Balemaster®

Division of East Chicago Machine & Tool
980 Crown Court
Crown Point, IN 46307

BEFORE ANY MAINTENANCE IS PERFORMED ON BALEMASTER/BALEWEL EQUIPMENT, MAKE CERTAIN THAT ALL ELECTRICAL CONTROLS ARE LOCKED OUT. DO NOT OPERATE THE EQUIPMENT WHEN PANELS AND GUARDS ARE NOT IN PLACE.

CAUTION

- LOCK OUT -

EQUIPMENT CONTROLS BEFORE

PERFORMING MAINTENANCE;

MAKING ADJUSTMENTS;

CLEANING THE EQUIPMENT;

OPENING OR REMOVING ACCESS PANELS, COVERS, DOORS, ETC.

NOTE: FOLLOW ALL OSHA, GENERAL SAFETY, PLANT RULES AND PROCEDURES.
THIS EQUIPMENT IS A MECHANICAL DEVICE THAT IS ELECTRICALLY CONTROLLED, HYDRAULICALLY/MECHANICALLY POWERED AND CAN CAUSE INJURY IF PROPER PRECAUTIONS ARE NOT FOLLOWED.

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules and precautions. For this reason, most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

WITH ANY MACHINERY, A CAREFUL AND TRAINED OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

NEVER ATTEMPT TO CLEAN, OIL, ADJUST OR CLEAR A MACHINE WHILE IT IS IN MOTION OR WITH THE POWER ON.

FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT.

M.O.119-95

4000 SERIES BALEMASTER BALER - OPEN CHAMBER BALER

OWNER'S MANUAL

* REFER TO THE AUTO-TY SECTION OF THIS MANUAL (WHEN PROVIDED) FOR ADDITIONAL INFORMATION RELATED TO THESE ITEMS.

M.O.119-95

OWNER'S MANUAL CONTINUED

* REFER TO THE AUTO-TY SECTION OF THIS MANUAL (WHEN PROVIDED) FOR ADDITIONAL INFORMATION RELATED TO THESE ITEMS.

OWNER'S MANUAL CONTINUED

AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS ANSI CODE Z245.5-1990

The following pages are excerpts from the American National Standard Institute Safety Requirements for balers, ANSI Code Z245.5-1990 for your information and compliance. The excerpts cover Modification (5.1.2), Installation, Operation, and Maintenance Requirements (6), Employer Responsibility (7.1) and Employee Responsibility (7.2). For the complete code contact:

SECRETARY - AMERICAN NATIONAL STANDARDS COMMITTEE, Z245
c/o NATIONAL SOLID WASTES MANAGEMENT ASSOCIATION
1730 RHODE ISLAND AVENUE, SUITE 1000
WASHINGTON, DC 20036

5. CONSTRUCTION AND MODIFICATION REQUIREMENTS

5.1.2 MODIFICATION. It shall be the responsibility of any person modifying a baler after the effective date of this standard to do so in accordance with all appropriate sections of this standard and to notify the manufacturer prior to making such modifications. No such modification should take place without the written permission of the manufacturer, if available. See 6.2 for operating instructions to be included with all modifications.

6. INSTALLATION, OPERATION AND MAINTENANCE REQUIREMENTS

6.1 GENERAL. Installation recommendations and operating instructions shall be developed by the manufacturer and furnished with each baler. These instructions shall establish guidelines for the use, cleaning, and preventive maintenance of the unit. Such instructions shall include safety precautions associated with the operation of the unit.

6.2 MODIFICATION. Any person modifying a baler shall furnish instructions with the modification. Instructions shall include safety precautions associated with the modification of the unit. Modifications shall be done in accordance with 5.1.2.

6.3 INSTALLATION. The installer shall install a baler in accordance with applicable codes, local ordinances, and the manufacturer's instructions and specifications.

6.4 MAINTENANCE PERSONNEL. The employer who operates the baler shall ensure the proper cleaning, inspecting, and maintaining of the baler in accordance with the manufacturer's recommendations. Employers who maintain their own equipment shall be responsible for the training of competent maintenance personnel in accordance with the manufacturer's recommendation.

AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS
ANSI CODE Z245.5-1990 CONTINUED

6.5 INSPECTION AND MAINTENANCE. The employer shall establish and follow a program of periodic and regular inspections of all balers to ensure that all parts, auxiliary equipment, and safeguards are in a safe operating condition. The employer shall maintain records of these inspections and the maintenance work performed.

6.6 WORK AREA. The employer shall provide an adequate work area around the baler to permit safe maintenance, servicing and cleaning. The employer shall keep all surrounding floor areas free from obstructions that would create a slip or trip hazard.

6.7 LOCKOUT PROCEDURES. A lockout procedure for baling equipment shall be established by the manufacturer and followed by the employer to provide for the power to be shut off before and during maintenance to prevent unauthorized operation. These procedures shall be in accordance with ANSI Z244.1-1982. See Pages 2.03 & 2.04 this manual.

6.8 PROTECTIVE DEVICES. The employer shall maintain all guards and protective devices required by this standard.

6.9 BLOCKING DEVICE FOR VERTICAL DOWNSTROKE BALERS. The manufacturer shall include in the instructions to the employer a provision that a blocking device, capable of being fabricated from readily available materials, shall be manually installed to restrain inadvertent downward motion of the platen whenever a person is to enter into the baler chamber.

7. OPERATIONAL REQUIREMENTS

7.1 EMPLOYER RESPONSIBILITY. The employer shall be responsible for:

(1) Ensuring that the installation of the baler is in conformance with applicable local, state and federal codes and ordinances.

(2) Providing a properly maintained baler that meets all applicable safety standards.

(3) Training and instructing employees in safe methods of work before assigning them to operate or maintain a baler. The employer shall maintain records of this training to include the date (s) of the training and the content of training received. The employer shall ensure, by adequate supervision, that correct operating and maintenance procedures are understood and followed. The employer should refer to the manufacturer's instructions for this purpose.

(4) Operating the baler in accordance with the design specifications as recommended by the manufacturer.

**AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS
ANSI CODE Z245.5-1990 CONTINUED**

(5) Repairing, prior to operation, all malfunctions or breakdowns that result in unsafe operating conditions of the baler. Specific instructions to employees and blocking devices, if required, shall be provided by the employer in the event that the baler chamber must be entered.

(6) Providing for the protection of the operator of horizontal balers having a loading height less than 42 inches from the point of operation by one of the following means:

(a) Sustained manual pressure controls, with the control panel located in such a way that the operator cannot reach the loading zone or pinch-point area.

(b) The installation of a point-of-operation guard that shall: prevent entry of hand, fingers, or any part of the body into the point of operation; in itself, create no pinch point between the guard and moving baler parts; offer maximum visibility of the point of operation consistent with other requirements; and be easily accessible for inspection and maintenance.

(7) Specifically inspecting safety interlocks, switches, and other protective devices, to ensure that these devices are not disabled or bypassed, and to not permit the baler to be operated unless these devices are fully functional. These inspections will be in accordance with 6.5.

7.2 EMPLOYEE RESPONSIBILITY. The employee shall be responsible for:

(1) Using all applicable safety features provided on the baler.

(2) Operating, maintaining, and using a baler only after being properly instructed and trained in accordance with the instructions given in 7.1(3).

(3) Immediately reporting any damage to or malfunction of the baler to the employer or responsible authority.

(4) Ensuring that all individuals are clear of the point of operation and pinch-point area before actuating the controls.

(5) Not placing hands or fingers in the bale binding slots.

(6) Ensuring that all individuals are standing clear of the bale chamber door when ejecting the bale or opening the bale chamber door.

(7) Ensuring that no one disables or bypasses safety interlocks, switches, and other protective devices, and that the baler is not operated unless these devices are fully functional.

LOCKOUT

Lockout procedure for Balemaster Equipment.

PURPOSE

This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

RESPONSIBILITY

The responsibility for seeing that this procedure is followed is binding upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by (designate individuals) in the purpose and use of the lockout procedure.

PREPARATION FOR LOCKOUT

Employees authorized to perform lockout shall be certain as to which switch, valve or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors. Before lockout commences, job authorization should be obtained.

SEQUENCE OF LOCKOUT PROCEDURE

1. Notify all affected employees that a lockout is required and the reason therefor.

2. If the equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.)

3. Operate the switch, valve, or other energy isolating device so that the energy source(s) (electrical, mechanical, hydraulic, etc.) is disconnected or isolated from the equipment. Stored energy, such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc., must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding-down, etc.

4. Lockout the energy isolating devices with an assigned individual lock.

5. After ensuring that no personnel are exposed and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

CAUTION: RETURN OPERATING CONTROLS TO NEUTRAL POSITION AFTER THE TEST.

LOCKOUT CONTINUED

6. The equipment is now locked out.

RESTORING EQUIPMENT TO SERVICE

1. When the job is complete the equipment is ready for testing or normal service, check the equipment area to see that no one is exposed.

2. When equipment is all clear, remove all locks. The energy isolating devices may be operated to restore energy to equipment.

PROCEDURE INVOLVING MORE THAT ONE PERSON

In the preceding steps, if more than one individual is required to lock out equipment, each shall place his own personal lock on the energy isolating device (s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it shall be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

RULES FOR USING LOCKOUT PROCEDURE

All equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock.

BALEMASTER

PREFACE

This Owner's Manual is to provide a fast and easy reference for installation, operation and servicing Balemaster Equipment. Safe operating and maintenance procedures, regular inspections, daily clean out of marked areas on the equipment and planned maintenance by qualified personnel are the responsibility of the user's management.

This Operator's Manual contains information on the operation and servicing of your new Balemaster Baler. Read, understand and follow the enclosed installation and operating instructions before connecting and operating your new Balemaster Baler. The equipment was electrically and hydraulically pressure tested and preset at the factory prior to shipment. It is important all users fully understand the safe operation and maintenance of this equipment. Operators having a language barrier or who are illiterate must be given sufficient training and supervision. It is important to know the Series Baler as stamped on the Series/Model Tag on the Baler in reviewing this Owner's Manual.

This Manual explains the conditions, under normal use, that the equipment may be installed, checked out and operated. It is intended to be used as a supplement to and not in place of other Safety Standards. Many local codes require installation of an Electrical Disconnect Switch in sight of the motor and be capable of being locked in "OFF" position only. Check your local codes for your installation.

The Balemaster equipment has been designed to provide an economical and reliable method of processing and compacting most forms of waste materials. The equipment is a first line production machine and it should receive regular maintenance.

All necessary maintenance and adjustments must be made promptly to avoid any complications and compounding problems. The use of jumpers or other devices to block out electrical interlocks or forcibly over-riding hydraulic components will result in damage to the unit, costly repairs, void the Warranty and could cause injury to operating and maintenance personnel and cannot be condoned.

PRECAUTIONS

P R E C A U T I O N S

BEFORE ANY MAINTENANCE IS PERFORMED ON BALEMASTER/BALEWEL EQUIPMENT, MAKE CERTAIN THAT ALL ELECTRICAL CONTROLS ARE LOCKED OUT. DO NOT OPERATE THE EQUIPMENT WHEN PANELS AND GUARDS ARE NOT IN PLACE.

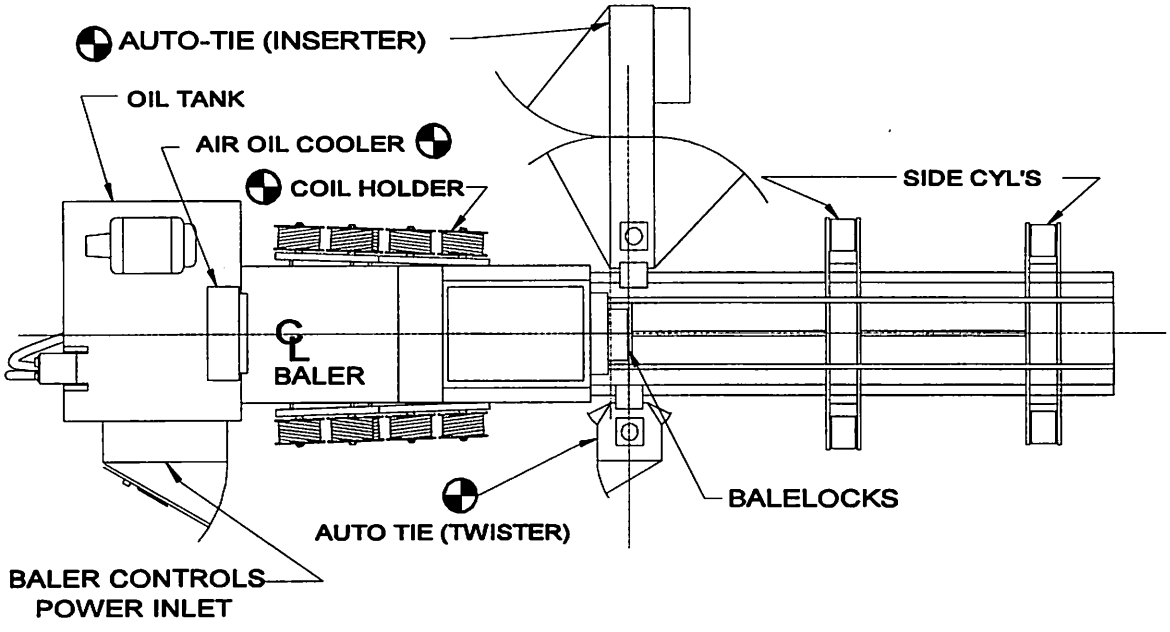
A V O I D A C C I D E N T S

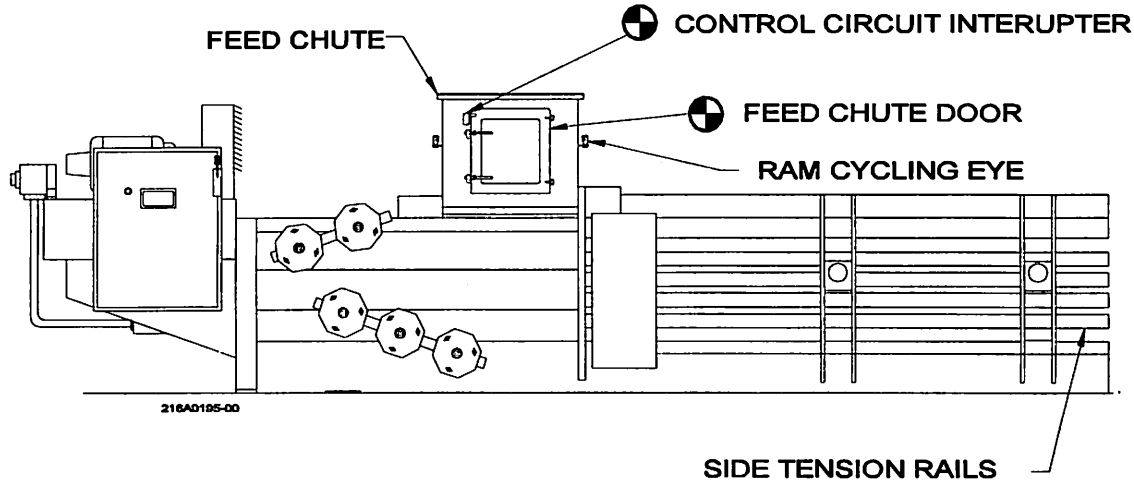
Most accidents, whether they occur in industry, on the farm, at home or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules and precautions. For this reason most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

WITH ANY MACHINERY A CAREFUL & TRAINED OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

NEVER ATTEMPT TO CLEAN, OIL OR ADJUST A MACHINE WHILE IT IS IN MOTION.

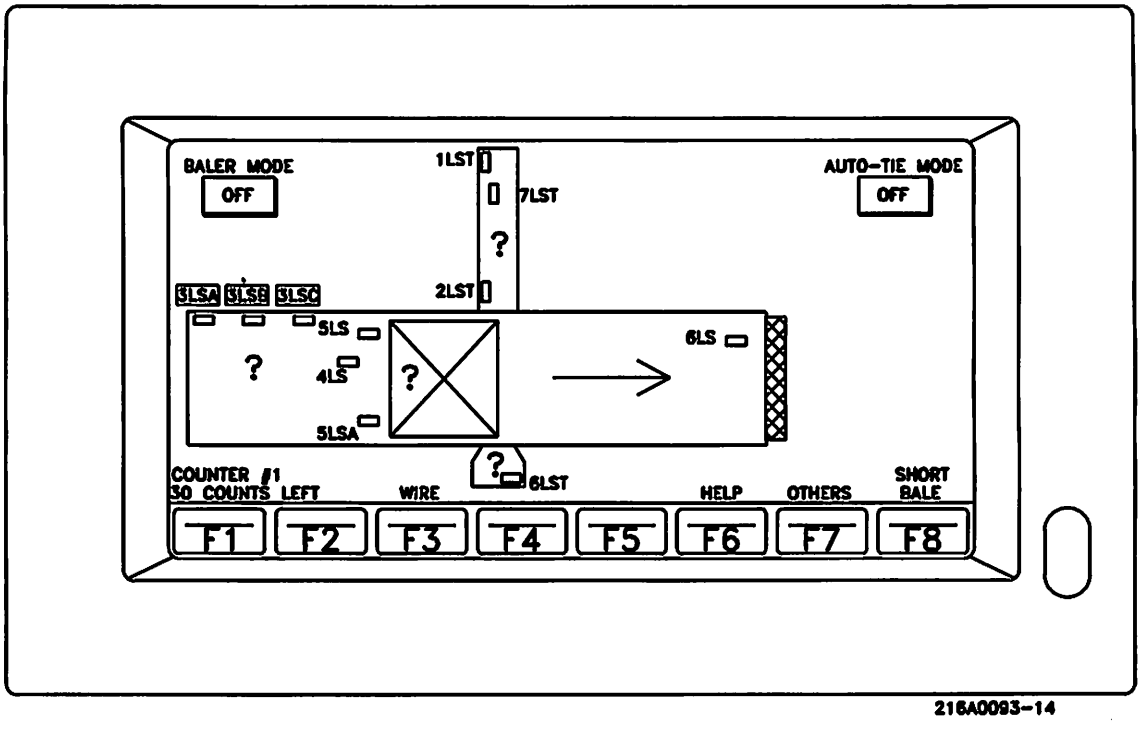
GENERAL ARRANGEMENT





OPTIONAL EQUIPMENT
BALER - STANDARD
AUTO-TIE - STANDARD

BALER W/TOUCH SCREEN
MAIN SCREEN



During normal automatic operation of the baler the main screen as shown above should be displayed. This screen will illustrate the various limit switches being activated while the baler is cycling.

Alarm messages are also located on this screen, for example if a certain limit switch is not activated when it should, there will be a message indicating to check that switch.

By pressing (F1) on the main screen the Bale Length Counter screen can be displayed which allows for changing the counter length or the counter currently being used.

Pressing "WIRE", button (F3) a screen illustrating the proper threading of the baling wire.

"OTHERS" will display the screen that allows access to the Hour Meters, Bale Counters, E.S.D. adjustment, and change the number of pumps running.

The electrical components are designed to operate in a temperature range of 32 F to 104 F (0 C to 40 C), in the absence of condensation and freezing moisture.

BALER W/TOUCH SCREEN

BALER OPERATION

"With Access Door Closed" pull Red Mushroom Button out to energize the master control relay. At this time both the baler and the auto-ty are off. Select the baler and auto-ty modes by pressing the corresponding button on the screen. When a selection is made the button will become shaded. After modes are selected press the "DONE" button (F8) to continue to the main screen.

The baler can be operated in Automatic, Continuous, or Manual.

AUTOMATIC OPERATION

Pull the power control switch out to start the machine. The red light will light up. Push the button on the panel marked "BALER AUTO.". If the photo eye's are blocked the motor(s) will start in a couple of seconds and the ram will cycle. After photo eyes are clear the ram will return to the back of the machine and the motor(s) will stop.

CONTINUOUS OPERATION (OPTIONAL)

Pull the power control switch out to start the machine. The red light will light up. Push the button on the panel marked "BALER CONT.". Motor(s) will start and run continuously, if the photo eye is blocked the ram will cycle and continue to cycle until the eyes are clear. After the eyes are clear the ram will remain at the rear of the machine with motor(s) running.

MANUAL OPERATION

Pull the power control switch out to start the machine. The red light will light up. Push the button on the panel marked "BALER MANUAL". Motor(s) will start and run continuously. Push the "DONE" button to advance to the main screen, then press the "BALER MODE" button to advance to the Baler & Auto-Ty Selector Screen. Press the "MANUAL RAM RETRACT" button (F2) and the ram will retract to the back of the machine.

BALER W/TOUCH SCREEN

AUTO-TY OPERATION

The AUTO-TY can be operated in Automatic, or Manual.

AUTO-TY MANUAL

Must be in the Baler & Auto-Ty Selector Screen for Manual Operation.
Set the Baler in the manual mode by pushing the "BALER MANUAL" button. Move the ram to its full forward position by pressing and holding the "MANUAL RAM FWD" button (F1). Limit Switches 5LS & 5LSA will be activated when the ram is in the full forward position. The Auto-Ty cannot be operated in the manual mode unless limit switches 5LS & 5LSA are activated, the Baler is in the manual mode and the Auto-Ty is in the manual mode. Set the Auto-Ty to manual by pressing "MANUAL" on the Auto-Ty Selector Switch. To advance the inserter carriage, push and hold "MANUAL INSERTER IN" button (F3). To retract the inserter carriage, push and hold "MANUAL INSERTER OUT" button (F4).
To activate the Twister manually the inserter must be in the fully retracted position with 1LST activated. Twister will not operate without 1LST activated. To twist, push and hold "MANUAL TWIST" button (F5).
To manually untwist, push and hold the "MANUAL UNTWIST" button (F6). The twister motor will untwist until 6LST is activated. When the twister motor stops, the hooks will be in the stored position.

AUTO-TY AUTOMATIC

Select the automatic mode for the baler by pushing the "BALER AUTO." button. Push the "AUTO." button of the Auto-Ty Selector Switch and the baler will function automatically.

SHORT BALE

Set the baler and Auto-Ty to the automatic mode. From the Main Screen, push and hold the "SHORT BALE" button (F8) until the display panel displays the message "INSERTER ADVANCING". The baler will tie off the bale automatically.

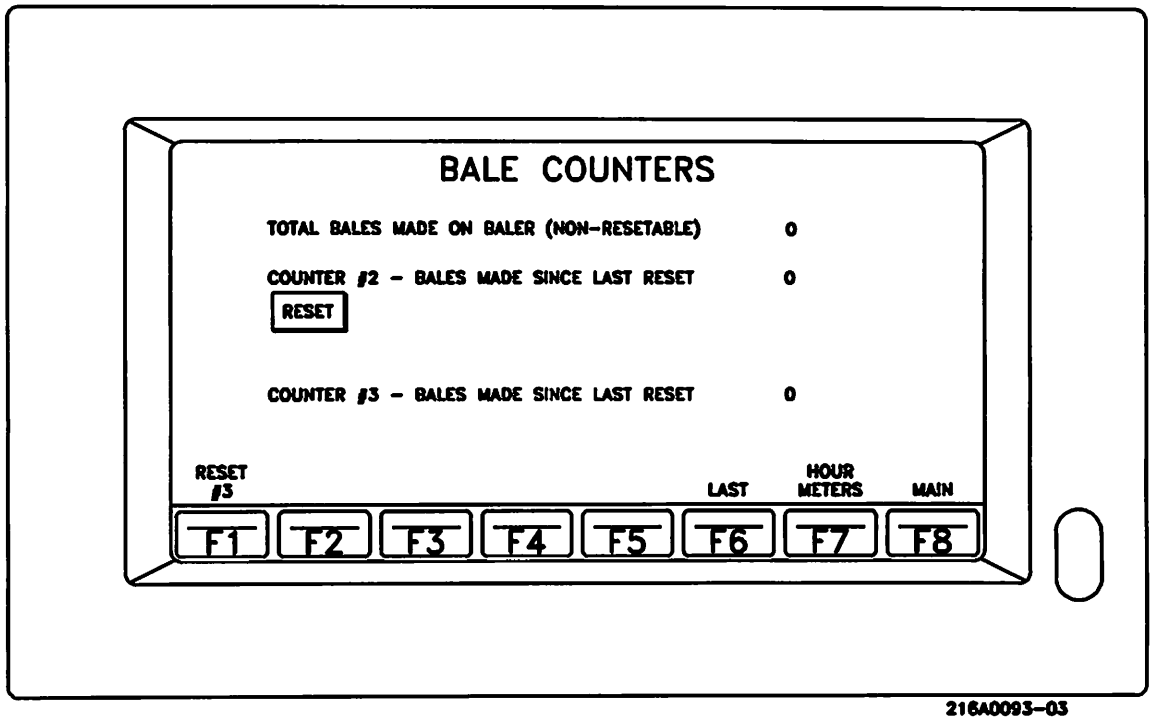
BALE LENGTH COUNT

Three separate bale lengths can be stored and recalled at any time. In the bottom left corner of the main screen the current bale length counter and the counts left to tie-off are displayed. From the main screen push (F1) to advance to the Bale Length Counter Screen. The selected counter will be shaded, to change the counter push the desired bale count button until it becomes shaded. If a different length is needed enter the length from the number keypad and push the enter button to update the program.
Press "MAIN" (F1) to return to the main screen.

3LS SELECTION (OPTIONAL)

If the baler is equipped with the three position 3LS option any one of the three limit switches can be selected by pushing the corresponding button on the main screen. "3LS SEL.". "3LSA" is for full stroke, "3LSB" is 2/3 stroke and "3LSC" is 1/3 stroke.

BALER W/TOUCH SCREEN
BALE COUNTERS



Three Bale Counters that record the number of bales made.

1.) Total Bales Made, Counts the bales made since the baler was started-up. (not resettable)

2.) Bales made since last reset, Counts the number of bales made since last reset. (Reset by pressing the "reset" button.)

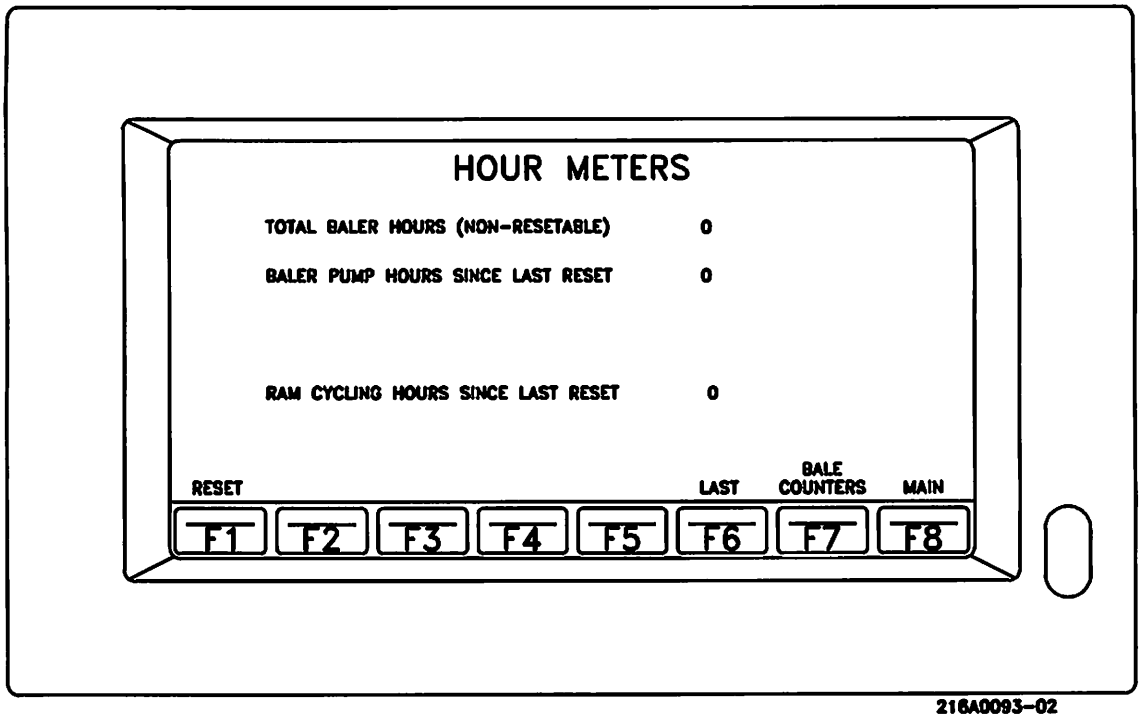
3.) Bales made since last reset, Counts the number of bales made since last reset. (Reset by pressing "Reset #3"-F1) and entering the code 427 to access the reset screen.
(See Page 5.12)

Counters 2 and 3 can be used for production to keep track of the bales made per shift or day.

Press F7 to access the bale counter screen.

Push F8 to return to the main screen.

BALER W/TOUCH SCREEN
HOUR METERS



Three Hour Meters

1.) Total Baler Hours, Records the hours that the Baler control power is energized, (not resettable).

2.) Baler Pump Hours, Records the hours that the baler pump is running.

3.) Ram Cycling Hours, Records the hours that the ram is advancing or retracting.

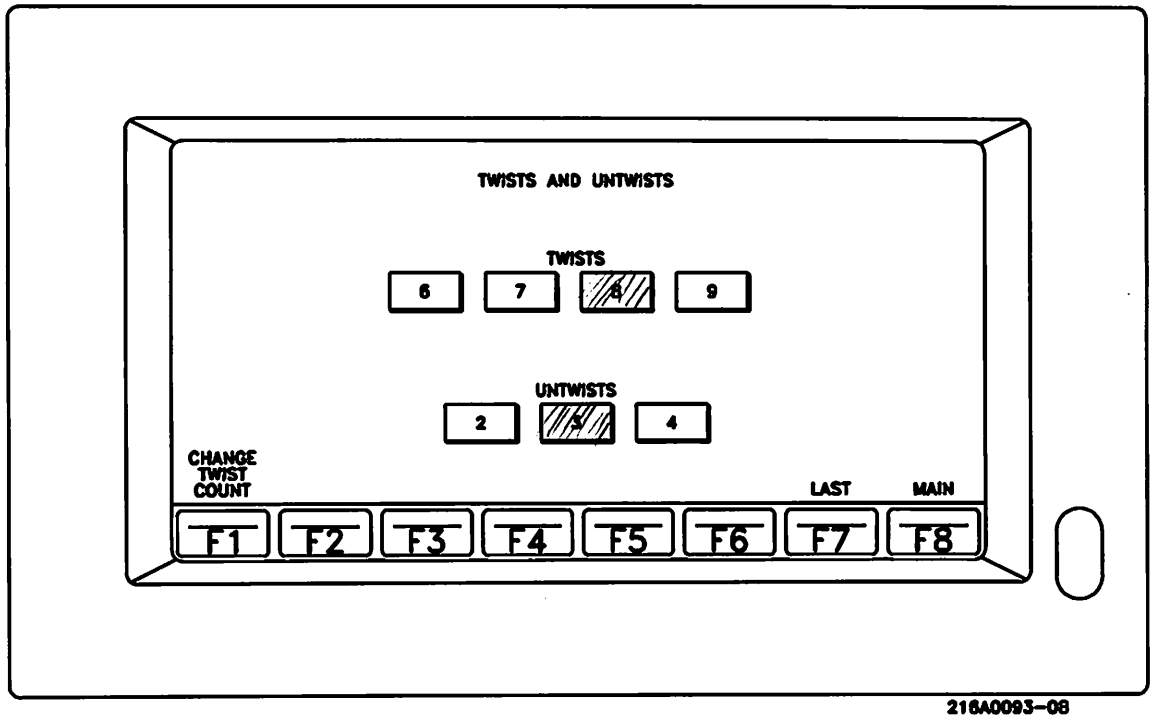
To reset hour meters 2 & 3 press "RESET", to access the reset code screen, enter code 427 then select function to reset. (See Page 5.12)

At 2nd Hour Meter screen, press the "RESET" button corresponding to the hour meter to reset.

Press F7 to access the bale counter screen.

Push F8 to return to the main screen.

BALER W/TOUCH SCREEN
TWISTS/UNTWISTS



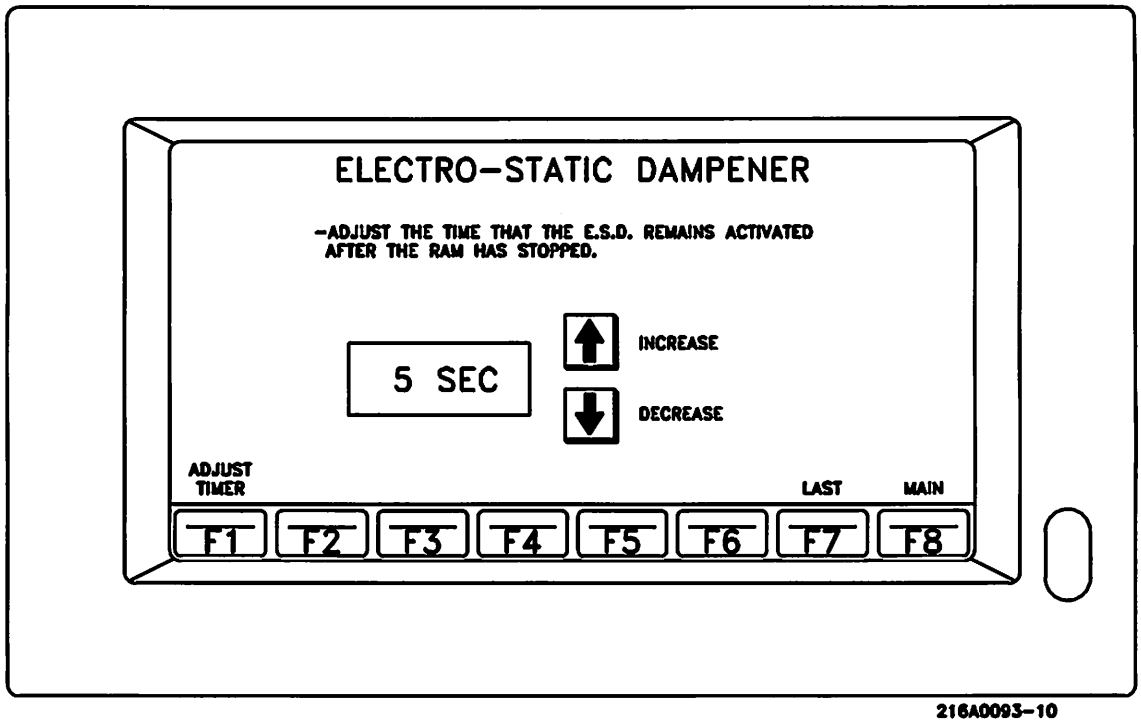
The TWISTS/UNTWIST screen displays the current number of twists and untwists that the twister makes during a tie-off. The current selection is shaded. Twists can be between 6 and 9, untwists can be between 2 and 4.

To change the number of twists or untwists, press "CHANGE TWIST COUNT", to access the reset code screen, enter 427 then go to the Twist/Untwists screen and press the desired count. (See Page 5.12)

Press F7 to return to the last screen.

Press F8 to return to the main screen.

BALER W/TOUCH SCREEN
ELECTRO-STATIC DAMPENER
(E.S.D. OPTIONAL)



The Electro-Static Dampener (E.S.D.) automatically sprays water into the feed chute during the ram cycle, reducing the electro-statically charged dust; thereby giving a cleaner operation.

The water spray also helps break-down material memory, (spring back) when baling whole material.

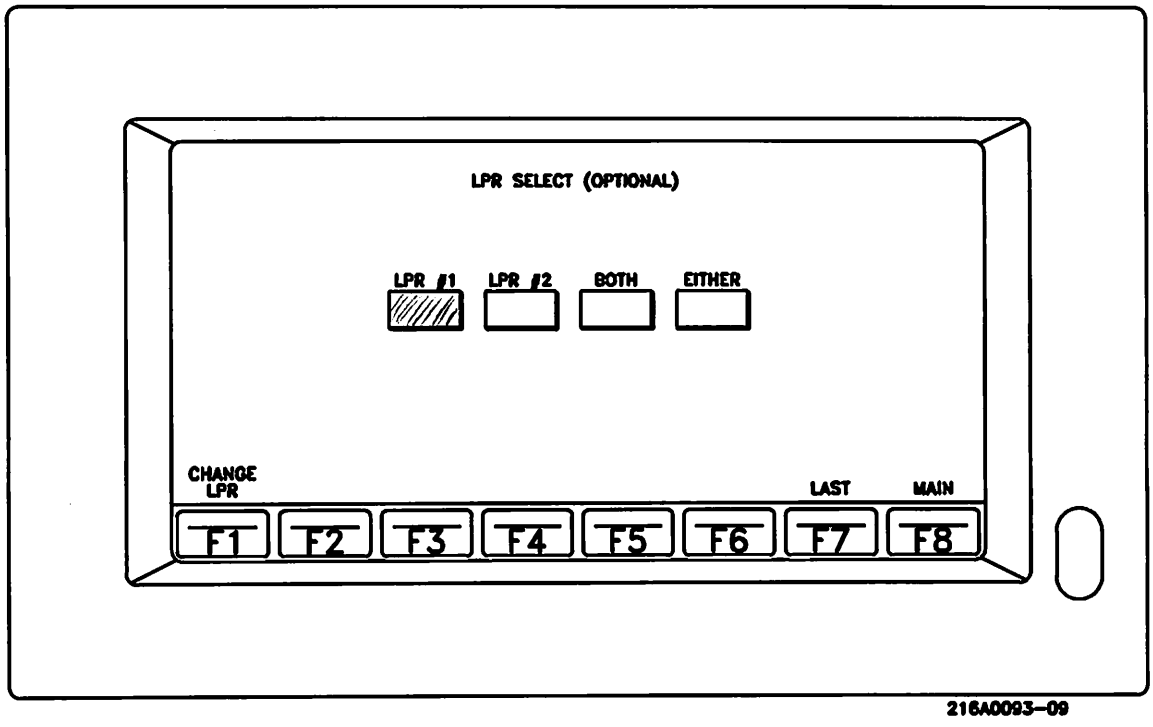
The E.S.D. operates during the ram cycle and remains energized for a preset time after the ram stops. The current E.S.D. screen displays the seconds that the water will spray after the ram stops.

To adjust this timer press "ADJUST TIMER" (F1), enter reset code 427 and select ESD. Press the button labeled "INCREASE" or "DECREASE" to change the time. (See Page 5.12)

Press F7 to return to the previous screen.

Press F8 to return to the main screen.

BALER W/TOUCH SCREEN
TWO SETS OF BALER CYCLING EYES
(OPTIONAL)



If purchased with the baler the LPR Select Screen allows for the selection of which photo-eye will control the ram cycling.

LPR OPTIONS:

1.) LPR #1 is used to cycle the baler.
2.) LPR #2 is used to cycle the baler.
3.) Both LPR's 1 and 2 must be blocked before the ram will cycle.
4.) Either LPR 1 or 2 will cause the ram to cycle.

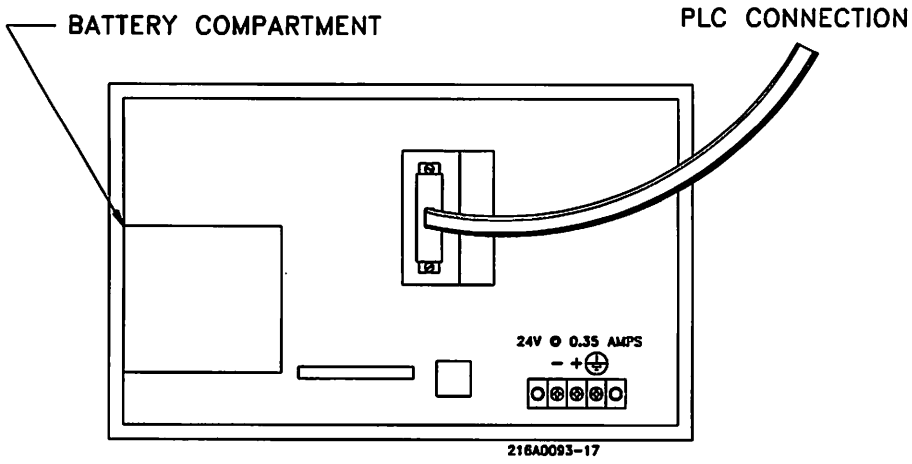
To change LPR press "CHANGE LPR" (F1), enter code 427 then select LPR and select the LPR to be used. (See Page 5.12)

If the baler is not equipped with this option the screen will be visible but no selection can be made.

Press F7 to return to the previous screen.

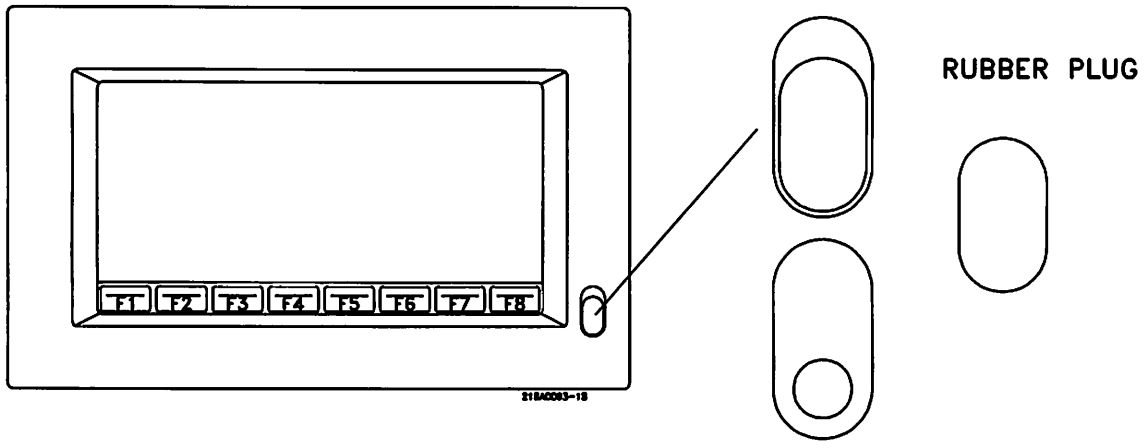
Press F8 to return to the main screen.

BALER W/TOUCH SCREEN
PLC CONNECTING CABLE



The cable shown above connects the Touch Screen to the PLC. Removal of cable could cause machine to malfunction.

ADJUSTING LCD CONTRAST AND CLEANING SCREEN



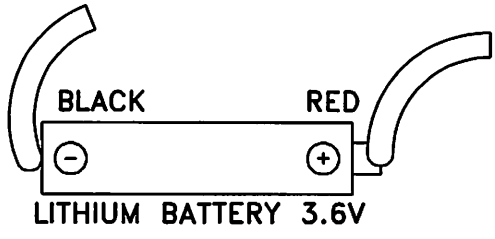
ADJUSTING SCREEN CONTRAST

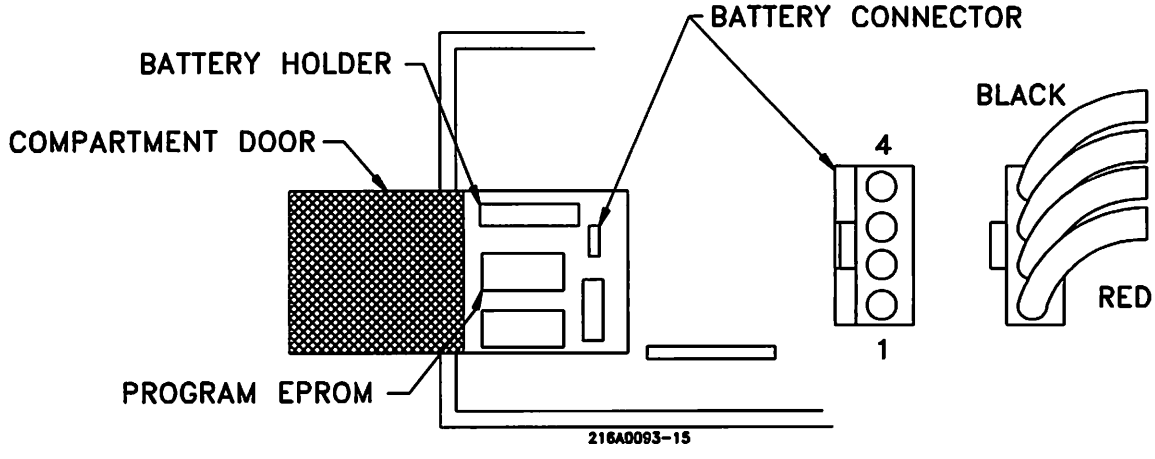
To adjust the screen contrast for better viewing, remove the small rubber plug on the face plate and insert a small flat-blade screwdriver into the slot.

