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Project# 17046 – Line 3

K2K Robot Dewiring

Operation and Maintenance Manual

For Georgia Pacific Perry, FL

AD DOC #BA00-A9- 132522

Revision	Description	Date	Initials
00	Initial	October 28th, 2019	MP

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Welcome

Welcome to the 17046 K2K Dewiring System Operation and Maintenance Manual.

How to Use this Manual

The following is a read only "word" document created in Word 2016. To facilitate browsing we suggest you open the side navigation panel. To do so, select "view" from the upper menu and be sure you have a check mark in the "thumbnail box" for the navigation panel. This will activate the side navigation panel.

All Drawing numbers and bill of materials have a hyperlink attached to them. You can view the hyperlinks by clicking on them. The section numbers in the layout image shown also act as hyperlinks. You can jump to you desired section of the manual by clicking on the corresponding section number.

You can also go from table of contents to the desired section by clicking on the section from the table of contents. You may also go from section title back to the table of contents by clicking on the section title.

Ask Someone

If you're unable to find what you are looking for in this document, contact our Service Department.

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Acronyms

The following abbreviations, found in the document relate to the following:

- AD: Advanced Dynamics Corporation Ltd.
- AB: Allen-Bradley
- CNET: Control Net
- ECR: Electrical Control Room
- ENET: Ethernet
- FVR: Full Voltage Reversing (motor stater)
- FVNR: Full Voltage Non-Reversing (motor stater)
- FPM: Feet per Minute
- HMI: Human-Machine Interface (or Operator-Machine Interface)
- HPU: Hydraulic Power Unit
- I/O: Input/Output
- LHS: Left Hand Side
- LVDT: Linear Variable Displacement Transducer
- MCR: Master Control Relay. This relay enables electrical operation of equipment in dedicated zones (E-stop)
- PB: Pushbutton
- PBS: Pushbutton Station
- PLC: Programmable Logic Controller
- PPR: Mill Information/Integration System
- RHS: Right Hand Side
- RVDT: Rotational Variable Displacement Transducer
- VFD: Variable Frequency Drive

Safety Recommendations

To begin, all personnel involved with the operation and maintenance of the equipment supplied by *Advanced Dynamics* must read & understand this manual. All additional manuals provided by suppliers of equipment incorporated within the *Advanced Dynamics* system must also be read & understood thoroughly.

In addition, it is the end user's responsibility to ensure the following with respect to the *Advanced Dynamics* supplied equipment:

- The equipment, as well as the area surrounding the equipment, is well lit and free of debris.
- The equipment is fitted with necessary safety guards, all of which are in place before running the system.
- All perimeter guarding & safety related devices/components/equipment to be supplied by others are properly installed and/or connected, and that they perform as intended & required.
- The supply of any additional safety related device required to ensure a safe environment in & about the system before its start-up.
- All untrained or unauthorized personnel are kept away from the vicinity of the equipment.
- Operators working with the equipment are forewarned & trained with respect to the dangers that exist.
- Operators working with the equipment are knowledgeable of proper emergency procedures, should one occur.
- Personnel never access any equipment until all proper safety rules & regulations are respected (i.e. Lock-Out / Tag-Out, etc.). In fact, all power to the system's components must be disconnected before any adjustment or maintenance is performed.
- Personnel recognize the equipment colour code established for this equipment in order to identify the danger that they represent:
- Safety Yellow: Identifies a component or equipment that covers or contains dangerous moving parts. These may be chain or coupling guards, safety fences, etc. The system/equipment must never operate without these guards.
- OSHA Orange: Identifies all moving components and/or equipment. These can be activated manually or automatically, by a control system. They can typically cause bodily harm to operators. The path of these items must always be clear before operating the equipment.
- ADCL Blue: Equipment and components painted with any other colour represent equipment or components which are non-moving. However, it is important to note that carelessness can render these components dangerous. Therefore, awareness is important at all times.
- Personnel should never place fingers, hands, feet or any body part where they do not belong, whether the equipment is running or not.

- The control sequence incorporates all necessary safety precautions and electrical interlocks.
- The system capacities are never exceeded, nor used for any other purpose than that which it was designed for.
- Operating procedures or equipment are not altered or modified IN ANY WAY, unless explicitly agreed upon in writing by *Advanced Dynamics*. Failure to comply with this requirement may result in injury or death and will definitely result in the CANCELLATION OF THE WARRANTY. In any case, where modifications may have been made to the system without *Advanced Dynamics* authorization, *Advanced Dynamics* declines all responsibility as to the safety of that system.
- Complete review of the system safety, in order to ensure conformance with required client/local/regional/national safety standards. As a minimum, it must meet or exceed requirements put forth by nationally recognized associations (i.e. OSHA, ASME, CSST, etc.). *Advanced Dynamics* strongly encourages the client to send a copy of this safety review to us.

Note: *Advanced Dynamics* CANNOT BE HELD RESPONSIBLE FOR ANY INJURY, DAMAGE AND/OR ACCIDENTS IF THE PRECEDING SAFETY RECOMMENDATIONS ARE IGNORED.

- Refer to Functional Description ZA00-A9-128146 (Line 3) Safety Section for more safety requirements.
- Safety Layout: BN00-D1-128925

Product Specifications

Description	Minimum	Maximum
Bale Height	16”	21”
Bale Width	24”	36”
Bale Length	24”	36”
Bale Weight	400 lbs	550 lbs
Wire Pattern	1x1, 1x2, 2x2	

System Operating Requirements

Depending on the wire pattern, the system is designed for a throughput of 80 bales per hour, 365 days per year operation, except for the maintenance periods.

System Operating Environment

The system is designed to operate in a typical paper mill environment with high humidity, relatively clean, but unheated with ambient temperature fluctuations between 50°F to 120°F. The system will be installed in an indoor, dry, non-corrosive and non-freezing environment.

Equipment Finish

Paint Specification
Surface Preparation
SSPC-SP6 - Commercial Blast Cleaning
Primer & Finish - Fixed Machinery
Polyamide Epoxy "Interguard" 345 HS or Equivalent (5-7 MILS DFT)
Colour: AD BLUE – RAL #5017 Semi-Gloss
Primer & Finish - Moving Parts
Polyamide Epoxy "Interguard" 345 HS or Equivalent (5-7 MILS DFT)
Colour: OSHA ORANGE - RAL #2011 Semi-Gloss
Primer & Finish – Safety Fence Frames, Guards, and Handrails
Polyamide Epoxy "Interguard" 345 HS (5-7 MILS DFT)
Colour: SAFETY YELLOW - RAL #1021 Semi-Gloss
Primer & Finish – Safety Fence Wire Mesh
Polyamide Epoxy “Interguard” 345 HS (5-7 MILS DFT)
Colour: Black – RAL#9005 Semi-Gloss

System Overview – Line 3

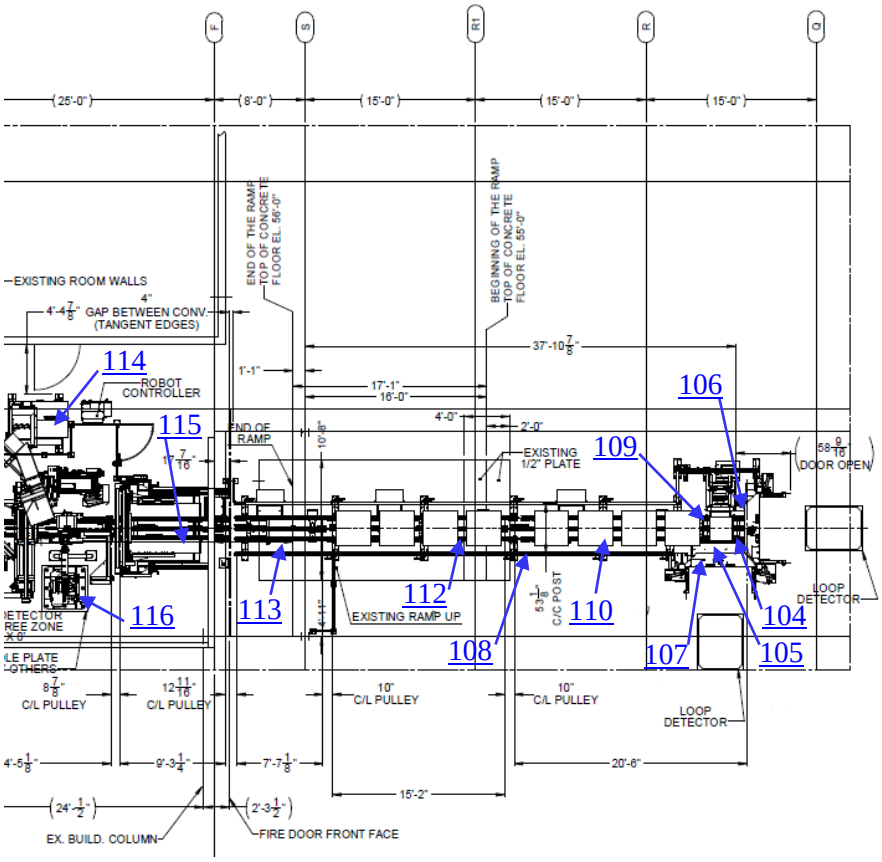
LAYOUT: BA00-D1-127640

FUNCTIONAL DESCRIPTION: ZA00- A9-128146

Infeed Zone

- Section 104 & 105: Truck Guards with Vehicle Loop Detectors
- Section 106 & 107: Safety Swing Gates (2)
- Section 108: Safety Fence
- Section 109: Loading Station
- Section 110, 112, 113: Stack Storage Conveyors (3)
- Section 111: Movable Backstop

In the infeed zone, the clamp trucks load the corresponding bale stacks, from 4 to 6 bales high or a maximum of 108” in height, onto the loading station of the Stack Storage Conveyor (Sections 110, 112, 113). It is the responsibility of the operator to load the proper bale type onto the conveyor as per the information provided.



There is one (1) loading station (Section 109) at the infeed zone at the south end of the first stack storage conveyor (Section 110). The operator can load the new stacks directly in front of the line or on the side at the entry of the line.

When the clamp truck is detected in front of the loading station, the following sequence is initiated:

- The sequence starts when the loading area on the stack storage conveyor is empty.
- An amber light and buzzer alerts operators that the PLC has initiated a loading sequence.

- The loading station remains in the raised position or moves to its raised position, if not already in the raised position.
- The movable backstop remains in its retracted position or moves to its retracted position if not already in that retracted position.
- After a 3 second delay, the safety swing gates will unlock and open allowing the clamp truck to place the stack onto the loading station. At this point, the buzzer is automatically turned off. **Note: The clamp truck must place the stack centered with the conveyor chain.**
- Once the stack is stable and the clamps are opened, the truck can reverse out and leave the loading area. The absence of the truck on the loop detector for five (5) seconds initiates the next function.
- The buzzer will turn back on and the safety swing gates will close and lock.
- Once the safety swing gates are locked the amber warning light and buzzer automatically turn off.
- The loading station lowers to its down position and deposits the stack on the stack storage conveyor.
- The stack storage conveyor runs forward and move the stack out of the loading area.
- The loading station raises to its up position.
- Once the stack has cleared the loading area, the sequence is complete.

