Closed End Horizontal Balers

CE-724842-830, CE-604842-830, CE-604242-830, CE-504842-830, CE-504242-830, CE-503042-830, CE-503042-720, CE-303042-720

OPERATION, SERVICE, AND INSTALLATION

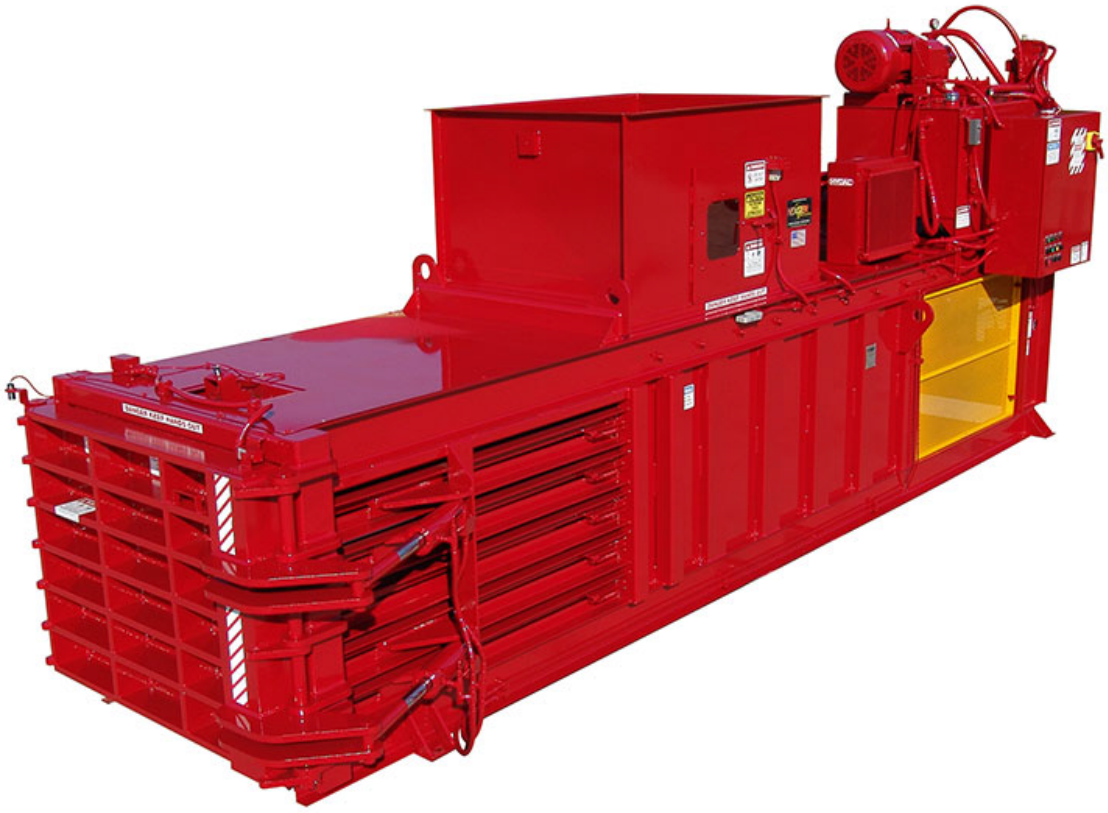
ISSUED DECEMBER 2022

CUSTOMER NAME: _____

SERIAL NUMBER: _____

COMPACTION & RECYCLING SOLUTIONS

0007-CE-BALERS-1222



Environmental Solutions Group
201 W. Main Street, Ste 300
Chattanooga, TN 37408
Marathon Customer Care: 1.800.633.8974

WARNING

IF INCORRECTLY USED, THIS EQUIPMENT CAN CAUSE SEVERE INJURY. THOSE WHO USE AND MAINTAIN THE EQUIPMENT SHOULD BE TRAINED IN ITS PROPER USE, WARNED OF ITS DANGERS, AND SHOULD READ AND FULLY UNDERSTAND THIS ENTIRE MANUAL BEFORE ATTEMPTING TO SET UP, OPERATE, ADJUST OR SERVICE THE EQUIPMENT. KEEP THIS MANUAL FOR FUTURE REFERENCE

IMPORTANT SAFETY NOTICE

Proper service and repair are important to the safe, reliable operation of the Marathon Equipment Company products. Service procedures recommended by Marathon Equipment Company are described in this Operation, Service, and Installation Manual and are effective for performing service operations. Some of these service operations may require the use of tools or blocking devices specially designed for the purpose. Special tools should be used when and as recommended. It is important to note that some warnings against the use of specific methods that can damage the product or render it unsafe are stated in the service manual. It is also important to understand these warnings are not exhaustive. Marathon Equipment Company could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each method. Consequently, Marathon Equipment Company has not undertaken any such broad evaluations. Accordingly, anyone who uses service procedures or tools which are not recommended by Marathon Equipment Company must first satisfy himself thoroughly that neither his safety nor the product safety will be jeopardized by the method he selects.