CLEANING TOUCH PANEL SCREEN

Use a mild detergent to remove finger prints and foreign material. Do not use paint thinner, ammonia, ester oil compounds, or acid compounds on the screen.

BALER W/TOUCH SCREEN
TOUCH SCREEN BATTERY REPLACEMENT





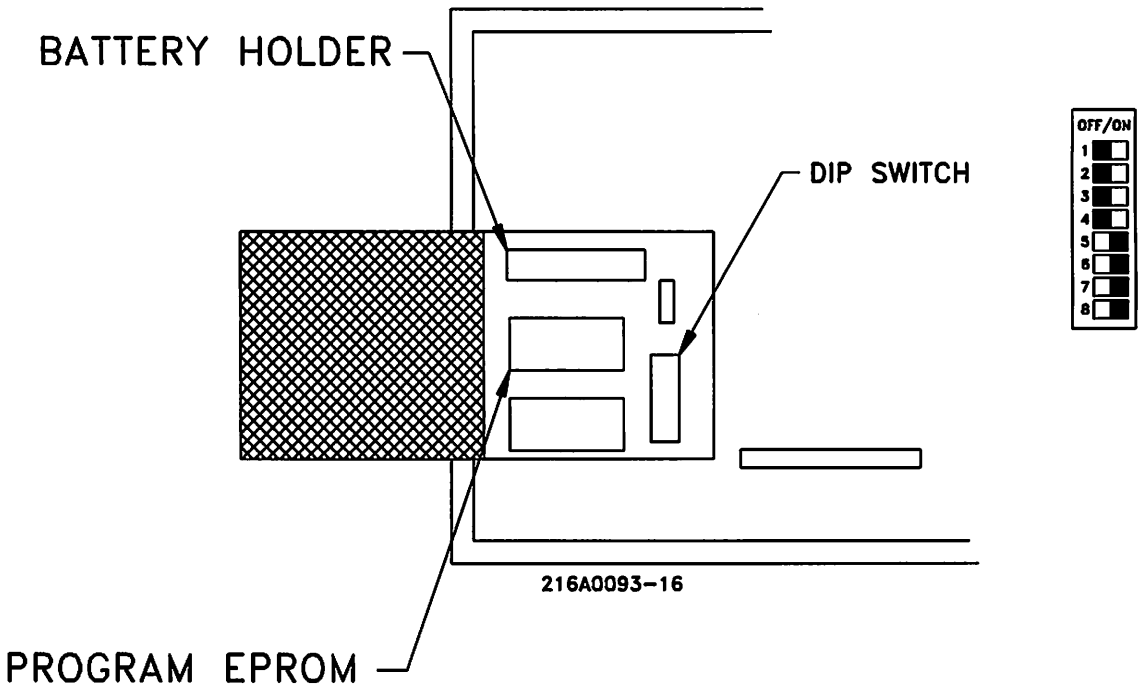
TO REPLACE THE BATTERY
Slide battery compartment cover to the left and pull out on the left end. Slide and remove.

With the TOUCH SCREEN POWERED-UP, pull the battery connector out of it's socket. Remove the battery from the battery holder.

CAUTION: **BATTERY REPLACEMENT MUST BE PREFORMED WITH THE TOUCH SCREEN POWERED-UP. FAILURE TO FOLLOW INSTRUCTIONS COULD RESULT IN LOSS OF PROGRAM.**

Connect the new battery to the connector as shown above. Make sure the guide notch on the female connector matches up with the slot on the male connector. Snap the battery into the holder and replace the cover.

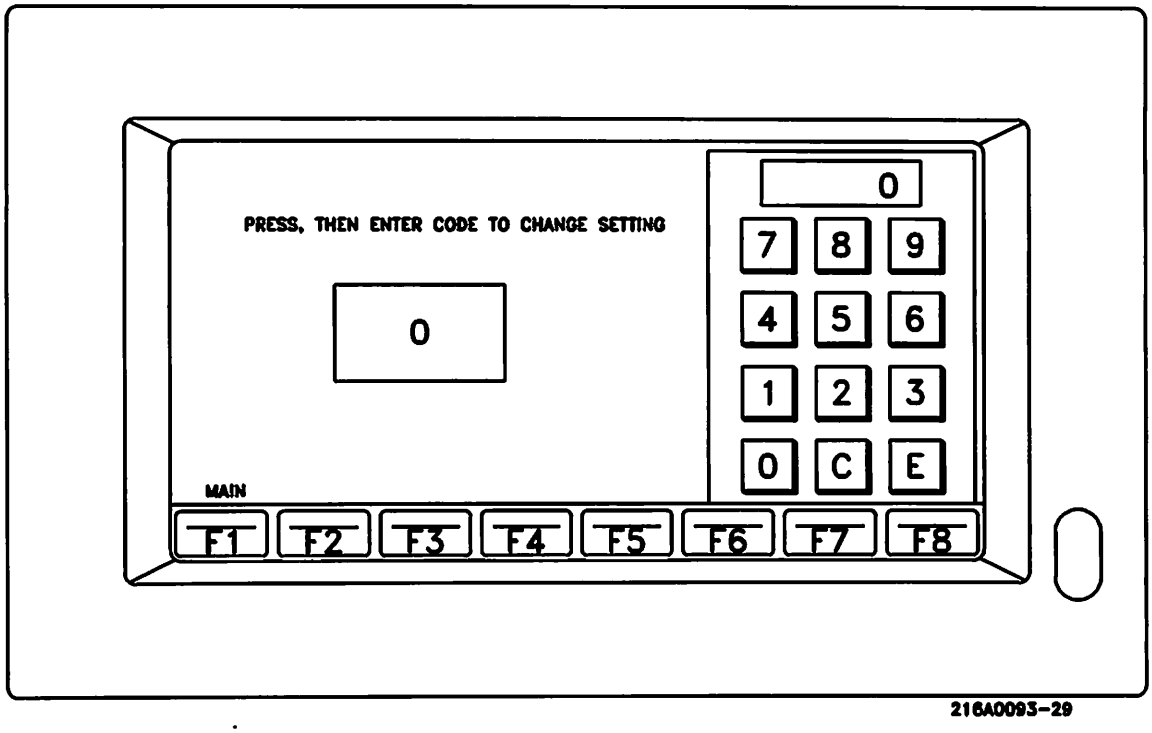
BALER W/TOUCH SCREEN
DIP SWITCH SETTINGS



The diagram above shows the dip switch settings. Changing these settings could cause the machine to malfunction.

The PROGRAM EPROM contains the Touch Screen Program. Removal of the Program Eprom will result in memory loss and machine will not function.

BALER W/TOUCH SCREEN
RESET CODE SCREEN



To change the baler settings, the code "427" must be entered, this prevents accidental changes to the bale length, twists/untwists, and other important information.

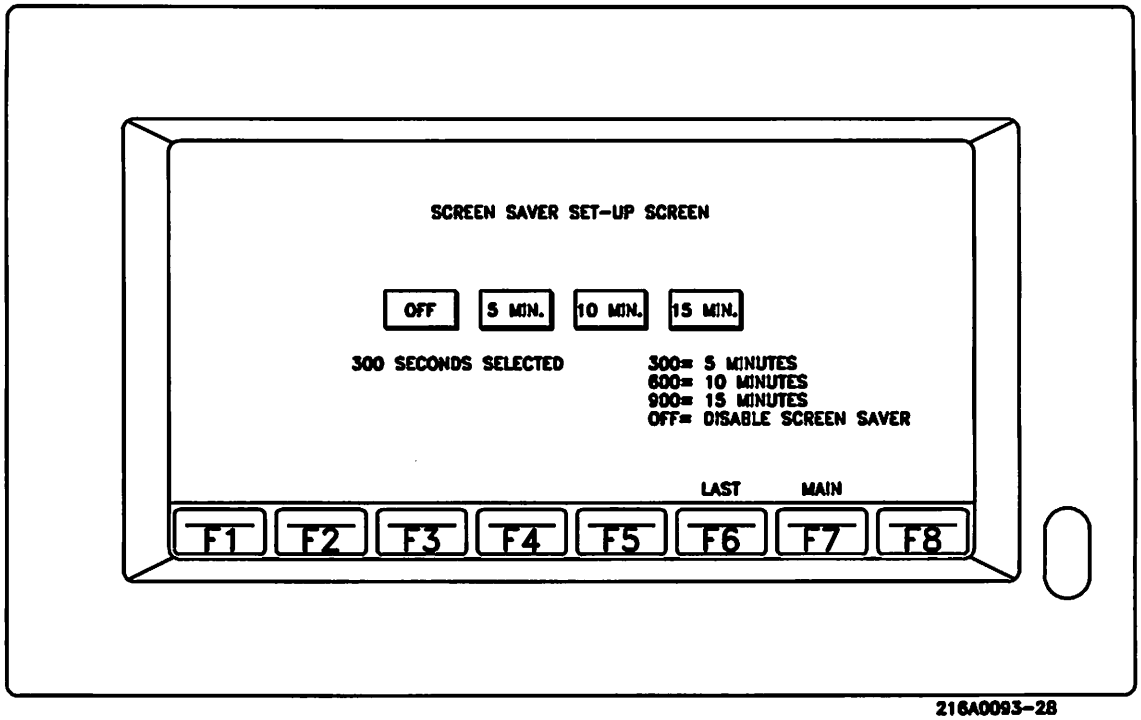
First press the box in the middle of the screen until it becomes shaded, then enter the code 427 and press the "ENTER" button.

If by entering the code the screen does not advance to the change setting screen:

1.) Enter 0 first then re-enter the code 427.
2.) The box in the middle of the screen must be shaded for the code to be accepted.

Press F8 to return to the main screen.

BALER W/TOUCH SCREEN
SCREEN SAVER



The Touch Screen is equipped with a screen saver to prolong the life of the LCD back light. This screen saver allows the back light to shut off after a predetermined time of non-activity on the screen.

The baler will continue to function even when the screen is dark, if the control power is energized and the proper baler and auto-ty modes are selected.

Touching the screen will turn the back light on.

The time selections for the screen saver are:

OFF
5 MINUTES
10 MINUTES
15 MINUTES

Access the screen saver screen by entering the reset code, See Page 5.12, then selecting screen saver. Select the time by pressing the appropriate button.

Balemaster recommends that the screen saver be set to 5 minutes.

Press F6 to return to the previous screen.

Press F7 to return to the main screen.

BALEMASTER SERIES

INSTALLATION INSTRUCTIONS

NOTE: INSTALLATION IS TO BE MADE BY QUALIFIED PERSONNEL AND IS THE RESPONSIBILITY OF THE USER MANAGEMENT.

1. Carefully move the baler into desired location and remove skids. Level the baler. Using floor of baler chamber as reference, anchor the baler to the floor through holes provided in anchor pads.

2. Place the slide plate section (if furnished) in front of the baler. See Slide Plate Instructions for installation.

3. Attach the Feed Chute. The feed chute access door or window should be on the operator's control cabinet side. To reduce any "dusting" during operation, caulk all seams with a non-hardening caulking compound.

4. Remove all protective covering from the photo-electric eye lenses and feed chute door plexiglas.

5. Mount the source and receiver cycling eyes with the brackets provided on each side of the feed chute. Level and square the source and receiver to the surface being penetrated. Cycling eye alignment, check per initial checkout sheet.

6. Mount Control Circuit Interrupter Switch, when furnished. This switch is supplied if feed chute access door was ordered. Circuit Interrupter Switch Test, check per initial checkout sheet.

BALEMASTER SERIES

INSTALLATION INSTRUCTION

NOTE: INSTALLATION IS TO BE MADE BY QUALIFIED PERSONNEL AND IS THE RESPONSIBILITY OF THE USER MANAGEMENT.

7. Check the level of the hydraulic oil by use of the dipstick. If it is low or not visible on the dipstick, add premium grade of non-foaming oil; Sinclair Rebilene Light Hydraulic Oil or equivalent, to the correct level. It is better to slightly overfill than underfill. (Refer to Preventive Maintenance - Hydraulic Oil Change)

   If the baler is to be operated or left standing for a period of time in other than normal temperature conditions (70 F), normal oil supplied may not be suitable. Check with your local hydraulic oil supplier for unusual temperature conditions.

   The electrical components are designed to operate in a temperature range of 32 F to 104 F (0 C to 40 C), in the absence of condensation and freezing moisture.

8. Connect your 3 Phase Electrical Power to the Power Control Cabinet and ground the baler frame per Local or National Electrical Codes. NOTE: ALL ELECTRICAL DISCONNECT SWITCHES SHOULD BE INSTALLED IN SIGHT OF ALL MOTOR CONTROLS OR SHOULD BE CAPABLE OF BEING LOCKED IN "OFF" POSITION ONLY. A tag on the electrical control box indicated the voltage, phase and frequency. Your machine is prewired in accordance with the Purchase Order.

   WARNING: THE PROGRAMMABLE LOGIC CONTROLLER, AND THE BALER ENCLOSURE MUST BE PROPERLY GROUNDED. ALL APPLICABLE CODES AND ORDINANCES MUST BE OBSERVED WHEN WIRING THE BALER.

   DO NOT START UNIT.

9. Check pump rotation per initial check sheet.

INSTALLATION INSTRUCTIONS

BALEMASTER SERIES - BALE SLIDE PLATE

1. The Balemaster Series Balers are supplied, as an option, with a five foot Bale Slide Plate.

2. For all models, locate the slide plate 1 ½" forward of the baler frame.

3. Level the conveyor as necessary, making sure the slide plate is below bale chamber floor line.

4. Anchor slide plate to floor using all mounting holes provided.

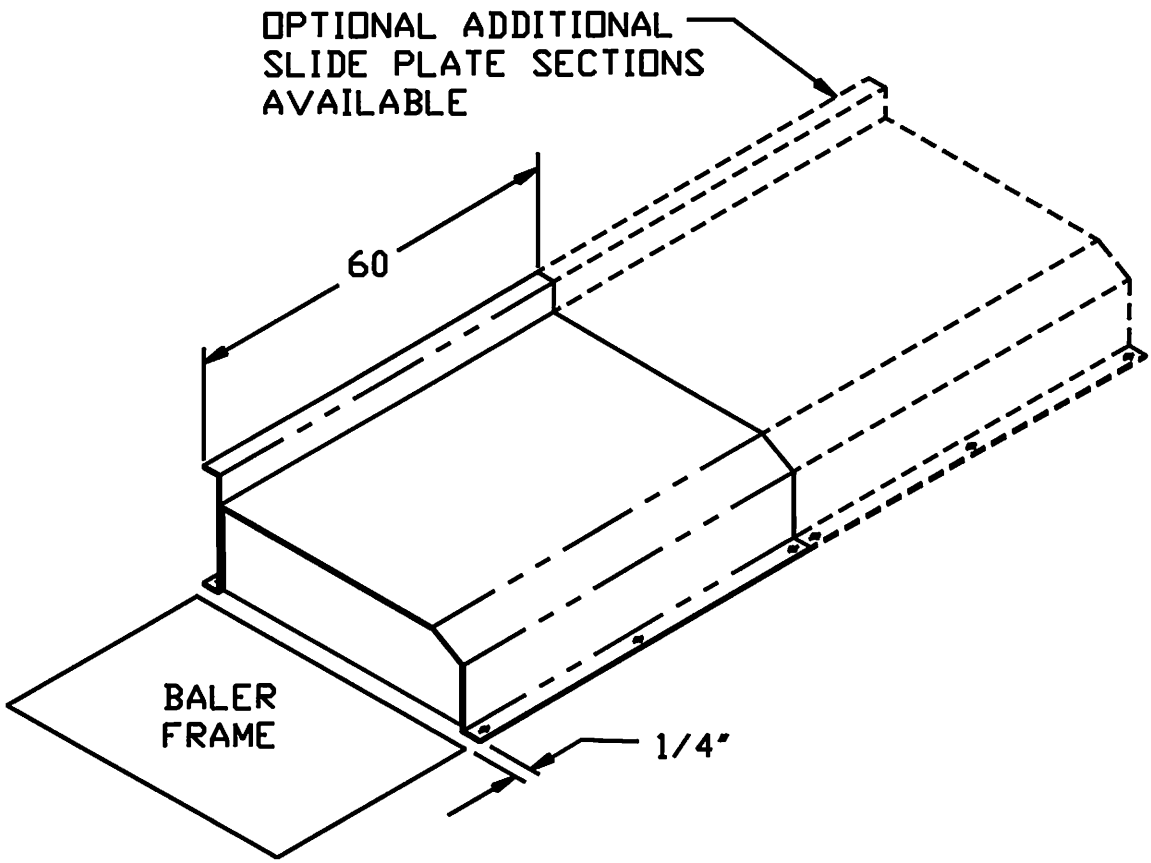


PHOTO EYE ALIGNMENT PROCEDURE (LPR)
WITH TOUCH SCREEN

NOTE: INSTALLATION IS TO BE MADE BY QUALIFIED PERSONNEL AND IS THE RESPONSIBILITY OF THE USER MANAGEMENT

1. Focus electric eye light source and receiver. Physically align the light source unit first by first directing it visually -- squarely at the receiver. Tighten mounting nut.

2. Turn the intensity adjustment on the source CW for maximum sensitivity.

3. Receiver unit will be aligned when both the green and red L.E.D.'s are illuminated.

4. When alignment has been completed, the receiver sensitivity adjustment control should be turned CW for maximum operating margin only if needed. The operating margin can be checked by determining how much of the receiver (or source) lens can be blocked before the red L.E.D. (margin) light goes off. It should be possible to cover two-thirds to three-quarters of the lens area with a piece of thick paper (thick enough to block source beam) before the red light goes out.

5. Time delay adjustment (from the operator interface) setting normally is 6 to 8 seconds before the ram begins to cycle. If the finished bale tends to be banana shaped, the time delay setting should be <u>increased</u> to permit a full charge in the baling chamber.

INITIAL CHECK-OUT
BALER W/TOUCH SCREEN

NOTE: INSTALLATION IS TO BE MADE BY QUALIFIED PERSONNEL AND IS THE RESPONSIBILITY OF THE USER MANAGEMENT.

1. Check completion of installation instructions.

2. On the Operator's Control Cabinet Door, check to see that:

   A. Electrical Power Switch (Red Mushroom Button) is pushed in.

3. Throw the disconnect switch handle, located on the Power Control Cabinet, to "ON". Yellow L.E.D. indicator should illuminate on the source and receiver photo switches. The Red and Green L.E.D.'s should illuminate if the source and receiver are aligned and there is electrical power to the Power Control Cabinet.

4. Pull Electrical Power Switch (Red Mushroom Button) out to "START". This energized the 115 Volt Control Circuit causing the power switch light to illuminate. If pilot light does not illuminate check:

   A. Electrical power hook-up.
   B. 115 Volt Transformer Fuse located on Electrical Control Panel.
   C. Faulty lamp in Electrical Power Switch.

   NOTE: TO REMOVE BULB, UNSCREW RED MUSHROOM BUTTON SECTION.

5. "With Access Door Closed", pull Red Mushroom Button out to energize the master control relay. Check the pump rotation by pressing the "BALER MANUAL" Button and note the direction of rotation. The pump shaft normally rotates clockwise when looking at the shaft end. The direction of rotation should correspond to the arrow on the pump. If it does not, reverse leads "T1" & "T3" at incoming side of disconnect and repeat test.

   CAUTION: OPERATING THE MOTOR FOR MORE THAN A FEW SECONDS IN "REVERSE DIRECTION" COULD CAUSE DAMAGE TO THE HYDRAULIC PUMP.

6. Test the Door Interrupting Limit Switch by opening access door. This should stop the pump. If it does not, adjust switch arm and retest. Pump should operate only when access door is closed and it's switch activated.

7. Electric Eye light source and receiver alignment, per alignment procedure instructions.

INITIAL CHECK-OUT CONTINUED
BALER W/TOUCH SCREEN

8. At the control cabinet, select the "BALER MANUAL" button, press the "DONE" button to advance to the main screen, then press the Baler Mode button to advance to the Baler & Auto-Ty Selector Screen. Press the "MANUAL RAM FWD." button (F1) and hold until the ram moves forward about twelve (12) inches. If ram does not move forward recheck pump rotation and the hydraulic oil level. Select the Automatic mode by pushing the "BALER AUTO." button, and the ram will automatically return to the rear position and stop. Select "BALER MANUAL", press the "MANUAL RAM FWD." button and hold until the ram advances to it's full stroke. Press the red "STOP" button and observe the position of the ram in the chamber, the wire tie slots in the ram face should be fully exposed. Pull the "START" button, press the "BALER MANUAL" button and press the "MANUAL RAM RETRACT" button, and hold until the ram returns to the rear position and stops.

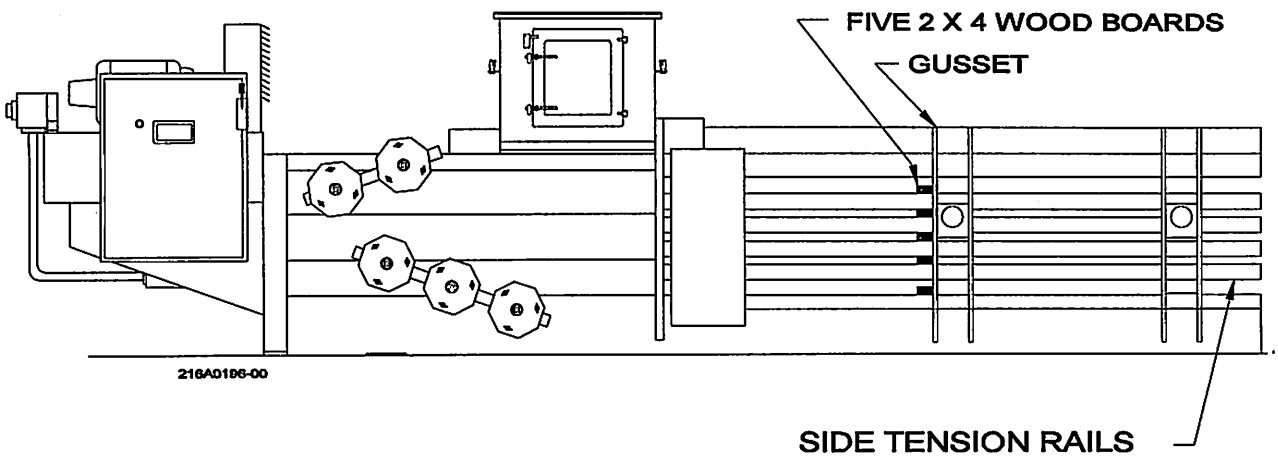
9. With "BALER AUTO" selected block the electric photo eye light beam using a heavy piece of nontransparent paper or cardboard. After a delay of about five seconds the motor(s) will start and the baler will continue to cycle as long as the light source is blocked. Remove the paper blocking the light source, the ram will finish its cycle, return to the back position and the motor(s) will turn off.

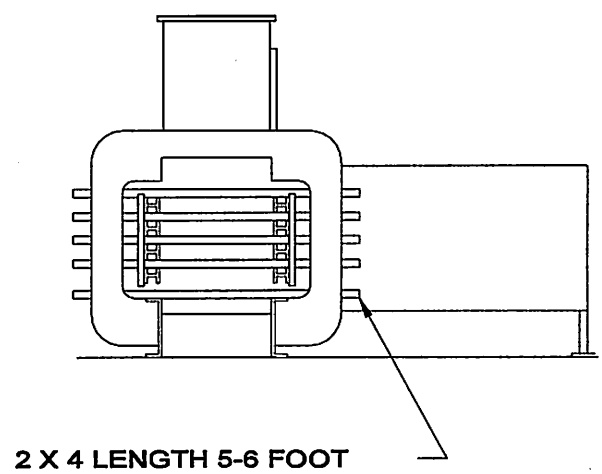
AUTOMATIC BALE LENGTH CONTROL

10. Replace the paper block on the electric photo eye. Select the off mode for the AUTO-TY by pressing the "OFF" button. While the ram is cycling, rotate the bale length counter, located on the top of the frame near the bale exit. Rotate the wheel in the direction it would normally move as the bale passed beneath it. Continue rotating the wheel until the ram moves to the full forward position. At this point the machine is ready to make a tie.

If all of the above operations function properly, go to Page 7.00 of the Auto-Ty section of the manual and begin the Initial Check-Out. If there are any discrepancies in the above operations, refer to the TROUBLE SHOOTING CHART section of the manual (Page 20.00).

INITIAL START-UP





INITIAL START-UP
BALER W/TOUCH SCREEN

AFTER COMPLETING THE INSTALLATION & CHECK-OUT
THE BALER IS READY FOR START-UP

CAUTION: DO NOT ACTIVATE SIDE DENSITY SYSTEM AT THIS TIME; SIDE DENSITY SHUT OFF, ITEM #25 ON THE HYDRAULIC SCHEMATIC, SHOULD BE CLOSED TO PREVENT EQUIPMENT DAMAGE.

1. Place five 2" X 4" soft wood boards across I-Beam side rails of bale chamber against the ram side of vertical post. End of boards should have minimum grip of 1".

2. Fold a heavy piece of paper or corrugated board to the cross-section dimensions of the bale chamber and set upright against (ram side) the 2" X 4" boards.

3. Energize 115 volt control circuit by pulling out the Red Mushroom Start Button. Proceed to the Bale & Auto-Ty Selector Screen, Push Baler "MANUAL" button. Press "MANUAL RAM FWD." until the ram stops in the fully forward position.

4. Feed material into feed chute. Let material build up at least 40" in the feed chute when forming the first bale. Turn the baler to automatic.

CAUTION: HAVE ALL PERSONNEL STAY CLEAR OF FRONT OF MACHINE AT THIS TIME. AS THE MATERIAL COMPRESSES THE 2" X 4" WOOD BOARDS WILL BREAK.

5. Continue to bale until material "packs" against 2" X 4" boards. Select the manual mode by pushing the "BALER MANUAL" button. Press the "MANUAL RAM FWD." button and advance the ram manually until wire-tie slots on the ram are fully exposed. Push the red stop button to turn the baler off.

6. Tie off bale. Check that the ram slots are exposed. Turn the baler and the auto-ty to "MANUAL" Press "MANUAL INSERTER IN" and hold until the needles stop. Turn baler power off. Check to see that the needles stopped with the center of the notch, on the needle, lining up with the twister hooks. If the needles are not lined-up 2LST will have to be adjusted. Once 2LST is adjusted and the needles are in the proper position the tie can be completed. Turn the control power on and select "BALER AUTO" and AUTO-TY "AUTO", the hooks will begin to twist.

7. After the tie is complete set the auto-ty to "MANUAL" and continue feeding material in the feed chute. When the first bale reaches the end of the baler, activate the density system by opening SHUT OFF VALVE #25 on the hydraulic circuit. Adjust Valve #18 for the desired density.

INITIAL START-UP CONTINUED
BALER W/TOUCH SCREEN

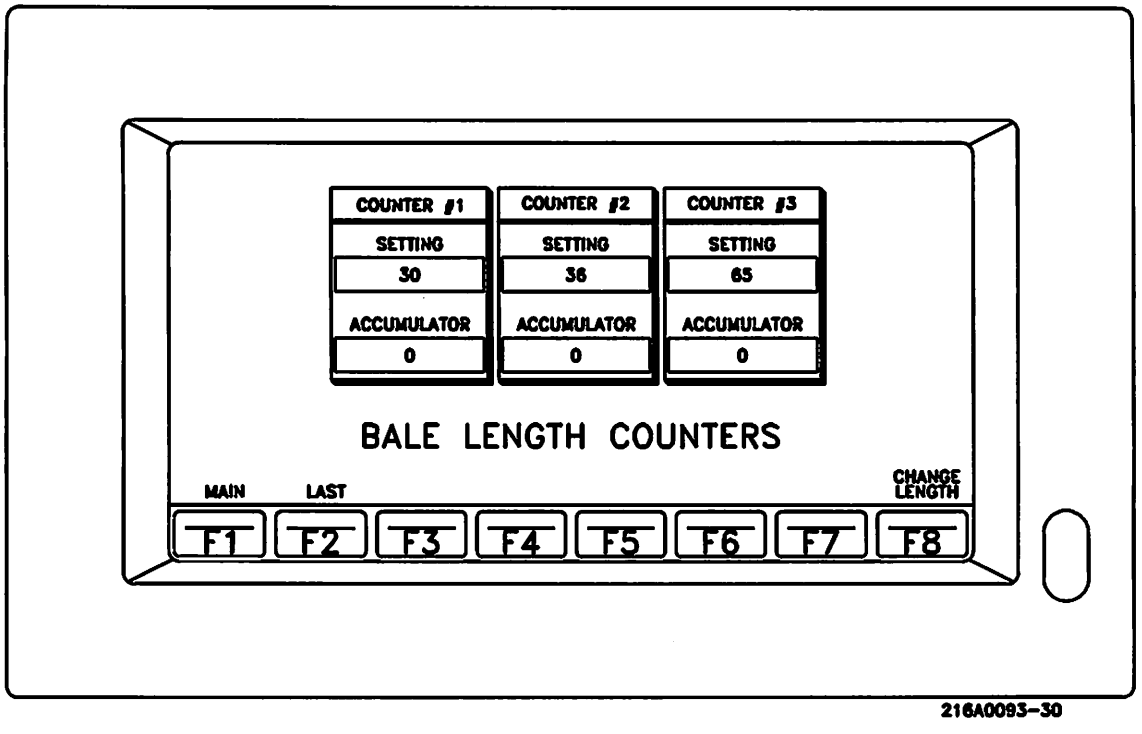
8. When second bale has been made to the desired length, (72" maximum), put the baler in manual by pushing the "BALER MANUAL" button. Manually advance the ram by pushing and holding the "MANUAL RAM FWD." button until the ram slots are exposed. Tie off the bale as described in Steps 5 & 6. Read instructions for bale length control before proceeding to the next step.

CAUTION: **HAVE ALL PERSONNEL STAY CLEAR OF FRONT OF MACHINE AT THIS TIME; AS THE MATERIAL COMPRESSES, THE 2" X 4" WOOD BOARDS WILL BREAK.**

9. Turn baler back to automatic and continue to bale. The third bale should have the density to advance the Bale Length Counter Ratchet Wheel as the bale advances in the baling chamber.

10. When the third bale has been made to desired length, the bale length counter has counted out, the ram will automatically stop in forward position with wire-tie slots exposed the Auto-Ty will tie off the bale.

BALE LENGTH COUNT SELECTION
BALER W/TOUCH SCREEN



The bale length control automatically measures the length of the bale as it is being formed. A sprocket, mounted near the front of the baler frame, trips a limit switch (6LS) as the bale advances from the baling chamber. This is electrically sensed and entered into the programmable logic controller (PLC).

In the bottom left corner of the main screen the current bale length counter and the counts left to tie-off are displayed.

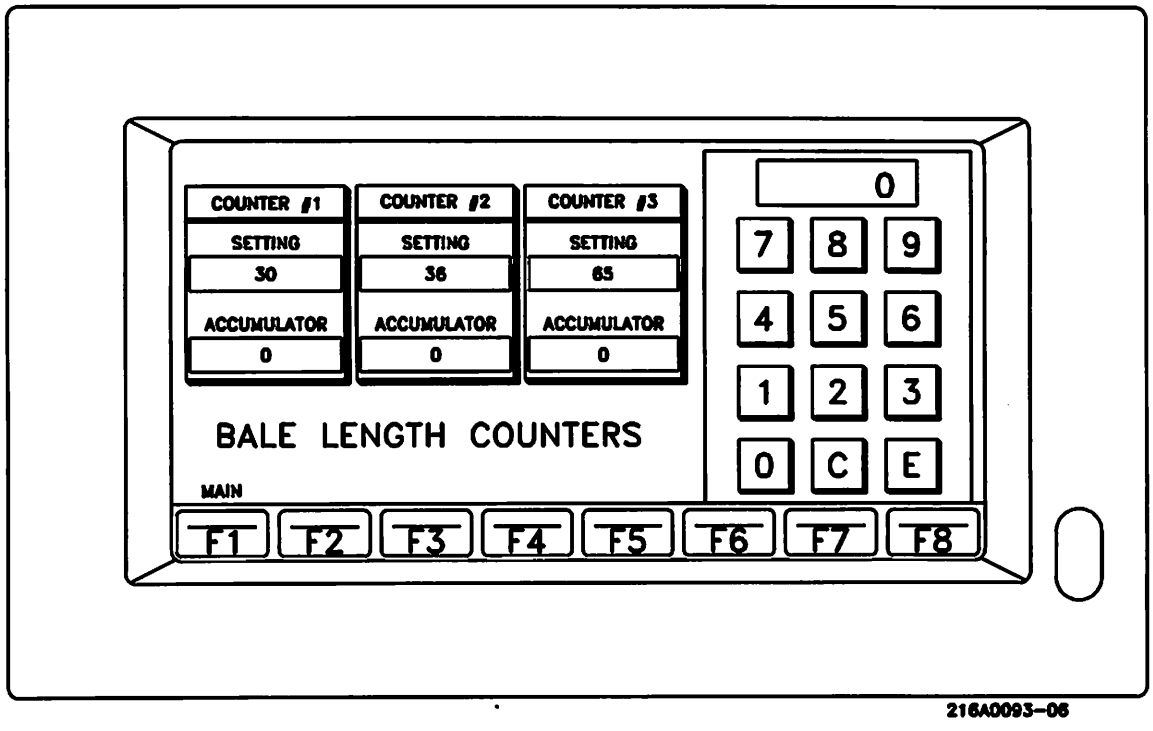
BALE COUNT

Three separate bale lengths can be stored and recalled at any time. From the main screen push (F1) to advance to the Bale Length Counter Screen (shown above). The selected counter will be shaded, to change the counter push the desired bale count button until it becomes shaded.

If a different length is needed press "CHANGE LENGTH" (F8) enter the reset code 427, See Page 5.12, then select Bale Length Counters. Go to Page 8.04.

Press "MAIN" (F1) to return to the main screen.

BALER W/TOUCH SCREEN
BALE LENGTH COUNT ADJUSTMENT



BALE COUNT

See Page 8.03 for procedure to access Bale Length Adjustment Screen.

If a different length is needed, enter the length from the number keypad and push the enter button to update the program.

Press "MAIN" (F1) to return to the main screen.

Numbers entered for bale length count are relative numbers and do not represent the bale length in actual inches. A count of 44 entered into the program may result in a actual bale length of 48 inches. A count of 66 entered into the program may result in a actual bale length of 72 inches. These values will vary with material being baled, baling pressure, condition of the material (wet or dry) and the amount of expansion after the bale is out of the chamber. Normally a bale will expand approximately 1 inch for every 12 inches of bale length. Some experimentation will be required to get the exact length required.

OPERATING INSTRUCTIONS
BALER W/TOUCH SCREEN

CAUTION: READ THIS ENTIRE MANUAL BEFORE OPERATING THIS EQUIPMENT

AUTO-TY OFF:

When the Auto-Ty is in the off position, the baler will operate normally until the bale length is reached. The baler will not continue to cycle until a tie has been made and the bale length counter automatically resets.

AUTO-TY AUTOMATIC: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS.

1. Select the automatic mode for the baler as described in the Baler Owner's Manual. (See Page 7.01.)
2. Set the auto-ty to automatic by pressing the "AUTO" button of the Auto-Ty Selector Switch.
3. Baler & Auto-Ty operation will function automatically.

AUTO-TY MANUAL: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS.

To run the baler and auto-ty in manual the Baler & Auto-Ty screen must be displayed.

1. Set the baler in the manual mode by pressing the "BALER MANUAL" button. Press the "MANUAL RAM FWD" button and hold until the ram is all the way forward and limit switches 4LS, 5LS and 5LSA are activated.
2. Set the auto-ty to manual by pressing the "MANUAL" button of the Auto-Ty Selector Switch.
3. To advance the inserter carriage, press the "MANUAL INSERTER IN" button.
4. To retract the inserter carriage, press the "MANUAL INSERTER OUT" button.
5. To twist press the "MANUAL TWIST" button.

NOTE: The carriage must be fully retracted activating 1LST.

SHORT BALE: INITIAL CONDITIONS & SEQUENCE OF OPERATION.

1. Set the baler to the automatic mode by pressing the "BALER AUTO." button.
2. Set the Auto-Ty to automatic by pressing the "AUTO." button.
3. From the Main Screen press and hold the "SHORT BALE" button.

NOTE: Another tie cannot be made until the ram has been fully retracted activating 3LS.

HELPFUL HINTS FOR FORMING BETTER BALES

For best results make sure the ram returns to its fully retracted position after each stroke. It should stay at this position until the photo-electric eye has been blocked.

Under normal conditions, the ram chamber and feed chute should be full of material at this time. Should the photo-electric eye be blocked by dust, foreign material or improper filling of the chute (such as material falling all on one side), a false signal will be given and the machine will cycle. After continuous operation under this condition, the bales coming out may have a very loose look, be lower than average in weight, curved bales or even fall apart.

Below is a list of items to check if you are experiencing these conditions:

1. Make sure the lenses of the photo-electric receiver and feed chute glass are free of dust.

2. Make sure the electro-static dampener (if furnished) is operating, this will help keep the dust down.

3. Check the time on the photo-eye. It should be 6 to 8 seconds. (See Photo-Eye Alignment Procedure for adjusting instructions.)

4. Make sure the material you are baling has been properly prepared. This will help to insure a proper charge in the chamber, giving a uniform bale.

5. Make sure material is falling evenly in the feed chute. Curved bales are usually a result of uneven loading in the feed chute.

It has been our experience that if the ram does not move forward far enough to trap the material with the Balelock, the material may spring back and prevent forming a proper charge. Never bale wax board or poly type coated material without the wax option. They will cause the side rails to become slippery and a loss of baling pressure will occur.

BALEMASTER TECHNICAL OPERATING DESCRIPTION
BALER W/TOUCH SCREEN

LIMIT SWITCHES & SOLENOID VALVES DESIGNATION & FUNCTION

SYMBOL	DESCRIPTION
3LS	Baling Ram Retracted
4LS	Baling Ram (Auto-Stroke)
6LS	Bale Length Control
Sol A	Advance Baling Ram
Sol B	Retract Baling Ram
LPR	Lower Photo Electric Relay (Cycling Eye)

The baler can be operated in Automatic, Continuous, or Manual.

AUTOMATIC OPERATION: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS

1. Pull the power control switch out to start the machine. The yellow L.E.D. lights will light up indicating the 110 Volt control circuit is energized.

2. Push the button on the panel marked "BALER AUTO". If the photo eye's are blocked the motor(s) will start and the ram will cycle. After photo eyes are clear the ram will return to the back of the machine and the motor(s) will stop.

3. As material builds in the feed chute to the level of the electric photo eye, the light beam will be blocked and after a brief time delay Solenoid "A" will be energized and the baler ram will advance forward. Solenoid "A" will remain energized until the ram completes it's stroke activating Limit Switch "4LS".

4. When limit switch is activated, Solenoid "B" is activated retracting the baling ram. Solenoid "B" will remain energized until the baling ram completes it's stroke actuating limit switch "3LS", which de-energizes the pump(s) and cooler motors.

5. As material builds up in the feed chute to level of "LPR" unit cycling eye, the blocking of light beam will cause the "LPR" time delay to expire energizing Solenoid "A", advancing the baling ram in the forward stroke. Solenoid "A" will remain energized until ram completes stroke, actuating Limit Switch "4LS".

6. When Limit Switch "4LS" is actuated, Solenoid "B" is energized retracting baling ram. Solenoid "B" will remain energized until ram completes stroke actuating Limit Switch "3LS" which de-energizes the pump and cooler motors.

TECHNICAL OPERATING DESCRIPTION CONTINUED
BALER W/TOUCH SCREEN

AUTOMATIC: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS

7. The baling cycle as described in Steps 5 and 6 continues until the Selected Bale Length Control Counter has reached its present count. The counter responds to impulses from Limit Switch "6LS" which is actuated by the moving ratchet wheel due to forward motion of material in the baling chamber.

8. When the preset count on counter has been reached, the baling ram will then move full forward and stop, exposing ram face tie slots.

Go to Auto-Ty Section in Manual

CONTINUOUS: (OPTIONAL) INITIAL CONDITIONS & SEQUENCE OF OPERATION

STEPS 1, 2 and 3 same as in "Automatic" sequence.

4. Press the "CONT" button on the Baler & Auto-Ty Selector Screen. If baling ram is in its retracted position and actuating Limit Switch "3LS", the pump and cooler motors will start. If baling ram is not in its retracted position and off "3LS", the pump and cooler motors will start, retracting the baling ram until "3LS" is actuated, and pump and cooler motors will continue to run.

STEP 5 same as in "Automatic" sequence.

6. When Limit Switch "4LS" is actuated, Solenoid "B" is energized retracting baling ram. Solenoid "B" will remain energized until ram completes stroke actuating Limit Switch "3LS". The hydraulic pump and cooler motors will continue to run at "IDLE".

STEPS 7 and 8 are the same as in "Automatic" sequence.

TECHNICAL OPERATING DESCRIPTION CONTINUED
BALER W/TOUCH SCREEN

MANUAL: INITIAL CONDITIONS & SEQUENCE OF OPERATION

1. Pull the start-stop switch out to energize the control power. The red light will illuminate indicating the 115 Volt Control Circuit is energized.

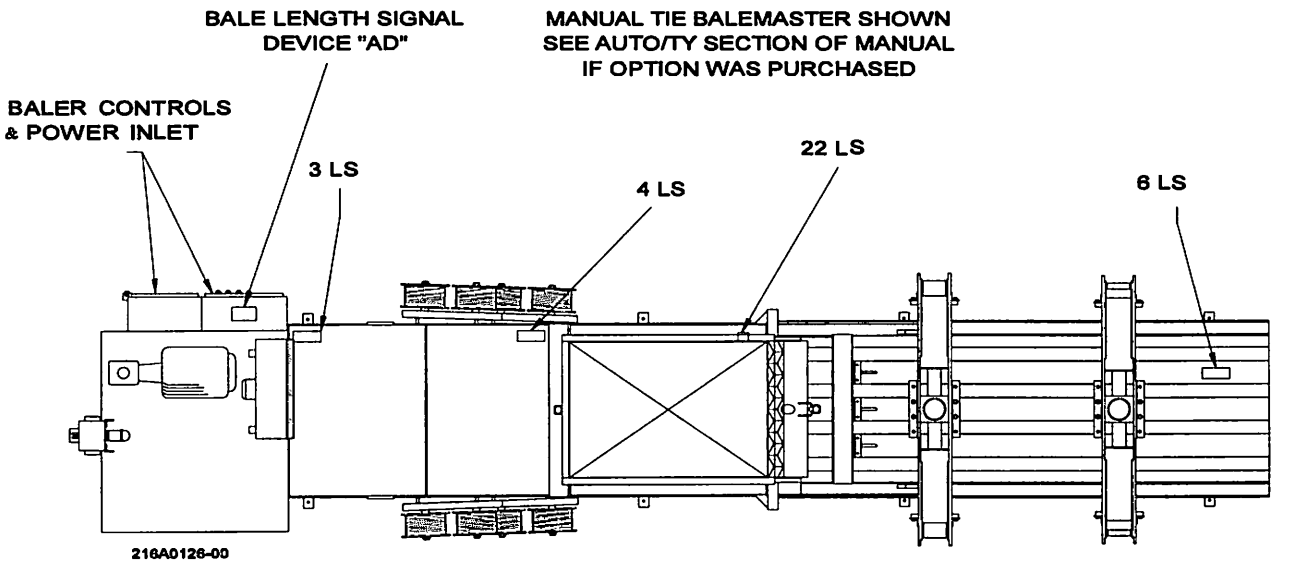
   To run the baler in manual the Baler & Auto-Ty Selector Screen must be displayed.