When the clamp truck is detected on the side of the loading station (west side of the stack storage conveyor), the following sequence is initiated:

- The sequence starts when the loading area on the stack storage conveyor is empty.
- An amber light and a buzzer alerts operators that he PLC has initiated a loading sequence.
- The loading stations remains in the raised position or moves to its raised position if not already in the raise position.
- The movable backstop pivots into stack reception position.
- After a 3 second delay, the safety swing gates will unlock and open allowing the clamp truck to place the stack onto the loading station. At this point, the buzzer is automatically turned off. **Note: The clamp truck must place the stack centered with the conveyor chain.**
- Once the stack is stable and the clamps are opened, the truck can reverse out and leave the loading area. The absence of the truck on the loop detector for five (5) seconds initiates the next function.
- The buzzer will turn back on and the safety swing gates will close and lock.
- Once the safety swing gates are locked the amber warning light and buzzer automatically turn off.
- The loading station lowers to its down position and deposits the stack on the stack storage conveyor.
- The stack storage conveyor runs forward and move the stack out of the loading area.
- The loading station raises to its up position.
- Once the stack has cleared the loading area, the sequence is complete.

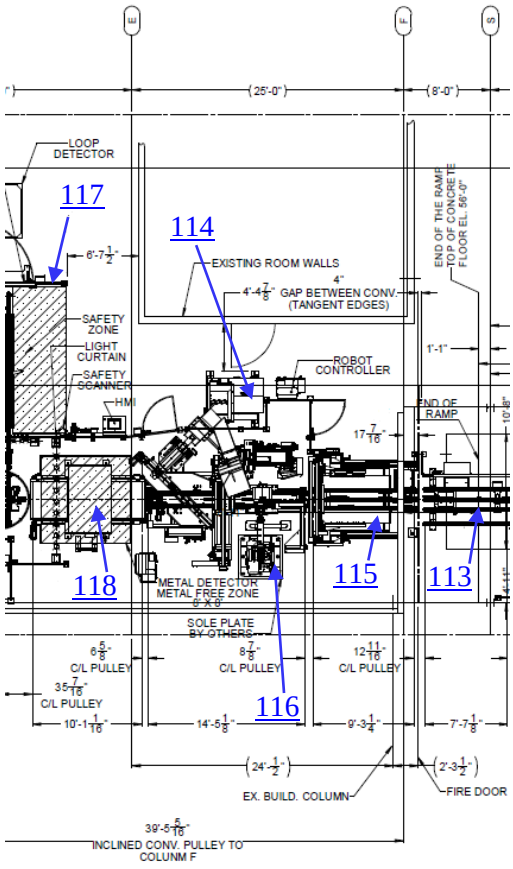
The stack storage conveyors (Sections 110, 112, 113) are surrounded by safety fences which will contain any stack toppling from the conveyor. The side sections of these fences can be manually unlatched and opened for cleaning and/or to remove fallen bales under a proper LOTO procedure.

The conveyor's operating mode is dictated by the downstream conveyor. The stack conveyors are programmed to continuously feed forward stacks towards the destacker conveyor. Therefore, the conveyor is in ACCUMULATION mode only when the downstream conveyor is full or destacking a stack from the last conveyor. Once the conveyor is full (a stack has reached the discharge position sensor), the conveyor then automatically switches to DELIVERY mode.

When a stack is requested by the destacker conveyor (Section 115), the third stack storage conveyor (Section 113) moves forward to transfer a stack to the destacker conveyor. The third stack storage conveyor then reverses until a stack is detected by the infeed position sensor. The third stack storage conveyor stops and waits for a new stack to be ready at the end of the second stack storage conveyor (Section 112) to start the loading process or for a new stack request by the destacker conveyor to transfer a stack.

Destacking and Dewiring Zone

- Section 114: Wire Baller
- Section 115: Destacker c/w Conveyor
- Section 116: K2K Bale Dewiring Unit
- Section 117: Safety Enclosure
- Section 118: Metal Detector c/w Conveyor



A stack is transferred from the infeed zone to the destacking and dewiring zone when it is transferred to the destacker conveyor (Section 115). This transfer is only allowed when the destacker conveyor is empty and the destacker clamps are opened.

The stack travels forward until it reaches the stack clamping position which is detected by a mechanical spring loaded plate. This position detection is not affected by pulp flaps. While the stack is approaching, the destacker clamps raise until the top of stack detection photocell does no longer detects the stack.

Once the clamps are in position and the conveyor is stopped, the clamps close on the top bale. The clamps will raise just enough for the bale to clear the rest of the stack. The conveyor will reverse and the stack is moved to the infeed end of the conveyor, detected by another spring loaded plate.

The clamps remain centered while the conveyor reverses and are lowered only when the stack is detected at the infeed. The clamps slowly deposit the bale back onto the conveyor. The lowering of the clamps slows down when the bale in the clamps blocks the second bale detection photocell. Once the bale has been lowered, the clamps open to release the bale and raise until they pass the second bale detection photocell.

The conveyor will then move forward and transfer the bale to the automatic dewiring unit conveyor (Section 116). As the bale is transferred, the clamps will continue to raise until the top of the stack is no longer detected. The air nozzles air activated to dust off the top of the bale to allow for a more accurate wire detection downstream.

In the dewiring unit, the bale is first conveyed onto the dewiring conveyor and stopped at a "stop line" determined by a timer. As the bale is conveyed, the side wire detector attached to the longitudinal cutter frame scans the wire's position. Once the bale is stopped, it is lifted off the conveyor by a pneumatic drive table to ensure that the bale is not moving during the cutting and coiling sequence. A vision system mounted on a large post scans the top of the bale to determine the positions where the wires intersect and the transversal cutter mechanism scans the side of the bale to find all possible wires. Once all the scanning processes are completed, the PLC determines the destinations for the cutters to remove the wires. Both cutters are then moved to the determined intersection position and the robot positions the coiler on top of the first wire intersection. Once both the cutters and the coiler are in position both wires are cut and coiled.

If a second intersection (or single wire) is present, the robot coiler and both cutters are moved to the 2nd position. Once they are in place, a new cutting and coiling sequence will take place.

Once the last wire is coiled, the bale is lowered onto the dewiring conveyor and sent to the broken wire removal station. While the bale is lowered and transferred to the next area, the transversal cutter carriage will move to the home position and wait for the next bale to come in. The robot moves the coiler to the wire cute and drops the coil(s) of wires in it. The dewiring unit's air nozzles will blow air on the bale as it is transferred to clean the top of the bale of any remaining pieces of wires that may have broken during the coiling process.

The broken wire station is an assembly consisting of two pivoting conveyors, a 45 degree angled wire grabber and a wire coiler. Once the bale exits the dewiring conveyor, it is positioned at the intersection of the two pivoting chain conveyors. Once positioned, the two conveyors then lower and drop the bale onto spring loaded pins. The wire grabber will then perform a sweep at a 45-degree angle underneath the bale to remove any broken and uncoiled wires present under the bale. The grabbed wires are coiled and dropped in the wire chute.

The wire chute ends in the funnel of the wire baller (Section 114). The wire baller motor will run every time a coil is dropped in the wire chute and runs for one minute. A proximity switch detects when the baller is full and the operator is notified by a message on the HMI. In order to empty the wire baller, the operator must manually open the wire baller doors, go to the HMI north of the wire baller and run the motor in reverse by pressing a button on the HMI. The bundle of wires (formed into a large coil) slowly slides off the wire baller shaft onto the floor. The operator can now put the large coil into a scrap metal container. The wire baller door must now be manually closed by the operator and the dewiring process can be resumed.

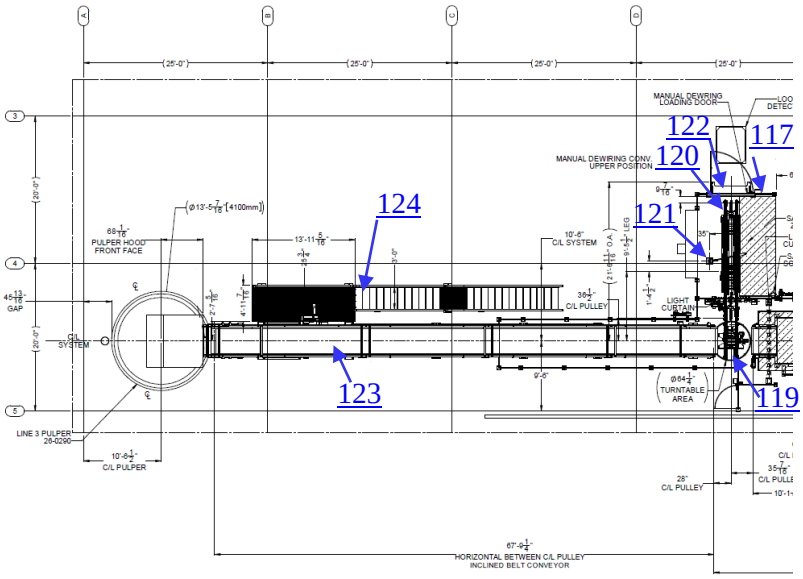
The robot coiling process can be performed even if the vision system is deactivated. In that case a third wire detector installed on the robot arm is used to locate the intersection of the wires. This mode of operation is expected to slightly increase the cycle time of the dewiring process.

As soon as the bale is dewired, the bale is conveyed through the metal detector (Section 118). The metal detector conveyor carries the dewired bale through a fiberglass tunnel that detects if pieces of wires are still present on or in the bale; at the end of the conveyor the bale is transferred to a turntable (Section 119). If metal is detected, a signal is sent to the PLC and the bale is rejected. The rejected bale is directed to the manual dewiring conveyor (Section 120) in the outfeed area. **Note: The bale must be in motion for metal to be detected.**

Caution: Due to the sensitivity of the metal detection technique used, no metal should be close to the detection tunnel. Refer to the mechanical drawing to locate the restricted area. The belt conveyor frame is fabricated using fiberglass beams and fasteners. Care should be taken at installation to not run electrical conduits or airline piping into this restricted area.

Manual Dewiring and Outfeed Zone

- Section 119: Turntable
- Section 120: Manual Dewiring Conveyor
- Section 121: Manual Wire Cutter
- Section 122: Truck Guard with Vehicle Loop Detector
- Section 123: Inclined Belt Conveyor
- Section 124: Catwalk
- Section 125: Chute



The dewired bales are received on the turntable (Section 119) from the metal detector conveyor. Bales with **NO** metal detected are directed to the pulper (by others). The bales going to the pulper are transferred from the turntable to the inclined belt conveyor (Section 123). Once twelve (12) bales are loaded on the inclined belt conveyor, the batch is ready.

After the inclined belt conveyor has received a batch of bales from the turntable it waits for a request to drop the bales into the pulper. The PLC signals the DCS that a batch is ready. When the pulper is ready for the bales to be dropped, the DCS signals the PLC to start the conveyor moving forward to drop the bales in the pulper. The inclined belt conveyor runs forward at a slower pace to allow the bales to be properly blended in the pulper. This feed rate will be set during the initial testing of the system. Without the permissive to drop the bales the conveyor stops the install the photocell at the end of the conveyor becomes blocked. This applies in both the automatic and manual modes.

The bales with metal detected on/in them are transferred from the turntable (Section 119) to the manual dewiring conveyor (Section 120). The manual deiwring conveyor can hold a total of three (3) bales. When the last bale is loaded, the manual dewiring conveyor will run forward until the last loaded bale reaches the inside of the fence. The bales are then lowered onto the dewiring table and the PLC sends a signal to the HMI, notifying the operator that the manual dewiring conveyor is full.