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ISSUED DECEMBER 2022

0007-CE-BALERS-1222

Printed in U.S.A.

Issued December 2022

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SECTION 1
GENERAL INFORMATION

INTRODUCTION

Thank you for purchasing a Marathon® Closed End Horizontal Baler!

This product is designed to give you reliable service and superior performance for years to come. The purpose of this manual is to provide the owner and/or operators with the necessary information to properly install, operate, and maintain the machine. Also included are sections regarding troubleshooting and service procedures. The manual is not intended as a primary training source, but as a reference guide for authorized, trained personnel. Each person involved in the operation, maintenance, and installation of the machine should read and thoroughly understand the instructions in this manual and follow ALL warnings.

Employers involved in the operation, maintenance, and installation of the machine should also read and understand the most current version of the following applicable standards:

ANSI STANDARD NO. Z245.5, "SAFETY REQUIREMENTS FOR INSTALLATION, MAINTENANCE AND OPERATION"

ANSI STANDARD NO. Z245.51, "SAFETY REQUIREMENTS FOR BALING EQUIPMENT"

A copy of this standard may be obtained from:

ENVIRONMENTAL INDUSTRIES ASSOCIATION

4301 CONNECTICUT AVENUE, NW SUITE 300

WASHINGTON, D.C. 20008

OSHA Standards - 29 CFR

Refer to:

- Part 1910.147: "The Control of Hazardous Energy (Lock-Out/Tag-Out)"
- Part 1910.212: "Machinery and Machine Guarding: General Requirements for all Machines"
- All other applicable OSHA Standards

ANY SERVICE OR REPAIRS THAT GO BEYOND THE SCOPE OF THIS MANUAL SHOULD BE PERFORMED BY FACTORY AUTHORIZED PERSONNEL ONLY!

If you should need further assistance, please contact your distributor. You will need to provide the equipment serial number, installation date, and electrical schematic number to your distributor.

If you have any safety concerns with the equipment or need further information, please contact us at:

Marathon Equipment Company

P.O. Box 1798

Vernon, AL 35592-1798

Attn: Field Service Department

877-258-1105

PREFACE

The following sections are a guide for maintenance and service of the Marathon Equipment Company unit. The sections cover preventive maintenance, adjustment, and troubleshooting hints. Before performing maintenance, check the work area carefully to find all the hazards present and make sure all necessary safeguards or safety devices are used to protect all persons and equipment involved. In order to diagnose a problem quickly and effectively, a service person must be thoroughly familiar with the machine. This Operation, Service, and Installation Manual explains the system and its major components. Diagrams and schematics of the electrical and hydraulic systems are in the Service Section.

IMPORTANT!

- Before starting any maintenance, study this section of the manual.
- Read all hazard warnings and decals on the unit.
- Clear the area of other persons before performing any maintenance.
- Know and understand safe use of all controls.
- It is your responsibility to understand and follow manufacturer's instructions on equipment maintenance and care.

HAZARD SYMBOLS AND DEFINITIONS

Listed below are the definitions for the various levels of hazards. It is important that the operators of this equipment and people who service units read and understand all warnings as they relate to this equipment operation.

- DANGER – indicates an imminently hazardous situation, which WILL result in DEATH or SERIOUS INJURY if you don't follow proper instructions.
- WARNING – indicates an imminently hazardous situation, which COULD result in DEATH OR SERIOUS INJURY if you don't follow proper instructions.
- CAUTION – indicates an imminently hazardous situation, which will result in MINOR to MODERATE INJURY if you don't follow proper instructions.
- NOTICE – means unit or other property may be damaged if these instructions are not followed.

You must read and obey all warnings in any manual produced by Marathon Equipment Company to support your unit.