2. Turn the baler to manual by pressing the Baler "MANUAL" button. The button will be shaded and the hydraulic pump motor and cooler motor will start.

3. MANUAL ADVANCE BALING RAM: Pressing the "MANUAL RAM FORWARD" button will energize Solenoid "A", advancing the baling ram. Solenoid "A" will remain energized until either the push button is released or the Ram reaches 5LS and 5LSA.

4. MANUAL RETRACT BALING RAM: Pressing the "MANUAL RAM RETRACT" button will energize Solenoid "B", retracting the baling ram. Solenoid "B" will remain energized until either the push button is released or the Ram reaches 3LS.

LIMIT SWITCH LOCATIONS



BALEMASTER

LIMIT SWITCHES - DESCRIPTION/ADJUSTMENTS

Refer to Limit Switch Arrangement Diagram on Page 13.00.

DESCRIPTION: REAR LIMIT SWITCH "3LS"

The Limit Switch is located toward the rear of the ram chamber.

FUNCTION: With the ram in the retracted position and limit switch actuated, the baling cycle is ready for operation when material builds up in the feed chute causing the "LPR" light beam to be blocked. After a time delay, Solenoid "A" is energized causing the 4-way valve to shift, making the ram go forward.

NOTE: UNDER THIS CONDITION, THE PUMP MOTOR WILL NOT RUN WHEN BALER UNIT IS IN THE AUTOMATIC MODE; IT WILL RUN CONTINUOUS WHEN BALER UNIT IS IN THE CONTINUOUS MODE.

ADJUSTMENT: Position of limit switch arm should be such that when the ram is fully retracted, it will be actuated. If improperly adjusted, the ram cannot actuate the limit switch and the ram will not advance when going through the baling cycle.

NOTE: RAM SHOULD STOP 1/4" TO 1/8" BEFORE "DEADHEAD" OF CYLINDER. DO NOT STOP AT DEADHEAD OF THE CYLINDER ON RETURN STROKE OR DAMAGE MAY OCCUR TO CYLINDER.

DESCRIPTION: LIMIT SWITCH "4LS"

This Limit Switch is located forward in the ram chamber.

FUNCTION: When limit switch is actuated as the ram moves forward, it energizes Solenoid "B", causing the 4-way valve to shift, making the ram reverse after the forward stroke.

ADJUSTMENT: Position of limit switch arm determines length of ram stroke when stroke is done automatically. If the limit switch arm is properly adjusted, the length of the stroke positions the material fully in front of the balelocks, preventing the materials from expanding back into the feed chute chamber when ram returns to the retracted position. The normal reversing position is when the ram face is 1/4" past the side sheets.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

LIMIT SWITCHES - DESCRIPTION/ADJUSTMENTS

DESCRIPTION: LIMIT SWITCH "6LS"

This limit switch is located under cover of the bale length control mechanical mechanism mounted on top of the bale chamber.

FUNCTION: This limit switch, each time actuated by the moving ratchet wheel, sends an electrical impulse signal to the counter, causing the counter to count down.

ADJUSTMENT: If this limit switch is properly adjusted, the contacts will "make & break" on each actuation of the ratchet wheel cam.

DESCRIPTION: LIMIT SWITCH "22LS" (OPTIONAL)

This limit switch is located above the feed chute door.

FUNCTION: This limit switch is a safety device and is designed in such a way that when the feed chute door is open the pump motor will not run; thus shutting down the operational sequence of the baler.

ADJUSTMENT: If the limit switch is properly adjusted, opening the door would shut down the pump motor. The baler must be restarted at the control panel after the door is closed.

NOTE: TO ADJUST LIMIT SWITCH ARM, LOOSEN SET SCREW TO FREE ARM SO THAT MOVEMENT PERMITS THE LIMIT SWITCH TO BE PROPERLY ADJUSTED. AFTER PROPER ADJUSTMENT, TIGHTEN SET SCREW.

CAUTION: **DO NOT OPERATE THE BALER IF THIS LIMIT SWITCH IS OPERATING IMPROPERLY.**

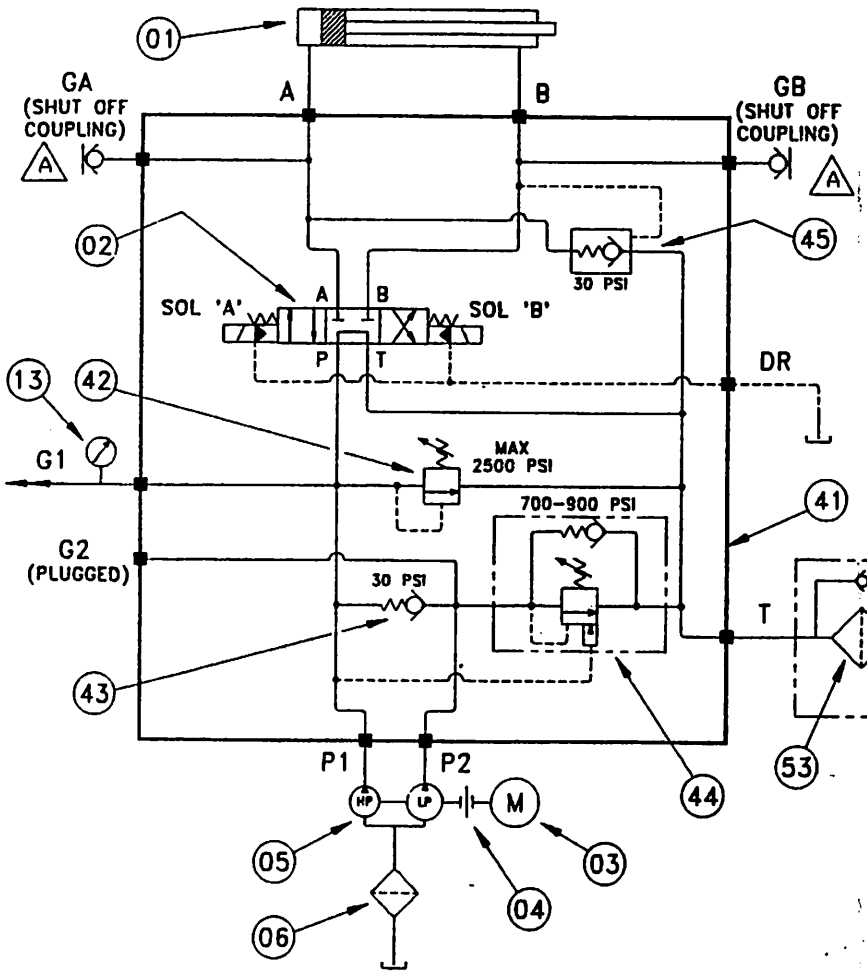
CAUTION: **NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.**

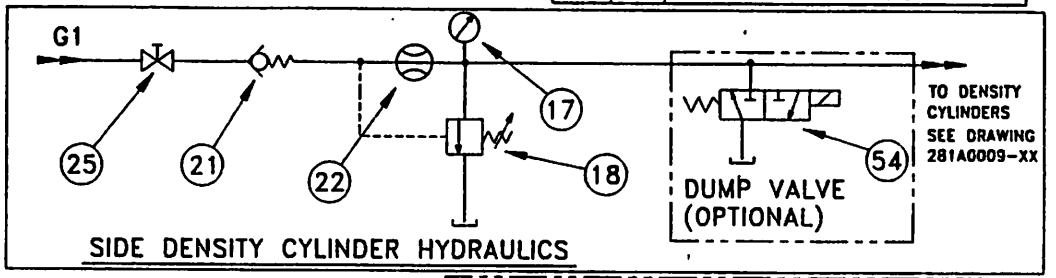
NOTES: -ADJUST VALVE (ITEM 18) TO ATTAIN SYSTEM OPERATING PRESSURE OF 1800/2250 PSI AS SHOWN ON GAUGE (ITEM 13).

-DO NOT EXCEED MAXIMUM PRESSURE OF 2500 PSI AS READ ON GAUGE (ITEM 13) AS PERSONAL INJURY OR EQUIPMENT DAMAGE MAY OCCUR.

ITEM	QTY.	DESCRIPTION
01	1	MAIN BALING CYLINDER
02	1	FOUR-WAY VALVE
03	1	ELECTRIC BALER MOTOR
04	1	MOTOR COUPLING
05	1	HYDRAULIC PUMP
06	1	HYDRAULIC OIL FILTER
07	1	OPTIONAL AIR/OIL COOLER
13	1	MAIN PRESSURE GAUGE
17	1	DENSITY PRESSURE GAUGE
18	1	DENSITY UNLOADING VALVE

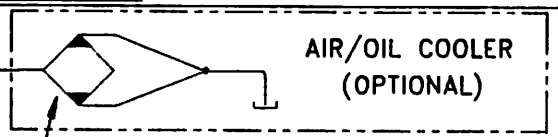
ITEM	QTY.	DESCRIPTION
20	1	65 PSI CHECK VALVE
21	1	1/4" CHECK VALVE
22	1	1/4" FLOW CONTROL
25	1	1/4" SHUT OFF VALVE
41	1	MANIFOLD ASSEMBLY
42	1	SYSTEM RELIEF VALVE
43	1	30 PSI CARTRIDGE CHECK VALVE
44	1	UNLOADING VALVE
45	1	30 PSI PILOT TO OPEN CHECK VALVE
53	1	OIL FILTER
54	1	SIDE DENSITY DUMP VALVE

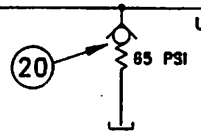




NOTE: DO NOT READ BALING OR MAX PRESSURE FROM ITEM 17 GAUGE.

MAX PRESSURE 2500 PSI





USED ON BALEMASTER BALERS WITH:
- -20,25 OR 30 H.P. MOTOR
- -TWO PRESSURE PUMP
- -ALUMINUM HYDRAULIC MANIFOLD
- -WITHOUT REGENERATION
- -WITH OR WITHOUT COOLER

NO.	ZONE	DATE	IN.	REMARKS
E		10-12-94	CS	ADDED 20 H.P.
D		07-30-93	BL	SUMP VALVE ADDED ITEM 54

Balemaster
DIV. OF EAST CHICAGO MACHINE TOOL CORP.
CROWN POINT, INDIANA

HYDRAULIC SCHEMATIC 20/25/30 HP WITHOUT REGENERATION

TOLERENCES - UNLESS OTHERWISE SPECIFIED:
FRACTIONAL ±1/64
DECIMAL 0.000 ±0.005
DECIMAL 0.00 ±0.01

THIRD ANGLE PROJECTION

DO NOT SCALE WORK TO DIMENSIONS

SCALE: 1=1

B/M REQ'D: YES / NO

DR. GOLINSKI

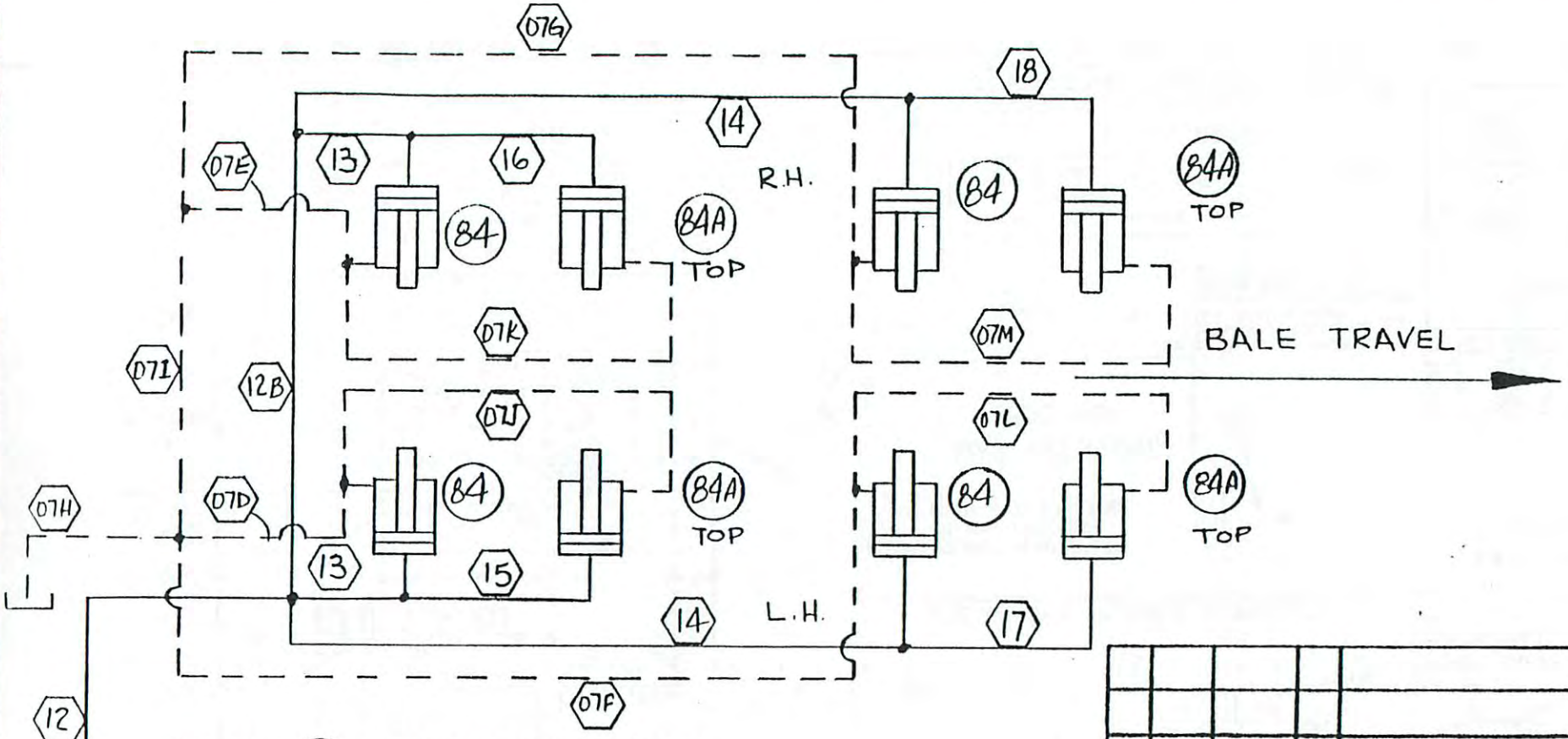
CH.

APP.

DATE: 1-22-92

28180039-00

l h g f e d c b a



NO.	ZONE	DATE	IN.	REMARKS

Balemaster®
DIV. OF EAST CHICAGO MACHINE TOOL CORP
EAST CHICAGO, INDIANA

8-SIDE CYL. ARR'GT.

TOLERANCES - UNLESS OTHERWISE SPECIFIED:	FRACTIONAL ± 1/64" DECIMAL ± .005	B/M REQ'D	YES / NO

DO NOT SCALE WORK TO DIMENSIONS | SCALE:

DRAWING CLASS.			
CUTTING & FORMING		LAYOUT	
FABRICATION		SUB-ASSY.	
MACHINING		ASSEMBLY	

MAT'L BW - 2, 15, 5, 11, 28

DR. T. RIVETT	CH.	APP.

DATE: 8-1-80	281A0009-02

BALEMASTER

AUTOMATIC BALE DENSITY CONTROL

DESCRIPTION/ADJUSTMENT

NOTE: Refer to the Hydraulic Schematic.

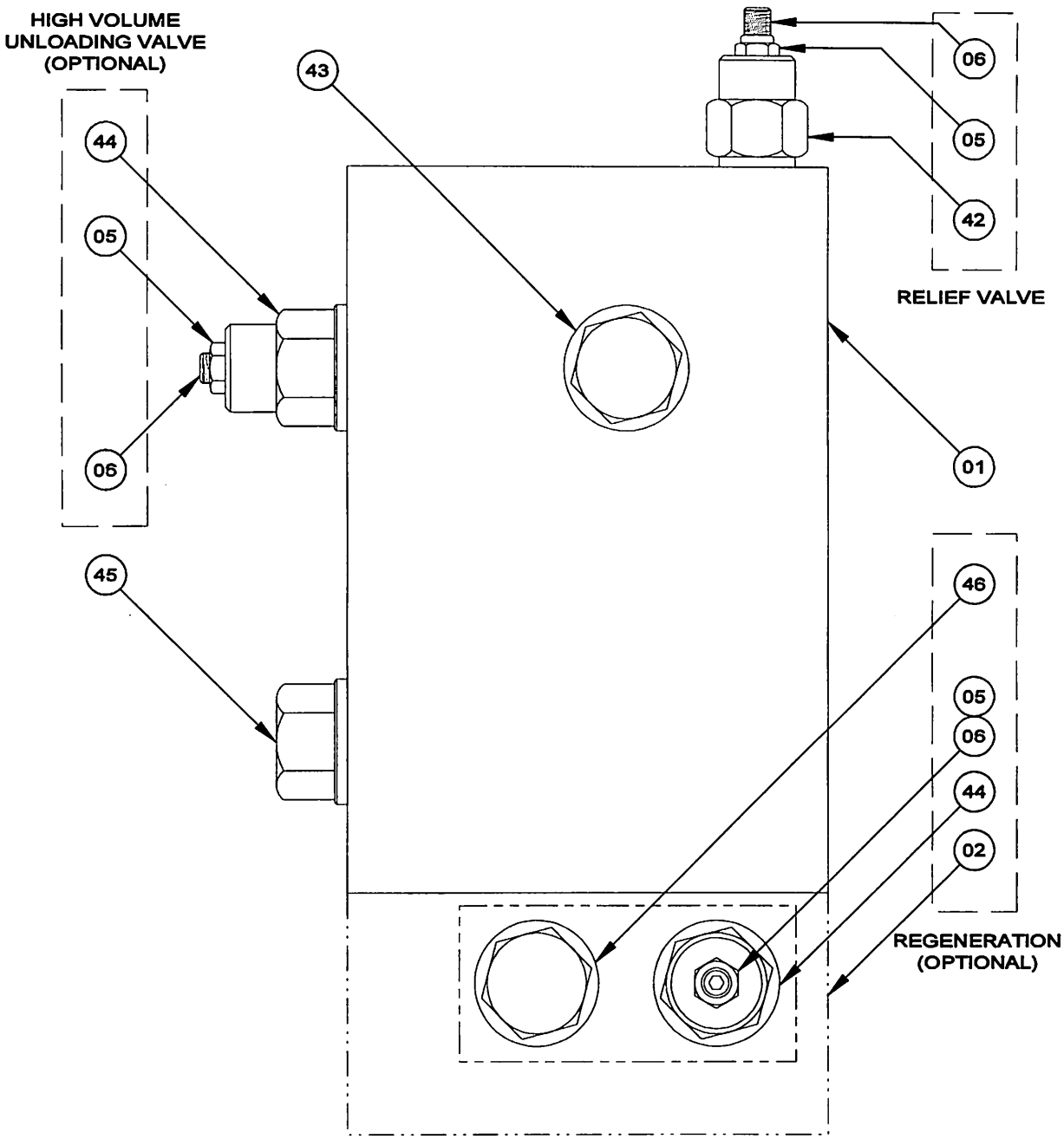
The Hydraulic Side Rail System should be set to a pressure that allows the main baling cylinder to operate between 1800 to 2250 PSI. Certain materials may require higher baling pressure; however, this pressure should not exceed 2500 PSI. When the main cylinder pressure reaches this pressure, the control valve (Item 18) will shift and allow the oil from the side cylinders to escape to the tank. At the same time the main baling cylinder can continue to extrude the bale. The control valve (Item 18) will reset and again operate on the next stroke.

To increase the baling pressure, the pressure upon the side cylinders must be increased. This is done by turning the adjustment screw clockwise on control valve #18. If baling pressure becomes too high, this screw will have to be backed out. Do **NOT** read side pressure gauge. This gauge is used to observe needle movement only. When needle stays at zero the density valve 18 must be cleaned or adjusted.

Side density shut-off Item 25 should be closed to prevent equipment damage when the chamber is empty. When making the first bale, do not activate the side density system until material has reached as far as the side cylinders.

CAUTION: **NEVER WORK ON UNIT UNTIL ALL MOTORS AND ROTATING EQUIPMENT HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.**

20/25/30 H.P. HYDRAULIC MANIFOLD ASSEMBLY



ITEM	DESCRIPTION	PART NO.
01	HYDRAULIC MANIFOLD ASSEMBLY	
02	HYDRAULIC MANIFOLD ASSEMBLY WITH REGEN	
42	SYSTEM RELIEF VALVE ASSEMBLY	HCA00217
44	HIGH VOLUME UNLOADING VALVE ASSEMBLY (OPT.)	HCA00223
44	PLUG (SINGLE PRESS. PUMP)	HCA00222
05	JAM NUT	
06	VALVE STEM	
43	CHECK VALVE ASSEMBLY	HCA00218
45	CHECK VALVE ASS'Y (PILOT TO OPEN)	HCA00220
46	REGEN. CHECK VALVE ASS'Y (PILOT TO CLOSE, OPT.)	HCA00221
44	REGENERATION VALVE ASSEMBLY (OPT)	HCA00223

216A0040-00

HYDRAULIC VALVE DESCRIPTION AND PRESSURE SETTING PROCEDURES 30 HP AND BELOW WITHOUT REGENERATION

HYDRAULIC MANIFOLD ASSEMBLY

ADJUSTABLE RELIEF VALVE: Pressure Setting 2500 PSI Maximum

This valve limits system pressure by directing pump flow to tank when system pressure reaches valve setting and thus prevents overloading of the system.

ADJUSTABLE UNLOADING VALVE: Pressure Setting 700 to 900 PSI

This valve limits high volume pressure by directing high volume pump flow to tank when the pressure reaches valve setting and thus prevents overloading of the electrical motor.

PRESSURE SETTING PROCEDURES

1. Balers with Auto-Tier

   Check to see that the needles are completely retracted from the baling chamber and actuating 1LST.

2. Start the baler by pulling the control power switch out. Press the buttons on the panel marked "BALER MAN" and "TIER MAN".

3. Advance the ram forward by pressing the button marked "MAN RAM FWD" until ram has advanced fully forward.

   NOTE: THE FOLLOWING IS A TECHNICAL PROCEDURE AND MUST BE PERFORMED BY EXPERIENCED MAINTENANCE PERSONNEL.

4. Loosen the adjustment stem jam nuts on the relief and unloading valves. Press the manual actuator plunger in, (located on each end of the solenoid portion of the 4-way valve). Find the side which advances the ram forward so that the ram can be deadheaded forward.

5. Shut off baler, move disconnect switch on control cabinet to OFF position. The setting of pressure for the relief and unloading valves will be done using an "AMPERE PROBE" that can handle the full load ampere of the pump motor, as read on motor nameplate. Place probe around one of the leads going to the motor in the starter control cabinet.

HYDRAULIC VALVE DESCRIPTION
AND
PRESSURE SETTING PROCEDURES
30 HP AND BELOW WITHOUT REGENERATION

HYDRAULIC MANIFOLD ASSEMBLY

6. Move the disconnect switch to ON position and place baler in manual mode - Step 2.

7. Back off the unloading valve by turning the valve stem clockwise.

8. Back off the relief valve by turning the valve stem counter-clockwise.

9. With an electrician watching the ampere probe, push the manual plunger on the 4-way valve advancing and keeping the ram in its deadhead position - Step 4.

10. Push the 4-way valve plunger, Step 4. Turn the unloading valve stem counter-clockwise until the ampere probe reading starts to rise. Keep turning stem until the ampere reading drops to a lower level. Jam down adjustment by tightening the unloading valve jam-nut.

11. If the reading before drop is below the motor full load ampere rating, turn relief valve stem one or two turns clockwise - then repeat Step 10. Unloading valve must be adjusted so that the drop in ampere will occur at the motor full load ampere rating. Continue with Step 10 until this occurs. When set, tighten jam-nut clockwise on valve stem.

12. Push the 4-way valve plunger, Step 4. Turn the relief valve stem clockwise until the pressure read on Gauge 13 is 2500 PSI. Tighten relief valve jam-nut.

CAUTION: DO NOT EXCEED 2500 PSI.

13. Release the 4-way valve plunger. Shut baler off and move disconnect to OFF position. Remove ampere probe and close control cabinet door.

THE UNLOADING AND RELIEF PRESSURES ARE NOW SET.

HYDRAULIC VALVE DESCRIPTION

HYDRAULIC SCHEMATIC

ITEM NUMBER 18

Pilot Operated Adjustable Control Valve - Automatic Bale Density Control Pages 15.00 and 16.00.

This valve regulates the baling hydraulic pressure (normally 1800 to 2250 PSI) as indicated on high pressure gauge, Item 13. Adjustment for this valve is described under Automatic Bale Density Control.

If density cylinder pressure as indicated on the low pressure gauge, Item 17, rises during ram stroke then drops to zero between ram strokes, the control valve is by-passing. Clean and repair or replace valve. If Gauge 17 reads zero at all times, clean Valve 18.

ITEM NUMBER 20

In-Line Check Valve (Furnished W/Air-Oil Cooler) Page 15.00

This valve allows for by-passing excess hydraulic oil to tank from the drain line feeding the Air-Oil Cooler, preventing pressure build-up in the cooler. The valve may be located in the reservoir directly below the manifold or in a drain line leading into the tank.

ITEM NUMBER 21

In-Line Check Valve Page 15.00

This valve seals hydraulic oil in the Automatic Bale Density Control Circuit. There is no adjustment for this valve.

ITEM NUMBER 22

This valve controls hydraulic oil flow into the Automatic Bale Density Control Circuit.

If density cylinder pressure cannot be increased as explained under Automatic Bale Density Control, the valve may be blocked. Clean and repair or replace valve.

HYDRAULIC VALVE DESCRIPTION

HYDRAULIC SCHEMATIC

ITEM NUMBER 23

Permanent Magnets

Magnets are located inside reservoir near oil suction line. When the reservoir is drained for cleaning, these magnets should be removed, cleaned and reinstalled.

ITEM NUMBER 25

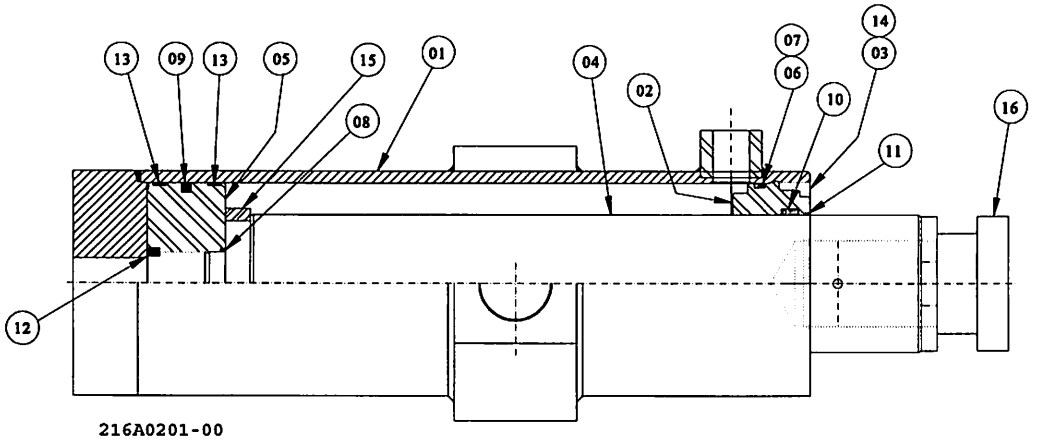
Adjustable Needle Valve (Density Control Circuit Shut-Off) Page 15.00

This valve when closed shuts off oil flow to the density control system. In normal operation, the valve should be fully open.

CAUTION: **NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.**

322

HYDRAULIC CYLINDER PARTS



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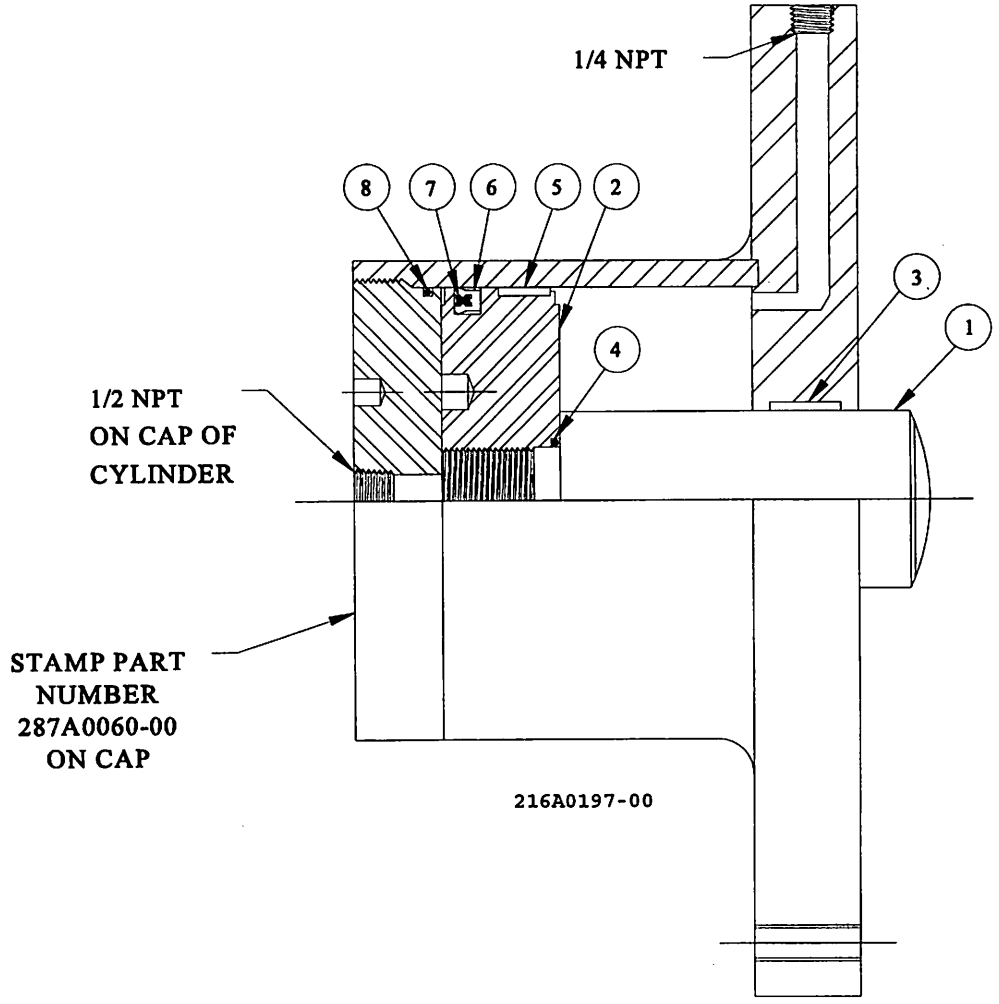
ITEM	DESCRIPTION	REQ.	
1	BODY WELDMENT	1	
2	HEAD	1	PART NUMBER: **287A0053-00**
3	HEAD NUT	1	BORE: 8"
4	PISTON ROD	1	ROD DIAMETER: 5 ½"
5	PISTON	1	WORKING STROKE: 49 ½"
6	BODY SEAL	1	MAX. OPERATING
7	BODY SEAL B.U.	1	PRESSURE: 2500 PSI OPTIONAL: 3000 PSI
8	ROD SEAL	1	
9	PISTON PACKING	1	PORTS: 2" SAE 4 BOLT
10	ROD PACKING	1	
11	ROD WIPER	1	**SEAL KIT PART NUMBERS:**
12	GRUB SCREW	2	
13	PISTON WEAR BANDS	2	* ROD SEALS: HAC102
14	HEAD LOCK NUT	1	* PISTON SEALS: HAC202
15	STOP TUBE	1	
16	ROD END	1	

HYDRAULIC DENSITY CYLINDER



ITEM #	DESCRIPTION	PART NUMBER	QTY.
	COMPLETE CYLINDER	287A0060-00	1
1	PISTON ROD		1
2	PISTON		1
3	ROD WEAR STRIP		2
4	PISTON ROD SEAL		1
5	WEAR STRIP		1
6	PISTON SEAL		1
7	PISTON SEAL EXPANDER		1
8	END CAP SEAL		1

* ITEMS #3 THRU #8 AVAILABLE AS SEAL KIT: HAM00601

PREVENTIVE MAINTENANCE

NOTE: THE FOLLOWING SCHEDULE IS BASED UPON OPERATING ONE EIGHT (8) HOUR SHIFT FIVE (5) DAYS A WEEK. LONGER OPERATING TIMES WILL CHANGE SCHEDULE.

CAUTION: **NEVER PERFORM MAINTENANCE ON BALER UNTIL MOTOR AND ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT. DO NOT REMOVE, PAINT - OVER OR DEFACE WARNING INSTRUCTIONS OR IDENTIFICATION LABELS.**

1. HYDRAULICS

A. Hydraulic Oil Level: Height of oil can be read on dipstick located on top side of reservoir. (See Page 19.03 for Oil Level.)

B. Oil Change: On a new machine, the oil in the hydraulic system should be thoroughly pumped out after 500 hours of initial running time (See Oil Change Schedule) and the tank cleaned using clean dry rags or equivalent. Inside the tank are two (2) magnets located under the oil suction line. If they are covered with residue and cannot be seen, feel around in the tank until found. Remove, clean and reinstall magnets under oil suction line after tank is thoroughly cleaned. After reinstalling magnets, refill reservoir at filler breather with clean premium grade hydraulic oil to proper level.

Under normal conditions, 500 hours of operation, the oil should be changed and the reservoir cleaned every 2000 hours of operation thereafter.

NOTE: SEE PAGE 19.04 FOR OIL/TEMPERATURE & CAPACITY CHART.

C. Air-Oil Cooler: From outside of oil cooler reverse blow with compressed air through cores every 100 operating hours or more often if necessary.

D. Oil Leak Check: Inspect for oil drips on all tube and pipe fittings and tighten when necessary in accordance with approved hydraulic fitting practices.

NOTE: IT IS IMPORTANT THAT THE PROPER SIZE WRENCH BE USED SO AS NOT TO DAMAGE THE HYDRAULIC FITTINGS. OVER TORQUING IS JUST AS BAD AS UNDER TORQUING.

PREVENTIVE MAINTENANCE CONTINUED

2. MECHANICAL

A. Ram Wiper: Inspect ram wiper to be sure that it rides on ram top plate. This should be done on a weekly basis. The wiper assembly is secured to the wiper support bracket which is located at the rear of the feed chute. If ram wiper requires adjustment, use the following instructions:

1. Determine the wear on the wiper by visual observation. If worn or cracked, replace.
2. Remove the fasteners that holds the support bracket in place.
3. With support bracket removed from the ram chamber, loosen the fasteners.
4. After new wiper has been put in place, reinstall the fasteners.
5. Replace the support bracket and tighten the fasteners which mounts the assembly to the ram chamber.

B. Ram Chamber: On the bottom, in the rear of the ram chamber area, is an opening with a tag that states "Clean Out Daily". If material is allowed to build up in the chamber because of failure to clean chamber daily, it will shorten cylinder life or cause other serious damage to the equipment.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

C. Ram Liners: Inspect the four (4) replaceable liners mounted on ram every 500 hours. Liners should just rub side plates and have no more than 1/8" clearance under baling ram gib bars.

D. Balelock: Balelocks should be cleaned daily of material that builds up in the balelock frame during operations. The balelock assembly is located on top of bale chamber in front of feed chute. If material is allowed to accumulate in the balelocks, it would effect its primary function to prevent the bale from expanding back into the feed chute chamber and could destroy the springs.

PREVENTIVE MAINTENANCE CONTINUED

E. Clean Plexiglas Lens: Assure cleanliness of all plexiglas on feed chute. Do not wipe with abrasive materials as it will scratch surface and reduce light transmission.

3. ELECTRICAL

A. Motor: Reverse blow with compressed air every 500 hours, blowing from the coupling end.

Motor - except totally enclosed: Lubricate motor bearings every 2000 hours using Sinclair Oil Company - Durolube #22 or equivalent NLGI #2 consistency grease free from any chemical or mechanical impurities.

B. Electrical Control Cabinet: Keep control cabinet door secured for personnel safety and cabinet cleanliness.

C. Control Circuit Interrupter: Check to make sure control circuit interrupter switch on load door of feed chute is, in fact, stopping motor when door is not closed. If faulty, do not operate baler until adjusted or repaired.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS AND ROTATING EQUIPMENT HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

PREVENTIVE MAINTENANCE

HYDRAULIC OIL CHANGE SCHEDULE

RECOMMENDED BALER OIL CHANGE SCHEDULE

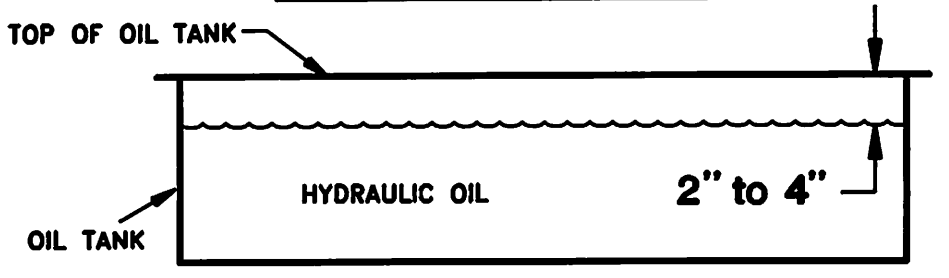
AFTER THE START-UP OF YOUR BALER CHANGE THE HYDRAULIC OIL AFTER 500 OPERATING HOURS, AND EVERY 2000 HOURS THEREAFTER.

500 HOURS = 1 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 3 MONTHS
500 HOURS = 2 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 6 WEEKS
500 HOURS = 3 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 4 WEEKS

2000 HOURS = 1 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 1 YEAR
2000 HOURS = 2 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 6 MONTHS
2000 HOURS = 3 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 4 MONTHS

NOTE: THE ABOVE IS BASED ON A 40 HOUR SHIFT, AND 52 WEEK YEAR. 6 OR 7 DAY OPERATION WILL REDUCE THE ABOVE OIL CHANGE INTERVALS. EXTERNAL FILTRATION DOWN TO 3 MICRON AND/OR SPECTROANALYSIS OF THE OIL MAY EXTEND THE ABOVE INTERVALS. FAILURE TO CHANGE OIL AT PROPER INTERVALS WILL VOID WARRANTY. SEE MANUAL FOR ADDITIONAL INFORMATION.

HYDRAULIC OIL LEVEL



FILL HYDRAULIC OIL BETWEEN 2" AND 4" FROM TOP OF OIL TANK WITH THE *BALING RAM IN A FULLY RETRACTED POSITION.*
CHECK MANUAL FOR MORE INFORMATION.

111A0079-00

NOTE: SEE FOLLOWING PAGE FOR HYDRAULIC OIL SPECIFICATIONS

PREVENTIVE MAINTENANCE CONTINUED

BALEMASTER SERIES BALER HYDRAULIC OIL/AMBIENT TEMPERATURE & CAPACITY CHART									
AMBIENT TEMPERATURES		GRADE							
60°F TO 90°F		PREMIUM HYDRAULIC OIL-220/250 SSU* AT 100° F							
BELOW 60° F OR ABOVE 90° F		CONSULT YOUR LOCAL HYDRAULIC DEALER							
HORSEPOWER	20	25	30	50	25+25	75	100	150	225
GALLONS OF OIL	54	133	133	267	267	267	357	357	571

* SSU REFERS TO **SAYBOLT SECOND UNIVERSAL**, AND IS THE ONLY DROP TEST USED TO DETERMINE THE **VISCOSITY RATING** OF A GIVEN OIL AT A SPECIFIED TEMPERATURE.

* **OIL LEVEL/TEMPERATURE INDICATOR - (OPTIONAL)**

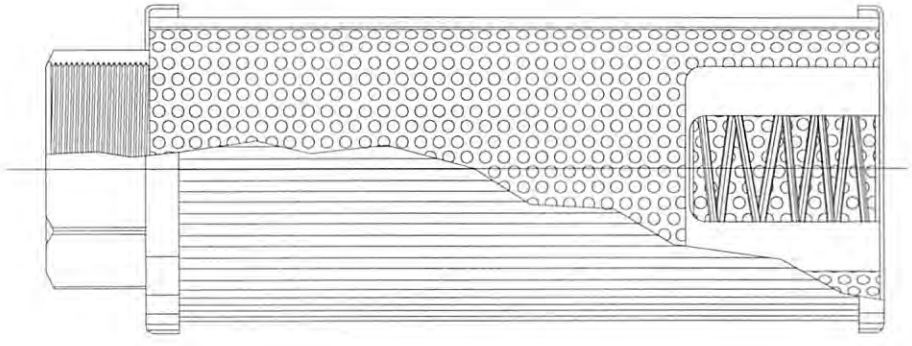
yes The Oil Level/Temperature Switch will stop the baler if the oil temperature exceeds 150 F or if the tank level drops to approximately half the tank depth.

NOTE: SOME HYDRAULIC OIL WILL REMAIN IN SYSTEM WHEN EMPTIED. THIS WILL NOT AFFECT RECOMMENDED QUANTITIES REQUIRED.

PREVENTIVE MAINTENANCE

OIL FILTERS SHOULD BE CLEANED EVERY 30 DAYS.

✳ **PART #HHA00020**



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(NPTF) WITH BY-PASS VALVE

HOW TO CLEAN:

Remove filter element from suction line; swish element in any non-caustic clean solvent for a short period of time.