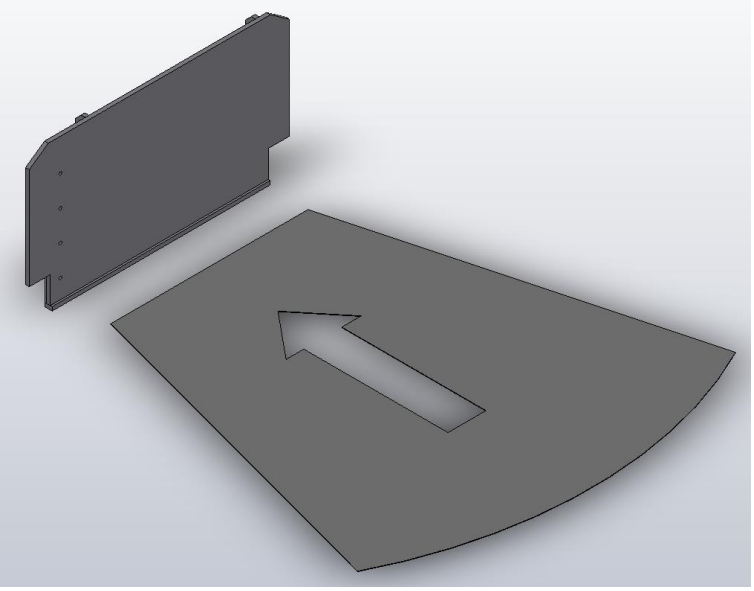
When the operator walks to the manual dewiring conveyor a safety scanner detects his presence and lowers the conveyor, removes all air by de-energizing the pneumatic safety circuit and turns off the STO on the conveyor VFD. The operator can now inspect and remove all wires from the bales using the manual wire cutter (Section 121). Once the bales are cleared of wires, the operator exits the manual dewiring area, returns to the HMI or the PBS, located near the manual dewiring loading gate, and resets the zone. With the zone reset, the operator can initiate the bale reinsertion sequence by pressing the appropriate push buttons on the HMI or the PBS. The system will automatically feed the bales back onto the turntable conveyor and towards the pulper.

Note: Bales can also be loaded manually by the clamp trucks onto the manual dewiring conveyor (Section 120) when the infeed zone and/or the destacking and dewiring zone are not running. When manually loading bales, the operator can job forward/reverse the manual dewiring conveyor by using the nearby PBS or HMI and the manual dewiring conveyor remains up, even if the clamp truck door is open. However, is someone walks into the area monitored by the safety area scanner, the conveyor will go down.

Once all of the bales for a batch are dropped into the pulper, including the ones on the manual dewiring conveyor, the batch complete signal is given to DCS. It will remain on until the next batch requests turns on.

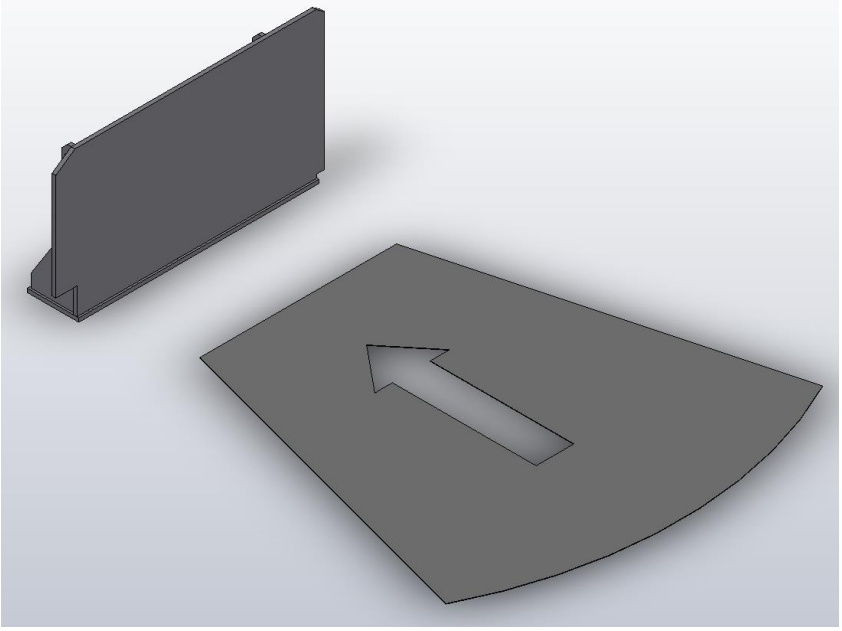
17046 Line 3 Equipment

104: MI00-D3-127641 Truck Guard c/w Vehicle Loop Detector



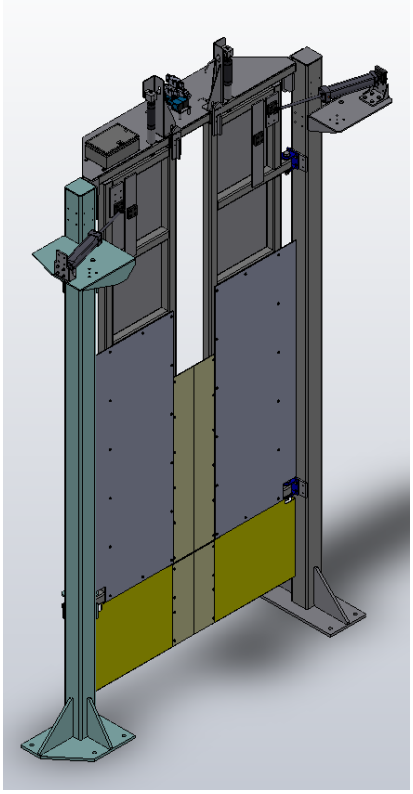
Drawings & Bill of Materials	
Mechanical	
MI00-D3-127641	Truck Guard c/w Loop Detector

105: MI00-D3-127642 Truck Guard c/w Vehicle Loop Detector



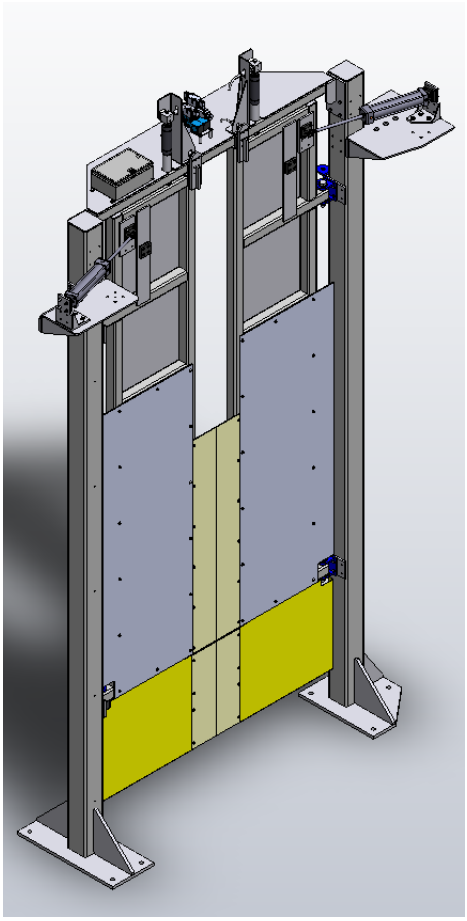
Drawings & Bill of Materials	
Mechanical	
MI00-D3-127642	Truck Guard c/w Vehicle Loop Detector

106: GM00-D3-127643 Safety Swing Gate



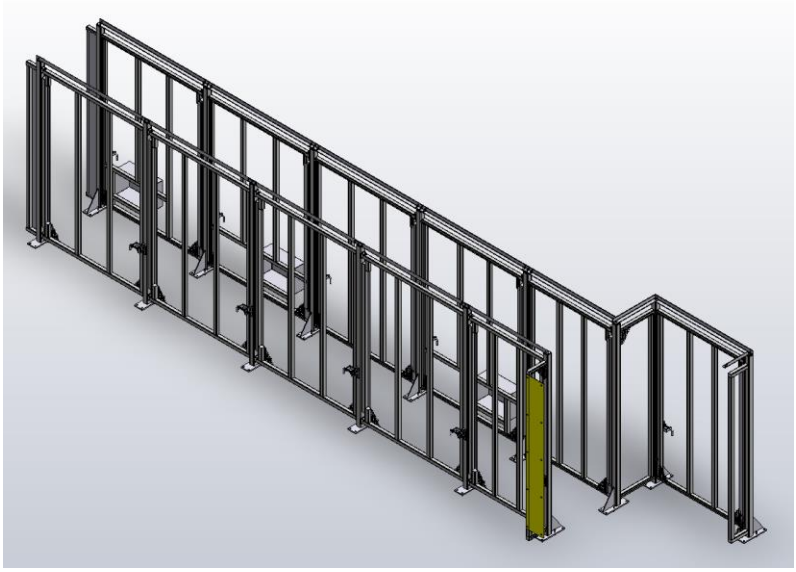
Drawings & Bill of Materials	
Mechanical	
GM00-D3-127643	Safety Swing Gate
128943	Sub Assy Safety Swing Gate RH
128944	Sub Assy Safety Swing Gate LH
129062	Top Attachment Assembly
Pneumatics	
17046-106PM1-BOM	Safety Swing Gates – Pneumatics
ZC00-B6-128642_1	106PM1 – Safety Swing Gates
Electrical	
17046-106E-BOM	Safety Swing Gate – Electrical
ZA00-B8-128165_01	Enclosures and Junction Boxes Section 106: E106JBC1 – Terminal Arrangement

107: GM00-D3-127644 Safety Swing Gate



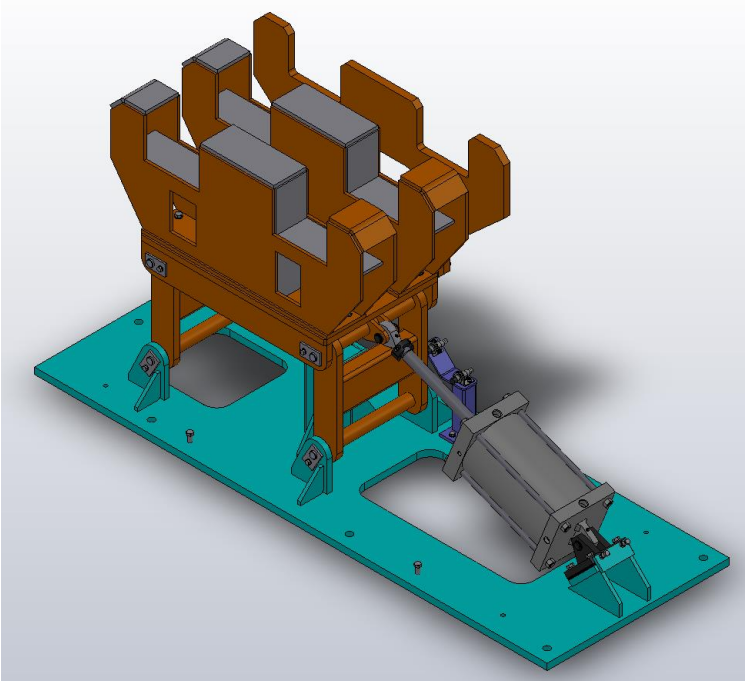
Drawings & Bill of Materials	
Mechanical	
GM00-D3-127644	Safety Swing Gate
128943	Sub Assy Safety Swing Gate RH
128944	Sub Assy Safety Swing Gate LH
129064	Top Attachment Assy
Pneumatics	
17046-107PM1-BOM	Safety Swing Gates - Pneumatics
ZC00-B6-128643_1	107PM1 – Safety Swing Gates
Electrical	
17046-107E-BOM	Safety Swing Gate – Electrical
ZA00-B8-128165_02	Enclosures and Junction Boxes Section 107: E107JBC1 – Terminal Arrangement

