREE TURN CONVEYOR
MODEL 20G071

SECTION 1--GENERAL INFORMATION

1.2--DESCRIPTION OF OPERATION (CONT'D)

IF THE DOWNSTREAM CONVEYOR IS READY TO RECEIVE BALES, THE CONVEYOR DRIVE STARTS AND DISCHARGES THE BALES. WHEN THE CONVEYOR IS EMPTY, THE CONVEYOR DRIVE STOPS AND THE ROTATION DRIVE STARTS IN REVERSE TO ROTATE THE CONVEYOR TOWARD THE LOAD POSITION. AS THE CONVEYOR NEARS THE LOAD POSITION, A PROXIMITY SENSOR IS ACTUATED INDICATING THAT THE CONVEYOR IS APPROACHING THE LOAD POSITION. THE VARIABLE FREQUENCY DRIVE REDUCES THE ROTATION SPEED TO A SLOW SPEED UNTIL THE LOAD POSITION SENSOR IS ACTUATED AND THEN THE DRIVE STOPS AND THE BRAKE IS ENGAGED. THE MACHINE IS NOW READY FOR A NEW CYCLE.

SECTION 2--ADJUSTMENTS

2.1--CONVEYING CHAIN TENSION

EACH PAIR OF CONVEYING CHAINS IS EQUIPPED WITH SLACK CHAIN TAKE-UP. THE CONVEYING CHAINS SHOULD RUN SNUGLY AND SMOOTHLY. TO ADJUST CONVEYING CHAIN TENSION, TIGHTEN THE CHAIN UNTIL IT JUST BEGINS TO CLICK, THEN LOOSEN THE CHAIN UNTIL IT RUNS NOISELESSLY. IF THE CHAIN CLICKS DURING OPERATION, IT IS TOO TIGHT; IF IT DRAGS OR JUMPS, IT IS TOO LOOSE.

2.3--SPEED OF TURN

THE ROTATING SPEED OF THE TURN CONVEYOR IS GOVERNED BY A CUSTOMER SUPPLIED VARIABLE FREQUENCY DRIVE. ADJUST ROTATION SPEEDS AS NEEDED TO PROVIDE SMOOTH MACHINE OPERATION AND APPROPRIATE CYCLE TIME.

2.2--CONVEYOR MOUNTED PROXIMITY SWITCHES

PROXIMITY SWITCHES ARE MOUNTED ON THE CONVEYOR TO DETECT AND CONTROL THE CONVEYOR MOVEMENT, AND PRODUCT MOVEMENT. SENSOR BRACKETS ARE MOUNTED ON UNISTRUT CHANNEL TO ALLOW ADJUSTABILITY OF LOCATION ALONG THE CONVEYOR.

- FOR M30 STYLE SENSORS, THE MOUNTING BRACKET CAN BE ADJUSTED ALONG THE UNISTRUT CHANNEL USING A 10MM ALLEN KEY TO LOOSEN AND TIGHTEN THE RETAINING NUT WITHIN THE CHANNEL. ORIENTATION AND DIRECTION OF THE SENSOR CAN BE ADJUSTED USING A 4MM ALLEN KEY TO LOOSEN THE HEAD OF THE MOUNTING BRACKET AND ALIGN IN A PREFERRED DIRECTION.

  THE PRODUCT DETECTION SENSORS SHOULD BE ADJUSTED TO PROPERLY DETECT A BALE WHEN ENTERING THE CONVEYOR AND WHEN THE BALE IS FULLY ON THE CONVEYOR.

  A SENSITIVITY ADJUSTMENT DIAL IS LOCATED ON THE SIDE OF THE SENSOR TO INCREASE/DECREASE SENSITIVITY OF THE SENSOR, ALLOWING DETECTION OF THE PRODUCT WITHOUT SENSING THE SURROUNDING PORTION OF THE CONVEYOR. THE SENSOR SHOULD BE LOCATED APPROXIMATELY 1 INCH BELOW THE CHAIN LEVEL.

- FOR 40MM X 40MM STYLE SENSORS, THE MOUNTING BRACKETS CAN BE ADJUSTED TO AFFECT THE SLOWDOWN AND STOP POSITIONS OF THE ROTATION.

  TWO SENSORS DETECT THE STOP POSITION FOR THE CONVEYOR WHILE ROTATING AND SHOULD BE POSITIONED SUCH THAT THE CONVEYOR IS LINED UP WITH THE UPSTREAM OR DOWNSTREAM CONVEYORS WHEN ACTIVATED.

  TWO SENSORS DETECT THE APPROACH OF THE CONVYEOR WHILE ROTATING AND ACT TO SLOW THE ROTATING SPEED BEFORE ACTIVATING THE STOP POSITION SENSORS. THESE SENSORS SHOULD BE ADJUSTED TO ALLOW FULL TRANSITION TO SLOW SPEED BEFORE ACTIVATING THE STOP POSITION SENSORS. THE VFD SETTINGS FOR SPEED AND ACCEL/DECEL RAMP RATES MAY AFFECT PROPER POSITIONING OF THESE SENSORS.

90 DEGREE TURN CONVEYOR
MODEL 20G071

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT
GEAR REDUCERS	MONTHLY	CHECK OIL LEVEL.
BEARINGS	MONTHLY	APPLY GREASE TO LUBE FITTINGS.
CONVEYING CHAINS	BI-MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL EVERY 60 DAY. AVOID OVER-OILING; EXCESS OIL WILL MARK THE PRODUCT.
GEAR REDUCERS	SEMI-ANNUALLY	CHANGE OIL EVERY 6 MONTHS OR AS NEEDED.
ROTEK BEARING AND GEAR	SEE VENDOR DATA	REFER TO VENDOR INFORMATION IN VENDOR DATA SECTION OF MANUAL.

NOTE: FOR ADDITIONAL MAINTENANCE OF GEAR REDUCERS, REFER TO VENDOR DATA SECTION OF THIS MANUAL.

3.2--LUBRICANT SELECTION GUIDE

GEAR REDUCER--USE GEAR OIL RECOMMENDED BY REDUCER MANUFACTURER. SEE VENDOR DATA SECTION.

ROTEK BEARING AND GEAR – USE LUBRICATION PRODUCTS RECOMMENDED BY MANUFACTURE. SEE VENDOR DATA SECTION.

GREASE--USE ANY HIGH-QUALITY BEARING GREASE.

90 DEGREE TURN CONVEYOR
MODEL 20G071

3.3--CONVEYOR WEAR STRIP REPLACEMENT

REPLACE THE UHMW WEAR STRIPS UNDER THE CONVEYING CHAINS WHEN NEEDED IN THE FOLLOWING MANNER:

1. LOOSEN THE CONVEYING CHAINS TO ALLOW ACCESS TO THE WEAR STRIPS.
2. REMOVE THE FASTENERS THAT ANCHOR THE WEAR STRIPS PIECES TO THE TUBES.
3. SLIDE OUT THE OLD WEAR STRIPS FROM UNDER THE CHAIN AND SLIDE IN THE NEW PIECES.
4. FASTEN EACH WEAR STRIP PIECE TO THE TUBE. FASTEN AT ONE END ONLY.
5. RETIGHTEN CONVEYING CHAINS.

3.4--IDLE SPROCKET REPLACEMENT

THE IDLER SPROCKETS AT EITHER THE END OF THE CONVEYOR OR AT THE TAKE-UPS ARE IDENTICAL. THE SPROCKETS ARE A TYPE "A" HUB WITH A BALL BEARING PRESSED IN WITH LOCTITE. A SPACER IS LOCATED BETWEEN THE TWO SPROCKETS AND THERE IS A SPACER LOCATED ON THE OUTSIDE OF EACH SPROCKET TO KEEP THEM POSITIONED IN THE CENTER OF THE TUBE. THE SPACERS ON THE OUTSIDE OF THE SPROCKETS HAVE A SHOULDER THAT CLAMPS ON THE INNER RACE OF THE BEARING. A BOLT PASSES THROUGH ALL THREE SPACERS AND THE SPROCKETS.

TO REPLACE THE END IDLE SPROCKETS, FIRST LOCK OUT POWER TO THE MOTOR. USING THE TAKE-UP, LOOSEN THE CONVEYING CHAINS OR BREAK THE CHAINS AT THE CONNECTING LINK. LOOSEN THE BOLT THAT GOES THROUGH THE SPROCKETS. ONCE THE BOLT IS LOOSE, THE ENTIRE SPROCKET ASSEMBLY CAN BE RAISED OUT OF THE TUBE. PUT THE NEW SPROCKET ASSEMBLY TOGETHER AND DROP IT INTO THE TUBE USING THE SLOT IN THE TUBE. BE SURE THAT THE TWO SPACERS WITH THE SHOULDER ARE INSTALLED WITH THE SMALLER DIAMETER TOWARD THE BEARING. RE-TIGHTEN THE THROUGH BOLT. PUT THE CHAINS BACK ONTO THE SPROCKETS AND RE- CONNECT CHAINS AND/OR TIGHTEN CHAINS AT THE TAKE-UP.

TO REPLACE THE TAKE-UP SPROCKETS, FIRST LOCK OUT POWER TO THE MOTOR. USING THE TAKE-UP, LOOSEN THE CONVEYING CHAINS OR BREAK THE CHAINS AT THE CONNECTING LINKS. PULL OUT THE BOLT THAT GOES THROUGH THE SPROCKETS. WHEN THE BOLT IS PULLED, THE SPACERS SHOULD FALL OFF INTO THE BOTTOM OF THE CONVEYOR TUBE. THE SPROCKETS COME OUT OF THE CUT-OUT IN THE BOTTOM OF THE TUBE. PUT THE NEW SPROCKETS INTO THE TUBE AND PUT THE SPACERS INTO POSITION. BE SURE THAT THE TWO SPACERS WITH THE SHOULDERS ARE INSTALLED WITH THE SMALLER DIAMETER TOWARD THE BEARINGS. REPLACE THE THROUGH BOLT. PUT THE CHAINS BACK ONTO THE SPROCKETS AND RE- CONNECT CHAINS AND/OR TIGHTEN CHAINS AT THE TAKE-UP.

CONNECT POWER BACK TO THE CONVEYOR MOTOR AND START CONVEYOR. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1 OF THIS MANUAL).

SECTION 3--MAINTENANCE (CONTINUED)

3.5--DRIVE SPROCKET REPLACEMENT

IN ORDER TO REPLACE DRIVE SPROCKETS, IT IS NECESSARY TO LOWER THE DRIVE SHAFT ASSEMBLY OUT OF THE CONVEYOR. IT IS NOT NECESSARY TO REMOVE THE SHAFT MOUNTED DRIVE REDUCER FROM THE SHAFT UNLESS DESIRED TO DECREASE THE AMOUNT OF WEIGHT THAT MUST BE HANDLED. A FORK TRUCK WITH LIFTING SLING OR STRAP MAY BE REQUIRED TO LOWER DRIVE SHAFT ASSEMBLY OUT OF THE CONVEYOR.

LOCK OUT POWER TO THE MOTOR AND DISCONNECT WIRING TO THE MOTOR CONDUIT HOUSING. USING THE TAKE-UPS, LOOSEN THE CHAINS OR BREAK CHAINS AT CONNECTING LINKS. DISCONNECT REDUCER TORQUE ARM FROM CONVEYOR FRAME.

PULL THE BOLTS THAT HOLD THE DRIVE SHAFT BEARINGS TO THE CONVEYOR FRAME. THE ENTIRE DRIVE SHAFT ASSEMBLY SHOULD NOW BE FREE TO LOWER OUT OF THE CONVEYOR. SLIDE THE NON-DRIVE SIDE BEARING OFF OF THE SHAFT.

THE DRIVE SPROCKETS ARE MOUNTED TO THE SHAFT WITH LOCKING BUSHINGS. THE SOCKET HEAD CAP SCREWS IN THE BUSHING ARE METRIC. IF THE DRIVE SHAFT OF THE CONVEYOR IS 2-15/16" DIAMETER, THE SCREWS IN THE BUSHING ARE M10 X 30 AND WILL REQUIRE AN 8 MM HEX BIT SOCKET. IF THE DRIVE SHAFT OF THE CONVEYOR IS 1-15/16" OR 2-7/16" DIAMETER, THE SCREWS IN THE BUSHING ARE M8 X 25 AND WILL REQUIRE A 6 MM HEX BIT SOCKET.

RELAX ALL LOCKING SCREWS ON THE BUSHING BY AT LEAST TWO TURNS AND TRANSFER SCREWS TO ALL PUSH-OFF THREADS PROVIDED IN THE FACE OF THE RING. RELEASE THE CONNECTION BY PROGRESSIVELY TIGHTENING ALL PUSH-OFF SCREWS IN A DIAMETRICALLY OPPOSITE SEQUENCE EXCEPT FOR SCREWS ADJACENT TO THE SLIT IN THE RING, WHICH SHOULD BE TIGHTENED ONE AFTER THE OTHER. ONCE THE BUSHING IS LOOSENED, PULL OFF THE DRIVE SPROCKETS THAT ARE TO BE REPLACED.

DO NOT USE MOLYBDENUM DISULFIDE, MOLYKOTE, NEVER-SEEZE OR SIMILAR LUBRICANTS IN ANY LOCKING ASSEMBLY INSTALLATION.

TO INSTALL THE NEW SPROCKETS, LOOSEN ALL LOCKING SCREWS BY A MINIMUM OF TWO TURNS AND TRANSFER AT LEAST THREE EQUALLY SPACED SCREWS TO THE CLAMP FLANGE PUSH-OFF THREADS IN ORDER TO KEEP THE TWO PARTS SPACED APART FOR EASY INSERTION OF LOCKING ASSEMBLY AND SPROCKET ONTO SHAFT. MOVE SPROCKET INTO POSITION ON SHAFT. RELOCATE LOCKING SCREWS FROM PUSH-OFF THREADS BACK TO LOCKING SCREW THREADS. TIGHTEN LOCKING SCREWS SUFFICIENTLY TO HOLD SPROCKET IN PLACE.

SLIDE THE BEARING BACK ONTO THE SHAFT AND RAISE THE DRIVE ASSEMBLY BACK INTO POSITION. PUT BACK IN THE BEARING MOUNTING BOLTS. CHECK DRIVE SPROCKET ALIGNMENTS AND ADJUST AS NECESSARY.

SECTION 3--MAINTENANCE (CONTINUED)

3.5--DRIVE SPROCKET REPLACEMENT (CONTINUED)

AFTER SPROCKETS ARE ALIGNED, TIGHTEN LOCKING SCREWS IN BUSHINGS IN SEVERAL STAGES TO A TORQUE VALUE OF 30 FT-LBS (60 FT-LBS FOR 2-15/16" DIAMETER SHAFT) USING A DIAMETRICALLY OPPOSITE TIGHTENING SEQUENCE. THIS APPLIES TO ALL LOCKING SCREWS EXCEPT THOSE ADJACENT TO THE SLIT IN THE INNER RING, WHICH SHOULD BE TORQUED ONE AFTER THE OTHER.

AFTER COMPLETING INSTALLATION, CHECK LOCKING SCREWS AGAIN IN A CLOCKWISE OR COUNTER-CLOCKWISE SEQUENCE AND MAKE SURE NONE OF THE BOLTS CAN BE TURNED AT THE SPECIFIED TIGHTENING TORQUE. IT IS NOT NECESSARY TO RECHECK THE TIGHTENING TORQUE AFTER EQUIPMENT HAS BEEN PUT BACK INTO OPERATION.

RECONNECT CONVEYING CHAINS, RECONNECT THE REDUCER TORQUE ARM TO THE CONVEYOR FRAME, RECONNECT MOTOR CONDUIT BOX WIRING, IF APPLICABLE, AND TURN POWER BACK ON TO MOTOR. START CONVEYOR AND CHECK THAT THE DRIVE SPROCKETS ARE CORRECTLY ALIGNED. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1 OF THIS MANUAL)

3.6--REDUCER REPLACEMENT

THE EURODRIVE GEARMOTOR IS A SHAFT MOUNTED UNIT. THE REDUCER HAS A TORQUE ARM THAT IS BOLTED TO THE FACE OF THE REDUCER AND IS THEN CONNECTED TO THE CONVEYOR FRAME WITH A FLEXIBLE CONNECTION THAT ALLOWS SOME MOVEMENT. IF DURING OPERATION OF THE DRIVE, YOU SEE "ORBITING" MOTION OF THE MOTOR, THIS IS NORMAL AND SHOULD NOT BE A CAUSE OF CONCERN.

TO REMOVE OR REPLACE THE GEARMOTOR, FIRST LOCK OUT POWER TO THE MOTOR. DISCONNECT THE WIRING CONNECTION TO THE MOTOR. FULLY LOOSEN THE SET SCREWS FROM THE TORQUE ANCHOR CONNECTION ON THE CONVEYOR FRAME AND REMOVE THE STEEL AND RUBBER SPACERS. THEN REMOVE THE SHAFT COVER ON THE OUTSIDE FACE OF THE REDUCER. THERE IS A 1/2-13NC BOLT IN THE END OF THE DRIVE SHAFT. REMOVE THIS BOLT, LOCK WASHER, AND SPACER AND SET ASIDE. REMOVE THE SNAP RING THAT WAS BEHIND THE SPACER AND SAVE FOR RE-ASSEMBLY. THE REDUCER SHOULD PULL OFF OF THE SHAFT WITHOUT MUCH DIFFICULTY. HOWEVER, IF NECESSARY, ATTACH A PULLER AND PULL THE REDUCER OFF OF THE SHAFT.

BEFORE REPLACING THE REDUCER, WE RECOMMEND USING ANTI-SEIZE OR EQUAL ON THE SHAFT. RE-ASSEMBLE GEAR REDUCER TO CONVEYOR BY REVERSING THE ABOVE PROCEDURE.

MACHINE ASSEMBLY LIST

MODEL NO.: **20G070**

Title:	90 DEGREE TURN CONVEYOR ASSEMBLY - 84" LENGTH	**Issued for Serial No.:**	220180003		
Description:	3 ROW WITH 2 SINGLE CHAINS PER ROW, 1" PITCH, TOP SPROCKET REMOVAL, 100 FPM, 480V	**Arrangement Drawing:**	DB9431000		
		Master by:	BH	**DATE:**	10/3/2022
		Issued By:	DEN	**DATE:**	7/13/2023
		Revision:	A	**DATE:**	7/13/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
			CB6584000	MACHINE WIRING DIAGRAM
1	1		AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO. 22018003
				MODEL NO.: 20G070
				DRAWING: DB9431000
				VOLTAGE: 480VAC/3PH/60HZ
				WEIGHT:
				DIMENSION:
				CUST. I.D. NO.:
	4			DRIVE SCREW, #2 X 1/4 LG
2	2		AA6140000	WARNING LABEL
3	2		AA6142000	SAFETY LABEL
4	2		AA6141000	CAUTION LABEL
5	1	PA9557	DB944000	TURN CONVEYOR ASSEMBLY

MACHINE ASSEMBLY LIST

MODEL NO.: **20G070**

Title:	90 DEGREE TURN CONVEYOR ASSEMBLY - 84" LENGTH	**Issued for Serial No.:**	220180003		
Description:	3 ROW WITH 2 SINGLE CHAINS PER ROW, 1" PITCH, TOP SPROCKET REMOVAL, 100 FPM, 480V	**Arrangement Drawing:**	DB9431000		
		Master by:	BH	**DATE:**	10/3/2022
		Issued By:	DEN	**DATE:**	7/13/2023
		Revision:	A	**DATE:**	7/13/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
6	1	PA9556	DB9430000	TURN MODULE ASSEMBLY
7	1		AA8943000	ACTUATOR
	1			HEX HD CAP SCREW, 1/4-20NC X 2 LG
	1			HEX NUT, 1/4-20NC
8	2		CB6586000*	GUARD RAIL ASSEMBLY
	8			HEX HD CAP SCREW, 5/16-18 X 1 LG
	8			LOCK WASHER, 5/16-STD
9	1		BB9219000	TERMINAL BOX ASSEMBLY, 3TB1
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	4			LOCK WASHER, 1/4-STD
10	1		BB9457000	TERMINAL BOX ASSEMBLY, 3TB2
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	4			LOCK WASHER, 1/4-STD
11	2	PA9559	CB6587000	BED SWITCH ASSEMBLY

MACHINE ASSEMBLY LIST

MODEL NO.: **20G070**

Title:	90 DEGREE TURN CONVEYOR ASSEMBLY - 84" LENGTH	**Issued for Serial No.:**	220180003		
Description:	3 ROW WITH 2 SINGLE CHAINS PER ROW, 1" PITCH, TOP SPROCKET REMOVAL, 100 FPM, 480V	**Arrangement Drawing:**	DB9431000		
		Master by:	BH	**DATE:**	10/3/2022
		Issued By:	DEN	**DATE:**	7/13/2023
		Revision:	A	**DATE:**	7/13/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
12	2		CB6649000	COVER, TURNTABLE RING GEAR
	8			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	8			FLAT WASHER, 1/4-STD
	8			LOCK WASHER, 1/4-STD
13	1		CB6648000	PINION SHROUD
	3			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	3			FLAT WASHER, 1/4-STD
	3			LOCK WASHER, 1/4-STD

PARTS LIST

PA9557 **Drawing: DB9440000**

Title:	TURN CONVEYOR ASSEMBLY	**Issued for Serial No.:**			
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:**	BH	**DATE:**	10/10/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	12/15/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9432000		TURN CONVEYOR FRAME WELDMENT
2	3	M10100080	*	BEARING, SKF: FY 1 15/16 TF
	12			HEX HD CAP SCREW, 9/16-12NC X 1 1/2 LG
	12			LOCK WASHER, 9/16-STD
3	1	DA8819222		DRIVE SHAFT
	1			KEY, 3/8 SQ X 2 LG.
4	3	BB8059004	*	DRIVE SPROCKET (21 T)
5	3	M20500079	*	BUSHING: BLACKSTAR: #TLK133X, 1-15/16 SHAFT
6	6	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	3			HEX HD BOLT, 1/2-13NC X 5 1/2 LG
	3			ESNA HALF NUT, 1/2-13NC
	6			FLAT WASHER, 1/2-STD
7	12	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	12			HEX HD BOLT, 1/2-13NC X 5 LG
	12			ESNA HALF NUT, 1/2-13NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9557 **Drawing: DB9440000**

Title:	TURN CONVEYOR ASSEMBLY	**Issued for Serial No.:**	
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:** BH	**DATE:** 10/10/2022
		Issued By:	**DATE:**
		Revision: A	**DATE:** 12/15/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	24			FLAT WASHER, 1/2-STD
8	6	AA9085000		TAKE-UP BRACKET
9	6	BA8328043		TAKE-UP SCREW
	6			FLAT WASHER, 1/2-SAE
	6			HEX NUT, 1/2-13NC
	6			JAM NUT, 1/2-13NC
10	18	AA9084000	*	HUB SPACER
11	18	AA9083000	*	INNER SPACER HUB
12A	2	CB1691135	*	WEAR STRIP
	2			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG
12B	1	CB1691136	*	WEAR STRIP
	1			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG
13	3	DA9192088		WEAR STRIP - WOOD
	6			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9557 **Drawing: DB9440000**

Title:	TURN CONVEYOR ASSEMBLY	**Issued for Serial No.:**			
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:**	BH	**DATE:**	10/10/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	12/15/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
14	6	M11200010	*	CHAIN, ANSI: 80 X 204 PITCHES = 204"
	24	M11400052	*	CONNECTING LINK, ANSI: 80
15	1	CB3721000		TORQUE ARM
	6			HEX HD BOLT, M8 X 1.25 X 25 MM LG
	6			LOCK WASHER, M8-STD
	6			FLAT WASHER, M8-STD
16	1	DA9050006		FLAT WASHER
	1			LOCK WASHER, 1/2-STD
	1			HEX HD CAP SCREW, 1/2-13NC X 1 1/4 LG
17	1	M22500157	*	GEARMOTOR, EURODRIVE: KA47DRN90L4, 2 HP, 460/3/60, M1 POSITION, 1.375 BORE SIDE B, RATIO 35.39, CONDUIT 0/X
18	2	AA6847000		RUBBER DISK
19	2	AA6846000		STEEL DISK
	2			SOC HD SET SCREW, 5/8-11NC X 2 LG., HALF DOG POINT
	2			ESNA NUT, HALF, 5/8-11NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9557 **Drawing: DB9440000**

Title:	TURN CONVEYOR ASSEMBLY	**Issued for Serial No.:**			
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:**	BH	**DATE:**	10/10/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	12/15/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
20				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9556 **Drawing: DB9430000**

Title:	TURN MODULE ASSEMBLY	**Issued for Serial No.:**	22018003		
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:**	BH	**DATE:**	10/3/2022
		Issued By:	BH	**DATE:**	10/31/2022
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB8406000		BASE WELDMENT
2				NOT USED
3	1	CB3842000		GEAR REDUCER MOUNT
	4			HEX HD CAP SCREW, 5/8 - 11NC X 2-1/4 LG
	4			FLAT WASHER, 5/8
	4			LOCK WASHER, 5/8 - STD
3A	1	BB8886000		SPACER
4	1	M10700019		BEARING, ROTEK: #L6-29E9Z
	18			HEX HD CAP SCREW, 5/8 - 11NC X 1-1/4 LG
	18			LOCK WASHER, 5/8 - STD
	18			HEX HD CAP SCREW, 1/2 - 13NC X 2 LG
	18			LOCK WASHER, 1/2 - STD
5	1	AB0037000		PINION GEAR
	1			KEY, 5/16 SQ X 1-3/4 LG
	2			SET SCREW, 5/16 - 18NC X 1 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9556 **Drawing: DB9430000**

Title:	TURN MODULE ASSEMBLY	**Issued for Serial No.:**	22018003		
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:**	BH	**DATE:**	10/3/2022
		Issued By:	BH	**DATE:**	10/31/2022
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
6	1	M22500161	*	GEARMOTOR W/BRAKE, EURODRIVE #S67DRN80M4BE1HR, 2 HP, 1.375 SHAFT, SIDE A, CONDUIT 90/2, RATIO 100.80, M5 POSITION, BE1 BRAKE, RELEASE LOCATION 33 DEG, BRAKE VOLTAGE 460VAC
	4			HEX HD CAP SCREW, 1/2 - 13NC X 2-1/2 LG
	4			LOCK WASHER, 1/2 - STD
	4			HEX NUT, 1/2 - 13NC
7	1			NOT USED
8				NOT USED
9				NOT USED
10				NOT USED
11				NOT USED
12	2	CB5973000		SWITCH STAND - RIGHT
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			FLAT WASHER, 3/8
	4			LOCK WASHER, 3/8-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9556 **Drawing: DB9430000**

Title:	TURN MODULE ASSEMBLY	**Issued for Serial No.:**	22018003		
Description:	90 DEGREE TURN CONVEYOR - ELECTRIC DRIVE	**Master by:**	BH	**DATE:**	10/3/2022
		Issued By:	BH	**DATE:**	10/31/2022
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
13	2	CB5972000		SWITCH STAND - LEFT
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			FLAT WASHER, 3/8
	4			LOCK WASHER, 3/8-STD
14	8	E16600154	*	PROX SWITCH, IFM EFECTOR #IM5123, 40X40X54MM, 24VDC,NO/NC
	8	E16700120		CORDSET, IFM EFECTOR #EVC003, FEMALE, M12, 4P, STRAIGHT, 10M
	16			SOC HD CAP SCREW, 10-32NF X 1-3/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9559 **Drawing: CB6587000**

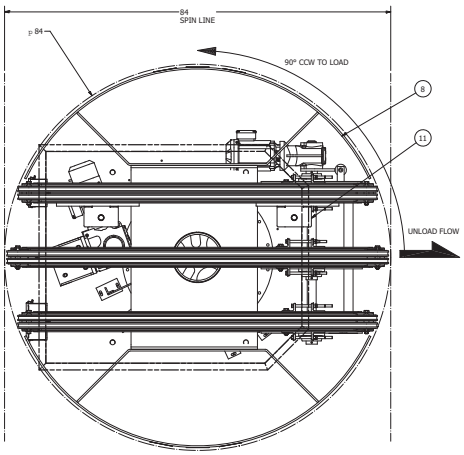
Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018003		
Description:	CAPACITIVE SWITCH	**Master by:**	BH	**DATE:**	11/3/2022
		Issued By:	BH	**DATE:**	10/31/2022
		Revision:	C	**DATE:**	11/30/2023

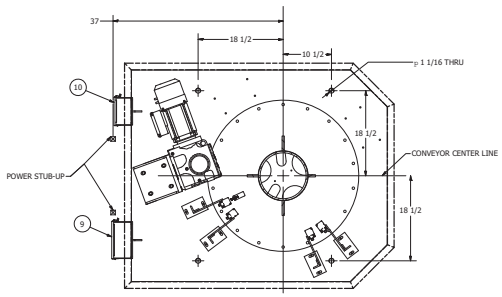
ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	E16600159	*	PROXIMITY SWITCH , CAPACITIVE, IFM, KI5309
	1	E16700105		CORDSET-FEMALE-M12-RT-4P-10M , EFE-EVC006
2	1	E16400029		MOUNTING BRACKET, IFM #E20874
3	1	BB9874000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

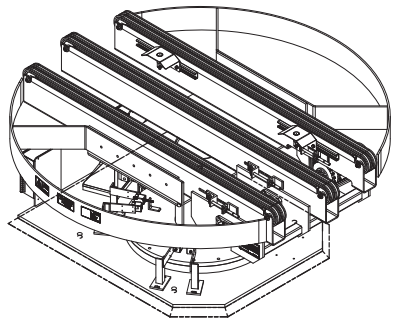
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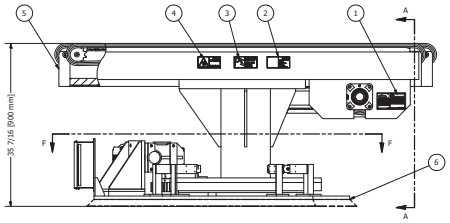
1. ALL ANCHOR BOLTS TO BE 3/4-10NC WITH 3.5" MIN. THREAD AND PROJECTION UNLESS OTHERWISE NOTED.

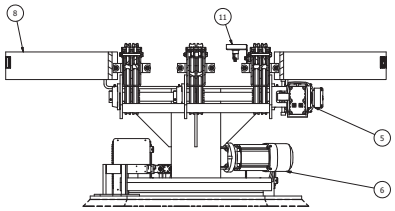




SECTION F-F
SCALE 1 / 10







SECTION A-A
SCALE 1 / 10

22018003

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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Fractional ± 1/32
Decimal: ± .010
Angles: ± ½

CRANSTON MACHINERY CO. INC.
3301 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.0172

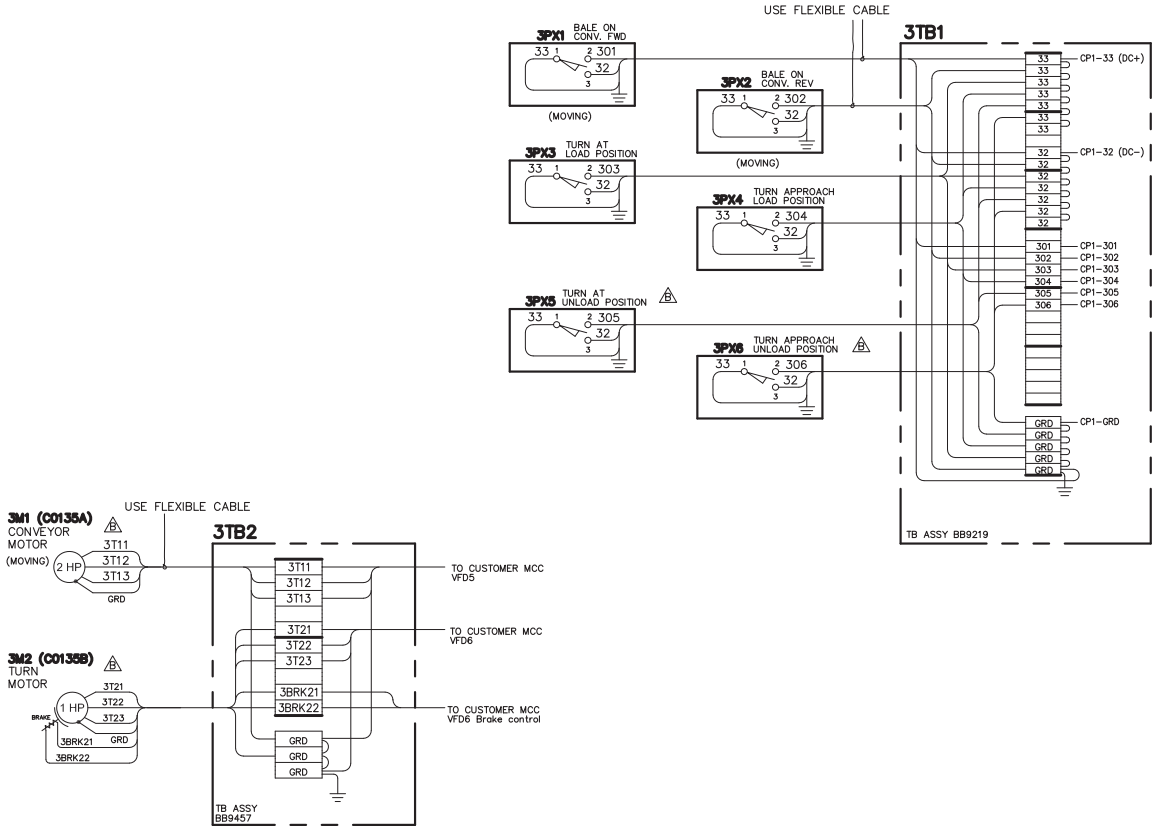
MACHINE ARRANGEMENT
90 DEGREE TURN

REV	DESCRIPTION	DATE	DESIGNER
A	ADD BED SWITCH	11/3/2022	BH

REVISION HISTORY

SCALE:	DRAWN BY:	Assembly No.	REV
1 / 10	BH	DB9431	A
DATE: 10/7/2022	APPD:	SHT 1 OF 1	

REF. DWG: DB7313



NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.
Ground ALL enclosure doors and covers to interior of enclosure.

SYM	DATE	REVISION	BY
B	9/26/23	ADDED BHS LABELS, CHANGED MOTOR WIRE #S, 3PX5 AND 3PX6	MLK
A	3/23/23	CHANGE BRAKE WIRE NUMBER	BH

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NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

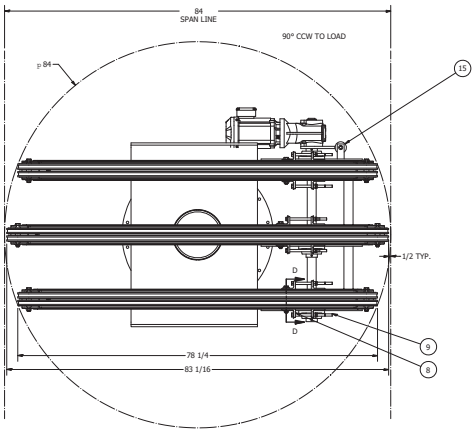
22018003

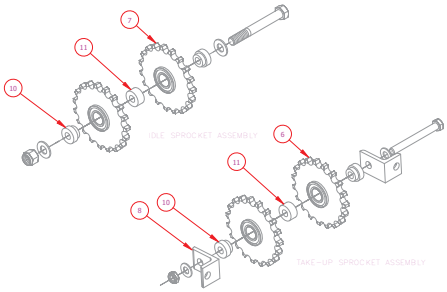
CRANSTON MACHINERY CO., INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

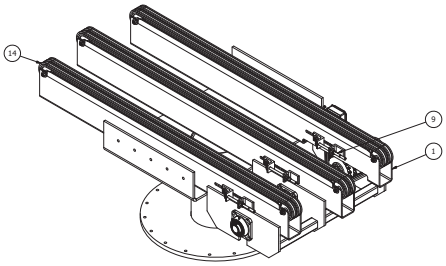
MACHINE WIRING DIAGRAM
TURN CONVEYOR

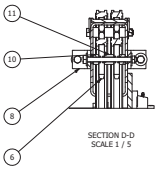
SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	CB6584	B
DATE: 9/22/22	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg.

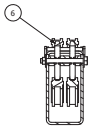




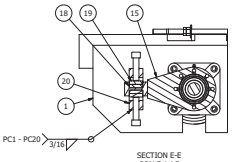




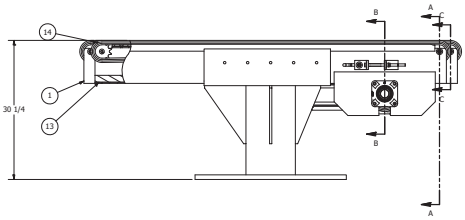
SECTION D-D
SCALE 1 / 5

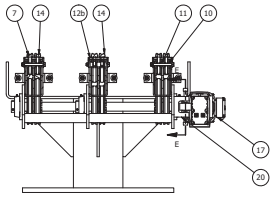


SECTION C-C
SCALE 1 / 5

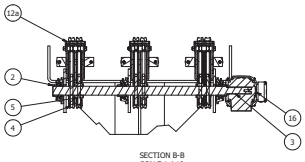


SECTION E-E
SCALE 1 / 5





SECTION A-A
SCALE 1 / 10



SECTION B-B
SCALE 1 / 10

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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional ± .1/32
Decimal: ± .010
Angles: ± ½

REV	DESCRIPTION	DATE	DESIGNER

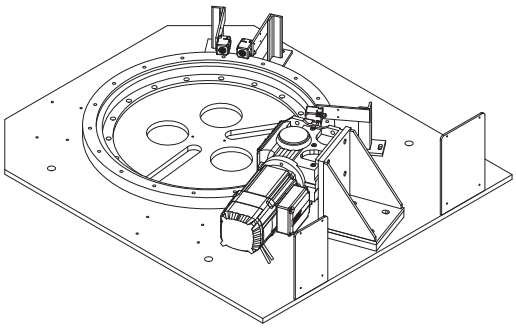
REVISION HISTORY

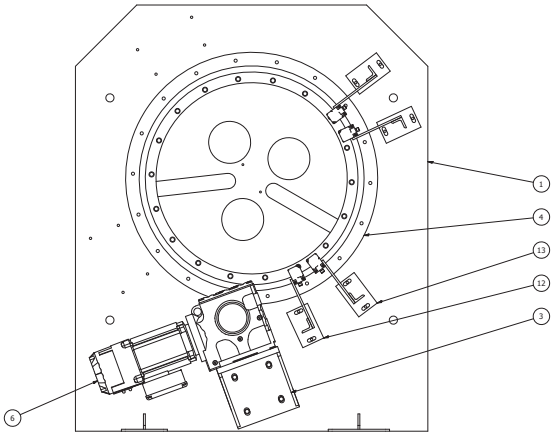
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3304 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.0172

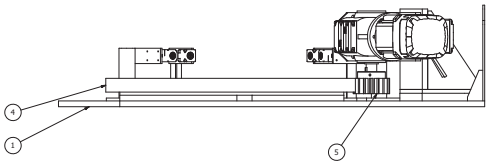
MACHINE ARRANGEMENT
90 DEGREE TURN

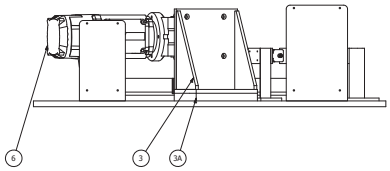
SCALE:	1 / 10	DRAWN BY:	BH	Assembly No.	DB9440	REV:
DATE:	10/7/2022	APPD:		SHT	1 OF	1

REF. DWG: DB8784









22018003

REV	DESCRIPTION	DATE	DESIGNER
REVISION HISTORY			

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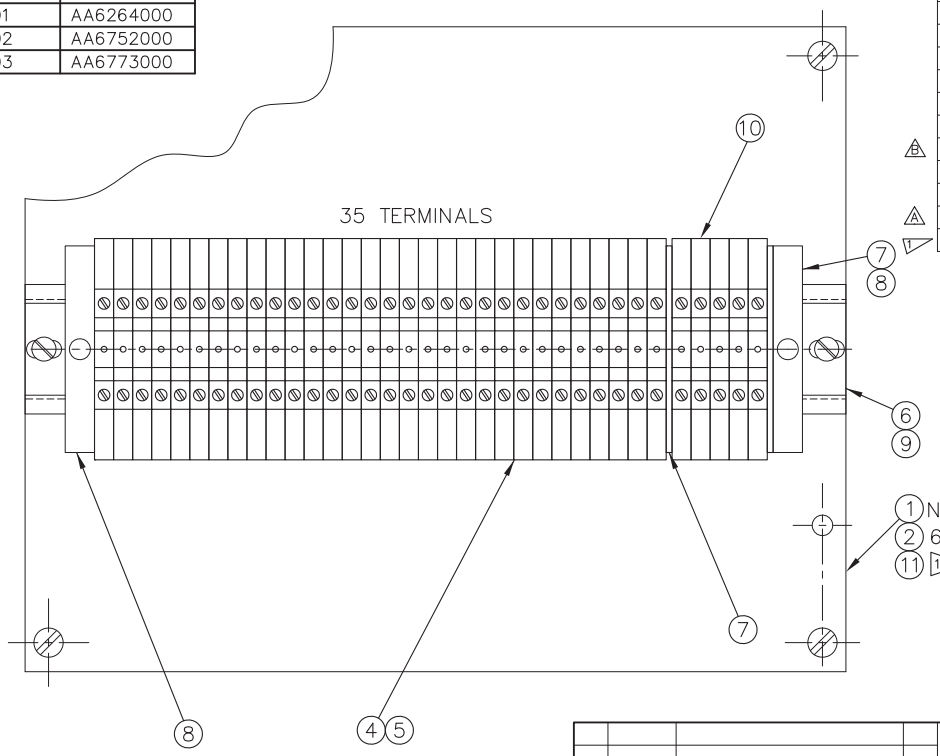
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OAK GROVE, OR 97267
PH 503.353.7701 FAX 503.654.0472

TURN MODULE ASSEMBLY
ELECTRIC DRIVE
90 DEGREE TURN

SCALE:	DWN BY:	DRAWING NO.	REV.
1 / 6	BH	DB9430	
DATE: 10/3/2022	CHK'D:	SHT 1 OF 1	

REF. DWG: DB8418

TAB. NO.	"A"
000	AA6144000
001	AA6264000
002	AA6752000
003	AA6773000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	SIZE
1	1	E26000005	ENCLOSURE, HOFFMAN #A-1008CH
2	1	E25000005	PANEL, HOFFMAN #A-10P8
3			
4	30	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
5	70	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
8	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
9	3		SLOT HD, MACH. SCREW, #8-32 x 3/8 LG.
10	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
11	2	"A"	WARNING DECAL

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER

1 NOT SHOWN
2 6 7/8"H x 8 3/4"W REF.
11

SYM	DATE	REVISION	BY
A	3-23-23	CHANGE ITEM 7	BH
A	1-26-15	CORRECT GROUND TERMINAL NUMBER	BH

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Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

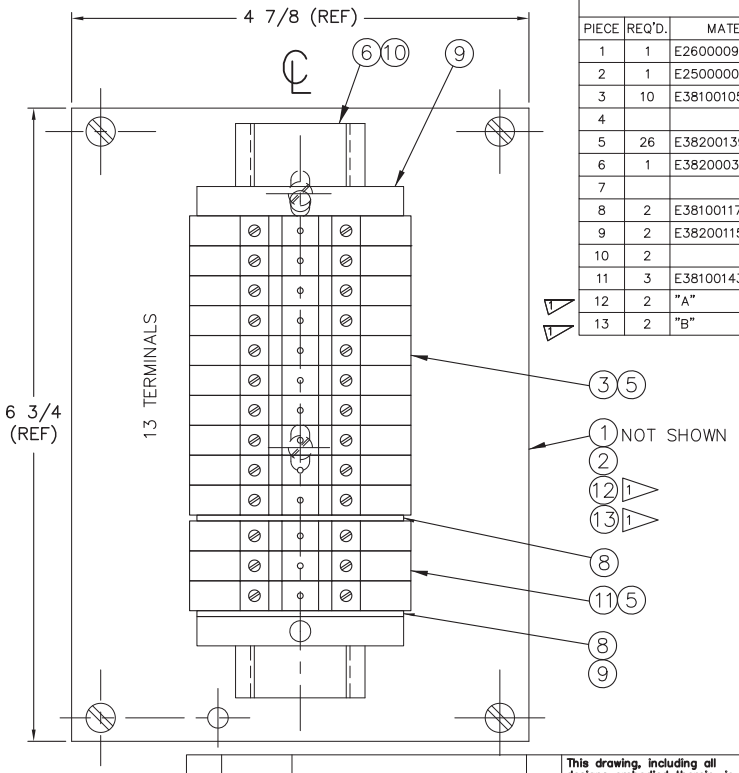
CRANSTON MACHINERY CO. INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

TERMINAL BOX ASSEMBLY
10 x 8 x 4 ENCLOSURE
(30 GRAY, 5 GROUND TERMINALS)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9219	B
DATE: 10/26/09	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB8239

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000094	ENCLOSURE, HOFFMAN #A-806CHNF
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	10	E38100105	TERMINAL, ALLEN BRADLEY #1492-J6
4			
5	26	E38200139	MARKER STRIP, ALLEN BRADLEY #1492-MR8X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	3	E38100143	TERMINAL, ALLEN BRADLEY #1492-JG6
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
A	3/23/23	CHANGE MARKER STRIP NUMBER	BH

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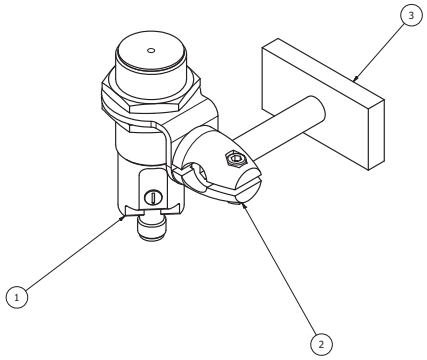
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
10 GRAY, 3 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	JMH	BB9457	A
DATE: 1/17/2018	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB9312



NOTE:

1.

2.

REV	DESCRIPTION	DATE	DESIGNER
A	REMOVED SHEET METAL BRACKET	11/30/24	JMH

REVISION HISTORY

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Dimensions in inches:
Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

CRANSTON MACHINERY CO. INC.
2281 S.E. OAK GROVE BLVD.
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PH 503.654.7701 FAX 503.654.8172

BED SWITCH ARRANGEMENT
CAPACITIVE SWITCH

SCALE:	DWN BY:	DRAWING NO:	REV:
1 : 1	BH	CB6587	A
DATE: 11/3/2022	APP'D: JMH	SHT 1 OF 1	

REF. DWG:

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CHAIN CONVEYOR

SECTION 1--GENERAL INFORMATION

1.1--GENERAL EQUIPMENT DESCRIPTION

THE CRANSTON CHAIN CONVEYOR IS DESIGNED TO TRANSPORT UNITS OF PULP USING MULTIPLE ROWS OF TWO INCH EXTENDED PITCH CONVEYING CHAIN. THE "S" WRAP DRIVE LOCATED AT THE DISCHARGE END IS SUITED FOR AUTOMATIC REVERSING APPLICATIONS, WHEN REQUIRED.

THE FRAME OF THE CONVEYOR IS CONSTRUCTED OF RECTANGULAR TUBING AND IS SUPPORTED BY RECTANGULAR TUBE LEGS.

THE CONVEYING CHAINS RIDE ON REPLACEABLE UHMW (ULTRA HIGH MOLECULAR WEIGHT) POLYETHYLENE WEAR STRIPS ATTACHED TO THE TOP OF THE TUBE FRAME. STEEL GUIDE BARS ARE WELDED ALONG EACH SIDE OF THE WEAR STRIPS. CHAINS RETURN THROUGH THE FRAME TUBES OVER CLEAR FIR WEAR STRIPS. (NOTE: ON SHORT CONVEYORS, RETURN WEAR STRIPS ARE NOT REQUIRED)

THE ELECTRIC CONVEYOR DRIVE CONSISTS OF A SHAFT MOUNTED REDUCER WITH A "C" FACE MOTOR. THIS ARRANGEMENT ELIMINATES SLIDE BASES, TRANSFER CHAIN DRIVES, COUPLINGS, AND GUARDS. FLANGE MOUNTED BEARINGS ARE BOLTED TO PLATES WELDED TO THE SIDES OF THE CONVEYOR TUBE FRAME AND SUPPORT THE DRIVE SHAFT ASSEMBLY. THE DRIVE SHAFT EXTENDS OUT FROM THE FRAME ON ONE SIDE TO PROVIDE MOUNTING FOR THE REDUCER. THE REDUCER INCLUDES A TORQUE ARM FASTENED TO THE CONVEYOR FRAME.

DRIVE SPROCKETS ARE INSTALLED ON THE DRIVE SHAFT WITH LOCKING BUSHINGS. THIS DESIGN OF THE BUSHING ALLOWS INSTALLING SPROCKETS TO THE DRIVE SHAFT WITHOUT KEYING.

IDLE SPROCKETS AND TAKE-UP SPROCKETS ARE MOUNTED INSIDE THE RECTANGULAR TUBES WITH A THROUGH BOLT. EACH OF THESE SPROCKETS HAS SPACERS FOR CENTERING THE SPROCKET, A DOUBLE ROW BALL BEARING AND SNAP RING RETAINERS.

EACH CONVEYING CHAIN IS EQUIPPED WITH ITS OWN SLACK TAKE-UP. ON APPLICATIONS WHERE THE CONVEYOR DRIVE IS LOCATED AT THE END OF THE CONVEYOR, A SINGLE ADJUSTABLE IDLE SPROCKET IS LOCATED NEAR THE DRIVE SHAFT.

CONVEYOR CONTROL MAY BE AUTOMATIC, SEMI-AUTOMATIC, OR MANUAL PUSHBUTTONS, DEPENDING ON SPECIFIC APPLICATION AND CUSTOMER REQUIREMENTS. CONVEYOR OPERATION IS ELECTRICALLY INTERLOCKED WITH ADJACENT MACHINERY.

CHAIN CONVEYOR

SECTION 1--GENERAL INFORMATION

1.2--DESCRIPTION OF OPERATION

CHAIN CONVEYORS ARE DESIGNED TO STORE AND CONVEY PULP BALES, STACKS, OR UNITS IN A STRAIGHT LINE. THE CONVEYOR RUNS ONLY ON DEMAND AND IS INTERLOCKED WITH ADJACENT MACHINERY. PROXIMITY SWITCHES ARE LOCATED TO MONITOR PRODUCT MOVEMENT OR POSITIONING.

SECTION 2--ADJUSTMENTS

2.1--CONVEYING CHAIN TENSION

EACH CONVEYING CHAIN IS EQUIPPED WITH SLACK CHAIN TAKE-UP. THE TAKE-UP SPROCKETS ARE LOCATED NEAR THE CONVEYOR DRIVE. TO INCREASE CHAIN TENSION, MOVE THE SPROCKETS TOWARD THE DRIVE SHAFT AND TO DECREASE MOVE THE SPROCKETS AWAY FROM THE DRIVE SHAFT.

THE CONVEYING CHAINS SHOULD RUN SNUGLY AND SMOOTHLY. TO ADJUST CONVEYING CHAIN TENSION, TIGHTEN THE CHAIN UNTIL IT JUST BEGINS TO CLICK, THEN LOOSEN THE CHAIN UNTIL IT RUNS NOISELESSLY. IF THE CHAIN CLICKS DURING OPERATION, IT IS TOO TIGHT; IF IT DRAGS OR JUMPS, IT IS TOO LOOSE.

2.2--CONVEYOR MOUNTED PROXIMITY SWITCHES

PROXIMITY SWITCHES ARE MOUNTED ON THE CONVEYOR TO DETECT AND CONTROL THE PRODUCT MOVEMENT. SENSOR BRACKETS ARE MOUNTED ON UNISTRUT CHANNEL TO ALLOW ADJUSTABILITY OF LOCATION ALONG THE CONVEYOR.

- FOR ROLLER BED STYLE SWITCHES, THE PASSING PRODUCT DEPRESSES SPRING-LOADED ACTUATORS, WHICH, IN TURN, ACTUATE THE PROXIMITY SWITCHES. THE HEIGHT OF THE ACTUATORS ABOVE CHAIN LEVEL MAY BE ADJUSTED FOR POSITIVE PRODUCT CONTACT. PLEASE REFER TO THE SWITCH ARRANGEMENT DRAWING DB8196. TO ADJUST THIS HEIGHT, ADJUST THE CAM (ITEM 13) BY TURNING THE ADJUSTING BOLT (ITEM 14). THE TOP OF THE ACTUATOR SHOULD BE SET TO 1" ABOVE THE TOP OF THE CHAIN.

  THE HEX HEAD BOLT (ITEM 16) AND THE JAM NUT ARE USED AS THE ACTUAL TARGET FOR THE PROXIMITY SWITCH. ADJUST THE HEAD OF THE BOLT IN OR OUT AS NECESSARY TO ACTUATE THE SWITCH AND THEN LOCK THE JAM NUT.

  THESE SWITCHES HAVE ALL BEEN SET AT THE FACTORY AND SHOULD NOT REQUIRE ANY ADJUSTMENT AT START-UP.

- FOR M30 STYLE SENSORS, THE MOUNTING BRACKET CAN BE ADJUSTED ALONG THE UNISTRUT CHANNEL USING A 10MM ALLEN KEY TO LOOSEN AND TIGHTEN THE RETAINING NUT WITHIN THE CHANNEL. ORIENTATION AND DIRECTION OF THE SENSOR CAN BE ADJUSTED USING A 4MM ALLEN KEY TO LOOSEN THE HEAD OF THE MOUNTING BRACKET AND ALIGN IN A PREFERRED DIRECTION.

CHAIN CONVEYOR

SECTION 2--ADJUSTMENTS

THE PRODUCT DETECTION SENSORS SHOULD BE ADJUSTED TO PROPERLY DETECT A BALE WHEN ENTERING THE CONVEYOR AND WHEN THE BALE IS FULLY ON THE CONVEYOR.

A SENSITIVITY ADJUSTMENT DIAL IS LOCATED ON THE SIDE OF THE SENSOR TO INCREASE/DECREASE SENSITIVITY OF THE SENSOR, ALLOWING DETECTION OF THE PRODUCT WITHOUT SENSING THE SURROUNDING PORTION OF THE CONVEYOR. THE SENSOR SHOULD BE LOCATED APPROXIMATELY 1 INCH BELOW THE CHAIN LEVEL.

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT TO DO
GEAR REDUCER	MONTHLY	CHECK OIL LEVEL.
BEARINGS	MONTHLY	APPLY GREASE TO LUBE FITTINGS. AVOID OVER LUBRICATION.
CONVEYING CHAINS	BI-MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL EVERY 60 DAYS. AVOID OVER-OILING; EXCESS OIL WILL MARK THE PRODUCT.
GEAR REDUCER	SEMI-ANNUALLY	CHANGE OIL FILL EVERY 6 MONTHS OR AS NEEDED.

NOTE: FOR ADDITIONAL MAINTENANCE OF GEAR REDUCERS, REFER TO THE MANUFACTURER'S INFORMATION IN THE VENDOR DATA SECTION OF THIS MANUAL.

3.2--LUBRICANT SELECTION GUIDE

GEAR REDUCER--USE GEAR OIL RECOMMENDED BY REDUCER MANUFACTURER. SEE VENDOR DATA SECTION.

GREASE--USE ANY BRAND OF HIGH-QUALITY BEARING GREASE.

CHAIN CONVEYOR

SECTION 3--MAINTENANCE

3.3--CONVEYOR WEAR STRIP REPLACEMENT

REPLACE THE POLYETHYLENE WEAR STRIPS UNDER THE CONVEYING CHAINS WHEN NEEDED IN THE FOLLOWING MANNER:

1. TURN OFF AND LOCK OUT POWER TO MOTOR.
2. USING THE TAKE-UPS, LOOSEN THE CONVEYING CHAINS TO ALLOW ACCESS TO THE WEAR STRIPS.
3. REMOVE THE FASTENERS THAT ANCHOR THE WEAR STRIP PIECES TO THE TUBES.
4. SLIDE OUT THE OLD WEAR STRIPS FROM UNDER THE CHAIN AND SLIDE IN THE NEW PIECES.
5. FASTEN EACH WEAR STRIP PIECE TO THE TUBE, BEING SURE TO LEAVE ABOUT 1/2" CLEARANCE AT EACH END BETWEEN PIECES. FASTEN AT ONE END ONLY.
6. USING THE TAKE-UPS, RE-TIGHTEN CONVEYING CHAINS.
7. RETURN POWER TO MOTOR AND START CONVEYOR. ADJUST CHAIN TENSION, IF REQUIRED (SEE SECTION 2.1 OF THIS MANUAL).

3.4--IDLE SPROCKET REPLACEMENT

THE IDLER SPROCKETS AT EITHER THE END OF THE CONVEYOR OR AT THE TAKE-UPS ARE SIMILAR. THE SPROCKET IS A TYPE "C" HUB WITH A DOUBLE ROW BALL BEARING HELD IN PLACE WITH A SNAP RING ON EACH SIDE. TWO SPACERS ARE USED ON EACH SIDE OF THE SPROCKET TO KEEP IT POSITIONED IN THE CENTER OF THE TUBE. THE SPACERS NEXT TO THE SPROCKET HAVE A SHOULDER THAT CLAMPS ON THE INNER RACE OF THE BEARING. A BOLT PASSES THROUGH ALL FOUR SPACERS AND THE SPROCKET.

TO REPLACE AN IDLE SPROCKET, FIRST LOCK OUT POWER TO THE MOTOR. USING THE TAKE-UPS, LOOSEN THE CONVEYING CHAIN OR BREAK THE CHAIN AT THE CONNECTING LINK. IF THE SPROCKET IS AT THE END OF THE CONVEYOR, PULL THE SPROCKET UP THROUGH THE CUT-OUT IN THE TOP OF THE TUBE. IF THE SPROCKET IS AT THE TAKE-UP, THE SPROCKET COMES OUT OF THE CUT-OUT IN THE BOTTOM OF THE TUBE.

PUT THE NEW SPROCKET INTO THE TUBE AND PUT THE SPACERS INTO POSITION. BE SURE THAT THE TWO SPACERS WITH THE SHOULDER ARE INSTALLED WITH THE SMALLER DIAMETER TOWARD THE BEARING. REPLACE THE THROUGH BOLT. PUT THE CHAIN BACK ONTO THE SPROCKET AND RE- CONNECT CHAIN AND/OR TIGHTEN CHAIN AT TAKE-UP.

CONNECT POWER BACK TO THE CONVEYOR MOTOR AND START CONVEYOR. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1 OF THIS MANUAL).

CHAIN CONVEYOR

SECTION 3--MAINTENANCE

3.5--DRIVE SPROCKET REPLACEMENT

IN ORDER TO REPLACE DRIVE SPROCKETS, IT IS NECESSARY TO LOWER THE DRIVE SHAFT ASSEMBLY OUT OF THE CONVEYOR. IT IS NOT NECESSARY TO REMOVE THE SHAFT MOUNTED DRIVE REDUCER FROM THE SHAFT UNLESS DESIRED TO DECREASE THE AMOUNT OF WEIGHT THAT MUST BE HANDLED. A FORK TRUCK WITH LIFTING SLING OR STRAP MAY BE REQUIRED TO LOWER DRIVE SHAFT ASSEMBLY OUT OF THE CONVEYOR.

LOCK OUT POWER TO THE MOTOR AND DISCONNECT WIRING TO THE MOTOR CONDUIT HOUSING. USING THE TAKE-UPS, LOOSEN THE CHAINS OR BREAK CHAINS AT CONNECTING LINKS. DISCONNECT REDUCER TORQUE ARM FROM CONVEYOR FRAME.

PULL THE BOLTS THAT HOLD THE DRIVE SHAFT BEARINGS TO THE CONVEYOR FRAME. THE ENTIRE DRIVE SHAFT ASSEMBLY SHOULD NOW BE FREE TO LOWER OUT OF THE CONVEYOR. SLIDE THE NON-DRIVE SIDE BEARING OFF OF THE SHAFT.

THE DRIVE SPROCKETS ARE MOUNTED TO THE SHAFT WITH LOCKING BUSHINGS. THE SOCKET HEAD CAP SCREWS IN THE BUSHING ARE METRIC.

RELAX ALL LOCKING SCREWS ON THE LOCKING BUSHING BY AT LEAST TWO TURNS AND TRANSFER SCREWS TO ALL PUSH-OFF THREADS PROVIDED IN THE FACE OF THE RING. RELEASE THE CONNECTION BY PROGRESSIVELY TIGHTENING ALL PUSH-OFF SCREWS IN A DIAMETRICALLY OPPOSITE SEQUENCE EXCEPT FOR SCREWS ADJACENT TO THE SLIT IN THE RING, WHICH SHOULD BE TIGHTENED ONE AFTER THE OTHER. ONCE THE BUSHING IS LOOSENED, PULL OFF THE DRIVE SPROCKETS THAT ARE TO BE REPLACED.

DO NOT USE MOLYBDENUM DISULFIDE, MOLYKOTE, NEVER-SEEZE OR SIMILAR LUBRICANTS IN ANY LOCKING ASSEMBLY INSTALLATION.

TO INSTALL THE NEW SPROCKETS, LOOSEN ALL LOCKING SCREWS BY A MINIMUM OF TWO TURNS AND TRANSFER AT LEAST THREE EQUALLY SPACED SCREWS TO THE CLAMP FLANGE PUSH-OFF THREADS IN ORDER TO KEEP THE TWO PARTS SPACED APART FOR EASY INSERTION OF LOCKING ASSEMBLY AND SPROCKET ONTO SHAFT. MOVE SPROCKET INTO POSITION ON SHAFT. RELOCATE LOCKING SCREWS FROM PUSH-OFF THREADS BACK TO LOCKING SCREW THREADS. TIGHTEN LOCKING SCREWS SUFFICIENTLY TO HOLD SPROCKET IN PLACE.

SLIDE THE BEARING BACK ONTO THE SHAFT AND RAISE THE DRIVE ASSEMBLY BACK INTO POSITION. PUT BACK IN THE BEARING MOUNTING BOLTS. CHECK DRIVE SPROCKET ALIGNMENTS AND ADJUST AS NECESSARY. AFTER SPROCKETS ARE ALIGNED, TIGHTEN LOCKING SCREWS IN BUSHINGS IN SEVERAL STAGES TO A TORQUE VALUE OF 30 FT-LBS (61 FT-LBS FOR 2- 15/16" DIAMETER SHAFT) USING A DIAMETRICALLY OPPOSITE TIGHTENING SEQUENCE. THIS APPLIES TO ALL LOCKING SCREWS EXCEPT THOSE ADJACENT TO THE SLIT IN THE INNER RING, WHICH SHOULD BE TIGHTENED ONE AFTER THE OTHER.

CHAIN CONVEYOR

SECTION 3--MAINTENANCE

3.5--DRIVE SPROCKET REPLACEMENT (CONT'D)

AFTER COMPLETING INSTALLATION, CHECK LOCKING SCREWS AGAIN IN A CLOCKWISE OR COUNTER-CLOCKWISE SEQUENCE AND MAKE SURE NONE OF THE BOLTS CAN BE TURNED AT THE SPECIFIED TIGHTENING TORQUE. IT IS NOT NECESSARY TO RECHECK THE TIGHTENING TORQUE AFTER EQUIPMENT HAS BEEN PUT BACK INTO OPERATION.

RECONNECT CONVEYING CHAINS, RECONNECT THE REDUCER TORQUE ARM TO THE CONVEYOR FRAME, RECONNECT MOTOR CONDUIT BOX WIRING, IF APPLICABLE, AND TURN POWER BACK ON TO MOTOR. START CONVEYOR AND CHECK THAT THE DRIVE SPROCKETS ARE CORRECTLY ALIGNED. ADJUST CHAIN TENSION, IF NECESSARY (SEE SECTION 2.1 OF THIS MANUAL)

3.6--REDUCER REPLACEMENT

THE EURODRIVE GEARMOTOR IS A SHAFT MOUNTED UNIT. THE ELECTRIC MOTOR IS CONNECTED TO THE REDUCER. THE REDUCER HAS A TORQUE ARM THAT IS BOLTED TO THE FACE OF THE REDUCER AND IS THEN CONNECTED TO THE CONVEYOR FRAME WITH A FLEXIBLE CONNECTION THAT ALLOWS SOME MOVEMENT. IF DURING OPERATION OF THE DRIVE, YOU SEE "ORBITING" MOTION OF THE MOTOR, THIS IS NORMAL AND SHOULD NOT BE A CAUSE OF CONCERN.

TO REMOVE OR REPLACE THE GEARMOTOR, FIRST LOCK OUT POWER TO THE MOTOR. DISCONNECT THE WIRING CONNECTION TO THE MOTOR. NEXT, DISCONNECT THE TORQUE ANCHOR CONNECTION ON THE CONVEYOR FRAME. THEN REMOVE THE SHAFT COVER ON THE OUTSIDE FACE OF THE REDUCER. THERE IS A 1/2-13NC BOLT IN THE END OF THE DRIVE SHAFT. REMOVE THIS BOLT, LOCK WASHER, AND SPACER AND SET ASIDE. REMOVE THE SNAP RING THAT WAS BEHIND THE SPACER AND SAVE FOR RE-ASSEMBLY. THE GEAR REDUCER SHOULD PULL OFF OF THE SHAFT WITHOUT MUCH DIFFICULTY. HOWEVER, IF NECESSARY, ATTACH A PULLER AND PULL THE UNIT OFF OF THE SHAFT.

BEFORE REPLACING THE GEAR REDUCER, WE RECOMMEND USING ANTI-SEIZE OR EQUAL ON THE SHAFT. REASSEMBLE GEAR REDUCER TO CONVEYOR BY REVERSING THE ABOVE PROCEDURE.

MACHINE ASSEMBLY LIST

MODEL NO.: **20D101**

Title:	CONVEYOR - CENTER DRIVE - SCREW TAKE-UPS	**Issued for Serial No.:**	22018004		
Description:	3 ROW, 1" PITCH, DOUBLE - SINGLE STRAND CHAIN	**Arrangement Drawing:**	DB9495000		
		Master by:	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	10/23/2023
		Revision:	D	**DATE:**	10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
			BB9783000	MACHINE WIRING DIAGRAM
1	2	-----	M25000018	CORPORATE PLATE
	16			DRIVE SCREW, #6 (.136) X 1/4" LG
2	1	-----	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NUMBER: 22018004
				MODEL NUMBER: 20D101
				DRAWINGS: ARRANGEMENT: DB9495000
				WIRING DIAGRAM: BB9783000
				DIMENSIONS: 48" W X 35" H X 237" L
				WEIGHT: 2200 LBS
				VOLTAGE: 480V/3PH/60HZ
				POWER: 5HP
	4			DRIVE SCREW, #6 (.136) X 1/4" LG
3	4	-----	AA6140000	WARNING DECAL
4	4	-----	AA6141000	CAUTION DECAL

MACHINE ASSEMBLY LIST

MODEL NO.: **20D101**

Title:	CONVEYOR - CENTER DRIVE - SCREW TAKE-UPS	**Issued for Serial No.:**	22018004		
Description:	3 ROW, 1" PITCH, DOUBLE - SINGLE STRAND CHAIN	**Arrangement Drawing:**	DB9495000		
		Master by:	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	10/23/2023
		Revision:	D	**DATE:**	10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
5	2	-----	AA6142000	SAFETY DECAL
6	3	-----	DB8748004	LEG MODULE
7	3	PA9588	DB9497000	SPAN MODULE
8	1	PA9587	CB6622000	DRIVE ASSEMBLY
9				NOT USED
10	2	-----	-----	UNISTRUT, P3300 X 18" LG
11	1	PA9559	CB6587000	PROXIMITY SWITCH ASSEMBLY (PX1, PX2)
11A	1	PA8989	DB8761000	BED SWITCH ASSEMBLY
11B	2		BB8587000	BRACKET
	2			HEX HEAD CAPSCREW #10-32 X 1/2
	2			LOCKWASHER #10

MACHINE ASSEMBLY LIST

MODEL NO.: **20D101**

Title:	CONVEYOR - CENTER DRIVE - SCREW TAKE-UPS	**Issued for Serial No.:**	22018004		
Description:	3 ROW, 1" PITCH, DOUBLE - SINGLE STRAND CHAIN	**Arrangement Drawing:**	DB9495000		
		Master by:	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	10/23/2023
		Revision:	D	**DATE:**	10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
11C	2	-----	E16600141	PROXIMITY SENSOR, IFM #IGS252
11D	2	-----	E16700120	CABLE: IFM EVC003
12				NOT USED
13	1	-----	DA8925127	TERMINAL BOX MOUNT PLATE
14	1	-----	BB9177000	TERMINAL BOX ASSEMBLY (TB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2" LG
	4			LOCK WASHER, 1/4-STD
15	1		E60000007	SAFETY LASER SCANNER, IDEC #SE2L-H05LPC
	1		E60000008	CABLE, IDEC #SE9Z-HS2-C020
	1		E60000009	BRACKET, IDEC #SE9Z-HS2-BK01

PARTS LIST

PA9588 **Drawing: DB9497000**

Title:	SPAN MODULE - CENTER DRIVE, DOUBLE STRAND 1"CHAIN	**Issued for Serial No.:**	22018004		
Description:	8 SPROCKETS, WEAR STRIP, TOP SPROCKET REMOVAL	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9498000		SPAN MODULE
2	2	CB1691141	*	WEAR STRIP
	2			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG
3	1	DA9192106		WEAR STRIP (WOOD)
	2			SELF TAPPING SHEET METAL SCREW, #10 X 3/4" LG
4	8	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	2			HEX HD CAP SCREW, 1/2-13NC X 5 LG.
	2			HEX HD CAP SCREW, 1/2-13NC X 5-1/2 LG
	8			FLAT WASHER, 1/2-STD
	4			ESNA NUT, HALF, 1/2-13NC
5	8	AA9084000	*	OUTER SPACER
6	2	M11200010	*	CHAIN, ANSI STD: #80 X 480" LG
7	8	M11400002	*	CONNECTING LINK, ANSI STD: #80
8	4	AA9083000	*	INNER SPACER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9588 **Drawing: DB9497000**

Title:	SPAN MODULE - CENTER DRIVE, DOUBLE STRAND 1"CHAIN	**Issued for Serial No.:**	22018004		
Description:	8 SPROCKETS, WEAR STRIP, TOP SPROCKET REMOVAL	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	DA9192378		WEAR STRIP (WOOD)
	2			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG
10	4	AA9085000		TAKE-UP BRACKET
11	4	BA8328043		TAKE-UP SCREW
	4			FLAT WASHER, 1/2-SAE
	4			JAM NUT, 1/2-13NC
	4			FULL HEX NUT, 1/2-13NC
12				NOT USED
13				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9587 **Drawing: CB6622000**

Title:	DRIVE ASSEMBLY, CENTER DRIVE, 2-7/16 DIA SHAFT,	**Issued for Serial No.:**	22018004		
Description:	3 BEARINGS, 3 DOUBLE SPROCKETS, KA77 EURODRIVE REDUCER	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	A	**DATE:**	4/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	3	DA8815022		SIDE PLATE
2	3	M10100079	*	BEARING, SKF: FY 2-7/16 TF
	12			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	12			LOCK WASHER, 5/8-STD
3	1	DB2892099		SHAFT
	1			KEY, 1/2 SQ X 3-1/2 LG
4	3	BB8059006	*	SPROCKET
5	3	M20500087	*	BUSHING, BLACK STAR: TLK133 X 2-7/16 DIA SHAFT
6	1	CB1036047		ANCHOR BLOCK
	2			SOC HD CAP SCREW, 5/8-11NC X 2 LG. HALF DOG POINT
	2			ESNA HALF JAM NUT, 5/8-11NC
7	2	CA7268080		TUBE
8	2	CA7268113		TUBE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9587 **Drawing: CB6622000**

Title:	DRIVE ASSEMBLY, CENTER DRIVE, 2-7/16 DIA SHAFT,	**Issued for Serial No.:**	22018004		
Description:	3 BEARINGS, 3 DOUBLE SPROCKETS, KA77 EURODRIVE REDUCER	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	A	**DATE:**	4/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	M22500168		GEARMOTOR, EURODRIVE: #KA77DRN132SR, 5.0 HP, 2" BORE, SIDE "A", 25.62:1 RATIO, MOTOR 480/3/60, TERMINAL BOX AT 180 DEGREES
10	1	CB6623000		TORQUE ARM
	8			HEX HEAD CAPSCREW, M12 X 1.75 X 30 MM LG
	8			LOCKWASHER M12-STD
	8			FLAT WASHER M12-STD
11	1	DA9050047		FLAT WASHER
				HEX HEAD CAPSCREW, 5/8-11 X 1-3/4 LG
				LOCKWASHER 5/8-STD
12	2	AA6847000		RUBBER DISK
	2			SOCKET HEAD SET SCREW, HALF DOG POINT, 5/8-11NC X 2" LG
	2			ESNA NUT, HALF 5/8-11 NC
13	2	AA6846000		STEEL DISK

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9559 **Drawing: CB6587000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018004		
Description:	CAPACITIVE SWITCH	**Master by:**	BH	**DATE:**	11/3/2022
		Issued By:	BH	**DATE:**	2/1/2023
		Revision:	C	**DATE:**	11/30/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	E16600159	*	PROXIMITY SWITCH , CAPACITIVE, IFM, KI5309
	1	E16700105		CORDSET-FEMALE-M12-RT-4P-10M , EFE-EVC006
2	1	E16400029		MOUNTING BRACKET, IFM #E20874
3	1	BB9874000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018004		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/23/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

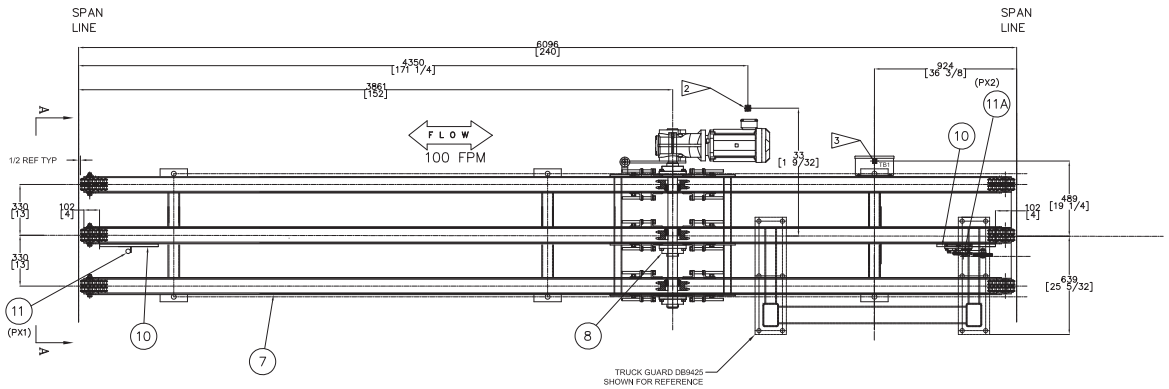
Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018004		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/23/2023
		Revision:		**DATE:**	

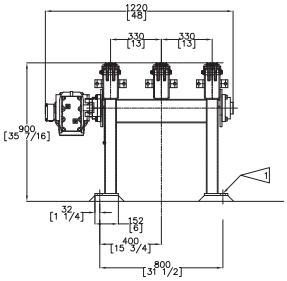
ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

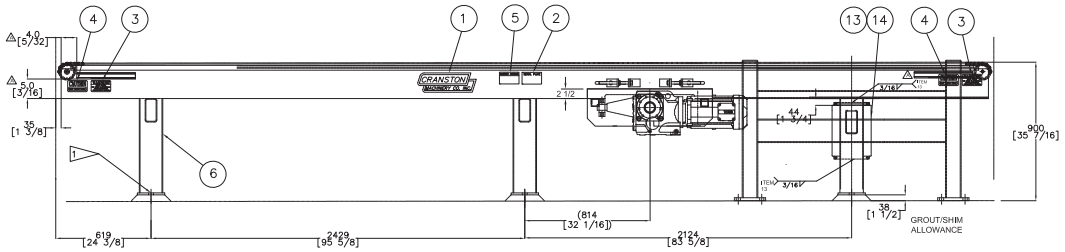
NOTES:

1. ALL ANCHOR BOLTS TO BE 3/4-10NC WITH 3" MIN. THREAD AND PROJECTION.
2. MOTOR STUB-UP
3. TERMINAL BOX STUB-UP
4. SEE DWG DB3385 FOR TYPICAL WELDING PROCEDURES.





VIEW A-A



PLOT SCALE = 1 : 12

CMCO S/N 22018004

SYM	DATE	REVISION	BY
1	11/8/23	ADDED 7	JMH
2	04/11/23	ADDED ADDITIONAL NOTE OF SHEET#1 AND PROX SENSOR ASSEMBLY DETAIL(SHEET#2)	FRB

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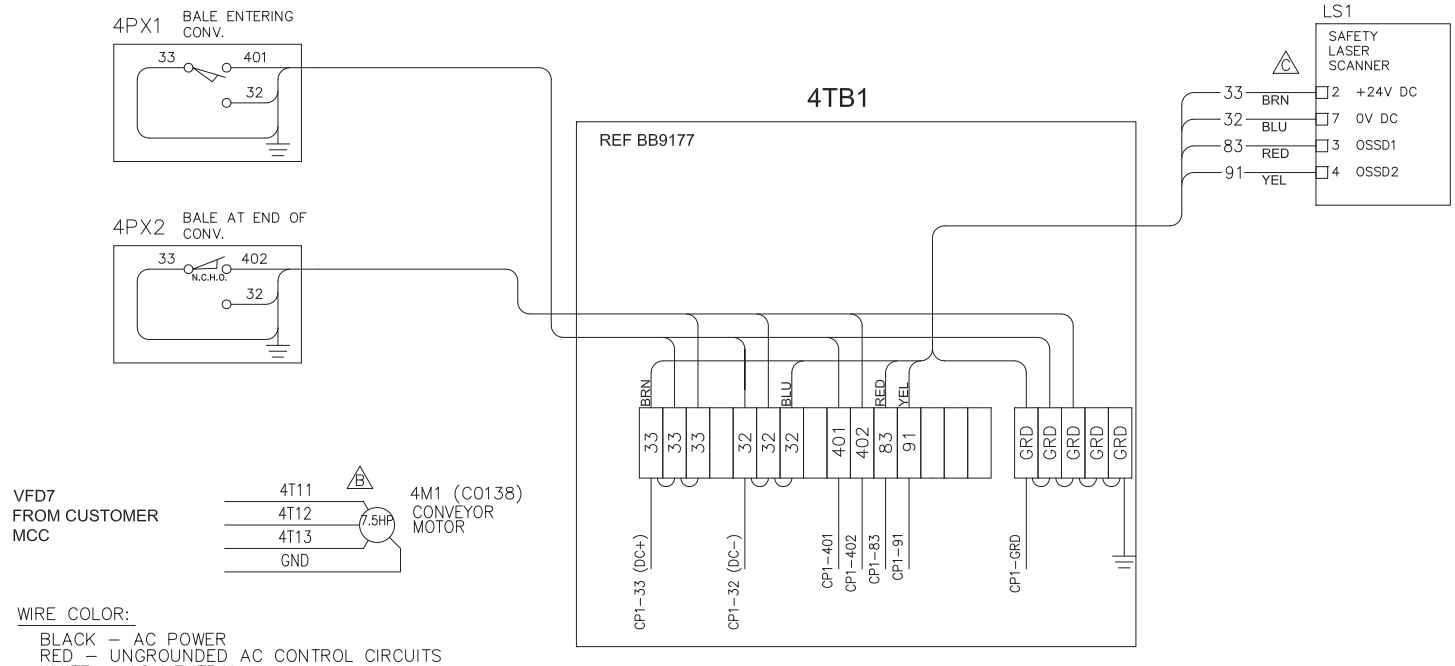
UNLESS OTHERWISE NOTED
Dimensions in inches
Tolerances:
Machined surface finish: 125 micro inches
Tolerances:
Welding: ± 1/4
Machining:
Fractional: ± 1/32
Decimal: ± .015
Angles: ± 1°

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ARRANGEMENT
CHAIN CONVEYOR – MODEL 200101

SCALE	DRAWN BY	DRAWING NO.	REV
1"=1'-0"	FRB	DB9495	B
DATE 26JAN2023	APPROVED JMH	SHT 1 OF 1	

Ref Master Dwg DB8798



WIRE COLOR:

BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUIT
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUIT
GREEN OR GREEN/YELLOW – GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

22018004

SYM	DATE	REVISION	BY
C	12/14/23	ADD LASER SCANNER WIRE COLORS	JMH
B	9/26/23	ADDED BHS LABELS AND CHANGED MOTOR WIRE #S	MLK
A	3/23/23	REMOVED VDL, ADD LASER	BH

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

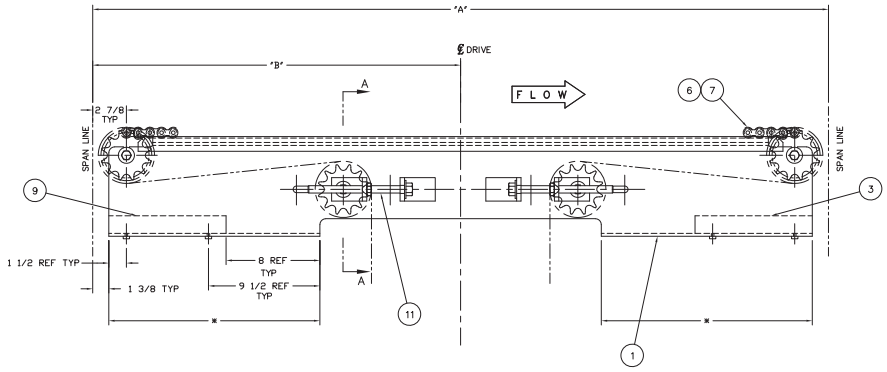
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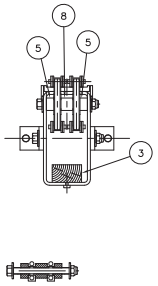
MACHINE WIRING DIAGRAM
STORAGE CONVEYOR

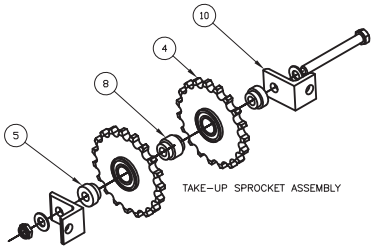
SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	BB9783	C
DATE: 9/22/22	APPROVED: JMH	SHT 1 OF 1	

TAB	"A"	"B"
000	240	152
001		
002		
003		

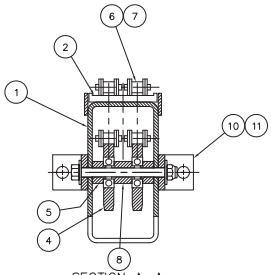
IF "*" DIMENSION IS 48" OR LESS, THEN PC #3 AND/OR #9 ARE NOT REQUIRED.







TAKE-UP SPROCKET ASSEMBLY



SECTION A–A

PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED
Dimensions in Inches
Machined Surface Finish: 125/Machine
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .015
Angles ± 1°

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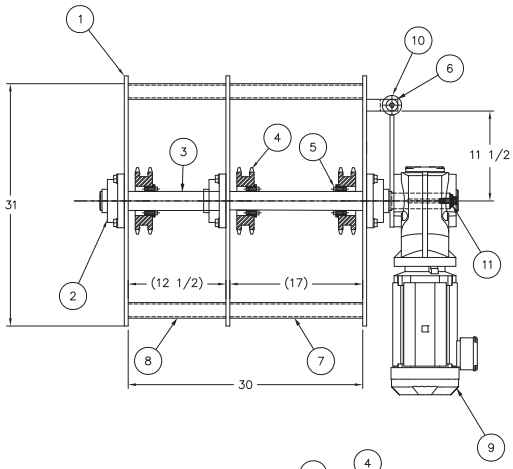
ARRANGEMENT
SPAN MODULE ASSEMBLY
CENTER DRIVE

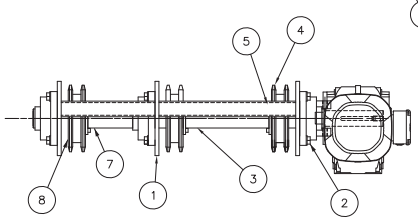
SCALE:	DRAWN BY	DRAWING NO.	REV.
NONE	FRB	DB9497	
DATE: 31JAN2023	APPROVED: JMH	SHT 1 OF 1	

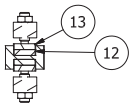
Ref Master Dwg DB9782

NOTE:
SPROCKETS TO BE TIMED TO EACH OTHER.

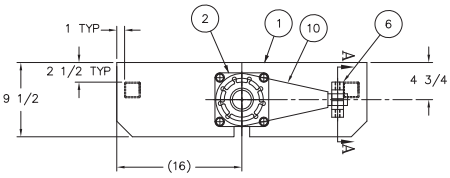
SEE DWG DB3385 FOR TYPICAL WELDING PROCEDURES







SECTION A-A



SYM	DATE	REVISION	BY

PLOT SCALE 1=8

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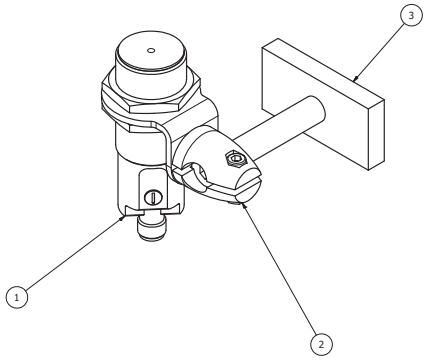
UNLESS OTHERWISE NOTED
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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ARRANGEMENT CENTER DRIVE KA77

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	FRB	CB6622	
DATE: 27JAN2023	APPROVED: JMH	SHT 1 OF 1	

Ref Master Dwg CB6253



NOTE:

1.

2.

REV	DESCRIPTION	DATE	DESIGNER
A	REMOVED SHEET METAL BRACKET	11/30/24	JMH

REVISION HISTORY

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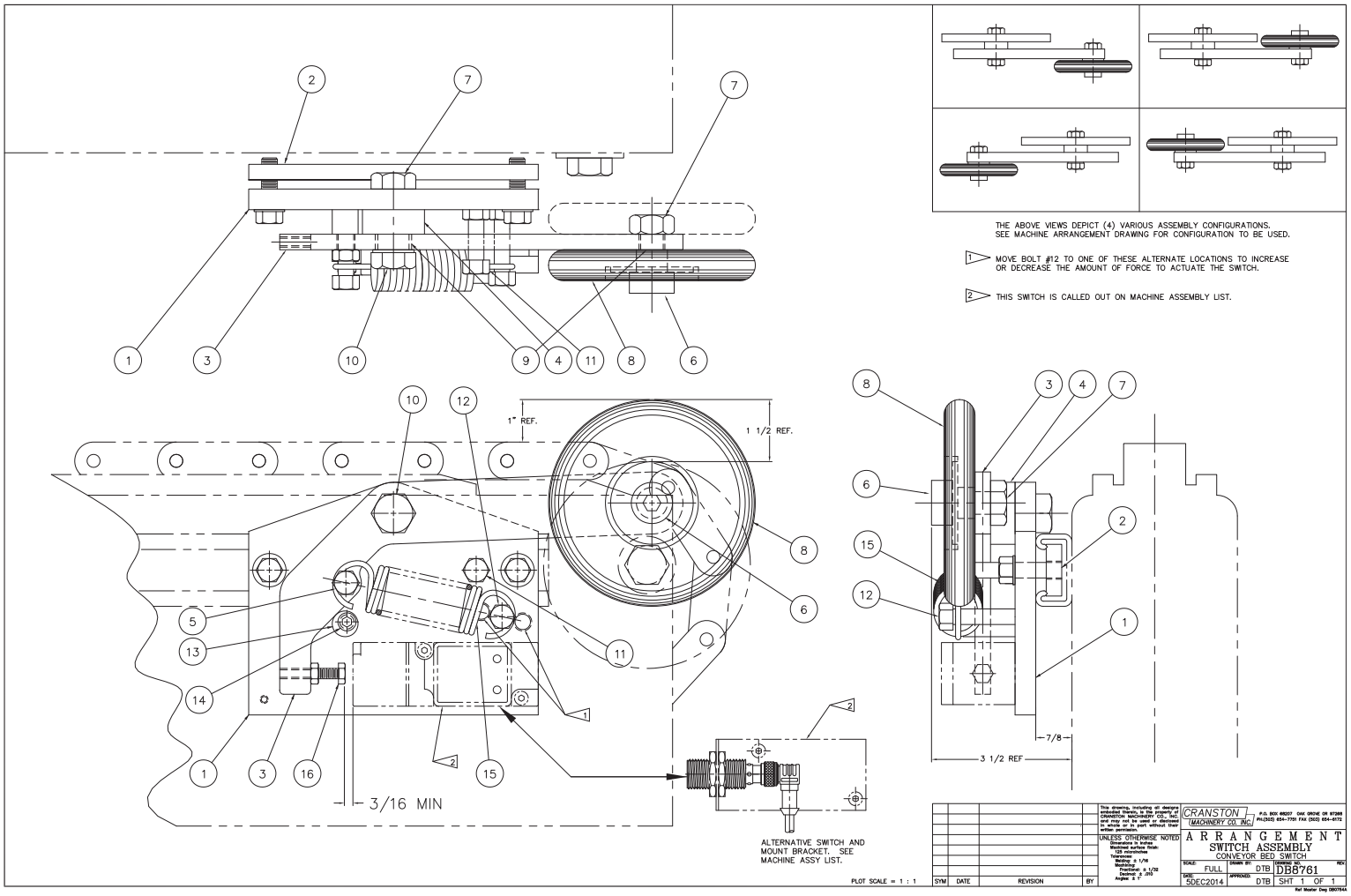
UNLESS OTHERWISE NOTED:
Dimensions in inches:
Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

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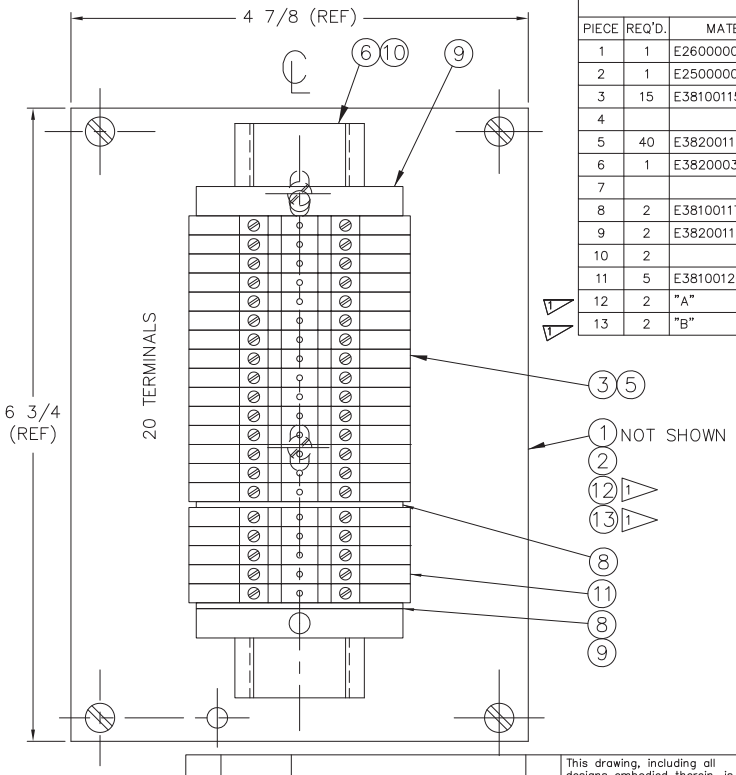
BED SWITCH ARRANGEMENT
CAPACITIVE SWITCH

SCALE:	DWN BY:	DRAWING NO:	REV:
1 : 1	BH	CB6587	A
DATE: 11/3/2022	APP'D: JMH	SHT 1 OF 1	

REF. DWG:


THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
7/8
3 1/2 REF
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
CRANSTON MACHINERY CO. INC.
A R R A N G E M E N T
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
DB8761
5DEC2014
SHT 1 OF 1

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000004	ENCLOSURE, HOFFMAN #A-806CH
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4			
5	40	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	3/23/23	ADD GRD TERMINAL NOTE	BH
A	1/26/15	ADD HIGH VOLTAGE DECAL	BH

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NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY, 5 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9177	B
DATE: 8/27/14	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB8473

MACHINE ASSEMBLY LIST

MODEL NO.: **20D101**

Title:	CONVEYOR - CENTER DRIVE - SCREW TAKE-UPS	**Issued for Serial No.:**	22018005		
Description:	3 ROW, 1" PITCH, DOUBLE - SINGLE STRAND CHAIN	**Arrangement Drawing:**	DB9494000		
		Master by:	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	D	**DATE:**	10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
			BB9784000	MACHINE WIRING DIAGRAM
1	2	-----	M25000018	CORPORATE PLATE
	16			DRIVE SCREW, #6 (.136) X 1/4" LG
2	1	-----	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NUMBER: 22018005
				MODEL NUMBER: 20D101
				DRAWINGS: ARRANGEMENT: DB9494000
				WIRING DIAGRAM: BB9784000
				DIMENSIONS: 48" W X 35" H X 237" L
				WEIGHT: 2200 LBS
				VOLTAGE: 480V/3PH/60HZ
				POWER: 5HP
	4			DRIVE SCREW, #6 (.136) X 1/4" LG
3	4	-----	AA6140000	WARNING DECAL
4	4	-----	AA6141000	CAUTION DECAL

MACHINE ASSEMBLY LIST

MODEL NO.: **20D101**

Title:	CONVEYOR - CENTER DRIVE - SCREW TAKE-UPS	**Issued for Serial No.:**	22018005		
Description:	3 ROW, 1" PITCH, DOUBLE - SINGLE STRAND CHAIN	**Arrangement Drawing:**	DB9494000		
		Master by:	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	D	**DATE:**	10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
5	2	-----	AA6142000	SAFETY DECAL
6	3	-----	DB8748004	LEG MODULE
7	3	PA9588	DB9497000	SPAN MODULE
8	1	PA9587	CB6622000	DRIVE ASSEMBLY
9				NOT USED
10	2	-----	-----	UNISTRUT, P3300 X 18" LG
11	1	PA9559	CB6587000	PROXIMITY SWITCH ASSEMBLY (PX1)
11A	1	PA8989	DB8761000	BED SWITCH ASSEMBLY
11B	1		BB8587000	BRACKET
	4			HEX HEAD CAPSCREW #10-32 X 1/2

MACHINE ASSEMBLY LIST

MODEL NO.: **20D101**

Title:	CONVEYOR - CENTER DRIVE - SCREW TAKE-UPS	**Issued for Serial No.:**	22018005		
Description:	3 ROW, 1" PITCH, DOUBLE - SINGLE STRAND CHAIN	**Arrangement Drawing:**	DB9494000		
		Master by:	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	D	**DATE:**	10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	4			LOCKWASHER #10
11C	2	-----	E16600141	PROXIMITY SENSOR, IFM #IGS252 (PX2)
11D	2	-----	E16700120	CABLE, IFM #EVC003
12				NOT USED
13	1	-----	DA8925127	TERMINAL BOX MOUNT PLATE
14	1	-----	BB9177000	TERMINAL BOX ASSEMBLY (TB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2" LG
	4			LOCK WASHER, 1/4-STD
15	1		E60000007	SAFETY LASER SCANNER, IDEC #SE2L-H05LPC
	1		E60000008	CABLE, IDEC #SE9Z-HS2-C020
	1		E60000009	BRACKET, IDEC #SE9Z-HS2-BK01

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9588 **Drawing: DB9497000**

Title:	SPAN MODULE - CENTER DRIVE, DOUBLE STRAND 1"CHAIN	**Issued for Serial No.:**	22018005		
Description:	8 SPROCKETS, WEAR STRIP, TOP SPROCKET REMOVAL	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9498000		SPAN MODULE
2	2	CB1691141	*	WEAR STRIP
	2			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG
3	1	DA9192106		WEAR STRIP (WOOD)
	2			SELF TAPPING SHEET METAL SCREW, #10 X 3/4" LG
4	8	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	2			HEX HD CAP SCREW, 1/2-13NC X 5 LG.
	2			HEX HD CAP SCREW, 1/2-13NC X 5-1/2 LG
	8			FLAT WASHER, 1/2-STD
	4			ESNA NUT, HALF, 1/2-13NC
5	8	AA9084000	*	OUTER SPACER
6	2	M11200010	*	CHAIN, ANSI STD: #80 X 480" LG
7	8	M11400002	*	CONNECTING LINK, ANSI STD: #80
8	4	AA9083000	*	INNER SPACER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9588 **Drawing: DB9497000**

Title:	SPAN MODULE - CENTER DRIVE, DOUBLE STRAND 1"CHAIN	**Issued for Serial No.:**	22018005		
Description:	8 SPROCKETS, WEAR STRIP, TOP SPROCKET REMOVAL	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	DA9192378		WEAR STRIP (WOOD)
	2			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG
10	4	AA9085000		TAKE-UP BRACKET
11	4	BA8328043		TAKE-UP SCREW
	4			FLAT WASHER, 1/2-SAE
	4			JAM NUT, 1/2-13NC
	4			FULL HEX NUT, 1/2-13NC
12				NOT USED
13				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9587 **Drawing: CB6622000**

Title:	DRIVE ASSEMBLY, CENTER DRIVE, 2-7/16 DIA SHAFT,	**Issued for Serial No.:**	22018005		
Description:	3 BEARINGS, 3 DOUBLE SPROCKETS, KA77 EURODRIVE REDUCER	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	A	**DATE:**	4/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	3	DA8815022		SIDE PLATE
2	3	M10100079	*	BEARING, SKF: FY 2-7/16 TF
	12			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	12			LOCK WASHER, 5/8-STD
3	1	DB2892099		SHAFT
	1			KEY, 1/2 SQ X 3-1/2 LG
4	3	BB8059006	*	SPROCKET
5	3	M20500087	*	BUSHING, BLACK STAR: TLK133 X 2-7/16 DIA SHAFT
6	1	CB1036047		ANCHOR BLOCK
	2			SOC HD CAP SCREW, 5/8-11NC X 2 LG. HALF DOG POINT
	2			ESNA HALF JAM NUT, 5/8-11NC
7	2	CA7268080		TUBE
8	2	CA7268113		TUBE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9587 **Drawing: CB6622000**

Title:	DRIVE ASSEMBLY, CENTER DRIVE, 2-7/16 DIA SHAFT,	**Issued for Serial No.:**	22018005		
Description:	3 BEARINGS, 3 DOUBLE SPROCKETS, KA77 EURODRIVE REDUCER	**Master by:**	FRB	**DATE:**	1/30/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	A	**DATE:**	4/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	M22500168		GEARMOTOR, EURODRIVE: #KA77DRN132SR, 5.0 HP, 2" BORE, SIDE "A", 25.62:1 RATIO, MOTOR 480/3/60, TERMINAL BOX AT 180 DEGREES
10	1	CB6623000		TORQUE ARM
	8			HEX HEAD CAPSCREW, M12 X 1.75 X 30 MM LG
	8			LOCKWASHER M12-STD
	8			FLAT WASHER M12-STD
11	1	DA9050047		FLAT WASHER
				HEX HEAD CAPSCREW, 5/8-11 X 1-3/4 LG
				LOCKWASHER 5/8-STD
12	2	AA6847000		RUBBER DISK
	2			SOCKET HEAD SET SCREW, HALF DOG POINT, 5/8-11NC X 2" LG
	2			ESNA NUT, HALF 5/8-11 NC
13	2	AA6846000		STEEL DISK

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9559 **Drawing: CB6587000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018005		
Description:	CAPACITIVE SWITCH	**Master by:**	BH	**DATE:**	11/3/2022
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	C	**DATE:**	11/30/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	E16600159	*	PROXIMITY SWITCH , CAPACITIVE, IFM, KI5309
	1	E16700105		CORDSET-FEMALE-M12-RT-4P-10M , EFE-EVC006
2	1	E16400029		MOUNTING BRACKET, IFM #E20874
3	1	BB9874000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018005		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

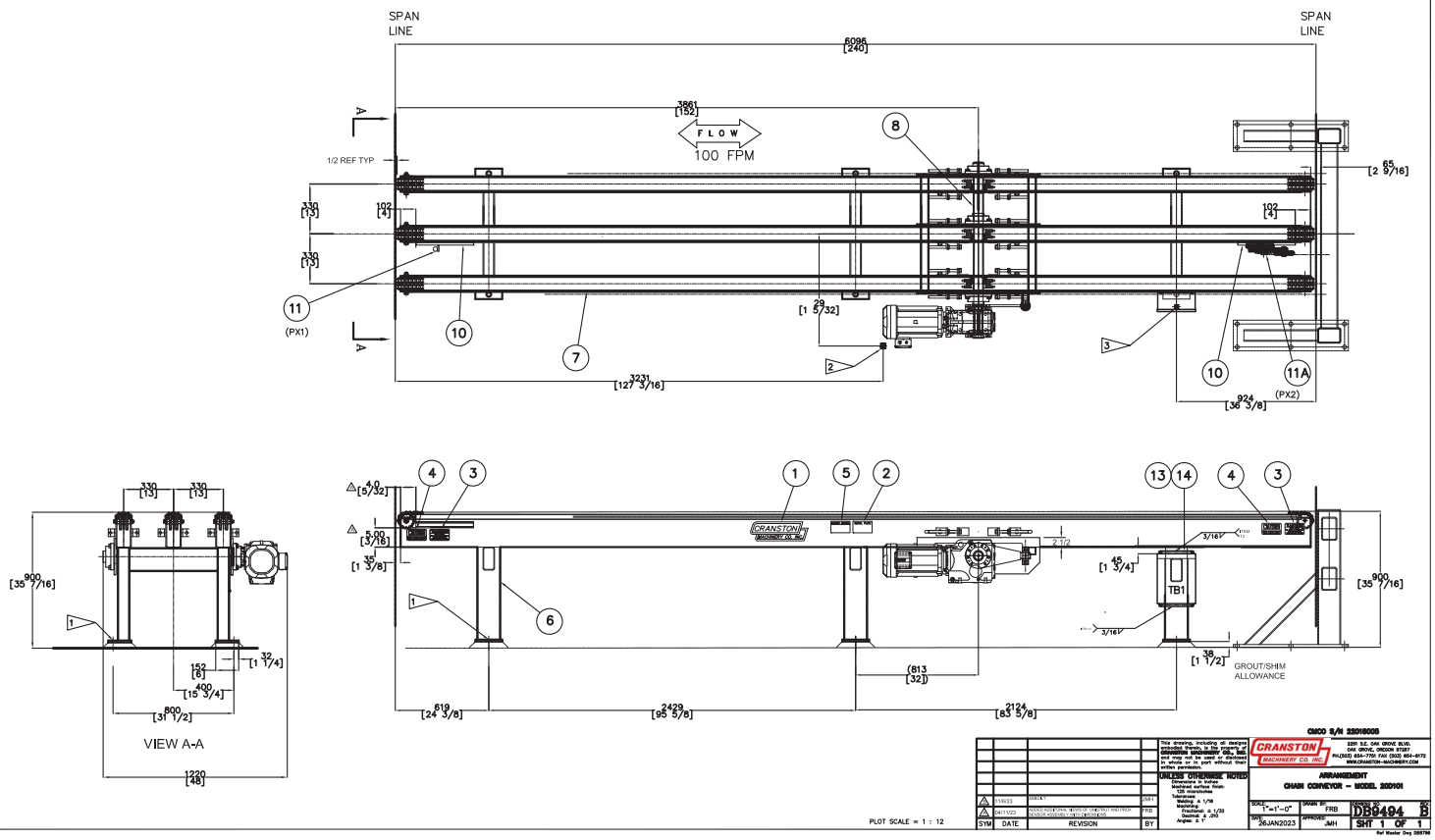
Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018005		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

NOTES:

1. ALL ANCHOR BOLTS TO BE 3/4-10NC WITH 3" MIN. THREAD AND PROJECTION.
2. MOTOR STUB-UP
3. TERMINAL BOX STUB-UP
4. SEE DWG DB3385 FOR TYPICAL WELDING PROCEDURES.



PLOT SCALE = 1 : 12

SYM	DATE	REVISION	BY
1	11/9/23	[illegible]	JMH
2	04/11/23	[illegible]	FRB

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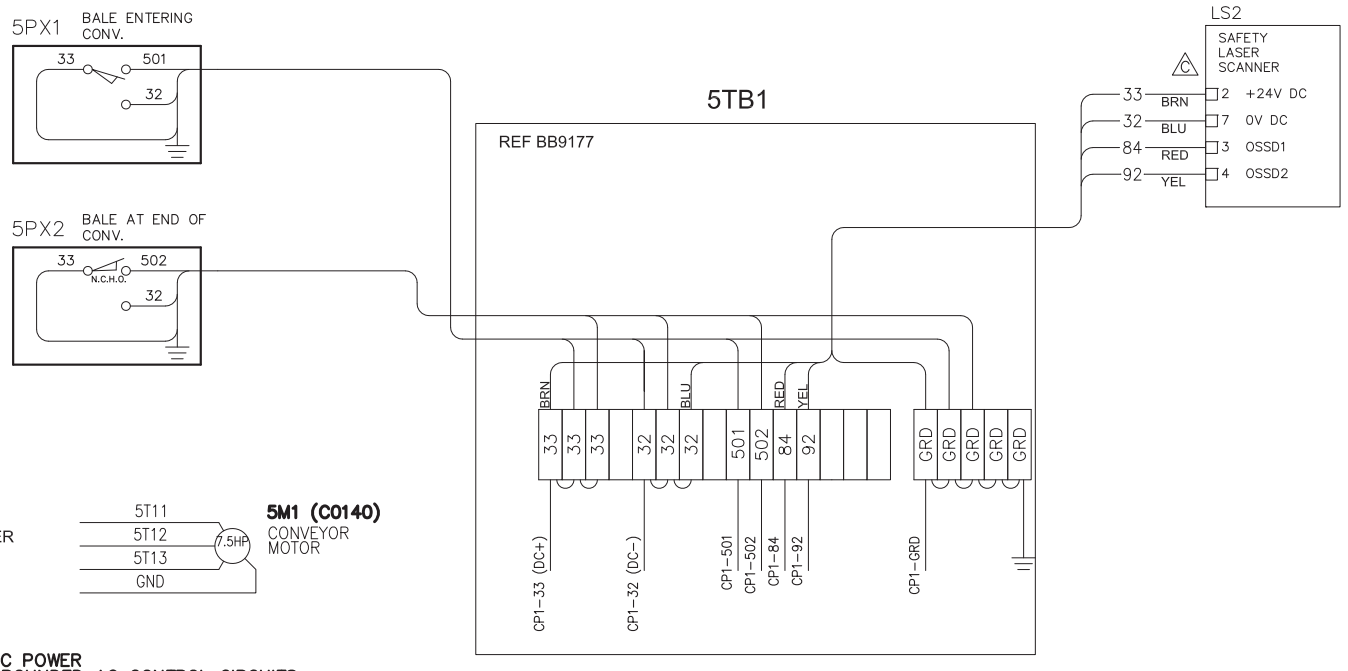
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125 microinches
Tolerances
Machining ± 1/64
Weldment
Linear ± 1/32
Decimal ± .010
Angles ± 1°

CRANSTON MACHINERY CO. INC.
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CMCO S/N 23016005

ARRANGEMENT
CHAIN CONVEYOR - MODEL 2CD10I

SCALE	DRAWN BY	DRAWING NO.	REV
1"=1'-0"	FRB	DB3494	B
DATE	APPROVED	SHT 1 OF 1	
26JAN2023	JMH	Ref Master Dwg DB3796	



VFD8
FROM CUSTOMER
MCC

5T11
5T12
5T13
GND
7.5HP

5M1 (C0140)
CONVEYOR MOTOR

WIRE COLOR:

BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUIT
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUIT
GREEN OR GREEN/YELLOW – GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

22018005

SYM	DATE	REVISION	BY
C	12/14/23	ADD LASER SCANNER WIRE COLORS.	JMH
B	9/26/23	ADDED BHS LABELS AND CHANGED MOTOR WIRE #S	MLK
A	3/23/23	REMOVED VDL, ADD LASER	BH

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

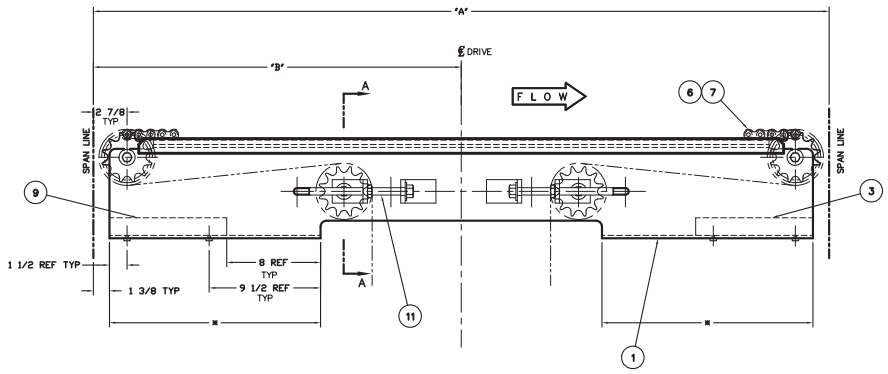
CRANSTON MACHINERY CO., INC.
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OAK GROVE, OREGON 157267
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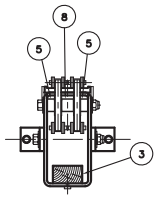
MACHINE WIRING DIAGRAM
STORAGE CONVEYOR

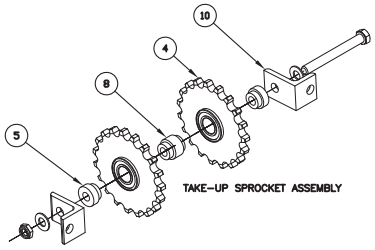
SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	BB9784	C
DATE: 9/22/22	APPROVED: JMH	SHT 1 OF 1	

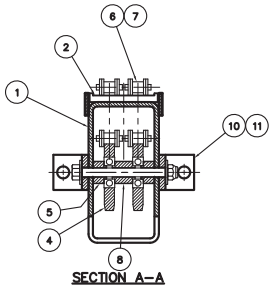
TAB	"A"	"B"
000	240	152
001		
002		
003		

IF "*" DIMENSION IS 48" OR LESS, THEN PC #3 AND/OR #9 ARE NOT REQUIRED.









PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125 microinches
Tolerances
Machining ± 1/64
Weldment
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

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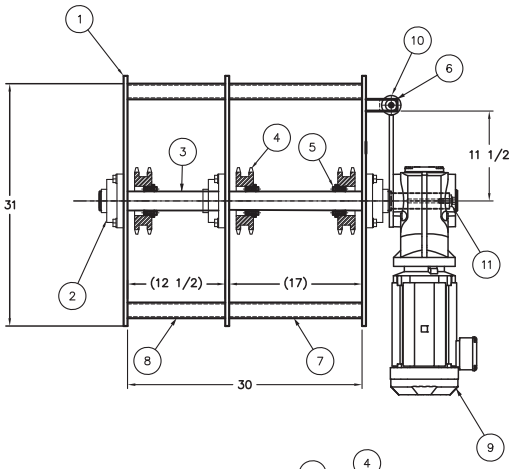
ARRANGEMENT
SPAN MODULE ASSEMBLY
CENTER DRIVE

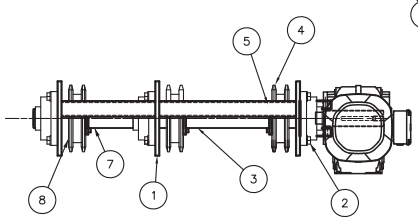
SCALE	DRAWN BY	WORK ORDER NO.	REV
NONE	FRB	DB9497	
DATE	APPROVED	SHT 1 OF 1	
31JAN2023	JMH		

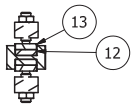
Ref Master Dwg DB9782

NOTE:
SPROCKETS TO BE TIMED TO EACH OTHER.

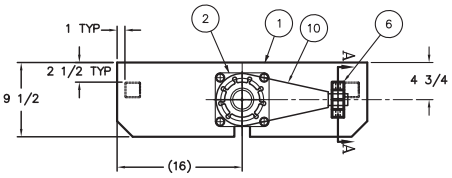
SEE DWG DB3385 FOR TYPICAL WELDING PROCEDURES







SECTION A–A



PLOT SCALE 1=8

SYM	DATE	REVISION	BY

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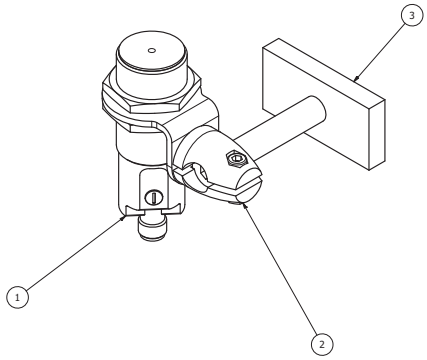
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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ARRANGEMENT CENTER DRIVE KA77

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	FRB	CB6622	
DATE: 27JAN2023	APPROVED: JMH	SHT 1 OF 1	

Ref Master Dwg CB6253



NOTE:

1.

2.

REV	DESCRIPTION	DATE	DESIGNER
A	REMOVED SHEET METAL BRACKET	11/30/24	JMH

REVISION HISTORY

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UNLESS OTHERWISE NOTED:

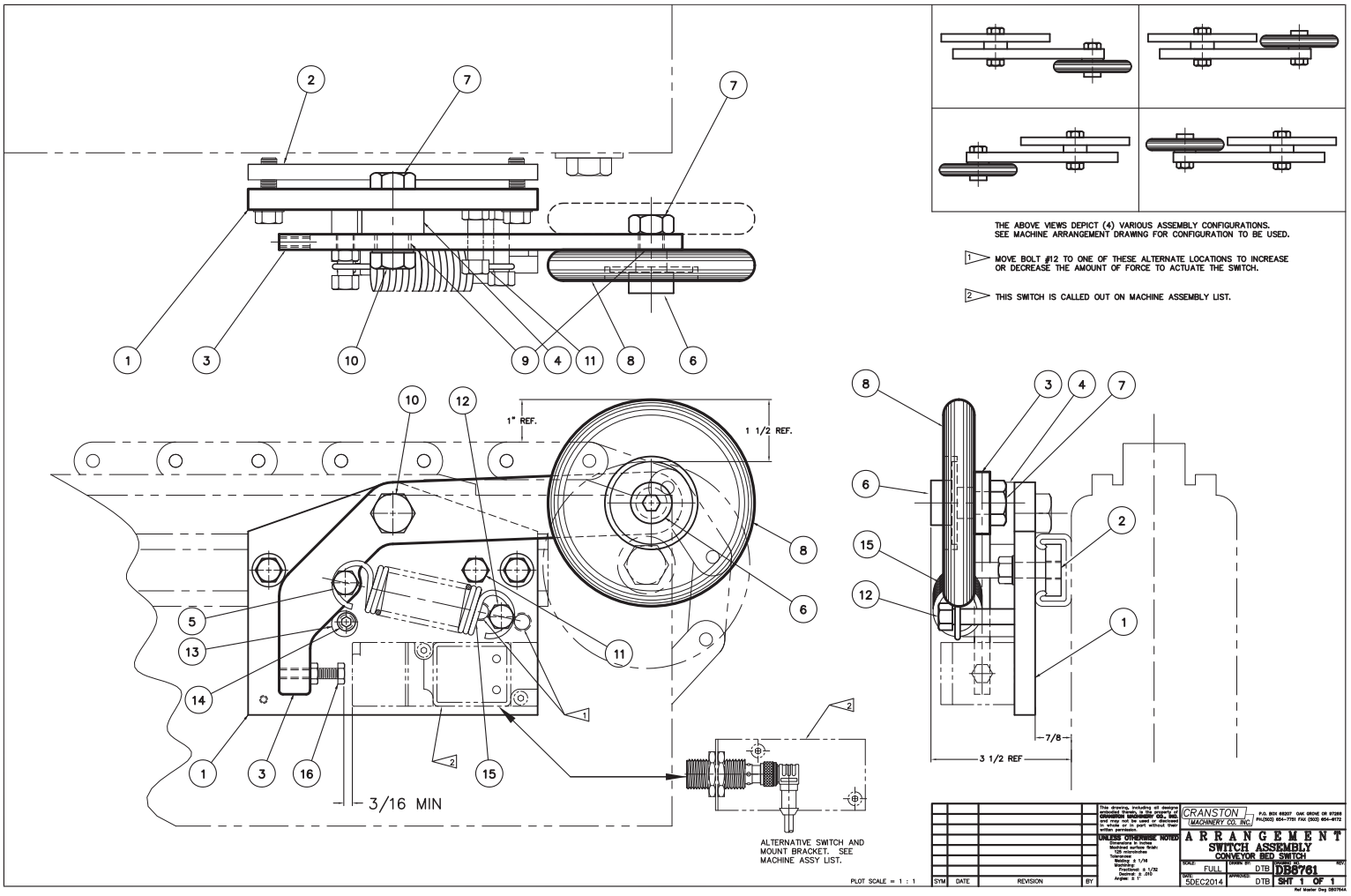
Dimensions in Inches:
Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1 c

CRANSTON MACHINERY CO. INC.
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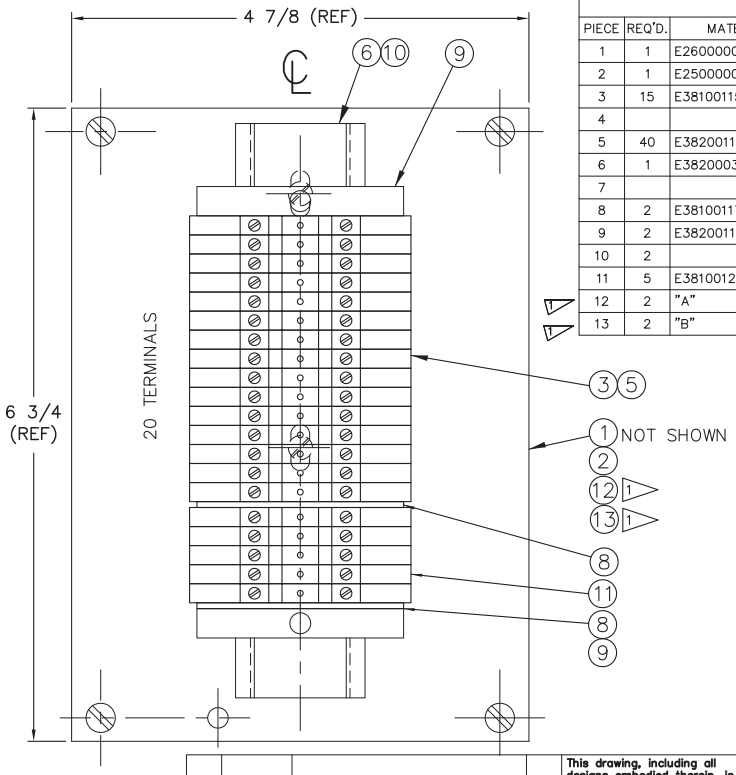
BED SWITCH ARRANGEMENT
CAPACITIVE SWITCH

SCALE:	DWN BY:	DRAWING NO.	REV:
1 : 1	BH	CB6587	A
DATE: 11/3/2022	APPD: JMH	SHT 1 OF 1	

REF. DWG:


THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
7/8
3 1/2 REF
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
CRANSTON MACHINERY CO. INC.
P.O. BOX 68207 OAK GROVE OR 97268
PH.(503) 654-7781 FAX (503) 654-8772
ARRANGEMENT
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
SCALE FULL
DRAWN BY DTB
DRAWING NO. DB8761
DATE 5DEC2014
APPROVED DTB
SHT 1 OF 1
SYM DATE REVISION BY

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000004	ENCLOSURE, HOFFMAN #A-806CH
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4			
5	40	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	3/23/23	ADD GRD TERMINAL NOTE	BH
A	1/26/15	ADD HIGH VOLTAGE DECAL	BH

This drawing, including all designs embodied therein, is the property of the CRANSTON MACHINERY CO., INC. and may not be used or disclosed in whole or in part without written permission.

NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY, 5 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9177	B
DATE: 8/27/14	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB8473

MACHINE ASSEMBLY LIST

MODEL NO.: **20D103**

Title: CONVEYOR - END DRIVE - 204" SPAN
Description:

Issued for Serial No.: 22018014
Arrangement Drawing: DB9441000
Master by: CJM **DATE:** 3/8/2023
Issued By: FRB **DATE:** 3/17/2023
Revision: A **DATE:** 10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	2		M25000018	CORPORATE PLATE,
	16			DRIVE SCREW, #6 (.136) x 1/4" LG.
2	1		AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO. 22018014
				MODEL NO.: 20D103
				DRAWING: DB9441000
				WIRING DIAGRAM: BB9788000
				VOLTAGE: 480VAC/3PH/60HZ
				POWER: 7.5 HP
				WEIGHT: 1952LB
				DIMENSION: 32W X 33 1/8 H X 201 1/4 LG
				CUST. I.D. NO.:
	4			DRIVE SCREW, #2 X 1/4 LG
3	1	PA9558	DB9442000	CONVEYOR ASSEMBLY
4	2	PA8989	DB8761000	BED SWITCH ASSEMBLY
4A	2		BB8587000	BRACKET

MACHINE ASSEMBLY LIST

MODEL NO.: **20D103**

Title: CONVEYOR - END DRIVE - 204" SPAN
Description:

Issued for Serial No.: 22018014
Arrangement Drawing: DB9441000
Master by: CJM **DATE:** 3/8/2023
Issued By: FRB **DATE:** 3/17/2023
Revision: A **DATE:** 10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	4			HEX HEAD CAPSCREW #10-32 X 1/2
	4			LOCKWASHER #10
4B	2		E16600141	PROXIMITY SENSOR, IFM-IGS252
4C	2		E16700105	RIGHT ANGLE CABLE: IFM EVC006
5	1	------	DA8925127	TERMINAL BOX MOUNT PLATE
	4			HEX HEAD CAPSCREW 1/4-20NC X 1/2
	4			LOCK WASHER 1/4-STD
6	1	------	BB9177000	TERMINAL BOX
	1	------	BB9788000	MACHINE WIRING DIAGRAM

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018014		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM	**DATE:**	10/15/2023
		Issued By:	FRB	**DATE:**	3/17/2023
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	4	AA6140000		WARNING LABEL
2	2	AA6142000		SAFETY LABEL
3	4	AA6141000		CAUTION LABEL
4	1	DB9443000		FRAME WELDMENT
5	2	M10100079	*	BEARING, SKF: FY 2-7/16 TF
	8			HEX HD CAP SCREW, 5/8-11NC X 1 1/2 LG
	8			LOCK WASHER, 5/8-STD
6	1	DB2892100		DRIVE SHAFT
	1			KEY, 1/2 SQ X 3-1/2 LG.
7	2	DB1070055	*	DRIVE SPROCKET (25 T)
8	2	M20500087	*	BUSHING: BLACKSTAR: #TLK133X, 1-15/16 SHAFT
11	2	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	2			HEX HD BOLT, 1/2-13NC X 5 1/2 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018014		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM	**DATE:**	10/15/2023
		Issued By:	FRB	**DATE:**	3/17/2023
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2			ESNA HALF NUT, 1/2-13NC
	4			FLAT WASHER, 1/2-STD
12	4	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	4			HEX HD BOLT, 1/2-13NC X 5 LG
	4			ESNA HALF NUT, 1/2-13NC
	8			FLAT WASHER, 1/2-STD
13	4	AA9085000		TAKE-UP BRACKET
14	4	BA8328043		TAKE-UP SCREW
	4			FLAT WASHER, 1/2-SAE
	4			HEX NUT, 1/2-13NC
	4			JAM NUT, 1/2-13NC
15	12	AA9084000	*	HUB SPACER
16	12	DA9050159	*	SIMPLE SPACER
17	2	CB1691137	*	WEAR STRIP
	2			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018014
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM **DATE:** 10/15/2023
		Issued By:	FRB **DATE:** 3/17/2023
		Revision:	A **DATE:** 7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
18	2	DA9192171		WEAR STRIP - WOOD
	8			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG
19	2	M11200010	*	CHAIN, ANSI: 80 X 450 PITCHES = 450"
	6	M11400052	*	CONNECTING LINK, ANSI: 80
20				NOT USED
21	1	CB66230000		TORQUE ARM
	8			HEX HD CAP SCREW, M12 x 1.75 x 30MM LG
	8			LOCK WASHER, M12-STD
	8			FLAT WASHER, M12-STD
22	1	M22500168	*	KA77DRN132S4, GEARMOTOR 7.5 HP, 2" BORE SIDE A, CONDUIT 180/X, RATIO 29.27, M1 POSITION, 480/3/60
23	1	DA9050047		FLAT WASHER
	1			LOCK WASHER, 5/8-STD
	1			HEX HD CAP SCREW, 5/8-11NC X 1-3/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018014		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM	**DATE:**	10/15/2023
		Issued By:	FRB	**DATE:**	3/17/2023
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
24	2	AA6847000		RUBBER DISK
25	2	AA6846000		STEEL DISK

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018014		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

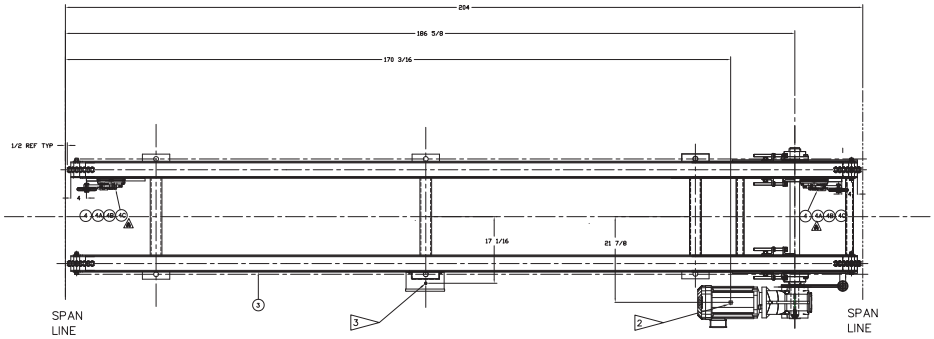
Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018014		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

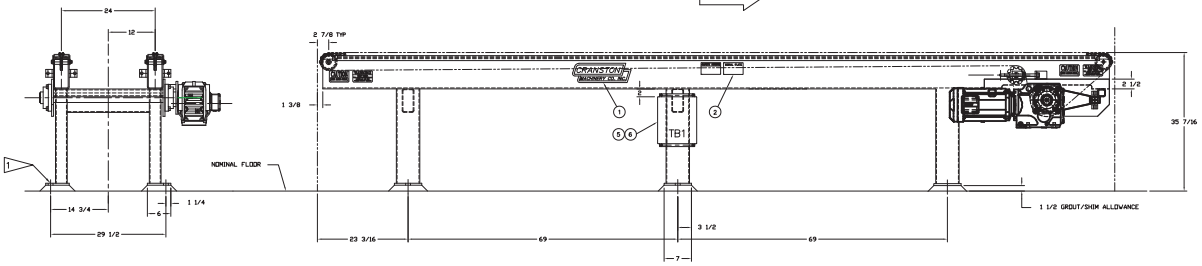
NOTES:

1. ALL ANCHOR BOLTS TO BE M20x2.5 [3/4–10NC] WITH 76mm [3"] MIN. THREAD AND PROJECTION.
2. MOTOR STUB–UP
3. TERMINAL BOX STUB–UP
4. BALE SIZE IS 39 1/4" x 42" x 33" H. THE 39 1/4" DIMENSION IS ACROSS CHAINS WHEN BALE ENTERS.
5. SEE DWG DB3385 FOR TYPICAL WELDING PROCEDURES.



100 FPM

FLOW



PLOT SCALE = 1 : 12

CMCO S/N 22018014

SYM	DATE	REVISION	BY
A	04/07/2022	[illegible]	TRB

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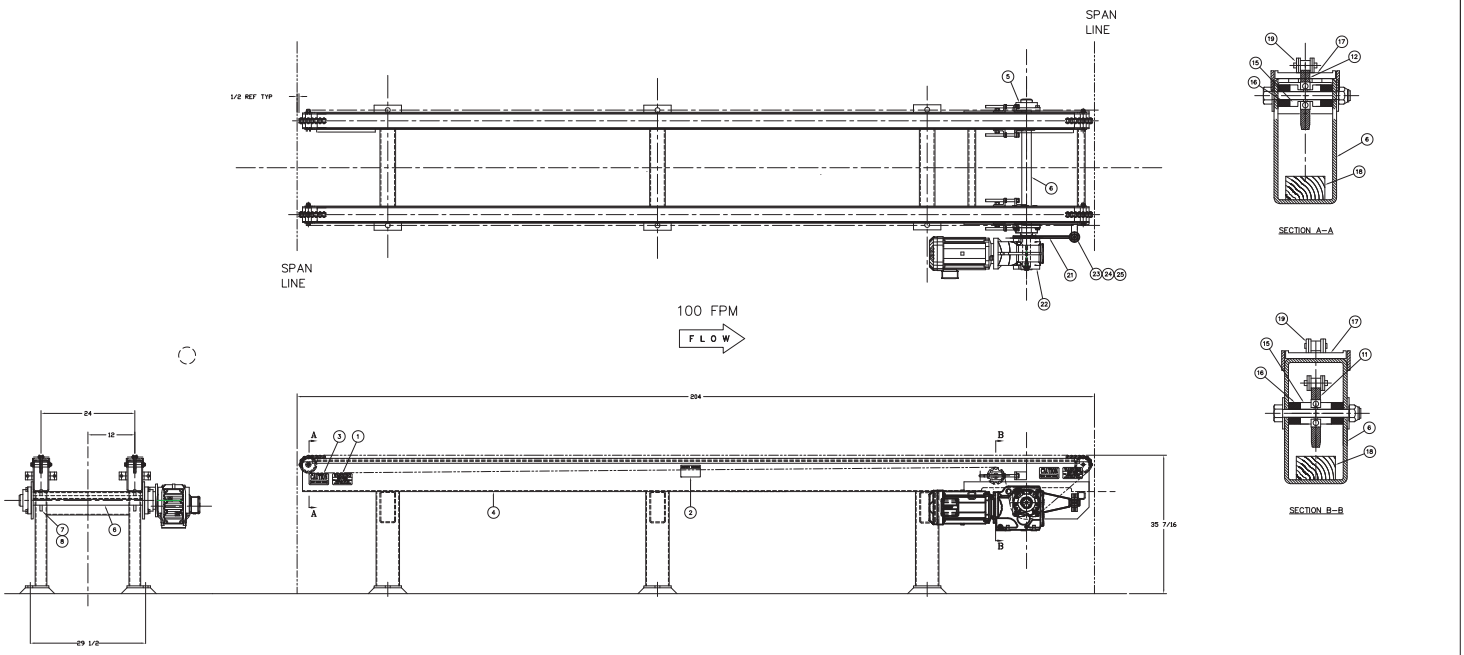
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125/Machined surface
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .015
Angles ± 1°

CRANSTON MACHINERY CO. INC.
2201 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7701 FAX (503) 654-8172
WWW.CRANSTON-MACHINERY.COM

ARRANGEMENT
CHAIN CONVEYOR – MODEL 20D

SCALE	DRAWN BY	DRAWING NO.	REV
1"=1'-0"	CJM	DB9441	A
DATE	APPROVED	SHT 1 OF 1	
10OCT2022			

Ref Master Dwg DB8798



CMCO S/N 22018014 PA9558

GRANSTON MACHINERY CO. INC.