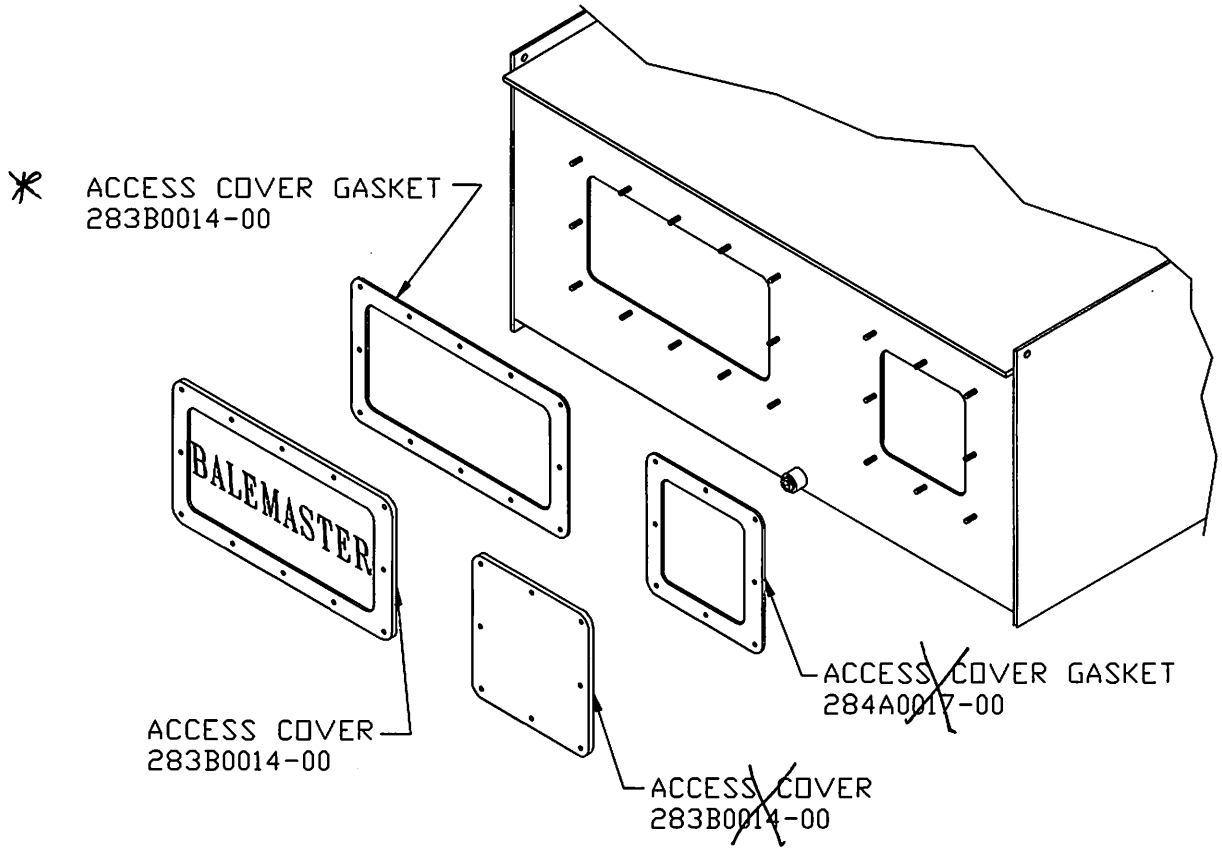
CAUTION: DO NOT LEAVE ELEMENT IN SOLVENT.

A stiff fiber brush may be used, if necessary, to remove impacted deposits between wire cloth serrations. Shake off excess solvent. If compressed air is available, blow dry from inside out.

CAUTION: STOP BALER BEFORE REMOVING FILTERS.

PREVENTIVE MAINTENANCE

REPLACING ACCESS COVER GASKETS



NOTE: When replacing Access Cover Gasket, be sure to seal with Dow Corning #739RTV Silastic Black Plastic Adhesive on both sides. Tighten all nuts evenly. **DO NOT OVER TIGHTEN.**

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

PREVENTIVE MAINTENANCE

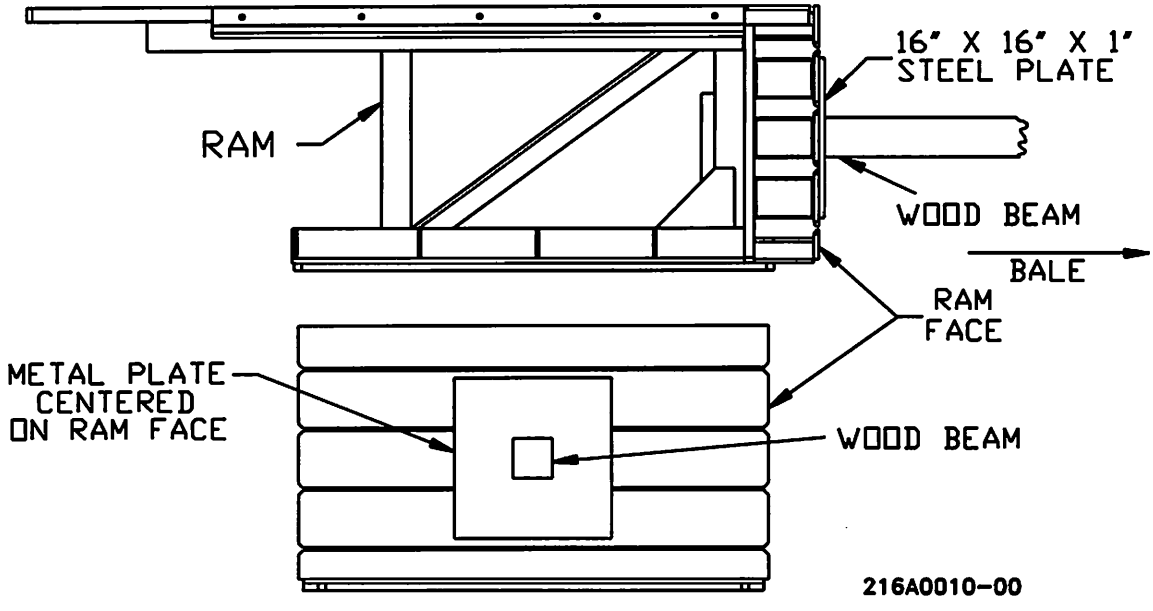
BALER RAM/CHAMBER MAINTENANCE

When Bale Chamber Maintenance is required, caution should be taken to not damage the ram or ram face on rams. If proper procedures are not followed possible damage to the ram and frame could occur.

For removal of bales in baling chamber the side rail hydraulic cylinders should first be relieved allowing side rails to expand and move away from the bale. This can be accomplished thru turning the side density valve adjusting screw counter-clockwise until the tension is relieved.

To extract bale from bale chamber use a piece of wood, with sufficient cross section and strength, with one end pressing against the bale and the other end pressing against a 16" X 16" X 1" thick piece of steel positioned against ram face. If the metal plate is not used or positioned properly to disperse the load on the ram, damage will occur to the ram face.

NOTE: DO NOT ATTEMPT THIS PROCEDURE WITH A SPECIAL AUTO-TIE CAN APPLICATION RAM.



BALEMASTER

TROUBLE SHOOTING CHART

CAUTION: UNDER NO CIRCUMSTANCES ATTEMPT TO ANALYZE OR CORRECT ELECTRICAL FAILURES ON THE EQUIPMENT UNLESS YOU ARE A FULLY QUALIFIED ELECTRICIAN. LACK OF KNOWLEDGE AND PROPER ELECTRICAL PRACTICES COULD CAUSE SERIOUS INJURY OR DEATH TO PERSONNEL.

TROUBLE: MOTOR WILL NOT START

A. Routine Observations:

1. Check power control cabinet to see if the disconnect switch handle is to "ON" position.

2. Has electrical power control switch (Red Mushroom Button) on the operators control cabinet been pulled out to "START" and baler selector switch turned to either manual, automatic, or continuous mode.

   NOTE: IN AUTOMATIC MODE, HYDRAULIC PUMP MOTOR WILL NOT RUN UNTIL TIMER ON "LPR" UNIT EXPIRES AFTER CYCLING EYE IS BLOCKED.

3. Is Feed Chute Door closed, actuating Limit Switch "22LS".

   If the above observation did not solve the problem, then electrical power failure to the equipment is likely.

B. Incoming Power Source Check:

1. Test for a blown control transformer fuse on secondary side, located in the power control cabinet.

2. Check motor starter overload heaters to see if they are tripped. If so, push all reset buttons in.

3. Test for blown fuses that protects the primary side of control transformer and motor starter.

4. Check motor starter control coil.

   If the above fails to pinpoint the problem after initial checkout, proceed as follows:

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

At the motor leads T1, T2 and T3 in the power control cabinet, take voltage readings across T1 & T2; T2 & T3; and T1 & T3. The readings at any of these points should correspond to the line voltages. For example: If the line voltage is 480 volts, then readings across T1 & T2, T2 & T3, T1 & T3 should read 480 volts.

If the condition above does not agree, then the failure to get power to the motor could be caused by the incoming power source to the equipment.

TROUBLE: RAM WILL NOT ADVANCE

A. Proper Oil Level:

Check proper level of hydraulic oil on the distinct. (See Preventive Maintenance Oil Change Schedule) If the oil is low, inspect for oil drips on all tube and pipe fittings and tighten where necessary in accordance with approved hydraulic fitting practices. If any hosing sections have excessive oil leaks due to damage or wear, they should be replaced. When hydraulic leaks are repaired, add proper premium grade non-foaming hydraulic oil to the proper oil level.

B. Dirty Oil Filter:

The oil filter systems traps dirt and foreign particles, keeping these impurities from contaminating the hydraulic oil. When the filter is not maintained regularly as described in the Preventive Maintenance section of this manual, these deposits build up; eventually blocking the oil flow. Remove filter element and clean thoroughly.

C. Is Ram Limit Switch "3LS" Properly Operating:

Two conditions can affect the above situation:

1. Material can build up behind the ram over a period of time. Failure to clean out daily will cause material to pack tightly in the chamber. It eventually prevents the ram from retracting into its fully stored position, thus preventing actuation of "3LS". To correct this problem, turn baler selector switch to "Manual" and manually run ram forward by depressing the "Man-Ram-Forward" push-button until ram is completely forward. Turn selector switch to "OFF", shutdown equipment and be sure it is electrically locked out. When ram chamber is cleaned of material and all personnel clear of baler unit, start up the equipment and turn selector switch to the automatic mode. This will cause the ram to return to normal stored position.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: RAM WILL NOT ADVANCE (CONTINUED)

C. Is Ram Limit Switch "3LS" Properly Operating: (Continued)

2. If ram is in its fully retracted position, but not actuating "3LS" Limit Switch Arm causing limit switch to be inoperative, check limit switch cam alignment. If adjustment is necessary, loosen fasteners holding cam and reset until limit switch arm is actuated. Tighten fasteners.

   NOTE: MUST BE ADJUSTED SO CYLINDER STOPS 1/8" TO 1/4" BEFORE DEADHEAD.

TROUBLE: HYDRAULIC PUMP NOT FUNCTIONING PROPERLY

The double pump consists of two separate pumping devices contained in one housing. The double pump has an inlet port and two outlet ports to provide fluid flow for two separate circuits. Separate circuits require separate pressure controls to limit maximum pressure in each circuit. The relief valve on high pressure side of pump is set at 2250 PSI; the unloading valve on low pressure side of pump is set at 700 to 900 PSI. To check pump for defect, proceed as follows:

1. Refer to Pages 17.00, 17.01 & 17.02 for procedures.

2. If any of the above pressure readings are low, then efficiency of pump to produce the maximum flow rates has failed and pump should be rebuilt or replaced.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED
WITH TOUCH SCREEN

TROUBLE: RAM RECIPROCATES CONTINUOUSLY

The normal cycling procedure is due primarily to the control function of the "LPR" unit; ie, when the receiver is blocked from the source, the internal relay is de-energized, which close N/C contacts and opening N/O contacts. The closed contacts, energize the ram advance circuits after the time delay expires, causing the ram to go forward. (Done by the PLC) If the ram continuously goes back and forth, it shows that the ram advance circuits are not being de-energized because the N/C contacts remained closed due to the "LPR" relay not being energized when the source beam again penetrates the receiver or the light beam is still interrupted due to accumulated dirt or dust on the feed chute windows. To correct the situation described above, proceed as follows:

1. Clean the feed chute windows inside and outside of dirt and dust.
2. Check to see that the "LPR" units are aligned properly.
3. Check to see that the yellow (power on) lights are on both for the source and receiver units. If not, check for proper incoming voltage.
4. If unit is not operative, it could be bad and should be replaced.

TROUBLE: LONG DELAY BEFORE RAM ADVANCES

Three (3) conditions can affect a long delay:

1. Time delay for the "LPR" unit could be set too long. Refer to :LPR" control diagram. With a piece of heavy non-transparent paper, block the photo-eye and observe that the green light (output energized) should go off.

   The time delay setting is normally 6 to 8 seconds before the ram cycles. If the time delay is longer than the normal setting, go to the operator interface. At the main screen, press (F7) others to go to the information screen. Then press (F5) LPR's to go to the select screen. Press (F1) change LPR to proceed to the next screen. Press the box, then enter the code number, and press "E" to enter. At the select screen press LPR's. Press (F2) to adjust the LPR time delay. Adjust the time delay to the desired setting, then press (F10) to return to the main screen.

   NOTE: DO NOT DECREASE BEYOND THE NORMAL SETTING. TIME DELAY SHOULD BE SUCH AS TO PERMIT A FULL CHARGE IN THE BALING CHAMBER.

   CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: LONG DELAY BEFORE RAM ADVANCES

2. Spool in 4-way valve could be dirty.
When dirt from hydraulic oil accumulates around the spool over a period, it tends to cause the sliding action to become sluggish. When this happens, the time it takes the spool to shift will be greatly increased, thus causing a delay before a ram advances. To correct this problem, proceed as follows: Shut down the equipment. Remove the four (4) socket head screws holding the cap end to 4-way directional valve body. Remove cap end, spring, spring seat, and spool away from the body. Clean the spool in mild detergent solution or solvent. Replace spool, spring seat, spring and cap end with proper seal. Secure to valve body by tightening the four (4) socket head screws. (Be sure to insert as removed as reverse insertion will not operate).

3. Choke valve adjustments improper (if supplied)
The choke valve, mounted on 4-way valve, has two (2) adjustment screws. These adjustments regulate the speed of spool shifting in the forward and reverse directions. The adjustment on the "A" port side determines the speed the spool will shift when moving from forward start. Adjustment on the "B" port side determines the speed the spool will shift when moving from reverse start.

TROUBLE: RAM ADVANCES ONLY PART WAY

1. If baling chamber resistance too high:
The side density cylinders on the hydraulic side rail system is set at a pressure that allows the main baling cylinder to operate at approximately 1850 to 2200 PSI to extrude the bale. When this pressure is too high, the density cylinder force against side rails tends to oppose the force of the main baling ram pushing the bale out. The unloading valve (Item 18) that regulates the baling density pressure is normally adjusted to maintain 500 to 1000 PSI on Gauge 13. If pressure reading shows higher than normal setting, turn the adjustment knob counter-clockwise to reduce pressure.

2. If pressure read on pressure gauge #13 is low:
The relief valve (Item 9) limits system pressure by directing pump flow to tank when pressure reaches the setting of the valve, thus preventing overloading of the system. If the valve is set too low, it reduces system pressure because the pressure increase in the system is limited by setting of adjustment knob on valve, thus unloading the pump flow to tank before system can exceed its maximum pressure. To adjust Relief Valve (Item 9), refer to Page 17.01 of this Manual.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: RAM ADVANCES ONLY PART WAY (CONTINUED)

3. Is pump delivering required output pressure to system:

   To check pump operation, refer to Page 20.02, "Hydraulic Pump Not Functioning Properly".

4. Is main hydraulic baling cylinder losing hydraulic pressure on forward stroke?

   Refer to Page 21.00 in this manual for "Hydraulic Cylinder Check".

   If the cylinder check indicates oil being pumped out of rod end of cylinder, then piston cups and rod seals should be replaced.

5. Check oil level - May be low and pump is sucking in air. Normally sounds like "Marbles" in pump.

TROUBLE: RAM SPEED REDUCED IN GENERAL

1. Inspect for leaks in the hydraulic system and low oil level in reservoir. Refer to "Ram Will Not Advance" Section, Page 20.01 in this manual.

2. If oil filter is dirty, it reduces the quality of oil to the pump, thus decreasing the efficiency of the pump to deliver maximum flow rate to the system. Pressure drop in the main ram cylinder will then tend to push the ram at slower than normal speed. Remove filter element and clean thoroughly. Refer to Page 19.05.

3. Is ram speed slow and baling pressure low:

   Refer to "Ram Advances Only Part Way" - Paragraph #4 on this page.

4. Pump Performance:

   The ability of the main cylinder to move the bale depends upon the pressure applied to it. The speed at which the ram advances the bale depends on the flow rate of the pump. If the pump flow rate is reduced due to wear of internal parts, reduction in the flow rate to the cylinder will result in pressure drop in main cylinder. To check pump, see "Hydraulic Pump Not Functioning Properly", Page 20.02.

CAUTION: **NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.**

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: RAM SPEED REDUCED IN GENERAL (CONTINUED)

5. Condition where air is in hydraulic oil:
   Air is soluble in oil. At atmospheric temperature and pressure, a volume of air dissolves in oil. As pressure increases, the amount of dissolved air increases. While this in itself is not serious, the reciprocal effect, air coming out of the oil, when the oil is subjected to low pressure at the pump inlet, (suction side of pump) causes cavitation, ie, formation of partial vacuum in the oil by the swift internal moving parts of the pump. Air bubbles throughout the oil are caused by air leaking into the system from various sources. Main leakage source are loose fittings, loose or worn seals on components, and low oil level in the reservoir. Inspect and repair all air leaks in system. Observe especially air leaks on suction side of pump.

TROUBLE: RAM WILL NOT RETURN

1. If ram is seized in baling chamber, try to free ram by turning selector switch to "OFF" and back to automatic several times. If ram cannot be freed, inspect balelock chamber for excessive paper build-up. If balelock chamber is not cleaned daily, paper eventually accumulates until material packs tightly in chamber and under ram top surface, thus jamming the ram. Material will have to be broke free and balelocks cleaned out.

   NOTE: IT MIGHT BECOME NECESSARY TO REMOVE BALELOCKS TO CLEAN OUT MATERIAL.

2. Check Solenoid "B" coil on 4-way valve to see if electrically operative.

   If pilot valve spool is dirty, the sliding action becomes extremely sluggish, preventing it from shifting. Remove and clean with mild detergent solution or solvent. The pilot valve is located on 4-way valve.

3. Observe in ram chamber to see if rod and ram are disconnected. If hydraulic rod is broken, replace rod, rod bushings and seals. Refer to Page 22.00 for Balemaster Service.

TROUBLE: LOSS OF NORMAL BALING PRESSURE

1. If baling chamber resistance is too low:
   The unloading valve (Item 18) regulates the baling pressure which is normally adjusted between 1800 to 2250 PSI on Gauge #13, depending upon material being baled.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: LOSS OF NORMAL BALING PRESSURE (CONTINUED)

1. Continue reading; if Gauge #17 shows pressure drop while ram is idle or drops to zero pressure while ram is stopped, then valve (Item 18) should be adjusted to a higher setting by turning the adjustment knob clockwise to increase pressure. If adjustment cannot be made, the valve usually requires cleaning.

2. Unloading Valve (Item 18) sticking:

   Disassemble valve and clean or replace.

3. Flow Control Valve (Item 22) blocked:

   Remove and clean if possible or replace.

4. Side Density Cylinders leaking:

   Replace Piston Cup Seals and Rod Seals.

5. Ram advances before a full charge of material has fallen into baling chamber. Refer to "Long Delay Before Ram Advances" Section, Page 20.03.

6. Low pressure reading on Gauge #13:

   If Gauge #13 is faulty, it would give a false reading, preventing proper setting or normal baling pressure. Replace defective gauge.

TROUBLE: RAM CREEP DURING TIE OFF

Minimum ram creep is normal. If ram creeps back excessively during tie off, check high pressure reading on high pressure Gauge #13. If pressure indicated on Gauge #13 drops during tie off, then:

1. Hydraulic system should be checked for leaks. If leaks are present, all tube and pipe fittings should be tightened.

2. Check main hydraulic cylinder for internal bypassing. If bypassing is present, piston cups and rod seals should be replaced. Refer to "Hydraulic Cylinder Check".

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: RAM CREEP DURING TIE OFF (CONTINUED)

3. If hydraulic cylinder is not bypassing during check out of cylinder, then the 4-way valve may be leaking due to contamination or wear. Replace with new 4-way valve if this is the case.

TROUBLE: BALE UNDER LENGTH

1. If bale length counter control is set too low, the bale length would result in shorter bales than desired. Refer to "Adjustments Bale Length Control" under "Initial Start-Up".

2. A sprocket mounted in the bale frame trips Limit Switch "6LS" as the bale advances in the baling chamber. The housing containing this sprocket must be kept clean and free of debris to allow the sprocket to rotate. After extrusion, the bale will expand approximately 1" per 12" of bale length. The exact amount of expansion will depend on the material being baled and may require a change in the counter setting.

3. Refer to Pages 30.02 & 30.03 for replacement of counter program. Make sure the mode selector switch is set to operate before returning the counter control to its housing.

TROUBLE: BALE OVER LENGTH

1. If the bale length counter control is set too high, the bale length would result in longer bales than desires. Refer to "Adjustments Bale Length Control" under "Initial Start-up".

2. Check proper alignment of bale length limit switch "6LS". The side roller plunger should move in and out (making and breaking of contacts) on each increment of rotation of the ratchet wheel. Refer to "Description/Limit Switch 6LS" under "Limit Switches Description Adjustment."

3. Check limit switch 6LS to see if electrically operative.

4. Observe any irregularities (voids) in top of bale or banana shaped bales.

   If you have the condition above, check the counter ratchet wheel for rotation as the ram advances the bale. If you observe a hit and miss situation, ie, ratchet wheel rotates when in contact with material; no rotation when ratchet wheel is not in contact with material due to voids in the bale, then two possible problems could exist:

CAUTION: **NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.**

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: BALE OVER LENGTH (CONTINUED)

4. Continued.....

   A. Check balelock operation: Is balelock preventing the bale from returning into the feed chute chamber when ram retracts.

   B. Check cycling time delay on "LPR" unit: If time is too short, the ram will advance before a full charge of material has fallen into the baling chamber. Refer to "Long Delay Before Ram Advances", Page 20.03, under" Trouble Shooting Chart" in the manual.

TROUBLE: PUMP FAILURE

1. Excessive Pump Noise:

   A. Air bubbles in hydraulic oil are caused by air leaking into the system from various sources. Refer to "Condition Where Air is in Hydraulic Oil", Pages 20.05 and 20.06, under "Ram Speed Reduced in General".

   B. Check Oil Level In Reservoir: Low oil level can result in the pump sucking air, creating air bubbles in the hydraulic oil and cause pump to cavitate. Fill reservoir to proper oil level. Refer to Maintenance Section, Page 19.00 in this manual.

   C. Dirty Oil Due To Dirty Oil Filer: The oil filter has a safety by-pass design. When filter traps dirt, it accumulates over a period of time and the filtered passage will eventually plug up. When the oil can no longer pass through the filtered passage, it will by-pass directly to the pump. This allows the unfiltered oil to be pumped in the system. Dirt from the contaminated oil settles on the internal pump parts causing abrasion problems which will wear out or damage the pump before its time. Remove filter element and clean thoroughly. Refer to Page 19.05.

   D. Improper Grade Of Oil: Refer to "Preventive Maintenance", pages in this manual.

   E. Excessive Heat: Clean air-oil cooler and be certain cooler fan is electrically operative.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART CONTINUED

TROUBLE: PUMP FAILURE (CONTINUED)

F. Excessive Pressure: Refer to "Hydraulic Pump Not Functioning Properly", Page 20.02.

G. Motor - Pump Coupling Misalignment: Coupling halves on pump and motor shaft must be aligned within .003 inch.

TROUBLE: PREMATURE HYDRAULIC CYLINDER FAILURE

1. Material packed in ram chamber: Ram chamber and roller ways should be cleaned daily so ram is free to reciprocate, avoiding unnecessary opposition to cylinder operation.

   NOTE: INSPECT RAM WIPER. ADJUST WIPER IF REQUIRED. REFER TO "PREVENTIVE MAINTENANCE" SECTION OF THIS MANUAL.

2. Dirty Oil Due To Dirty Oil Filter: The filter elements are of the safety by-pass design. If filter is plugged, oil will by-pass directly to the system to prevent pump from cavitating. This allows unfiltered oil to be pumped to hydraulic cylinder and accumulated dirt from contaminated oil will cause abrasion problems which will wear the piston cups and cylinder wall. Remove filter element and clean. Refer to Page 19.05.

3. Baling At Too High A Pressure: Never operate baler above specified hydraulic pressures. For proper operating pressure, refer to "Hydraulic Valves - Description/Adjustments" Section of this manual for "Adjustment Of Relief Valve", Page 17.01, and Unloading Valve (Item 9).

4. Excessive Heat: Clean air-oil cooler and be certain cooler fan is electrically operative.

5. Worn Ram Liners: Replace worn ram liners. Refer to "Preventive Maintenance" Section of this manual.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TORQUE WRENCH CHART

BOLT DIA.	THREAD PITCH	GRADE 0-2	GRADE 5	GRADE 6	GRADE 7	GRADE 8
1/4	20	5.5	9.7	11.0	11.5	13.0
	28	6.0	11.0	12.0	13.0	15.0
5/16	18	10.0	18.0	20.0	21.0	24.0
	24	11.4	20.0	23.0	24.0	27.5
3/8	16	21.7	39.0	43.0	45.0	52.0
	24	24.5	44.0	49.0	51.0	59.0
7/16	14	32.4	58.0	65.0	67.0	78.0
	20	38.4	69.0	77.0	80.0	92.0
½	13	43.5	87.0	97.0	102.0	116.0
	20	54.6	103.0	115.0	121.0	138.0
9/16	12	57.5	111.0	123.0	129.0	147.0
	18	68.0	131.0	146.0	153.0	175.0
5/8	11	86.0	173.0	192.0	201.0	230.0
	18	102.0	200.0	224.0	235.0	269.0
3/4	10	152.0	290.0	324.0	336.0	389.0
	16	182.0	345.0	384.0	403.0	461.0
7/8	9	222.0	500.0	555.0	583.0	666.0
	14	261.0	585.0	653.0	685.0	784.0
1	8	307.0	690.0	769.0	807.0	923.0
	14	370.0	830.0	925.0	967.0	1111.0
1-1/4	7	384.0	862.5	961.0	1009.0	1154.0
	12	462.5	1037.5	1156.0	1209.0	1389.0
1-1/2	6	460.5	1035.0	1153.5	1210.5	1384.5
	12	555.0	1245.0	1387.5	1450.5	1666.5
1-3/4	5	537.0	1207.5	1346.0	1412.0	1615.0
	12	647.2	1452.5	1619.0	1692.0	1944.0
2	4.5	614.0	1380.0	1538.0	1614.0	1846.0

VALUES ARE FOR CLEAN THREADS, LIGHTLY OILED.

EXCEPTIONS:

1. Ryertex:
   a. Bearing, same as Grade 2.
   b. Threaded, ½ the value of Grade 2.
2. Brass: ½ the value of Grade 2.
3. Grade 8 & Soc Hd Bolts W/Gr. 5 Nuts; use values of Gr. 5.
4. Bolt In Slotted Holes; use ½ value of Grade 2.
5. Hogger Tie Rod Bolts.

HYDRAULIC CYLINDER CHECK

This page is to assist maintenance personnel in determining a cylinder failure without removing the cylinder from the machine.

The following two tests will give a confirming answer should a cylinder failure be in question.

1. Remove the furthest forward limit switch (either 4LS or 5LS).
2. With the controls in "MAN" mode, push the "MAN-RAM" button and hold it until the baling ram comes to a stop.
3. Turn the control power off.
4. Remove the hydraulic hose 01 from the rod end. See Hydraulic Schematic.8
5. Turn the control power on and with the baler in "MAN" mode, hold the "MAN-RAM" button depressed.

NOTE: IF OIL IS LEAKING OUT OF THE ROD END OF THE CYLINDER, THE CYLINDER PISTON CUP SEALS HAVE FAILED OR THE INTERIOR CYLINDER WALLS ARE SCORED AND THE CYLINDER MUST BE REBUILT OR REPLACED.

CAUTION: **SOME HYDRAULIC FLUIDS ARE FLAMMABLE. CARE SHOULD BE TAKEN TO AVOID SPILLAGE.**

BALING CYLINDER REMOVAL & INSTALLATION

NOTE: MAINTENANCE IS THE RESPONSIBILITY OF THE USER MANAGEMENT AND IS TO BE PERFORMED BY QUALIFIED PERSONNEL.

CYLINDER REMOVAL

1. Position the ram at least half way forward in the chamber permitting sufficient room for personnel access to the cylinder/ram attachment.

2. Lock out electrical power.

   CAUTION: **NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.**

3. Remove ram chamber cover.

4. Support the cylinder to prevent it from dropping when the cylinder adaptor is removed.

5. Disconnect the hoses. Mark the hoses so they can be hooked up correctly upon installation. Incorrect attachment will cause ram to operate in reverse. Install plugs in threaded port or covers on SAE Flanges. This prevents the cylinder rod from moving unexpectedly during handling.

6. Remove the bolts from the cylinder adaptor at the rear of the ram. THE TRUNNION BLOCKS MUST BE UNBOLTED FROM THE FRAME AND THEN REMOVED FROM THE CYLINDER. NOTE LOCATION OF ANY SHIMS AND SAVE TO USE FOR INSTALLATION.

7. Remove the cylinder from the baler.

8. If the cylinder is to be stored or shipped, retract the rod back into the cylinder and install plugs or covers in the cylinder ports.

IMPORTANT: THE RECEIVING DEPARTMENT WILL NOT ACCEPT CYLINDERS WITHOUT PLUG OR COVERS ON THE PORTS.

BALING CYLINDER REMOVAL & INSTALLATION

NOTE: KEEP ALL HYDRAULIC PARTS CLEAN. DIRT AND CONTAMINATES SHORTEN THE LIFE OF HYDRAULIC COMPONENTS.

CYLINDER INSTALLATION

1. Place cylinder in baler.

   NOTE: ON STANDARD UNITS, THE CYLINDER IS INSTALLED FROM THE TOP. ON OVERSIZE UNITS, THE CYLINDER CAN BE INSERTED THROUGH THE REAR FRAME. PROTECT THE CYLINDER ROD FROM DAMAGE.

2. Attach back (cap) of cylinder to baler frame. Standard balers use a pin. Oversize balers use the trunnion blocks bolted to the rear frame.

3. Extend the cylinder and check alignment. Alignment on oversize balers can be adjusted by shims behind the trunnion blocks.

4. Extend cylinder rod to ram, align holes and insert pin. Be sure to reinstall cotter pins.

5. Install hoses. Be sure they are correctly coupled. If reversed, the ram will operate in opposite direction and hoses must be reversed.

6. Turn on electrical power.

7. Start baler. Check for hydraulic leaks and ram direction.

8. Check limit switch for proper location. See Pages 13.00, 13.01 and 13.02 for limit switch description, location and adjustment.

9. Reinstall ram chamber cover.

PARTS ORDERING INFORMATION

BALEMASTER/BALEWEL EQUIPMENT

SERVICES AVAILABLE:

We will be pleased to quote the following:

1. Replacement Parts and Spare Parts.
2. Bale Tie Wire.
3. Factory Field Service Supervision.

PARTS ORDERING

Your order **MUST** include the following:

1. Serial Number and Model Number as tagged on the machine.
2. Part Number -- refer to Parts List in this Manual.

CONTACT

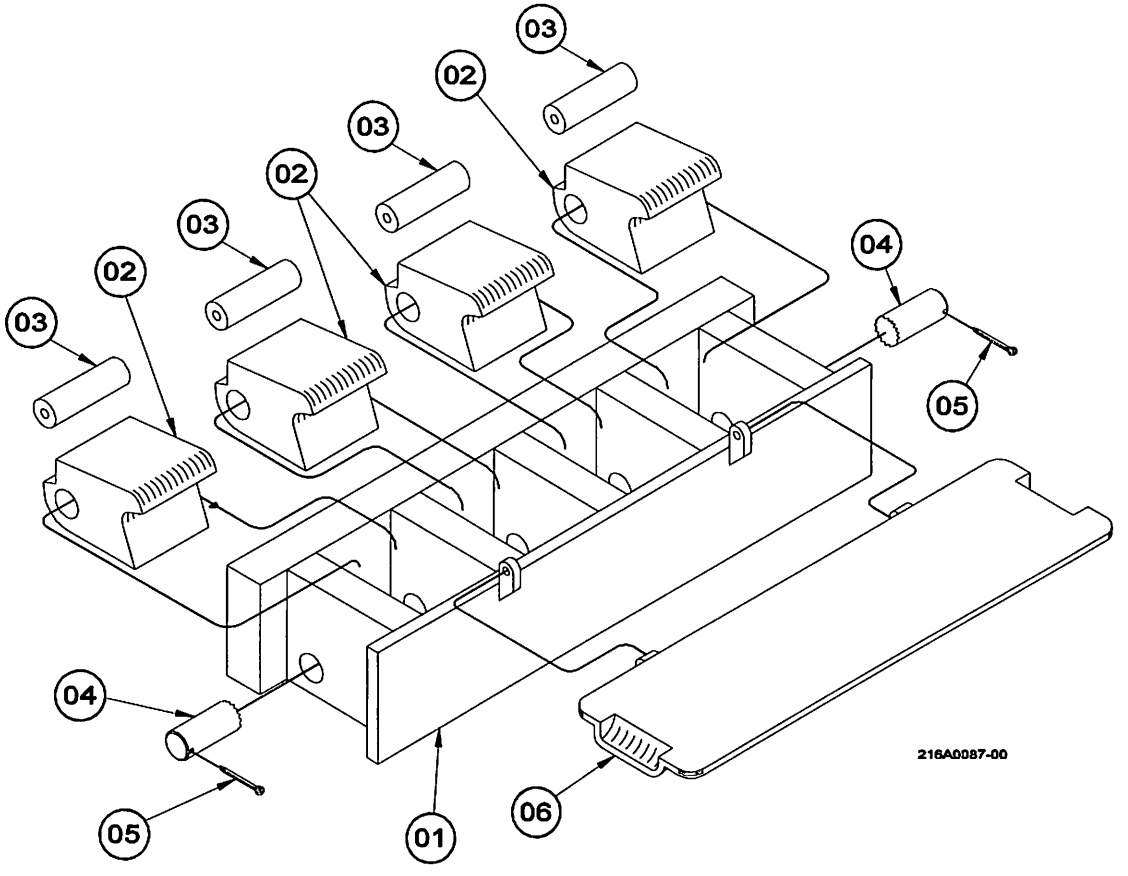
THE SERVICE DESK
BALEMASTER DIVISION
EAST CHICAGO MACHINE TOOL CORPORATION
980 CROWN COURT
CROWN POINT, INDIANA 46307

OR CALL

#(219) 663 - 4525

3. All Warranty Claimed Returned Parts must have a Return Authorization Number given during contact with our Service Desk. Ship to the attention of: Customer Service Department. **NO** Collect Shipments will be accepted. See Warranty.

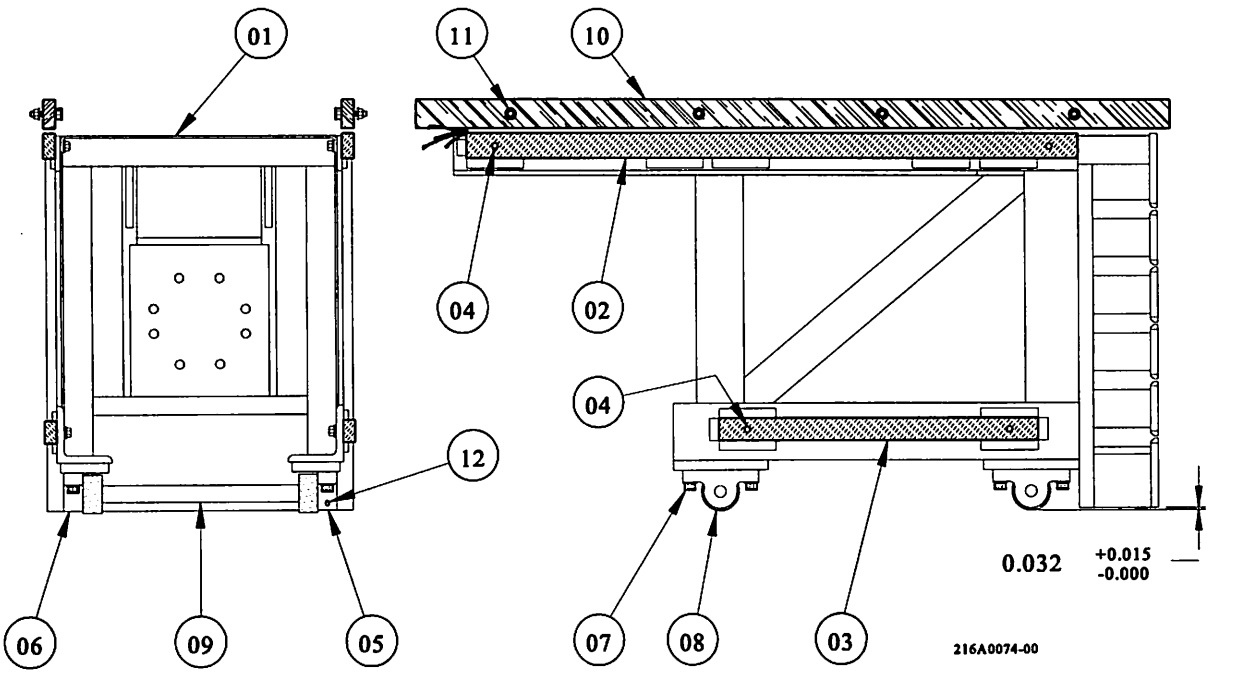
SPARE PARTS - BALELOCK ASSEMBLY



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	BALELOCK FRAME	PART OF MAIN FRAME	1
*2	BALELOCK	225B0061-00	4
*3	SPRING	225A0062-00	4
*4	BALELOCK PIN	225B0011-02	1
5	COTTER PIN	APC00016	2
6	BALELOCK COVER	225B0010-00	1

* THESE SPARE PARTS ARE RECOMMENDED FOR YOU OWN INVENTORY TO COVER EMERGENCY REPAIRS.