108: GM00-D3-127645: Safety Fences



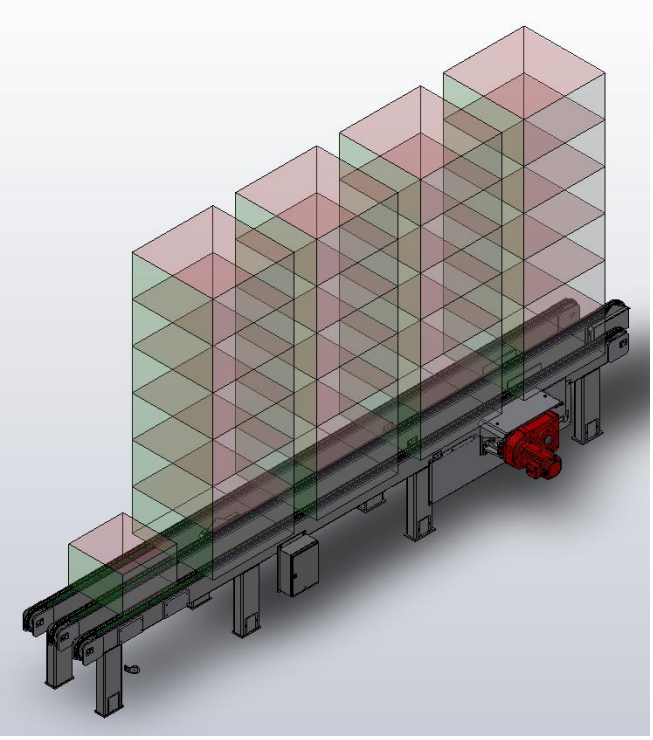
Drawings & Bill of Materials	
Mechanical	
GM00-D3-127645	Safety Fences
127686	Door Assy
127760	Door Assy
128776	Door Assy
128778	Door Assy
128852	Door Assy
129891	Door Assy

109: GF00-D3-127646 Loading Station



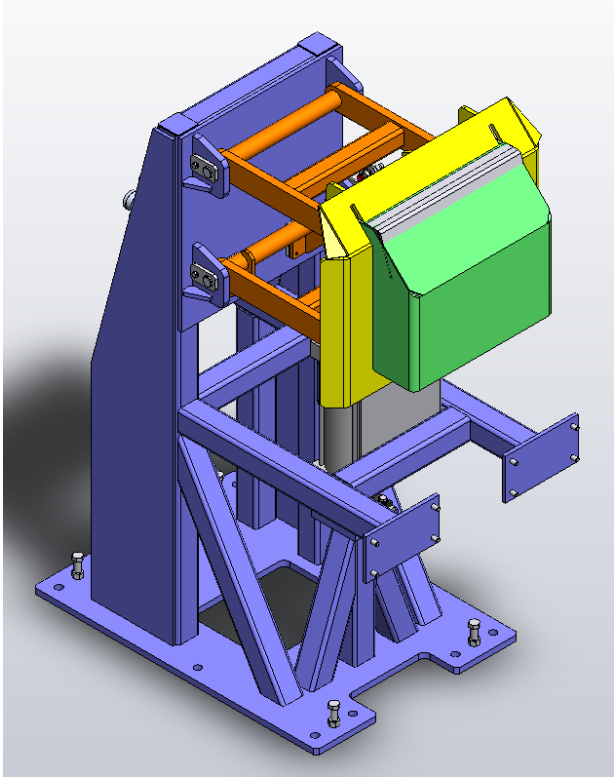
Drawings & Bill of Materials	
Mechanical	
GF00-D3-127646	Loading Station
129589	Sensors Assy
Pneumatics	
17046-109PM1-BOM	Loading Station - Pneumatics
ZC00-B6-128644_	109PM1 – Loading Station
Electrical	
17046-109E-BOM	Loading Station – Electrical

110: DA06-D3-127647 Stack Storage Conveyor #1



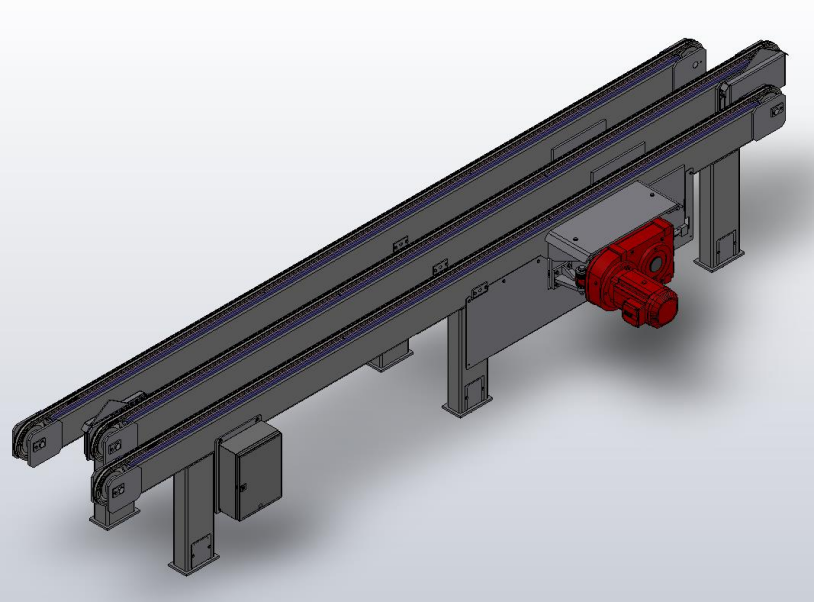
Drawings & Bill of Materials	
Mechanical	
DA06-D3-127647	Stack Storage Conveyor #1
88869	Idler Sprocket Assy
88891	Chain Support Assy
92042	Bale Switch
124002	Take-Up Sprocket Assy
Electrical	
17046-110E-BOM	Stack Storage Conveyor – Electrical
ZA00-B8-128165_03	Enclosures and Junction Boxes Section 110: E110JBC1 – Terminal Arrangement

111: FA00-D3-127648 Movable Backstop



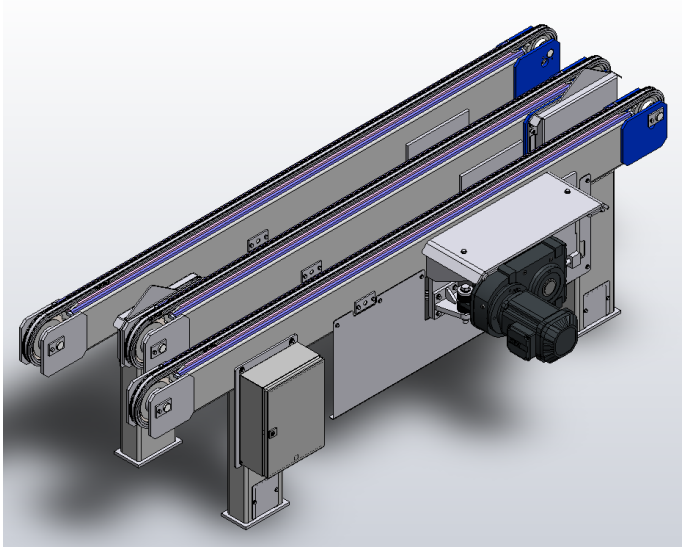
Drawings & Bill of Materials	
Mechanical	
FA00-D3-127648	Movable Backstop
Pneumatics	
17046-111PM1-BOM	Movable Backstop – Pneumatics
ZC00-B6-128644_1	111PM1 – Movable Backstop
Electrical	
17046-111E-BOM	Movable Backstop - Electrical

112: DA06-D3-127649 Stack Storage Conveyor #2



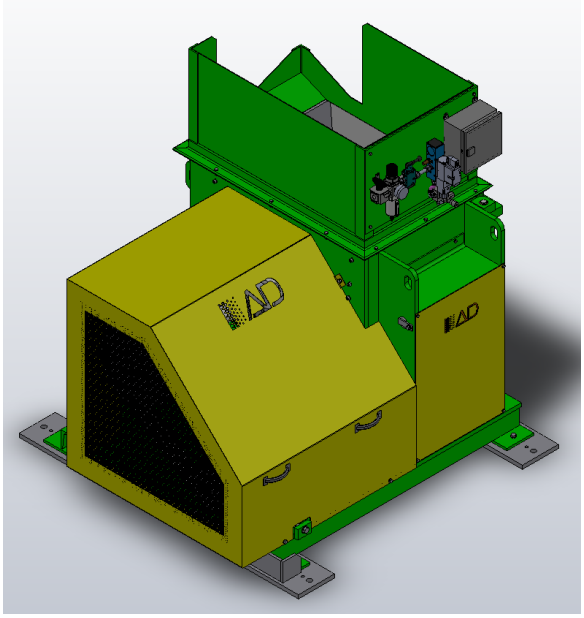
Drawings & Bill of Materials	
Mechanical	
DA06-D3-127649	Stack Storage Conveyor #2
88869	Idler Sprocket Assy
88891	Chain Sprocket Assy
92042	Bale Switch
124002	Take-Up Sprocket Assy
Electrical	
17046-112E-BOM	Stack Storage Conveyor – Electrical
ZA00-B8-128165_5	Enclosures and Junction Boxes Section 112: E112JBC1 – Terminal Arrangement

113: DA06-D3-127650 Stack Storage Conveyor #3



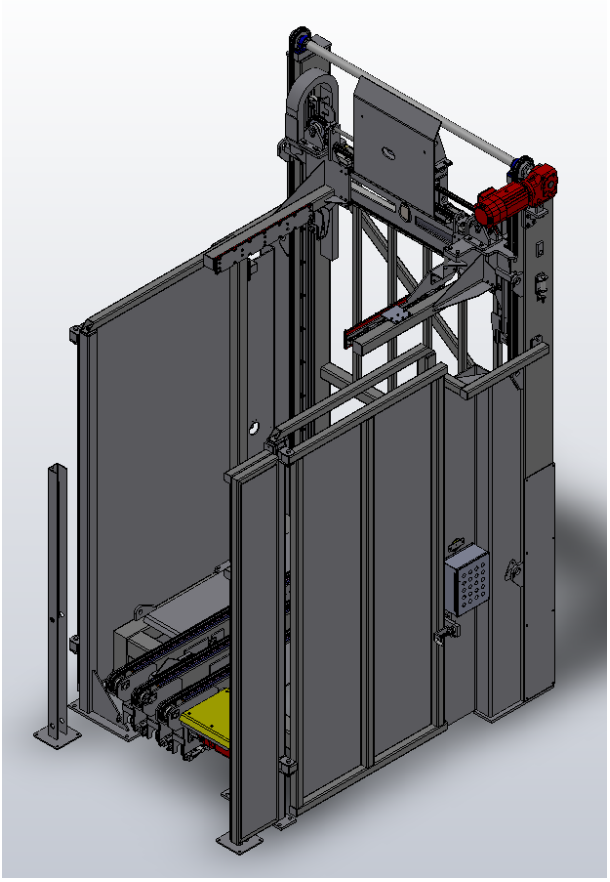
Drawings & Bill of Materials	
Mechanical	
DA06-D3-127650	Stack Storage Conveyor #3
88869	Idler Sprocket Assy
88891	Chain Support Assy
92042	Bale Switch
92544	Idler Sprocket Assy
127553	Take-Up Sprocket Assy
Electrical	
17046-113E-BOM	Stack Storage Conveyor – Electrical
ZA00-B8-128165_05	Enclosures and Junction Boxes Section 113: E113JBC1 – Terminal Arrangement

114: TS03-D3-127651 Wire Baller



Drawings & Bill of Materials	
Mechanical	
TS03-D3-127651	Wire Baller
Pneumatics	
17046-114PM1-BOM	Wire Baller – Pneumatics
ZC00-B6-128651_1	114PM1 – Wire Baller
Electrical	
17046-114E-BOM	Wire Baller – Electrical
ZA00-B8-128165_06	Enclosures and Junction Boxes Section 114: E114JBC1 – Terminal Arrangement