2291 S.E. DIV GROVE BLVD.
DIV GROVE, OREGON 97267
PH.(503) 654-7705 FAX (503) 654-6172
SHELLY@GRANSTON-MACHINERY.COM

ASSEMBLY
CHAIN CONVEYOR – MODEL 20D

SYM	DATE	REVISION	BY

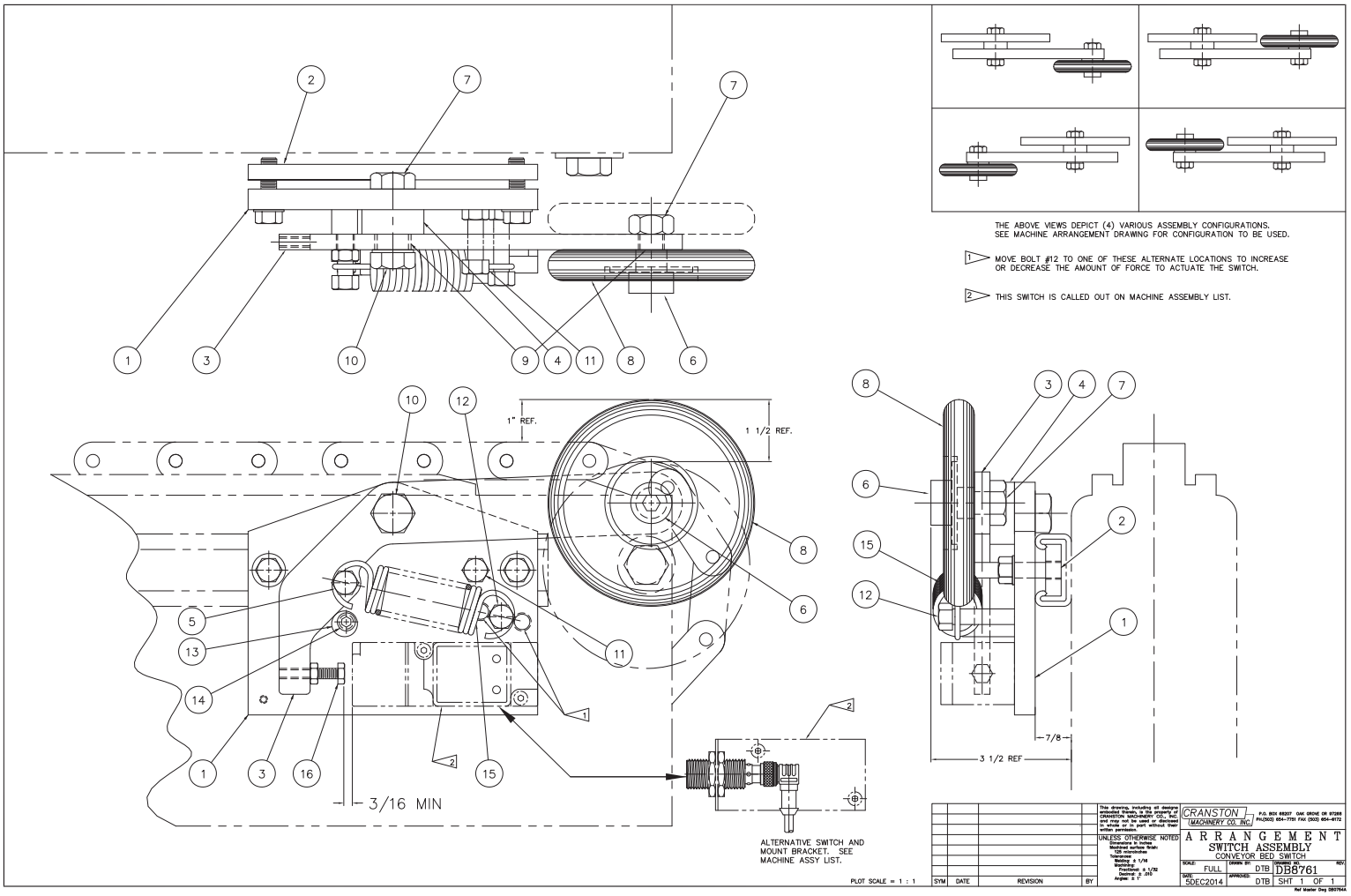
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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125 microinches
Tolerances
Welding ± 1/16
Machining
Decimals ± 1/32
Fractions ± 1/32
Angles ± 1°

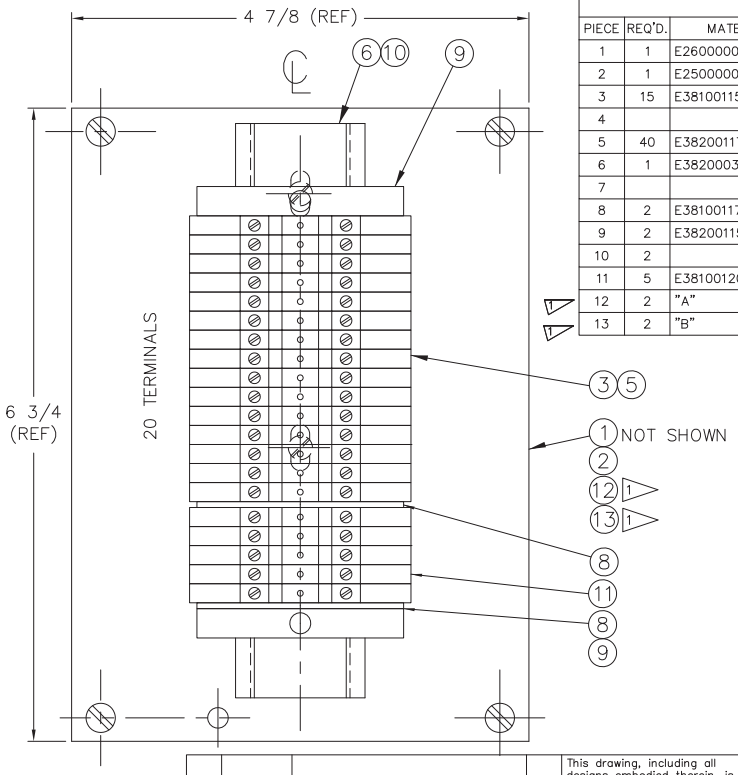
SCALE: 1"=1'-0" | DRAWN BY: CJM | DRAWING NO: DB9442 | REV:
DATE: 10OCT2022 | APPROVED: | SHT 1 OF 1

Ref Master Dwg DB8796

PLOT SCALE = 1 : 12


THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
7/8
3 1/2 REF
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
SYM DATE REVISION BY
CRANSTON MACHINERY CO. INC.
P.O. BOX 68207 OAK GROVE OR 97268
PH.(503) 654-7781 FAX (503) 654-8172
ARRANGEMENT
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
SCALE: FULL
DRWN BY: DTB
DRAWING NO. DB8761
REV.
DATE 5DEC2014
APPROVED: DTB
SHT 1 OF 1

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000004	ENCLOSURE, HOFFMAN #A-806CH
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4			
5	40	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	3/23/23	ADD GRD TERMINAL NOTE	BH
A	1/26/15	ADD HIGH VOLTAGE DECAL	BH

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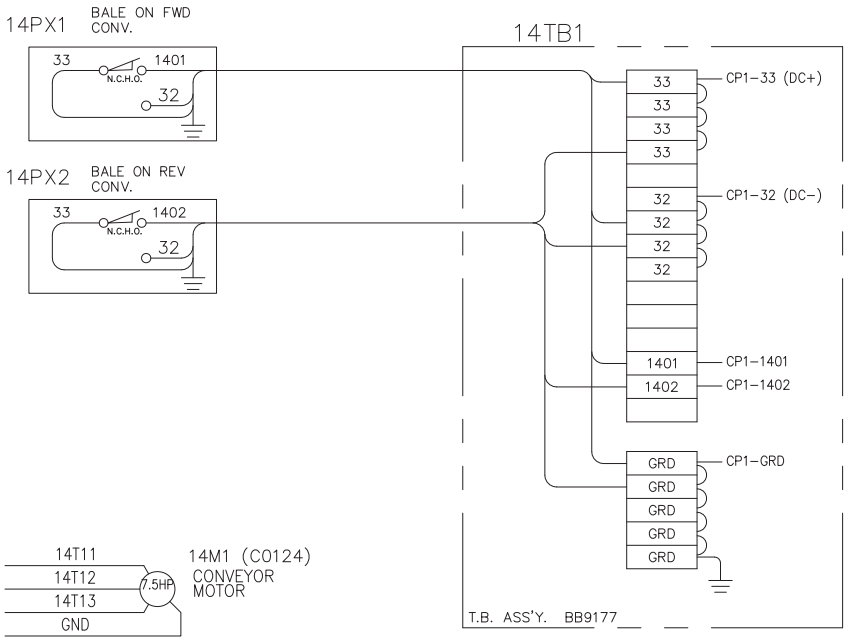
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
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OAK GROVE, OREGON 97267
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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY, 5 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9177	B
DATE: 8/27/14	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB8473



WIRE COLOR:

BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUIT
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUIT
GREEN OR GREEN/YELLOW – GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

22018014

SYM	DATE	REVISION	BY
B	20230926	ADDED BHS LABELS	MLK
A	3/23/23	FOR RELEASE	BH

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

CRANSTON MACHINERY CO., INC.
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OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

MACHINE WIRING DIAGRAM
CONVEYOR

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	BB9788	B
DATE: 9/23/22	APPROVED:	SHT 1 OF 1	

MACHINE ASSEMBLY LIST

MODEL NO.: **20D103**

Title: CONVEYOR - END DRIVE - 204" SPAN
Description:

Issued for Serial No.: 22018015
Arrangement Drawing: DB9503000
Master by: FRB **DATE:** 3/8/2023
Issued By: FRB **DATE:** 3/17/2023
Revision: C **DATE:** 10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	2		M25000018	CORPORATE PLATE
	16			DRIVE SCREW, #6 (.136) x 1/4" LG.
2	1		AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO. 22018015
				MODEL NO.: 20D103
				DRAWING: DB9503000
				WIRING DIAGRAM: BB9789000
				VOLTAGE: 480VAC/3PH/60HZ
				POWER: 7.5 HP
				WEIGHT: 1952LB
				DIMENSION: 32W X 33 1/8 H X 201 1/4 LG
				CUST. I.D. NO.:
	4			DRIVE SCREW, #2 X 1/4 LG
3	1	PA9558	DB9442000	CONVEYOR ASSEMBLY
4	2	PA8989	CB6587000	BED SWITCH ASSEMBLY
4A	2		BB8587000	BRACKET, IDEC #SE9Z-HS2-BK01

MACHINE ASSEMBLY LIST

MODEL NO.: **20D103**

Title: CONVEYOR - END DRIVE - 204" SPAN
Description:

Issued for Serial No.: 22018015
Arrangement Drawing: DB9503000
Master by: FRB **DATE:** 3/8/2023
Issued By: FRB **DATE:** 3/17/2023
Revision: C **DATE:** 10/23/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	4			HEX HEAD CAPSCREW #10-32 X 1/2
	4			LOCKWASHER #10
4B	2		E16600141	PROXIMITY SENSOR, IFM #IGS252
4C	2		E16700105	CABLE, IFM #EVC006
5	1	------	DA8925127	TERMINAL BOX MOUNT PLATE
	4			HEX HEAD CAPSCREW 1/4-20 X 1/2
	4			LOCKWASHER 1/4-STD
6	1	------	BB9177000	TERMINAL BOX
6A	1	------	BB9789000	MACHINE WIRING DIAGRAM
7	1		E60000007	SAFETY LASER SCANNER, IDEC #SE2L-H05LPC
	1		E60000008	CABLE, IDEC #SE9Z-HS2-C020
	1		E60000009	BRACKET, IDEC #SE9Z-HS2-BK01

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018015		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM	**DATE:**	10/15/2023
		Issued By:	FRB	**DATE:**	3/17/2023
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	4	AA6140000		WARNING LABEL
2	2	AA6142000		SAFETY LABEL
3	4	AA6141000		CAUTION LABEL
4	1	DB9443000		FRAME WELDMENT
5	2	M10100079	*	BEARING, SKF: FY 2-7/16 TF
	8			HEX HD CAP SCREW, 5/8-11NC X 1 1/2 LG
	8			LOCK WASHER, 5/8-STD
6	1	DB2892100		DRIVE SHAFT
	1			KEY, 1/2 SQ X 3-1/2 LG.
7	2	DB1070055	*	DRIVE SPROCKET (25 T)
8	2	M20500087	*	BUSHING: BLACKSTAR: #TLK133X, 1-15/16 SHAFT
11	2	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	2			HEX HD BOLT, 1/2-13NC X 5 1/2 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018015
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM **DATE:** 10/15/2023
		Issued By:	FRB **DATE:** 3/17/2023
		Revision:	A **DATE:** 7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2			ESNA HALF NUT, 1/2-13NC
	4			FLAT WASHER, 1/2-STD
12	4	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	4			HEX HD BOLT, 1/2-13NC X 5 LG
	4			ESNA HALF NUT, 1/2-13NC
	8			FLAT WASHER, 1/2-STD
13	4	AA9085000		TAKE-UP BRACKET
14	4	BA8328043		TAKE-UP SCREW
	4			FLAT WASHER, 1/2-SAE
	4			HEX NUT, 1/2-13NC
	4			JAM NUT, 1/2-13NC
15	12	AA9084000	*	HUB SPACER
16	12	DA9050159	*	SIMPLE SPACER
17	2	CB1691137	*	WEAR STRIP
	2			HEX SOC FLAT C'SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018015		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM	**DATE:**	10/15/2023
		Issued By:	FRB	**DATE:**	3/17/2023
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
18	2	DA9192171		WEAR STRIP - WOOD
	8			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG
19	2	M11200010	*	CHAIN, ANSI: 80 X 450 PITCHES = 450"
	6	M11400052	*	CONNECTING LINK, ANSI: 80
20				NOT USED
21	1	CB66230000		TORQUE ARM
	8			HEX HD CAP SCREW, M12 x 1.75 x 30MM LG
	8			LOCK WASHER, M12-STD
	8			FLAT WASHER, M12-STD
22	1	M22500168	*	KA77DRN132S4, GEARMOTOR 7.5 HP, 2" BORE SIDE A, CONDUIT 180/X, RATIO 29.27, M1 POSITION, 480/3/60
23	1	DA9050047		FLAT WASHER
	1			LOCK WASHER, 5/8-STD
	1			HEX HD CAP SCREW, 5/8-11NC X 1-3/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9558 **Drawing: DB9442000**

Title:	CONVEYOR ASSEMBLY - 204" SPAN	**Issued for Serial No.:**	22018015
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	CJM **DATE:** 10/15/2023
		Issued By:	FRB **DATE:** 3/17/2023
		Revision:	A **DATE:** 7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
24	2	AA6847000		RUBBER DISK
25	2	AA6846000		STEEL DISK

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018015
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB **DATE:** 12/29/2014
		Issued By:	FRB **DATE:** 10/24/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

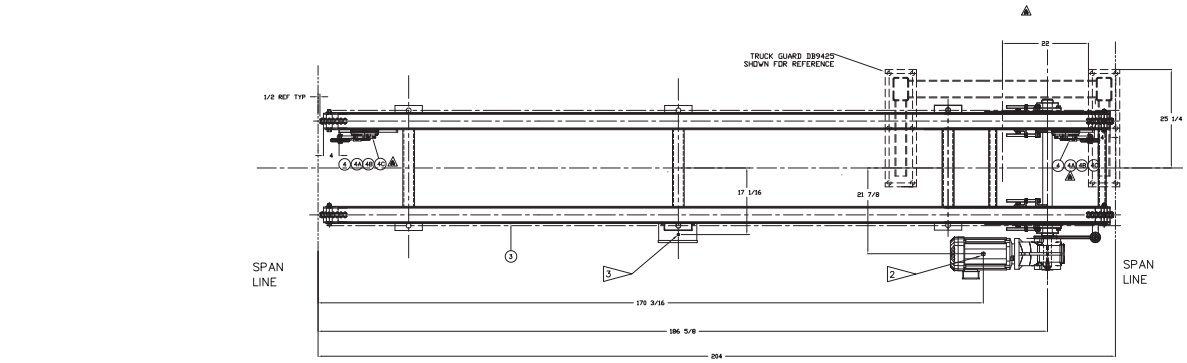
Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018015		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

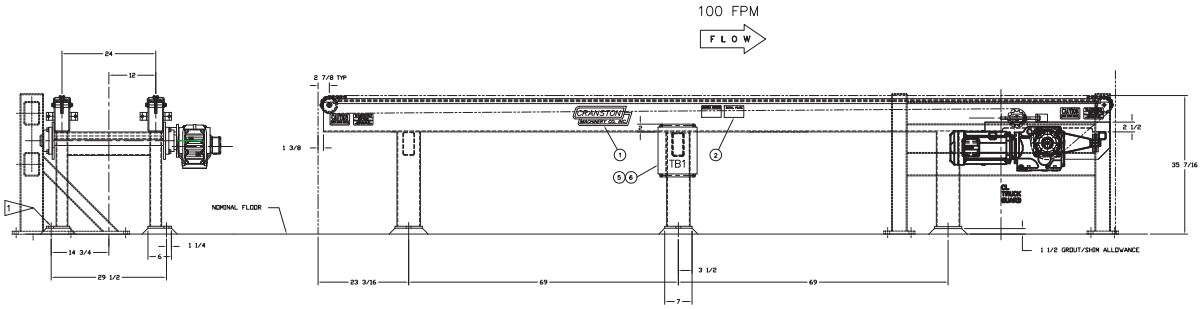
ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

NOTES:

1. ALL ANCHOR BOLTS TO BE M20x2.5 [3/4–10NC] WITH 76mm [3"] MIN. THREAD AND PROJECTION.
2. MOTOR STUB–UP
3. TERMINAL BOX STUB–UP
4. BALE SIZE IS 39 1/4" x 42" x 33" H. THE 39 1/4" DIMENSION IS ACROSS CHAINS WHEN BALE ENTERS.
5. SEE DWG DB3385 FOR TYPICAL WELDING PROCEDURES.





PLOT SCALE = 1 : 12

CMCO S/N 22018015

SYM	DATE	REVISION	BY
	04/07/2023	[illegible]	FRB
	04/07/2023	[illegible]	FRB

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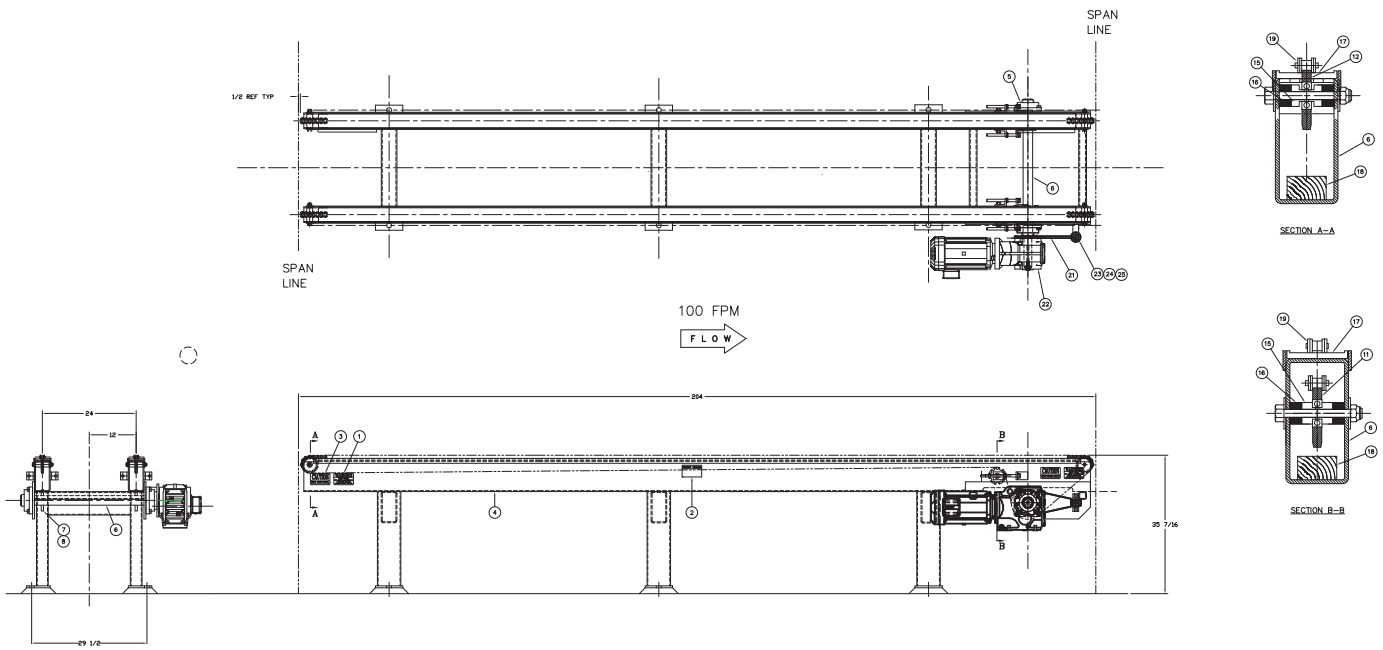
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125 microinches
Tolerances
Machining ± 1/64
Weldment
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

CRANSTON MACHINERY CO. INC.
2201 S.E. DAY GROVE BLVD.
GRESHAM, OREGON 97080
PH.(503) 804-7700 FAX (503) 804-4172
WWW.CRANSTON-MACHINERY.COM

ARRANGEMENT
CHAIN CONVEYOR – MODEL 20D

SCALE	DRAWN BY	DRAWING NO.	REV
1"=1'-0"	FRB	DB9503	A
DATE: 07MAR2023	APPROVED:	SHT 1 OF 1	

Ref Master Dwg DB8796



CMCO S/N 22018014 PA9558

SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED
Dimensions in Inches
Machined Surface Finish: 125/Machine
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .015
Angles: ± 1°

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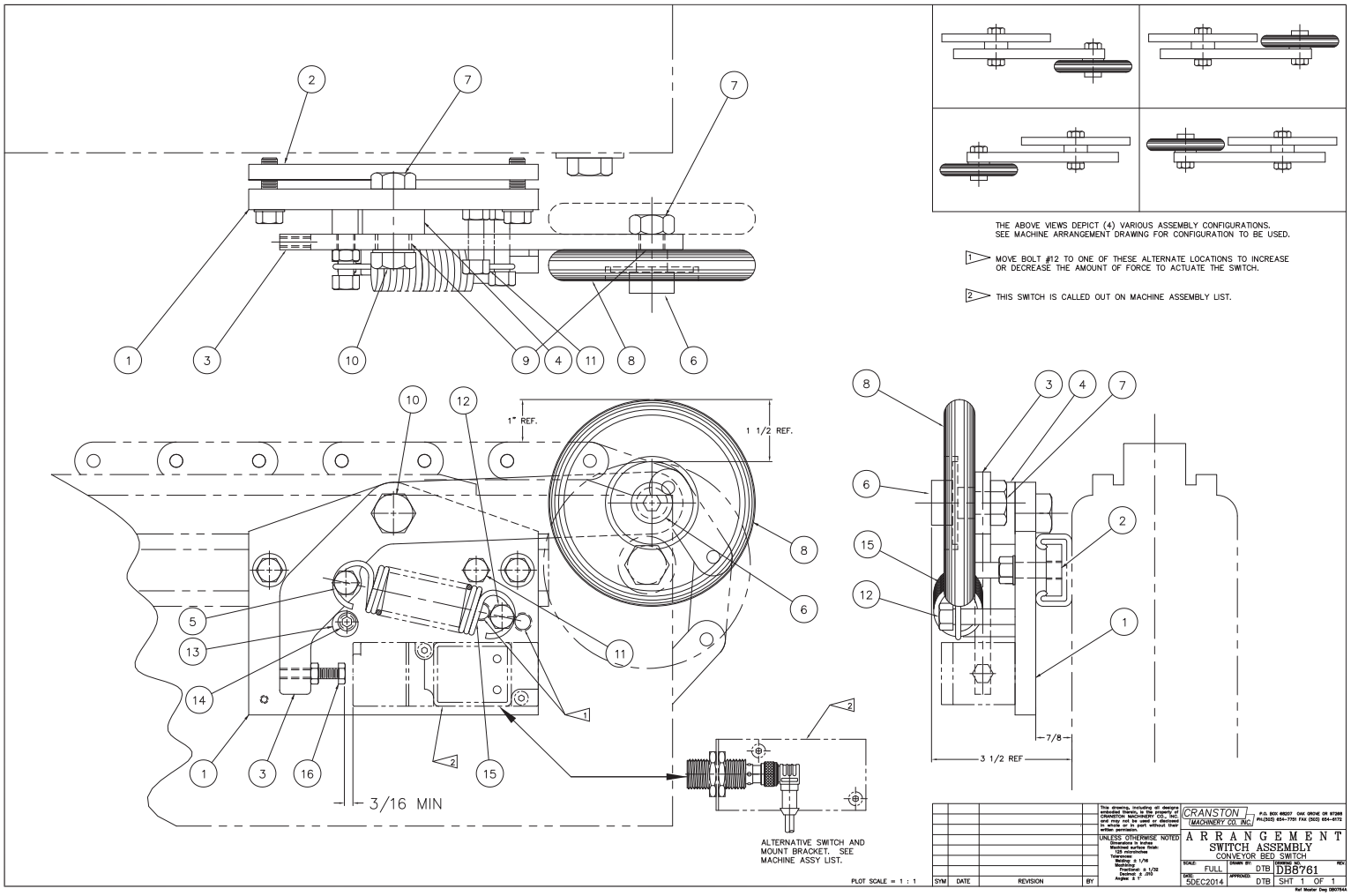
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OAK GROVE, OREGON 97267
PH.(503) 654-7701 FAX (503) 654-8172
WWW.CRANSTON-MACHINERY.COM

ASSEMBLY
CHAIN CONVEYOR – MODEL 20D

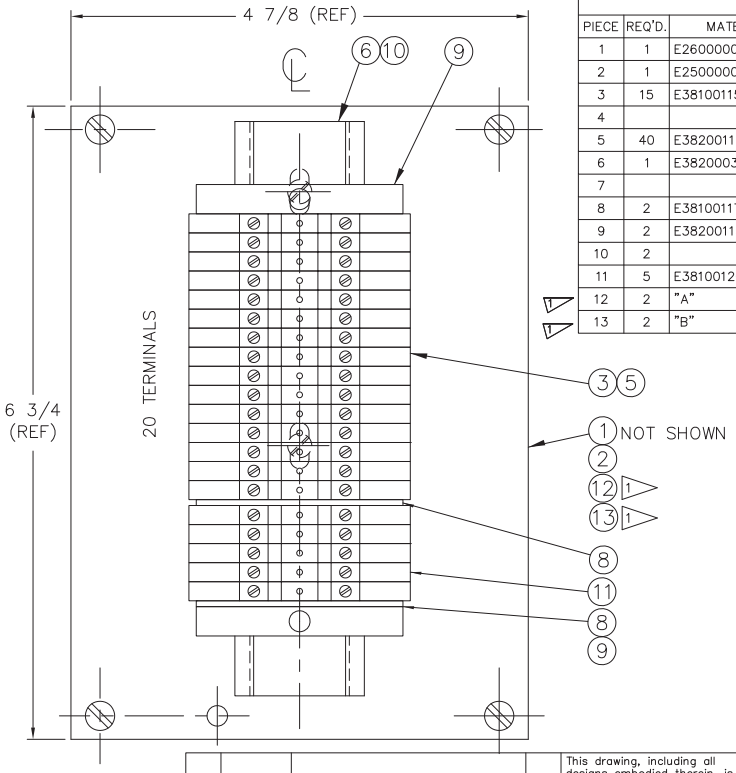
SCALE	DRAWN BY	DRAWING NO.	REV.
1"=1'-0"	CJM	DB9442	
DATE	APPROVED	SHT 1 OF 1	
10OCT2022			

Ref Master Dwg DB8798

PLOT SCALE = 1 : 12


THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
3 1/2 REF
7/8
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
SYM
DATE
REVISION
BY
CRANSTON MACHINERY CO. INC.
P.O. BOX 69207 OAK GROVE OR 97268
PH(503) 654-7701 FAX (503) 654-6172
ARRANGEMENT
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
SCALE: FULL
DRAWN BY: DTB
DRAWING NO. DB8761
REV:
DATE: 5DEC2014
APPROVED: DTB
SHT 1 OF 1

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000004	ENCLOSURE, HOFFMAN #A-806CH
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4			
5	40	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1. APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	3/23/23	ADD GRD TERMINAL NOTE	BH
A	1/26/15	ADD HIGH VOLTAGE DECAL	BH

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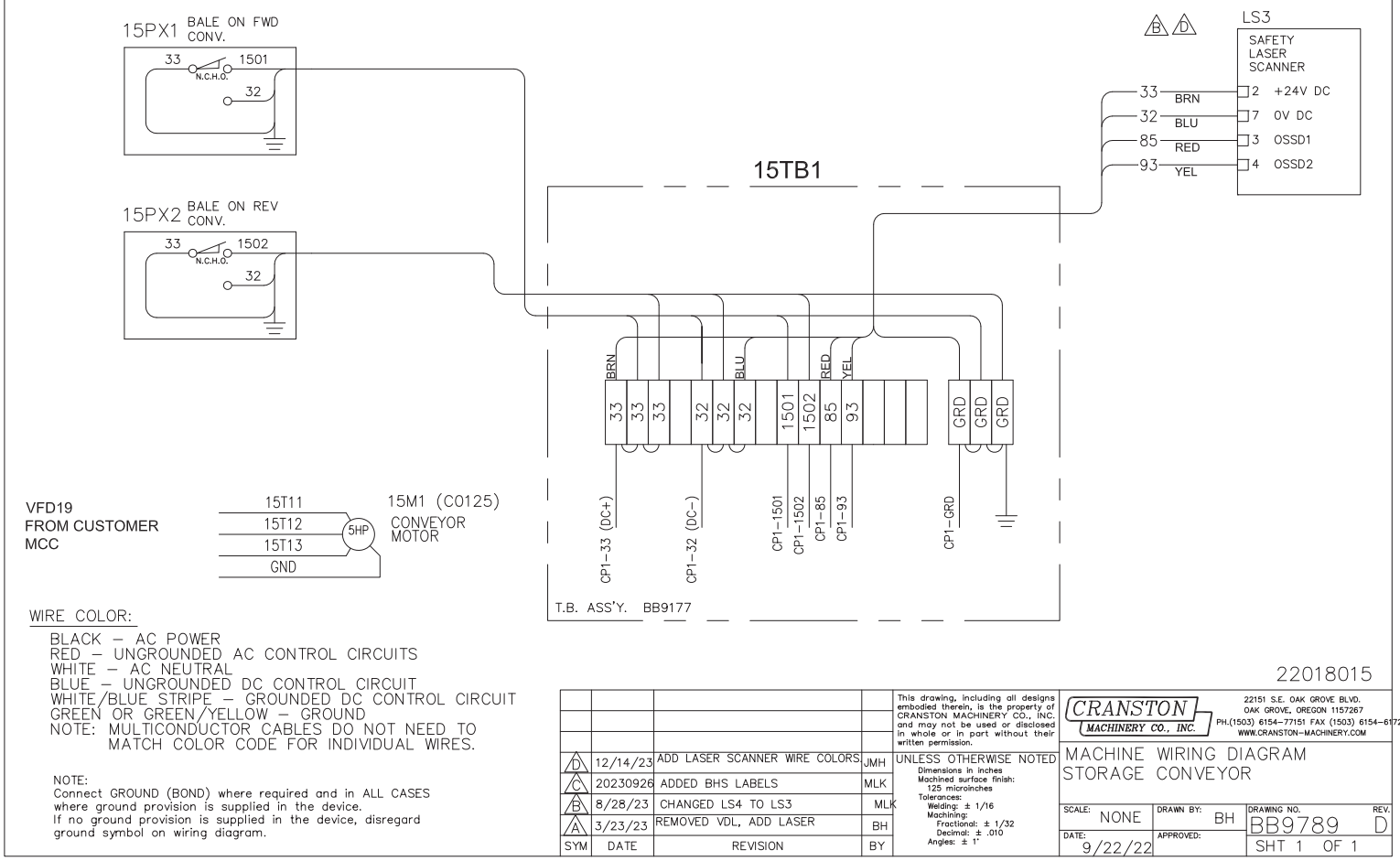
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY, 5 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9177	B
DATE: 8/27/14	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB8473



WIRE COLOR:

BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUIT
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUIT
GREEN OR GREEN/YELLOW – GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

22018015

SYM	DATE	REVISION	BY
D	12/14/23	ADD LASER SCANNER WIRE COLORS	JMH
C	20230926	ADDED BHS LABELS	MLK
B	8/28/23	CHANGED LS4 TO LS3	MLK
A	3/23/23	REMOVED VDL, ADD LASER	BH

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

CRANSTON MACHINERY CO., INC.
22151 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 1157267
PH.(1503) 6154-77151 FAX (1503) 6154-6172
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MACHINE WIRING DIAGRAM
STORAGE CONVEYOR

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	BB9789	D
DATE: 9/22/22	APPROVED:	SHT 1 OF 1	

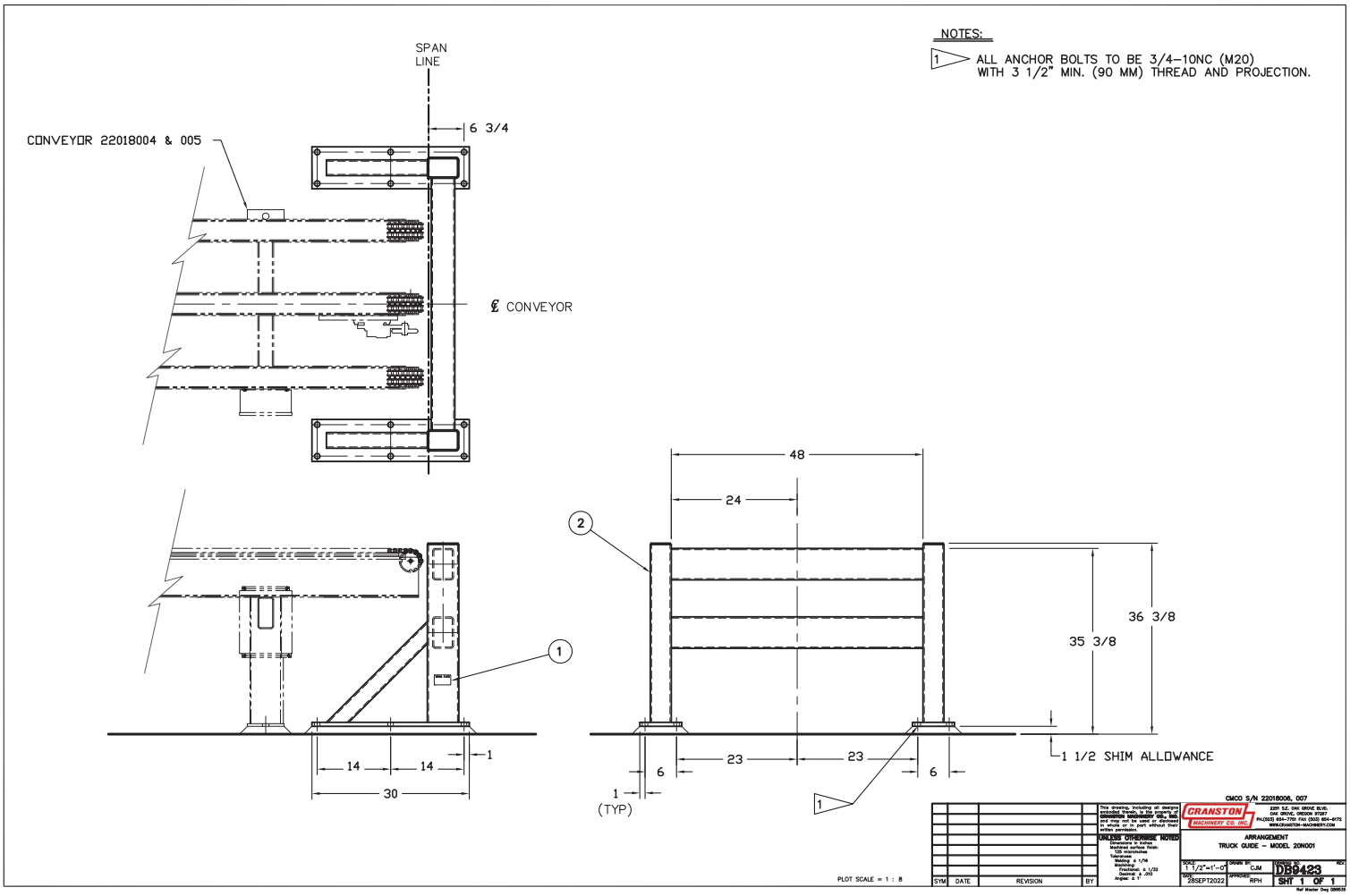
MACHINE ASSEMBLY LIST

MODEL NO.: **20N001**

Title: FORK TRUCK GUARD
Description:

Issued for Serial No.: 22018006
Arrangement Drawing: DB9423000
Master by: RPH **DATE:** 9/28/2022
Issued By: CJM **DATE:** 9/28/2022
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	------	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS
				AS FOLLOWS:
				SERIAL NO.: 22018006
				MODEL NO.: 20N001
				CUSTOMER I.D. NO.:
	4			DRIVE SCREW, #6 (.136) x 1/4" LG
2	1	------	DB9425000	WELDMENT, TRUCK GUARD


NOTES:
1 ALL ANCHOR BOLTS TO BE 3/4–10NC (M20) WITH 3 1/2" MIN. (90 MM) THREAD AND PROJECTION.
SPAN LINE
6 3/4
CONVEYOR 22018004 & 005
℄ CONVEYOR
48
24
2
36 3/8
35 3/8
1
14
14
1
30
6
23
23
6
1 (TYP)
1
1 1/2 SHIM ALLOWANCE
PLOT SCALE = 1 : 8
CMCO S/N 22018006, 007
CRANSTON MACHINERY CO. INC.
ARRANGEMENT
TRUCK GUIDE – MODEL 20N001
DB9423
SHT 1 OF 1
28SEPT2022
SYM DATE REVISION BY

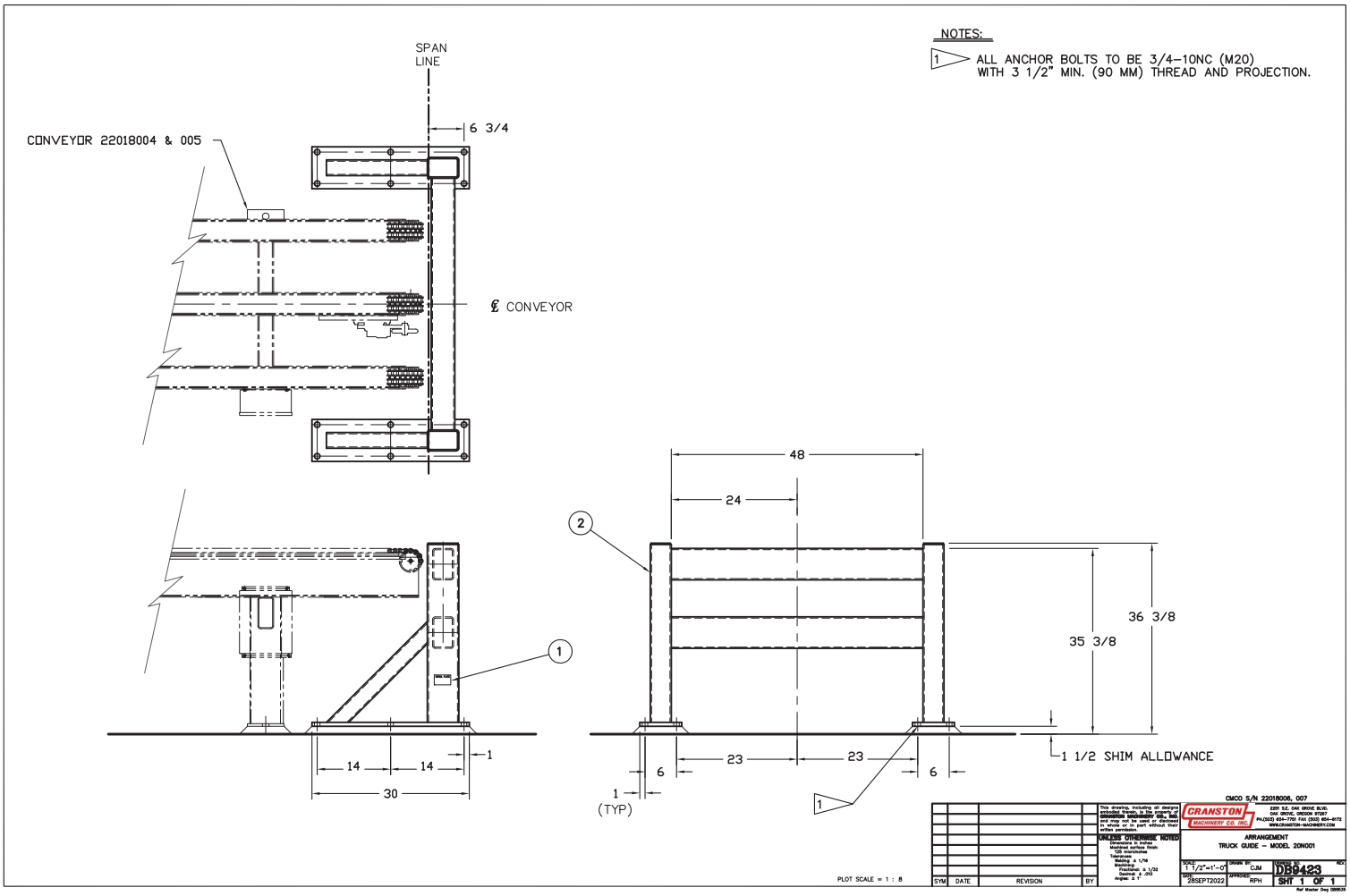
MACHINE ASSEMBLY LIST

MODEL NO.: **20N001**

Title: FORK TRUCK GUARD
Description:

Issued for Serial No.: 22018007
Arrangement Drawing: DB9423000
Master by: RPH **DATE:** 9/28/2022
Issued By: CJM **DATE:** 9/28/2022
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	------	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS
				AS FOLLOWS:
				SERIAL NO.: 22018007
				MODEL NO.: 20N001
				CUSTOMER I.D. NO.:
	4			DRIVE SCREW, #6 (.136) x 1/4" LG
2	1	------	DB9425000	WELDMENT, TRUCK GUARD


NOTES:
1 ALL ANCHOR BOLTS TO BE 3/4–10NC (M20) WITH 3 1/2" MIN. (90 MM) THREAD AND PROJECTION.
SPAN LINE
6 3/4
CONVEYOR 22018004 & 005
℄ CONVEYOR
48
24
2
36 3/8
35 3/8
1 1/2 SHIM ALLOWANCE
1
14
14
30
1
6
23
23
6
1
(TYP)
CMCO S/N 22018006, 007
CRANSTON MACHINERY CO. INC.
ARRANGEMENT
TRUCK GUIDE – MODEL 20N001
UNLESS OTHERWISE NOTED
PLOT SCALE = 1 : 8
SYM
DATE
REVISION
BY
SCALE 1 1/2"=1'-0"
DRAWN BY CJM
DRAWING NO DB9423
REV
DATE 28SEPT2022
APPROVED RPH
SHT 1 OF 1

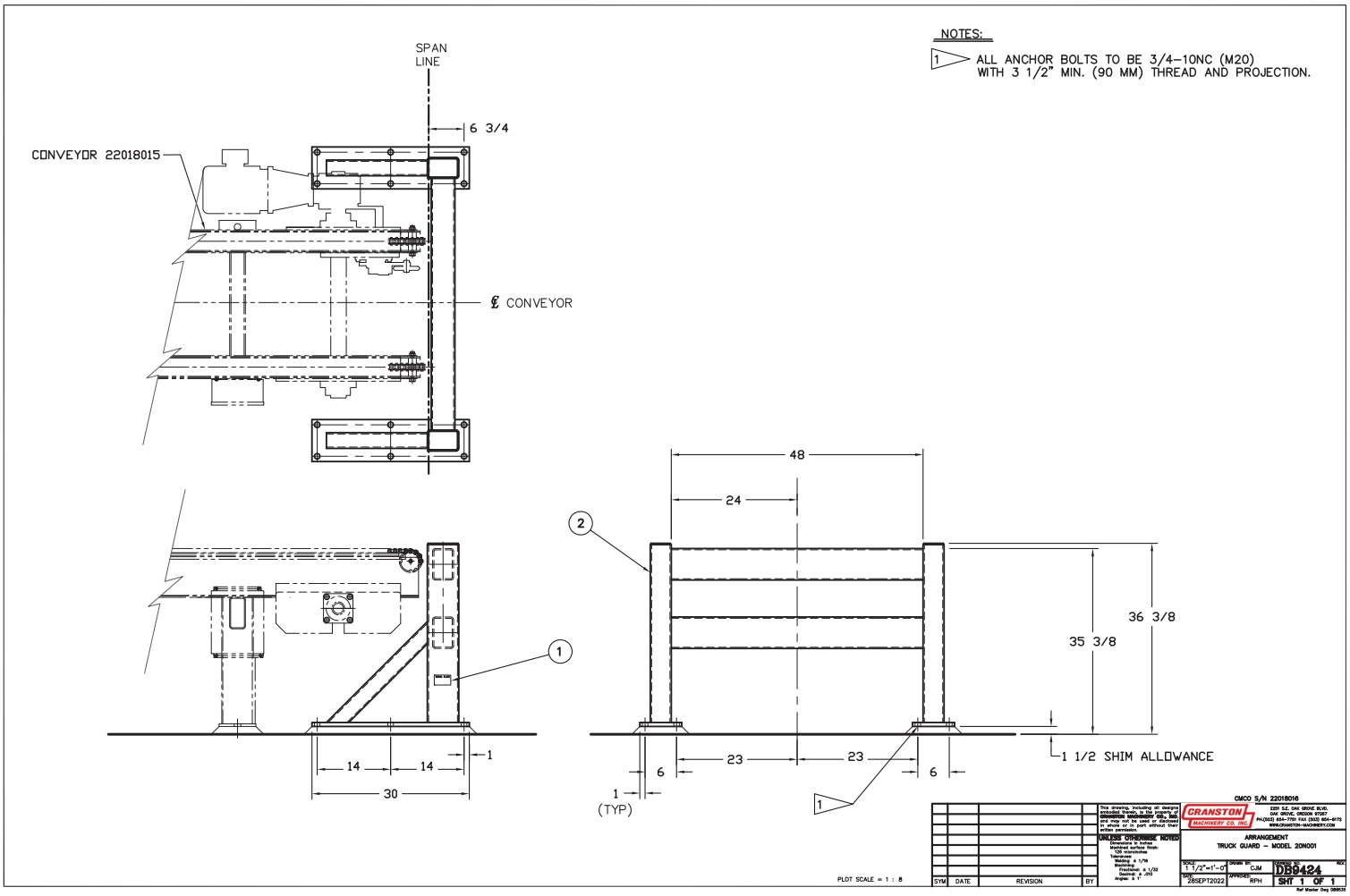
MACHINE ASSEMBLY LIST

MODEL NO.: **20N001**

Title: FORK TRUCK GUARD
Description:

Issued for Serial No.: 22018016
Arrangement Drawing: DB9424000
Master by: RPH **DATE:** 9/28/2022
Issued By: CJM **DATE:** 9/28/2022
Revision: **DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	------	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS
				AS FOLLOWS:
				SERIAL NO.: 22018016
				MODEL NO.: 20N001
				CUSTOMER I.D. NO.:
	4			DRIVE SCREW, #6 (.136) x 1/4" LG
2	1	------	DB9425000	WELDMENT, TRUCK GUARD


NOTES:
1 ALL ANCHOR BOLTS TO BE 3/4–10NC (M20) WITH 3 1/2" MIN. (90 MM) THREAD AND PROJECTION.
SPAN LINE
6 3/4
CONVEYOR 22018015
℄ CONVEYOR
48
24
2
36 3/8
35 3/8
1 1/2 SHIM ALLOWANCE
1
14
14
1
30
6
23
23
6
1 (TYP)
1
PLOT SCALE = 1 : 8
CMCO S/N 22018016
CRANSTON MACHINERY CO. INC.
ARRANGEMENT
TRUCK GUARD – MODEL 20N001
DB9424
SHT 1 OF 1
28SEPT2022
CJM
RPH

MACHINE SERIAL NO. 22018008

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SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

The Cranston model 21A021 Econorap is a fully automatic, self-contained machine designed to draw and cut one-piece wrappers directly from rolls of wrapper stock and apply them to a specific size of pulp bale. This machine applies a single ply wrapper with the overlap located on the bottom of the bale.

This wrapper dispenser incorporates electrical and pneumatic systems and includes the following:

- A one roll backstand with TIdland expanding air chucks.
- A decurler assembly that is mounted above the wrapper nip rolls and is automatically adjustable to remove curl from the wrapper stock.
- A set of wrapper nip rolls that are located below the decurler that pull the wrapper from the wrapper roll and feed it under the backstand, into the cutter assembly and onto the wrapper feed deck.
- A rotary disk type sheet cutter mounted downstream from the wrapper nip rolls that cuts the wrapper to length. The cutter cuts in both directions.
- An inclined wrapper feed deck that guides the wrapper from the cutter and into the gripper. There is a wrapper guide frame that should float ½” above the wrapper deck. The guide frame can be lifted and hung on the underside of the wrapper conveyor for maintenance.
- A wrapper bar unit that pulls the wrapper up the mast, positioning it for pick up by the bale as it passes through on the wrapper conveyor. The wrapper bar unit is chain driven by a variable frequency drive.
- A gripper unit that holds one end of the wrapper while the wrapper bar unit pulls the wrapper up the mast and into position to wrap the bale.
- The mast assembly that houses the wrapper bar unit and allows the wrapper to be vertically positioned so that the bale can pass through and begin the wrapping process.
- A line conveyor that is a three row, double strand 1” chain conveyor with an electric shaft mounted drive. This conveyor conveys the bales into and out of the econorap.
- A jump conveyor that is a four row, double strand, 3/4" pitch chain conveyor driven by an electric shaft mounted drive. This conveyor raises the bale above the line conveyor, transfers the bale to the wrapper conveyor, receives the wrapped bale from the wrapper conveyor and then lowers the bale back onto the line conveyor for discharge.
- A wrapper conveyor that is a four row, double strand, 3/4" pitch chain conveyor driven by an electric shaft mounted drive. The wrapper conveyor receives the bale from the jump conveyor as the bale passes through the wrapper curtain and then returns the bale to the jump conveyor after wrapping is completed.

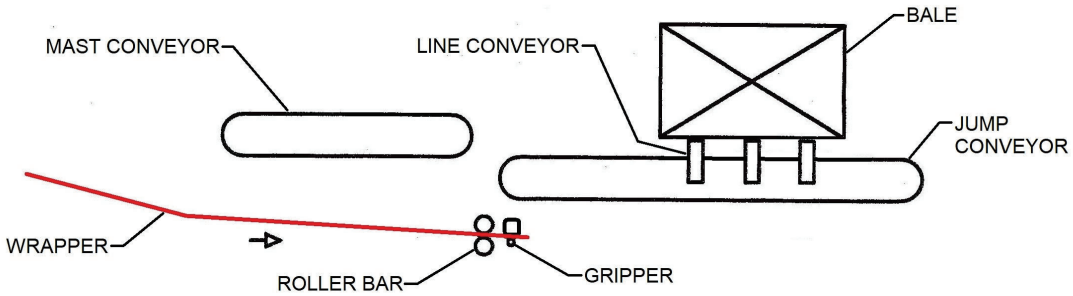
- An air bag lift module that raises and lowers the jump conveyor.

The econorap operates automatically and is electrically interlocked with adjacent equipment. The machine may be manually operated using the manual overriding controls at the touch screen.

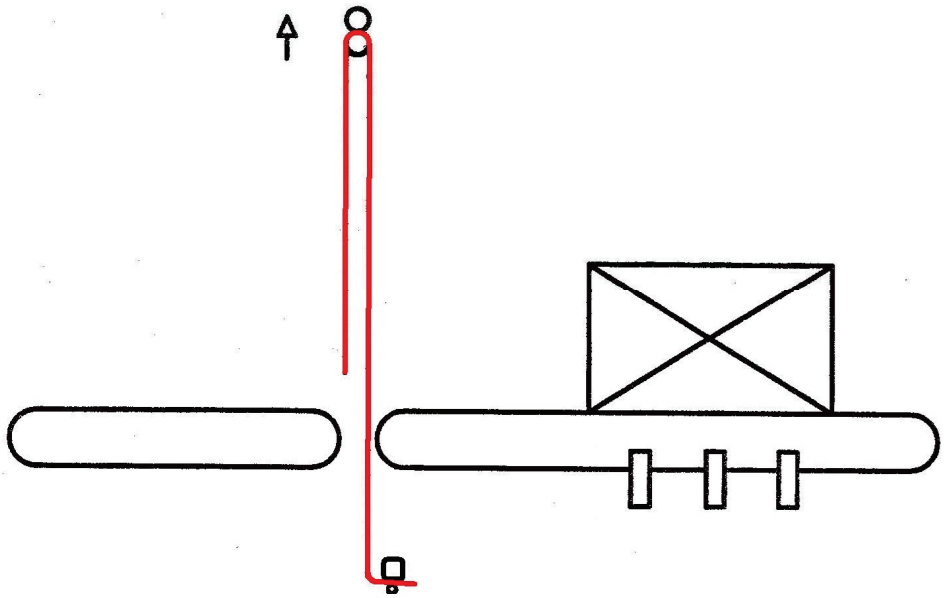
1.2--DESCRIPTION OF OPERATION

The following pages illustrate how the wrapper is applied to the bale.

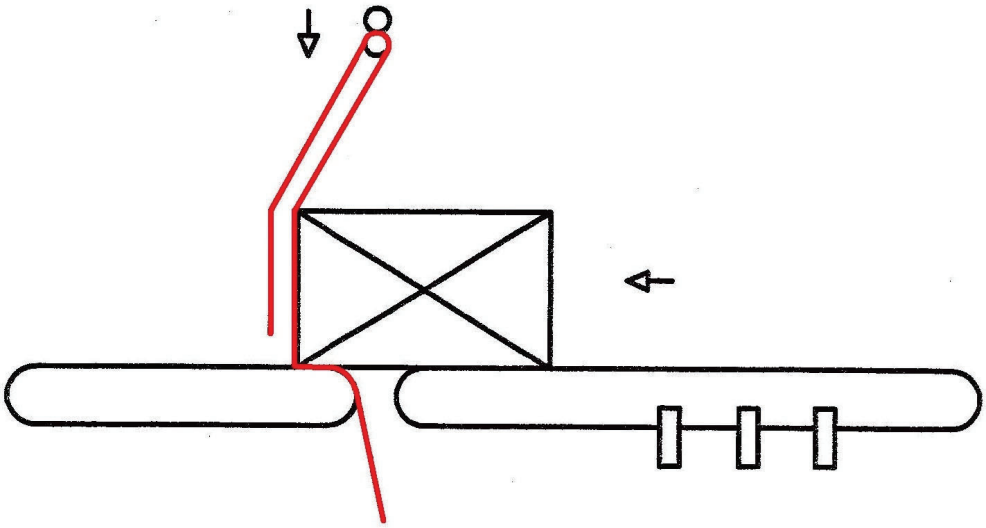
Before a bale enters the econorap, the wrapper feeds through the cutter assembly, over the wrapper guides and into the open gripper. The gripper closes, capturing one end of the wrapper and the mast begins to raise preparing the sheet to be cut. The wrapper bar assembly pulls the wrapper up and pauses, allowing the cutter to cut the paper at the proper length. Then the wrapper bar assembly continues to the top of the mast, forming a "wrapper curtain."



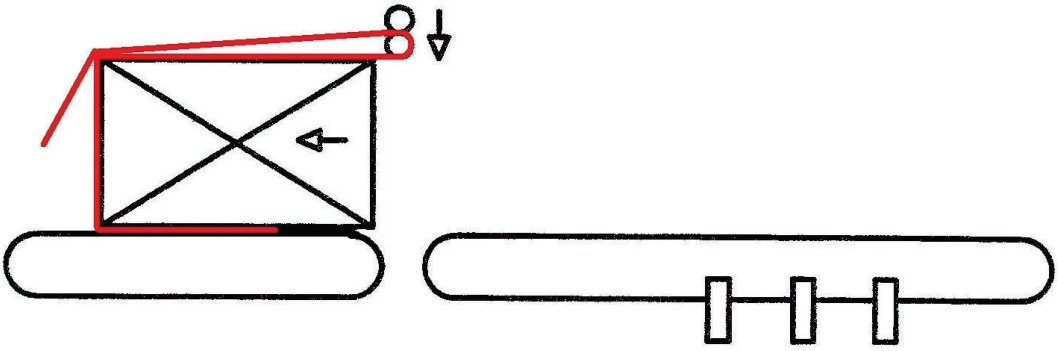
As the bale enters onto the line conveyor, it actuates a switch that stops the bale in position over the jump conveyor. The air bag inflates, lifting the jump conveyor, which raises the bale off the line conveyor. When the jump conveyor is fully raised, the downstream end of the jump conveyor will be slightly higher than the wrapper conveyor.



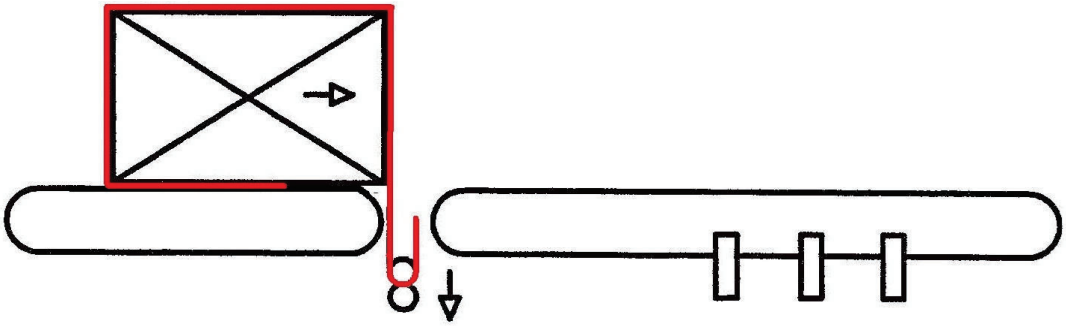
The bale now moves from the jump conveyor toward the wrapper conveyor. The bale contacts the wrapper curtain, the gripper releases the end of the wrapper, and the wrapper bar assembly starts moving downward.



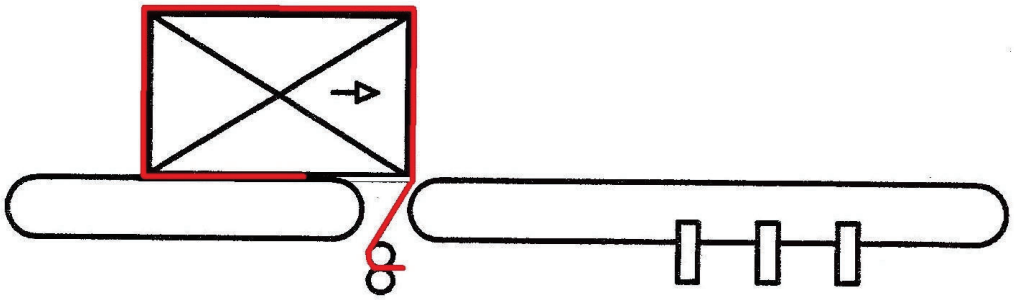
The bale continues onto the wrapper conveyor and once it is clear of the descending wrapper bar assembly, the conveyor drive stops. The wrapper bar assembly continues until it is fully down.



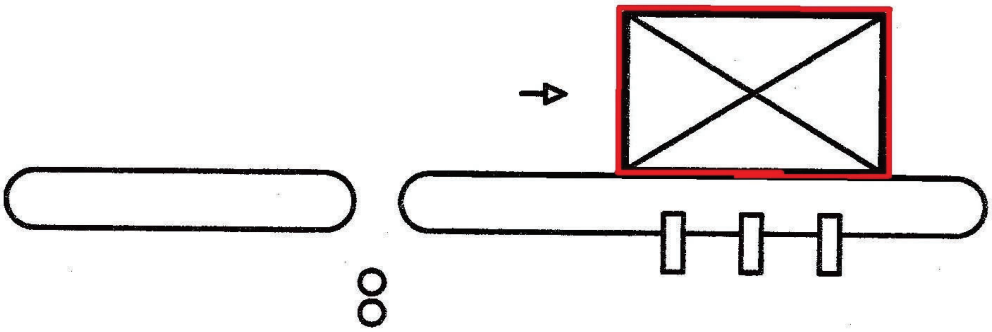
Once the tail of the wrapper is past the top of the jump conveyor, the wrapper conveyor drive starts and moves the bale back to the jump conveyor.



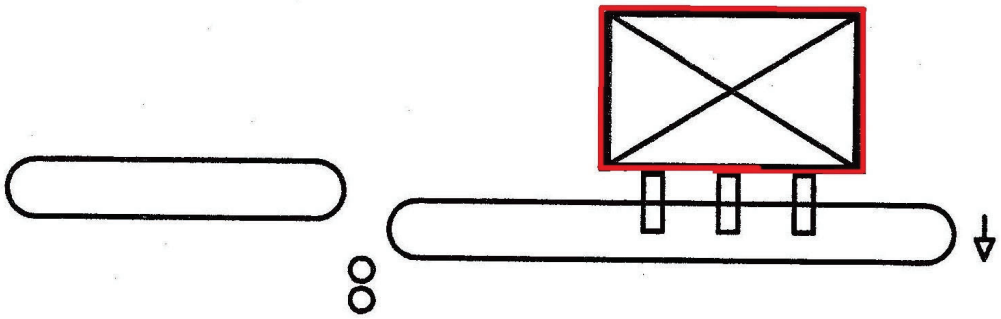
As the bale continues to move onto the jump conveyor, the wrapper bar assembly. reaches the full down position and releases the end of the wrapper.



The bale continues onto the jump conveyor until it is positioned over the line conveyor and then stops. The wrapping Is complete and the wrapper Is overlapped on the bottom of the bale.



The air bag deflates, lowering the jump conveyor down and leaving the wrapped bale on the line conveyor. When downstream equipment is ready to receive the bale it will exit the conveyor, meanwhile the Econorap prepares the next sheet for the next incoming bale.



1.3--ROLL LOADING

Before loading a roll onto the lower backstand, go to the HMI panel, screen 008 ECONORAP, and lower the scissor lift to the load position, release the roll stop brake and the chuck lugs. Then retract the left and right core chucks to the fully open position.

The lower backstand is now ready to have a wrapper roll placed onto the idle rollcase that is mounted to the scissors lift. When loading the roll with the clamp truck the operator should try to center the roll as close as possible on the idle rollcase. Once the roll is on the rollcase, the operator needs to go back to the control panel and use the scissors lift to raise the wrapper roll to a position where the center line of the wrapper roll, and the center line of the core chucks are in line. Then using the core chuck pushbuttons, extend the core chucks. The operator will need to watch the chucks as they extend toward the core to be sure that chucks insert into the core of the wrapper roll.

If the chucks do not insert into the roll core because the roll centerline is not aligned with the chuck centerline, the operator will need to raise or lower the scissors lift so alignment is obtained. Once the chucks are fully inserted into the roll, the operator should continue to hold the

switch until the chucks stop moving and then release the switch. Now using the HMI, the operator will lower the scissors lift to the down position.

Using the HMI, the operator should select de-select the lug release allowing the lugs to expand into the wrapper core.

The roll is now loaded and ready to be threaded into the machine. If the roll is not going to be threaded immediately the roll stop brake should be engaged on the HMI.

**For details on any of the above functions see HMI OPERATION section 5.4

1.4--ROLL UNLOADING

To remove a core of partially used roll from the backstand, the operator will need to use a clamp truck. **Using the scissor lift for unloading rolls may not be an option as fork truck clamps may contact and damage rollcase.**

The operator using the clamp truck should place the clamps around the roll or core and apply clamping pressure. Next, the operator will need to get off the truck, go to the HMI panel, screen 008 ECONORAP, disengage lugs and retract left and right chucks to the load position.

The operator can now get back onto the clamp truck and remove the roll or core. Make sure that both core chucks are clear of the roll or core before removing the roll or core.

**For details on any of the above functions see HMI OPERATION section 5.4

1.5--WRAPPER STOCK THREADING

The following step by step procedure for wrapper stock threading assumes that the econorap has been installed, is ready for starting up, that no bales are within the machine, wrapper roll is in the dispenser backstand, no obstructions are within the dispenser, the air pressure is turned on and electrical power is on at the machine.

1. At the touch screen, go to the ECONORAP screen and put the Econorap in manual mode.

2. On the HMI, screen 008 ECONORAP, press the buttons to release the brake pressure, manually retract the decurler, engage the core lugs, dis-engage the nip roll, and confirm the scissor lift is lowered. More details on these actions can be found in HMI OPERATION section 5.4.

3. Unroll about 4 feet of wrapper from the roll and cut the leading end of the wrapper stock at a diagonal with a short flat on the left-hand side for ease of threading. Pull the wrapper stock off the bottom of the roll and following the threading diagram on the side of the backstand, feed the wrapper around the idle roll, over the decurler roller and moveable decurler bar and into the opening between the guards covering the drive roll and pinch roll.

3a. If having difficulty threading wrapper stock through the nip rolls then the nip roll guide bar can be released using the 2 De-sta-co clamps on either side of the machine. Open the clamps, remove the bar and proceed with threading procedure. After successful threading re-install the guide and close the De-sta-co clamps. Note that wrapper forward motion and auto mode will be prevented while guard is removed.

4. Continue pushing the wrapper between the guards. The wrapper will travel between the drive roll and pinch roll and then across the cutter bar. When you can see both sides of the wrapper on the curved section of the wrapper tray you can stop threading.

5. Go to the HMI, engage the nip roll and enable brake tension, then feed about 3 feet of wrapper through the cutter. Confirm the material is coming off the roll straight and square, if not open the nip roll and adjust wrap by hand to correct and then close nip roll again. You can now put the machine into auto mode. You then have the option to go back to manual and cut the sheet that was fed, remove it from the machine and go back to Auto or press the new roll button to use the material that is there. More details on this process can be found in the HMI OPERATION section 5.4.

WARNING: BE SURE TO KEEP HANDS AND CLOTHING CLEAR OF THE WRAPPER CUTTER ASSEMBLY BEFORE CYCLING THE CUTTER.

1.6--PROXIMITY SWITCH AND PHOTOEYE SCHEDULE

The following schedule lists the proximity switches and photoeyes used on the econorap and their function.

SWITCH I.D.	GENERAL LOCATION	ACTUATED FUNCTION
PE1	AT GRIPPER	WRAPPER IN GRIPPER
PE2	BETWEEN JUMP AND WRAPPER CONVEYOR	BALE BLOCKING WRAPPER BAR
PX1	LINE CONVEYOR AT JUMP CONVEYOR	BALE APPROACHING JUMP CONVEYOR
PX2	LEFT HAND END OF JUMP CONVEYOR	JUMP CONVEYOR LOWERED
PX3	LEFT HAND END OF JUMP CONVEYOR	JUMP CONVEYOR RAISED
PX4	ENTRY OF LINE CONVEYOR	BALE ENTERING ECONORAP
PX5	EXIT OF LINE CONVEYOR	BALE LEAVING ECONORAP
PX6	JUMP CONVEYOR	BALE ON JUMP CONVEYOR
PX7	JUMP CONVEYOR NEAR MAST	BALE POSITION ON JUMP CONV
PX8	ON LOWER MAST ASSEMBLY	WRAPPER BAR LOWERED
PX9	ON LOWER MAST ASSEMBLY	WRAPPER BAR CLEAR OF BALE
PX10	ON UPPER MAST ASSEMBLY	WRAPPER IN POSITION TO CUT
PX11	TOP OF MAST ASSEMBLY	WRAPPER BAR RAISED
PX12	NEAR GRIPPER CYLINDERS	GRIPPER OPEN
PX13	WRAPPER CONV ENTRY	WRAPPER CONV BALE ON LEFT
PX14	WRAPPER CONV END	WRAPPER CONV BALE ON RIGHT
PX15	CUTTER ASSEMBLY	CUTTER EXTENDED
PX16	CUTTER ASSEMBLY	CUTTER RETRACTED
PX17	LOWER BACKSTAND	SCISSOR LIFT LOWERED
SS1	NIP GUIDE	NIP GUIDE SAFETY SWITCH

See econorap arrangement drawing for locations.

1.7--SOLENOID VALVE SCHEDULE

The following schedule lists the solenoid valves used on the econorap and their function.

VALVE I.D.	GENERAL LOCATION	FUNCTION
SV1 (A) SV1 (B)	MAST PANEL	(A) JUMP CONVEYOR LOWER (B) JUMP CONVEYOR RAISE
SV2	MAST PANEL	GRIPPER CLOSE
SV3 (A) SV3 (B)	BACKSTAND PANEL	(A) CUTTER EXTEND (B) CUTTER RETRACT
SV4	TBD	LOWER SCISSOR LIFT
SV5	BACKSTAND PANEL	(A) CHUCK LUGS EXPAND (B) CHUCK LUGS RETRACT
SV6	BACKSTAND PANEL	ROLL TENSION ENABLE
SV7 (A) SV7 (B)	BACKSTAND PANEL	(A) ROLL STOP BRAKE (B) ROLL STOP BRAKE RELEASE
SV8	BACKSTAND PANEL	CLOSE NIP ROLL

SECTION 2—ADJUSTMENTS

2.1--AIR PRESSURE

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

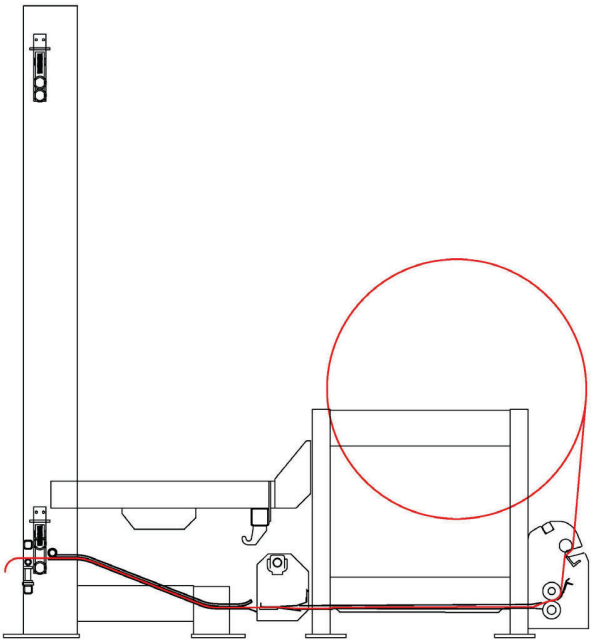
Set the air pressure with the pressure regulator to 60 psi.

2.2--WRAPPER LENGTH

The wrapper length and consequently the amount of overlap on the bottom of the bale is controlled by a proximity sensor PX10 located on the mast assembly and a configuration setting on the HMI. See HMI OPERATION section 5.5 for more details on sensor location and configuration.

2.3--WRAPPER THREADING GUIDE

The diagram below illustrates how the wrapper rolls are threaded. The machine is designed for one active backstand.



WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

2.4--DECURLER ADJUSTMENT

The decurler is automatically moved to a preset position by the program. While the decurler can be manually adjusted it will always go to the preset position on the HMI configuration screen when put into Auto mode. See HMI OPERATION section 5.5 for more details on where to set the decurler position.

2.5--WRAPPER NIP ROLLS

Wrapper nip rolls and feed wheels must be set level and perpendicular to the wrapper feed line. The pressure between the two rolls or wheels must be great enough to drive the wrapper through but not too great to cause wrinkling. Even pressure must exist from one side to the other or the wrapper will skew when feeding. To adjust nip pressure, adjust the air cylinder rods at each end.

The wrapper nip rolls are opened using the HMI, see HMI OPERATION section 5.4 for more details.

2.6--CUTTER ASSEMBLY

The cutter assembly consists of a rotary blade that travels along a fixed anvil. The cutter cuts in both directions. The rotary blade should be angled approximately 3 to 5 degrees to the cutter anvil with the leading edge of the blade touching in the direction of cut. To adjust the

angle, loosen the bolts on the bottom side of the bearing that mounts the cutter and move the cutter as required. Be sure to retighten the bolts.

2.7--WRAPPER DECK FEED

The wrapper deck guide must be locked at the bottom of the deck on both ends with lever-actuated latches. The lever is located at the bottom of the incline and operates both latches.

When the adjustment seems correct, test run a wrapper through the wheels. The wrapper should run through smoothly, evenly, and come out unmarked. Secure the bolts after adjusting.

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

2.8--DRIVE CHAIN TENSION

Drive chain tension should be adjusted to run snugly, but never tight. Excess tension will cause rapid wear on chains and sprockets.

Conveying chain tension is adjusted by positioning the idler sprocket in the conveyor tube located near the conveyor drive. Tighten the chain until it just begins to "click", then loosen until it runs quietly.

2.9--EQUALIZING CHAINS ON JUMP CONVEYOR

The equalizing (lift) chains on the jump conveyor will require occasional adjustment to compensate for chain stretch. Tighten the lift chains by turning the anchoring bolts at each end of each chain.

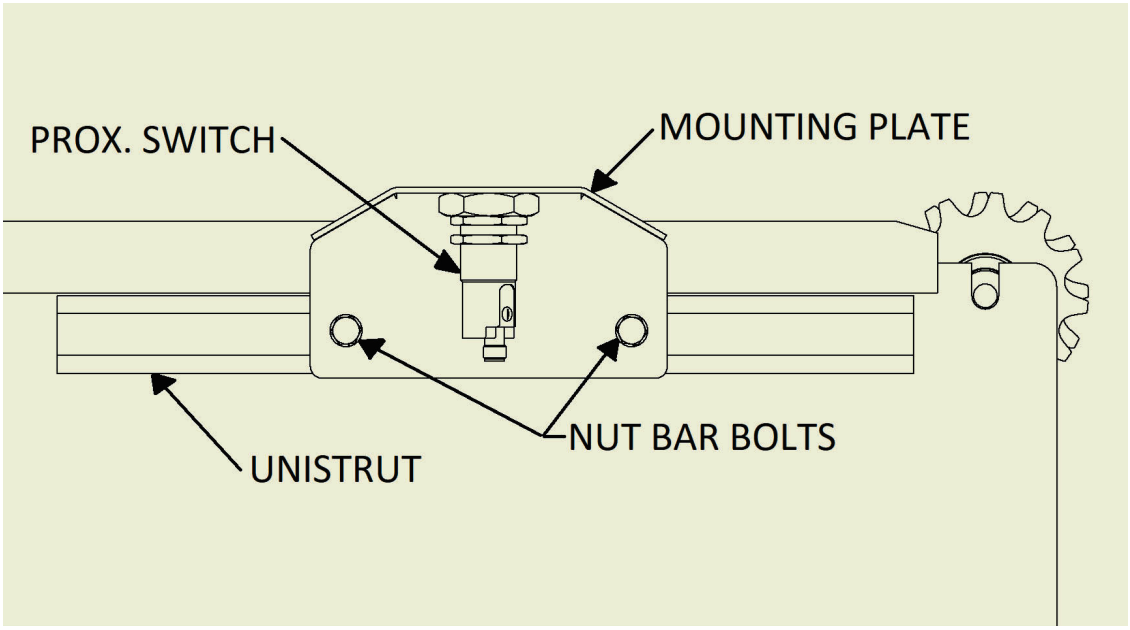
CAUTION: BOTH CHAINS MUST BE ADJUSTED EVENLY FOR BIND FREE LIFTING AND LOWERING.

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

2.10--CONVEYOR MOUNTED PROXIMITY CAPACITIVE BED SWITCHES

Proximity switches to control product movement are mounted just below the conveyor level. The passing product activates the capacitive switch which sends a signal to the plc. The height of the proximity switches may be adjusted for positive product contact. To adjust this, adjust the low-profile nuts on the proximity switch.

The hex head bolts for the nut bar can be adjusted to position the mounting plate on the Unistrut extrusion. The position will be set at fabrication but may need adjustment in the field.



BED SWITCH DIAGRAM – CHAIN NOT SHOWN

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

2.11--RAISING / LOWERING SPEEDS FOR JUMP CONVEYOR

The speeds of air bag inflation and deflation to raise or lower the jump conveyor are governed by pneumatic flow controls. Turn the flow control adjustment in or out, as needed, to provide smooth machine action and appropriate cycle time. The flow control for raising the jump conveyor is located on the manifold under valve SV1.

2.12--TENSION BRAKE

The amount of tension that is applied to the wrapper as it is pulled off the roll is controlled by the Maxcess control unit located on the right side of the backstand if facing the paper roll while standing at the roll load position.

The Maxcess unit has been calibrated at the factory. The amount of air pressure that the unit will apply to the Tidland brakes can be manually adjusted by increasing or decreasing the value of the "auto tension" input on the face of the Maxcess enclosure. This tension will vary depending upon feedback from the ultra-sonic sensor detecting the roll diameter loaded onto the machine. A larger roll will require more braking force for tension than a smaller roll.

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

ITEM	WHEN	WHAT TO DO
AIR FILTER	DAILY	DRAIN ANY AND ALL WATER, MORE THAN ONCE A DAY, IF NECESSARY.
PHOTOEYE LENS	WEEKLY	WIPE PHOTOEYE LENS CLEAN. **WARNING: NEVER WIPE LENS WHILE MACHINE IS IN "AUTO" MODE.**
GEAR REDUCERS	MONTHLY	CHECK OIL LEVEL. REFER TO VENDOR DATA SECTION FOR REDUCERS.
DRIVE CHAINS	MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL.
CONVEYING CHAINS	BI-MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL. AVOID OVER-OILING; EXCESS OIL WILL MARK THE PRODUCT.
GREASE POINTS	BI-MONTHLY	APPLY GREASE AT THE ALL GREASE FITTINGS.
CUTTER BLADE	SEMI-ANNUALLY	CHECK PERIODICALLY FOR CHIPS, DULLNESS, AND OTHER SIGNS OF WEAR.
GEAR REDUCERS	SEMI-ANNUALLY	CHANGE OIL FILL EVERY 6 MONTHS OR AS NEEDED. REFER TO VENDOR DATA SECTION FOR INFORMATION ON REDUCERS.
AIR BAGS	SEMI-ANNUALLY	INSPECT FOR LEAKS, CRACKS, HARDENING, AND OTHER SIGNS OF WEAR.

NOTE: FOR ADDITIONAL MAINTENANCE OF GEAR REDUCER, REFER TO VENDOR DATA SECTION OF MANUAL.

3.2--LUBRICANT SELECTION GUIDE

Gear reducer - Use gear oil recommended by reducer manufacturer - refer to vendor data section of manual.

Chain oil - Use any high-quality chain oil.

Grease - Use any high-quality bearing grease.

3.3--ELECTRICAL COMPONENTS

Periodically check all switches and photoeyes for secure mounting and proper adjustment. Also check the electrical connections to all solenoid valves for tightness.

3.4--CONVEYOR WEAR STRIP REPLACEMENT

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

Replace the wear strips under the conveying chains when needed in the following manner:

1. Lock out and tag motor power.

2. Loosen the conveying chains to allow access to the wear strips.

3. Remove the fasteners that anchor the wear strips pieces to the tubes.

4. Slide out the old wear strips from under the chain and slide in the new pieces.

5. Fasten each wear strip piece to the tube, being sure to leave about 1/8" clearance at each end between pieces. Fasten at one end only.

6. Re-tighten conveying chains. Adjust chain tension, if necessary (see section 2.8).

3.5--AIR BAG REPLACEMENT

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

To replace an air bag, proceed as follows:

1. With the jump conveyor in the up position, insert blocks into the frame so that when the air supply is shut off, the air bag is not compressed between the lift module base plate and the conveyor frame.

2. Turn off air supply and lock out electrical power supply.

3. Disconnect the air connection at the air bag.

4. Remove the air bag by compressing it.

5. Install the new air bag into position, re-align airbag with framework.

6. Reconnect air connection to air bag. Reconnect electrical power supply, turn on air supply and inflate air bag.

7. Remove blocks from step 1.

3.6--REDUCER REPLACEMENT

WARNING: NEVER ENTER INTO THE ECONORAP TO MAKE ADJUSTMENTS OR REPAIRS WITH CONTROLS IN "AUTO" MODE.

The eurodrive gear reducer is a shaft mounted unit. An adapter made for a flanged motor connects the electric motor to the reducer. The adapter includes a special eurodrive coupling for connecting the motor to the high-speed shaft of the reducer. The reducer also has a torque arm that is bolted to the face of the reducer and is then connected to the conveyor frame with a flexible connection that allows some movement. If during operation of the drive, you see "orbiting" motion of the motor, this is normal and should not be a cause of concern.

To remove or replace the gear reducer, first lock out power to the motor. Disconnect the wiring connection to the motor. Remove the bolt from the torque arm connection on the conveyor frame and remove the rubber spacer. Then remove the shaft cover on the outside face of the reducer. There is a 1/2-13nc bolt in the end of the drive shaft. Remove this bolt, lock washer, and spacer and set aside. Remove the snap ring that was behind the spacer and save for re-assembly. The reducer should pull off the shaft without much difficulty. However, if necessary, attach a puller and pull the reducer off the shaft.

Before replacing the reducer, we recommend using anti-seize or equal on the shaft. Re-assemble gear reducer to conveyor by reversing the above procedure.

3.7—SAFETY DEVICES

The Econorap is equipped with numerous safety devices including 2 that are in the backstand area where the roll is loaded into the machine. The first device is an area scanner which confirms that there are no personnel in the area before allowing the machine to run in Automatic mode. If the scanner detects an object or person in its field of view while running in Automatic mode, then it will immediately switch to manual mode and need to be re-started.

The second device is a safety switch sensing the presence of the nip roll guide. The switch is located on the right-hand side of the guide when facing the roll. This guide is equipped with De-sta-co toggle clamps for ease of removal and installation to either clear a jam or to facilitate ease of threading the machine. If the safety switch does not detect the presence of the nip roll guide, then auto mode will be stopped / prevented and manual motion of the wrapper motor forward (8M5) will be prohibited.

Both above conditions will cause a display to appear on the Econorap HMI screens described below in section 5.1 HMI OVERVIEW.

SECTION-4--PARTS LIST AND DRAWINGS

SECTION 5—HMI OPERATION

5.1—HMI OVERVIEW

Standard display features:



Typical motor identifier motor inactive.



Motor reverse command active.



Motor forward command active.



Typical device identifier. Proximity switch (PX), photoeye (PE), or solenoid valve (SV) identifier.



Denotes device active.

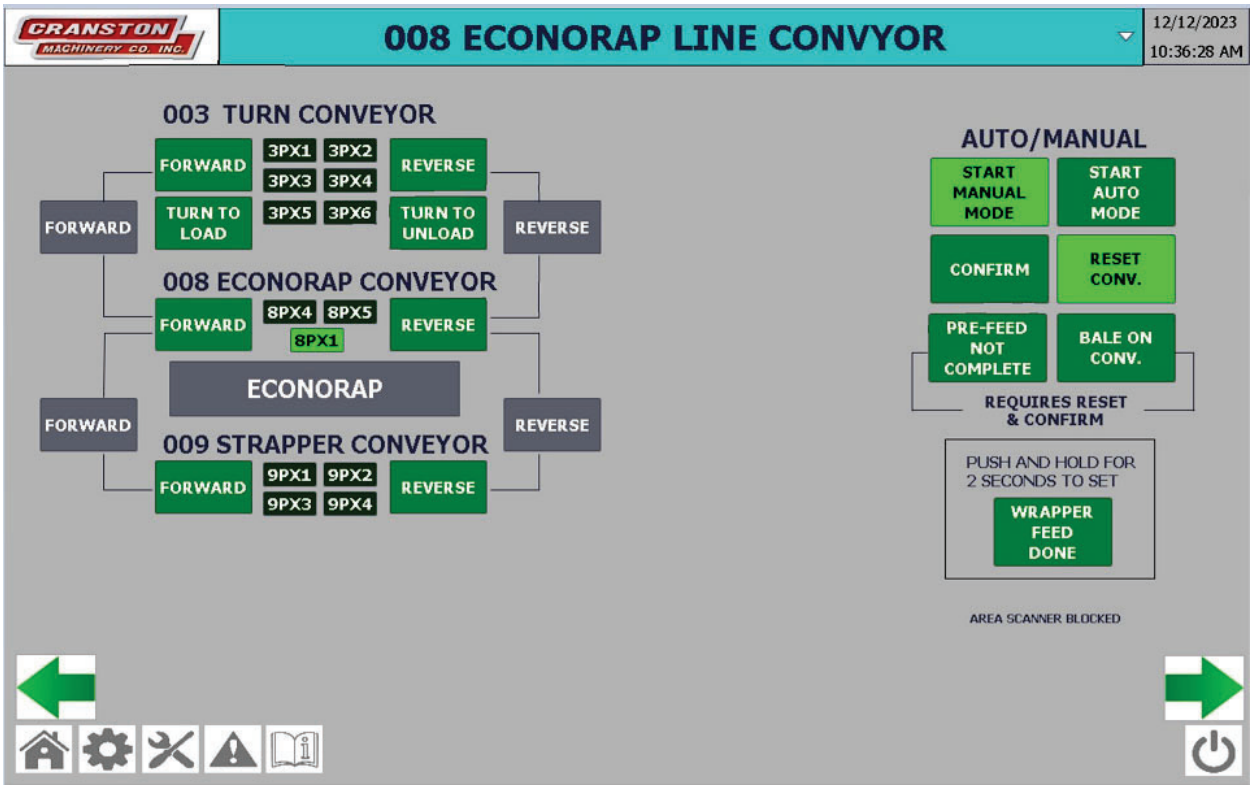


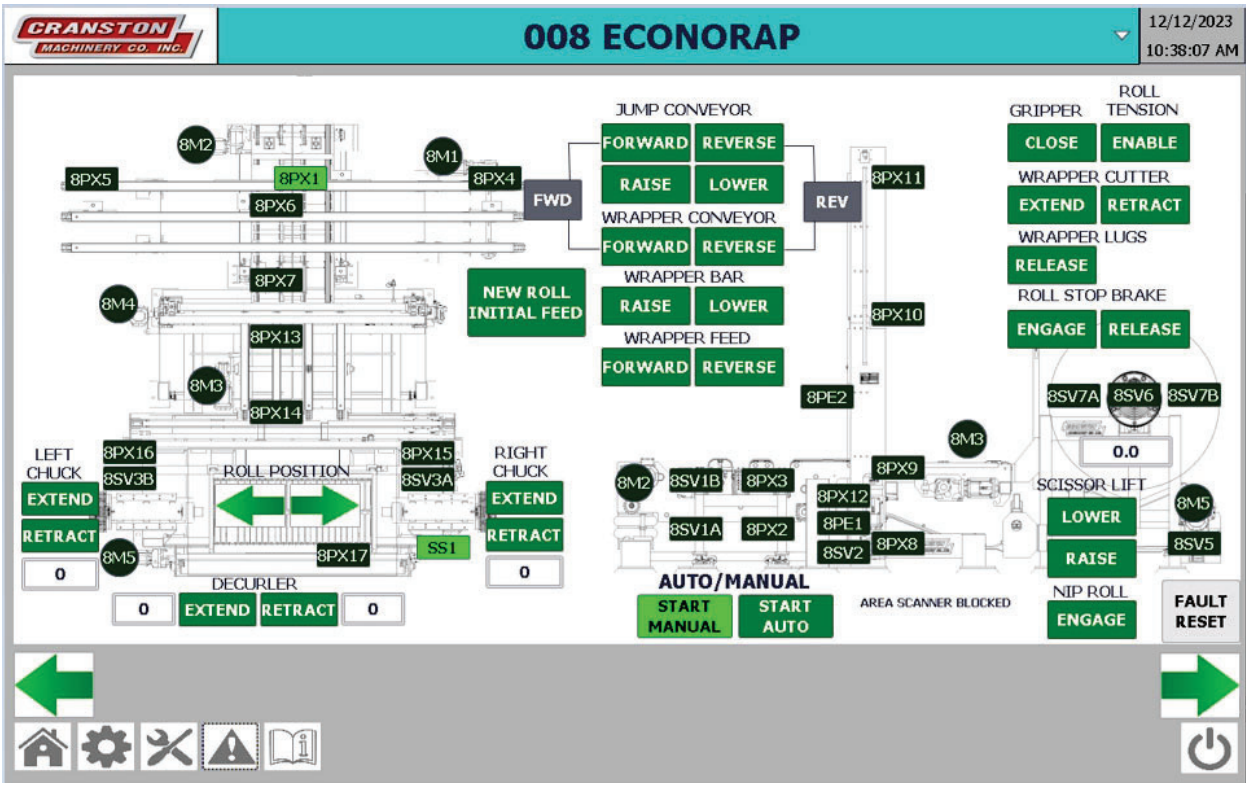


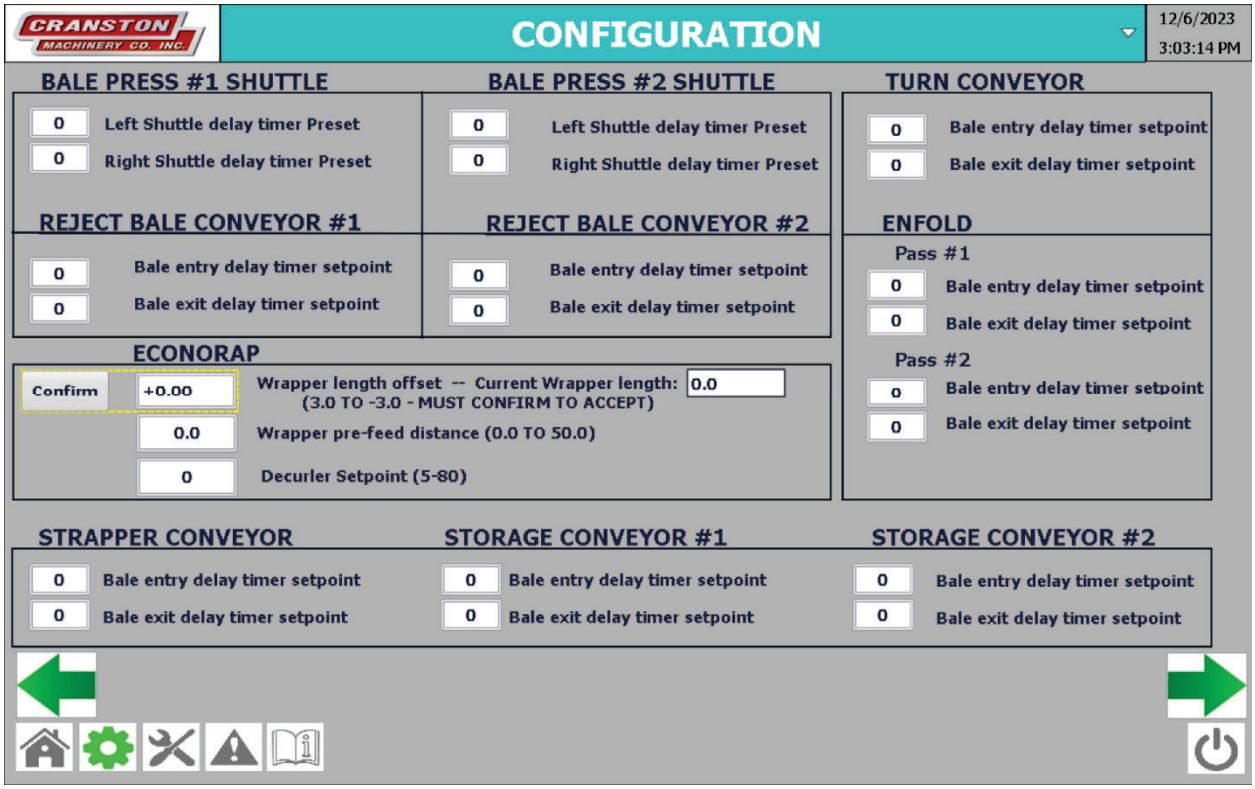


Safety device status blocks, these will only appear on the corresponding Econorap screens when either the nip guide safety device or the area scanner safety device are in a non-safe state.

5.2—SCREENS


008 ECONORAP LINE CONVYOR
12/12/2023
10:36:28 AM
003 TURN CONVEYOR
FORWARD
3PX1 3PX2
3PX3 3PX4
REVERSE
FORWARD
TURN TO LOAD
3PX5 3PX6
TURN TO UNLOAD
REVERSE
008 ECONORAP CONVEYOR
FORWARD
8PX4 8PX5
8PX1
REVERSE
ECONORAP
FORWARD
REVERSE
009 STRAPPER CONVEYOR
FORWARD
9PX1 9PX2
9PX3 9PX4
REVERSE
AUTO/MANUAL
START MANUAL MODE
START AUTO MODE
CONFIRM
RESET CONV.
PRE-FEED NOT COMPLETE
BALE ON CONV.
REQUIRES RESET & CONFIRM
PUSH AND HOLD FOR 2 SECONDS TO SET
WRAPPER FEED DONE
AREA SCANNER BLOCKED


008 ECONORAP
12/12/2023
10:38:07 AM
8M2
8M1
8PX5
8PX1
8PX4
8PX6
FWD
8PX7
8M4
NEW ROLL INITIAL FEED
8PX13
8M3
8PX14
LEFT CHUCK
8PX16
8SV3B
EXTEND
RETRACT
8M5
0
ROLL POSITION
8PX15
8SV3A
8PX17
SS1
RIGHT CHUCK
EXTEND
RETRACT
0
DECURLER
0
EXTEND
RETRACT
0
JUMP CONVEYOR
FORWARD
REVERSE
RAISE
LOWER
WRAPPER CONVEYOR
FORWARD
REVERSE
WRAPPER BAR
RAISE
LOWER
WRAPPER FEED
FORWARD
REVERSE
REV
8PX11
8PX10
8PE2
8M3
8M2
8SV1B
8PX3
8PX9
8PX12
8SV1A
8PX2
8PE1
8SV2
8PX8
AUTO/MANUAL
START MANUAL
START AUTO
AREA SCANNER BLOCKED
GRIPPER
CLOSE
ROLL TENSION
ENABLE
WRAPPER CUTTER
EXTEND
RETRACT
WRAPPER LUGS
RELEASE
ROLL STOP BRAKE
ENGAGE
RELEASE
8SV7A
8SV6
8SV7B
0.0
SCISSOR LIFT
LOWER
RAISE
8M5
8SV5
NIP ROLL
ENGAGE
FAULT RESET



5.3—ECONORAP LINE CONVEYOR SCREEN OPERATION

START MANUAL MODE This will immediately halt the automatic operation of the Econorap machine. Ideally only used when no motion is occurring and is the same state the machine goes to if either the area scanner or Nip Roll Guide safety switch is put into a non-safe state.

START AUTO MODE Used as a cycle-start, begins Econorap automatic cycle if not prohibited by any conditions.

<u>All the following buttons are only active when the Econorap is in manual mode</u>.

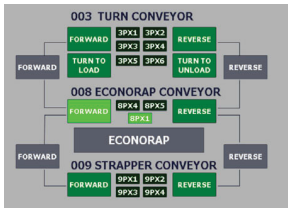
CONFIRM RESET CONV. Used together to prevent inadvertent triggering, the RESET CONV. Must be pressed first, followed by the CONFIRM button to reset certain conditions described below.

PRE-FEED NOT COMPLETE BALE ON CONV. REQUIRES RESET & CONFIRM PRE-FEED COMPLETE / NOT COMPLETE is the status of the wrapper pre-feed for the next cycle. It can be turned on or off by first pressing the button and following up with RESET CONV. And finally CONFIRM. The machine will react accordingly to what state is selected when put into auto.

BALE ON CONV is automatically turned on in logic based upon the status of automatic sequence. It can only be turned OFF from pushbuttons or a bale detected leaving the conveyor. To turn off first press the button and then follow up with RESET CONV. And finally CONFIRM. The machine will react accordingly to what state is selected when put into auto.



This button indicates if a cut sheet is hanging from the mast ready to wrap the next incoming bale. Its state can be changed by holding the button for 2 or more seconds in manual mode, changing the state will cause the sheet gripper to open or close accordingly and the machine will react to what state is selected when put into auto.



All remaining buttons and indicators on this screen are for jogging conveyors or turntables and proximity switch feedback. Note that the outer FORWARD and REVERSE buttons are used to jog 2 consecutive sections of conveyor (shown by lines connecting to the buttons) at a time to help facilitate bale positioning, while the inner buttons move only 1 conveyor section at a time.

5.4—ECONORAP SCREEN OPERATION



The 4 buttons shown here are used when loading or unloading a new roll of paper. The chucks for engaging / disengaging the roll can be individually adjusted and their positional feedback is displayed in the indicators below them.



The arrows shown on this screen are also buttons and are similar to the above pushbuttons with the exception that they move both the left and right chucks at the same time. This is to facilitate shifting the entire roll to the left or right if the wrapper does not appear to be centered on the bale. The feedback indicators shown above will also update the displayed position to give the operator an idea how far to the left or right the paper is shifted.

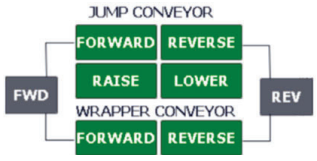


The decurler buttons are used to move the bar the paper runs over before entering the nip roller. This is usually used to facilitate a roll change out. Keep in mind that while the position can be adjusted manually, when Auto mode is selected the Decurler is going to go to a pre-set position setup in the configuration page and described further below. The indicators show the position of the 2 linear actuators that drive the decurler and should be very close to the same value.



The New Roll initial feed button is one of only a few buttons that can be used while in Auto mode. If desired, when loading a new roll, the button can be used to run the paper all the way up to the gripper located at the bottom of the mast bar. This button can be pressed before going into Auto mode and will latch in until the paper is detected in the proper location or can be pressed after Auto mode has already been started and the machine has begun its first feed. Note

that when used, the wrapper motor will continue to feed while in Auto until the sensor PE1 detects the edge of the paper at the gripper.



This group of buttons is used for control of the conveyors in and out of the econorap. The raise and lower buttons inflate and deflate the airbag to bring the jump conveyor to the raised position (height of the wrapper conveyor) or the lowered position (height of the main line conveyor). Similar to the main line conveyor buttons the outer the outer FWD and REV buttons are used to jog 2 consecutive sections of conveyor (shown by lines connecting to the buttons) at a time, while the inner buttons only move 1 section.



Used to manually raise and lower the wrapper mast bar, if the WRAPPER FEED DONE indicator on the econorap line conveyor screen is on (highlighted) then the wrapper bar must be located at the top of the mast (8PX11 on) or Auto mode will not start. If the indicator is off, then the first motion when the machine is started will be to move the wrapper bar toi the lowered position.



The buttons will move the wrapper (nip) roller in the forward or reverse direction, they are primarily used for initial feeding of a new roll or to facilitate clearing a jam. Note that if the nip guide safety switch is not made then the wrapper feed forward button will not function.



This will immediately halt the automatic operation of the Econorap machine. Ideally only used when no motion is occurring and is the same state the machine goes to if either the area scanner or Nip Roll Guide safety switch is put into a non-safe state.



Used as a cycle-start, begins Econorap automatic cycle if not prohibited by any conditions.



This button will close the gripper if it is open and re-open the gripper if pressed again. Note that if the WRAPPER FEED DONE indicator on the econorap line conveyor screen is on (highlighted) then the gripper will remain closed even in Auto mode. To open the gripper in this case the WRAPPER FEED DONE will need to be re-set. This is explained above in section 5.3.



This button is used to manually enable or disable the automatic tensioning on the roll, when pressed it will automatically release the ROLL STOP BRAKE. When the machine is put into Auto mode this becomes active.



These buttons will send the cutter from one side to the other, the cutter will cut the paper from either direction.



Used to turn on or release brake pressure from the roll in manual, typical use would be for threading a new roll into the machine.



These buttons are to raise and lower the scissor lift that the roll case is mounted on. There is no automatic operation of this device, manual actuation will need to be performed when loading a new roll.



Used to close or open the nip roll in manual mode, will be prohibited in manual if the area scanner detects personnel in the area to prevent injury. The nip roll engages on its own when entering automatic mode.

5.5—CONFIGURATION SCREEN OPERATION

The following information is entered into the CONFIGURATION (see section 5.2) screen on the HMI and used for the automatic operation of the econowrap.



The above entry can be used to modify the overall length of the bale wrapper. The nominal length of a wrapper sheet (value set to 0) is 158.5”, this input will allow changes of up to +/-3.0”. When changing this value the confirm button must be pressed afterward, at which time the popup shown below will appear to notify the operator that proximity switch 8PX10 may need adjustment in order to accomidate the new length and the Current Wrapper length will be updated to the new value.



Popup shown when confirming length adjustment.

The procedure for adjustment can be performed by inputting the desired offset, pressing confirm, and then acknowledge on the popup screen, and then running the machine in automatic. IF the machine halts in automatic mode with the mast at approximately the half-raised point then then machine should be put into manual and the proximity switch **8PX10** should be adjusted to turn on at the current mast position. The cutter could then be cycled, the Wrapper bar raised to the top position, and the WRAPPER FEED DONE button confirmed to be on. The machine can then be started again in auto.



This entry controls the amount of pre-feed the machine does after cutting a sheet for the next bale. A value of 0.0 essentially disables the pre-feed, while a value of 50.0 will run the wrapper until the next sheet almost reaches the wrapper bar assembly.



The Decurler Setpoint controls how far the decurler bar engages when auto mode is started, a value of 80 represents maximum engagement of the decurler, while a value of 0 essentially disables the decurler.

MACHINE ASSEMBLY LIST

MODEL NO.: **21A021**

Title:	ECONORAP WRAPPER DISPENSER	**Issued for Serial No.:**	22018008
Description:	SINGLE-PIECE 80" W X 150" L WRAPPER DISPENSER	**Arrangement Drawing:**	DB9406000
		Master by:	ADT **DATE:** 12/15/2022
		Issued By:	FRB **DATE:** 10/20/2023
		Revision:	H **DATE:** 11/30/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	1		DB9496000	PNEUMATIC SCHEMATIC
	1		DB9422000	MACHINE WIRING DIAGRAM
	1		DB9539000	PANEL WIRING DIAGRAM (TB1)
1	1	PA9572	DB9479000	THRU CONVEYOR
2	1	PA9579	DB9407000	JUMP CONVEYOR
3	1	PA9580	DB9466000	MAST ASSEMBLY
4	1	PA9573	DB9419000	CUTTER ASSEMBLY
5	1	PA9578	DB9433000	BACKSTAND ASSEMBLY
6	1	PA9577	DB9435000	NIP-DRIVE / DECURLER ASSEMBLY
7	5	PA9559	CB6587000	SWITCH ASSEMBLY
8	7		M25000018	NAME PLATE - CORP LOGO

MACHINE ASSEMBLY LIST

MODEL NO.: 21A021

Title:	ECONORAP WRAPPER DISPENSER	**Issued for Serial No.:**	22018008		
Description:	SINGLE-PIECE 80" W X 150" L WRAPPER DISPENSER	**Arrangement Drawing:**	DB9406000		
		Master by:	ADT	**DATE:**	12/15/2022
		Issued By:	FRB	**DATE:**	10/20/2023
		Revision:	H	**DATE:**	11/30/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
9	1		AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				MACHINE: ECONORAP
				DESCRIPTION: SINGLE PIECE WRAPPER DISPENSER
				SERIAL NUMBER: 22018008
				UNIT MODEL: 21A021
				DATE: JUNE 2023
				DRAWING: DB9406000
				PNEUMATIC: DB9496000
				ELECTRICAL: DB9422000
				DIMENSION: 205" W X 141" H X 180" L
				WEIGHT:
				VOLTAGE: 120V/1PH/60HZ
				POWER:
10	1	PA9603	N/A	METLER TOLEDO LOAD CELL SYSTEM
	32			HEX HD BOLT, 3/8-16NC X 1 5/8
	32			LOCK WASHER, 3/8 STD
	32			FLAT WASHER, 3/8 STD

MACHINE ASSEMBLY LIST

MODEL NO.: **21A021**

Title:	ECONORAP WRAPPER DISPENSER	**Issued for Serial No.:**	22018008		
Description:	SINGLE-PIECE 80" W X 150" L WRAPPER DISPENSER	**Arrangement Drawing:**	DB9406000		
		Master by:	ADT	**DATE:**	12/15/2022
		Issued By:	FRB	**DATE:**	10/20/2023
		Revision:	H	**DATE:**	11/30/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
11	1	PA8989	DB8761000	BED SWITCH ASSEMBLY
11A	1	------	BB8587000	BRACKET
	2			HEX HEAD CAPSCREW #10-32 X 1/2
	2			LOCKWASHER #10-STD
11B	1		E16600141	PROXIMITY SENSOR, IFM #IGS252
11C	1		E16700105	CABLE, IFM #EVC006
12	1		BB9853000	ECONORAP THREADING DIAGRAM
13	1		E64000007	SAFETY LASER SCANNER, IDEC #SE2L-H05LPC
	1		E64000008	CABLE, IDEC #SE9Z-HS2-C020
	1		E64000009	BRACKET, IDEC #SE9Z-HS2-BK01
	1		CB6685000	BRACKET, LASER SCANNER
14	1		BB9880000	LIFT TRUCK WHEEL STOP

PARTS LIST

PA9572 **Drawing: DB9479000**

Title:	THRU CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008
Description:	THRU CONVEYOR ASSEMBLY	**Master by:**	ADT **DATE:** 12/5/2022
		Issued By:	ADT **DATE:** 5/4/2023
		Revision:	C **DATE:** 1/8/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9408000		THRU CONVEYOR WELDMENT
2	3	CB1691138		WEAR STRIP - UHMW
	6			HEX SOC FLAT C/SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG
3	3	DA9192164		WEAR STRIP - WOOD
	6			SELF TAPPING SHEET METAL SCREW, #10 X 3/4" LG
4	18	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	9			HEX HD BOLT, 1/2-13NC X 5 1/2 LG
	9			ESNA HALF NUT, 1/2-13NC
	18			FLAT WASHER, 1/2-STD
5	18	AA9084000	*	HUB SPACER
6	9	AA9083000	*	INNER SPACER HUB
7	2	M10100080	*	BEARING, SKF: FY 1 15/16 TF
	8			HEX HD CAP SCREW, 9/16-12NC X 1 1/2 LG
	8			LOCK WASHER, 9/16-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9572 **Drawing: DB9479000**

Title:	THRU CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	THRU CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/5/2022
		Issued By:	ADT	**DATE:**	5/4/2023
		Revision:	C	**DATE:**	1/8/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
8	1	DA8819226		DRIVE SHAFT
	1			KEY, 3/8 SQ X 2" LG
9	3	BB8059004	*	DRIVE SPROCKET, 2X SINGLE STRAND, 21T
10	3	M20500079	*	BUSHING: BLACKSTAR: #TLK133X, 1-15/16 SHAFT
11	6	AA9085000		TAKE-UP BRACKET
12	6	BA8328043		TAKE-UP SCREW
	6			FLAT WASHER, 1/2-SAE
	6			HEX NUT, 1/2-13NC
	6			JAM NUT, 1/2-13NC
13	6	M11200010	*	CHAIN, ANSI: 80 X 360 PITCHES = 360"
	18	M11400052	*	CONNECTING LINK, ANSI: 80
14	1	CB6634000		TORQUE ARM
	6			HEX HD BOLT, M12 X 1.75 X 25 MM LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9572 **Drawing: DB9479000**

Title:	THRU CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	THRU CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/5/2022
		Issued By:	ADT	**DATE:**	5/4/2023
		Revision:	C	**DATE:**	1/8/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	6			LOCK WASHER, M12-STD
	6			FLAT WASHER, M12-STD
15	1	M22500158		KA57DRN100LM4, GEARMOTOR 3 HP, 1.5 BORE SIDE B, CONDUIT 0/X, RATIO 30.28, M1 POSITION, 480/3/60
16	2	AA6847000		RUBBER DISK
17	2	AA6846000		STEEL DISK
	2			SOC HD SET SCREW, 5/8-11NC X 2 LG.
	2			HALF DOG POINT
18	4	E44000020		[REF] LOAD CELL - TOL-61043208
				550KG/1.25KLBS
19	4	BB9841000		BASE PLATE - ANCHOR
20	1	BB9219000		TERMINAL BOX ASSEMBLY (8TB2)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	4			LOCK WASHER, 1/4-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9579 **Drawing: DB9407000**

Title:	JUMP CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	JUMP CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/14/2022
		Issued By:		**DATE:**	
		Revision:	E	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9480000		JUMP CONVEYOR BASE WELDMENT
2	1	DB9409000		JUMP CONVEYOR WELDMENT
3	1	BA7988060		SHAFT
4	2	M21000445		SPOCKET, ANSI: #80B17, 1-15/16 BORE, HARDENED TEETH, STD BORE WITH (2) SET SCREWS, 1 OVER KW, 1 @ 90 DEG
	2			SQUARE KEY, 1/2 X 1-1/4 LG
5	4	M10100080		BEARING, SKF: #FY 1-15/16 TFM
	16			HEX HD CAP SCREW, 9/16-12NC X 1-1/2 LG
	16			LOCK WASHER, 9/16-STD
6	8	DA90500072		SPACER, BRONZE
7	4	BB3660000		WHEEL
	4	M20100173		(REF) BEARING, SYMMCO: #SS-6274-32, 1-15/16 ID X 2-5/16 OD X 2 LG
8	6	M76000008		SET COLLAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9579 **Drawing: DB9407000**

Title:	JUMP CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	JUMP CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/14/2022
		Issued By:		**DATE:**	
		Revision:	E	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	2	DA9050160		SPACER
10	1	DA8819223		SHAFT
11	2	BB9808000		V-WHEEL GUIDE
	4			HEX HD BOLT, 3/8-16NC X 1 LG
	4			HEX NUT, 3/8-16NC
	8			LOCK WASHER, 3/8-STD
12	4	M11200020		CHAIN, ANSI #60-2, 275" LG, INCLUDING CONNECTING LINK
13	12	M11400016		CONNECTING LINK, ANSI: #60-2
14	32	BB9817000		IDLE WHEEL - 60-2 ROLLER CHAIN
	32	M10000033	*	(REF) BEARING, SKF: 5206-2RS
15	44	CA7612055		SPACER
	44			HEX HD CAP SCREW, 1/2-13NC X 1 LG
	44			LOCK WASHER, 1/2-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9579 **Drawing: DB9407000**

Title:	JUMP CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	JUMP CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/14/2022
		Issued By:		**DATE:**	
		Revision:	E	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
16	12	BB9793000		SPROCKET, IDLE
	12	M10000033	*	(REF) BEARING, SKF: 5206-2RS
17	2	CB5592000		GUIDE
	6			HEX HD CAP SCREW 3/8-16NC X 1-1/4 LG
	6			LOCK WASHER, 3/8-STD
18	2	CA8175043		THREADED ROD
	2	AA8779000		BUMPER PAD
	2	AA8504000		BUMPER PAD
19	2	M10600097		ROLLER, V-GROOVE
	2			HEX HD BOLT, PARTIALLY THREADED, 3/4-10 X 3-1/2" LG
	2			LOCK NUT, 3/4-10NC
20	4	BB7295000		STOP NUT
	4			HEX JAM NUT, 1-1/4-12NF
21	2	BB9815000		BRACKET, V-WHEEL
	8			HEX HD BOLT, 3/8-16 X 1-1/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9579 **Drawing: DB9407000**

Title:	JUMP CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	JUMP CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/14/2022
		Issued By:		**DATE:**	
		Revision:	E	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	8			LOCK NUT, 3/8-16
	16			WASHER, STD 3/8
22	4	BB9816000		WEAR STRIP, 60-2 ROLLER CHAIN
	8			SOC HD CAP SCREW, 3/8-16NC X 1 LG
23	4	M20500079		BUSHING, BIKON - LOCKING 1.9375 DIA, BS-TLK133
24	4	DB4198001		SPROCKET 60-2A35
25	2	CA7340015		CHAIN CONNECCTOR
	2			HEX NUT, 1"-8NC
	2			JAM NUT, 1"-8NC
	2			WASHER, 1"
26	2	BB3695000		IDLER SPROCKET
	2	M21000446		(REF) SPROCKET
	2	M54000003		SNAP RING, TRUARC: #N5000-187
	2	AA5610000		KEEPER
	2			HEX HD CAP SCREW, 3/8-16NC X 1" LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9579 **Drawing: DB9407000**

Title:	JUMP CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008
Description:	JUMP CONVEYOR ASSEMBLY	**Master by:**	ADT **DATE:** 12/14/2022
		Issued By:	**DATE:**
		Revision:	E **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2			LOCK WASHER, 3/8-STD
27	4	M10000021		BEARING, SKF: #6005-2RS
28	4	M80000013		TENSIONER, 60-2 CHAIN, FD-CT2204
	8			HEX HD CAP SCREW, 1/2-13NC X 2 LG
	8			FLAT WASHER, 1/2 STD
	8			LOCK WASHER, 1/2 STD
	8			NUT, 1/2 STD
29	1	M40000037		AIR BAG, FIRESTONE: SIZE 21, #W01-358-7143
	8	AA6018000		STUD (LOCTITE INTO TOP AND BOTTOM OF AIR BAG)
30	2	M11200010		CHAIN, ANSI STD: #80 X 90" LG
	4	M11400002		CONNECTING LINK, ANSI STD: #80
31	1	BB9820000		SENSOR GUARD
	2			ROUND HD CAP SCREW, 1/4-20NC X 1 LG
	2			LOCK WASHER, 1/4 STD
	2			NUT, 1/4 STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9579 **Drawing: DB9407000**

Title:	JUMP CONVEYOR ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	JUMP CONVEYOR ASSEMBLY	**Master by:**	ADT	**DATE:**	12/14/2022
		Issued By:		**DATE:**	
		Revision:	E	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
32	1	E16600157		CAPACITIVE SENSOR, 30MM, 24VDC IMF KI5306
33	1	M22500162		FA57DRN100LM4, GEARMOTOR 3 HP, 1.5 BORE, CONDUIT 0/X, RATIO 35.79, M1 POSITION, 480/3/60
	1	CA9688003		STEP KEY
34	2	M22200008		MOUNTING BUSHING, EURODRIVE: 0133485
	1			HEX HD BOLT, 1/2-13NC X 4 LG.
	2			FLAT WASHER, 1/2 STD
	1			LOCKNUT, 1/2 STD
35	2	E16600154		PROX. SENSOR, SW-PROX-40X40X54MM-DC-NO/NC EFE-IM5123
	2	E16700120		CORDSET-FEMALE-M12-STR-4P10M EVC003
36	1	AB0165000		BRACKET, PROX SWITHES, JUMP DRIVE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9467000		MAST WELDMENT
2	4	CB1691140	*	WEAR STRIP
	4			FLAT HD SOC HD CAP SCREW, 3/8-16NC X 5/8
3	4	M11200020		CHAIN, 60-2, 94" LG. (INCL. CONN. LINK)
4	16	DB4198000	*	DOUBLE SPROCKET, 18 TEETH
	16			HEX HD CAP SCREW, 5/8-11NC X 4" LG.
	32			FLAT WASHER, 5/8-STD.
	16			HALF ESNA NUT, 5/8-16NC
	16	M10000033		(REF) BEARING, NEW DEPARTURE: #55506 30MM BORE WITH 2 SHIELDS
5	32	DA8808001		SPACER
6	32	DA9050075		SPACER
7	4	M11400016	*	CONNECTING LINK, 60-2
8	1	CB6624000	*	ROLLER, IDLE, BALE TOP
	4			HEX HD CAP SCREW, 3/8-16NC X 2-1/2 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			LOCK WASHER, 3/8-STD.
9	3	BB9825000		HINGE BEARING
	6			HEX HD CAP SCREW, 1/4-20NC X 3 LG.
	6			ESNA NUT 1/4-20
	6			WASHER 1/4 STD
10	2	CA7621140		MULTI-HOLE BAR
11	4	CA7621141		SPACER
12	2	CA7544074		NUT BAR
13	4	BB9828001	*	NARROW GUIDE BAR
	16			SOC HD CAP SCREW, 1/2-13NC X 2" LG.
	16			ESNA NUT, 1/2-13NC
	8			FLAT WASHER, 1/2-STD
14	2	BB9827001	*	WIDE GUIDE BAR
	8			FLT HD SOC HD CAP SCREW, 1/2-13NC X 1-1/2" LG.
	8			ESNA NUT, 1/2-13NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	8			FLAT WASHER, 1/2-STD
15	4	BB9828000	*	NARROW GUIDE BAR
	16			SOC HD CAP SCREW, 1/2-13NC X 2 LG.
	16			ESNA NUT, 1/2-13NC
	16			FLAT WASHER, 1/2-STD
16	2	BB9827000	*	WIDE GUIDE BAR
	8			FLT HD SOC HD CAP SCREW, 1/2-13NC X 1-1/2 LG
	8			ESNA NUT, 1/2-13NC
	8			FLAT WASHER, 1/2-STD.
17	1	M22500165	*	SA67DRN90L4BE2HR/EK8C, GEARMOTOR W/BRAKE, 2 HP, 1.5" BORE SIDE "B", CONDUIT 0/X, M4 POSITION, RATIO 20.37, 480/3/60, TAPER SHAFT HTL ENCODER, 460V BRAKE, RELEASE LOCATION 303 DEG
18	1	DA9050006		SPACER
	1			HEX HD CAP SCREW, 7/16-14NC X 1-1/4 LG.
	1			LOCK WASHER, 7/16-STD.
19	1	CB3719000		TORQUE ARM

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			HEX HD CAP SCREW, M12 X 1.25 X 25MM LG.
	4			LOCK WASHER, M12-STD.
	2			SOC HD SET SCREW, 5/8-11NC X 2" LG. DOG POINT
	2			HEX JAM NUT, 5/8-11NC
20	4	AA6847000		RUBBER DISK
21	4	AA6846000		STEEL DISK
22	2	M10100099	*	BEARING, SKF: #FY 1-7/16 TF
	8			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
	8			LOCK WASHER, 1/2-STD.
23	1	BB9823000		DRIVE SHAFT
	1			KEY, 1/4 SQ X 3 LG.
24	2	DB1070043	*	SPROCKET
25	2	M20500083	*	BUSHING, BIKON: #1006-IN FOR 1-7/16 DIA. SHAFT
26	2	DB9499000		TENSION ROLL, LIFT BRACKET

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
27	2	AB0159000		SPRING STOP - PAPER GUIDE LOCK
	4			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	4			LOCK WASHER, 1/4-STD
28	2	CB2445002		CHAIN ANCHOR
	4			HEX NUT, 3/4-10NC
29	2	AA1068000	*	SPRING
30	4	AA7762000		SPRING RETAINER
31	2	BB9837000		TENSION ROLL, ROLL RETAINER
32	1	CB6615000		WRAPPER GUIDE
	4			HEX HD CAP SCREW , 1/2-13NC X 1-1/2 LG.
	8			FLAT WASHER 1/2
	4			ESNA NUT, 1/2-13 UNF
	2			HEX HD CAP SCREW, 3/8-16NC X 2-1/4 LG
	2			HALF JAM NUT, 3/8-16NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
33	2	CA8007045	*	BUMPER
	4			SOC HD CAP SCREW, 5/16-18NC X 1/2 LG.
34	1	CB6626000	*	ROLLER, IDLE, MAST LIFT BOTTOM
	4			ROLL PIN, 1/8" DIA X 2"
35	1	BB9824000		WRAPPER GUIDE LOCK
36	1	CB6625000	*	ROLLER, CONVEYOR ENG. CO., 2-1/2" DIA X 2-1/2" DIA X 11 GA. WALL FOR 3/4" HEX AXLE (NO AXLE), 68-7/16 B.F., #29935-68-7/16
	2			ROLL PIN, 3/8 DIA X 3 LG.
37	2	M76000014		SET COLLAR, 5/8" WITH 2 SET SCREWS
38	2	CA8131005	*	IDLER SPROCKET
	2			HEX HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
	2			LOCK WASHER, 5/16-STD
39	2	M10200017	*	BEARING, MCGILL: #SB-22204SS
40	2	M54000003		SNAP RING, WALDES TRUARC: INTERNAL #N5000-187

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
41	2	DA9050121		WASHER
42	1	CB3737000		IDLER BRACKET - LH
42A	1	CB3738000		IDLER BRACKET - RH
43	4	CA7621111		MULTI-HOLE BAR
	8			HEX HD CAP SCREW, 1/2-13NC X 1 3/4 LG
	8			LOCK WASHER, 1/2-STD
44	4	CA7621112		MULTI-HOLE BAR
45	4	CA7621110		MULT-HOLE BAR
46	2	BA8328045		EXTRA LONG SCREW
	2			HEX NUT, 3/4-10NC
47	2	M43000015		ROTARY LATCH, EBERHARD #8-241-L-54 LH
	4			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	4			FLAT WASHER, 1/4-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			LOCK WASHER, 1/4-STD
48	2	AB0158000		BRACKET - LATCH MOUNT
	4			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	4			FLAT WASHER, 1/4-STD
	4			LOCK WASHER, 1/4-STD
49	1	CB3721000		TORQUE ARM
	4			HEX HD CAP SCREW, M8 X 1.25 X 25MM LG.
	4			LOCK WASHER, M8-STD.
	2			SOC HD SET SCREW, 5/8-11NC X 2" LG. DOG POINT
	2			HEX JAM NUT, 5/8-11NC
50	5	BA8328038		EXTRA LONG SCREW
	5			HEX NUT, 5/8-11NC
51	1	M22500163	*	KA47DRN90L4, GEARMOTOR, 2 HP, 1.375" BORE SIDE B, CONDUIT 0/X, RATIO 21.81, M1 POSITION, 480/3/60
52	2	E16100023		REFLECTOR MOUNTING SET, IFM #E20997

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
53	1	DA9050005		SPACER
	1			HEX HD CAP SCREW, 1/2-13NC X 1 LG.
	1			LOCK WASHER, 1/2" STD.
54	2	M10100080	*	BEARING, SKF: #FY 1-15/16 TF
	8			HEX HD CAP SCREW, 1/2-13NC X 1-1/2 LG.
	8			LOCK WASHER, 1/2-STD.
55	1	DA8819225		SHAFT
	1			KEY, 1/4" SQ X 2-1/4"
56	4	DB4198003	*	SPROCKET (60-2A35)
57	1	BB9842000		TERMINAL BOX (8TB3)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			LOCK WASHER, 1/4-STD.
58	5	E16600154		PROX. SENSOR, SW-PROX-40X40X54MM-DC-NO/NC EFE-IM5123
	5	E16700120		CORDSET-FEMALE-M12-STR-4P10M EVC003
	8			SOCKET HEAD MACHINE SCREW, #10-32 X 1-1/2 LG
	8			LOCK WASHER, #10

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
59	4	BB9809000		BRACKET ASSEMBLY - SENSOR MOUNTING
60	2	M18000438		AIR CYLINDER, BIMBA: #FO-09-2.75 MT, DOUBLE ACTING, 1-1/16 BORE, 2-3/4 STROKE
	8			SOC HD CAP SCREW, #6-40NF X 3/4 LG
61	1	BB9799000		GRIP BAR
62	1	CB6597001		GRIPPER BAR, CYLINDER MOUNT
	4			HEX HD CAP SCREW, 3/8-16NC X 1" LG.
	4			LOCK WASHER, 3/8-STD
63	2	BA8328012		EXTRA LONG SCREW
	6			JAM NUT, 1/2-13NC
64	1	CB6597000		GRIPPER BAR, TOP
	4			HEX HD CAP SCREW, 3/8-16NC X 1-1/4" LG.
	4			LOCK WASHER, 3/8-STD
65	4	M20500079		BUSHING, BIKON: #1006-IN FOR 1-15/16 DIA. SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
66	1	BB9832000		SUPPORT BRIDGE
67	8	M10000107		BEARING, NICE: #3021
	8	M69100039		ROLL PIN, 1/2" DIA X 7/8 LG
68	4	M10000106		BEARING, NICE: #3014
	4	M69100040		ROLL PIN, 3/8" DIA X 1-1/8 LG
69	2	M11200040		CHAIN, ASA 60, 3/4 PITCH X 300 LG.
	4	M11400042		CONNECTING LINK, ASA 60
70	2	BB7162000		TENSION BAR
71	2	AB0154000		COMPRESSION SPRING
72	2	AB0156000		BRAKE BAND
	4			ESNA NUT, 1/4-28 UNF
	4			FLAT WASHER, WIDE 1/4
73	2	AB0157000		FRICTION BAND

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
74	2	E16000132	*	PHOTO EYE, IFM #OGP280
	2	E16700120		CABLE, IFM #EVC003
75	2	E16400021		PHOTOEYE MOUNT, IFM #E21206
76	2	AB0153000		MOUNTING BRACKET
77	3	E16400030		MOUNTING ROD, IFM #E20938
78	1	M24000005		FLOW CONTROL, PH-03250-419
79	1	M24000042		NEEDLE VALVE, PH-SP-50
80	1	M24960005		QUICK EXHAUST, PH-0R50B
81	1	M24600304		KIT-END-PLATE, H2, TERMINAL BOX, 1/2"NPT, PH-PSHU20L500P
82	1	M24100826		VALVE SOL. PARKER, H2 2 POSS, SPRING/AIR RETURN, EXT. PILOT, 24VDC, H2EVXXG0B9D
83				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
84	1	M24350020		REGULATOR-SANDWICH, H2, COMMON, PLUG-IN, 0-125PSI, PH-PS4138166CP
85	1	M24100715		VALVE-DBL. SOLENOID, H2, 4 WAY-2 POSS, 24VDC, PLUG-IN, PH-H22VXBG0B9D
86	1	M24600296		MANIFOLD-BASE, H2, 1/2"NPT, PLUG-IN, PH-PSHU1157M1P
87	2	M28000002		MUFFLER-EXHAUST, 1/2"NPT, PH-EM-50
88	1	M50000025		FILTER/REG COMBO, 1/2" NPT, METAL BOWL GUARD, 40 MICRON, PH-07E32A1A
	2	M75000051		MOUNT BRACKET, PH-PS807P
89	2	AB0160000		PULL ARM - PAPER GUIDE LOCK
	2			HEX HD CAP SCREW, #12-24NC X 3/4" LG.
	4			FLAT WASHER, #12-STD.
	2			ESNA NUT, #12-24NC
	2			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	4			FLAT WASHER, 1/4-STD
	2			ESNA NUT, 1/4-20NC
89A	1	M17000012		GAUGE, PARKER, PH-P781642

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

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PARTS LIST

PA9580 **Drawing: DB9466000**

Title:	MAST ASSEMBLY - ECONORAP	**Issued for Serial No.:**	22018008		
Description:	BULK HANDLING SYSTEMS	**Master by:**	ADT	**DATE:**	2/2/2023
		Issued By:		**DATE:**	
		Revision:	J	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
90	4	AB0161000		HINGE ARM - PAPER GUIDE
	4			HEX HD CAP SCREW, 1/2-13NC X 1 1/2" LG.
	8			FLAT WASHER, 1/2-STD
	4			ESNA NUT, 1/2-13NC
91	1	AB0167000		BRACKET, PROX SWITCH, GRIPPER
92	2	M14000159		SPRING - TENSION
93				
94				
95				
96				
97				
98				

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9573 **Drawing: DB9419000**

Title: CUTTER ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/7/2022
Issued By: **DATE:**
Revision: B **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9418000		CUTTER FRAME WELDMENT
	4			HEX HD CAP SCREW, 5/8-11NC X 1-3/4" LG.
	4			FLAT WASHER, 5/8-STD.
	4			LOCK WASHER, 5/8-STD.
	4			HEX NUT, 5/8-11NC
2	1	BB9785000		SLIDE BAR
	8			HEX HD CAP SCREW, 3/8-16NC X 1" LG.
	8			LOCK WASHER, 3/8-STD.
3	1	BB9786000		CUTTER BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1" LG.
	2			FLAT WASHER, 3/8-STD.
	2			LOCK WASHER, 3/8-STD.
4	1	AB0142000		FIXED LOWER GUIDE
	2			HEX HD CAP SCREW, 3/8-16NC X 1" LG.
	2			LOCK WASHER, 3/8-STD.
5	1	BB7063000		TOP SLIDE BEARING, CUTTER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9573 **Drawing: DB9419000**

Title: CUTTER ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/7/2022
Issued By: **DATE:**
Revision: B **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
6	1	BB9787000		FIXED UPPER GUIDE
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-STD.
7	1	BB7064000		LOWER SLIDE BEARING, CUTTER
8	1	BB7065000		CUTTER BEARING MOUNT
	4			HEX HD CAP SCREW, 3/8-16NC X 3 LG.
	4			LOCK WASHER, 3/8-STD.
9	1	BB7062000		SLIDE BEARING CYLINDER MOUNT
	8			HEX HD CAP SCREW, 3/8-16NC X 3" LG.
	4			FLAT HD SOC CAP SCREW, 3/8-16NC X 1" LG.
	8			LOCK WASHER, 3/8-STD.
10	2	AA2858000		SPACER
11	2	BB7066000		BEARING, CUTTER SHAFT
	8			HEX HD CAP SCREW, 3/8-16NC 1-1/2" LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9573 **Drawing: DB9419000**

Title: CUTTER ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/7/2022
Issued By: **DATE:**
Revision: B **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	8			FLAT WASHER, 3/8-STD.
	8			LOCK WASHER, 3/8-STD.
12	2	BA3212000		SHAFT CUTTER DISC
13	2	AA1123000		DISC CUTTER WHEEL
14	2	AA2629000		WASHER, CUTTER DISC
	2			ESNA NUT, (FULL) 3/4-10NC
15	2	E16600154		PROXIMITY SWITCH, IMF: IM5123
	2			SOCKET HD CAP SCREW, M5X0.8 X 40MM LG.
	2			FLAT WASHER, M5
	2	E16700120		CABLE, M12, STRAIGHT SENSOR CONNECTOR, FEMALE EVC003
16	1	M18300017		BAND CYLINDER, TOLOMATIC: BC220-SK100-FM2-AH2 (100" STROKE, WITH SHOCKS)
	4			HEX HD CAP SCREW, 3/8-16NC X 2-3/4 LG.
	4			HEX NUT, 3/8-16NC
	4			LOCK WASHER, 3/8-STD.
	4			FLAT WASHER, 3/8-SAE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9573 **Drawing: DB9419000**

Title: CUTTER ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/7/2022
Issued By: **DATE:**
Revision: B **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17	2	AA0660000		SPRING, CUTTER DISC
	2			FLAT WASHER, 3/4-STD.
	2			ESNA NUT, (FULL), 3/4-10NC
18	5	AB0145000		WRAPPER GUIDE BRACKET
	8			HEX HD CAP SCREW, 1/4-20NC X 1/2" LG.
	4			ESNA NUT, (FULL) 1/4-20NC
	4			FLAT WASHER, 1/4-STD.
	4			LOCK WASHER, 1/4-STD.
19	2	CA7916041		SHIM PACK
20	1	AB0163000		SUPPORT BEAM - RODLESS CYLINDER
	4			HHS 1/2-13 X 1" LG
	4			LOCK WASHER 1/2
	4			WASHER STD 1/2
21	4	BB9848000		SUPPORT BRACKET - RODLESS CYLINDER
	4			HHS 3/8-16 X 4 1/2" LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9573 **Drawing: DB9419000**

Title: CUTTER ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/7/2022
Issued By: **DATE:**
Revision: B **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			LOCK WASHER 3/8
	4			WASHER STD 3/8
	4			NUT STD 3/8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9573 **Drawing: DB9419000**

Title:	CUTTER ASSEMBLY	**Issued for Serial No.:**	22018008
Description:		**Master by:**	DEN **DATE:** 12/7/2022
		Issued By:	**DATE:**
		Revision:	B **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/13/2022
Issued By: ADT **DATE:** 6/8/2023
Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9396000		BACKSTAND FRAME, WELDMENT
2	2	BB9803000		GUIDE PIN, ROLLER CARRIAGE
3	1	M68000033		SCISSOR LIFT, SOUTHWORTH: LS8-36
4	1	AB0146000		BRACKET, PROX SWITCH
5	1	E16600154		PROXIMITY SWITCH, IFM#: EFE-IM5123
6	1	DB9444000		ROLLER CARRIAGE
7				NOT USED
8	8	BB7103000		GUIDE BAR, 3"
9	4	BB7102000		GUIDE BAR, 2"
	20			HEX HD CAP SCREW, 1/2-13NC X 2-1/2 LG.
	20			LOCK WASHER, 1/2-STD.
	8			1/8" NPT STR ZERK FITTING

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY

Description:

Issued for Serial No.: 22018008

Master by: DEN **DATE:** 12/13/2022

Issued By: ADT **DATE:** 6/8/2023

Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	4	M10000059		BEARING, SEALMASTER #MSC40, 2-1/2 BORE
11	2	CB4697000		CHUCK SHAFT
	12			HEX HE CAP SCREW, 1/2-13NC X 2-1/2 LG.
	12			LOCK WASHER, 1/2-STD.
12	2	DB9504000		ASSEMBLY, BEARING HOUSING AND BRAKE PLATE
13	2	M60000018		CHUCK, 4", PNEUMATIC, MAXCESS: 4.00-AP-RS PART# 270047491
	12			SOC HD CAP SCREW, 1/2-13NC X 3-1/2 LG.
14	2	M19000065		AIR BRAKE, MAXCESS#: 27L127812 MODEL 305-1-3
	12			HEX HD BOLT, 3/4-10NC X 5-1/2 LG.
	12			LOCK WASHER, 3/4-STD.
	12			STD NUT, 3/4-10NC
15	1	CB6616000		PAPER GUIDE, BOTTOM ACCESS
	2			HEX HD BOLT, 1/2-13NC X 2 LG.
	2			WASHER, 1/2-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/13/2022
Issued By: ADT **DATE:** 6/8/2023
Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
16	1	CB6617000		PAPER GUIDE, ENTERING FLANGE
	4			HEX HD BOLT, 3/8-16NC X 1 LG.
	4			LOCK WASHER, 3/8-STD.
17	1	BB9822000		PAPER GUIDE, BOTTOM EXIT
	4			HEX HD BOLT, 3/8-16NC X 1-1/2 LG.
	4			LOCK WASHER, 3/8-STD.
	4			STD NUT, 3/8-16NC
18	2	BB9821000		PAPER GUIDE, UPPER OUTBOARD
	4			HEX HD BOLT, 1/4-20NC 1 LG.
	8			WASHER, 1/4-STD.
	8			LOCK WASHER, 1/4-STD.
	4			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG.
19	1	CB6619000		PAPER GUIDE, UPPER CENTER
	4			HEX HD BOLT, 1/4-20NC 1 LG.
	8			WASHER, 1/4-STD.
	8			LOCK WASHER, 1/4-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY

Description:

Issued for Serial No.: 22018008

Master by: DEN **DATE:** 12/13/2022

Issued By: ADT **DATE:** 6/8/2023

Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG.
20	2	M69400039		PIN, QUICK-RELEASE, D-HANDLE, MCM# 92627A315
21	2	M18600017		LINEAR ACTUATOR, 12" STROKE, 120VAC, NOOK# CC-28 HD/E/231/AA/12/S
22	2	BA9012015		CLEVIS PIN (SHAFT)
	4			COTTER PIN, 1/8 X 1"
23	2	AB0150000		TRUNION MOUNT, SIDE A
	4			HEX HD BOLT, 3/8-16NC X 1-1/4 LG.
	4			LOCK WASHER, 3/8-STD.
	4			HEX NUT, 3/8-16NC
24	2	AB0151000		TRUNION MOUNT, SIDE B
	4			HEX HD BOLT, 3/8-16NC X 1-1/4 LG.
	4			LOCK WASHER, 3/8-STD.
25	1	M24600305		H1 END PLATE KIT, PARKER, PSHU20L510P

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/13/2022
Issued By: ADT **DATE:** 6/8/2023
Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
26	3	M24600294		MANIFOLD BASE, PARKER, H1, 3/8"NPT, PLUG-IN, PSHU1155M1P
27	1	M24600296		MANIFOLD BASE, PARKER, H2, 1/2"NPT, PLUG-IN, PSHU1157M1P
27A	1	M24600309		GASKET, MFD, PH, CLSD SUP & EXH, OPEN PILOT: PH-PSHU13P
28	1	M24350025		REGULATOR, PARKER, H1 SANDWICH, COMMON, 0-125PSI, PS4038166CP
29	2	M24100825		VALVE SOL. PARKER, H1 2 POSS, SPRING/AIR RETURN, INT. PILOT, 24VDC, H1EVXBG0B9D
30	1	M24100753		VALVE SOL. PARKER, H1 3POSS, SPRING CNTR, PORTS BLOCKED 24VDC, H15VXBG0B9D
31	1	M24100752		VALVE SOL. PARKER, H2 3 POSS, SPRING CNTR, EXHAUST OPEN, 24VDC, H26VXBG0B9D
32	1	M24100826		VALVE SOL. PARKER, H2 2 POSS, SPRING/AIR RETURN, EXT. PILOT, 24VDC, H2EVXXG0B9D
33	2	M28000002		MUFFLER-EXHAUST, PARKER, 1/2"NPT, PH-EM-50
33A	1	M28000005		MUFFLER-EXHAUST, PARKER, 3/8"NPT, PH-EM-37

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY

Description:

Issued for Serial No.: 22018008

Master by: DEN **DATE:** 12/13/2022

Issued By: ADT **DATE:** 6/8/2023

Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
34	2	M24000084		FLOW CONTROL, PARKER, 3/8"NPT, ADJUSTABLE, RIGHT ANGLE, PH-FC703-6
35	1	BB9830000		MOUNTING PLATE, PNEUMATIC
36	2	M53000408		SWIVEL, PARKER: S2102-4-4
37	1	M50100029		FILTER/REG COMBO, 1/2" NPT, METAL BOWL GUARD, 40 MICRON, PH-06E32A1A
38	2	M17000012		GAUGE, PARKER, PH-P781642
39	1	M75000051		MOUNT BRACKET PH-PS707P
40	1	M24000085		AIR NOZZLE, HAND GUN, SPEEDAIRE, #5X786
41	1	CB6585000		TERMINAL BOX ASSY (TB1)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	4			LOCK WASHER, 1/4-STD
42	1	E66000002		TENSION CONTROL, MAXCESS MAGPOWER VERSATEC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9578 **Drawing: DB9433000**

Title: BACKSTAND ASSEMBLY
Description:

Issued for Serial No.: 22018008
Master by: DEN **DATE:** 12/13/2022
Issued By: ADT **DATE:** 6/8/2023
Revision: D **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
43	1	E66100002		SENSOR, MAXCESS MAGPOWR ULTRASONIC
44	1	E66100003		REGULATOR, MAXCESS MAGPOWR CURRENT TO PRESSURE TRANSDUCER
45	1	BB9847000		SUPPORT ARM - SONIC SENSOR
46	1	E16400029		MOUNTING SET IFM

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9577 **Drawing: DB9435000**

Title:	NIP DRIVE / DECURLER	**Issued for Serial No.:**	22018008		
Description:	COMBINATION ASSEMBLY FOR BACKSTAND	**Master by:**	DEN	**DATE:**	12/12/2022
		Issued By:	ADT	**DATE:**	3/24/2024
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9474000		FRAME WELDMENT, NIP DRIVE / DECURLER
	2			HEX HD CAP SCREW, 5/8-11NC X 2" LG.
	2			HEX HD CAP SCREW, 5/8-11NC X 2-1/2" LG.
	4			FLAT WASHER, 5/8-STD.
	4			LOCK WASHER, 5/8-STD.
	4			HEX NUT, 5/8-11NC
2	1	BB9796000		NIP ROLL SHAFT, PINCH
3	1	CB6594000		DRIVE ROLL / SHAFT, RUBBER
	1			KEY, 5/16 X 5/16 X 2" LG.
	2			HEX HD CAP SCREW, 7/16-14NC X 1-1/2" LG.
	2			LOCK WASHER, 7/16-STD.
	4			HEX HD CAP SCREW, 5/16-20NC X 3/4" LG.
	4			FLAT WASHER, 5/16-STD.
	4			LOCK WASHER, 5/16-STD.
4	2	M18000260		AIR CYLINDER, BIMBA: #FOS50-0.50
	8			SOC HD CAP SCREW, 1/4-20NC X 2-1/4" LG.
	8			SAE FLAT WASHER, 1/4-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9577 **Drawing: DB9435000**

Title:	NIP DRIVE / DECURLER	**Issued for Serial No.:**	22018008
Description:	COMBINATION ASSEMBLY FOR BACKSTAND	**Master by:**	DEN **DATE:** 12/12/2022
		Issued By:	ADT **DATE:** 3/24/2024
		Revision:	C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	8			FULL ESNA NUT, 1/4-20NC
5	2	M10500024		ROD END, SHERICAL, PINCH SHAFT
6	1	CB6613000		DECURLER ROLLER, 3" X 83LG
	2			HEX HD CAP SCREW, 3/8-16NC X 3/4" LG
	2			LOCK WASHER, 3/8-STD
7	1	CB6598000		DECURLER SUB-ASSEMBLY
8	4	M10100099		BEARING, FACE MOUNT, 4 BOLT
	8			HEX HD CAP SCREW, 1/2-13NC X 1-1/2" LG.
	6			HEX HD CAP SCREW, 1/2-13NC X 2-1/4" LG.
	14			HEX NUT, 1/2-13NC
	14			LOCK WASHER, 1/2-STD
	2			HEX HD CAP SCREW, 7/16-14 X 1-1/4" LG
	2			LOCK WASHER, 7/16-STD
9	1	CB6596000		ROLLER, PINCH
	2	M69100016		ROLL PIN, 1/4 DIA X 1-3/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9577 **Drawing: DB9435000**

Title:	NIP DRIVE / DECURLER	**Issued for Serial No.:**	22018008		
Description:	COMBINATION ASSEMBLY FOR BACKSTAND	**Master by:**	DEN	**DATE:**	12/12/2022
		Issued By:	ADT	**DATE:**	3/24/2024
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	2	BB9836000		CARTRIGE, NIP ROLL
11	1	CB6595000		PAPER GUIDE, START
12	1	M22500164		GEARMOTOR, EURODRIVE: FA67DRN100L4,
13	1	DA9050005		SPACER
	1			HEX HD CAP SCREW, 1/2-13NC X 1-1/2" LG.
	1			LOCK WASHER, 1/2"
14	2	M22200008		MOUNTING BUSHING, EURODRIVE: 0133485
15	2	M18600018		LINEAR ACTUATOR, 8" STROKE, 120VAC, NOOK# CC-28 HD/E/231/AA/08/S
16	2	BA9012022		CLEVIS PIN (SHAFT), 1/2 X 2 1/8 LG
	4			COTTER PIN, 1/8 X 1"
17	2	BB9829000		TRUNNION MOUNT, 2 PIECE
	8			HEX HD BOLT, 3/8-16NC X 1-1/4 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9577 **Drawing: DB9435000**

Title:	NIP DRIVE / DECURLER	**Issued for Serial No.:**	22018008
Description:	COMBINATION ASSEMBLY FOR BACKSTAND	**Master by:**	DEN **DATE:** 12/12/2022
		Issued By:	ADT **DATE:** 3/24/2024
		Revision:	C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	8			LOCK WASHER, 3/8-STD.
18	2	CB668100		END PLATE, BRACKET
19	2	M31000021		CLAMP, OEVERCENTER, DE-STA-CO: 603
	8			HEX HD BOLT, 1/4-20NC X 5/8 LG.
	8			LOCK WASHER, 1/4-STD.
20	1	BB9878000		MOUNT KIT, SWITCH
	2			HEX HD BOLT, 1/4-20NC X 1-1/4 LG.
	2			HEX HD BOLT, 1/4-20NC X 3/4 LG.
	4			LOCK WASHER, 1/4-STD.
	4			FLAT WASHER, 1/4-STD.
	4			SCREW, #8 X 5/8 LG.
	4			LOCK WASHER, #8
21	1	E10160025		SWITCH- SAFETY, AD-SPC-111007
22	4	M30700006		HEADLESS SHOULDER SCREW (LOCATE PIN) 3/8 X 3/8 X 5/16-18

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9559 **Drawing: CB6587000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	CAPACITIVE SWITCH	**Master by:**	BH	**DATE:**	11/3/2022
		Issued By:	ADT	**DATE:**	3/24/2023
		Revision:	C	**DATE:**	11/30/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	E16600159	*	PROXIMITY SWITCH , CAPACITIVE, IFM, KI5309
	1	E16700105		CORDSET-FEMALE-M12-RT-4P-10M , EFE-EVC006
2	1	E16400029		MOUNTING BRACKET, IFM #E20874
3	1	BB9874000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9603 **Drawing:** **N/A**

Title:	METLER TOLEDO LOAD CELL SYSTEM	**Issued for Serial No.:**	22018008		
Description:	LOAD CELL SYSTEM FOR BHS BALE MAINLINE (THRU) CONVEYOR	**Master by:**	ADT	**DATE:**	4/26/2023
		Issued By:	ADT	**DATE:**	4/26/2023
		Revision:	B	**DATE:**	8/22/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	4	E44000020		WEIGH MODULE, METLER TOLEDO #61043208
				550kg/1.25K LOAD CELL, 15FT CABLE
2	1	E26500009		BOX - JUNCTION METLER TOLEDO #30206111
				MODEL AJB541M
3	1	E17400184		CABLE - INTERFACE METLER TOLEDO #30127500
				24GA 6COND 0.245OD SHIELD POLY, 25' LG
4	1	E41000024		WEIGHING TERMINAL, METLER TOLEDO #30601194
				MODEL IND360
5	1	E41100010		ADAPTER-STAND TOLEDO #22020286
6	1	CA8260000		MOUNTING STAND
7	1			TERMINAL BOX ASSEMBLY (8TB4)
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	4			LOCK WASHER, 1/4-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

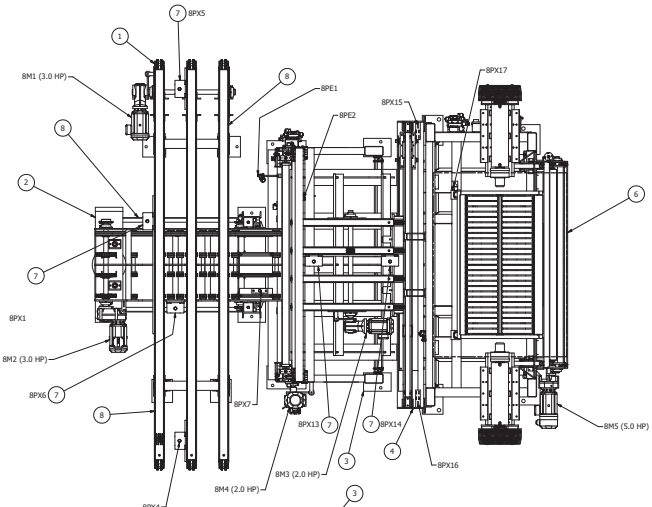
PARTS LIST

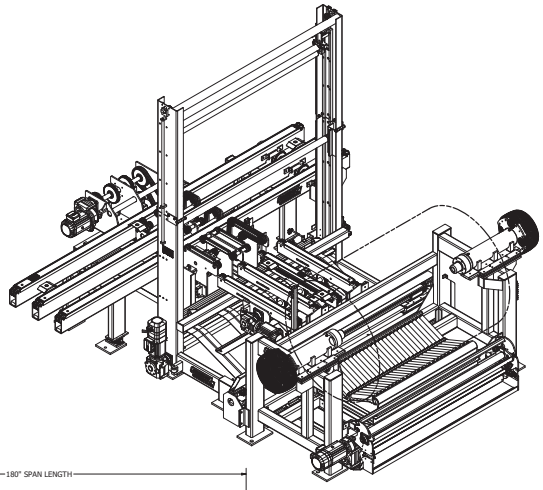
PA8989 **Drawing: DB8761000**

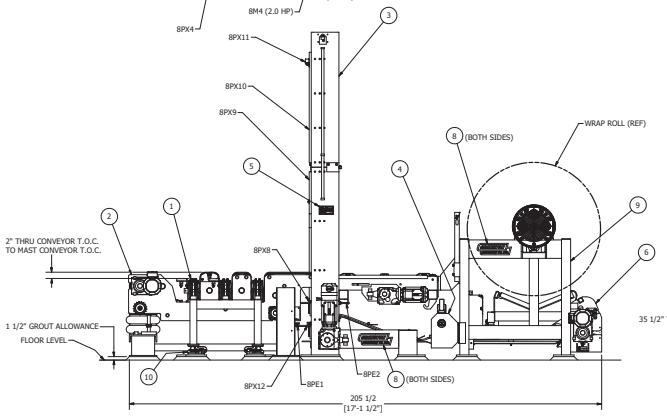
Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018008		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/24/2023
		Revision:		**DATE:**	

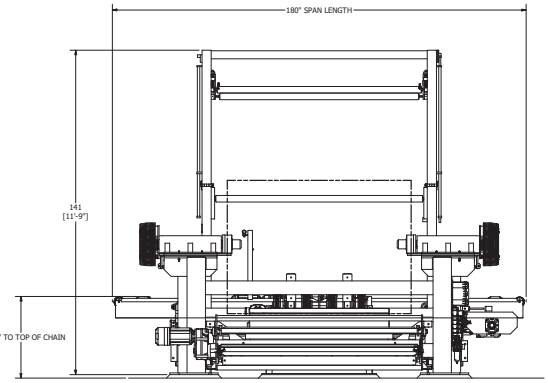
ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY









NOTES:

1. ANCHOR BOLTS Ø3/4"
2. GROUTING OR EQUIVALENT TO BE USED TO LEVEL ECONORAP MACHINERY. MAST CONVEYOR TOP OF CHAIN TO BE 2" ABOVE THRU CONVEYOR TOP OF CHAIN
3. PNEUMATIC SUPPLY TO BE 60 PSI

REV	DESCRIPTION	DATE	DESIGNER
B	UPDATED ANCHOR BOLT LAYOUT	12/8/2023	DEN
A	ADDED LOAD CELL SYSTEM TO THRU CONVEYOR.	4/27/2023	ADT

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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional ± 1/16
Machining:
Positional ± 1/32
Decimal ± .010
Angles ± 1°

CRANSTON MACHINERY CO. INC.
3201 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.6172

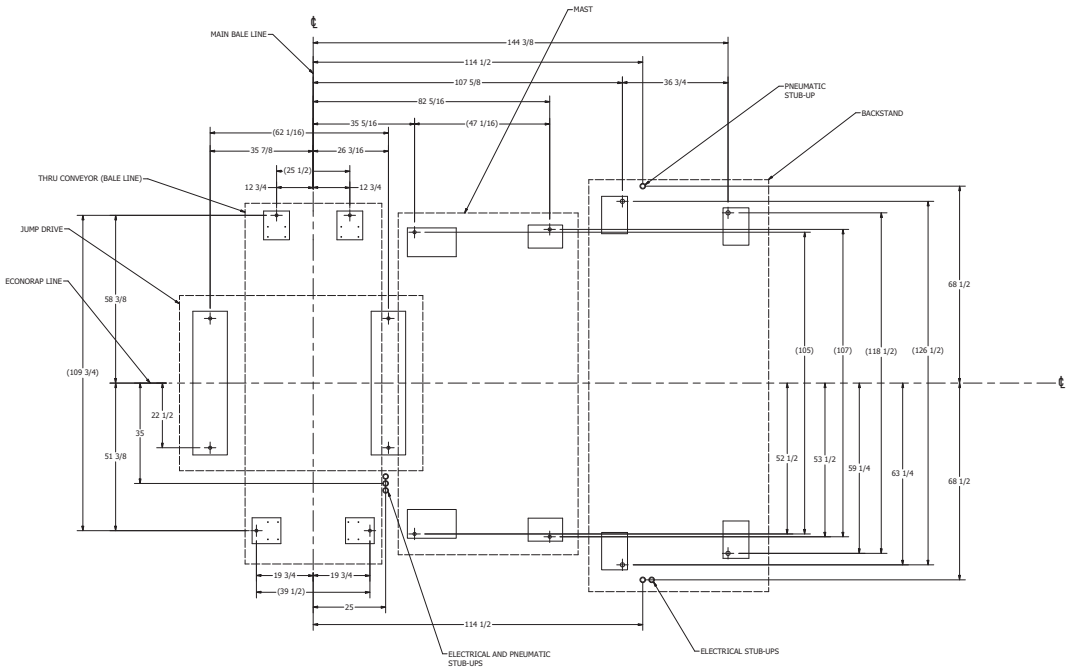
ECONORAP

ARRANGEMENT

SCALE:	DRAWN BY:	PROJECT NO.	REV.
1 / 20	ADT	DB9406	B
DATE: 9/7/2022	APPD:	SHT 1 OF 2	

REF. DWG:

BASE PLATE / ANCHOR BOLT LAYOUT:



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UNLESS OTHERWISE NOTED:
Dimensions in inches
Tolerances:
Fractional ± 1/32
Angular: ± 1°
Machining
Two Place Decimal ± .010
Three Place Decimal ± .005 minimum/inches
Welding ± 1/16

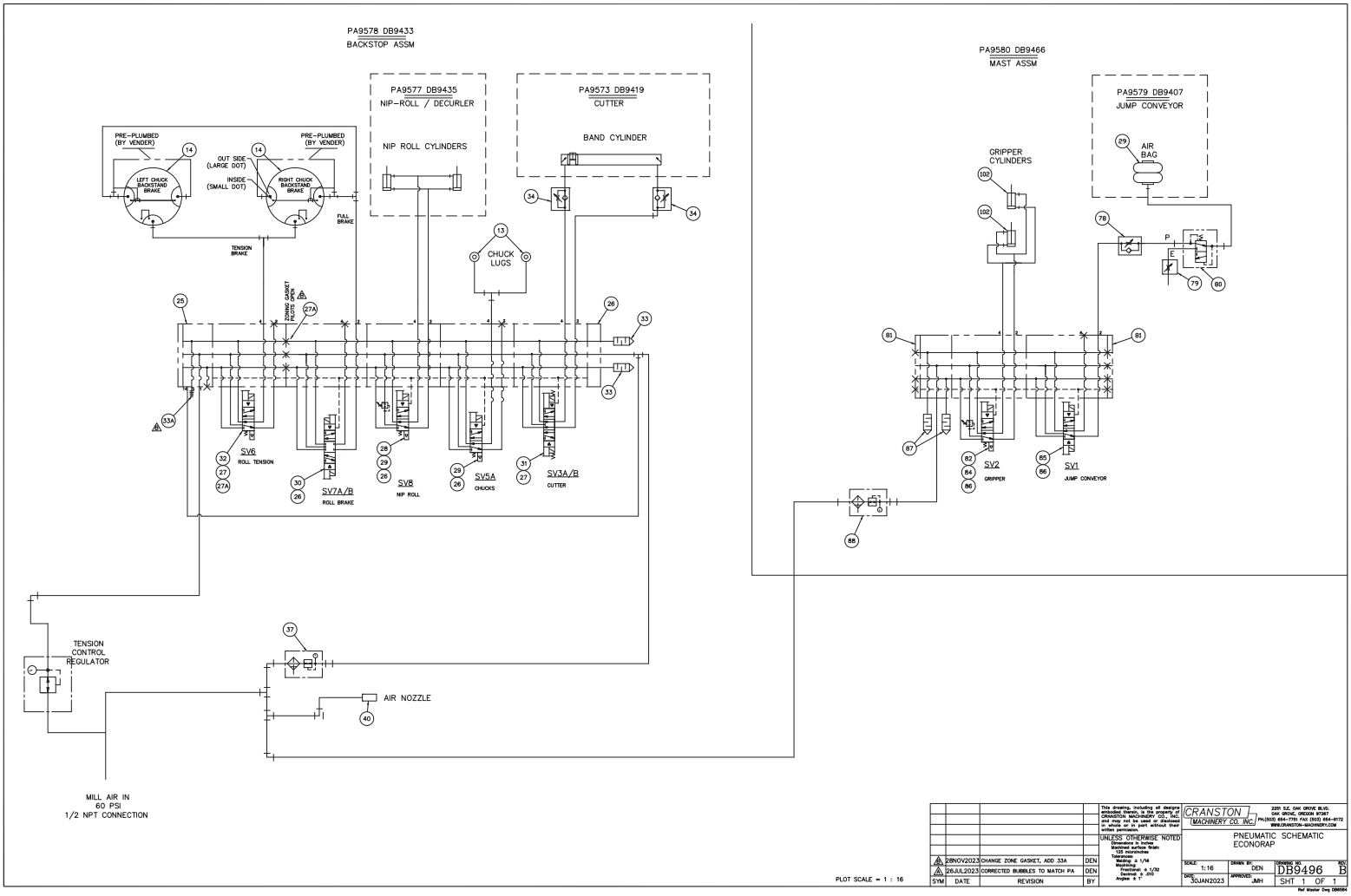
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2231 S.E. OAK GROVE BLVD.
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ECONORAP

DETAILS

SCALE:	DWN. BY:	DRAWING NO.	REV.
1/16	ADT	DB9406	B
DATE: 9/7/2022	APPD:	SHT 2 OF 2	

REF. DWG:



PLOT SCALE = 1 : 16

SYM	DATE	REVISION	BY
1	28NOV2023	CHANGE ZONE GASKET, ADD 33A	DEN
2	26JUL2023	CORRECTED BUBBLES TO MATCH PA	DEN

UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

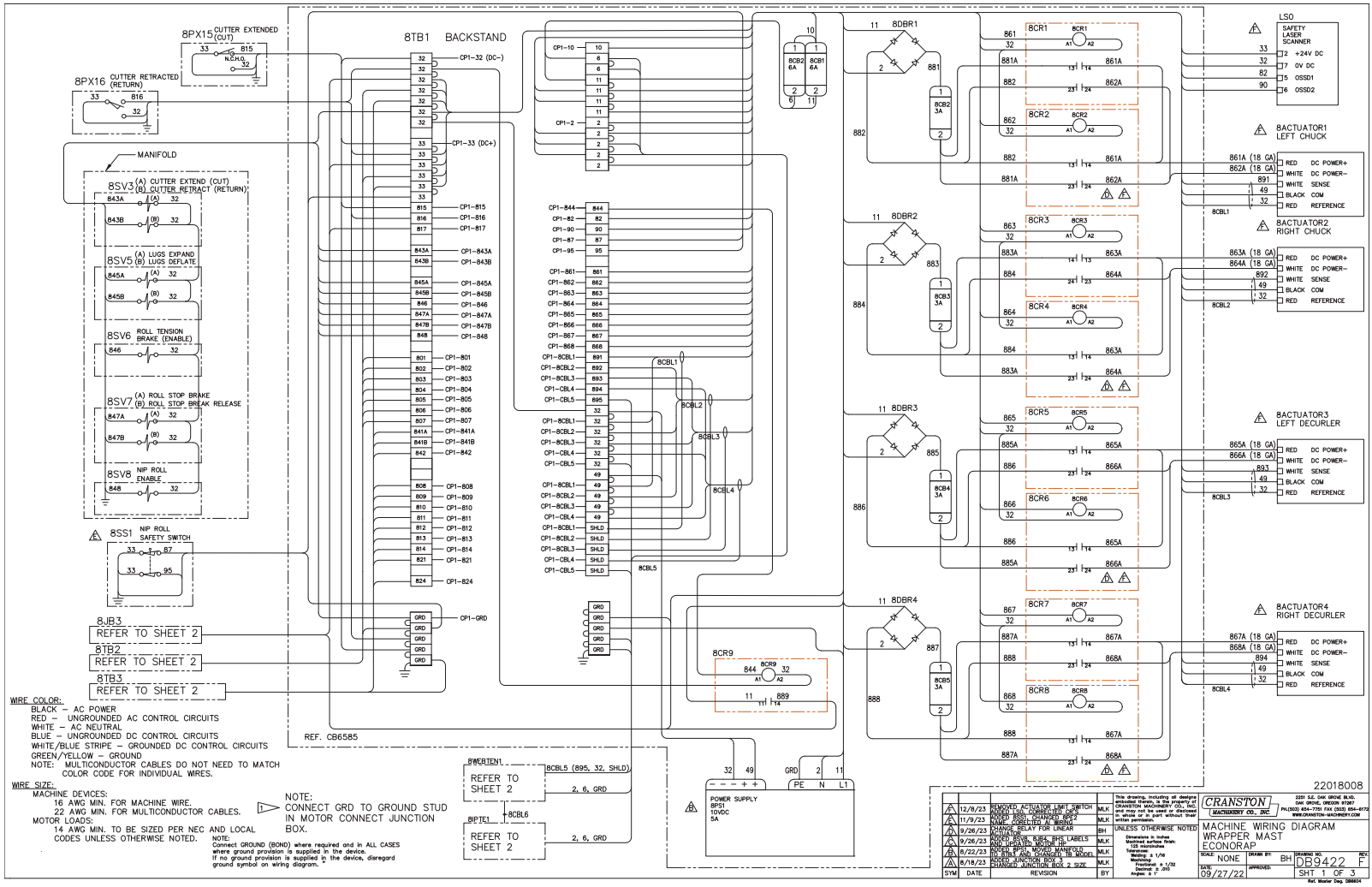
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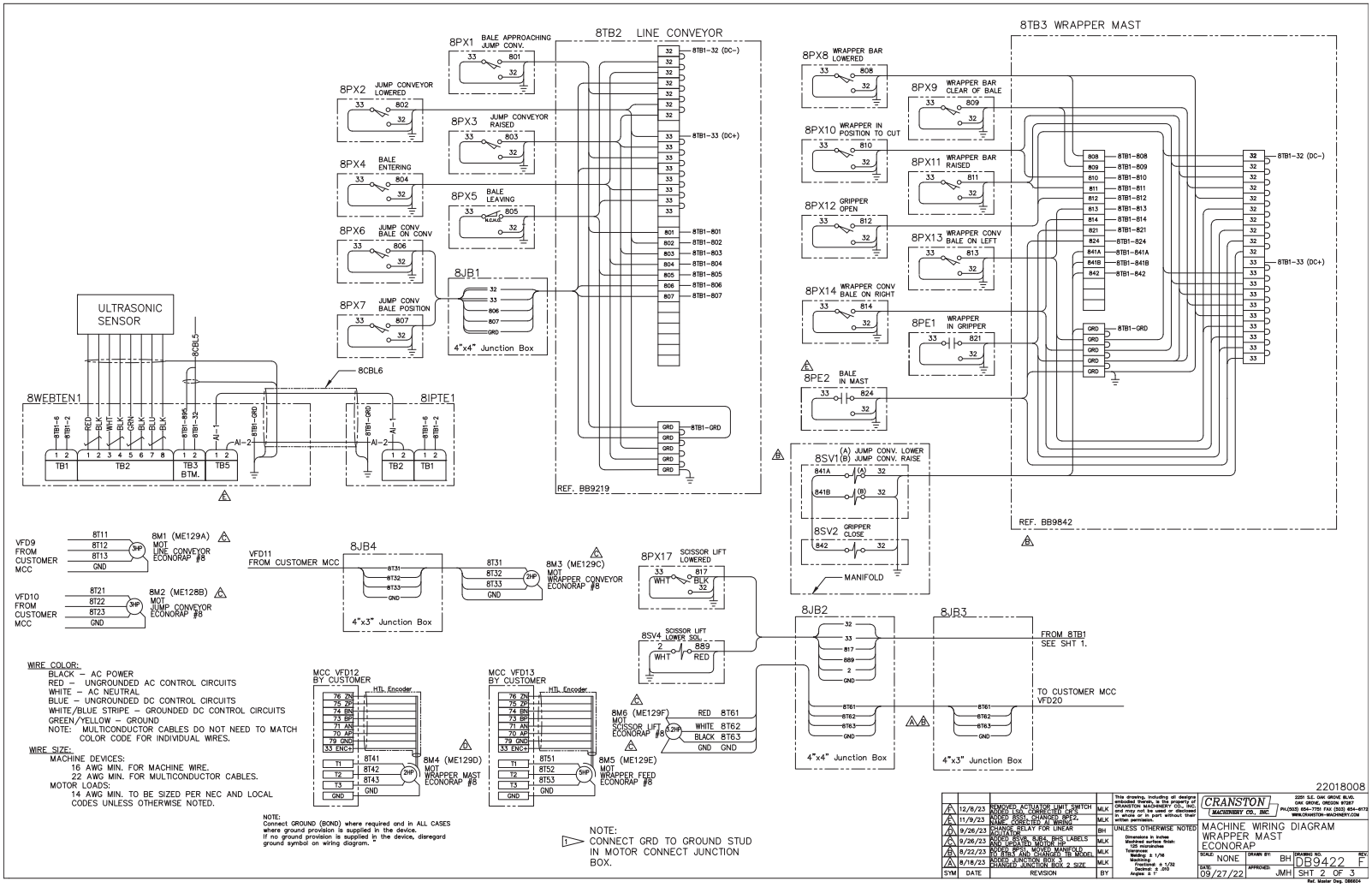
CRANSTON MACHINERY CO. INC.
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PNEUMATIC SCHEMATIC
ECONORAP

SCALE	DRAWN BY	DRAWING NO.	REV
1:16	DEN	DB9496	B
DATE: 30JAN2023	APPROVED: JMH	SHT 1 OF 1	

Ref Master Dwg DB9584


8PX15 CUTTER EXTENDED (CUT)
8PX16 CUTTER RETRACTED (RETURN)
MANIFOLD
8SV3 (A) CUTTER EXTEND (CUT) (B) CUTTER RETRACT (RETURN)
8SV5 (A) LUGS EXPAND (B) LUGS DEFLATE
8SV6 ROLL TENSION BRAKE (ENABLE)
8SV7 (A) ROLL STOP BRAKE (B) ROLL STOP BREAK RELEASE
8SV8 NIP ROLL ENABLE
8SS1 NIP ROLL SAFETY SWITCH
8JB3 REFER TO SHEET 2
8TB2 REFER TO SHEET 2
8TB3 REFER TO SHEET 2
8TB1 BACKSTAND
REF. CB6585
8DBR1
8DBR2
8DBR3
8DBR4
8CR1
8CR2
8CR3
8CR4
8CR5
8CR6
8CR7
8CR8
8CR9
8CB1 6A
8CB2 6A
8CB2 3A
8CB3 3A
8CB4 3A
8CB5 3A
8CBL1
8CBL2
8CBL3
8CBL4
8CBL5
LSO SAFETY LASER SCANNER
8ACTUATOR1 LEFT CHUCK
8ACTUATOR2 RIGHT CHUCK
8ACTUATOR3 LEFT DECURLER
8ACTUATOR4 RIGHT DECURLER
8CBL1 8CBL2 8CBL3 8CBL4
8WERTEN1
8BPTE1
REFER TO SHEET 2
POWER SUPPLY 8PS1 10VDC 5A
PE N L1
WIRE COLOR:
BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUITS
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUITS
GREEN/YELLOW – GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.
WIRE SIZE:
MACHINE DEVICES:
16 AWG MIN. FOR MACHINE WIRE.
22 AWG MIN. FOR MULTICONDUCTOR CABLES.
MOTOR LOADS:
14 AWG MIN. TO BE SIZED PER NEC AND LOCAL CODES UNLESS OTHERWISE NOTED.
1 NOTE: CONNECT GRD TO GROUND STUD IN MOTOR CONNECT JUNCTION BOX.
NOTE: Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device. If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.
22018008
CRANSTON MACHINERY CO., INC
MACHINE WIRING DIAGRAM
WRAPPER MAST
ECONORAP
DRAWING NO. DB9422
REV. F
DATE 09/27/22
SHT 1 OF 3



22018008

SYM	DATE	REVISION	BY
A	12/8/23	REMOVED ACTUATOR LIMIT SWITCH ADDED 130A, CORRECTED DESC ADDED BB83, CHANGED 8PE2 NAME, CORRECTED AI WIRING	MLK
E	11/9/23	CHANGE RELAY FOR LINEAR ISOLATOR	BH
D	9/26/23	ADDED 8SV6, 8JB7, 8PX15 LABELS AND 8" BATTERY LIFT	MLK
C	9/26/23	ADDED 8SV5, MOTOR MANIFOLD	MLK
B	8/22/23	70 8TB3 AND 70 8JB3 TO MODEL	MLK
A	8/18/23	ADDED JUNCTION BOX 3 CHANGED JUNCTION BOX 2 SIZE	MLK

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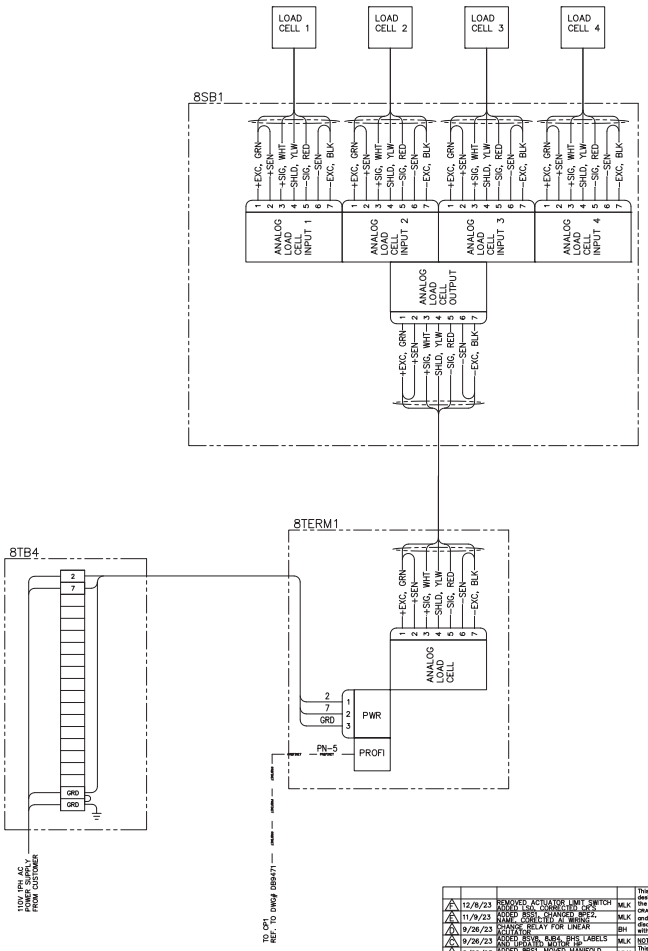
UNLESS OTHERWISE NOTED
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances
Fractional: ± 1/16
Machining
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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MACHINE WIRING DIAGRAM
WRAPPER MAST
ECONORAP

SCALE	DRAWN BY	DRAWING NO.	REV.
NONE	BH	DB9422	F
DATE	APPROVED	SHT 2 OF 3	
09/27/22	JMH		

Ref. Master Dwg. DB8404



WIRE COLOR:
BLACK - AC POWER
RED - UNGROUNDED AC CONTROL CIRCUITS
WHITE - AC NEUTRAL
BLUE - UNGROUNDED DC CONTROL CIRCUITS
WHITE/BLUE STRIPE - GROUNDED DC CONTROL CIRCUITS
GREEN/YELLOW - GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.

WIRE SIZE:
MACHINE DEVICES:
16 AWG MIN. FOR MACHINE WIRE.
22 AWG MIN. FOR MULTICONDUCTOR CABLES.
MOTOR LOADS:
14 AWG MIN. TO BE SIZED PER NEC AND LOCAL CODES UNLESS OTHERWISE NOTED.

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device. If no ground provision is supplied in the device, disregard ground symbol on wiring diagram. *

SYM	DATE	REVISION	BY
7	12/8/23	REMOVED ACTUATOR LIMIT SWITCH ADDED 110A, CONNECTED DRS	MLK
6	11/9/23	ADDED BSS1, CHANGED BPE2, JUMPER DETAIL & WIRING	MLK
5	9/26/23	CHANGED RELAY FOR LINEAR ACTUATOR	BH
4	9/26/23	ADDED BPV2, E-STOP, DRS LABELS AND UPDATED MOTOR TBs	MLK
3	8/22/23	ADDED BPS1, MOVED MANIFOLD TO BTM1 AND CHANGED TB MODEL	MLK
2	8/18/23	ADDED JUNCTION BOX 3 CHANGED JUNCTION BOX 2 SIZE	MLK

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NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

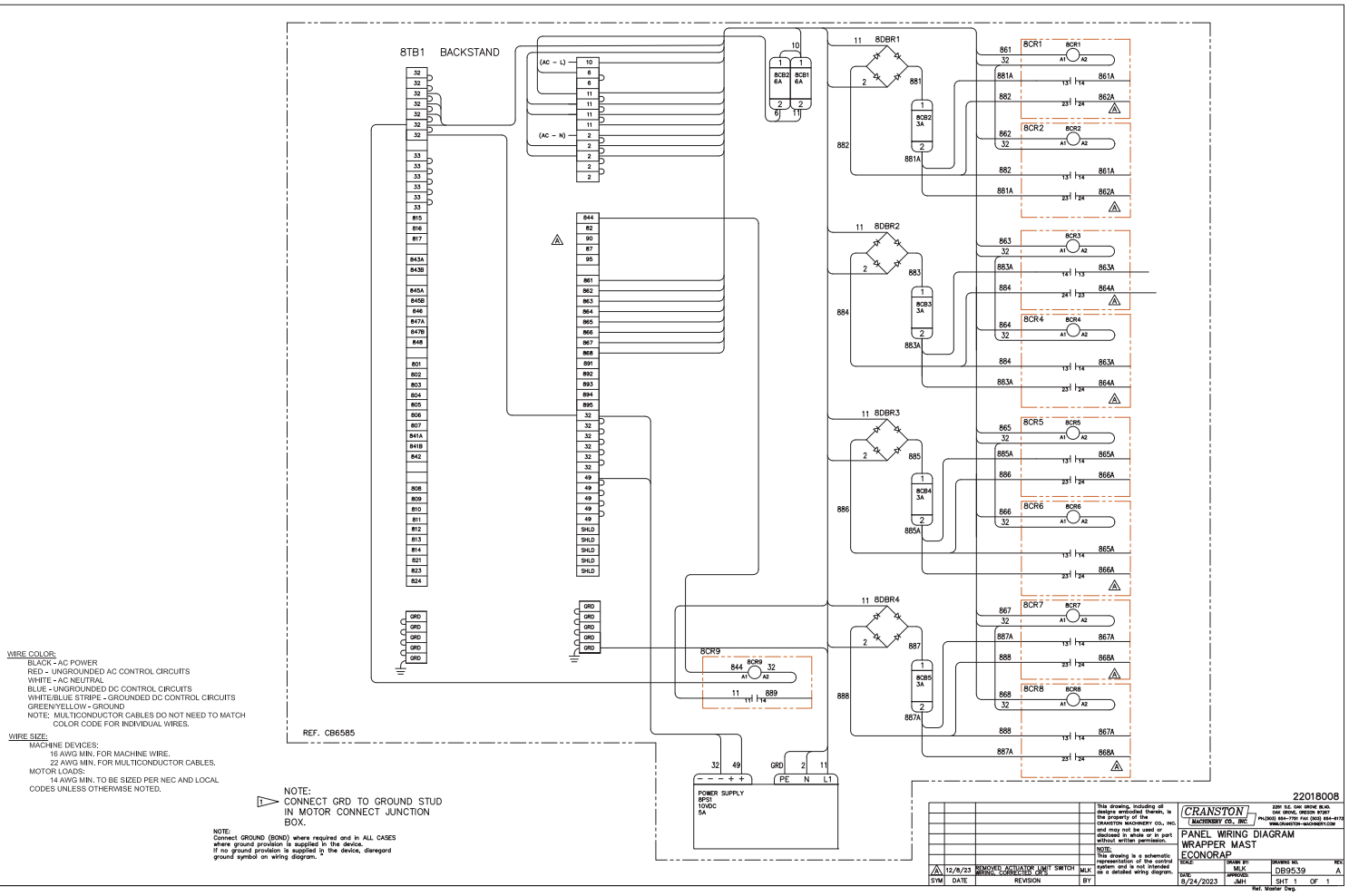
22018008

CRANSTON MACHINERY CO., INC.
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MACHINE WIRING DIAGRAM
WRAPPER MAST
ECONORAP

SCALE:	DRAWN BY:	DRAWING NO.	REV.
	BH	DB9422	F
DATE: 9/27/22	APPROVED: JMH	SHT 3 OF 3	

Ref. Master Dwg. DB6604



WIRE COLOR:
BLACK - AC POWER
RED - UNGROUNDED AC CONTROL CIRCUITS
WHITE - AC NEUTRAL
BLUE - UNGROUNDED DC CONTROL CIRCUITS
WHITE/BLUE STRIPE - GROUNDED DC CONTROL CIRCUITS
GREEN/YELLOW - GROUND
NOTE: MULTICONDUCTOR CABLES DO NOT NEED TO MATCH COLOR CODE FOR INDIVIDUAL WIRES.

WIRE SIZE:
MACHINE DEVICES:
16 AWG MIN. FOR MACHINE WIRE.
22 AWG MIN. FOR MULTICONDUCTOR CABLES.
MOTOR LOADS:
14 AWG MIN. TO BE SIZED PER NEC AND LOCAL CODES UNLESS OTHERWISE NOTED.

NOTE:
CONNECT GRD TO GROUND STUD IN MOTOR CONNECT JUNCTION BOX.

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

22018008

SYM	DATE	REVISION	BY
1	12/8/23	REMOVED ACTUATOR LIMIT SWITCH WIRING, CORRECTED CR'S	MLK

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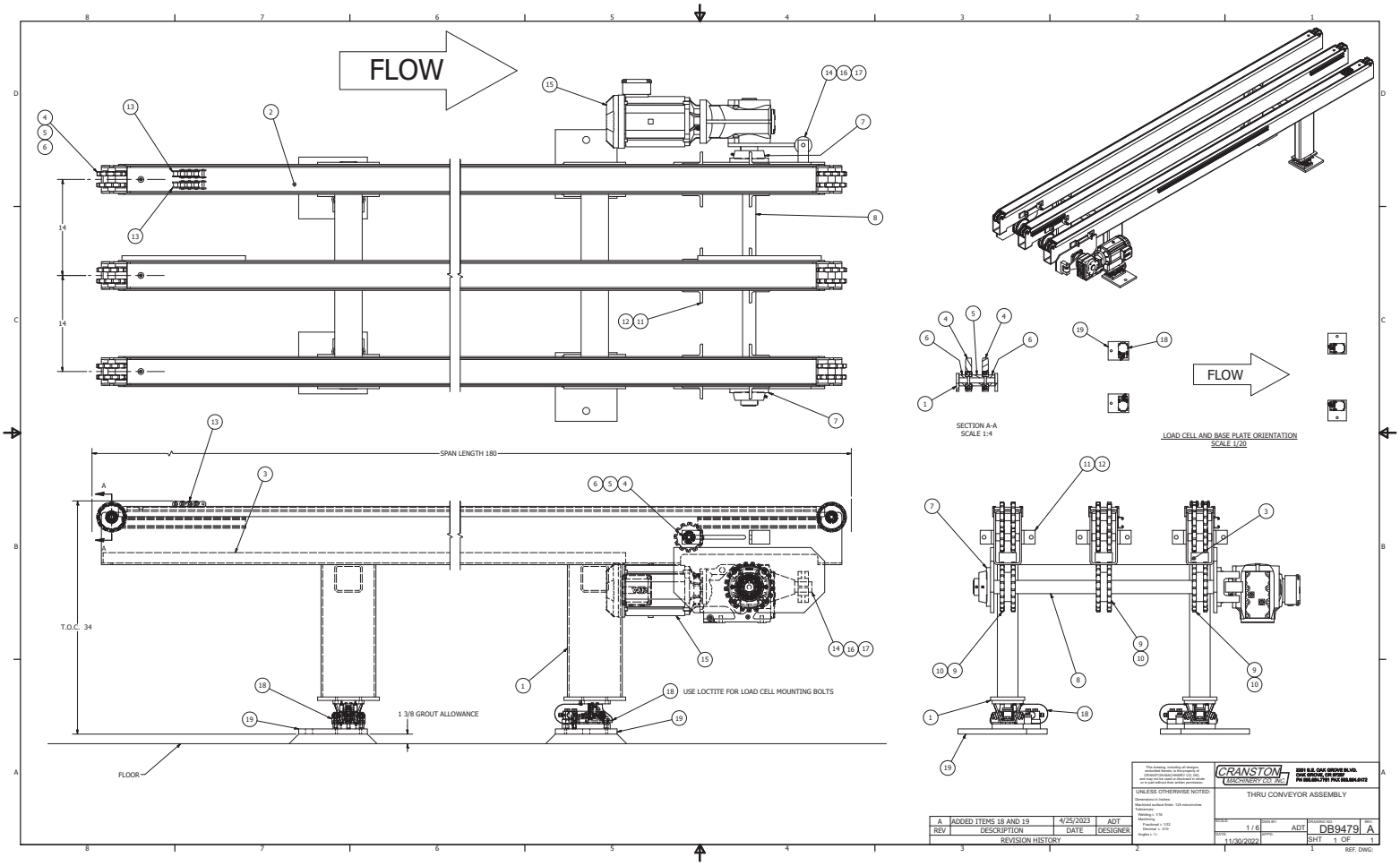
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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PANEL WIRING DIAGRAM
WRAPPER MAST
ECONORAP

SCALE:	DRAWN BY:	DRAWING NO.	REV:
	MLK	DB9539	A
DATE: 8/24/2023	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg.



REV	DESCRIPTION	DATE	DESIGNER
A	ADDED ITEMS 18 AND 19	4/25/2023	ADT

REVISION HISTORY

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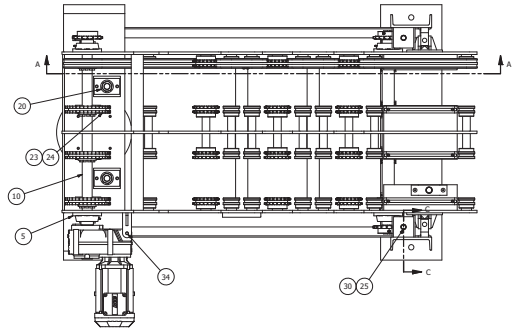
UNLESS OTHERWISE NOTED:
Dimensions in inches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

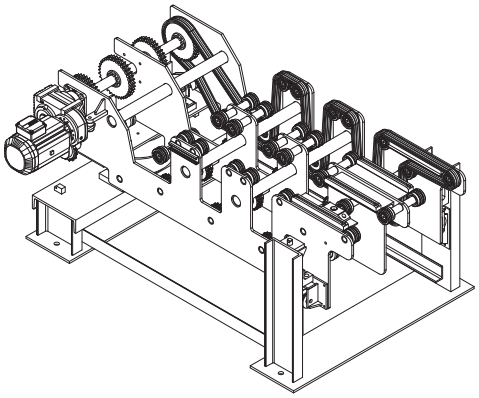
CRANSTON MACHINERY CO. INC.

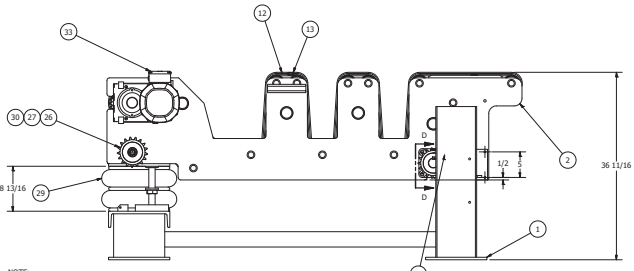
2201 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.281.1701 FAX 503.654.0472

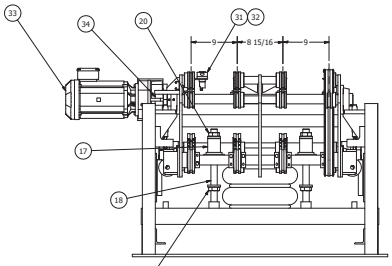
THRU CONVEYOR ASSEMBLY

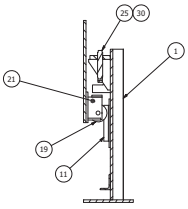
SCALE	DWN BY	DRAWING NO.	REV
1 / 6	ADT	DB9479	A
DATE	CHKD	SHT 1 OF 1	
11/30/2022		REF. DWG:	









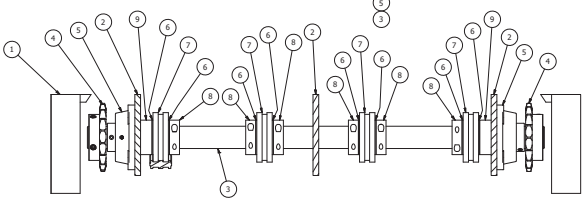


SECTION C-C
SCALE 1 / 9

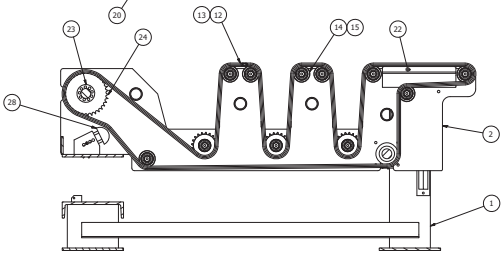
NOTE:

1.

2.



SECTION D-D
SCALE 1 / 4



SECTION A-A
SCALE 1 / 9

REVISION HISTORY			
REV	DESCRIPTION	DATE	DESIGNER
A	ADDED TORQUE ARM HARDWARE, ITEM 34	6/28/2023	ADT

REVISION HISTORY			
REV	DESCRIPTION	DATE	DESIGNER
A	ADDED TORQUE ARM HARDWARE, ITEM 34	6/28/2023	ADT

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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional: ± .032
Decimal: ± .010
Angles: ± ½

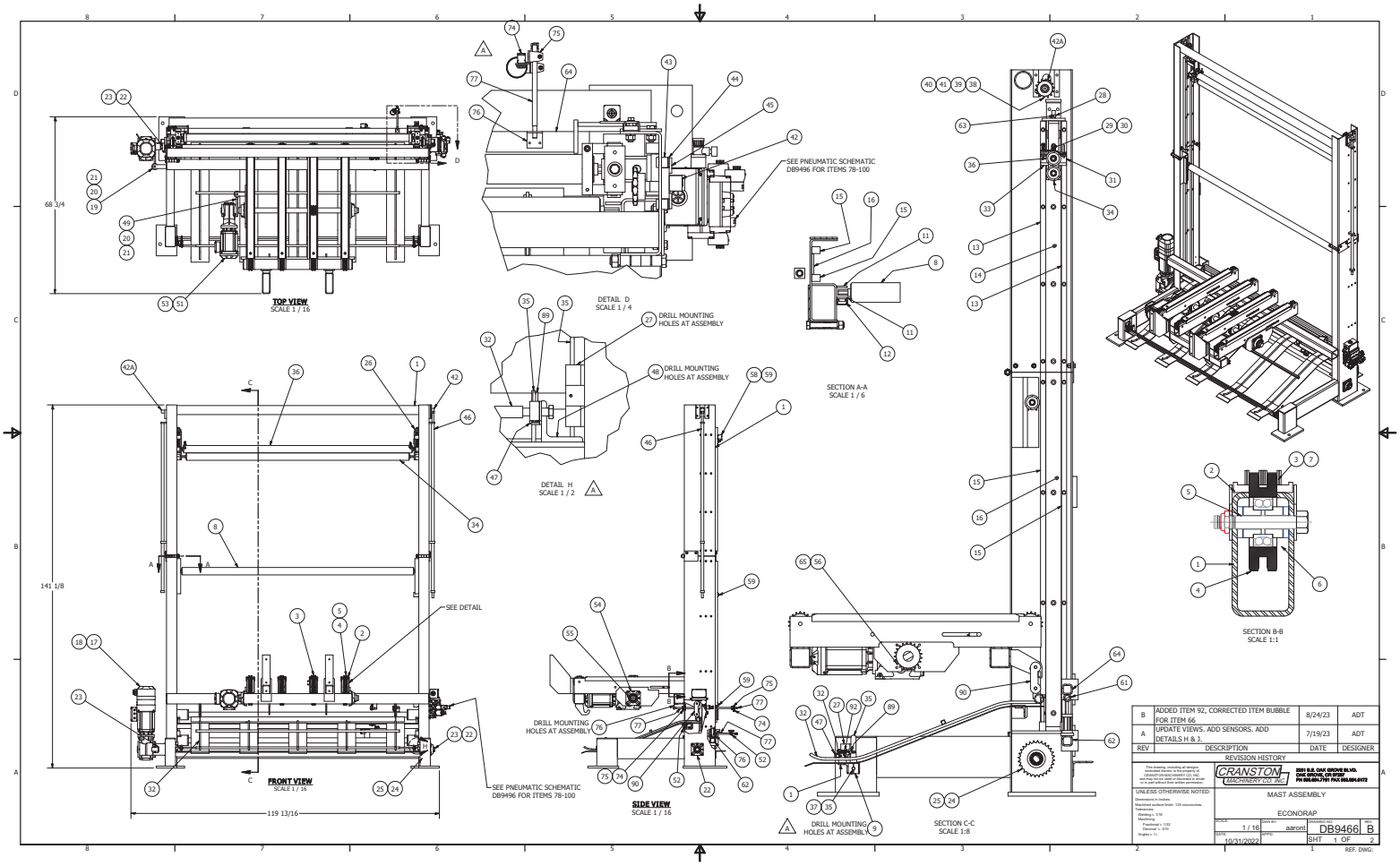
CRANSTON MACHINERY CO. INC.

3201 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH (503)-653-7701 FAX (503)-654-3172

Jump and Thru Conveyors

SCALE:	DRAWN BY:	Assembly No.	REV.
1 / 9	ADT	DB9407	A
DATE: 9/13/2022	APPD:	SHT 1 OF 1	

REF. DWG:



REV	DESCRIPTION	DATE	DESIGNER
B	ADDED ITEM 92, CORRECTED ITEM BUBBLE FOR ITEM 66	8/24/23	ADT
A	UPDATE VIEWS. ADD SENSORS. ADD DETAILS H & J.	7/19/23	ADT

REVISION HISTORY

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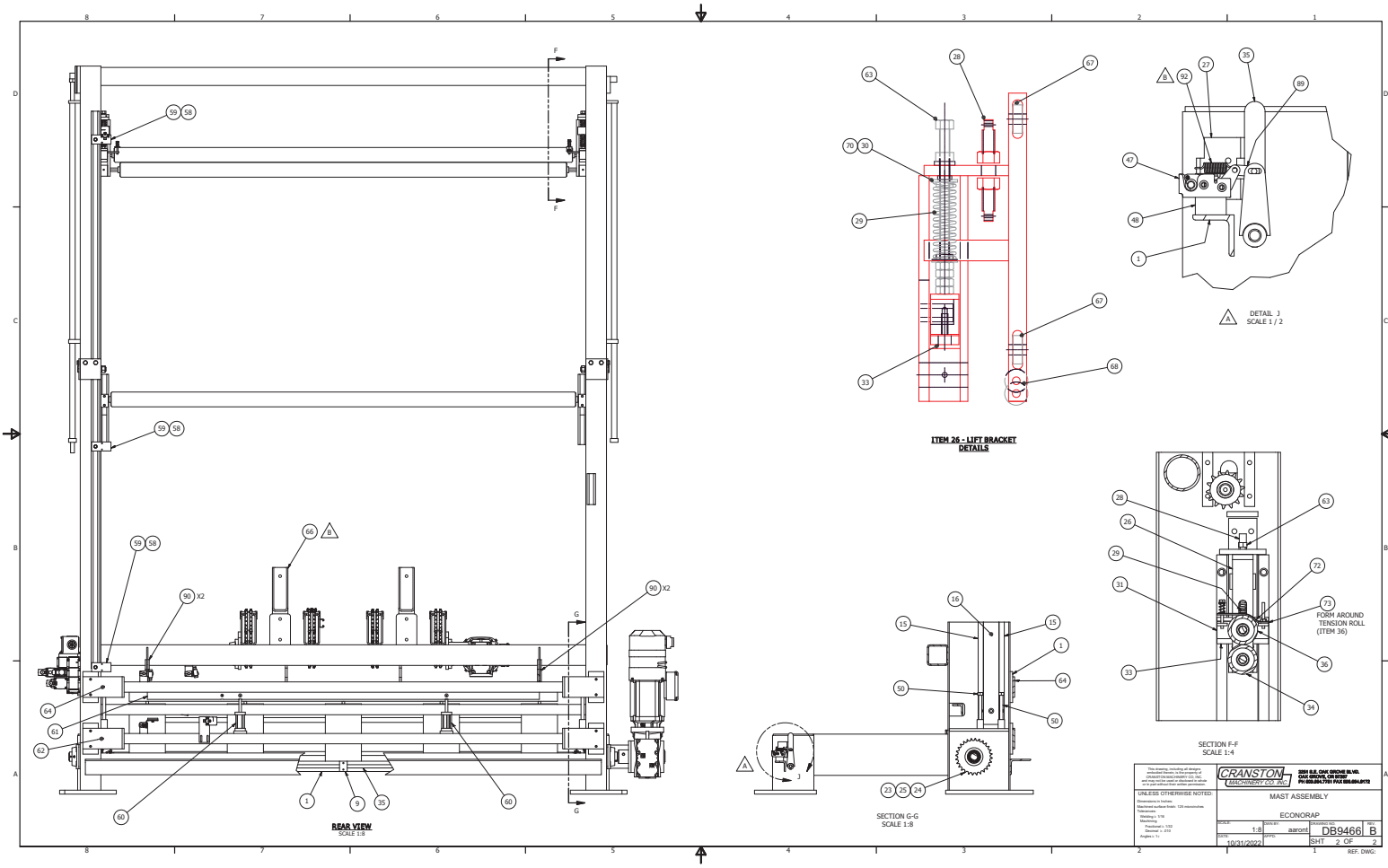
UNLESS OTHERWISE NOTED:
Dimensions are in inches.
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

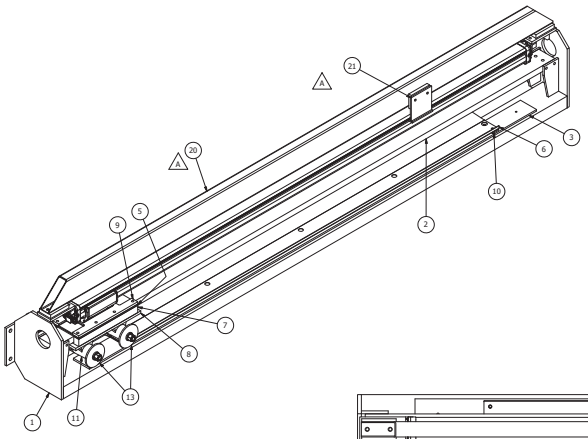
MAST ASSEMBLY

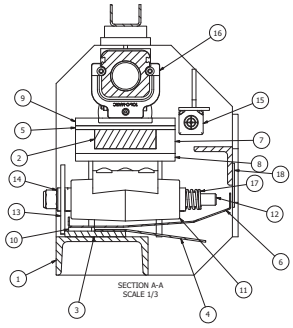
ECONORAP

SCALE	DWN BY	DRAWING NO.	REV.
1 / 16	aaront	DB9466	B
DATE: 10/31/2022	CHKD:	SHT 1 OF 2	

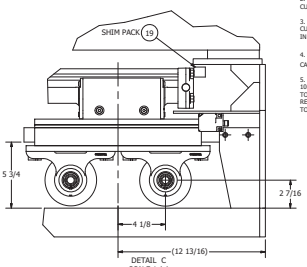
REF. DWG:


REAR VIEW
SCALE 1:8
ITEM 26 - LIFT BRACKET DETAILS
DETAIL J
SCALE 1 / 2
SECTION G-G
SCALE 1:8
SECTION F-F
SCALE 1:4
FORM AROUND TENSION ROLL (ITEM 36)
CRANSTON MACHINERY CO. INC.
MAST ASSEMBLY
ECONORAP
DB9466
B
10/31/2022
SHT 2 OF 2





SECTION A-A
SCALE 1/3



DETAIL C
SCALE 1 / 4

NOTE:

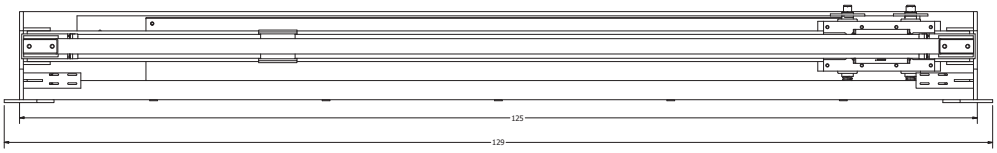
1. FRONT EDGES OF (ITEM 2) AND (ITEM 3) MUST BE PARALLEL.

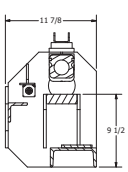
2. ADJUST BOTH ENDS OF (ITEM 17) TO MAKE PARALLEL TO (ITEM 2), SO THAT THE CUTTER ASSEMBLY SLIDES FREELY.

3. SET CUTTER WHEEL ASSEMBLY (ITEMS 11, 12, 13, 14 & 15) AT 3 TO 5 DEGREES TO CUTTER ANVIL (ITEM 3), LEADING EDGE IS TOUCHING IN THE DIRECTION IS TOUCHING IN THE DIRECTION SET TO CUT IN RESPECTIVE DIRECTION.

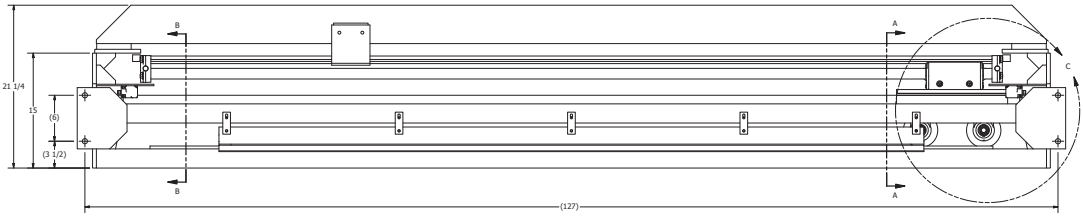
4. TORQUE CARRIAGE SCREWS TO 10 FT-LB ± AVOID OVER TORQING SCREWS, CAUSING SLIDE BEARINGS 26 & 27 TO SEIZE. USE LOCTITE 242 (BLUE) ON SCREWS.

5. ADJUST BAND CYLINDER SHOCKS TO ACHIEVE NECESSARY STROKE. 100" STROKE WITH SHOCKS OUTBOARD TO MAX POSITION = 86 3/4" CUT TO ADJUST SHOCKS, REMOVE FOUR BOLTS IN SHOCK HOUSING, ADJUST AND REINSTALL.
TORQUE ALUMINUM BRACKET EVENLY WHEN REINSTALLING. A





SECTION B-B
SCALE 1/6



REV	DESCRIPTION	DATE	DESIGNER
A	ADDED TOP SUPPORT TUBE PC20 & BRACKETS PC21	8/25/2023	DEN

REVISION HISTORY

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UNLESS OTHERWISE NOTED:
Dimensions in inches
Tolerances: Surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining:
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

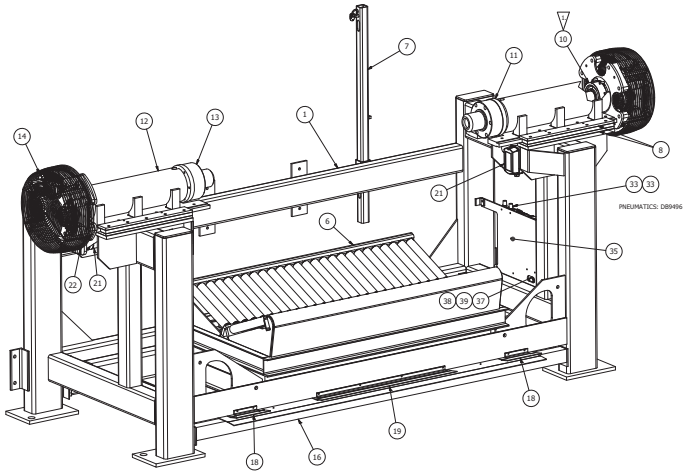
CRANSTON MACHINERY CO. INC.
2221 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.6172

CUTTER ARRANGEMENT

ECONORAP

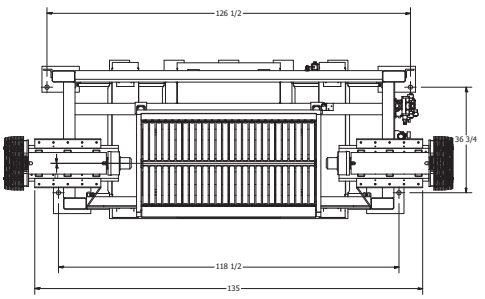
SCALE:	1/6	DWN BY:	DEN	DRAWING NO.	DB9419	REV.	A
DATE:	9/23/2022	APPD:	JMH	SHT	1 OF		1

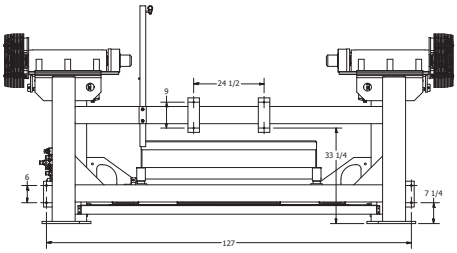
REF. DWG: DB6513

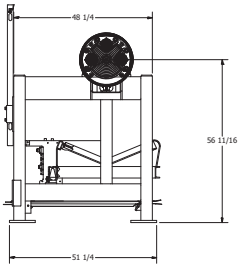


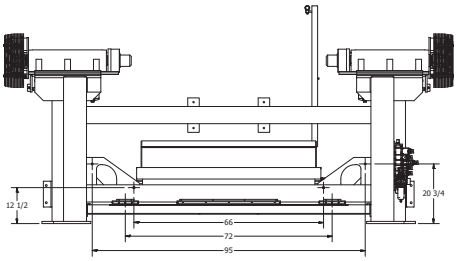
NOTE:

1. CHUCK SHAFT BEARINGS (PC10): REMOVE ZERK AND PLUG. INSTALL PLUG IN FACE OF BEARING. WHEN PRESSING BEARING, CLOCK ZERK PORT (O.D.) TO SLOT, INSTALL ZERK.
2. USE ZERK SLOT TO TIGHTEN SETSCREW AGAINST SHAFT.









REV	DESCRIPTION	DATE	DESIGNER
A	ADDED MAST, PC7	7/20/2023	DEN

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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional: ± 1/32
Decimal: ± .010
Angles: ± ½

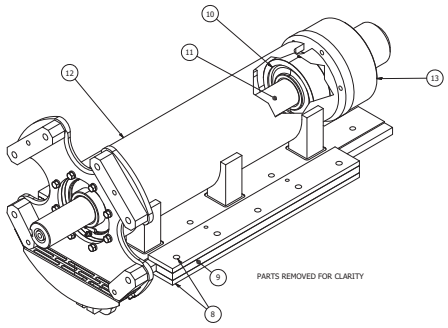
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3301 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.0172

BACKSTAND ASSEMBLY

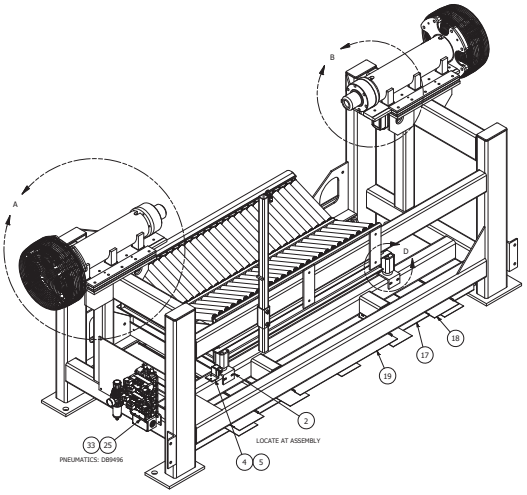
ECONORAP

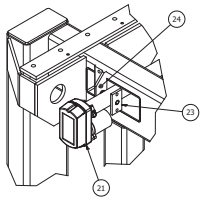
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DATE:	10/24/2022	APPD:	JMH	SHT	1 OF	2	

REF. DWG: DB6543

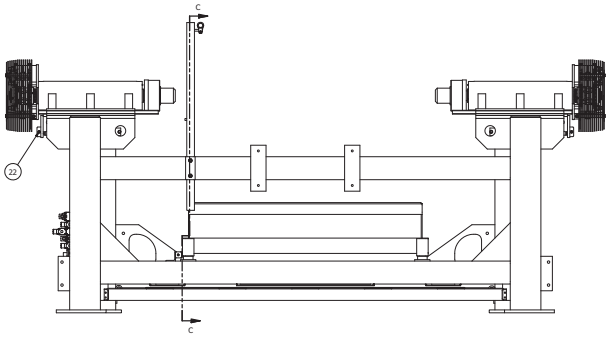


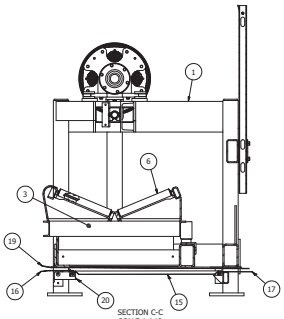
DETAIL A
SCALE 1 / 4



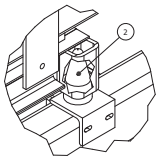


DETAIL B
SCALE 1 / 6





SECTION C-C
SCALE 1 / 12



DETAIL D
SCALE 1 / 4

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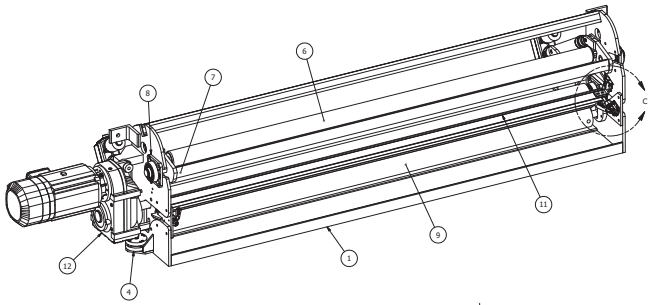
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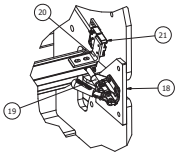
BACKSTAND ASSEMBLY

ECONORAP

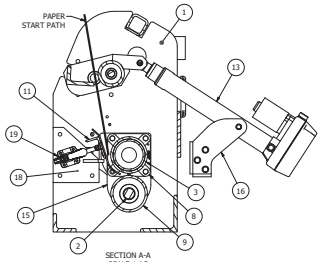
SCALE	DWN BY	DRAWING NO.	REV.
1 / 12	DEN	DB9433	A
DATE	CHKD	SHT 2 OF 2	
10/24/2022	JMH		

REF. DWG: DB6543





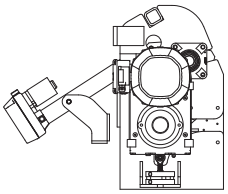
DETAIL C
SCALE 1 / 4

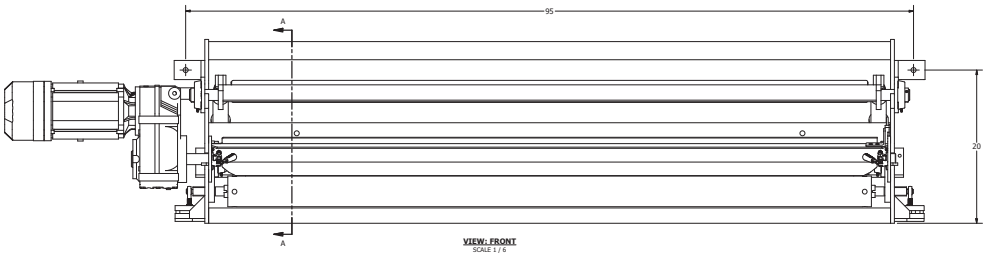


SECTION A-A
SCALE 1 / 5

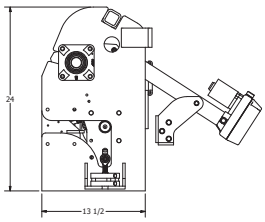
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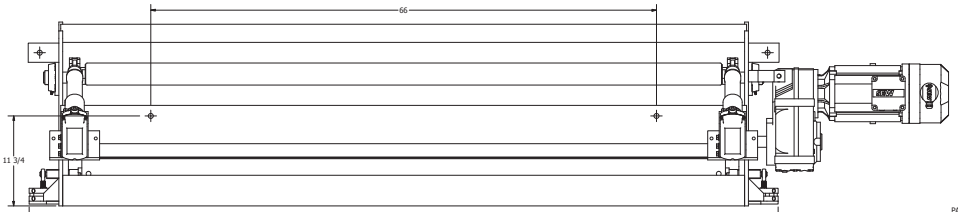
1. PC15, PC16 AND PC17 INSTALLED AFTER DRIVE/DECURLER ASSEMBLY IS ATTACHED TO BACKSTAND FRAME.





VIEW: FRONT
SCALE 1 / 6





VIEW: FRAME SIDE (BACK)
SCALE 1 / 6

PA9577

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Machining:
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

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NIP DRIVE / DECURLER ASSEMBLY

ECONORAP

SCALE:	1 / 6	DWN BY:	DEN	Assembly DWG	DB9435	REV	A
DATE:	10/4/2022	APP'D:		SHT	1 OF	2	

REF. DWG:

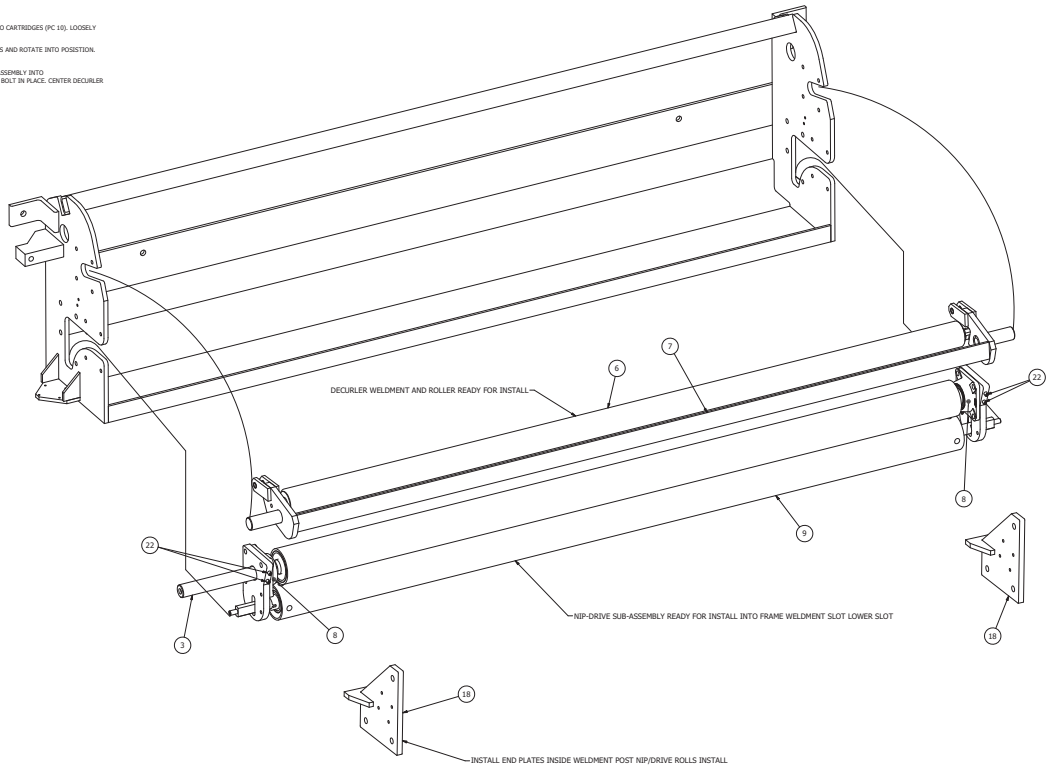
REV	DESCRIPTION	DATE	DESIGNER
A	REDESIGN PAPER GUIDE FOR QUICK RELEASE	11/16/2022	DEN

NOTE:

1. ASSEMBLE DRIVE ROLL (PC 3), NIP ROLL (PC 9) AND TWO BEARINGS (PC 8) ONTO CARTRIDGES (PC 10). LOOSELY THREAD 7/16" WASHER AND BOLT THRU BEARING INTO CARTRIDGE.

2. STARTING WITH NIP ROLL, SLIDE NIP-DRIVE ASSEMBLY THRU END PLATE SLOTS AND ROTATE INTO POSSITION. SLIDE ON OUTSIDE BEARINGS (PC8) TIGHTEN ALL THRU BOLTS.

3. ASSEMBLE DECURLER ROLL (PC 6), ONTO DECURLER WELDMENT (PC 7). SLIDE ASSEMBLY INTO TOP SLOTS OF FRAME WELDMENT (PC1). SLIDE ON OUTSIDE BEARINGS (PC8) AND BOLT IN PLACE. CENTER DECURLER WELDMENT AND TIGHTEN BEARING SETSCREWS.



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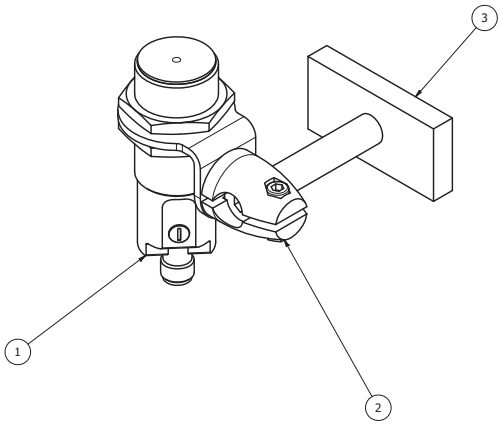
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PH 503.654.1701 FAX 503.654.6172

NIP DRIVE / DECURLER

SUB-ASSEMBLIES

SCALE:	DWN BY:	DRAWING NO.	REV.
1 / 5	DEN	DB9435	A
DATE: 10/4/2022	CHK'D:	SHT 2 OF 2	

REF. DWG:



NOTE:

1.

2.

REVISION HISTORY			
REV	DESCRIPTION	DATE	DESIGNER
A	REMOVED SHEET METAL BRACKET	11/30/24	JMH

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Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

CRANSTON MACHINERY CO. INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7751 FAX 503.654.6172

BED SWITCH ARRANGEMENT
CAPACITIVE SWITCH

SCALE:	DWN BY:	DRAWING NO.	REV.
1 : 1	BH	CB6587	A
DATE: 11/3/2022	APP'D: JMH	SHT 1 OF 1	

REF. DWG:

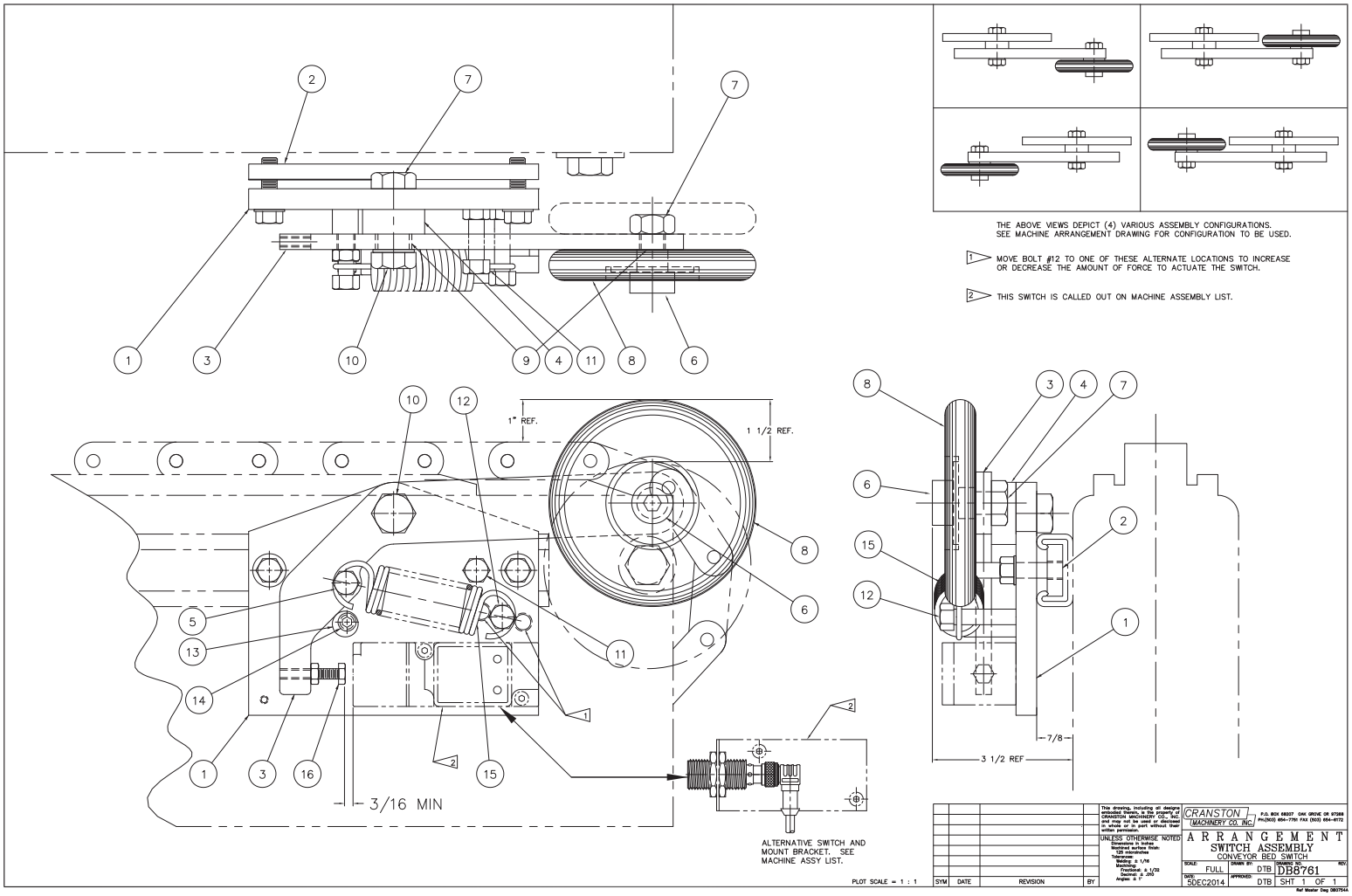

THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
7/8
3 1/2 REF
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
CRANSTON MACHINERY CO., INC.
P.O. BOX 68207 OAK GROVE OR 97268
PH.(503) 654-7791 FAX (503) 654-8772
ARRANGEMENT
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
SCALE: FULL
DRAWN BY: DTB
DRAWING NO.: DB8761
REV.
SIZE: SDEC2014
APPROVED: DTB
SHT 1 OF 1

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MODEL 61B033

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- 1.1--EQUIPMENT DESCRIPTION
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STRAPPER CONVEYOR
MODEL 61B033

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON MODEL 61B033 STRAPPER CONVEYOR IS A MULTIPLE ROW CHAIN CONVEYOR DESIGNED FOR USE WITH CRANSTON WIRE STRAPPING MACHINES. THE CONVEYOR IS DIVIDED INTO TWO EQUAL SECTIONS, DRIVEN BY ELECTRIC MOTOR(S). THE WIRE STRAPPING MACHINE OPERATES IN THE SPAN BETWEEN THE TWO SECTIONS. THE FAR END OF EACH CONVEYOR SECTION IS PIVOT-MOUNTED TO ALLOW THE SECTIONS TO SWING UPWARD, PROVIDING ACCESS FOR REMOVING OR INSTALLING THE WIRE STRAPPER INTO THE CONVEYOR. EACH CONVEYOR HALF IS RAISED BY A PNEUMATIC CYLINDER OPERATED BY A MANUAL VALVE. THE CONVEYOR HALVES ONLY RAISE HIGH ENOUGH AT THE CENTER TO ALLOW PULLING THE WIRE STRAPPER OUT OF THE CONVEYOR OR MOVING THE WIRE STRAPPER BACK INTO THE CONVEYOR.

THE INFEED HALF OF THE CONVEYOR INCLUDES A SET OF HAND-ADJUSTED WRAPPER GUIDES. THESE PADDLES ARE MOUNTED TO THE SIDE OF THE CONVEYOR FRAME TO GUIDE THE BALE WRAPPER OF THE INCOMING BALE.

THE CONVEYOR OPERATES AUTOMATICALLY AND IS INTERLOCKED WITH THE WIRE STRAPPER AND ADJACENT MACHINERY.

1.2--DESCRIPTION OF OPERATION: NON-REVERSING

THE CONVEYOR CONVEYS BALES THROUGH THE WIRE STRAPPER AND AUTOMATICALLY STOPS AT EACH POINT WHERE A WIRE IS REQUIRED ON THE BALE. WHEN THE CONVEYOR HAS STOPPED WITH THE BALE IN POSITION FOR THE FIRST WIRE, IT SIGNALS THE WIRE STRAPPER TO APPLY A WIRE. WHEN THE WIRE HAS BEEN APPLIED TO THE BALE, THE CONVEYOR RESTARTS, MOVES THE BALE TO THE NEXT POSITION, AND STOPS. THE STARTING AND STOPPING FOR WIRE APPLICATION CONTINUES UNTIL THE BALE HAS PASSED THE POSITION FOR THE LAST WIRE.

AFTER THE LAST WIRE HAS BEEN APPLIED, THE CONVEYOR WAITS FOR THE DISCHARGE INTERLOCK. WHEN THE INTERLOCK IS ENERGIZED, THE CONVEYOR RESTARTS TO DISCHARGE THE BALE AND THE INFEED INTERLOCK IS ENERGIZED.

THE CONVEYOR IS NOW READY TO RECEIVE ANOTHER BALE.

STRAPPER CONVEYOR
MODEL 61B033

SECTION 1--GENERAL INFORMATION

1.2--DESCRIPTION OF OPERATION: AUTO-REVERSING

THE CONVEYOR CONVEYS THE BALE THROUGH THE WIRE STRAPPER AND AUTOMATICALLY STOPS AT EACH POINT WHERE A WIRE IS REQUIRED ON THE BALE. WHEN THE CONVEYOR HAS STOPPED WITH THE BALE IN POSITION FOR THE FIRST WIRE, IT SIGNALS THE WIRE STRAPPER TO APPLY A WIRE. WHEN THE WIRE HAS BEEN APPLIED TO THE BALE, THE CONVEYOR RESTARTS, MOVES THE BALE TO THE NEXT POSITION, AND STOPS. THE STARTING AND STOPPING FOR WIRE APPLICATION CONTINUES UNTIL THE BALE HAS PASSED THE POSITION FOR THE LAST WIRE.

AFTER THE LAST WIRE HAS BEEN APPLIED, THE CONVEYOR WAITS FOR THE DISCHARGE INTERLOCK. WHEN THE INTERLOCK IS ENERGIZED, THE CONVEYOR RESTARTS TO DISCHARGE THE BALE AND THE INFEED INTERLOCK IS ENERGIZED.

THE BALE MOVES DOWNSTREAM TO THE FOLDER AND THE WRAPPER ENDS ARE FOLDED. AFTER FOLDING, THE BALE REVERSES BACK TO THE FIRST STRAPPING POSITION. WHEN THE CONVEYOR GOES INTO REVERSE MODE. THE BALE STOPS AT EACH POINT WHERE A WIRE IS REQUIRED ON THE BALE. AFTER THE WIRES HAVE BEEN APPLIED AND THE DISCHARGE INTERLOCK RECEIVED, THE BALE WILL PROCEED IN THE FORWARD DIRECTION THROUGH THE FOLDER TO DOWNSTREAM EQUIPMENT.

ONCE THE BALE IS CLEAR OF THE STRAPPER CONVEYOR, THE CONVEYOR IS READY TO RECEIVE ANOTHER BALE.

1.3--STRAPPER REMOVAL

WHEN NECESSARY TO REMOVE THE WIRE STRAPPER THE CONVEYOR MUST BE PUT INTO MANUAL MODE AND THEN THE HAND VALVE LOCATED NEAR THE AIR FILTER AND REGULATOR CAN BE CYCLED TO RAISE THE CONVEYOR. SIMILARLY, AFTER THE STRAPPER IS PUT BACK INTO THE CONVEYOR, THE HAND VALVE CAN BE USED TO LOWER THE CONVEYOR BACK INTO NORMAL POSITION.

IF FOR ANY REASON, MAINTENANCE OR REPAIRS NEED TO BE PERFORMED ON THE CONVEYOR OR STRAPPER WITH THE CONVEYOR HALVES IN THE RAISED POSITION, ALWAYS BLOCK THEM IN THE UP POSITION WITH JACKS OR SUITABLE BRACING. NEVER ASSUME THAT THE AIR CYLINDERS WILL KEEP THEM IN A RAISED POSITION.

STRAPPER CONVEYOR
MODEL 61B033

SECTION 2--ADJUSTMENTS

2.1--CONVEYING CHAIN TENSION

THE STRAPPER CONVEYOR IS DIVIDED INTO TWO HALVES AND EACH HALF HAS MULTIPLE CONVEYING CHAINS. EACH CONVEYOR TOP IS MOUNTED TO THE DRIVE SHAFT WITH BEARINGS. THE SLACK SIDE OF THE CHAINS HANG BELOW THE CONVEYOR TOP AND MUST NOT BE ALLOWED TO RUN AGAINST THE LOWER CONVEYOR SUPPORT FRAME. OVER TIME, THE CHAINS MAY STRETCH AND REQUIRE TENSION ADJUSTMENT. THE CHAINS RETURN UNDER THE CONVEYOR TOPS AND THERE IS A SHAFT WITH UHMW WHEELS THAT SUPPORT THE RETURN CHAINS. EACH END OF THE SHAFT IS ATTACHED TO A BOLT-ON BRACKET WITH SLOTS SO THAT THE WHEELS CAN BE RAISED SLIGHTLY TO INCREASE CHAIN TENSION. IF THIS IS NOT ENOUGH ADJUSTMENT, THEN THE CHAINS MAY NEED TO HAVE A LINK OR TWO REMOVED. USE OFFSET CONNECTING LINKS IF NECESSARY.

2.2--DRIVE CHAIN TENSION

FOR CONVEYORS WITH A SINGLE MOTOR DRIVE:

THE STRAPPER CONVEYOR HAS TWO DRIVE CHAINS, ONE FOR EACH HALF OF THE CONVEYOR AND THEY ARE LOCATED UNDER THE CHAIN GUARD. BOTH CHAINS SHOULD BE SNUG, BUT NEVER ABSOLUTELY TIGHT. EXCESS TENSION CAUSES RAPID WEAR ON THE CHAIN AND THE SPROCKETS.

EACH DRIVE CHAIN HAS ITS OWN ADJUSTING SPROCKET FOR CHAIN TENSION. ADJUST CHAIN TENSION BY REPOSITIONING THE ADJUSTMENT SPROCKET. AFTER ADJUSTING, ALWAYS REPLACE THE CHAIN GUARD.

2.3--CONVEYOR MOUNTED PROXIMITY SWITCHES

PROXIMITY SWITCHES TO CONTROL BALE MOVEMENT ARE MOUNTED JUST BELOW CONVEYOR LEVEL. PASSING BALES DEPRESS SPRING-LOADED ACTUATORS, WHICH, IN TURN, ACTUATE THE PROXIMITY SWITCHES. THE HEIGHT OF THE ACTUATORS ABOVE CONVEYOR LEVEL MAY BE ADJUSTED FOR POSITIVE BALE CONTACT. TO ADJUST THIS HEIGHT, (REFER TO DRAWING DB8196) ADJUST THE CAM, ITEM 13, BY TURNING THE ADJUSTING BOLT, ITEM 14. THE TOP OF THE ACTUATOR SHOULD BE SET TO APPROXIMATELY 1" ABOVE THE TOP OF THE CHAIN.

THE HEX HEAD BOLT, ITEM 16, AND THE JAM NUT ARE USED AS THE ACTUAL TARGET FOR THE PROXIMITY SWITCH. ADJUST THE HEAD OF THE BOLT IN OR OUT AS NECESSARY TO ACTUATE THE SWITCH AND THEN LOCK THE JAM NUT.

2.4--AIR PRESSURE

SET THE AIR PRESSURE AT THE REGULATOR TO 60 PSI.

STRAPPER CONVEYOR
MODEL 61B033

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT TO DO
AIR FILTER	DAILY	DRAIN ANY AND ALL WATER FROM THE AIR FILTER.
GEAR REDUCER	MONTHLY	CHECK OIL LEVEL. REFER TO VENDOR DATA INFORMATION REGARDING THE REDUCER.
DRIVE CHAINS	MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL.
CONVEYING CHAINS	BI-MONTHLY	LIGHTLY COAT WITH CHAIN OIL EVERY 60 DAYS.
DRIVE CHAIN IDLERS	BI-MONTHLY	APPLY GREASE TO THE LUBE FITTINGS. THERE ARE HOLES LOCATED IN THE CHAIN GUARD TO ALLOW ACCESS TO THE LUBE FITTINGS.
GEAR REDUCER	SEMI-ANNUALLY	CHANGE OIL FILL EVERY 6 MONTHS OR WHEN NEEDED. REFER TO MANUFACTURER'S INFORMATION IN THE VENDOR DATA SECTION.

3.2--LUBRICANT SELECTION GUIDE

CHAIN OIL- USE ANY HIGH QUALITY CHAIN OIL.

GEAR REDUCER- REFER TO MANUFACTURER'S RECOMMENDATIONS IN VENDOR DATA SECTION.

MACHINE ASSEMBLY LIST

MODEL NO.: **61B033**

Title:	986 STRAPPER CONVEYOR	**Issued for Serial No.:**	22018009		
Description:	HINGED, 4 ROW, #80 CHAIN, 94-1/2" SPAN, ELECTRIC DRIVE	**Arrangement Drawing:**	DB9481000		
		Master by:	FRB	**DATE:**	1/4/2022
		Issued By:	FRB	**DATE:**	1/31/2023
		Revision:	F	**DATE:**	10/20/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	1	-----	CB6612000	PNEUMATIC SCHEMATIC
	1	-----	CB6591000	MACHINE WIRING DIAGRAM
1	1	-----	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				MACHINE: STRAPPER CONVEYOR
				SERIAL NO.: 22018009
				MODEL NO.: 61B033
				DRAWING: DB9481000
				DIMENSIONS: 54" W X 44" H X 93 1/2" LG
				WEIGHT: 2420 LBS
				VOLTAGE: 460V/3PH/60HZ
				POWER: 2HP
	4			DRIVE SCREW, #6 (.136) X 1/4" LG
2				NOT USED
3	1	PA9584	DB9488000	CONVEYOR FRAME ASSEMBLY
4	1	-----	CB6621000	BASE PLATE

MACHINE ASSEMBLY LIST

MODEL NO.: **61B033**

Title:	986 STRAPPER CONVEYOR	**Issued for Serial No.:**	22018009		
Description:	HINGED, 4 ROW, #80 CHAIN, 94-1/2" SPAN, ELECTRIC DRIVE	**Arrangement Drawing:**	DB9481000		
		Master by:	FRB	**DATE:**	1/4/2022
		Issued By:	FRB	**DATE:**	1/31/2023
		Revision:	F	**DATE:**	10/20/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
4A	1	-----	CB6620000	BASE PLATE
4B	1	-----	CB6657000	BASE PLATE
5		PA8955	BB9178000	MAGNETIC NOSE LOCK ASSEMBLY
		PA9115	BA9407000	GUIDE/LOCK MOUNT
6	2	PA8989	DB8761000	CONVEYOR SWITCH ASSEMBLY
6A	2	-----	BB8587000	BRACKET
	4			HEX HEAD CAPSCREW #10-32 X 1/2
	4			LOCKWASHER #10
6B	2	----	E16600141	PROXIMITY SENSOR, IFM #IGS252
6C	2	----	E16700120	CABLE, IFM #EVC003
7				NOT USED
8				NOT USED

MACHINE ASSEMBLY LIST

MODEL NO.: **61B033**

Title:	986 STRAPPER CONVEYOR	**Issued for Serial No.:**	22018009		
Description:	HINGED, 4 ROW, #80 CHAIN, 94-1/2" SPAN, ELECTRIC DRIVE	**Arrangement Drawing:**	DB9481000		
		Master by:	FRB	**DATE:**	1/4/2022
		Issued By:	FRB	**DATE:**	1/31/2023
		Revision:	F	**DATE:**	10/20/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
9	1	PA9602	NONE	CONVEYOR CONTROL MODULE
10	4	-----	AA6142000	SAFETY LABEL
11	2	-----	AA6140000	WARNING LABEL
12	3	-----	AA6141000	CAUTION LABEL
13	2	PA9581	CB6611000	WRAPPER GUIDE ASSEMBLY
14	1	PA9585	DB9492000	SUPPORT, LIFT AND DRIVE ASSEMBLY
15	1	-----	CB6651000	GUARD
	2			HEX HEAD CAPSCREW 5/16 - 18 INC X 1
	2			FLAT WASHER 5/16
	2			LOCK WASHER 5/16

PARTS LIST

PA9584 **Drawing: DB9488000**

Title:	CONVEYOR FRAME ASSEMBLY	**Issued for Serial No.:**	22018009		
Description:	4 ROW, MODEL 61B033	**Master by:**	FRB	**DATE:**	1/4/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9489000		CONVEYOR FRAME
	3			HEX HD CAP SCREW, 1/2-13NC X 1-1/2 LG.
	3			JAM NUT, 1/2-13NC
2	2	CB6618000		HEAD SHAFT
	8			KEYSTOCK, 3/8" SQUARE X 2-1/4" LG.
	2			KEYSTOCK, 1/4" SQUARE X 2-1/4 LG.
3	8	DA8947040	*	SPROCKET, 19 TEETH
4	12	M10100007	*	BEARING,SKF: #FYT 1 7/16 FM
	12			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
	12			HEX HD CAP SCREW, 1/2-13NC X 1-1/2 LG.
	24			LOCK WASHER, 1/2-STD.
5	8	BB9100000	*	IDLER SPROCKET
6	8	M10000031		(REF) BEARING, SKF: #6206-2RS
7	8	BB9857000		IDLER HEAD SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9584 **Drawing: DB9488000**

Title:	CONVEYOR FRAME ASSEMBLY	**Issued for Serial No.:**	22018009		
Description:	4 ROW, MODEL 61B033	**Master by:**	FRB	**DATE:**	1/4/2023
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	8			HEX HD CAP SCREW, 1/2-13NC X 2-3/4 LG.
	8			ESNA HALF NUT, 1/2-13NC
8	16	AA5296000		WASHER
9	1	BB8891000		CONVEYOR LATCH PIN
	2			HEX HD CAP SCREW, 3/8-16NC X 1" LG.
	2			LOCK WASHER, 3/8-STD.
	2			FLAT WASHER, 3/8-SAE
10	8	BB9866000	*	WEAR STRIP
	16			FLAT HD CAP SCREW, 1/4-20NC X 1/2 LG.
11	8	M11200010	*	CHAIN, ASA: #80 STEEL, 97" LG. INCLUDING CONNECTING LINK
	8	M11400002	*	CONNECTING LINKS, ASA: #80 STEEL
12				NOT USED
13	6	BA9586000		NUT BAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9584 **Drawing: DB9488000**

Title: CONVEYOR FRAME ASSEMBLY
Description: 4 ROW, MODEL 61B033

Issued for Serial No.: 22018009
Master by: FRB **DATE:** 1/4/2023
Issued By: FRB **DATE:** 2/1/2023
Revision: C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
14	1	DB9489001		CONVEYOR FRAME
	3			HEX HD CAP SCREW, 1/2-13NC X 1-1/2 LG.
	3			JAM NUT, 1/2-13NC
15	2	AA8949001		TAKE-UP SHAFT
16	4	AA8950000		TAKE-UP MOUNTING BRACKET
	8			HEX HEAD CAP SCREW, 3/8-16NC X 1LG.
	8			FLAT WASHER, 3/8-STD.
	8			LOCKWASHER, 3/8-STD.
17	20	M76000007		SHAFT SET COLLAR
18	8	AA8953001	*	UHMW WHEEL

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8955 **Drawing: BB9178000**

Title:	MAGNETIC NOSE LOCK ASSEMBLY	**Issued for Serial No.:**	22018009
Description:	3" DIA. MAGNET, 24VDC	**Master by:**	RPH **DATE:** 9/5/2014
		Issued By:	FRB **DATE:** 2/1/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	BB9179000		WIRING DIAGRAM
1	1	BB9181000		MAGNET MOUNT PLATE WELDMENT
	1			SOC HD CAP SCREW, 5/16-16NC X 2-1/4 LG.
	1			ESNA NUT, 5/16-18NC
	1			WASHER, 5/16-18NC
2	2	M41000028		NEOPRENE WASHER, 1/8 THK X 3/8 ID X 13/16 OD
				MCMASTER CARR: #90133A420
3	1	E69000001		3" MAGNET, 24 VDC, 400 LB RATING, 1.5 LG.,
				APW: EM300-24-212
4	1	BB9182000		PLATE FOR NOSE ALIGNMENT PIN
	2			HEX HD CAP SCREW, 1/2-13NC X 2-1/2 LG.
	2			WASHER, 1/2-STD.
	2			LOCK WASHER, 1/2-STD.
	2			FULL HEX NUT, 1/2-13NC
	4			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	4			LOCK WASHER, 3/8-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9115 **Drawing: BA9407000**

Title:	GUIDE BAR ASSEMBLY	**Issued for Serial No.:**	22018009
Description:	986/987 STRAPPER CONVEYOR	**Master by:**	RPH **DATE:** 10/13/2016
		Issued By:	FRB **DATE:** 2/1/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1				NOT USED (PART OF MAGNETIC NOSE LOCK ON STRAPPER PARTS LIST)
2	1	CB6316036		GUIDE MOUNT
	3			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
	3			LOCK WASHER, 1/2-STD.
	3			FLAT WASHER, 1/2-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018009
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB **DATE:** 12/29/2014
		Issued By:	FRB **DATE:** 10/20/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018009		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	FRB	**DATE:**	10/20/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9602 **Drawing:** **NONE**

Title:	987 CONVEYOR CONTROL MODULE	**Issued for Serial No.:**	22018009		
Description:	986/987 STRAPPER CONVEYOR	**Master by:**	FRB	**DATE:**	4/25/2023
		Issued By:		**DATE:**	
		Revision:	B	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CA9724000		CONTROL MOUNTING STAND
	2			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	2			LOCKWASHER, 3/8-STD
2	1	BB9219000		ENCLOSURE (CONTROL VOLTAGE) TB1
	4			HEX HEAD CAP SCREW, 1/4-20NC X 1/2 LG
	4			LOCKWASHER, 1/4-STD
3	1	BB9457000		ENCLOSURE (HIGH VOLTAGE) TB2
	4			HEX HD CAPSCREW, 1/4-20NC X 1/2 LG
	4			LCOKWASHER, 1/4 STD
4	1	E24000173		CONTROL CONNECTOR, BASE,: MENCOM: #CHPT-24.5LS
5	1	E24000174		FEMALE INSERT, MENCOM: #CSHF-24
6	1	E24300029		JUNCTION BOX, MELTRIC: #513C7000
7	1	E24000117		RECEPTACLE, MELTRIC: #33-34043
8	1	E24600027		FINGER PLATES, MELTRIC: #61-6A346

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9602 **Drawing:** **NONE**

Title:	987 CONVEYOR CONTROL MODULE	**Issued for Serial No.:**	22018009		
Description:	986/987 STRAPPER CONVEYOR	**Master by:**	FRB	**DATE:**	4/25/2023
		Issued By:		**DATE:**	
		Revision:	B	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	CB6650000		STANCHION CONTROLS
	2			HEX HEAD CAP SCREW 3/8-16NC X 1 LG
	2			LOCKWASHER, 3/8-STD
	2			FLAT WASHER 3/8 STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9581 **Drawing: CB661100**

Title: WRAPPER GUIDE ASSEMBLY
Description:

Issued for Serial No.: 22018009
Master by: FRB **DATE:** 1/4/2023
Issued By: FRB **DATE:** 2/1/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CA8182009		WRAPPER GUIDE MOUNT
2	1	BA8798008		WRAPPER GUIDE SUPPORT
3	1	CB6143000		WRAPPER GUIDE
4	2	AA8522000		T-HANDLE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

F-12-87

PARTS LIST

PA9585 **Drawing: DB9492000**

Title: SUPPORT, LIFT AND DRIVE ASSY
Description:

Issued for Serial No.: 22018009
Master by: FRB **DATE:** 1/4/2022
Issued By: FRB **DATE:** 2/1/2023
Revision: C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9487000		CONVEYOR SUPPORT FRAME
	2			SQ HD SET SCREW, 1/2-13NC X 6" LG
	2			HEX NUT, 1/2-13NC
	4			HEX HEAD CAPSCREW, 1/2-13NC X 1" LG
	4			LOCKWASHER, 1/2-STD
2	1	CB6608000		SUPPORT FRAME-CONVEYOR
	4			HEX HD CAP SCREW, 3/4-10NC X 1-1/2 LG.
	4			LOCK WASHER, 3/4
2A	1	CB6610000		SUPPORT FRAME-MODIFIED
3				SHIM PACK CONSISTING OF:
	12	AA7622000		SHIM, (1/16) 2 EXTRA TO SHIP WITH MACHINE
	4	AA7622001		SHIM, (1/8)
	4	AA7622002		SHIM, (1/4)
4	4	CA8007036		BUMPER
	8			SOC HD CAP SCREW, 5/16-18NC X 1-1/2 LG.
5	2	M18000247	*	AIR CYLINDER, P.H.: #3.25CBB-2AU14AC7

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9585 **Drawing: DB9492000**

Title: SUPPORT, LIFT AND DRIVE ASSY
Description:

Issued for Serial No.: 22018009
Master by: FRB **DATE:** 1/4/2022
Issued By: FRB **DATE:** 2/1/2023
Revision: C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
6	2	M45000008		CYLINDER MOUNT PLATE, P.H.: #69196
	4			SOC HD CAP SCREW, 1/2-13NC X 1 3/4 LG
	4			HI COLLAR LOCK WASHER, 1/2"
7	4	AA7623000		SHIM
8	2	M45000011	*	FEMALE ROD CLEVIS, P.H.: #50942
9	2	M45000013	*	PIVOT PIN, P.H.: #68369
10	2	M22500167		GEAR MOTOR, EURODRIVE, SA47DRN90L4, 23.2:1 RATIO, 1-1/4 BORE, 2HP, TERMINAL BOX AT 180 DEGREES
11	2	CB0853000		TORQUE ARM
	8			HEX HEAD CAPSCREW M8 X 1.25 X 25 LG
	8			LOCKWASHER M8-STD
	8			FLAT WASHER M8-STD
12	4	AA6847000		RUBBER DISK
	4			SOCKET HEAD SET SCREW HALF DOG POINT 5/8-11NC X 2 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9585 **Drawing: DB9492000**

Title:	SUPPORT, LIFT AND DRIVE ASSY	**Issued for Serial No.:**	22018009		
Description:		**Master by:**	FRB	**DATE:**	1/4/2022
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			ESNA NUT, HALF 5/8-11NC
13	4	AA6846000		STEEL DISK
14	2	DA9050136		FLAT WASHER
	2			LOCKWASHER 7/16-STD
	2			HEX HEAD CAPSCREW 7/16-14 X 1 LG
15				NOT USED
16				NOT USED
17				NOT USED
18				NOT USED
19				NOT USED
20	1	M24800017	*	AIR VALVE, P.H.: #CC537B
	2			SOCKET HEAD CAPSCREW 1/4-20 X 1-3/4
	2			STD LOCKWASHER, 1/4 STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9585 **Drawing: DB9492000**

Title:	SUPPORT, LIFT AND DRIVE ASSY	**Issued for Serial No.:**	22018009		
Description:		**Master by:**	FRB	**DATE:**	1/4/2022
		Issued By:	FRB	**DATE:**	2/1/2023
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
20A	1	BB9845000		SPACER
22	3	M28000011		EXHAUST MUFFLER, P.H.: #ES-37MB
23	1	M50100015		FILTER/REGULATOR, P.H.: #07E32A13A
	1	M17000012		GAUGE, P.H.: #K4520N14160
	1	M75000056		MOUNT BRACKET, P.H.: #PS807P
	2			HEAD HEAD CAPSCREW 1/2-20 X 1/2
	2			FLAT WASHER, 1/4 STD
	2			LOCKWASHER, 1/4 STD
24	1	M53100003		MALE CONNECTOR, PH: 48F-6-6
25	2	M53100034		CLOSE NIPPLE, PH: 215PN-6
26	1	M53100024		PLUG, PH: 219P-6
27	1	M53100138		MALE BRANCH TEE, PH: 145F-6-6
28	1			HOSE ASSEMBLY, CONSISTING OF:

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9585 **Drawing: DB9492000**

Title: SUPPORT, LIFT AND DRIVE ASSY
Description:

Issued for Serial No.: 22018009
Master by: FRB **DATE:** 1/4/2022
Issued By: FRB **DATE:** 2/1/2023
Revision: C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	M36000113		HOSE, PH: 7212-381BK X 25" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B
29	1	M53100013		MALE ELBOW, PH: 149F-6-6
30	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 86" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B
31	2	M53100191		MALE CONNECTOR, PH: 48F-6-8
32	3	M53100075		BUSHING, PH: 209P-8-6
33	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 42" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B
34	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 42" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

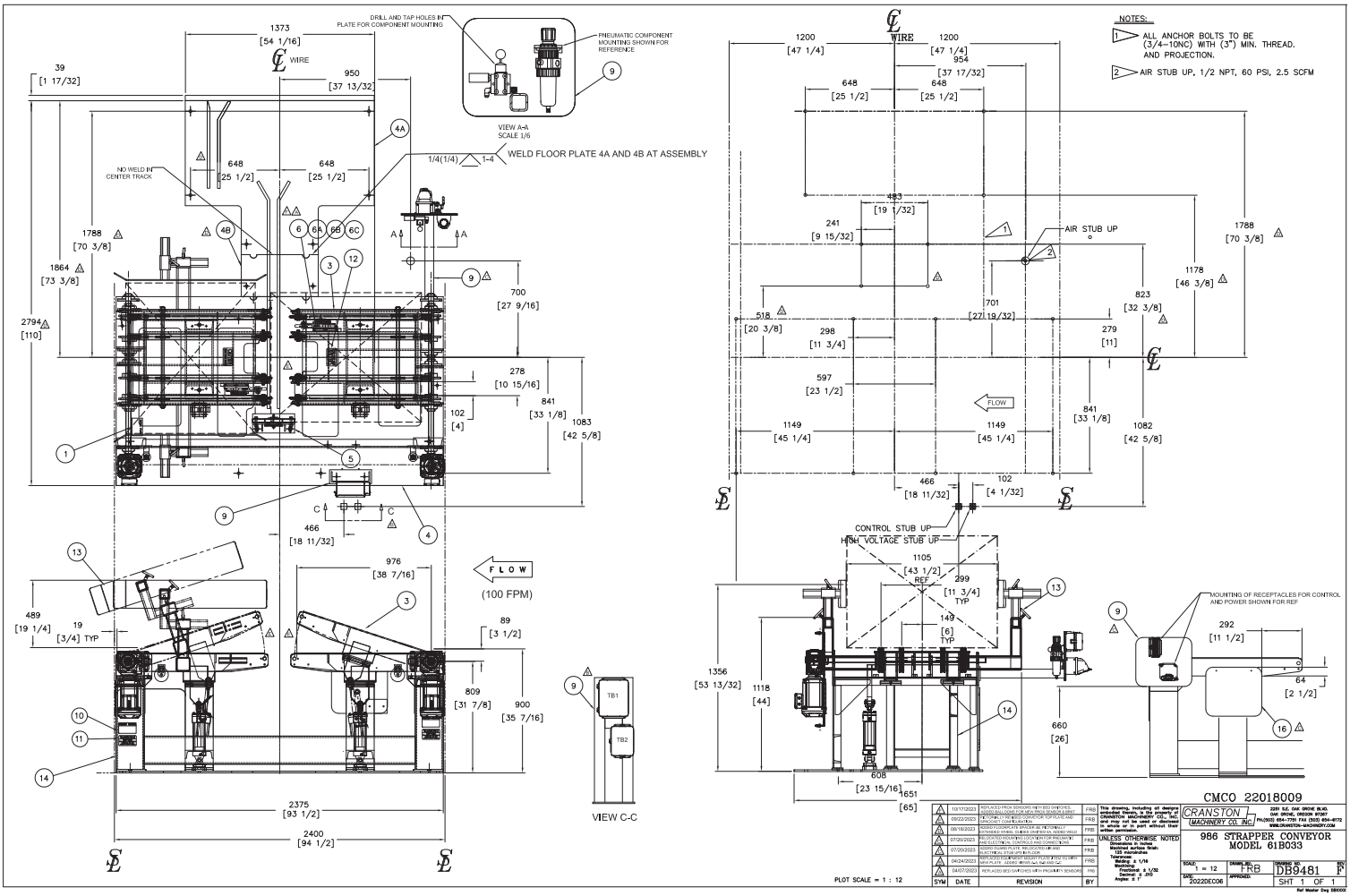
PA9585 **Drawing: DB9492000**

Title: SUPPORT, LIFT AND DRIVE ASSY
Description:

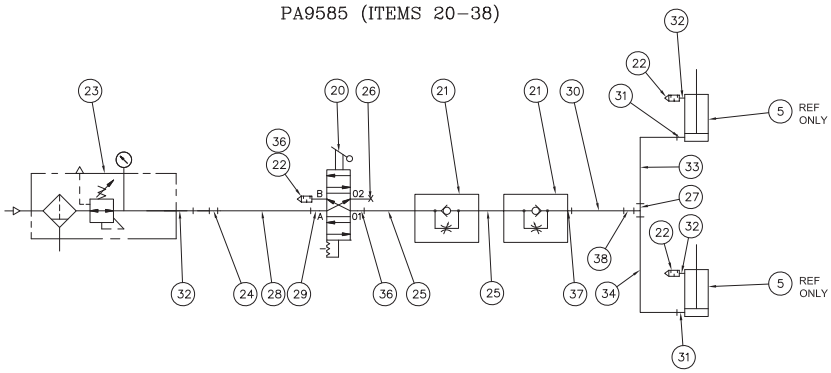
Issued for Serial No.: 22018009
Master by: FRB **DATE:** 1/4/2022
Issued By: FRB **DATE:** 2/1/2023
Revision: C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
35				NOT USED
36	2	M53100001		90 DEG STREET ELL, PH: 2202P-6-6
37	1	M53100127		45 DEG STREET ELL, PH: 159F-6-6
38	1	M53100015		FEMALE ELBOW, PH: 150F-6-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY


NOTES:
1 ALL ANCHOR BOLTS TO BE (3/4-10NC) WITH (3") MIN. THREAD. AND PROJECTION.
2 AIR STUB UP, 1/2 NPT, 60 PSI, 2.5 SCFM
WELD FLOOR PLATE 4A AND 4B AT ASSEMBLY
NO WELD IN CENTER TRACK
DRILL AND TAP HOLES IN PLATE FOR COMPONENT MOUNTING
PNEUMATIC COMPONENT MOUNTING SHOWN FOR REFERENCE
VIEW A-A SCALE 1/6
AIR STUB UP
CONTROL STUB UP
HIGH VOLTAGE STUB UP
FLOW
(100 FPM)
MOUNTING OF RECEPTACLES FOR CONTROL AND POWER SHOWN FOR REF
VIEW C-C
TB1
TB2
PLOT SCALE = 1 : 12
CMCO 22018009
CRANSTON MACHINERY CO. INC.
986 STRAPPER CONVEYOR
MODEL 61B033
DRAWING NO. DB9481
DRAWN: FRB
DATE: 20220EC06
SHT 1 OF 1

PA9585 (ITEMS 20–38)



PLOT SCALE = 1 : 1

SYM	DATE	REVISION	BY

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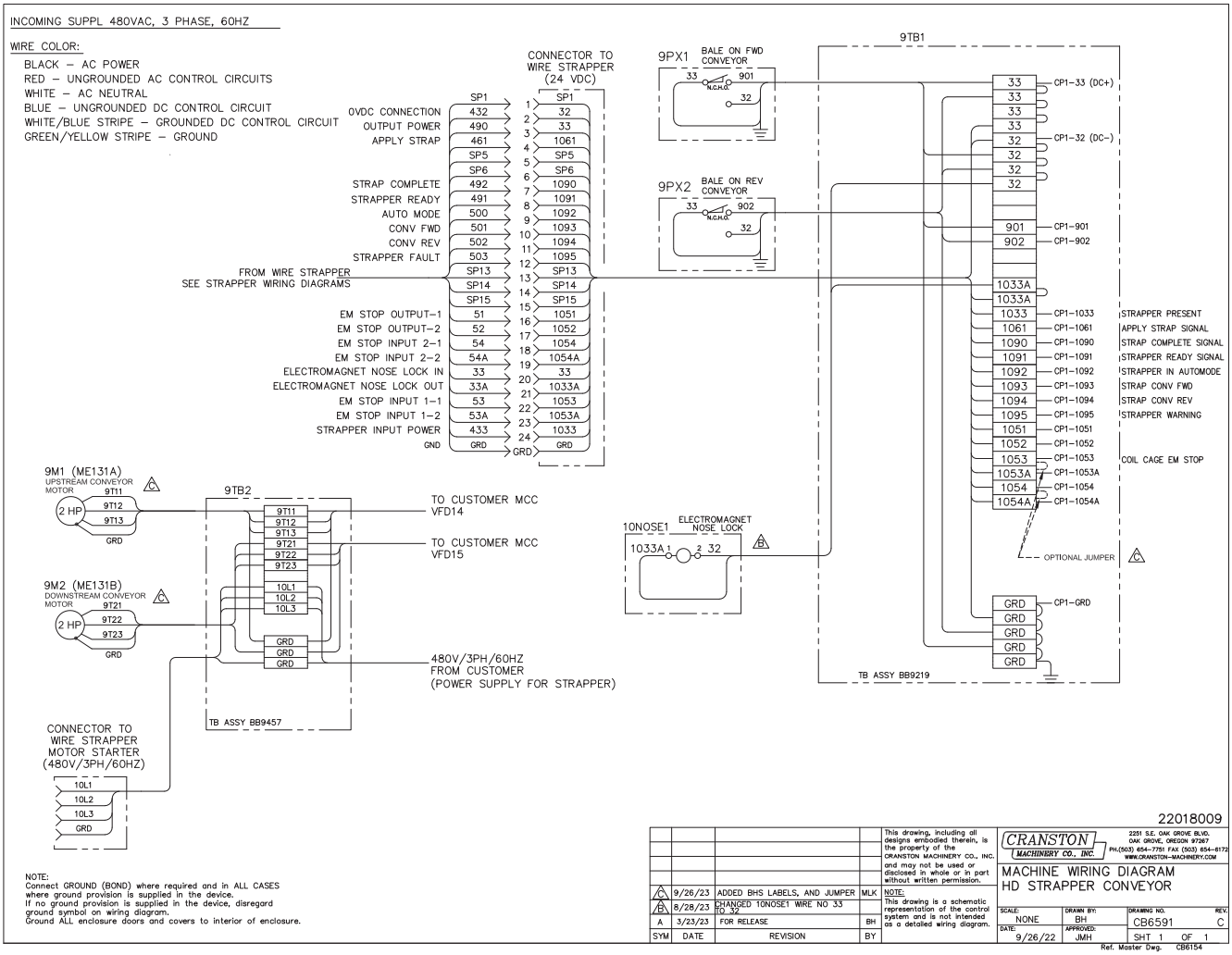
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

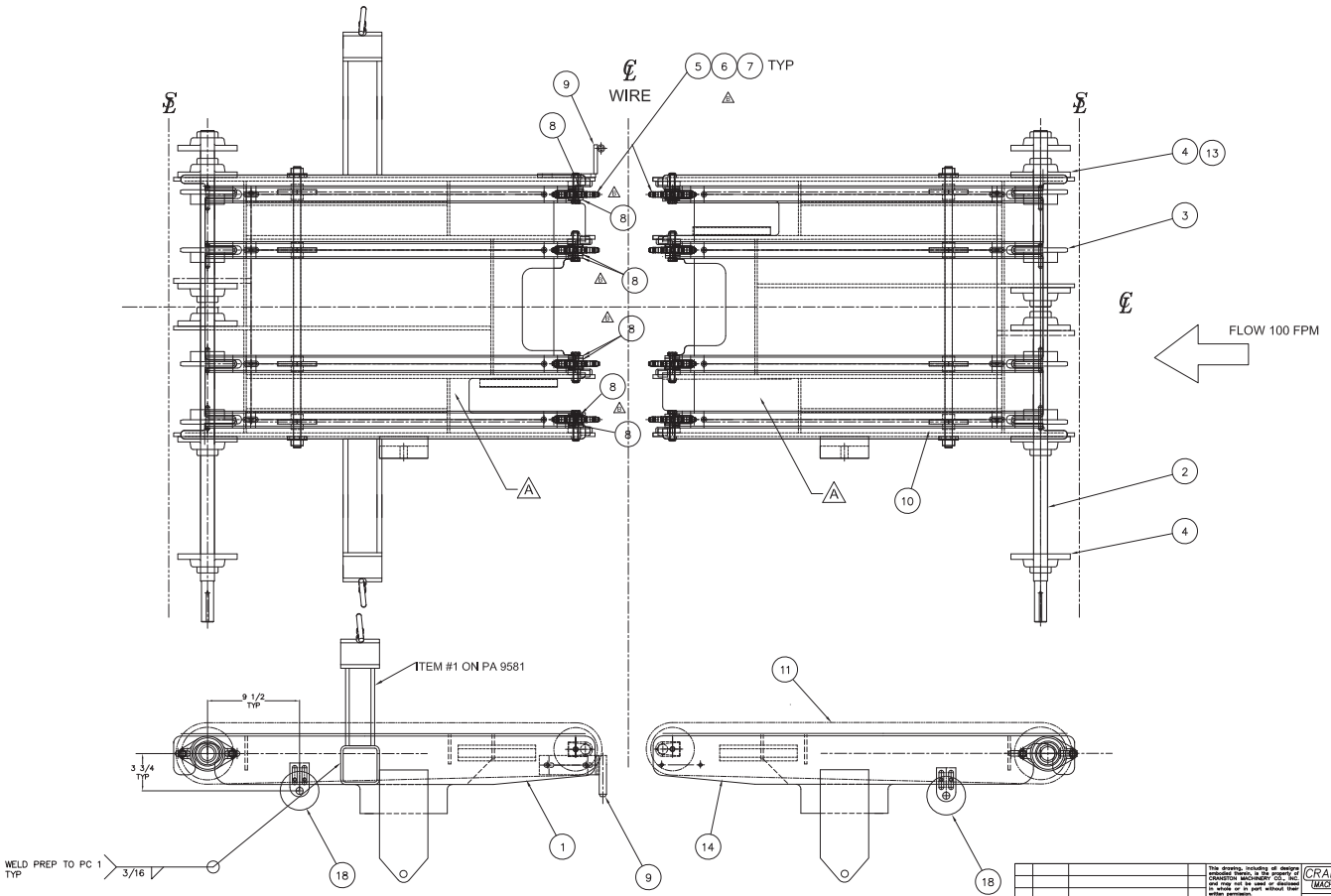
CRANSTON MACHINERY CO. INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

PNEUMATIC SCHEMATIC

SCALE:	DRAWN BY:	DRAWING NO	REV.
NONE	FRB	CB6612	
DATE:	APPROVED:	SHT 1 OF 1	
21DEC2022			

Ref Master Dwg BB9102


INCOMING SUPPL 480VAC, 3 PHASE, 60HZ
WIRE COLOR:
BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUIT
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUIT
GREEN/YELLOW STRIPE – GROUND
CONNECTOR TO WIRE STRAPPER (24 VDC)
0VDC CONNECTION
OUTPUT POWER
APPLY STRAP
STRAP COMPLETE
STRAPPER READY
AUTO MODE
CONV FWD
CONV REV
STRAPPER FAULT
FROM WIRE STRAPPER SEE STRAPPER WIRING DIAGRAMS
EM STOP OUTPUT–1
EM STOP OUTPUT–2
EM STOP INPUT 2–1
EM STOP INPUT 2–2
ELECTROMAGNET NOSE LOCK IN
ELECTROMAGNET NOSE LOCK OUT
EM STOP INPUT 1–1
EM STOP INPUT 1–2
STRAPPER INPUT POWER
GND
9PX1 BALE ON FWD CONVEYOR
9PX2 BALE ON REV CONVEYOR
N.C.H.O.
9TB1
CP1–33 (DC+)
CP1–32 (DC–)
CP1–901
CP1–902
CP1–1033
CP1–1061
CP1–1090
CP1–1091
CP1–1092
CP1–1093
CP1–1094
CP1–1095
CP1–1051
CP1–1052
CP1–1053
CP1–1053A
CP1–1054
CP1–1054A
CP1–GRD
STRAPPER PRESENT
APPLY STRAP SIGNAL
STRAP COMPLETE SIGNAL
STRAPPER READY SIGNAL
STRAPPER IN AUTOMODE
STRAP CONV FWD
STRAP CONV REV
STRAPPER WARNING
COIL CAGE EM STOP
OPTIONAL JUMPER
TB ASSY BB9219
9M1 (ME131A) UPSTREAM CONVEYOR MOTOR
9M2 (ME131B) DOWNSTREAM CONVEYOR MOTOR
2 HP
9TB2
TO CUSTOMER MCC VFD14
TO CUSTOMER MCC VFD15
480V/3PH/60HZ FROM CUSTOMER (POWER SUPPLY FOR STRAPPER)
TB ASSY BB9457
10NOSE1 ELECTROMAGNET NOSE LOCK
CONNECTOR TO WIRE STRAPPER MOTOR STARTER (480V/3PH/60HZ)
NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.
Ground ALL enclosure doors and covers to interior of enclosure.
22018009
This drawing, including all designs embodied therein, is the property of the CRANSTON MACHINERY CO., INC. and may not be used or disclosed in whole or in part without written permission.
C 9/26/23 ADDED BHS LABELS, AND JUMPER MLK
B 8/28/23 CHANGED 10NOSET WIRE NO 33 TO 32
A 3/23/23 FOR RELEASE BH
SYM DATE REVISION BY
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.
CRANSTON MACHINERY CO., INC.
2251 S.E. OAK GROVE BLVD. OAK GROVE, OREGON 97267
PH:(503) 654–7761 FAX (503) 654–8172
WWW.CRANSTON–MACHINERY.COM
MACHINE WIRING DIAGRAM
HD STRAPPER CONVEYOR
SCALE: NONE
DRAWN BY: BH
DRAWING NO. CB6591
REV. C
DATE: 9/26/22
APPROVED: JMH
SHT 1 OF 1
Ref. Master Dwg. CB6154



PLOT SCALE = 1 : 5

SYM	DATE	REVISION	BY
3	9/22/2023	SHORTENED WEAR STRIPS BY INCH	FRB
2	9/22/2023	BOTTOM FULLY REVISED MOUNTING COMPONENTS FOR IDLER SPROCKETS	FRB
1	03-22-2022	BOTTOM FULLY REVISED CONVEYOR TOP PLATES TO MATCH WELDSHEETS	FRB

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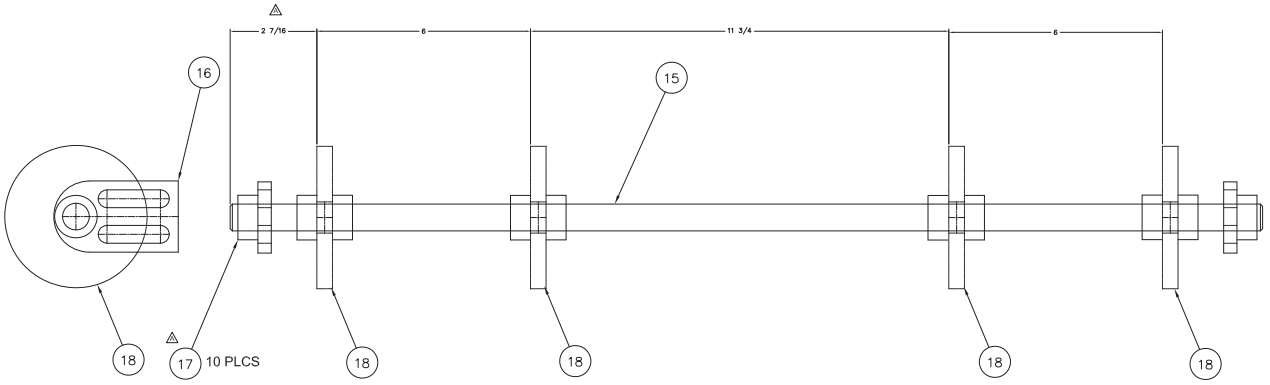
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish:
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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CONVEYOR FRAME ASSEMBLY

SCALE:	DRAWN BY:	DRAWING NO.	REV.
1:5	FRB	DB9488	A
DATE: 2022DEC20	APPROVED:	SHT 1 OF 2	

Ref Master Dwg DB0000



PLOT SCALE = 1 : 5

SYM	DATE	REVISION	BY
1	10/17/2023	ITEM 17 QTY 10 WAS 2, ADDED REF DIMS	FRB

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Machining:
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Decimal: ± .005
Angles: ± 1°

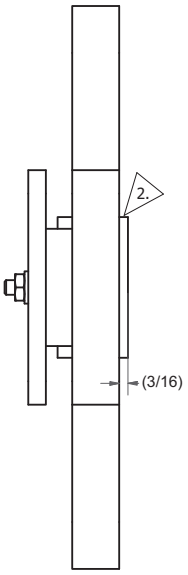
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CONVEYOR FRAME ASSEMBLY

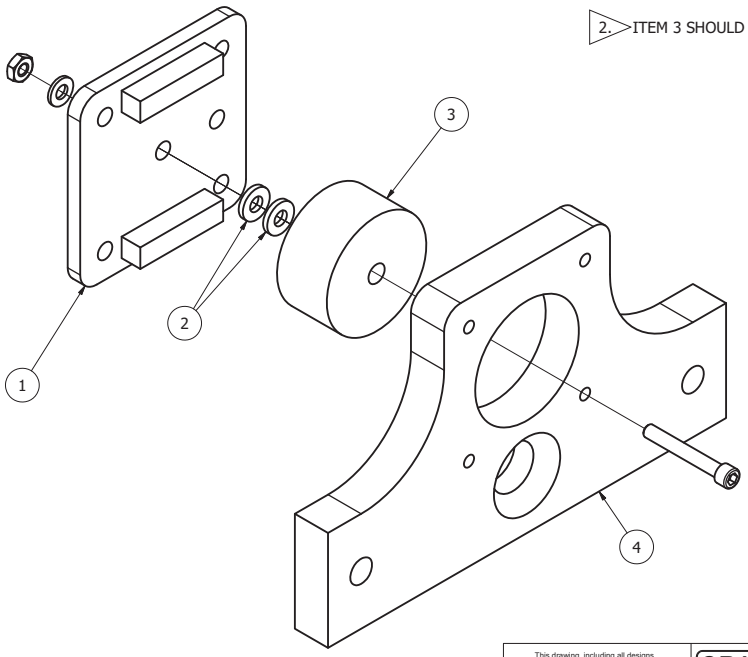
SCALE:	DRAWN BY:	DRAWING NO.	REV:
1:5	FRB	DB9488	A
DATE: 2022DEC20	APPROVED:	SHT 2 OF 2	

Ref Master Dwg DB9000

NOTES:
1. ITEM 3 (MAGNET) SHOULD BE ABLE TO PIVOT ON ITEM 2 (RUBBER WASHER) - DO NOT OVER TIGHTEN HARDWARE.
2. ITEM 3 SHOULD BE SLIGHTLY PROUD OF ITEM 4.