LOCK-OUT & TAG-OUT INSTRUCTIONS FOR HORIZONTAL BALERS

⚠ DANGER

Before entering any part of the baler, be sure that all sources of energy have been shut off, all potential hazards have been eliminated, and the baler is locked-out and tagged-out in accordance with OSHA and ANSI requirements.

The specific Lock-Out and Tag-Out instructions may vary from company to company (i.e. multiple locks may be required, or other machinery may need to be locked-out and tagged-out). The following instructions are provided as minimum guidelines.

INSTRUCTIONS

1. Notify all affected employees that servicing or maintenance is required on the baler and that the baler must be shut down and locked out to perform the servicing or maintenance.
2. Perform a hazard assessment;
   a. The authorized employee shall refer to the company procedure to identify the type and magnitude of the energy that the baler utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. Wear proper personal protective equipment.
4. If baler is operating, it must be shut down by the normal stopping procedure. If the ram is pressing against a load, move the ram rearward before shutting the baler down.
5. De-activate the energy isolating device(s) so that baler is isolated from the energy source(s).
   a. Shut down all power sources.
   b. Move the main disconnect lever to the OFF position.
6. Lockout the energy isolating device(s) with assigned individual lock(s).
   a. Padlock the disconnect lever with a keyed padlock and take the key with you.
   b. Along with the padlock, place an appropriate, highly visible, warning tag on the disconnect lever. The tag should provide a warning such as:

      “Danger: Do not operate equipment. Person working on equipment.” or

      “Warning: Do not energize without the permission of _____.”

   c. Place operating components in such a position so as not to be subject to possible free fall and/or install additional blocking devices to prevent this potential for any raised or elevated component.
7. Stored hydraulic energy must be removed from the baler hydraulic circuit for complete Lock-Out and Tag-Out. Make sure that this energy has been relieved by manually depressing the solenoid valve pin located in the center of each coil end of the directional control valve.
8. After locking and tagging the baler, ensure that the baler is disconnected from the energy source by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate. Try to start and operate the baler (as outlined in the Operating Instructions) to make sure the Lock-Out and Tag-Out is effective. If the Lock-Out and Tag-Out is effective, remove the key from the key switch and take it with you.

LOCK-OUT & TAG-OUT INSTRUCTIONS (CONTINUED)

9. Before entering baler perform hazard assessment for confined space requirements (hazardous fumes, dust or other toxic material).

10. The baler is now locked out.

RESTORING SERVICE

When the servicing or maintenance is completed and the stationary baler is ready to return to normal operating condition, the following steps shall be taken:

1. Check the baler and the immediate area around the baler to ensure that nonessential items have been removed and that the baler components, guards and covers are operationally intact.

2. Check the work area to ensure that all employees have been safely positioned or removed from any hazardous area.

3. Verify that the controls are in neutral.

4. Remove the lockout devices and re-energize the baler.

NOTICE

The removal of some forms of blocking may require re-energizing of the baler before safe removal.

5. Notify affected employees that the servicing or maintenance is completed and the baler is ready for use.

6. Reassess area to determine all hazards are protected.

SERVICE/PARTS ASSISTANCE

Assistance in troubleshooting, repair and service is available by contacting the authorized Marathon Equipment Company Dealer in your area. Parts are available at your Marathon Equipment Company Dealer or through Marathon Equipment Company. Marathon Equipment Company personnel are trained to give prompt, professional assistance.

ALWAYS give the machine serial number in all correspondence relating to the equipment.

GUARDS AND ACCESS COVERS

Before operating or performing maintenance, check the work area carefully to find all the hazards present and make sure all guards and safety devices are in place to protect all persons and equipment involved.

⚠ WARNING

DO NOT operate without all guards and access covers in place.

GREASE LUBRICANT RECOMMENDATION

Use a grease gun. Before engaging grease gun, clean the fitting. Always pump enough grease to purge the joint of contaminated grease and wipe off the excess grease. Lubricate a unit as recommended on the lubrication decal on the unit and in the Operation, Service, and Installation Manual. Use NLGI 000 grease.

RECOMMENDED OILS

The following oils by brand name are approved for use in the hydraulic system on this equipment and considered to be all temperature hydraulic fluids.

- Union-UNAX-46, UNAX-AW46
- Gulf-Harmony 47, Harmony 48-AW
- Exxon-Teresstic 46, NUTO 46
- Texaco-Rando 46
- Chevron-AW 46
- Shell-Turbo 46, Tellus 46
- Citgo-Pacemaker 46, Tellus-AW46
- Conoco-Super Hydraulic Oil 46

Automatic Transmission Fluid (for 15 HP and smaller units only)

- Quaker State-Dextron II (ATF)

Cold Weather Fluid

- Amoco-Rycon MV

WARNING DECALS ON THE UNIT

⚠ WARNING

DO NOT operate without all guards and access covers in place.