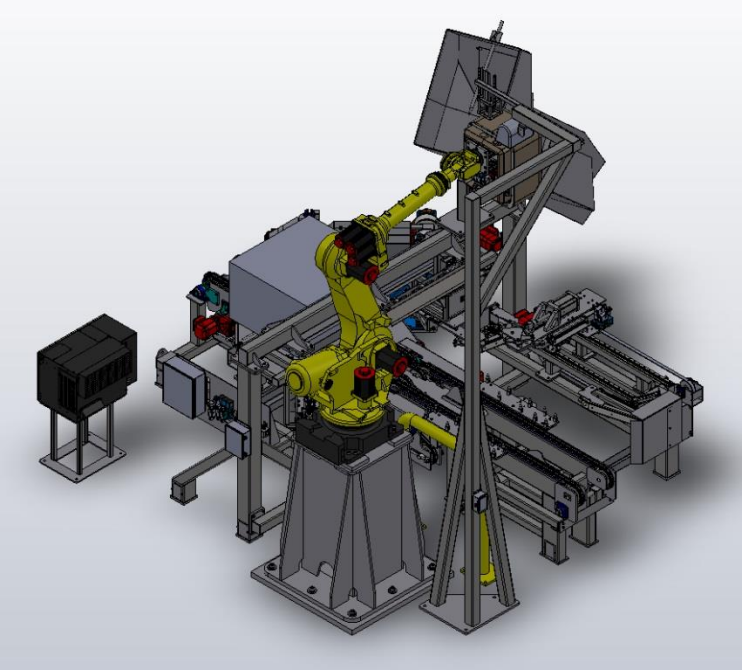
115: GB00-D3-127652 Electric Destacker



Drawings & Bill of Materials	
Mechanical	
GB00-D2-127652	Electric Destacker
124816	Sub Assy South Side Door
127497	Carriage Assy
124930	Sub Assembly Carriage
124950	Sub Assy Left Destacker Arm
124957	Sub Assy Right Destacker Arm
124980	Carriage Centering Device Assy
127687	Sub Assy Chain Conveyor
88869	Idler Sprocket Assy
88870	Drive Sprocket Assy
92042	Bale Switch
124095	Take-Up Sprocket Assy
92544	Idler Sprocket Assy

129547	Idler Sprocket Assy
127877	Destacker Frame Assy
124737	Counterweight Assy
124793	Chain Tensioner Sub Assy
124795	Idler Sub Assy (LH)
124800	Idler Sub Assy (RH)
129607	Sub Assy North Side Door
129605	Sub Assy Light Curtain & Muting
129775	Manifold Holder Assy
129603	Sub Assy Air Knife
Pneumatics	
17046-115PM1-BOM	Destacker c/w Conveyor – Pneumatics
ZC00-B6-128645_1	115PM1 – Destacker c/w Conveyor
Electrical	
17046-115E-BOM	Destacker c/w Conveyor – Electrical
17046-115PBS1-BOM	Destacker c/w Conveyor PBS – Electrical
ZA00-B8-128166_01	Enclosures and Junction Boxes: E115PBS1 External View
ZA00-B8-128166_02	Enclosures and Junction Boxes: E115PBS1 Internal View
ZA00-B8-128166_03	Enclosures and Junction Boxes: E115PBS1 Terminal Block Arrangement
ZA00-B8-128166_04	Enclosures and Junction Boxes: E115PBS1 24VDC Distribution
ZA00-B8-128166_05	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 1 (1734-IE4C)
ZA00-B8-128166_06	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 2 (1734-IB8)
ZA00-B8-128166_07	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 3 (1734-IB8)
ZA00-B8-128166_08	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 4 (1734-IB8)
ZA00-B8-128166_09	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 5 (1734-IB8)
ZA00-B8-128166_10	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 6 (1734-OB8)
ZA00-B8-128166_11	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 7 (1734-OB8)
ZA00-B8-128166_12	Enclosures and Junction Boxes: E115PBS1 Rack 3, Slot 8 (1734-OB8)

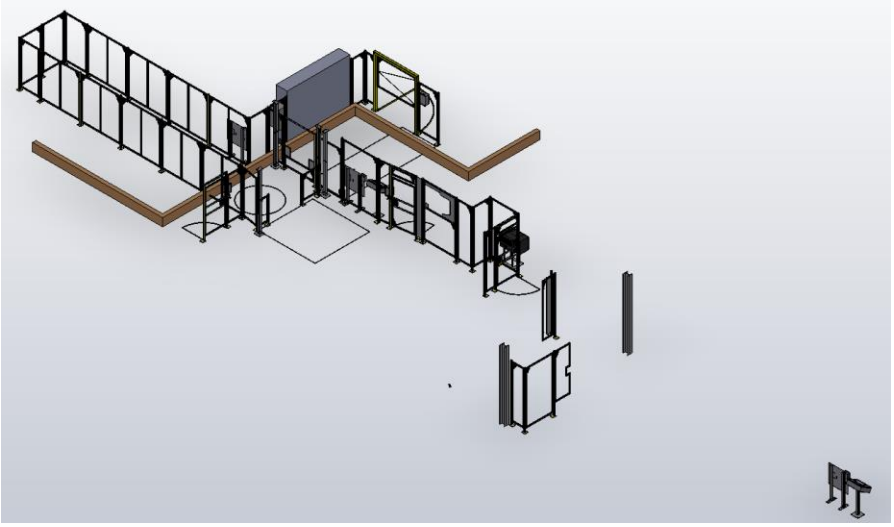
116: GC00-D2-127653 K2K Bale Dewiring Unit



Drawings & Bill of Materials	
Mechanical	
GC00-D2-127653	K2K Bale Dewiring Unit
128471	Dewiring Conveyor c/w Lifter Pin
88868	Take-Up Sprocket Assy
88869	Idler Sprocket Assy
88870	Drive Sprocket Assy
97707	Drive Sprocket Assy
118321	Dewiring Bale Switch
126275	Bale Switch – Extended Fin (IMP)
128207	Sub Assy Robot
127765	Sub Assy Post
89745	Sub Assy Robot Controller Support
127586	Cutters Assy
127587	Sub Assy Wire Cutters Frame
127633	Sub Assy Wire Detection
127689	Sub Assy Longitudinal Cutter
127692	Sub Assy Longitudinal Cutter
127778	Sub Assy Transversal Cutter
88974	Sub Assy Transversal Detector
127823	Sub Assy Transversal Cutter

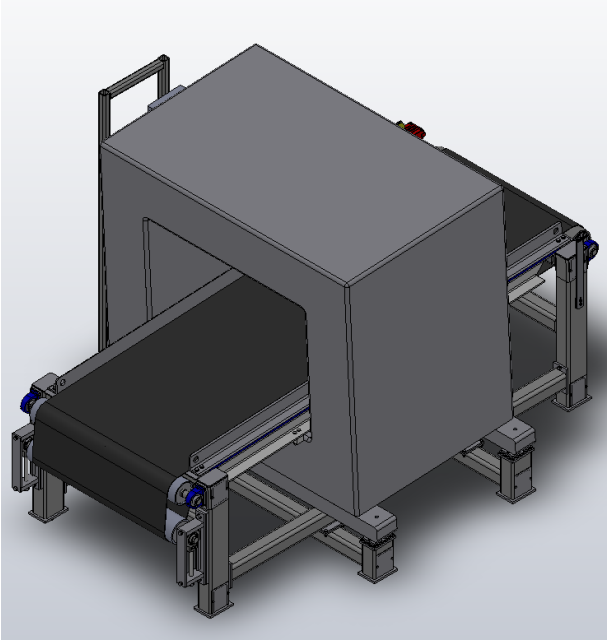
129888	Sub Assy Air Knife
128299	Broken Wire Removal Station
89172	Sub Assy Stationary Coiler
89414	Sub Assy Coiling Head
89667	Sub Assy Pin Pad
92042	Bale Switch
127869	Sub Assy Chutes
Pneumatics	
17046-116PM1-BOM	Robot Dewiring Tool – Pneumatics
ZC00-B6-128646_1	116PM1 – Robot Dewiring Tool
17046-116PM2-BOM	Longitudinal & Transversal Cutters – Pneumatics
ZC00-B6-128646_2	116PM2 – Longitudinal & Transversal Cutters
ZC00-B6-128646_3	116PM2 – Longitudinal & Transversal Cutters
ZC00-B6-128646_4	116PM2 – Longitudinal & Transversal Cutters
ZC00-B6-128646_5	116PM2 – Longitudinal & Transversal Cutters
17046-116PM3-BOM	Broken Wire Removal Station - Pneumatics
ZC00-B6-128646_6	116PM3 – Broken Wire Removal Station
Electrical	
17046-116.81E-BOM	Dewiring Conveyor – Electrical
17046-116.82E-BOM	Dewiring Robot - Electrical
ZA00-B8-128165_12	Enclosures and Junction Boxes Section 116: E116ROBJBP1 – Terminal Arrangement
17046-116.83E-BOM	Robot Dewiring Tool - Electrical
17046-116.84E-BOM	Longitudinal & Transversal Cutters – Electrical
ZA00-B8-128165_10	Enclosures and Junction Boxes Section 116: E116LCJBC1 – Terminal Arrangement
ZA00-B8-128165_11	Enclosures and Junction Boxes Section 116: E116TCJBC1 – Terminal Arrangement
17046-116.85E-BOM	Broken Wire Removal Station – Electrical
ZA00-B8-128165_07	Enclosures and Junction Boxes Section 116: E116BWJBC1 – Terminal Arrangement
ZA00-B8-128165_08	Enclosures and Junction Boxes Section 116: E116BWJBC1 – Terminal Arrangement
ZA00-B8-128165_09	Enclosures and Junction Boxes Section 116: E116BWJBP1 – Terminal Arrangement

117: LE00-D3-127660 Safety Enclosure



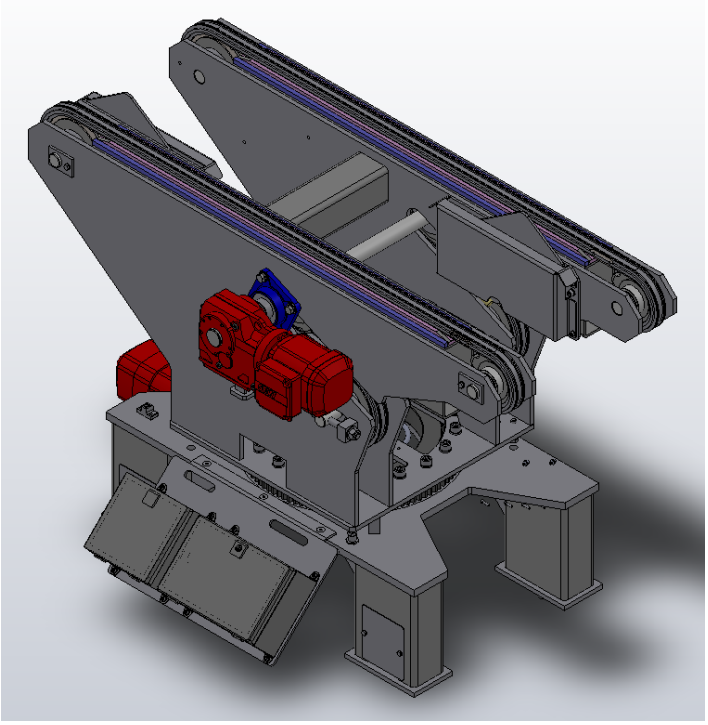
Drawings & Bill of Materials	
Mechanical	
LE00-D3-127660	Safety Enclosure
118655	Enclosure Stand Assy
125175	Sub Assy Light Curtain & Muting
129457	Sub Assy Scanner
129895	RH Door Assy
129813	LH Door Sub Assy
129814	RH Door Sub Assy
129815	RH Door Sub Assy