TOP VIEW
SCALE 1 / 2



REV	DATE	DESCRIPTION	BY
C	2/14/2022	ADD SECOND WASHER PC.2	DEN
B	1/5/21	ADDED NOTE	JDA
A	1/17/17	ADDED BOLT, WASHER, AND NUT DETAIL	JML

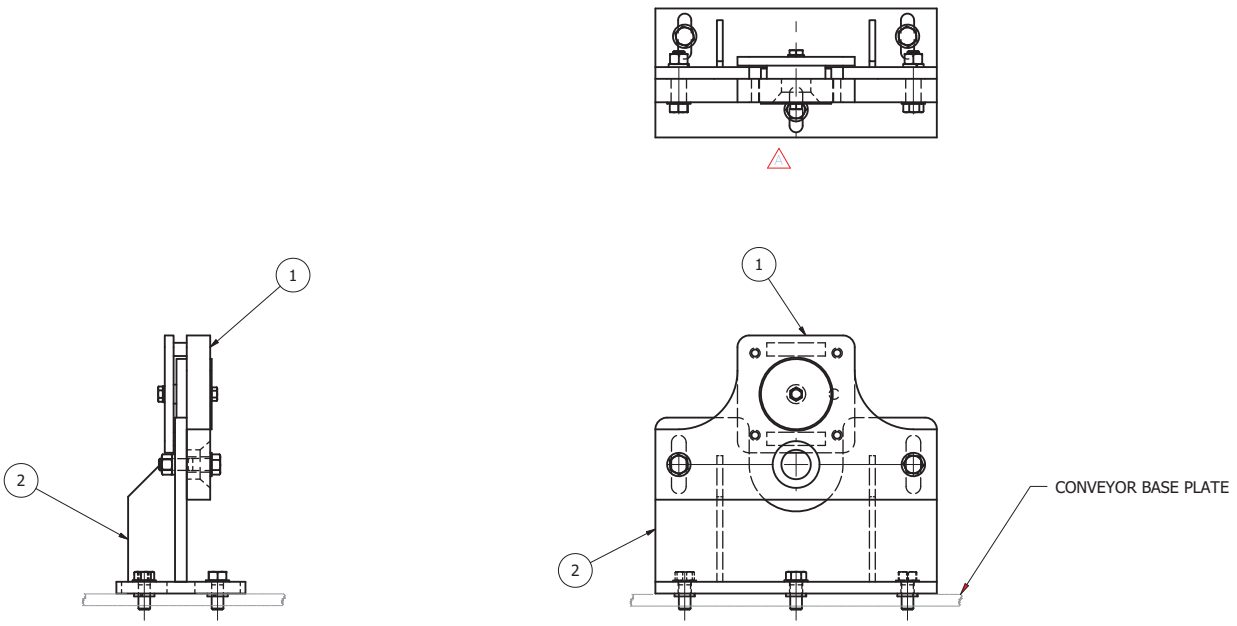
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Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1˚

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ASSEMBLY
MAGNETIC NOSE LOCK

SCALE:	DWN BY:	DRAWING NO.	REV.
1:2	JML	BB9178	C
DATE: 9/5/14	APP'D: DTB	SHT 1 OF 1	



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Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

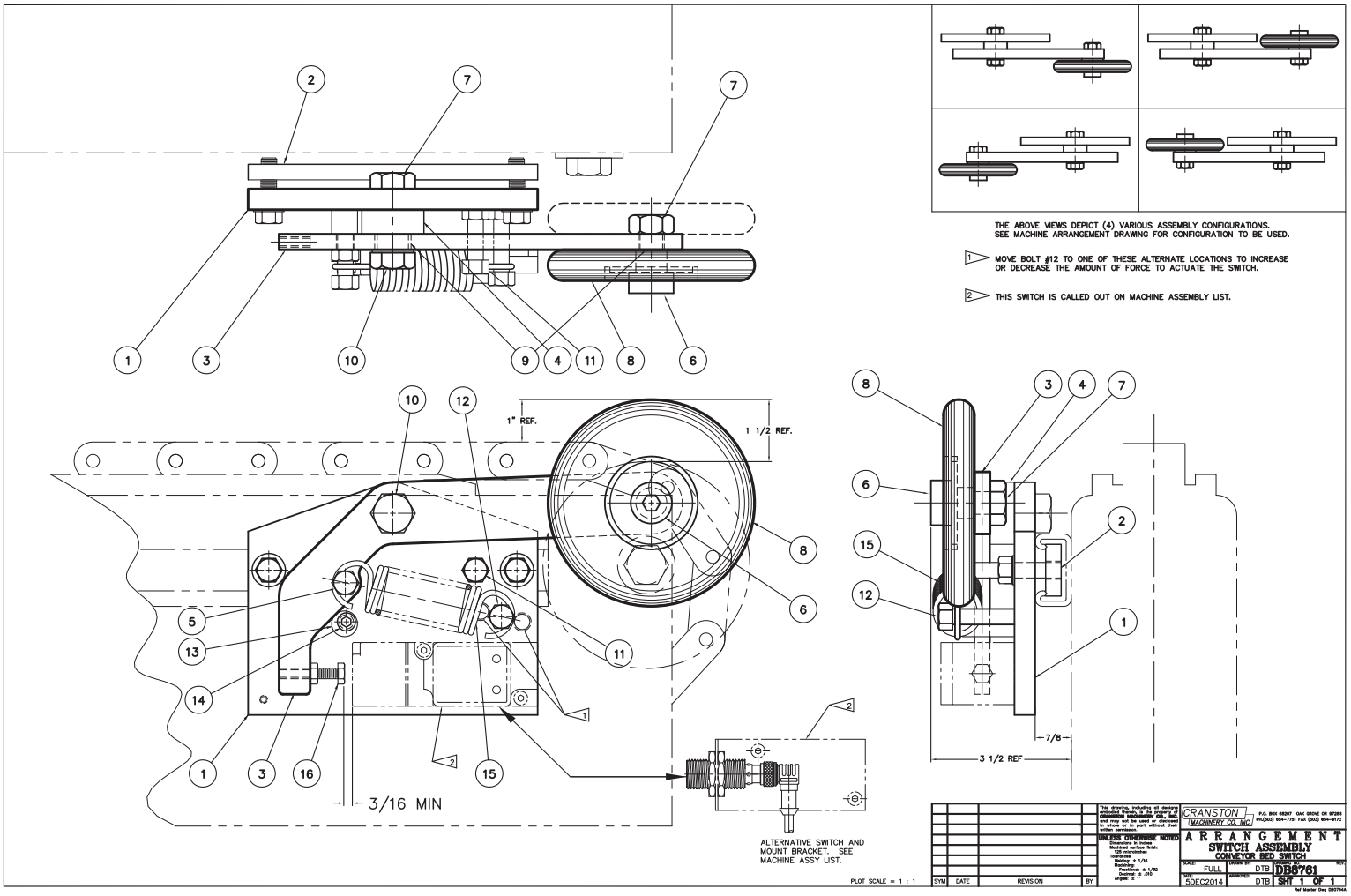
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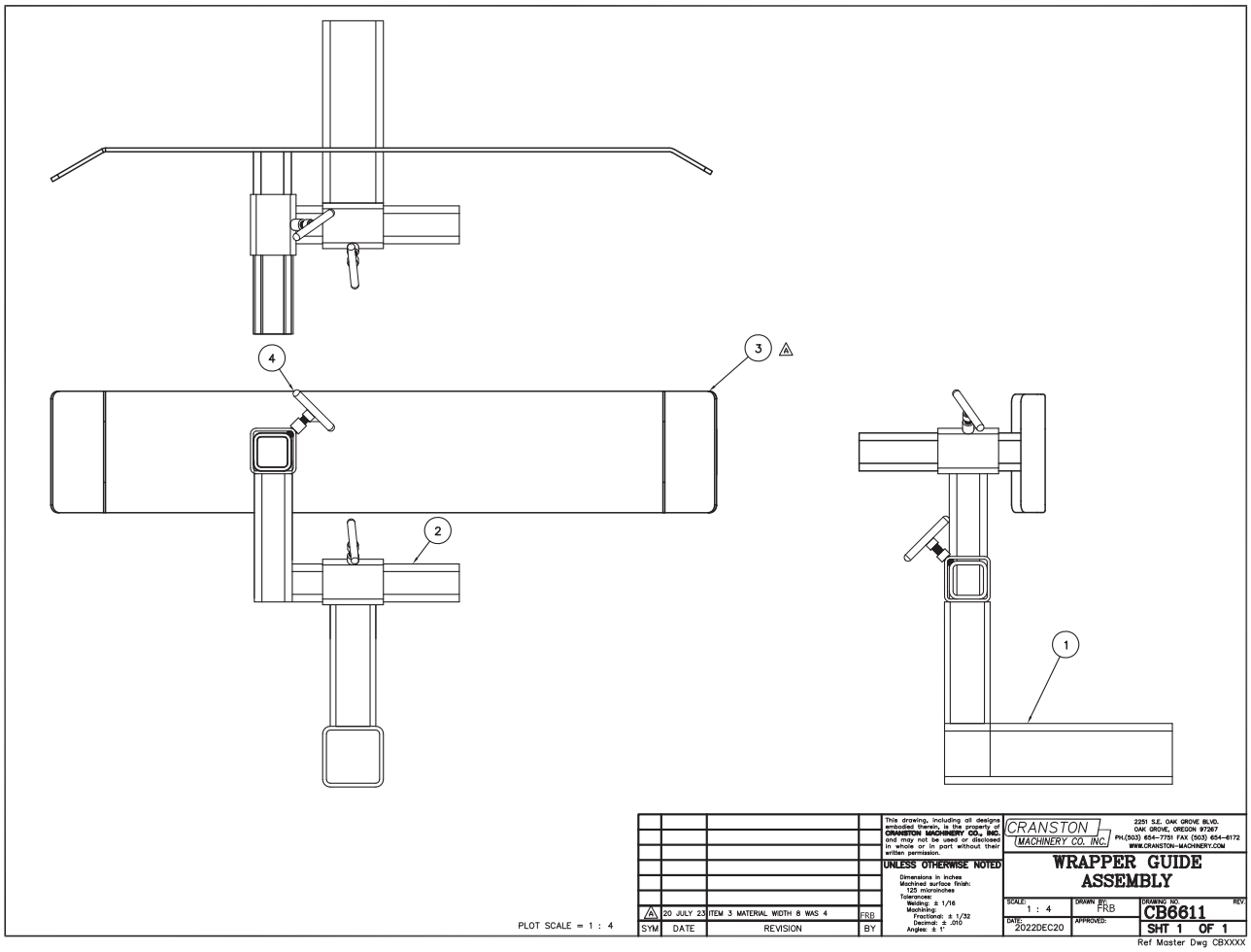
ASSEMBLY - MAGNETIC NOSE LOCK

SCALE:	DWN BY:	DRAWING NO.	REV.
NONE	JEL	BA9407	B
DATE:	APP'D:	SHT 1 OF 1	
10/29/2018	RPH		

REV	DATE	DESCRIPTION	DESIGNER
B	29OCT2018	ADDED MAGNETIC NOSE LOCK	JEL
A	6NOV2008	MADE BASE WIDER AND ADDED A BOLT - ECR3063	DTB

REV	DATE	DESCRIPTION	DESIGNER
A	6NOV2008	MADE BASE WIDER AND ADDED A BOLT - ECR3063	DTB
B	29OCT2018	ADDED MAGNETIC NOSE LOCK	JEL


THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
7/8
3 1/2 REF
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
CRANSTON MACHINERY CO. INC.
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ARRANGEMENT
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
SCALE FULL
DRAWN BY DTB
DRAWING NO. DB8761
REV.
DATE 5DEC2014
APPROVED DTB
SHT 1 OF 1
SYM DATE REVISION BY



PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY
A	20 JULY 23	ITEM 3 MATERIAL WIDTH B WAS 4	FRB

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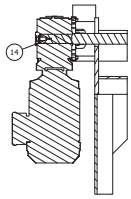
WRAPPER GUIDE ASSEMBLY

SCALE:	DRAWN BY:	DRAWING NO	REV.
1 : 4	FRB	CB6611	
DATE: 2022DEC20	APPROVED:	SHT 1 OF 1	

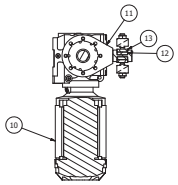
Ref Master Dwg CBXXXX

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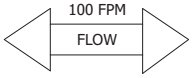
1. GEARMOTOR SPEEDS AT 1450 RPM (A)
CHAIN SPEED WILL BE 100 FPM

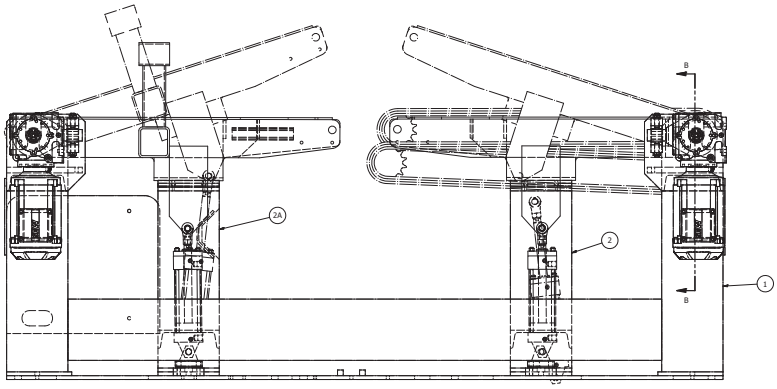


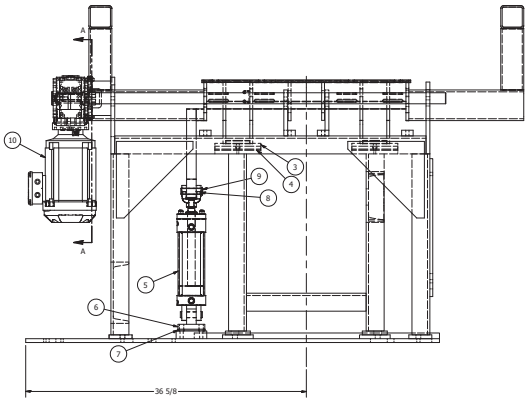
SECTION B-B
SCALE 1/6



SECTION A-A
SCALE 1/6







REV	DESCRIPTION	DATE	DESIGNER
A	CORRECTED TEXT FOR MOTOR & CHAIN SPEED	07/21/2023	FRB

REVISION HISTORY

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SUPPORT LIFT AND DRIVE ASSY

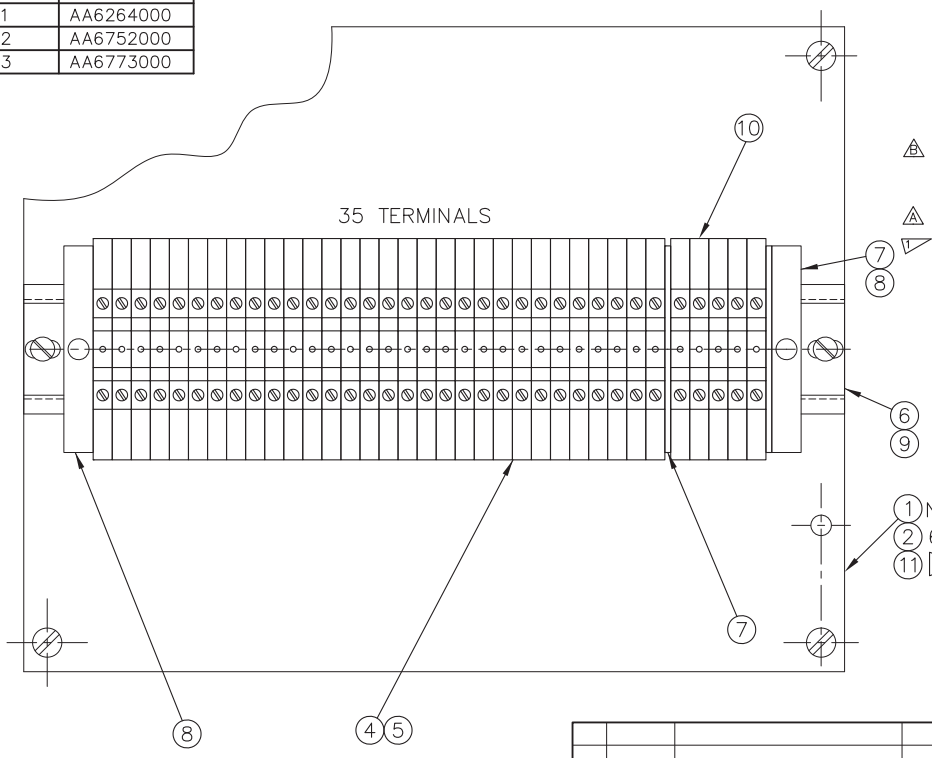
SCALE:	DRAWN BY:	DRAWING NO.	REV:
1/6	FRB	DB9492	A
DATE: 1/18/2023	APPD:	SHT 1 OF 1	

REF. DWG:

REV	DESCRIPTION	DATE	DESIGNER
A	CORRECTED TEXT FOR MOTOR & CHAIN SPEED	07/21/202 3	FRB

REVISION HISTORY

TAB. NO.	"A"
000	AA6144000
001	AA6264000
002	AA6752000
003	AA6773000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	SIZE
1	1	E26000005	ENCLOSURE, HOFFMAN #A-1008CH
2	1	E25000005	PANEL, HOFFMAN #A-10P8
3			
4	30	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
5	70	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
8	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
9	3		SLOT HD, MACH. SCREW, #8-32 x 3/8 LG.
10	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
11	2	"A"	WARNING DECAL

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER

SYM	DATE	REVISION	BY
A	3-23-23	CHANGE ITEM 7	BH
A	1-26-15	CORRECT GROUND TERMINAL NUMBER	BH

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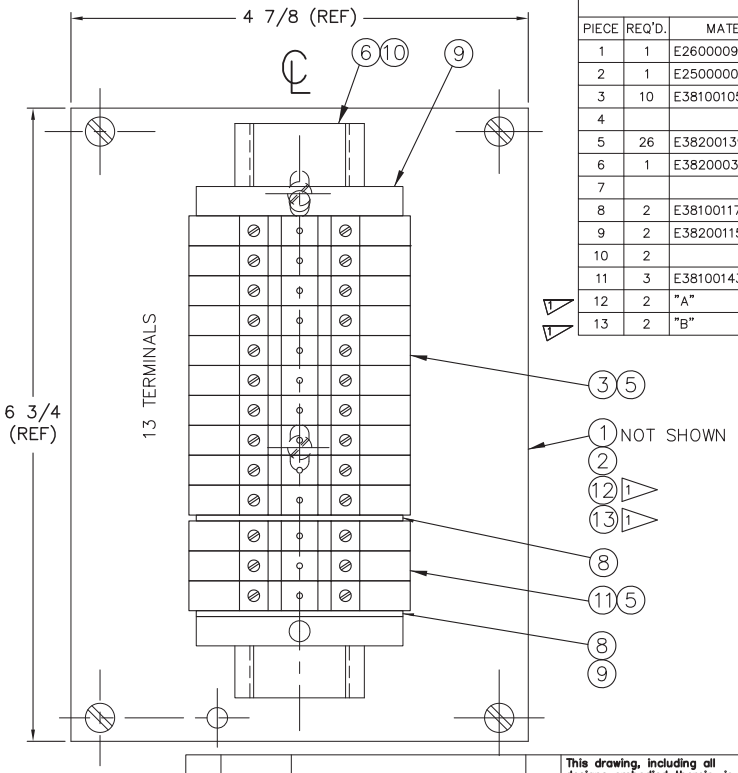
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TERMINAL BOX ASSEMBLY
10 x 8 x 4 ENCLOSURE
(30 GRAY, 5 GROUND TERMINALS)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9219	B
DATE: 10/26/09	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB8239

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26000094	ENCLOSURE, HOFFMAN #A-806CHNF
2	1	E25000008	PANEL, HOFFMAN #A-8P6
3	10	E38100105	TERMINAL, ALLEN BRADLEY #1492-J6
4			
5	26	E38200139	MARKER STRIP, ALLEN BRADLEY #1492-MR8X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
11	3	E38100143	TERMINAL, ALLEN BRADLEY #1492-JG6
12	2	"A"	WARNING DECAL
13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
A	3/23/23	CHANGE MARKER STRIP NUMBER	BH

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NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
10 GRAY, 3 GROUND TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	JMH	BB9457	A
DATE: 1/17/2018	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB9312

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- 1.2--DESCRIPTION OF OPERATION
- 1.3--CONTROL COMPONENT SCHEDULE

SECTION 2--ADJUSTMENTS
- 2.1--AIR SYSTEM PRESSURE
- 2.2--WIRE DRIVE SPEED
- 2.3--CUTTER HEIGHT
- 2.4--EJECTOR HEIGHT
- 2.5--GRIPPER COVER INSERT

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- 3.1--LUBRICATION AND MAINTENANCE SCHEDULE
- 3.2--LUBRICANT SELECTION GUIDE
- 3.3--75,000 CYCLE INSPECTION
- 3.4--SAMPLE LOG BOOK PAGE
- 3.5--WIRE THREADING

SECTION 4--TROUBLESHOOTING GUIDE

SECTION 5--DRAWINGS AND PARTS LIST

ELECTRIC / PNEUMATIC STRAPPER

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON ELECTRIC / PNEUMATIC WIRE STRAPPER IS AN AUTOMATIC MACHINE DESIGNED TO APPLY HIGH TENSILE ROUND STEEL WIRES AROUND PULP BALES AT PRE-SELECTED POSITIONS. THE WIRE IS TIED BY A DOUBLE TWISTED KNOT ON THE BOTTOM OF THE BALE. THESE WIRES HOLD THE BALE TOGETHER AND RETAIN PROTECTIVE WRAPPERS IN PLACE DURING TRANSPORTATION AND STORAGE.

THE WIRE STRAPPER IS SUPPORTED ON CASTERS AND MAY BE PULLED OUT OF THE MAIN BALE LINE FOR INSPECTION AND MAINTENANCE. ALL MACHINE COMPONENTS ARE EASILY ACCESSIBLE.

THE WIRE STRAPPER INCLUDES THE FOLLOWING:

A WIRE FEED UNIT, WHICH FEEDS THE WIRE INTO THE MACHINE AND TENSIONS IT AROUND THE BALE. THE FOUR DRIVE WHEELS ARE DRIVEN BY AN ELECTRIC MOTOR WITH A VARIABLE FREQUENCY DRIVE. THE WHEELS DRIVE THE WIRE AT VARIOUS SPEEDS FOR FEED AND TENSION.

A WIRE TRACK, WHICH GUIDES THE WIRE AROUND THE MACHINE OPENING. THE WIRE TRACK IS COMPRISED OF WIRE GUIDE PLATES WITH COVERS, WHICH DIRECT THE WIRE DURING WIRE FEED AND SUPPORT THE WIRE UNTIL IT IS TENSIONED AROUND THE BALE.

AN ACCUMULATOR, WHICH COLLECTS SLACK WIRE DURING THE TENSIONING PROCESS. THE ACCUMULATOR IS A FLAT, RECTANGULAR, UPRIGHT SECTION ON THE WIRE FEED END OF THE STRAPPER. DURING TENSIONING, ALL WIRE SLACK IS ENCLOSED IN THE ACCUMULATOR.

A PNEUMATICALLY OPERATED KNOTTER HEAD, WHICH IS A COMPACT, SELF-CONTAINED UNIT THAT PERFORMS THE WIRE TWISTING AND CUTTING FUNCTIONS OF THE STRAPPING CYCLE. A TOOTHED GRIPPER, LOCATED IN THE KNOTTER HEAD ON THE SIDE OPPOSITE THE WIRE FEED SIDE, GRIPS THE END OF THE WIRE UNTIL THE KNOT IS COMPLETED. A TWISTER GEAR, CENTRALLY-LOCATED IN THE KNOTTER HEAD, TWISTS THE WIRE TO FORM THE KNOT. THE CUTTER, MOUNTED ON AN ARM ON THE WIRE FEED SIDE OF THE KNOTTER HEAD, CUTS THE WIRE AFTER THE KNOT HAS BEEN FORMED. A TWO-PRONG EJECTOR MECHANISM, LOCATED JUST BELOW THE CUTTER, "KICKS" THE KNOTTED WIRE OUT OF THE KNOTTER HEAD TO COMPLETE THE MACHINE KNOTTING CYCLE.

A SET OF MANUALLY ADJUSTABLE VERTICAL WIRE GUIDES THAT ASSIST IN KEEPING THE WIRE STRAIGHT ACROSS THE BALE DURING THE TENSION CYCLE.

OPTIONALLY, THE MANUALLY ADJUSTABLE WIRE GUIDES CAN BE REPLACED BY PNEUMATICALLY OPERATED RETRACTING WIRE GUIDES THAT MOVE CLOSER TO THE BALE FOR IMPROVED WIRE PLACEMENT ON THE BALE, THEN RETRACT AWAY FROM THE BALE FOR CLEARANCE WHILE CONVEYING.

ELECTRIC / PNEUMATIC STRAPPER

1.2--DESCRIPTION OF OPERATION

THE CRANSTON WIRE STRAPPER OPERATES AUTOMATICALLY AND IS INTERLOCKED WITH THE STRAPPER CONVEYOR AND ADJACENT MACHINERY.

BEFORE A BALE MAY BE STRAPPED BY THE WIRE STRAPPER, THE MACHINE MUST FEED THE WIRE INTO POSITION. THE WIRE DRIVE WHEELS START AND THE WIRE FEEDS AROUND THE WIRE TRACK. THE WIRE DRIVE MOTOR WORKS IN A POSITIONING MODE FOR FEEDING THE WIRE AROUND THE TRACK. IN AUTO MODE, THE WIRE FEEDS TO A POSITION BEYOND THE HEAD AT A SLOW RATE. THE GRIPPER WILL BE RAISED (CLOSED) DURING THE INITIAL SLOW FEED TO ACT AS A GUIDE FOR THE WIRE THROUGH THE HEAD. AFTER THE FIRST FEEDING POSITION IS ACHIEVED, THE WIRE DRIVE TRANSITIONS TO A FASTER RATE AND FEEDS TO A SECOND POSITION THAT IS A FEW INCHES BEFORE THE HEAD. AS THE WIRE IS FEEDING, THE GRIPPER WILL LOWER (OPEN) BASED ON A TIMER IN THE PLC. AFTER THE SECOND POSITION IS ACHIEVED, THE WIRE DRIVE TRANSITIONS BACK TO A SLOW RATE AND FEEDS TO A THIRD POSITION THAT IS BEYOND THE HEAD. PRIOR TO REACHING THIS THIRD POSITION, THE WIRE REACHES THE WIRE STOP AND ACTUATES THE WIRE AT WIRE STOP SENSOR. THIS SENSOR WILL STOP THE FEEDING CYCLE AND CLOSE THE GRIPPER ON THE WIRE END. THE MACHINE IS NOW READY TO APPLY THE WIRE TO A BALE.

WHEN THE BALE HAS STOPPED IN POSITION ON THE INTERFACING STRAPPER CONVEYOR TO RECEIVE THE WIRE, THE WIRE DRIVE MOTOR PULLS THE WIRE QUICKLY IN REVERSE (THE TENSIONING DIRECTION) AND PULLS THE WIRE TIGHT AROUND THE BALE. WHEN THE WIRE HAS BEEN TENSIONED, THE KNOTTER COVER PARTIALLY OPENS, AND THE TWISTER GEAR TURNS TO FORM THE KNOT. WHEN THE KNOT IS COMPLETED, THE WIRE IS CUT AND EJECTED, AND THE KNOTTER COVER CLOSES.

THE BALE MAY BE DISCHARGED OR ADVANCED TO THE POSITION FOR THE NEXT WIRE AFTER THE KNOTTER COVER HAS CLOSED. AS THE CONVEYOR RESTARTS, THE MACHINE STARTS FEEDING THE WIRE FOR THE NEXT CYCLE.

1.3--CONTROL COMPONENT SCHEDULE

SV1 KNOTTER TWIST SOLENOID

LOCATION: MANIFOLD POSITION #1.
FUNCTION: ENERGIZING THE COIL CAUSES KNOTTER CYLINDER TO RETRACT AND ROTATE THE TWISTER GEAR (MAKING A KNOT), AND CUTS AND EJECTS THE WIRE. DE-ENERGIZING THE COIL CAUSES KNOTTER CYLINDER TO EXTEND TO HOME POSITION.

SV2 GRIPPER SOLENOID

LOCATION: MANIFOLD POSITION #2
FUNCTION: ENERGIZING THE COIL CAUSES GRIPPER TO OPEN (LOWER). DE-ENERGIZING THE COIL CAUSES GRIPPER TO CLOSE (RAISE).

SV3 TRACK OILER SOLENOID

LOCATION: ON FRAME BELOW OILER
FUNCTION: ENERGIZING THE COIL CAUSES OILER TO DRIP.

SV4 AIR JET SOLENOID

LOCATION: MANIFOLD POSITION #3
FUNCTION: ENERGIZING THE COIL CAUSES AIR JET TO BLOW AIR INTO KNOTTER.

SV5 WIRE DRIVE CLOSE SOLENOID

LOCATION: MANIFOLD POSITION #4
FUNCTION: ENERGIZING THE COIL CAUSES AIR BAG TO INFLATE AND CLOSE THE WIRE DRIVE WHEELS.

SV6A RETRACTING WILD WIRE GUIDES RAISE SOLENOID (OPTIONAL)

LOCATION: MANIFOLD POSITION #5
FUNCTION: ENERGIZING THE COIL CAUSES THE RETRACTING WILD WIRE GUIDES TO RAISE.

SV6B RETRACTING WILD WIRE GUIDES LOWER SOLENOID (OPTIONAL)

LOCATION: MANIFOLD POSITION #5
FUNCTION: ENERGIZING THE COIL CAUSES THE RETRACTING WILD WIRE GUIDES TO LOWER.

1.3--CONTROL COMPONENT SCHEDULE

PX1 - KNOTTER COVER CLOSED

LOCATION: RIGHT HAND ROLLER ARM, CUTTER SIDE
ACTUATION: RIGHT HAND SIDE PLATE
FUNCTION: INDICATES KNOTTER COVER IS CLOSED AND WIRE FEED CYCLE TO START.

PX2 - TWIST STROKE COMPLETE

LOCATION: CUTTER SIDE OF KNOTTER HEAD.
ACTUATION: RIGHT HAND DRIVE ARM.
FUNCTION: ENTERS COUNT ON CYCLE COUNTER AND CANCELS WIRE IN GRIPPER MEMORY.

PX3 - WIRE AT WIRE STOP

LOCATION: GRIPPER SIDE OF KNOTTER HEAD.
ACTUATION: STOP ARM.
FUNCTION: INDICATES WIRE IS IN GRIPPER AND STOPS WIRE FEED MOTOR.

RNG1 - OUT OF WIRE SENSOR (OPTIONAL)

LOCATION: ON INCOMING WIRE TOP ENTRY AT WIRE INFEED END OF MACHINE.
ACTUATION: WIRE PRESENT
FUNCTION: INDICATES WIRE IS PRESENT AT THE TOP ENTRY DOWN TUBE.

ELECTRIC / PNEUMATIC STRAPPER

SECTION 2--ADJUSTMENTS

2.1--AIR PRESSURE

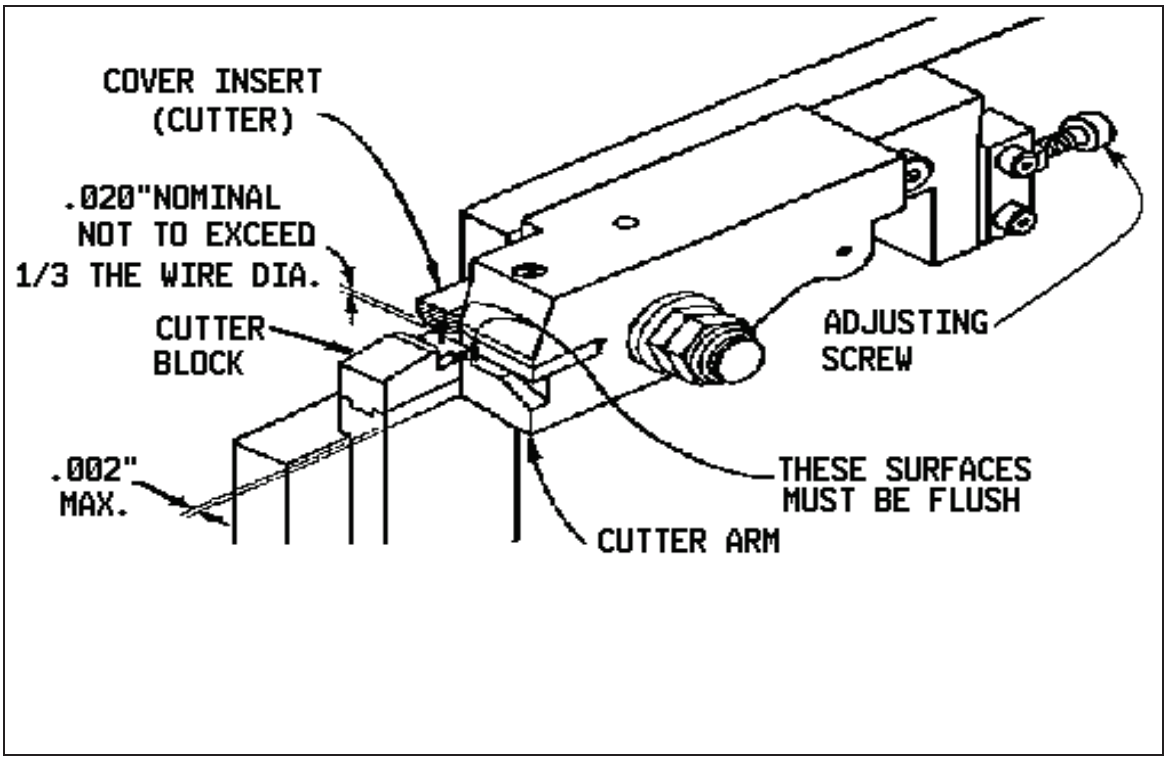
THE SYSTEM AIR PRESSURE SHOULD BE SET AT 65 PSI (MINIMUM). THIS SETTING MAY BE MADE AT THE MAIN AIR REGULATOR LOCATED TO THE RIGHT OF THE CONTROL PANEL.

THERE IS A REGULATOR UNDER SOLENOID VALVE SV5 THAT REGULATES AIR PRESSURE TO THE AIR BAG ON THE WIRE DRIVE UNIT. IF THE AIR PRESSURE IS SET TOO HIGH, THE WIRE WILL BE OVALIZED IN THE WIRE DRIVE WHEELS AND MAY CAUSE WIRE FEEDING PROBLEMS. IF THE AIR PRESSURE IS SET TOO LOW, THE WIRE MAY SLIP IN THE DRIVE WHEELS. WE RECOMMEND SETTING THIS REGULATOR TO 55 PSI.

2.2--WIRE DRIVE SPEEDS

THE CONTROL SYSTEM USES VARYING FEED AND TENSION SPEEDS. THESE SPEEDS ARE OPTIMIZED AT THE FACTORY DURING TESTING AND MACHINE CHECK-OUT.

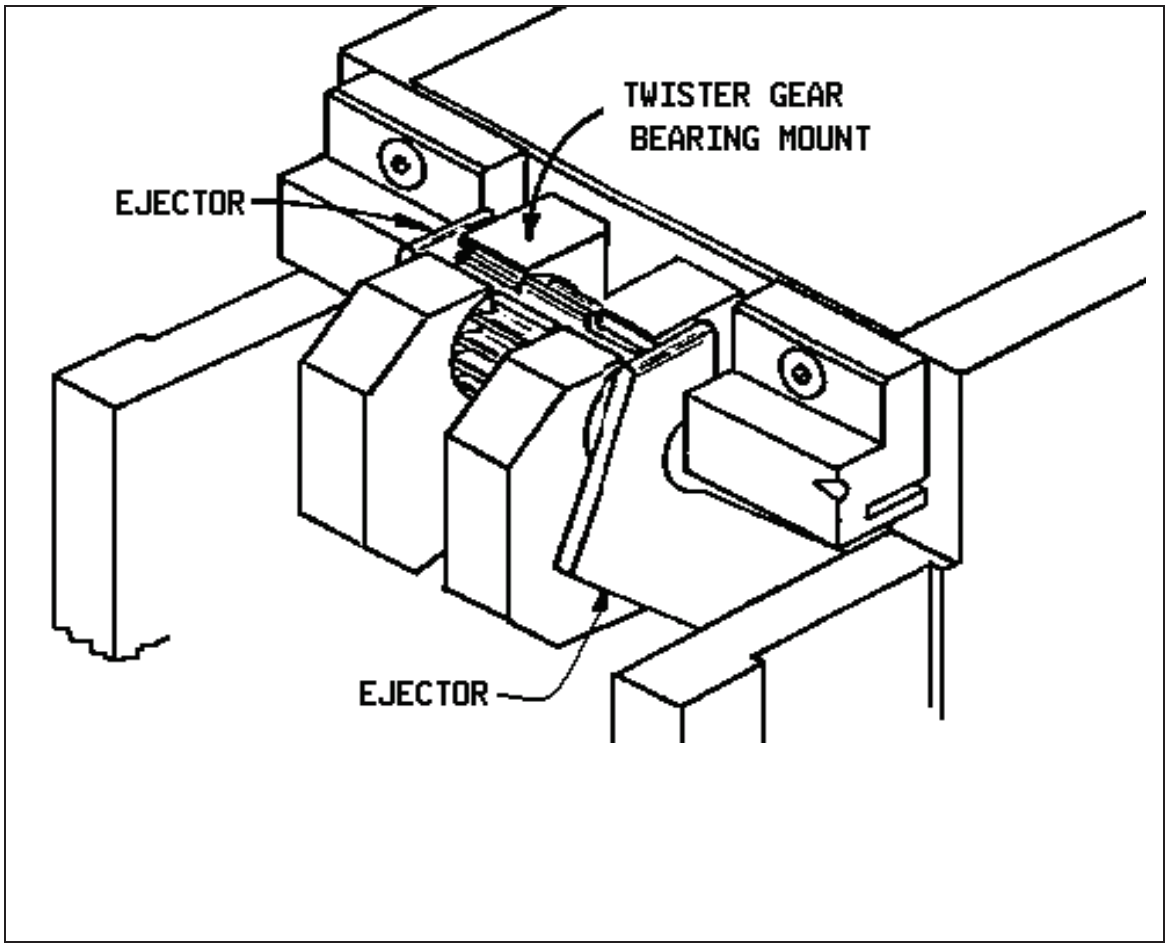
THESE SPEEDS SHOULD NOT BE CHANGED WITHOUT INSTRUCTION AND/OR HELP FROM CRANSTON MACHINERY'S SERVICE OR ENGINEERING PERSONNEL.



2.3--CUTTER HEIGHT

THE BOTTOM OF THE WIRE GROOVE IN THE CUTTER ARM MUST BE FLUSH WITH THE BOTTOM OF THE GROOVE IN THE CUTTER BLOCK. PERFORM THIS ADJUSTMENT AS FOLLOWS:

1. REMOVE THE KNOTTER COVER AND WIRE GUIDES BY REMOVING (4) 3/8" SOCKET HEAD CAP SCREWS.
2. LOOSEN THE ADJUSTING ARM LOCKNUT AND TURN THE ADJUSTING SCREW TO OBTAIN THE SPECIFIED CUTTER HEIGHT.
3. TIGHTEN THE ADJUSTING SCREW LOCKNUT AND THE ADJUSTING ARM LOCKNUT. REASSEMBLE THE KNOTTER COVER AND WIRE GUIDES. BE CAREFUL TO RETURN THE WIRE GUIDES TO THEIR PROPER POSITIONS.



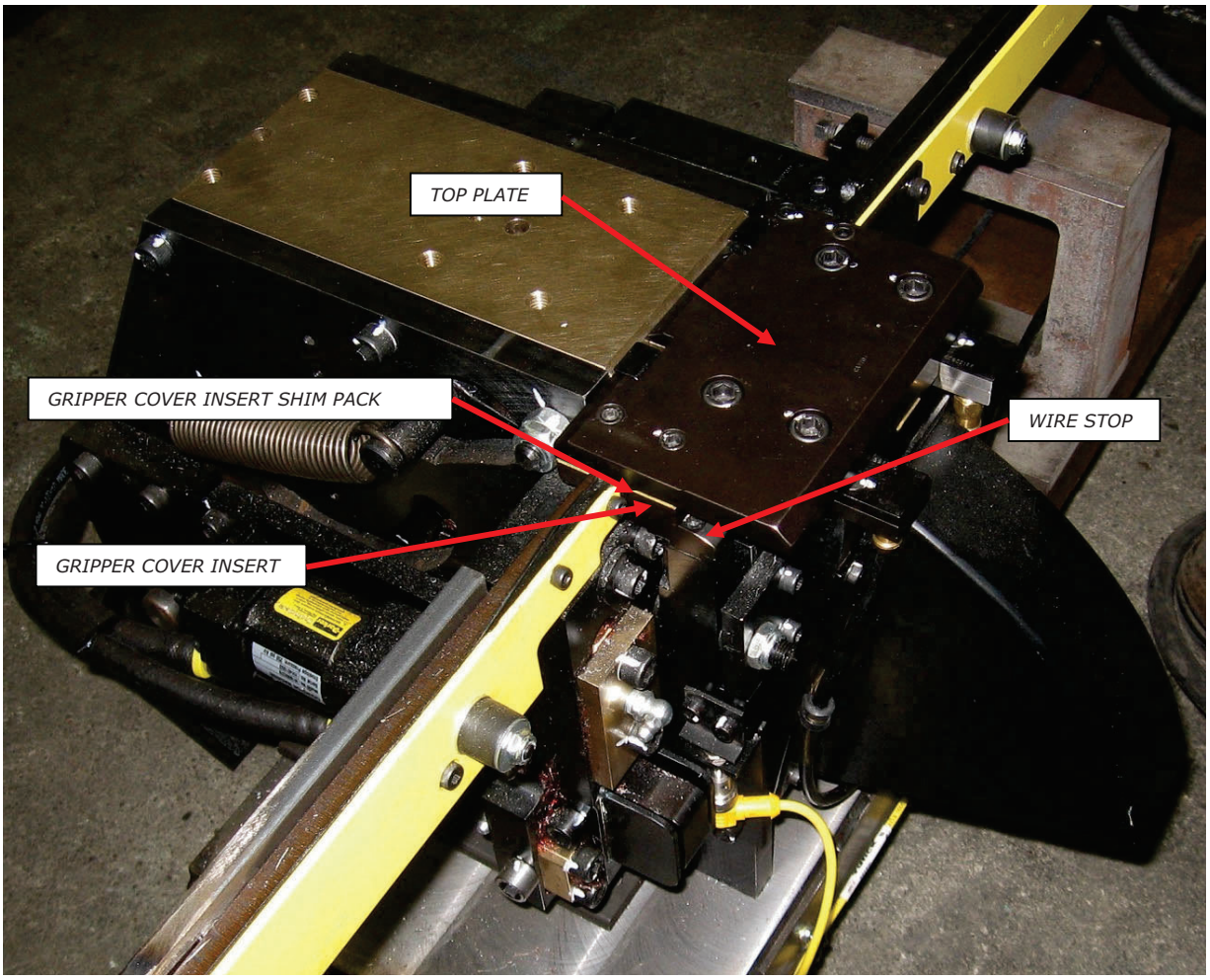
2.4--EJECTOR HEIGHT

THE TOP SURFACE OF THE EJECTORS SHOULD BE FLUSH WITH THE TOP SURFACE OF THE TWISTER GEAR BEARING MOUNTS WHEN THE KNOTTER CYLINDER IS FULLY RETRACTED.

1. PUT THE STRAPPER INTO MANUAL MODE.
2. USING THE MANUAL CONTROLS, OPEN THE KNOTTER HEAD AND THEN REMOVE THE PNEUMATIC SUPPLY FROM THE MACHINE.
3. TURN OFF THE MACHINE.
4. REMOVE THE KNOTTER COVER BY REMOVING (4) 3/8" SOCKET HEAD CAP SCREWS.
5. LOOSEN THE KNOTTER CYLINDER CLEVIS CLAMP SCREW.
6. ROTATE THE KNOTTER CYLINDER ROD TO ACHIEVE THE PROPER POSITION OF THE EJECTORS.
7. RE-TIGHTEN THE CLEVIS CLAMP SCREWS.
8. REPLACE THE KNOTTER COVER AND WIRE GUIDES. BE CAREFUL TO RETURN THE WIRE GUIDES TO THEIR PROPER POSITIONS.
9. RE-ATTACH PNEUMATIC SUPPLY AND TURN ON MACHINE.

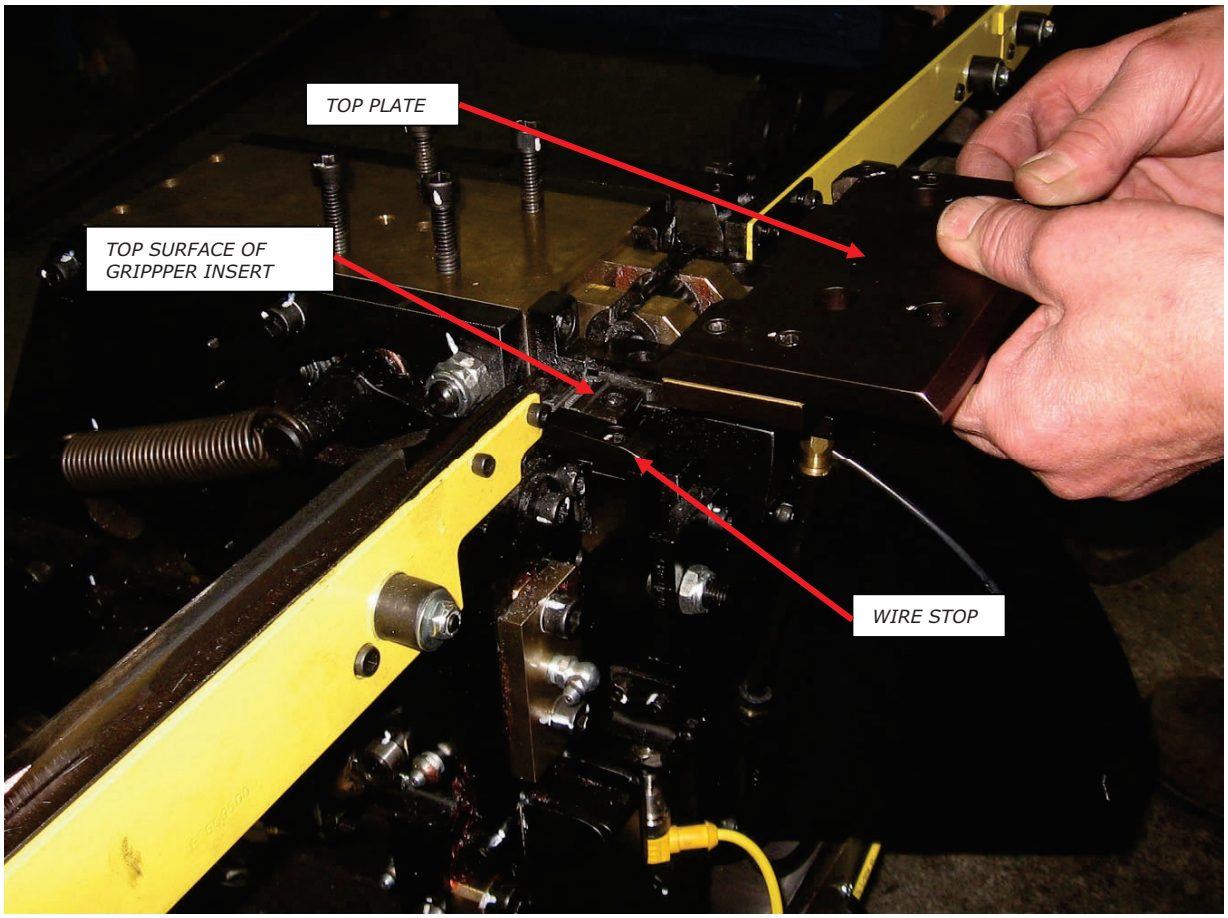
2.5--GRIPPER COVER INSERT

THE ACTUAL GRIPPER DOES NOT HAVE ADJUSTMENT, BUT THE GRIPPER COVER INSERT MUST BE PROPERLY SET FOR THE KNOTTER HEAD TO OPERATE CORRECTLY. THE ADJUSTMENT THAT FOLLOWS WAS MADE AT THE FACTORY, SO NEW MACHINES SHOULD NOT NEED ADJUSTMENT. THE FOLLOWING PROCEDURES DETAIL THE PROPER SETTINGS WHEN THE GRIPPER GUIDE OR GRIPPER COVER INSERT ARE REPLACED. THESE SETTINGS CAN ALSO BE CHECKED IF THE WIRE APPEARS TO BE SLIPPING IN THE GRIPPER.



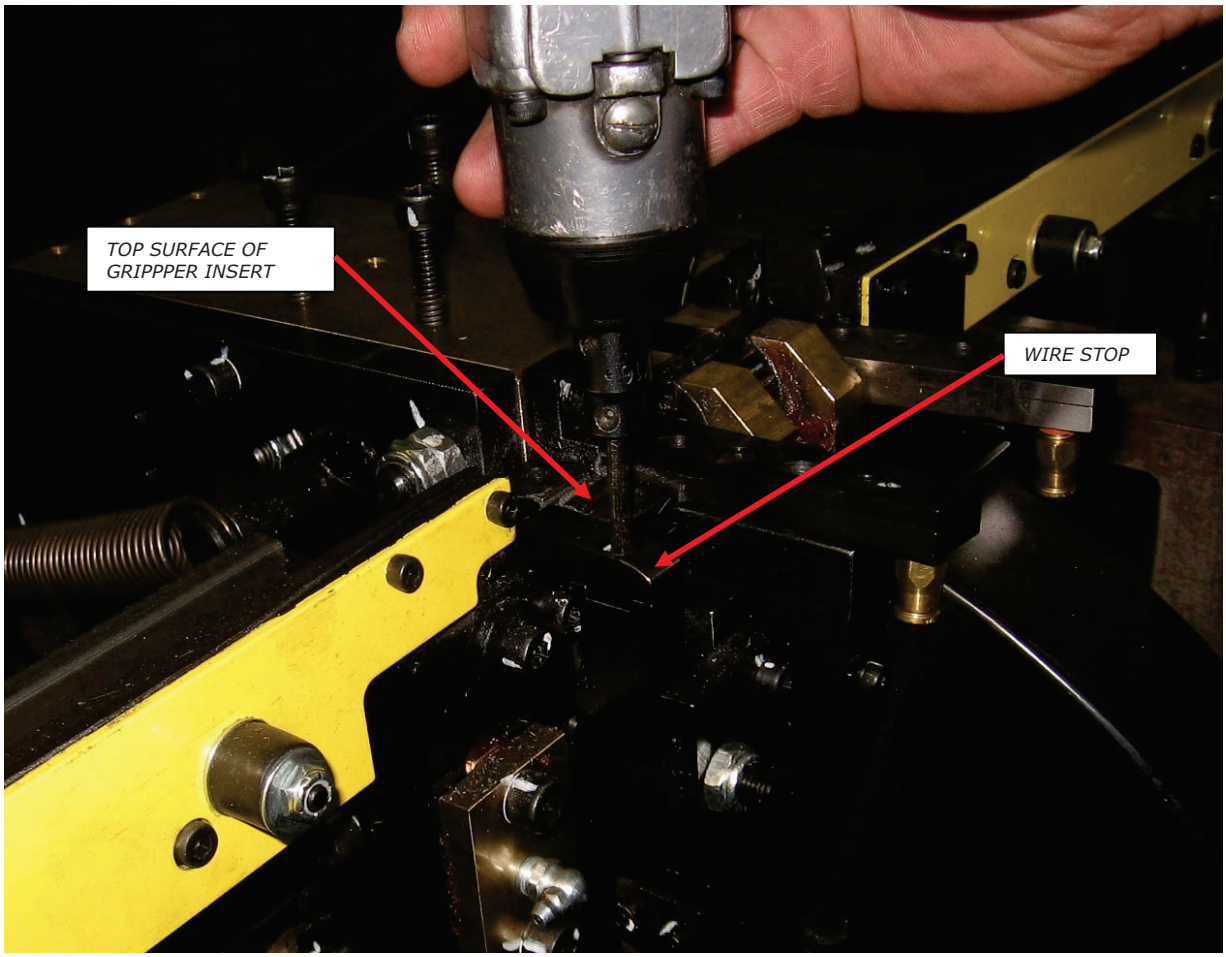
THE PHOTO ABOVE SHOWS THE AREA OF THE KNOTTER HEAD THAT WILL BE CHECKED.

2.5--GRIPPER COVER INSERT



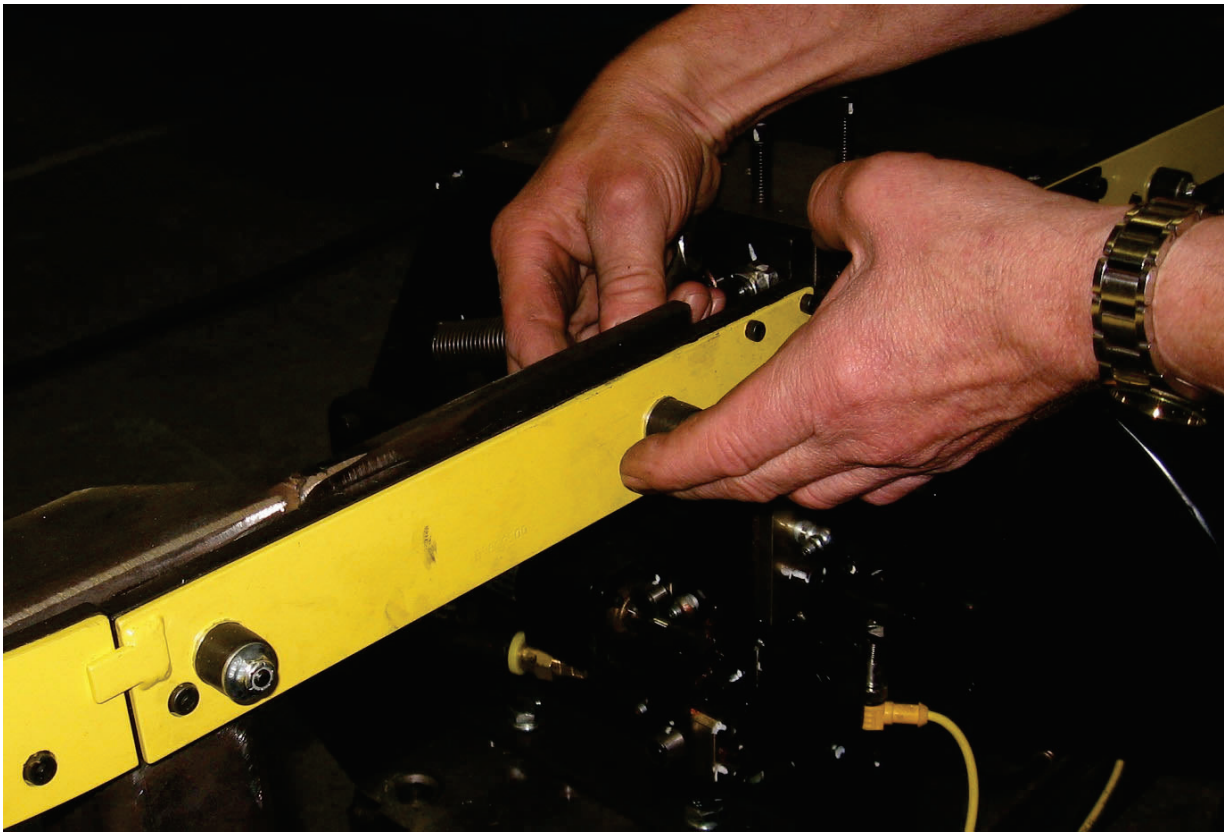
FIRST REMOVE THE (4) SOCKET HEAD CAP SCREWS AND REMOVE THE TOP PLATE.

2.5--GRIPPER COVER INSERT



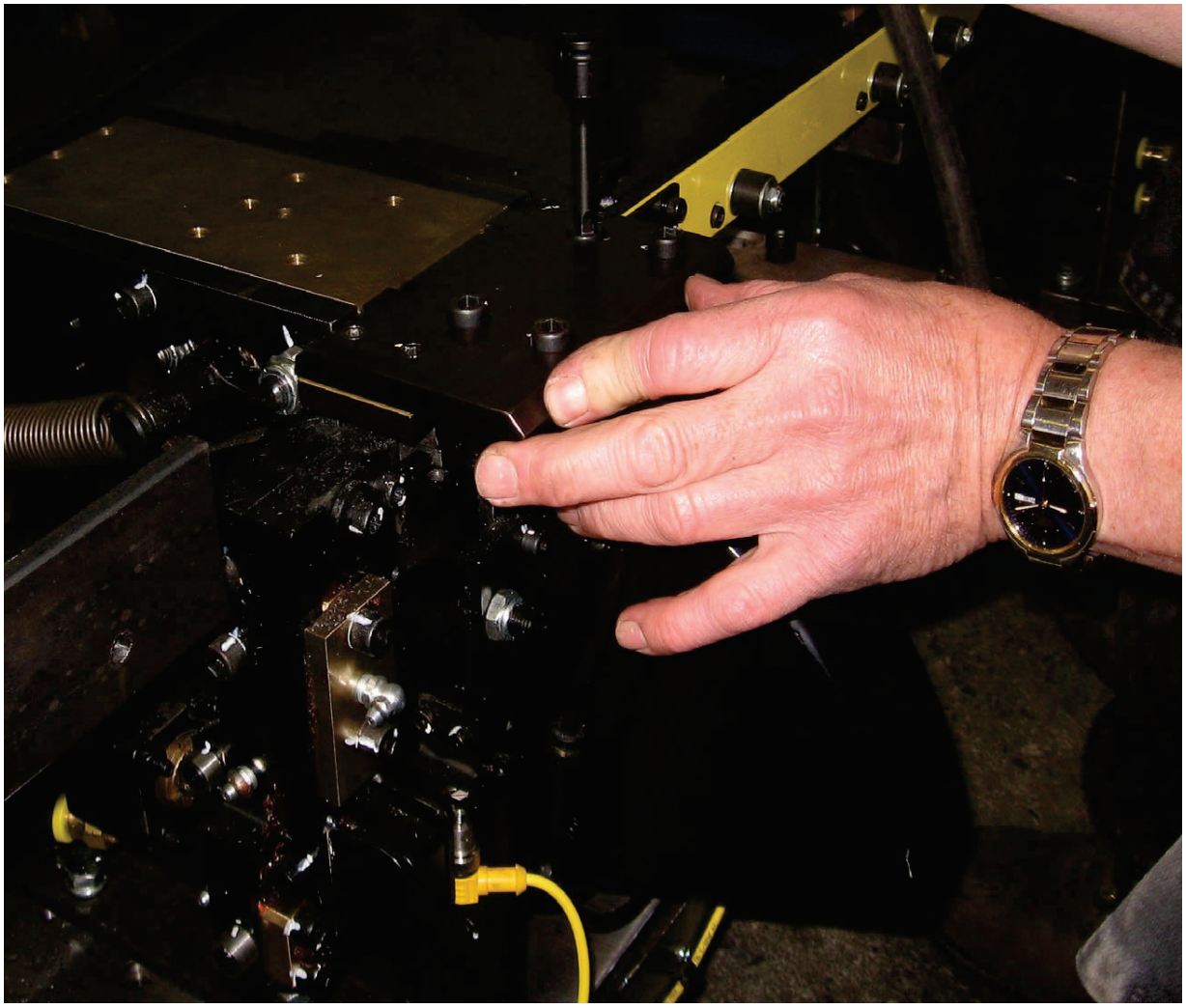
NEXT, REMOVE THE SOCKET HEAD CAP SCREW AND THE WIRE STOP. NOTE THE LOCATION OF THE TOP SURFACE OF THE GRIPPER INSERT. THE MEASUREMENT TO BE CHECKED WILL BE FROM THE TOP SURFACE OF THE GRIPPER INSERT TO THE UNDERSIDE OF THE GRIPPER INSERT COVER AFTER THE TOP PLATE IS RE-INSTALLED. THE WIRE STOP IS REMOVED SO THAT THERE IS ACCESS TO MAKE THE MEASUREMENT.

2.5--GRIPPER COVER INSERT



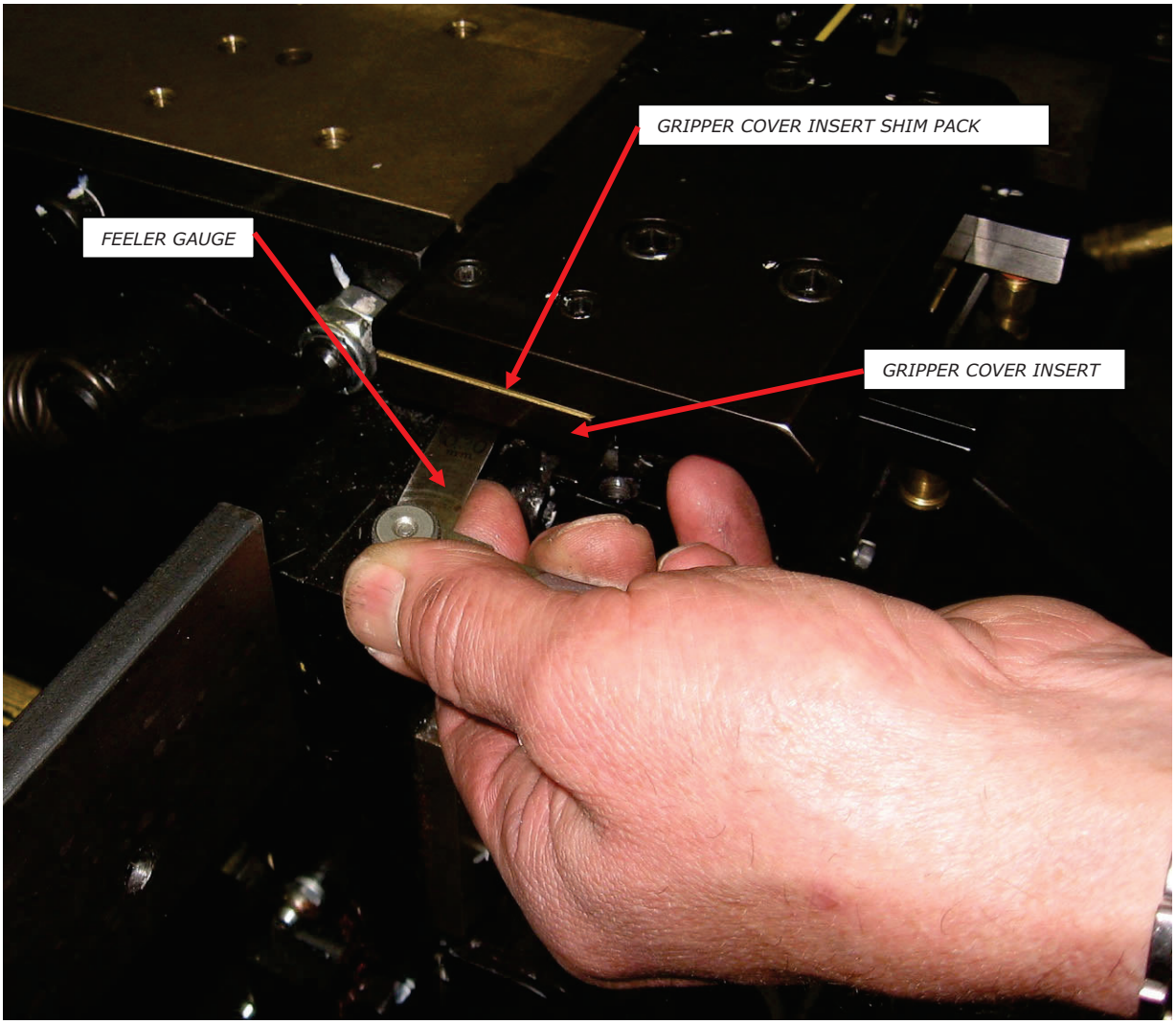
NEXT, REMOVE THE DISCHARGE WIRE TRACK AND COVER. REMOVE THESE PARTS SO THAT THERE IS ACCESS FOR THE MEASUREMENT THAT FOLLOWS.

2.5--GRIPPER COVER INSERT



REPLACE THE TOP PLATE.

2.5--GRIPPER COVER INSERT

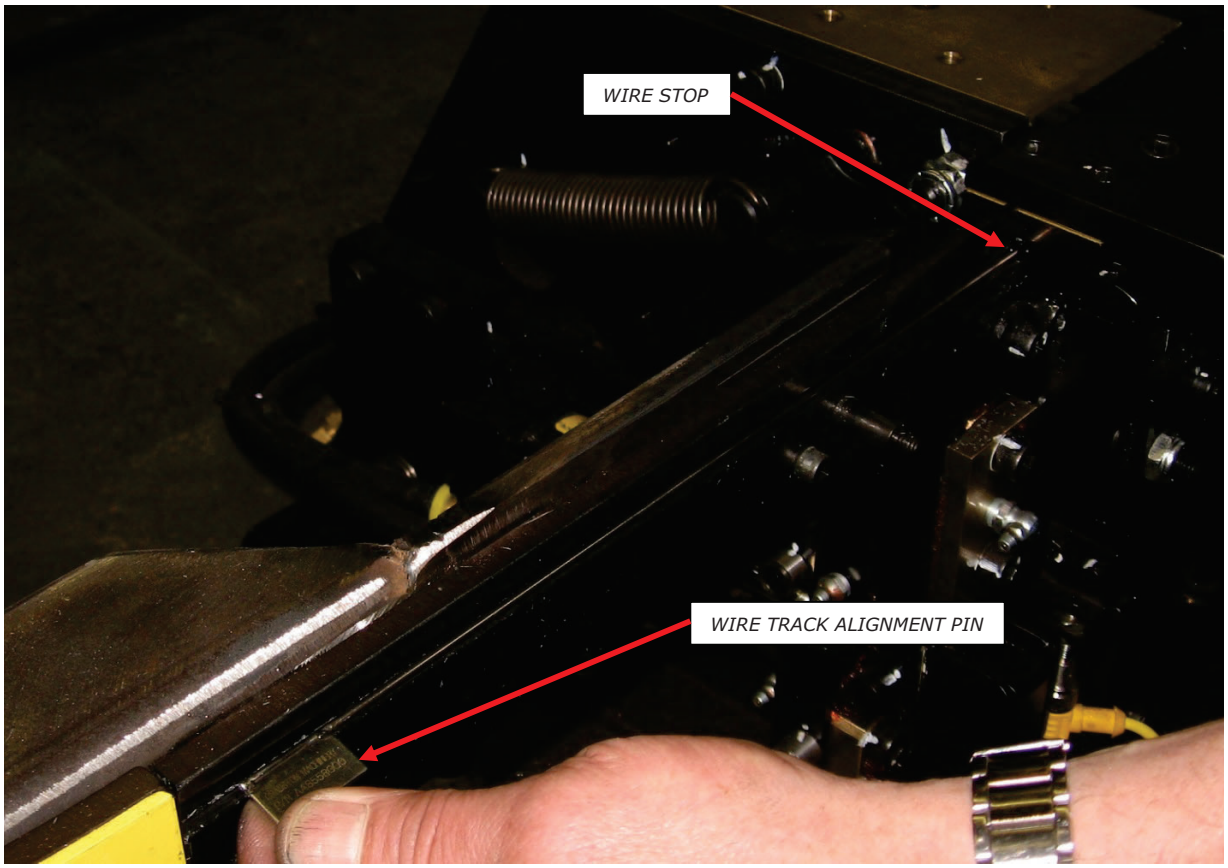


INSERT A FEELER GAUGE BETWEEN THE TOP OF THE GRIPPER INSERT AND THE UNDERSIDE OF THE GRIPPER COVER INSERT. THIS GAP SHOULD BE BETWEEN .013-.018" (3.3 – 4.5 MM).

THE GRIPPER COVER INSERT SHIM PACK, PART NUMBER AA5382000, CONSISTS OF .002" (.05 MM) THICK LAMINATED SHIMS. IF THE GAP IS LESS THAN .013" (3.3 MM), THEN REMOVE SHIM(S). IF THE GAP IS GREATER THAN .018" (4.5 MM), ADD SHIM(S).

AFTER CHECKING THIS MEASUREMENT, REMOVE THE TOP PLATE AND RE-INSTALL THE WIRE STOP. THEN RE-INSTALL THE TOP PLATE.

2.5--GRIPPER COVER INSERT



MOUNT THE DISCHARGE TRACK TO THE FRAME BUT DO NOT FULLY TIGHTEN THE BOLTS.

USE THE WIRE TRACK ALIGNMENT PIN, AA8558000, FROM THE TOOL KIT, TO ALIGN THE DISCHARGE WIRE TRACK WITH THE HOLE IN THE WIRE STOP. THEN TIGHTEN THE BOLTS THAT MOUNT THE DISCHARGE TRACK. REPLACE THE TRACK COVER.

TEST TRACK ALIGNMENT BY RUNNING A WIRE THOUGH THE MACHINE. IF THE WIRE FEEDS CLEANLY, THEN THE DISCHARGE WIRE TRACK IS ALIGNED. IF IT STUBS OR STOPS AFTER PASSING THROUGH THE KNOTTER, THE DISCHARGE WIRE TRACK IS NOT ALIGNED CORRECTLY.

THIS COMPLETES THE GRIPPER COVER INSERT ADJUSTMENT PROCEDURE.

ELECTRIC / PNEUMATIC STRAPPER

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT TO DO
TWISTER GEAR	TWICE EACH SHIFT	BLOW DOWN THE TWISTER GEAR AND SURROUNDING AREA THOROUGHLY AND LUBRICATE. THE TWISTER GEAR COLLECTS EXTRA DIRT AND PARTICLES AS IT IS BELOW THE BALES. ACCUMULATED DIRT MAY CAUSE MALFUNCTIONS.
AIR FILTER	DAILY	DRAIN ANY AND ALL WATER FROM THE AIR FILTER.
SOLENOID OILER DRIP TRAY	DAILY	DRAIN OIL FROM DRIP TRAY LOCATED UNDER WIRE TRACK AND OVER THE SOLENOID VALVES.
CYLINDER CLEVIS PINS	MONTHLY	APPLY GREASE TO CLEVIS PINS ON CYLINDERS
GRIPPER SLIDE	MONTHLY	APPLY GREASE TO THE LUBE FITTINGS ON THE GRIPPER SLIDE.
MACHINE INSPECTION	EVERY 75,000 CYCLES	THE WIRE STRAPPER SHOULD BE REMOVED FROM THE LINE AND INSPECTED AFTER EVERY 75,000 CYCLES. FOR AN INSPECTION OUTLINE AND GUIDE, SEE THE INSTRUCTIONS ON THE FOLLOWING PAGES.

3.2--LUBRICANT SELECTION GUIDE

GREASE - USE ANY HIGH QUALITY BEARING GREASE.

SOLENOID OILER - USE 10W NON-DETERGENT MOTOR OIL OR #32 TURBINE OIL

ELECTRIC / PNEUMATIC STRAPPER

3.3--75,000 CYCLE INSPECTION

AT INTERVALS OF APPROXIMATELY 75,000 CYCLES, REMOVE THE MACHINE FROM THE LINE FOR INSPECTION AND ADJUSTMENTS. THE INSPECTION WILL BOOST THE MACHINE'S RELIABILITY AND DECREASE "DOWN" TIME NOTICEABLY. THE INSPECTION AND ADJUSTMENTS SHOULD ONLY BE PERFORMED BY A PERSON WITH A THOROUGH WORKING KNOWLEDGE OF THE EQUIPMENT AND ITS OPERATION.

BEFORE THE INSPECTION, THOROUGHLY BLOW DOWN THE MACHINE AND WIPE IT DOWN TO REMOVE DIRT, GREASE, AND WIRE PARTICLES.

I. ACCUMULATOR
1--CHECK BOLTS FOR TIGHTNESS; INSPECT FOR EXTERNAL DAMAGE.
2--CHECK AND ADJUST ALL WIRE SHEAVES IN THE ACCUMULATOR AND ON THE WIRE CART.

II. WIRE DRIVE SYSTEM
1--CHECK ALL BOLTS AND FASTENERS FOR TIGHTNESS.
2--REPLACE WIRE DRIVE BEARINGS, IF NECESSARY.
3--REPLACE WIRE DRIVE WHEELS, IF:
A) THE WHEELS SHOW SOME FLAT SPOTS, OR
B) THE CLEARANCE BETWEEN THE TOP AND BOTTOM WHEELS IS LESS THAN 0.005" WITH THE WIRE IN PLACE.
4--BLOW OUT THE GEARS WITH AIR.
5--CHECK THE WIRE DRIVE COUPLING FOR PROPER ALIGNMENT AND SECURITY.
6--CHECK THE FEED WHEEL SHAFT LOCK NUTS FOR TIGHTNESS.

III. WIRE GUIDES AND KNOTTER HEAD
1--THOROUGHLY BLOW OUT THE STATIONARY WIRE GUIDES FROM THE CUTTER BLOCK TO THE DRIVE WHEELS. USE A PIECE OF WIRE TO OPEN THE TRACK COVERS WHILE BLOWING OUT THE GUIDES.
2--CHECK THE STATIONARY WIRE SEPARATORS:
A) FOR EXCESSIVE WEAR ON THE ENDS.
B) EVERY 300,000 CYCLES: REMOVE THE STATIONARY GUIDES FOR INSPECTION. CAUTION: ALWAYS REPLACE THE WIRE SEPARATOR IN THE PROPER POSITION.

3--CHECK CUTTER AND CUTTER BLOCK FOR EXCESSIVE WEAR; CHECK BOLTS FOR TIGHTNESS. THE CUTTER BLADE WILL NEED REPLACEMENT ONLY WHEN THE CUT ON THE WIRE END IS FAULTY.
4--CHECK CUTTER ALIGNMENT.
5--CHECK AND ADJUST THE TWISTER GEAR. THE SLOT MUST BE PRECISELY VERTICAL AT THE END OF THE STROKE. THE SLOT SHOULD LINE UP WITH THE JOURNAL OPENING IN THE CUTTER ON THE INCOMING SIDE.
6--CHECK TO ENSURE THAT THE GRIPPER SYSTEM IS SECURE. LUBRICATE THE GRIPPER AT THE LUBE POINTS WITH A LIGHT GREASE. THE GRIPPER WILL NEED REPLACEMENT ONLY WHEN THE WIRE FAILS TO HOLD DURING OPERATION, ESPECIALLY DURING THE "TENSION" AND "TWIST" PORTIONS OF THE MACHINE CYCLE.

3.3--75,000 CYCLE INSPECTION (CONT'D)

IV. WIRE TRACK

1--REPLACE ANY MISSING STUDS IN THE WIRE GUIDES.

2--EVERY THIRD INSPECTION: REMOVE THE COVERS AND CLEAN.

V. CONVEYOR

NOTE: THE CONVEYOR WILL NORMALLY BE IN USE DURING THE WIRE STRAPPER INSPECTION AND CONVEYOR MAINTENANCE MAY BE SCHEDULED TO A LATER SHUTDOWN. VISUALLY INSPECT THE CONVEYOR AT THIS TIME, AND ADJUST AS OUTLINED BELOW, WHEN POSSIBLE.

1--CHECK ALL NUTS AND BOLTS FOR TIGHTNESS.

2--ADJUST CONVEYING CHAINS FOR PROPER TENSION AND ALIGNMENT.

VI. ELECTRICAL COMPONENTS

1--CHECK ALL SWITCHES FOR SECURE MOUNTING, CORRECT ADJUSTMENT, AND PROPER OPERATION.

2--CHECK ALL CONVEYOR PROXIMITY SWITCHES FOR MOUNTING, ADJUSTMENT, AND PROPER OPERATION.

3--CHECK ALL CABLE CONNECTORS FOR DAMAGE.

VII. POST INSPECTION CHECK-OUT

BEFORE RE-INSTALLING THE MACHINE IN THE LINE:

1--HOOK UP ELECTRICAL CONNECTIONS.

2--CHECK ALL SWITCHES FOR PROPER OPERATION

3--SET THE MAIN AIR PRESSURE REGULATOR TO 65 PSI (MINIMUM).

4--RETHREAD MACHINE WITH WIRE.

5--RUN A SAMPLE WIRE THROUGH THE FULL CYCLE, AND CHECK THE KNOT FOR PROPER FORMATION. NOTE: WATCH CLOSELY TO MAKE SURE THAT THE WIRE IS NOT SLIPPING IN THE GRIPPER.

6--CHECK THE KNOTTER HEAD FOR PROPER OPERATION DURING THE TYING CYCLE.

7--CHECK THE GENERAL OPERATION OF THE MACHINE. INVESTIGATE ANY "MISSED" WIRES, AND CORRECT THE CAUSE OF THE FAILURE.

8--INSTALL THE MACHINE IN THE PRODUCTION LINE, AND OBSERVE THE GENERAL MACHINE OPERATION. PERFORM ANY NECESSARY FINAL ADJUSTMENTS.

VIII. RECORD KEEPING

EACH WIRE STRAPPING MACHINE SHOULD HAVE ITS OWN LOGBOOK, STATING WHEN INSPECTIONS, ADJUSTMENTS, AND REPAIRS WERE PERFORMED AND WHAT WAS DONE. AT THE END OF THIS INSPECTION, THE PERSON WHO INSPECTED THE MACHINERY SHOULD NOTE THE CONDITIONS WHICH REQUIRED ADJUSTMENTS OR PART REPLACEMENTS. HAVE THE OPERATORS OBSERVE MACHINE OPERATION DAILY AND REPORT ANY ABNORMAL FUNCTIONS. A SAMPLE LOGBOOK PAGE FOLLOWS ON THE NEXT PAGE.

CRANSTON WIRE STRAPPER
MACHINE MAINTENANCE LOG

MACHINE SERIAL NUMBER:_____
INSTALLATION DATE:_____

PLACE THE ABOVE INFORMATION ON THE FIRST PAGE OF THE MACHINE LOG BOOK. FOR THE REMAINDER OF THE LOG BOOK PAGES, WE SUGGEST THE FOLLOWING FORMAT SHOWN BELOW:

CRANSTON WIRE STRAPPER PAGE_____
MACHINE SERIAL NUMBER:_____

DATE	CYCLE NO.	WORK DONE ON MACHINE	BY	COMMENTS

ELECTRIC / PNEUMATIC STRAPPER

3.5--WIRE THREADING

TYPICALLY, WHEN THE STRAPPER RUNS OUT OF WIRE, THE OUT OF WIRE SENSOR NO LONGER DETECTS THE WIRE AND THE MACHINE GOES INTO MANUAL MODE. THE WIRE DRIVE WHEELS WILL AUTOMATICALLY OPEN AND THE FLASHING YELLOW BEACON TURNS ON TO ALERT THE OPERATOR THAT THE MACHINE IS OUT OF WIRE. PROCEED AS FOLLOWS TO RETHREAD THE MACHINE:

1. OPEN THE ACCUMULATOR DOOR AND PULL OUT THE WIRE THAT HAS ACCUMULATED INCLUDING THE WIRE THAT IS IN THE TRACK.
2. AT THE WIRE COIL CART, INSTALL A NEW COIL OF WIRE. PLEASE REFER TO THE THREADING INSTRUCTIONS IN THE SECTION OF THE MANUAL THAT COVERS THE WIRE DISPENSER.
3. AFTER THE WIRE HAS BEEN PUSHED THROUGH FROM THE WIRE DISPENSER, IT SHOULD STICK OUT BELOW THE WIRE INFEED GUIDE TUBE AT THE STRAPPER. PULL OUT ABOUT 5 FEET OF WIRE AND IF THE END OF THE WIRE IS BENT, CUT OFF THE END FOR A STRAIGHT CUT.
4. PUT THE WIRE UNDER THE BIG ACCUMULATOR SHEAVE ON THE RIGHT HAND SIDE OF THE ACCUMULATOR, OVER THE SPACERS BETWEEN THE LARGE SHEAVES, OVER THE BIG ACCUMULATOR SHEAVE ON THE LEFT HAND SIDE AND INTO THE WIRE DRIVE. IF THERE IS EXCESS WIRE PUSH IT UP INTO THE ACCUMULATOR.
5. CAREFULLY CLOSE THE ACCUMULATOR DOOR MAKING SURE THE WIRE DOES NOT GET BELOW THE ACCUMULATOR SPACERS OR COME OUT OF THE SHEAVES. PUSH EXCESS WIRE BACK UP THE WIRE INFEED GUIDE TUBE, IF NECESSARY.
6. PUSH THE “AUTO MODE” PUSHBUTTON AND THE MACHINE WILL BE READY FOR AUTOMATIC OPERATION.

ELECTRIC / PNEUMATIC STRAPPER
TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY
MACHINE WILL NOT RETHREAD	1. KNOTTER COVER PLATE IS NOT CLOSED. 2. SHORT OR BENT PIECES OF WIRE JAMMED IN KNOTTER HEAD, CAUGHT IN TRACK, OR TWISTER GEAR. 3. AIR PRESSURE IS TOO LOW. 4. "KNOTTER COVER CLOSED" SWITCH MALFUNCTION, NOT ENERGIZING FEED SOLENOIDS. 5. WIRE DRIVE OR WIRE CART FEED WHEELS JAMMED. 6. CUTTER ARM IS OUT OF POSITION. 7. CONTROLS NOT SET PROPERLY.	1. CHECK FOR PIECES OF WIRE JAMMING COVER PLATE. 2. CHECK FOR PIECES OF WIRE, BLOW OUT GUIDES. 3. CHECK. SYSTEM PRESSURE SHOULD BE 65 PSI. 4. CHECK SWITCH ACTUATION AND ELECTRICAL CONNECTIONS. REPLACE SWITCH IF NECESSARY. 5. CHECK AND CLEAR. 6. CHECK POSITION; MOVE IF NECESSARY AND OBSERVE CLOSELY ON NEXT CYCLE. 7. CHECK AND CORRECT.
MACHINE WILL NOT COMPLETE RE-THREAD FUNCTIONS.	1. WIRE JAMMED IN WIRE CART DISPENSER. 2. WIRE CAUGHT IN SHEAVES OR FEED WHEELS. 3. TRACK AND GUIDES AT FEED WHEELS ARE BLOCKED. 4. WIRE GUIDES OUT OF ALIGNMENT. 5. CUTTER IS DEFECTIVE AND BENDS WIRE. 6. WIRE DRIVE WHEELS NOT CLOSED.	1. CHECK AND FREE. 2. CHECK AND FREE; INSPECT SHEAVES OR FEED WHEELS FOR DAMAGE. 3. CHECK AND CLEAR. 4. CHECK AND CORRECT. 5. CHECK CUTTER CONDITION. REPLACE IF NECESSARY. 6. CHECK AND CORRECT.
MACHINE OVERFEEDS	1. RUBBER SPRINGS ARE WORN OUT. 2. "WIRE AT STOP" SWITCH MALFUNCTION. 3. CONTROLS NOT SET PROPERLY.	1. REPLACE. 2. CHECK SWITCH ACTUATION AND ELECTRICAL CONNECTIONS. REPLACE SWITCH IF NECESSARY. 3. CHECK AND CORRECT.

ELECTRIC / PNEUMATIC STRAPPER
TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY
WIRE COMES OUT OF TRACK.	1. TRACK OUT OF ALIGNMENT. 2. WIRE HAS CURLED END.	1. CHECK FOR LOOSE BOLTS AND BENT GUIDES; RE-ALIGN. CHECK RUBBER SPRINGS AND PINS ON WIRE RETAINERS. CHECK STRIPPING ACTION OF WIRE. 2. WIRE WILL HAVE A CURLED END IF THE PREVIOUS WIRE HAS TENSIONED DOWN TO A SMALL LOOP. CUT OFF END. TENSION AND CYCLE.
WIRE DOES NOT REACH GRIPPER.	1. WIRE GUIDES OUT OF ALIGNMENT. 2. END OF WIRE IS BENT BECAUSE OF BAD CUTTER. 3. END OF WIRE IS BENT BECAUSE OF IMPROPER STRIPPING ACTION. 4. CUTTER INSERT IS WORN OR DAMAGED.	1. RE-ALIGN. CHECK FOR LOOSE BOLTS OR BENT GUIDES. 2. CHECK WIRE END; CUT OFF END OF WIRE, TENSION, AND CLOSELY WATCH NEXT CYCLE. 3. IMPROPER STRIPPING MAY CAUSE WIRE TO BEND AND BENT WIRE MAY END UP BEHIND CUTTER BLADE. WIRE SHOULD STRIP FROM RIGHT TO LEFT WHEN FACING THE CONTROL SIDE OF THE MACHINE. IF IT DOES NOT, RUBBER SPRINGS MAY BE WORN OUT. 4. CHECK; REPLACE, IF NECESSARY.
TWISTER GEAR WILL NOT INDEX DURING NORMAL OPERATION.	1. GEARS ARE CLOGGED OR JAMMED WITH DIRT. 2. PRESSURE SETTING INCORRECT.	1. CLEAN BY BLOWING GEARS OUT WITH AIR AND LUBRICATE. 2. CHECK; PRESSURE SHOULD BE 65 PSI

ELECTRIC / PNEUMATIC STRAPPER
TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY
TWISTER DOES NOT WORK WITH MACHINE IN "AUTO".	1. GEARS JAMMED WITH PIECES OF WIRE. 2. GEARS CLOGGED OR JAMMED WITH DIRT. 3. "TWISTER STROKE COMPLETE" SWITCH JAMMED IN ACTUATED POSITION. 4. CYLINDER MALFUNCTION; LEAKS OR PISTON BYPASS. 5. "TWIST" SOLENOID (SV1) MALFUNCTION. 6. CONTROLS NOT SET PROPERLY.	1. CHECK AND CLEAN. 2. CHECK AND CLEAN. 3. CHECK SWITCH, POSITION OF DRIVE ARMS, AND WIRING. 4. CHECK AND CORRECT. 5. REPLACE COIL. 6. CHECK AND CORRECT.
TWISTER DOES NOT WORK WITH MACHINE IN MANUAL.	SEE INSTRUCTIONS UNDER HEADING "TWISTER DOES NOT WORK WITH MACHINE IN "AUTO".	
TWISTER WILL NOT COMPLETE CYCLE.	1. WIRE IS OUT OF TWISTER GEAR. 2. CYLINDER LEAKS OR ALLOWS PISTON BYPASS.	1. CHECK. TENSION AND CYCLE AGAIN. OBSERVE CLOSELY FOR SIGNS OF OTHER PROBLEMS. 2. CHECK AND CORRECT.
CUTTER OPERATES, BUT DOES NOT CUT WIRE.	1. CUTTER BLADE IS WORN OR CHIPPED. 2. CUTTER BLOCK DEFECTIVE OR DAMAGED.	1. IF BLADE IS CHIPPED, ROTATE IT 180 DEGREES. NOTE: IF THE WIRE IS CROOKED AT THE KNOTTER, IT WILL CHIP THE BLADE AND WILL NOT CUT. 2. CHECK AND REPLACE, IF NECESSARY.
CUTTER WILL NOT OPERATE OR RETURN.	1. SPRING IS BROKEN. 2. LOOSE BOLTS. 3. CUTTER INCORRECTLY ADJUSTED AND OUT OF ALIGNMENT.	1. CHECK AND/OR REPLACE. 2. TIGHTEN. 3. CORRECT.

ELECTRIC / PNEUMATIC STRAPPER
TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY
MACHINE WILL NOT APPLY WIRES IN “AUTO”.	1. CONTROLS ARE SET TO MANUAL. 2. SPRING ON CONVEYOR PROXIMITY SWITCH (FOR INTERLOCK) IS BROKEN. 3. CONVEYOR INTERLOCK MALFUNCTION.	1. SWITCH TO “AUTO”. 2. REPLACE SPRING. 3. CONSULT SCHEMATICS AND CORRECT.
MACHINE CONTINUES TO APPLY WIRES AT ONE POSITION.	1. CONVEYOR INTERLOCK MALFUNCTION. 2. WIRE IS TIED AROUND CONVEYOR OR OTHER FIXED EQUIPMENT AS WELL AS THE BALE.	1. CONSULT SCHEMATICS AND CORRECT. 2. CLIP WIRE AND CYCLE AGAIN.
RETRACTING WILD WIRE GUIDES DO NOT RAISE OR LOWER.	1. PRESSURE SETTING INCORRECT. 2. FLOW CONTROL SETTING INCORRECT. 3. GUIDES BINDING; TOO MUCH FRICTION.	1. CHECK; PRESSURE SHOULD BE 65 PSI. 2. CHECK. ADJUST TO ALLOW SMOOTH OPERATION WITHOUT EXCESSIVE IMPACT AT END OF STROKE. 3. APPLY GREASE TO SHAFT.

CRANSTON MACHINERY CO. INC.

2251 S.E. OAK GROVE BLVD., OAK GROVE, OREGON 97267, USA

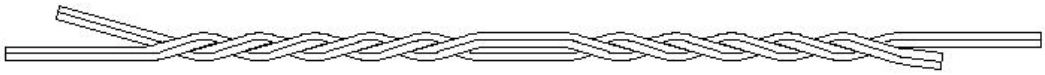
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Cranston Specification #CS-003

Recommended Wire Specifications

SCOPE:

These details cover the normal recommended specifications for wire strapping with a twisted joint to be used in securing high density packages, bundles or bales in groups or units as used in a Cranston wire strapping machine of a specified model. Cranston machines and wire dispensing equipment are designed for this type of wire and coil.



TYPICAL CRANSTON TWISTED JOINT: 900 SERIES

WIRE TENSILE AND STRENGTH:

WIRE SIZES:	TENSILE STRENGTH:	NOTES:
15 to 13-1/2 gauge	130,000 to 160,000 psi	Another common strength specification is expressed in breaking strength.
13-1/4 to 11 gauge	145,000 to 170,000 psi	
10-3/4 to 8 gauge	150,000 to 175,000 psi	Wire gauge based on American Steel & Wire Co. (Washburn & Moen).

ELONGATION: Minimum 7% in 10 inches

SIZE TOLERANCE:

The wire shall have a diameter tolerance of ± .002” for all sizes.

TORSIONAL STRENGTH:

The wire must have the ability to withstand at least 25 twisted turns in a wire length of 100 times the wire diameter without breaking.

COATING:

Hot dipped galvanized and pad wiped with approximately .2 oz. of zinc per square foot of wire surface. The coating must adhere to the wire so as not to peel when wrapped around its own diameter at least four times.

FINISH:

The wire may be quoted with a 3% to 5% solution such as industrial compound No. 22 or Galvaseal “J”. Other coatings such as wax, oil, etc. which may adversely affect the knot strength, wire feed or tension in the wire strapping machine, are not acceptable.

GENERAL QUALITY:

The wire shall have a uniform chemical composition free from undue segregation and inclusions. The wire shall be free of surface defects such as laps, seams, fins, roughness, etc. which may impair its use in Cranston’s strapping machines.

NUMBER OF TESTS:

Testing must be in accordance with sound statistical quality control principles. In no case shall the number of tests be less than four selected from each ten tons of wire produced within a single lot.

COILING:

The wire should be coiled in the largest quantity deemed reasonable for shipping and handling purposes.

Normally a maximum of one wire splices per coil of wire will be accepted. Any welds must be of top quality, fully ground and dressed to wire size to assure proper strength and size to run through the strapping equipment. There shall be no loose ends in a coil except at the lead and tail ends. The wire must be coiled with forward or positive cast. To test this, a single wrap must be cut from the coil and suspended with the cut gap at the bottom. The amount of cast can be measured by lateral distance between the cut ends. This distance should be approximately 3”. The wire is drawn from this coil from the top.

Wire must be coiled by drop cast coilers with the dead cast set approximately 8” larger than the core on which it is carried.

Coils should be cast on cores or stands having proper support for storage, shipping and dispensing.

Identification tags should be secured to the leading end of each coil. These tags should display wire gauge or size, tensile strength, coil weight, manufacturing date and the manufacturer's production lot identification number.

Each coil should be covered with poly film to shelter it from dust and moisture. The bottom of the package must be left open to provide adequate breathing.

STORAGE:

Wire must always be transported and stored in a covered area, kept dry and free of dust, oil and other contaminating atmospheres. Wire should be consumed as soon as possible. Recommended maximum storage is 60 to 90 days.

WIRE PACKAGING OR CORE DETAIL:

Typical pipe or tubular carriers are fabricated in various ways and the tops of the tubes are approximately 48" high for Cranston machines.

Outside diameters of coil should not exceed that of the base of the carrier on which it is carried. Either cardboard or plastic sleeves should be put over upright sections to prevent the wire from chafing against the core.

A distance of 10" to 12" must be maintained from the top of the free wire coil and the top of the carrier on which it is carried.

Cores must be made with adequate height and diameter to maintain proper coil retention and support when in a free stack (not banded or wrapped). The height must be appropriate for feeding into the strappers.

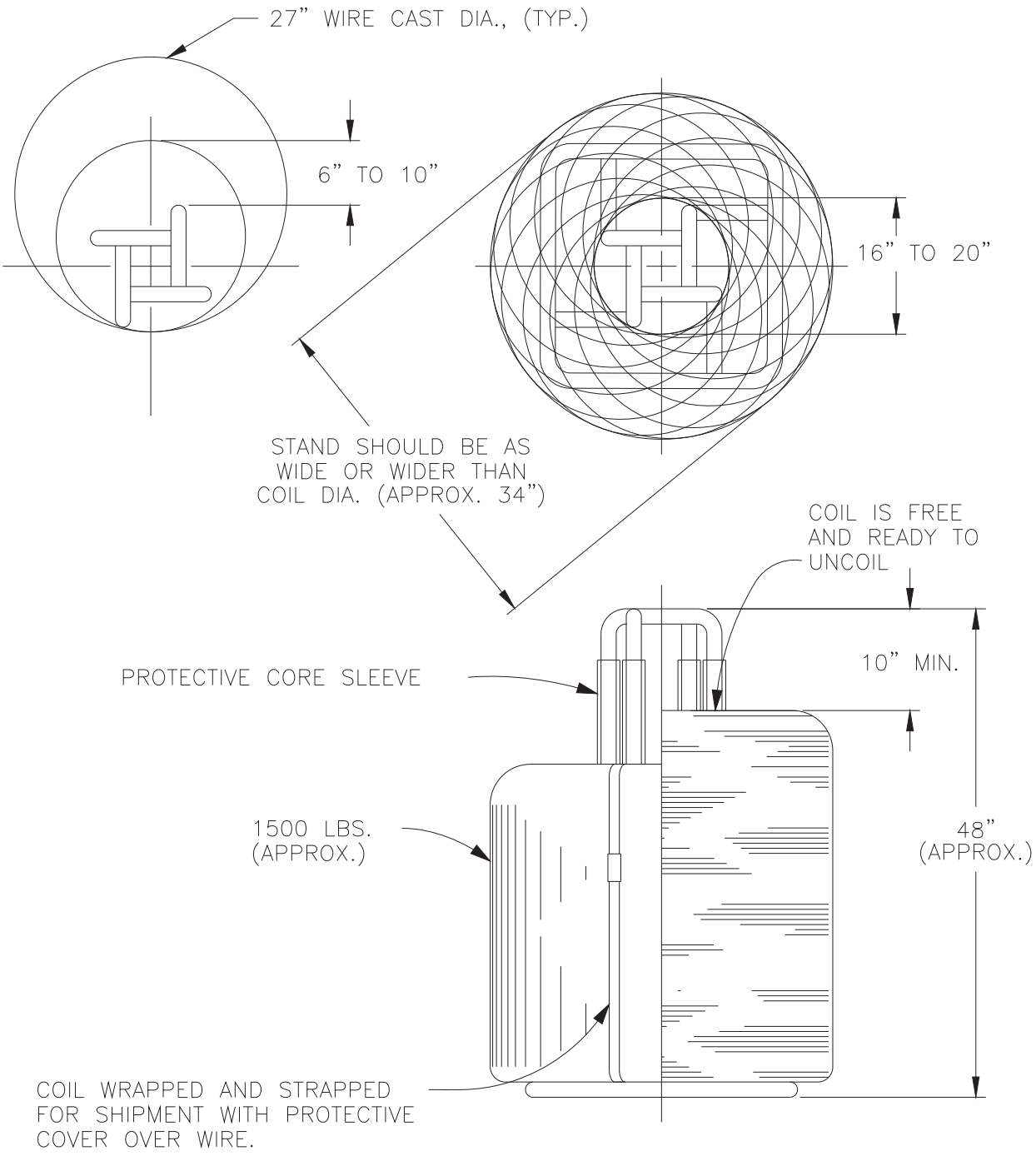
Coils should be compressed and bound or strapped in four places at 90° positions to prevent bounce, chafing or interleaving of wires during shipment.

As an alternate, coils may be on pallets with fiber cores, in which case the producer must assure and provide the packaging. Special dispensing cores must be used.

COIL WEIGHT:

Coil weight is approximately 1,800 lbs. (835 Kg) ± 15%.

ILLUSTRATION OF TYPICAL WIRE COIL



MACHINE ASSEMBLY LIST

MODEL NO.: 60B077

Title:	ELECTRIC/PNEUMATIC WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	60"W X 40-1/2" H OPENING, FOR MAX 44" W X 34-1/2" H BALE, 13.5 GA.	**Arrangement Drawing:**	DB9475000		
		Master by:	JMH	**DATE:**	11/11/2022
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:	A	**DATE:**	7/21/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
			CB6417000	PNEUMATIC SCHEMATIC
	1		BB985000	ELECTRICAL SCHEMATIC
	1		DB953000	CONTROL PANEL WIRING DIAGRAM
	1		DB9531000	MACHINE WIRING DIAGRAM
1	2	------	M25000018	CORPORATE PLATE
	16			DRIVE SCREW, #6 X 1/4" LG.
2	1	------	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO.: 22018010, 22018018
				MODEL NO.: 60B067
				DATE: DEC. 2022
				DRAWING: DB9475000
				TAG NO.:
				DIMENSION: 43 W. X 112 L. X 91 H.
				WEIGHT: 1500 LBS.
				VOLTAGE: 480 VAC/ 3PH/60HZ

MACHINE ASSEMBLY LIST

MODEL NO.: 60B077

Title:	ELECTRIC/PNEUMATIC WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	60"W X 40-1/2" H OPENING, FOR MAX 44" W X 34-1/2" H BALE, 13.5 GA.	**Arrangement Drawing:**	DB9475000		
		Master by:	JMH	**DATE:**	11/11/2022
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:	A	**DATE:**	7/21/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
				POWER: 11.5 KVA
	4			DRIVE SCREW, #2 X 1/4" LG.
3	1	------	M25000002	PATENT PLATE
	4			DRIVE SCREW, #2 X 1/4" LG.
4	2	------	AA6142000	SAFETY LABEL
5	2	------	AA6143000	EYE SAFETY LABEL
6	2	------	AA6141000	CAUTION LABEL
7	2	------	AA6144000	WARNING LABEL
8	2	------	AA6140000	WARNING LABEL
9	1	PA9565	DB9476000	FRAME ASSEMBLY
10	1	PA9055	DB8829000	KNOTTER ASSEMBLY

MACHINE ASSEMBLY LIST

MODEL NO.: 60B077

Title:	ELECTRIC/PNEUMATIC WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	60"W X 40-1/2" H OPENING, FOR MAX 44" W X 34-1/2" H BALE, 13.5 GA.	**Arrangement Drawing:**	DB9475000		
		Master by:	JMH	**DATE:**	11/11/2022
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:	A	**DATE:**	7/21/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
11	1	PA9328	DB8766000	WIRE DRIVE ASSEMBLY
12	1	PA9566	DB9477000	WIRE TRACK ASSEMBLY
13	3	PA9567	CB6600000	CASTER AND ELEVATION KIT
14	1	PA9234	CB5723000	TOP WIRE ENTRY
	2			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	2			FLAT WASHER, 3/8-STD
	2			LOCK WASHER, 3/8-STD
15	1	PA6802	NONE	SOLENOID OILER
16	1	PA9255	CB6417000	PNEUMATIC SYSTEM
17	1	PA9607	DB9524000	CONTROL MODULE
	4	------	M14400016	VIBRATION CONTROL MOUNT, MCMASTER-CARR: #9213K74
	1	-------	E52100018	GROUND STRAP, ERICO 556670, MBJ25-100-10
	4			FLAT WASHER, 3/8-STD.
	4			LOCK WASHER, 3/8

MACHINE ASSEMBLY LIST

MODEL NO.: 60B077

Title:	ELECTRIC/PNEUMATIC WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	60"W X 40-1/2" H OPENING, FOR MAX 44" W X 34-1/2" H BALE, 13.5 GA.	**Arrangement Drawing:**	DB9475000		
		Master by:	JMH	**DATE:**	11/11/2022
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:	A	**DATE:**	7/21/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	4			NUT, 3/8-16NC
	1			HEX HD CAP SCREW, 1/4-20NC
	1			FLAT WASHER, 1/4-STD
18				
19	2	PA9237	BB9211000	FIXED WIRE GUIDE ASSEMBLY
20				NOT USED
21				NOT USED
22				NOT USED

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9565 **Drawing: DB9476000**

Title:	FRAME MODULE	**Issued for Serial No.:**	22018010, 018		
Description:	EP STRAPPER - 42" H OPENING	**Master by:**	JMH	**DATE:**	11/11/2022
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB8756003		FRAME WELDMENT AND DRILLING 4 SHEETS
	4			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
	4			LOCK WASHER, 1/2-STD.
2				NOT USED
3				NOT USED
4				NOT USED
5				NOT USED
6	1	AA6201001		MOUNTING PLATE
	2			SOC HD CAP SCREW, #10-32NF X 1" LG
7	1	CA9774000		ACCUMULATOR BACK PLATE
8	1	CA9775000		ACCUMULATOR COVER PLATE
	9			HEX HD CAP SCREW, 1/4-20NC X 1-1/4 LG
	9			LOCK WASHER, 1/4 STD
	9			FLAT WASHER, 1/4 SAE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9565 **Drawing: DB9476000**

Title:	FRAME MODULE	**Issued for Serial No.:**	22018010, 018
Description:	EP STRAPPER - 42" H OPENING	**Master by:**	JMH **DATE:** 11/11/2022
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	BA7355000		ACCUMULATOR TOP SPACER
10	1	BB0681000		LEFT HAND SPACER
11	1	BB0682000		RIGHT HAND SPACER
12	1	BA7358000	*	ACCUMULATOR SPACER
	1			FLAT HD CAP SCREW, #10-32NF X 1/2 LG.
13	1	BB0683000	*	LOWER DISCHARGE SPACER
	3			FLAT HD CAP SCREW, #10-2NF X 1/2 LG.
14	1	M34000002		LATCH MAGNET, ECLIPSE MAGNET, SHALLOW POT #827
	1			FLAT HD CAP SCREW, #8-32NF X 1/2 LG
15	1	AA0151000		THUMB SCREW
16	2	BA0156001	*	WIRE SHEAVE
17	2	M54000002	*	(REF) SNAP RING, WALDES TRUARC: #5000 200

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9565 **Drawing: DB9476000**

Title:	FRAME MODULE	**Issued for Serial No.:**	22018010, 018		
Description:	EP STRAPPER - 42" H OPENING	**Master by:**	JMH	**DATE:**	11/11/2022
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
18	2	M10000002	*	(REF) BEARING, SKF: #6205 2RS
19	2	AA5403000	*	BUSHING
20	2	AA1271000	*	SPACER
	2			HEX HD BOLT, 3/4-10NC X 2 1/2 LG.
	2			LOCK WASHER, 3/4 STD.
	2			HEX NUT, 3/4-10NC
21	2	M69100019		PIN, SPIROL: CLDP .250 X 1.250 MBK
22	1	CB6218000		RETAINING BRACKET
	3			HEX HD CAP SCREW, 1/2-13NC X 1-1/2 LG.
	3			FLAT WASHER, 1/2 STD.
	3			LOCK WASHER, 1/2 STD.
	3			HEX NUT, 1/2 13NC
23	1	CA9880002		WIRE GUARD
	3			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	3			LOCK WASHER, 1/4 STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9565 **Drawing: DB9476000**

Title:	FRAME MODULE	**Issued for Serial No.:**	22018010, 018
Description:	EP STRAPPER - 42" H OPENING	**Master by:**	JMH **DATE:** 11/11/2022
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
24	2	AA8745000		LOCATING PIN
25	1	M69600001		TOOLING PIN, MSC: 64215759
	1	M69600002		TOOLING PIN, MSC: 64216104
26	3	E16600111	*	PROXIMITY SENSOR, TURK: BI2 EG08K AP6X H1341
27	3	E16700135		CORD SET, TURCK: WK4T 1.5 RS4T/S71.5
28	3	E16700120		CABLE, M12 , 10M, 1 FM
29	1	E19100115		CABLE GLANDS,3/4", 3 HOLE, ABB
30	1	CB4915000		DRIP TRAY
	2			HEX HD CAP SCREW, 5/16-18NC X 3/4 LG.
	2			LOCK WASHER, 5/16 STD
31	1	M53100298		DRAIN COCK, PH: DC601 2
31A	1	M53100314		MALE CONNECTOR, P.H.: #W68PLP 4 4
31B	1	M53100287		MALE CONNECTOR, P.H.: #W68PLP 4 2

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9565 **Drawing: DB9476000**

Title:	FRAME MODULE	**Issued for Serial No.:**	22018010, 018
Description:	EP STRAPPER - 42" H OPENING	**Master by:**	JMH **DATE:** 11/11/2022
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
31C	1	M53100069		COUPLING, P.H.: #207P 4
32	1	CB6185000		VALVE MOUNTING PLATE
	3			HEX HD CAP SCREW, 3/8 16NC X 1" LG
	3			LOCK WASHER, 3/8 STD
	3			FLAT WASHER, 3/8 STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9055 **Drawing: DB8829000**

Title: 5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.
Description:

Issued for Serial No.: 22018010, 018
Master by: BH **DATE:** 9/3/2015
Issued By: JMH **DATE:** 2/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	BB7309000		LH SIDE PLATE
2	1	BB7309000		RH SIDE PLATE
3	1	M18000379	*	PNEUMATIC CYLINDER, PARKER HANNIFIN: #5CD 2AUS13AC4.451, S=EXTENDED ROD, KK=3/4 16, A=1 1/8", LA=3 7/8" PORTS POS 1
4	2	AA3904000	*	TRUNION SPACER
5	2	M10000028	*	(REF) BEARING, FAFNIR: #S10PP2, 1" BORE SEALED
6	1	BB9168000		CYLINDER MOUNT
7	1	BB9167000		CYLINDER MOUNT
8	6			SOC HD CAP SCREW, 3/8-16NC X 1-1/2 LG.
9	2	M69100009		SPIROL PIN, 1/4 X 1-1/2 LG.
10	1	CA4103001		SEGMENTED GEAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
11	1	M10000030	*	(REF) BEARING, MRC: #5207CFF, 30MM BORE DOUBLE ROW 2 SHIELDS
12	2	AA4030000		SEGMENT GEAR KEEPER
13	12			SOC HD CAP SCREW, 1/4 20NC X 1/2" LG.
14	2	AA3906000		INNER SPACER
15	1	CA4861001	*	ROLLER ARM
16	1	CA4861001	*	ROLLER ARM
17	4	M10000029	*	(REF) BEARING, CONSOLIDATED BEARING: #R-20-2RS, 1-1/4 BORE
18	2	AA3907000		SPACER BUSHING
19	1	AA5377000	*	SEGEMENT GEAR PIVOT PIN
20	2	AA5386000		WASHER
21	2			LOCK WASHER, 1/2-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9055 **Drawing: DB8829000**

Title: 5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.
Description:

Issued for Serial No.: 22018010, 018
Master by: BH **DATE:** 9/3/2015
Issued By: JMH **DATE:** 2/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
22	6			HEX HD CAP SCREW, 1/2-13NC X 1" LG.
23	1	AA3939000		INNER SPACER
24	3	M10200005	*	CAM ROLLER, MCTILL #MR12-N BEARING WIT MI-9-N
25	2	AA3940000		OUTER SPACER
26	1	AA3945000		CAM SPACER
27	1	BA4642000		BEARING BOLT
28	2	M38100003		WASHER, CARR LANE: #CL-2-FW, 1-1/16 O.D.
29	4			JAM NUT, ESNA: 1/2-13NC
30	1	CA4697002	*	DRIVE ARM
31	1	CA4697002	*	DRIVE ARM

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
32	1	AA3384000		INNER SPACER DRIVE ARM
33	2	AA3942000		OUTER SPACER DRIVE ARM
34	1	AA4339000		PIVOT PIN
35	1	AA4544000		LOCK NUT
36	1	BA4643000	*	LH EJECTOR
37	1	BA4810000	*	RH EJECTOR
38	4			FLAT HD CAP SCREW, 1/4-20NC X 5/8" LG.
39	1	M10600001	*	CAM ROLLER, MCGILL: #CYR 1-1/2 S, 7/16 BORE, SEALED
40	2	AA3386000		SPACER DRIVE ARM CAM
41	1	AA3941000		SPACER SHAFT DRIVE ARM
42	4			SOC HD CAP SCREW, 5/16-18NC X 3/4 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
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CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
43	1	AA3383000		ARM SPACER
44	1			SOC HD CAP SCREW, 1/2-13NC X 3" LG.
45	1	BB9331000	*	CLEVIS
46				NOT USED
47	1	AA4022000	*	CLEVIS PIN
48	1	M29000002		GREASE FITTING, ALEMITE: #1610 BL
49	2	M54000015		SNAP RING, WALDES TRUARC: #5100 75
50	1	AA4504000		ACTUATOR SPACER
51	1			SOC HD CAP SCREW, 5/16-18NC X 2-3/4 LG.
52	1	CA4100001		TOP PLATE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
53	9			SOC HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
54	1	AA3993000		TIE BOLT
55	1	AA3943000		BUSHING
56	1	CB6256000	*	CUTTER ARM
57	1	AA4340000	*	CUTTER BLADE
58	1			SOC HD CAP SCREW, #10-32NF X 3/4 LG.
59	2			HEX JAM, 1/2-13NC (HALF NUT)
60	1	AA9099000		CUTTER BLOCK STOP
61	1			SOC HD CAP SCREW, 3/8-16NC X 2" LG.
62	1	AA4221000		ADJUSTMENT BLOCK
63	2			SOC HD CAP SCREW, 1/4-20NC X 1" LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
64	1			HEX JAM NUT, 1/4-20NC (HALF NUT)
65	1			SOC HD CAP SCREW, 1/4-20NC X 1-3/4 LG.
66	1	CA4694000	*	TWISTER GEAR
67	2	AA3394000	*	TWISTER BEARING
68	2	AA4201000	*	GUIDE SPACER
69	2	BA7252000		FIXED WIRE GUIDE
70	4			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG.
71	1	AA3956000		SPRING STOP
72	1	AA3957000	*	EXTENSION SPRING
73	1	BA7250000		CUTTER BLOCK MOUNT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
74	7			SOC HD CAP SCREW, 5/16-18NC X 1/2 LG.
75	1	BA8313000	*	CUTTER BLOCK
76	14			SOC HD CAP SCREW, 10-32NF X 1/2 LG.
77	1	BB9317000		TRACK MOUNT ASSEMBLY
78	2			SOC HD CAP SCREW, 5/16-18NC X 1-1/4" LG.
79	1	AA5946000	*	SPRING (CUTTER)
80	1	BA7135000		GRIPPER GUIDE MOUNT
81	1			BUTTON HD SOC CAP SCREW, 5/16-18NC X 1/2" LG.
82	1	BB9293000	*	GRIPPER GUIDE
83	1	DB6743000		GRIPPER MOUNT
83A	1	M29000002		1/8" NPT ZERK, STRAIGHT, ALEMITE: 1610 BL
83B	1	M29000011		1/8" NPT ZERK, 90 DEG., ALEMITE: 1613 B

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title: 5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.
Description:

Issued for Serial No.: 22018010, 018
Master by: BH **DATE:** 9/3/2015
Issued By: JMH **DATE:** 2/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
84	1	DB6744000	*	GRIPPER SLIDE
85	1	CB6262000	*	GRIPPER
86	1	M54000052	*	SNAP RING, TRUARC: 5100 31
87	1		*	HEX NUT ESNA, 7/16-20NF
88	1	AA8511000	*	STOP PIN
89	1	BA4913000		STOP ARM
90	1			SOC HD SET SCREW, 1/4-20NC X 3/8 LG WITH NYLOC PATCH
91	1	M14000118	*	WIRE STOP SPRING, LEE #LC-058GH-2MW
92	1	BA4906000	*	WIRE STOP
93	1			SOC HD CAP SCREW, 1/4-28NF X 1/2" LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
94	1	AA8510000		SUPPORT STOP
95	1	BB9408000	*	PNEUMATIC CYLINDER
96	1	BB7313000	*	GRIPPER LIFT YOKE
97	3	M10600081	*	CAM FOLLOWER, TORRINGTON: YCRS-12
98	3	CA7612057	*	WASHER
99	2			SOC HD PAN HEAD SCREW, 3/8-16NC X 1/2 LG
100	1	BB9318000		PROXIMITY SWITCH MOUNT
101	1	AA8521000		SWITCH ACTUATOR
102	1	AA8526000	*	SCREW REWORK
103	1	AA8509001	*	SCREW REWORK
104	1	CA4758000		SEGMENT COVER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title: 5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.
Description:

Issued for Serial No.: 22018010, 018
Master by: BH **DATE:** 9/3/2015
Issued By: JMH **DATE:** 2/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
105	1	BB7352000		PROXIMITY SWITCH MOUNT
106	1	CA6706000		COVER PLATE
107	1	BA4637000	*	TWISTER GUIDE
108	2			FLAT WASHER, #10-STD.
109	1	AA5382000	*	SHIM PACK
110	1	BB9294000		COVER INSERT (GRIPPER)
111	1	AA5383000	*	SHIM PACK
112	1	BA6894000	*	COVER INSERT (CUTTER)
113	3			SOC HD CAP SCREW, 3/8-16NC X 1 LG.
113A	2			SOC HD CAP SCREW, 3/8-16NC X 1/2 LG.
114A	1	BB1307000	*	AIR JET RETRACTING WIRE GUIDE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title: 5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.
Description:

Issued for Serial No.: 22018010, 018
Master by: BH **DATE:** 9/3/2015
Issued By: JMH **DATE:** 2/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
114B	1	BB1308000	*	AIR JET RETRACTING WIRE GUIDE - TOP INCOMING
114C	1	BB1309000	*	AIR JET RETRACTING WIRE GUIDE - BOTTOM DISCHARGE
114D	1	BB1310000	*	AIR JET RETRACTING WIRE GUIDE - TOP DISCHARGE
114E	2	M53000313		MALE CONNECTOR, ALKON: AQ68-P-4X2
115				NOT USED
116	2	AA3978000		KNOTTER MOUNT BRACKET
117	2			SOC HD CAP SCREW, 3/8-16NC X 3" LG.
118	1			SOC HD CAP SCREW, 3/8-16NC X 1/2 LG
119	1			NOT USED
120	1			NOT USED
121	3	M38000003	*	SPRING WASHER, ASSOCIATED SPRING: #U312 0075S
122	2			SOC HD FLAT HD CAP SCREW, 3/8-16NC X 1" LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title: 5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.
Description:

Issued for Serial No.: 22018010, 018
Master by: BH **DATE:** 9/3/2015
Issued By: JMH **DATE:** 2/15/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
123				NOT USED
124	1	BB7314000	*	GUIDE BAR
125				NOT USED
126	1	BB7314001	*	GUIDE BAR
127	1	AA8514000	*	GUIDE CAP
127A	1	M29000011		1/8" NPT ZERK, 90 DEG., ALEMITE: 1613 B
128	2			SOC HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
129	3	M69100025		SPIROL COIL PIN, 1/4 X 3/4
130	1	BB7315000		CYLINDER MOUNT
131				NOT USED
132	1	DA8808017		SPACER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9055 **Drawing: DB8829000**

Title:	5-1/2" KNOTTER - MODEL 62A059, 13.5 GA.	**Issued for Serial No.:**	22018010, 018
Description:		**Master by:**	BH **DATE:** 9/3/2015
		Issued By:	JMH **DATE:** 2/15/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
133	1	AA8509002		SCREW REWORK
134	1	CA7612058		WASHER
135	1	BB7372000	*	SWITCH ACTUATOR
136	4			FLAT HD SOC HD CAP SCREW, #10 32NF X 3/8 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9328 **Drawing: DB8766000**

Title:	WIRE DRIVE - MODEL 62B020, 15-13.5 GAUGE	**Issued for Serial No.:**	22018010, 018		
Description:	FOR USE WITH ELEC/PNEU STRAPPER WITH IEC 4 KW MOTOR	**Master by:**	RPH	**DATE:**	1/11/2019
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	2	CA6958009		MOUNT RAIL
2	1	CA0560000	*	SIDE PLATE, LOWER REAR
3	8			SOC. HD. CAP SCREW, 1/4-20NC X 1-1/2" LG.
4	1	BB7296000		TENSION SUPPORT
5	6			SOC. HD. CAP SCREW, 3/8-16NC X 1-1/2" LG.
6	1	CA0561000	*	SIDE PLATE, UPPER REAR
7	8	M10000070		(REF) BEARING, SKF: #6305-2RSNR-W64, 25 MM BORE, 2 SEALS AND SNAP RING AND SPECIAL LUBRICANT
8	2	M10000071		(REF) BEARING, SKF: #6207-2RSNR-W64, 35 MM BORE, 2 SEALS AND SNAP RING AND SPECIAL LUBRICANT
9	4	BB9428000	*	WIRE DRIVE GEAR
10	1	CB6366000	*	WIRE DRIVE GEAR

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9328 **Drawing: DB8766000**

Title:	WIRE DRIVE - MODEL 62B020, 15-13.5 GAUGE	**Issued for Serial No.:**	22018010, 018		
Description:	FOR USE WITH ELEC/PNEU STRAPPER WITH IEC 4 KW MOTOR	**Master by:**	RPH	**DATE:**	1/11/2019
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
11	1			SQ. KEY, 1/4" SQ. X 1" LG.
12	1	CA0560000	*	SIDE PLATE, LOWER FRONT
13	6	M69100016		ROLL PIN, 1/4 DIA. X 1-3/4" LG.
14	1	CA0561000	*	SIDE PLATE, UPPER FRONT
15	4	AA0148000		SPACER
16	4	BB9429000		SHAFT
17	4	AA0312000	*	WOODRUFF KEY
18				NOT USED
19				NOT USED
20				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9328 **Drawing: DB8766000**

Title:	WIRE DRIVE - MODEL 62B020, 15-13.5 GAUGE	**Issued for Serial No.:**	22018010, 018		
Description:	FOR USE WITH ELEC/PNEU STRAPPER WITH IEC 4 KW MOTOR	**Master by:**	RPH	**DATE:**	1/11/2019
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
21	4	BA0155001	*	SHEAVE
21A	8	BB9036000		(REF) LOCKING TAB
22	16	M30600014		(REF) HEX HD CAP SCREW, 1/4-28NF X 1/2" LG. GRADE 8
23	1	AA4512000		SPACER WASHER
24	1	BB9299000	*	COUPLING
25	1	CB6208000		MOTOR MOUNT
26	4			SOC. HD. CAP SCREW, 3/8-16NC X 1-1/2" LG.
27	2	M69100009		ROLL PIN, 1/4 DIA. X 1-1/2" LG.
27A	2	M69100009		ROLL PIN, 1/4 DIA X 1-1/2" LG.
28	1	AA9100000	*	ELECTRIC MOTOR
29	4			LOCK WASHER, 7/16
	4			FLAT WASHER, SAE 7/16

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9328 **Drawing: DB8766000**

Title:	WIRE DRIVE - MODEL 62B020, 15-13.5 GAUGE	**Issued for Serial No.:**	22018010, 018		
Description:	FOR USE WITH ELEC/PNEU STRAPPER WITH IEC 4 KW MOTOR	**Master by:**	RPH	**DATE:**	1/11/2019
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
30	4			HEX HD CAP SCREW, 7/16-14NC X 1 3/4 LG
	4			HEX NUT, 7/16-14NC
31	1			(REF) SQ. KEY, 8 MM SQ. X 1-1/4" LG.
32	1	CB6260000		WIRE GUIDE
33	1	CB6261000		WIRE GUIDE COVER
34				NOT USED
35				NOT USED
36				NOT USED
37				NOT USED
38	3			SOC. HD. CAP SCREW, 1/4-20NC X 3/4" LG.
39	3			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG,
40	1	M40000010	*	AIR BAG, FIRESTONE: W01-385-7731, STYLE 131

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9328 **Drawing: DB8766000**

Title:	WIRE DRIVE - MODEL 62B020, 15-13.5 GAUGE	**Issued for Serial No.:**	22018010, 018		
Description:	FOR USE WITH ELEC/PNEU STRAPPER WITH IEC 4 KW MOTOR	**Master by:**	RPH	**DATE:**	1/11/2019
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
41	2	AA6018001		STUD (LOCTITE INTO BOTTOM OF ITEM 40)
42	1	CB6231000		AIR BAG MOUNT
	1			HEX HD BOLT, 3/4-10NC X 3-1/4 LG
	1			ESNA NUT, HALF, 3/4-10NC
43	2			SOC HD CAP SCREW, 3/8-16NC X 1 1/2 LG
44	4	M14000126	*	SPRING, CENTURY: D-1402
45	4	AA8502000		SPRING SPACER (LOCTITE INTO ITEM 2 & 12)
46				NOT USED
47	1	M53100084		LONG NIPPLE, PH: 215PNL-4-20
48				NOT USED
49				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9328 **Drawing: DB8766000**

Title:	WIRE DRIVE - MODEL 62B020, 15-13.5 GAUGE	**Issued for Serial No.:**	22018010, 018		
Description:	FOR USE WITH ELEC/PNEU STRAPPER WITH IEC 4 KW MOTOR	**Master by:**	RPH	**DATE:**	1/11/2019
		Issued By:	JMH	**DATE:**	2/15/2023
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
50				NOT USED
51	5	AA8696000		SPACER
52	5			SOC HD CAP SCREW, #10-32NF X 1/2 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9566 **Drawing: DB9477000**

Title:	WIRE TRACK ASSEMBLY	**Issued for Serial No.:**	22018010, 018
Description:	40-1/2" H OPENING, 13-13.5 GA., 986 OR 987 EP STRAPPER, SPECIAL CORNERS FOR WIDE BALE (UP TO 44" WIDE)	**Master by:**	JMH **DATE:** 12/11/2022
		Issued By:	**DATE:**
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB4140000		BACKING PLATE INCOMING PLATE
	3			BUTTON HD SOC CAP SCREW, 1/4-20NC X 1/2 LG.
	2			FLAT WASHER, 1/4-SAE
	3			HEX JAM NUT, 1/4-20NC
	1			SQ HD SET SCREW, 1/4-20NC X 1 LG.
	1			ESNA NUT, HALF, 1/4-20NC
2	1	BB4811000		FIRST WIRE COVER
	4			SOC HD CAP SCREW, 1/4-20NC X 3/8 LG.
3	1	BB4812000	*	FIRST WIRE SEPARATOR
	2			SOC HD CAP SCREW, 1/4-20NC X 3/8 LG.
4	1	BB6097000	*	WIRE SEPARATOR
5	1	BB7440000	*	SECOND WIRE - UPPER GUIDE
	2			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG.
	2	M69100079		PIN, SPIROL: CLDP .187 X .625 MBK
6	1	BB6098000	*	SECOND WIRE - LOWER GUIDE
	2			BUTTON HD SOC CAP SCREW,, #10-32NF X 1/2 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9566 **Drawing: DB9477000**

Title:	WIRE TRACK ASSEMBLY	**Issued for Serial No.:**	22018010, 018		
Description:	40-1/2" H OPENING, 13-13.5 GA., 986 OR 987 EP STRAPPER, SPECIAL CORNERS FOR WIDE BALE (UP TO 44" WIDE)	**Master by:**	JMH	**DATE:**	12/11/2022
		Issued By:		**DATE:**	
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	M69100079		PIN, SPIROL: CLDP .187 X .625 MBK
7	1	BB6100000		SECOND WIRE COVER
8	1	AA7912000		INFEED WEDGE
	1			SOC HD CAP SCREW, 1/4-20NC X 3/8 LG.
	1			SOC HD CAP SCREW, 1/4-20NC X 1/2 LG.
9	1	BB6095000		DISCHARGE COVER
10	1	BB6096000	*	DISCHARGE GUIDE
	2			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG
11	1	AA7913000	*	DISCHARGE WEDGE
	2			SOC HD CAP SCREW, #10-32NF X 1/4 LG.
12A	2	DB4738000	*	CORNER GUIDE
12B	1	DB9478000	*	CORNER GUIDE
	6			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG.
13A	2	BB4536000		CORNER GUIDE COVER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9566 **Drawing: DB9477000**

Title:	WIRE TRACK ASSEMBLY	**Issued for Serial No.:**	22018010, 018		
Description:	40-1/2" H OPENING, 13-13.5 GA., 986 OR 987 EP STRAPPER, SPECIAL CORNERS FOR WIDE BALE (UP TO 44" WIDE)	**Master by:**	JMH	**DATE:**	12/11/2022
		Issued By:		**DATE:**	
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
13B	2	BB9802000		CORNER GUIDE COVER
14	1	DB9478001	*	CORNER GUIDE
	2			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG.
15	1	DB5808000	*	TOP WIRE GUIDE
	4			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG.
16	1	CB4139000		TOP WIRE GUIDE COVER
17	21	AA2683000	*	RUBBER SPRING
	21			FLAT WASHER, 3/8-SAE
	21			ESNA NUT, THIN, 1/4-20NC
	21			CUT WASHER, 1/4
18				NOT USED
19	1	AA7936000		INFEED COVER RETAINER
20	1	M53100161		BARBED FITTING, HUMPHREY: #BF-1, 1/4 OD TUBING TO #10-32 THREADS

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9566 **Drawing: DB9477000**

Title:	WIRE TRACK ASSEMBLY	**Issued for Serial No.:**	22018010, 018		
Description:	40-1/2" H OPENING, 13-13.5 GA., 986 OR 987 EP STRAPPER, SPECIAL CORNERS FOR WIDE BALE (UP TO 44" WIDE)	**Master by:**	JMH	**DATE:**	12/11/2022
		Issued By:		**DATE:**	
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
21	2	BB6603000		SIDE WIRE GUIDE - 5"
	4			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG
22	2	BB6604000		SIDE GUIDE COVER
23	2	BB4532000		SIDE WIRE GUIDE - 10"
	4			SOC HD CAP SCREW, 1/4-20NC X 5/8 LG
24	2	BB4533000		SIDE GUIDE COVER

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9567 **Drawing: CB6600000**

Title:	CASTER & ELEVATION KIT	**Issued for Serial No.:**	22018010, 018
Description:	EP STRAPPER - 900MM LINE HEIGHT	**Master by:**	JMH **DATE:** 11/11/2022
		Issued By:	**DATE:**
		Revision:	A **DATE:** 6/9/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	3	CB6405004		ELEVATION SPACER
2	9	BA9611000		CASTER SHIM, (3) EACH CASTER (1/4)
3	6	BA9611004		CASTER SHIM, (2) EACH CASTER (1/8)
4				NOT USED
5	3	M16000003		CASTER, ALBION: #72CA08201S-SL72
	12			HEX HD CAP SCREW, 1/2-13NC X 2 LG. (CASTER)
	12			HEX HD CAP SCREW, 3/8-16NC X 1-1/2 LG. (FRAME)
	12			LOCK WASHER, 1/2-STD.
	12			FLAT WASHER, 1/2-SAE
	12			LOCK WASHER, 3/8-STD.
	12			FLAT WASHER, 3/8-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9234 **Drawing: CB5723000**

Title:	TOP WIRE ENTRY - WIRE STRAPPER - STD FASTENERS	**Issued for Serial No.:**	22018010, 018		
Description:	WITH RING TYPE SENSOR, 5" HANDLE	**Master by:**	RPH	**DATE:**	1/5/2017
		Issued By:	JMH	**DATE:**	1/20/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
1	1	DB8765000		INFEED GUIDE TUBE MOUNT
	3			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	3			LOCK WASHER, 3/8 STD
	2			SOC HD SET SCREW, 3/8-16NC X 5/8 LG
2	1	AA7800000	*	WIRE SHEAVE
	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG
	1			HEX NUT, 3/8-16NC
	1			FLAT WASHER, 3/8 STD
	1			LOCK WASHER, 3/8 STD
3	2	AA8820000	*	HUB
4	1	CB5709000		COVER ASSEMBLY
	2			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	2			LOCK WASHER, 1/4 STD
4A	1	M79000052		KNOB, MCMASTER CARR: 6390K53
	2			JAM NUT, M8 X 1.25
5	1	CB6264000		INFEED GUIDE TUBE

PARTS LIST

PA9234 **Drawing: CB5723000**

Title:	TOP WIRE ENTRY - WIRE STRAPPER - STD FASTENERS	**Issued for Serial No.:**	22018010, 018		
Description:	WITH RING TYPE SENSOR, 5" HANDLE	**Master by:**	RPH	**DATE:**	1/5/2017
		Issued By:	JMH	**DATE:**	1/20/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
	2			SOC HD CAP SCREW, #8-32NF X 1" LG
6	2	AA3506000	*	WIRE GUIDE
7	1	M79000037		HAND KNOB, CARR LANE: CL 5A PPK4T
8	1	CB4164001		CORNER GUIDE
	1			SOC HD SET SCREW, 3/8-16NC X 1 LG
	1			HEX JAM NUT, 3/8 16NC
9	1	CB4165000		CORNER GUIDE COVER
	3			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	3			LOCK WASHER, 1/4 STD
10	11	M10000130	*	BEARING, SKF: 6072Z
	11			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG
	11			LOCK WASHER, 1/4 STD
	11			HEX NUT, 1/4-20NC
11	11	AA8211000		WASHER

PARTS LIST

PA9234 **Drawing: CB5723000**

Title:	TOP WIRE ENTRY - WIRE STRAPPER - STD FASTENERS	**Issued for Serial No.:**	22018010, 018		
Description:	WITH RING TYPE SENSOR, 5" HANDLE	**Master by:**	RPH	**DATE:**	1/5/2017
		Issued By:	JMH	**DATE:**	1/20/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
12	1	CB5254000		FUNNEL BLOCK MOUNT
	2			HEX HD CAP SCREW, 5/16-18NC X 3/4 LG
	2			LOCK WASHER, 5/16 STD
13	2	BB7944000	*	FUNNEL BLOCK
	4			HEX HD CAP SCREW, 5/16-18NC X 3/4 LG
	4			LOCK WASHER, 5/16 STD
14	1	BB7983000	*	BOTTOM FUNNEL BLOCK
	2			HEX HD CAP SCREW, 5/16-18NC X 2 LG
	2			LOCK WASHER, 5/16 STD
15A	1	AA8680000		SIDE SHIELD
15B	1	AA8680001		SIDE SHIELD
16	1	E16600147	*	RING SENSOR, EFECTOR: I7R213
	1	E16700112		CABLE, AB: 889D R4AC 5
17	1	AA9075000		HINGE COVER WIRE GUIDE
	1			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG.
	1			LOCK WASHER, 1/4 HI COLLAR
	1			FLAT WASHER, 1/4 STD.