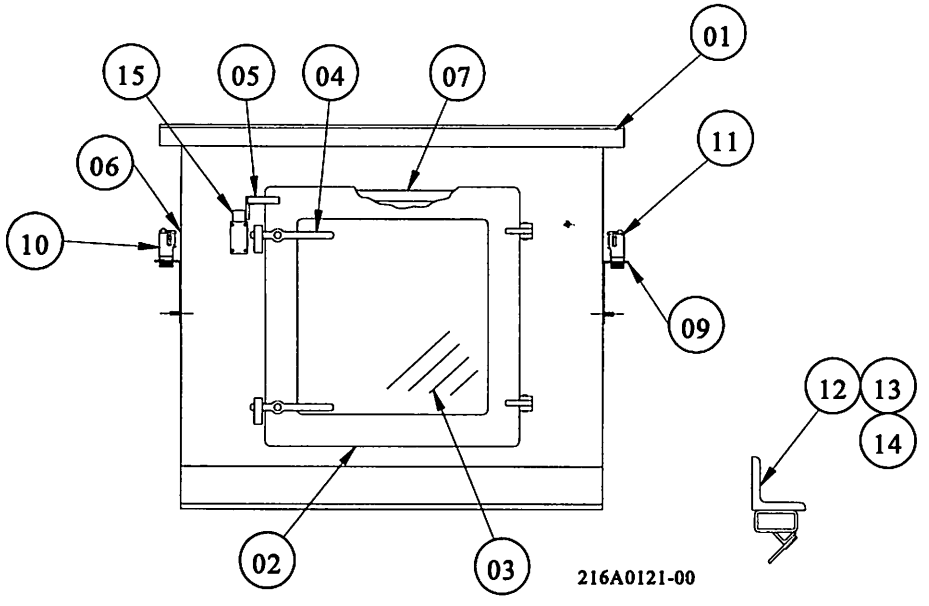
SPARE PARTS - RAM - AUTOTY
PART NUMBERS: BR065-02



ITEM#	DESCRIPTION	PART NUMBER	QTY.
01	RAM ASSEMBLY-STANDARD	223D0145-00	1
* 02	TOP SIDE LINER	223A0522-00	2
* 03	BOTTOM SIDE LINER	223A0522-00	2
* 04	3/8-16 HEX HD CAP SCR	AAA00036	8
	3/8 LOCK WASHER	AHB00006	8
	3/8 FLAT WASHER	AHA00006	8
	3/8 BRASS INSERT	AGG00001	8
05	ROLLER SHAFT BLOCK	228B0004-00	2
06	ROLLER SHAFT BLOCK	228B0005-00	2
07	3/4-10 SOC HD CAP SCR	AAB00111	8
* 08	RAM ROLLER	CEA00002	4
* 09	RAM ROLLER SHAFT	228B0014-06	2
* 10	GIB BAR (RIGHT HAND)	222A0007-90	1
	GIB BAR (LEFT HAND)	222A0007-91	1
11	½-13 SOC HD CAP SCR	AAB00083	12
	½-13 HEX HD CAP SCR	AAA00072	4
	½-13 LOCK NUT	AGB00005	16
12	CUP POINT SET SCREW	ADB00057	2
	* RAM GROOVE COVER	223B0206-00	5
	* COVER BACKUP BAR	223B0206-02	5

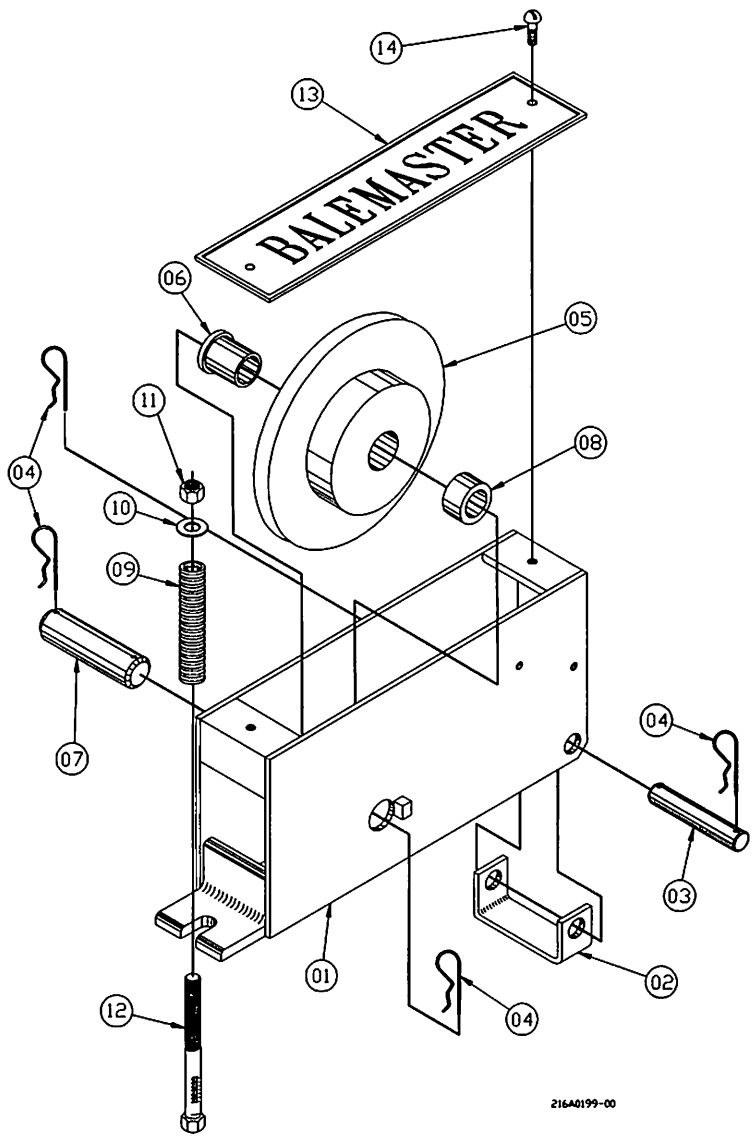
* TO BE USED WITH R.1 OPTION ONLY

SPARE PARTS - FEED CHUTE W/DOOR



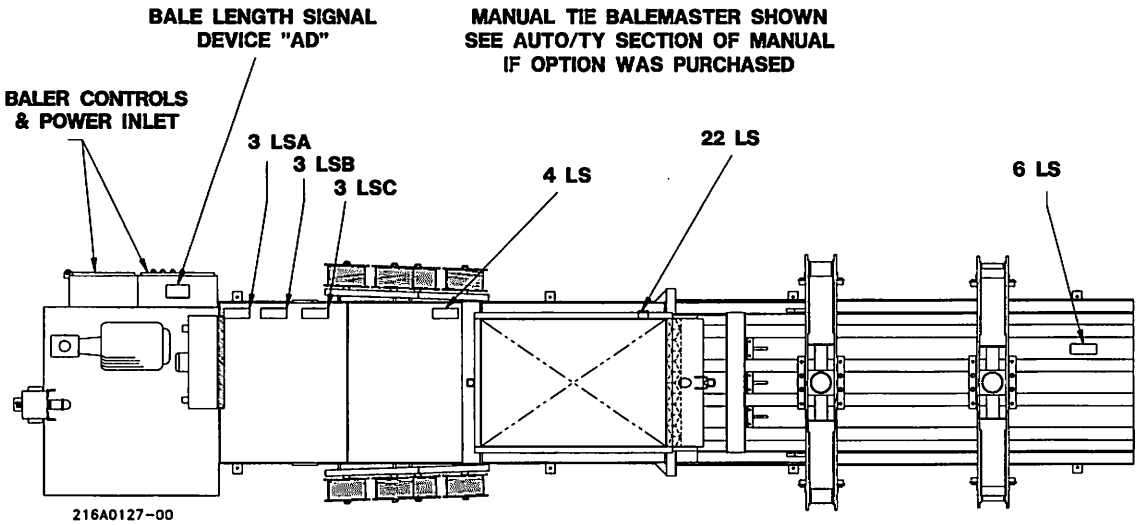
ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	FEED CHUTE W/DOOR-26"	224C0099-00	1
	FEED CHUTE W/DOOR-32"	224C0101-00	1
	FEED CHUTE W/DOOR-40"	224C0103-00	1
	FLARED FEED CHUTE W/DOOR-40"	224C0179-00	1
2	DOOR	224C0005-00	1
3	WINDOW	224B0006-00	1
4	HANDLE	224B0007-00	2
5	LIMIT SWITCH ACTUATOR	226A0013-00	1
6	PHOTO-CELL WINDOW	EJA00006	4
7	DOOR GASKET	EAB00012	1
8	RAM INSPECTION COVER-26"	212A0022-00	1
NOT	RAM INSPECTION COVER-32"	212A0022-00	1
SHOWN	RAM INSPECTION COVER-40"	212A0023-00	1
9	PHOTO-CELL BRACKET	113A0024-00	2
10	LIGHT SOURCE	GTE00019	1
11	RECEIVER PHOTOSWITCH CONTROL	GTE00020	1
12	RAM WIPER SUPPORT-26"	223B0919-00	1
	RAM WIPER SUPPORT-32"	223B0916-00	1
	RAM WIPER SUPPORT-40"	223B0916-00	1
13	RAM WIPER BACK-UP BAR	223B0804-06	1
14	RAM WIPER	223B0804-04	1
15	LIMIT SWITCH-22LS	GXA00031	1
	LIMIT SWITCH ARM	GXA00026	1

SPARE PARTS - BALE LENGTH CONTROL



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	BALE LENGTH FRAME	226B0043-00	1
2	PIVOT BRACKET	226A0044-00	1
3	PIVOT PIN	226B0007-00	1
4	HAIR PIN COTTER	APC00025	4
5	SPROCKET	112A0004-00	1
6	BRONZE BUSHING	CKA00003	1
7	SPROCKET PIN	226A0045-00	1
8	SPACER	226A0046-00	1
9	COIL SPRING	ZKA00006	1
10	½" FLAT WASHER	AHA00007	1
11	½-13 HEX NUT	AGC00015	1
12	½-13 X 5 HEX HD CAP SCR	AAA00078	1
13	NAME PLATE (COVER)	111A0015-00	1
14	1/4-20 X 3/4 RD HD MACH SCR	AFB00038	2

SPARE PARTS - ELECTRICAL - LIMIT SWITCHES

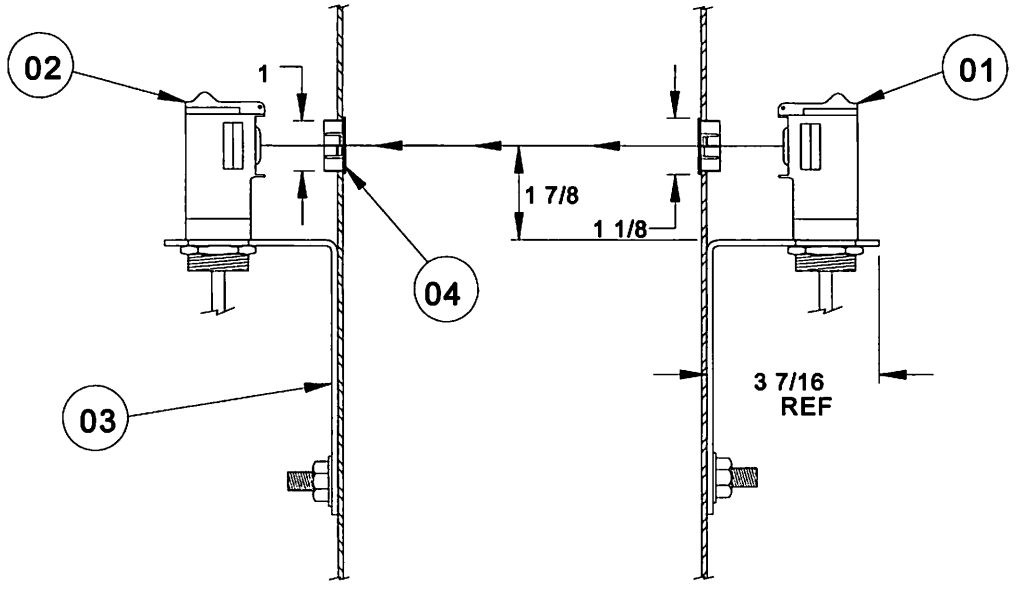


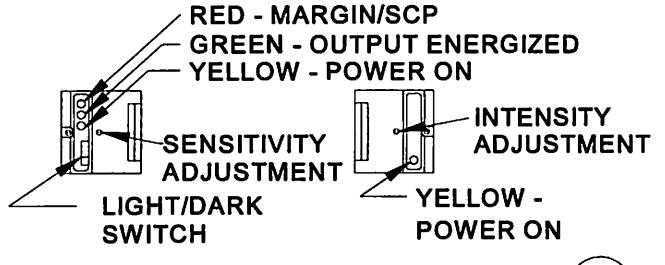
BALER LIMIT SWITCHES	PART NUMBER
22LS	GXA00031
LIMIT SWITCH ARM	GXA00026
6LS	GXA00031
LIMIT SWITCH ARM	GXA00026
5LS** - 5LSA**	GXA00031
LIMIT SWITCH ARM	GXA00026
4LS	GXA00031
LIMIT SWITCH ARM	GXA00030
3LSA - ~~3LSB**~~ - ~~3LSC**~~	GXA00032
LIMIT SWITCH ARM	GXA00026
* BALE LENGTH COUNTER	GSA00008
* LPR-RECEIVER	SEE PAGE 27.02
* LPR LIGHT SOURCE	SEE PAGE 27.02

* THESE PARTS ARE RECOMMENDED FOR YOUR OWN STOCK TO COVER EMERGENCY REPAIRS.

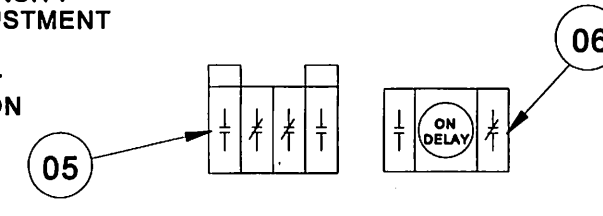
** OPTIONAL SWITCHES - DEPENDING UPON FEATURES SELECTED.

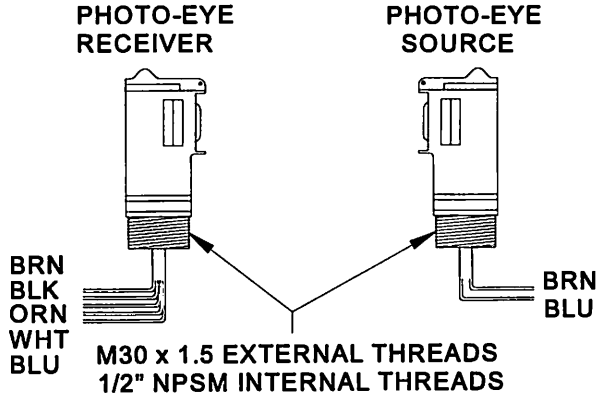
LOWER PHOTO RELAY (LPR)





ADJUST TIMER VALUE
.1 - 30 SECONDS
CONTACTS RATED @ 10 AMPS





65-264 VDC / 60-264 VAC, 4VA
2A / 132 VAC
1A / 264 VAC
1A / 150 VDC

WHITE : NORMALLY CLOSED
ORANGE: COMMON
BLACK: NORMALLY OPEN
BLUE: ~ / - (TYPICALLY 120 VAC)
BROWN: ~ / + (TYPICALLY 120 VAC)

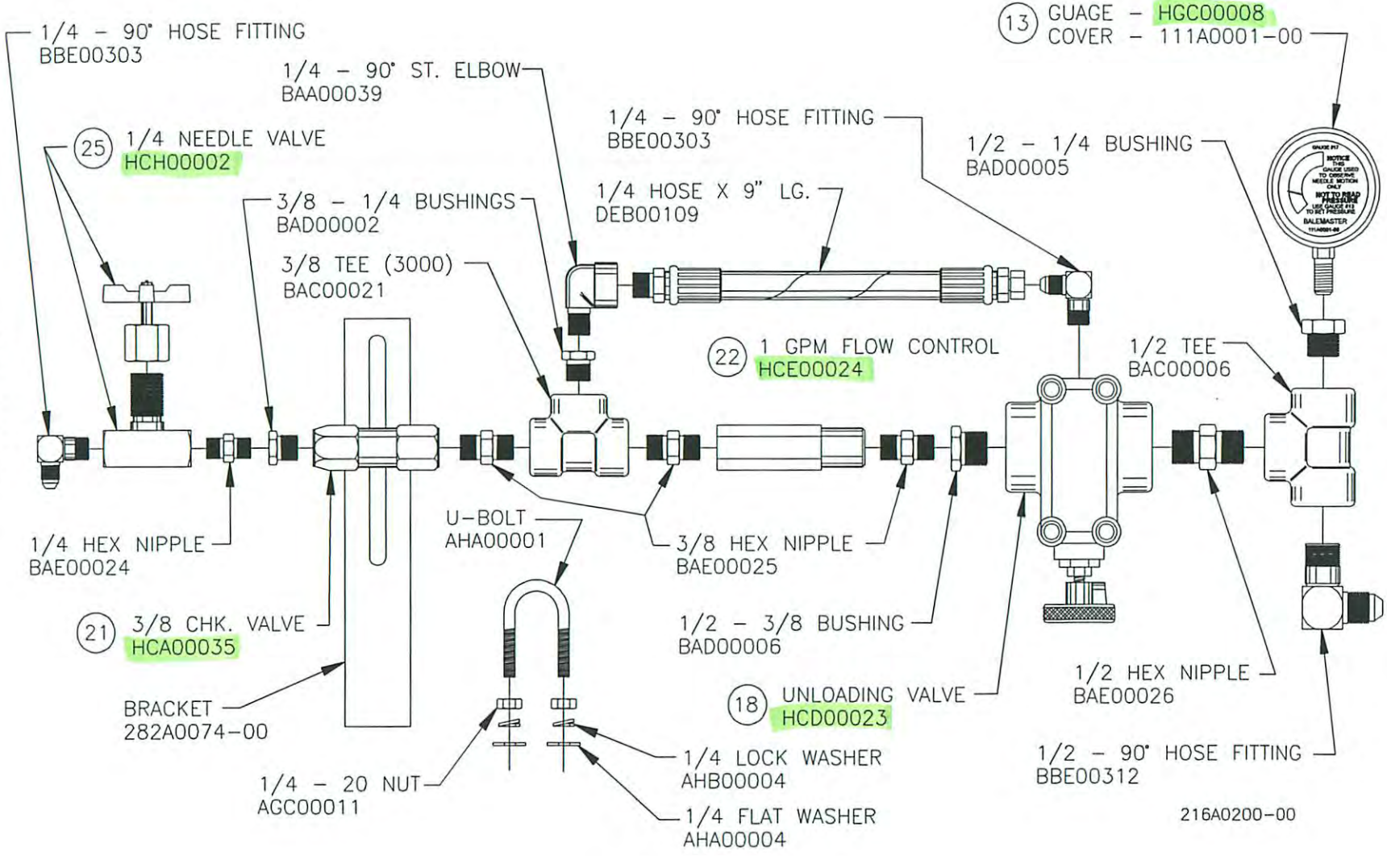
216A0124-00

SPARE PARTS - LOWER PHOTO RELAY (LPR)

	ITEM #	DESCRIPTION	PART NUMBER	QTY.
*	01	LIGHT SOURCE	GTE00019	1
*	02	RECEIVER	GTE00020	1
	03	MOUNTING BRACKET	113A0023-00	2
	04	PHOTO-CELL WINDOW	EJA00006	2
*	05	RELAY	GRA00028	1
*	06	TIMER ATTACHMENT DELAY "ON"	GRA00029	1

* USED WITH NON-OPERATOR INTERFACE MODELS

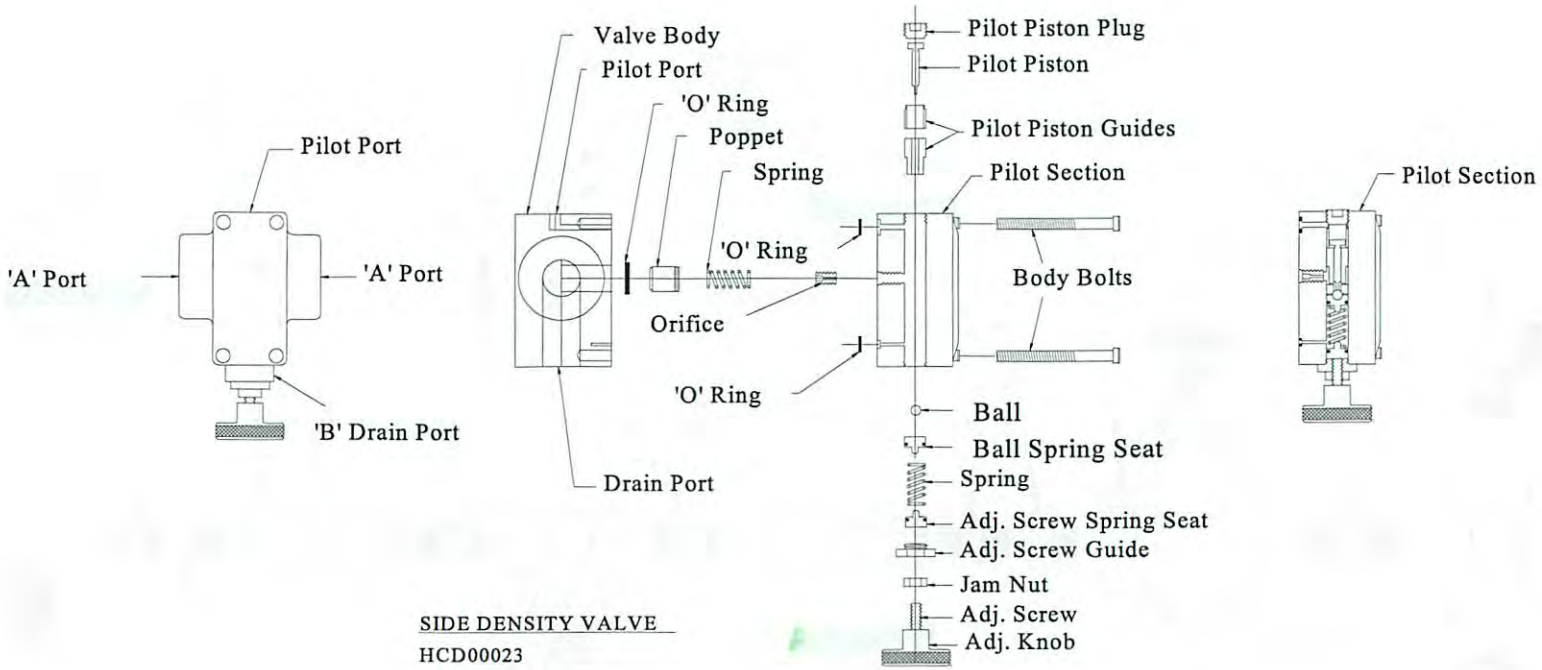
(* #'s Highlighted are marked on valve assembly)



141\A0001-00

SIDE DENSITY CONTROL ASSEMBLY - PARTS LIST #BP001-02

MB0103-06
September 29, 1995
PAGE 28.00



SIDE DENSITY VALVE
HCD00023
ITEM #18

PROCEDURE TO CLEAN SIDE DENSITY VALVE

Shut baler off and LOCK-OUT disconnect switch.
Shut off 1/4 inch shut-off valve on side density sub-assembly, Item # 25 on the hydraulic schematic
Turn Adj. Knob on side density valve counter clock-wise to release any side pressure in the system.
Loosen & take out the (4) body bolts holding the pilot section to the valve body.
Pull out the spring and poppet from the valve body, the poppet may be stuck.
Wipe off poppet with a clean rag and reinsert into the body, making sure that it moves freely.
Replace the spring and pilot section being careful not to crush the (3) 'o' rings.
Tighten the (4) body bolts and readjust the side pressure to achieve 1800 psi baling pressure.

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS AND ROTATING EQUIPMENT HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

PART NUMBER	PART DESCRIPTION	QUANTITY PER
BC045-01	8" CYLINDER, 4000G-8 STD. LGTH.	1
✈ 287A0053-00	HYD. CYL, 8" BORE X 49-1/	1.000
223C0301-02	RAM ADAPTER	1.000
114A0001-04	SCREW,CAP,HEX HEAD,1-8 X	6.000

PART NUMBER	PART DESCRIPTION	QUANTITY PER
BW034-04	SIDE CYL ASSY., 4000G-8 W/"G", STD/LG/X-LG	1
287A0060-00	TENSION CYLINDER, 6 X 2-1	8.000
	<12> SIDE DENSITY PIPING	
	<12B> CROSSOVER FROM RIGHT TO LEFT	
	<13> FROM CROSSOVER TO BOTTOM CYL.	
BEG00230	HOSE,HYDRAULIC,HIGH PRESS	2.000
BBF00008	TEE,BRANCH,MALE,1/2 - 1/2	2.000
	<14> PIPE TO FRONT SIDE CYL'S.	
BEG00230	HOSE,HYDRAULIC,HIGH PRESS	2.000
BBF00008	TEE,BRANCH,MALE,1/2 - 1/2	2.000
	<15> BOTTOM CYL'S. TO TOP CYL'S.	
BBE00312	ELBOW,MALE,90,1/2 - 1/2"	4.000
BEC00208	HOSE,HYDRAULIC,HIGH PRESS	4.000
	ALL DRAIN LINES	

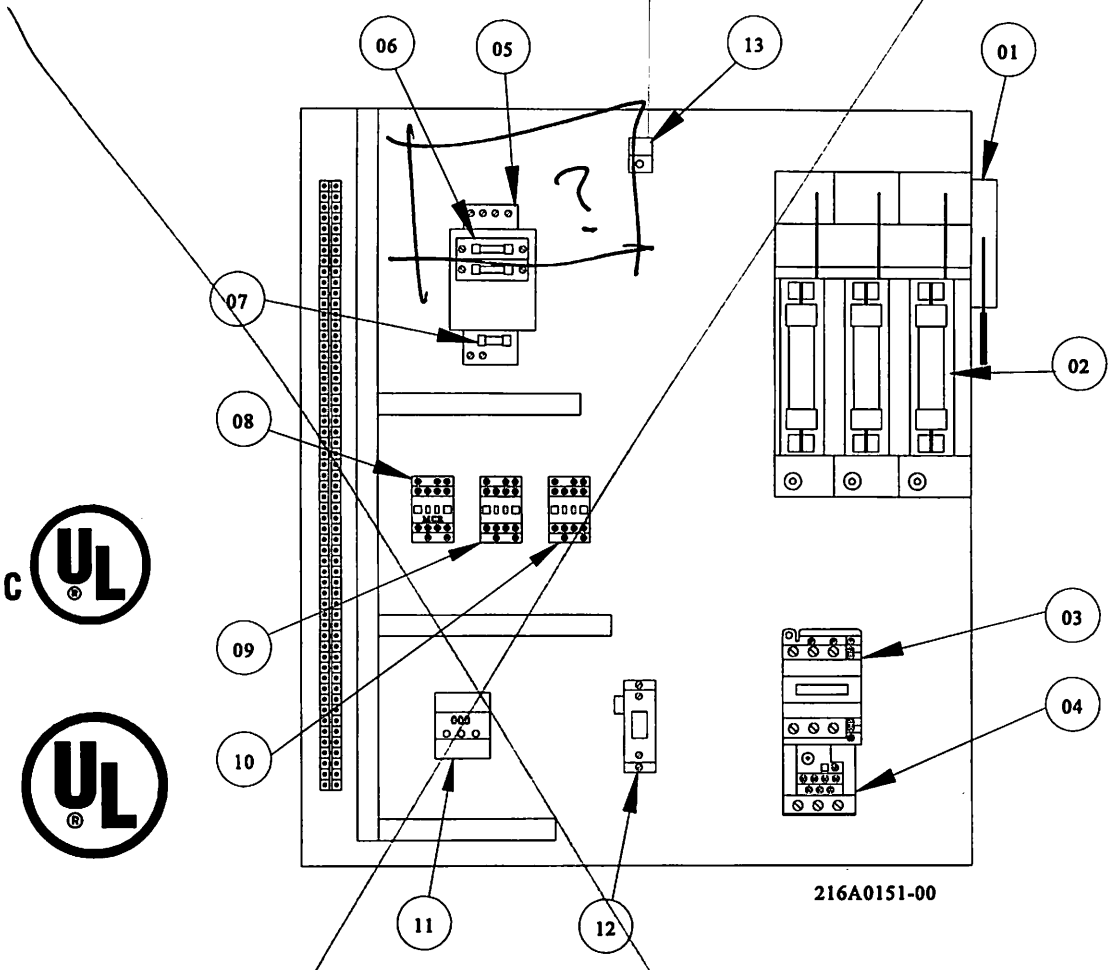
PART NUMBER	PART DESCRIPTION	QUANTITY PER
BP025-02	POWER PKG., 25 HP W/O REGEN, CARTRIDGE VAL	1
HMA00002	HYDRAULIC OIL	110.000
284B0005-00	OIL TANK COVER GASKET	1.000
283C0013-00	ACCESS COVER DOOR W/HOLES	1.000
283B0014-00	ACCESS COVER GASKET	1.000
283A0015-00	FILLER/FILTER/DIPSTICK	1.000
HHA00001	FILTER,BREATHER,FILLER	1.000
ZTA00017	MAGNET .300X2X2 PERMAG 46	1.000
HCC00035	4- WAY VALVE, 3/4" HI-FLO	1.000
HKB00001	FLANGE,MOTOR/PUMP,25 HP	1.000
DBA00024	COUPLING,MOTOR/PUMP,7/8 X	1.000
HBA00024	PUMP, DUAL VANE	1.000
HKA00004	FLANGE,2 1/2" PIPE	1.000
HHA00020	FILTER,HYDRAULIC	1.000
HGC00008	GAUGE,LIQUID FILL,0-5000	1.000
	<11> SUCTION - FILTER TO PUMP	
	<02> PUMP "HV" TO MANIFOLD	
BEJ44E4G041	HYD HOSE, HP, 1 X 41, 90	1.000
BEF00004	FLANGE KIT, FOR 1" FLG TY	2.000
	<04> PUMP "HP" TO MANIFOLD	
BEJ33E3H052	HYD HOSE, HP, 3/4 X 52, 9	1.000
BEF00003	FLANGE KIT, FOR 3/4" FLG	2.000
	<07D> TO CHECK VALVE (20) INSIDE TANK	
HCA00010	VALVE,CHECK,IN-LINE,1 1/4	1.000
	<07C> SIDE DENSITY (18) TO TANK	
	<07E> 4-WAY VALVE TO DRAIN	
BBE00303	ELBOW,MALE,90,1/4 - 1/4"	1.000
BEB00136	HOSE,HYDRAULIC,HIGH PRES,	1.000
	<21> MANIFOLD TO SIDE DENSITY	
BBE00004	CONNECTOR,MALE,1/4 - 1/4"	1.000
BEB00136	HOSE,HYDRAULIC,HIGH PRES,	1.000
HGC00008	GAUGE,LIQUID FILL,0-5000	.000
	REFERENCE ONLY	

PART NUMBER	PART DESCRIPTION	QUANTITY PER
BJ031-02	W/O COOLER, 25 HP 1 & 2-PRESS. PUMPS, W/O MANIFOLD "T" TO TANK	1
BEF00006	FLANGE KIT, FOR 1-1/2" FL	1.000
BEA66C6B034	HYD HOSE, LP, 1-1/2 X 34, SELECTOR SWITCH	1.000
GWC00011	SWITCH,SELECTOR,3 POSITIO	1.000

PART NUMBER	PART DESCRIPTION	QUANTITY PER
BI258-03	HYD HOSING, 4025G-8, STD CYL, W/O REGEN MANIFOLD ASSY.	1
HCA00217	CART RELIEF VALVE	1.000
HCA00218	CART CHECK VALVE	1.000
HCA00223	COUNTERBALANCE VALVE	1.000
HCA00220	CART P.O. CHECK VALVE, OP	1.000
	-- MANIFOLD MOUNTING HARDWARE --	
	<01> MANIFOLD "B" TO CYL. ROD END	
BEJ66E6Q124	HOSE,1-1/2 X 124,HP,1-1/2	1.000
BEF00006	FLANGE KIT, FOR 1-1/2" FL	2.000
	<08> MANIFOLD "A" TO CYL. CAP END	
BEJ66E6A052	HYD HOSE, HP, 1-1/2 X 52,	1.000
BEF00006	FLANGE KIT, FOR 1-1/2" FL	1.000
HKA00029	FLANGE,PIPE,2" "O" RING	1.000
BBE00221	ELBOW,MALE,45,1 1/2 - 1 1	1.000
	<21A> DENSITY VALVE TO BALER PIPE	
BEG00290	HOSE,HYDRAULIC,HIGH PRESS	1.000
	CLAMPS	

wrong
(see Auto-TY section PAGE 17.00 →)

SPARE PARTS - IEC ELECTRICAL



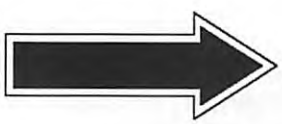
ITEM #	DESCRIPTION	PART NUMBER	QTY.
01	ELECTRICAL DISCONNECT (OPTIONAL)	PER HP	1
02	BALER CONTACTOR FUSES	PER HP	3
03	MOTOR CONTACTOR	PER HP	1
04	MOTOR CONTACTOR OVERLOAD	PER HP	1
05	TRANSFORMER	PER HP	1
06	PRIMARY TRANSFORMER FUSES	PER HP	2
07	SECONDARY TRANSFORMER FUSE	PER HP	1
08	MASTER CONTROL RELAY	GRA00026	1
09	1CR - CONTROL RELAY	GRA00027	1
10	2CR - CONTROL RELAY	GRA00028	1
	LATCH ATTACHMENT	GRA00031	1
11	1TR - CONTROL RELAY	GRA00028	1
	TIME DELAY ON ATTACHMENT	GRA00029	1
12	ESD - CONTROL RELAY (OPTIONAL)	GRA00026	1
	TIME DELAY ON ATTACHMENT	GRA00030	1
13	OIL COOLER OVERLOAD (OPTIONAL)	PER HP	1
14	GROUND LUG	GDA00002	1

SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.

111A0012-00

111A0010-00



111A0011-00

SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.

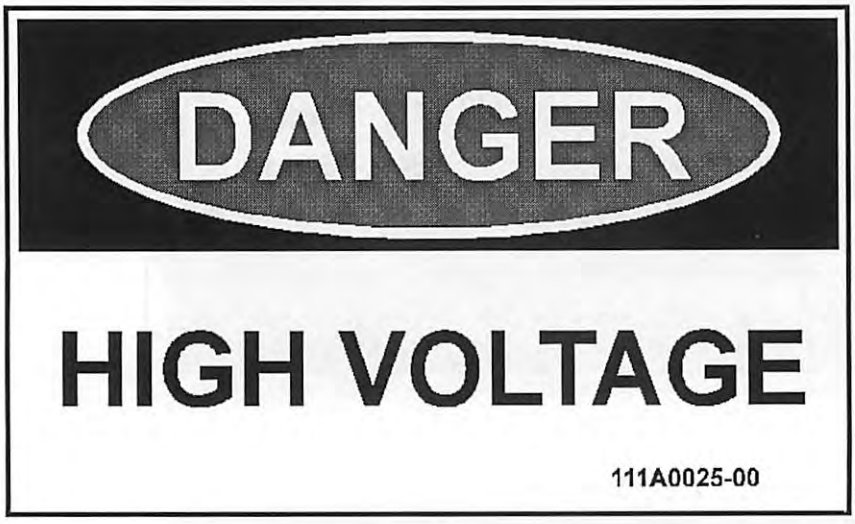
111A0006-00

111A0027-00

111A0042-00

SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.



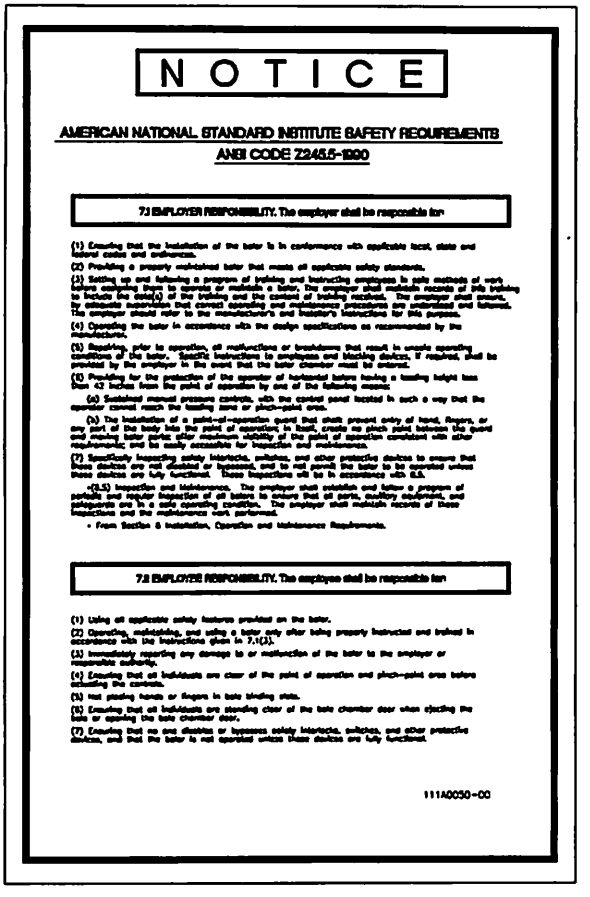
111A0025-00

111A0026-00

111A0055-00

SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.



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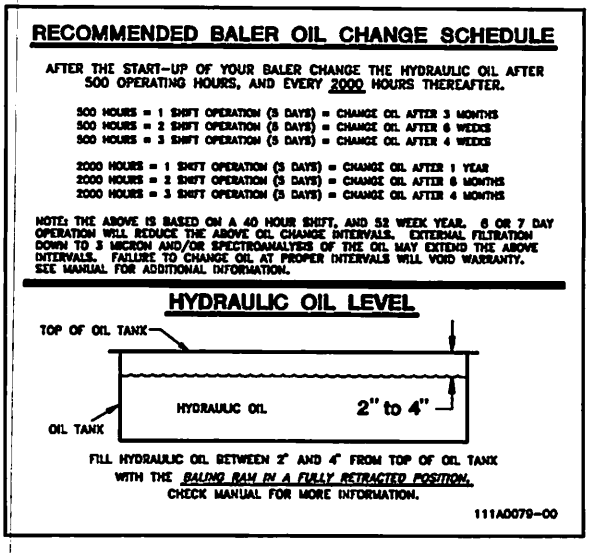
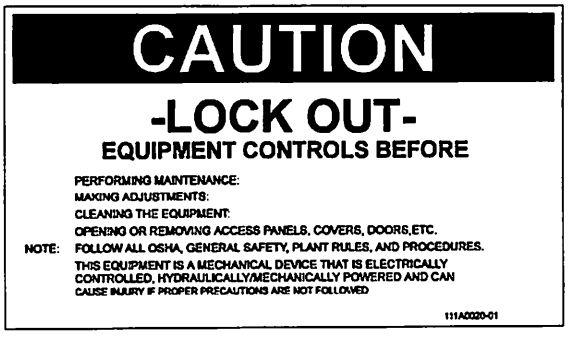


111A0079-00



111A0020-01

111A0044-00

SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.

111A0077-00

111A0075-00

COMMENT FORM

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CROWN POINT, INDIANA 46307
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BULLETIN 676b

DIVISION OF EAST CHICAGO MACHINE TOOL CORP.
980 CROWN COURT, CROWN POINT, INDIANA 46307
219/663-4525 Fax 219/663-4591

TERMS AND CONDITIONS OF SALE

The following terms and conditions of sale become a part of the proposal and any subsequent sale of equipment manufactured by the East Chicago Machine Tool Corporation, its Divisions or Subsidiary, hereafter referred to as "we," "us," "our," etc., whether the equipment be purchased or leased directly from us or our Agent, Representative or Dealer, or from a Leasing Company. "Buyer" as used herein includes not only the purchaser but also the original user and original owner of the equipment.

PRICES

1. Prices are firm for a period of 60 days from date of proposal provided that the first available shipment will be accepted by Buyer.
2. Prices are f.o.b. point of manufacture. Shipments will be made freight collect only.
3. Prices are in U.S. currency and do not include any excise, sales, use or property taxes, export or import duties or other taxes of any taxing authority. Prices are subject to increase equal in amount to any tax we may be required to collect or pay on the sale or use of the equipment. Such amount will be payable when invoiced.

TERMS OF PAYMENT

1. Unless otherwise specified by us, the following payment schedule applies to all accepted orders, based on the total dollar amount of the order:

   To $50,000:
   Twenty five percent payable at time of placement of order;
   Sixty five percent payable five (5) calendar days prior to shipment;
   Ten percent payable thirty (30) calendar days following date of shipment.

   $50,001 and up
   Twenty five percent payable at time of placement of order followed by equal monthly progress payments, so scheduled, that ninety percent has been paid five (5) calendar days prior to scheduled shipment and final ten percent payable thirty (30) calendar days following date of shipment.
2. Accounts not paid within 30 days of invoice date will bear a service charge of one and one-half percent (1½%) per month on the unpaid balance due.

ACCEPTANCE

1. All orders are subject to acceptance in Crown Point, Indiana in writing by our marketing manager or one or our corporate officers. Typographical and clerical errors in quotations and acknowledgements are subject to correction. Equipment manufacture will not be scheduled prior to receipt of down payment.
2. For credit verification, we may require a financial statement or other financial information from the Buyer. At our option prior to shipment of the equipment, we may require the utilization of a financing statement and security agreement or irrevocable Letter of Credit. Title to equipment shall pass to Buyer only upon payment in full, of the balance due on the order.
3. Any contract for the sale of equipment by us shall be treated as made and as performed in the State of Indiana.

CHANGES IN DESIGN

1. As we constantly strive to improve our products, specifications are necessarily subject to change without notice. We are not obligated to apply any change or improvement on equipment previously manufactured.
2. Changes in design or construction of equipment made at the request of the Buyer after its order has been accepted, or, in the case of custom equipment orders after the approval of certified drawings, will be made at the expense of the Buyer under terms to be mutually agreed.

CANCELLATION

Accepted orders cannot be cancelled or assigned without prior written agreement by our marketing manager or one of our corporate officers and payment of a charge of not less than 10% of the purchase price to cover lost time and handling expenses in the case of cancellation.

SHIPMENT

1. We reserve the right to select the transportation carrier which has equipment to meet the requirements of our shipping facility.
2. We are not responsible for shipping delays beyond our reasonable control. It is understood that we are free of any and all liability and penalty for delayed shipments caused by transportation delays, inability to obtain necessary components and materials for fabrication and assembly, acts of Buyer, labor disturbances, wars, riots, fires, accidents, explosions, floods, epidemics, quarantine, adverse weather, Governmental acts or regulations, or acts of God.
3. Should the Buyer be unable or unwilling to accept shipment of the equipment when notified that the equipment is ready for shipment, the terms of payment of the order shall then be in effect as if shipment had been made. Any expense or cost to us incidental to the delayed shipment will be payable by the Buyer when invoiced.

RISK OF LOSS AND DAMAGES

We assume no responsibility for loss or damage to the equipment incurred after we load the equipment on the transportation carrier. The risk of loss or damage shall thereafter be borne by the Buyer regardless of whether title has passed to Buyer upon shipment. Claims for such loss or damage must be filed by the Buyer with the transportation carrier or other responsible party.

SERVICE

1. Before the equipment is placed in operation, start-up and training service by one of our field service engineers is available and recommended.

   During this start-up, final equipment adjustments are made and the Buyer and his operating and maintenance personnel are instructed. This service is charged at prevailing rates. Service work can not be scheduled unless payments are current in accordance with the contract.
2. Two Owner's Manuals covering Installation, Operating and Maintenance Instructions and Spare and Replacement Parts Lists are furnished with the equipment purchased. Additional manuals may be purchased at the prevailing nominal charge.

GENERAL

1. Electrical components used on the equipment meet ANSI and National Electrical Code requirements and are UL approved. Hydraulic system components used on the equipment comply with National Fluid Power Association and JIC Standards.

   The equipment is constructed in compliance with the intent of the Occupational Safety and Health Act of 1970 (OSHA), and in particular with Title 29, Chapter XVII, Part 1910, of the Occupational Safety and Health Standards adopted Oct. 18, 1972.
2. Additional costs as the result of special hydraulic, electrical or pneumatic components or other special arrangements required by local standards or codes will be the responsibility of the Buyer.
3. The equipment is skidded as is normal to the transportation carrier. Loading, skidding, crating, export boxing, packing or painting of a special type or nature can be provided at an extra charge.
4. In the event that litigation is brought against the Buyer alleging that the equipment of our manufacture, which is the subject of this proposal, infringes any U.S. or Canadian patent issued as of the date of acceptance of the order, we agree to defend such litigation at our expense provided the Buyer notifies us within seven (7) days after receiving notice of the alleged infringement and provided we are given complete control of the defense of such litigation with the right to settle such litigation or to make changes in the equipment for the purpose of avoiding the alleged infringement.
5. These terms and conditions supersede and take precedence over all the provisions of the Buyer's purchase order or any similar document of the Buyer in conflict with these terms and conditions of sale.
6. These terms and conditions of sale, our written warranty, our published current literature and specifications and our acceptance of the Buyer's order define our entire obligation with respect to any sale of our equipment.
7. All information in the proposal is confidential, prepared solely for the Buyer's consideration to purchase our equipment. Transmissions of all or any part of the proposal information to others or use by the Buyer for other purposes is unauthorized without our written consent.

WARRANTY

1. We warrant the equipment to the Buyer against defective materials or workmanship under normal use and service during a five day week starting from date of shipment on a prorated basis as follows: Up to 8 hours per day operation - 12 calendar months; 8 hours to 16 hours per day operation - 6 calendar months; 16 hours per day operation and up - 4 calendar months. A warranty of less than (1) one year commences the first day the equipment is operated in excess of eight hours. This warranty will not be honored unless payments are current in accordance with the contract.

   Should the equipment or any part of the equipment prove defective in materials or workmanship within the warranty period, we will repair or replace the defective equipment or part, free of charge, f.o.b. our plant, provided the defective equipment or part is delivered to us at our plant or other location at our direction. However, no replacement parts will be furnished under this warranty or otherwise, unless payments are current in accordance with the contract. Such action by us does not extend the warranty period. The Buyer shall assume the cost of removal and installation of replacement parts.

   This warranty is contingent upon our being promptly notified of the defects and the Buyer establishing to our satisfaction that the defective equipment or part of the equipment has been properly installed, maintained in accordance with the Owners' manual supplied, and operated within the limits of rated and normal usage.
2. This warranty has no application to electric motors on the equipment or to normal replacement of service parts such as operating oil, paint, conveyor belts and drive belts, light sources and fuses and other parts which may have service life inherently shorter in duration than the warranty period. Customer specified components will carry the component manufacturers warranty only. Electric motor warranty claims should be directed to the local motor manufacturer service center.
3. This warranty has no application to wear or damage resulting from accident, alteration, misuse, abuse, neglect, non-action, improper removal or reinstallation or handling of new or defective parts, lack of preventive maintenance, sabotage, tampering, fire, explosion or any other causes not directly attributable to defective workmanship or material of the equipment or any part of the equipment. Under no circumstances shall we have any liability under this warranty for loss of use or for any other losses or damages sustained by the Buyer.

   THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS, AND EXPRESSES OUR ENTIRE OBLIGATION AND LIABILITY WITH RESPECT TO SAID EQUIPMENT. WE NEITHER ASSUME, NOR AUTHORIZE ANYONE TO ASSUME FOR US, ANY OTHER OBLIGATION OR LIABILITY WITH RESPECT TO THE EQUIPMENT OR ANY PART OF THE EQUIPMENT. WE EXPRESSLY DISCLAIM ALL LIABILITY FOR DAMAGES OF EVERY NATURE AND DESCRIPTION, IF ANY, SUSTAINED BY THE BUYER FROM DELAYS IN THE SHIPMENT AND DELIVERY OF EQUIPMENT, REPLACEMENT EQUIPMENT OR ANY REPLACEMENT PART, OR FROM DEFECTS IN, OR FAILURES OR MALFUNCTIONS OF, THE EQUIPMENT OR ANY PART THEREOF.

LICENSEE IN EUROPE BALEMASTER EUROPE B.V., NUTH HOLLAND

M.O. 119-95

AUTOMATIC WIRE TIE - 5-WIRES

OWNER'S MANUAL

5-WIRES

OWNER'S MANUAL CONTINUED

AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS
ANSI CODE Z245.5-1990

The following pages are excerpts from the American National Standard Institute Safety Requirements for balers, ANSI Code Z245.2-1990 for your information and compliance. The excerpts cover Modification (5.0.2), Installation, Operation, and Maintenance Requirements (6), Employer Responsibility (7.1) and Employee Responsibility (7.2). For the complete code contact:

SECRETARY - AMERICAN NATIONAL STANDARDS COMMITTEE, Z245
C/O NATIONAL SOLID WASTES MANAGEMENT ASSOCIATION
1730 RHODE ISLAND AVENUE, SUITE 1000
WASHINGTON, DC 20036

5. CONSTRUCTION AND MODIFICATION REQUIREMENTS

5.1.2 MODIFICATION. It shall be the responsibility of any person modifying a baler after the effective date of this standard to do so in accordance with all appropriate sections of this standard and to notify the manufacturer prior to making such modifications. No such modification should take place without the written permission of the manufacturer, if available. See 6.2 for operating instructions to be included with all modifications.