118: DA03-D3-127661 Metal Detector c/w Conveyor



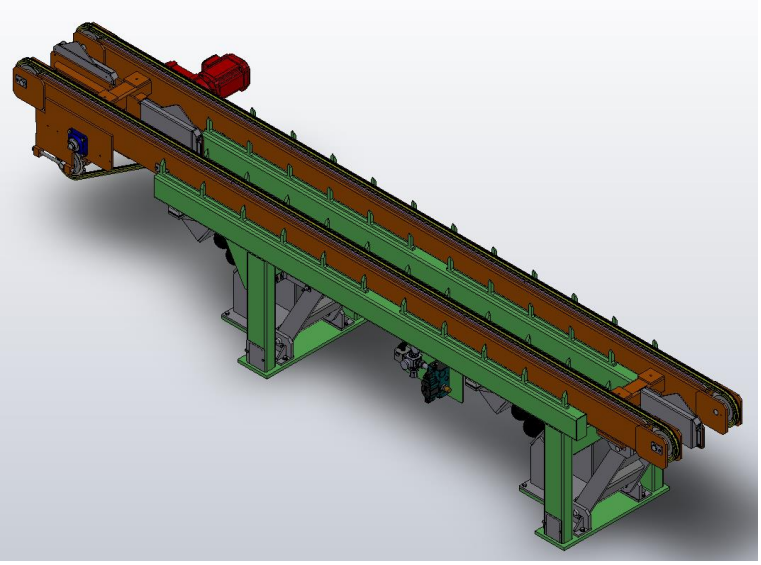
Drawings & Bill of Materials	
Mechanical	
DA03-D3-127661	Metal Detector c/w Conveyor
Electrical	
17046-118E-BOM	Metal Detector – Electrical
ZA00-B8-128165_13	Enclosures and Junction Boxes Section 118: E118JBC2 – Terminal Arrangement

119: DJ00-D3-127662 Bale Turntable



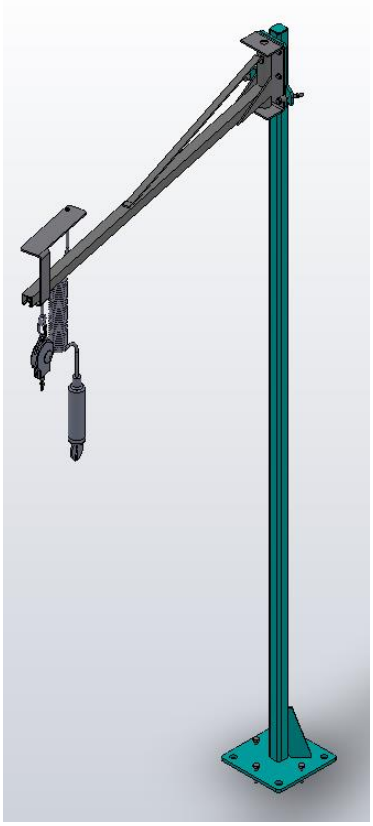
Drawings & Bill of Materials	
Mechanical	
DJ00-D3-127662	Bale Turntable
127770	Turntable Top Assy
88868	Take-Up Sprocket Assy
88869	Idler Sprocket Assy
88870	Drive Sprocket Assy
92042	Bale Switch
92544	Idler Sprocket Assy
127771	Base Frame Sub Assy
Electrical	
17046-119E-BOM	Bale Turntable - Electrical
ZA00-B8-128165_14	Enclosures and Junction Boxes Section 119: E119JBC1 – Terminal Arrangement
ZA00-B8-128165_15	Enclosures and Junction Boxes Section 119: E119JBP1 – Terminal Arrangement

120: DA06-D3-127663 Manual Dewiring



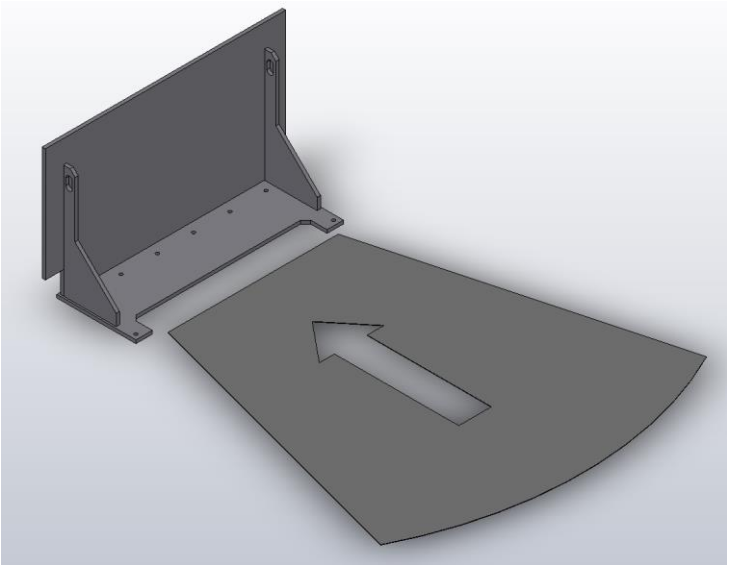
Drawings & Bill of Materials	
Mechanical	
DA06-D3-127663	Manual Dewiring
128086	Sub Assy Chain Conveyor
88869	Idler Sprocket Assy
88870	Drive Sprocket Assy
88891	Bale Switch
107473	Take Up Sprocket Assy
Pneumatics	
17046-120PM1-BOM	Manual Dewiring Conveyor – Pneumatics
ZC00-B6-128647_1	120PM1 – Manual Dewiring Conveyor
Electrical	
17046-120E-BOM	Manual Dewiring Conveyor
ZA00-B8-128165_16	Enclosures and Junction Boxes Section 120: E120JBC1 – Terminal Arrangement

121: MV00-D3-127664 Manual Wire Cutter



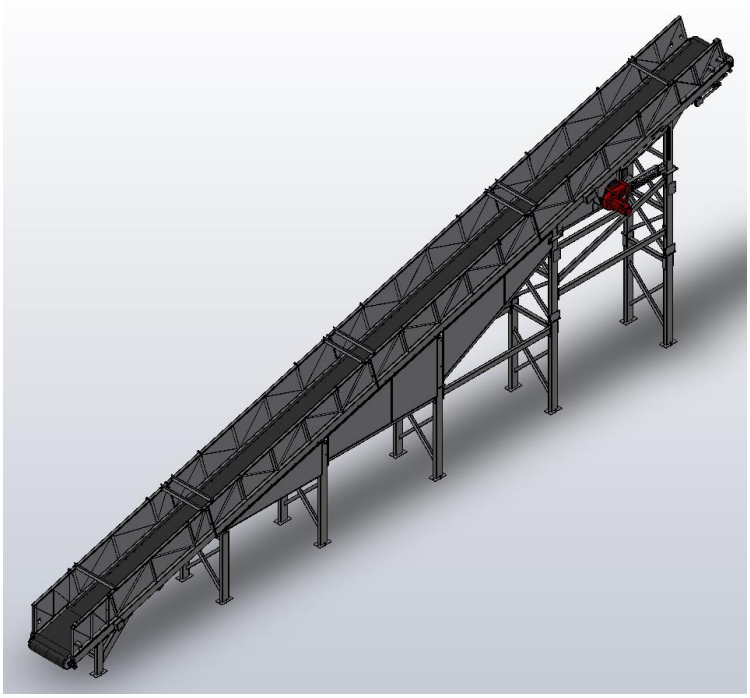
Drawings & Bill of Materials	
Mechanical	
MV00-D3-127664	Manual Wire Cutter
Pneumatic	
17046-121PM1-BOM	Manual Wire Cutter – Pneumatics
ZC00-B6-128648_1	121PM1 – Manual Wire Cutter

122: MI00-D3-127665 Truck Guard c/w Vehicle Loop Detector



Drawings & Bill of Materials	
Mechanical	
MI00-D3-127665	Truck Guard c/w Vehicle Loop Detector

123: DA03-D3-127666 Inclined Belt Conveyor

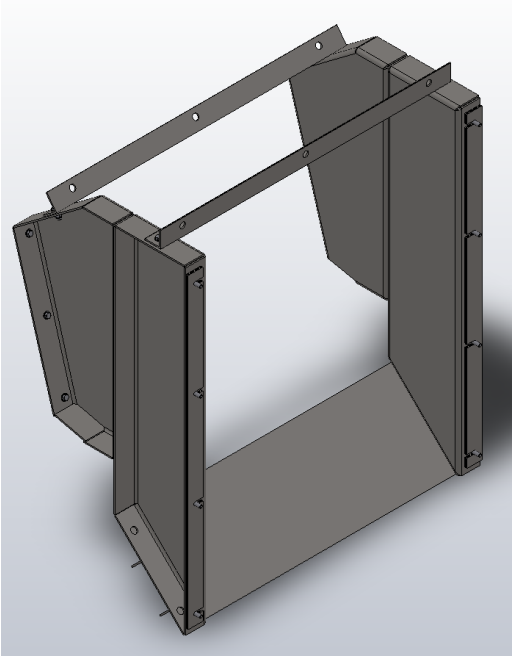


Drawings & Bill of Materials	
Mechanical	
DA03-D3-127666	Inclined Belt Conveyor
87751	Roller Sub Assy
128365	Roller Sub Assy
Electrical	
17046-123E-BOM	Inclined Belt Conveyor – Electrical
ZA00-B8-128165_17	Enclosures and Junction Boxes Section 123: E123JBC1 – Terminal Arrangement
ZA00-B8-128165_18	Enclosures and Junction Boxes Section 123: E123JBC2 – Terminal Arrangement

124: JS00-D3-127667 Catwalk

Drawings & Bill of Materials	
Mechanical	
JS00-D3-127667	Catwalk

125: GA00-D3-127668 Chute



Drawings & Bill of Materials	
Mechanical	
GA00-D3-127668	Chute

151: PNL 1 Electrical Controls

Drawings & Bill of Materials	
17046-E151PNL1-BOM	Electrical Controls – E151PNL1
51.1 Electrical Controls – Drafting	
ZA00-B8-128153_01	Power Distribution E151PNL1: 480VAC Distribution
ZA00-B8-128153_02	Power Distribution E151PNL1: 480VAC Distribution
ZA00-B8-128153_03	Power Distribution E151PNL1: 480VAC Distribution
ZA00-B8-128153_04	Power Distribution E151PNL1: Spare
ZA00-B8-128153_05	Power Distribution E151PNL1: Spare
ZA00-B8-128153_06	Power Distribution E151PNL1: 120VAC Distribution
ZA00-B8-128153_07	Power Distribution E151PNL1: 24VDC Distribution
ZA00-B8-128153_08	Power Distribution E151PNL1: 24VDC Distribution
ZA00-B8-128153_09	Power Distribution E151PNL1: 24VDC Distribution
ZA00-B8-128153_10	Power Distribution E151PNL1: 24VDC Distribution
ZA00-B8-128154_01	Motor Control Schematic Section 110: E110M01, Motor Schematics (E151DP1)
ZA00-B8-128154_02	Motor Control Schematic Section 112: E112M01, Motor Schematics (E151DP1)
ZA00-B8-128154_03	Motor Control Schematic Section 113: E113M01, Motor Schematics (E151DP1)
ZA00-B8-128154_04	Motor Control Schematic Section 114: E114M01, Motor Schematics (E151DP1)
ZA00-B8-128154_05	Motor Control Schematic Section 115: E115M01, Motor Schematics (E151DP1)
ZA00-B8-128154_06	Motor Control Schematic Section 115: E115M02, Motor Schematics (E151DP1)
ZA00-B8-128154_07	Motor Control Schematic Section 116: E116DCM01, Motor Schematics (E151DP1)
ZA00-B8-128154_08	Motor Control Schematic Section 116: E116ROBM01, Motor Schematics (E151DP1)
ZA00-B8-128154_09	Motor Control Schematic Section 116: E116LCM01, Motor Schematics (E151DP1)
ZA00-B8-128154_10	Motor Control Schematic Section 116: E116TCM01, Motor Schematics (E151DP1)
ZA00-B8-128154_11	Motor Control Schematic Section 116: E116BWM01A-B, Motor Schematics (E151DP1)
ZA00-B8-128154_12	Motor Control Schematic Section 116: E116BWM02, Motor Schematics (E151DP1)
ZA00-B8-128154_13	Motor Control Schematic Section 116: E116BWM03, Motor Schematics (E151DP1)Motor Control Schematic Section 116
ZA00-B8-128154_16	Motor Control Schematic Section 118: E118M01, Motor Schematics (E151DP1)
ZA00-B8-128154_18	Motor Control Schematic Section 119: E119M01, Motor Schematics (E151DP1)