PARTS LIST

PA9234 **Drawing: CB5723000**

Title:	TOP WIRE ENTRY - WIRE STRAPPER - STD FASTENERS	**Issued for Serial No.:**	22018010, 018		
Description:	WITH RING TYPE SENSOR, 5" HANDLE	**Master by:**	RPH	**DATE:**	1/5/2017
		Issued By:	JMH	**DATE:**	1/20/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION

F-12-87 * MARKED IF PART IS CONSIDERED AS A NORMAL REPLACEMENT PART ** CRITICAL REPLACEMENT PART

PARTS LIST

PA6802 **Drawing:** **NONE**

Title: AUTOMATIC OILER, 24VDC
Description:

Issued for Serial No.: 22018010, 018
Master by: DTB **DATE:** 12/16/2003
Issued By: **DATE:**
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	M52000028	*	OILER, LUBE DEVICES: #RE0156A-43, 1 QUART, 24VDC,
	1	E26000192		CROUSE-HINDS: 3/4 FDC-2
	1	E26600010		CONDOLET COVER, CROUSE HINDS: #DS-100G
2	1	M36500003		TUBING, PH: #E-43-0250, 1/4" O.D. X 36" LG.
3	1	AA8801000		OILER LABEL

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9255 **Drawing: CB6417000**

Title:	PNEUMATIC SYSTEM - ELEC/PNEU WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	FIXED WIRE GUIDES	**Master by:**	KCH	**DATE:**	5/30/2018
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	2/14/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	M50100029		FILTER/REGULATOR, PH: 06E32A13AC, 1/2 NPT
2	1	M17000012		GAUGE, PH: K4520N14160
3	1	M75000051		MOUNT BRACKET, PH: PS707P
	2			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	2			LOCK WASHER, 1/4-STD
	2			FLAT WASHER, 1/4-STD
4	1	M53100165		STREET TEE, PH: 2225P-8
5	2	M53100057		MALE ELBOW, PH: 149F-12-8
6	1	M53100215		MALE CONNECTOR, PH: 48F-4-8
7	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000119		HOSE, PH: 7212-251BK X 84" LG
	2	M53200001		SWIVEL, PH: 30882-4-4B
8	1	M53100042		MALE CONNECTOR, PH: 48F-4-4

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9255 **Drawing: CB6417000**

Title:	PNEUMATIC SYSTEM - ELEC/PNEU WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	FIXED WIRE GUIDES	**Master by:**	KCH	**DATE:**	5/30/2018
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	2/14/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	M24000085		BLOW GUN, GAINGER: SPEEDAIRE: 5X786
10	2			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000122		HOSE, PH: 7212-751BK X 53" LG
	2	M53200014		SWIVEL, PH: 30882-12-12B
11	2	M53100039		MALE CONNECTOR, PH: 48F-12-12
12	2	M53100024		C'SUNK HEX PLUG, PH: 219P-6
13	2	M53100012		MALE ELBOW, PH; 149F-8-8
13A	2	M53100020		MALE CONNECTOR, P.H.: #48F-8-8
14	3	M53100024		C-SUNK HEX PLUG, PH: 219P-6
15	2	M53000124		90 DEG STREET ELL, PH: 2102-12-12
16	2	M28000008		MUFFLER, PH: ES75MB
17	4	M53100014		C-SUNK HEX PLUG, PH: 219P-2

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9255 **Drawing: CB6417000**

Title:	PNEUMATIC SYSTEM - ELEC/PNEU WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	FIXED WIRE GUIDES	**Master by:**	KCH	**DATE:**	5/30/2018
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	2/14/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
18	1	BB9487000		PNEUMATIC MANIFOLD ASSEMBLY CONSISTING OF:
	4			SOC HD CAP SCREW, 1/4-20NC X 1 LG
	4			LOCK WASHER, 1/4-STD
18A	1	M24100748	*	(REF) SOLENOID VALVE, PH: H25VXBG0B9D
18B	2	M24100678	*	(REF) SOLENOID VALVE, PH: H11VXBG0B9D
18C	1	M24100680	*	(REF) SOLENOID VALVE, PH: H11VXXG0B9D
18D	1	M24600296		(REF) MANIFOLD, PH: PSHU1157M1P
18E	3	M24600295		(REF) MANIFOLD, PH: PSHU1155J1P
18F	1	M24000163		(REF) FLOW CONTROL, PH: PS4135CP
18G	1	M24000162		(REF) FLOW CONTROL, PH: PS4035CP
18H	1	M24350021		(REF) REGULATOR, PH: PS4038155CP
18J	1	M24600293		(REF) END PLATE KIT, PH: PSHU20L320P
18K	1	M17000022		(REF) PRESSURE GAUGE, VALLEY INST: 0010DAB60, 2-60 PSI, 1" DIA
18L	1	M24600294		(REF) MANIFOLD, P.H.: PSHU1155M1P
18M	1	M24600276		(REF) BLANKING PLATE, P.H.: #PS4034CP
18N	2	M53100024		(REF) PLUG, P.H.: #219P-6
19	1	E16700055		CABLE, BRAD HARRISON: 333030P80M050

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9255 **Drawing: CB6417000**

Title:	PNEUMATIC SYSTEM - ELEC/PNEU WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	FIXED WIRE GUIDES	**Master by:**	KCH	**DATE:**	5/30/2018
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	2/14/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
20	1	M53100291		MALE ELBOW SWIVEL, PH: W169PL-4-4
21	1	M36000124		HOSE, NYLON, 1/4", PH: NB-4-035 X 48" LG
22	1	M53100294		UNION TEE, PH: 164PL-4
23	1	M36000124		HOSE, NYLON, 1/4", PH: NB-4-035 X 9" LG
24	1	M36000124		HOSE, NYLON, 1/4", PH: NB-4-035 X 12" LG
25	2	M53100287		MALE CONNECTOR, P.H.: #W68PL-4-2
26	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 64" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B
27	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 60" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B
28	1	M53100013		MALE ELBOW PH: 149F-6-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9255 **Drawing: CB6417000**

Title:	PNEUMATIC SYSTEM - ELEC/PNEU WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	FIXED WIRE GUIDES	**Master by:**	KCH	**DATE:**	5/30/2018
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	2/14/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
28A	1	M53100127		45 DEG ELL, PH: 159F-6-6
29	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 43" LG
	2	M53200003		SWIVEL, PH: 30882-8-8B
30	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 43" LG
	2	M53200003		SWIVEL, PH: 30882-8-8B
31	1	M36000124		HOSE, NYLON, 1/4", PH: NB-4-035 X 69" LG
32	2	M53100003		MALE CONNECTOR, PH: 48F-6-6
33	2	M53100288		MALE CONNECTOR, PH: W68PL-4-6
33A	2	M53100077		BUSHING, P.H.: #209P-12-8
34	1	M53100069		COUPLING, PH: 207P-4

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9255 **Drawing: CB6417000**

Title:	PNEUMATIC SYSTEM - ELEC/PNEU WIRE STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	FIXED WIRE GUIDES	**Master by:**	KCH	**DATE:**	5/30/2018
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	2/14/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
35	1	M53100291		MALE ELL, P.H.: #W169PL-4-4
36	1	M53000801		F/M QUICK CONNECTOR COUPLER, PH: #17
37	1	M53000802		MALE QUICK CONNECTOR NIPPLE, PH: #H2F
38	1	M53100077		BUSHING, P.H.: #209P-12-8
39	1	M53100332		CONNECTOR ANCHOR, P.H.: #207ACBH-12
40	1	AB0012000		BULKHEAD MOUNT
	2			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG.
	2			LOCK WASHER, 1/4

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
		BB9850000		ELECTRICAL SCHEMATIC
		DB9530000		CONTROL PANEL WIRING DIAGRAM
		DB9531000		MACHINE WIRING DIAGRAM
1	1	DB9525000		ENCLOSURE, DRILLING
	1			HEX HD CAP SCREW, 10-32NC X 1" LG.
	2			HEX NUT, 10-32NC
	1			LOCK NUT, 10-32
2	1	E51000019		DISCONNECT, ALLEN BRADLEY: #194R-C30-1753
	1	E51100023		DISCONNECT HANDLE, ALLEN BRADLEY: #194R-PB
	1	E51100024		DISCONNECT SHAFT, ALLEN BRADLEY: #194R-S1
3	3	E37100137	*	FUSE, BUSS: #LP-CC-20, CLASS CC, 20A
4	1	E17300128	*	PROCESSOR, SIEMENS: #6ES7-214-1AG31-0XB0
	1	BB7338003		COMMUNICATION CABLE
5	1	E17100265	*	IN/OUT MODULE, SIEMENS: #6ES7 223-1BH32-0XB0

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
6				NOT USED
7				NOT USED
8	1	E17600117		5 PORT ETHERNET SWITCH, WEIDMULLER: 1240840000
9	1	E14300003		SAFETY RELAY, SIEMENS #3SK1121-2AB40
	1	E14300010		SAFETY RELAY CONNECTOR, SIEMENS #3ZY1212-2BA00
10	1	E14300005		SAFETY OUTPUT EXPANSION, SIEMENS: #3SK1211-2BB40
	1	E14300007		OUTPUT DEVICE CONNECTOR, SIEMENS #3ZY1212-2DA00
11	1	E17200121		POWER SUPPLY, TRIO-PS13AC/24PC/10 #2866459
12	2	E17100248	*	INPUT WIRING MODULE, PHOENIX CONTACT: #2315214
13	4	E17400157		CABLE, PHOENIX CONTACT: #2900122, VIP-CAB-FLK14/FR/05/0.14/0.5M
14	2	E14200010		RELAY ADAPTER, PHOENIX CONTACT: #2295554, PLC-V8/FLK14/OUT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
15	16	E14000157	*	RELAY, PHOENIX CONTACT #2966634, PLC-OSC-24DC/24DC/2
	16	E14200012		MARKER STRIP, PHOENIX CONTACT #1051003
	1	E14200014		JUMPER, PHOENIX CONTACT: 2966838, GRAY
16	1	E14200008		SEPARATOR, PHOENIX CONTACT #2966841
17	1	E47000098	*	CIRCUIT BREAKER, SIEMENS #5SJ4110-7HG41, 10A
18	4	E47000097	*	CIRCUIT BREAKER, SIEMENS #5SJ4103-7HG41, 3A
19	1	E47000096	*	CIRCUIT BREAKER, SIEMENS #5SJ4101-7HG41, 1A
20	2	E38200038		CHANNEL, ALLEN BRADLEY #199-DR1
21	10	E38200115		END ANCHOR, ALLEN BRADLEY #1492-EAJ35
22	32	E38100115		TERMINAL, ALLEN BRADLEY #1492-J3
23	3	E38100117		BARRIER END, ALLEN BRADLEY #1492-EBJ3, GRAY
24	5	E38100120		GROUNDING TERMINAL, ALLEN BRADLEY #1492-JG3

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
25	1	E38100128		END BARRIER, ALLEN BRADLEY #1492-EBJ3-Y, YELLOW
26	74	E38200117		MARKER STRIP, ALLEN BRADLEY #1492-M5X12
27A	1	E19000013		WIRE DUCT, TYTON: #SL-1X3-W
	1	E19000019		COVER, TYTON: TC1-W
27B	1	E19000013		WIRE DUCT, TYTON: #SL-1X3-W
	1	E19000019		COVER, TYTON: TC1-W
27C	1	E19000013		WIRE DUCT, TYTON: #SL-1X3-W
	1	E19000019		COVER, TYTON: TC1-W
28	1	E19000011		WIRE DUCT, TYTON: #SL-2X3-W
	1	E19000020		COVER, TYTON: #TC2-W
29	1	E47000088		FUSE BLOCK, ALLEN BRADLEY #1492-FB3M30
30	3	E37100110	*	FUSE, BUSS: #LP-CC-6, 6 AMP

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
31	1	E11100065	*	VFD, SIEMENS G120 POWER MODULE PM240-2, FSB #6SL3210-1PE21-4UL0
	1	E11100066		SIEMENS G120 CONTROL UNIT, CU2505-2PN, DI15/DO2, 24VDC #6SL3246-0BA22-1FA0
	1	E11200064		SIEMENS G120 OPERATOR PANEL, #6SL3255-0AA00-4CA1
	1	E11200065		SIEMENS SCREENING KIT FOR POWER MODULE, FSB #6SL3262-1AB00-0DA0
	1	E56000001		SIEMENS LICENSE KEY SD CARD, J12 MB, EO1 #6SL3054-4AG00-2AA0-Z
	1	BB7338003		COMMUNICATION CABLE, SHIELDED ETHERNET
32				NOT USED
33				NOT USED
34				NOT USED
35	1	E27200010		BEACON LIGHT, TELEMECANIQUE #XVBL-35
	1	E27500015	*	BULB, TELEMECANIQUE #DL1BEBS, 24V
36	1	E21000027	*	COUNTER, VEEDER ROOT #C342-0474
37	1	E23500059		LEGEND PLATE, ALLEN BRADLEY #800F-15YSE112
38	1	E13100145		SWITCH, ALLEN BRADLEY #800FP-LMT44MN3RX02

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
39	2	E13100144		SWITCH, ALLEN BRADLEY #800FP-LF3MN3GX01
40	2	E10400113		SWITCH, ALLEN BRADLEY #800FP-HB32MX20
41A	1	AB0093000		NAME PLATE, PHENOLIC, 3/4 X 1-1/2, (MANUAL TIE)
41B	1	AB0093001		NAME PLATE, PHENOLIC, 3/4 X 1-1/2, (AUTO MODE)
41C	1	AB0093002		NAME PLATE, PHENOLIC, 3/4 X 1-1/2, (WIRE FEED/TENSION)
41D	1	AB0093003		NAME PLATE, PHENOLIC, 3/4 X 1-1/2, (WIRE DRIVE OPEN/CLOSE)
41E	1	AB0093004		NAME PLATE, PHENOLIC, 3/4 X 1-1/2, (CONVEYOR REV/FWD)
42	1	AA7244000		OPERATING NAMEPLATE, PHENOLIC
43				NOT USED
44	1	M25000018		CORPORATE PLATE
	8			DRIVE SCREW, #6 (.136) X 1/4" LG.
45	2	AA6144000		WARNING DECAL, TURN OFF ELECTRICAL
46	2	AA6145000		WARNING DECAL, HIGH VOLTAGE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9607 **Drawing: DB9524000**

Title:	CONTROLS, EP STRAPPER	**Issued for Serial No.:**	22018010, 018		
Description:	SIEMENS S7-1200 PLC, HOFFMAN ENCLOSURE	**Master by:**	JMH	**DATE:**	6/21/2023
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	7/25/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
47	1	E24100134	*	PLUG, MELTRIC: 33-38043
	1	E24500048		HANDLE, MELTRIC: 513P0D30
48	1	E24100184	*	PLUG, CABLE HOOD, MENCOM: #CAV24L29
	1	E24100185	*	MALE INSERT, MENCOM: #CSHM-24
	1	E24500050		CABLE CLAMP, MENCOM #CRSS-29
	1	E24300025		DUST COVER, MENCOM #CHC-24LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9237 **Drawing: BB9211000**

Title:	FIXED WIRE GUIDE ASSEMBLY	**Issued for Serial No.:**	22018010, 018
Description:	2 X 22 SPRING STEEL	**Master by:** RPH	**DATE:** 5/15/2018
		Issued By:	**DATE:**
		Revision:	**DATE:**

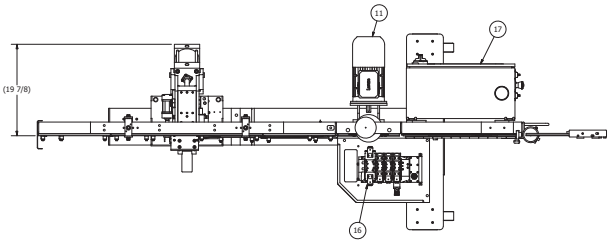
ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	BA7547000		GUIDE SPACER
	2			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	2			HEX HD CAP SCREW, 3/8-16NC X 1 LG.
	3			FLAT WASHER, 3/8-STD.
	3			LOCK WASHER, 3/8-STD.
2	1	BB9479000		FRONT WIRE GUIDE
3	1	BB9480000		BACK WIRE GUIDE
4	2	M69100015		PIN, SPIROL, CLDP .375 X 1.25 MBK
	2	M69100020		PIN, SPIROL, CLDP .250 X 2.00 MBK

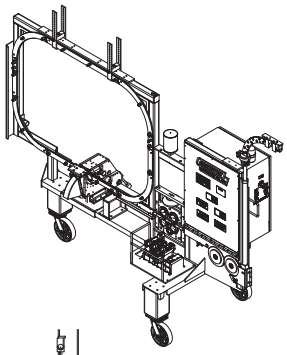
* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

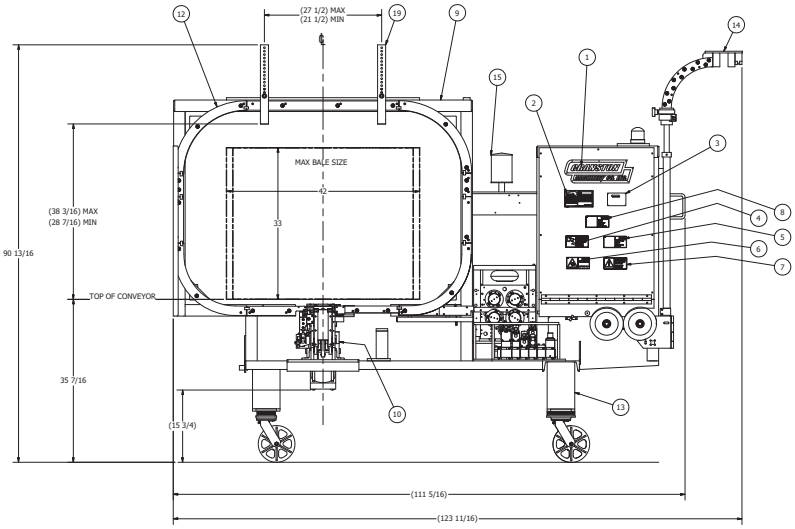
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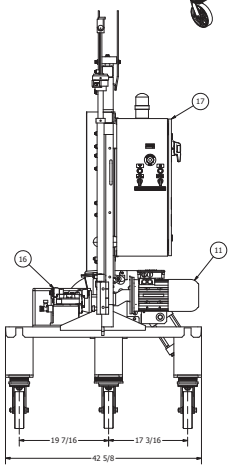
1.

2.









22018010, 018

This drawing, including all designs embodied therein, is the property of CRANSTON MACHINERY CO. INC. and may not be used or disclosed in whole or in part without written permission.

UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional ± 1/16
Machining:
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

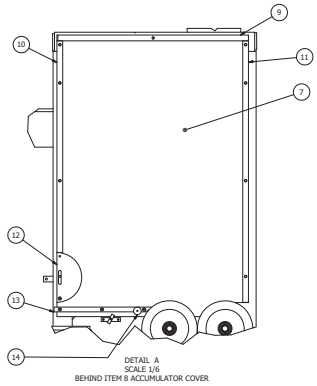
CRANSTON MACHINERY CO. INC.
3351 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7751 FAX 503.654.6472

STRAPPER ARRANGEMENT

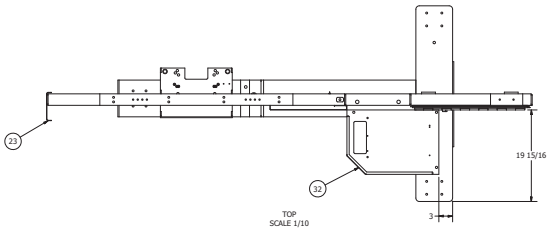
SCALE:	DRAWN BY:	Assembly No.	REV:
1/10	JMH	DB9475	
DATE:	APPD:	SHT 1 OF 1	
12/19/2022	JMH		

REF. DWG:

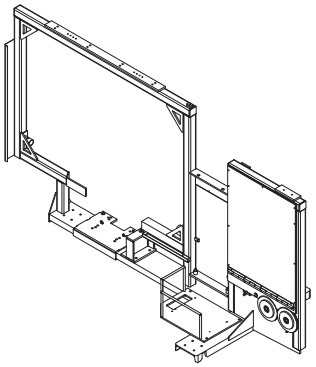
REV	DESCRIPTION	DATE	DESIGNER
REVISION HISTORY			

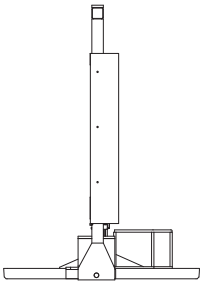


DETAIL A
SCALE 1/6
BEHIND ITEM 8 ACCUMULATOR COVER

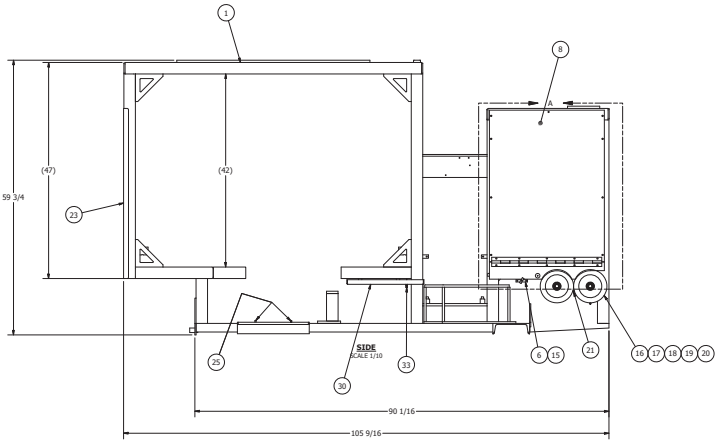


TOP
SCALE 1/10

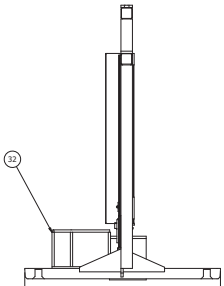




FRONT
SCALE 1/10



SIDE
SCALE 1/10



REAR
SCALE 1/10

(42 9/16)

NOTE:
1.
2.

PA9565

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OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.6172

UNLESS OTHERWISE NOTED:
Dimensions are inches
Tolerances:
Fractional ± 1/32
Angles ± 1°

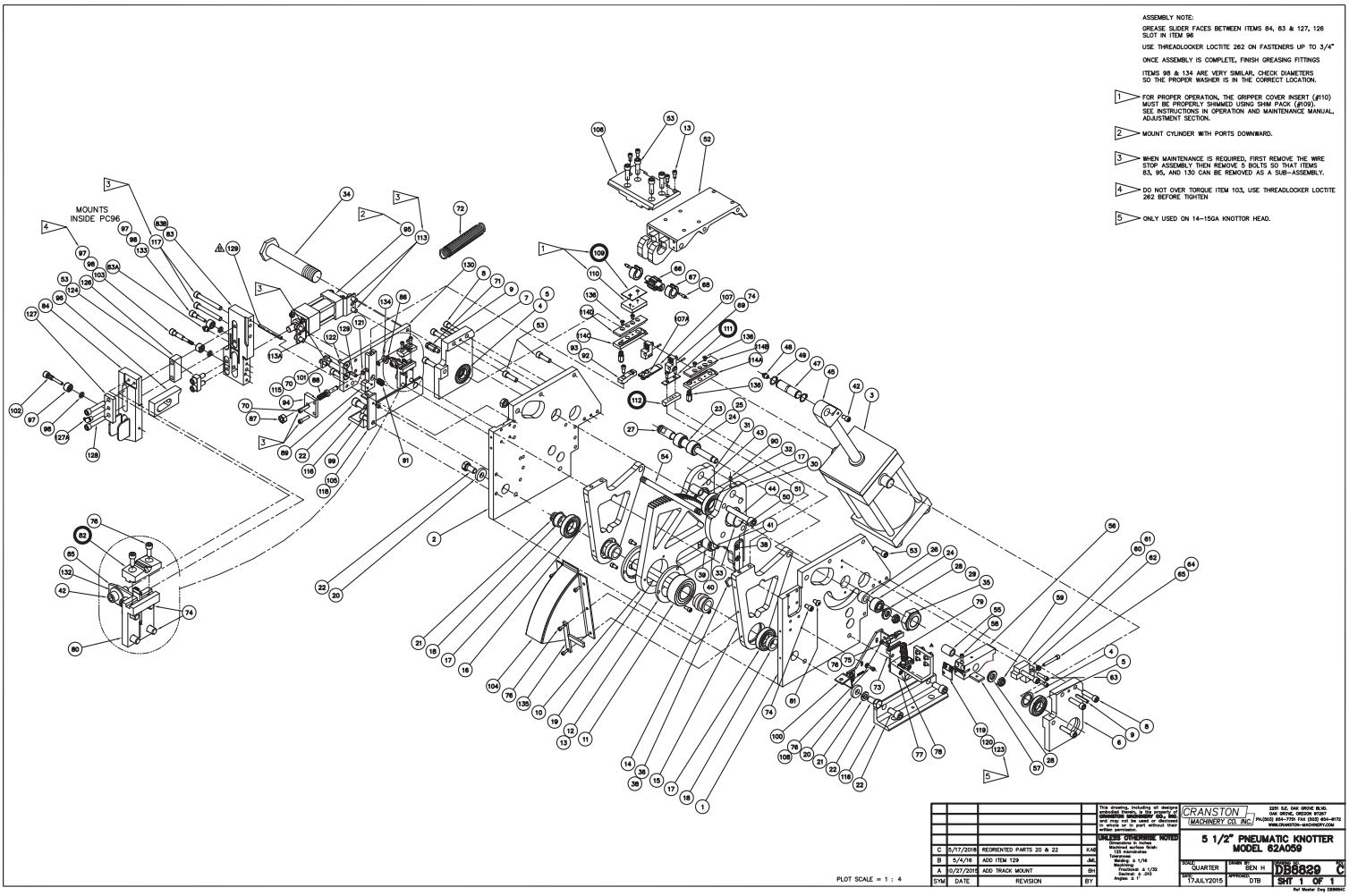
FRAME ASSEMBLY

SCALE	DWN BY	DRAWING NO.	REV
1/10	JMH	DB9476	
DATE	CHK'D	SHT 1 OF 1	
12/19/2022	JMH		

REF. DWG: DB8755

REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY



SYM	DATE	REVISION	BY
C	5/17/2018	REORIENTED PARTS 20 & 22	KAB
B	5/4/16	ADD ITEM 129	JML
A	6/27/2015	ADD TRACK MOUNT	BH

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Dimensions in Inches
Standard surface finish: 125 micro inches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .015
Angles ± 1°

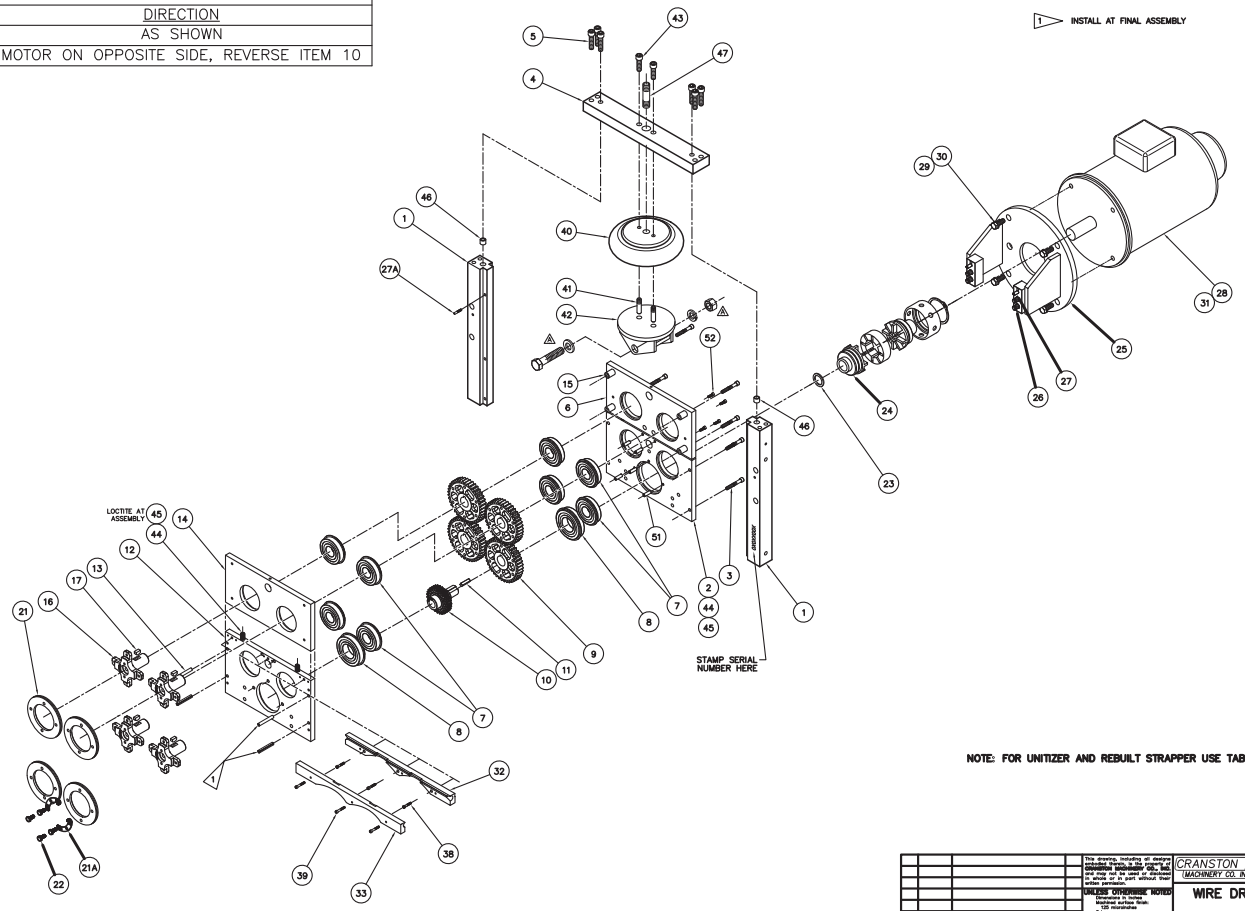
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OAK GROVE, OREGON 97267
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5 1/2" PNEUMATIC KNOTTER MODEL 62A059

SCALE	QUARTER	DRAWN BY	BEN H
DATE	17JULY2015	APPROVED	DTB

DWG NO. DB6829 C
SHT 1 OF 1
Ref Master Dwg DB6804C

TABS	
TAB	DIRECTION
000	AS SHOWN
001	MOTOR ON OPPOSITE SIDE, REVERSE ITEM 10



NOTE: FOR UNITIZER AND REBUILT STRAPPER USE TAB 001 REVERSE

PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY
1	11APR19	UPDATED PRINT, ADDED FASTENERS	JEL

CRANSTON MACHINERY CO. INC.
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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish:
125 microinches
Tolerances
Welding: ± 1/16
Machining
Fractional ± 1/32
Decimal ± .015
Angles ± 1°

WIRE DRIVE ASSEMBLY
ELECTRIC

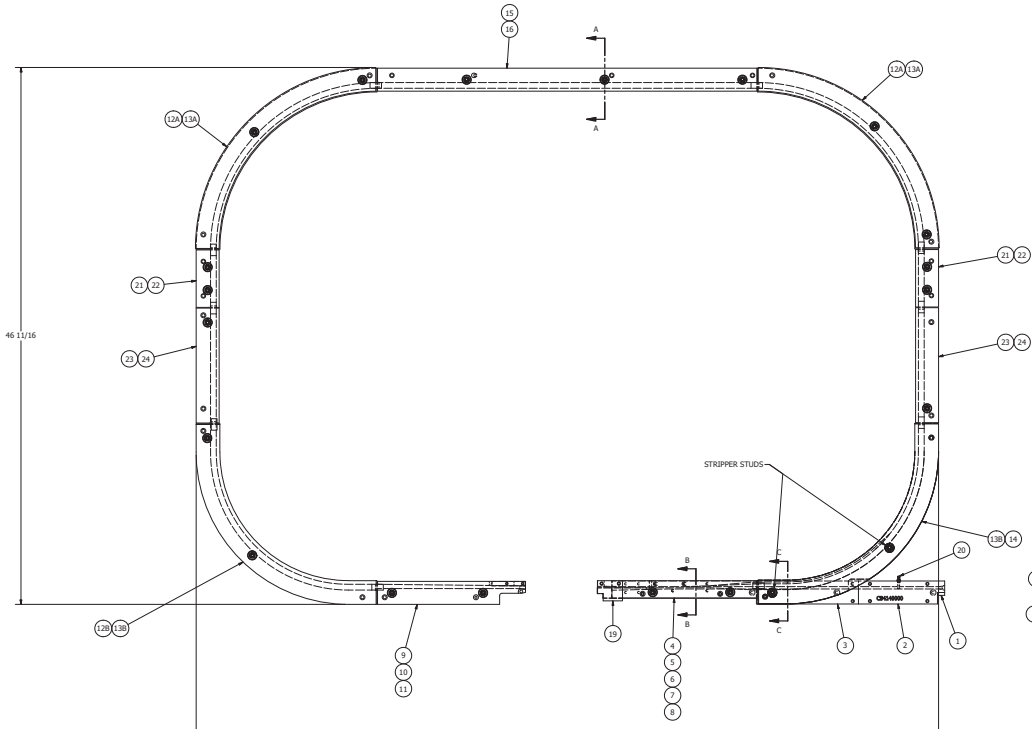
SCALE	DRAWN BY	DRAWING NO.	REV
NONE	JEL	DB5766	A
DATE	APPROVED	SHT 1 OF 1	
28JAN2015	RPH		

Ref Master Dwg DB5753

NOTE:

1.

2.



PA9566

REV	DESCRIPTION	DATE	DESIGNER
		12/19/2022	JMH

REVISION HISTORY

UNLESS OTHERWISE NOTED:

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OAK GROVE, OR 97267
PH 503.654.7751 FAX 503.654.6472

WIRE TRACK ASSEMBLY

WIDE BALE OPENING

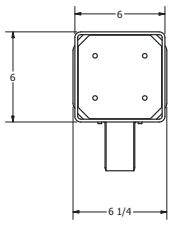
SCALE:	DRAWN BY:	TRACKING:	REV:
1/4	JMH	DB9477	
DATE:	APP'D:	SHT 1 OF 1	
12/19/2022	JMH		

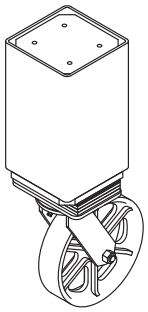
REF. DWG: CB5750

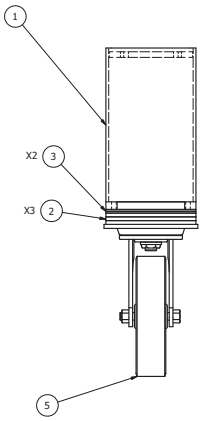
NOTE:

1.

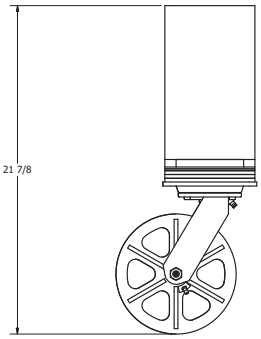
2.







SINGLE CASTER
SCALE 1/4
(TYP)



PA9567

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Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

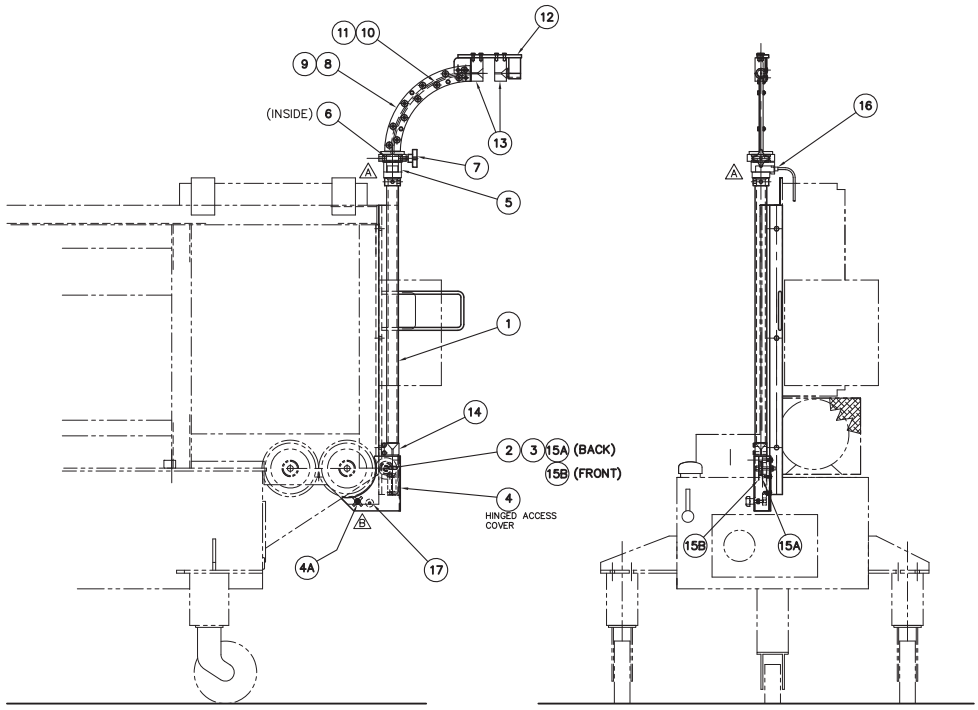
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OAK GROVE, OR 97267
PH 503.654.7751 FAX 503.654.6172

CASTER ASSEMBLY

SCALE:	DWN BY:	DRAWING NO.	REV:
1 / 4	JMH	CB6600	
DATE: 12/19/2022	APPD: JMH	SHT 1 OF 1	REF. DWG:

REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY



PLOT SCALE = 1 : 8

SYM	DATE	REVISION	BY
B	1NOV2023	REVERSED IMAGES PC17 & 4A	DEN
A	1/24/2017	UPDATED DRAWING	JML

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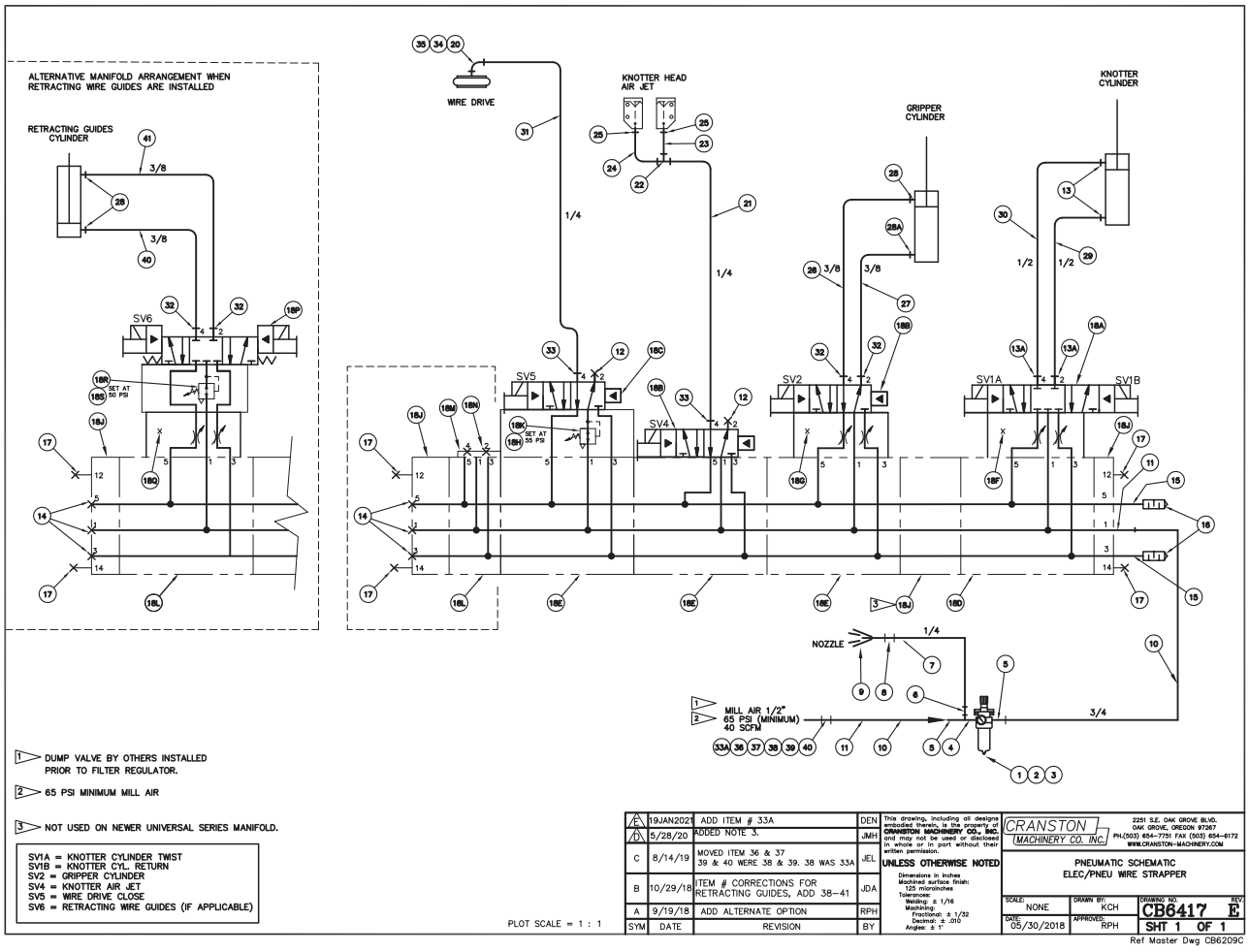
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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ARRANGEMENT – TOP WIRE ENTRY
(WITH OUT OF WIRE SENSOR)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
1 1/2"=1'-0"	FRB	CB5723	B
DATE: 21MAR2011	APPROVED: FRB	SHT 1 OF 1	

Ref Master Dwg CB5249



SYM	DATE	REVISION	BY
E	19JAN2021	ADD ITEM # 33A	DEN
D	5/28/20	ADDED NOTE 3.	JMH
C	8/14/19	MOVED ITEM 36 & 37 39 & 40 WERE 38 & 39. 38 WAS 33A	JEL
B	10/29/18	ITEM # CORRECTIONS FOR RETRACTING GUIDES, ADD 38–41	JDA
A	9/19/18	ADD ALTERNATE OPTION	RPH

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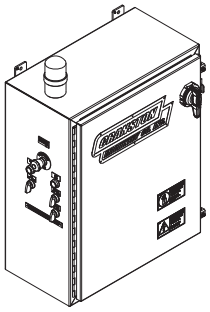
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

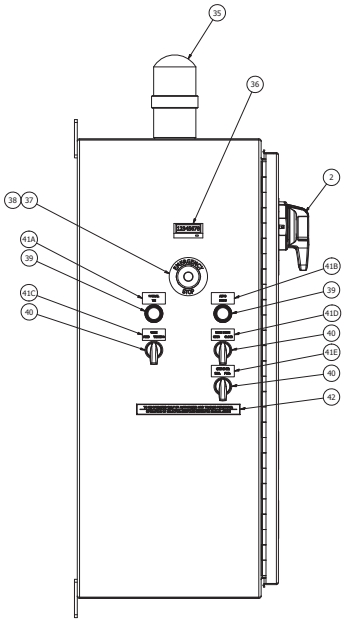
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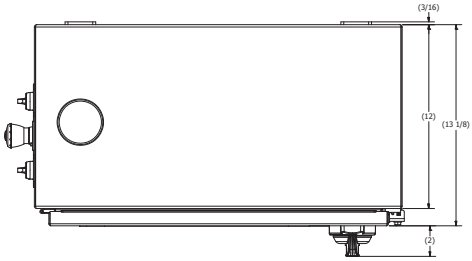
PNEUMATIC SCHEMATIC
ELEC/PNEU WIRE STRAPPER

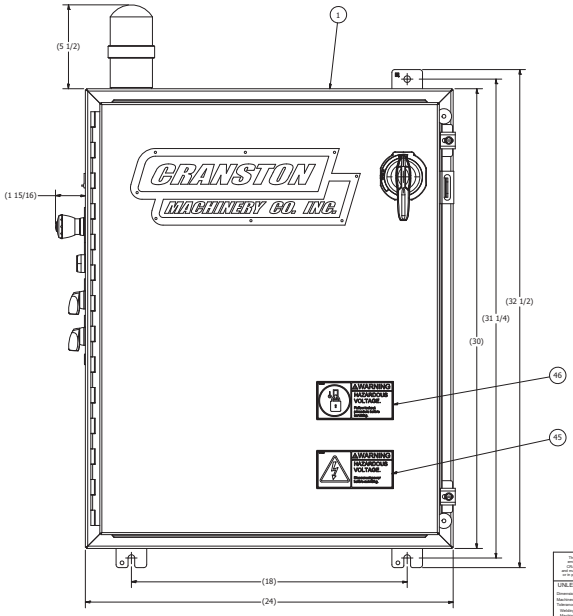
SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	KCH	CB6417	E
DATE: 05/30/2018	APPROVED: RPH	SHT 1 OF 1	

Ref Master Dwg CB6209C









NOTE:

1. ITEMS 47, 48 NOT SHOWN.

2.

PA9607

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Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional: ± .032
Decimal: ± .010
Angles: ± ½

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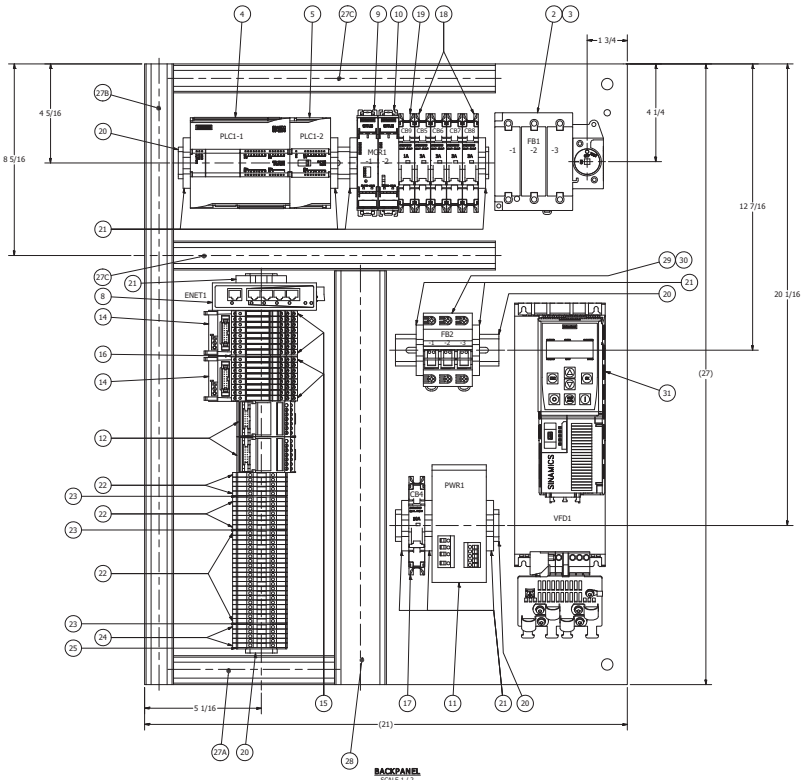
CONTROL PANEL

SCALE:	DRAWN BY:	ASSEMBLY NO.	REV.
1/3	JMH	DB9524	
DATE:	APP'D:	SHT 1 OF 2	
6/21/2023	JMH		

REF. DWG: DB9385

REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY



BACKPANEL
SCALE 1 / 2

PA9607

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Machined Surface Finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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CONTROL PANEL

BACK PANEL

SCALE:	DWN BY:	DRAWING NO.	REV.
1 / 2	JMH	DB9524	
DATE:	APPD:	SHT 2 OF 2	
6/21/2023	JMH		

REF. DWG: DB9385

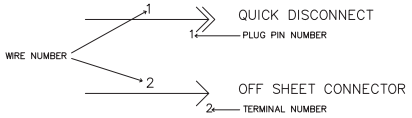
SCHEMATIC CONTENTS

1. LEGEND & REFERENCE
2. 3PH AC POWER
3. CONTROL POWER
4. CONTROL CONNECTOR
5. PLC INPUTS
6. PLC OUTPUTS
7. PLC INPUTS/OUTPUTS

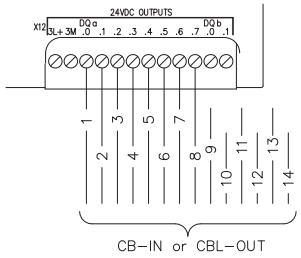
RELATED DRAWINGS

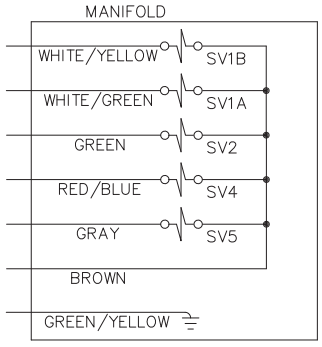
BB9850	ELECTRICAL SCHEMATIC
DB9524	CONTROL PANEL LAYOUT
DB9530	CONTROL PANEL WIRING DIAGRAM
DB9531	MACHINE WIRING DIAGRAM

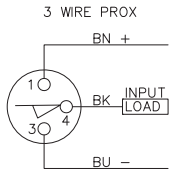
SYMBOL CONVENTIONS USED

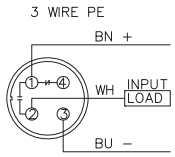


TYPICAL PLC I/O TO CABLE CONNECTION

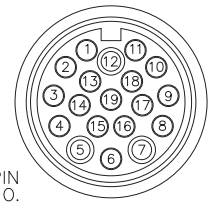








COLOR CODE AND FACE VIEW VALVE MANIFOLD CABLE



PIN NO.

1 – VIOLET
2 – RED
3 – GRAY
4 – RED/BLUE
5 – BLUE
6 – GREEN
7 – BROWN
8 – WHITE/GREEN
9 – WHITE/YELLOW
10 – WHITE/GRAY
11 – BLACK
12 – GREEN/YELLOW
13 – YELLOW/BROWN
14 – BROWN/GREEN
15 – WHITE
16 – YELLOW
17 – PINK
18 – GRAY/BROWN
19 – GRAY/PINK

22018010

SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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ELECTRICAL SCHEMATIC EP STRAPPER LEGEND

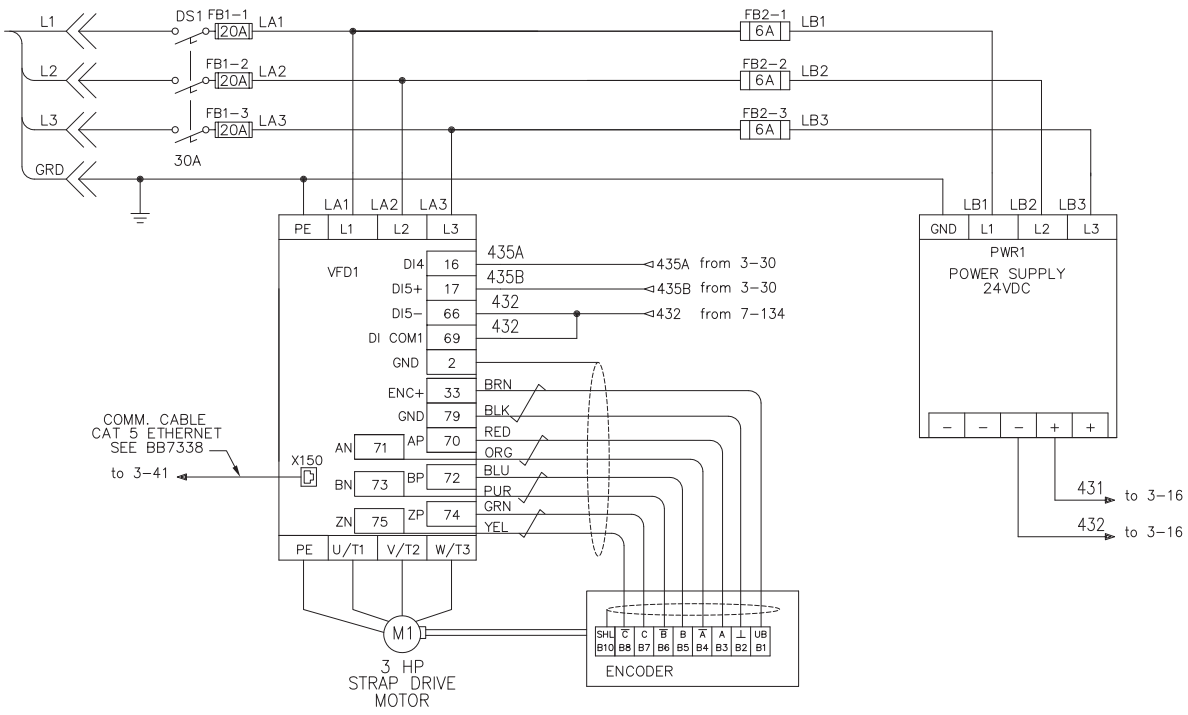
SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 1 OF 7	

Ref. Master Dwg. BB9699A

WIRING FOR MOTORS

380-480VAC, 3 PHASE, 50-60HZ

FROM CONVEYOR
BY CUSTOMER



22018010

SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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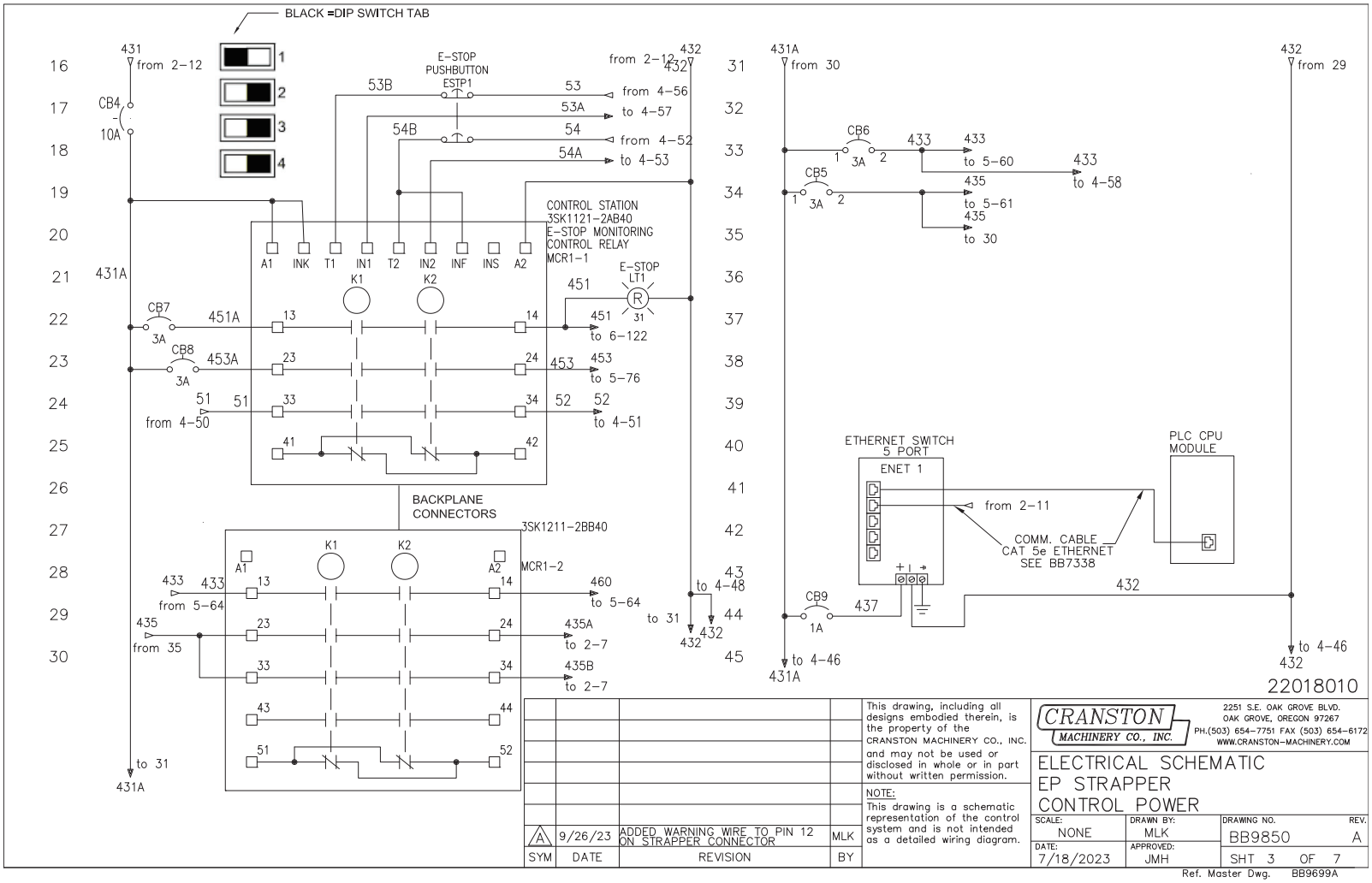
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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ELECTRICAL SCHEMATIC
EP STRAPPER
MOTOR POWER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 2 OF 7	

Ref. Master Dwg. BB9699A



SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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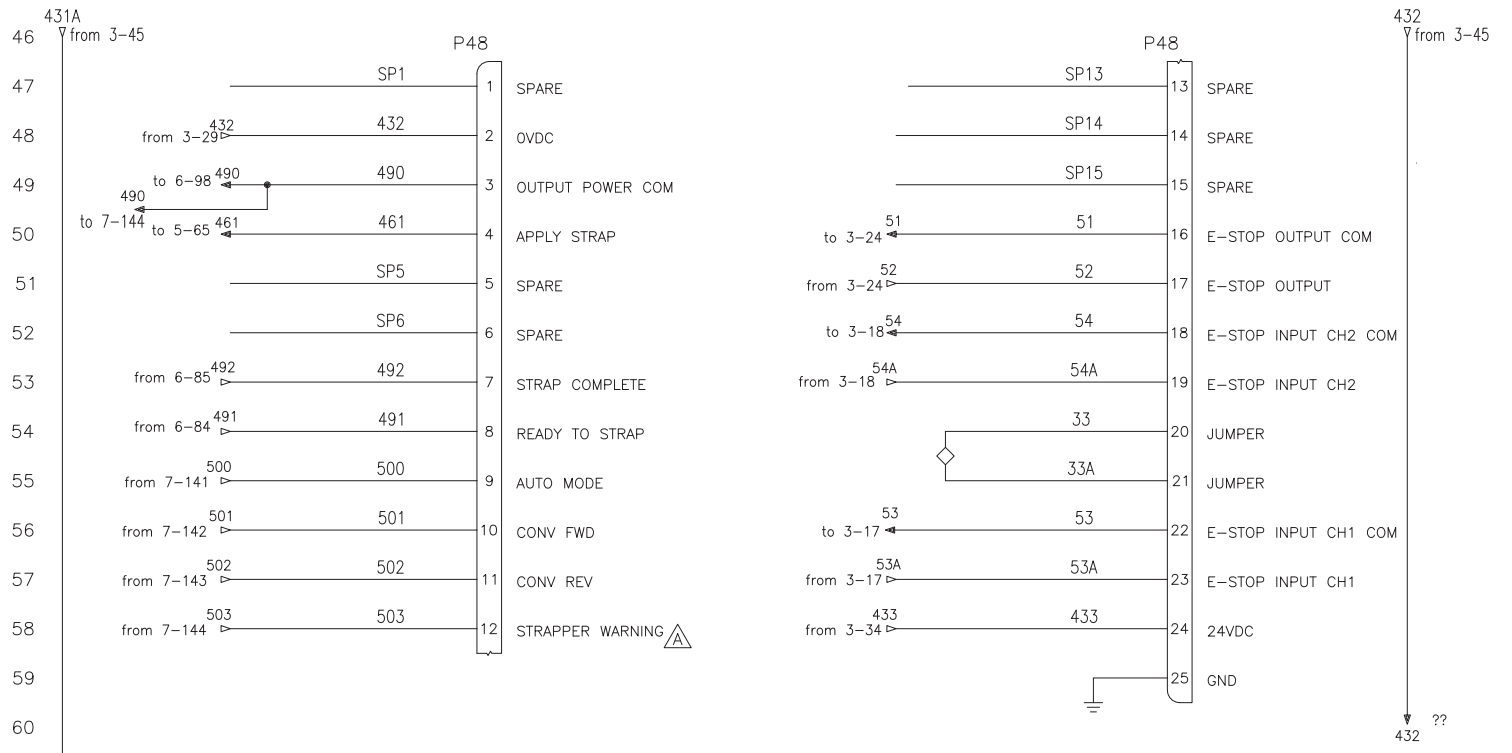
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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ELECTRICAL SCHEMATIC
EP STRAPPER
CONTROL POWER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 3 OF 7	

Ref. Master Dwg. BB9699A



22018010

SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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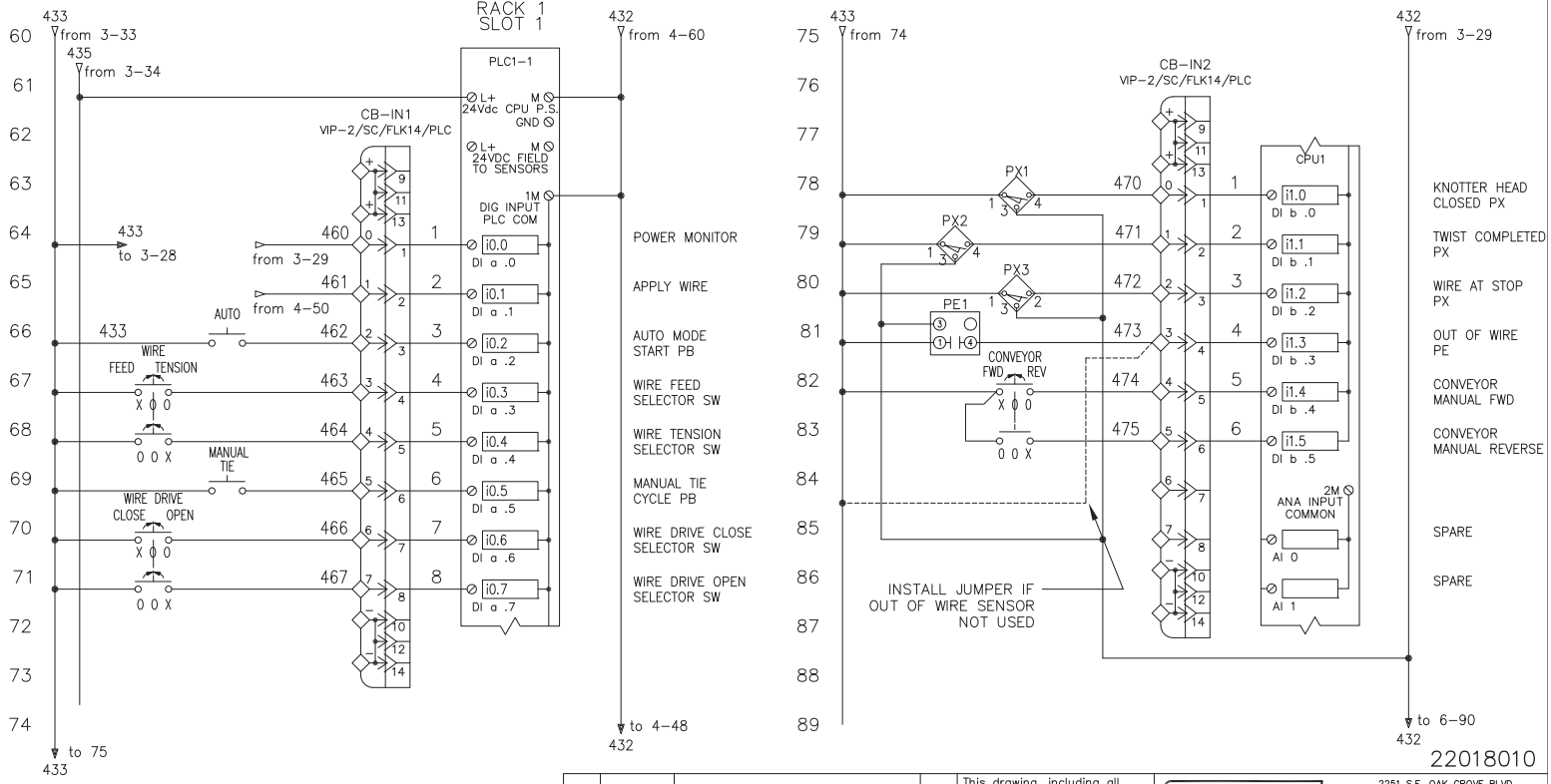
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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OAK GROVE, OREGON 97267
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ELECTRICAL SCHEMATIC
EP STRAPPER
CONTROL CONNECTOR

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 4 OF 7	

Ref. Master Dwg. BB9699A



SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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NOTE:
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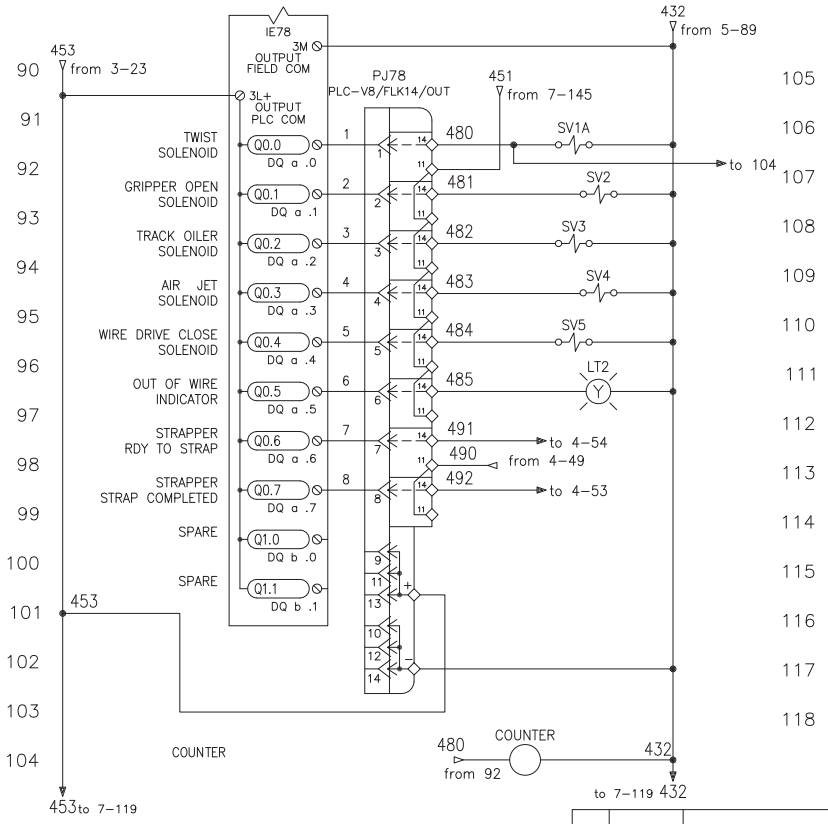
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ELECTRICAL SCHEMATIC
EP STRAPPER
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 5 OF 7	

Ref. Master Dwg. BB9699A

22018010



22018010

SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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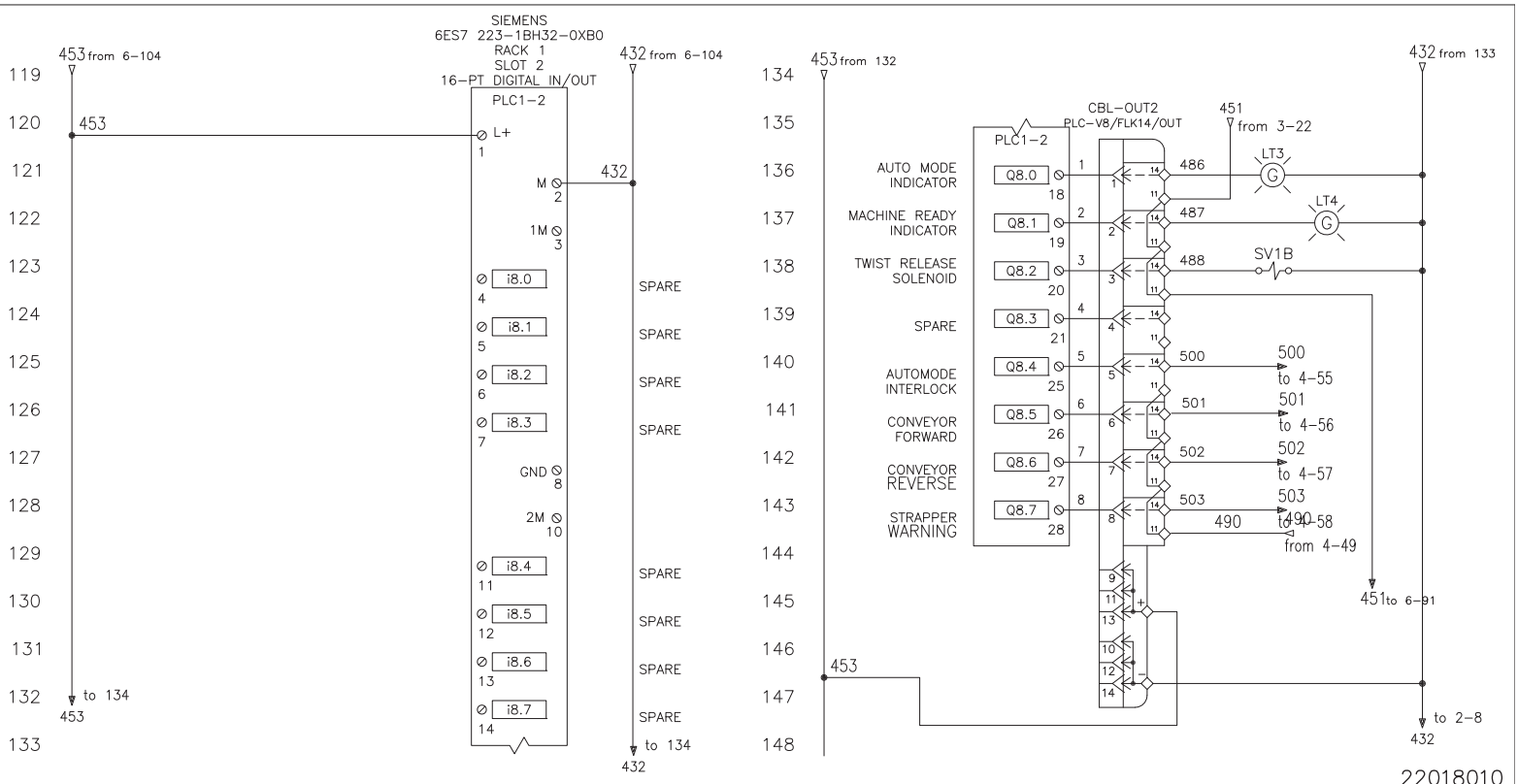
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

ELECTRICAL SCHEMATIC
EP STRAPPER
PLC OUTPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 6 OF 7	

Ref. Master Dwg. BB9699A



22018010

SYM	DATE	REVISION	BY
A	9/26/23	ADDED WARNING WIRE TO PIN 12 ON STRAPPER CONNECTOR	MLK

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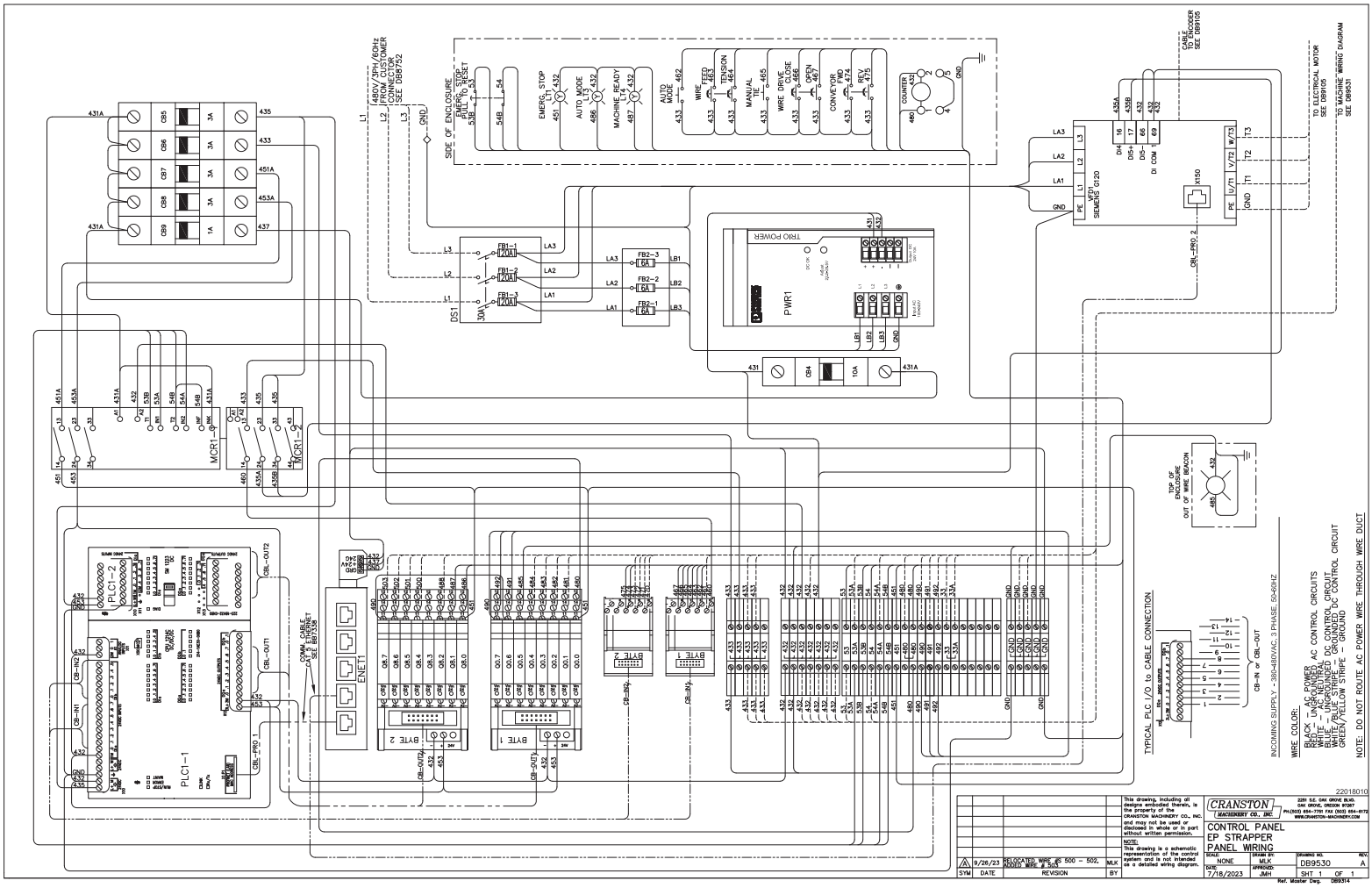
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

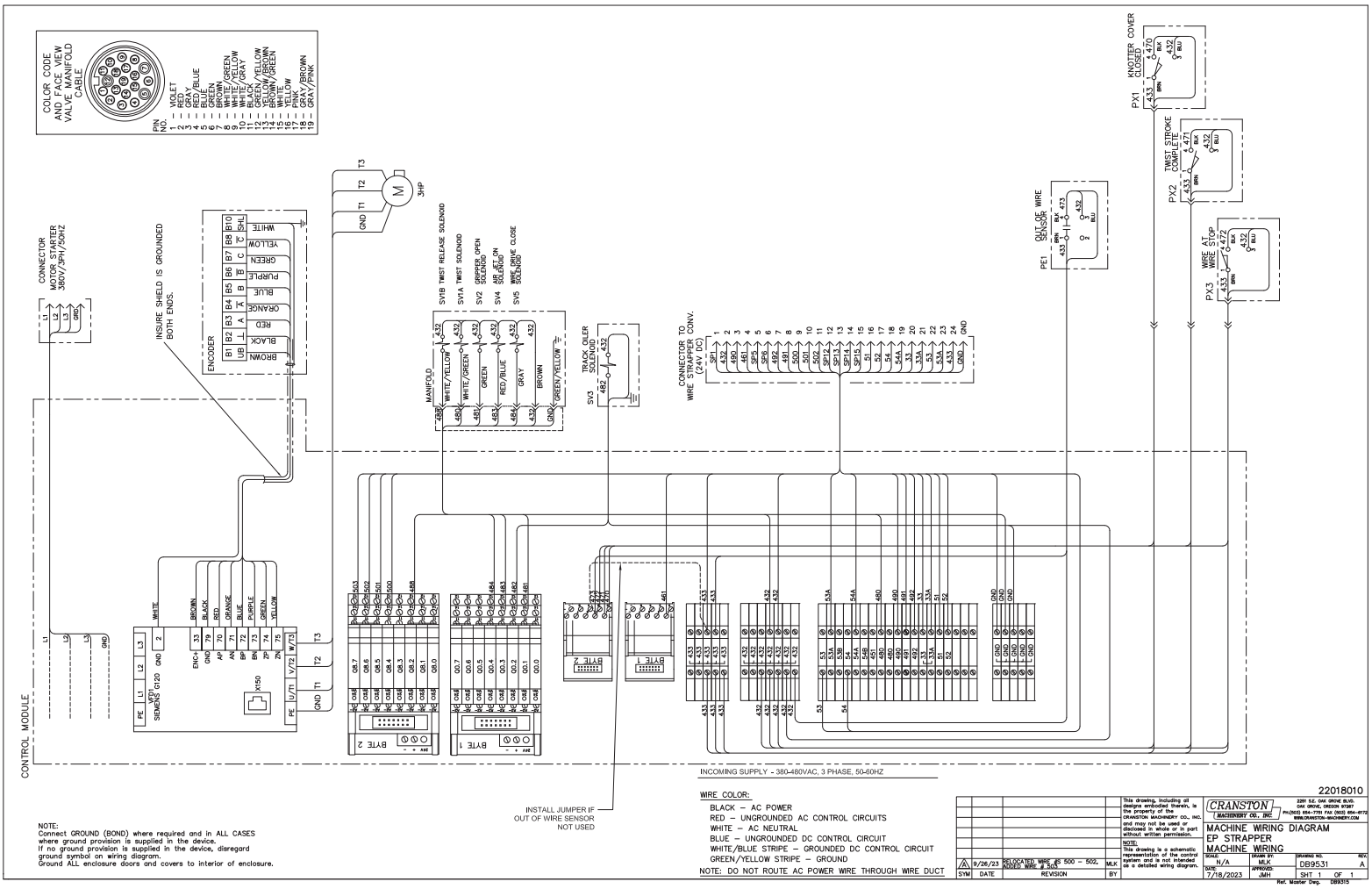
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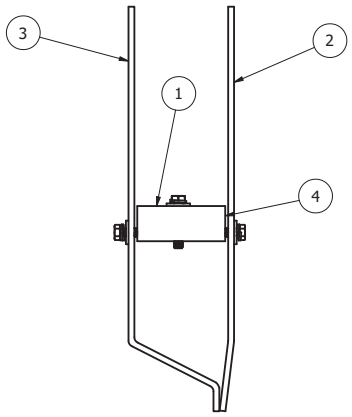
ELECTRICAL SCHEMATIC
EP STRAPPER
PLC INPUTS/OUTPUTS

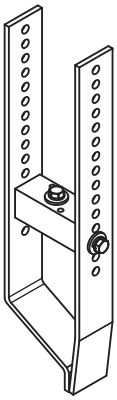
SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	MLK	BB9850	A
DATE: 7/18/2023	APPROVED: JMH	SHT 7 OF 7	

Ref. Master Dwg. BB9699A


CONTROL PANEL
EP STRAPPER
PANEL WIRING
CRANSTON MACHINERY CO., INC.
2201 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7701 FAX (503) 654-4172
WWW.CRANSTON-MACHINERY.COM
SCALE: NONE
DRAWN BY: MLK
DRAWING NO. DB9530
REV. A
DATE: 7/16/2023
APPROVED: JMH
SHT 1 OF 1
Ref. Master Dwg. DB9314
22018010
9/26/23 RELOCATED WIRE #S 500 – 502, ADDED WIRE # 543 MLK
SYM DATE REVISION BY
This drawing, including all designs embodied therein, is the property of the CRANSTON MACHINERY CO., INC. and may not be used or disclosed in whole or in part without written permission.
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.
INCOMING SUPPLY - 380-480VAC, 3 PHASE, 50-60HZ
WIRE COLOR:
BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – GROUNDED AC CONTROL CIRCUIT
BLUE – UNGROUNDED DC CONTROL CIRCUIT
ORANGE – GROUNDED DC CONTROL CIRCUIT
GREEN/YELLOW STRIPE – GROUND
NOTE: DO NOT ROUTE AC POWER WIRE THROUGH WIRE DUCT
TYPICAL PLC I/O to CABLE CONNECTION
TOP OF ENCLOSURE OUT OF WIRE DUCT
SIDE OF ENCLOSURE
TO ENCODER SEE DB9105
TO ELECTRICAL MOTOR SEE DB9105
TO MACHINE WIRING DIAGRAM SEE DB9531
PLC1-2
PLC1-1
MCR1-8
MCR1-9
PWR1
TRIO POWER
ENET1
BYTE 1
BYTE 2
SIEMENS G120
CB-PRO 2
CB-PRO 1
CB-OUT2
CB-OUT1
CB-IN2
CB-IN1
CB-OUT
CB-IN
EMERG. STOP
AUTO MODE
MACHINE READY
WIRE FEED
TENSION
MANUAL JOG
WIRE DRIVE CLOSE
CONVEYOR
REV.
COUNTER
FEED TO RESET
DS1
FB1-1
FB1-2
FB1-3
FB2-1
FB2-2
FB2-3


COLOR CODE AND FACE VIEW VALVE MANIFOLD CABLE
PIN NO. 1 — VIOLET
2 — GRAY
3 — RED/BLUE
4 — BLUE
5 — GREEN
6 — BROWN
7 — WHITE/GREEN
8 — WHITE/YELLOW
9 — WHITE/GRAY
10 — RED
11 — GREEN/YELLOW
12 — BROWN/GREEN
13 — WHITE
14 — YELLOW
15 — PINK
16 — GRAY/BROWN
17 — GRAY/PINK
18 — BLACK
19 — BLACK
CONNECTOR MOTOR STARTER 350V/3PH/50HZ
INSURE SHIELD IS GROUNDED BOTH ENDS.
ENCODER
BROWN
BLACK
RED
ORANGE
PURPLE
BLUE
GREEN
YELLOW
WHITE
MANIFOLD
SV1B TWIST RELEASE SOLENOID
SV1A TWIST SOLENOID
SV2 GRIPPER OPEN SOLENOID
SV4 AIR JET ON SOLENOID
SV5 KNIFE DRIVE CLOSE SOLENOID
SV3 TRACK OILER SOLENOID
CONNECTOR TO WIRE STRAPPER CONV. (24V DC)
3HP
KNOTTER COVER CLOSED
TWIST STROKE COMPLETE
WIRE AT WIRE STOP
OUT OF WIRE SENSOR
PX1
PX2
PX3
PE1
CONTROL MODULE
VFD SIEMENS G120
BYTE 1
BYTE 2
INCOMING SUPPLY - 380-480VAC, 3 PHASE, 50-60HZ
INSTALL JUMPER IF OUT OF WIRE SENSOR NOT USED
WIRE COLOR:
BLACK – AC POWER
RED – UNGROUNDED AC CONTROL CIRCUITS
WHITE – AC NEUTRAL
BLUE – UNGROUNDED DC CONTROL CIRCUIT
WHITE/BLUE STRIPE – GROUNDED DC CONTROL CIRCUIT
GREEN/YELLOW STRIPE – GROUND
NOTE: DO NOT ROUTE AC POWER WIRE THROUGH WIRE DUCT
NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.
Ground ALL enclosure doors and covers to interior of enclosure.
22018010
SYM 1 DATE 9/26/23 REVISION RELOCATED WIRE #5 500 – 502, ADDED WIRE #54A BY MLK
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NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.
CRANSTON MACHINERY CO., INC
2291 S.E. OAK GROVE BLVD. OAK GROVE, OREGON 97267
PH.(503) 654-7701 FAX (503) 654-8772
WWW.CRANSTON-MACHINERY.COM
MACHINE WIRING DIAGRAM
EP STRAPPER
MACHINE WIRING
SCALE: N/A
DRAWN BY: MLK
DATE: 7/18/2023
APPROVED: JMH
DRAWING NO. DB9531
REV. A
SHT 1 OF 1
Ref. Master Dwg. DB9315





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UNLESS OTHERWISE NOTED:
Dimensions in Inches:
Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1˚

CRANSTON MACHINERY CO. INC.
P.O. BOX 68207 OAK GROVE OR 97268
PH 503.654.7751 FAX 503.654.6172

EXTRA LONG WIRE GUIDE

SCALE:	DWN BY:	DRAWING NO.	REV.
1:4	RPH	BB9211	
DATE:	APP'D:	SHT 1 OF 1	
11/7/14	RPH		

WIRE COIL DISPENSER - MODEL 50B023

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION
1.2--WIRE THREADING
1.3--WIRE STRAIGHTENING

SECTION 2--DRAWING AND PARTS LIST

WIRE COIL DISPENSER - MODEL 50B023

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON WIRE COIL DISPENSER IS DESIGNED TO PROVIDE CONSISTENT DISTRIBUTION OF WIRE TO THE WIRE STRAPPING EQUIPMENT. THE MODEL 50B023 IS A TOP PAY-OFF DISPENSER.

THE DISPENSER CONSISTS OF A FLOOR MOUNTED FRAME WITH (1) SET OF EXPANDED METAL DOORS. **THESE DOORS ARE TO BE CLOSED WHENEVER THE DISPENSER IS IN OPERATION.** A SEPARATE AND MOVABLE BASE IS PROVIDED TO SUPPORT THE WIRE STAND AND COIL. THIS MOVABLE BASE CAN BE LIFTED, REMOVED, AND OR REPLACED WITH A FORK TRUCK OR PALLET JACK. AT THE TOP OF THE FRAME THERE IS A SYSTEM OF (3) WIRE GUIDE SHEAVES, INCLUDING ONE SHEAVE THAT IS ADJUSTABLE FOR WIRE STRAIGHTENING, AND A 90 DEGREE WIRE GUIDE. THE 90 DEGREE WIRE GUIDE HAS A GROOVE THROUGH THE CENTER FOR THE WIRE AND A SERIES OF BEARINGS TO FACILITATE WIRE TRAVEL. THIS 90 DEGREE WIRE GUIDE IS ABLE TO SWIVEL 360 DEGREES SO THAT IT CAN LINE UP WITH A MATING GUIDE ON THE WIRE STRAPPING MACHINE. A HAND KNOB IS PROVIDED TO LOCK THE SWIVEL POSITION OF THE 90 DEGREE WIRE GUIDE. THIS HANDLE MUST BE LOCKED DURING OPERATION. AT THE END OF THE 90 DEGREE WIRE GUIDE THERE IS A MOUNT FOR HOLDING THE PIECE OF PIPE THAT IS SUSPENDED BETWEEN THE COIL DISPENSER AND THE WIRE STRAPPER. THE COIL DISPENSER ALSO INCLUDES A PAYOFF RING THAT MOUNTS TO THE TOP OF THE WIRE STAND.

1.2--WIRE THREADING - **PLEASE REFER TO DRAWING DB8915 FOR ITEM NUMBERS**

WE SUGGEST INSTALLING THE COIL DISPENSER NEAR THE WIRE STRAPPER SUCH THAT THE TOP 90 DEGREE WIRE GUIDE IS POINTING TO THE MATING GUIDE ON THE STRAPPER. MAKE SURE THAT THE LOCKING KNOB (ITEM 17) IS TIGHT ONCE THE GUIDE IS PROPERLY POSITIONED. MOUNT THE CROSS TUBE AND SLIDE TUBE (ITEMS 23 AND 24) BETWEEN THE TWO 90 DEGREE WIRE GUIDES. THE TUBES MUST BE IN A STRAIGHT LINE AND SHOULD BE AGAINST THE END STOPS THAT ARE IN EACH HANGER BRACKET. THERE IS ALSO A PIN ON THE END OF EACH TUBE THAT FITS INTO A SLOT IN THE HANGERS.

OPEN THE DOORS OF THE ENCLOSURE AND RAISE THE TWO ARMS (ITEM 3) UPWARD SO THEY WILL NOT BE IN THE WAY WHEN LOADING THE WIRE COIL. INSTALL A COIL OF WIRE (SUPPLIED BY CUSTOMER) ONTO THE WIRE STAND. MOVE THE WIRE STAND WITH WIRE COIL INTO THE DISPENSER SO THAT IT IS CENTERED ON THE PLATFORM. WE SUGGEST USING A FORK TRUCK TO PICK UP AND MOVE THE WIRE STAND INTO THE BASE PRIOR TO MOVING IT INTO THE DISPENSER. A FORK CAN BE INSERTED UNDER THE UPPER PORTION OF THE WIRE STAND. NOW INSTALL THE PAYOFF RING AND HOLD DOWN BAR (ITEMS 6 & 7) TO THE TOP OF THE WIRE STAND. LOWER THE TWO ARMS (ITEM 3) SO THAT THEY TOUCH THE OUTER EDGE OF THE PAYOFF RING. TAKE THE END OF THE WIRE, MAKING SURE IT COMES OVER THE OUTSIDE OF THE PAYOFF RING AND INSERT IT INTO THE HOLE UNDER THE CENTER OF THE TOP CHANNEL FRAME. ROTATE HANDLE (ITEM 13) COUNTER-CLOCKWISE TO DISENGAGE FROM THE HOLDING LUG AND PULL OUTWARD SLIGHTLY TO MOVE THE CENTER SHEAVE. WHILE DOING THIS, PUSH THE WIRE UP PAST THE SHEAVES AND THROUGH THE WIRE DIE (ITEM 4) AND INTO THE HOLE ON THE UNDERSIDE OF THE 90 DEGREE WIRE GUIDE (ITEM 18). PUSH THE HANDLE (ITEM 13) INWARD MAKING SURE THE WIRE IS

1.2--WIRE THREADING (CONT'D)

LINED UP WITH THE GROOVES IN THE SHEAVES AND THEN ROTATE CLOCKWISE TO LOCK INTO PLACE.

NOW CONTINUE PUSHING THE WIRE UP. THE WIRE WILL GO THROUGH THE 90 DEGREE WIRE GUIDE (ITEM 18), THROUGH THE INTERCONNECTING TUBES (ITEM 23 AND 24), INTO THE MATCHING 90 DEGREE WIRE GUIDE AT THE STRAPPER, DOWN THROUGH THE WIRE TUBE AT THE STRAPPER AND COME OUT NEAR THE RIGHT HAND SIDE OF THE ACCUMULATOR.

ONCE THE WIRE EMERGES NEAR THE ACCUMULATOR, CLOSE THE COIL DISPENSER DOORS AND SECURE. AT THIS POINT THE WIRE MUST BE THREADED INTO THE STRAPPER. PLEASE REFER TO THE THREADING INSTRUCTIONS IN THE WIRE STRAPPER MANUAL.

1.3--WIRE STRAIGHTENING

SOME TYPES OF WIRE HAVE MORE CAST (CURLING) THAN OTHERS AND THIS CAN CAUSE WIRE FEEDING PROBLEMS AT THE STRAPPING EQUIPMENT. THE CENTER SHEAVE OF THE GROUP OF THREE AT THE TOP OF THE DISPENSER IS ADJUSTABLE BY TURNING A BOLT IN OR OUT AND LOCKING WITH A JAM NUT. MOVING THE SHEAVE IN TOWARD THE OPPOSING TWO SHEAVES WILL INCREASE THE BACK BENDING ON THE WIRE AND HELP STRAIGHTEN THE WIRE. TYPICALLY, THIS IS A ONE TIME ADJUSTMENT, BUT IF WIRE CHARACTERISTICS OR SUPPLIER CHANGES, IT MAY NEED TO BE RE-ADJUSTED.

MACHINE ASSEMBLY LIST

MODEL NO.: **50B023**

Title:	WIRE CAGE WITH ENCLOSURE, PAY-OFF RING, AND	**Issued for Serial No.:**	22018011, 019
Description:	CROSS OVER TUBE	**Arrangement Drawing:**	DB8914000
		Master by:	CJM **DATE:** 8/11/2022
		Issued By:	CJM **DATE:** 8/12/2022
		Revision:	**DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	PA9142	DB8915000	WIRE CAGE ASSEMBLY
2	1	------	CB5652000	STEEL PALLET
3	1	------	------	NOT USED
4	1	PA9257	CB6323000	SAFETY SWITCH MODULE
	1	------	BB9379000	WIRING DIAGRAM

PARTS LIST

PA9142 **Drawing: DB8915000**

Title:	WIRE CAGE WITH THIRD LEG AND CROSS OVER TUBE	**Issued for Serial No.:**	22018011, 019		
Description:	WITHOUT WIRE STAND	**Master by:**	JML	**DATE:**	9/23/2016
		Issued By:	CJM	**DATE:**	8/12/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
1	1	AB0041000		SERIAL PLATE, STAMP WITH 1/8" HIGH
				LETTERS AS FOLLOWS:
				SERIAL NO.: 22018011, 019
				MODEL NO.: 50B023
				CUSTOMER I.D.NO.: 2170
	4			DRIVE SCREW, #6 (.136) X 1/4" LG.
2	1	DB8871000		FRAME WELDMENT
3	2	BB9333000		ANTI-FOULING ARM
	2			HEX HD CAP SCREW, 1/2 X 5 LG.
	2			SAE WASHER, 1/2
	2			ESNA NUT, 1/2-13NC
4	2	AA3506000		WIRE GUIDE
5	1	BB9351000		WIRE GUIDE RETAINER WITH RING
	2			FULL ESNA NUT, 3/8-16NC
6	1	CA7292000		PAY-OFF RING

PARTS LIST

PA9142 **Drawing: DB8915000**

Title:	WIRE CAGE WITH THIRD LEG AND CROSS OVER TUBE	**Issued for Serial No.:**	22018011, 019		
Description:	WITHOUT WIRE STAND	**Master by:**	JML	**DATE:**	9/23/2016
		Issued By:	CJM	**DATE:**	8/12/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
7	1	CA7293000		HOLD DOWN BAR
	1	M79000032		SPEED BALL HANDLE, CARR-LANE: #CL-44-SBH
8	2	M34000006		MAGNET, HF-96651, 2" DIA.
	2			SOC HD CAP SCREW, 10-32NF X 1/2 LG.
	2			ESNA NUT, #10-32NF
9				NOT USED
10				NOT USED
11				NOT USED
12	1	BB7945000		SHEAVE MOUNT PIVOT
	1	M20100248	*	(REF) BUSHING, SYMMCO: #SF-1216-8 3/8 ID X 1/2 OD X 1/2 LG., 1/16" THICK X 5/8 OD FLANGE
	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/2 LG.
	1			ESNA NUT, HALF, 3/8-16NC
13	1	BB7946000		HANDLE
	1			HEX SOC SHOULDER SCREW, 3/8" X 3/8" LG.

PARTS LIST

PA9142 **Drawing: DB8915000**

Title:	WIRE CAGE WITH THIRD LEG AND CROSS OVER TUBE	**Issued for Serial No.:**	22018011, 019		
Description:	WITHOUT WIRE STAND	**Master by:**	JML	**DATE:**	9/23/2016
		Issued By:	CJM	**DATE:**	8/12/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
				SHOULDER, 5/16-18NC THREAD
14	3	AA7800000	*	WIRE SHEAVE
	3			HEX HD CAP SCREW, 3/8-16NC X 1-1/2 LG.
	3			HEX NUT, 3/8-STD.
	4			FLAT WASHER, 3/8-STD.
	3			LOCK WASHER, 3/8-STD
15	3	AA4144000	*	BUSHING
16	1			SQ HD SET SCREW, 1/4-20NC X 1-1/2 LG.
	1			JAM NUT, 1/4-20NC
17	2	M79000037		HAND KNOB, CARR-LANE: #CL-5A-PPK4T
18	1	CB4164001		CORNER GUIDE
	1			SOC HD SET SCREW, 3/8-16NC X 1 LG.
	1			HEX JAM NUT, 3/8-16NC
19	1	CB4165000		CORNER GUIDE COVER
	3			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.

PARTS LIST

PA9142 **Drawing: DB8915000**

Title:	WIRE CAGE WITH THIRD LEG AND CROSS OVER TUBE	**Issued for Serial No.:**	22018011, 019		
Description:	WITHOUT WIRE STAND	**Master by:**	JML	**DATE:**	9/23/2016
		Issued By:	CJM	**DATE:**	8/12/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
	3			LOCK WASHER, 1/4-STD.
20	11	M10000130	*	BEARING, SKF: 607-2Z
	11			SOC HD CAP SCREW, 1/4-20NC X 3/4 LG.
	11			LOCK WASHER, 1/4-STD.
	11			HEX NUT, 1/4-20NC
21	11	AA8211000		WASHER
22	1	CB5257000		PIPE MOUNT
	2			HEX HD CAP SCREW, 5/16-18NC X 3/4 LG.
	2			LOCK WASHER, 5/16-STD.
23	1	CB5258000		CROSS TUBE
24	1	CB5259000		SLIDE TUBE
25	1	DB8907000		SUPPORT BRACE

PARTS LIST

PA9142 **Drawing: DB8915000**

Title:	WIRE CAGE WITH THIRD LEG AND CROSS OVER TUBE	**Issued for Serial No.:**	22018011, 019		
Description:	WITHOUT WIRE STAND	**Master by:**	JML	**DATE:**	9/23/2016
		Issued By:	CJM	**DATE:**	8/12/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-STD.
	2			FLAT WASHER, 3/8-STD.
	2			NUTS, 3/8-16NC
	2			HEX HD CAP SCREW, 1/2-13NC X 1-1/2 LG.
	2			LOCK WASHER, 1/2-STD.
	2			FLAT WASHER, 1/2-STD.
	2			NUT 1/2" FULL
26	2	DB8706000		DOOR ASSEMBLY
	8			HEX HD CAP SCREW, 5/16-18NC X 3/4 LG.
	8			LOCK WASHER, 5/16-STD.
	8			FLAT WASHER, 5/16-STD.
27	1	BB9142000		DOOR HANDLE - ROTARY LOCK
	2			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG.
	2			LOCK WASHER, 1/4-STD.
	2			FLAT WASHER, 1/4-SAE
28	1	M25000018		CORPORATE PLATE
	8			DRIVE SCREW, #6 (.136) X 1/4" LG.

PARTS LIST

PA9142 **Drawing: DB8915000**

Title:	WIRE CAGE WITH THIRD LEG AND CROSS OVER TUBE	**Issued for Serial No.:**	22018011, 019		
Description:	WITHOUT WIRE STAND	**Master by:**	JML	**DATE:**	9/23/2016
		Issued By:	CJM	**DATE:**	8/12/2022
		Revision:		**DATE:**	

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
29	1	BB9143000		DOOR HANDLE - STRIKER PIN
	2			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG.
	2			LOCK WASHER, 1/4-STD.
	2			FLAT WASHER, 1/4-SAE
30	1	DB8870000		REAR PANEL WELDMENT
	8			HEX HD CAP SCREW, 5/16-18NC X 3/4 LG.
	8			LOCK WASHER, 5/16-STD.
	8			FLAT WASHER, 5/16-STD.
31	1	BB8802000		SHIPPING SKID
32	1	AA9080000		DOOR LATCH TAG
33	1	AA9081000		WIRE DIE TAG

PARTS LIST

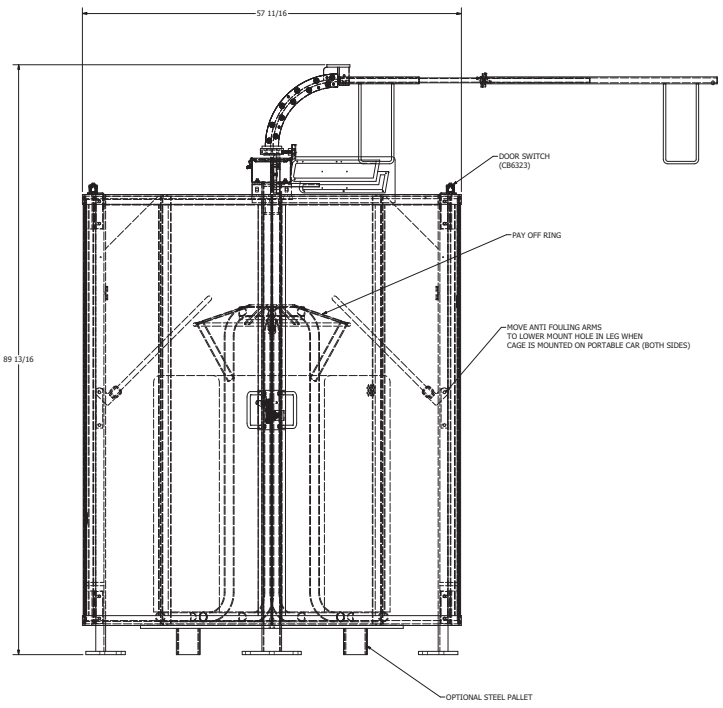
PA9257 **Drawing: CB6323000**

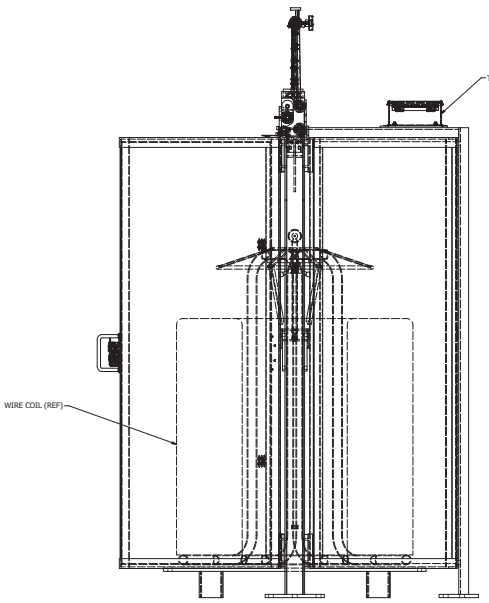
Title: COIL CAGE SAFETY SWITCH
Description:

Issued for Serial No.: 22018011, 019
Master by: KCH **DATE:** 6/1/2018
Issued By: CJM **DATE:** 8/12/2022
Revision: **DATE:**

ITEM NO.	QTY	PART NO.	*	NAME OF PART / DESCRIPTION
1	1	BB9486000		TERMINAL BOX
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			FLAT WASHER, 1/4-STD.
	4			LOCK WASHER, 1/4-STD.
2	2	AA9935000		MOUNTING BRACKET
	4			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG.
	4			FLAT WASHER, 1/4-STD.
	4			LOCK WASHER, 1/4-STD.
3	2	E10160019		SAFETY SWITCH - HINGE, OMRON: #D4NH-4CBC-NPT
	4			SOC HD CAP SCREW, 10-32 X 1-1/4 LG.
	4			FLAT WASHER, #10-STD.
	4			LOCK WASHER, #10-STD.
	4			NUT, #10-STD.
4	2	AA9936000		SPACER
	2			BUTTON SOC HD CAP SCREW, 10-32NC X 1-1/4 LG.
	2			FLAT WASHER, #10-STD.
	2			NUT, 10-32-STD

F-12-87 * MARKED IF PART IS CONSIDERED AS A NORMAL REPLACEMENT PART ** CRITICAL REPLACEMENT PART





WEIGHT: 400 LBS (180 KG)

REV	DESCRIPTION	DATE	DESIGNER
A	ADD DETAIL	28AUG19	DEN

REVISION HISTORY

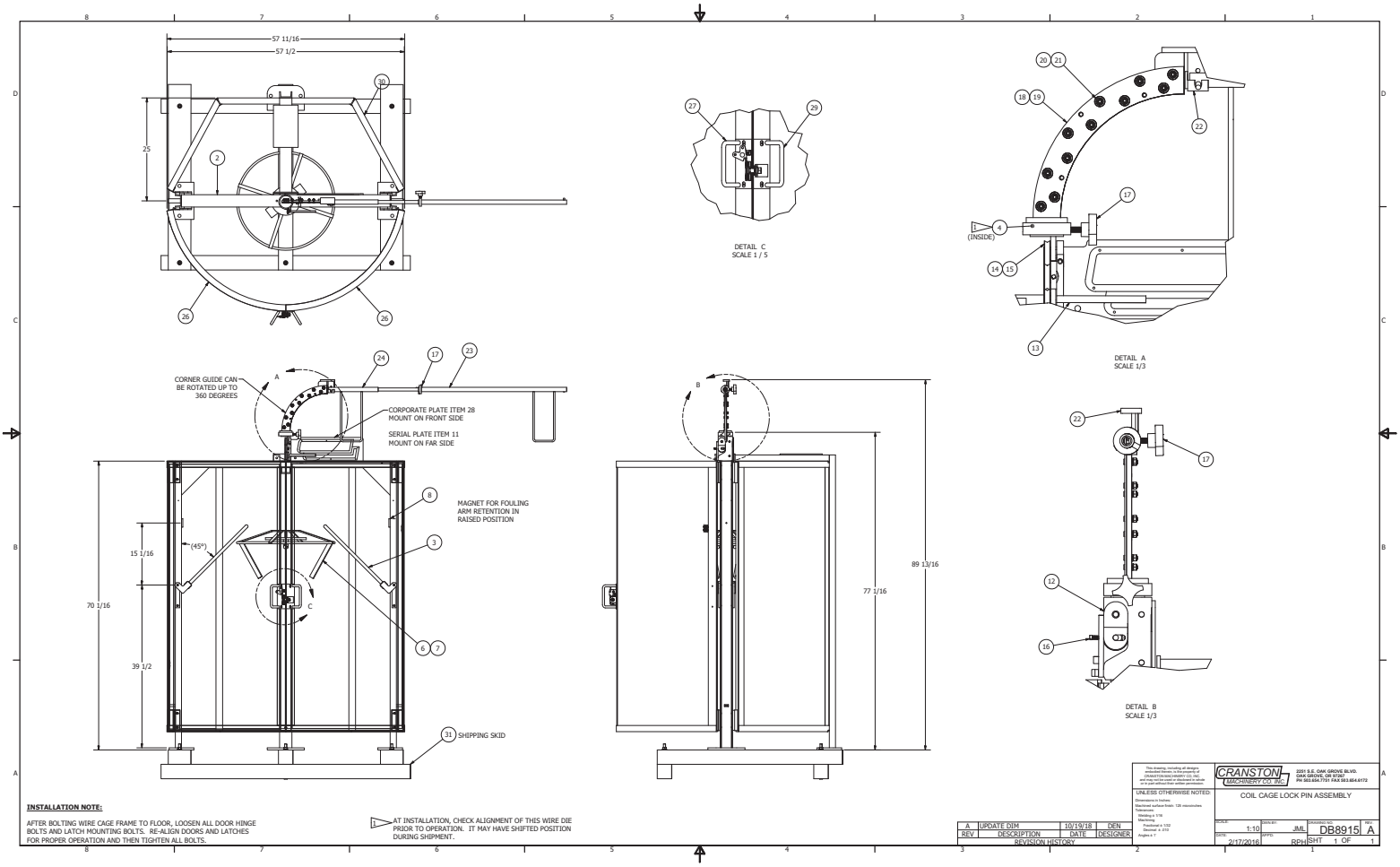
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Dimensions are in inches.
Tolerances:
Welding is ± 1/16
Machining:
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

CRANSTON MACHINERY CO. INC.
P.O. BOX 68297 OAK GROVE OR 97268
PH 503.654.7751 FAX 503.654.6172

ARR-COIL CAGE

SCALE:	DRAWN BY:	DRAWING NO.	REV.
1:7	JML	DB8914	A
DATE: 10/5/2016	APPD: RPH	SHT 1 OF 1	



INSTALLATION NOTE:

AFTER BOLTING WIRE CAGE FRAME TO FLOOR, LOOSEN ALL DOOR HINGE BOLTS AND LATCH MOUNTING BOLTS. RE-ALIGN DOORS AND LATCHES FOR PROPER OPERATION AND THEN TIGHTEN ALL BOLTS.

1 AT INSTALLATION, CHECK ALIGNMENT OF THIS WIRE DIE PRIOR TO OPERATION. IT MAY HAVE SHIFTED POSITION DURING SHIPMENT.

REV	DESCRIPTION	DATE	DESIGNER
A	UPDATE DIM	10/19/18	DEN

REVISION HISTORY

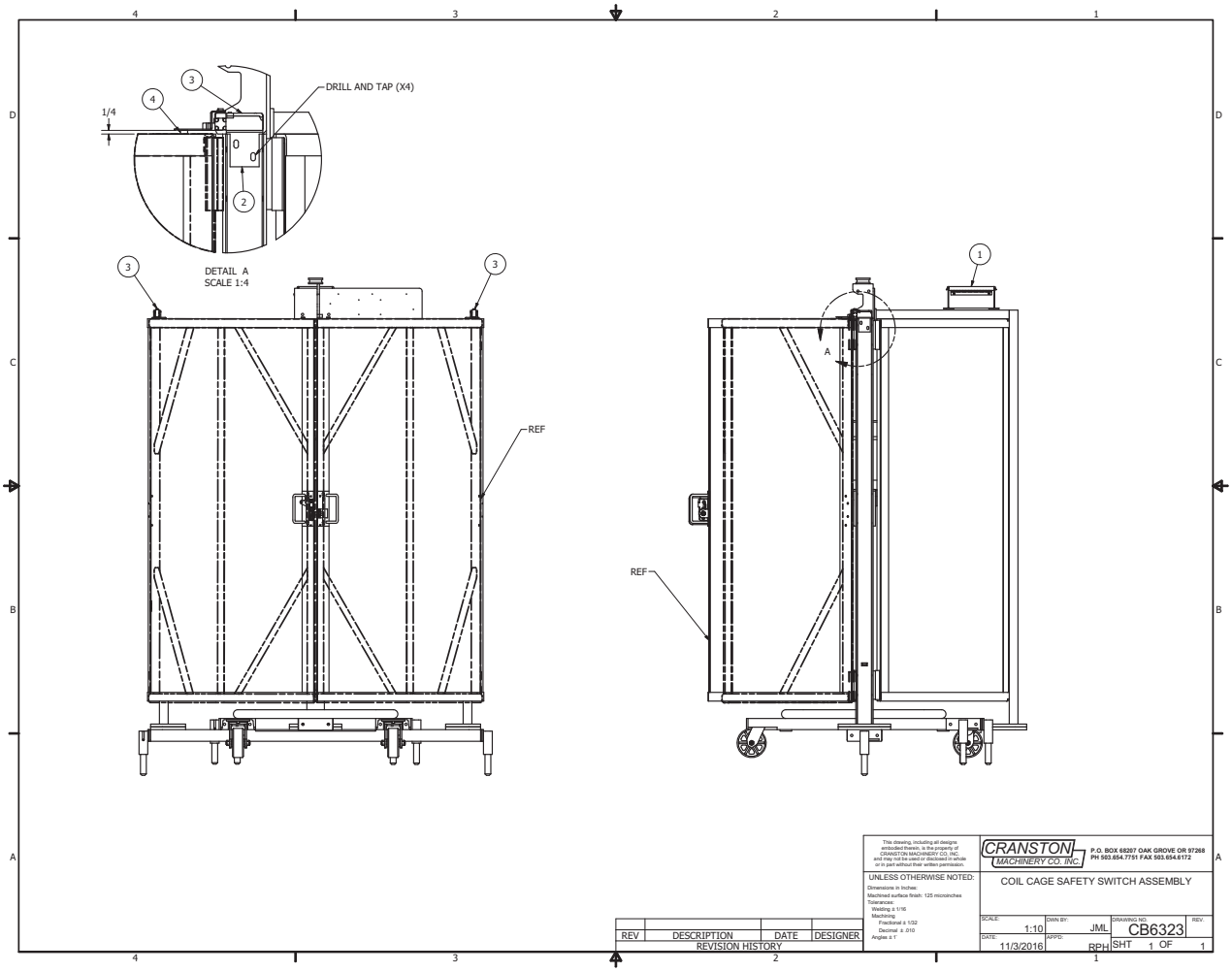
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Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Fractional ± 1/32
Decimal: ± .010
Angles ± 1°

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COIL CAGE LOCK PIN ASSEMBLY

SCALE:	DRAWN BY:	DRAWING NO.	REV
1:10	JML	DB8915	A
DATE: 2/17/2016	APPD: RPH	SHT 1 OF 1	



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Machined surface finish: 125 microinches
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Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

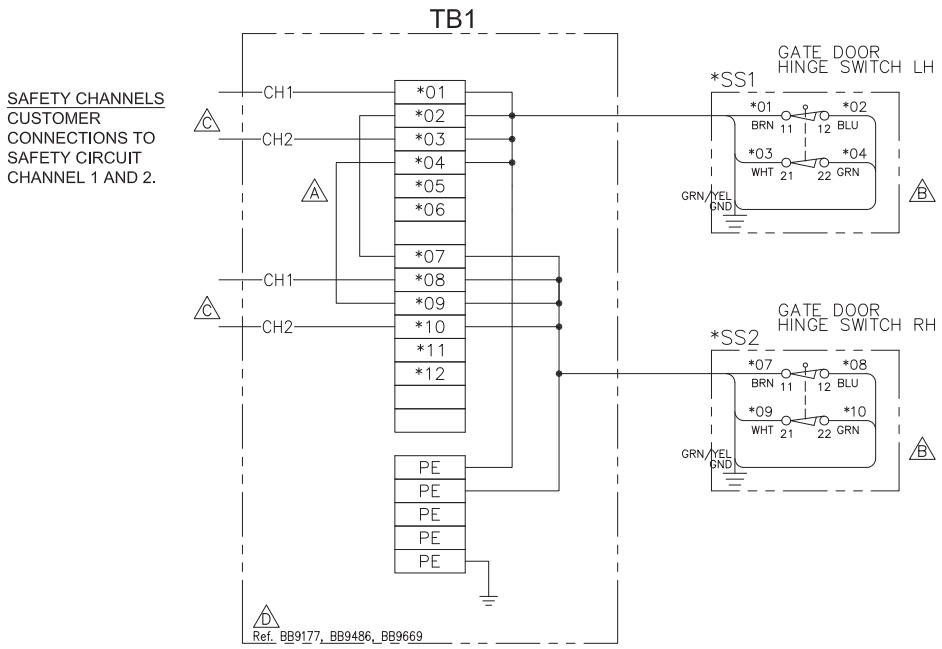
CRANSTON MACHINERY CO. INC.
P.O. BOX 68207 OAK GROVE OR 97268
PH 503.654.7751 FAX 503.654.6172

COIL CAGE SAFETY SWITCH ASSEMBLY

SCALE:	DWN BY:	DRAWING NO.	REV:
1:10	JML	CB6323	
DATE: 11/3/2016	APPD: RPH	SHT 1 OF 1	

REVISION HISTORY

REV	DESCRIPTION	DATE	DESIGNER



WIRING NOTES:
WIRING SHOULD BE THHN OR MTW.
MIN. 16 AWG ROUTED THROUGH LIQUID TIGHT FLEXIBLE CONDUIT.

USE BLUE CONDUCTORS FOR ALL EXCEPT GROUND, WHICH IS YELLOW/GREEN.

△A LH & RH SWITCHES ARE FROM FACING DOOR

△A WIRE NUMBER PREFIX:
REPLACE "*" WITH NUMBER OF MACHINE WITHIN SYSTEM.

IF COIL CAGE IS STAND-ALONE, OMIT "*".

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY
△D	8/2/2023	ADD ADDITIONAL REFERENCE DWGS.	JMH
△C	4/7/2022	ADD SAFETY CHANNEL LINES.	JMH
△B	12/9/21	CHANGED SWITCH TO 2 N.C.	JMH
△A	6/6/17	ADDED JUMPERS. LH/RH NOTE CHANGED TO PREFIXED NUMBER.	JMH

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NOTE:

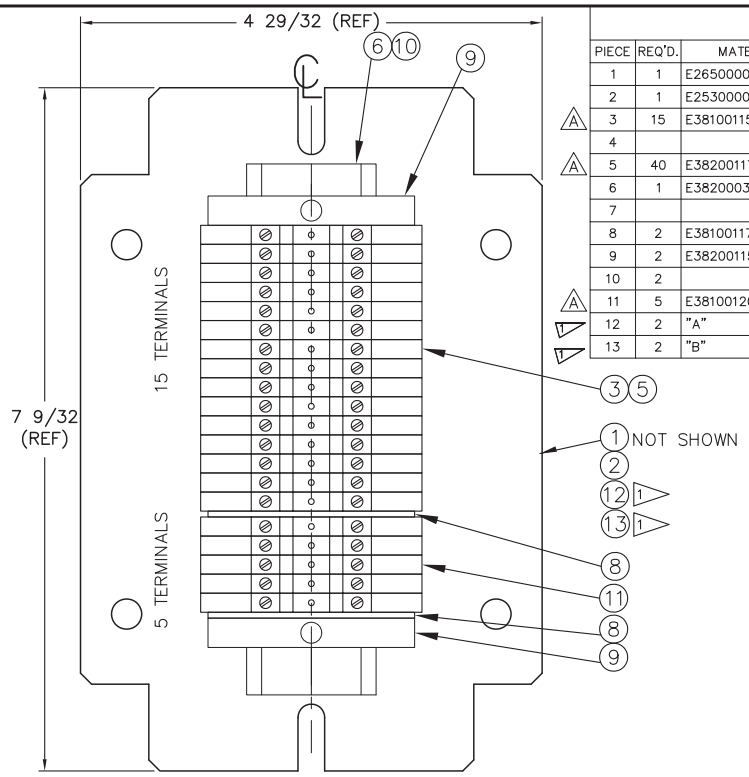
CRANSTON MACHINERY CO., INC.
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OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

WIRING DIAGRAM
COIL CAGE

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NA	JMH	BB9379	D
DATE: 11/3/16	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg.

TAB. NO.	"A"	"B"
000	AA6144000	NONE
001	AA6264000	NONE
002	AA6752000	NONE
003	AA6773000	NONE
004	AA6144000	AA6145000
005	AA6264000	
006	AA6752000	AA6753000
007	AA6773000	AA6774000
008	AA8418000	NONE



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	DESCRIPTION
1	1	E26500007	ENCLOSURE, RITTAL #JB080604HC
2	1	E25300002	PANEL MOUNT BRACKET, RITTAL #SZ 8018.790
A 3	15	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3 GRAY
4			
A 5	40	E38200117	MARKER STRIP, ALLEN BRADLEY#1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7			
8	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
9	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
10	2		SLOT HD, MACH SCREW, #10-32 x 3/8" LG.
A 11	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
1 12	2	"A"	WARNING DECAL
1 13	2	"B"	WARNING DECAL - HIGH VOLTAGE

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER.

SYM	DATE	REVISION	BY
B	6/8/2020	ADD TAB 008.	JMH
A	9/19/18	CHANGED TERMINALS AND COUNT.	JMH

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NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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TERMINAL BOX ASSEMBLY
8 x 6 x 3 1/2
15 GRAY TERMINALS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	KCH	BB9486	B
DATE: 05/30/18	APPROVED: RPH	SHT 1 OF 1	

Ref. Master Dwg. BB9177A

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MODELS 20H065

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3.3--AIR BAG REPLACEMENT

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TURNTABLE CONVEYOR

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON TURNTABLE CONVEYOR IS DESIGNED TO TRANSPORT A PRODUCT (PULP BALE, STACK, ETC.) USING MULTIPLE ROWS OF ONE INCH EXTENDED PITCH CONVEYING CHAIN. THE TURNTABLE ROTATES THE PRODUCT 90 DEGREES TO POSITION IT FOR OTHER MACHINE FUNCTIONS. THE LIFT-OUT DESIGN OF THE "LIFT AND TURN" ASSEMBLY PROVIDES EASY ACCESS FOR MAINTENANCE AND/OR REPAIRS.

THE TURNTABLE CONVEYOR IS A TWO ROW, CHAIN CONVEYOR WITH AN ELECTRIC SHAFT MOUNT DRIVE AT THE DISCHARGE END.

THE "LIFT AND TURN" ASSEMBLY INCLUDES AN X SHAPED TURN GRID WHICH IS MOUNTED ON TOP OF THE TURN SHAFT. DURING THE TURN, THE PRODUCT IS SUPPORTED ON THE TURN GRID. THE TURN SHAFT IS AN UPRIGHT SHAFT WHICH IS BEARING SUPPORTED ON AN AIRBAG. THE AIRBAG INFLATES TO LIFT THE SHAFT, RAISING THE TURN GRID ABOVE CONVEYING CHAIN LEVEL. FOUR PINS ON THE BASE OF THE TURN SHAFT MESH WITH THE SLOTS OF THE TURN ARM AS THE TURN GRID RAISES. THE TURN ARM IS A NOTCHED, ROUNDED COLLAR WITH A SLOT. THE ARM IS ATTACHED BY A CAM TO AN AIR CYLINDER. THE CYLINDER ROTATES THE TURN ARM AROUND THE TURN SHAFT. DURING OPERATION, THE AIRBAG LIFTS THE TURN SHAFT, MESHING THE FOUR PINS MENTIONED ABOVE WITH THE SLOTS OF THE TURN ARM. WHEN THE CYLINDER EXTENDS TO ROTATE THE TURN ARM, THE TURN ARM ROTATES THE SHAFT AND TURN GRID BY MOVING THE PINS.

THE ELECTRIC CONVEYOR DRIVE CONSISTS OF A SHAFT MOUNTED REDUCER WITH A "C" FACE MOTOR. THIS ARRANGEMENT ELIMINATES SLIDE BASES, TRANSFER CHAIN DRIVES, COUPLINGS, AND GUARDS.

EACH CONVEYING CHAIN IS EQUIPPED WITH ITS OWN SLACK TAKE-UP, A SINGLE ADJUSTABLE IDLE SPROCKET IS LOCATED NEAR THE DRIVE SHAFT.

CONVEYOR CONTROL MAY BE AUTOMATIC, SEMI-AUTOMATIC, OR MANUAL PUSHBUTTONS, DEPENDING ON SPECIFIC APPLICATION AND CUSTOMER REQUIREMENTS. CONVEYOR OPERATION IS ELECTRICALLY INTERLOCKED WITH ADJACENT MACHINERY.

TURNTABLE CONVEYOR

1.2--DESCRIPTION OF OPERATION

THE BALE COMES ONTO THE TURNTABLE CONVEYOR AND ACTUATES THE INFEED CONVEYOR BED SWITCH WHICH ACTUATES A TIMER AND RAISES THE PNEUMATIC BALE STOPS. THE CONVEYOR STOPS AFTER THE TIMER TIMES OUT WITH THE BALE OVER THE LIFT AND TURN GRID AND THE BALE STOPS RETRACT. THE AIRBAG INFLATES, LIFTING THE TURN GRID TO ABOUT ONE INCH ABOVE THE CONVEYING CHAINS AND MOVES THE TURN SHAFT PINS UP INTO THE SLOTS OF THE TURN ARM. ONCE THE TURN GRID IS UP, THE INDEXER MOVES THE TURN ARM AROUND THE SHAFT TO ROTATE THE TURN GRID 90 DEGREES. AFTER THE TURN IS COMPLETE, THE AIRBAG DEFLATES, LOWERING THE TURN GRID AND RETURNS THE BALE TO THE CONVEYING CHAINS. AFTER THE TURN GRID AND BALE ARE LOWERED, ANY ADDITIONAL FUNCTIONS (SUCH AS WRAPPER FOLDING) ARE PERFORMED BY INTERFACING MACHINERY. ONCE THESE FUNCTIONS ARE COMPLETED, THE CONVEYOR DRIVE STARTS AND DISCHARGES THE BALE TO DOWNSTREAM EQUIPMENT.

SECTION 2--ADJUSTMENTS

2.1--AIR PRESSURE

SET THE AIR PRESSURE WITH THE REGULATOR TO 60-80 PSI.

2.2--CONVEYING CHAIN TENSION

EACH OF THE CONVEYING CHAINS IS INSTALLED WITHOUT ADJUSTABLE TAKE-UPS. IF THE CHAIN GETS TOO LOOSE, REMOVE A LINK AND/OR USE AN OFF-SET LINK.

2.3--CONVEYOR MOUNTED PROXIMITY SWITCHES

PROXIMITY SWITCHES TO CONTROL PRODUCT MOVEMENT ARE MOUNTED JUST BELOW CONVEYOR LEVEL. THE PASSING PRODUCT DEPRESSES SPRING- LOADED ROLLER ACTUATORS, WHICH, IN TURN, ACTUATE THE SWITCHES. THE HEIGHT OF THE ACTUATORS ABOVE CONVEYOR LEVEL HAVE BEEN SET AT THE FACTORY TO BE APPROXIMATELY 1" ABOVE CONVEYING CHAIN LEVEL.

2.4--TURN GRID: LIFT AND LOWER SPEEDS

THE LIFTING AND LOWERING SPEEDS OF THE TURN GRID ARE GOVERNED BY PNEUMATIC FLOW CONTROLS LOCATED BETWEEN THE SOLENOID VALVE AND THE AIR BAG. TO CHANGE THE SPEED OF AN INDIVIDUAL FUNCTION, ADJUST THAT FUNCTION'S FLOW CONTROL TO OBTAIN SMOOTH ACTION AND APPROPRIATE CYCLE TIME.

TURNTABLE CONVEYOR

2.5--ROTARY INDEXER

THE ROTARY INDEXER WAS PRE-PROGRAMMED BY CRANSTON TO ROTATE 90 DEGREES AND SHOULD NOT REQUIRE ADJUSTMENT AFTER INSTALLATION. IF YOU HAVE ANY PROBLEMS CONCERNING THE ROTARY INDEXER OR SERVO DRIVE, PLEASE CONTACT CRANSTON MACHINERY FOR ASSISTANCE.

RESETTING FROM A POWER FAILURE - OPERATOR PERSPECTIVE

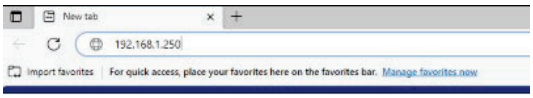
WHEN THE INDEXER SERVO DRIVE IS POWERED UP, THE DRIVE NEEDS TO BE “HOMED” BEFORE NORMAL OPERATION CAN COMMENCE. IN ORDER TO RE-HOME THE INDEXER AFTER A POWER FAILURE, RAISE THE TURN TABLE, THEN INITIATE A “ROTATE” COMMAND FROM A CONTROL STATION USING EITHER THE FORWARD OR REVERSE BUTTONS. THE INDEXER WILL RUN AT A SLOW SPEED UNTIL THE BUTTON IS RELEASED. RELEASE THE BUTTON WHEN THE INDEXER HAS BEEN ALIGNED WITH THE CONVEYOR. LOWER THE TABLE AND ENSURE PROPER SPACING ON ALL SIDES OF THE INDEXER. THE INDEXER IS NOW READY FOR OPERATION. WHEN THE NEXT “ROTATE” COMMAND IS INITIATED, THE INDEXER WILL RUN IN ITS NORMAL INDEXING SPEED PROFILE.

RESETTING FROM A DRIVE FAULT OR E-STOP – OPERATOR PERSPECTIVE

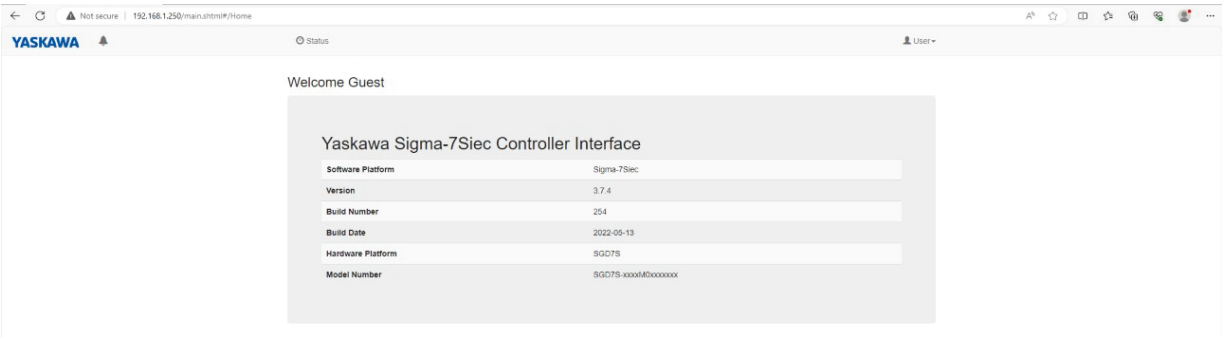
IF AN E-STOP OR DRIVE FAULT OCCURS WITH THE INDEXER SERVO, THE DRIVE WILL NEED TO BE RESET BEFORE NORMAL OPERATION CAN RECOMMENCE. IN ORDER TO RESET THE INDEXER, RAISE THE INDEXING GRID, THEN INITIATE A “RESET CONV.” COMMAND FROM THE CONTROL PANEL. THE PLC WILL ISSUE THE APPROPRIATE SEQUENCE OF SIGNALS TO RESET THE SERVO DRIVE. AFTER A “RESET” COMMAND HAS BEEN ISSUED, A “ROTATE” COMMAND CAN BE PERFORMED TO ROTATE THE INDEXING GRID. NOTE, THE GRID MUST BE RAISED ANY TIME A “ROTATE” COMMAND IS ISSUED. IF THE GRID IS NOT RAISED, THE ROTATE COMMAND WILL BE IGNORED.

MODIFYING RETAINED SPEED VALUES

IF THE VELOCITY OR ACCEL/DECEL VALUES ON THE INDEXER ARE FOUND TO BE INSUFFICIENT THESE VALUES CAN BE MODIFIED VIA A CSV THAT CAN BE ACCESSED USING THE YASKAWA WEB UI. TO ACCESS THE DRIVES WEB UI YOU MUST BE CONNECTED TO THE SAME NETWORK AS THE DRIVE. OPEN A MODERN BROWSER AND ENTER THE IP ADDRESS “192.168.1.250” INTO THE ADDRESS BAR.



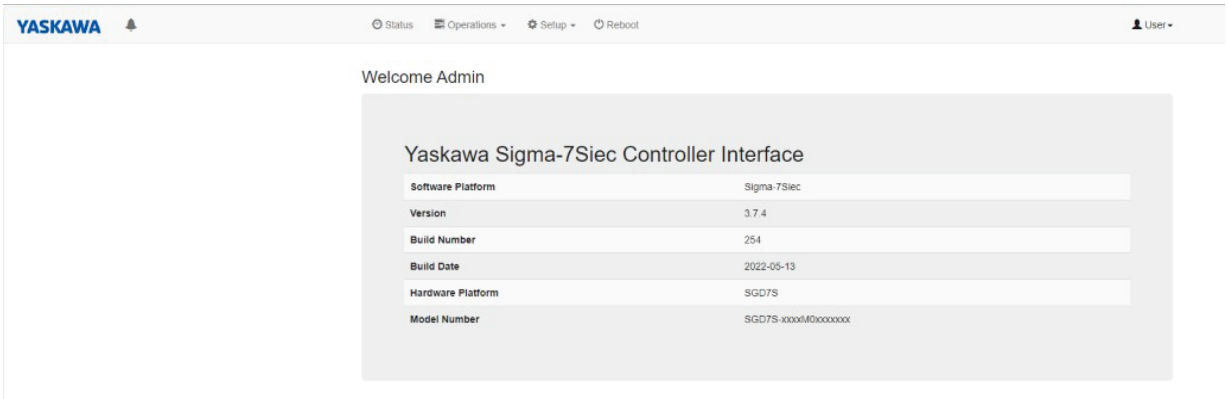
AFTER THE BROWSER LOADS YOU SHOULD SEE THE FOLLOWING PAGE.



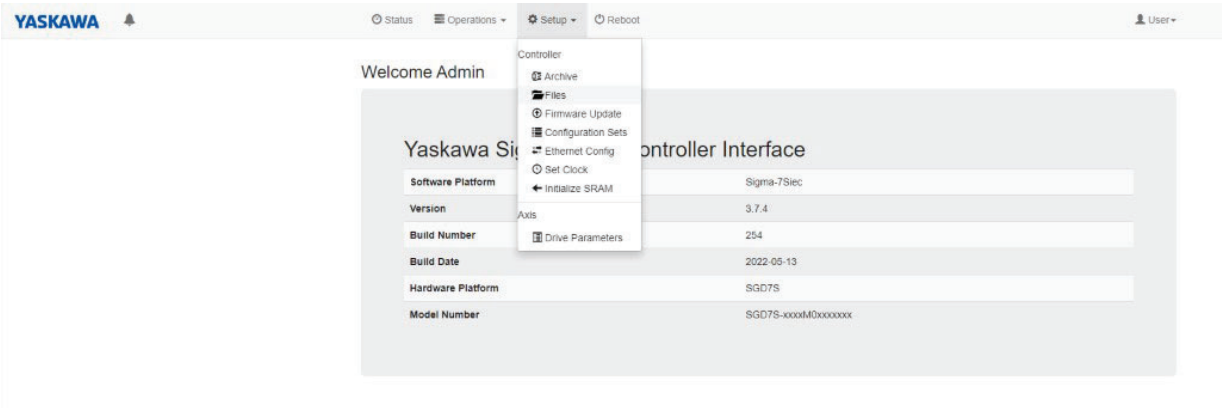
TO LOG INTO THE DRIVE CLICK USER IN THE TOP RIGHT FOR A POP UP WINDOW TO APPEAR ASKING FOR LOG IN CREDENTIALS. FOR LOGIN ENTER “Admin” AND PASSWORD ENTER “Sigma-7S”.

SigmaLogic7 product is the same as Sigma-7Siec.
Login: **Admin**
Password: **Sigma-7S**

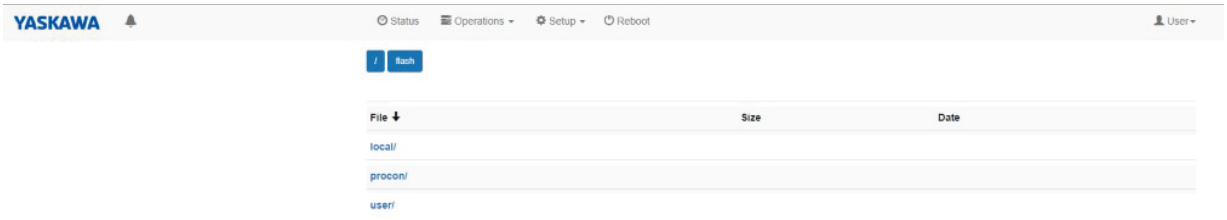
IF YOU HAVE LOGGED IN SUCCESSFULLY YOU SHOULD SEE THE FOLLOWING PAGE.



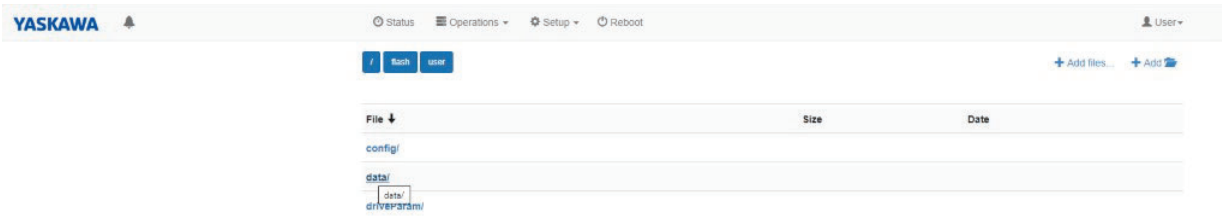
AFTER SUCCESSFULLY LOGGING IN OPEN THE “FILES” PAGE LOCATED UNDER “SETUP”



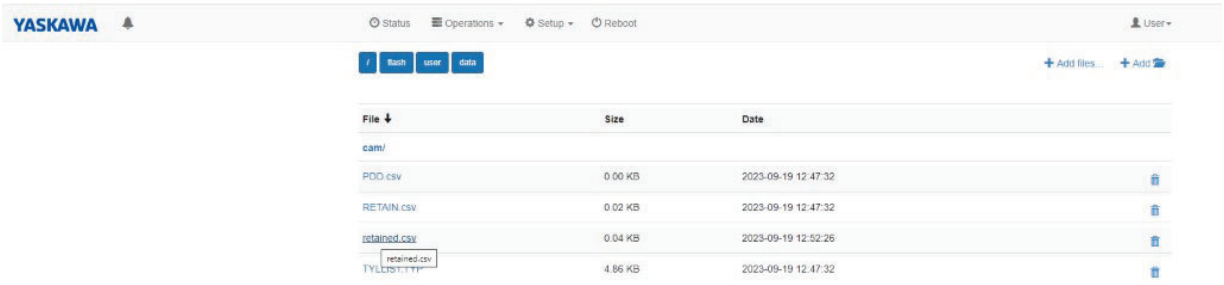
SELECT “user/”



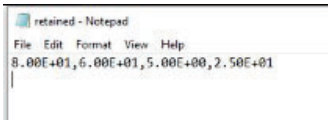
SELECT “data/”



SELECT “retained.csv” THE CSV WILL THEN DOWNLOAD TO YOUR COMPUTERS DOWNLOAD FOLDER.