6. INSTALLATION, OPERATION AND MAINTENANCE REQUIREMENTS

6.1 GENERAL. Installation recommendations and operating instructions shall be developed by the manufacturer and furnished with each baler. These instructions shall establish guidelines for the use, cleaning, and preventive maintenance of the unit. Such instructions shall include safety precautions associated with the operation of the unit.

6.2 MODIFICATION. Any person modifying a baler shall furnish instructions with the modification. Instructions shall include safety precautions associated with the modification of the unit. Modifications shall be done in accordance with 5.1.2.

6.3 INSTALLATION. The installer shall install a baler in accordance with applicable codes, local ordinances, and the manufacturer's instructions and specifications.

6.4 MAINTENANCE PERSONNEL. The employer who operates the baler shall ensure the proper cleaning, inspecting, and maintaining of the baler in accordance with the manufacturer's recommendations. Employers who maintain their own equipment shall be responsible for the training of competent maintenance personnel in accordance with the manufacturer's recommendation.

6.5 INSPECTION AND MAINTENANCE. The employer shall establish and follow a program of periodic and regular inspections of all balers to ensure that all parts, auxiliary equipment, and safeguards are in a safe operating condition. The employer shall maintain records of these inspections and the maintenance work performed.

AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS
ANSI CODE Z245.5-1990 CONTINUED

6.6 WORK AREA. The employer shall provide an adequate work area around the baler to permit safe maintenance, servicing and cleaning. The employer shall keep all surrounding floor areas free from obstructions that would create a slip or trip hazard.

6.7 LOCKOUT PROCEDURES. A lockout procedure for baling equipment shall be established by the manufacturer and followed by the employer to provide for the power to be shut off before and during maintenance to prevent unauthorized operation. These procedures shall be in accordance with ANSI Z244.1-1982. See Pages 2.03 & 2.04 this manual.

6.8 PROTECTIVE DEVICES. The employer shall maintain all guards and protective devices required by this standard.

6.9 BLOCKING DEVICE FOR VERTICAL DOWNSTROKE BALERS. The manufacturer shall include in the instructions to the employer a provision that a blocking device, capable of being fabricated from readily available materials, shall be manually installed to restrain inadvertent downward motion of the platen whenever a person is to enter into the baler chamber.

7. OPERATIONAL REQUIREMENTS

7.1 EMPLOYER RESPONSIBILITY. The employer shall be responsible for:

(1) Ensuring that the installation of the baler is in conformance with applicable local, state and federal codes and ordinances.

(2) Providing a properly maintained baler that meets all applicable safety standards.

(3) Training and instructing employees in safe methods of work before assigning them to operate or maintain a baler. The employer shall maintain records of this training to include the date(s) of the training and the content of training received. The employer shall ensure, by adequate supervision, that correct operating and maintenance procedures are understood and followed. The employer should refer to the manufacturer's instructions for this purpose.

(4) Operating the baler in accordance with the design specifications as recommended by the manufacturer.

(5) Repairing, prior to operation, all malfunctions or breakdowns that result in unsafe operating conditions of the baler. Specific instructions to employees and blocking devices, if required, shall be provided by the employer in the event that the baler chamber must be entered.

AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS
ANSI CODE Z245.5-1990 CONTINUED

(6) Providing for the protection of the operator of horizontal balers having a loading height less than 42 inches from the point of operation by one of the following means:

(a) Sustained manual pressure controls, with the control panel located in such a way that the operator cannot reach the loading zone or pinch-point area.

(b) The installation of a point-of-operation guard that shall: prevent entry of hand, fingers, or any part of the body into the point of operation; in itself, create on pinch point between the guard and moving baler parts; offer maximum visibility of the point of operation consistent with other requirements; and be easily accessible for inspection and maintenance.

(7) Specifically inspecting safety interlocks, switches, and other protective devices, to ensure that these devices are not disabled or bypassed, and to not permit the baler to be operated unless these devices are fully functional. These inspections will be in accordance with 6.5.

7.2 EMPLOYEE RESPONSIBILITY. The employee shall be responsible for:

(1) Using all applicable safety features provided on the baler.

(2) Operating, maintaining, and using a baler only after being properly instructed and trained in accordance with the instructions given in 7.1(3).

(3) Immediately reporting any damage to or malfunction of the baler to the employer or responsible authority.

(4) Ensuring that all individuals are clear of the point of operation and pinch-point area before actuating the controls.

(5) Not placing hands or fingers in the bale binding slots.

(6) Ensuring that all individuals are standing clear of the bale chamber door when ejecting the bale or opening the bale chamber door.

(7) Ensuring that no one disables or bypasses safety interlocks, switches, and other protective devices, and that the baler is not operated unless these devices are fully functional.

LOCKOUT

Lockout procedure for Balemaster Equipment.

PURPOSE

This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

RESPONSIBILITY

The responsibility for seeing that this procedure is followed is binding upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by (designate individuals) in the purpose and use of the lockout procedure.

PREPARATION FOR LOCKOUT

Employees authorized to perform lockout shall be certain as to which switch, valve or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors. Before lockout commences, job authorization should be obtained.

SEQUENCE OF LOCKOUT PROCEDURE

1. Notify all affected employees that a lockout is required and the reason therefor.

2. If the equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).

3. Operate the switch, valve, or other energy isolating device so that the energy source(s) (electrical, mechanical, hydraulic, etc.) is disconnected or isolated from the equipment. Stored energy, such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc., must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding-down, etc.

4. Lockout the energy isolating devices with an assigned individual lock.

5. After ensuring that no personnel are exposed and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

CAUTION: RETURN OPERATING CONTROLS TO NEUTRAL POSITION AFTER THE TEST.

LOCKOUT CONTINUED

6. The equipment is now locked out.

RESTORING EQUIPMENT TO SERVICE

1. When the job is complete the equipment is ready for testing or normal service, check the equipment area to see that no one is exposed.

2. When equipment is all clear, remove all locks. The energy isolating devices may be operated to restore energy to equipment.

PROCEDURE INVOLVING MORE THAN ONE PERSON

In the preceding steps, if more than one individual is required to lock out equipment, each shall place his own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it shall be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

RULES FOR USING LOCKOUT PROCEDURE

All equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock.

BALEMASTER

PREFACE

This Owner's Manual is to provide a fast and easy reference for installation, operation and servicing Balemaster Equipment. Safe operating and maintenance procedures, regular inspections, daily clean out of marked areas on the equipment and planned maintenance by qualified personnel are the responsibility of the user's management.

This Operator's Manual contains information on the operation and servicing of your new Balemaster. Read, understand and follow the enclosed installation and operating instructions before connecting and operating your new Balemaster. The equipment was electrically and hydraulically pressure tested and preset at the factory prior to shipment. It is important all users fully understand the safe operation and maintenance of this equipment. Operators having a language barrier or who are illiterate must be given sufficient training and supervision. It is important to know the Series Number as stamped on the Series/Model Tag on the Equipment in reviewing this Owner's Manual.

This Manual explains the conditions, under normal use, that the equipment may be installed, checked out and operated. It is intended to be used as a supplement to and not in place of other Safety Standards. Many local codes require installation of an Electrical Disconnect Switch in sight of the motor and be capable of being locked in "OFF" position only. Check your local codes for your installation.

The Balemaster equipment has been designed to provide an economical and reliable method of processing and compacting most forms of waste materials. The equipment is a first line production machine and it should receive regular maintenance.

All necessary maintenance and adjustments must be made promptly to avoid any complications and compounding problems. The use of jumpers or other devices to block out electrical interlocks or forcibly over-riding hydraulic components will result in damage to the unit, costly repairs, void the Warranty and could cause injury to operating and maintenance personnel and cannot be condoned.

PRECAUTIONS

P R E C A U T I O N S

BEFORE ANY MAINTENANCE IS PERFORMED ON BALEMASTER/BALEWEL EQUIPMENT, MAKE CERTAIN THAT ALL ELECTRICAL CONTROLS ARE LOCKED OUT. DO NOT OPERATE THE EQUIPMENT WHEN PANELS AND GUARDS ARE NOT IN PLACE.

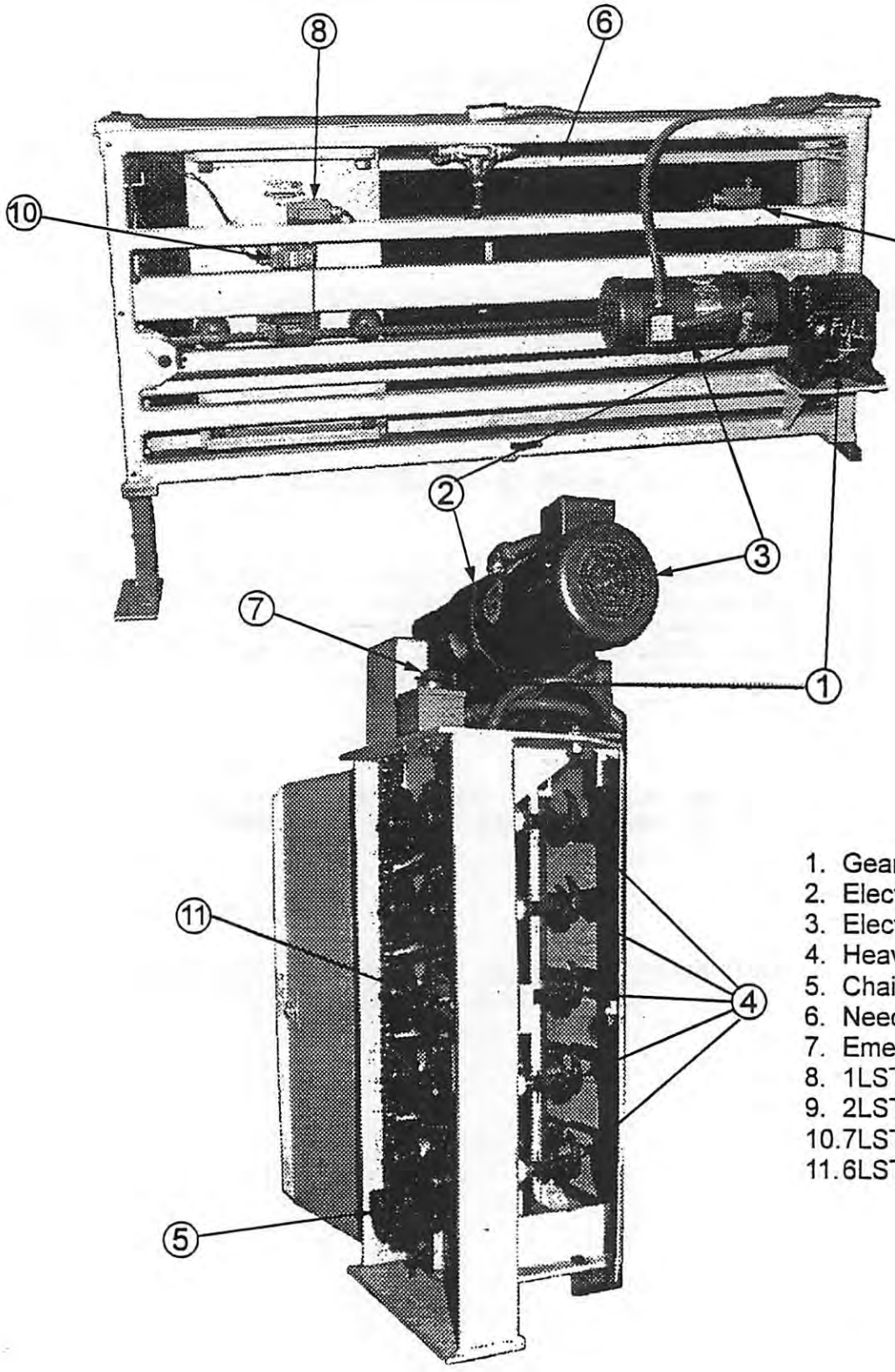
A V O I D A C C I D E N T S

Most accidents, whether they occur in industry, on the farm, at home or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules and precautions. For this reason most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

WITH ANY MACHINERY A CAREFUL & TRAINED OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

NEVER ATTEMPT TO CLEAN, OIL OR ADJUST A MACHINE WHILE IT IS IN MOTION.

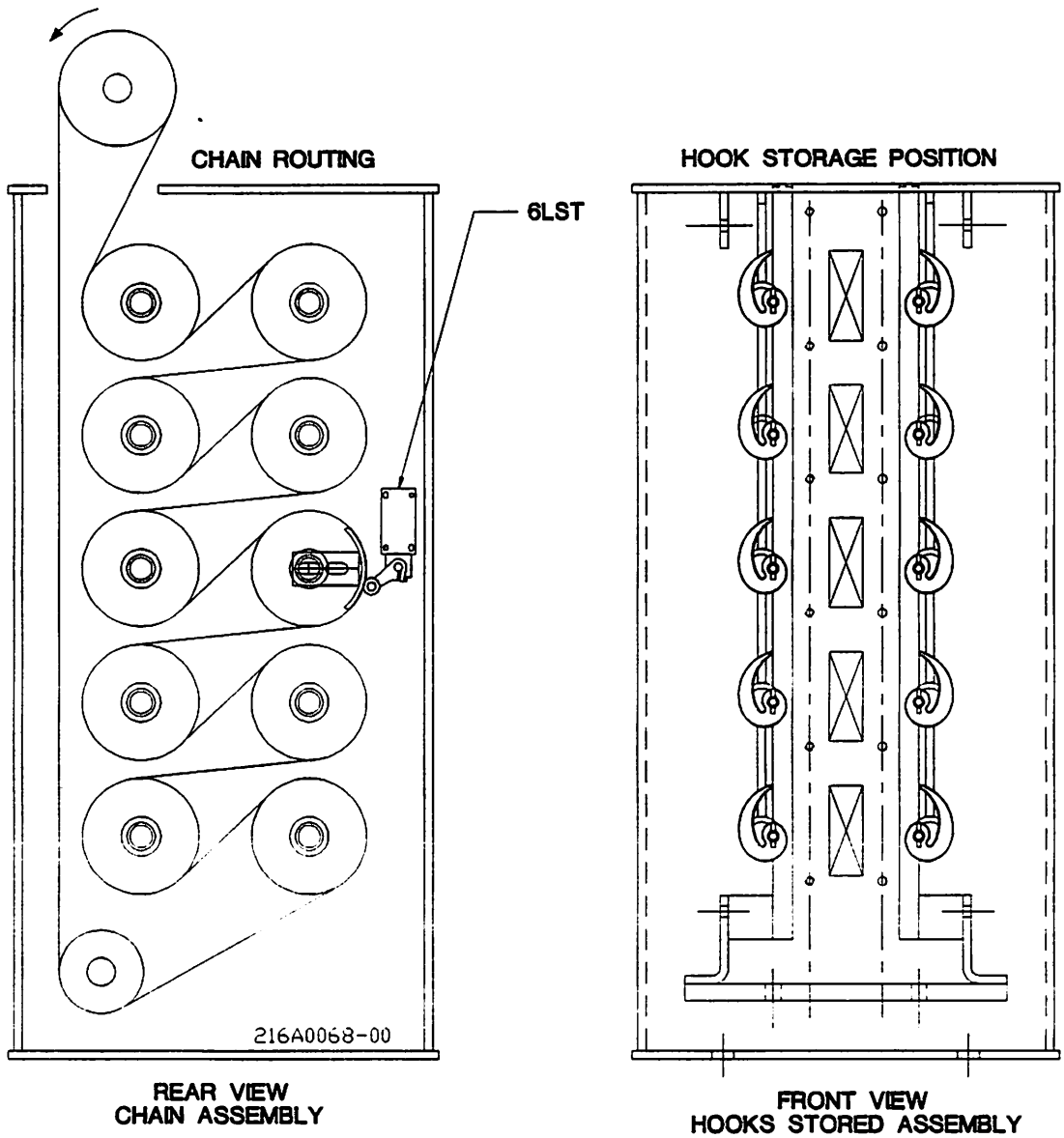
GENERAL ARRANGEMENT - TWISTER & INSERTER



1. Gear Reducer
2. Electric Brake
3. Electric Motor
4. Heavy Duty Hook
5. Chain Tensioner
6. Needle
7. Emergency Stop
8. 1LST
9. 2LST
10. 7LST
11. 6LST

GENERAL ARRANGEMENT

CHAIN ASSEMBLY & HOOKS STORED ASSEMBLY



REAR VIEW
CHAIN ASSEMBLY

FRONT VIEW
HOOKS STORED ASSEMBLY

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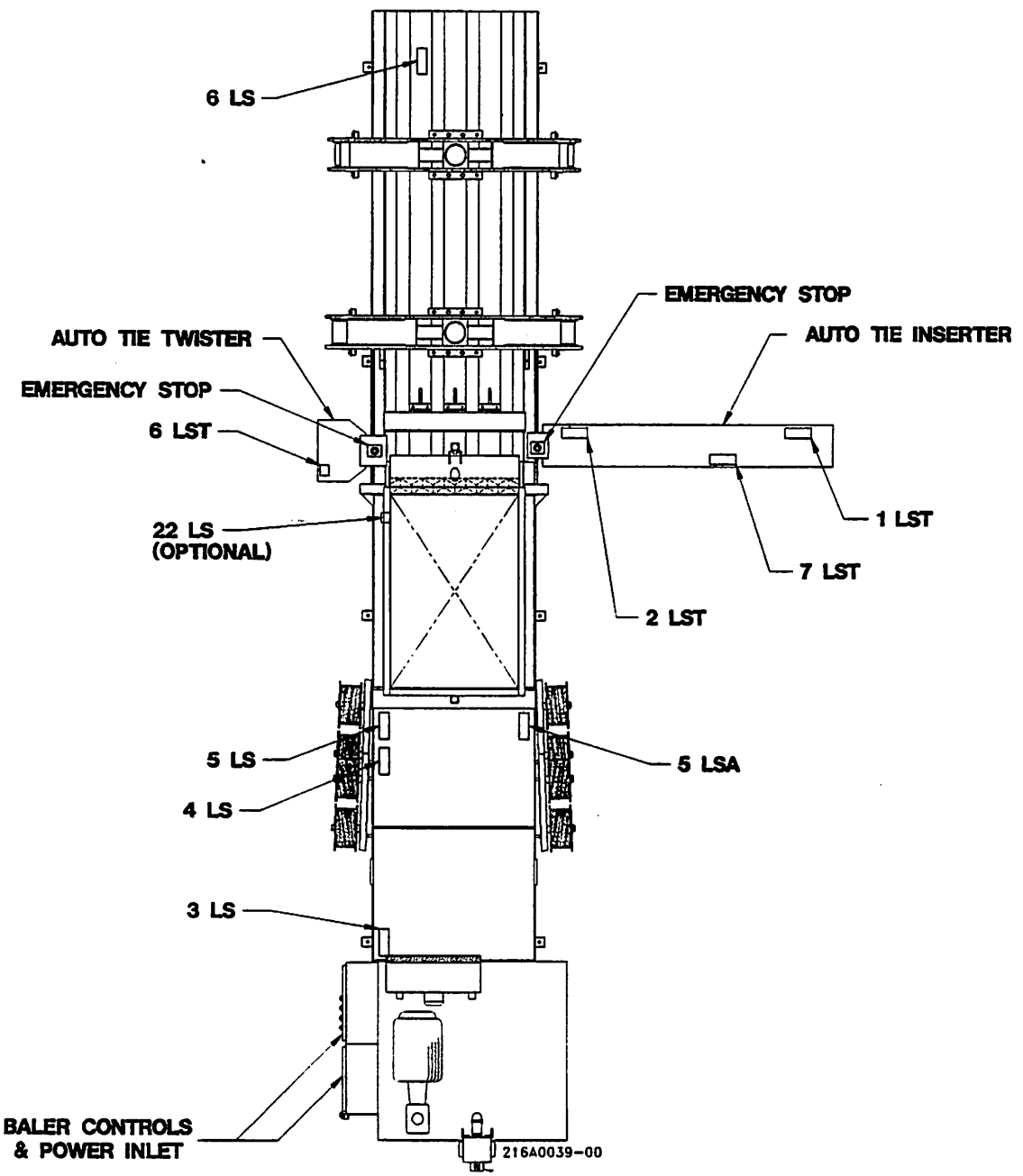
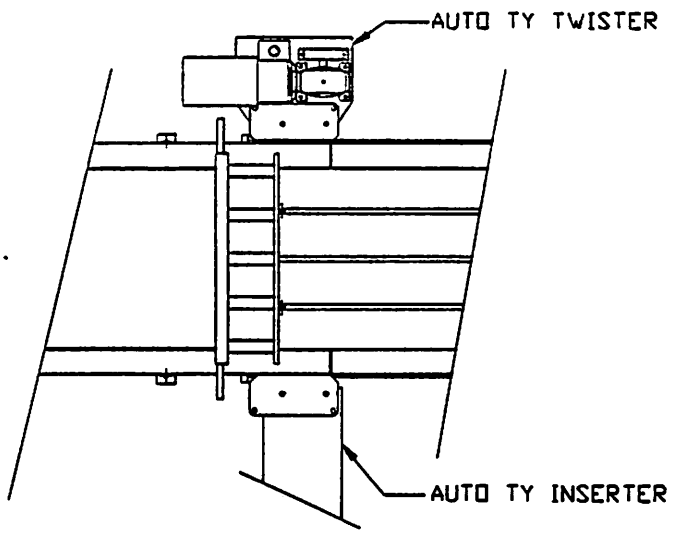
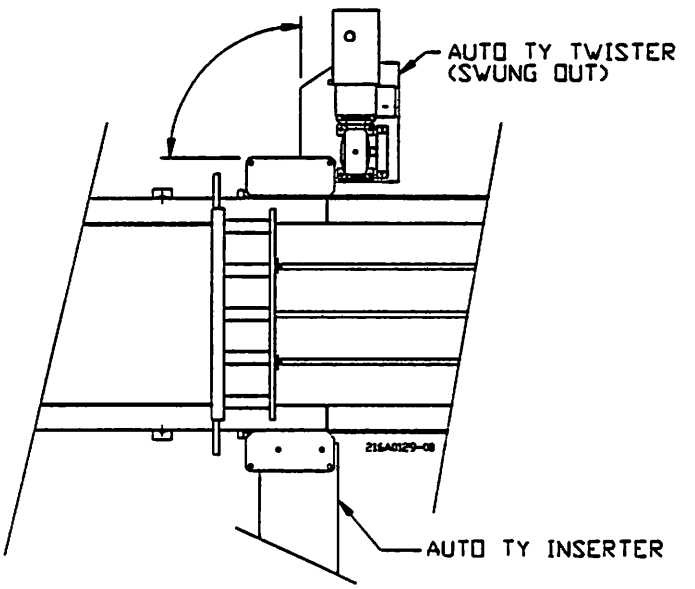
TYPICAL LIMIT SWITCH LOCATIONS



ROTATING TWISTER LAYOUT (PLAN VIEW)
RIGHT HAND AUTO-TY CONFIGURATION



TWISTER POSITION



ROTATED TWISTER POSITION

After removing two of the inline mounting bolts, the twister mechanism will pivot out for maintenance and general cleanout purposes.

CAUTION: NEVER WORK ON TWISTER UNTIL ALL MOTORS AND ROTATING HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

AUTO-TY

INSTALLATION INSTRUCTIONS

NOTE: **INSTALLATION IS TO BE MADE BY QUALIFIED PERSONNEL AND IS THE RESPONSIBILITY OF THE USER'S MANAGEMENT.**

After the Baler has been leveled, installed and bolted down, the Balemaster Auto-Ty Inserter Assembly may be mounted.

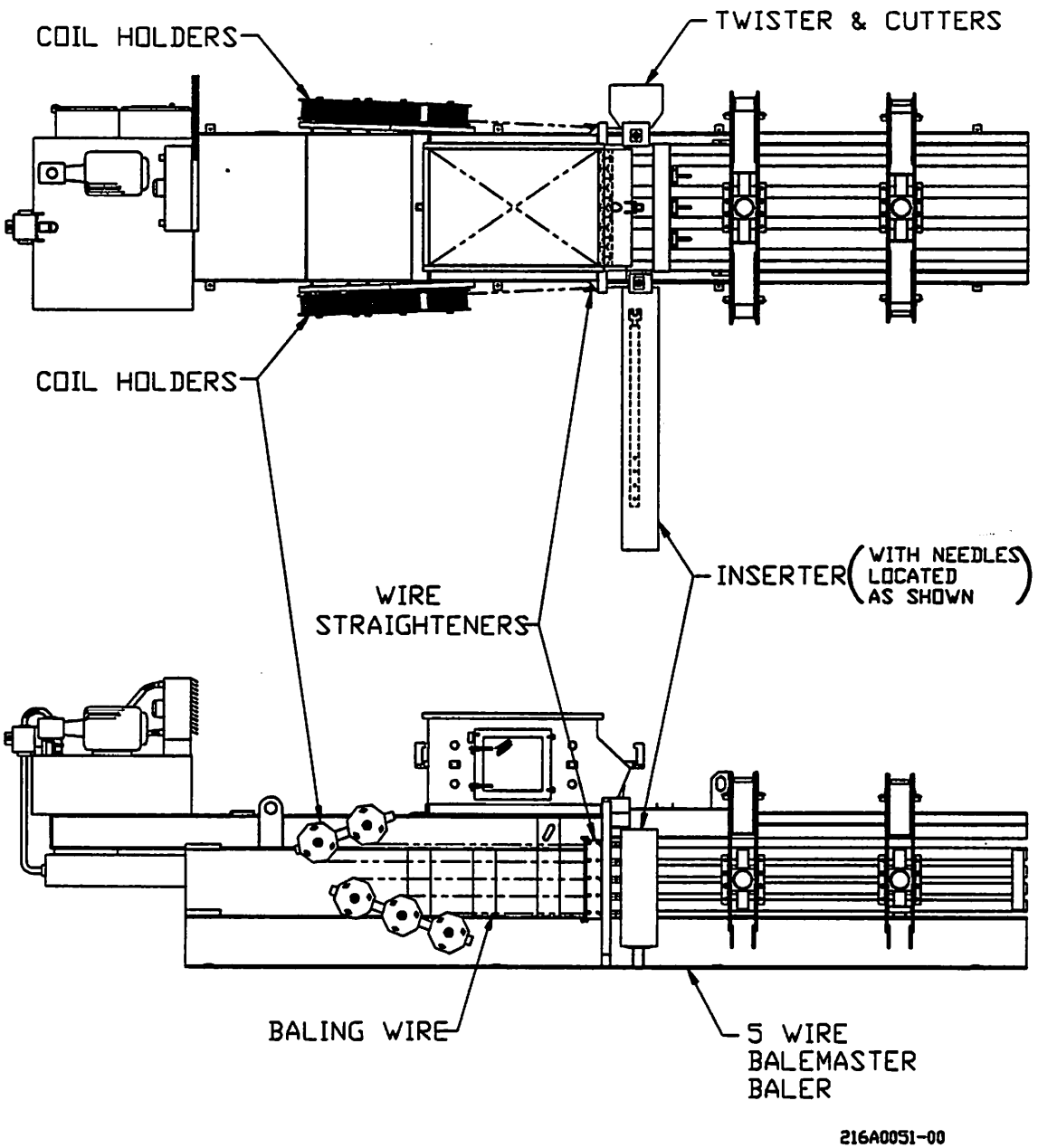
The Twister Assembly is factory mounted and ready for operation.

For shipping purposes, the Inserter Assembly is shipped separately. It is easily installed and made ready for operation when the following steps are taken:

1. Remove all crating and skids.
2. Remove all twister hooks. Note position for reinstallation. See Page 5.01.
3. Mount the inserter between the brackets provided on the baler and attach the inserter support.
4. Disengage brake as shown on Page 10.01; with the baling ram fully advanced (see Baler Manual), insert the needles manually by turning the motor drive adaptor. The motor drive adaptor is attached to the motor shaft inside the rear cover. It can be reached with an allen wrench without removing the rear motor cover. Check needle vertical and lateral alignment at twister side. Adjust inserter frame as required. Tighten hold-down bolts. Retract needles.
5. Locate and secure wire coil holders (optional) as per Page 6.01.
6. Make inserter electrical connections in accordance with electrical circuit diagram.
7. After completion of above, reinstall ALL guards.

CAUTION: DO NOT OPERATE WITHOUT ALL GUARDS IN PLACE.

AUTO-TY
INSTALLATION INSTRUCTIONS
STANDARD RIGHT HAND CONFIGURATION SHOWN



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AUTO-TY

INITIAL CHECK-OUT
WITH TOUCH SCREEN

CAUTION: READ THIS ENTIRE MANUAL BEFORE OPERATING THIS EQUIPMENT.

1. With the inserter in the retracted position, disengage brake as shown on Page 10.01. Advance the needles by turning the motor drive adaptor counterclockwise to 1" maximum. This will move the limit switch bracket off of 1LST. The motor drive adaptor is attached to the motor shaft inside the rear cover and can be reached with an allen wrench without removing the rear motor cover. With the baler selector switch in MANUAL, attempt to move the baling ram forward by pressing the "MANUAL RAM FWD" button. The ram should NOT MOVE. If it does, there is a fault in the wiring hookup that must be corrected before any further operation is resumed. Attempt this action with the baler in all three (3) modes; MANUAL, AUTOMATIC AND CONTINUOUS.

2. Retract the needles by turning the motor drive adaptor clockwise until the limit switch bracket is again on 1LST and activated. Be sure brake is disengaged.

3. With the baler in "MANUAL", move the baling ram forward to some midstroke position by pressing the "MANUAL RAM FWD" button. (Do not activate full forward limit switches 5LS and 5LSA.)

4. With the Auto-Ty in MANUAL, attempt to advance the carriage by pressing the "MANUAL INSERTER IN" button. The carriage should NOT ADVANCE. If it does, there is a fault in the wiring hookup that must be corrected before any further operation is resumed.

5. Remove all twister hooks, see Page 5.01.

6. With the Auto-Ty in MANUAL, advance the ram full forward by pressing the "MANUAL RAM FWD" button, actuating 5LS and 5LSA.

7. Set the Auto-Ty to MANUAL by pressing the "MANUAL" button of the Auto-Ty selector switch.

8. Disengage brake on twister side. See Page 10.01. Move twister in counterclockwise direction until limit switch 6LST is off limit switch bracket by turning the motor drive adaptor. Motor drive adaptor location same as described in Step 1.

9. Press the "MANUAL INSERTER IN" button. The carriage should NOT ADVANCE. If it does, there is a fault in the wiring hookup that must be corrected before any further operation is resumed.

10. Move twister in clockwise direction until limit switch 6LST is activated on limit switch bracket by turning the motor drive adaptor. Be sure brake is disengaged.

AUTO-TY

INITIAL CHECK-OUT CONTINUED
WITH TOUCH SCREEN

11. Push the "MANUAL INSERTER IN" button in and hold it until the carriage is fully advanced.

12. Repeat Step 8.

13. Push the "MANUAL INSERTER OUT" button. It should NOT RETRACT. If it does, there is a fault in the wiring hookup that must be corrected before any further operation is resumed.

14. Repeat Step 10.

15. Set the Baler & Auto-Ty to AUTOMATIC by pressing the "AUTO" button on both the Baler & Auto-Ty selector switches. The twister will turn eight (8) or nine (9) revolutions twisting, then the twister will untwist for three (3) revolutions, the inserter needles will retract.

16. With the "CYCLING EYE" blocked (use a piece of cardboard or other material in front of the receiver), the ram will reciprocate. Move the bale length counter wheel in the direction the material would move until the counter has "counted out". Refer to Baler Manual.

17. The ram will advance to the fully advanced position, the needles will insert, the twister will twist, the twister will untwist, the needles will then retract, the counter will reset and the baling ram will retract if the eye is still blocked and continue to operate until the cycling eye is clear. Remove the material blocking the "CYCLING EYE".

18. Reinstall the twister hooks per diagram on Page 5.01.

19. Repeat Steps 6, 7 and 11.

    NOTE: OBSERVE THE ALIGNMENT OF THE TWISTER HOOKS IN RELATION TO THE CLEARANCE SLOTS IN THE INSERTER NEEDLES. A MINIMUM OF 1/4" CLEARANCE ON ALL SIDES IS REQUIRED.

20. Repeat Step 15.

AUTO-TY

INITIAL START-UP

CAUTION: READ THIS ENTIRE MANUAL BEFORE OPERATING THIS EQUIPMENT.

1. After the 2" X 4" boards have been inserted, (See Baler Manual) the wires from the coils must be inserted through their proper slots and manually twisted together with the wire directly opposite on the other side; laying the wires on top of the boards.

   CAUTION: HAVE ALL PERSONNEL STAY CLEAR OF FRONT OF MACHINE AT THIS TIME; AS THE MATERIAL COMPRESSES, THE 2" x 4" WOOD BOARDS WILL BREAK.

2. Follow all other Start-Up procedures as described in the Baler Manual.

3. The first bale may be made intentionally short and tied off in Manual Mode as described in the Baler Manual. This would be a plug and would be your Initial Start-Up.

AUTO-TY

TECHNICAL OPERATING DESCRIPTION
WITH TOUCH SCREEN

CAUTION: READ THIS ENTIRE MANUAL BEFORE OPERATING THIS EQUIPMENT.

AUTO-TY OFF:

When the Auto-Ty is in the off position, the baler will operate normally until the bale length is reached. The baler will not continue to cycle until a tie has been made and the bale length counter automatically resets.

AUTO-TY AUTOMATIC: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS.

1. Select the automatic mode for the baler as described in the Baler Owner's Manual. (See Page 7.01)
2. Set the Auto-Ty to automatic by pushing the "AUTO" button of the Auto-Ty Selector Switch.
3. Baler & Auto-Ty operation will function automatically.

AUTO-TY MANUAL: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS.

To run the Baler & Auto-Ty in MANUAL the Baler and Auto-Ty Screen must be displayed.

1. Set the baler in the manual mode by pressing the "BALER MANUAL" button. Press the "MANUAL RAM FORWARD" button and hold until the ram is all the way forward and limit switches 4LS, 5LS and 5LSA are activated.
2. Set the Auto-Ty to manual by pressing the "MANUAL" button on the Auto-Ty Selector Switch.
3. To advance the inserter carriage, press the "MANUAL INSERTER IN" button.
4. To retract the inserter carriage, press the "MANUAL INSERTER OUT" button.
5. To twist press the "MANUAL TWIST" button.
   NOTE: THE CARRIAGE MUST BE FULLY RETRACTED ACTIVATING 1LST.

SHORT BALE: INITIAL CONDITIONS & SEQUENCE OF OPERATIONS.

1. Set the baler to the automatic mode by pressing the "BALER AUTO" button.
2. Set the Auto-Ty to automatic by pressing the "AUTO" button.
3. From the Main Screen press and hold the "SHORT BALE" button.

   NOTE: ANOTHER TIE CANNOT BE MADE UNTIL THE RAM HAS BEEN FULLY RETRACTED, ACTIVATING 3LS.

AUTO-TY

TECHNICAL OPERATING DESCRIPTION CONTINUED
WITH TOUCH SCREEN

LIMIT SWITCHES & SOLENOID VALVES DESIGNATION & FUNCTION

SYMBOL	DESCRIPTION
3LS	BALING RAM RETRACTED
4LS	BALING RAM ADVANCED
5LS & 5LSA	BALING RAM FULLY ADVANCED
6LS	BALE LENGTH CONTROL
1LST	CARRIAGE RETRACTED
2LST	CARRIAGE ADVANCED
6LST	TWIST COUNTING
7LST	CHAIN SLACK
SOLENOID A	ADVANCE BALING RAM
SOLENOID B	RETRACT BALING RAM

AUTOMATIC OPERATIONS:

1. Set the Baler to automatic by pressing the "BALER AUTO" button.
2. Set the Auto-Ty to automatic by pressing the "AUTO" button on the Auto-Ty Selector Switch.
3. Refer to Baler Manual for baling operation in the Automatic Mode.
4. When the preset count has been reached, the baling ram continues forward beyond limit switch "4LS" until limit switches "5LS" & "5LSA" are activated. The bale will then be tied automatically.
5. The carriage needles advance forward until limit switch "2LST" is activated.
6. The twister will twist eight (8) revolutions, cut and twist in reverse three (3) revolutions.
7. The bale length control counter will automatically reset.
8. The carriage needles will retract until limit switch "1LST" is activated.
9. After an automatic tie the baling ram will remain in the forward position, when the photo electric eye is blocked Solenoid "B" will be energized.
10. The baling ram will retract until limit switch "3LS" is activated.

AUTO-TY

TECHNICAL OPERATING DESCRIPTION CONTINUED
WITH TOUCH SCREEN

MANUAL OPERATION:

The Baler and Auto-Ty can only be activated manually when the Baler and Auto-Ty Selector Screen is displayed.

1. The carriage can be advanced or retracted by pressing the "MANUAL INSERTER IN" button, with the baler in the manual mode, the Auto-Ty in the manual mode and the baler ram fully advanced activating 5LS and 5LSA.

2. Manual twisting is done by pressing the "MANUAL TWIST" button. This can only be done when the carriage is fully retracted activating 1LST. To untwist, press the "MANUAL UNTWIST" button. This can only be done when the carriage is fully advanced or fully retracted.

3. The cutters are mechanically connected to the twister shaft and should be fully opened when the twister hooks are in their stored position.

MANUAL RAN FORWARD PUSH BUTTON:

The "MANUAL RAM FORWARD" button, when depressed, will directly energize Solenoid "A", advancing the baling ram forward. This operation can only be done when the baler is in the manual mode and the carriage needles are fully retracted activating "1LST".

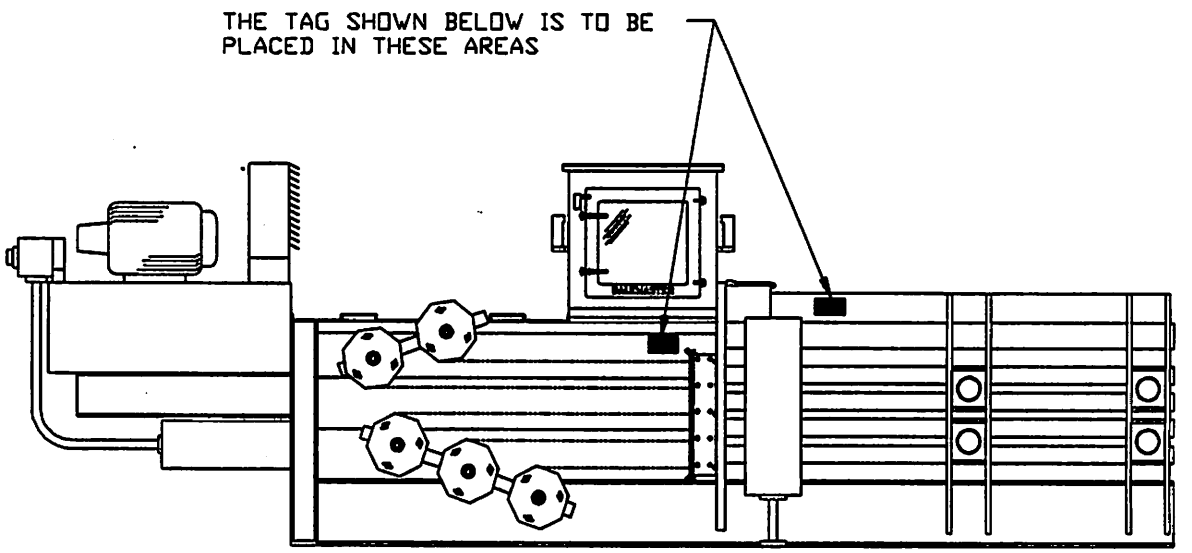
EMERGENCY MANUAL RAM FORWARD PUSH BUTTON:

If the "MANUAL RAM FORWARD" button should fail to advance the baling ram when pressed, the Emergency Manual Ram Forward Push Button can be pressed at the same time the "MANUAL RAM FORWARD" button is pressed, which will directly energize Solenoid "A". This can only be done when the baler is in the manual mode.

NOTE: THE EMERGENCY MANUAL RAM FORWARD PUSH BUTTON IS LOCATED INSIDE THE CONTROL CABINET AND IS ONLY TO BE USED BY QUALIFIED MAINTENANCE PERSONNEL. IT IS IMPORTANT TO VISUALLY CHECK THE LOCATION OF THE INSERTER NEEDLES TO AVOID DAMAGE TO THEM WHEN ADVANCING THE BALING RAM.

AUTO-TY

OPERATING INSTRUCTIONS/WIRE SPLICING



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CAUTION

BALER MUST BE SHUT OFF BY **LOCKING** BALER DISCONNECT SWITCH IN THE **OFF POSITION** WHEN PERFORMING ANY OF THE FOLLOWING:

WHEN	threading, splicing, or aligning tie wires through Twister or Inserter mechanism.
WHEN	tying or re-tying loose or broken wires.
WHEN	removing broken or excess wire form the Auto Ty mechanism or baling ram slots.
WHEN	performing other operator or maintenance functions in or around the Baler or Auto Ty mechanism.
NOTE:	Tie wires should be spliced together downstream of the Twister or Inserter mechanism. See the Baler manual provided with the baler.

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MOTOR BRAKE

C A U T I O N

A. MOST BRAKE FRICTION DISCS CONTAIN BURNT AND DEGRADED RESIN DUST. DUST FROM THE FRICTION DISC ACCUMULATES ON THE BRAKE INTERNAL PARTS AND IN THE HOUSING. THIS DUST MUST BE REMOVED BEFORE SERVICING OR ADJUSTING THE BRAKE.

DO NOT BLOW OFF DUST USING AN AIR HOSE

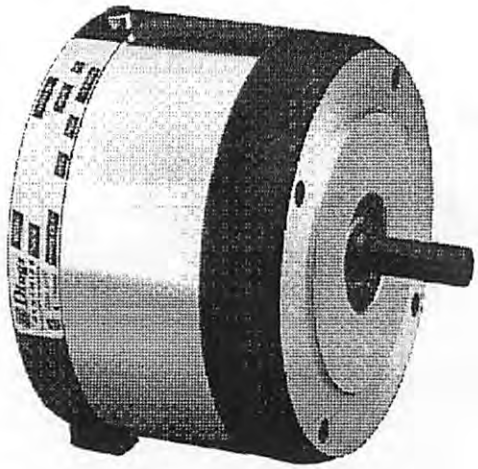
IT IS IMPORTANT TO AVOID DISPERSING DUST INTO THE AIR OR INHALING IT; AS THIS MAY BE DANGEROUS TO YOUR HEALTH.

B. WEAR A FILTERED MASK OR A RESPIRATOR WHILE REMOVING DUST FROM THE INSIDE OF A BRAKE.

C. USE A VACUUM CLEANER OR A SOFT BRUSH TO REMOVE DUST FROM THE BRAKE. WHEN BRUSHING, AVOID CAUSING THE DUST TO BECOME AIRBORNE. COLLECT THE DUST IN A CONTAINER, SUCH AS A BAG, WHICH CAN BE SEALED OFF.

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

MOTOR BRAKE



PART NUMBER:

DAB00007	230/460 VOLT
DAB00008	208/415 VOLT
DAB00009	575 VOLT
DAB00010	380 50 HZ

60 SERIES DOUBLE C FACE BRAKE
ENCLOSED HOUSING

INSTALLATION (See exploded view, Page 10.03)

1) Mount hub (22) over key on shaft 1/4" from the motor mounting face. Part number on hub to face away from motor. Use 3/16" square key furnished. Key must extend to, and be flush with, end of motor shaft. Tighten both setscrews in hub with 8-10 lbs. ft. torque.

2) Remove adapter housing (7). You may have to remove wrap cover (9) and tap lightly with a soft mallet in the openings in the side of the adapter housing. Place brake assembly onto the motor C face, engaging hub splines into brake disc splines. The release should be located at the top.