ZA00-B8-128154_19	Motor Control Schematic Section 119: E119M02, Motor Schematics (E151DP1)
ZA00-B8-128154_20	Motor Control Schematic Section 120: E120M01, Motor Schematics (E151DP1)
ZA00-B8-128154_23	Motor Control Schematic Section 123: E123M01, Motor Schematics (E151DP1)
ZA00-B8-128155_01	Safety Circuits E151PNL1: Rack 2, Slot 1 (1734-IB8S)
ZA00-B8-128155_02	Safety Circuits E151PNL1: Rack 2, Slot 2 (1734-IB8S)
ZA00-B8-128155_03	Safety Circuits E151PNL1: Rack 2, Slot 3 (1734-IB8S)
ZA00-B8-128155_04	Safety Circuits E151PNL1: Rack 2, Slot 4 (1734-IB8S)
ZA00-B8-128155_05	Safety Circuits E151PNL1: Rack 2, Slot 5 (1734-IB8S)
ZA00-B8-128155_06	Safety Circuits E151PNL1: Rack 2, Slot 6 (1734-IB8S)
ZA00-B8-128155_07	Safety Circuits E151PNL1: Rack 2, Slot 7 (1734-IB8S)
ZA00-B8-128155_08	Safety Circuits E151PNL1: Rack 2, Slot 8 (1734-IB8S)
ZA00-B8-128155_09	Safety Circuits E151PNL1: Rack 2, Slot 9 (1734-OB8S)
ZA00-B8-128155_10	Safety Circuits E151PNL1: Rack 2, Slot 10 (1734-OB8S)
ZA00-B8-128155_11	Safety Circuits E151PNL1: Rack 2, Slot 11 (1734-OB8S)
ZA00-B8-128155_12	Safety Circuits E151PNL1: Rack 2, Slot 12 (1734-OB8S)
ZA00-B8-128156_01	Input/Output E151PNL1: Rack 1, Slot 1 (1734-IE4C)
ZA00-B8-128156_02	Input/Output E151PNL1: Rack 1, Slot 2 (1734-IE4C)
ZA00-B8-128156_03	Input/Output E151PNL1: Rack 1, Slot 3 (1734-IB8)
ZA00-B8-128156_04	Input/Output E151PNL1: Rack 1, Slot 4 (1734-IB8)
ZA00-B8-128156_05	Input/Output E151PNL1: Rack 1, Slot 5 (1734-IB8)
ZA00-B8-128156_06	Input/Output E151PNL1: Rack 1, Slot 6 (1734-IB8)
ZA00-B8-128156_07	Input/Output E151PNL1: Rack 1, Slot 7 (1734-IB8)
ZA00-B8-128156_08	Input/Output E151PNL1: Rack 1, Slot 8 (1734-IB8)
ZA00-B8-128156_09	Input/Output E151PNL1: Rack 1, Slot 9 (1734-IB8)
ZA00-B8-128156_10	Input/Output E151PNL1: Rack 1, Slot 10 (1734-IB8)
ZA00-B8-128156_11	Input/Output E151PNL1: Rack 1, Slot 11 (1734-IB8)
ZA00-B8-128156_12	Input/Output E151PNL1: Rack 1, Slot 12 (1734-IB8)
ZA00-B8-128156_13	Input/Output E151PNL1: Rack 1, Slot 13 (1734-IB8)
ZA00-B8-128156_14	Input/Output E151PNL1: Rack 1, Slot 14 (1734-IB8)
ZA00-B8-128156_15	Input/Output E151PNL1: Rack 1, Slot 15 (1734-IB8)
ZA00-B8-128156_16	Input/Output E151PNL1: Rack 1, Slot 16 (1734-OB8)
ZA00-B8-128156_17	Input/Output E151PNL1: Rack 1, Slot 17 (1734-OB8)
ZA00-B8-128156_18	Input/Output E151PNL1: Rack 1, Slot 18 (1734-OB8)
ZA00-B8-128156_19	Input/Output E151PNL1: Rack 1, Slot 19 (1734-OB8)
ZA00-B8-128156_20	Input/Output E151PNL1: Rack 1, Slot 20 (1734-OB8)
ZA00-B8-128156_21	Input/Output E151PNL1: Rack 1, Slot 21 (1734-OB8)

ZA00-B8-128156_22	Input/Output E151PNL1: Rack 1, Slot 22 (1734-OB8)
ZA00-B8-128156_23	Input/Output E151PNL1: Rack 1, Slot 23 (1734-OB8)
ZA00-B8-128156_24	Input/Output E151PNL1: Rack 1, Slot 24 (1734-OB8)
ZA00-B8-128156_25	Input/Output E116RC1: Robotic Dewiring Station
ZA00-B8-128156_26	Input/Output E116RC1: Robotic Dewiring Station
ZA00-B8-128162_01	Enclosures and Junction Boxes E151PNL1: External View
ZA00-B8-128162_02	Enclosures and Junction Boxes E151PNL1: Internal View Control & Drive Panel
ZA00-B8-128162_03	Enclosures and Junction Boxes E151PNL1: Terminal Block Arrangement 1
ZA00-B8-128162_04	Enclosures and Junction Boxes E151PNL1: Terminal Block Arrangement 2
ZA00-B8-128162_05	Enclosures and Junction Boxes E151PNL1: Terminal Block Arrangement 3
ZA00-B8-128162_06	Enclosures and Junction Boxes E151PNL1: Fuses E151PLC1
ZA00-B8-128162_07	Enclosures and Junction Boxes E151PNL1: Fuses E151DP1
ZA00-B8-128168_01	Interconnects E151PNL1: Network Architecture

170: Pneumatic

Drawings & Bill of Materials	
ZC00-B6-128932	Air Consumption Data
17046-170PINT1-BOM	Pneumatic Interconnection – Pneumatics
17046-170PINT2-BOM	Pneumatic Interconnection – Pneumatics
17046-170PINT3-BOM	Pneumatic Interconnection – Pneumatics
ZC00-B6-128677_1	170PINT1 – Safety Swing Gates – Pneumatic Interconnection
ZC00-B6-128678_1	170PINT2 – Destacker & K2K Dewiring Unit – Pneumatic Interconnection
ZC00-B6-128679_1	170PINT3 – Manual Dewiring – Pneumatic Interconnection
170.8 Electrical	
17046-170E-BOM	Pneumatic Controls – Electrical
ZA00-B8-128165_19	Enclosures and Junction Boxes Section 170: E170JBC1 – Terminal Arrangement
ZA00-B8-128165_20	Enclosures and Junction Boxes Section 170: E170JBC2 – Terminal Arrangement
ZA00-B8-128165_21	Enclosures and Junction Boxes Section 170: E170JBC3 – Terminal Arrangement

Pneumatic Controls

For general information, all pneumatic assemblies are done using the following typical guidelines when possible:

- Pneumatic sections are supplied with an inlet ball valve which exhausts downstream pressure when closed;
- Pneumatic pressure is applied on the cap end of cylinders when a directional valve's port 'A' (or '4') is pressurized (note however that this is not possible in all cases).

With respect to drawings, all pneumatic drawings are schematics only and do not reflect the component physical layout nor line lengths. As standard supply, all ADCL pneumatic drawings include :

- A client connection point(s) description table, where applicable;
- Client supply requirements, where applicable;
- Line size, material and bend radius table for all lines used on valve assemblies;
- An actuator reference information box for all functions;
- Line, item and general reference notes.

Note: To release pneumatic pressure at the automatic tensioning cylinders, close safety lock-out manual valve on manifold (check pressure on gauge located on the regulator).

180: Electrical

Drawings & Bill of Materials	
17046-180E-BOM	Electric Controls - General
17046-E180HM1-BOM	Electric Controls – E180HM1
17046-E180HM2-BOM	Electric Controls – E180HM2
17046-E180PBS2B-BOM	Electric Controls – E180PBS2B
17046-E180PBS2C-BOM	Electric Controls – E180PBS2C
17046-E180PBS3A-BOM	Electric Controls – E180PBS3A
17046-E180PBS4-BOM	Electric Controls – E180PBS4
17046-E180PBS5-BOM	Electric Controls – E180PBS5
180.1 Drafting	
ZA00-B8-128149_01	Drawing List: Title Page
ZA00-B8-128149_02	Drawing List: Electrical Drawing List
ZA00-B8-128149_03	Drawing List: Electrical Drawing List
ZA00-B8-128149_04	Drawing List: Electrical Drawing List
ZA00-B8-128150_01	Project Specifications: Panel and Electrical Assembly
ZA00-B8-128150_02	Project Specifications: Panel and Electrical Assembly
ZA00-B8-128164_01	Enclosures and Junction Boxes: E180HMI1 – HMI Enclosure Layout
ZA00-B8-128164_02	Enclosures and Junction Boxes: E180HMI1 – Terminal Arrangement
ZA00-B8-128164_03	Enclosures and Junction Boxes: E180HMI2 – HMI Enclosure Layout
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ZA00-B8-128164_05	Enclosures and Junction Boxes: E180PBS2B – Push Button Station Layout
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ZA00-B8-128164_07	Enclosures and Junction Boxes: E180PBS2C – Push Button Station Layout
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ZA00-B8-128164_09	Enclosures and Junction Boxes: E180PBS3A – Push Button Station
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ZA00-B8-128167_01	Interconnects E151PNL1: E151PLC1: Control Cables
ZA00-B8-128167_02	Interconnects E151PNL1: E151PLC1: Control Cables
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180.2 Documents	
ZA00-B8-128147	Instrument List

ZA00-B8-128148	Load & Power Distribution List

System Maintenance

Service and maintenance are absolutely essential in order to obtain the desired performance from AD equipment. Follow the scheduled maintenance as shown in the following articles.

- General Preventive Maintenance Table.
- Fluid Power Maintenance Fluid Power Components.
- Storage Preservation and Maintenance of Preservation.
- Preservation Recommendations.
- Start-up after Prolong Storage.
- Qualification Requirements and Training Program for Maintenance.

General Preventive Maintenance Table

Preventive maintenance helps to reduce the number of intervention on the equipment. To reduce the risk of wear and damage to components, proper lubrication must be used. Also, preventive maintenance will decrease the risk of breaking parts which can cause more significant damages and thus reduce the costs and the prolonged downtime periods.
Preventive maintenance shall be performed by qualified maintenance personnel only.