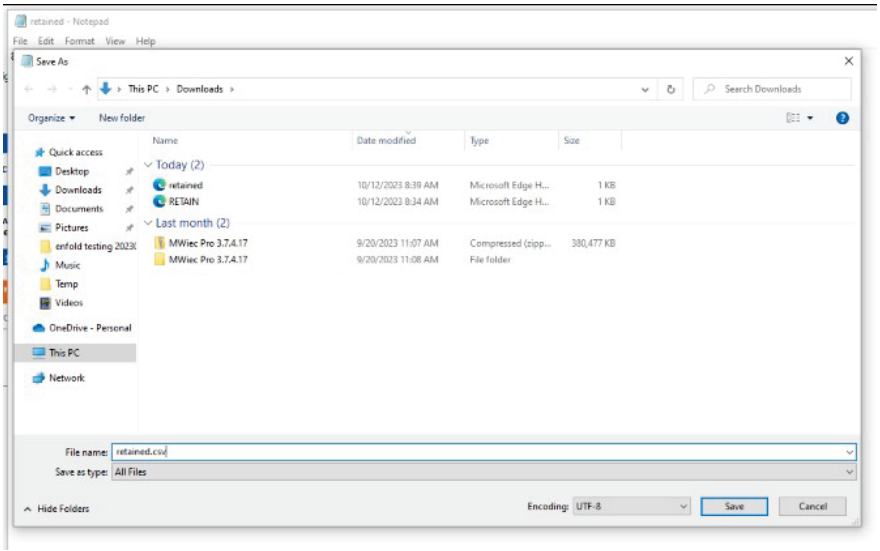


OPEN THE “retained.csv” WITH NOTEPAD.

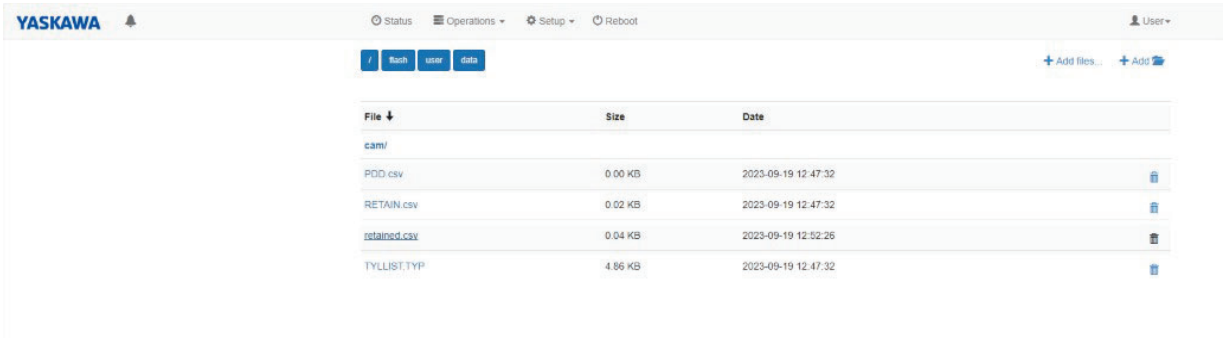


THESE VALUES CORRESPOND TO INDEXER’S SPEED VARIABLES IN THE FOLLOWING ORDER.
“AUTO VELOCITY, AUTO ACCEL/DECEL, MANUAL VELOCITY, MAUAL ACCEL/DECEL”

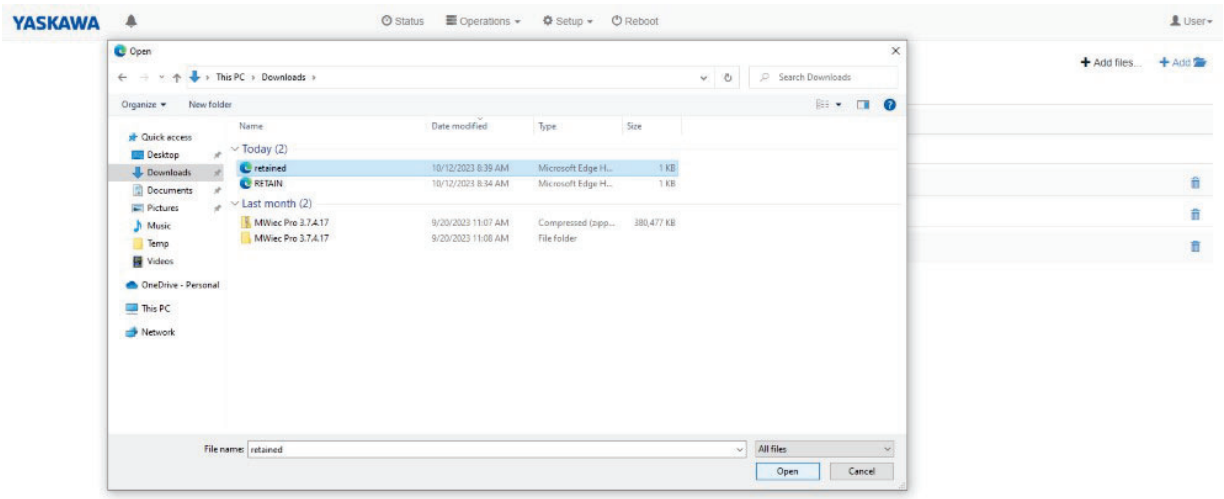
AFTER MAKING ANY NECESSARY MODIFICATIONS TO THESE VALUES ENSURE YOU SAVE THE FILE AS “retained.csv” AGAIN. IF IT IS NOT SAVED AS A CSV THE INDEXER WILL NOT ROTATE.



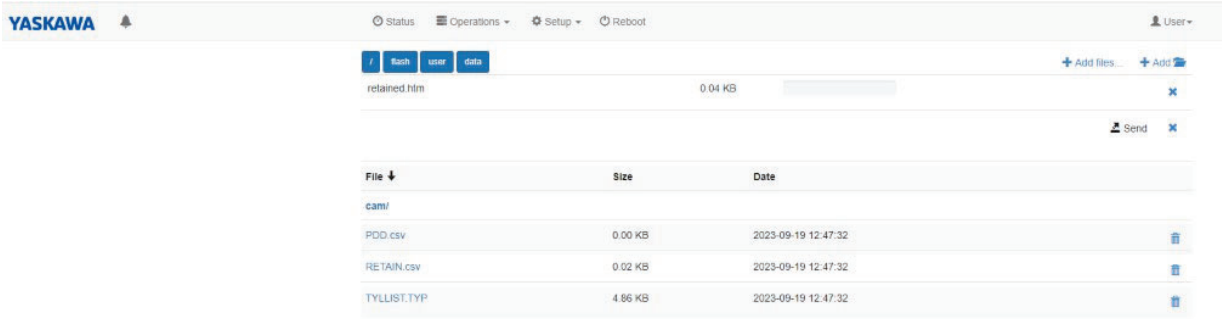
TO UPLOAD THE NEW VALUES TO THE DRIVE FIRST YOU MUST DELETE THE PREVIOUS FILE BY CLICKING ON THE TRASH CAN ICON ON THE RIGHT-HAND SIDE.



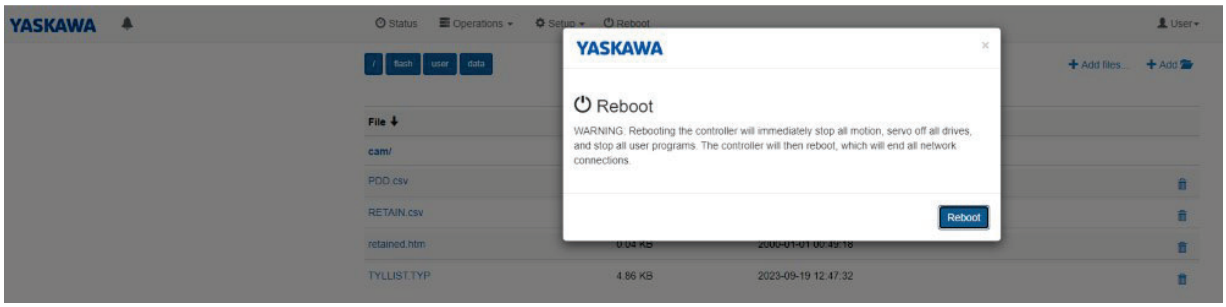
SELECT “Add files” THIS WILL OPEN A FILE EXPLORER PAGE. NAVIGATE TO WHERE YOU HAVE SAVED THE “retained.csv”



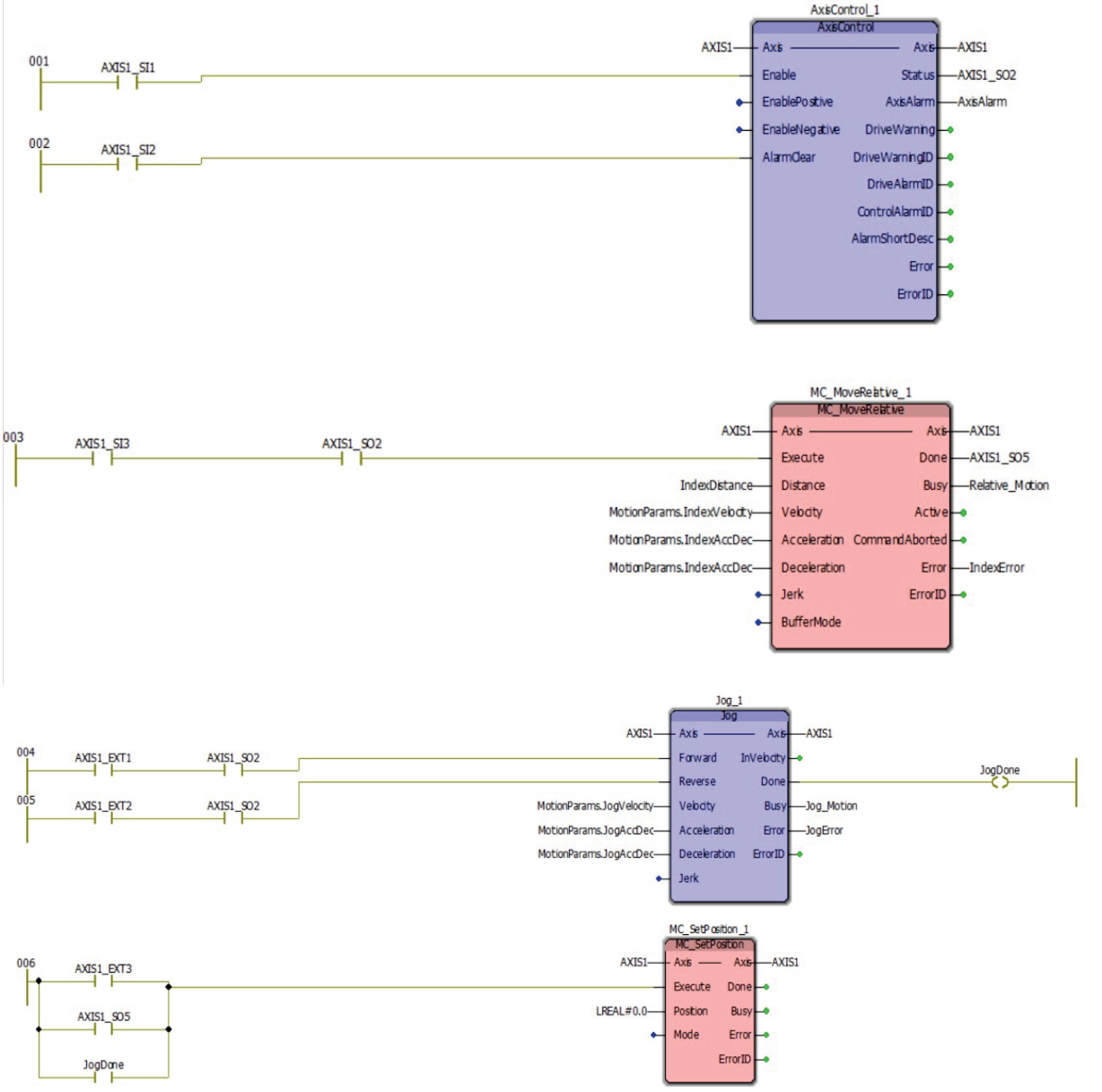
PRESS “SEND” TO CONFIRM THE UPLOAD TO THE DRIVE.

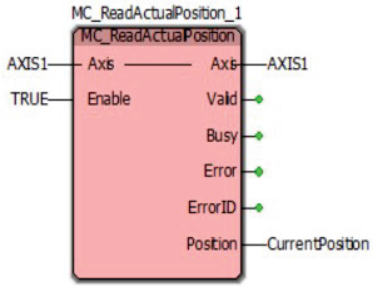


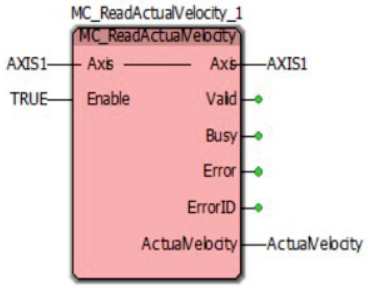
AFTER THE UPLOAD HAS BEEN COMPLETED A REBOOT OF THE DRIVE IS NECESSARY FOR THE NEW VARIABLES TO TAKE EFFECT. PRESSING THE “Reboot” BUTTON ON THE WEB UI WILL SHOW YOU THE FOLLOWING POP UP TO CONFIRM THE REBOOT.

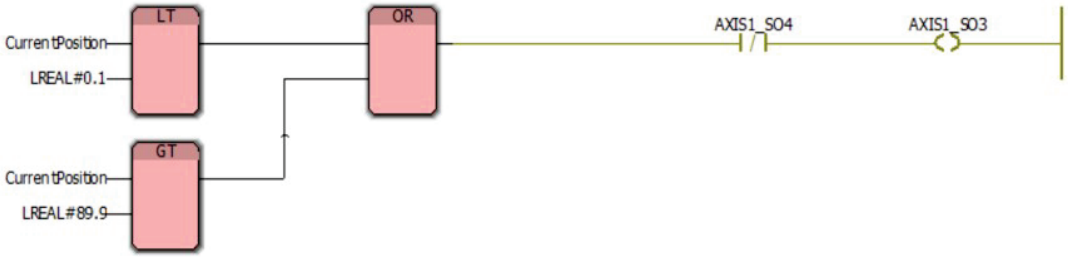


INDEXER MOTION WORKS PROGRAM




MC_ReadActualPosition_1
MC_ReadActualPosition
AXIS1
Axis
Axis
AXIS1
TRUE
Enable
Valid
Busy
Error
ErrorID
Position
CurrentPosition


MC_ReadActualVelocity_1
MC_ReadActualVelocity
AXIS1
Axis
Axis
AXIS1
TRUE
Enable
Valid
Busy
Error
ErrorID
ActualVelocity
ActualVelocity


LT
CurrentPosition
LREAL#0.1
OR
GT
CurrentPosition
LREAL#89.9
AXIS1_SO4
AXIS1_SO3


007
AxisAlarm
JogError
IndexError
AXIS1_SO1


008
Relative_Motion
Jog_Motion
AXIS1_SO4

TURNTABLE CONVEYOR

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT
GEAR REDUCER	MONTHLY	CHECK OIL LEVEL.
CONVEYING CHAINS	BI-MONTHLY	CHECK CHAIN TENSION. LIGHTLY COAT WITH CHAIN OIL EVERY 60 DAYS. AVOID OVER-OILING; EXCESS OIL WILL MARK THE PRODUCT.
GEAR REDUCER	SEMI-ANNUALLY	CHANGE OIL FILL EVERY 6 MONTHS OR AS NEEDED.
ROTARY INDEXER	NEVER	ROTARY INDEXER IS LUBRICATED FOR LIFE. THERE IS NO MAINTENANCE REQUIREMENTS FOR THIS DEVICE.

NOTE: FOR ADDITIONAL MAINTENANCE OF GEAR REDUCER, REFER TO VENDOR DATA SECTION OF THIS MANUAL.

3.2--LUBRICANT SELECTION GUIDE

GEAR REDUCER--USE GEAR OIL RECOMMENDED BY REDUCER MANUFACTURER.
SEE VENDOR DATA SECTION

CHAIN OIL--USE ANY HIGH POLARITY FACTOR CHAIN OIL

AIR SUPPLY:

THE SOLENOID VALVE AND AIR BAG DO NOT REQUIRE ANY LUBRICATION.

SECTION 3--MAINTENANCE (CONT'D)

3.3--AIRBAG REPLACEMENT

TO REPLACE AN AIRBAG, PROCEED AS FOLLOWS:

1. TURN OFF AIR SUPPLY AND LOCK OUT ELECTRICAL CONTROL POWER.
2. RAISE THE CONVEYOR HALVES UP TO ACCESS THE LIFT AND TURN MODULE.
3. RAISE THE ROTARY INDEXER SUPPORT PLATFORM AND BLOCK IN PLACE.
4. REMOVE THE AIR CONNECTION AT THE TOP OF THE AIR BAG.
5. REMOVE THE (2) 3/8 HEX HEAD SCREWS HOLDING THE AIR BAG TO THE BOTTOM OF THE SUPPORT PLATFORM. THE AIR BAG SHOULD NOW DROP DOWN TOWARD THE BASE PLATE. REMOVE THE OLD AIR BAG.
6. INSTALL THE NEW AIR BAG INTO POSITION AND INSTALL THE (2) 3/8 HEX HEAD SCREWS.
7. REMOVE THE BLOCKS FROM THE SUPPORT PLATFORM AND CAREFULLY LOWER THE SUPPORT PLATFORM.
8. RECONNECT THE AIR CONNECTION AT THE TOP OF THE AIR BAG.
9. TURN ON AIR SUPPLY AND ELECTRICAL CONTROLS SO THAT THE AIR BAG CAN BE CYCLED UP AND DOWN.
10. WHEN SATISFIED THAT AIR BAG IS CORRECTLY POSITIONED, TURN OFF ELECTRICAL CONTROLS.
11. LOWER THE CONVEYOR HALVES INTO CONVEYING POSITION AND TURN ON ELECTRICAL CONTROLS.

3.4 CONVEYOR WEAR STRIP REPLACEMENT

REPLACE THE UHMW WEAR STRIPS UNDER THE CONVEYING CHAINS WHEN NEEDED IN THE FOLLOWING MANNER:

1. LOOSEN THE CONVEYING CHAINS TO ALLOW ACCESS TO THE WEAR STRIPS.
2. REMOVE THE FASTENERS THAT ANCHOR THE WEAR STRIPS PIECES TO THE TUBES.
3. SLIDE OUT THE OLD WEAR STRIPS FROM UNDER THE CHAIN AND SLIDE IN THE NEW PIECES.
4. FASTEN EACH WEAR STRIP PIECE TO THE TUBE, BEING SURE TO LEAVE ABOUT 1/2" CLEARANCE AT EACH END BETWEEN PIECES. FASTEN AT ONE END ONLY.
5. RE TIGHTEN CONVEYING CHAINS.

MACHINE ASSEMBLY LIST

MODEL NO.: **20H065**

Title:	TURNTABLE CONVEYOR - 108" SPAN W/ STOPS	**Issued for Serial No.:**	22018012		
Description:	MOUNTS ON ENFOLD 22018013	**Arrangement Drawing:**	DB9413000		
		Master by:	RPH	**DATE:**	10/6/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	C	**DATE:**	12/8/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	PA9550	DB9414000	ENFOLD CONVEYOR ASSEMBLY
2	1	PA9555	DB9152000	RETRACTING BALE STOPS
3	2	PA8989	DB8761000	BED SWITCH ASSEMBLY
	2		E16600141	SWITCH, IFM #IGS252
	2		E16700120	CABLE, IFM #EVC003, 10M
	4			SOC HD CAP SCREW, M10-32NF X 1/2 LG
	4			LOCK WASHER, #10 HI COLLAR
	2		BB8587000	BRACKET
4	1	PA9553	DB9416000	LIFT AND TURN MODULE
5	1		BB9219000	TERMINAL BOX
	1		DB9420000	MACHINE WIRING DIAGRAM
			DB9429000	PNEUMATIC SCHEMATIC
6	1		BB9876000	LOWER WRAPPER GUIDE

MACHINE ASSEMBLY LIST

MODEL NO.: **20H065**

Title:	TURNTABLE CONVEYOR - 108" SPAN W/ STOPS	**Issued for Serial No.:**	22018012		
Description:	MOUNTS ON ENFOLD 22018013	**Arrangement Drawing:**	DB9413000		
		Master by:	RPH	**DATE:**	10/6/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	C	**DATE:**	12/8/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	6			HEX HEAD CAPSCREW 1/4-20 X 1
	6			FLAT WASHER 1/4
7	1		BB9877000	LOWER WRAPPER SKID PLATE
	4			HEX HEAD CAPSCREW 1/4-20 X 1
	4			FLAT WASHER 1/4

PARTS LIST

PA9550 **Drawing: DB9414000**

Title:	ENFOLD CONVEYOR ASSEMBLY - 108" LENGTH	**Issued for Serial No.:**	22018012		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	RPH	**DATE:**	9/15/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	5/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	AB0041000		SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				SERIAL NO. 22018012
				MODEL NO.: 20H065
				DRAWING: DB9413000
				VOLTAGE: 480VAC/3PH/60HZ
				WEIGHT:
				DIMENSION:
				CUST. I.D. NO.:
	4			DRIVE SCREW, #2 X 1/4 LG
2	4	AA6140000		WARNING LABEL
3	2	AA6142000		SAFETY LABEL
4	2	AA6141000		CAUTION LABEL
5	1	DB9415000		FRAME WELDMENT
	4			HEX HD CAP SCREW, 1/2-13NC X 5 1/2 LG
	4			LOCK WASHER, 1/2-STD
	4			FLAT WASHER, 1/2-STD
	4			HEX NUT, 1/2-13NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9550 **Drawing: DB9414000**

Title:	ENFOLD CONVEYOR ASSEMBLY - 108" LENGTH	**Issued for Serial No.:**	22018012		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	RPH	**DATE:**	9/15/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	5/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
6	2	M10100080	*	BEARING, SKF: FY 1 15/16 TF
	8			HEX HD CAP SCREW, 9/16-12NC X 1 1/2 LG
	8			LOCK WASHER, 9/16-STD
7	1	DA8819221		DRIVE SHAFT
	1			KEY, 3/8 SQ X 2-5/8 LG.
8	2	DB1070046	*	DRIVE SPROCKET (25 T)
9	2	M20500079	*	BUSHING: BLACKSTAR: #TLK133X, 1-15/16 SHAFT
10	2	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	2			HEX HD BOLT, 1/2-13NC X 5 1/2 LG
	2			ESNA HALF NUT, 1/2-13NC
	4			FLAT WASHER, 1/2-STD
11	4	M21000750	*	SPROCKET, BLACK STAR: 80BB12
	4			HEX HD BOLT, 1/2-13NC X 5 LG
	4			ESNA HALF NUT, 1/2-13NC
	8			FLAT WASHER, 1/2-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9550 **Drawing: DB9414000**

Title:	ENFOLD CONVEYOR ASSEMBLY - 108" LENGTH	**Issued for Serial No.:**	22018012		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	RPH	**DATE:**	9/15/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	5/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
12	4	AA9085000		TAKE-UP BRACKET
13	4	BA8328043		TAKE-UP SCREW
	4			FLAT WASHER, 1/2-SAE
	4			HEX NUT, 1/2-13NC
	4			JAM NUT, 1/2-13NC
14	12	AA9084000	*	HUB SPACER
15	12	DA9050159	*	SIMPLE SPACER
16	2	BB9839000	*	WEAR STRIP
	4			HEX SOC FLAT C/SUNK HD CAP SCREW, 3/8-16NC X 5/8 LG
17	2	DA9192070		WEAR STRIP - WOOD
	4			SELF TAPPING SHEET METAL SCREW, #10 X 3/4 LG
18	2	M11200010	*	CHAIN, ANSI: 80 X 144 PITCHES = 144"
	4	M11400052	*	CONNECTING LINK, ANSI: 80

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9550 **Drawing: DB9414000**

Title:	ENFOLD CONVEYOR ASSEMBLY - 108" LENGTH	**Issued for Serial No.:**	22018012		
Description:	2 ROW, 1" PITCH, 100 FPM, 480V	**Master by:**	RPH	**DATE:**	9/15/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	5/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
19			*	NOT USED
20	1	DA9050005		SPACER
21	1			HEX HD CAP SCREW, 1/2-13NC X 1 1/4 LG
	1			LOCK WASHER, 1/2-STD
22	1	M22500156	*	GEARMOTOR, EURODRIVE: FA67DRN90L4, 2 HP, 460/3/60, M5 POSITION, 1.5 HOLLOW BORE, CONDUIT 90/2
23	2	M22200008	*	MOUNTING BUSHING, EURODRIVE: 0133485
24	1			HEX HD BOLT, 1/2-13NC X 4 LG
	1			HEX NUT, 1/2-13NC
	1			HEX JAM NUT, 1/2-13NC
	1			FLAT WASHER, 1/2-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9555 **Drawing: DB9152000**

Title: RETRACTING BALE STOPS
Description: FOR ENFOLD CONVEYOR

Issued for Serial No.: 22018012
Master by: RPH **DATE:** 9/28/2022
Issued By: RPH **DATE:** 10/6/2022
Revision: A **DATE:** 12/30/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	M24100650	*	VALVE, PH: H22VXBG0B9B, 24V
	1	M24600296		MANIFOLD, PH: PSHU1157M1P
	1	M24000163		FLOW CONTROL, PH: PS4135CP
2	1	CB6439000		CYLINDER AND STOP MOUNTING PLATE
	3			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
	3			LOCK WASHER, 1/2-STD.
	3			FLAT WASHER, 1/2-STD.
2A	1	CB6439001		CYLINDER AND STOP MOUNTING PLATE
	3			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG.
	3			LOCK WASHER, 1/2-STD.
	3			FLAT WASHER, 1/2-STD.
3	2	M18000137	*	CYLINDER, PARKER HANNIFIN: #2.5CBB-2AU14AC X 3
4	2	M45000016		MOUNTING PLATE, PARKER HANNIFIN: 0959810050
	8			HEX HD CAP SCREW, 3/8-16NC X 1-1/2 LG.
	8			HEX NUT, 3/8-16NC
	8			LOCK WASHER, 3/8-STD.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9555 **Drawing: DB9152000**

Title:	RETRACTING BALE STOPS	**Issued for Serial No.:**	22018012		
Description:	FOR ENFOLD CONVEYOR	**Master by:**	RPH	**DATE:**	9/28/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	12/30/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
5	2	M45000041		KNUCKLE, PARKER HANNIFIN: #69089
6	2	CA8921000		BALE STOP ARM
	4	M20100155		(REF) BUSHING, SYMMCO: SF-3240-16
	4	M20100170	*	(REF) BUSHING, SYMMCO: SF-1620-8
	2			HEX HD CAP SCREW, 1/2-13NC X 3/4 LG.
	2			LOCK WASHER, 1/2-STD.
	2			FLAT WASHER, 1/2-SAE
7	2	DA8994026		COTTERED PIN
	4			COTTER PIN, 3/32 DIA X 1-1/2 LG.
8	2	AB0005000		SPACER PLATE, BALE STOP
	6			FLAT HD SOC CAP SCREW, 1/2-13NC X 1 LG.
9	2	M53100191		MALE CONNECTOR, PH: 48F-6-8
10	2			AIR HOSE ASSEMBLIES, EACH CONSISTING OF:
	1	M36000113		HOSE, P.H.: 7212-381BK X 68" LG.
	2	M53200004		SWIVEL, PARKER HANNIFIN: #30882-6-6B

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9555 **Drawing: DB9152000**

Title:	RETRACTING BALE STOPS	**Issued for Serial No.:**	22018012		
Description:	FOR ENFOLD CONVEYOR	**Master by:**	RPH	**DATE:**	9/28/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	12/30/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
11	2	M53100138		MALE BRANCH TEE, PARKER HANNIFIN: #145F-6-6
12	4	M53100013		MALE ELBOW, PARKER HANNIFIN: #149F-6-6
13	2			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, P.H.: 7212-381BK X 15" LG.
	2	M53200004		SWIVEL, PARKER HANNIFIN: #30882-6-6B
14	2			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 19" LG
	2	M53200004		SWIVEL, PH: 30882-6-6B
15				NOT USED
16	1	M53100041		ADAPTER, PH: 222P-8-8
17				NOT USED
18				NOT USED
19				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9555 **Drawing: DB9152000**

Title:	RETRACTING BALE STOPS	**Issued for Serial No.:**	22018012		
Description:	FOR ENFOLD CONVEYOR	**Master by:**	RPH	**DATE:**	9/28/2022
		Issued By:	RPH	**DATE:**	10/6/2022
		Revision:	A	**DATE:**	12/30/2022

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
20				NOT USED
21				NOT USED
22				NOT USED
23	2	M53100070		COUPLING, PH: 207P-6
24	2	M53100003		MALE CONNECTOR, PH: 48F-6-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018012		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	RPH	**DATE:**	10/6/2024
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6225000		MOUNTING PLATE
2	1	BB8654000		NUT BAR
	2			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	2			LOCK WASHER, 3/8-SPLIT
3	1	CB6223000		ACTUATOR ARM
4	1	DA9050158		SPACER
5	1			HEX HD CAP SCREW, 3/8-16NC X 1-1/4 LG.
	1			HEX NUT, 3/8-16NC
6	1			HEX HD CAP SCREW, 5/8-11NC X 1-1/2 LG.
	1			FLAT WASHER, 5/8-STD.
7	2			JAM NUT, 5/8-11NC
8	1	CA8990001	*	WHEEL

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA8989 **Drawing: DB8761000**

Title:	CONVEYOR BED SWITCH ASSEMBLY	**Issued for Serial No.:**	22018012		
Description:	NO SWITCH, INCH FASTENERS	**Master by:**	DTB	**DATE:**	12/29/2014
		Issued By:	RPH	**DATE:**	10/6/2024
		Revision:		**DATE:**	

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	2	M20100228	*	BUSHING, SYMMCO: #SF-2024-8
10	1			HEX HD CAP SCREW, 5/8-11NC X 2 LG.
11	1			HEX HD CAP SCREW, 3/8-16NC X 1-3/4 LG.
	1			HEX NUT, 3/8-16NC
12	1			HEX HD CAP SCREW, 3/8-16NC X 2 LG.
	1			HEX NUT, 3/8-16NC
13	1	AA9076000		ECCENTRIC STOP
14	1			SOC HD CAP SCREW, 5/16-18NC X 1-3/4 LG.
15	1	AA9071000	*	SPRING
16	1			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	1			HEX NUT, 1/4-20NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9553 **Drawing: DB9416000**

Title:	LIFT & TURN MODULE, AIR BAG, SERVO INDEXER	**Issued for Serial No.:**	22018012		
Description:	480V/3PH/60HZ, PH VALVE, IFM PROX SENSOR	**Master by:**	RPH	**DATE:**	9/23/2022
		Issued By:		**DATE:**	
		Revision:	C	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6344000		AIR BAG BASE
2	1	M40000002	*	AIR BAG, FIRESTONE: #274, W01-358-6900
	4	AA6018005		STUD (LOCTITE INTO TOP & BOTTOM OF AIR BAG)
3	1	CB6348001		LIFT PLATE
	1			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	1			HEX JAM NUT, 1/4-20NC
4	1	DB8955000		LIFT FRAME
	6			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	6			LOCK WASHER, 3/8-STD
5	2	CB6026000		GUIDE HOUSING
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			LOCK WASHER, 3/8-STD
6	4	BB8904000	*	GUIDE BUSHING
7	8	M54000062	*	SNAP RING, SMALLEY: WHM-175

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9553 **Drawing: DB9416000**

Title:	LIFT & TURN MODULE, AIR BAG, SERVO INDEXER	**Issued for Serial No.:**	22018012		
Description:	480V/3PH/60HZ, PH VALVE, IFM PROX SENSOR	**Master by:**	RPH	**DATE:**	9/23/2022
		Issued By:		**DATE:**	
		Revision:	C	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
8	4	AA8916001	*	BUMPER PAD
9	4	AA8965000		STOP NUT
10	4	BB8905001		THREAD ROD
	12			HEX JAM NUT, 1-12NF
11	1	CB5982002		TURN SHAFT
	12			HEX HD CAP SCREW, M10 X 1.5 X 50MM LG.
	12			LOCK WASHER, M10-STD
12	1	CB6581000		TURN GRID
	4			SOC HD CAP SCREW, 3/8-16NC X 2 1/2 LG
13	2	CB6027000		SUPPORT BAR
	4			HEX HD BOLT, 1/2-13NC X 5 LG
	4			LOCK WASHER, 1/2-STD
	4			HEX NUT, 1/2-13NC
14	1	BB9818000		SERVO INDEXER
	16			SOC HD CAP SCREW, 5/16-18NC X 3-1/4 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9553 **Drawing: DB9416000**

Title:	LIFT & TURN MODULE, AIR BAG, SERVO INDEXER	**Issued for Serial No.:**	22018012		
Description:	480V/3PH/60HZ, PH VALVE, IFM PROX SENSOR	**Master by:**	RPH	**DATE:**	9/23/2022
		Issued By:		**DATE:**	
		Revision:	C	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	16			LOCK WASHER, 5/16-STD.
	2			DOWEL PIN, 8 MM DIA X 76 MM LG
15	2	E16600140	*	PROXIMITY SWITCH, IFM #IGS236
	2	E16700120		CABLE, IFM #EVC003, 10M
	2	E16700158		PATCH CABLE, IFM #EVC019, 5M
16	1	M24100748	*	VALVE, P.H.: #H25VXBG0B9D, 24VDC
	1	M24600296		MANIFOLD, PH: PSHU1157M1P
17	1	M24000004	*	FLOW CONTROL, PARKER HANNIFIN: 032500219
18	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 48" LG
	2	M53200003		SWIVEL, PH: 30882-8-8B
19	1	M53100307		HEX NIPPLE, P.H.: 1/2 X 1/4 FF
19A	1	M53100016		STREET ELL, PH: 2202P-4-4
19B	1	M53100105		ADAPTER, PH: 222P-4-4

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9553 **Drawing: DB9416000**

Title:	LIFT & TURN MODULE, AIR BAG, SERVO INDEXER	**Issued for Serial No.:**	22018012		
Description:	480V/3PH/60HZ, PH VALVE, IFM PROX SENSOR	**Master by:**	RPH	**DATE:**	9/23/2022
		Issued By:		**DATE:**	
		Revision:	C	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
20	2	M53100014		PLUG, P.H.: #219P-2
21	1	M53100036		MALE CONNECTOR, PH: 48F-6-4
22	1	M53100022		MALE ELBOW, PH: 149F-8-12
23	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, P.H.: 7212-381BK X 75" LG.
	1	M53200004		FEMALE SWIVEL, P.H.: #30882-6-6B
24	2	M28000010		MUFFLER, PH: EM75
25	1	M53100045		PLUG, PH: #219P-8
26				NOT USED
27	1	M24600304		END PLATE KIT, PH: PSHU20L500P
28	1	M28000015	*	QUICK EXHAUST, HUMPHREY: #QE3
29	1	M28000011		EXHAUST MUFFLER, PARKER HANNIFIN: #ES-37MB

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9553 **Drawing: DB9416000**

Title:	LIFT & TURN MODULE, AIR BAG, SERVO INDEXER	**Issued for Serial No.:**	22018012		
Description:	480V/3PH/60HZ, PH VALVE, IFM PROX SENSOR	**Master by:**	RPH	**DATE:**	9/23/2022
		Issued By:		**DATE:**	
		Revision:	C	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
30	1	M53100003		MALE CONNECTOR, PH: 48F-6-6
31	1	M53100076		BUSHING, PH #209P-12-6
	1	M53100034		NIPPLE, P.H. 215PN-6
32	2	CB6054000		GUIDE HOUSING
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			LOCK WASHER, 3/8-STD
33	1	M53000799		QUICK DISCONNECT, AEROQUIP: FD43-1011-06-06, FEMALE
34	1	M53000800		QUICK DISCONNECT, AEROQUIP: FD43-1014-06-06, MALE
35	1	M53100034		NIPPLE, PH: #215PN-6
36	8	M41000029		BUMPER RUBBER, 1/2"TH X 1.25"ID X 3"OD
37	1	DB8956000		LEG SUPPORT BOX
	2			HEX BOLT, 3/4"-10 X 3.5"
	2			LOCK WASHER, 3/4"

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9553 **Drawing: DB9416000**

Title:	LIFT & TURN MODULE, AIR BAG, SERVO INDEXER	**Issued for Serial No.:**	22018012		
Description:	480V/3PH/60HZ, PH VALVE, IFM PROX SENSOR	**Master by:**	RPH	**DATE:**	9/23/2022
		Issued By:		**DATE:**	
		Revision:	C	**DATE:**	8/7/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	4			FLAT WASHER, 3/4"
38	1	CB6652000		ENFOLD INDEXER CONTROL PANEL STANCHION
	4			HEX HD BOLT, 3/8-16NC X 1 LG
	4			HEX NUT, 3/8-16NC
	8			FLAT WASHER, 3/8-STD

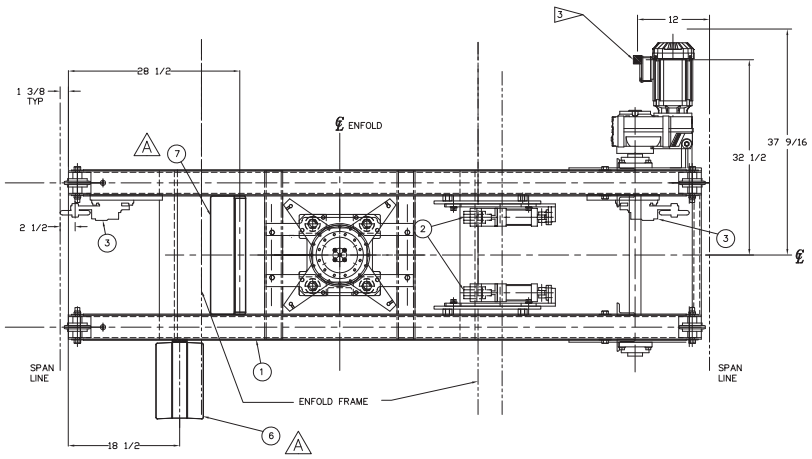
* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

NOTES:

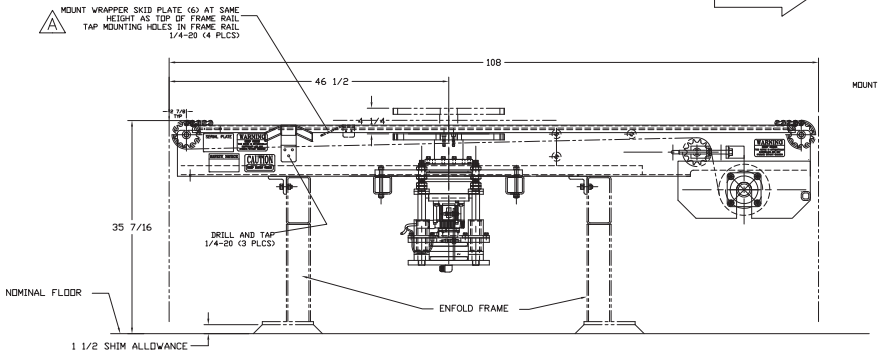
1 ITEM NUMBERS SHOWN ON THIS DRAWING ARE FOR THE CHAIN CONVEYOR.

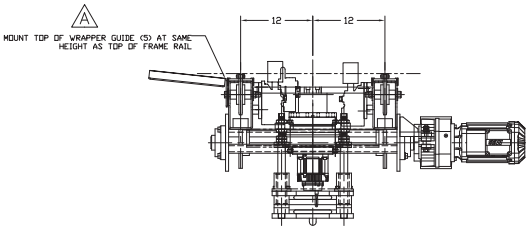
2 BALE SIZE IS 39 1/4" x 42" x 33" H. THE 39 1/4" DIMENSION IS ACROSS CHAINS WHEN BALE ENTERS.

3 MOTOR STUB-UP



100 FPM





PLOT SCALE = 1 : 8

CMCO S/N 22018012

SYM	DATE	REVISION	BY
A	11/29/23	ADDED WRAPPER GUIDE AND SKID PLATE	FRB

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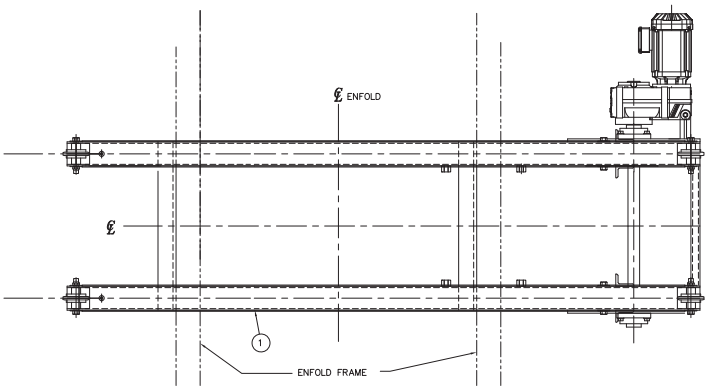
UNLESS OTHERWISE NOTED
Machined surface finish 125 microinches
Tolerances
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

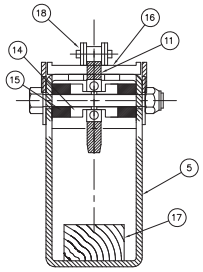
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ARRANGEMENT
ENFOLD CONVEYOR

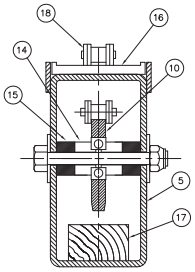
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DATE 9/15/22	APPROVED RPH	SHT 1 OF 1	

REF MASTER DWG. DB9099

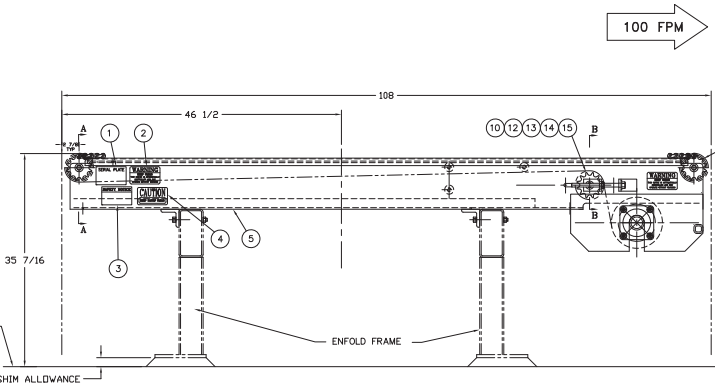


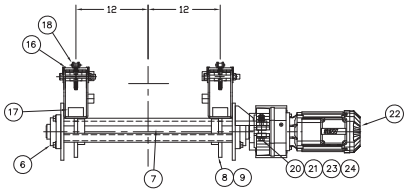


SECTION A–A



SECTION B–B





PLOT SCALE = 1 : 8

SYM	DATE	REVISION	BY
1	–	–	–

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UNLESS OTHERWISE NOTED
Dimensions in Inches
Interpret Geometric Tolerancing per ASME Y14.5M-1994
Tolerances
Fractional ± 1/16
Machined
Fractional ± 1/32
Decimal ± .010
Angles: ± 1°

CMCO S/N 22018012

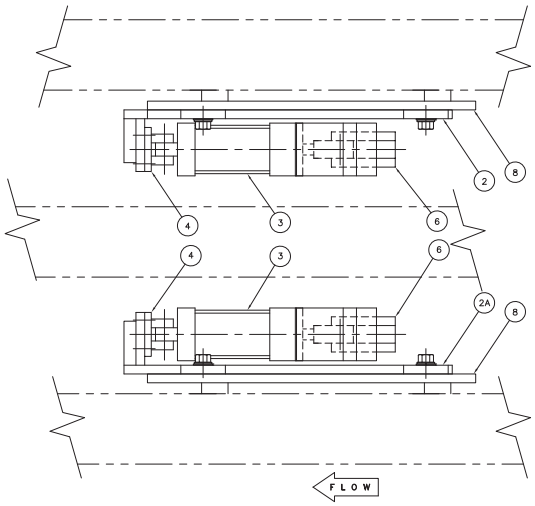
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OAK GROVE, OREGON 97267
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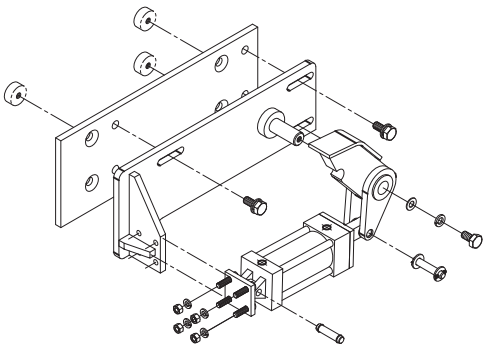
ASSEMBLY
ENFOLD CONVEYOR

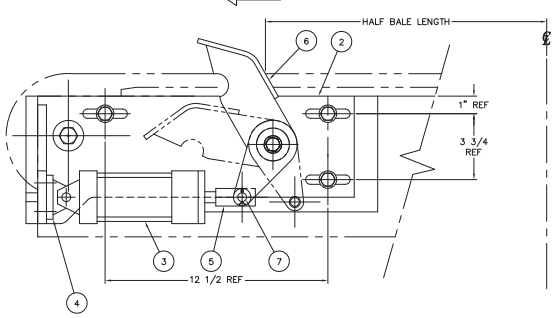
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DATE	APPROVED		
9/15/22	RPH	SHT 1 OF 1	

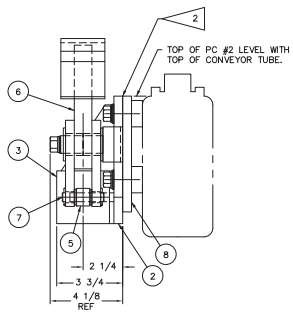
REF MASTER DWG: DB9089

1. FOR SOLENOID VALVE AND PLUMBING SEE PNEUMATIC SCHEMATIC.
2. TAC WELD PC 2 TO PC 8 AFTER STOP LOCATION IS SET









NOT TO SCALE

PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY

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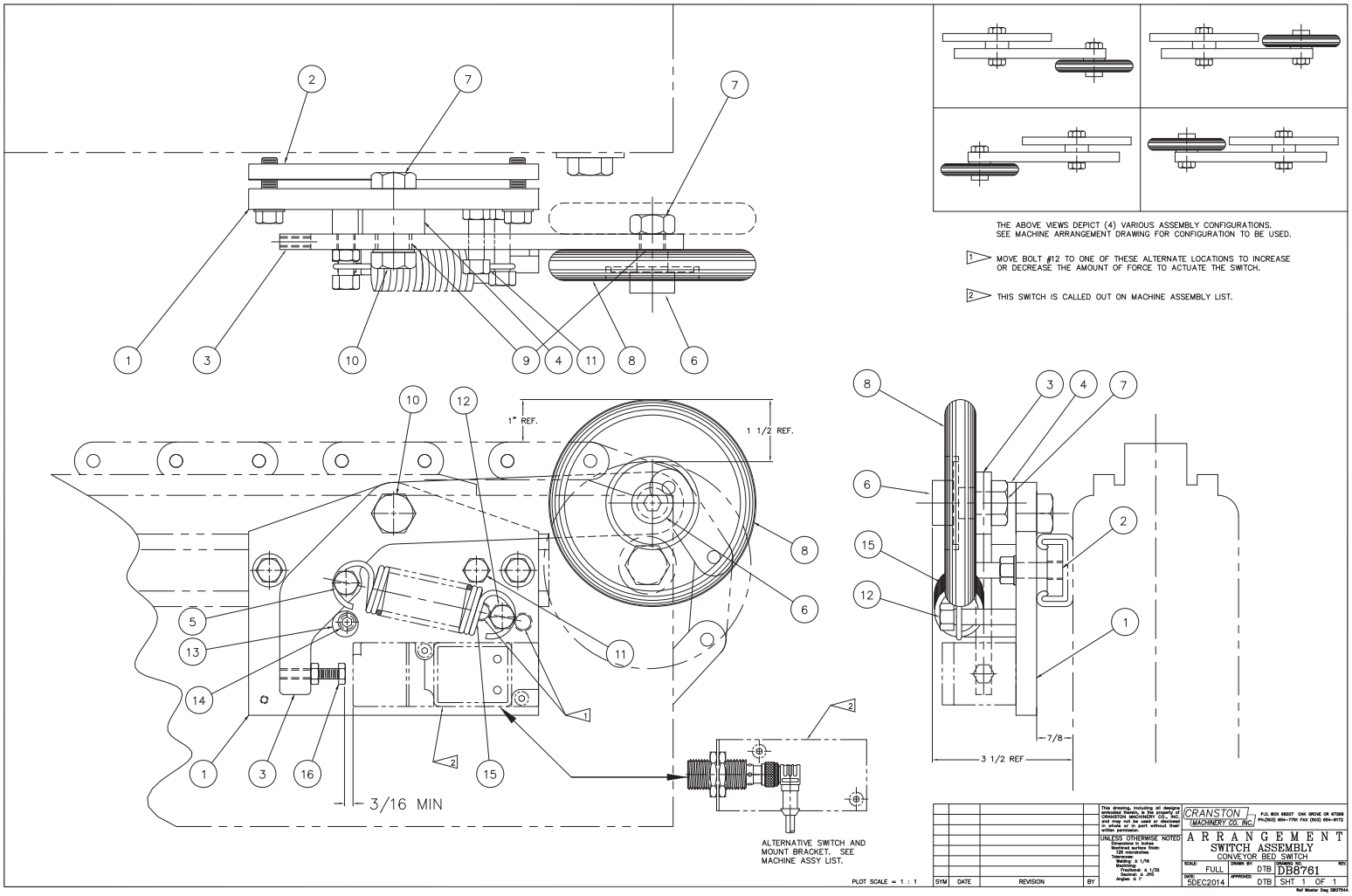
UNLESS OTHERWISE NOTED
Dimensions in inches
Tolerances: Finish: 125 microinches
Tolerances:
Fractional ± 1/16
Machined ± 1/32
Fractional ± 1/32
Decimal ± .015
Angles ± 1°

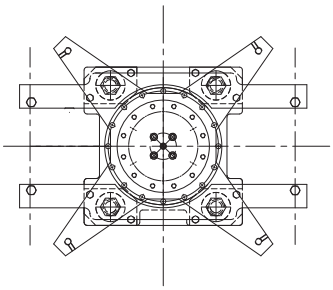
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P.O. BOX 68207 OAK GROVE OR 97268
PH:(503) 654-7701 FAX (503) 654-6172

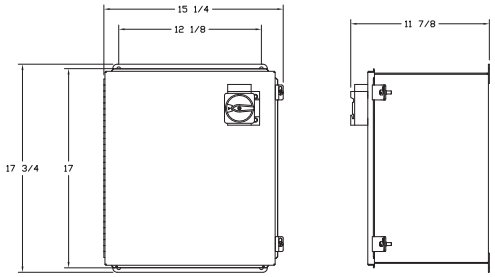
A S S E M B L Y
RETRACTING BALE STOPS

SCALE:	DRAWN BY:	DRAWING NO.	REV:
NONE	JDA	DB9152	
DATE:	APPROVED:	SHT 1 OF 1	
17OCT2018	JDA		

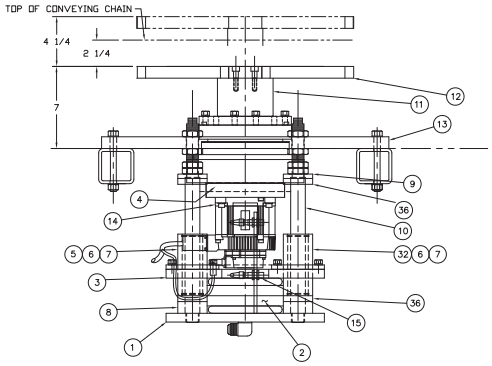
Ref Master Dwg DB9407,DB8780, DB9882

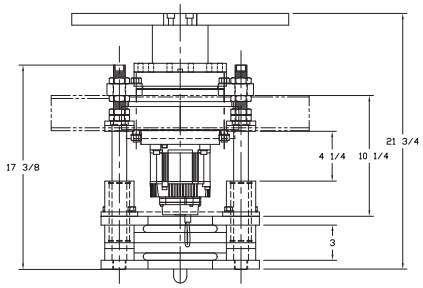

THE ABOVE VIEWS DEPICT (4) VARIOUS ASSEMBLY CONFIGURATIONS.
SEE MACHINE ARRANGEMENT DRAWING FOR CONFIGURATION TO BE USED.
1 MOVE BOLT #12 TO ONE OF THESE ALTERNATE LOCATIONS TO INCREASE OR DECREASE THE AMOUNT OF FORCE TO ACTUATE THE SWITCH.
2 THIS SWITCH IS CALLED OUT ON MACHINE ASSEMBLY LIST.
1" REF.
1 1/2 REF.
3/16 MIN
7/8
3 1/2 REF
ALTERNATIVE SWITCH AND MOUNT BRACKET. SEE MACHINE ASSY LIST.
PLOT SCALE = 1 : 1
CRANSTON MACHINERY CO., INC.
A R R A N G E M E N T
SWITCH ASSEMBLY
CONVEYOR BED SWITCH
SCALE: FULL
DRAWN BY: DTB
DRAWING NO.: DB8761
REV:
SIZE: SDEC2014
APPROVED: DTB
SHT 1 OF 1





SERVO INDEXER DRIVE CONTROLLER
(INCLUDED WITH ITEM 14)





PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 micro-inches
Tolerances:
Welding ± 1/16
Machining:
Fractional ± 1/32
Decimal ± .015
Angles ± 1°

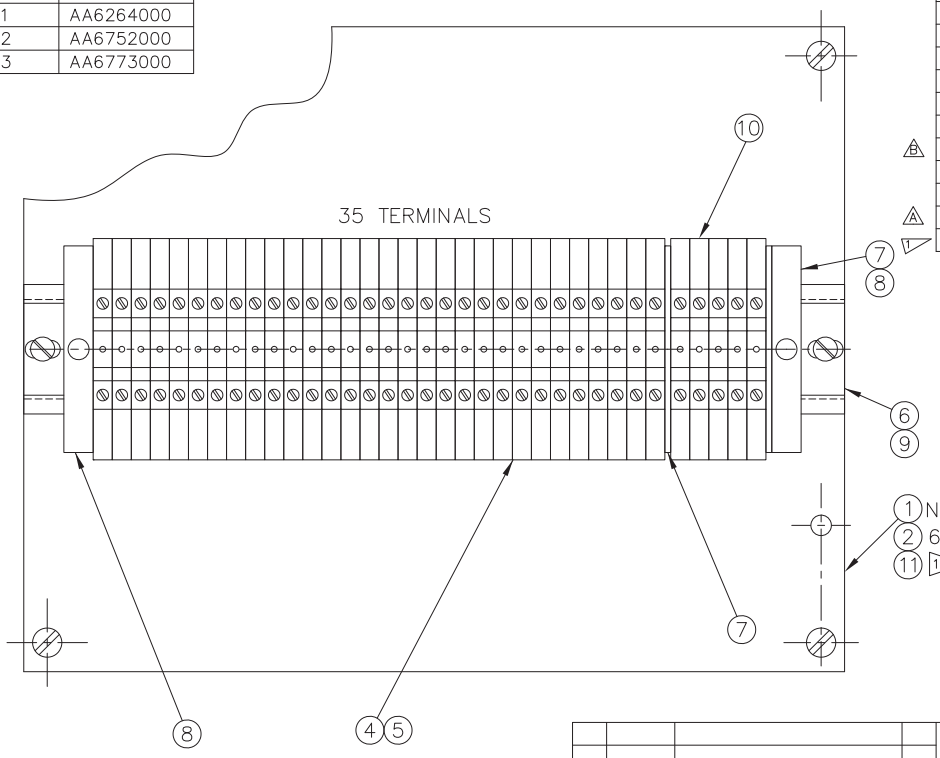
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LIFT AND TURN MODULE

SCALE	DRAWN BY	DRAWING NO.	REV.
3"=1'-0"	RPH	DB9416	
DATE	APPROVED	SHT 1 OF 1	
23SEP2022	RPH		

Ref Master Dwg DB9864

TAB. NO.	"A"
000	AA6144000
001	AA6264000
002	AA6752000
003	AA6773000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	SIZE
1	1	E26000005	ENCLOSURE, HOFFMAN #A-1008CH
2	1	E25000005	PANEL, HOFFMAN #A-10P8
3			
4	30	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
5	70	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
6	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
7	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
8	2	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
9	3		SLOT HD, MACH. SCREW, #8-32 x 3/8 LG.
10	5	E38100120	TERMINAL, ALLEN BRADLEY #1492-JG3
11	2	"A"	WARNING DECAL

NOTES

1 APPLY (1) TO INSIDE & (1) TO OUTSIDE OF ENCLOSURE COVER

SYM	DATE	REVISION	BY
A	3-23-23	CHANGE ITEM 7	BH
A	1-26-15	CORRECT GROUND TERMINAL NUMBER	BH

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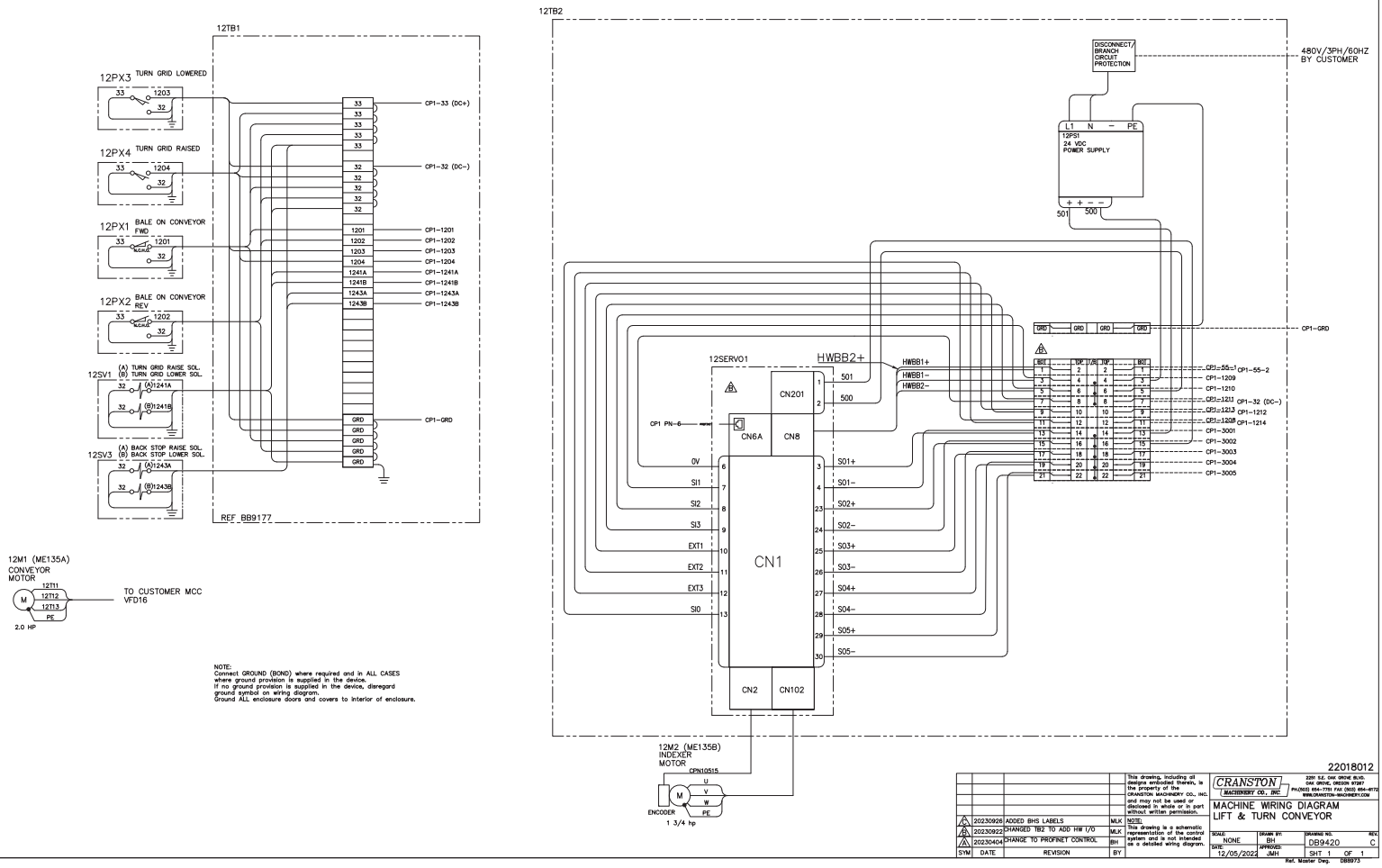
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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TERMINAL BOX ASSEMBLY
10 x 8 x 4 ENCLOSURE
(30 GRAY, 5 GROUND TERMINALS)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
FULL	BH	BB9219	B
DATE: 10/26/09	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB8239



22018012

SYM	DATE	REVISION	BY
3	20230926	ADDED BHS LABELS	MLK
2	20230922	CHANGED TB2 TO ADD HW I/O	MLK
1	20230404	CHANGE TO PROFINET CONTROL	BH

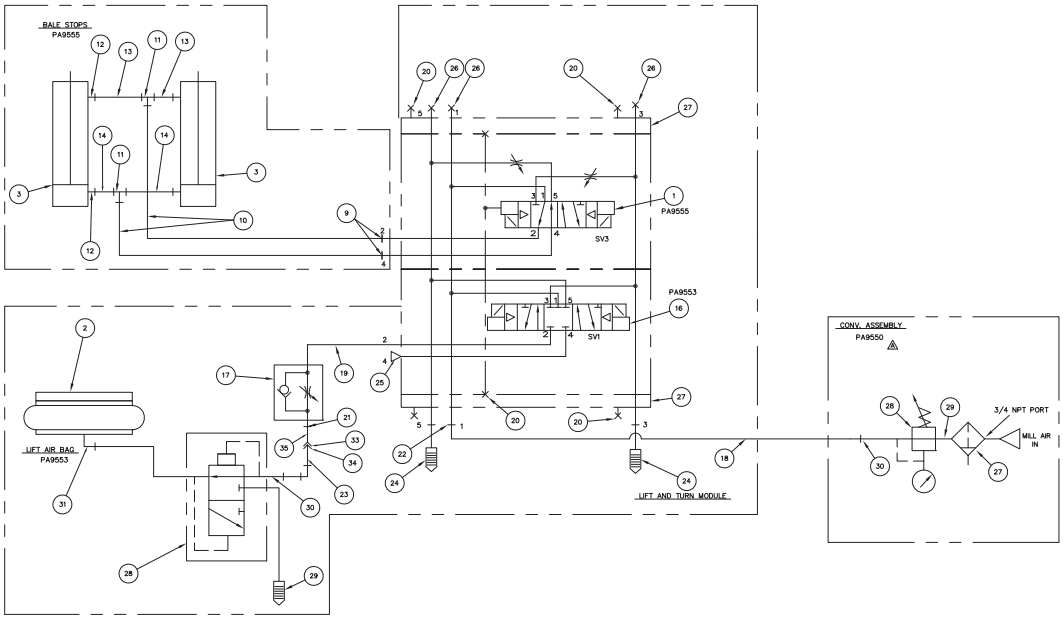
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NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

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MACHINE WIRING DIAGRAM
LIFT & TURN CONVEYOR

SCALE: NONE | DRAWN BY: BH | DRAWING NO.: DB9420 | REV: C
DATE: 12/05/2022 | APPROVED: JMH | SHT 1 OF 1
Ref. Master Dwg. DB9173



PLOT SCALE = 1 :

SYM	DATE	REVISION	BY
A	21AUG2023	ADDED PA9550 & ITEM NUMBERS	DEN

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125 microinches
Tolerances
Machining ± 1/64
Molding
Fractional ± 1/32
Decimal ± .010
Angles ± 1°

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PNEUMATIC SCHEMATIC
TURNTABLE CONVEYOR MODEL 20H065
AIR BAG LIFT — ELECTRIC ROTATE
WITH BALE STOPS

SCALE	DRAWN BY	DRAWING NO.	REV.
NONE	RPH	DB9429	A
DATE 9-28-22	APPROVED RPH	SHT 1 OF 1	

Ref Master Dwg DB8655

CRANSTON MACHINERY CO. INC.

TABLE OF CONTENTS

ENFOLD

MODEL 21D015

SECTION 1--GENERAL INFORMATION
1.1--EQUIPMENT DESCRIPTION
1.2--DESCRIPTION OF OPERATION

SECTION 2--ADJUSTMENTS
2.1--INITIAL MACHINE SET-UP
2.2--AIR PRESSURE
2.3--PROXIMITY SWITCHES

SECTION 3--MAINTENANCE
3.1--LUBRICATION AND MAINTENANCE SCHEDULE
3.2--LUBRICANT SELECTION GUIDE
3.3--ELECTRICAL COMPONENTS

SECTION 4--REPLACEMENT PARTS AND DRAWINGS

ENFOLD
MODEL 21D015

SECTION 1--GENERAL INFORMATION

1.1--EQUIPMENT DESCRIPTION

THE CRANSTON ENFOLD IS A PNEUMATIC POWERED FOLDING MACHINE DESIGNED TO FOLD BOTH UNBOUND ENDS OF THE BALE WRAPPER AGAINST THE BALE. THE MACHINE IS LOW PROFILE ALLOWING EXCELLENT VIEWING OF THE ENTIRE BALE LINE. BALE FLOW IS STRAIGHT THROUGH THE MACHINE. SOME APPLICATIONS INCLUDE A TURNTABLE CONVEYOR MOUNTED BETWEEN THE TWO FOLDER HALVES. IF THE TURNTABLE CONVEYOR IS UPSTREAM OF THE FOLDER, THEN THE CONVEYOR IN THE ENFOLD WITH BE SIMPLY A CHAIN CONVEYOR WITH PNEUMATIC BALE STOPS TO POSITION THE BALE ON CENTER FOR FOLDING. THE ENFOLD IS NORMALLY INSTALLED BETWEEN THE BALE TYING MACHINES.

THE ENFOLD INCLUDES THE FOLLOWING:

A BASE ASSEMBLY THAT MOUNTS TO THE FLOOR AT FOUR POINTS. THE BASE IS CONSTRUCTED OF RECTANGULAR TUBING AND THE TWO ENFOLD HALVES AND THE CONVEYOR MOUNT TO THE BASE.

TWO TRACK ASSEMBLIES THAT MOUNT TO THE BASE. EACH OF THESE ASSEMBLIES CONSISTS OF FOUR HARDENED TRACKS AND AN AIR CYLINDER ON EACH END OF THE MACHINE. THE AIR CYLINDERS MOVE THE CARRIAGE ASSEMBLIES IN TOWARD THE BALE OR OUT FROM THE BALE.

TWO CARRIAGE ASSEMBLIES THAT MOUNT ON THE TRACK ASSEMBLIES. THESE ASSEMBLIES EACH CONSIST OF A FRAME WELDMENT, FOUR CAM FOLLOWERS THAT RIDE ON THE TRACK ASSEMBLIES, AND THE PNEUMATIC VALVING. MOUNTED TO EACH WELDMENT ARE THE TOP FOLD PADDLE ASSEMBLIES AND THE CORNER FOLD PADDLE ASSEMBLIES. THE CARRIAGE ASSEMBLIES ARE HELD AGAINST THE BALE BY THE TRACK ASSEMBLY AIR CYLINDERS TO ENSURE TIGHT FOLDING ACTION BY THE PADDLE ASSEMBLIES.

TWO BOTTOM FOLD PADDLE ASSEMBLIES EACH CONSISTING OF A FOLD PADDLE AND A PNEUMATIC CYLINDER. THE PADDLE IS A FLAT STEEL FLAP THAT PIVOTS UPWARD TO FOLD THE BALE WRAPPER. THE PNEUMATIC CYLINDER PROVIDES THE PIVOTING MOTION. THE BOTTOM FOLD PADDLE ASSEMBLIES MOUNT DIRECTLY TO THE CARRIAGE ASSEMBLIES.

TWO TOP FOLD ASSEMBLIES EACH CONSISTING OF A FOLD TUBE, TOP FOLD ARM, AND TWO PNEUMATIC CYLINDERS. THE FOLD ARMS, WHICH PIVOT DOWNWARD, MOUNT TO THE CARRIAGE ASSEMBLIES. THE VERTICALLY MOUNTED PNEUMATIC CYLINDERS PULL THE FOLD ARMS DOWN UNTIL THE FOLD TUBES HIT THE TOP OF THE BALE. AT THIS POINT, THE FOLD TUBES PIVOT ABOUT THE CORNER OF THE BALE AS THE FOLD ARMS CONTINUE DOWNWARD "WIPING" THE WRAPPER ALONG THE SIDE OF THE BALE. THE HORIZONTALLY MOUNTED PNEUMATIC CYLINDERS APPLY SUFFICIENT PRESSURE TO THE FOLD TUBES TO INSURE THIS "WIPING" ACTION. THIS MOTION PROVIDES A FIRM, CRISP FOLD.

FOUR CORNER FOLD PADDLE ASSEMBLIES, EACH CONSISTING OF AN ARM, FOLD PADDLE, AND PNEUMATIC CYLINDER. THE ARM AND PNEUMATIC CYLINDER MOUNT TO THE CARRIAGE ASSEMBLY AND PIVOT INWARD TO THE BALE. THE PADDLES ARE FABRICATED OF STEEL IN AN "L" SHAPE AND MOVE IN TO "HUG" THE CORNERS OF THE BALE.

ENFOLD
MODEL 21D015

1.1--EQUIPMENT DESCRIPTION (CONT'D)

THE ENFOLD IS CONTROLLED BY THE MAIN BALE LINE CONTROL SYSTEM. THE ENFOLD OPERATES AUTOMATICALLY OR BY MANUAL OVERRIDE PUSHBUTTONS AND SELECTOR SWITCHES AND IS ELECTRICALLY INTERLOCKED WITH ADJACENT MACHINERY.

1.2--DESCRIPTION OF OPERATION

THE BALE COMES INTO THE ENFOLD ON THE FOLDER CONVEYOR AND ACTUATES THE INFEED PROXIMITY SWITCH ON THE FOLDER CONVEYOR. THIS STARTS A TIMER WHICH TIMES OUT TO POSITION THE BALE AT THE CENTER OF THE FOLDER. A SET OF PNEUMATICALLY OPERATED BALE STOPS ARE MOUNTED BETWEEN THE CHAINS OF THE CONVEYOR AND ARE LOCATED DOWNSTREAM OF THE CENTERLINE OF THE FOLDER. THE TIMER IS SET SO THAT IT TIMES OUT SLIGHTLY AFTER THE BALE IS STOPPED AGAINST THE BALE STOPS. THIS PROVIDES ACCURATE POSITIONING OF THE BALE AT THE CENTER OF THE FOLDER. IN APPLICATIONS WHERE A TURNTABLE CONVEYOR IS USED AS THE FOLDER CONVEYOR, THE BALE STOPS ARE USED TO POSITION THE BALE SO THAT IT IS CENTERED OVER THE TURN GRID. ONCE THE BALE HAS STOPPED, THE TURN GRID RAISES AND ROTATES THE BALE THRU 90 DEGREES AND THEN THE TURN GRID LOWERS. THE BALE NOW RESTS CROSSWAYS ON THE CONVEYOR WITH ITS TWO UNBOUND ENDS AT 90 DEGREES TO ORIGINAL BALE FLOW.

WHEN THE BALE HAS STOPPED, THE CARRIAGE ASSEMBLIES COME IN UNTIL POSITIONED AT THE BALE. THEN THE CORNER FOLD PADDLES SWING IN TO "HUG" THE CORNERS OF THE BALE, FOLDING THE SIDES OF THE WRAPPER AGAINST THE BALE ENDS. WHEN THE CORNER PADDLES ARE IN, THE BOTTOM PADDLES PIVOT UPWARD FOLDING THE BOTTOM OF THE WRAPPER UP TO COVER THE CORNER FOLDS. WHEN THE BOTTOM PADDLES ARE UP, THE CORNER FOLD PADDLES SWING OUT. ONCE THE CORNER PADDLES ARE OUT, THE TOP FOLD ARMS PIVOT DOWNWARD FOLDING THE TOP OF THE WRAPPER DOWN TO COMPLETE THE FOLD.

AFTER THE TOP FOLD ARMS ARE DOWN, THE CYLINDERS THAT PUSHED THE CARRIAGE ASSEMBLIES INTO POSITION RELAX, TAKING PRESSURE OFF THE SIDES OF THE BALE. AT THIS POINT, THE FOLDER CONVEYOR WAITS FOR THE INTERLOCK SIGNAL FROM DOWNSTREAM EQUIPMENT FOR NORMAL FLOW, AND UPSTREAM EQUIPMENT FOR REVSERSING FLOW.

AS THE BALE STARTS TO MOVE UPSTREAM OR DOWNSTREAM, THE FOLD IS HELD IN PLACE BY DISCHARGE GUIDES (ROUND PIPES) THAT ARE EXTENSIONS TO THE TOP FOLD PADDLE ASSEMBLIES UNTIL THE BALE IS INTO THE WIRE STRAPPER. AS SOON AS THE FIRST WIRE IS APPLIED AT THE STRAPPER, THE TOP FOLD PADDLE ASSEMBLIES CAN BE RAISED, THE BOTTOM FOLD PADDLES LOWERED AND THE CARRIAGES CAN MOVE OUT TO THE RECEIVING POSITION AND THE NEXT BALE CAN FEED INTO THE ENFOLD.

SECTION 2--ADJUSTMENTS

2.1--INITIAL MACHINE SET-UP

PRIOR TO SHIPMENT, THE ENFOLD AND CONVEYOR ARE FACTORY ADJUSTED FOR THE CUSTOMER'S NOMINAL BALE SIZE. BASICALLY, THE POSITION OF THE CARRIAGE ASSEMBLIES SET THE PARAMETERS FOR ALL OF THE ENFOLD PADDLE POSITIONS.

THE CARRIAGES ARE SET BASED ON THE REQUIRED POSITION OF THE CORNER FOLD PADDLES IN THE FOLDING POSITION. THE DISTANCE ACROSS THE CHAINS BETWEEN THE CORNER FOLD PADDLES IS SET TO THE NOMINAL BALE DIMENSION MINUS 2". THE AIR CYLINDER THAT MOVES THE CARRIAGE IN AND OUT ALSO ACTS AS AN "AIR SPRING" TO KEEP THE CARRIAGE IN BUT ALSO ALLOWS THE CARRIAGE TO MOVE BACKWARD IN CASE OF AN OVERSIZE BALE.

THE CORNER FOLD PADDLES ON EACH SIDE OF THE LINE ARE SET TO HUG THE CORNERS OF THE NOMINAL BALE. THE DISTANCE BETWEEN THE UPSTREAM CORNER PADDLE AND THE DOWNSTREAM CORNER PADDLE WHEN BOTH ARE FULLY EXTENDED (IN) IS SET TO NOMINAL BALE SIZE MINUS 1". THE FRONT ENDS OF THE CORNER FOLD PADDLE CYLINDERS HAVE ADJUSTING BRACKETS. THE ACTUAL FOLD PADDLE MOUNTS TO A SLOTTED BRACKET ON THE FOLD ARM AND IS INITIALLY SET APPROXIMATELY IN THE MIDDLE OF THE SLOTS.

THE TOP FOLD TUBE ARM MOUNTS TO THE CARRIAGE AND DOES NOT NORMALLY REQUIRE ANY FIELD ADJUSTMENT. AS THE TOP FOLD PADDLE LOWERS AND CONTACTS THE BALE, THE CENTER OF THE FOLDING TUBE SHOULD STRIKE THE BALE APPROXIMATELY 1" IN FROM THE BALE EDGE AND THEN WIPE DOWN AND AROUND THE TOP EDGE OF THE BALE. IF DURING START-UP, THE TOP FOLD TUBE DOES NOT PERFORM AS STATED, OR DOES NOT PROVIDE A SUITABLE FOLD, PLEASE CONTACT CRANSTON SERVICE DEPARTMENT FOR FURTHER ASSISTANCE.

NOTE: ATTEMPTING TO PROCESS A BALE THAT IS LARGER THAN WHAT THE ENFOLD HAS BEEN SET UP TO HANDLE COULD CAUSE SERIOUS DAMAGE AND BREAKAGE TO PARTS OF THE MACHINE. IF BALES ARE CONTINUALLY JAMMING IN THE ENFOLD, THIS IS AN INDICATION THAT THE MACHINE IS NOT SET UP PROPERLY OR OVERSIZED BALES ARE BEING PROCESSED. IF THIS OCCURS, CONTACT CRANSTON MACHINERY SERVICE DEPARTMENT FOR INSTRUCTIONS.

2.2--AIR PRESSURE

THE TYPE OF WRAPPER, THICKNESS, MATERIAL, ETC., WILL HAVE AN EFFECT ON THE CORRECT AIR PRESSURE SETTINGS FOR YOUR APPLICATION. BASICALLY, THE AIR PRESSURE SHOULD BE SET TO THE LOWEST SETTING THAT RESULTS IN A WELL-WRAPPED PACKAGE. THE FOLLOWING SETTINGS ARE PROVIDED FOR INITIAL START-UP.

THERE ARE THREE PRESSURE REGULATORS ON EACH END OF THE ENFOLD. ONE REGULATOR IS FOR THE AIR CYLINDER THAT MOVES THE CARRIAGE IN AND OUT. SET THIS PRESSURE TO 30 PSI. TOO MUCH PRESSURE ON THIS CYLINDER WILL NOT ALLOW THE CARRIAGE TO MOVE OUT DURING BALE DISCHARGE. TOO LITTLE PRESSURE WILL NOT ALLOW THE CARRIAGE TO MOVE IN DURING THE FOLDING CYCLE.

THE SECOND REGULATOR IS FOR THE TOP FOLD TUBE CYLINDER, WHICH ACTS AS AN AIR SPRING. SET THIS REGULATOR TO APPROXIMATELY 40-50 PSI. TOO MUCH PRESSURE ON THIS CYLINDER WILL NOT ALLOW THE TOP FOLD TUBE TO WIPE DOWN AROUND THE CORNER OF THE BALE. IF THE TUBE DOES NOT WIPE DOWN AROUND THE CORNER OF THE BALE SET THE PRESSURE LOWER UNTIL IT DOES.

THE THIRD REGULATOR CONTROLS THE AIR PRESSURE TO THE REST OF THE ENFOLD CYLINDERS AND SHOULD BE SET TO APPROXIMATELY 60-80 PSI.

2.3--PROXIMITY SWITCHES

THE CORNER FOLD PADDLES OPENED AND CLOSED, THE TOP FOLD ARM LOWERED AND RAISED, THE BOTTOM FOLD PADDLES LOWERED, AND THE CARRIAGE ASSEMBLIES OUT FUNCTIONS OF THE ENFOLD ARE MONITORED BY PROXIMITY SWITCHES. THESE SWITCHES ARE MOUNTED TO ADJUSTABLE BRACKETS OR THE SENSOR TARGETS ARE ADJUSTABLE. THE SENSOR TARGET SHOULD BE ABOUT 1/8" TO 1/4" AWAY FROM THE FACE OF THE SENSOR IN ORDER TO ACTUATE PROPERLY. THESE SWITCHES ARE SET AT THE FACTORY AND SHOULD NOT REQUIRE ANY ADJUSTMENT AT START-UP, BUT SHOULD BE CHECKED PRIOR TO START-UP TO ENSURE THAT THEY ACTUATE PROPERLY.

ENFOLD
MODEL 21D015

SECTION 3--MAINTENANCE

3.1--LUBRICATION AND MAINTENANCE SCHEDULE

ITEM	WHEN	WHAT TO DO
AIR FILTER	DAILY	DRAIN ANY AND ALL WATER, MORE THAN ONCE A DAY, IF NECESSARY.
PIVOT BEARINGS	MONTHLY	APPLY GREASE TO THE GREASE POINTS ON THE PIVOT MECHANISMS OF THE TOP AND BOTTOM PADDLES EVERY 30 DAYS. AVOID OVER-LUBRICATION.
SEALED BEARINGS	NEVER	THESE BEARINGS ARE LUBRICATED AND SEALED FOR LIFE. NO ADDITIONAL LUBRICATION REQUIRED.

NOTE: THE CYLINDERS AND VALVES USED ON THIS EQUIPMENT REQUIRE NO LUBRICATION IN THE AIR SUPPLY LINE.

3.2--LUBRICANT SELECTION GUIDE

GREASE - USE ANY BRAND OF HIGH QUALITY BEARING GREASE.

3.3--ELECTRICAL COMPONENTS

PERIODICALLY CHECK ALL SWITCHES FOR SECURE MOUNTING AND PROPER ADJUSTMENT (IF APPLICABLE). ALSO CHECK THE ELECTRICAL CONNECTION TO ALL SOLENOID VALVES AND SWITCHES FOR TIGHTNESS.

MACHINE ASSEMBLY LIST

MODEL NO.: **21D015**

Title:	PNUEMATIC ENFOLD	**Issued for Serial No.:**	22018013		
Description:	BALE: 39.25 X 42 X 33H	**Arrangement Drawing:**	DB9395000		
		Master by:	RPH	**DATE:**	10/7/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	A	**DATE:**	4/17/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	PA9542	BB9794000	BASE MODULE
2	2	PA9543	DB9436000	TRACK ASSEMBLY
3	2	PA9544	AB0143000	CARRIAGE ASSEMBLY
4	2	PA9545	CB6592000	BOTTOM FOLD PADDLE ASSEMBLY
5	2	PA9546	CB6580000	CORNER FOLD PADDLE ASSEMBLY - LH
6	2	PA9547	CB6580001	CORNER FOLD PADDLE ASSEMBLY - RH
7	2	PA9548	CB6593000	TOP FOLD PADDLE ASSEMBLY
8	1	----	BB9338000	TERMINAL BOX ASSY (TB1)
9	1	----	BB9338000	TERMINAL BOX ASSY (TB2)
10	2	PA9549	DB9439000	AIR PREP ASSEMBLY

MACHINE ASSEMBLY LIST

MODEL NO.: 21D015

Title:	PNUEMATIC ENFOLD	**Issued for Serial No.:**	22018013		
Description:	BALE: 39.25 X 42 X 33H	**Arrangement Drawing:**	DB9395000		
		Master by:	RPH	**DATE:**	10/7/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	A	**DATE:**	4/17/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
11	1	----	AB0041000	SERIAL PLATE, STAMP WITH 1/8" HIGH LETTERS AS FOLLOWS:
				MACHINE: ENFOLD
				DESCRIPTION: BALE 39.25 X 42 X 33H
				SERIAL NUMBER: 22018013
				UNIT MODEL: 21D015
				DATE: DEC 2022
				DRAWING: DB9395000
				HYDRAULIC:
				ELECTRICAL:
				DIMENSION:
				WEIGHT:
				VOLTAGE: 480V/3PH/60HZ
	4			DRIVE SCREW, #6 (.136) X 1/4" LG
12	4	----	M25000018	CORPORATE PLATE
	32			DRIVE SCREW, #6 (.136) X 1/4" LG
13	4	----	AA6142000	SAFETY DECAL
14	6	----	AA6141000	CAUTION DECAL

MACHINE ASSEMBLY LIST

MODEL NO.: **21D015**

Title:	PNUEMATIC ENFOLD	**Issued for Serial No.:**	22018013		
Description:	BALE: 39.25 X 42 X 33H	**Arrangement Drawing:**	DB9395000		
		Master by:	RPH	**DATE:**	10/7/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	A	**DATE:**	4/17/2023

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
15	6	----	AA6140000	WARNING DECAL
	1	----	DB9439000	PNUEMATIC SCHEMATIC
	1	----	DB9421000	MACHINE WIRING DIAGRAM

PARTS LIST

PA9542 **Drawing: BB9794000**

Title:	BASE MODULE	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	10/3/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	A	**DATE:**	1/8/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9434000		BASE WELDMENT
2	1	BB0711001		MOUNT PLATE
	2			HEX SOC FLAT HD CAP SCREW, 3/8-16NC X 3/4 LG
3	1	BB0711001		MOUNT PLATE
	2			HEX SOC FLAT HD CAP SCREW, 3/8-16NC X 3/4 LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9543 **Drawing: DB9436000**

Title:	TRACK ASSEMBLY	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	RPH **DATE:** 10/7/2022
		Revision:	C **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9437000		WELDMENT - BASE
	4			HEX HD CAP SCREW, 1/2-13NC X 1-1/4 LG
	4			FLAT WASHER, 1/2-STD
	4			LOCK WASHER, 1/2-STD
2	2	BA8051000		CARRIAGE GUIDE - PNEUMATIC ENFOLD BASE
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			LOCK WASHER, 3/8-STD
3	2	BA8052000		CARRIAGE GUIDE - PNEUMATIC ENFOLD BASE
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			LOCK WASHER, 3/8-STD
4	2	BB0946000		TOP ANGLE - ENFOLD BASE
	4			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	4			LOCK WASHER, 3/8-STD
	4			FLAT WASHER, 3/8-STD
	2	M69100025		PIN, SPIROL: CLDP .250 X .750 MBK
5	2	M45000027		CLEVIS BRACKET, PARKER HANNIFIN: 0959450000

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9543 **Drawing: DB9436000**

Title:	TRACK ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
5A	1	AB0144000		SHIM
6	1	M18000419	*	CYLINDER, PARKER: #2.5CSB-2AU37AC X 6
	4			SOC HD CAP SCREW, 3/8-16NC X 2 LG
	4			SOC HD CAP SCREW, 3/8-16NC X 1-1/2 LG
	8			LOCK WASHER, 3/8-STD
	4			HEX NUT, 3/8-16NC
	1	M45000042	*	SPHERICAL ROD EYE, PARKER HANNIFIN: #0961000050
	2	M45000028	*	PIVOT PIN, PARKER HANNIFIN: #83962
7	1	BB0711001		MOUNTING PLATE
	2			HEX SOC FLAT HD CAP SCREW, 3/8-16NC X 3/4 LG.
8	1	M24100789	*	SOLENOID VALVE, PH: H26VXXG0B9D, 24VDC
9	1	M24350020	*	SANDWICH REGULATOR, PH: PS4138166CP
10	1	M24600296		MANIFOLD, PH: PSHU1157M1P
11	2	M53100015		FEMALE ELBOW, PH: 150F-6-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9543 **Drawing: DB9436000**

Title:	TRACK ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
12	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, P.H.: 7212-381BK X 38" LG.
	2	M53200004		FEMALE SWIVEL, P.H.: #30882-6-6B
12A	1			HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		HOSE, P.H.; 7212-381BK X 44" LG.
	2	M53200004		FEMALE SWIVEL, P.H.; #30882-6-6B
13	2	M53100003		MALE CONNECTOR, PH: 48F-6-6
14	2	M24000084	*	FLOW CONTROL, PH: 032510375
15	1	E16600154	*	PROXIMITY SWITCH, IFM #IM5123
	1	E16700120		CABLE, IFM #EVC003, 10M
	2			SOC HD CAP SCREW, #10-32NF X 1 1/4 LG
	2			LOCK WASHER, #10-STD
16	2	M53100005		HEX NIPPLE, PH: 216P-8-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9543 **Drawing: DB9436000**

Title:	TRACK ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9544 **Drawing: AB0143000**

Title:	CARRIAGE ASSEMBLY	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	RPH **DATE:** 10/7/2022
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9438000		FRAME WELDMENT
2	4	M10600019	*	CAMROL BEARING, MCGILL: #CF-2-3/4S
	4			HEX JAM NUT, 1-14NF

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9545 **Drawing: CB6592000**

Title:	BOTTOM FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	B	**DATE:**	3/15/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	BB9173000		CYLINDER MOUNT - RH
2	1	BB9172000		CYLINDER MOUNT - LH
3	2	M20000020		(REF) BRONZE BEARING, BOSTON: 35682-FB1622-8
	4			HEX HD CAP SCREW, 1/2-13NC X 2 LG.
	4			LOCK WASHER, 1/2-STD.
4	1	M18000416	*	AIR CYLINDER, PARKER HANNIFIN: #3-1/4 CD2AU14AC X 6.75
5	1	M45000011	*	FEMALE ROD CLEVIS, PARKER HANNFIN: #50942
6	1	M45000013	*	PIVOT PIN, PARKER HANNFIN: #68369
7	2	M10500031	*	SPHERCO ROD END, FK BEARINGS: #JF10T
	2			HEX HD CAP SCREW, 5/8-18NF X 5-1/4 LG.
	2			LOCK WASHER, 5/8-STD.
8	1	CB6201000		PADDLE MOUNT
	2			SHOULDER BOLT, 5/8 X 1 1/4 LG
	2			FLAT WASHER, 1/2-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9545 **Drawing: CB6592000**

Title:	BOTTOM FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:** RPH	**DATE:** 9/9/2022
		Issued By: RPH	**DATE:** 10/7/2022
		Revision: B	**DATE:** 3/15/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2			ESNA FULL HEX NUT, 1/2-13NC
9	1	CB6202002		BOTTOM FOLD PADDLE
	2			LOCK WASHER, 1/2-STD.
	2			HEX NUT, 1/2-13NC
10	1	E16600154	*	PROXIMITY SWITCH, IFM #IM5123
	1	E16700120		CABLE, IFM #EVC003, 10M
	2			SOC HD CAP SCREW, #10-32NF X 1 1/4 LG
	2			LOCK WASHER, #10-HI COLLAR
11	1	BB9174000		SWITCH MOUNTING PLATE
	2			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	2			FLAT WASHER, 1/4-STD
	2			LOCK WASHER, 1/4-STD
12	1	M24100748	*	SOLENOID VALVE, PH: H25VXBG0B9D, 24VDC
	1	M24600296		MANIFOLD, PH: PSHU1157M1P
13	2	M53100005		HEX NIPPLE, PH: 216P-8-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9545 **Drawing: CB6592000**

Title:	BOTTOM FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	B	**DATE:**	3/15/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
14	2	M53100015		FEMALE ELBOW, PH: 150F-6-6
15	1			AIR HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		AIR HOSE, PH: 7212-381BK X 60" LG.
	2	M53200004		SAE 45 DEG SWIVEL, P.H.: #30882-6-6B
15A	1			AIR HOSE ASSEMBLY, CONSISTING OF:
	1	M36000113		AIR HOSE, PH: 7212-381BK X 66" LG.
	2	M53200004		SAE 45 DEG SWIVEL, P.H.: #30882-6-6B
16	1	M53100191		MALE CONNECTOR, PH: 48F-6-8
17	1	M53100055		MALE ELBOW, PH: 149F-6-8
18	2	M24000083		FLOW CONTROL, PH: 03251-0500

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9546 **Drawing: CB6580000**

Title:	CORNER FOLD PADDLE - LH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	DEN	**DATE:**	5/26/2023
		Revision:	F	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9404000		CORNER FOLD MOUNT
	4			HEX HD CAP SCREW, 1/2-13NC X 1 3/4 LG
	4			LOCK WASHER, 1/2-STD
2	2	BB9183000		NUT BAR
3	2	BB9184000		TRUNNION MOUNT
	2	M20100155		(REF) BUSHING, SYMMCO: SF-3240-16
	4			HEX HD CAP SCREW, 1/2-13NC X 1 1/2 LG
	4			LOCK WASHER, 1/2-STD
4	1	M18000417	*	AIR CYLINDER, PH: 5CD-2AU19ACX 11.25
5	1	BA9917000	*	SPHERICAL ROD END
6	1	M45000046	*	PIVOT PIN, PH: 83963
7	2	M10100133	*	BEARING, SKF: F2B 107-TF
	4			HEX HD CAP SCREW, 7/16-14NC X 1 3/8 LG
	4			LOCK WASHER, 7/16-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9546 **Drawing: CB6580000**

Title:	CORNER FOLD PADDLE - LH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	DEN	**DATE:**	5/26/2023
		Revision:	F	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
8	1	BB9185000		SWITCH ACTUATOR
	2			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	2			HEX JAM NUT, 3/8-16NC
	2			SOC HD SET SCREW, 5/16-18NC X 3/4 LG, CUP POINT
9	2	E16600154	*	PROXIMITY SWITCH, IFM #IM5123
	2	E16700120		CABLE, IFM #EVC003, 10M
	4			SOC HD CAP SCREW, #10-32NF X 1 1/2 LG
	4			FLAT WASHER, #10-STD
9A	2	AB0162000		BRACKET, SWITCH-PROX
	4			LOCK WASHER #10-STD
	4			FLAT WASHER #10-STD
10	2	AA9061000		NUT BAR
11	1	BB9489000		SPACER
12	1	DB9410000		CORNER FOLD ARM - LH
13	1	BB8719000		CLEVIS MOUNT BRACKET

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9546 **Drawing: CB6580000**

Title:	CORNER FOLD PADDLE - LH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	DEN	**DATE:**	5/26/2023
		Revision:	F	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2	M20200027	*	(REF) TENSION BUSHING, VOGELSANG: VG-275
	4			SOC HD CAP SCREW, 3/8-16NC X 3/4 LG
	4			LOCK WASHER, 3/8-HI COLLAR
	4			FLAT WASHER, 3/8-SAE
	2	M69100025		SPIROL PIN, SPIROL: CLDP .250 X .750 MBK
14	1	BB9491000		BUMPER
	2			HEX HD CAP SCREW, 5/16-18NC X 1 LG
	2			FLAT WASHER, 5/16-STD
	2			LOCK WASHER, 5/16-STD
15	1	BB8721000		CORNER FOLD PADDLE MOUNT BRACKET
	2	M20400045		(REF) DRILL BUSHING, TYPE P, 7/8 ID X 1 1/4 OD X 5/8 LG
	4			SOC HD CAP SCREW, 3/8-16NC X 1 1/4 LG
	4			LOCK WASHER, 3/8-STD
	4			FLAT WASHER, 3/8-SAE
16	1	BB9195000		PADDLE BACKING PLATE
	3			SOC HD CAP SCREW, 1/2-13NC X 2 1/4 LG,
	3			LOCK WASHER, 1/2-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9546 **Drawing: CB6580000**

Title:	CORNER FOLD PADDLE - LH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	DEN	**DATE:**	5/26/2023
		Revision:	F	**DATE:**	1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17	1	M14000141	*	EXTENSION SPRING, LEE SPRING: LE115K01M, 1.25" OD, .115" DIA WIRE, MAX LOAD 45 #, FREE LENGTH 3.25", MAX LENGTH 5.51".
18	1	BB9492000		PIVOT SHAFT
	2	M20100266		THRUST WASHER, SYMMCO: ST-2848-4
19	1	DB8734000		CORNER FOLD PADDLE - SIDE
19A	1	DB9403000		CORNER FOLD PADDLE - BACK
20	1	BB9240000	*	ROLLER
20A	1	AA9070000		ROLLER SHAFT
	2			COTTER PIN, 3/32 DIA X 1 1/4 LG
21	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 33" LG
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
22	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 41" LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9546 **Drawing: CB6580000**

Title:	CORNER FOLD PADDLE - LH	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	DEN **DATE:** 5/26/2023
		Revision:	F **DATE:** 1/9/2024

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
23	1	M24100748	*	VALVE, PH: H25VXBG0B9D, 24VDC
	1	M24600296		MANIFOLD, PH: PSHU1157M1P
24	2	M53100018		UNION TEE, PH: 2203P-8
25	4	M53100012		MALE ELL, PH: 149F-8-8
26	2	M53100020		MALE CONNECTOR, PH: 48F-8-8
27	2	M5300099		PIPE NIPPLE, PH: 0101-8-8
28	1	M24000005		FLOW CONTROL VALVE, PH: 032500419
29	2	CB6684000		WRAPPER GUIDE
	4			ALL THREAD, 5/16-18 X 4" LG
	16			NUT, 5/16-18
	8			FLAT WASHER, 5/16

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9547 **Drawing: CB6580001**

Title:	CORNER FOLD PADDLE - RH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:		**DATE:**	
		Revision:	B	**DATE:**	12/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB9405000		CORNER FOLD MOUNT
	4			HEX HD CAP SCREW, 1/2-13NC X 1 3/4 LG
	4			LOCK WASHER, 1/2-STD
2	2	BB9183000		NUT BAR
3	2	BB9184000		TRUNNION MOUNT
	2	M20100155		(REF) BUSHING, SYMMCO: SF-3240-16
	4			HEX HD CAP SCREW, 1/2-13NC X 1 1/2 LG
	4			LOCK WASHER, 1/2-STD
4	1	M18000417	*	AIR CYLINDER, PH: 5CD-2AU19ACX 11.25
5	1	BA9917000	*	SPHERICAL ROD END
6	1	M45000046	*	PIVOT PIN, PH: 83963
7	2	M10100133	*	BEARING, SKF: F2B 107-TF
	4			HEX HD CAP SCREW, 7/16-14NC X 1 3/8 LG
	4			LOCK WASHER, 7/16-STD

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9547 **Drawing: CB6580001**

Title:	CORNER FOLD PADDLE - RH	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	**DATE:**
		Revision:	B **DATE:** 12/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
8	1	BB9185000		SWITCH ACTUATOR
	2			HEX HD CAP SCREW, 3/8-16NC X 1 LG
	2			HEX JAM NUT, 3/8-16NC
	2			SOC HD SET SCREW, 5/16-18NC X 3/4 LG, CUP POINT
9	2	E16600154	*	PROXIMITY SWITCH, IFM #IM5123
	2	E16700120		CABLE, IFM #EVC003, 10M
	4			SOC HD CAP SCREW, #10-32NF X 1 1/2 LG
	4			FLAT WASHER, #10-STD
10	2	AA9061000		NUT BAR
11	2	BB9489000		SPACER
12	1	DB9411000		CORNER FOLD ARM - RH
13	1	BB8719000		CLEVIS MOUNT BRACKET
	2	M20200027	*	(REF) TENSION BUSHING, VOGELSANG: VG-275
	4			SOC HD CAP SCREW, 3/8-16NC X 3/4 LG
	4			LOCK WASHER, 3/8-HI COLLAR
	4			FLAT WASHER, 3/8-SAE

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9547 **Drawing: CB6580001**

Title:	CORNER FOLD PADDLE - RH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:		**DATE:**	
		Revision:	B	**DATE:**	12/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2	M69100025		SPIROL PIN, SPIROL: CLDP .250 X .750 MBK
14	1	BB9491001		BUMPER
	2			HEX HD CAP SCREW, 5/16-18NC X 1 LG
	2			FLAT WASHER, 5/16-STD
	2			LOCK WASHER, 5/16-STD
15	1	BB8721001		CORNER FOLD PADDLE MOUNT BRACKET
	2	M20400045		(REF) DRILL BUSHING, TYPE P, 7/8 ID X 1 1/4 OD X 5/8 LG
	4			SOC HD CAP SCREW, 3/8-16NC X 1 1/4 LG
	4			LOCK WASHER, 3/8-HI COLLAR
	4			FLAT WASHER, 3/8-SAE
16	1	BB9195000		PADDLE BACKING PLATE
	3			SOC HD CAP SCREW, 1/2-13NC X 2 1/4 LG,
	3			LOCK WASHER, 1/2-STD
17	1	M14000141	*	EXTENSION SPRING, LEE SPRING: LE115K01M, 1.25" OD, .115" DIA WIRE, MAX LOAD 45 #, FREE LENGTH 3.25", MAX LENGTH 5.51".
18	1	BB9492000		PIVOT SHAFT

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9547 **Drawing: CB6580001**

Title:	CORNER FOLD PADDLE - RH	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	**DATE:**
		Revision:	B **DATE:** 12/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2	M20100266		THRUST WASHER, SYMMCO: ST-2848-4
19	1	DB8734000		CORNER FOLD PADDLE - SIDE
19A	1	DB9403000		CORNER FOLD PADDLE - BACK
20	1	BB9240000	*	ROLLER
20A	1	AA9070000		ROLLER SHAFT
	2			COTTER PIN, 3/32 DIA X 1 LG
21	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 33" LG
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
22	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 45" LG
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
23				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9547 **Drawing: CB6580001**

Title:	CORNER FOLD PADDLE - RH	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:		**DATE:**	
		Revision:	B	**DATE:**	12/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
24				NOT USED
25	2	M53100018		UNION TEE, PH: 2203P-8
26				NOT USED
27				NOT USED
28				NOT USED
29	2	CB6684000		WRAPPER GUIDE
	4			ALL THREAD, 5/16-18 X 4" LG
	16			NUT,5/16-18
	8			FLAT WASHER, 15/16

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9548 **Drawing: CB6593000**

Title:	TOP FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:** RPH	**DATE:** 9/9/2022
		Issued By: RPH	**DATE:** 10/7/2022
		Revision: C	**DATE:** 3/28/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	CB6196000		TOP FOLD ARM
2	1	CB6197000		TOP FOLD PADDLE
	1	M20100090		(REF) BUSHING, SYMMCO: SS-2432-20
	2			HEX HD CAP SCREW, 1/2-13NC X 1 3/4 LG
	2			HEX NUT, 1/2-13NC
3	1	CA7254017		TUBE
4	4	M10100008	*	BEARING, SEALMASTER: FB-23
	12			HEX HD CAP SCREW, 7/16-14NC X 1 1/4 LG
	12			FLAT WASHER, 7/16-SAE
	12			LOCK WASHER, 7/16-STD
5	1	CB6204000		PIVOT SHAFT WELDMENT
	4			HEX HD BOLT, 1/2-13NC X 1-1/2 LG.
	4			LOCK WASHER, 1/2-STD
	2	M69100058		PIN, SPIROL: CLDP .250 X 1.000 MBK
6				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9548 **Drawing: CB6593000**

Title:	TOP FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	3/28/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
7				NOT USED
8	1	M18000418	*	CYLINDER, PH: #4CSB-2AU19AC X 4.125
9	1	M45000047	*	SPHERICAL ROD EYE, PH: 0961000075
10	2	M45000046	*	PIVOT PIN, PH: #83963
11	1	M45000048		CLEVIS BRACKET, PH: 83948
	4			HEX HD CAP SCREW, 1/2-13NC X 1 3/4 LG
	4			LOCK WASHER, 1/2-STD
12				NOT USED
13				NOT USED
14	1	M18000082	*	CYLINDER, PH: #2CBB-2AU34AC X 6-1/2
15	1	CA7331000		FEMALE ROD CLEVIS
	1	M58000002		NYLON BALL, 1/4 DIA.
	1			SOC HD SET SCREW, 3/8-16NC X 1/2 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9548 **Drawing: CB6593000**

Title:	TOP FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	3/28/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
16	1	CA7663000		PIVOT PIN
17	2	M24000083		FLOW CONTROL, PH: 03251-0500
18	1	M24000084		FLOW CONTROL, PH: 03251-0375
19	1	M28000005		MUFFLER, PH: EM37
20	1	BB9781000		SWITCH MOUNTING BRACKET
	2			HEX HD CAP SCREW, 1/4-20NC X 3/4 LG
	2			FLAT WASHER, 1/4-STD
	2			LOCK WASHER, 1/4-STD
21	1	AA9057000		SWITCH ACTUATOR
	2			HEX HD CAP SCREW, 1/4-20NC X 1 LG
	2			FLAT WASHER, 1/4-STD
	2			LOCK WASHER, 1/4-STD
	1			HEX HD CAP SCREW, 3/8-16NC X 1 1/4 LG
	1			HEX NUT, 3/8-16NC

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9548 **Drawing: CB6593000**

Title:	TOP FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	3/28/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
22	2	E16600158	*	PROXIMITY SWITCH, IFM #IFS245
	2	E16700120		CABLE, IFM #EVC003, 10M
23	1	M24100748	*	VALVE, PH: H25VXBG0B9D, 24VDC
	1	M24600296		MANIFOLD, PH: PSHU1157M1P
	1	M24600304		END PLATE KIT, PH: PSHU20L500P
24	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 34" LG.
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
25	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 40" LG.
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
26	2	M53100191		MALE CONNECTOR, PH: 48F-6-8
27				NOT USED
28	1	M53100015		FEMALE ELL, PH: 150F-6-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9548 **Drawing: CB6593000**

Title:	TOP FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	RPH **DATE:** 10/7/2022
		Revision:	C **DATE:** 3/28/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
29	1	M53100005		REDUCER, PH: 216P-8-6
30	2	M53100055		MALE ELBOW, PH: 149F-6-8
31	1	M51000021		REGULATOR, PH: #07R313A
	1	M17000012		GAUGE, PH: K4520N14160
	1	M75000056		MTG. BRACKET, PH: #PS807P
	2			HEX HD CAP SCREW, 1/4-20NC X 1 LG.
	2			FLAT WASHER, 1/4-STD.
	2			LOCK WASHER, 1/4-STD.
32	1	AA8727000		AIR SETTING TAG (WIRE TIE TO REGULATOR)
33	2			HOSE ASSEMBLIES, EACH CONSISTING OF:
	1	M36000113		HOSE, PH: 7212-381BK X 36" LG
	2	M53200004		FEMALE SWIVEL, PH: 30882-6-6B
34	1	M53100015		FEMALE ELBOW, PH: 150F-6-6
35	1	M53100026		NIPPLE, PH: 215PNL-6-20

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9548 **Drawing: CB6593000**

Title:	TOP FOLD PADDLE ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:	RPH	**DATE:**	10/7/2022
		Revision:	C	**DATE:**	3/28/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
36	1	M53100001		90 DEG STREET ELL, PH: 2202P-6-6
37	1	M53100155		ANCHOR CONNECTOR, PH: 207ACBH-6

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9549 **Drawing: DB9439000**

Title:	AIR PREP ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	8/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	M50000051		FILTER, PARKER HANNIFIN: #07F42A
	1	M75000052		MOUNTING BRACKET, PH: #PS843P
	2			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	2			LOCK WASHER, 1/4-STD
	2			FLAT WASHER, 1/4-STD
2				NOT USED
3	1	M51000061		REGULATOR, PARKER HANNIFIN: #07R413A
	1	M17000012		GAUGE, PH: K4520N14160
	2			HEX HD CAP SCREW, 1/4-20NC X 1/2 LG
	2			LOCK WASHER, 1/4-STD
	2			FLAT WASHER, 1/4-STD
	1	M75000056		MOUNTING BRACKET, PH: PS807P
4	2	M53100037		CLOSE NIPPLE, PH: 215PN-12
5	1	M53000197		STREET TEE, PH: #012T-12-12
6				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9549 **Drawing: DB9439000**

Title:	AIR PREP ASSEMBLY	**Issued for Serial No.:**	22018013		
Description:	ENFOLD	**Master by:**	RPH	**DATE:**	9/9/2022
		Issued By:		**DATE:**	
		Revision:	A	**DATE:**	8/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
7				NOT USED
8	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000122		HOSE, PH: 7212-751BK X 25" LG
	2	M53200014		FEMALE SWIVEL, PH: #30882-12-12B
9	2	M53100040		MALE CONNECTOR, PH: 149F-12-12
9A	2	M53100022		MALE CONNECTOR, PH: 149F-8-12
9B	3	M53000669		PLUG, PH: 219P-12
9C	4	M53100014		PLUG, PH: 219P-2
10	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000120		HOSE, PH: 7212-501BK X 57" LG
	2	M53200003		FEMALE SWIVEL, PH: #30882-8-8B
11	1	M53100076		BUSHING REDUCER, PH: 209P-12-6
12	1	M53100003		MALE CONNECTOR, PH: 48F-6-6
13	1			HOSE ASSEMBLY CONSISTING OF:
	1	M36000113		HOSE, P.H.: 7212-381BK X 37 LG.

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

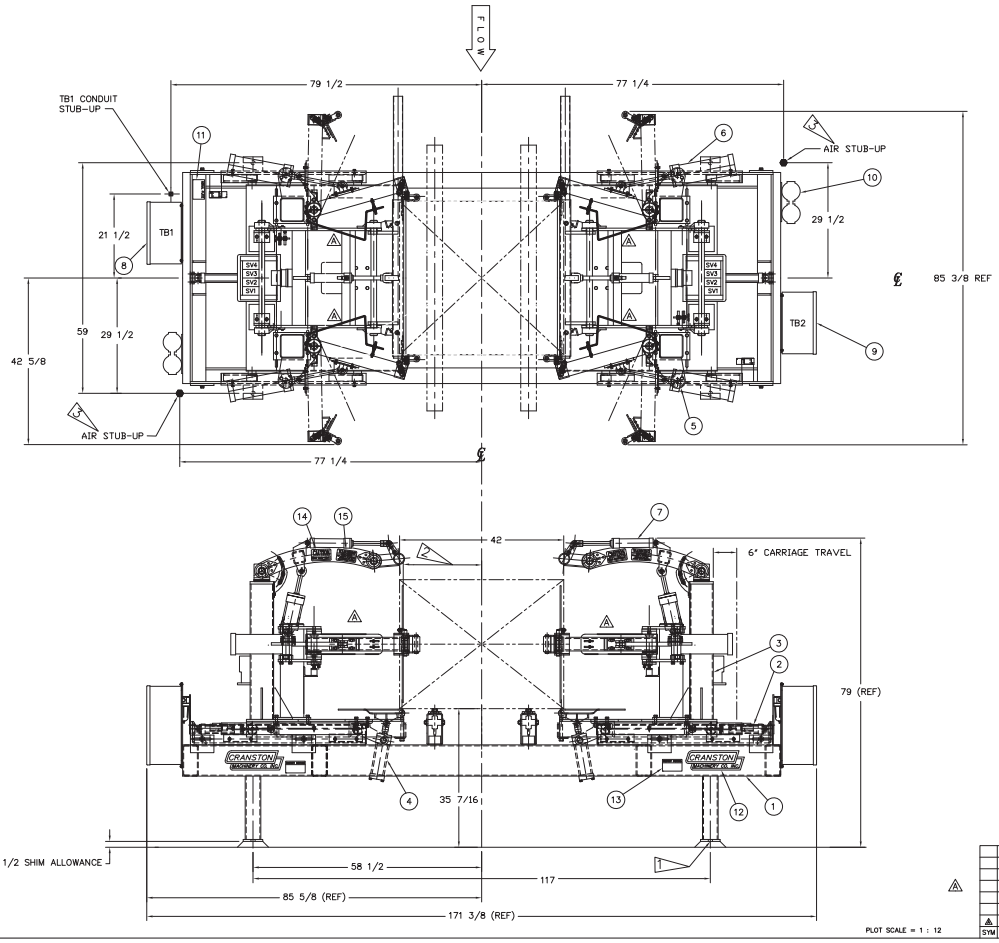
PARTS LIST

PA9549 **Drawing: DB9439000**

Title:	AIR PREP ASSEMBLY	**Issued for Serial No.:**	22018013
Description:	ENFOLD	**Master by:**	RPH **DATE:** 9/9/2022
		Issued By:	**DATE:**
		Revision:	A **DATE:** 8/8/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2	M53200004		FEMALE SWIVEL, P.H.: #30882-6-6B
14	1	M53100020		MALE CONNECTOR, PH: 48F-8-8
15	1	M53100018		UNION TEE, PH: #2203P-8
16	1	M53100012		MALE ELBOW, PH: 149F-8-8
17	1	M28000009		EXHAUST SILENCER, P.H.: ES50MB

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY



PLOT SCALE = 1 : 12

NOTES:

1. ANCHOR BOLTS TO BE 3/4–10NC X 3 1/2" MIN. THREAD LENGTH AND PROJECTION.
2. SET TO 1/2 NOMINAL BALE WIDTH IN FOLDING POSITION MINUS 1 INCH.
3. AIR CONSUMPTION: 50 SCFM AT 60 PSIG. (EACH LOCATION) 3/4 NPT (EACH LOCATION)

NOM. BALE DIMENSIONS IN FOLDING POSITION:

Bale Width Across Chains	= 42"
Bale Width Parallel To Chains	= 39.25"
Bale Height	= 33"

SYM	DATE	REVISION	BY
A	11/28/22	PICTORIALLY ADDED WRAPPER GUIDES	FEB

CMCO S/N 22018013

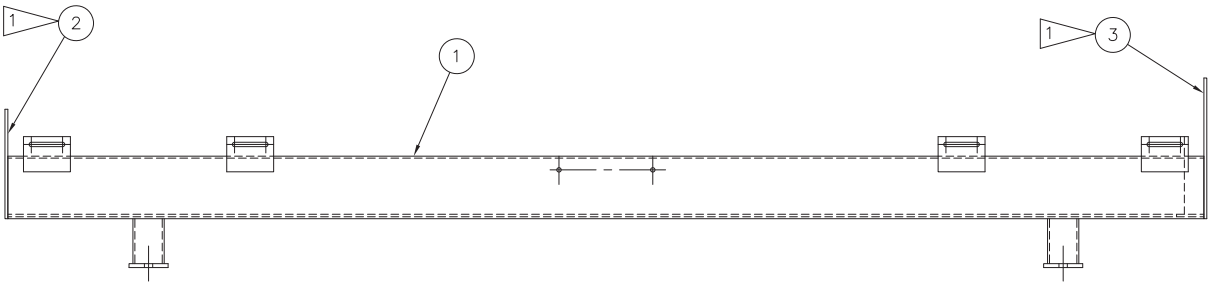
CRANSTON MACHINERY CO., INC.

ARRANGEMENT
ENFOLD – MODEL 21D014

SCALE: 1"=1'-0" | DRAWN BY: RPH | DRAWING NO.: DB9395 | REV: A
DATE: 26AUG2022 | APPROVED: RPH | SHT 1 OF 1

Ref Master Dwg DB9129

1 EXACT LOCATION OF PC #2 & #3 WILL BE DETERMINED AT FINAL ASSEMBLY.



SYM	DATE	REVISION	BY

PLOT SCALE = 1 : 12

This drawing, including all designs embodied therein, is the property of CRANSTON MACHINERY CO., INC. and may not be used or disclosed in whole or in part without their written permission.

UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

CRANSTON MACHINERY CO. INC.
P.O. BOX 68207 OAK GROVE OR 97268
PH.(503) 654-7751 FAX (503) 654-6172

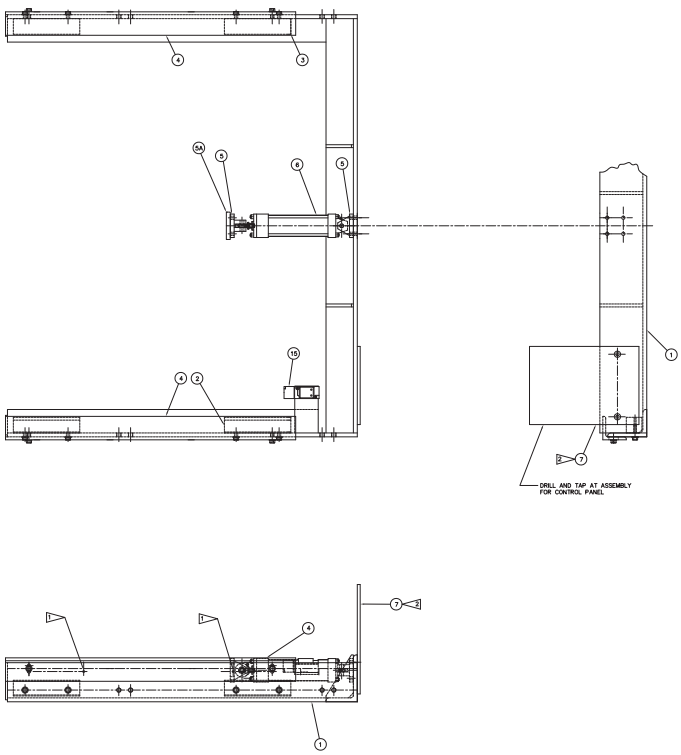
BASE MODULE

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	RPH	BB9794	
DATE:	APPROVED:	SHT 1 OF 1	
04OCT2022	RPH		

Ref. Master Dwg. BB9497

TAB NO.	DESCRIPTION
000	INCH
001	METRIC

1. AFTER FINAL ASSEMBLY AND ADJUSTMENT, DRILL 1/4 DIA THROUGH AND ROLL PIN PC #4, TYP (4) PLACES.
2. LOCATE AND MOUNT AT ASSEMBLY.
3. SEE PNEUMATIC SCHEMATIC FOR PC #12 TO #14.



PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish 125 microinches
Tolerances
Machining ± 1/64
Weldment
Machined ± 1/32
Decimal ± .010
Angles ± 1°

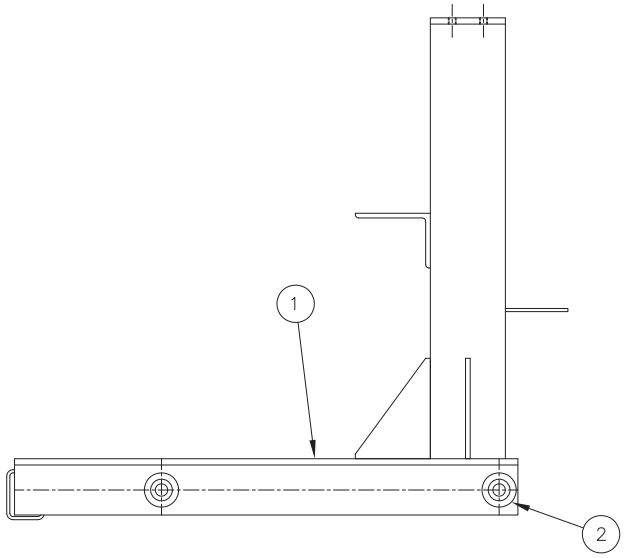
GRANSTON MACHINERY CO. INC.

2201 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7701 FAX (503) 654-6172
WWW.GRANSTON-MACHINERY.COM

ARRANGEMENT
TRACK ASSEMBLY

SCALE	DRAWN BY	DRAWING NO.	REV
2"=1'-0"	RPH	DB9436	
DATE 10/4/22	APPROVED RPH	SHT 1 OF 1	

Ref Master Dwg DB9113



SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED

Dimensions in inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

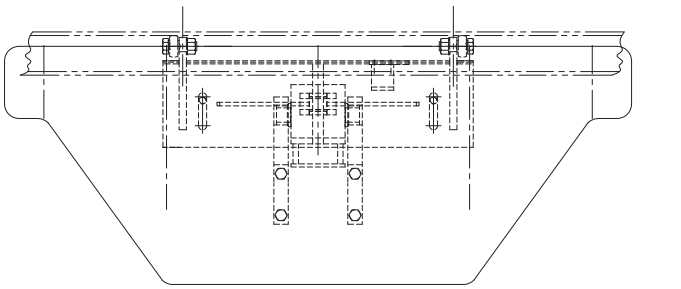
CRANSTON MACHINERY CO. INC.
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OAK GROVE, OREGON 97267
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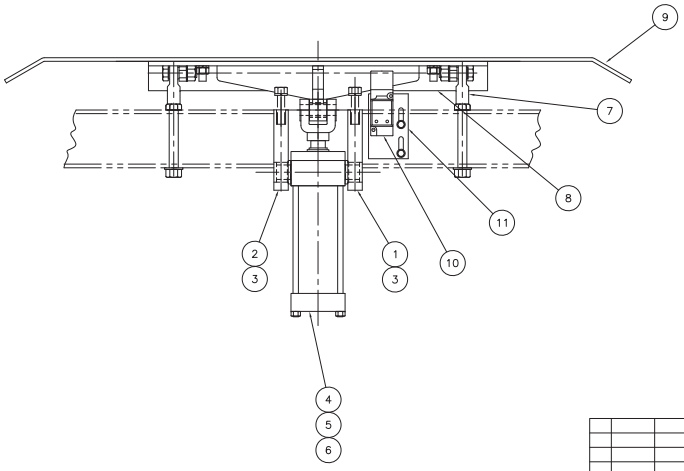
CARRIAGE ASSEMBLY

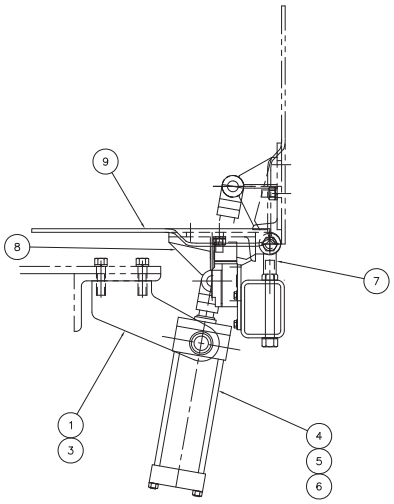
SCALE:	DRAWN BY:	DRAWING NO.	REV.
2"=1'-0"	RPH	AB0143	
DATE: 5OCT2022	APPROVED: RPH	SHT 1 OF 1	

Ref. Master Dwg. AA9056

1. SEE PNEUMATIC SCHEMATIC FOR PC #15 TO #18.







PLOT SCALE = 1 : 4

SYM	DATE	REVISION	BY
.	.	.	.

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UNLESS OTHERWISE NOTED
Dimensions In Inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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BOTTOM FOLD PADDLE ASSEMBLY

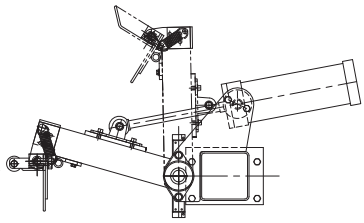
SCALE:	DRAWN BY:	DRAWING NO.	REV.
3"=1'-0"	RPH	CB6592	
DATE:	APPROVED:		
06OCT2022	RPH	SHT 1 OF 1	

Ref Master Dwg CB6200

TAB	DESCRIP.
000	LH FOLD ASSY
001	RH FOLD ASSY

NOTE:

1 AFTER FINAL ADJUSTMENTS, DRILL THRU PILOT HOLES AND INSTALL ROLL PINS



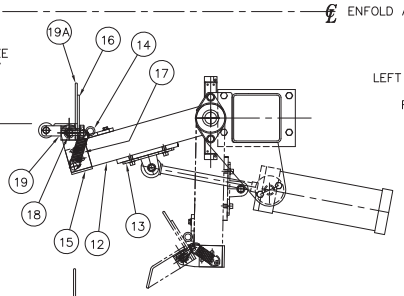
RIGHT HAND SIDE – PA9547

FOR CONTROLS: RH DOWNSTREAM AND LH UPSTREAM

SET TO 1/2 THE NOMINAL BALE SIZE (IN FOLDING POSITION) MINUS 1/2" WITH CYLINDER FULLY STROKED.

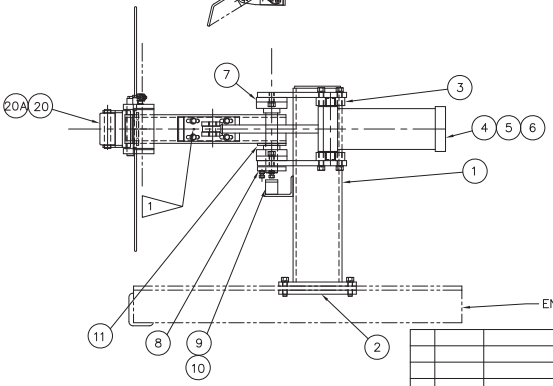
℄ ENFOLD AND BALE

SET TO 1/2 THE NOMINAL BALE SIZE (IN FOLDING POSITION) MINUS 1/2" WITH CYLINDER FULLY STROKED.