3) Screw in four 3/8-16 threaded rods (28) or (32) through bracket (1) into motor C face (approx. 9/16" engagement or 9 turns). Bring coil lead wires out of conduit hole before installing adapter housing. Align adapter housing (7) with four threaded rods. NOTE: Arrow head on adapter housing should be in line with the manual release nob (15). Slide adapter housing onto threaded rods, turning output shaft (8) so that the keyway in the brake shaft lines up with the key in the motor shaft. Make sure adapter housing seats against the bracket (1). Tap adapter housing in place lightly. If excessive force is required, the key may have to be filed.

4) Install key into the brake shaft extension. Slide gear reducer onto threaded rods, aligning key in the brake shaft with the keyway in gear reducer. Fasten with lockwashers (29) and nuts (30).

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

MOTOR BRAKE
(Continued)

MANUAL RELEASE (See exploded view)

The brake is equipped with a manual release. Turn the release knob (15) clockwise to stop position to release the brake. The brake will remain released until the release knob is turned counterclockwise (approx. 65 deg.) or until the brake coil is energized, automatically resetting the brake.

TORQUE ADJUSTMENT (See exploded view, Page, 10.03)

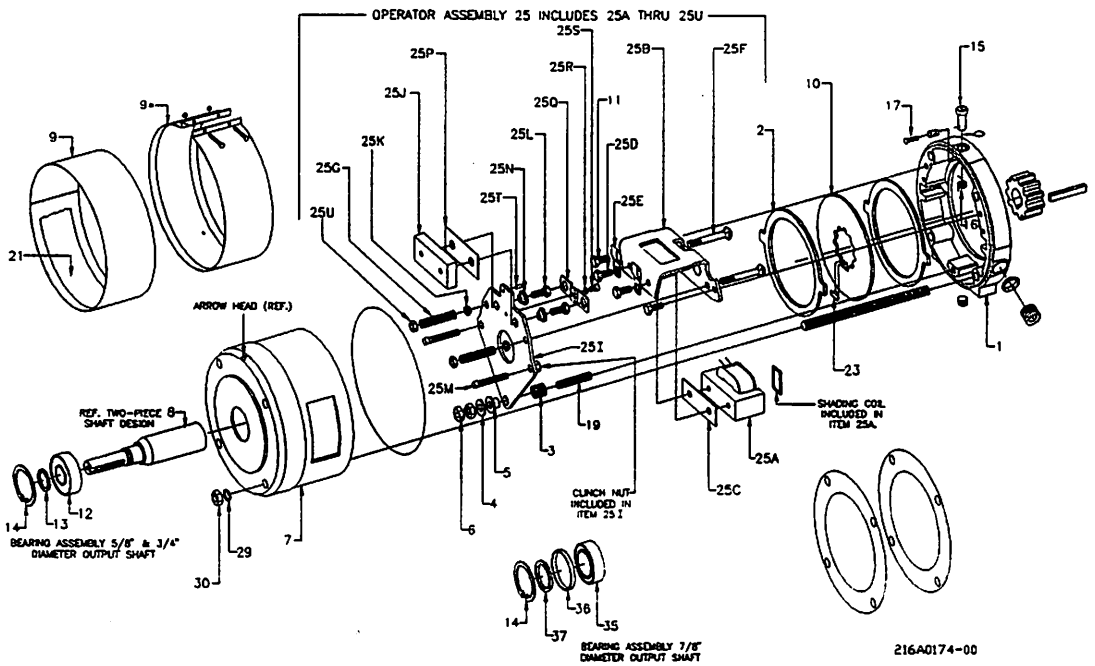
The magnetic disc brake is factory set for a rated static torque. The brake can be adjusted to reduce torque which increases stopping time. Do not attempt to adjust brake for a higher torque, as this will cause premature coil burnout.

1) To adjust, remove cover (9) to expose torque locknuts (25U), which are above torque springs (25G).

2) To increase stopping time and reduce torque, turn two locknuts (25U) counterclockwise, increasing spring length. Each full turn reduces torque 7% to 10%.

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

MOTOR BRAKE



EXPLODED VIEW

WARNING

Brake performance and features must be carefully matched to the requirements of the application.

Consideration must be given to torque requirements, especially where an overhauling condition exists, as well as thermal capacity, ambient temperature, atmospheric explosion hazards, type of enclosure and any other unusual conditions.

Improper selection and installation of a brake and/or lack of maintenance may cause brake failure which could result in damage to property and/or injury to personnel.

If injury to personnel could be caused by brake failure, additional means must be provided to insure safety of personnel.

Do not operate manual release or energize brake coil before installation in order to preserve prealignment of rotating discs for ease of installation.

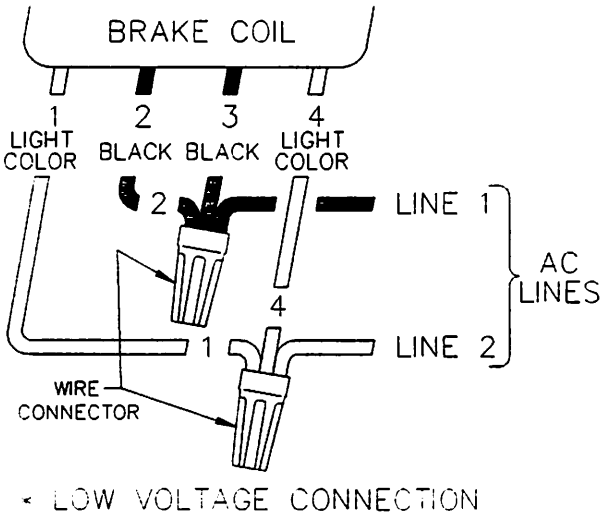
NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

MOTOR BRAKE WIRING

Connect coil leads as indicated and replace cover.

CONNECTION OF COIL LEADS

DUAL VOLTAGE COIL



* LOW VOLTAGE CONNECTION

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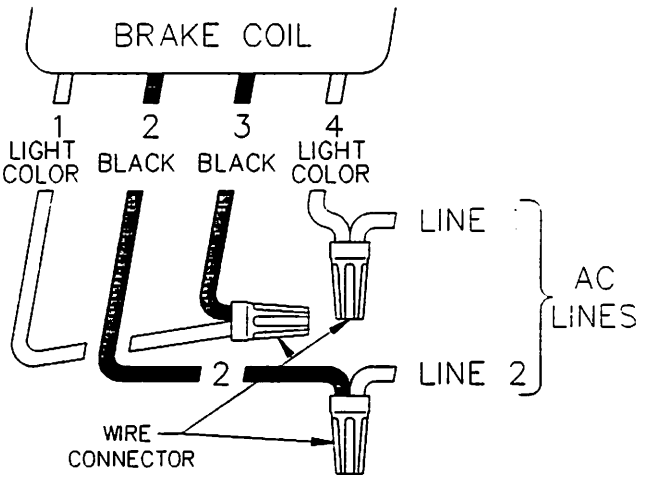

* HIGH VOLTAGE CONNECTION

216A0179-00

Connect leads 2 and 4 to any two line leads (single or three phase) of same voltage and frequency as brake.

SINGLE VOLTAGE COIL

Connect brake coil leads to any two line leads (single or three phase) of same voltage and frequency as brake.

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

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MOTOR BRAKE

MAINTENANCE AND SERVICE

WEAR ADJUSTMENT (See Figure 1 Below & Exploded View, Page 10.03)

Before air gap "A" reaches .100", adjustment is required. Any delay in adjusting the magnetic air gap will result in eventual loss of torque.

1. To adjust, remove cover (9) to expose adjusting screws magnetic air gap "A."

2. Measure air gap "A" using 3/8" to 1/2" wide feeler gauge as shown in Figure 1.

3. Turn two square head screws (25M) until air gap "A" measures: 0.050/0.055" Air gap should be the same on both sides.

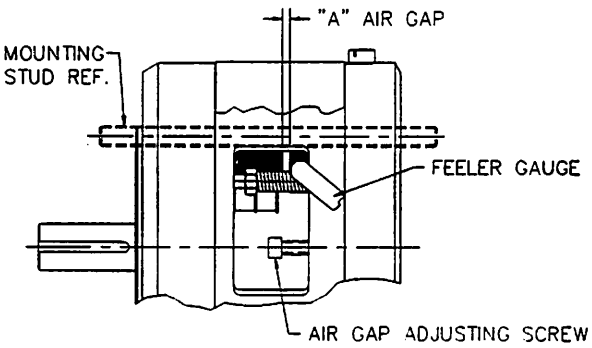


Figure 1. 216A0177-00

FRICTION DISC REPLACEMENT (See Exploded View, page 10.03)

When total wear on a rotating friction disc reaches 1/16" (3/16" Thick New), replace disc.

1. Disconnect power.

2. Remove any equipment mounted on the brake C face, such as a gear reducer, by removing nuts (30) and lockwashers (29).

3. For two piece shaft design, remove adapter housing (7) which includes shaft (8).

4. Remove operator assembly (25) by removing screws (11) and pivot stud (19). Item 19 has a hex socket in end of stud for removal.

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

FRICTION DISC REPLACEMENT (Continued)

5. Remove worn rotating discs (10) and stationary discs (2). Replace worn discs and install new discs in the same order. Install stabilizer clip (23), if furnished, on rotating discs prior to installation.

6. To replace operator assembly, turn two screws (25M) counterclockwise five turns. Place operator assembly onto brake bracket (1) and install two screws (11). Replace compression spring (3), bushing (5), washer (6), and pivot stud (19) which has the two nuts (6) in place. Tighten firmly.

7. Readjust magnetic air gap "A" as described under "Wear Adjustment."

8. Check manual release operation before completing installation.

9. Reassemble.

MAGNET ASSEMBLY REPLACEMENT

1. Disconnect power supply.

2. Remove adapter assembly as described in "Friction Disc Replacement."

3. Remove two cap screws (25D), wire clamps (25E), magnet assembly and shock mount (25C).

4. Replace shock mount and magnet, feeding coil wires through hole in back of bracket (25B). Tighten mounting screws with 55 to 60 lbs.in. torque.

5. Set air gap "A" as described under "Wear Adjustment."

6. Energize coil. Coil should be quiet; if not, adjust pivot stud.

7. Reassemble.

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

MOTOR BRAKE

TROUBLE SHOOTING

BRAKE DOES NOT RELEASE

1. Check for failure of power supply to brake.
2. Check brake visually for broken or damaged parts.
3. Check for broken leadwire or bad electrical connection.
4. Check for correct voltage.
   Voltage must correspond to that listed on brake nameplate. If voltage is more than 10% below figure stamped on nameplate, magnet will not pull in, causing coil or burn out within minutes. If voltage is more than 10% above, coil will overheat and burn out.
5. Check for burned out coil (coil may be charred or burned).

BRAKE DOES NOT STOP

1. Check that manual release is in normal reset position.
2. Check brake visually for broken or damaged parts.
3. Check disc wear (See "Wear Adjustment").
4. Check for broken friction disc.
5. Make certain hub has not shifted position on shaft and that all rotating discs are fully engaged on hub.

BRAKE CHATTERS OR HUMS

1. Clean magnet faces if dirty:
   Insert a clean sheet of paper between magnet faces and energize brake. Move paper around between faces to dislodge dirt. Finally, remove paper.
2. Check that magnet faces are parallel in closed position:
   If not parallel along length of magnet, check bushings under torque springs for binding or excessive wear. If not parallel along width of magnet, adjust pivot nut (Item 6) on post to obtain minimum magnet hum. Check magnet gap "A" and adjust if necessary (See "Wear Adjustment"). Operate manual release (15) and adjust if necessary. ("Manual release adjustment.")

MANUAL RELEASE ADJUSTMENT

1. Set air gap "A" as described in "Wear Adjustment"
2. If brake does not release, turn adjusting screw (17) counterclockwise 1/4 turn and try again.
3. If the release nob (15) does not return to its normal position automatically, turn screw (17) clockwise 1/4 turn and try again.

NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

PREVENTIVE MAINTENANCE

CAUTION: NEVER PERFORM MAINTENANCE ON BALER UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT. DO NOT REMOVE, PAINT OVER OR DEFACE WARNING INSTRUCTIONS OR IDENTIFICATION LABELS.

The Balemaster Auto-Ty is a very reliable and durable component requiring very little maintenance. If the below items are checked on a regular basis, it will give you excellent, long lasting service.

DAILY

1. Check gear reducer for leaks. Correct as necessary.
2. Check the inserter tracks for contaminants and clean as necessary.
3. Check inserter and twister chains for proper tension.
4. Check wire cutter blades for damaged edges.
5. Check that all guards are in place. Do not operate without guards in proper position.

MONTHLY:

1. Check the gear reducers for proper oil level. Use 90 weight high pressure gear lube that is compatible with brass.
2. Check inserter and twister chains for proper tension. Do not over lubricate.
3. Check the level, square the alignment of the inserter needles with the twister hooks. Adjust as necessary.
4. Check the twister hook screws for tightness. Tighten as required.
5. Check disc brake for wear and adjust as required.
6. Check wire cutters for damaged edges and actuator blocks for excessive wear. Blocks should be changed when total wear exceeds 1/8".

CAUTION: AFTER PERFORMING THE ABOVE, REPLACE ALL GUARDS.

TROUBLE SHOOTING CHART

PROBLEM	CAUSE	CORRECTION
CARRIAGE WILL NOT ADVANCE OR RETRACT.	SELECTOR SWITCH IN "OFF POSITION"	TURN SWITCHES TO PROPER POSITIONS
	NO WIRE	FILL WIRE HOLDERS ACTIVATING LIMIT SW. 33LST AND 34LST (OPT.)
	BALING RAM NOT FULL FORWARD	CHECK POSITION OF RAM AND LIMIT SWITCHES 5LS AND 5LSA
	6LST NOT ACTIVATED	SEE PAGE 5.02 FOR POSITION
	BRAKE NOT RELEASED	SEE PAGE 10.01
	MOTOR HEATERS "TRIPPED"	PUSH RESET BUTTONS DETERMINE CAUSE
	MOTOR FUSES "BLOWN"	DETERMINE AND CORRECT PROBLEM. REPLACE FUSES
	BROKEN CHAIN, KEY, OR SPROCKET	REPAIR AS NECESSARY "7LST" DE-ACTIVATED
	NEEDLES OUT OF ALIGNMENT	REALIGN INSERTER OR NEEDLES

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TROUBLE SHOOTING CHART

PROBLEM	CAUSE	CORRECTION
TWISTER DOES NOT OPERATE	AUTO-TY IN "OFF" POSITION	TURN SWITCHES TO PROPER POSITIONS
	BRAKE NOT RELEASED	SEE PAGE 10.01
	1LST OR 2LST NOT ACTIVATED	CHECK CARRIAGE POSITION AND LIMIT SWITCHES
	MOTOR HEATERS "TRIPPED"	DETERMINE CAUSE AND PUSH RESET BUTTONS
	MOTOR FUSES "BLOWN"	SEE PAGE 10.01
	MOTOR HEATERS "TRIPPED"	PUSH RESET BUTTONS DETERMINE CAUSE
	MOTOR FUSES "BLOWN"	DETERMINE AND CORRECT PROBLEM. REPLACE FUSES
	BROKEN CHAIN, KEY, OR SPROCKET	REPAIR AS NECESSARY "7LST" DE-ACTIVATED
	NEEDLES OUT OF ALIGNMENT	REALIGN INSERTER OR NEEDLES

CAUTION: NEVER WORK ON UNIT UNTIL ALL MOTORS & ROTATING EQUIPMENT HAS STOPPED AND IS ELECTRICALLY LOCKED OUT.

TORQUE WRENCH CHART

BOLT DIA.	THREAD PITCH	GRADE 0-2	GRADE 5	GRADE 6	GRADE 7	GRADE 8
1/4	20	5.5	9.7	11.0	11.5	13.0
	28	6.0	11.0	12.0	13.0	15.0
5/16	18	10.0	18.0	20.0	21.0	24.0
	24	11.4	20.0	23.0	24.0	27.5
3/8	16	21.7	39.0	43.0	45.0	52.0
	24	24.5	44.0	49.0	51.0	59.0
7/16	14	32.4	58.0	65.0	67.0	78.0
	20	38.4	69.0	77.0	80.0	92.0
1/2	13	43.5	87.0	97.0	102.0	116.0
	20	54.6	103.0	115.0	121.0	138.0
9/16	12	57.5	111.0	123.0	129.0	147.0
	18	68.0	131.0	146.0	153.0	175.0
5/8	11	86.0	173.0	192.0	201.0	230.0
	18	102.0	200.0	224.0	235.0	269.0
3/4	10	152.0	290.0	324.0	336.0	389.0
	16	182.0	345.0	384.0	403.0	461.0
7/8	9	222.0	500.0	555.0	583.0	666.0
	14	261.0	585.0	653.0	685.0	784.0
1	8	307.0	690.0	769.0	807.0	923.0
	14	370.0	830.0	925.0	967.0	1111.0
1-1/4	7	384.0	862.5	961.0	1009.0	1154.0
	12	462.5	1037.5	1156.0	1209.0	1389.0
1-1/2	6	460.5	1035.0	1153.5	1210.5	1384.5
	12	555.0	1245.0	1387.5	1450.5	1666.5
1-3/4	5	537.0	1207.5	1346.0	1412.0	1615.0
	12	647.2	1452.5	1619.0	1692.0	1944.0
2	4.5	614.0	1380.0	1538.0	1614.0	1846.0

VALUES ARE FOR CLEAN THREADS, LIGHTLY OILED.

EXCEPTIONS:

1. Ryertex:
   a. Bearing, same as Grade 2.
   b. Threaded, 1/2 the value of Grade 2.
2. Brass: 1/2 the value of Grade 2.
3. Grade 8 & Soc Hd Bolts W/Gr. 5 Nuts; use values of Gr. 5.
4. Bolt In Slotted Holes; use 1/2 value of Grade 2.
5. Hogger Tie Rod Bolts.

AUTO-TY

PARTS ORDERING INFORMATION

BALEMASTER/BALEWEL EQUIPMENT

SERVICES AVAILABLE:

We will be pleased to quote the following:

1. Replacement Parts & Spare Parts.
2. Bale Tie Wire.
3. Factory Field Service Supervision.

PARTS ORDERING:

Your order MUST include the following:

1. Serial Number & Model Number as tagged on the machine.
2. Part Number -- refer to Parts List in this Manual.

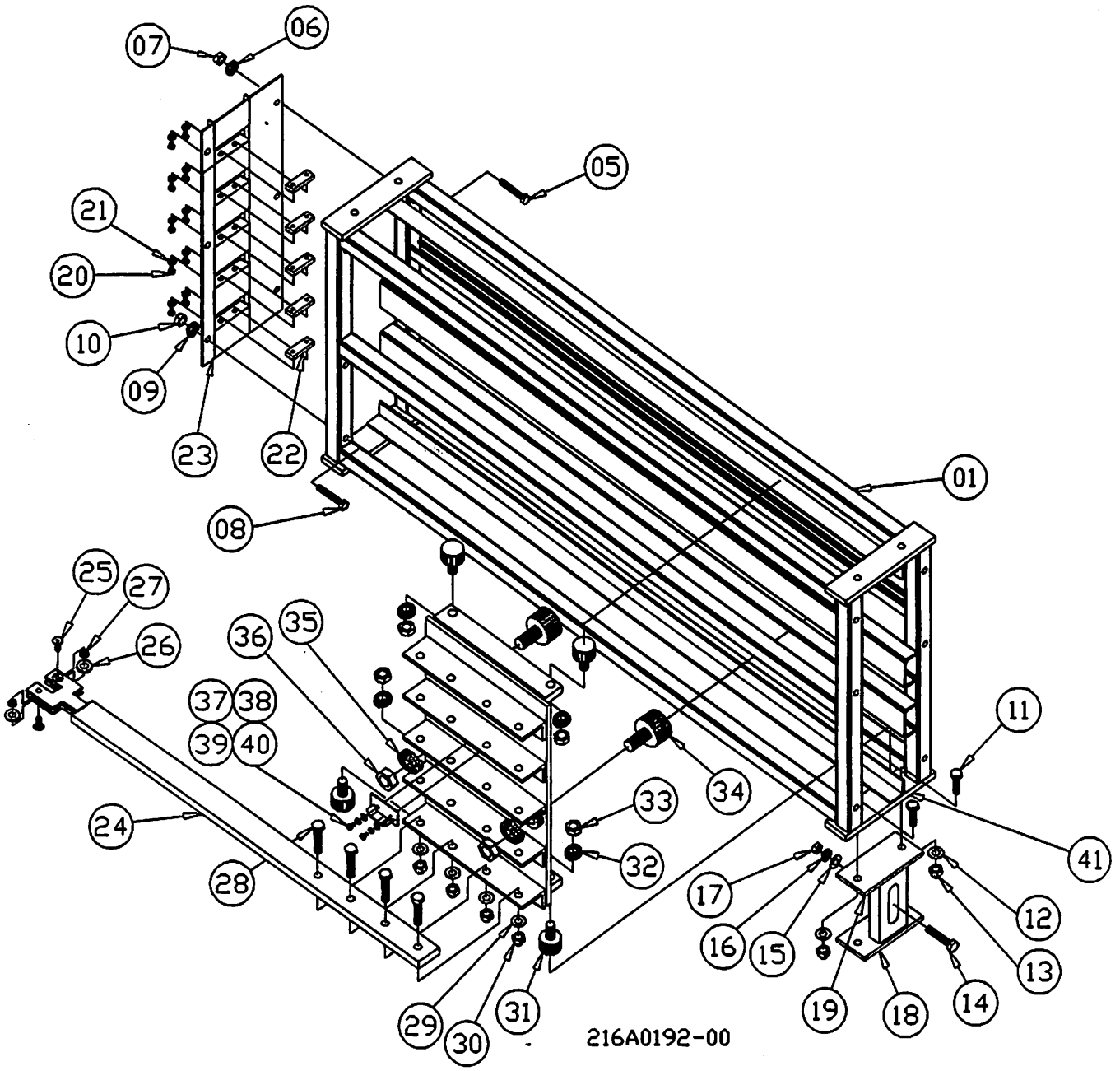
CONTACT

THE SERVICE DESK
BALEMASTER DIVISION
EAST CHICAGO MACHINE TOOL CORPORATION
980 CROWN COURT
CROWN POINT, INDIANA 46307

OR CALL

(219) 663 - 4525

3. All Warranty Claimed Returned Parts must have a Return Authorization Number given during contact with our Service Desk. Ship to the attention of: CUSTOMER SERVICE DEPARTMENT. NO Collect Shipments will be accepted. See Warranty.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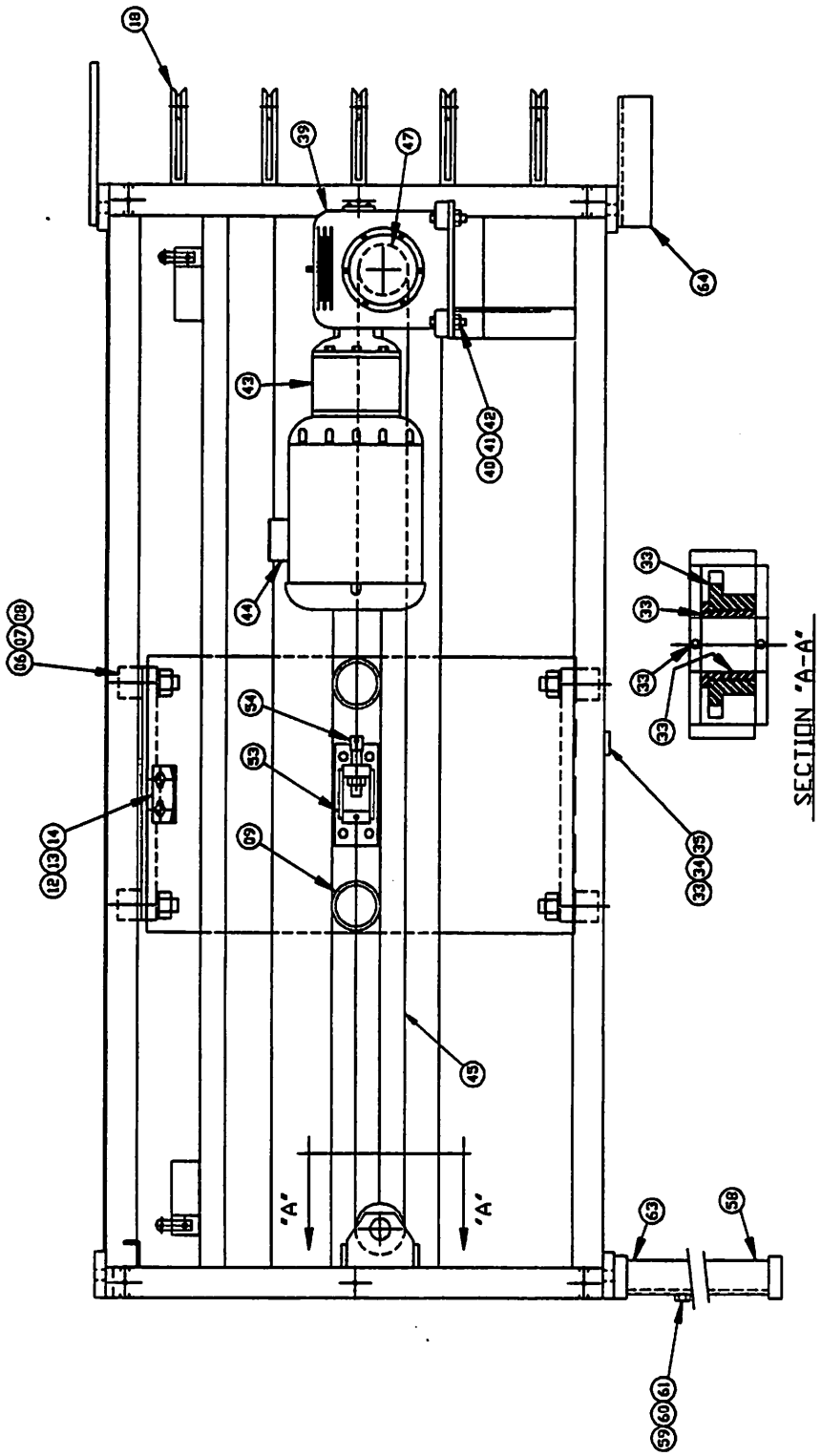
AUTO-TY
INSERTER ASSEMBLY CONTINUED



AUTO-TY

SPARE PARTS - INSERTER
COMMON PARTS FOR ALL INSERTER MODELS
5 - WIRE

ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	INSERTER FRAME	241D0062-00	1
2	HEX HEAD CAP SCREW	AAA00090	4
3	FLAT WASHER	AHA00008	4
4	FLEX LOCK NUT	AGB00006	4
5	HEX HEAD CAP SCREW	AAA00071	3
6	LOCK WASHER	AHB00008	3
7	HEX NUT	AGC00015	3
8	HEX HEAD CAP SCREW	AAA00073	3
9	LOCK WASHER	AHB00008	3
10	HEX NUT	AGC00015	3
11	HEX HEAD CAP SCREW	AAA00090	2
12	FLAT WASHER	AHA00008	2
13	FLEX LOCK NUT	AGB00006	2
14	HEX HEAD CAP SCREW	AAA00064	2
15	FLAT WASHER	AHA00007	2
16	LOCK WASHER	AHB00008	2
17	HEX NUT	AGC00015	2
18	INSERTER SUPPORT	241A0022-00	1
20	HEX HEAD CAP SCREW	AAA00030	8
21	LOCK WASHER	AHB00006	8
22	WEAR LINER	223A0509-00	~~4~~ 5
23	INSERTER FRONT PLATE	241C0027-00	1
24	NEEDLE	241B0007-08	2
25	FLAT HD SOC CAP SCREW	ACB00028	8
26	ROLLER	241A0018-02	8
27	BUSHING	241A0030-02	8
28	HEX HEAD CAP SCREW	AAA00069	16
29	FLAT WASHER	AHA00007	16
30	FLEX LOCK NUT	AGB00005	16
31	2" CAM FOLLOWER	CEA00005	4
32	LOCK WASHER	AHB00011	4
33	HEX NUT	AGC00021	4
34	3 1/4 CAM FOLLOWER	CEA00006	2
35	LOCK WASHER	AHB00014	2
36	HEX NUT	AGC00026	2
37	PAN HEAD SCREW	AFB00041	2
38	LOCK WASHER	AHB00004	2
39	LIMIT SWITCH ACTUATOR	241A0021-00	1

AUTO-TY
SPARE PARTS - INSERTER

COMMON PARTS FOR ALL INSERTER MODELS CONTINUED
5 - WIRE

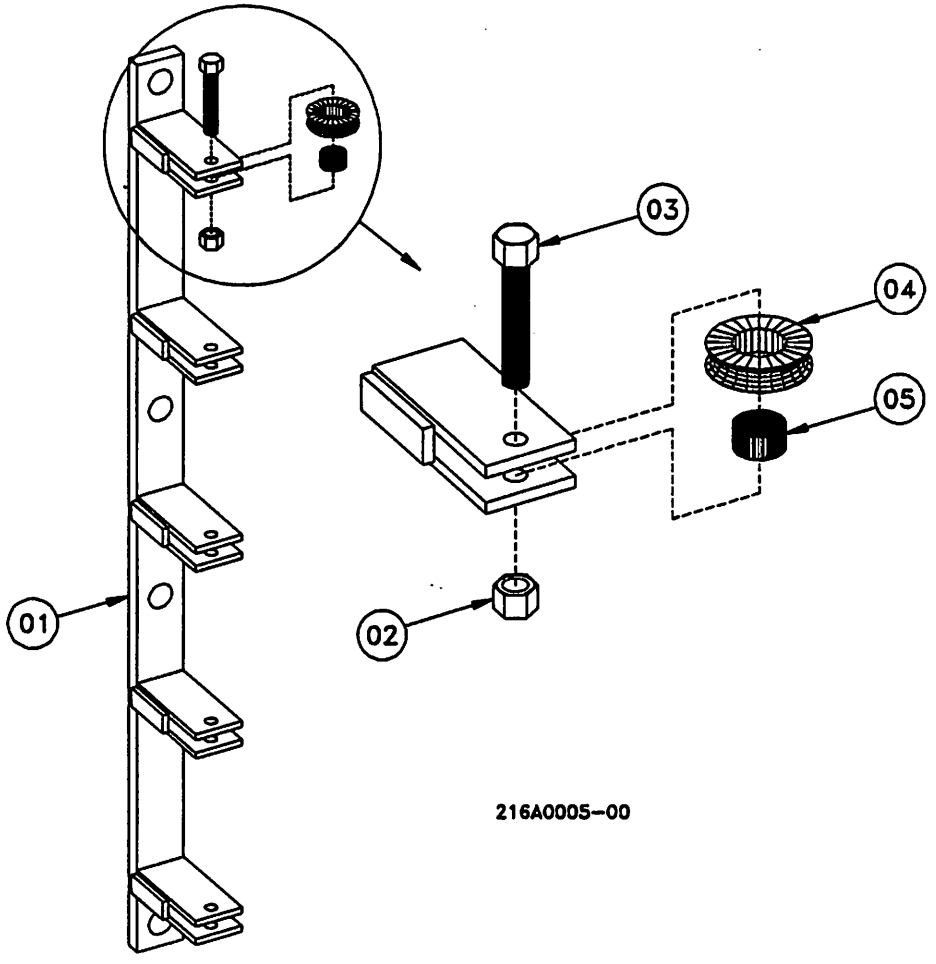
ITEM #	DESCRIPTION	PART NUMBER	QTY.
40	HEX HD CAP SCR	AAA00067	4
41	LOCK WASHER	AHB00008	4
42	NUT	AGC00015	4
43	BRAKE ASSEMBLY	SEE ELECTRICAL	1
44	MOTOR	SEE ELECTRICAL	1
46	CONNECTING LINK	DCB00011	1
47	GEAR REDUCER SPROCKET	112A0001-00	1
48	IDLER SPROCKET	112A0001-01	1
49	PIN	242A0007-00	1
50	SPROCKET SPACER	241A0020-00	1
51	BEARING	CHA00006	1
52	SET SCREWS	ADB00018	2
53	PULL BRACKET	241B0025-00	1
54	CHAIN STUD	241A0015-00	1
58	INSERTER SUPPORT BAR	241A0022-00	1
59	HEX HD CAP SCR	AAA00090	2
60	FLAT WASHER	AHA00008	2
61	FLEX LOCK NUT	AGB00006	2

NON-COMMON PARTS PER BALER MODEL NUMBER

ITEM #	DESCRIPTION	BB, B400 4000, 4400 5400	4200	4500 4700	QTY.
1	FRAME	241D0062-40	241D0062-42	241D0062-45	1
15	CARRIAGE TRACK (TOP & BOTTOM)	241A0055-01	241A0055-03	241A0055-05	2
18	NEEDLE	241B0007-10	241B0007-06	241B0007-08	5
45	ROLLER CHAIN	DCB00182	DCB00204	DCB00228	1
63	INSERTER SUPPORT EXTENSION	241A0008-00	241A0008-09	241A0008-03	1

AUTO-TY

SPARE PARTS - INSERTER WIRE GUIDE



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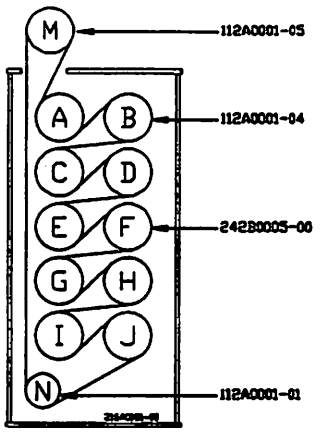
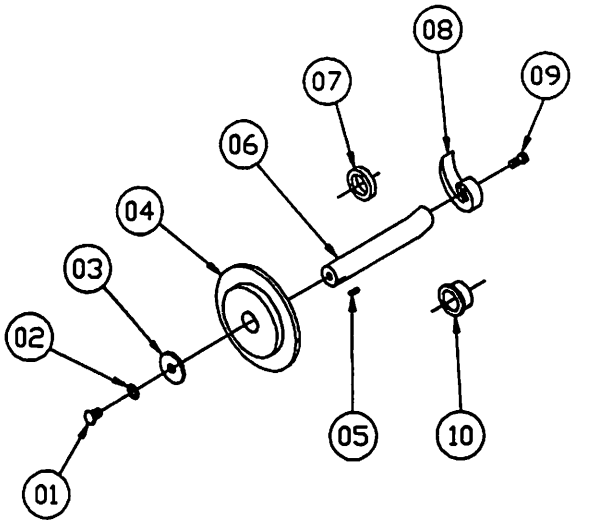
ITEM #	DESCRIPTION	PART NUMBER	QTY.
01	INSERTER WIRE GUIDE	241B0046-00	1
02	5/16-18 FLEX LOCK NUT	AGB00004	5
03	5/16-18 X 1 1/4 HEX HD CAP SCR	AAA00019	5
04	ROLLER	241A0018-02	5
05	BUSHING	241A0030-02	5

AUTO-TY
SPARE PARTS - TWISTER MECHANISM





TWISTER ASSEMBLIES 1,2,3,4,5,7,8,9,10

ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	HEX HD CAP SCR	AAA00032	9
2	LOCK WASHER	AHB00006	9
3	RETAINER	242A0011-00	9
4	SPROCKET	112A0001-04	9
5	KEYSTOCK	ATF00001	-
6	TWISTER HOOK SHAFT	242B0004-00	10
7	COLLAR, SET	DEA00003	10
8	*TWISTER HOOK	242B0006-00	10
9	SOC HD CAP SCR	AAB00046	10
10	BUSHING	CKA00003	20
	CHAIN W/CON. LINK	DCB00293	1

TWISTER ASSEMBLY F - SAME AS ABOVE EXCEPT:

4	ECCENTRIC SPROCKET (DRIVES CUTTER MECH.)	242B0005-00	1

TWISTER ASSEMBLY M - ON GEAR REDUCER

SPROCKET	1120001-05	1
KEYSTOCK	ATF00001	-
GEAR REDUCER	DAA00003	1
COMPLETE BRAKE	DAB00001	
MOTOR	SEE ELECTRICAL	
GUARD	242A0009-00	1
SCREWS	AFB00036	2

*CAUTION: DO NOT GRIND OR WELD ON TWISTER HOOKS.
BROKEN HOOKS ARE TO BE REPLACED WITH NEW HOOKS ONLY.

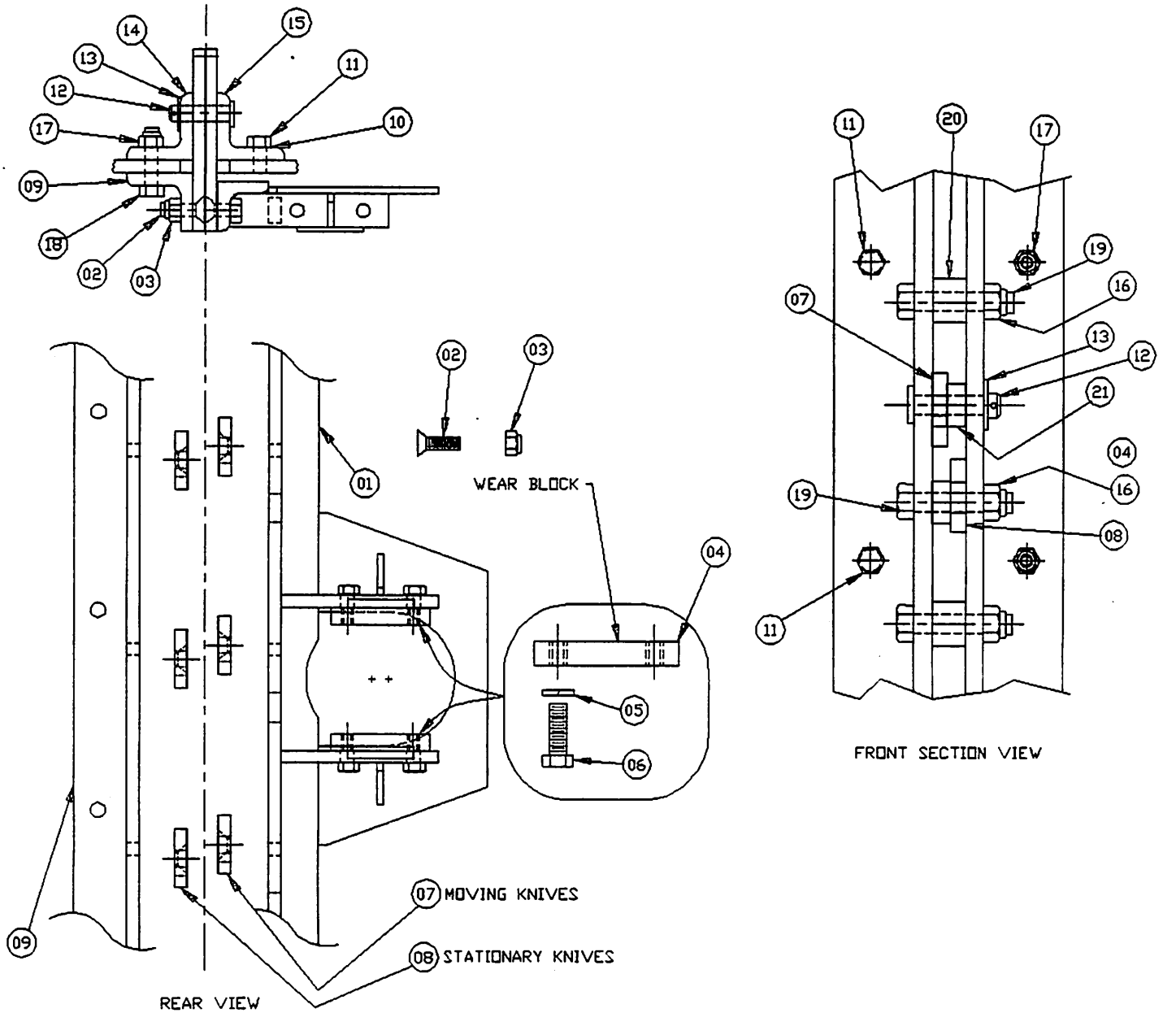
AUTO-TY

CHAIN TENSIONER

TWISTER ASSEMBLY N - CHAIN TENSIONER ASSEMBLY

DESCRIPTION	PART NUMBER	QTY.
TAKE-UP BRACKET	242C0020-00	1
BOLTS	AAB00077	3
FLAT WASHER	AHA00007	3
LOCK WASHER	AHB00008	3
PIN DRIVE SPROCKET	242A0007-00	1
SET SOCKET SCREW	ADB00018	1
SPROCKET	112A0001-01	1
SET SOCKET SCREW	ADB00018	1
ROLLER BEARING	CHA00006	1
SQUARE HD SET SCREW	ADA00033	1
HEAVY HEX NUT	AGC00017	1
FLAT WASHER	AHA00008	1

TWISTER CUTTER



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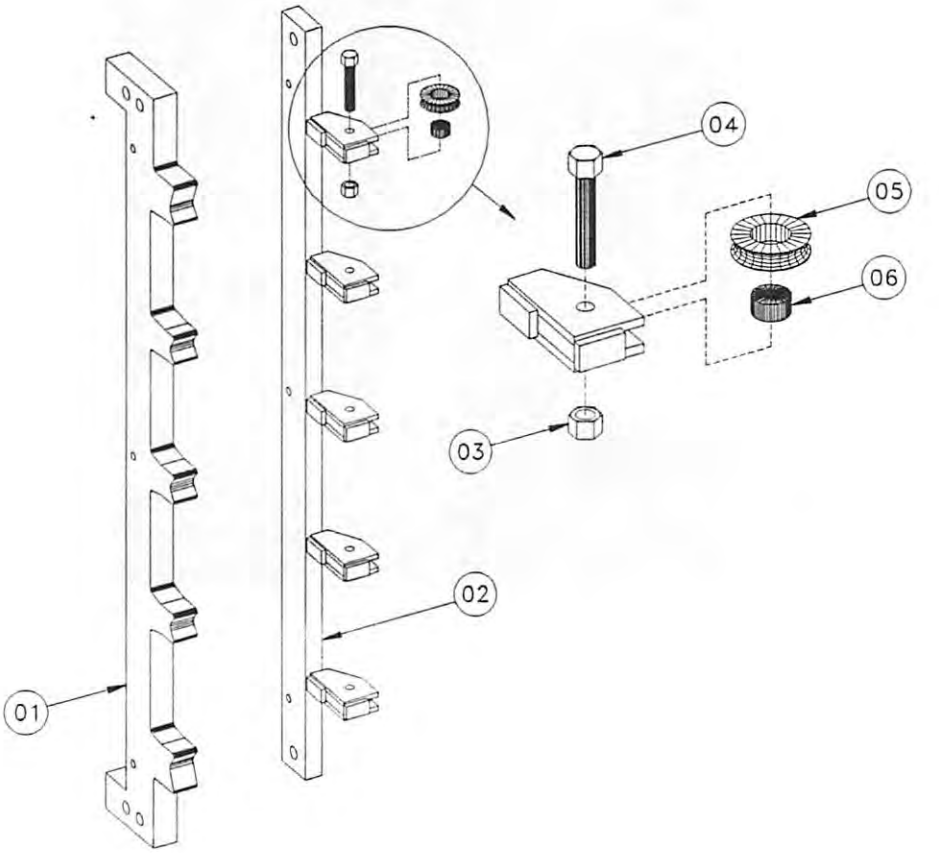
AUTO-TY

SPARE PARTS - TWISTER CUTTER
5 - WIRE

ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	DRIVE BAR	242C00021-00	1
2	FLAT SOC HD HEX CAP SCR	ACB00038	10
3	FLEX LOCK NUT (TIGHTEN STATIONARY KNIFE SECURELY) (SNUG UP MOVING KNIFE .001 TO .002 CLEARANCE)	AGB00002	10
4	RYERTEX RAM LINER	223A0509-00	2
5	LOCK WASHER	AHB00006	4
6	HEX HD CAP SCR	AAA00031	4
7	CUTTER KNIFE	242B0019-00	5
8	CUTTER KNIFE	242B0019-00	5
9	REAR KNIFE SUPPORT	242B0002-00	1
10	LOCK WASHER	AHB00006	6
11	HEX HD CAP SCR	AAA00031	6
12	CLEVIS PIN	APA00006	5
13	FLAT WASHER	AHA00007	5
14	FRONT KNIFE SUPPORT	242B0003-91	1
15	FRONT KNIFE SUPPORT	242B0003-90	1
16	HEX HD CAP SCR	AAA00068	11
17	FLEX LOCK NUT	AGB00002	6
18	HEX HD CAP SCR	AAA00035	5
19	HEX HD CAP SCR	AAA00068	11
20	CUTTER KNIFE SPACER	242A0010-01	6
21	CUTTER KNIFE SPACER	242A0010-00	10

AUTO-TY

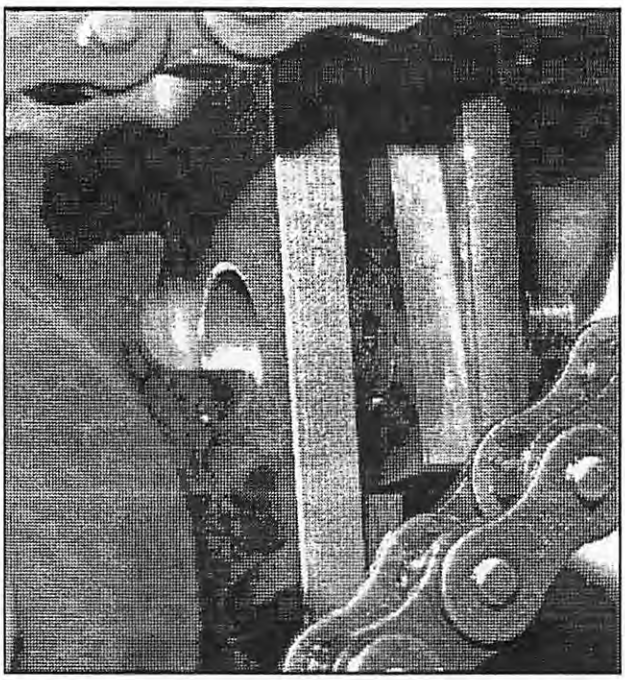
SPARE PARTS - TWISTER WIRE GUIDE



ITEM #	DESCRIPTION	PART NUMBER	QTY.
01	T.W. GUIDE OUTPUT SIDE	242B0001-00	1
02	T.W. GUIDE INPUT SIDE	242C0036-00	1
03	5/16-18 FLEX LOCK NUT	AGB00004	5
04	5/16-18 X 1 1/4 HEX HD CAP SCR	AAA00019	5
05	ROLLER	241A0018-02	5
06	BUSHING	241A0030-02	5

AUTO-TY

TWISTER CUTTER



216A0188-00

In order to replace cutter knives or cutter knife bolts, the following steps must be taken:

1) Align holes in cutter knife frame to cutter knife bolt heads by moving the drive bar. This can be done by releasing the brake and manually turning the motor with a 3/8 Allen wrench.