For more details concerning preventive maintenance, please refer to the following table:

Machine Element	*Section (s)*	*Weekly*	*Monthly*	*3 Mo.*	*6 Mo.*	*Yearly*
Air Bags (Bellows style)			C, I (1)			
Bearings & blocks, Linear			C, L (11)			
Bearings, SKF Roller			I, C		G (13)	
Bearings, SKF Spherical			I, C		G (14)	
Bushings			C, L (11)			
Casters		I				
Chain, roller			I/T/L (15)			
Cylinders, hydraulic			C, I (1)			
Cylinders, pneumatic			C, I (1)			
Cylinders, rodless			C, I (1)			
Robots, FANUC		See Manufacturer's Literature for more Information				
Robot suction cups		I			I/R(1)	
Filters, hydraulic		I (1)				R (9)
Filters, pneumatic circuits		I (8)				R (9)
Gauges			C, I (1)			
Gearmotors, SEW Eurodrive*			I, A Brake		I, C*	
Heat Exchanger (air / oil)		I		C		
Hoses		I (1)				
HPU General Assembly				C, I (2)		
HPU Reservoir					I (7)	
Hydraulic Oil						N (5)
Hydraulic Oil Level		I, A (4)				
Hydraulic Oil Temperature		I				
Lubricators, pneumatic			I (10)		C	
Manifolds & Valve Assembly			C, I (2)			
Manipulator jaw serrated pads		I,C				
Motor, electric, HPU			I (1)			L (3)
Mufflers, exhaust, pneumatic					C	
Photocells		I, W				
Pivots & pivot pins			C, L (11)			
Printer, Zebra labeler	I (16)					
Rotary Actuators			C, I (1)			
Sprockets, roller chain		I				
Suction Cups, Vacuum Cups		I, C				
Transducers		I, C				

*SEW Motor Lubrication Table

Legend:
A: Adjust, C: Clean, F: Fill Oil, G: Grease, I: Inspect, L: Lubricate, N: Analyze, O: Change oil, R: Replace, T: Tension, W: Wipe Clean

1 Inspect for leaks and external damage, adjust or replace as necessary.
2 Inspect for leaks, adjust as necessary.
3 Shell Dolium R or equivalent.
4 Fill with Quintolubric 888, or equivalent, if necessary.
5 Clean reservoir and replace oil with Quintolubric 888, or equivalent, if necessary.
6 Change element with proper replacement as per section bill of material.
7 Pre-change with dry nitrogen to adequate pressure.
8 Drain bowl.
9 Change element with proper replacement as per section bill of material.
10 Fill with Mobile Die light NFO 10W/NR, or equivalent, if necessary.
11 Use Shell Alania RA3 or equivalent.
12 As required.
13 Use SKF LGMT 2 or equivalent lithium based grease.
14 Use SKF LGHB 2 or equivalent high pressure lithium based grease.
15 Use SAE 10W
16 Refer to OEM literature for more info.
* Refer to OEM literature for more info. For scheduled oil change: min 3 yrs or 10,000 hrs. Use Shell Omala 220.

General Fluid Power Maintenance

	Weekly	Monthly	Quarterly	Bi-Yearly	Yearly
Filters (pneumatic circuits only)	I (3)				R (6)
Lubricators (pneumatic circuits only)		I (4)		C	
Manifolds & Valve Assemblies		C, I (2)			
Gauges		C, I (1)			
Exhaust Mufflers (pneumatic circuits only)				C	
Hoses		I (1)			
Cylinders		C, I (1)			
Cylinder Pivots and Accessories		C, I (1)			
Rotary Actuators		C, I (1)			
Motors		C, I (1)			
Air Bags (bellows)		C, I (1)			

Remarks:

(1) Inspect for leaks and external damage, adjust or replace as necessary:
(2) Inspect for leaks, adjust as necessary;
(3) Drain bowl;
(4) Fill with Mobil Die Light NFO 10 W/NR, or equivalent, if necessary;
(5) Use Shell Alvania RA3 or Equivalent;
(6) Change element with proper replacement as per section bill of material.

Legend:

A: Adjust
C: Clean
I: Inspect
L: Lubricate
N: Analyse
R: Replace

Preservation Recommendations

In order to ensure proper preservation of all equipment delivered by AD in the Georgia Pacific K2K Dewiring Pulper Feed System, the preservation recommendation must be performed to any equipment that is not running for a long time period.

- The equipment shall be adequately protected against mechanical damage, such as impacts with material handling equipment, motor vehicles, suspended loads, falling objects, etc.
- The equipment shall be adequately stored inside to protect against sunlight, rain and other environmental factors.
- The corrosion inhibition protection ("Rustban") shall be applied to all exposed steel surfaces and shall not be removed until equipment is back in place and ready for start-up.
- All pneumatic and hydraulic lines (piping and tubing) shall be capped to prevent contamination.
- All electrical equipment, including instruments, shall be given additional protection to prevent contamination and oxydation. It is recommended to use plastic wrap over all junction boxes, photocells, proximity switches, pneumatic enclosures, light curtains, etc.
- All MCC, HMI, PLC and Remote I/O shall be stored in a heated warehouse until they are required at their final location for installation. Once these equipments are moved out of the warehouse, plastic wrap shall be used to protect them against any environmental factors. This protection shall be removed when work is performed on the equipment and put back in place when the work is stopped.

Start-up After Prolonged Storage

If the equipment has been stopped or been in storage for a prolonged period, the following "start-up after storage" checklist is to be used by the client and AD as a general guideline to define the procedures for starting the equipment. It is assumed that the equipment has been properly prepared for storage (or shipment) and stored adequately, as per the recommendations shown in the previous section of this manual.

Checklist before start-up:

1. Visually inspect equipment for damages caused during storage or shipment.
2. Verify guide rails, guide wheels, guide shafts and pivots for corrosion.
3. Verify for proper oil levels in gear reducers.
4. Remove rust protection applied to unpainted surfaces before storage.
5. Verify all pneumatic and hydraulic lines and cylinders for crush or collision damage, (particularly the exterior tube and extended rods).
6. Pneumatic equipment must have all lines checked for leaks, otherwise low pressure shifting of all actuators should occur.
7. Pneumatic lubricators (if installed) should be filled with proper lube, and flow rates verified before start up.
8. Hydraulic equipment must have all lines purged and flushed, standard flushing of field installed lines (if applicable) must be done before connection to AD equipment lines (they are sealed before shipment).
9. All hydraulic lines should be filled under controlled conditions before equipment is put into loaded operation.
10. All electrical devices should be "megged" for ground faults.
11. All ground lines should be visually inspected and their true continuity verified.
12. All guards must be in place and standard safety precautions taken for each stage of powered start up.
13. Visual inspection of all active areas must be done and safety tape placed appropriately when the start up is being undertaken while adjacent work is underway in the same building.
14. Sign off procedures done at each stage, where applicable.

Qualification Requirements and Training Program for Maintenance

Maintenance employees are important to ensure safe and proper running of the equipment and achieving set goals in productivity of the supplied system.

In order to achieve the desired objectives, we believe the following qualifications are required for maintenance employees:

- Familiarity with the equipment and its adjacent systems, in terms of their operations, hazards and emergency procedures.
- Ability to understand & act responsibly according to above.
- Familiarity with automated handling equipment.
- Familiarity with the mechanical and electrical supply of the AD system.
- Familiarity with touch screens and control stations.
- Familiarity with the various breakdowns (MCC, PLC, HMI, hydraulic, pneumatic, safety & operational) of the AD equipment and systems.
- Familiarity of each system zone's limits and safety requirements.
- Ability to read and understand English.
- Ability to differentiate the colors red, green and yellow (re: no colour blindness)

Maintenance employees shall be familiar with the functionality of the complete system and have received proper maintenance training before doing any maintenance action on the equipment included in the AD system.

General Installation Instructions

Provided below are the General Installation Instructions. Should you need extra information or guidance, contact Advanced Dynamics for support (see section Contact Us in this manual).

Client:		Project #		Section #	
Section Description					
1	Stage the equipment in place				
2	Align the center-line of the equipment very precisely (+- 1.5mm) with existing equipment centerline				
3	Using the provided jack bolts (or levelling screws), align the equipment so that is perfectly horizontal				
4	Drill anchor bolt holes with equipment in place				
5	Cast anchor bolts into the floor concrete, using epoxy or other desired means and let dry for appropriate duration (as per manufacturer's specifications)				
6	Insert shims under the equipment base plates, near the anchor bolts				
7	Remove all jack bolts (or levelling screws) and discard				
8	Torque the anchor bolts to manufacturer's specifications				
9	Grout the base plates				

Note: General tolerance of +-1.5 mm is given as a reference only. Tighter tolerances may be required. Consult AD's installation supervisor to confirm all tolerances

Equipment Commissioning Checklist

Provided below is an Equipment Commissioning Checklist. Should you need extra information or guidance, contact Advanced Dynamics for support (see section Contact Us in this manual).

Client:		Project #		Section #	
Section Description					

	Mechanical, Hydraulic and Pneumatic	Yes	No	N/A
1	Is the equipment installed straight and level, and as per GA drawings?			
2	Are all components installed at the specified elevations?			
3	Are all shims in place and secured?			
4	Are all components bolted down properly onto shims?			
5	Are all fasteners installed, torqued and locked (lock nuts, lock washers, loctite, cutter pins, etc.)?			
6	Is final grouting of the base plates complete?			
7	Have all hydraulic and pneumatic lines been flushed and/or cleaned?			
8	Are all pulleys, belts and chains tensioned properly?			
9	Have all gaskets been installed?			
10	Have all the lubricated parts been lubricated with proper lubricant?			
11	Have all parts been adjusted (clearances, gaps, etc) and locked in place?			
12	Have all mechanical stoppers been installed and locked in place?			
13	Are all drain plugs installed securely on equipment (to prevent leaks)?			
14	Have verifications been made to ensure there are no leaks (oil and air)?			
15	Are all "reservoirs" filled to proper level (hydraulic, pneumatic lubricators, lubrication, and nitrogen)?			
16	Are all operating pressures as per pneumatic drawings (no load and full load)?			
17	Are all hydraulic/pneumatic adjustments verified & locked as per schematics?			
18	Are all hydraulic/pneumatic interconnections completed as per schematics?			
	Electrical	Yes	No	N/A

1	Have all electrical equipment and components been installed as per the electrical layout drawing and properly connected?			
2	Are all components electrically grounded?			
3	Are all elements functional (motors running in proper direction, I/O's checked, etc)?			
4	Are all motor currents within manufacturer specifications (no load and full load)?			
5	Are all VFDs (variable frequency drive) programmed/calibrated?			
6	Are all instruments calibrated?			
7	Are all electrical panels properly mounted?			
8	Are all junction boxes installed properly?			
9	Have verifications been made to ensure there are no short circuits (megger, impedance, ground, etc)?			
10	Is HMI (human machine interface) functional?			
11	Have verifications been made to ensure there are no stripped wires?			
12	Are all wire tags installed?			
13	Are all wire colors per drawings?			
14	Are all wires and terminal blocks properly installed and torqued?			
15	Are all fuses and breakers in place and functional?			
	General	Yes	No	N/A
1	Are all components properly identified?			
2	Have all paint damages been painted over with approved paints?			
3	Are all components in proper working condition (no broken, cracked or damaged parts)?			
4	Is all safety equipment in place (safety fences, gates, pull cords, stickers, labels, signs, etc.)?			
5	Have all foreign objects (tools, material, etc.) been removed from the equipment and its components?			
6	Have all discrepancies (if any) been reported?			

Spare Parts

The following pages contain a comprehensive listing of all the spare parts recommended by Advanced Dynamics Corporation Ltd.

The following list is for capital spare parts: PM01-A9-132525

To order pieces, you must give AD the complete information concerning “project – section # - reference drawing # - item #"

Letter of Warranty

Please take note of the following attachment containing the letter of warranty for the K2K Dewiring & Loose Wire Stripper Station purchased by Georgia Pacific Perry from Advanced Dynamics.

TBD

Thank you

Thank you for taking the time to read and understand this manual. Do not hesitate to contact AD with any questions related to the supplied equipment, it will be our pleasure to help you.

We hope that this new equipment will meet or exceed your expectations and provide you with the long term benefits it was designed for!