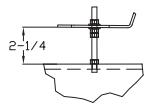


LEFT HAND SIDE – PA9546

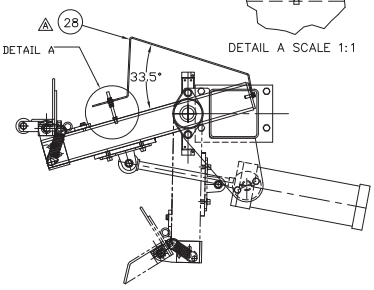
FOR CONTROLS: LH DOWNSTREAM AND RH UPSTREAM



SET INITIAL DIM AS SHOWN
ADJUST HEIGHT AS NEEDED 2-1/4
FOR WRAPPER CLEARANCE



DETAIL A



DETAIL A SCALE 1:1

⚠ WRAPPER GUIDE INSTALLATION DETAIL SHOWN (TYP)

PLOT SCALE = 1 : 8

SYM	DATE	REVISION	BY
⚠	11/29/23	ADDED WRAPPER GUIDE ITEM 28	FRB
⚠	11/29/23	ADDED INSTALLATION DETAIL	FRB

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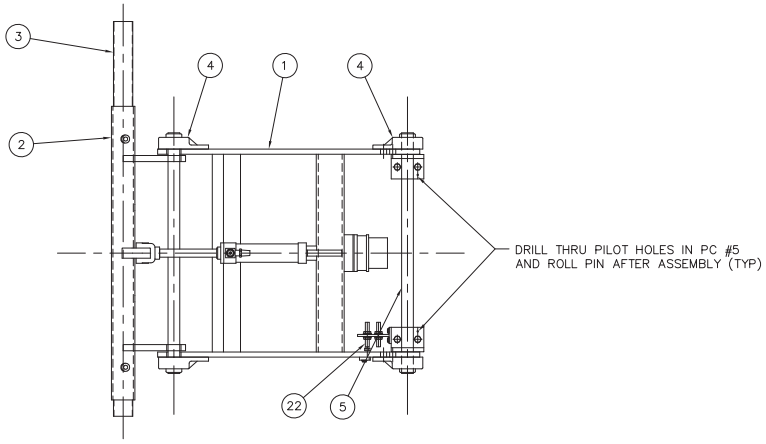
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

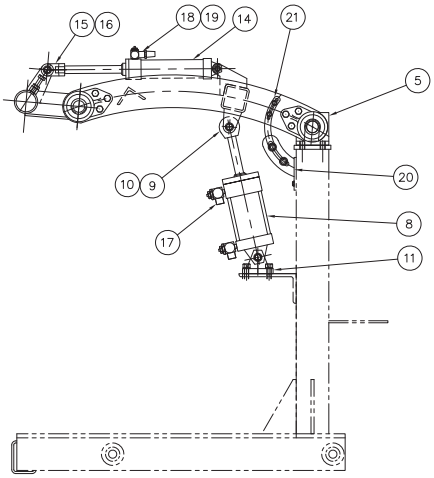
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OAK GROVE, OREGON 97267
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CORNER FOLD PADDLE ASSEMBLY

SCALE:	DRAWN BY:	DRAWING NO.	REV.
1-1/2"=1'-0"	RPH	CB6580	A
DATE: 9/20/22	APPROVED: RPH	SHT 1 OF 1	

Ref Master Dwg CB6423





PLOT SCALE = 1 : 8

SYM	DATE	REVISION	BY

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UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

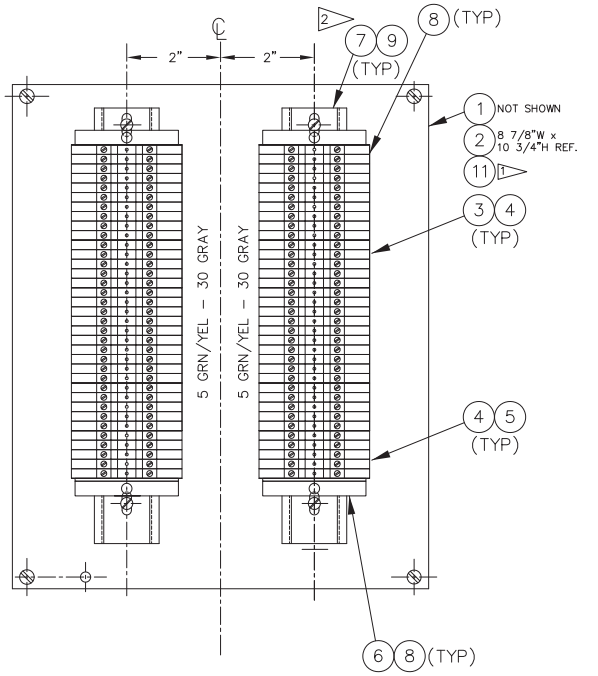
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TOP FOLD ASSEMBLY

SCALE:	DRAWN BY:	DRAWING NO.	REV.
1-1/2"=1'-0"	RPH	CB6593	
DATE: 10/05/22	APPROVED: RPH	SHT 1 OF 1	

Ref Master Dwg CB6195

TAB.	"A"	"B"
000	AA6144000	———
001	AA6264000	———
002	AA6752000	———
003	AA6773000	———
004	AA6144000	AA6145000
005	AA6752000	AA6753000
006	AA6773000	AA6774000



MATERIAL LIST

PIECE	REQ'D.	MATERIAL	SIZE
1	1	E26000091	ENCLOSURE, HOFFMAN #A-1210CH
2	1	E25000043	PANEL, HOFFMAN #A-12P10
3	60	E38100115	TERMINAL, ALLEN BRADLEY #1492-J3
4	140	E38200117	MARKER STRIP, ALLEN BRADLEY #1492-M5X12
5	10	E38100120	GROUND TERMINAL, ALLEN BRADLEY #1492-JG3
6	2	E38100117	END BARRIER, ALLEN BRADLEY #1492-EBJ3
2 7	1	E38200038	CHANNEL, ALLEN BRADLEY #199-DR1
8	4	E38200115	END ANCHOR, ALLEN BRADLEY #1492-EAJ35
9	6		SLOT HD, MACH. SCREW, #10-32 x 3/8 LG.
10			
1 11	2	"A"	WARNING DECAL
1 12	2	"B"	WARNING DECAL (HIGH VOLTAGE)

NOTES:

1. APPLY (1) TO INSIDE AND (1) TO OUTSIDE OF ENCLOSURE COVER.
2. REMOVE PAINT FROM UNDER DIN RAIL

PLOT SCALE = 1 : 2

SYM	DATE	REVISION	BY

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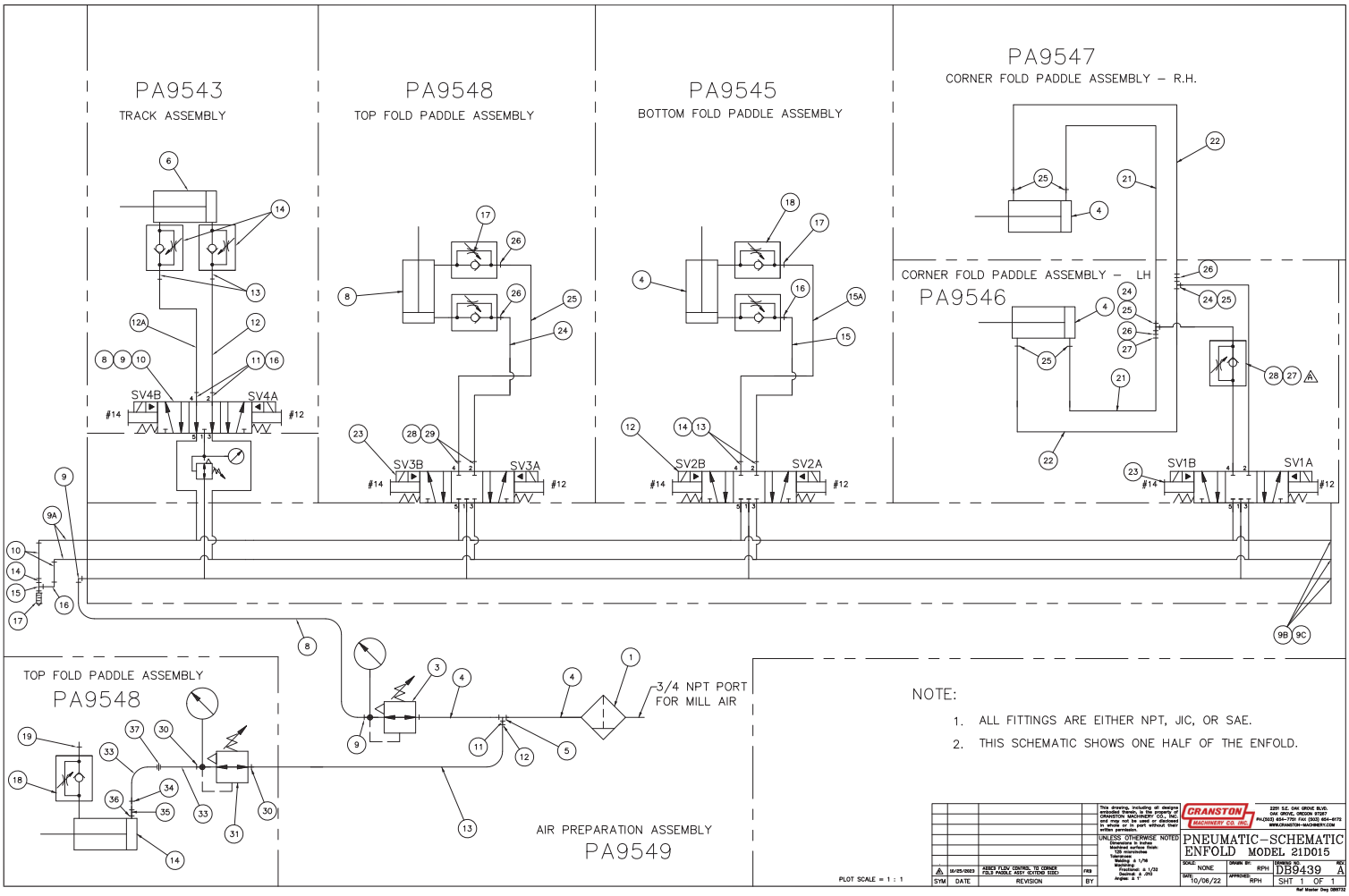
UNLESS OTHERWISE NOTED
Dimensions in inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

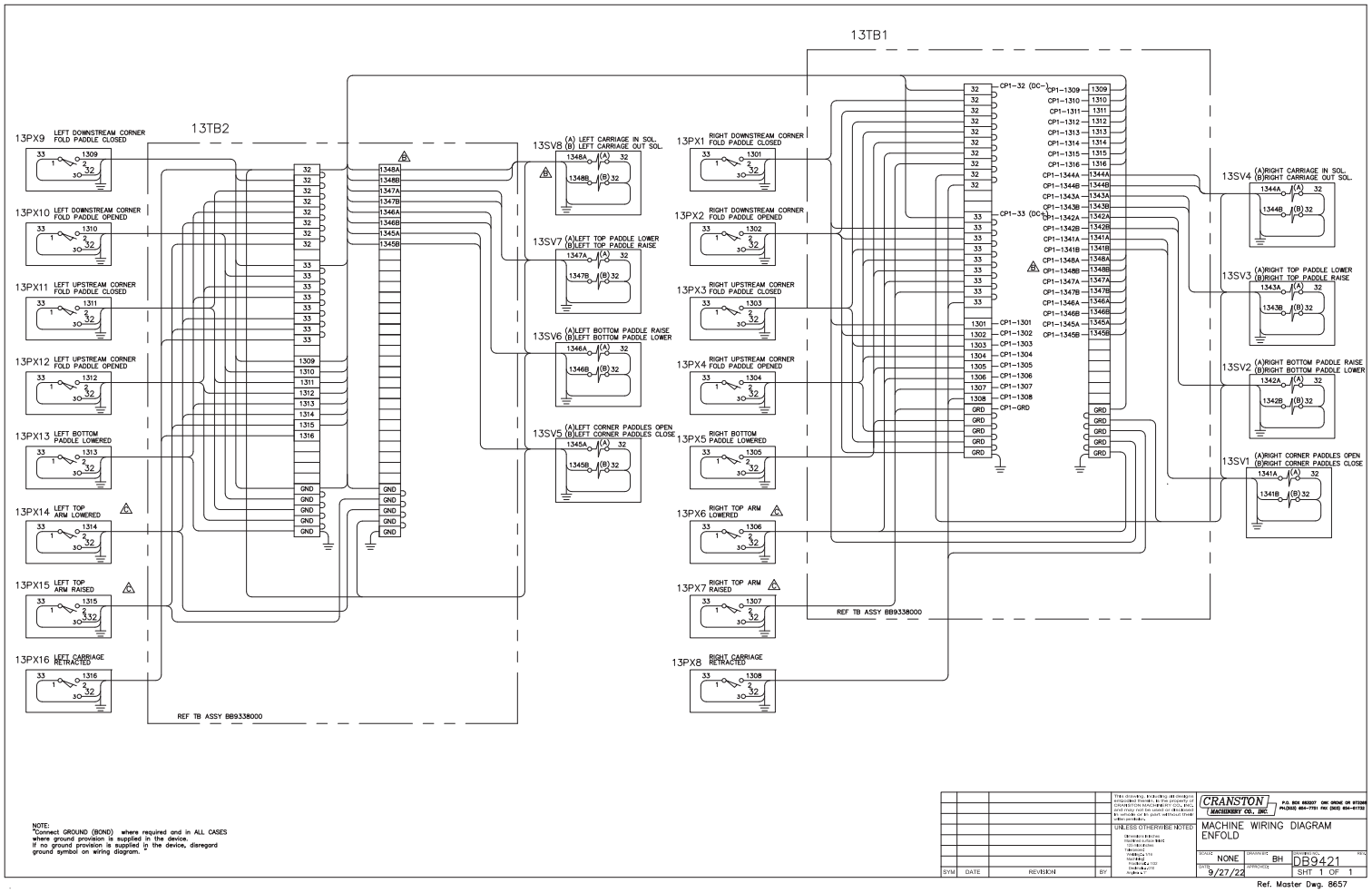
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TERMINAL BOX ASSEMBLY 12"x10"x5" ENCLOSURE (60 GRAY, 10 GND TERM.S)

SCALE:	DRAWN BY:	DRAWING NO.	REV.
1/2	JMH	BB9338	
DATE: 2/11/2016	APPROVED: JMH	SHT 1 OF 1	

Ref. Master Dwg. BB9251


PA9543
TRACK ASSEMBLY
PA9548
TOP FOLD PADDLE ASSEMBLY
PA9545
BOTTOM FOLD PADDLE ASSEMBLY
PA9547
CORNER FOLD PADDLE ASSEMBLY – R.H.
CORNER FOLD PADDLE ASSEMBLY – LH
PA9546
SV4B
SV4A
SV3B
SV3A
SV2B
SV2A
SV1B
SV1A
#14
#12
TOP FOLD PADDLE ASSEMBLY
PA9548
3/4 NPT PORT
FOR MILL AIR
AIR PREPARATION ASSEMBLY
PA9549
NOTE:
1. ALL FITTINGS ARE EITHER NPT, JIC, OR SAE.
2. THIS SCHEMATIC SHOWS ONE HALF OF THE ENFOLD.
GRANSTON MACHINERY CO. INC.
PNEUMATIC–SCHEMATIC
ENFOLD MODEL 21D015
SCALE: NONE
DRAWN BY: RPH
DRAWING NO: DB9439
REV: A
DATE: 10/06/22
APPROVED: RPH
SHT 1 OF 1
PLOT SCALE = 1 : 1



NOTE:
"Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device. If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY

UNLESS OTHERWISE NOTED:

CRANSTON MACHINERY CO., INC.
P.O. BOX 883307, OAK GROVE OR 97268
PH.(503) 654-7751 FAX (503) 654-6732

MACHINE WIRING DIAGRAM
ENFOLD

SCALE	DRAWN	DRAWING NO.	REV.
NONE	BH	DB9421	
DATE	APPROVED	SHT 1 OF 1	
9/27/22			

Ref. Master Dwg. 8657

MACHINE ASSEMBLY LIST

MODEL NO.: N/A

Title:	CONTROLS	**Issued for Serial No.:**	22018017
Description:	BULK HANDLING - BALE FINISHING SYSTEM	**Arrangement Drawing:**	NONE
		Master by:	BH **DATE:** 4/18/2023
		Issued By:	JMH **DATE:** 7/21/2023
		Revision:	**DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
	1		BB9795000	ELECTRICAL SCHEMATIC
	1		BB9813000	FIELD WIRING DIAGRAM
1	1	PA9563	DB9470000	CONTROL PANEL (CP1)
	1		DB9471000	CP1 PANEL WIRING
2	1	PA9568	CB6602000	CONTROL STATION (CS1)
	1		BB9804000	CS1 WIRING DIAGRAM
3	1	PA9569	CB6603000	CONTROL STATION (CS2)
	1		BB9805000	CS2 WIRING DIAGRAM
4	1	PA9570	CB6604000	CONTROL STATION (CS3)
	1		BB9806000	CS3 WIRING DIAGRAM

PARTS LIST

PA9563 **Drawing: DB9470000**

Title:	CONTROL PANEL	**Issued for Serial No.:**	22018017
Description:	BULK HANDLING SYSTEM	**Master by:**	BH **DATE:** 11/1/2022
		Issued By:	BH **DATE:** 7/21/2023
		Revision:	A **DATE:** 8/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	BB9795000		ELECTRICAL SCHEMATIC
	1	DB9471000		PANEL WIRING DIAGRAM
1	1	E26000304		ENCLOSURE CONSOLE, HOFFMAN: A604810LPG
2	1	E25000093		BACKPANEL, HOFFMAN: A60P48
3	1	E17500095		MOUNT RAIL, SIEMENS: 6ES7 590-1AE80-0AA0, S7-1500, 482MM
4	1	E17300145	*	PLC, SIEMENS: 6ES7 513-1FL02-0AB0, CPU 1513F-1 PN
	1	E17700071	*	MEMORY CARD, SIEMENS: 6ES7 954-8LL03-0AA0, 256MB
	1	BB7338006		ETHERNET CABLE
5	1	E17100283	*	SAFETY INPUT MODULE, SIEMENS: 6ES7 526-1BH00-0AB0, F-DI 16X24VDC
	1	E17700070	*	FRONT CONNECTOR, SIEMENS: 6ES7592-1BM00-0XB0
6	1	E17100284	*	SAFETY OUTPUT MODULE, SIEMENS: 6ES7 526-2BF00-0AB0, F-DQ 8X24VDC/2A PPM
	1	E17700070	*	FRONT CONNECTOR, SIEMENS: 6ES7592-1BM00-0XB0
7	1	E17100292	*	ANALOG INPUT MODULE, SIEMENS: 6ES7 531-7NF00-0AB0

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9563 **Drawing: DB9470000**

Title:	CONTROL PANEL	**Issued for Serial No.:**	22018017		
Description:	BULK HANDLING SYSTEM	**Master by:**	BH	**DATE:**	11/1/2022
		Issued By:	BH	**DATE:**	7/21/2023
		Revision:	A	**DATE:**	8/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
8	7	E17100285	*	INPUT MODULE, SIEMENS: 6ES7 521-1BH10-0AA0, DI 16X24VDC BA; W/FRONT CONNECTOR PUSH-IN
9	4	E17100286	*	OUPUT MODULE, SIEMENS: 6ES7 522-1BH10-0AA0, DQ 16X24VDC/0.5A BA; W/FRONT CONNECTOR PUSH-IN
10				NOT USED
11				NOT USED
12	1	E17600120	*	NETWORK SWITCH, WEIDMULLER: 1240900000, 8-PORT
13	1	E47000108	*	CIRCUIT BREAKER, SIEMENS: 15A, 1P, #5SJ4118-7HG41 (CB1)
14	4	E47000094	*	CIRCUIT BREAKER, SIEMENS: 6A, 1P, #5SJ4106-7HG41 (CB2, CB3, CB4, CB33)
15	2	E47000098	*	CIRCUIT BREAKER, 10A, SIEMENS #5SJ4110-7HG41 (CB31, CB40)
16	4	E47000097	*	CIRCUIT BREAKER, 3A, SIEMENS: 5SJ4103-7HG41 (CB35, CB36, CB37, CB38)

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9563 **Drawing: DB9470000**

Title:	CONTROL PANEL	**Issued for Serial No.:**	22018017
Description:	BULK HANDLING SYSTEM	**Master by:**	BH **DATE:** 11/1/2022
		Issued By:	BH **DATE:** 7/21/2023
		Revision:	A **DATE:** 8/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
17				NOT USED
18	2	E17200128	*	POWER SUPPLY, SIEMENS: 6EP1334-1LB00 (PS1, PS2)
19	64	E14000172	*	RELAY, PHOENIX CONTACT: 2900299, PLC-RPT-24DC/21
	64	E14200012		MARKER STRIP, PHOENIX CONTACT: 1051003
20	8	E14200010	*	PLC V8 ADAPTER, PHOENIX CONTACT: 2295554, PLC-V8-FLK14-OUT
	8	E17400183	*	CABLE, PHOENIX CONTACT: 2305279, CABLE-FLK14/OE/0,14/2,0M
21	7	E14200008		SEPARATOR, PHOENIX CONTACT: 2966841, PLC-ATP-BK
22	25	E38100143		GROUND TERMINAL, ALLEN BRADLEY: 1492-JG6
	50	E38200139		MARKER STRIP, ALLEN BRADLEY: 1492-M8X12
23	1	E38100128	*	END BARRIER, ALLEN BRADLEY: 1492-EBJ3-Y, YELLOW
24	12	E11000121	*	CONTACTOR, SIEMENS: 3RH2131-1BB40
25				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9563 **Drawing: DB9470000**

Title:	CONTROL PANEL	**Issued for Serial No.:**	22018017		
Description:	BULK HANDLING SYSTEM	**Master by:**	BH	**DATE:**	11/1/2022
		Issued By:	BH	**DATE:**	7/21/2023
		Revision:	A	**DATE:**	8/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
26	1	E38200038		DIN RAIL, ALLEN BRADLEY #199-DR1, 18.5" LG
27	3	E38200038		DIN RAIL, ALLEN BRADLEY #199-DR1, 38" LG
28	25	E38200115		END ANCHOR, ALLEN BRADLEY #1492-EAJ35
29	5	E38100105		TERMINAL, ALLEN BRADLEY #1492-J6
	10	E38200139		MARKING STRIP, ALLEN BRADLEY: 1492-MR8X12
30	262	E38100116		TERMINAL, BLUE, ALLEN BRADLEY #1492-J3-B
	524	E38200117		MARKING STRIP, ALLEN BRADLEY: 1492-M5X12
31				NOT USED
32	19	E38100118		END BARRIER, ALLEN BRADLEY: 1492-EBJ3-B, BLUE
33	1	E38100117		END BARRIER, ALLEN BRADLEY #1492-EBJ3, GRAY
34				NOT USED
35	2	E19000028		DUCT, TYTON #SL-3X4-W, 44" LG

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9563 **Drawing: DB9470000**

Title:	CONTROL PANEL	**Issued for Serial No.:**	22018017		
Description:	BULK HANDLING SYSTEM	**Master by:**	BH	**DATE:**	11/1/2022
		Issued By:	BH	**DATE:**	7/21/2023
		Revision:	A	**DATE:**	8/11/2023

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	2	E19000021		DUCT COVER, TYTON #TC3, 44" LG
36	4	E19000028		DUCT, TYTON #SL-3X4-W, 38" LG
	4	E19000021		DUCT COVER, TYTON #TC3, 38" LG
37	1	E19000027		DUCT, TYTON: SL-2X4-W, 10" LG
	1	E19000020		DUCT COVER, TYTON: TC2, 10" LG
38	1	E19000027		DUCT, TYTON: SL-2X4-W, 19" LG
	1	E19000020		DUCT COVER, TYTON: TC2, 19" LG
39	1	E19000027		DUCT, TYTON: SL-2X4-W, 51" LG
	1	E19000020		DUCT COVER, TYTON: TC2, 51" LG
40	1	M25000018		CORPORATE PLATE
	8			SCREW, 6-32

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9568 **Drawing: CB6602000**

Title: OPERATION INTERFACE STATION - CS1
Description:

Issued for Serial No.: 22018017
Master by: BH **DATE:** 11/11/2022
Issued By: BH **DATE:** 12/16/2022
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	BB9804000		WIRING DIAGRAM - CONTROL STATION 1
1	1	CB6601000		CONTROL STATION DRILLING
2	1	E17900052		OPERATOR INTERFACE, SIEMENS: #6AV2 1240-MC01-0AX0
3				NOT USED
4	1	E13100145		PUSHBUTTON, ILLUMINATED RED, MAINTAINED,
				ALLEN BRADLEY: #800FP-LMT44MN3RX02
	1	E23500059		LEGEND PLATE, ALLEN BRADLEY: #800F-15YSE112
5	20	E38100116		TERMINAL, BLUE, ALLEN BRADLEY #1492-J3-B
	40	E38200117		MARKING STRIP, ALLEN BRADLEY: 1492-M5X12
6	3	E38100118		END BARRIER, ALLEN BRADLEY: 1492-EBJ3-B, BLUE
7	2	E38200115		END ANCHOR, ALLEN BRADLEY #1492-EAJ35
8				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9568 **Drawing: CB6602000**

Title:	OPERATION INTERFACE STATION - CS1	**Issued for Serial No.:**	22018017
Description:		**Master by:**	BH **DATE:** 11/11/2022
		Issued By:	BH **DATE:** 12/16/2022
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	E38200038		DIN RAIL, ALLEN BRADLEY #199-DR1
10	5	E38100143		GROUND TERMINAL, ALLEN BRADLEY: 1492-JG6
	10	E38200139		MARKER STRIP, ALLEN BRADLEY: 1492-M8X12
11	1			NOT USED
12	1	AA7731000		NAME PLATE (TRAINED PERSONNEL)
13	1	AA6144000		DECAL
14	1	AA7775000		NAME PLATE, CS1

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9569 **Drawing: CB6603000**

Title:	OPERATION INTERFACE STATION - CS2	**Issued for Serial No.:**	22018017
Description:		**Master by:** BH	**DATE:** 11/11/2022
		Issued By: BH	**DATE:** 11/11/2022
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	BB9805000		WIRING DIAGRAM - CONTROL STATION 2
1	1	CB6601000		CONTROL STATION DRILLING
2	1	E17900052		OPERATOR INTERFACE, SIEMENS: #6AV2 1240-MC01-0AX0
3				NOT USED
4	1	E13100145		PUSHBUTTON, ILLUMINATED RED, MAINTAINED,
				ALLEN BRADLEY: #800FP-LMT44MN3RX02
	1	E23500059		LEGEND PLATE, ALLEN BRADLEY: #800F-15YSE112
5	20	E38100116		TERMINAL, BLUE, ALLEN BRADLEY #1492-J3-B
	40	E38200117		MARKING STRIP, ALLEN BRADLEY: 1492-M5X12
6	3	E38100118		END BARRIER, ALLEN BRADLEY: 1492-EBJ3-B, BLUE
7	2	E38200115		END ANCHOR, ALLEN BRADLEY #1492-EAJ35
8				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9569 **Drawing: CB6603000**

Title: OPERATION INTERFACE STATION - CS2
Description:

Issued for Serial No.: 22018017
Master by: BH **DATE:** 11/11/2022
Issued By: BH **DATE:** 11/11/2022
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	E38200038		DIN RAIL, ALLEN BRADLEY #199-DR1
10	5	E38100143		GROUND TERMINAL, ALLEN BRADLEY: 1492-JG6
	10	E38200139		MARKER STRIP, ALLEN BRADLEY: 1492-M8X12
11				NOT USED
12	1	AA7731000		NAME PLATE (TRAINED PERSONNEL)
13	1	AA6144000		DECAL
14	1	AA7776000		NAME PLATE, CS2

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

PARTS LIST

PA9570 **Drawing: CB6604000**

Title:	OPERATION INTERFACE STATION - CS3	**Issued for Serial No.:**	22018017
Description:		**Master by:**	BH **DATE:** 11/11/2022
		Issued By:	BH **DATE:** 7/21/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
	1	BB9806000		WIRING DIAGRAM - CONTROL STATION 3
1	1	CB6601000		CONTROL STATION DRILLING
2	1	E17900052		OPERATOR INTERFACE, SIEMENS: #6AV2 1240-MC01-0AX0
3				NOT USED
4	1	E13100145		PUSHBUTTON, ILLUMINATED RED, MAINTAINED,
				ALLEN BRADLEY: #800FP-LMT44MN3RX02
	1	E23500059		LEGEND PLATE, ALLEN BRADLEY: #800F-15YSE112
5	20	E38100116		TERMINAL, BLUE, ALLEN BRADLEY #1492-J3-B
	40	E38200117		MARKING STRIP, ALLEN BRADLEY: 1492-M5X12
6	3	E38100118		END BARRIER, ALLEN BRADLEY: 1492-EBJ3-B, BLUE
7	2	E38200115		END ANCHOR, ALLEN BRADLEY #1492-EAJ35
8				NOT USED

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART

NOT COVERED BY WARRANTY

PARTS LIST

PA9570 **Drawing: CB6604000**

Title:	OPERATION INTERFACE STATION - CS3	**Issued for Serial No.:**	22018017
Description:		**Master by:**	BH **DATE:** 11/11/2022
		Issued By:	BH **DATE:** 7/21/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
9	1	E38200038		DIN RAIL, ALLEN BRADLEY #199-DR1
10	5	E38100143		GROUND TERMINAL, ALLEN BRADLEY: 1492-JG6
	10	E38200139		MARKER STRIP, ALLEN BRADLEY: 1492-M8X12
11				NOT USED
12	1	AA7731000		NAME PLATE (TRAINED PERSONNEL)
13	1	AA6144000		DECAL
14	1	AA7777000		NAME PLATE, CS3
15	1	BB9806000		WIRING DIAGRAM - CONTROL STATION 3

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

ELECTRICAL DRAWINGS REFERENCE

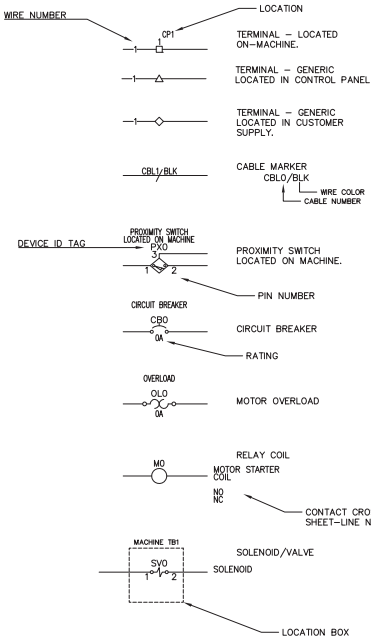
BB9795 – ELECTRICAL SCHEMATIC
- SHT 1 – REFERENCE
- SHT 2 – MOTOR CONNECTIONS
- SHT 3 – MOTOR CONNECTIONS
- SHT 4 – MOTOR CONNECTIONS
- SHT 5 – CONTROL POWER
- SHT 6 – SAFETY INPUTS
- SHT 7 – SAFETY OUTPUTS
- SHT 8 – PLC INPUTS
- SHT 9 – PLC INPUTS
- SHT 10 – PLC INPUTS
- SHT 11 – PLC INPUTS
- SHT 12 – PLC INPUTS
- SHT 13 – PLC INPUTS
- SHT 14 – PLC INPUTS
- SHT 15 – PLC INPUTS
- SHT 16 – PLC OUTPUTS
- SHT 17 – PLC OUTPUTS
- SHT 18 – PLC OUTPUTS
- SHT 19 – PLC OUTPUTS
- SHT 20 – PLC OUTPUTS

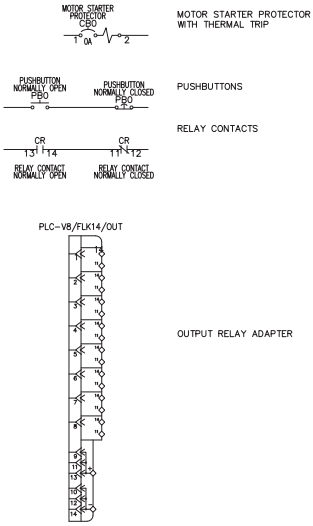
DB9470 – CONTROL PANEL ASSEMBLY ARRANGEMENT

DB9471 – CONTROL PANEL WIRING

CB6582 – MACHINE WIRING DIAGRAM 001 SHUTTLE CONVEYOR
CB6583 – MACHINE WIRING DIAGRAM 002 SHUTTLE CONVEYOR
CB6584 – MACHINE WIRING DIAGRAM 003 TURN CONVEYOR
BB9783 – MACHINE WIRING DIAGRAM 004 STORAGE CONVEYOR
BB9784 – MACHINE WIRING DIAGRAM 005 STORAGE CONVEYOR
DB9422 – MACHINE WIRING DIAGRAM 008 ECONORAP
CB6591 – MACHINE WIRING DIAGRAM 009 STRAPPER CONVEYOR
DB9420 – MACHINE WIRING DIAGRAM 012 TURNTABLE CONVEYOR
DB9421 – MACHINE WIRING DIAGRAM 013 ENFOLD
BB9788 – MACHINE WIRING DIAGRAM 014 STORAGE CONVEYOR
BB9789 – MACHINE WIRING DIAGRAM 015 STORAGE CONVEYOR

DRAWING SYMBOLS USED





22018017

SYM	DATE	REVISION	BY
1	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
3	04/18/23	FOR RELEASE	BH

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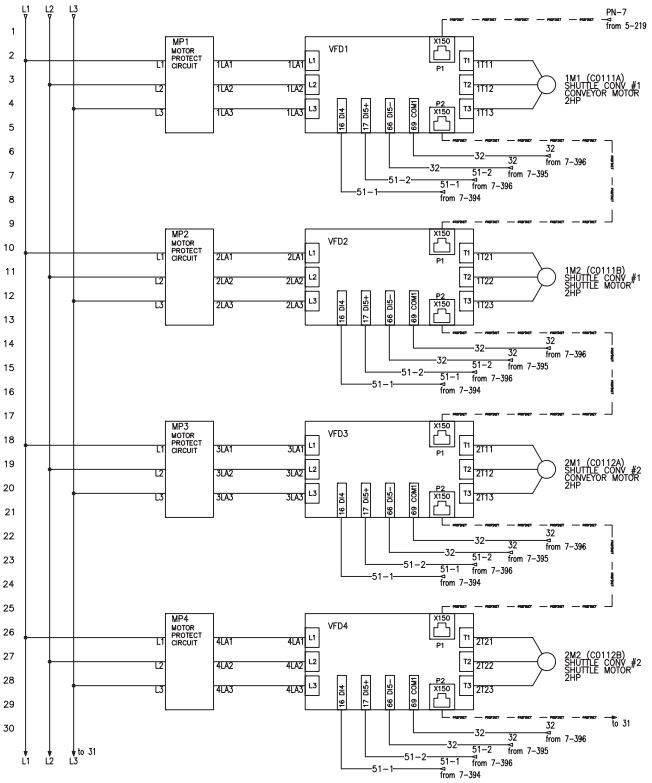
NOTE:
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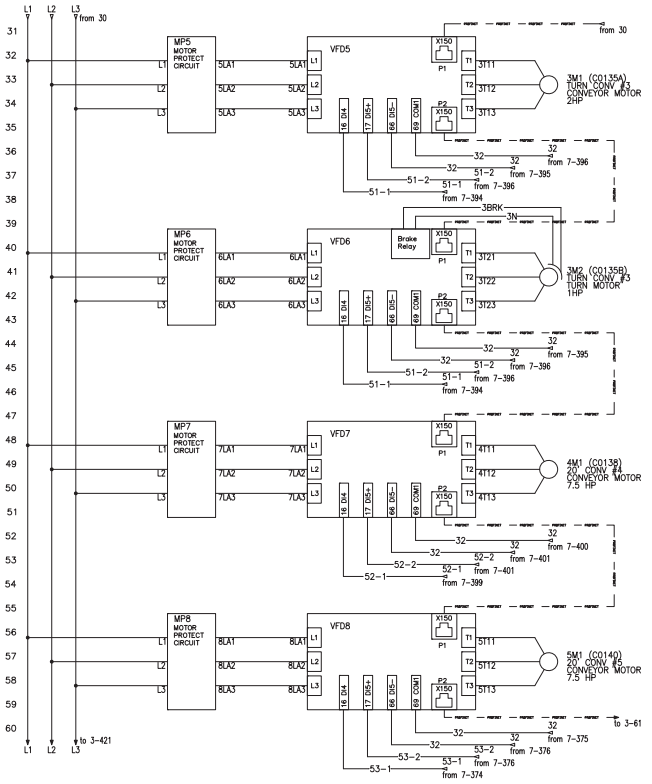
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OAK GROVE, OREGON 97267
PH.(503) 654–7721 FAX (503) 654–8172
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ELECTRICAL SCHEMATIC REFERENCE

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979501	C
DATE:	APPROVED:	SHT 1 OF 21	
10/11/22	JMH		

Ref. Master Dwg. BB9520





22018017

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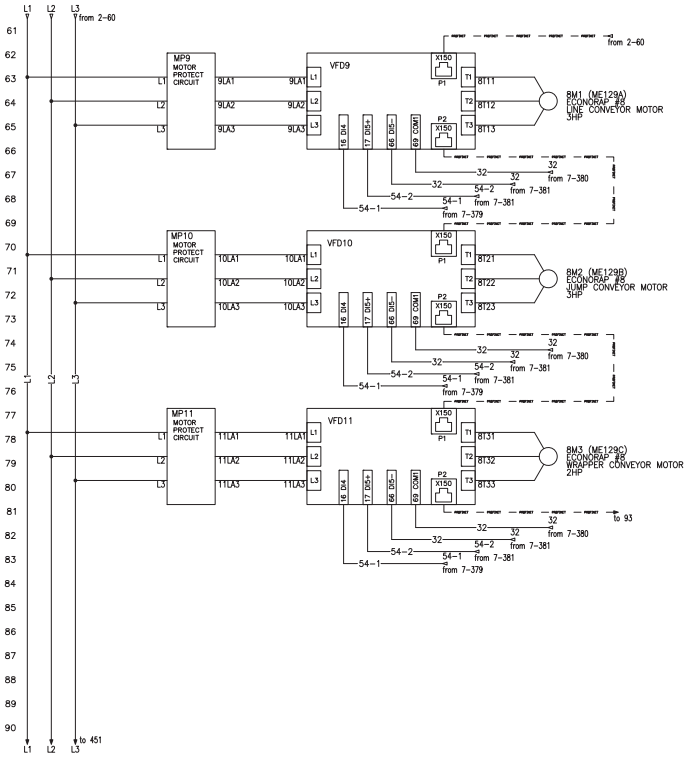
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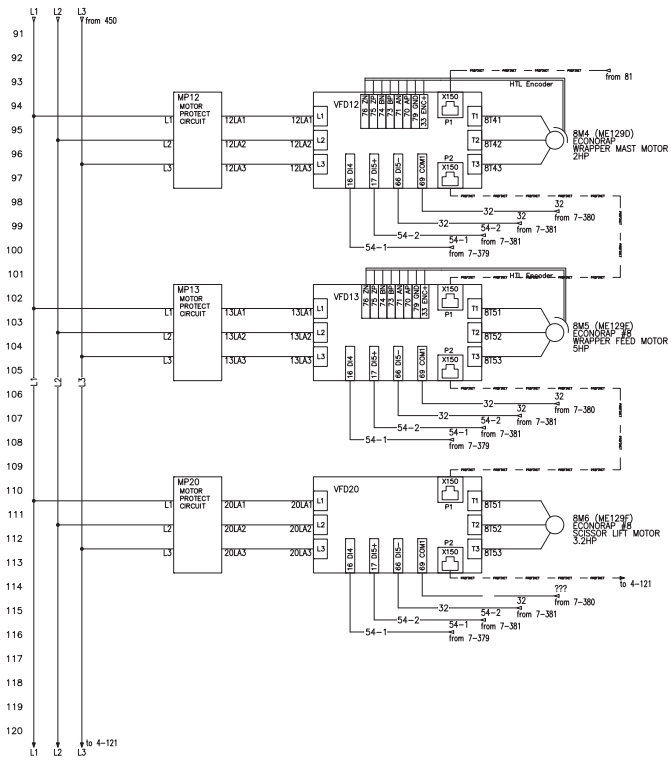
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ELECTRICAL SCHEMATIC
MOTOR CONNECTIONS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979502	C
DATE: 10/11/22	APPROVED: JMH	SHT 2 OF 21	

Ref. Master Dwg. BB9920





22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
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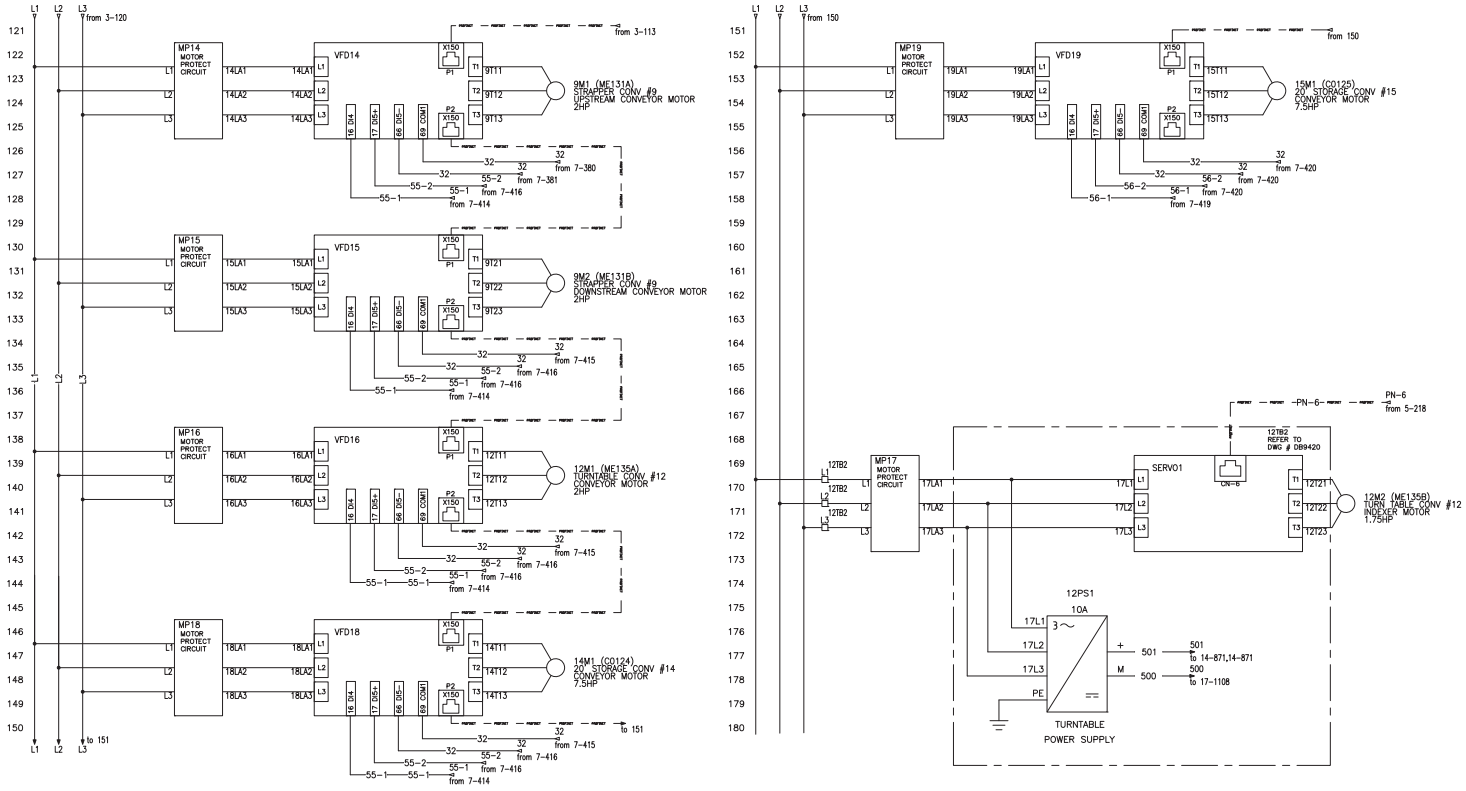
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ELECTRICAL SCHEMATIC
MOTOR CONNECTIONS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979503	C
DATE: 10/11/22	APPROVED: JMH	SHT 3 OF 21	

Ref. Master Dwg. BB9520



22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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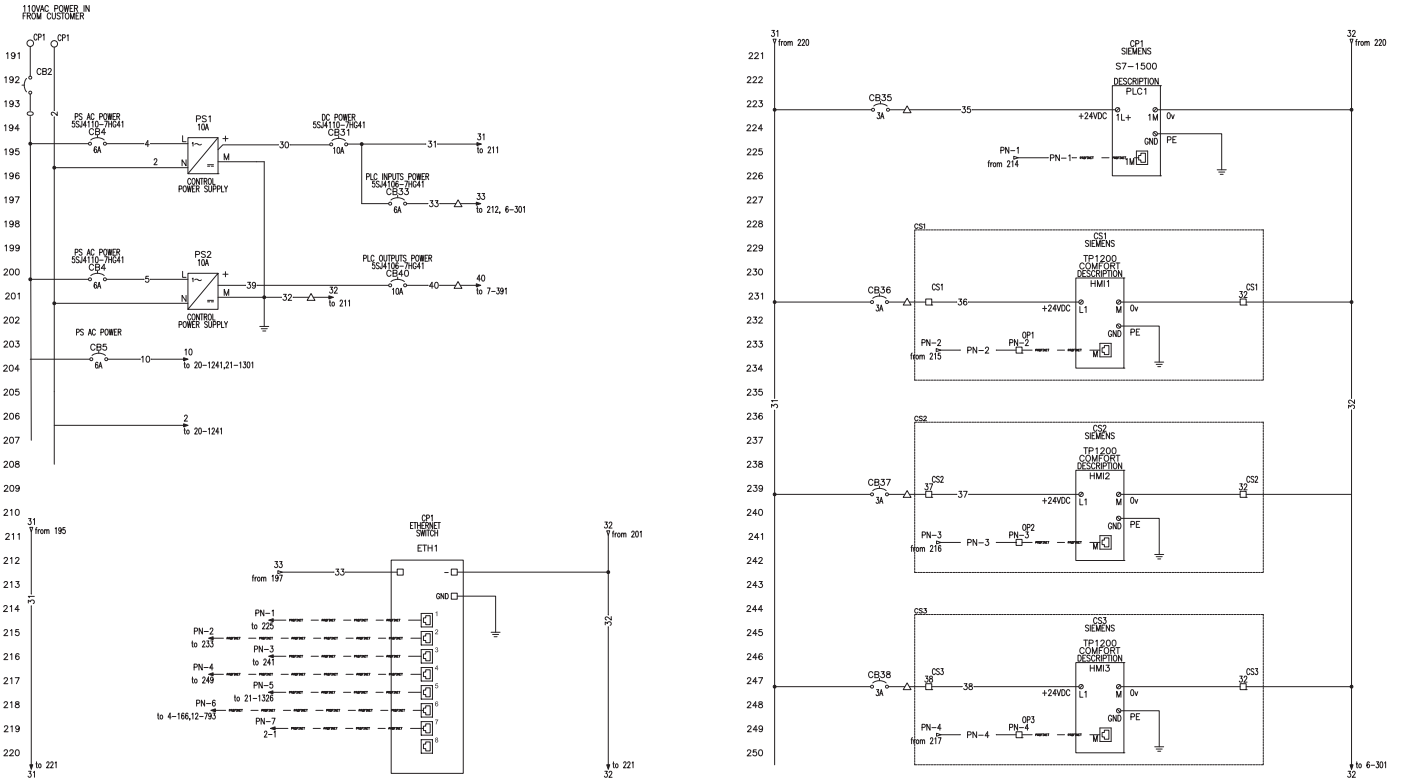
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ELECTRICAL SCHEMATIC
MOTOR CONNECTIONS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979504	C
DATE: 10/11/22	APPROVED: JMH	SHT 4 OF 21	

Ref. Master Dwg. BB9920



22018017

SYM	DATE	REVISION	BY
1	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

NOTE:
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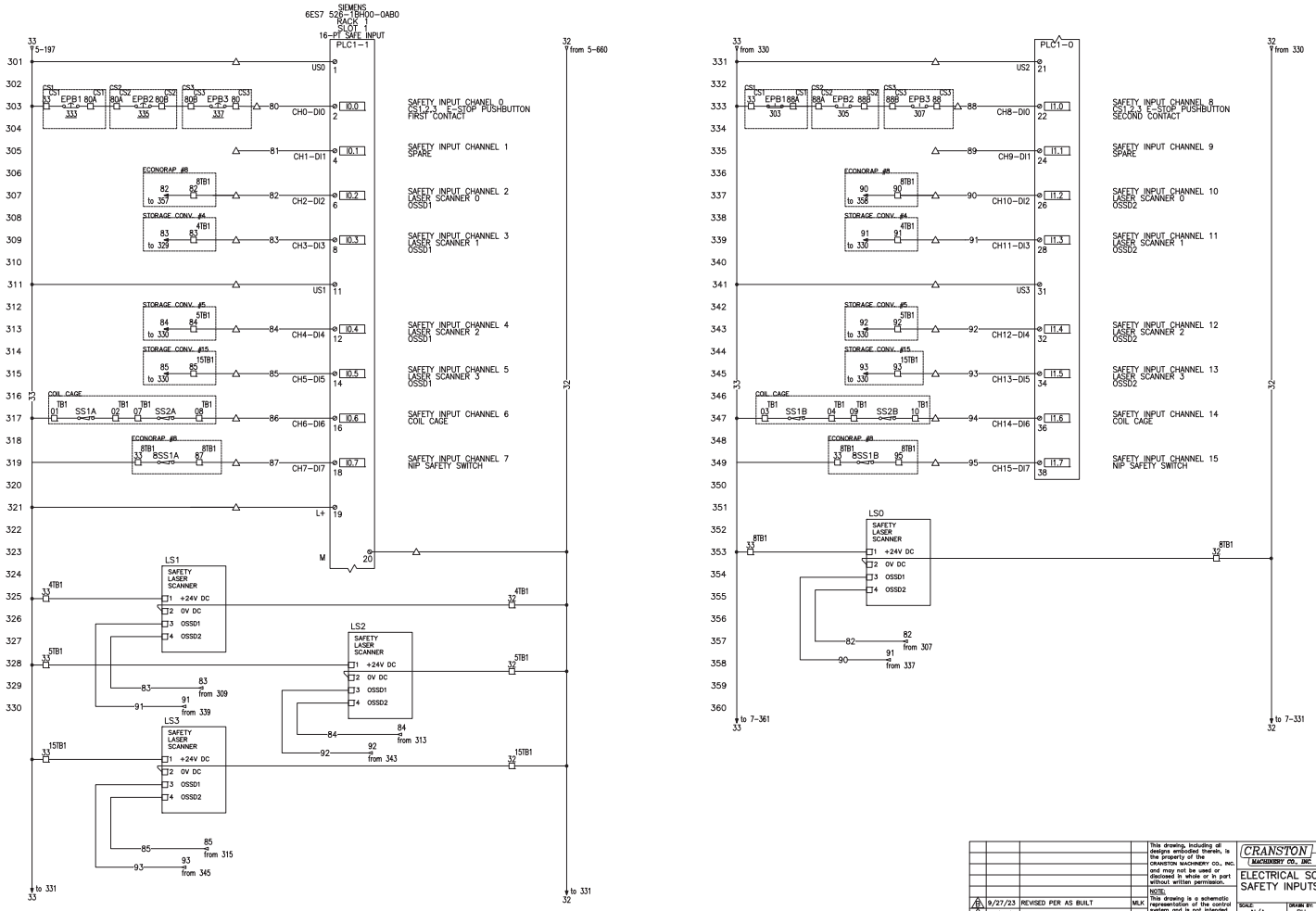
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ELECTRICAL SCHEMATIC
CONTROL POWER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979505	C
DATE:	APPROVED:	SHT 5 OF 21	
10/11/22	JMH		

Ref. Master Dwg. BB9520



22018017

SYM	DATE	REVISION	BY
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2	04/18/23	FOR RELEASE	BH

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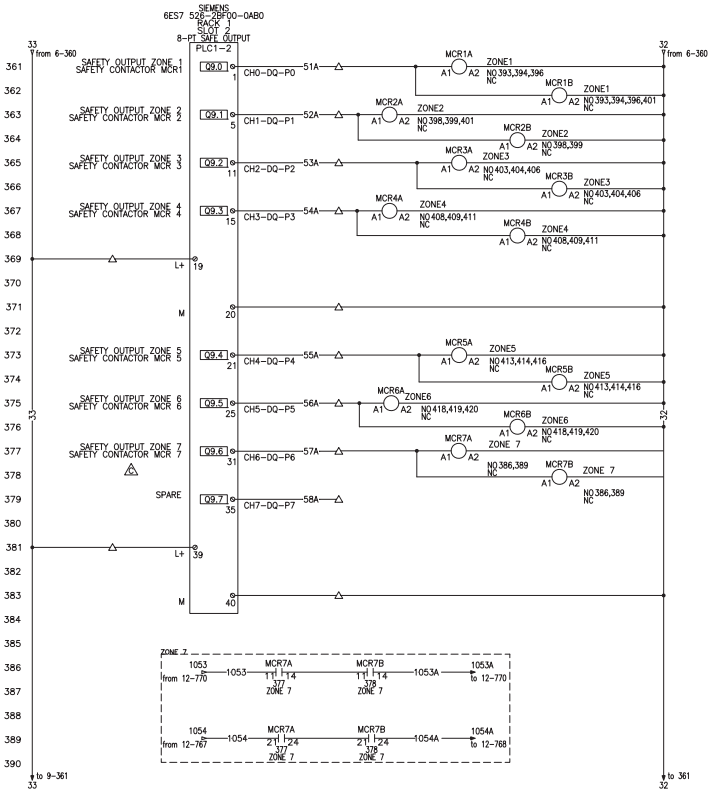
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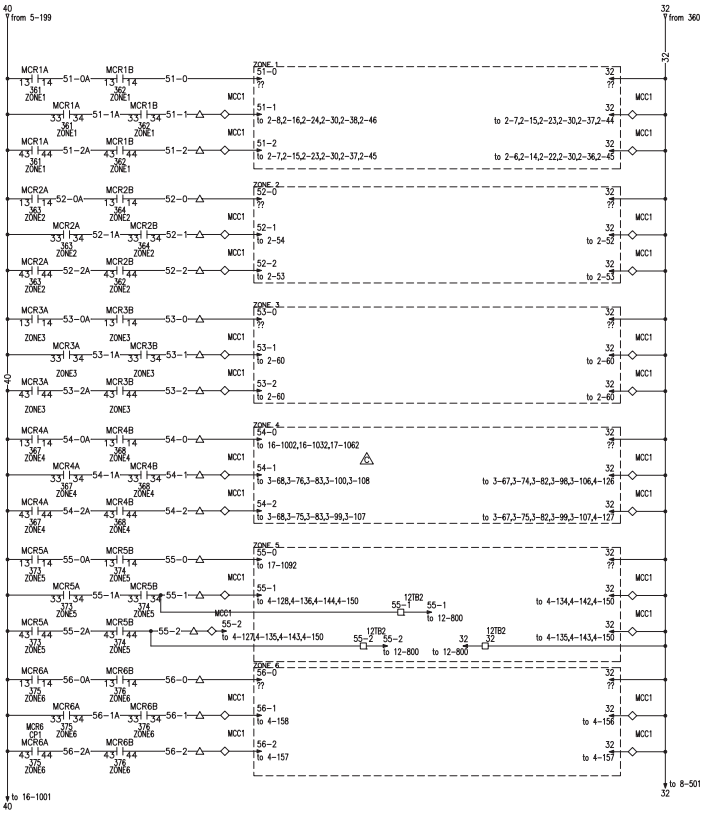
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ELECTRICAL SCHEMATIC
SAFETY INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979506	B
DATE: 10/11/22	APPROVED: JMH	SHT 6 OF 21	

Ref. Master Dwg. BB9820





REFERENCE

ZONE : MACHINE

1: SHUTTLE CONVEYOR #1, SHUTTLE CONVEYOR #2, TURN CONVEYOR #3
2: STORAGE CONVEYOR #4
3: STORAGE CONVEYOR #5
4: ECONORAP #6
5: STRAPPER CONVEYOR #9, ENFOLD TURN TABLE CONVEYOR #12, ENFOLD #13, STORAGE CONVEYOR #14
6: STORAGE CONVEYOR #15
7: EP STRAPPER #10, EZ THREAD COIL DISPENSER #11

22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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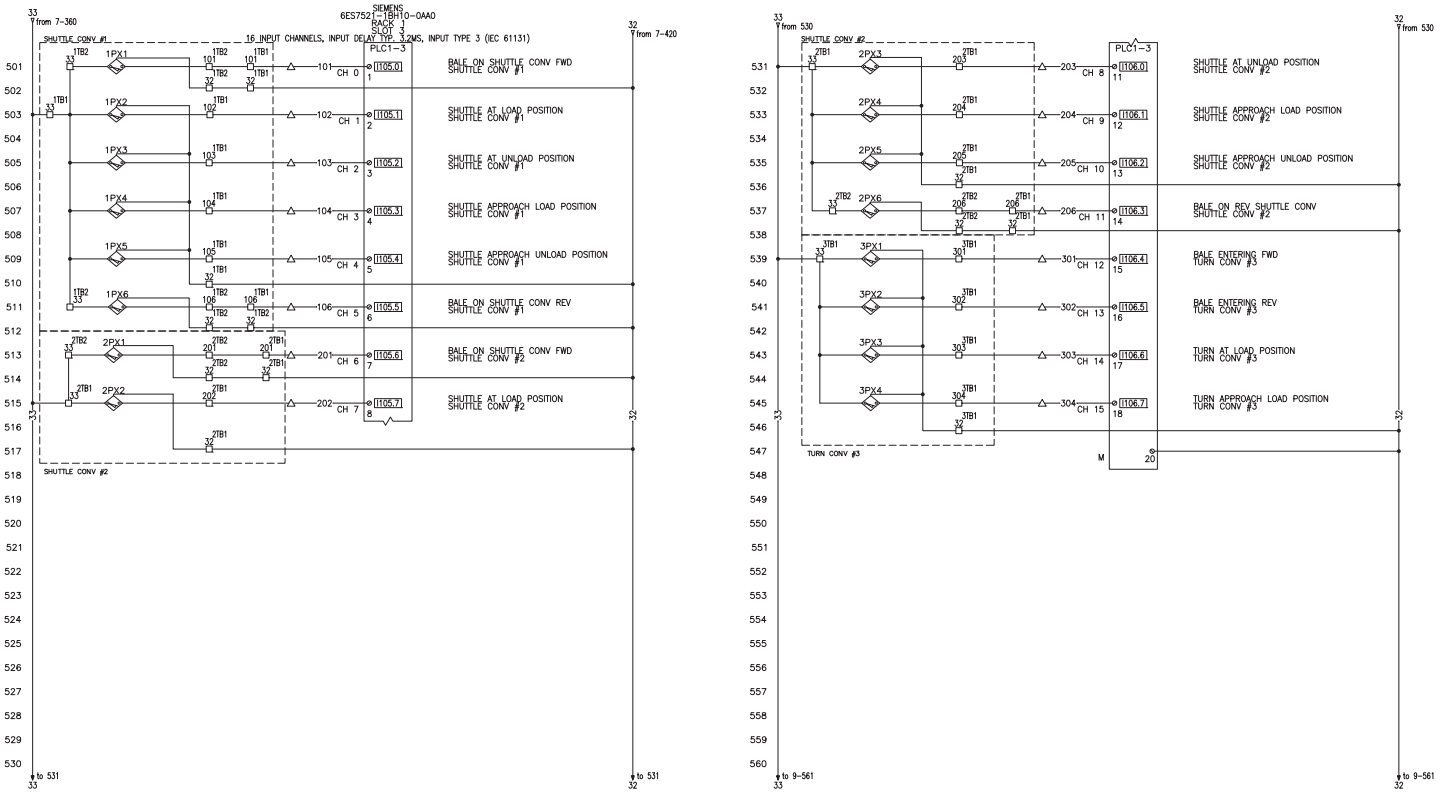
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ELECTRICAL SCHEMATIC
SAFETY OUTPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979507	C
DATE: 10/11/22	APPROVED: JMH	SHT 7 OF 21	

Ref. Master Dwg. BB9520



22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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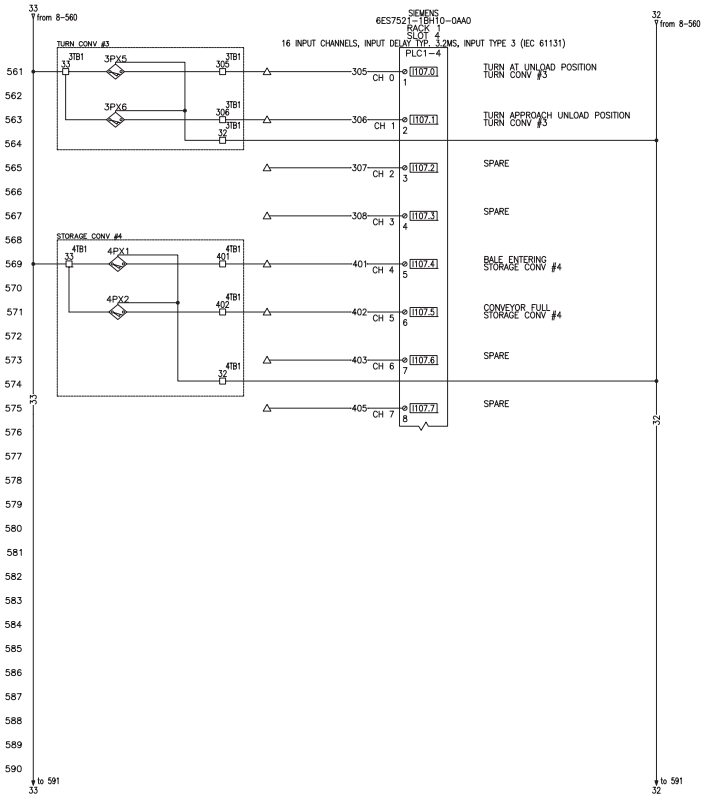
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

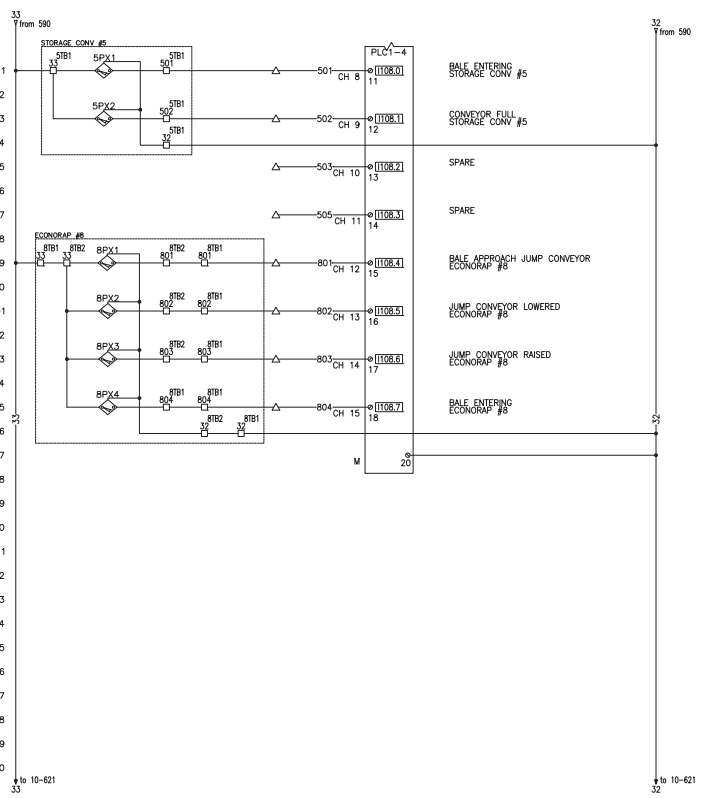
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ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979508	C
DATE: 10/11/22	APPROVED: JMH	SHT 8 OF 21	

Ref. Master Dwg. BB9820





22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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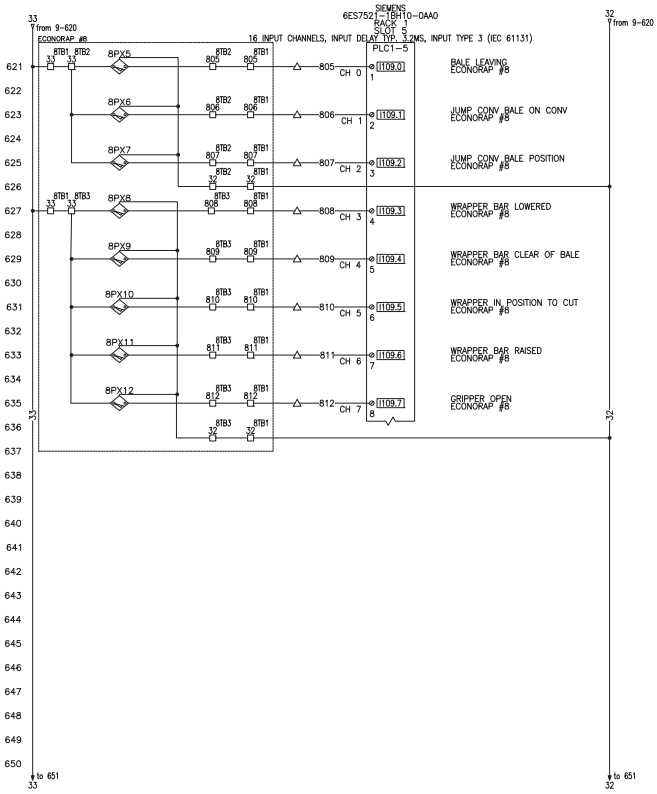
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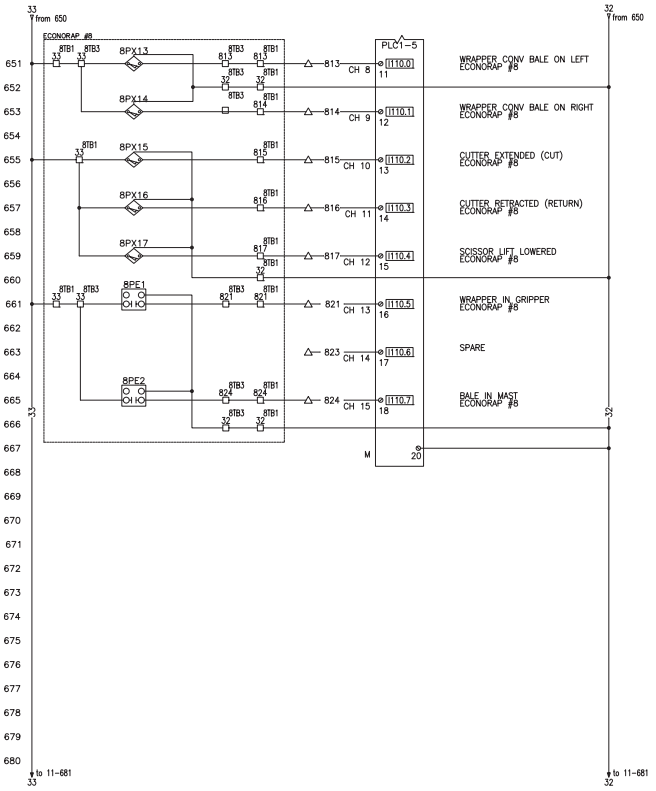
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ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979509	C
DATE: 10/11/22	APPROVED: JMH	SHT 9 OF 21	

Ref. Master Dwg. BB9520





22018017

SYM	DATE	REVISION	BY
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2	9/27/23	REVISED AS PANEL BUILT	MLK
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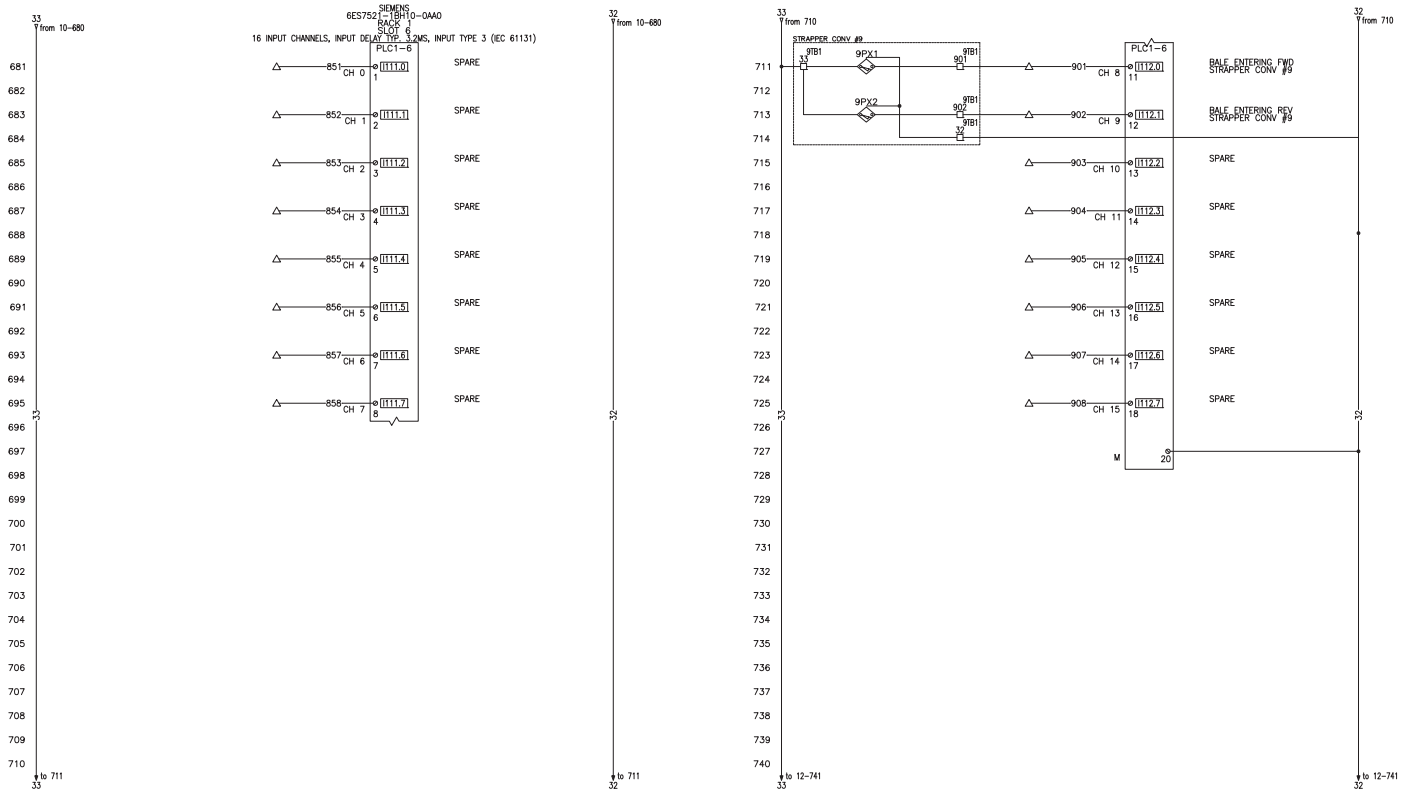
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ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979510	C
DATE: 10/11/22	APPROVED: JMH	SHT 10 OF 21	

Ref. Master Dwg. BB9820



22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

NOTE:
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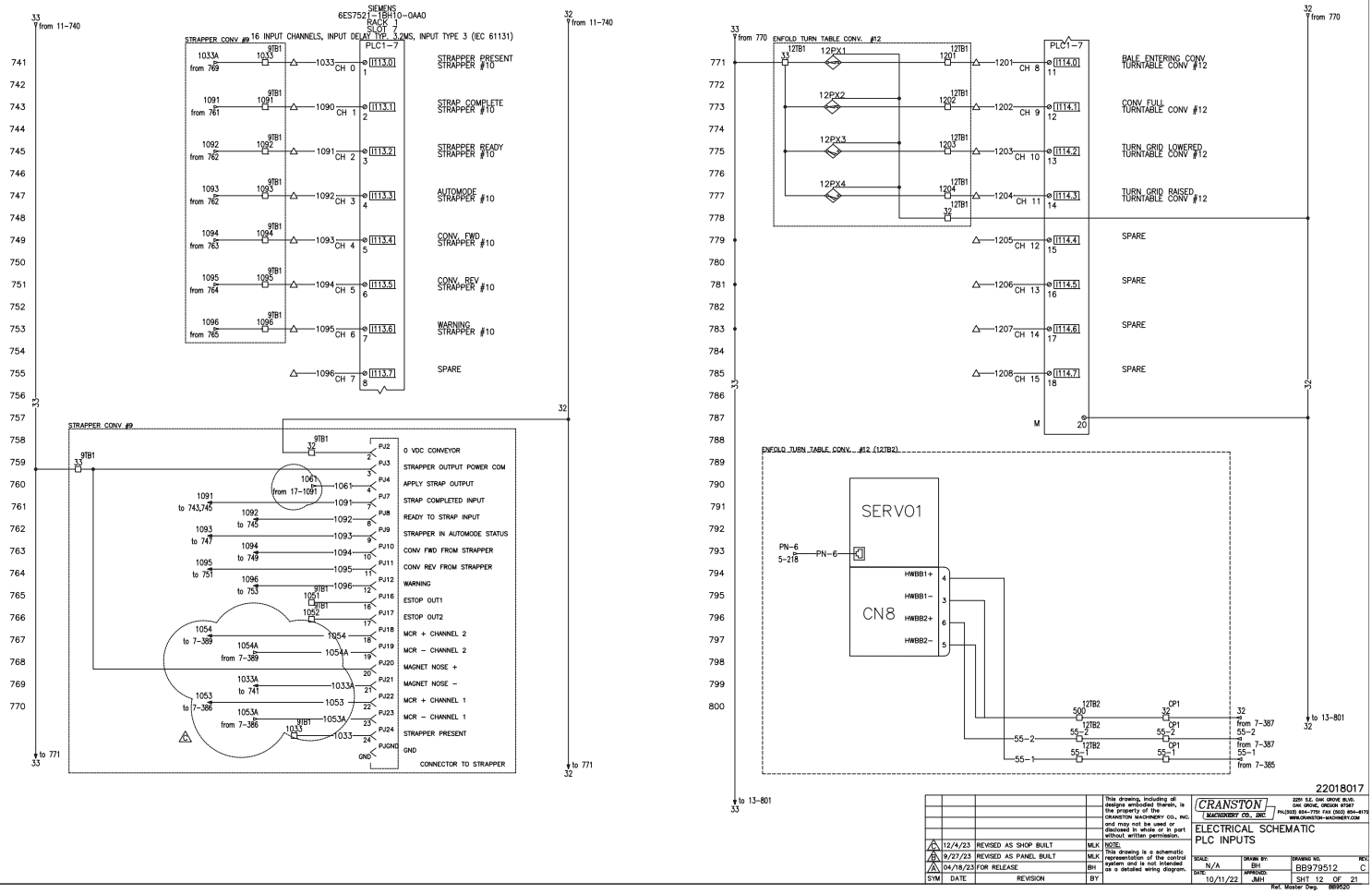
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ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979511	C
DATE: 10/11/22	APPROVED: JMH	SHT 11 OF 21	

Ref. Master Dwg. BB9520



22018017

SYM	DATE	REVISION	BY
A	12/4/23	REVISED AS SHOP BUILT	MLK
A	9/27/23	REVISED AS PANEL BUILT	MLK
A	04/18/23	FOR RELEASE	BH

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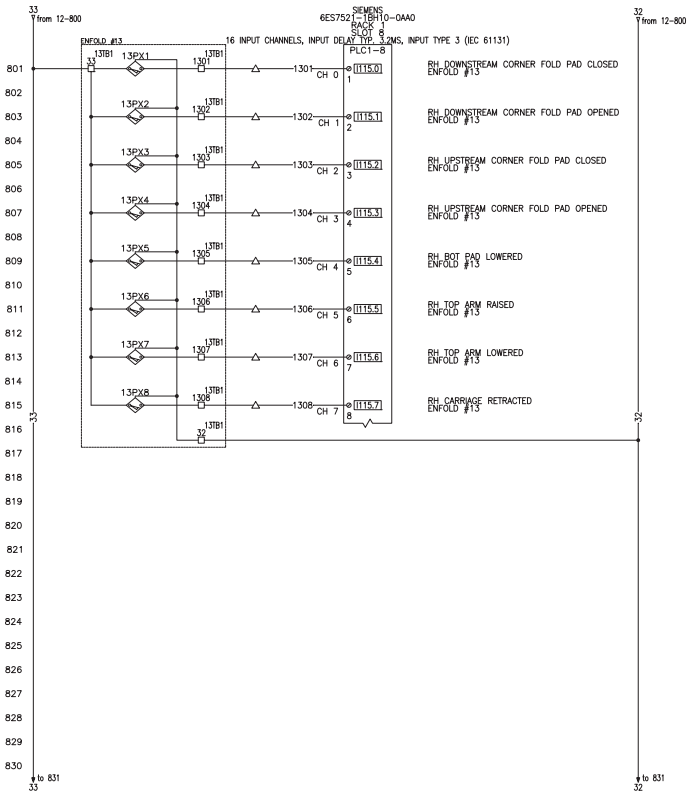
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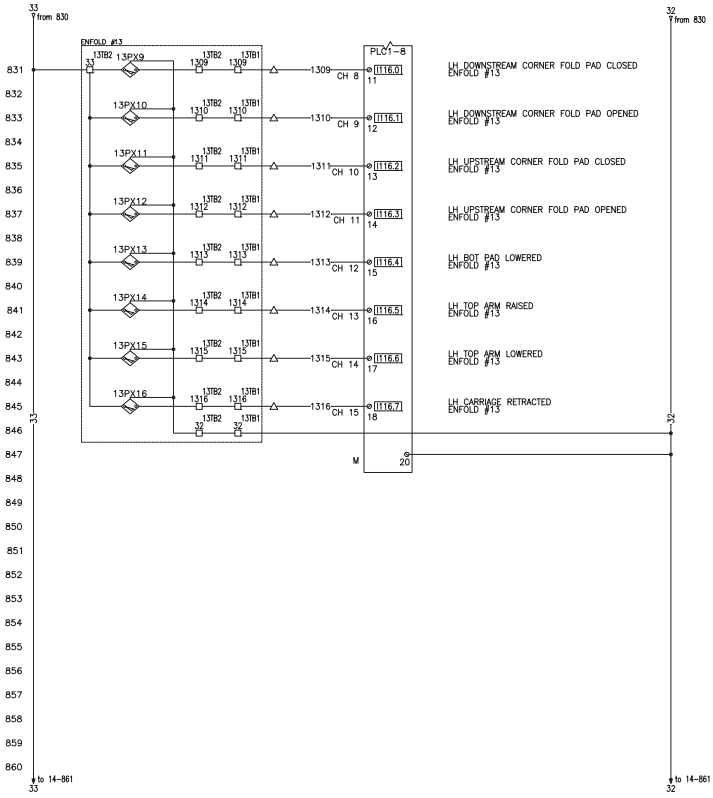
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OAK GROVE, OREGON 97267
PH.(503) 656-7755 FAX (503) 654-8172
WWW.CRANSTON-MACHINERY.COM

ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979512	C
DATE: 10/11/22	APPROVED: JMH	SHT 12 OF 21	

Ref. Master Dwg. BB9820





22018017

SYM	DATE	REVISION	BY
1	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

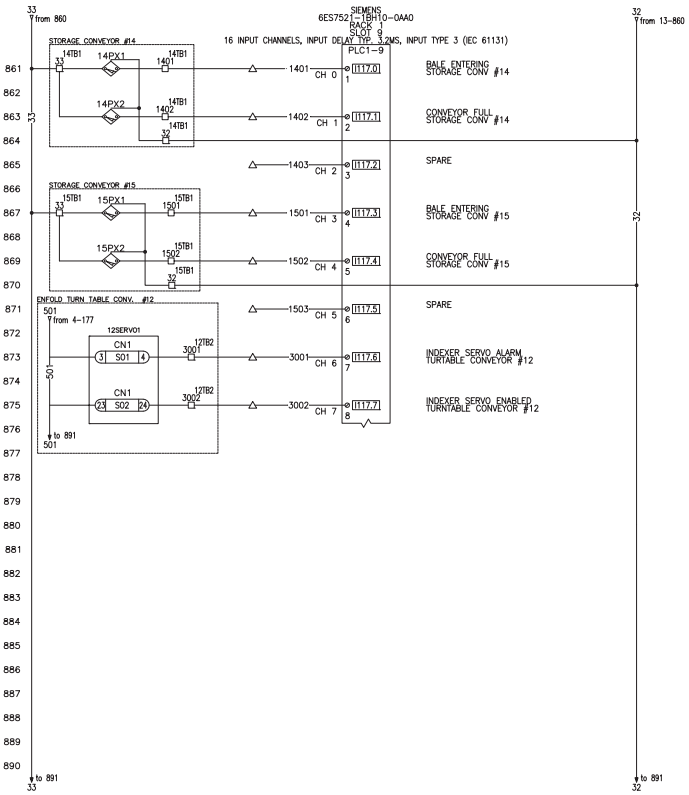
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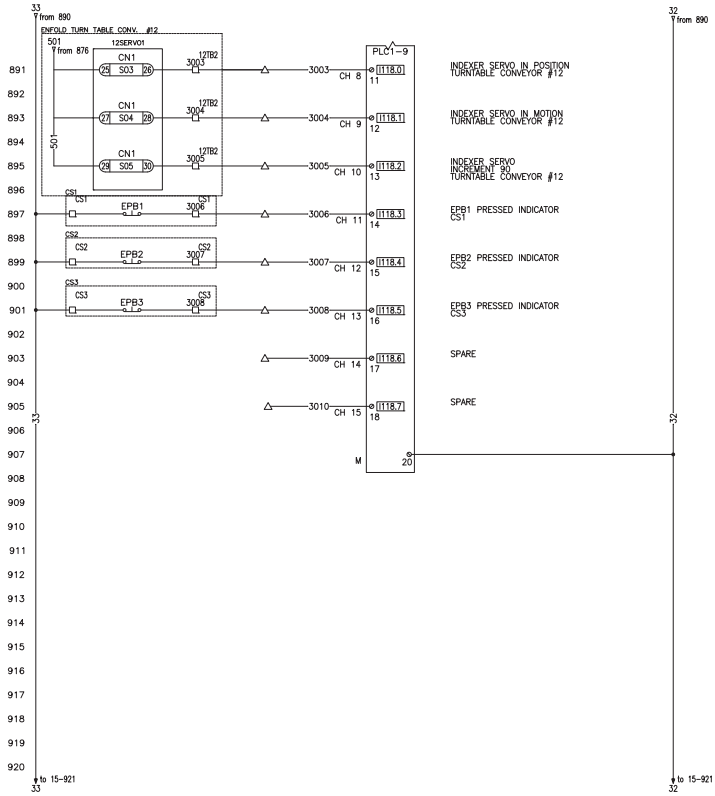
CRANSTON MACHINERY CO., INC.
2291 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7731 FAX (503) 654-8173
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ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV:
N/A	BH	BB979513	C
DATE:	APPROVED:	SHT 13 OF 21	
10/11/22	JMH		

Ref. Master Dwg. BB9520





22018017

SYM	DATE	REVISION	BY
A	12/4/23	REVISED AS SHOP BUILT	MLK
B	9/27/23	REVISED AS PANEL BUILT	MLK
A	04/18/23	FOR RELEASE	BH

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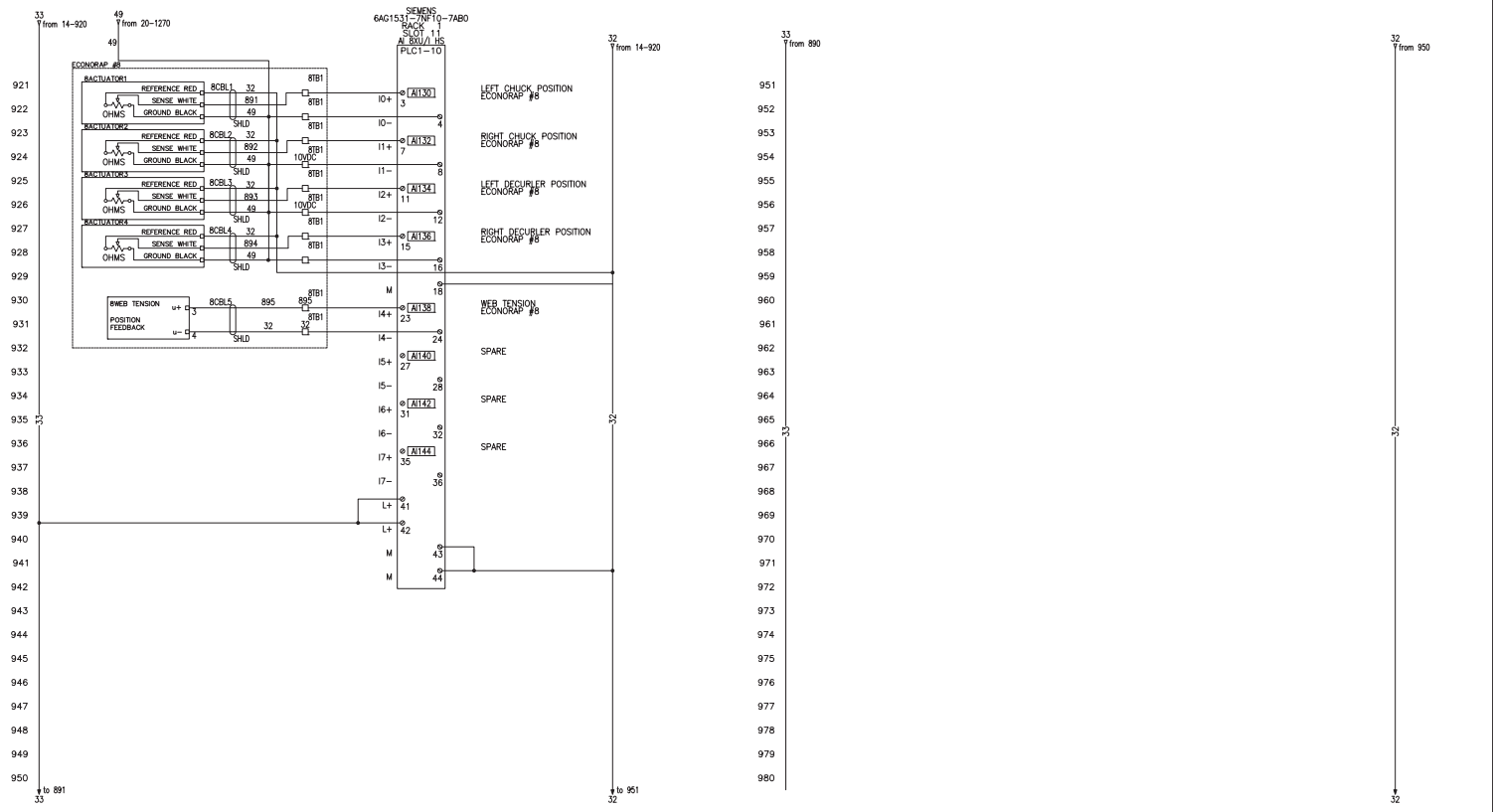
NOTE:
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CRANSTON MACHINERY CO., INC.
22M S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979514	C
DATE: 10/11/22	APPROVED: JMH	SHT 14 OF 21	

Ref. Master Dwg. BB9820



22018017

SYM	DATE	REVISION	BY
1	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
3	04/18/23	FOR RELEASE	BH

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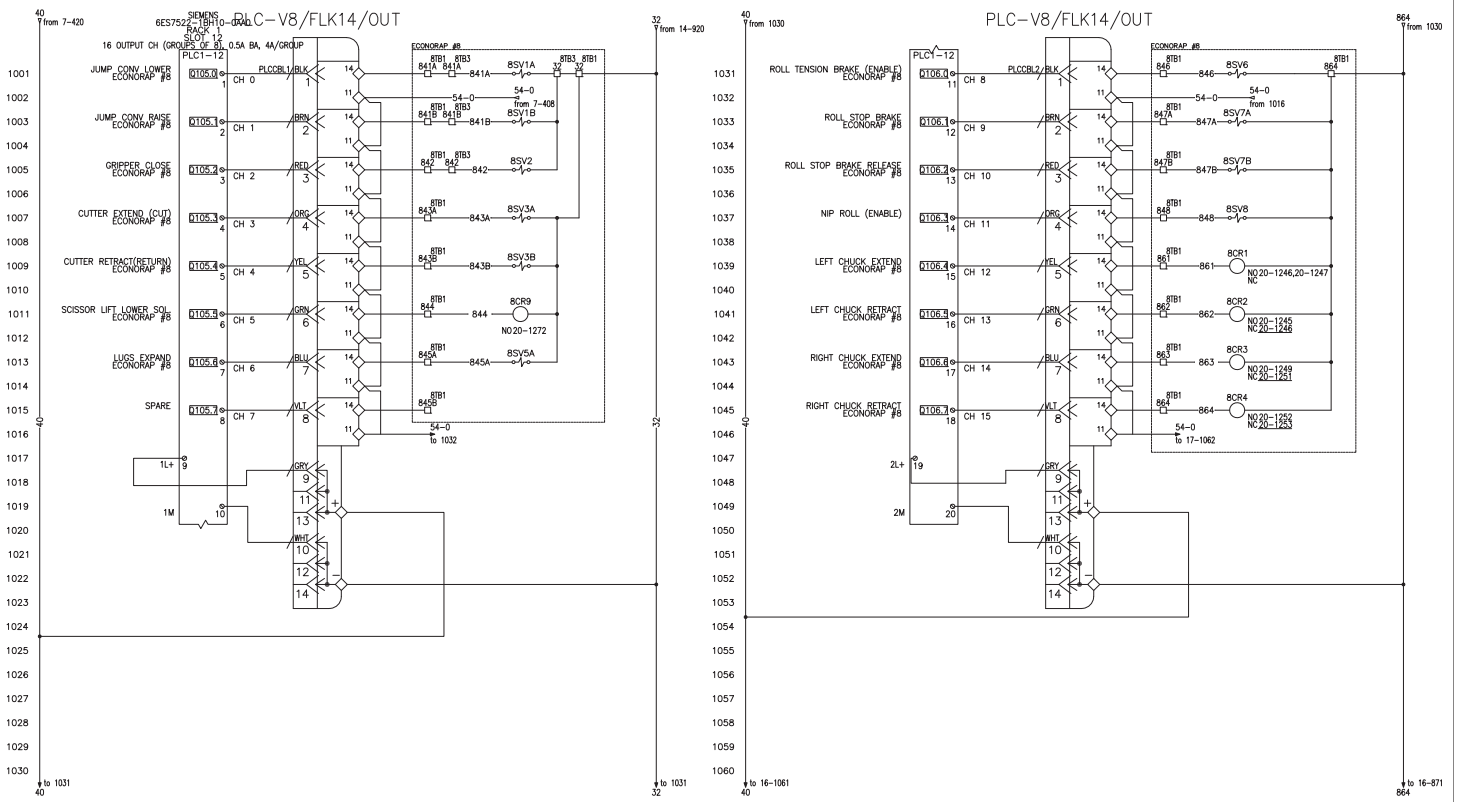
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7731 FAX (503) 654-8172
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ELECTRICAL SCHEMATIC
PLC INPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979515	C
DATE:	APPROVED:	SHT 15 OF 21	
10/11/22	JMH		

Ref. Master Dwg. BB9520



22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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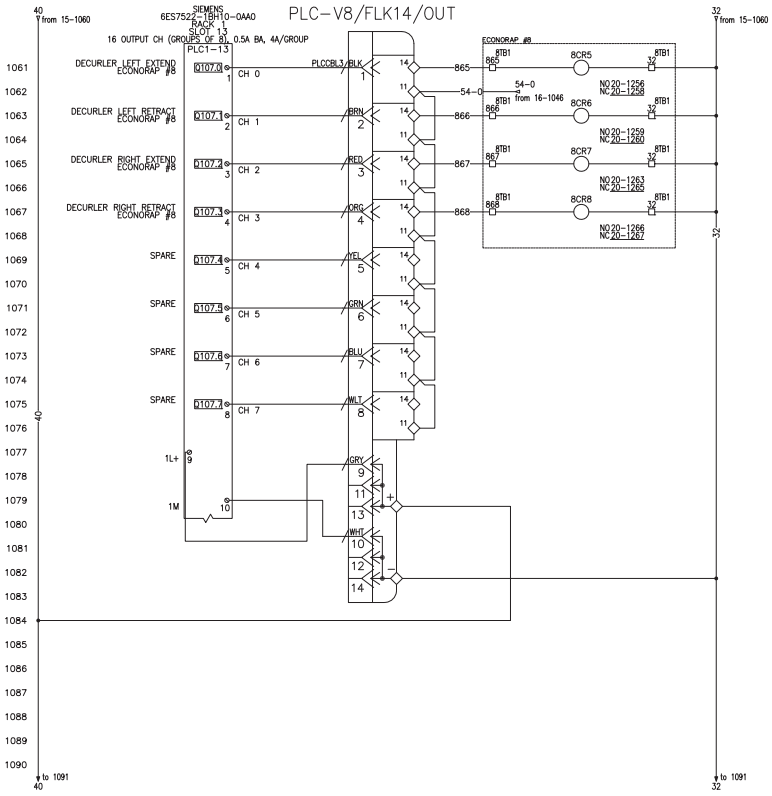
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

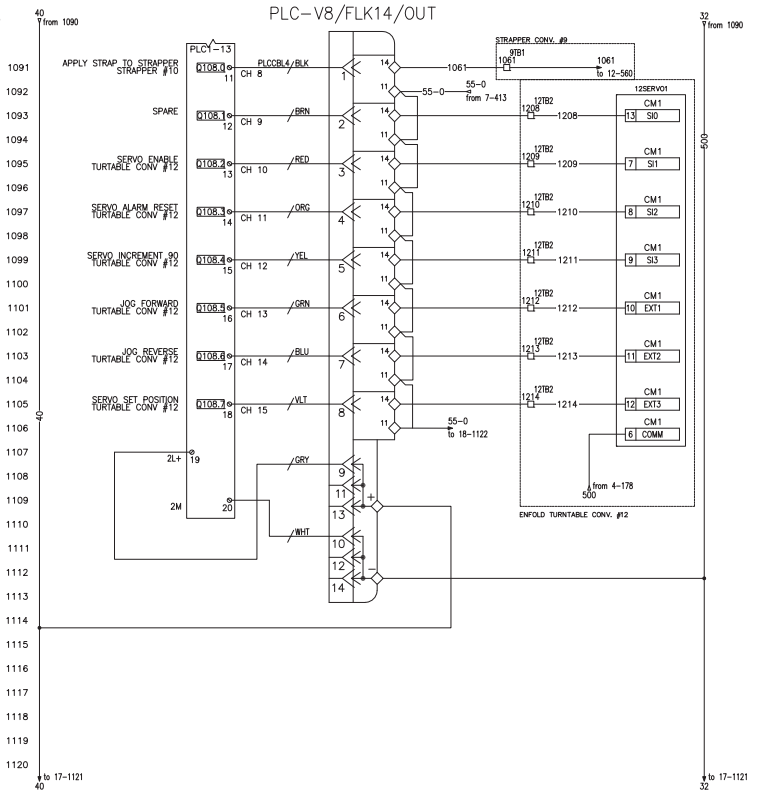
CRANSTON MACHINERY CO., INC.
22M S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 656-7701 FAX (503) 654-6172
WWW.CRANSTON-MACHINERY.COM

ELECTRICAL SCHEMATIC
PLC OUTPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979516	C
DATE: 10/11/22	APPROVED: JMH	SHT 16 OF 21	

Ref. Master Dwg. BB9920





22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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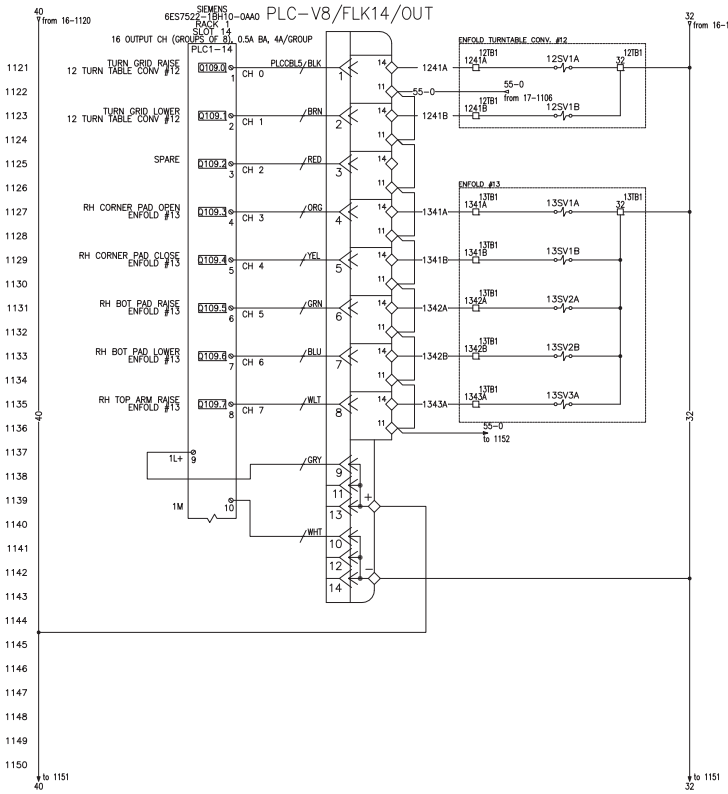
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

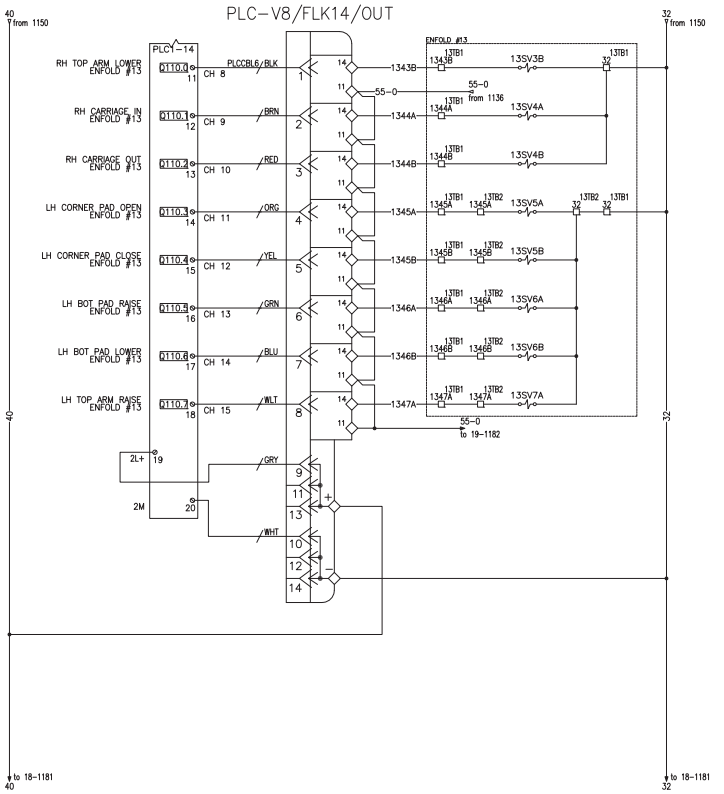
CRANSTON MACHINERY CO., INC.
2291 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7721 FAX (503) 654-8172
WWW.CRANSTON-MACHINERY.COM

ELECTRICAL SCHEMATIC
PLC OUTPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979517	C
DATE:	APPROVED:	SHT 17 OF 21	
10/11/22	JMH		

Ref. Master Dwg. BB9520





22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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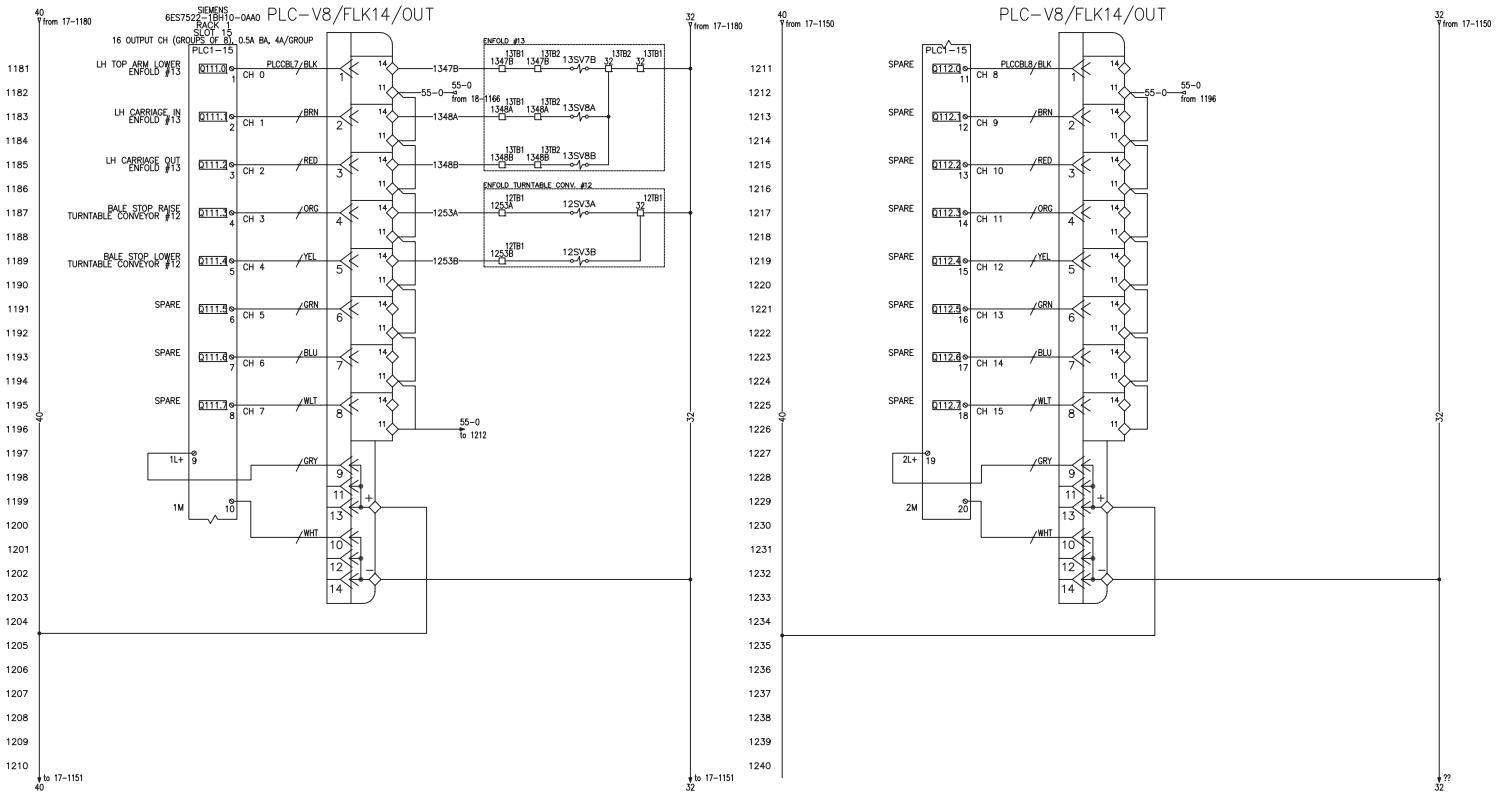
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
22M S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
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WWW.CRANSTON-MACHINERY.COM

ELECTRICAL SCHEMATIC
PLC OUTPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979518	C
DATE: 10/11/22	APPROVED: JMH	SHT 18 OF 21	

Ref. Master Dwg. BB9920



22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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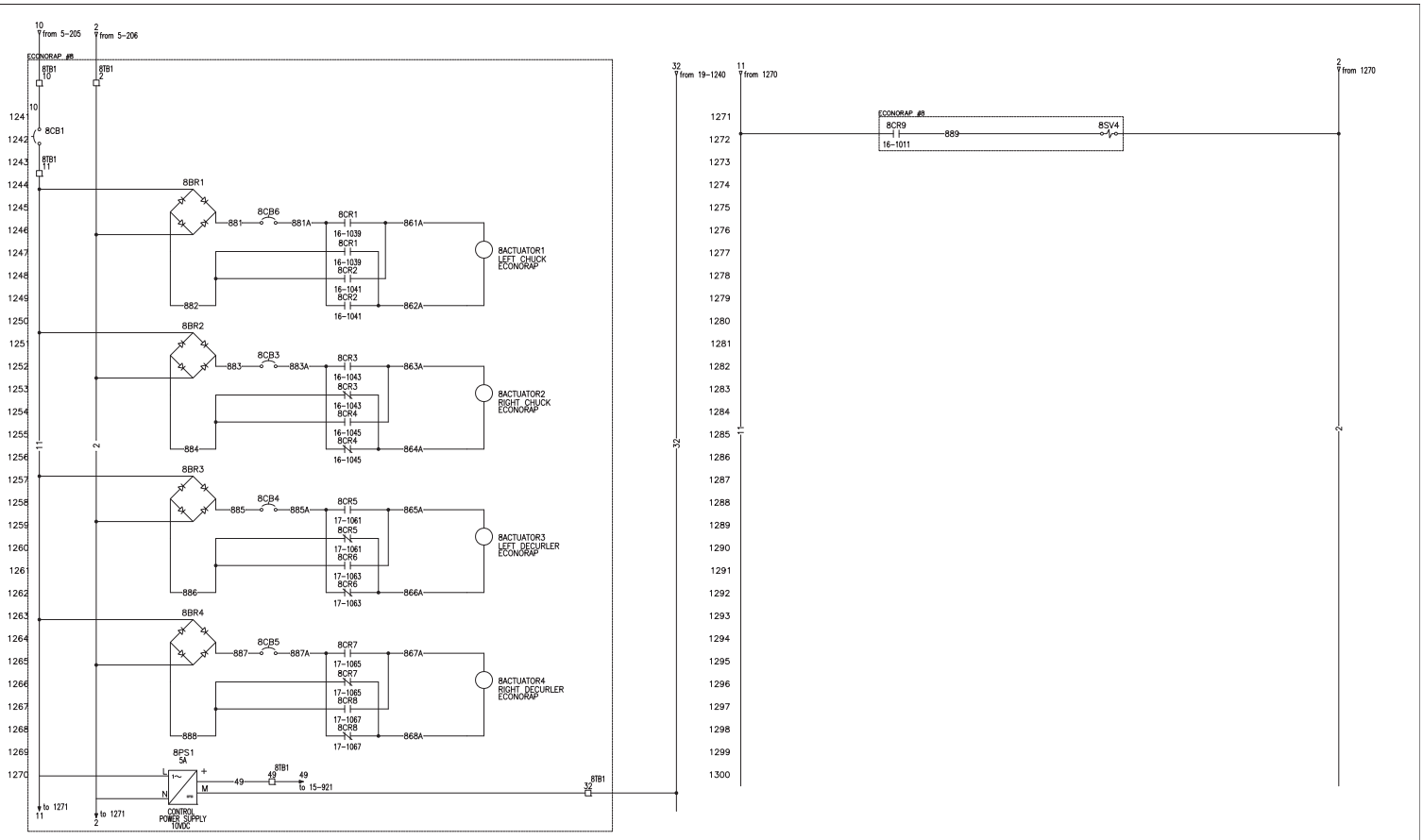
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
2251 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7731 FAX (503) 654-8173
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ELECTRICAL SCHEMATIC
PLC OUTPUTS

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979519	C
DATE:	APPROVED:	SHT 19 OF 21	
10/11/22	JMH		

Ref. Master Dwg. BB9520



22018017

SYM	DATE	REVISION	BY
3	04/18/23	FOR RELEASE	BH
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	12/4/23	REVISED AS SHOP BUILT	MLK

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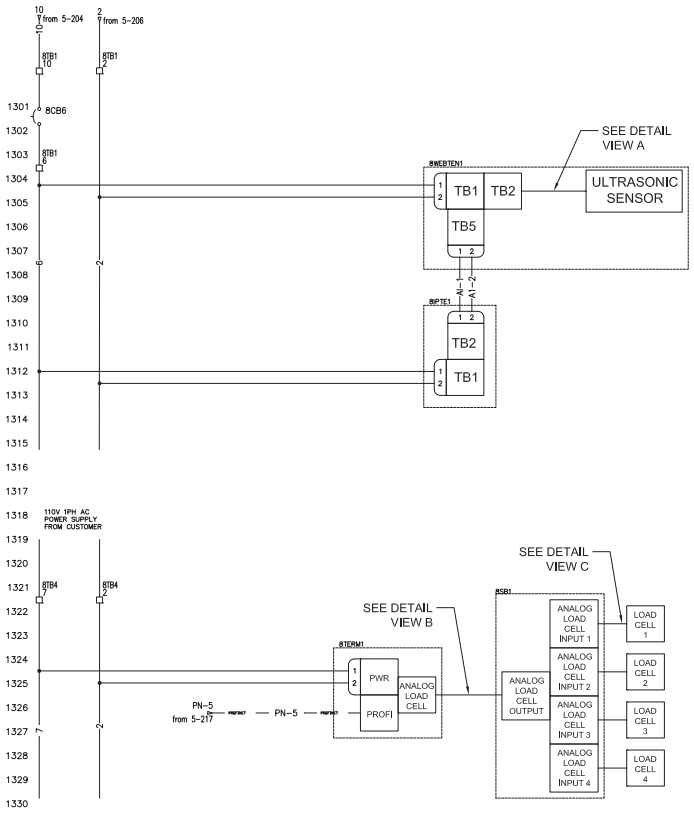
NOTE: This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
22M S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7751 FAX (503) 654-8172
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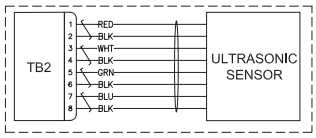
ELECTRICAL SCHEMATIC
ACTUATOR POWER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979520	C
DATE: 10/11/22	APPROVED: JMH	SHT 20 OF 21	

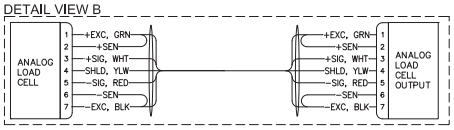
Ref. Master Dwg. BB9920



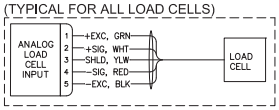
DETAIL VIEW A



DETAIL VIEW B



DETAIL VIEW C
(TYPICAL FOR ALL LOAD CELLS)



22018017

SYM	DATE	REVISION	BY
3	12/4/23	REVISED AS SHOP BUILT	MLK
2	9/27/23	REVISED AS PANEL BUILT	MLK
1	04/18/23	FOR RELEASE	BH

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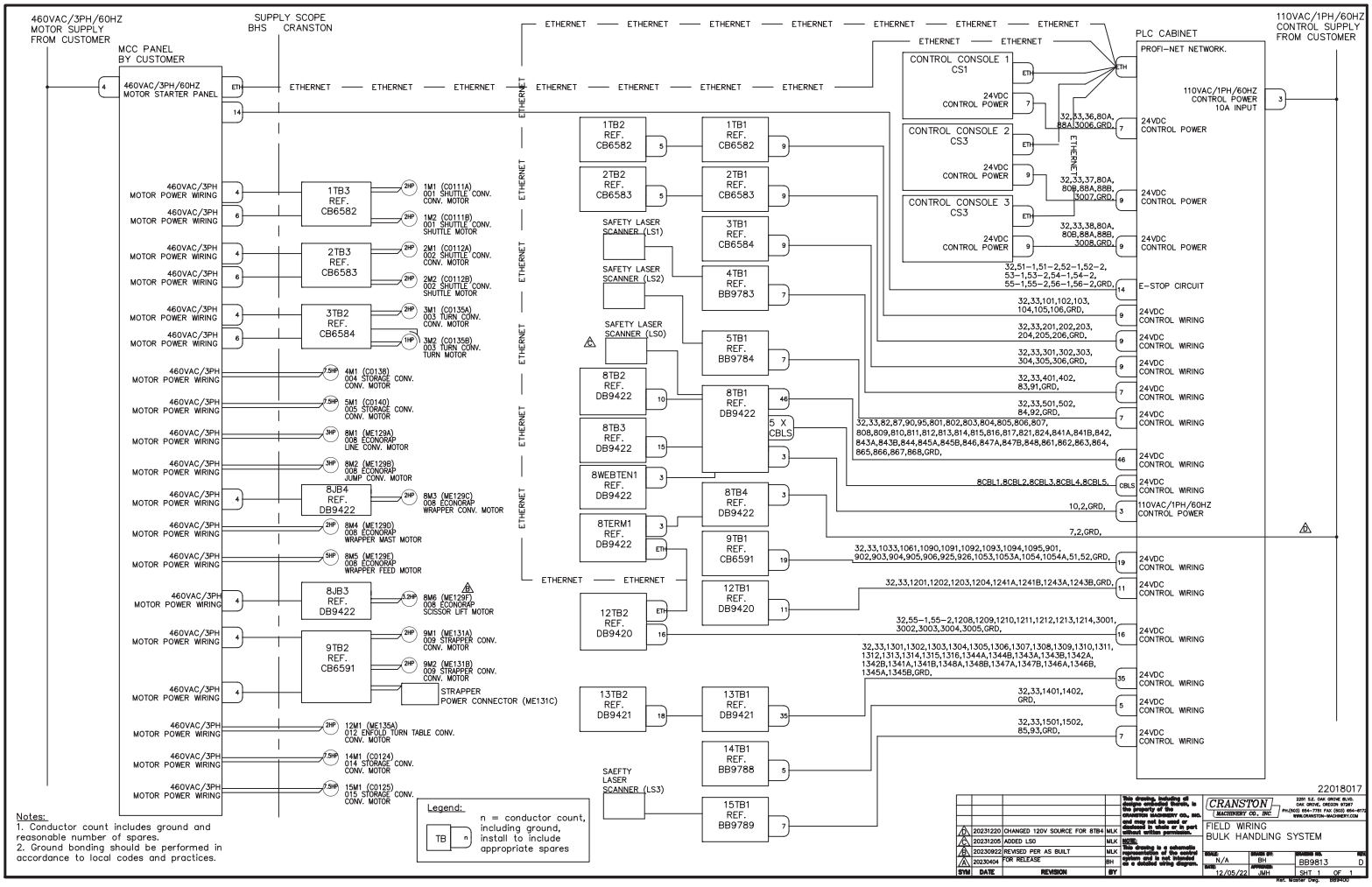
NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

CRANSTON MACHINERY CO., INC.
2291 S.E. OAK GROVE BLVD.
OAK GROVE, OREGON 97267
PH.(503) 654-7731 FAX (503) 654-8172
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ELECTRICAL SCHEMATIC
WEB TENSION AND
LOAD CELL POWER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
N/A	BH	BB979521	C
DATE: 10/11/22	APPROVED: JMH	SHT 21 OF 21	

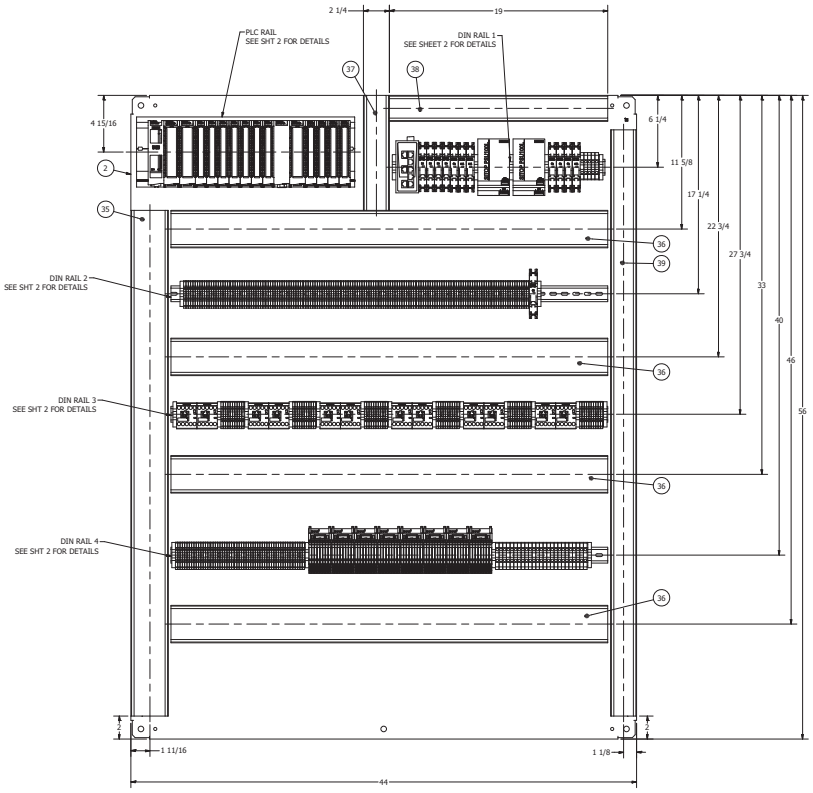
Ref. Master Dwg. BB9520


460VAC/3PH/60HZ MOTOR SUPPLY FROM CUSTOMER
MCC PANEL BY CUSTOMER
460VAC/3PH/60HZ MOTOR STARTER PANEL
SUPPLY SCOPE BHS CRANSTON
ETHERNET
PLC CABINET
PROFI-NET NETWORK.
110VAC/1PH/60HZ CONTROL SUPPLY FROM CUSTOMER
110VAC/1PH/60HZ CONTROL POWER 10A INPUT
CONTROL CONSOLE 1 CS1
CONTROL CONSOLE 2 CS3
CONTROL CONSOLE 3 CS3
24VDC CONTROL POWER
1TB3 REF. CB6582
2TB3 REF. CB6583
3TB2 REF. CB6584
8JB4 REF. DB9422
8JB3 REF. DB9422
9TB2 REF. CB6591
1M1 (C0111A) 001 SHUTTLE CONV. CONV. MOTOR
1M2 (C0111B) 001 SHUTTLE CONV. SHUTTLE MOTOR
2M1 (C0112A) 002 SHUTTLE CONV. CONV. MOTOR
2M2 (C0112B) 002 SHUTTLE CONV. SHUTTLE MOTOR
3M1 (C0135A) 003 TURN CONV. CONV. MOTOR
3M2 (C0135B) 003 TURN CONV. TURN MOTOR
4M1 (C0136) 004 STORAGE CONV. CONV. MOTOR
5M1 (C0140) 005 STORAGE CONV. CONV. MOTOR
8M1 (ME129A) 008 ECONORAP LINE CONV. MOTOR
8M2 (ME129B) 008 ECONORAP JUMP CONV. MOTOR
8M3 (ME129C) 008 ECONORAP WRAPPER CONV. MOTOR
8M4 (ME129D) 008 ECONORAP WRAPPER MAST MOTOR
8M5 (ME129C) 008 ECONORAP WRAPPER FEED MOTOR
8M6 (ME129F) 008 ECONORAP SCISSOR LIFT MOTOR
9M1 (ME131A) 009 STRAPPER CONV. CONV. MOTOR
9M2 (ME131B) 009 STRAPPER CONV. CONV. MOTOR
STRAPPER POWER CONNECTOR (ME131C)
12M1 (ME135A) 012 ENFOLD TURN TABLE CONV. CONV. MOTOR
14M1 (C0124) 014 STORAGE CONV. CONV. MOTOR
15M1 (C0125) 015 STORAGE CONV. CONV. MOTOR
1TB2 REF. CB6582
2TB2 REF. CB6583
3TB1 REF. CB6584
4TB1 REF. BB9783
5TB1 REF. BB9784
8TB2 REF. DB9422
8TB3 REF. DB9422
8WEBTEN1 REF. DB9422
8TERM1 REF. DB9422
8TB1 REF. DB9422
8TB4 REF. DB9422
9TB1 REF. CB6591
12TB2 REF. DB9420
12TB1 REF. DB9420
13TB2 REF. DB9421
13TB1 REF. DB9421
14TB1 REF. BB9788
15TB1 REF. BB9789
1TB1 REF. CB6582
2TB1 REF. CB6583
SAFETY LASER SCANNER (LS1)
SAFETY LASER SCANNER (LS2)
SAFETY LASER SCANNER (LS0)
SAEFTY LASER SCANNER (LS3)
5 X CBLS
E-STOP CIRCUIT
24VDC CONTROL WIRING
110VAC/1PH/60HZ CONTROL POWER
Legend:
TB n
n = conductor count, including ground, install to include appropriate spares
Notes:
1. Conductor count includes ground and reasonable number of spares.
2. Ground bonding should be performed in accordance to local codes and practices.
22018017
CRANSTON MACHINERY CO., INC
FIELD WIRING
BULK HANDLING SYSTEM
BB9813
SHT 1 OF 1
20231220 CHANGED 120V SOURCE FOR 8TB4 MLK
20231205 ADDED LS0 MLK
20230922 REVISED PER AS BUILT MLK
20230404 FOR RELEASE BH
12/05/22 JMH

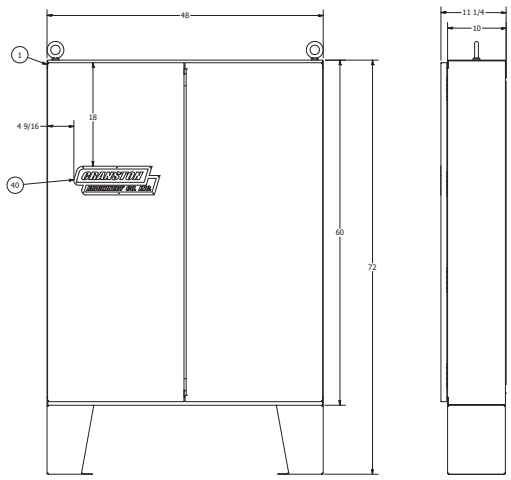
NOTE:

1.

2.



BACKPANEL
SCALE 1 / 4



ENCLOSURE
SCALE 1 / 8

PA9563

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UNLESS OTHERWISE NOTED:
Dimensions in inches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Angular: ± 1°

REV	DESCRIPTION	DATE	DESIGNER
C	ADD POWER SUPPLY MODULE, CB5.	9/21/2023	JMH
B	UPDATE TERMINAL COUNT.	8/8/2023	JMH/MLK
A	FOR RELEASE	4/15/2023	BH

REVISION HISTORY

CRANSTON MACHINERY CO. INC.
2201 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.353.7701 FAX 503.654.0472

CONTROL PANEL ASSEMBLY
SIEMENS S7-1500F

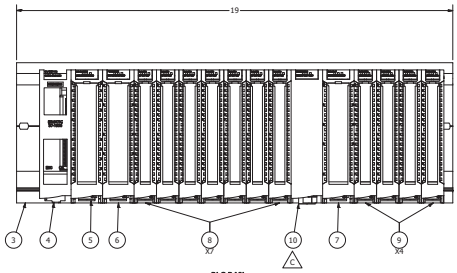
SCALE	DWN BY	DRAWING NO.	REV.
1 / 4	BH	DB9470	C
DATE: 11/2/2022	APPD: JMH	SHT 1 OF 2	

REF. DWG: DB9164

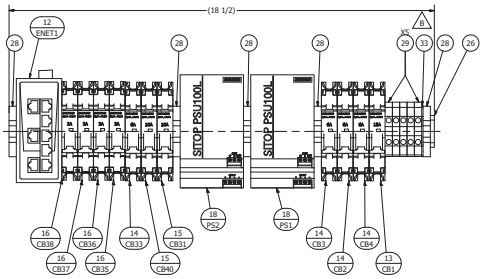
NOTE:

1.

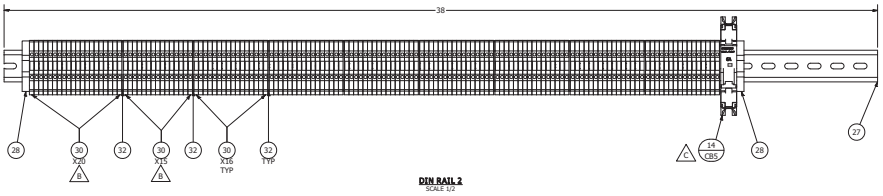
2.



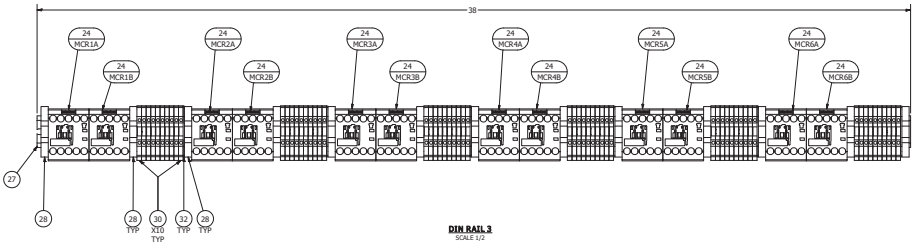
PLC RAIL
SCALE 1/2



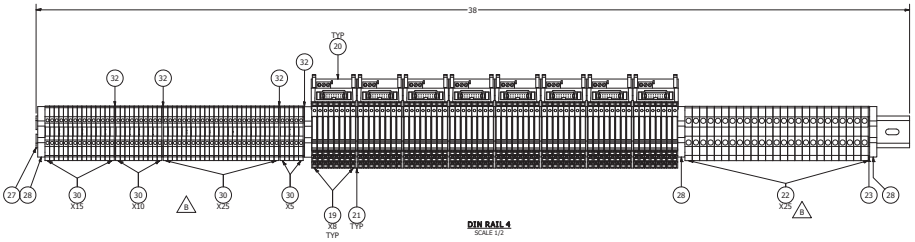
DIN RAIL 1
SCALE 1/2



DIN RAIL 2
SCALE 1/2



DIN RAIL 3
SCALE 1/2



DIN RAIL 4
SCALE 1/2

PA9563

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UNLESS OTHERWISE NOTED:
Dimensions in Inches
Machined surface finish: 125 microinches
Tolerances:
Fractional: ± 1/16
Machining:
Positional: ± .002
Decimal: ± .010
Angles: ± ½

REV	DESCRIPTION	DATE	DESIGNER
C	ADD POWER SUPPLY MODULE, CB5.	9/21/2023	JMH
B	UPDATE TERMINAL COUNT.	8/8/2023	JMH/MLK
A	FOR RELEASE	4/15/2023	BH

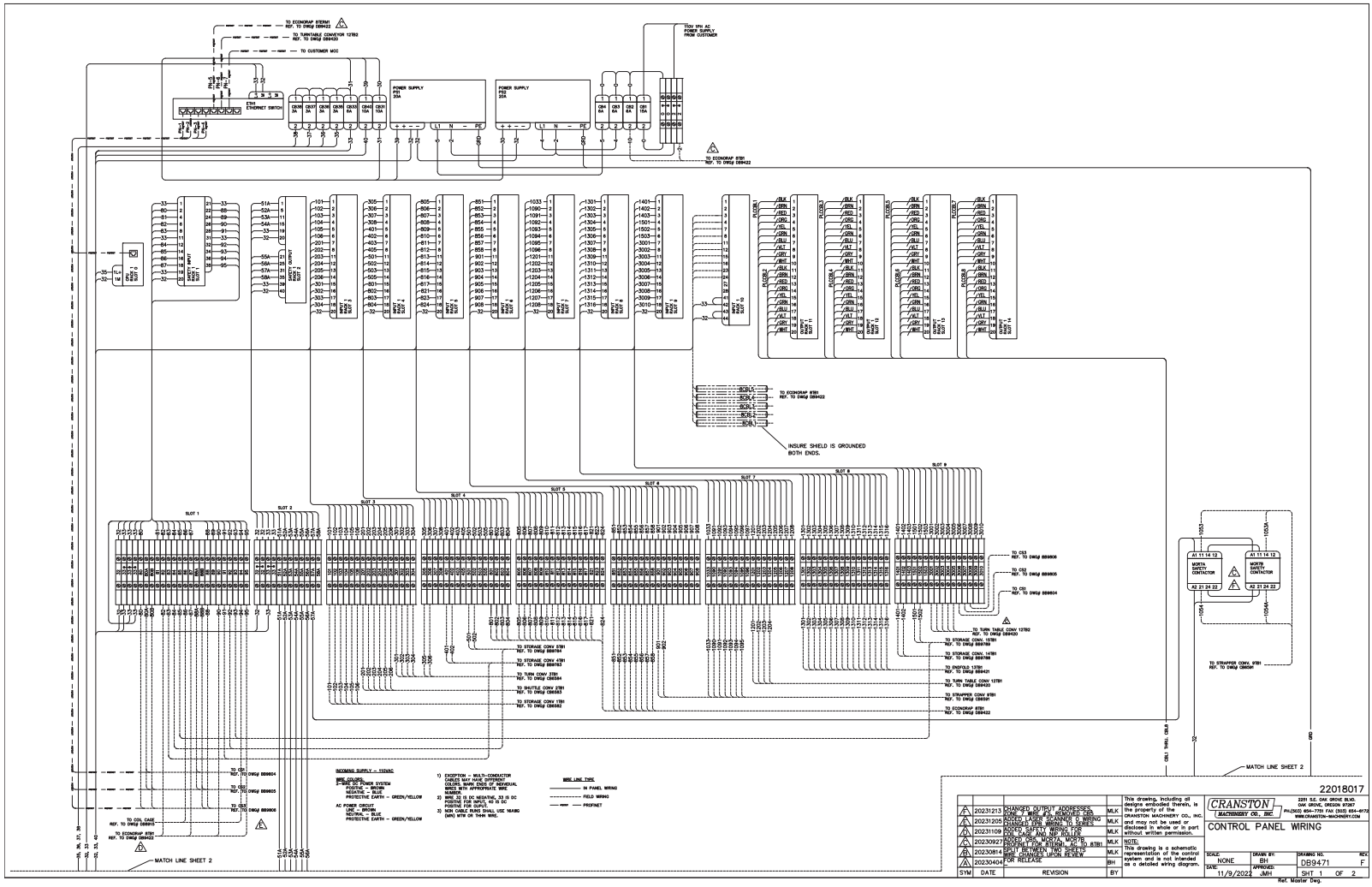
REVISION HISTORY

CRANSTON MACHINERY CO. INC.
3304 S.E. OAK GROVE BLVD.
OAK GROVE, OR 97267
PH 503.654.7701 FAX 503.654.0172

CONTROL PANEL ARRANGEMENT
SIEMENS S7-1500F
DIN RAIL DETAILS

SCALE:	DRAWN BY:	Assembly	REV
1/2	BH	DB9470	C
DATE:	APPD:	SHT 2 OF 2	
11/2/2022	JMH		

REF. DWG: DB9164



SYM	DATE	REVISION	BY
1	20231213	CHANGED OUTPUT ADDRESSES, ZONE 7 WIRE #'S REMOVED PER	MLK
2	20231205	ADDED LASER SCANNER 5 WIRING	MLK
3	20231109	ADDED LASER SCANNER 5 SERIES FUSIBLE TERMINAL BLOCKS	MLK
4	20230927	ADDED CB4, MOTA & MOTB	MLK
5	20230814	SPLIT BETWEEN TWO SHEETS	MLK
6	20230424	WIRE CHANGES UPON REVIEW FOR RELEASE	BH

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NOTE:
This drawing is a schematic representation of the control system and is not intended as a detailed wiring diagram.

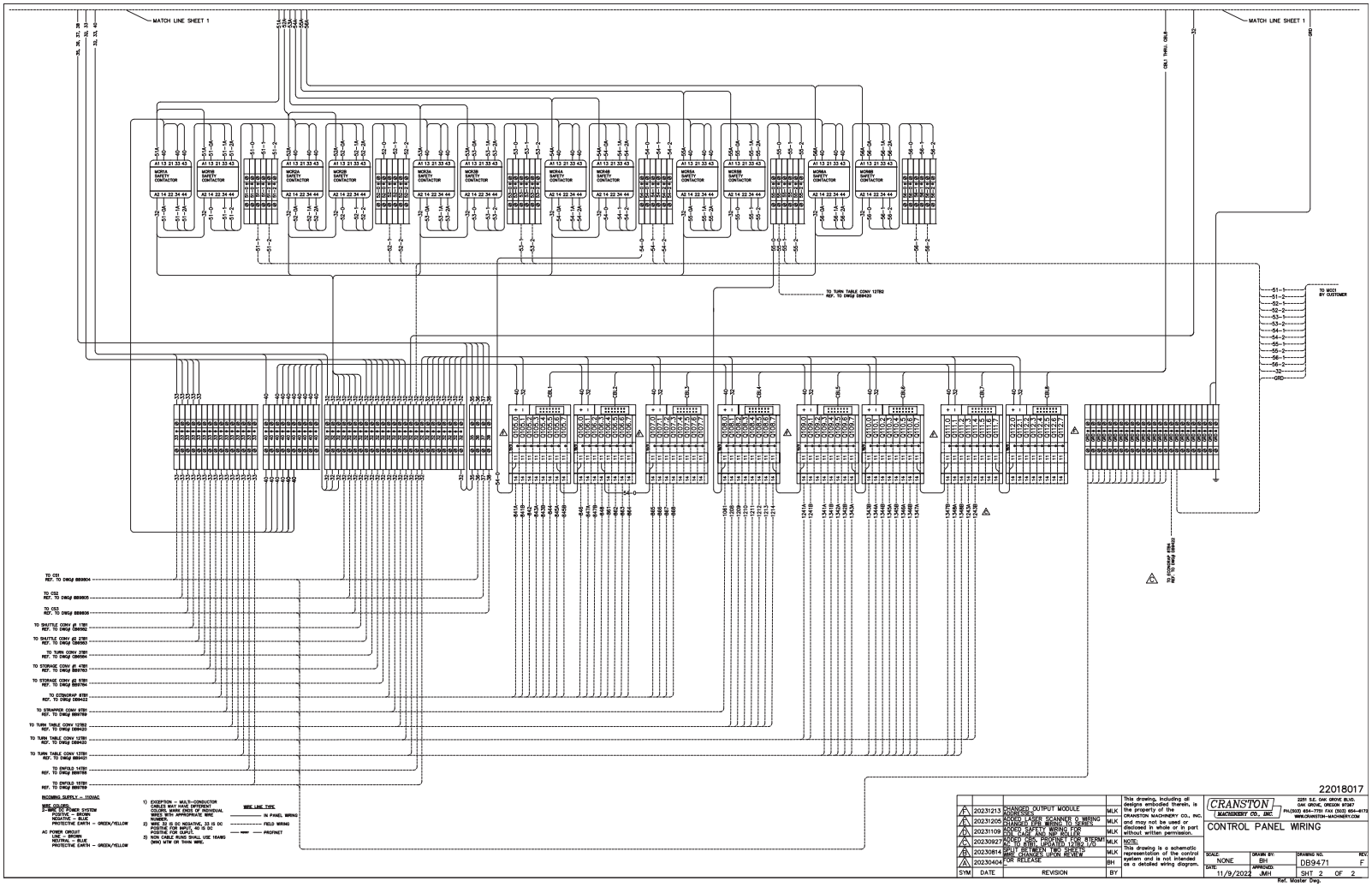
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OAK GROVE, OREGON 97267
PH.(503) 654-7701 FAX (503) 654-9172
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CONTROL PANEL WIRING

22018017

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	DB9471	F
DATE:	APPROVED:	SHT 1 OF 2	
11/9/2022	JMH		

Ref. Master Dwg.



22018017

SYM	DATE	REVISION	BY
1	20231213	CHANGED OUTPUT MODULE CONFIGURE	MLK
2	20231205	ADDED LASER SCANNER O WIRING CHANGED EPS WIRING TO SERIES	MLK
3	20231109	ADDED SAFETY WIRING FOR ICE CAGE AND NEW BALLET	MLK
4	20230927	ADDED VSD'S PROFINET FOR STERMI AS WELL AS REMOTE I/O	MLK
5	20230814	SHUTTLES, TURNS AND SERVOS BUILT AS PER SPEC UPON REVIEW FOR RELEASE	BH
6	20230404		BH

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CONTROL PANEL WIRING

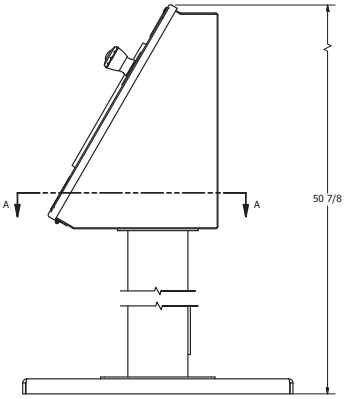
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DATE:	APPROVED:	SHT 2 OF 2	
11/9/2022	JMH		

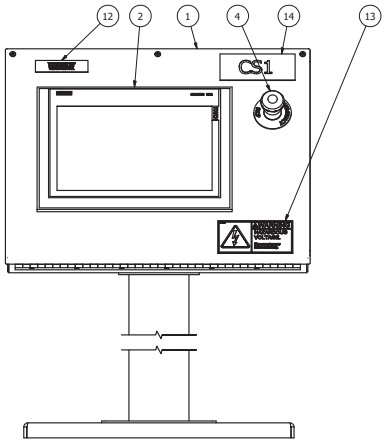
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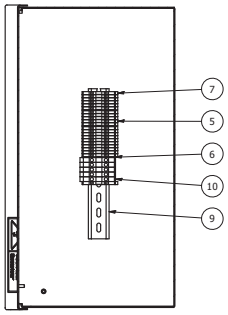
NOTE:

1.

2.







SECTION A-A
SCALE 1 /4

REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY

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UNLESS OTHERWISE NOTED:
Dimensions in Inches:
Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1 c

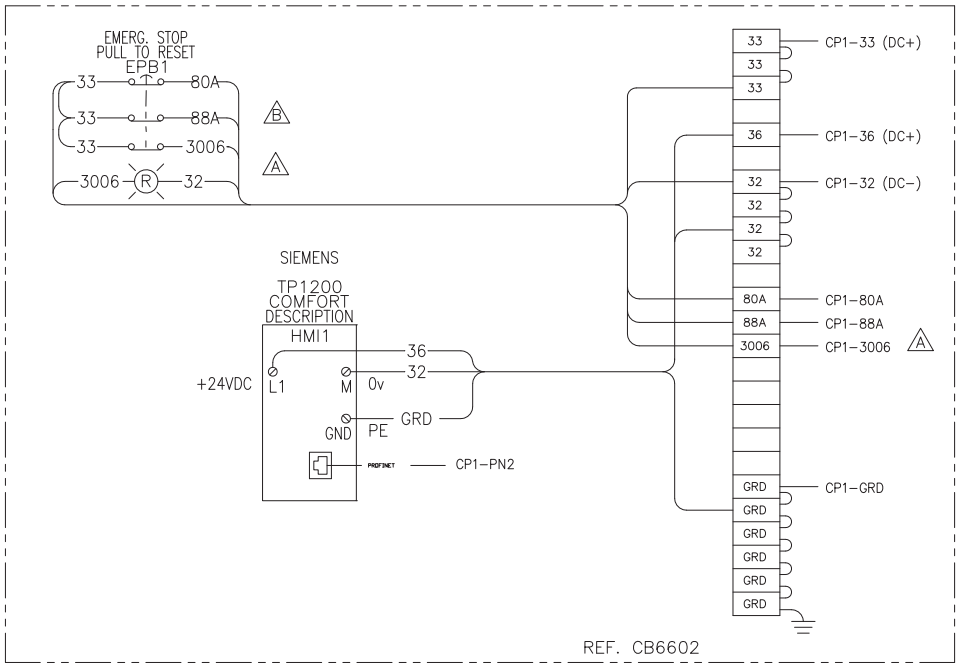
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OAK GROVE, OR 97267
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CONTROL STATION
SIEMENS COMFORT PANEL 12"

SCALE:	DWN BY:	DRAWING NO.	REV:
1 /4	BH	CB6602	
DATE:	APPD:	SHT 1 OF 1	
11/14/2022	JMH		

REF. DWG:



22018017

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY
B	12/5/23	CHANGED EPB1 WIRING FOR SERIES WITH EPB2 AND EPB3	MLK
A	8/24/23	ADD LT FOR EPB1	JMH

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Dimensions in inches
Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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WIRING DIAGRAM
CONTROL STATION
CS1

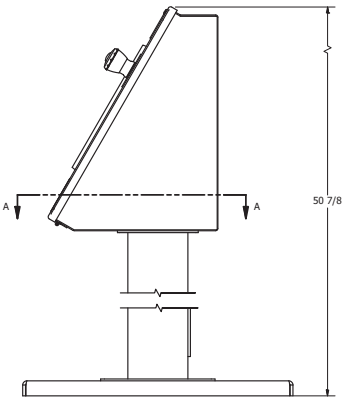
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NONE	BH	BB9804	B
DATE: 11/14/22	APPROVED:	SHT 1 OF 1	

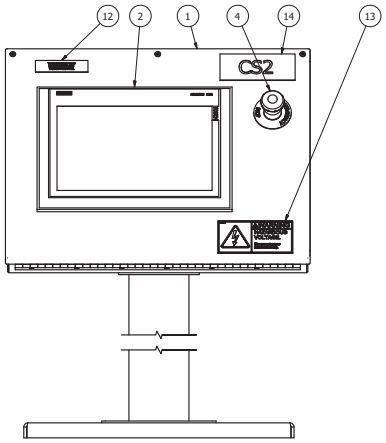
Ref. Master Dwg. BB7148

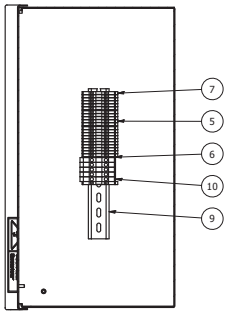
NOTE:

1.

2.