2) Replace knife/bolt.

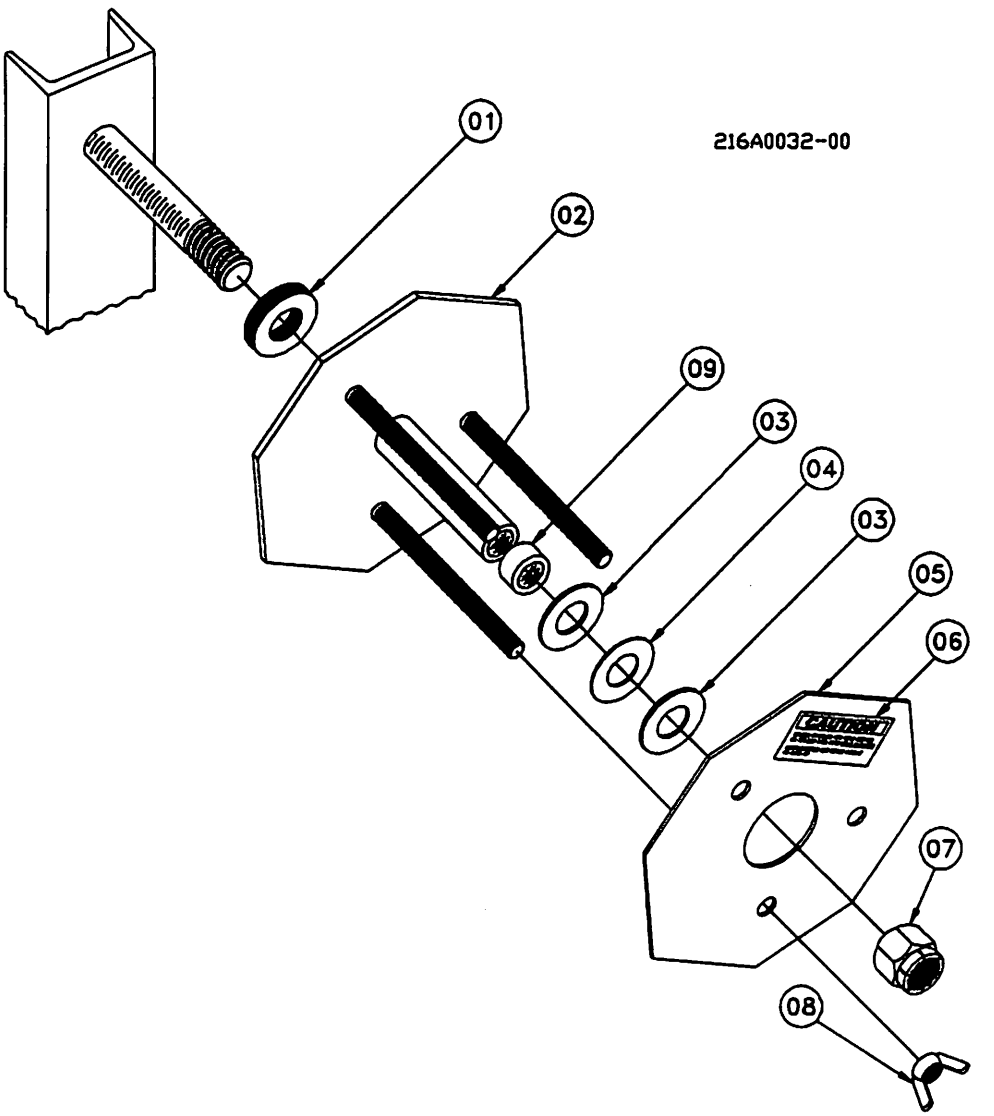
3) Tighten movable cutter knife bolt using 7/32 Allen wrench (Drive bar is threaded). When bolt is snug, back the bolt out 1/4 turn.

4) Tighten lock nut using 3/8 wrench making sure bolt stays in the backed out position.

Failure to follow this procedure will result in failure of cutter knife bolt

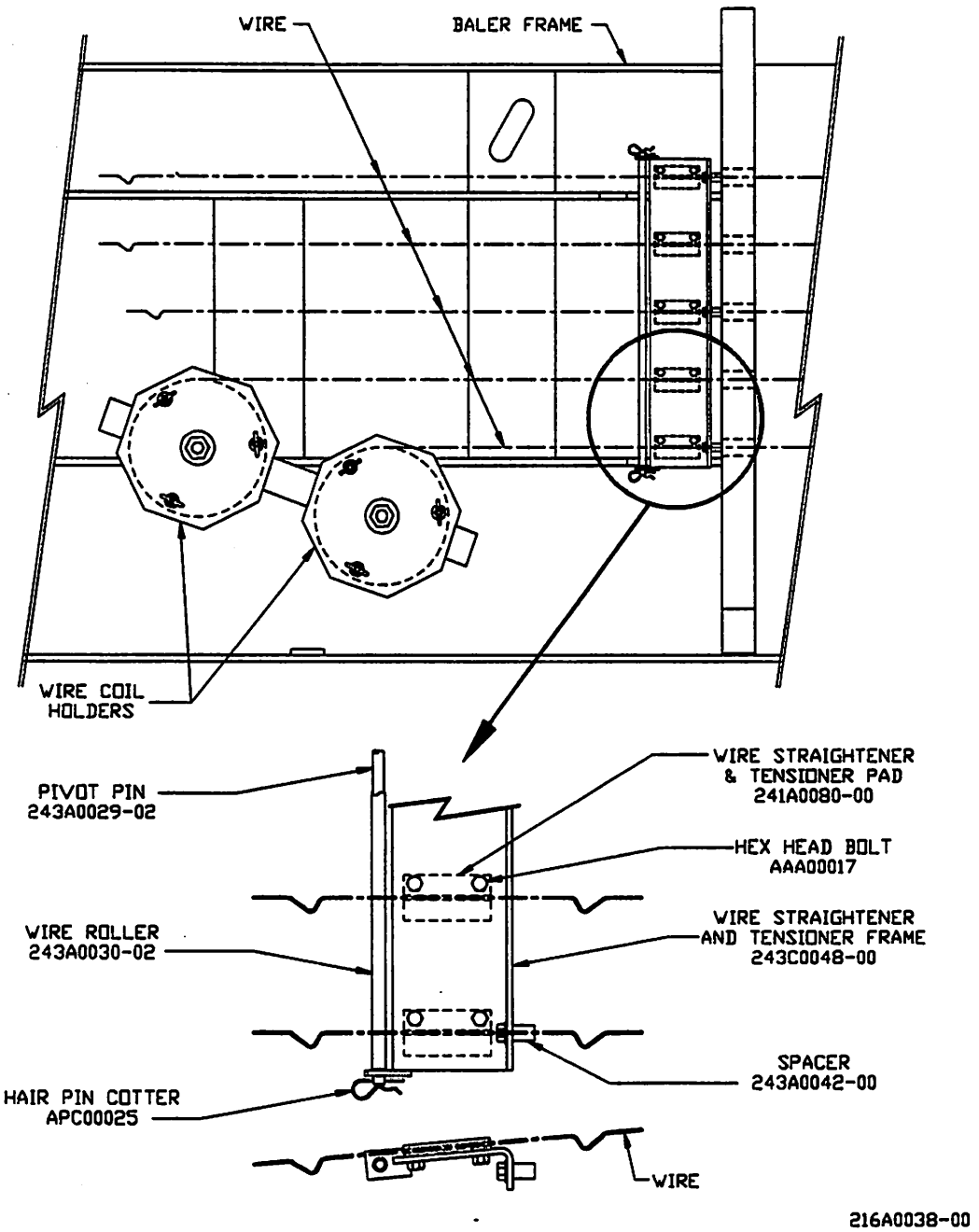
NEVER PERFORM MAINTENANCE ON BRAKE UNTIL MOTOR & ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.

AUTO-TY
SPARE PARTS - WIRE COIL HOLDER

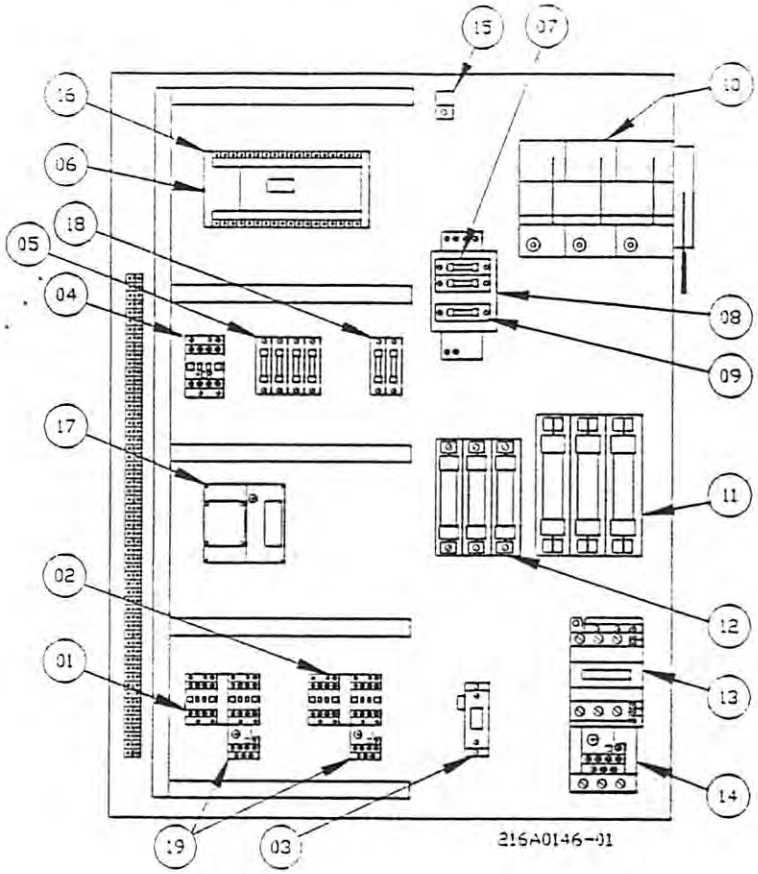


ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	INNER UHMW SPACER	242A0034-00	1
2	WIRE COIL REEL	242B0032-00	1
3	FLAT WASHER	AHA00011	2
4	OUTER UHMW WASHER	242A0056-00	1
5	WIRE COIL RETAINER PLATE	242A0031-00	1
6	CAUTION TAG	111A0040-00	1
7	1-8 FLEX LOCK NUT	AGB00014	1
8	5/8-11 WING NUT	AZA00011	3

WIRE STRAIGHTENER & TENSIONER ASSEMBLY



TYPICAL CONTROL PANEL SLC500 W/TOUCH SCREEN
(1 PUMP) IEC ELECTRICAL



ITEM	DESCRIPTION	PART NUMBER	QTY
01	REV. CONTACTOR TWISTER	GNH00001	1
02	REV. CONTACTOR INSERTER	GNH00001	1
03	OIL COOLER OVERLOAD	PER HP/VOLT	1
04	MASTER CONTROL RELAY	GRA00026	1
05	PLC OUTPUT FUSES	GMH00002	4
06	A.B. SLC500 BATTERY	GJA00056	1
07	PRIMARY TRANSFORMER FUSES	PER HP/VOLT	2
08	TRANSFORMER	PER HP/VOLT	1
09	SECONDARY TRANSFORMER FUSE	PER HP/VOLT	1
10	DISCONNECT	PER HP/VOLT	1
11	PUMP FUSES	PER HP/VOLT	3
12	INSERTER/TWISTER FUSES	GMA00031	3
13	PUMP CONTACTOR	PER HP/VOLT	1
14	PUMP CONTACTOR OVERLOAD	PER HP/VOLT	1
15	GROUND LUG	GDA00002	1
16	A.B. SLC500 PROCESSOR	GJA00048	1
17	24 VDC POWER SUPPLY	GQB00006	1
18	POWER SUPPLY FUSES	GMH00001	2
19	INSERTER/TWISTER CONTACTOR OVERLOAD	GOC00006	2

WARNING: The Programmable Logic Controller (PLC Item 16), and the baler enclosure must be properly grounded. All applicable codes and ordinances must be observed when wiring the baler.

Chapter 9 Maintenance and Troubleshooting

General

The SLC 500 controller has been designed to simplify maintenance and troubleshooting procedures. By observing the diagnostic indicators on the front of the processor unit and I/O modules, the majority of faults can be located and corrected. These indicators, along with error codes identified in the programming device User's Manual and programmer's monitor, help trace the source of the fault to the user's input/output devices, wiring, or the controller.

Safety Considerations

Safety considerations are an important element of proper troubleshooting procedures. Actively thinking about the safety of yourself and others, as well as the condition of your equipment, is of primary importance. Several safety areas are discussed below.

Power Supplies: Before working on a fixed I/O unit, always remove the power supply input power at the main power disconnect switch.

The power LED on the fixed I/O unit indicates that DC power is being supplied to the rack. The LED could be OFF when incoming power is present.

Replacing Fuses: When replacing a fuse, be sure to remove all power from the system.

Main Power Disconnect: The main power disconnect switch should be located where operators and maintenance personnel have quick and easy access to it. Ideally, the disconnect switch is mounted on the outside of the enclosure, so that it can be accessed without opening the enclosure.

In addition to disconnecting electrical power, all other sources of power (pneumatic and hydraulic) should be de-energized before working on a machine or process controlled by an SLC controller.

Activating Devices When Troubleshooting: When troubleshooting, never reach into the machine to actuate a device. Unexpected machine motion could occur. Use a wooden stick. A metal rod is more likely to damage the machine and could conduct electricity back to you.

Safety Considerations (continued)

Stand Clear of Machine: When troubleshooting any controller problem, have all personnel remain clear of the machine. The problem could be intermittent, and sudden unexpected machine motion could occur. Have someone ready to operate an emergency stop switch in case it becomes necessary to shut off power to the machine.

Program Alteration: There are several causes of alteration to the user program, including extreme environmental conditions, Electromagnetic Interference (EMI), improper grounding, improper wiring connections, and unauthorized tampering. If you suspect the memory has been altered, check the program against a previously saved program on an EEPROM or UVPROM memory module.

Safety Circuits: Circuits installed on the machine for safety reasons, like overtravel limit switches, stop push buttons, and interlocks, should always be hard-wired directly to the master control relay. These devices must be wired in series so that when any one device opens, the master control relay is de-energized thereby removing power to the machine. Never alter these circuits to defeat their function. Serious injury or machine damage could result.

Power Distribution: There are some points about power distribution that you should be aware of. First, the master control relay must be able to inhibit all machine motion by removing power to the machine I/O devices when the relay is de-energized.

Second, if you are using a DC power supply, interrupt the load side rather than the AC line power. This avoids the additional delay of power supply turn-on and turn-off. The DC power supply should be powered directly from the fused secondary of the transformer. Power to the DC input and output circuits is connected through a set of master control relay contacts.

Periodic Tests of Master Control Relay Circuit: Any part can fail, including the switches in a master control relay circuit. The failure of one of these switches would most likely cause an open circuit which would be a safe power-off failure. However, if one of these switches shorts out, it no longer provides any safety protection. These switches should be tested periodically to assure they will stop machine motion when needed.

Preventive Maintenance

The printed circuit boards of the controller must be protected from dirt, oil, moisture and other airborne contaminants. In order to protect these boards, the controller must be installed in an enclosure suitable for the environment. The interior of the enclosure should be kept clean and the enclosure door should be kept closed whenever possible.

Regularly inspect your terminal connections for tightness. Loose connections may cause improper functioning of the controller or damage the components of the system.

WARNING: To ensure personal safety and to guard against damaging equipment, inspect connections with incoming power OFF.

The National Fire Protection Association (NFPA) provides recommendations for electrical equipment maintenance. Refer to article 70B of the NFPA for general requirements regarding safety related work practices.

Troubleshooting

When troubleshooting, pay careful attention to these general warnings:

WARNING: Have all personnel remain clear of the controller and equipment when power is applied. The problem may be intermittent and sudden unexpected machine motion could result in injury. Have someone ready to operate an Emergency Stop switch in case it becomes necessary to shut off power to the controller equipment. Also, see NFPA 70E Part II for additional guidelines for safety related work practices.

WARNING: Never reach into a machine to actuate a switch since unexpected machine motion can occur and cause injury. Use a wooden stick. A metal rod could damage the machine and/or conduct current to the person holding it.

WARNING: Remove all electrical power at the main power disconnect switches before checking electrical connections or inputs/outputs causing machine motion.

Troubleshooting (continued)

If installation and start-up procedures detailed in the Chapters 7 and 8 were followed closely, your SLC controller will give you reliable service. If a problem should occur, the first step in the troubleshooting procedure is to identify the problem and its source. Do this by observing your machine or process and by monitoring the diagnostic LED indicators on the CPU, Power Supply and I/O modules. By doing this, the source of a problem can generally be narrowed down to the processor, wiring, or the input/output devices.

To assist you in identifying the source of the controller's operation problem, we have included some troubleshooting considerations including status indication, trouble description, probable causes and recommended action.

USING THE TROUBLESHOOTING CONSIDERATIONS TABLE GUIDE

To receive the maximum benefit of this Table Guide, we recommend the following steps in using its information:

1. Identify your and CPU LED status indicators.
2. Match your controller's status LED indicators with the status LED indicators located in the first column in the Troubleshooting Considerations Table.
3. Once the LED status indicators are matched to the appropriate table, simply move across the table identifying trouble Description and Probable Causes.
4. Then follow the Recommended Action steps for each probable cause until the cause is identified.
5. If Recommended Actions do not identify the trouble cause, contact your local Allen-Bradley Sales Office.

Troubleshooting (continued)

Refer to the following log to determine the status of the LED indicators:

- ☐ Indicates that LED is OFF.
- ■ Indicates that LED is ILLUMINATED.
- ▒ Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATIONS			
STATUS INDICATORS	**DESCRIPTION**	**PROBABLE CAUSES**	**RECOMMENDED ACTION**
☐ POWER ☐ PC RUN ☐ CPU FAULT ☐ FORCED I/O ☐ BATTERY LOW	Inadequate System Power	No Line Power	1. Verify proper line voltage and connections on the power terminals.
		Power Supply Fuse	1. Check the incoming power fuse, check for proper incoming power connections. Replace fuse. 2. If fuse blows again, replace the fixed I/O unit. Refer to Page 9-12 for fuse location and replacement procedures.
		Power Supply Overloaded	1. Verify that the contents of the 2-slot expansion rack does not exceed the 16 output limit. NOTE – This problem can occur intermittently if power supply is slightly overloaded when output loading and temperature varies.
		Defective Power Supply	1. Recheck other probable causes. 2. Monitor line power to the fixed I/O unit for possible transient or shorting problem identification. 3. Replace the fixed I/O unit.

Troubleshooting (continued)

Refer to the following log to determine the status of the LED indicators:

- ☐ Indicates that LED is OFF.
- ■ Indicates that LED is ILLUMINATED.
- ▒ Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATIONS			
STATUS INDICATORS	**DESCRIPTION**	**PROBABLE CAUSES**	**RECOMMENDED ACTION**
■ POWER ☐ PC RUN ☐ CPU FAULT ☐ FORCED I/O ☐ BATTERY LOW	Processor not in RUN Mode	Improper mode selected or User program logic	1. Verify selected processor mode. 2. If in program/test modes attempt RUN mode entry. 3. Check user program logic for suspend instructions if in suspend mode. Refer to either the Hand-Held Terminal Programming Manual - Publication 1747-809 or the Advanced Programming Software Manual - Publication 1747-801.
		Line Power Out of Operating Range	1. Check proper 115/230 Volt incoming connections. 2. Monitor for proper line voltage at the incoming power connections.
■ POWER ■ PC RUN ☐ CPU FAULT ☐ FORCED I/O ☐ BATTERY LOW	System Inoperable No Major CPU Faults Detected	User Program Logic Error	1. Monitor logic in RUN mode and verify desired I/O status. 2. Check for minor CPU faults. Refer to Hand-Held Programming Manual - Publication 1747-809 or Advanced Programming Software Manual - Publication 1747-801.
		Defective I/O Devices or I/O Wiring	1. Test inputs and outputs according to start-up procedures covered in Chapter 8.

Troubleshooting (continued)

Refer to the following log to determine the status of the LED indicators:

- Indicates that LED is OFF.
- Indicates that LED is ILLUMINATED.
- Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATIONS			
STATUS INDICATORS	**DESCRIPTION**	**PROBABLE CAUSES**	**RECOMMENDED ACTION**
POWER PC RUN CPU FAULT FORCED I/O BATTERY LOW	CPU Fault	CPU Memory Error	1. Cycle power.
		Faulty Memory Module	1. Remove power and then remove the Memory Module from the CPU. 2. Re-energize the controller. NOTE – If steady CPU FAULT LED changes to flashing, replace the existing Memory Module with a replacement module. Refer to Chapter 3 for removing and installing Memory Modules.
POWER PC RUN CPU FAULT FORCED I/O BATTERY LOW	CPU Major Error	Initial CPU Factory Power-up Condition	1. Refer to Chapter 8 and follow the Start-up procedures.
		Hardware/ Software Major Fault Detected NOTE – Erratic repetitive power cycling can cause a CPU Major Hardware Fault	1. Monitor Status File Word S2:6 for major error code. 2. Refer to Hand-Held Programming Manual - Publication 1747-809 or Advanced Programming Software Manual - Publication 1747-801 for major/minor fault identification. 3. Remove hardware/software condition causing fault. 4. Clear Status File S2:1/13 major error halted bit. 5. Clear Status File S2:5 minor error bits, if set. 6. Clear Status File S2:6 major error code (optional). 7. Attempt a CPU RUN mode entry. If unsuccessful, repeat recommended action steps above.

Troubleshooting (continued)

Refer to the following log to determine the status of the LED indicators:

- ☐ Indicates that LED is OFF.
- ■ Indicates that LED is ILLUMINATED.
- ▒ Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATIONS

STATUS INDICATORS	DESCRIPTION	PROBABLE CAUSES	RECOMMENDED ACTION
■ POWER ■ PC RUN ☐ CPU FAULT ■ FORCED I/O ☐ BATTERY LOW	System Does Not Operate Per Ladder Logic	User Forced I/O Disabling Operation	1. Monitor program file on-line and identify forced I/O. 2. Disable appropriate forces and test system conditions again. Refer to Hand-Held Programming Manual - Publication 1747-809 or Advanced Programming Software Manual - Publication 1747-801.
■ POWER ■ PC RUN ☐ CPU FAULT ▒ FORCED I/O ☐ BATTERY LOW	System Does Not Operate Per Programmed Forces	Forces User Programmed Are Not Enabled	1. Monitor program file on-line and identify programmed forces. 2. Enable appropriate forces and test system conditions again. Once forces are enabled FORCED I/O LED should be steady. Refer to Hand-Held Programming Manual - Publication 1747-809 or Advanced Programming Software Manual - Publication 1747-801.
■ POWER ☐ PC RUN ▒ CPU FAULT ☐ FORCED I/O ■ BATTERY LOW ①	CPU Major Error with Low or NO Battery Back-up	Loss of RAM Memory during Power Down Period	1. Replace the battery. Refer to Page 9-11 for battery installation and replacement procedures. 2. Refer to CPU major error recommended action steps. Refer to Hand-Held Programming Manual - Publication 1747-809 or Advanced Programming Software Manual - Publication 1747-801.

① Regardless of any other LED status indicator conditions, always replace the battery when the BATTERY LOW LED indicator is illuminated if RAM battery back-up is desired or replace the battery jumper for capacitor back-up of the memory.

Battery Catalog No. 1747-BA

Handling

The procedures listed below must be followed to ensure proper battery operation and reduce personnel hazards.

- Use only for intended operation.
- Do not ship or dispose of cells except according to recommended procedures.
- Do not ship on passenger aircraft.

WARNING:

- Do not charge the batteries. An explosion could result or the cells could overheat causing burns.
- Do not open, puncture, crush, or otherwise mutilate the batteries. A possibility of an explosion exists and/or toxic, corrosive, and flammable liquids would be exposed.
- Do not incinerate or expose the batteries to high temperatures. Do not attempt to solder batteries. An explosion could result.
- Do not short positive and negative terminals together. Excessive heat can build up and cause severe burns.

Storage

Store the lithium batteries in a cool, dry environment, typically +20°C to +25°C (+68°F to +77°F) and 40% to 60% relative humidity. Store the batteries and a copy of the battery instruction sheet in the original container, away from flammable materials.

Transportation

One or Two Batteries – Each battery contains 0.23 grams of lithium. Therefore, up to two batteries can be shipped together within the United States without restriction. Regulations governing shipment to or within other countries may differ.

Three or More Batteries – Procedures for the transportation of three or more batteries shipped together within the United States are specified by the Department of Transportation (DOT) in the Code of Federal Regulations, CFR49, "Transportation". An exemption to these regulations, DOT - E7052, covers the transport of certain hazardous materials classified as flammable solids. This exemption authorizes transport of lithium batteries by motor vehicle, rail freight, cargo vessel, and cargo-only aircraft, providing certain conditions are met. Transport by passenger aircraft is not permitted.

A special provision of DOT-E7052 (11th Rev., October 21, 1982, par. 8-a) provides that:

> Persons that receive cell and batteries covered by this exemption may reship them pursuant to the provisions of 49 CFR 173.22a in any of these packages authorized in this exemption including those in which they were received.

The Code of Federal Regulations, 49 CRF 173.22a, relates to the use of packaging authorized under exemptions. In part, it requires that you must maintain a copy of the exemption at each facility where the packaging is being used in connection with shipment under the exemption.

Shipment of depleted batteries for disposal may be subject to specific regulation of the countries involved or to regulations endorsed by those countries, such as the IATA Restricted Articles Regulations of the International Air Transport Association, Geneva, Switzerland.

Regulations for transportation of lithium batteries are periodically revised.

Disposal

WARNING: Do not incinerate or dispose of lithium batteries in general trash collection. Explosion or violent rupture is possible. Batteries should be collected for disposal in a manner to prevent against short circuitting, compacting, or destruction of case integrity and hermetic seal.

For disposal, batteries must be packaged and shipped in accordance with transportation regulations, to a proper disposal site. The U.S. Department of Transportation authorizes shipment of "Lithium batteries for disposal" by motor vehicle only in regulation 173.1015 of CRF49 (effective January 5, 1983). For additional information contact:

U.S. Department of Transportation
Research and Special Programs Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Although the Environmental Protection Agency at this time has no regulations specific to lithium batteries, the material contained may be considered toxic, reactive, or corrosive. The person disposing of the material is responsible for any hazard created in doing so. State and local regulations may exist regarding the disposal of these materials.

Battery Installation

Back-up power for the RAM memory is provided by a capacitor which will retain the contents of the RAM memory for a period of 5 to 30 days. (See the graph on Page5-1). For applications requiring memory back-up for a longer period of time an optional replaceable battery Catalog Number 1747-BA is required. The lithium battery provides back-up for approximately five years. A BATTERY LOW red LED alerts you when the battery voltage has fallen below a threshold level.

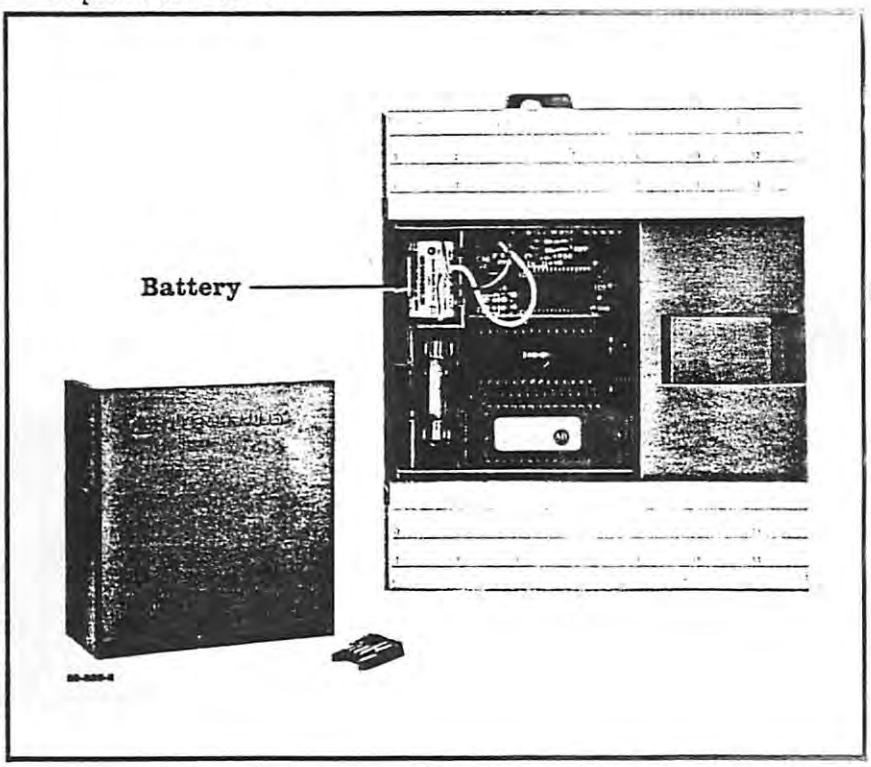
For Battery installation or replacement do the following:

NOTE – The battery can be replaced while the processor is powered.

1. Remove processor cover.
2. **If you are installing a battery in a new processor** (battery never installed before) remove the jumper from the battery socket.

2a. **If you are replacing an old battery,** unplug the battery connector from the socket.

3. Insert a new or replacement battery in the holder making sure it is held in by the retaining clip.
4. Plug the battery connector into the socket with the red **lead wire on the right.**
5. Replace the cover.



Power Supply Fuse Replacement

Under normal power-up conditions, the POWER indicator will illuminate. If a power supply fuse is blown, the POWER indicator will not illuminate. One of the following conditions, could cause a blown power supply fuse:

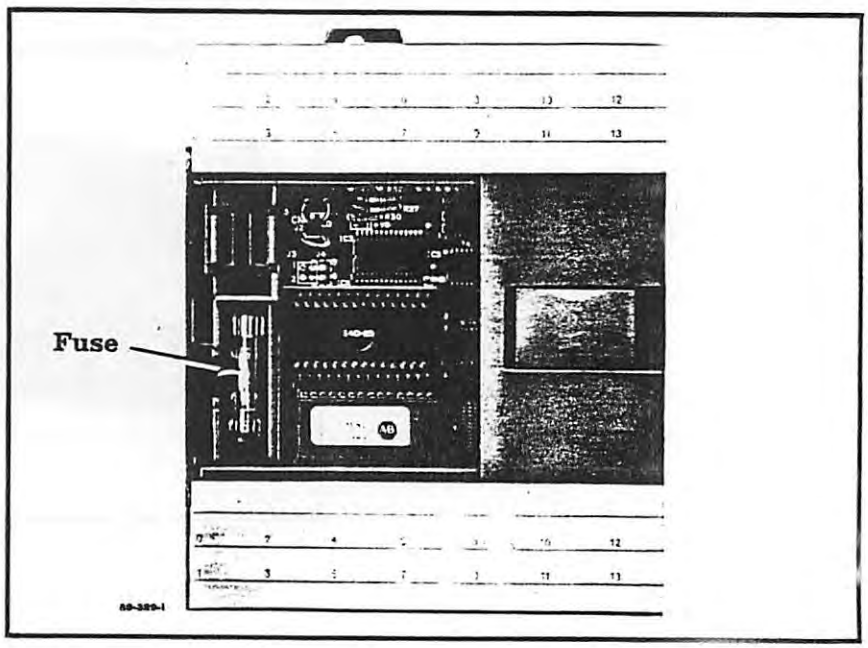
- Excessive line voltage
- Internal power supply malfunction

WARNING: Contact with AC line potential can cause injury to personnel. Remove system power before attempting fuse replacement.

CAUTION: Use only replacement fuses of the type and rating recommended for the unit. Improper fuse selection can result in equipment damage.

After the conditions causing the malfunction have been corrected, the fuse can be replaced. It is especially important to check the wiring. Replacement procedure:

1. Disconnect power to the processor.
2. Remove the cover on the processor.
3. Locate the fuse. Use a miniature fuse puller to grip the fuse and remove it from its holder.
4. Discard the fuse and replace it with the recommended replacement fuse.
5. Replace the cover on the processor.
6. Restore power to the processor. The POWER indicator should now illuminate.



AUTO-TY SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.

PART #111A0006-00

PART #111A0010-00

PART #11A0027-00

145\A0001-00

AUTO-TY SPARE TAGS

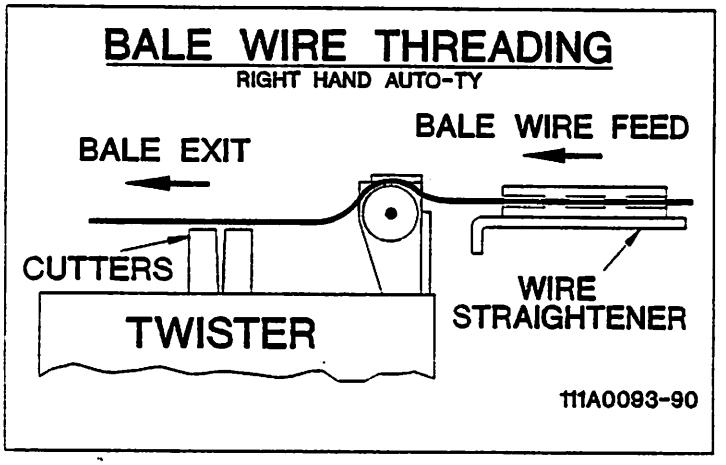
NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.

PART #111A0020-01

PART #111A0024-00

AUTO-TY SPARE TAGS
RIGHT HAND AUTO-TY

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.



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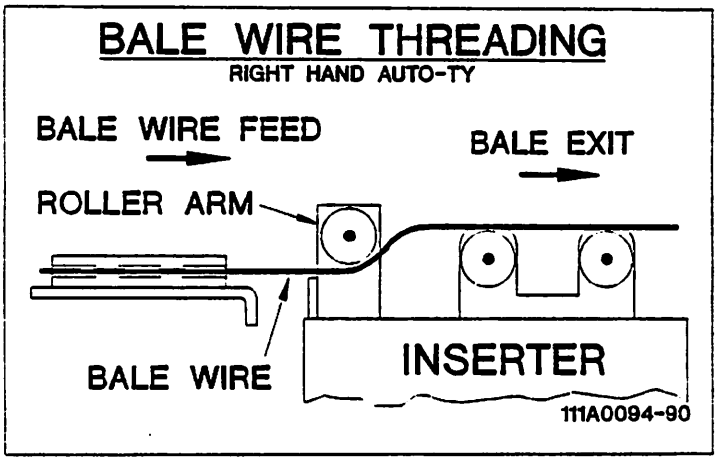
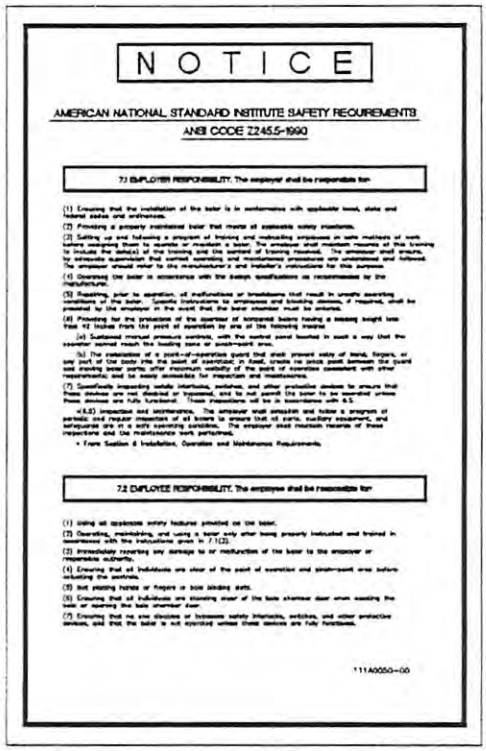


111A0094-90

AUTO-TY SPARE TAGS

NOTE: TO ORDER NEW TAGS, USE THE PART NUMBER BY EACH TAG.



NOTICE

AMERICAN NATIONAL STANDARD INSTITUTE SAFETY REQUIREMENTS
ANSI CODE Z245.5-1990

7.2 EMPLOYER RESPONSIBILITY. The employer shall be responsible for:

(1) Ensuring that the installation of the baler is in conformance with applicable local, state and federal codes and ordinances.

(2) Providing a properly maintained baler that meets all applicable safety provisions.

(3) Setting up and following a program of training and motivating employees in safe methods of work before assigning them to operate or maintain a baler. The employer shall maintain records of this training to include the date(s) of the training and the content of training received. The employer shall ensure, by adequate supervision, that correct operating and maintenance procedures are understood and followed. The employer should refer to the manufacturer's and installer's instructions for this purpose.

(4) Observing the baler in accordance with the design specifications as recommended by the manufacturer.

(5) Preventing, prior to operation, all malfunctions or breakdowns that result in unsafe operating conditions of the baler. Specific instructions to employees and bonding personnel, if required, shall be provided by the employer in the event that the baler chamber must be entered.

(6) Preventing that the production of the operation of compacted bales having a weighing weight less than 12 inches from the point of operation by one of the following means:

(a) Calibrated manual pressure controls, with the control panel located in such a way that the operator cannot reach the loading zone or point-of-hand area.

(b) The installation of a point-of-operation guard that shall prevent entry of hands, fingers, or any part of the body into the point of operation. In itself, create no pinch point between the guard and moving baler parts after maximum visibility of the point of operation consistent with other requirements, and be easily accessible for inspection and maintenance.

(7) Guaranteeing interlocking safety interfaces, switches, and other protective devices to ensure that these devices are not disabled or bypassed, and to not permit the baler to be operated unless these devices are fully functional. These inspections will be in accordance with 6.5.

4.5.2) Inspection and Maintenance. The employer shall establish and follow a program of periodic and regular inspection of all balers to ensure that all parts, auxiliary equipment, and safeguards are in a safe operating condition. The employer shall maintain records of these inspections and the maintenance work performed.

• From Section 4 Installation, Operation and Maintenance Requirements.

7.2 EMPLOYEE RESPONSIBILITY. The employee shall be responsible for:

(1) Using all applicable safety features provided on the baler.

(2) Operating, maintaining, and using a baler only after being properly instructed and trained in accordance with the instructions given in 7.1(3).

(3) Immediately reporting any damage to or malfunction of the baler to the employer or responsible authority.

(4) Ensuring that all individuals are clear of the point of operation and point-of-hand area before activating the controls.

(5) Not placing hands or fingers in baler sliding parts.

(6) Ensuring that all individuals are standing clear of the baler chamber door when loading the baler or opening the baler chamber door.

(7) Ensuring that no one disables or bypasses safety interlocks, switches, and other protective devices, and that the baler is not operated unless these devices are fully functional.

111A0050-00

PART#: 111A0050-00

CAUTION

BALER MUST BE SHUT OFF BY **LOCKING** BALER DISCONNECT SWITCH IN THE **OFF POSITION** WHEN PERFORMING ANY OF THE FOLLOWING:

WHEN	threading, splicing, or aligning tie wires through Twister or Inserter mechanism.
WHEN	tying or re-tying loose or broken wires.
WHEN	removing broken or excess wire form the Auto Ty mechanism or baling ram slots.
WHEN	performing other operator or maintenance functions in or around the Baler or Auto Ty mechanism.
NOTE:	Tie wires should be spliced together downstream of the Twister or Inserter mechanism. See the Baler manual provided with the baler.

111A0057-00

PART #: 111A0057-00

145\A0001-00

COMMENT FORM

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☐ If your comment does not need a reply (for example, pointing out a typing error), check this box and do not include your name and address below. If your comment is applicable, we will include it in the next revision of the manual.

☐ If you would like a reply, check this box. Please be sure to print your name and address below.

PAGE NUMBER: COMMENT:

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COMPANY OR ORGANIZATION

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ADDRESS

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CITY, STATE & ZIP CODE

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TELEPHONE NUMBER W/AREA CODE

Please Mail Form To:
BALEMASTER
DIVISION OF EAST CHICAGO MACHINE TOOL CORPORATION
980 CROWN COURT
CROWN POINT, INDIANA 46307
ATTN: SERVICE DEPARTMENT