SECTION A-A
SCALE 1 /4

REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY

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Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1 c

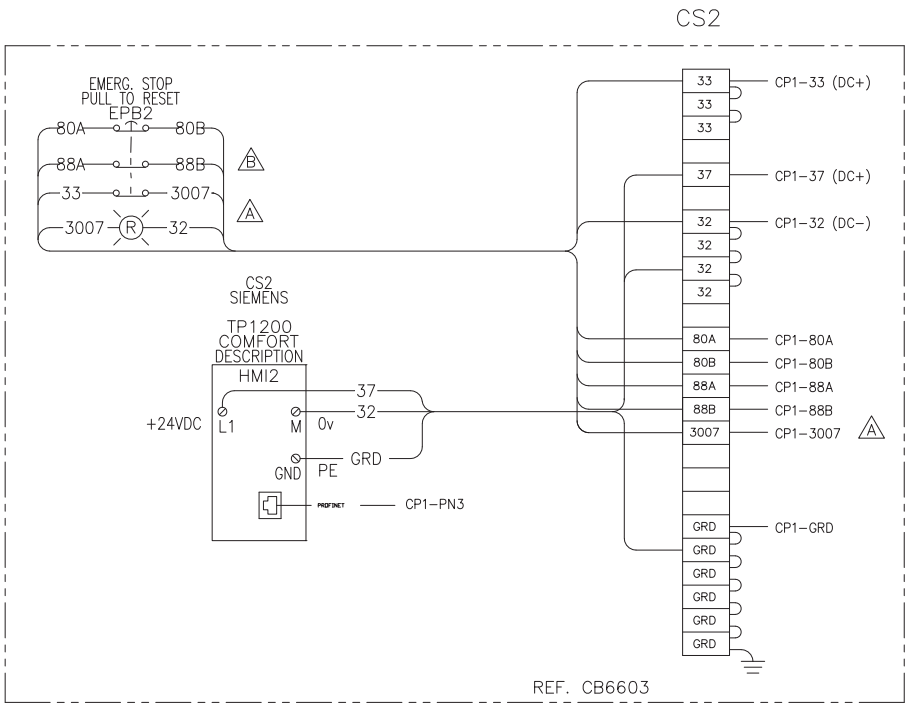
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CONTROL STATION
SIEMENS COMFORT PANEL 12"

SCALE:	DWN BY:	DRAWING NO.	REV:
1 /4	BH	CB6603	
DATE:	APPD:	SHT 1 OF 1	
11/14/2022	JMH		

REF. DWG:



22018017

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY
B	12/5/23	CHANGED EPB2 WIRING FOR SERIES WITH EPB1AND EPB3	MLK
A	8/24/23	ADD LT FOR EPB2	JMH

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Machined surface finish: 125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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WIRING DIAGRAM
CONTROL STATION
CS2

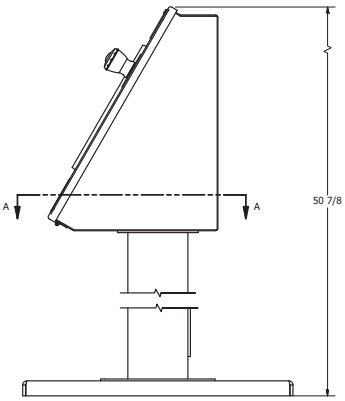
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NONE	BH	BB9805	B
DATE: 11/14/22	APPROVED:	SHT 1 OF 1	

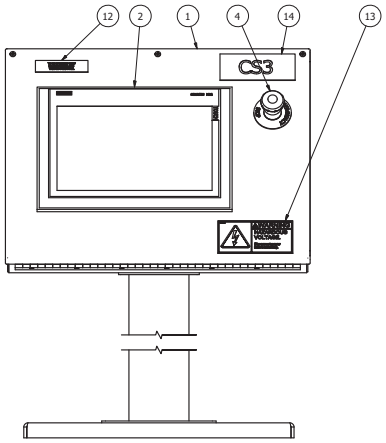
Ref. Master Dwg. BB7148

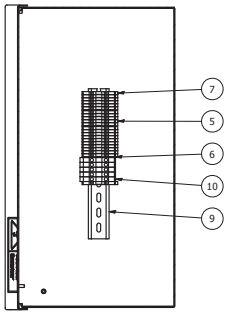
NOTE:

1.

2.







SECTION A-A
SCALE 1 /4

REV	DESCRIPTION	DATE	DESIGNER

REVISION HISTORY

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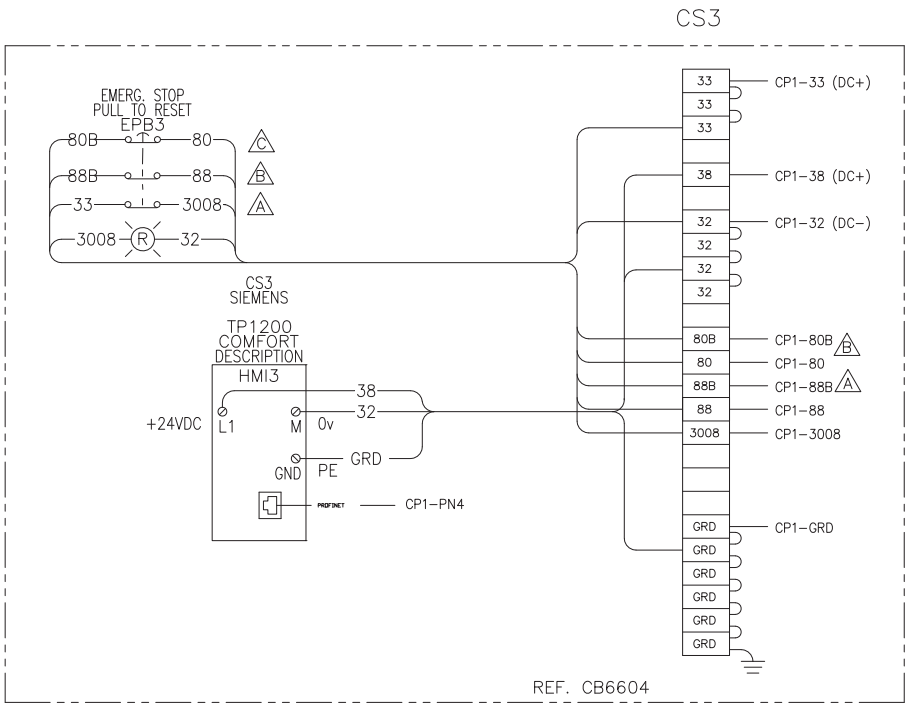
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Machined surface finish: 125 microinches
Tolerances:
Welding ± 1/16
Machining
Fractional ± 1/32
Decimal ± .010
Angles ± 1 c

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CONTROL STATION
SIEMENS COMFORT PANEL 12"

SCALE:	DWN BY:	DRAWING NO.	REV:
1 /4	BH	CB6604	
DATE: 11/14/2022	APPD: JMH	SHT 1 OF 1	

REF. DWG:



22018017

NOTE:
Connect GROUND (BOND) where required and in ALL CASES where ground provision is supplied in the device.
If no ground provision is supplied in the device, disregard ground symbol on wiring diagram.

SYM	DATE	REVISION	BY
C	12/5/23	CHANGED EPB3 WIRING FOR SERIES WITH EPB1 AND EPB2	MLK
B	9/27/23	CHANGED WIRE NO 81 TO 82 AND 89 TO 90	MLK
A	8/24/23	ADD LT FOR EPB3	JMH

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Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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WIRING DIAGRAM
CONTROL STATION
CS3

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	BH	BB9806	C
DATE: 11/14/22	APPROVED:	SHT 1 OF 1	

Ref. Master Dwg. BB7148

MACHINE ASSEMBLY LIST

MODEL NO.: NONE

Title:	ACCESSORIES	**Issued for Serial No.:**	22018020
Description:	FOR EP STRAPPERS	**Arrangement Drawing:**	NONE
		Master by: JMH	**DATE:** 8/25/2023
		Issued By: JMH	**DATE:** 8/25/2023
		Revision:	**DATE:**

ITEM	QTY	PARTS LIST	DRAWING	ASSEMBLY NAME / DESCRIPTION
1	1	PA9143	---------	TEST BALE PIN ASSEMBLY
2	1	PA9613	AA6865001	TEST STATION
3				NOT USED
4				NOT USED
5	1	------	AA8558000	KNOTTER ALIGNMENT PIN FOR STRAPPERS (13 - 13 1/2 GA)
6	1	PA7924	---------	WIRE DRIVE SERVICE KIT
7	1		CB5652000	ROUND STEEL PALLET
8				NOT USED
9	1		CA7292000	PAYOFF RING
	1	------	BB9855000	TEST STATION WIRING DIAGRAM

PARTS LIST

PA9143 **Drawing:** **NONE**

Title: TEST BALE PIN ASSEMBLY
Description:

Issued for Serial No.: 22018020
Master by: RPH **DATE:** 5/29/2018
Issued By: JMH **DATE:** 8/25/2023
Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	2	BB9384000		TEST BALE PIN
	2	M69400033		1/2 DIA QUICK RELEASE PIN

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

F-12-87

PARTS LIST

PA9613 **Drawing: AA6865001**

Title:	TEST STATION - 986/EP WIRE STRAPPER	**Issued for Serial No.:**	22018020
Description:		**Master by:** JMH	**DATE:** 8/25/2023
		Issued By: JMH	**DATE:** 8/25/2023
		Revision:	**DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	BB1023000		MOUNTING STAND
2	1	E24000173		RECEPTACLE, BASE SURFACE MOUNT, MENCOM: CHPT-24.5LS
	1	E24000174		FEMALE INSERT, MENCOM: CSHF-24
	4			SOC HD CAP SCREW, #10-32NF X 3/4 LG.
	4			FLAT WASHER, #10
	4			LOCK WASHER, #10
	4			HEX NUT, #10-32NF
3	1	E24000117		RECEPTACLE, MELTRIC: 33-34043
	1	E24300021		ADAPTER, MELTRIC: 513B3N05
	1	E24600027		FINGER DRAW PLATE, MELTRIC: 61-6A346
	4			SOC HD CAP SCREW, #10-32NF X 3/4 LG.
	4			FLAT WASHER, #10
	4			LOCK WASHER, #10
	4			HEX NUT, #10-32NF

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

CRANSTON MACHINERY CO. INC.

PARTS LIST

PA7924 **Drawing:** **NONE**

Title: WIRE DRIVE SIDE PLATE ASSEMBLY KIT

Description:

Issued for Serial No.: 22018020

Master by: DTB **DATE:** 9/29/2008

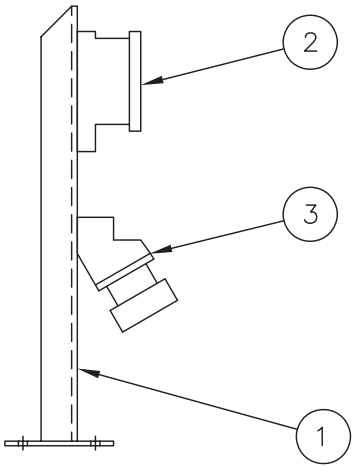
Issued By: JMH **DATE:** 8/25/2023

Revision: **DATE:**

ITEM	QTY	PART NO.	*	PART NAME / DESCRIPTION
1	1	DB7687000		WIRE DRIVE PRESS FIXTURE
2	1	BB8192000		GEAR SEATING FIXTURE
	3	M30600002		HEX HD CAP SCREW, 5/16-18NC X 1-3/8 LG, FULL THREAD, GRADE 8
	3	M30600003		HEX HD CAP SCREW, M8 X 1.25 X 35 MM LG, FULL THREAD, GRADE 8 OR EQUAL
3	1	BB8196000		SHAFT SEATING FIXTURE
4	1	AA8738000		BOLT
5	1	AA8739000		PART NAME / DESCRIPTION
6	1	AB0001000		INSTRUCTIONAL DVD (GET FROM ENGINEERING)
7	1	CB5527000		(REF) SIDE PLATE MODIFICATION DRAWING

* NORMAL CONSUMABLE WEAR PART, ** HIGH CONSUMABLE WEAR PART
NOT COVERED BY WARRANTY

TAB	PA
000	PA9292
001	PA9613



PLOT SCALE = 1 : 8

SYM	DATE	REVISION	BY
A	8/25/23	TABULATE, ADD TAB 001.	JMH

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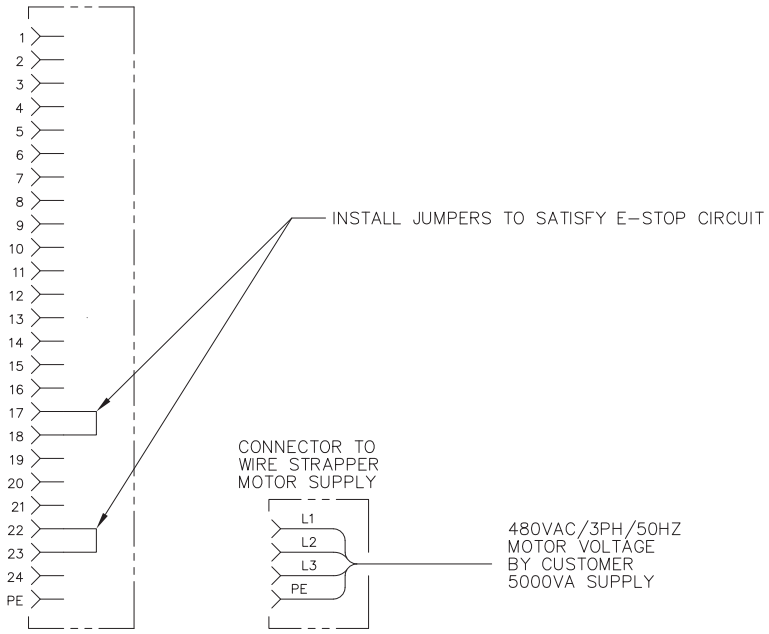
Dimensions in inches
Machined surface finish:
125 microinches
Tolerances:
Welding: ± 1/16
Machining:
Fractional: ± 1/32
Decimal: ± .010
Angles: ± 1°

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ARRANGEMENT
TEST INTERFACE FOR
WIRE STRAPPER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	DEJ	AA6865	A
DATE: 4–9–90	APPROVED: DEJ	SHT 1 OF 1	

Ref. Master Dwg. AA6865



22018020

SYM	DATE	REVISION	BY

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WIRING DIAGRAM
TEST INTERFACE
WIRE STRAPPER

SCALE:	DRAWN BY:	DRAWING NO.	REV.
NONE	JMH	BB9855	
DATE: 8/25/2023	APPROVED: JMH	SHT 1 OF 1	

Ref: BB9506

C0024

[image]

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Gear Compound EP

Product Use: Gear Lubricant

Product Number(s): CPS255059, CPS255066, CPS255067, CPS255068, CPS255069, CPS255070, CPS255071, CPS255072, CPS255073, CPS255074

Synonyms: Chevron Gear Compound EP ISO 100, Chevron Gear Compound EP ISO 1000, Chevron Gear Compound EP ISO 150, Chevron Gear Compound EP ISO 1500, Chevron Gear Compound EP ISO 220, Chevron Gear Compound EP ISO 2200, Chevron Gear Compound EP ISO 320, Chevron Gear Compound EP ISO 460, Chevron Gear Compound EP ISO 68, Chevron Gear Compound EP ISO 680

Company Identification

Chevron Products Company

a division of Chevron U.S.A. Inc.

6001 Bollinger Canyon Rd.

San Ramon, CA 94583

United States of America

www.chevronlubricants.com

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : lubemsds@chevron.com

Product Information: (800) LUBE TEK

MSDS Requests: (800) 414-6737

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	60 - 100 %weight

SECTION 3 HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

FLAMMABLE PROPERTIES:

Flashpoint: (ASTM D92) 210 °C (410 °F) Minimum

Autoignition: No Data Available

Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m3	10 mg/m3	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m3	--	--	--

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Amber

Physical State: Liquid

Odor: Petroleum odor

pH: Not Applicable

Vapor Pressure: <0.01 mmHg @ 37.8 °C (100 °F)

Vapor Density (Air = 1): >1

Boiling Point: >315°C (599°F)

Solubility: Soluble in hydrocarbons; insoluble in water

Freezing Point: Not Applicable

Specific Gravity: 0.8752 - 0.9013 @ 15°C (59°F) / 15.6°C (60.1°F)

Density: 0.8756 kg/m3 - 0.9013 kg/m3 @ 15.6°C (60.1°F)

Viscosity: 61.2 mm2/s - 2200 mm2/s @ 40°C (104°F)

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is not expected to be harmful to aquatic organisms. The ecotoxicity hazard is based on an evaluation of data for the components or a similar material.

ENVIRONMENTAL FATE

Ready Biodegradability: This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

Additional Information:NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

IMO/IMDG Shipping Description: PETROLEUM LUBRICATING OIL; MAY BE REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO TI OR IATA DGR

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: NO

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1
01-2A=IARC Group 2A
01-2B=IARC Group 2B
02=NTP Carcinogen
03=EPCRA 313
04=CA Proposition 65
05=MA RTK
06=NJ RTK
07=PA RTK

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Gear oil)

WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 1 Flammability: 1 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

LABEL RECOMMENDATION:

Label Category : INDUSTRIAL OIL 1 - IND1

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1,3,5,9,11,12,16.

Revision Date: February 02, 2009

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

CIMCOOL® FLUID TECHNOLOGY

Material Safety Data Sheet

CIMGUARD® 40

CORROSION PREVENTIVE

DATE EFFECTIVE: 07-09-2010

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer:	CIMCOOL® Industrial Products LLC 3000 Disney Street Cincinnati, OH 45209 United States
Emergency:	Telephone (USA): 1-800-424-9300 (CHEMTREC) Telephone (Outside USA): 1-703-527-3887 (CHEMTREC)
General Information:	Telephone: 1-513-458-8199
Generic Name:	Corrosion Preventive

2 EMERGENCY INFORMATION

Product is combustible. Product is a primary eye irritant. Product may be a primary skin irritant. Pulmonary aspiration hazard if swallowed and/or vomiting occurs - can enter lungs and cause damage. Vapors are heavier than air. Vapors may travel across the ground and reach a remote ignition source causing a flashback fire danger. Highway spills could result in slippery conditions. No other significant health effects are associated with this material.

3 POTENTIAL HEALTH EFFECTS OF DIRECT EXPOSURE

	Product
Inhalation:	Extended exposure to mist may cause upper respiratory irritation.
Eye Contact:	Product is a primary eye irritant.
Skin Contact:	Product may be a primary skin irritant.
Ingestion:	Not orally toxic. Pulmonary aspiration hazard if swallowed and/or vomiting occurs - can enter lungs and cause damage.

Medical Conditions generally aggravated by exposure

May aggravate existing skin irritation where further defatting or skin penetration could occur.

Skin irritation (redness and dryness of hands) may be experienced when the product has been contaminated by certain oils or by dissolved metals. When problems occur, use of oil-resistant barrier creams may be a temporary control measure. Contact CIMCOOL® Industrial Products LLC Technical Services at 1-513-458-8199 for specific recommendations.

When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splash guards, as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted. Contact CIMCOOL® Industrial Products LLC at 1-513-458-8199 for specific recommendations.

Carcinogen Listings: NTP: No IARC: No OSHA: No

Signs and symptoms of exposure

Acute

Eye injury may result from contact with product. Skin irritation can result from improper use and handling of product.

4 EMERGENCY AND FIRST AID PROCEDURES

Eyes

In case of eye contact, flush immediately with running water for at least 15 minutes, and get prompt medical attention.

Skin Contact

For skin contact flush with large amounts of water while removing contaminated clothing. Remove contaminated shoes and clothing and launder before reuse. If irritation persists, get medical attention.

Product is not irritating to the skin when used as recommended and good personal hygiene is practiced.

Ingestion

If the material is swallowed, DO NOT INDUCE VOMITING. Immediately contact a physician and obtain treatment. Do not give liquids. Swallowing small quantities of product may cause nausea, diarrhea or abdominal distress.

Inhalation

Inhalation can occur in applications where high mist levels are generated. OSHA has set a PEL of 15 mg/m^3 for any airborne particulate as a nuisance level of exposure. NIOSH has set a REL of 0.5 mg/m^3 for metalworking fluid mist. If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms persist, get medical attention.

5 CONTROL MEASURES

Respiratory protection

In metalworking fluid applications where time-weighted exposures are 0.5 to 5 mg/m^3, mist reduction through improved ventilation, mist collection or process modification is recommended by NIOSH. Where this is not possible, NIOSH recommends the use of any air purifying, half-mask respirator including a disposable respirator, equipped with any P- or R-series particulate filter. If the average exposure will exceed 5 mg/m^3, NIOSH recommends use of a powered, air-purifying respirator equipped with a hood or helmet and a HEPA filter. If respiratory problems are present when mist levels are < 0.5 mg/m^3, respiratory protection should be based on the individual recommendation of a qualified health care provider.

Caution

The appropriate use and type of respirator is dependent upon use of the product and local operating conditions.

Ventilation

For most applications, adequate shop ventilation is needed. However, when high mist levels are generated or where machines are close together or ventilation is inadequate, operators may experience respiratory irritation. For such applications, use of splash guards or mist collectors is recommended.

Eye protection

Proper metalworking plant eye protection required when handling product.

Other protective clothing or equipment

Use effective metalworking plant protective clothing as appropriate.

Work / Hygiene Practices

Good personal hygiene should always be followed.

Protective Gloves

Impervious gloves, such as nitrile gloves, are recommended when handling product.

6 HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

These ingredients may contribute to the acute product hazards listed under the Potential Health Effects section. Other substances, not hazardous under the OSHA Hazard Communication Standard, may be present. Further composition information may be available to health professionals as provided in the Standard.

Component	CAS #	Percent
SYNTHETIC ISOPARAFFINIC HYDROCARBON CAS# 68551-17-7 and/or 64742-48-9 and/or 642928-30-1	SEE COMPONENT	30 - 50
SEVERELY-HYDROTREATED NAPHTHENIC PETROLEUM DISTILLATES	64742-52-5	25 - 40
SOLVENT-REFINED HEAVY PARAFFINIC PETROLEUM DISTILLATES	64741-88-4	5 - 10
CALCIUM SULFONATES	Trade Secret	3 - 7
CARBONIC ACID, CALCIUM SALT (1:1)	471-34-1	3 - 7
DIETHYLENE GLYCOL MONOBUTYL ETHER (SARA 313 Reportable)	112-34-5	1 - 5

7 FIRE AND EXPLOSION HAZARD DATA

Extinguishing Media

Chemical foam, carbon dioxide, or dry chemical

Hazardous Combustion Products

Smoke, fumes, and oxides of carbon

Flash Point: > 143 °F (> 61.7 °C) Setaflash

Lower Explosive Limit: Not Applicable

Upper Explosive Limit: Not Applicable

HMIS RATINGS

Health	1
Flammability Classification	2
Reactivity	0

NFPA RATINGS

Health	1
Flammability Classification	2
Reactivity	0

8 ACCIDENTAL RELEASE MEASURES

Contain the spill, collect on absorbent material, and discard as dictated by Federal, state and local regulations that may apply. Flush area thoroughly with water.

Reportable Quantity: None

9 WASTE DISPOSAL

For Used Product

Disposal procedures must comply with local, county, state and Federal regulations. Contact CIMCOOL® Industrial Products LLC at 1-513-458-8199 for assistance.

For Unused Product

Product is not a hazardous waste as defined under 40 CFR 261. Contact CIMCOOL® Industrial Products LLC at 1-513-458-8199 for assistance.

Empty Containers

Empty containers will contain a residue which is not considered a hazardous waste under RCRA regulations. Drums can be drained to a "drip dry" condition by inversion and can be offered for recycling or scrap.

CAUTION: Empty containers retain residue (liquid and/or vapor) and may be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE THIS CONTAINER TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION: IT MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean drums since residue is difficult to remove. Empty drums should be completely drained, promptly bunged, and promptly returned to a drum reconditioner. Empty disposable bulk containers should be drained, sealed, and properly discarded. Empty recyclable bulk containers should be drained, sealed, and recycled. Empty pails and jugs should be drained and properly discarded.

10 HANDLING AND STORAGE

Avoid contact of product with eyes or skin. Wash thoroughly after handling. Do not swallow. Use only as recommended by CIMCOOL® Industrial Products LLC . If frozen, product separates. Thaw completely at room temperature and stir thoroughly prior to use. Do not store product in direct sunlight or elevated temperatures.

Other Precautions

Product is combustible. Do not heat. Avoid open flames, sparks, and temperatures approaching the flash point.

11 PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point:	Not Applicable
Specific Gravity:	0.88
Solubility (H2O):	Insoluble
Volatile Organic Content (by ASTM D2369):	45 %
pH (Concentrate):	Not Applicable
Recommended Starting Dilution:	Use Undiluted
Appearance/Odor:	Opaque/Chemical

12 REACTIVITY

Stability

Stable under normal conditions.

Conditions to avoid

Use as directed.

Materials to avoid

Avoid contact with strong acids or oxidizers to product.

Hazardous Polymerization

Will not occur.

Combustion Products

Smoke, fumes, and oxides of carbon

13 TRANSPORTATION INFORMATION

BY LAND

Hazardous Materials Description and Proper Shipping Name (49 CFR 172.101)

Petroleum distillates, n.o.s. or Petroleum products, n.o.s. (contains mineral spirits) NOTE: IN CONTAINERS LESS THAN 119 GALLONS THIS PRODUCT IS NOT REGULATED BY DOT

Hazard Class (49 CFR 172.101): 3

Identification Number: UN1268

Packaging Group: III

BY AIR OR VESSEL

Hazardous Materials Description and Proper Shipping Name (49 CFR 172.101)

Not a Hazardous Material

Identification Number: UN1268

14 REGULATORY INFORMATION

EXPOSURE GUIDELINES

REGULATED MATERIAL	NIOSH REL	OSHA PEL	OSHA STEL	ACGIH TLV	ACGIH STEL
SYNTHETIC ISOPARAFFINIC HYDROCARBON CAS# 68551-17-7 and/or 64742-48-9 and/or 642928-30-1		100 ppm (REC)			
METALWORKING FLUID MIST	0.5 mg/m³				
MINERAL OIL (MIST)	5 mg/m³	5 mg/m³		5 mg/m³	

CERCLA

No components of this product are present at levels which require reporting under 40 CFR 302.4.

EPCRA (SARA) TITLE III Extremely Hazardous Substances (302): None

Hazardous Substances (311/312)

Product is a hazardous substance as defined under the OSHA Hazard Communication Standard and may be reportable under the provisions of SARA Sections 311 and 312.

HAZARD CATEGORIES

Acute Health: Yes

Chronic Health: No

Fire: Yes

Sudden Release of Pressure: No

Reactive: No

RCRA

Product concentrate does not meet the definition of a hazardous waste as defined under 40 CFR 261. It is possible that in use, the product may be contaminated by metals or by chlorinated solvents and the final waste may meet the TCLP definition. Each facility should assess each waste stream to determine if the used fluid should be treated as a hazardous waste.

TSCA

The ingredients of this product are on the TSCA inventory.

State Right to Know

Many states have enacted Community Right-To-Know laws which require information beyond that mandated by federal laws. Since some of these laws are inconsistent with the federal laws, the information in this sheet may not fully meet the requirements of every state.

In accordance with South Coast Air Quality Management District Rule 1144 (adopted March 6, 2009), this product shall not be sold in the State of California after July 1, 2010 (inclusive).

Toxic Substances (313)

Component	CAS #	Max %	Comments
Diethylene Glycol Monobutylether	112-34-5	1%	

GLOSSARY OF ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygenists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Disclaimer

NOTE: The opinions expressed herein are those of qualified experts within CIMCOOL® Industrial Products LLC and of their suppliers. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the condition and use of the product are not within the control of CIMCOOL® Industrial Products LLC , it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

F75B412

Section 1. Identification

Product name : KEM® 400 Enamel
Flat Black

Product code : F75B412

Other means of identification : Not available.

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Paint or paint related material.

Manufacturer : THE SHERWIN-WILLIAMS COMPANY
101 W. Prospect Avenue
Cleveland, OH 44115

Emergency telephone number of the company : US / Canada: (800) 424-9300
Mexico: SETIQ 800-00-214-00 / 55-5559-1588 Available 24 hours and 365 days a year

Product Information Telephone Number : US / Canada: 866-722-9710
Mexico: Not Available

Regulatory Information Telephone Number : US / Canada: (216) 566-2902
Mexico: Not Available

Transportation Emergency Telephone Number : US / Canada: (800) 424-9300
Mexico: SETIQ 800-00-214-00 / 55-5559-1588 Available 24 hours and 365 days a year

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
ASPIRATION HAZARD - Category 1

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 8.7% (oral), 8.7% (dermal), 8.7% (inhalation)

GHS label elements

Section 2. Hazards identification

Hazard pictograms :



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
May cause respiratory irritation.
May cause cancer.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure. (lungs)

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. FOR INDUSTRIAL USE ONLY. Adequate ventilation required when sanding or abrading the dried film. If Adequate ventilation cannot be provided wear an approved particulate respirator (NIOSH approved). Follow respirator manufacturer's directions for respirator use. DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Abrading or sanding of the dry film may release Crystalline Silica which has been shown to cause lung damage and cancer under long term exposure.

Please refer to the SDS for additional information. Keep out of reach of children. Do not transfer contents to other containers for storage.

Hazards not otherwise classified : DANGER: Rags, steel wool, other waste soaked with this product, and sanding residue may spontaneously catch fire if improperly discarded. Immediately place rags, steel wool, other waste soaked with this product, and sanding residue in a sealed, water-filled, metal container. Dispose of in accordance with local fire regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

Ingredient name	% by weight	CAS number
Xylene, mixed isomers	≥25 - ≤50	1330-20-7
Talc	≥10 - ≤25	14807-96-6
Lt. Aliphatic Hydrocarbon Solvent	≤10	64742-89-8
Ethylbenzene	≤7.7	100-41-4
Carbon Black	≤3	1333-86-4
Light Aromatic Hydrocarbons	≤1.6	64742-95-6
trimethylbenzene	<1	25551-13-7
Zirconium 2-Ethylhexanoate	≤1	22464-99-9
Med. Aliphatic Hydrocarbon Solvent	<1	64742-88-7
1,3,5-Trimethylbenzene	≤0.3	108-67-8
1,2,4-Trimethylbenzene	≤0.3	95-63-6
Cobalt 2-Ethylhexanoate	≤0.3	136-52-7
Methyl Ethyl Ketoxime	≤0.3	96-29-7
Crystalline Silica, respirable powder	≤0.3	14808-60-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Flammable liquid.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits (OSHA United States)

Ingredient name	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**OSHA PEL (United States, 5/2018). [Xylenes (o-, m-, p-isomers)]** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2023). [p-xylene and mixtures containing p-xylene] Ototoxicant.** TWA: 20 ppm 8 hours.
Talc	14807-96-6	**NIOSH REL (United States, 10/2020).** TWA: 2 mg/m³ 10 hours. Form: Respirable fraction **ACGIH TLV (United States, 1/2023).** TWA: 2 mg/m³ 8 hours. Form: Respirable fraction
Lt. Aliphatic Hydrocarbon Solvent	64742-89-8	None.
Ethylbenzene	100-41-4	**ACGIH TLV (United States, 1/2023). Ototoxicant.** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 100 ppm 10 hours. TWA: 435 mg/m³ 10 hours. STEL: 125 ppm 15 minutes.

Section 8. Exposure controls/personal protection

		STEL: 545 mg/m³ 15 minutes. **OSHA PEL (United States, 5/2018).** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours.
Carbon Black	1333-86-4	**NIOSH REL (United States, 10/2020).** TWA: 3.5 mg/m³ 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 3.5 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2023).** TWA: 3 mg/m³ 8 hours. Form: Inhalable fraction
Light Aromatic Hydrocarbons	64742-95-6	None.
trimethylbenzene	25551-13-7	**ACGIH TLV (United States, 1/2023). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**ACGIH TLV (United States, 1/2023). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **NIOSH REL (United States, 10/2020). [zirconium compounds as Zr]** TWA: 5 mg/m³, (as Zr) 10 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **OSHA PEL (United States, 5/2018). [Zirconium compounds (as Zr)]** TWA: 5 mg/m³, (as Zr) 8 hours.
Med. Aliphatic Hydrocarbon Solvent	64742-88-7	**OSHA PEL (United States, 5/2018). [Naphtha (Coal tar)]** TWA: 100 ppm 8 hours. TWA: 400 mg/m³ 8 hours.
1,3,5-Trimethylbenzene	108-67-8	**ACGIH TLV (United States, 1/2023). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours.
1,2,4-Trimethylbenzene	95-63-6	**NIOSH REL (United States, 10/2020).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours. **ACGIH TLV (United States, 1/2023).** TWA: 10 ppm 8 hours.
Cobalt 2-Ethylhexanoate	136-52-7	**ACGIH TLV (United States, 1/2023). [cobalt and inorganic compounds as Co] Skin sensitizer. Inhalation sensitizer.** TWA: 0.02 mg/m³, (as Co) 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.
Crystalline Silica, respirable powder	14808-60-7	**OSHA PEL Z3 (United States, 6/2016).** TWA: 250 mppcf / (%SiO2+5) 8 hours. Form: Respirable TWA: 10 mg/m³ / (%SiO2+2) 8 hours. Form: Respirable **OSHA PEL (United States, 5/2018). [Silica, crystalline]** TWA: 50 µg/m³ 8 hours. Form: Respirable dust

		ACGIH TLV (United States, 1/2023). [Silica, crystalline] TWA: 0.025 mg/m³ 8 hours. Form: Respirable fraction **NIOSH REL (United States, 10/2020). [SILICA, CRYSTALLINE (AS RESPIRABLE DUST)]** TWA: 0.05 mg/m³ 10 hours. Form: respirable dust

Occupational exposure limits (Canada)

Ingredient name	CAS #	Exposure limits
Xylene	1330-20-7	**CA Alberta Provincial (Canada, 6/2018). [Dimethylbenzene (o,m & p isomers)]** 8 hrs OEL: 100 ppm 8 hours. 15 min OEL: 651 mg/m³ 15 minutes. 15 min OEL: 150 ppm 15 minutes. 8 hrs OEL: 434 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 6/2022). [Xylene (o, m & p isomers)]** TWA: 100 ppm 8 hours. STEL: 150 ppm 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Xylene (o-,m-,p- isomers)]** TWAEV: 100 ppm 8 hours. TWAEV: 434 mg/m³ 8 hours. STEV: 150 ppm 15 minutes. STEV: 651 mg/m³ 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Xylene (o-, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Xylene (o, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
talc (none asbestiform)	14807-96-6	**CA British Columbia Provincial (Canada, 6/2022). Notes: the value is for particulate matter containing no asbestos and less than 1% crystalline silica.** TWA: 2 mg/m³ 8 hours. Form: Respirable **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 2 mg/m³ 8 hours. Form: Respirable dust. **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 2 mg/m³ 8 hours. Form: Respirable particulate **CA Ontario Provincial (Canada, 6/2019).** TWA: 2 mg/m³ 8 hours. Form: Respirable particulate matter. TWA: 2 f/cc 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** TWA: 2 mg/m³ 8 hours. Form: respirable fraction
Ethylbenzene	100-41-4	**CA Alberta Provincial (Canada, 6/2018).**

		8 hrs OEL: 100 ppm 8 hours. 8 hrs OEL: 434 mg/m³ 8 hours. 15 min OEL: 543 mg/m³ 15 minutes. 15 min OEL: 125 ppm 15 minutes. **CA British Columbia Provincial (Canada, 6/2022).** TWA: 20 ppm 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 20 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 20 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 125 ppm 15 minutes. TWA: 100 ppm 8 hours.
Carbon black	1333-86-4	**CA British Columbia Provincial (Canada, 6/2022).** TWA: 3 mg/m³ 8 hours. Form: Inhalable **CA Ontario Provincial (Canada, 6/2019).** TWA: 3 mg/m³ 8 hours. Form: Inhalable particulate matter. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 3 mg/m³ 8 hours. Form: inhalable dust **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 3.5 mg/m³ 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 7 mg/m³ 15 minutes. TWA: 3.5 mg/m³ 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**CA Alberta Provincial (Canada, 6/2018). [Zirconium and compounds as Zr]** 8 hrs OEL: 5 mg/m³, (as Zr) 8 hours. 15 min OEL: 10 mg/m³, (as Zr) 15 minutes. **CA British Columbia Provincial (Canada, 6/2022). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Zirconium and compounds]** TWAEV: 5 mg/m³, (as Zr) 8 hours. STEV: 10 mg/m³, (as Zr) 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Zirconium and compounds as Z]** STEL: 10 mg/m³, (as Zr) 15 minutes. TWA: 5 mg/m³, (as Zr) 8 hours.
Cobalt 2-Ethylhexanoate	136-52-7	**CA British Columbia Provincial (Canada, 6/2022). [cobalt and inorganic compounds as Co, Inhalable] Skin sensitizer. Inhalation sensitizer. Notes: No British Columbia exposure limit at this time** **CA British Columbia Provincial (Canada, 6/2022). [Cobalt and inorganic compounds as Co, Total] Skin sensitizer. Inhalation sensitizer.** TWA: 0.02 mg/m³, (as Co, Total) 8 hours.

Section 8. Exposure controls/personal protection

		CA Quebec Provincial (Canada, 6/2022). [Cobalt elemental, and inorganic compounds] Skin sensitizer. Inhalation sensitizer. TWAEV: 0.02 mg/m³, (as Co) 8 hours. **CA Ontario Provincial (Canada, 6/2019). [Cobalt and inorganic compounds as Co]** TWA: 0.02 mg/m³, (as Co) 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Cobalt and inorganic compounds as Co]** STEL: 0.06 mg/m³, (measured as Co) 15 minutes. TWA: 0.02 mg/m³, (measured as Co) 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.
Quartz	14808-60-7	**CA British Columbia Provincial (Canada, 6/2022). [Silica, Crystalline - alpha quartz and Cristobalite Respirable]** TWA: 0.025 mg/m³ 8 hours. Form: Respirable **CA Quebec Provincial (Canada, 6/2022). [Silica Crystalline -Quartz]** TWAEV: 0.1 mg/m³ 8 hours. Form: Respirable dust. **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 0.025 mg/m³ 8 hours. Form: Respirable particulate **CA Ontario Provincial (Canada, 6/2019). [Silica, Crystalline (Quartz/Tripoli)]** TWA: 0.1 mg/m³ 8 hours. Form: Respirable particulate matter. **CA Saskatchewan Provincial (Canada, 7/2013).** TWA: 0.05 mg/m³ 8 hours. Form: respirable fraction

Occupational exposure limits (Mexico)

	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Xylenes (mixed)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**NOM-010-STPS-2014 (Mexico, 4/2016).** TWA: 20 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**NOM-010-STPS-2014 (Mexico, 4/2016). [Zirconium compounds]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes.
Cobalt 2-Ethylhexanoate	136-52-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Cobalt and inorganic compounds]** TWA: 0.02 mg/m³, (as Co) 8 hours.

Biological exposure indices (United States)

Section 8. Exposure controls/personal protection

Ingredient name	Exposure indices
Xylene, mixed isomers	**ACGIH BEI (United States, 1/2023) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methylhippuric acids [in urine]. Sampling time: end of shift.
Ethylbenzene	**ACGIH BEI (United States, 1/2023)** BEI: 0.15 g/g creatinine, sum of mandelic acid and phenylglyoxylic acid [in urine]. Sampling time: end of shift.
Cobalt 2-Ethylhexanoate	**ACGIH BEI (United States, 1/2023) [cobalt and inorganic compounds including cobalt oxides]** BEI: 15 µg/l, not combined with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek. BEI: Nonquantitative: Biological monitoring should be considered for this compound based on the review; however, a specific BEI® could not be determined due to insufficient data., cobalt with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek.

Biological exposure indices (Canada)

No exposure indices known.

Biological exposure indices (Mexico)

Ingredient name	Exposure indices
Xylene, mixed isomers	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methyl hippuric acids [in urine]. Sampling time: at the end of the work shift.
Ethylbenzene	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012)** BEI: 0.7 g/g creatinine [non-specific.The determinant is nonspecific, since it can be found after exposure to other chemicals.; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], Sum of mandelic acid and acid phenylglyoxylic [in urine]. Sampling time: at the end of the shift at

	the end of the work week. BEI: semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible., ethylbenzene [in exhaled air]. Sampling time: uncritical.
Cobalt 2-Ethylhexanoate	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [cobalt and its compounds]** BEI: 1 µg/l [Basal level.The determinant may be present in the biological sample obtained from subjects who have not been occupationally exposed, at a concentration that could affect the interpretation of the results. These background levels are included in the valu; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], cobalt [in blood]. Sampling time: at the end of the shift at the end of the work week. BEI: 15 µg/l [Basal level.The determinant may be present in the biological sample obtained from subjects who have not been occupationally exposed, at a concentration that could affect the interpretation of the results. These background levels are included in the valu], cobalt [in urine]. Sampling time: at the end of the shift at the end of the work week.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : 115°C (239°F)

Flash point : Closed cup: 13°C (55.4°F) [Pensky-Martens Closed Cup]

Evaporation rate : 1.5 (butyl acetate = 1)

Flammability : Flammable liquid.

Lower and upper explosion limit/flammability limit : Lower: 0.7%
Upper: 7%

Vapor pressure : 1.6 kPa (12 mm Hg)

Relative vapor density : 3.66 [Air = 1]

Relative density : 1.06

Solubility(ies) :

Media	Result
cold water	Not soluble

Partition coefficient: n-octanol/water : Not applicable.

Section 9. Physical and chemical properties

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C (104°F)): <20.5 mm^2/s (<20.5 cSt)

Molecular weight : Not applicable.

Heat of combustion : 17.661 kJ/g

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Xylene, mixed isomers	LC50 Inhalation Gas.	Rat	6700 ppm	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
Carbon Black	LD50 Oral	Rat	>15400 mg/kg	-
Light Aromatic Hydrocarbons	LD50 Oral	Rat	8400 mg/kg	-
trimethylbenzene	LD50 Oral	Rat	8970 mg/kg	-
Zirconium 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	>5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m^3	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m^3	4 hours
	LD50 Oral	Rat	5 g/kg	-
Cobalt 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	1.22 g/kg	-
Methyl Ethyl Ketoxime	LD50 Oral	Rat	930 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Xylene, mixed isomers	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 uL	-
	Skin - Moderate irritant	Rabbit	-	100 %	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
Talc	Skin - Mild irritant	Human	-	72 hours 300 ug l	-
Ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Light Aromatic Hydrocarbons	Eyes - Mild irritant	Rabbit	-	24 hours 100 uL	-
trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
1,3,5-Trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
Methyl Ethyl Ketoxime	Eyes - Severe irritant	Rabbit	-	100 uL	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Xylene, mixed isomers	-	3	-
Talc	-	3	-
Ethylbenzene	-	2B	-
Carbon Black	-	2B	-
Cobalt 2-Ethylhexanoate	-	2B	Reasonably anticipated to be a human carcinogen.
Crystalline Silica, respirable powder	+	1	Known to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 3	-	Respiratory tract irritation
Lt. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Ethylbenzene	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Light Aromatic Hydrocarbons	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Med. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
1,3,5-Trimethylbenzene	Category 3	-	Respiratory tract irritation
1,2,4-Trimethylbenzene	Category 3	-	Respiratory tract irritation
Methyl Ethyl Ketoxime	Category 1	-	upper respiratory tract
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 2	-	-
Talc	Category 1	inhalation	lungs
Lt. Aliphatic Hydrocarbon Solvent	Category 2	-	-
Ethylbenzene	Category 2	-	-
Light Aromatic Hydrocarbons	Category 2	-	-
Med. Aliphatic Hydrocarbon Solvent	Category 1	-	-
Methyl Ethyl Ketoxime	Category 2	-	blood system
Crystalline Silica, respirable powder	Category 1	inhalation	-

Aspiration hazard

Name	Result
Xylene, mixed isomers	ASPIRATION HAZARD - Category 1
Lt. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
Ethylbenzene	ASPIRATION HAZARD - Category 1
Light Aromatic Hydrocarbons	ASPIRATION HAZARD - Category 1
trimethylbenzene	ASPIRATION HAZARD - Category 1
Med. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
1,3,5-Trimethylbenzene	ASPIRATION HAZARD - Category 1
1,2,4-Trimethylbenzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : May damage fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	9805.67 mg/kg
Dermal	3054.34 mg/kg
Inhalation (gases)	18603.71 ppm
Inhalation (vapors)	172.42 mg/l

Section 11. Toxicological information

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Xylene, mixed isomers	Acute LC50 8500 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Lt. Aliphatic Hydrocarbon Solvent	Acute LC50 >100000 ppm Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
Ethylbenzene	Acute EC50 4900 µg/l Marine water	Algae - *Skeletonema costatum*	72 hours
	Acute EC50 7700 µg/l Marine water	Algae - *Skeletonema costatum*	96 hours
	Acute EC50 6.53 mg/l Marine water	Crustaceans - *Artemia sp.* - Nauplii	48 hours
	Acute EC50 2.93 mg/l Fresh water	Daphnia - *Daphnia magna* - Neonate	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
trimethylbenzene	Acute LC50 5600 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
1,3,5-Trimethylbenzene	Acute LC50 13000 µg/l Marine water	Crustaceans - *Cancer magister* - Zoea	48 hours
	Acute LC50 12520 µg/l Fresh water	Fish - *Carassius auratus*	96 hours
	Chronic NOEC 0.4 mg/l Fresh water	Daphnia - *Daphnia magna*	21 days
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - *Elasmopus pectenicrus* - Adult	48 hours
	Acute LC50 7720 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Methyl Ethyl Ketoxime	Acute LC50 843000 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Xylene, mixed isomers	-	-	Readily
Ethylbenzene	-	-	Readily
Light Aromatic Hydrocarbons	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Xylene, mixed isomers	-	8.1 to 25.9	Low
Lt. Aliphatic Hydrocarbon Solvent	-	10 to 2500	High
Light Aromatic Hydrocarbons	-	10 to 2500	High
Zirconium 2-Ethylhexanoate	-	2.96	Low
1,3,5-Trimethylbenzene	-	161	Low
1,2,4-Trimethylbenzene	-	243	Low
Cobalt 2-Ethylhexanoate	-	15600	High
Methyl Ethyl Ketoxime	-	2.5 to 5.8	Low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IATA	IMDG
UN number	UN1263	UN1263	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT	PAINT	PAINT	PAINT
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.
Additional information	- **ERG No.** 128	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3). **ERG No.** 128	- **ERG No.** 128	-	**Emergency schedules** F-E, S-E

Section 14. Transport information

Special precautions for user : Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

Transport in bulk according to IMO instruments : Not available.

Proper shipping name : Not available.

Section 15. Regulatory information

SARA 313

SARA 313 (40 CFR 372.45) supplier notification can be found on the Environmental Data Sheet.

California Prop. 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

International regulations

Montreal Protocol

Not listed.

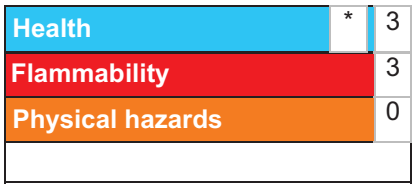
Stockholm Convention on Persistent Organic Pollutants

Not listed.

International lists : **Australia inventory (AIIC)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory (CSCL): Not determined.
Japan inventory (ISHL): Not determined.
Korea inventory (KECI): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan Chemical Substances Inventory (TCSI): Not determined.
Thailand inventory: Not determined.
Turkey inventory: Not determined.
Vietnam inventory: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	On basis of test data
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 1A	Calculation method
TOXIC TO REPRODUCTION - Category 1B	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

History

Date of printing : 9/13/2023

Date of issue/Date of revision : 9/13/2023

Date of previous issue : 7/17/2023

Version : 21

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

It is recommended that each customer or recipient of this Safety Data Sheet (SDS) study it carefully and consult resources, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. This information is provided in good faith and believed to be accurate as of the effective date herein. However, no warranty, express or implied, is given. The information presented here applies only to the product as shipped. The addition of any material can change the composition, hazards and risks of the product. Products shall not be repackaged, modified, or tinted except as specifically instructed by the manufacturer, including but not limited to the incorporation of products not specified by the manufacturer, or the use or addition of products in proportions not specified by the manufacturer. Regulatory requirements are subject to change and may differ between various locations and jurisdictions. The customer/buyer/user is responsible to ensure that his activities comply with all country, federal, state, provincial or local laws. The conditions for use of the product are not under the control of the manufacturer; the customer/buyer/user is responsible to determine the conditions necessary for the safe use of this product. The customer/buyer/user should not use the product for any purpose other than the purpose shown in the applicable section of this SDS without first referring to the supplier and obtaining written handling instructions. Due to the proliferation of sources for information such as manufacturer-specific SDS, the manufacturer cannot be responsible for SDSs obtained from any other source.

SAFETY DATA SHEET

F75KXG22601-794383

Section 1. Identification

Product name : F75KX KEM 400 ENAMEL BLEND WITH OPTICOLOR XP
RAL 6032 SIGNAL GREEN

Product code : F75KXG22601-794383

Other means of identification : Not available.

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Paint or paint related material.

Manufacturer : THE SHERWIN-WILLIAMS COMPANY
101 W. Prospect Avenue
Cleveland, OH 44115

Emergency telephone number of the company : (216) 566-2917

Product Information Telephone Number : Not available.

Transportation Emergency Telephone Number : (800) 424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 2
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
ASPIRATION HAZARD - Category 1

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 5.9% (oral), 5.9% (dermal), 5.9% (inhalation)

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

Hazard statements : Flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
Suspected of causing cancer.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Please refer to the SDS for additional information. Keep out of reach of children. Do not transfer contents to other containers for storage.

Hazards not otherwise classified : DANGER: Rags, steel wool, other waste soaked with this product, and sanding residue may spontaneously catch fire if improperly discarded. Immediately place rags, steel wool, other waste soaked with this product, and sanding residue in a sealed, water-filled, metal container. Dispose of in accordance with local fire regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

Section 3. Composition/information on ingredients

Ingredient name	% by weight	CAS number
Xylene, mixed isomers	≥25 - ≤33	1330-20-7
Lt. Aliphatic Hydrocarbon Solvent	≤7.1	64742-89-8
Ethylbenzene	≤6.6	100-41-4
2-methoxy-1-methylethyl acetate	≤6.1	108-65-6
Titanium Dioxide	≤5	13463-67-7
Zirconium 2-Ethylhexanoate	≤1	22464-99-9
Light Aromatic Hydrocarbons	<1	64742-95-6
Hydrotreated Heavy Petroleum Naphtha	≤0.3	64742-48-9
Methyl Ethyl Ketoxime	≤0.3	96-29-7
trimethylbenzene	≤0.3	25551-13-7
Cobalt 2-Ethylhexanoate	≤0.3	136-52-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Section 4. First aid measures

Ingestion : May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Flammable liquid.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers

Section 7. Handling and storage

retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits (OSHA United States)

Ingredient name	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**OSHA PEL (United States, 5/2018). [Xylenes (o-, m-, p-isomers)]** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2023). [p-xylene and mixtures containing p-xylene] Ototoxicant.** TWA: 20 ppm 8 hours.
Lt. Aliphatic Hydrocarbon Solvent	64742-89-8	None.
Ethylbenzene	100-41-4	**ACGIH TLV (United States, 1/2023). Ototoxicant.** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 100 ppm 10 hours. TWA: 435 mg/m³ 10 hours. STEL: 125 ppm 15 minutes. STEL: 545 mg/m³ 15 minutes. **OSHA PEL (United States, 5/2018).** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours.
2-methoxy-1-methylethyl acetate	108-65-6	**OARS WEEL (United States, 4/2022).** TWA: 50 ppm 8 hours.
Titanium Dioxide	13463-67-7	**OSHA PEL (United States, 5/2018).** TWA: 15 mg/m³ 8 hours. Form: Total dust **ACGIH TLV (United States, 1/2023).** TWA: 2.5 mg/m³ 8 hours. Form: respirable fraction, finescale particles
Zirconium 2-Ethylhexanoate	22464-99-9	**ACGIH TLV (United States, 1/2023). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **NIOSH REL (United States, 10/2020). [zirconium compounds as Zr]** TWA: 5 mg/m³, (as Zr) 10 hours. STEL: 10 mg/m³, (as Zr) 15 minutes.

		OSHA PEL (United States, 5/2018). [Zirconium compounds (as Zr)] TWA: 5 mg/m³, (as Zr) 8 hours.
Light Aromatic Hydrocarbons	64742-95-6	None.
Hydrotreated Heavy Petroleum Naphtha	64742-48-9	None.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.
trimethylbenzene	25551-13-7	**ACGIH TLV (United States, 1/2023). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours.
Cobalt 2-Ethylhexanoate	136-52-7	**ACGIH TLV (United States, 1/2023). [cobalt and inorganic compounds as Co] Skin sensitizer. Inhalation sensitizer.** TWA: 0.02 mg/m³, (as Co) 8 hours.

Occupational exposure limits (Canada)

Ingredient name	CAS #	Exposure limits
Xylene	1330-20-7	**CA Alberta Provincial (Canada, 6/2018). [Dimethylbenzene (o,m & p isomers)]** 8 hrs OEL: 100 ppm 8 hours. 15 min OEL: 651 mg/m³ 15 minutes. 15 min OEL: 150 ppm 15 minutes. 8 hrs OEL: 434 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 6/2022). [Xylene (o, m & p isomers)]** TWA: 100 ppm 8 hours. STEL: 150 ppm 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Xylene (o-,m-,p- isomers)]** TWAEV: 100 ppm 8 hours. TWAEV: 434 mg/m³ 8 hours. STEV: 150 ppm 15 minutes. STEV: 651 mg/m³ 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Xylene (o-, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Xylene (o, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 100 ppm 8 hours. 8 hrs OEL: 434 mg/m³ 8 hours. 15 min OEL: 543 mg/m³ 15 minutes. 15 min OEL: 125 ppm 15 minutes. **CA British Columbia Provincial (Canada, 6/2022).** TWA: 20 ppm 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 20 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 20 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).**

Section 8. Exposure controls/personal protection

		STEL: 125 ppm 15 minutes. TWA: 100 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**CA Alberta Provincial (Canada, 6/2018). [Zirconium and compounds as Zr]** 8 hrs OEL: 5 mg/m³, (as Zr) 8 hours. 15 min OEL: 10 mg/m³, (as Zr) 15 minutes. **CA British Columbia Provincial (Canada, 6/2022). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Zirconium and compounds]** TWAEV: 5 mg/m³, (as Zr) 8 hours. STEV: 10 mg/m³, (as Zr) 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Zirconium and compounds as Z]** STEL: 10 mg/m³, (as Zr) 15 minutes. TWA: 5 mg/m³, (as Zr) 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.
Cobalt 2-Ethylhexanoate	136-52-7	**CA British Columbia Provincial (Canada, 6/2022). [cobalt and inorganic compounds as Co, Inhalable] Skin sensitizer. Inhalation sensitizer. Notes: No British Columbia exposure limit at this time** **CA British Columbia Provincial (Canada, 6/2022). [Cobalt and inorganic compounds as Co, Total] Skin sensitizer. Inhalation sensitizer.** TWA: 0.02 mg/m³, (as Co, Total) 8 hours. **CA Quebec Provincial (Canada, 6/2022). [Cobalt elemental, and inorganic compounds] Skin sensitizer. Inhalation sensitizer.** TWAEV: 0.02 mg/m³, (as Co) 8 hours. **CA Ontario Provincial (Canada, 6/2019). [Cobalt and inorganic compounds as Co]** TWA: 0.02 mg/m³, (as Co) 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Cobalt and inorganic compounds as Co]** STEL: 0.06 mg/m³, (measured as Co) 15 minutes. TWA: 0.02 mg/m³, (measured as Co) 8 hours.

Occupational exposure limits (Mexico)

Section 8. Exposure controls/personal protection

	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Xylenes (mixed)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**NOM-010-STPS-2014 (Mexico, 4/2016).** TWA: 20 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**NOM-010-STPS-2014 (Mexico, 4/2016). [Zirconium compounds]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes.
Cobalt 2-Ethylhexanoate	136-52-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Cobalt and inorganic compounds]** TWA: 0.02 mg/m³, (as Co) 8 hours.

Biological exposure indices (United States)

Ingredient name	Exposure indices
Xylene, mixed isomers	**ACGIH BEI (United States, 1/2023) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methylhippuric acids [in urine]. Sampling time: end of shift.
Ethylbenzene	**ACGIH BEI (United States, 1/2023)** BEI: 0.15 g/g creatinine, sum of mandelic acid and phenylglyoxylic acid [in urine]. Sampling time: end of shift.
Cobalt 2-Ethylhexanoate	**ACGIH BEI (United States, 1/2023) [cobalt and inorganic compounds including cobalt oxides]** BEI: 15 µg/l, not combined with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek. BEI: Nonquantitative: Biological monitoring should be considered for this compound based on the review; however, a specific BEI® could not be determined due to insufficient data., cobalt with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek.

Biological exposure indices (Canada)

No exposure indices known.

Biological exposure indices (Mexico)

Ingredient name	Exposure indices
Xylene, mixed isomers	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methyl hippuric acids [in urine]. Sampling time: at the end of the work shift.

Ethylbenzene	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012)** BEI: 0.7 g/g creatinine [non-specific.The determinant is nonspecific, since it can be found after exposure to other chemicals.; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], Sum of mandelic acid and acid phenylglyoxylic [in urine]. Sampling time: at the end of the shift at the end of the work week. BEI: semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible., ethylbenzene [in exhaled air]. Sampling time: uncritical.
Cobalt 2-Ethylhexanoate	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [cobalt and its compounds]** BEI: 1 µg/l [Basal level.The determinant may be present in the biological sample obtained from subjects who have not been occupationally exposed, at a concentration that could affect the interpretation of the results. These background levels are included in the valu; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], cobalt [in blood]. Sampling time: at the end of the shift at the end of the work week. BEI: 15 µg/l [Basal level.The determinant may be present in the biological sample obtained from subjects who have not been occupationally exposed, at a concentration that could affect the interpretation of the results. These background levels are included in the valu], cobalt [in urine]. Sampling time: at the end of the shift at the end of the work week.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : 115°C (239°F)

Section 9. Physical and chemical properties

Flash point : Closed cup: 26°C (78.8°F) [Pensky-Martens Closed Cup]

Evaporation rate : 1.5 (butyl acetate = 1)

Flammability : Flammable liquid.

Lower and upper explosion limit/flammability limit : Lower: 0.9%
Upper: 13.1%

Vapor pressure : 1.6 kPa (12 mm Hg)

Relative vapor density : 3.66 [Air = 1]

Relative density : 1.02

Solubility(ies) :

Media	Result
cold water	Not soluble

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C (104°F)): <20.5 mm^2/s (<20.5 cSt)

Molecular weight : Not applicable.

Heat of combustion : 15.782 kJ/g

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
Xylene, mixed isomers	LC50 Inhalation Gas.	Rat	6700 ppm	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
2-methoxy-1-methylethyl acetate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	8532 mg/kg	-
Zirconium 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	>5 g/kg	-
Light Aromatic Hydrocarbons	LD50 Oral	Rat	8400 mg/kg	-
Hydrotreated Heavy Petroleum Naphtha	LC50 Inhalation Vapor	Rat	8500 mg/m³	4 hours
	LD50 Oral	Rat	>6 g/kg	-
Methyl Ethyl Ketoxime	LD50 Oral	Rat	930 mg/kg	-
trimethylbenzene	LD50 Oral	Rat	8970 mg/kg	-
Cobalt 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	1.22 g/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Xylene, mixed isomers	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 uL	-
	Skin - Moderate irritant	Rabbit	-	100 %	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
Ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Titanium Dioxide	Skin - Mild irritant	Human	-	72 hours 300 ug I	-
Light Aromatic Hydrocarbons	Eyes - Mild irritant	Rabbit	-	24 hours 100 uL	-
Methyl Ethyl Ketoxime	Eyes - Severe irritant	Rabbit	-	100 uL	-
trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Xylene, mixed isomers	-	3	-
Ethylbenzene	-	2B	-
Titanium Dioxide	-	2B	-
Cobalt 2-Ethylhexanoate	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Section 11. Toxicological information

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 3	-	Respiratory tract irritation
Lt. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Ethylbenzene	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
2-methoxy-1-methylethyl acetate	Category 3	-	Narcotic effects
Light Aromatic Hydrocarbons	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Methyl Ethyl Ketoxime	Category 1	-	upper respiratory tract
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 2	-	-
Lt. Aliphatic Hydrocarbon Solvent	Category 2	-	-
Ethylbenzene	Category 2	-	-
Light Aromatic Hydrocarbons	Category 2	-	-
Methyl Ethyl Ketoxime	Category 2	-	blood system

Aspiration hazard

Name	Result
Xylene, mixed isomers	ASPIRATION HAZARD - Category 1
Lt. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
Ethylbenzene	ASPIRATION HAZARD - Category 1
Light Aromatic Hydrocarbons	ASPIRATION HAZARD - Category 1
Hydrotreated Heavy Petroleum Naphtha	ASPIRATION HAZARD - Category 1
trimethylbenzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : May damage fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	11492.71 mg/kg
Dermal	3583.46 mg/kg
Inhalation (gases)	21826.56 ppm
Inhalation (vapors)	201.15 mg/l

Section 11. Toxicological information

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Xylene, mixed isomers	Acute LC50 8500 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Lt. Aliphatic Hydrocarbon Solvent	Acute LC50 >100000 ppm Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
Ethylbenzene	Acute EC50 4900 µg/l Marine water	Algae - *Skeletonema costatum*	72 hours
	Acute EC50 7700 µg/l Marine water	Algae - *Skeletonema costatum*	96 hours
	Acute EC50 6.53 mg/l Marine water	Crustaceans - *Artemia sp.* - Nauplii	48 hours
	Acute EC50 2.93 mg/l Fresh water	Daphnia - *Daphnia magna* - Neonate	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
Titanium Dioxide	Acute LC50 >1000000 µg/l Marine water	Fish - *Fundulus heteroclitus*	96 hours
Methyl Ethyl Ketoxime	Acute LC50 843000 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
trimethylbenzene	Acute LC50 5600 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Xylene, mixed isomers	-	-	Readily
Ethylbenzene	-	-	Readily
Light Aromatic Hydrocarbons	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Xylene, mixed isomers	-	8.1 to 25.9	Low
Lt. Aliphatic Hydrocarbon Solvent	-	10 to 2500	High
Zirconium 2-Ethylhexanoate	-	2.96	Low
Light Aromatic Hydrocarbons	-	10 to 2500	High
Hydrotreated Heavy Petroleum Naphtha	-	10 to 2500	High
Methyl Ethyl Ketoxime	-	2.5 to 5.8	Low
Cobalt 2-Ethylhexanoate	-	15600	High

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IATA	IMDG
UN number	UN1263	UN1263	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT	PAINT	PAINT	PAINT
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.
Additional information	- **ERG No.** 128	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3). **ERG No.** 128	- **ERG No.** 128	-	**Emergency schedules** F-E, S-E

Section 14. Transport information

Special precautions for user : Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

Transport in bulk according to IMO instruments : Not available.

Proper shipping name : Not available.

Section 15. Regulatory information

SARA 313

SARA 313 (40 CFR 372.45) supplier notification can be found on the Environmental Data Sheet.

California Prop. 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

International regulations

Montreal Protocol

Not listed.

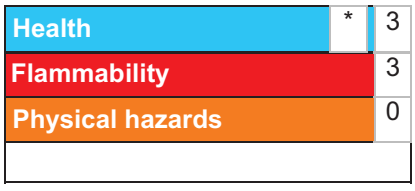
Stockholm Convention on Persistent Organic Pollutants

Not listed.

International lists : **Australia inventory (AIIC)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory (CSCL): Not determined.
Japan inventory (ISHL): Not determined.
Korea inventory (KECI): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan Chemical Substances Inventory (TCSI): Not determined.
Thailand inventory: Not determined.
Turkey inventory: Not determined.
Vietnam inventory: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 2	Calculation method
TOXIC TO REPRODUCTION - Category 1B	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

History

Date of printing : 10/4/2023

Date of issue/Date of revision : 10/4/2023

Date of previous issue : 7/31/2023

Version : 2

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

It is recommended that each customer or recipient of this Safety Data Sheet (SDS) study it carefully and consult resources, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. This information is provided in good faith and believed to be accurate as of the effective date herein. However, no warranty, express or implied, is given. The information presented here applies only to the product as shipped. The addition of any material can change the composition, hazards and risks of the product. Products shall not be repackaged, modified, or tinted except as specifically instructed by the manufacturer, including but not limited to the incorporation of products not specified by the manufacturer, or the use or addition of products in proportions not specified by the manufacturer. Regulatory requirements are subject to change and may differ between various locations and jurisdictions. The customer/buyer/user is responsible to ensure that his activities comply with all country, federal, state, provincial or local laws. The conditions for use of the product are not under the control of the manufacturer; the customer/buyer/user is responsible to determine the conditions necessary for the safe use of this product. The customer/buyer/user should not use the product for any purpose other than the purpose shown in the applicable section of this SDS without first referring to the supplier and obtaining written handling instructions. Due to the proliferation of sources for information such as manufacturer-specific SDS, the manufacturer cannot be responsible for SDSs obtained from any other source.

SAFETY DATA SHEET

F75KXW14172-4383

Section 1. Identification

Product name : Sherwin-Williams Industrial Coatings
SAFETY YELLOW SW 4084

Product code : F75KXW14172-4383

Other means of identification : Not available.

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Paint or paint related material.

Manufacturer : THE SHERWIN-WILLIAMS COMPANY
101 W. Prospect Avenue
Cleveland, OH 44115

Emergency telephone number of the company : (216) 566-2917

Product Information Telephone Number : Not available.

Regulatory Information Telephone Number : (216) 566-2902

Transportation Emergency Telephone Number : (800) 424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 2
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
ASPIRATION HAZARD - Category 1

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 5.7% (oral), 5.7% (dermal), 5.7% (inhalation)

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

Hazard statements : Highly flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
May cause respiratory irritation.
Suspected of causing cancer.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Please refer to the SDS for additional information. Keep out of reach of children. Do not transfer contents to other containers for storage.

Hazards not otherwise classified : DANGER: Rags, steel wool, other waste soaked with this product, and sanding residue may spontaneously catch fire if improperly discarded. Immediately place rags, steel wool, other waste soaked with this product, and sanding residue in a sealed, water-filled, metal container. Dispose of in accordance with local fire regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

Section 3. Composition/information on ingredients

Ingredient name	% by weight	CAS number
Xylene, mixed isomers	≥25 - ≤50	1330-20-7
Titanium Dioxide	≥10 - ≤25	13463-67-7
Ethylbenzene	≤9.4	100-41-4
Lt. Aliphatic Hydrocarbon Solvent	≤8.7	64742-89-8
Light Aromatic Hydrocarbons	≤1.8	64742-95-6
Zirconium 2-Ethylhexanoate	≤1	22464-99-9
trimethylbenzene	<1	25551-13-7
Med. Aliphatic Hydrocarbon Solvent	<1	64742-88-7
1,3,5-Trimethylbenzene	≤0.3	108-67-8
1,2,4-Trimethylbenzene	≤0.3	95-63-6
Methyl Ethyl Ketoxime	≤0.3	96-29-7
Cobalt 2-Ethylhexanoate	≤0.3	136-52-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Flammable liquid.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits (OSHA United States)

Ingredient name	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**OSHA PEL (United States, 5/2018). [Xylenes (o-, m-, p-isomers)]** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2022). [p-xylene and mixtures containing p-xylene] Ototoxicant.** TWA: 20 ppm 8 hours.
Titanium Dioxide	13463-67-7	**OSHA PEL (United States, 5/2018).** TWA: 15 mg/m³ 8 hours. Form: Total dust **ACGIH TLV (United States, 1/2022).** TWA: 2.5 mg/m³ 8 hours. Form: respirable fraction, finescale particles
Ethylbenzene	100-41-4	**ACGIH TLV (United States, 1/2022). Ototoxicant.** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 100 ppm 10 hours. TWA: 435 mg/m³ 10 hours. STEL: 125 ppm 15 minutes. STEL: 545 mg/m³ 15 minutes. **OSHA PEL (United States, 5/2018).** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours.
Lt. Aliphatic Hydrocarbon Solvent	64742-89-8	None.
Light Aromatic Hydrocarbons	64742-95-6	None.
Zirconium 2-Ethylhexanoate	22464-99-9	**ACGIH TLV (United States, 1/2022). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **NIOSH REL (United States, 10/2020). [zirconium compounds as Zr]** TWA: 5 mg/m³, (as Zr) 10 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **OSHA PEL (United States, 5/2018). [Zirconium compounds (as Zr)]**

		TWA: 5 mg/m³, (as Zr) 8 hours.
trimethylbenzene	25551-13-7	**ACGIH TLV (United States, 1/2022). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours. TWA: 123 mg/m³ 8 hours.
Med. Aliphatic Hydrocarbon Solvent	64742-88-7	**OSHA PEL (United States, 5/2018). [Naphtha (Coal tar)]** TWA: 100 ppm 8 hours. TWA: 400 mg/m³ 8 hours.
1,3,5-Trimethylbenzene	108-67-8	**ACGIH TLV (United States, 1/2022). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours. TWA: 123 mg/m³ 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours.
1,2,4-Trimethylbenzene	95-63-6	**NIOSH REL (United States, 10/2020).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours. **ACGIH TLV (United States, 1/2022).** TWA: 10 ppm 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.
Cobalt 2-Ethylhexanoate	136-52-7	**ACGIH TLV (United States, 1/2022). [cobalt and inorganic compounds as Co] Skin sensitizer. Inhalation sensitizer.** TWA: 0.02 mg/m³, (as Co) 8 hours.

Occupational exposure limits (Canada)

Ingredient name	CAS #	Exposure limits
Xylene	1330-20-7	**CA Alberta Provincial (Canada, 6/2018). [Dimethylbenzene (o,m & p isomers)]** 8 hrs OEL: 100 ppm 8 hours. 15 min OEL: 651 mg/m³ 15 minutes. 15 min OEL: 150 ppm 15 minutes. 8 hrs OEL: 434 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 6/2022). [Xylene (o, m & p isomers)]** TWA: 100 ppm 8 hours. STEL: 150 ppm 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Xylene (o-,m-,p- isomers)]** TWAEV: 100 ppm 8 hours. TWAEV: 434 mg/m³ 8 hours. STEV: 150 ppm 15 minutes. STEV: 651 mg/m³ 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Xylene (o-, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Xylene (o, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**CA Alberta Provincial (Canada, 6/2018).**

		8 hrs OEL: 100 ppm 8 hours. 8 hrs OEL: 434 mg/m³ 8 hours. 15 min OEL: 543 mg/m³ 15 minutes. 15 min OEL: 125 ppm 15 minutes. **CA British Columbia Provincial (Canada, 6/2022).** TWA: 20 ppm 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 20 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 20 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 125 ppm 15 minutes. TWA: 100 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**CA Alberta Provincial (Canada, 6/2018). [Zirconium and compounds as Zr]** 8 hrs OEL: 5 mg/m³, (as Zr) 8 hours. 15 min OEL: 10 mg/m³, (as Zr) 15 minutes. **CA British Columbia Provincial (Canada, 6/2022). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Zirconium and compounds]** TWAEV: 5 mg/m³, (as Zr) 8 hours. STEV: 10 mg/m³, (as Zr) 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Zirconium and compounds as Z]** STEL: 10 mg/m³, (as Zr) 15 minutes. TWA: 5 mg/m³, (as Zr) 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.
Cobalt 2-Ethylhexanoate	136-52-7	**CA British Columbia Provincial (Canada, 6/2022). [cobalt and inorganic compounds as Co, Inhalable] Skin sensitizer. Inhalation sensitizer. Notes: No British Columbia exposure limit at this time** **CA British Columbia Provincial (Canada, 6/2022). [Cobalt and inorganic compounds as Co, Total] Skin sensitizer. Inhalation sensitizer.** TWA: 0.02 mg/m³, (as Co, Total) 8 hours. **CA Quebec Provincial (Canada, 6/2022). [Cobalt elemental, and inorganic compounds] Skin sensitizer. Inhalation sensitizer.** TWAEV: 0.02 mg/m³, (as Co) 8 hours. **CA Ontario Provincial (Canada, 6/2019). [Cobalt and inorganic compounds as Co]** TWA: 0.02 mg/m³, (as Co) 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Cobalt and inorganic compounds as Co]** STEL: 0.06 mg/m³, (measured as Co) 15

		minutes. TWA: 0.02 mg/m³, (measured as Co) 8 hours.

Occupational exposure limits (Mexico)

	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Xylenes (mixed)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**NOM-010-STPS-2014 (Mexico, 4/2016).** TWA: 20 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**NOM-010-STPS-2014 (Mexico, 4/2016). [Zirconium compounds]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes.
Cobalt 2-Ethylhexanoate	136-52-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Cobalt and inorganic compounds]** TWA: 0.02 mg/m³, (as Co) 8 hours.

Biological exposure indices (United States)

Ingredient name	Exposure indices
Xylene, mixed isomers	**ACGIH BEI (United States, 1/2022) [XYLENES (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methylhippuric acids [in urine]. Sampling time: end of shift.
Ethylbenzene	**ACGIH BEI (United States, 1/2022)** BEI: 0.15 g/g creatinine, sum of mandelic acid and phenylglyoxylic acid [in urine]. Sampling time: end of shift.
Cobalt 2-Ethylhexanoate	**ACGIH BEI (United States, 1/2022) [COBALT AND INORGANIC COMPOUNDS including Cobalt oxides]** BEI: 15 µg/l, not combined with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek. BEI: Nonquantitative: Biological monitoring should be considered for this compound based on the review; however, a specific BEI® could not be determined due to insufficient data., cobalt with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek.

Biological exposure indices (Canada)

No exposure indices known.

Biological exposure indices (Mexico)

Section 8. Exposure controls/personal protection

Ingredient name	Exposure indices
Xylene, mixed isomers	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methyl hippuric acids [in urine]. Sampling time: at the end of the work shift.
Ethylbenzene	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012)** BEI: 0.7 g/g creatinine [non-specific.The determinant is nonspecific, since it can be found after exposure to other chemicals.; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], Sum of mandelic acid and acid phenylglyoxylic [in urine]. Sampling time: at the end of the shift at the end of the work week. BEI: semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible., ethylbenzene [in exhaled air]. Sampling time: uncritical.
Cobalt 2-Ethylhexanoate	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [cobalt]** BEI: 1 µg/l [Basal level.The determinant may be present in the biological sample obtained from subjects who have not been occupationally exposed, at a concentration that could affect the interpretation of the results. These background levels are included in the valu; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], cobalt [in blood]. Sampling time: at the end of the shift at the end of the work week. BEI: 15 µg/l [Basal level.The determinant

	may be present in the biological sample obtained from subjects who have not been occupationally exposed, at a concentration that could affect the interpretation of the results. These background levels are included in the valu], cobalt [in urine]. Sampling time: at the end of the shift at the end of the work week.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : 115°C (239°F)

Flash point : Closed cup: 22°C (71.6°F) [Pensky-Martens Closed Cup]

Evaporation rate : 1.5 (butyl acetate = 1)

Flammability : Flammable liquid.

Lower and upper explosion limit/flammability limit : Lower: 0.7%
Upper: 7%

Vapor pressure : 1.6 kPa (12 mm Hg)

Relative vapor density : 3.66 [Air = 1]

Relative density : 1.15

Solubility(ies) :

Media	Result
cold water	Not soluble

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C (104°F)): <20.5 mm^2/s (<20.5 cSt)

Molecular weight : Not applicable.

Heat of combustion : 15.72 kJ/g

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Xylene, mixed isomers	LC50 Inhalation Gas.	Rat	6700 ppm	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
Light Aromatic Hydrocarbons	LD50 Oral	Rat	8400 mg/kg	-
Zirconium 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	>5 g/kg	-
trimethylbenzene	LD50 Oral	Rat	8970 mg/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Methyl Ethyl Ketoxime	LD50 Oral	Rat	930 mg/kg	-
Cobalt 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	1.22 g/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Xylene, mixed isomers	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 uL	-
	Skin - Moderate irritant	Rabbit	-	100 %	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
Titanium Dioxide	Skin - Mild irritant	Human	-	72 hours 300 ug l	-
Ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Light Aromatic Hydrocarbons	Eyes - Mild irritant	Rabbit	-	24 hours 100 uL	-
trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
1,3,5-Trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
Methyl Ethyl Ketoxime	Eyes - Severe irritant	Rabbit	-	100 uL	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Section 11. Toxicological information

Classification

Product/ingredient name	OSHA	IARC	NTP
Xylene, mixed isomers	-	3	-
Titanium Dioxide	-	2B	-
Ethylbenzene	-	2B	-
Cobalt 2-Ethylhexanoate	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 3	-	Respiratory tract irritation
Ethylbenzene	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Lt. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Light Aromatic Hydrocarbons	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Med. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
1,3,5-Trimethylbenzene	Category 3	-	Respiratory tract irritation
1,2,4-Trimethylbenzene	Category 3	-	Respiratory tract irritation
Methyl Ethyl Ketoxime	Category 1	-	upper respiratory tract
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 2	-	-
Ethylbenzene	Category 2	-	-
Lt. Aliphatic Hydrocarbon Solvent	Category 2	-	-
Light Aromatic Hydrocarbons	Category 2	-	-
Med. Aliphatic Hydrocarbon Solvent	Category 1	-	-
Methyl Ethyl Ketoxime	Category 2	-	blood system

Aspiration hazard

Section 11. Toxicological information

Name	Result
Xylene, mixed isomers	ASPIRATION HAZARD - Category 1
Ethylbenzene	ASPIRATION HAZARD - Category 1
Lt. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
Light Aromatic Hydrocarbons	ASPIRATION HAZARD - Category 1
trimethylbenzene	ASPIRATION HAZARD - Category 1
Med. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
1,3,5-Trimethylbenzene	ASPIRATION HAZARD - Category 1
1,2,4-Trimethylbenzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Section 11. Toxicological information

Not available.

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : May damage fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	10137.23 mg/kg
Dermal	3159.93 mg/kg
Inhalation (gases)	19246.87 ppm
Inhalation (vapors)	177.65 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Xylene, mixed isomers	Acute LC50 8500 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Titanium Dioxide	Acute LC50 >1000000 µg/l Marine water	Fish - *Fundulus heteroclitus*	96 hours
Ethylbenzene	Acute EC50 4900 µg/l Marine water	Algae - *Skeletonema costatum*	72 hours
	Acute EC50 7700 µg/l Marine water	Algae - *Skeletonema costatum*	96 hours
	Acute EC50 6.53 mg/l Marine water	Crustaceans - *Artemia sp.* - Nauplii	48 hours
	Acute EC50 2.93 mg/l Fresh water	Daphnia - *Daphnia magna* - Neonate	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
Lt. Aliphatic Hydrocarbon Solvent	Acute LC50 >100000 ppm Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
trimethylbenzene	Acute LC50 5600 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
1,3,5-Trimethylbenzene	Acute LC50 13000 µg/l Marine water	Crustaceans - *Cancer magister* - Zoea	48 hours
	Acute LC50 12520 µg/l Fresh water	Fish - *Carassius auratus*	96 hours
	Chronic NOEC 0.4 mg/l Fresh water	Daphnia - *Daphnia magna*	21 days
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - *Elasmopus pectenicrus* - Adult	48 hours
	Acute LC50 7720 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Methyl Ethyl Ketoxime	Acute LC50 843000 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours

Persistence and degradability

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Xylene, mixed isomers	-	-	Readily
Ethylbenzene	-	-	Readily
Light Aromatic Hydrocarbons	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Xylene, mixed isomers	-	8.1 to 25.9	Low
Lt. Aliphatic Hydrocarbon Solvent	-	10 to 2500	High
Light Aromatic Hydrocarbons	-	10 to 2500	High
Zirconium 2-Ethylhexanoate	-	2.96	Low
1,3,5-Trimethylbenzene	-	161	Low
1,2,4-Trimethylbenzene	-	243	Low
Methyl Ethyl Ketoxime	-	2.5 to 5.8	Low
Cobalt 2-Ethylhexanoate	-	15600	High

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IATA	IMDG
UN number	UN1263	UN1263	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT	PAINT	PAINT	PAINT
Transport hazard class(es)	3 	3 	3 	3 	3 

Section 14. Transport information

Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.
Additional information	- **ERG No.** 128	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3). **ERG No.** 128	- **ERG No.** 128	-	**Emergency schedules** F-E, S-E

Special precautions for user : Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

Transport in bulk according to IMO instruments : Not available.

Proper shipping name : Not available.

Section 15. Regulatory information

SARA 313

SARA 313 (40 CFR 372.45) supplier notification can be found on the Environmental Data Sheet.

California Prop. 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

International regulations

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

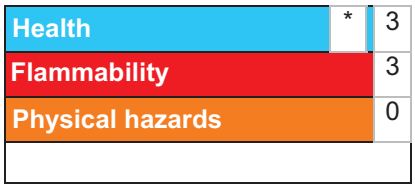
International lists : **Australia inventory (AIIC)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory (CSCL): Not determined.
Japan inventory (ISHL): Not determined.
Korea inventory (KECI): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.

Section 15. Regulatory information

Taiwan Chemical Substances Inventory (TCSI): Not determined.
Thailand inventory: Not determined.
Turkey inventory: Not determined.
Vietnam inventory: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	On basis of test data
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 2	Calculation method
TOXIC TO REPRODUCTION - Category 1B	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

History

Date of printing : 8/15/2023

Date of issue/Date of revision : 8/15/2023

Date of previous issue : 8/15/2023

Version : 5.03

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

It is recommended that each customer or recipient of this Safety Data Sheet (SDS) study it carefully and consult resources, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. This information is provided in good faith and believed to be accurate as of the effective date herein. However, no warranty, express or implied, is given. The information presented here applies only to the product as shipped. The addition of any material can change the composition, hazards and risks of the product. Products shall not be repackaged, modified, or tinted except as specifically instructed by the manufacturer, including but not limited to the incorporation of products not specified by the manufacturer, or the use or addition of products in proportions not specified by the manufacturer. Regulatory requirements are subject to change and may differ between various locations and jurisdictions. The customer/buyer/user is responsible to ensure that his activities comply with all country, federal, state, provincial or local laws. The conditions for use of the product are not under the control of the manufacturer; the customer/buyer/user is responsible to determine the conditions necessary for the safe use of this product. The customer/buyer/user should not use the product for any purpose other than the purpose shown in the applicable section of this SDS without first referring to the supplier and obtaining written handling instructions. Due to the proliferation of sources for information such as manufacturer-specific SDS, the manufacturer cannot be responsible for SDSs obtained from any other source.

SAFETY DATA SHEET

F75KXY19324-4383

Section 1. Identification

Product name : Kem® 400 Enamel
ral 1016

Product code : F75KXY19324-4383

Other means of identification : Not available.

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Paint or paint related material.

Manufacturer : THE SHERWIN-WILLIAMS COMPANY
101 W. Prospect Avenue
Cleveland, OH 44115

Emergency telephone number of the company : (216) 566-2917

Product Information Telephone Number : Not available.

Transportation Emergency Telephone Number : (800) 424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 2
TOXIC TO REPRODUCTION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
ASPIRATION HAZARD - Category 1

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 4.8% (oral), 4.8% (dermal), 4.8% (inhalation)

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

Hazard statements : Flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Please refer to the SDS for additional information. Keep out of reach of children. Do not transfer contents to other containers for storage.

Hazards not otherwise classified : DANGER: Rags, steel wool, other waste soaked with this product, and sanding residue may spontaneously catch fire if improperly discarded. Immediately place rags, steel wool, other waste soaked with this product, and sanding residue in a sealed, water-filled, metal container. Dispose of in accordance with local fire regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

Section 3. Composition/information on ingredients

Ingredient name	% by weight	CAS number
Xylene, mixed isomers	≥25 - ≤33	1330-20-7
Titanium Dioxide	≥10 - ≤25	13463-67-7
Ethylbenzene	≤7.4	100-41-4
Lt. Aliphatic Hydrocarbon Solvent	≤5	64742-89-8
2-methoxy-1-methylethyl acetate	≤5	108-65-6
Light Aromatic Hydrocarbons	<1	64742-95-6
Zirconium 2-Ethylhexanoate	≤1	22464-99-9
trimethylbenzene	<1	25551-13-7
Med. Aliphatic Hydrocarbon Solvent	<1	64742-88-7
1,3,5-Trimethylbenzene	≤0.3	108-67-8
1,2,4-Trimethylbenzene	≤0.3	95-63-6
Methyl Ethyl Ketoxime	≤0.3	96-29-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause respiratory irritation.

Section 4. First aid measures

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Flammable liquid.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless

Section 7. Handling and storage

adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits (OSHA United States)

Ingredient name	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**OSHA PEL (United States, 5/2018). [Xylenes (o-, m-, p-isomers)]** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2023). [p-xylene and mixtures containing p-xylene] Ototoxicant.** TWA: 20 ppm 8 hours.
Titanium Dioxide	13463-67-7	**OSHA PEL (United States, 5/2018).** TWA: 15 mg/m³ 8 hours. Form: Total dust **ACGIH TLV (United States, 1/2023).** TWA: 2.5 mg/m³ 8 hours. Form: respirable fraction, finescale particles
Ethylbenzene	100-41-4	**ACGIH TLV (United States, 1/2023). Ototoxicant.** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 100 ppm 10 hours. TWA: 435 mg/m³ 10 hours. STEL: 125 ppm 15 minutes. STEL: 545 mg/m³ 15 minutes. **OSHA PEL (United States, 5/2018).** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours.
Lt. Aliphatic Hydrocarbon Solvent	64742-89-8	None.
2-methoxy-1-methylethyl acetate	108-65-6	**OARS WEEL (United States, 4/2022).** TWA: 50 ppm 8 hours.
Light Aromatic Hydrocarbons	64742-95-6	None.
Zirconium 2-Ethylhexanoate	22464-99-9	**ACGIH TLV (United States, 1/2023). [Zirconium and compounds as Zr]**

Section 8. Exposure controls/personal protection

		TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **NIOSH REL (United States, 10/2020). [zirconium compounds as Zr]** TWA: 5 mg/m³, (as Zr) 10 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **OSHA PEL (United States, 5/2018). [Zirconium compounds (as Zr)]** TWA: 5 mg/m³, (as Zr) 8 hours.
trimethylbenzene	25551-13-7	**ACGIH TLV (United States, 1/2023). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours.
Med. Aliphatic Hydrocarbon Solvent	64742-88-7	**OSHA PEL (United States, 5/2018). [Naphtha (Coal tar)]** TWA: 100 ppm 8 hours. TWA: 400 mg/m³ 8 hours.
1,3,5-Trimethylbenzene	108-67-8	**ACGIH TLV (United States, 1/2023). [trimethyl benzene, isomers]** TWA: 10 ppm 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours.
1,2,4-Trimethylbenzene	95-63-6	**NIOSH REL (United States, 10/2020).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours. **ACGIH TLV (United States, 1/2023).** TWA: 10 ppm 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.

Occupational exposure limits (Canada)

Ingredient name	CAS #	Exposure limits
Xylene	1330-20-7	**CA Alberta Provincial (Canada, 6/2018). [Dimethylbenzene (o,m & p isomers)]** 8 hrs OEL: 100 ppm 8 hours. 15 min OEL: 651 mg/m³ 15 minutes. 15 min OEL: 150 ppm 15 minutes. 8 hrs OEL: 434 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 6/2022). [Xylene (o, m & p isomers)]** TWA: 100 ppm 8 hours. STEL: 150 ppm 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Xylene (o-,m-,p- isomers)]** TWAEV: 100 ppm 8 hours. TWAEV: 434 mg/m³ 8 hours. STEV: 150 ppm 15 minutes. STEV: 651 mg/m³ 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Xylene (o-, m-, p-isomers)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Xylene (o, m-, p-isomers)]** STEL: 150 ppm 15 minutes.

Section 8. Exposure controls/personal protection

		TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 100 ppm 8 hours. 8 hrs OEL: 434 mg/m³ 8 hours. 15 min OEL: 543 mg/m³ 15 minutes. 15 min OEL: 125 ppm 15 minutes. **CA British Columbia Provincial (Canada, 6/2022).** TWA: 20 ppm 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 20 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 20 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 125 ppm 15 minutes. TWA: 100 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**CA Alberta Provincial (Canada, 6/2018). [Zirconium and compounds as Zr]** 8 hrs OEL: 5 mg/m³, (as Zr) 8 hours. 15 min OEL: 10 mg/m³, (as Zr) 15 minutes. **CA British Columbia Provincial (Canada, 6/2022). [Zirconium and compounds as Zr]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes. **CA Quebec Provincial (Canada, 6/2022). [Zirconium and compounds]** TWAEV: 5 mg/m³, (as Zr) 8 hours. STEV: 10 mg/m³, (as Zr) 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Zirconium and compounds as Z]** STEL: 10 mg/m³, (as Zr) 15 minutes. TWA: 5 mg/m³, (as Zr) 8 hours.
Methyl Ethyl Ketoxime	96-29-7	**OARS WEEL (United States, 4/2022). Skin sensitizer.** TWA: 10 ppm 8 hours.

Occupational exposure limits (Mexico)

	CAS #	Exposure limits
Xylene, mixed isomers	1330-20-7	**NOM-010-STPS-2014 (Mexico, 4/2016). [Xylenes (mixed)]** STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
Ethylbenzene	100-41-4	**NOM-010-STPS-2014 (Mexico, 4/2016).** TWA: 20 ppm 8 hours.
Zirconium 2-Ethylhexanoate	22464-99-9	**NOM-010-STPS-2014 (Mexico, 4/2016). [Zirconium compounds]** TWA: 5 mg/m³, (as Zr) 8 hours. STEL: 10 mg/m³, (as Zr) 15 minutes.

Biological exposure indices (United States)

Section 8. Exposure controls/personal protection

Ingredient name	Exposure indices
Xylene, mixed isomers	**ACGIH BEI (United States, 1/2023) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methylhippuric acids [in urine]. Sampling time: end of shift.
Ethylbenzene	**ACGIH BEI (United States, 1/2023)** BEI: 0.15 g/g creatinine, sum of mandelic acid and phenylglyoxylic acid [in urine]. Sampling time: end of shift.

Biological exposure indices (Canada)

No exposure indices known.

Biological exposure indices (Mexico)

Ingredient name	Exposure indices
Xylene, mixed isomers	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012) [xylenes (technical or commercial grade)]** BEI: 1.5 g/g creatinine, methyl hippuric acids [in urine]. Sampling time: at the end of the work shift.
Ethylbenzene	**Official Mexican STANDARD NOM-047-SSA1-2011, Environmental Health-Biological exposure indices for personnel occupationally exposed to chemical substances. (Mexico, 6/2012)** BEI: 0.7 g/g creatinine [non-specific.The determinant is nonspecific, since it can be found after exposure to other chemicals.; semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible.], Sum of mandelic acid and acid phenylglyoxylic [in urine]. Sampling time: at the end of the shift at the end of the work week. BEI: semi-quantitative.The biological determinant is an indicator of chemical exposure, but the quantitative interpretation of the measure is ambiguous. These biological determinants should be used as a screening test if a quantitative test is not possible., ethylbenzene [in exhaled air]. Sampling time: uncritical.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : 115°C (239°F)

Section 9. Physical and chemical properties

Flash point : Closed cup: 23°C (73.4°F) [Pensky-Martens Closed Cup]

Evaporation rate : 1.5 (butyl acetate = 1)

Flammability : Flammable liquid.

Lower and upper explosion limit/flammability limit : Lower: 0.9%
Upper: 13.1%

Vapor pressure : 1.6 kPa (12 mm Hg)

Relative vapor density : 3.66 [Air = 1]

Relative density : 1.15

Solubility(ies) :

Media	Result
cold water	Not soluble

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C (104°F)): <20.5 mm^2/s (<20.5 cSt)

Molecular weight : Not applicable.

Heat of combustion : 14.531 kJ/g

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
Xylene, mixed isomers	LC50 Inhalation Gas.	Rat	6700 ppm	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
2-methoxy-1-methylethyl acetate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	8532 mg/kg	-
Light Aromatic Hydrocarbons	LD50 Oral	Rat	8400 mg/kg	-
Zirconium 2-Ethylhexanoate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	>5 g/kg	-
trimethylbenzene	LD50 Oral	Rat	8970 mg/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Methyl Ethyl Ketoxime	LD50 Oral	Rat	930 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Xylene, mixed isomers	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 uL	-
	Skin - Moderate irritant	Rabbit	-	100 %	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
Titanium Dioxide	Skin - Mild irritant	Human	-	72 hours 300 ug l	-
Ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Light Aromatic Hydrocarbons	Eyes - Mild irritant	Rabbit	-	24 hours 100 uL	-
trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
1,3,5-Trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
Methyl Ethyl Ketoxime	Eyes - Severe irritant	Rabbit	-	100 uL	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Section 11. Toxicological information

Product/ingredient name	OSHA	IARC	NTP
Xylene, mixed isomers	-	3	-
Titanium Dioxide	-	2B	-
Ethylbenzene	-	2B	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 3	-	Respiratory tract irritation
Ethylbenzene	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Lt. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
2-methoxy-1-methylethyl acetate	Category 3	-	Narcotic effects
Light Aromatic Hydrocarbons	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Med. Aliphatic Hydrocarbon Solvent	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
1,3,5-Trimethylbenzene	Category 3	-	Respiratory tract irritation
1,2,4-Trimethylbenzene	Category 3	-	Respiratory tract irritation
Methyl Ethyl Ketoxime	Category 1	-	upper respiratory tract
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Xylene, mixed isomers	Category 2	-	-
Ethylbenzene	Category 2	-	-
Lt. Aliphatic Hydrocarbon Solvent	Category 2	-	-
Light Aromatic Hydrocarbons	Category 2	-	-
Med. Aliphatic Hydrocarbon Solvent	Category 1	-	-
Methyl Ethyl Ketoxime	Category 2	-	blood system

Aspiration hazard

Name	Result
Xylene, mixed isomers	ASPIRATION HAZARD - Category 1
Ethylbenzene	ASPIRATION HAZARD - Category 1
Lt. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
Light Aromatic Hydrocarbons	ASPIRATION HAZARD - Category 1
trimethylbenzene	ASPIRATION HAZARD - Category 1
Med. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1
1,3,5-Trimethylbenzene	ASPIRATION HAZARD - Category 1
1,2,4-Trimethylbenzene	ASPIRATION HAZARD - Category 1

Section 11. Toxicological information

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Section 11. Toxicological information

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	12021.51 mg/kg
Dermal	3759.56 mg/kg
Inhalation (gases)	22899.15 ppm
Inhalation (vapors)	207.58 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Xylene, mixed isomers	Acute LC50 8500 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Titanium Dioxide	Acute LC50 >1000000 µg/l Marine water	Fish - *Fundulus heteroclitus*	96 hours
Ethylbenzene	Acute EC50 4900 µg/l Marine water	Algae - *Skeletonema costatum*	72 hours
	Acute EC50 7700 µg/l Marine water	Algae - *Skeletonema costatum*	96 hours
	Acute EC50 6.53 mg/l Marine water	Crustaceans - *Artemia sp.* - Nauplii	48 hours
	Acute EC50 2.93 mg/l Fresh water	Daphnia - *Daphnia magna* - Neonate	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
Lt. Aliphatic Hydrocarbon Solvent	Acute LC50 >100000 ppm Fresh water	Fish - *Oncorhynchus mykiss*	96 hours
trimethylbenzene	Acute LC50 5600 µg/l Marine water	Crustaceans - *Palaemonetes pugio*	48 hours
1,3,5-Trimethylbenzene	Acute LC50 13000 µg/l Marine water	Crustaceans - *Cancer magister* - Zoea	48 hours
	Acute LC50 12520 µg/l Fresh water	Fish - *Carassius auratus*	96 hours
	Chronic NOEC 0.4 mg/l Fresh water	Daphnia - *Daphnia magna*	21 days
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - *Elasmopus pectenicrus* - Adult	48 hours
	Acute LC50 7720 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours
Methyl Ethyl Ketoxime	Acute LC50 843000 µg/l Fresh water	Fish - *Pimephales promelas*	96 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Xylene, mixed isomers	-	-	Readily
Ethylbenzene	-	-	Readily
Light Aromatic Hydrocarbons	-	-	Readily

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Xylene, mixed isomers	-	8.1 to 25.9	Low
Lt. Aliphatic Hydrocarbon Solvent	-	10 to 2500	High
Light Aromatic Hydrocarbons	-	10 to 2500	High
Zirconium 2-Ethylhexanoate	-	2.96	Low
1,3,5-Trimethylbenzene	-	161	Low
1,2,4-Trimethylbenzene	-	243	Low
Methyl Ethyl Ketoxime	-	2.5 to 5.8	Low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IATA	IMDG
UN number	UN1263	UN1263	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT	PAINT	PAINT	PAINT
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.

Section 14. Transport information

Additional information	-	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).	-	-	**Emergency schedules** F-E, S-E
	ERG No. 128	**ERG No.** 128	**ERG No.** 128		

Special precautions for user : Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

Transport in bulk according to IMO instruments : Not available.

Proper shipping name : Not available.

Section 15. Regulatory information

SARA 313

SARA 313 (40 CFR 372.45) supplier notification can be found on the Environmental Data Sheet.

California Prop. 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

International regulations

Montreal Protocol

Not listed.

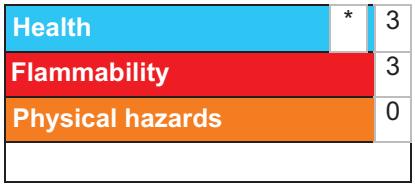
Stockholm Convention on Persistent Organic Pollutants

Not listed.

International lists : **Australia inventory (AIIC)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory (CSCL): Not determined.
Japan inventory (ISHL): Not determined.
Korea inventory (KECI): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan Chemical Substances Inventory (TCSI): Not determined.
Thailand inventory: Not determined.
Turkey inventory: Not determined.
Vietnam inventory: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 2	Calculation method
TOXIC TO REPRODUCTION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

History

Date of printing : 10/4/2023

Date of issue/Date of revision : 10/4/2023

Date of previous issue : 9/6/2023

Version : 3

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

It is recommended that each customer or recipient of this Safety Data Sheet (SDS) study it carefully and consult resources, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. This information is provided in good faith and believed to be accurate as of the effective date herein. However, no warranty, express or implied, is given. The information presented here applies only to the product as shipped. The addition of any material can change the composition, hazards and risks of the product. Products shall not be repackaged, modified, or tinted except as specifically instructed by the manufacturer, including but not limited to the incorporation of products not specified by the manufacturer,

Section 16. Other information

or the use or addition of products in proportions not specified by the manufacturer. Regulatory requirements are subject to change and may differ between various locations and jurisdictions. The customer/buyer/user is responsible to ensure that his activities comply with all country, federal, state, provincial or local laws. The conditions for use of the product are not under the control of the manufacturer; the customer/buyer/user is responsible to determine the conditions necessary for the safe use of this product. The customer/buyer/user should not use the product for any purpose other than the purpose shown in the applicable section of this SDS without first referring to the supplier and obtaining written handling instructions. Due to the proliferation of sources for information such as manufacturer-specific SDS, the manufacturer cannot be responsible for SDSs obtained from any other source.

Revision Number: 004.0

Issue date: 01/04/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: LOCTITE® 222MS™ THREADLOCKER LOW STRENGTH PART NO. 22241
IDH number: 135335
Product type: Anaerobic Sealant
Item number: 22241
Region: United States

Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

Contact information:
Telephone: 860.571.5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state: Liquid
Color: Purple
Odor: Mild

HEALTH: *2
FLAMMABILITY: 1
PHYSICAL HAZARD: 1
Personal Protection: See MSDS Section 8

WARNING: CAUSES EYE IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY CAUSE SKIN IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects

Inhalation: May cause respiratory tract irritation.
Skin contact: May cause allergic skin reaction. May cause skin irritation.
Eye contact: Contact with eyes will cause irritation.
Ingestion: Not expected to be harmful by ingestion.

Existing conditions aggravated by exposure: Eye, skin, and respiratory disorders.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Polyglycol dimethacrylate	25852-47-5	30 - 60
Oleic acid 5.5EO	9004-96-0	30 - 60
Saccharin	81-07-2	1 - 5
Silica, amorphous, fumed, crystal-free	112945-52-5	1 - 5
Cumene hydroperoxide	80-15-9	1 - 5
Propanediol-1,2	57-55-6	1 - 5

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If symptoms develop and persist, get medical attention.

Skin contact: Wash with soap and water. Remove contaminated clothing and footwear. Wash clothing before reuse. If symptoms develop and persist, get medical attention.

Eye contact: Flush with copious amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Get medical attention.

Ingestion: Do not induce vomiting. Keep individual calm. Get medical attention.

5. FIRE FIGHTING MEASURES

Flash point: > 93.3 °C (> 199.94 °F) Tagliabue closed cup

Autoignition temperature: Not available

Flammable/Explosive limits - lower: Not available

Flammable/Explosive limits - upper: Not available

Extinguishing media: Foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: None

Hazardous combustion products: Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapours.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Store in a partly filled, closed container until disposal.

7. HANDLING AND STORAGE

Handling: Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Use only with adequate ventilation.

Storage: For safe storage, store at or below 38 °C (100.4 °F)
Keep in a cool, well ventilated area away from heat, sparks and open flame.
Keep container tightly closed until ready for use.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Polyglycol dimethacrylate	None	None	None	None
Oleic acid 5.5EO	None	None	None	None
Saccharin	None	None	None	None
Silica, amorphous, fumed, crystal-free	10 mg/m3 TWA Inhalable dust. 3 mg/m3 TWA Respirable fraction.	20 MPPCF TWA 0.8 mg/m3 TWA	None	None
Cumene hydroperoxide	None	None	1 ppm (6 mg/m3) TWA (SKIN)	None
Propanediol-1,2	None	None	10 mg/m3 TWA Aerosol.	None

Engineering controls: No specific ventilation requirements noted, but forced ventilation may still be required if concentrations exceed occupational exposure limits.

Respiratory protection: Use a NIOSH approved supplied air respirator with an organic cartridge if the potential to exceed established exposure limits exists.

Eye/face protection: Safety goggles or safety glasses with side shields.

Skin protection: Use impermeable gloves and protective clothing as necessary to prevent skin contact. Neoprene gloves. Butyl rubber gloves. Natural rubber gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Color: Purple
Odor: Mild
Odor threshold: Not available
pH: Not applicable
Vapor pressure: < 5 mm hg (27 °C (80.6 °F))
Boiling point/range: > 149 °C (> 300.2 °F)
Melting point/ range: Not available
Specific gravity: 1.05
Vapor density: Not available
Flash point: > 93.3 °C (> 199.94 °F) Tagliabue closed cup
Flammable/Explosive limits - lower: Not available
Flammable/Explosive limits - upper: Not available
Autoignition temperature: Not available
Evaporation rate: Not available
Solubility in water: Slight
Partition coefficient (n-octanol/water): Not available
VOC content: 0.19 %; 1.79 g/l

10. STABILITY AND REACTIVITY

Stability: Stable

Hazardous reactions: Will not occur.

Hazardous decomposition products: Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapours.

Incompatible materials: Strong oxidizing agents.

Conditions to avoid: See "Handling and Storage" (Section 7) and "Incompatibility" (Section 10).

11. TOXICOLOGICAL INFORMATION

Acute oral product toxicity: LD50 (rat) > 10,000 mg/kg

Acute dermal product toxicity: LD50 (rabbit) > 5,000 mg/kg

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Polyglycol dimethacrylate	No	No	No
Oleic acid 5.5EO	No	No	No
Saccharin	No	No	No
Silica, amorphous, fumed, crystal-free	No	No	No
Cumene hydroperoxide	No	No	No
Propanediol-1,2	No	No	No

Hazardous components	Health Effects/Target Organs
Polyglycol dimethacrylate	Irritant, Allergen
Oleic acid 5.5EO	Irritant
Saccharin	No Target Organs
Silica, amorphous, fumed, crystal-free	Nuisance dust
Cumene hydroperoxide	Allergen, Central nervous system, Corrosive, Irritant, Mutagen
Propanediol-1,2	Irritant

12. ECOLOGICAL INFORMATION

Ecological information: Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The shipping classifications in this sections are for non-bulk packaging only (unless otherwise specified). Shipping classification may be different for bulk packaging.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12(b) Export Notification: None above reporting de minimus

CERCLA/SARA Section 302 EHS:	None above reporting de minimus Hydroquinone (CAS# 123-31-9). Ethylene oxide (CAS# 75-21-8).
CERCLA/SARA Section 311/312:	Immediate Health, Delayed Health
CERCLA/SARA 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Cumene hydroperoxide (CAS# 80-15-9). This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Saccharin (CAS# 81-07-2). Cumene hydroperoxide (CAS# 80-15-9).
California Proposition 65:	This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. This product contains a chemical known in the State of California to cause cancer.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.
WHMIS hazard class:	D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: 1

Prepared by: Kyra Kozak Woods, Manager, Regulatory Affairs

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Revision Number: 001.0

Issue date: 07/01/2009

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: LOCTITE® 243™ THREADLOCKER
Product type: Anaerobic

IDH number: 1329505
Item number: 1329505
Region: United States

Company address:
Henkel Corporation
1001 Trout Brook Crossing
Rocky Hill, Connecticut 06067

Contact information:
Telephone: 860.571.5100
Emergency telephone: 860.571.5100
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state: Liquid
Color: Blue
Odor: Characteristic

HEALTH: *2
FLAMMABILITY: 1
PHYSICAL HAZARD: 1
Personal Protection: See MSDS Section 8

WARNING: CAUSES EYE IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects

Inhalation: May cause respiratory tract irritation.
Skin contact: May cause allergic skin reaction. May cause skin irritation with discomfort or rash.
Eye contact: Contact with eyes will cause irritation. Pain and discomfort. Excess tearing.
Ingestion: May be harmful if swallowed.

Existing conditions aggravated by exposure: Eye, skin, and respiratory disorders.

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Polyglycol dimethacrylate	25852-47-5	10 - 30
Tetramethylene dimethacrylate	2082-81-7	10 - 30
Hexanedioic acid, polymer with 1,3-butanediol, hexadecanoate	68332-62-7	10 - 30
2,4,6-Triallyloxy-1,3,5-triazine	101-37-1	5 - 10
2-[[2,2-bis[[(1-oxoallyl)oxy]methyl]butoxy]methyl]-2-ethyl-1,3-propanediyl diacrylate	94108-97-1	1 - 5
Amorphous fumed silica	68611-44-9	1 - 5
Propanediol-1,2	57-55-6	1 - 5
Saccharin	81-07-2	1 - 5
polyamide resin	Proprietary	1 - 5
1-Acetyl-2-phenylhydrazine	114-83-0	0.1 - 1

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If symptoms develop and persist, get medical attention.

Skin contact: Wash with soap and water. Remove contaminated clothing and footwear. Wash clothing before reuse. If symptoms develop and persist, get medical attention.

Eye contact: Flush with copious amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Get medical attention.

Ingestion: Do not induce vomiting. Keep individual calm. Get medical attention.

5. FIRE FIGHTING MEASURES

Flash point: > 93 °C (> 199.4 °F)

Autoignition temperature: Not available

Flammable/Explosive limits - lower: Not available

Flammable/Explosive limits - upper: Not available

Extinguishing media: Foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: None

Hazardous combustion products: Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic fragments.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Store in a partly filled, closed container until disposal.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists of this product. Wash thoroughly after handling.

Storage: For safe storage, store at or below 38 °C (100.4 °F)
Keep in a cool, well ventilated area away from heat, sparks and open flame.
Keep container tightly closed until ready for use.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Polyglycol dimethacrylate	None	None	None	None
Tetramethylene dimethacrylate	None	None	None	None
Hexanedioic acid, polymer with 1,3-butanediol, hexadecanoate	None	None	None	None
2,4,6-Triallyloxy-1,3,5-triazine	None	None	None	None
2-[[2,2-bis[[(1-oxoallyl)oxy]methyl]butoxy]methyl]-2-ethyl-1,3-propanediyl diacrylate	None	None	None	None
Amorphous fumed silica	None	None	None	None
Propanediol-1,2	None	None	10 mg/m3 TWA Aerosol.	None
Saccharin	None	None	None	None
polyamide resin	None	None	None	None
1-Acetyl-2-phenylhydrazine	None	None	None	None

Engineering controls: Local exhaust ventilation is recommended when general ventilation is not sufficient to control airborne contamination.

Respiratory protection: Use a NIOSH approved air-purifying respirator with an organic vapor cartridge.

Eye/face protection: Safety goggles or safety glasses with side shields.

Skin protection: Use impermeable gloves and protective clothing as necessary to prevent skin contact. Neoprene, Butyl-rubber, or nitrile-rubber gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Color: Blue
Odor: Characteristic
Odor threshold: Not available
pH: Not available
Vapor pressure: < 0.1 mm hg (27 °C (80.6 °F))
Boiling point/range: > 149 °C (> 300.2 °F)
Melting point/ range: Not available
Specific gravity: 1.09
Vapor density: Not available
Flash point: > 93 °C (> 199.4 °F)
Flammable/Explosive limits - lower: Not available
Flammable/Explosive limits - upper: Not available
Autoignition temperature: Not available
Evaporation rate: Not available
Solubility in water: Slight
Partition coefficient (n-octanol/water): Not available
VOC content: Not available

10. STABILITY AND REACTIVITY

Stability: Stable

Hazardous reactions: Will not occur.

Hazardous decomposition products: Oxides of carbon. Oxides of nitrogen. Oxides of sulfur. Irritating organic fragments.

Incompatible materials: Strong oxidizing agents. Reducing agents. Strong alkalis. Oxygen scavengers. Other polymerization initiators. Heavy metals.

Conditions to avoid: See "Handling and Storage" (Section 7) and "Incompatibility" (Section 10).

11. TOXICOLOGICAL INFORMATION

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Polyglycol dimethacrylate	No	No	No
Tetramethylene dimethacrylate	No	No	No
Hexanedioic acid, polymer with 1,3-butanediol, hexadecanoate	No	No	No
2,4,6-Triallyloxy-1,3,5-triazine	No	No	No
2-[[2,2-bis[[(1-oxoallyl)oxy]methyl]butoxy]methyl]-2-ethyl-1,3-propanediyl diacrylate	No	No	No
Amorphous fumed silica	No	No	No
Propanediol-1,2	No	No	No
Saccharin	No	No	No
polyamide resin	No	No	No
1-Acetyl-2-phenylhydrazine	No	No	No

Hazardous components	Health Effects/Target Organs
Polyglycol dimethacrylate	Irritant, Allergen
Tetramethylene dimethacrylate	Irritant, Allergen
Hexanedioic acid, polymer with 1,3-butanediol, hexadecanoate	No Records
2,4,6-Triallyloxy-1,3,5-triazine	No Target Organs
2-[[2,2-bis[[(1-oxoallyl)oxy]methyl]butoxy]methyl]-2-ethyl-1,3-propanediyl diacrylate	No Data
Amorphous fumed silica	No Target Organs
Propanediol-1,2	Irritant
Saccharin	No Target Organs
polyamide resin	No Records
1-Acetyl-2-phenylhydrazine	Allergen, Blood, Kidney, Mutagen, Some evidence of carcinogenicity

12. ECOLOGICAL INFORMATION

Ecological information: Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The shipping classifications in this sections are for non-bulk packaging only (unless otherwise specified). Shipping classification may be different for bulk packaging.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12(b) Export Notification:	None above reporting de minimus
CERCLA/SARA Section 302 EHS:	None above reporting de minimus
CERCLA/SARA Section 311/312:	Immediate Health, Delayed Health
CERCLA/SARA 313:	None above reporting de minimus
CERCLA Reportable quantity:	Saccharin (CAS# 81-07-2) 100 lbs. (45.4 kg)
California Proposition 65:	This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.
WHMIS hazard class:	D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: New Material Safety Data Sheet format.

Prepared by: Kyra Kozak Woods, Manager, Regulatory Affairs

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Revision Number: 002.1

Issue date: 05/27/2009

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Silver Grade Anti-Seize Lubricant
Product type: Lubricant

Company address:
Henkel Corporation
1001 Trout Brook Crossing
Rocky Hill, Connecticut 06067

IDH number: 235005
Item number: 76764
Region: United States

Contact information:
Telephone: 860.571.5100
Emergency telephone: 860.571.5100
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state: Paste
Color: Silver
Odor: Hydrocarbon-like

HEALTH: 1
FLAMMABILITY: 1
PHYSICAL HAZARD: 1
Personal Protection: See MSDS Section 8

WARNING: CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects

Inhalation: Moderate respiratory tract irritation.
Skin contact: Moderate skin irritation.
Eye contact: Moderate eye irritation.
Ingestion: Principal hazard of ingestion is aspiration into the lungs and subsequent pneumonitis. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Existing conditions aggravated by exposure: Eye, skin, and respiratory disorders.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	10 - 30
Graphite	7782-42-5	10 - 30
Calcium oxide	1305-78-8	10 - 30
Mineral oil light naphthenic hydrotreat. <3% DMSO	64742-53-6	10 - 30
Aluminum not powder, dust or fume	7429-90-5	5 - 10
Distillates (petroleum), straight-run middle	64741-44-2	1 - 5
Quartz (SiO2)	14808-60-7	0.1 - 1

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If symptoms persist, seek medical advice.

Skin contact: If symptoms develop and persist, get medical attention. Wash with soap and water.

Eye contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Ingestion:	Do not induce vomiting. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

Flash point:	> 93 °C (> 199.4 °F)
Autoignition temperature:	Not determined
Flammable/Explosive limits - lower:	Not available
Flammable/Explosive limits - upper:	Not available
Extinguishing media:	Dry chemical. Carbon dioxide. Foam.
Special firefighting procedures:	None
Unusual fire or explosion hazards:	None
Hazardous combustion products:	Oxides of carbon. Oxides of nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Prevent further leakage or spillage if safe to do so.
Clean-up methods:	Store in a partly filled, closed container until disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Remove all sources of ignition.

7. HANDLING AND STORAGE

Handling:	Keep away from heat, spark and flame. Avoid skin and eye contact.
Storage:	Keep in a cool, well ventilated area.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Distillates (petroleum), hydrotreated heavy naphthenic	5 mg/m3 TWA mist 10 mg/m3 STEL mist	5 mg/m3 TWA mist	None	None
Graphite	2 mg/m3 TWA Respirable fraction.	5 mg/m3 TWA Respirable fraction. 15 mg/m3 TWA Total dust. 15 MPPCF TWA	None	None
Calcium oxide	2 mg/m3 TWA	5 mg/m3 TWA	None	None
Mineral oil light naphthenic hydrotreat. <3% DMSO	5 mg/m3 TWA Mist. 10 mg/m3 STEL Mist.	500 ppm (2,000 mg/m3) TWA	None	None
Aluminum not powder, dust or fume	1 mg/m3 TWA Respirable fraction.	15 mg/m3 TWA (as Al) Total dust. 5 mg/m3 TWA (as Al) Respirable dust.	None	None
Distillates (petroleum), straight-run middle	5 mg/m3 TWA mist 10 mg/m3 STEL mist	5 mg/m3 TWA mist	None	None
Quartz (SiO2)	0.025 mg/m3 TWA Respirable fraction.	2.4 MPPCF TWA Respirable. 0.1 mg/m3 TWA Respirable. 0.3 mg/m3 TWA Total dust.	None	None

Engineering controls: Use local ventilation if general ventilation is insufficient to maintain vapor concentration below established exposure limits.

Respiratory protection: Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

Eye/face protection: Safety goggles or safety glasses with side shields.

Skin protection: Neoprene or oil resistant gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Paste
Color: Silver
Odor: Hydrocarbon-like
Odor threshold: Not available
pH: Not applicable
Vapor pressure: < 5 mm hg
Boiling point/range: Not available
Melting point/ range: Not available
Specific gravity: 1.25
Vapor density: Not available
Flash point: > 93 °C (> 199.4 °F)
Flammable/Explosive limits - lower: Not available
Flammable/Explosive limits - upper: Not available
Autoignition temperature: Not determined
Evaporation rate: Not available
Solubility in water: Insoluble
Partition coefficient (n-octanol/water): Not determined
VOC content: 12.96 %; 162 g/l

10. STABILITY AND REACTIVITY

Stability: Stable

Hazardous reactions: Will not occur.

Hazardous decomposition products: None reasonably foreseeable.

Incompatible materials: Strong oxidizing agents.

Conditions to avoid: None known

11. TOXICOLOGICAL INFORMATION

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Distillates (petroleum), hydrotreated heavy naphthenic	No	No	No
Graphite	No	No	No
Calcium oxide	No	No	No
Mineral oil light naphthenic hydrotreat. <3% DMSO	No	No	No
Aluminum not powder, dust or fume	No	No	No
Distillates (petroleum), straight-run middle	No	No	No
Quartz (SiO2)	Known carcinogen.	Group 1	No

Hazardous components	Health Effects/Target Organs
Distillates (petroleum), hydrotreated heavy naphthenic	Irritant
Graphite	Lung
Calcium oxide	Irritant, Corrosive, Eyes
Mineral oil light naphthenic hydrotreat. <3% DMSO	Irritant
Aluminum not powder, dust or fume	Central nervous system, Irritant, Lung
Distillates (petroleum), straight-run middle	Irritant
Quartz (SiO2)	Immune system, Lung, Some evidence of carcinogenicity

12. ECOLOGICAL INFORMATION

Ecological information: Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12(b) Export Notification:	None above reporting de minimus
CERCLA/SARA Section 302 EHS:	None above reporting de minimus
CERCLA/SARA Section 311/312:	Immediate Health
CERCLA/SARA 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Aluminum not powder, dust or fume (CAS# 7429-90-5).
California Proposition 65:	This product contains a chemical known in the State of California to cause cancer.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.
WHMIS hazard class:	D.2.A, D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: Not available

Prepared by: C.J. Michaels, Manager, Regulatory Affairs

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Revision Number: 003.1

Issue date: 12/10/2009

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: LOCTITE® 7649™ PRIMER
Product type: Accelerator

IDH number: 209715
Item number: 21348
Region: United States

Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

Contact information:
Telephone: 860.571.5100
Emergency telephone: 860.571.5100
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state:	Liquid	**HEALTH:**	*2
Color:	Green	**FLAMMABILITY:**	3
Odor:	Acetone	**PHYSICAL HAZARD:**	0
		Personal Protection:	See MSDS Section 8

DANGER: CAUSES EYE AND SKIN IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
FLAMMABLE LIQUID AND VAPOR.

Relevant routes of exposure: Inhalation, Skin, Eye contact, Ingestion

Potential Health Effects

Inhalation: Vapors and mists will irritate nose and throat and possibly eyes. May cause respiratory tract irritation. Excessive inhalation of this material causes headache, dizziness, nausea and incoordination. Harmful by inhalation.

Skin contact: May cause skin irritation. Solvent action can dry and defat the skin, causing the skin to crack, leading to dermatitis.

Eye contact: Vapors may irritate eyes. Contact with eyes will cause irritation.

Ingestion: Harmful if swallowed.

Existing conditions aggravated by exposure: Eye, skin, and respiratory disorders.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Acetone	67-64-1	60 - 100
Isobutane	75-28-5	10 - 30
2-Ethylhexanoic acid	149-57-5	0.1 - 1

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If symptoms persist, seek medical advice.

Skin contact: Wash with soap and water. If symptoms develop and persist, get medical attention.

Eye contact: Flush with copious amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Get medical attention.

Ingestion: If conscious, drink plenty of water. Do not induce vomiting. Keep individual calm. Get medical attention.

5. FIRE FIGHTING MEASURES

Flash point: -20 °C (-4°F) Estimated

Autoignition temperature: Not available

Flammable/Explosive limits - lower: Not available

Flammable/Explosive limits - upper: Not available

Extinguishing media: Foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition, and flash back.

Hazardous combustion products: Oxides of carbon. Oxides of nitrogen. Irritating organic vapours.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Remove all sources of ignition. Ensure adequate ventilation. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Store in a partly filled, closed container until disposal.

7. HANDLING AND STORAGE

Handling: Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. During use and until all vapors are gone: Keep area ventilated - do not smoke; extinguish all flames, pilot lights, and heaters; turn off stoves, electrical tools and appliances, and any other sources of ignition.

Storage: For safe storage, store at or below 49 °C (120.2 °F)
Store away from heat, sparks, flames, or other sources of ignition.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Acetone	500 ppm TWA 750 ppm STEL	1,000 ppm (2,400 mg/m3) TWA	None	None
Isobutane	1,000 ppm TWA	None	None	None
2-Ethylhexanoic acid	5 mg/m3 TWA Inhalable fraction and vapor.	None	None	None

Engineering controls:	Use local ventilation if general ventilation is insufficient to maintain vapor concentration below established exposure limits.
Respiratory protection:	Use NIOSH approved respirator if there is potential to exceed exposure limit(s).
Eye/face protection:	Safety goggles or safety glasses with side shields.
Skin protection:	Neoprene, Butyl-rubber, or nitrile-rubber gloves. Chemical resistant, impermeable gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Green
Odor:	Acetone
Odor threshold:	Not available
pH:	Not available
Vapor pressure:	172 mm hg (68 °F (20°C))
Boiling point/range:	133 °F (56.1 °C)
Melting point/ range:	Not available
Specific gravity:	0.7936
Vapor density:	2.0
Flash point:	-20 °C (-4°F) Estimated
Flammable/Explosive limits - lower:	Not available
Flammable/Explosive limits - upper:	Not available
Autoignition temperature:	Not available
Evaporation rate:	1.9 (Ether = 1)
Solubility in water:	Soluble
Partition coefficient (n-octanol/water):	Not available
VOC content:	1.48 %; 11.7 g/l EPA Method 24

10. STABILITY AND REACTIVITY

Stability:	Stable
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Oxides of carbon. Oxides of nitrogen. Irritating organic vapours.
Incompatible materials:	Strong oxidizing agents. Acids.
Conditions to avoid:	See "Handling and Storage" (Section 7) and "Incompatibility" (Section 10).

11. TOXICOLOGICAL INFORMATION

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Acetone	No	No	No
Isobutane	No	No	No
2-Ethylhexanoic acid	No	No	No

Hazardous components	Health Effects/Target Organs
Acetone	Blood, Central nervous system, Irritant, Reproductive
Isobutane	Cardiac, Central nervous system, Lung
2-Ethylhexanoic acid	Developmental, Eyes, Irritant, Liver, Reproductive

12. ECOLOGICAL INFORMATION

Ecological information:	Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: D001: Ignitable.

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name:	Aerosols
Hazard class or division:	2.1
Identification number:	UN 1950
Packing group:	None
Exceptions:	Consumer Commodity, (Not more than 1 L), ORM-D

International Air Transportation (ICAO/IATA)

Proper shipping name:	Aerosols, flammable
Hazard class or division:	2.1
Identification number:	UN 1950
Packing group:	None
Exceptions:	(Not more than 30 kg), ID8000, May Qualify as Consumer Commodity

Water Transportation (IMO/IMDG)

Proper shipping name:	AEROSOLS
Hazard class or division:	2.1
Identification number:	UN 1950
Packing group:	None
Exceptions:	Limited quantity (Not more than 1 L).

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12(b) Export Notification:	None above reporting de minimus
CERCLA/SARA Section 302 EHS:	None above reporting de minimus
CERCLA/SARA Section 311/312:	Delayed Health, Fire, Immediate Health
CERCLA/SARA 313:	None above reporting de minimus
California Proposition 65:	This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.
WHMIS hazard class:	A, B.5, D.2.A, D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: New Material Safety Data Sheet format.

Prepared by: Kyra Kozak Woods, Manager, Regulatory Affairs

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Unoba® EP (All Grades)

Material Safety Data Sheet

1. Product and Company Identification

Product Name: Unoba® EP (All Grades)

MSDS Number: 722490

Synonyms: Unoba® EP No. 00
Unoba® EP No. 0
Unoba® EP No. 1
Unoba® EP No. 2
Unoba® EP No. 3
76 Unoba® EP No. 00, No. 0, No. 1, No. 2, No. 3

Intended Use: Lubricating Grease

Manufacturer: ConocoPhillips Lubricants
600 N. Dairy Ashford, 2W900
Houston, Texas 77079-1175

Emergency Health and Safety Number: Chemtrec: 800-424-9300 (24 Hours)

Customer Service: U.S.: 1-800-822-6457 or International: +1-83-2486-3363

Technical Information: 1-877-445-9198

MSDS Information: Internet: http://w3.conocophillips.com/NetMSDS/
Phone: 800-762-0942
Email: MSDS@conocophillips.com

2. Hazards Identification

Emergency Overview

CAUTION!

Eye Irritant

NFPA



Appearance: Green
Physical Form: Semi-Solid
Odor: Petroleum

Potential Health Effects
Eye: Eye irritant. Contact may cause stinging, watering, redness, and swelling.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Repeated exposure may cause skin dryness or cracking. No harmful effects from skin absorption are expected.

Inhalation (Breathing): No information available on acute toxicity.

Ingestion (Swallowing): No harmful effects expected from ingestion.

Signs and Symptoms: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

Pre-Existing Medical Conditions: Conditions which may be aggravated by exposure include skin disorders and eye disorders.

See Section 11 for additional Toxicity Information.

3. Composition / Information on Ingredients

Component	CASRN	Concentration*
Lubricant Base Oil (Petroleum)	VARIOUS	<90
Additives	PROPRIETARY	>12
Zinc dialkyl dithiophosphate	68649-42-3	<2

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

Eye Contact: For direct contact, remove contact lenses if present and easy to do. Immediately hold eyelids apart and flush the affected eye(s) with clean water for at least 15 minutes. Seek immediate medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Notes to Physician: High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

5. Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 1 **Flammability:** 1 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

6. Accidental Release Measures

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents).

7. Handling and Storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wear eye/face protection. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

8. Exposure Controls / Personal Protection

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m^3 STEL: 10 mg/m^3 as Oil Mist, if generated	TWA: 5 mg/m^3 as Oil Mist, if generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile.

Respiratory Protection: Respiratory protection is not normally required under intended conditions of use. Emergencies or conditions that could result in significant airborne exposures may require the use of NIOSH approved respiratory protection. An industrial hygienist or other appropriate health and safety professional should be consulted for specific guidance under these situations.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Green
Physical Form:	Semi-Solid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<0.1 mm Hg
Vapor Density (air=1):	> 5
Boiling Point/Range:	No data
Melting/Freezing Point:	No data
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Bulk Density:	7.5 lbs/gal
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	<1
Flash Point:	450°F / 232°C
Test Method:	Cleveland Open Cup (COC), ASTM D92
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

10. Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. Toxicological Information

Chronic Toxicity:

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Acute Toxicity:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	> 5 g/kg	> 2 g/kg	> 5 mg/L
Zinc dialkyl dithiophosphate	>2000 mg/kg (rat)	>2000 mg/kg (rat)	No data

12. Ecological Information

Ecotoxicity: Experimental studies show that acute aquatic toxicity values are greater than 1000 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. However, there is insufficient information available on the toxicity of the thickening agents used in greases. Should therefore be regarded as capable of causing long term adverse effects in the aquatic environment.

Mobility: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. Components may behave differently in the aquatic environment with soaps dispersing and dissolving to some extent in water while the hydrocarbons will float on the surface due to their low water solubility. The hydrocarbon portion would be expected to show low mobility in soil and water. The major environmental fate would be expected to be biodegradion.

Persistence and degradability: The base oil constituents of greases are expected to be inherently, but no readily biodegradable. Some of the thickening agents may be readily biodegradable.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material range from 4 to over 6, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

13. Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. Transportation Information

U.S. Department of Transportation (DOT)
Shipping Description: ***Not regulated***
Note: ***If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)***

International Maritime Dangerous Goods (IMDG)
Shipping Description: ***Not regulated***
Note: ***U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.***

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)
UN/ID #: ***Not regulated***

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

15. Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)
Acute Health: Yes
Chronic Health: No
Fire Hazard: No
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	Concentration*	de minimis
Zinc compound(s)	<2	1.0%

EPA (CERCLA) Reportable Quantity (in pounds):
This material does not contain any chemicals with CERCLA Reportable Quantities. This material contains the following chemicals subject to the reporting requirements of 40 CFR 302.4:

California Proposition 65:
Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Type of Toxicity
Silica-Crystalline (Quartz)	Cancer
Naphthalene	Cancer

Canadian Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class
D2B

National Chemical Inventories:
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. Other Information

Date of Issue:	02-Dec-2009
Status:	Final
Previous Issue Date:	23-Oct-2008
Revised Sections or Basis for Revision:	Product Name / Synonyms (Section 1) Environmental hazards (Section 12)
MSDS Number:	722490

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:
The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Hydroclear Diamond Class® Turbine Oil (All Grades)

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Hydroclear Diamond Class® Turbine Oil (All Grades)
MSDS Number:	775694
Synonyms:	Hydroclear Diamond Class® Turbine Oil 32 Hydroclear Diamond Class® Turbine Oil 46 Hydroclear Diamond Class® Turbine Oil 68
Intended Use:	Turbine Oil
Manufacturer/Supplier:	ConocoPhillips Lubricants 600 N. Dairy Ashford Houston, Texas 77079-1175
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
Customer Service:	888-766-7676
Technical Information:	800-255-9556
MSDS Information:	Internet: http://w3.conocophillips.com/NetMSDS/

2. HAZARDS IDENTIFICATION

Emergency Overview

This material is not considered hazardous according to OSHA criteria.

NFPA



Appearance: Clear and bright
Physical Form: Liquid
Odor: Petroleum

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Prolonged or repeated contact can defat the skin, causing drying and cracking of the skin, and possibly dermatitis (inflammation). A component of this material may cause an allergic skin reaction. No harmful effects from skin absorption are expected.

Inhalation (Breathing): No information available on acute toxicity.

Ingestion (Swallowing): No harmful effects expected from ingestion.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, nausea and diarrhea. Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders.

See Section 11 for additional Toxicity Information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS	Concentration*
Lubricant Base Oil (Petroleum)	VARIOUS	>99
Additives	PROPRIETARY	<1

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. FIRE-FIGHTING MEASURES

NFPA 704 Hazard Class

Health: 0 **Flammability:** 1 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling: Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m³ STEL: 10 mg/m³ as Oil Mist, if generated	TWA: 5 mg/m³ as Oil Mist, if generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile.

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. PHYSICAL AND CHEMICAL PROPERTIES

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Clear and bright
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1 mm Hg
Vapor Density (air=1):	>1
Boiling Point/Range:	No data
Melting/Freezing Point:	<-27.4°F / <-33°C
Pour Point:	<-27.4°F / <-33°C
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	0.87 @ 60ºF (15.6ºC)
Bulk Density:	7.3 lbs/gal
Viscosity:	5.3 - 8.7 cSt @ 100°C; 30 - 72 cSt @ 40°C
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	No data
Flash Point:	>302°F / >150°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

10. STABILITY AND REACTIVITY

Stability: Stable under normal ambient and anticipated conditions of storage and handling.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. TOXICOLOGICAL INFORMATION

Chronic Data:

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Acute Data:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	>5 g/kg	>2 g/kg	No data

12. ECOLOGICAL INFORMATION

12. ECOLOGICAL INFORMATION

Lubricant oil basestocks are complex mixtures of hydrocarbons (primarily branched chain alkanes and cycloalkanes) ranging in carbon number from C15 to C50. The aromatic hydrocarbon content of these mixtures varies with the severity of the refining process. White oils have negligible levels of aromatic hydrocarbons, whereas significant proportions are found in unrefined basestocks. Olefins are found only at very low concentrations. Volatilization is not significant after release of lubricating oil basestocks to the environment due to the very low vapor pressure of the hydrocarbon constituents. In water, lubricating oil basestocks will float and will spread at a rate that is viscosity dependent. Water solubilities are very low and dispersion occurs mainly from water movement with adsorption by sediment being the major fate process. In soil, lubricating oil basestocks show little mobility and adsorption is the predominant physical process.

Both acute and chronic ecotoxicity studies have been conducted on lubricant base oils. Results indicate that the acute aquatic toxicities to fish, Daphnia, Ceriodaphnia and algal species are above 1000 mg/l using either water accommodated fractions or oil in water dispersions. Since lubricant base oils mainly contain hydrocarbons having carbon numbers in the range C15 to C50, it is predicted that acute toxicity would not be observed with these substances due to low water solubility. Results from chronic toxicity tests show that the no observed effect level (NOEL) usually exceeds 1000 mg/l for lubricant base oils with the overall weight of experimental evidence leading to the conclusion that lubricant base oils do not cause chronic toxicity to fish and invertebrates.

Large volumes spills of lubricant base oils into water will produce a layer of undissolved oil on the water surface that will cause direct physical fouling of organisms and may interfere with surface air exchange resulting in lower levels of dissolved oxygen. Petroleum products have also been associated with causing taint in fish even when the latter are caught in lightly contaminated environments. Highly refined base oils sprayed onto the surface of eggs will result in a failure to hatch.

Extensive experience from laboratory and field trials in a wide range of crops has confirmed that little or no damage is produced as a result of either aerosol exposure or direct application of oil emulsion to the leaves of crop plants. Base oils incorporated into soil have resulted in little or no adverse effects on seed germination and plant growth at contamination rates up to 4%.

13. DISPOSAL CONSIDERATIONS

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT)

Shipping Description:	***Not regulated***
Note:	***If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)***

International Maritime Dangerous Goods (IMDG)

Shipping Description:	***Not regulated***
Note:	***U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.***

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #:	***Not regulated***

14. TRANSPORTATION INFORMATION

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

15. REGULATORY INFORMATION

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):
This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:
This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

Canadian Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class
None

National Chemical Inventories:
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. OTHER INFORMATION

Issue Date:	08-Jul-2008
Status:	Final
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Revised Sections or Basis for Revision:	Health Hazard (Section 2) NFPA ratings (Sections 2&5) Composition (Section 3) Physical Properties (Section 9)
MSDS Number:	775694

MSDS Legend:
ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; CAS = Chemical Abstracts Service Registry; CEILING = Ceiling Limit (15 minutes); EINECS - European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-DFG = Deutsche Forschungsgemeinschaft; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organization / International Air Transport Association; IMDG = International Maritime Dangerous Goods; Ireland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; N/A = Not Applicable; N/D = Not Determined; NIOSH = National Institute for Occupational Safety and Health; NTP = [US] National Toxicology Program; OSHA = [US] Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value; TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 Workplace Exposure Limits

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