Make sure you can read all warning and instruction decals. Clean decals if you cannot read the words. See below for directions on cleaning decals. Replace any decal that is damaged, missing, or is not readable. When you replace a part that has a decal, make sure a new decal is installed on the new part. See the Operation, Service, and Installation Manual for replacement decals. Order replacement decals from Marathon Equipment Company or an authorized dealer.

DECAL CARE

It is important that the decals are properly cleaned to make sure that they are readable and do not come off the unit. Use the following steps to clean the decals.

A. General Instructions

Following these instructions helps the decals adhere longer.

- Wash the decals with a blend of mild car wash detergent and clean water
- Rinse with clean water
- Let the unit air-dry or dry with a micro-fiber cloth
- Do not allow fuels to stay in contact with the decal for an extended period of time. Remove the fuel contamination as quickly as possible
- Do not use carnauba-based wax over the decals
- Do not use a mechanical brush while washing the decals.

B. Pressure Washer Precautions

Pressure washing can cause damage to decals. It can cause the edges of the decals to lift and peel the decal away from the unit. Over time, the decal can fade, crack or chip away.

Use pressure washing only when other cleaning methods are not effective. If you use a pressure washer, use the following precautions.

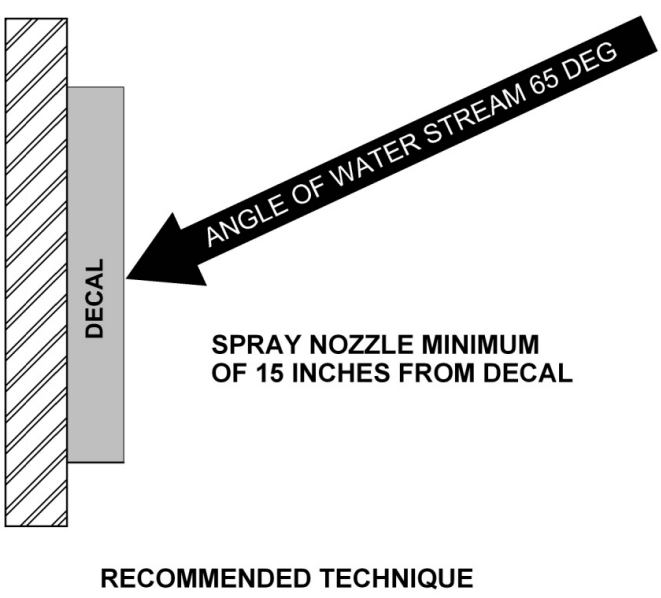
- Spray nozzle opening: 40° wide pattern
- Spray angle: 65° from unit's body
- Distance of nozzle to decal: 15" minimum
- Water pressure: less than or equal to 800 psi
- Length of time: not more than 30 sec.
- Do not use sharp angles to clean the decals – this can lift the decals from the unit.
- NEVER use a "turbo pressure nozzle".

C. Remove Difficult Debris

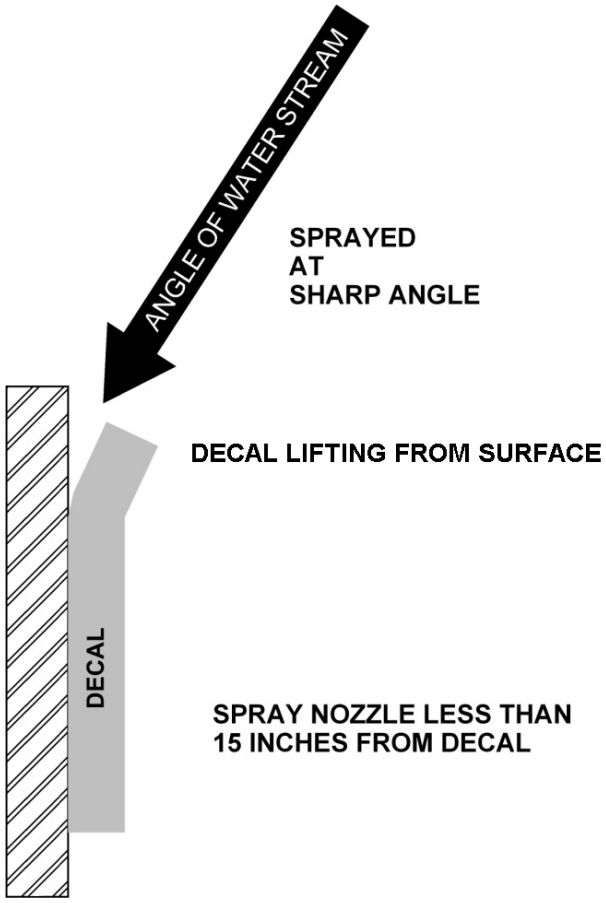
When normal cleaning procedures do not remove difficult debris from the decals, try the following:

- Spot clean the decal with Isopropyl Alcohol and a micro-fiber cloth (rag)
- If these methods do not work on a problem area, call a Marathon Equipment Company Dealer or Marathon Equipment Company Customer Support.

DECAL CARE (CONTINUED)

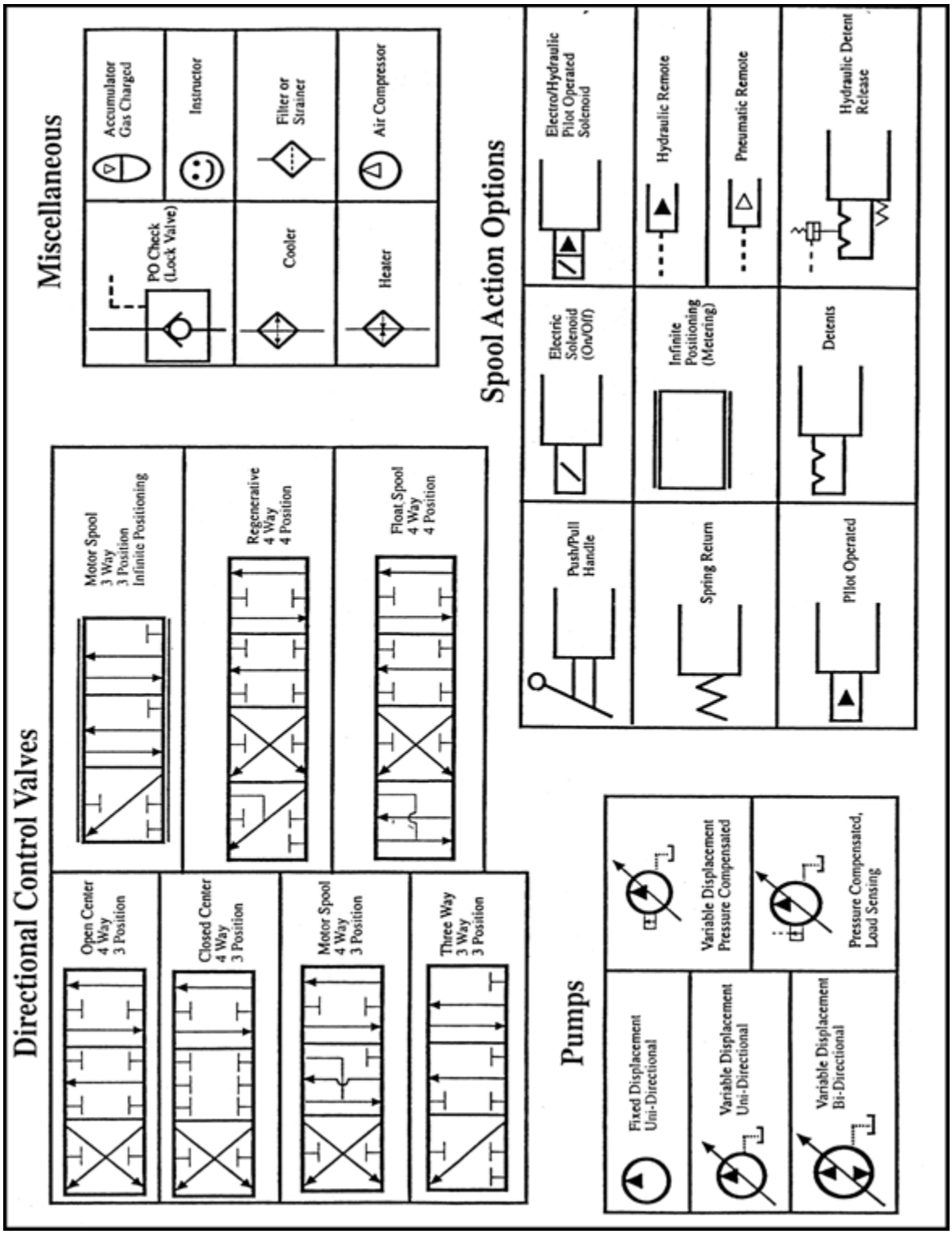


RECOMMENDED TECHNIQUE

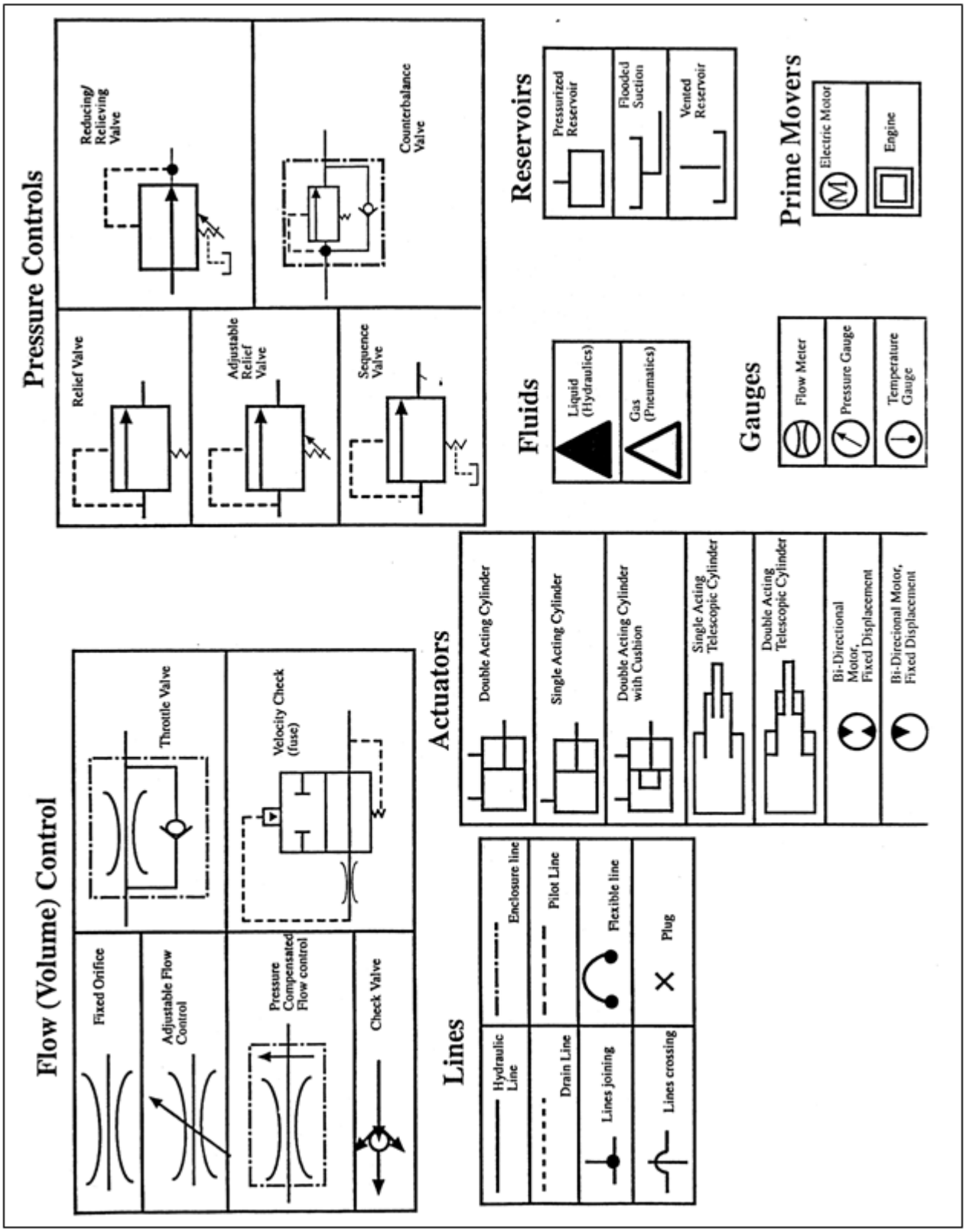


INCORRECT TECHNIQUE

HYDRAULIC SYMBOLS

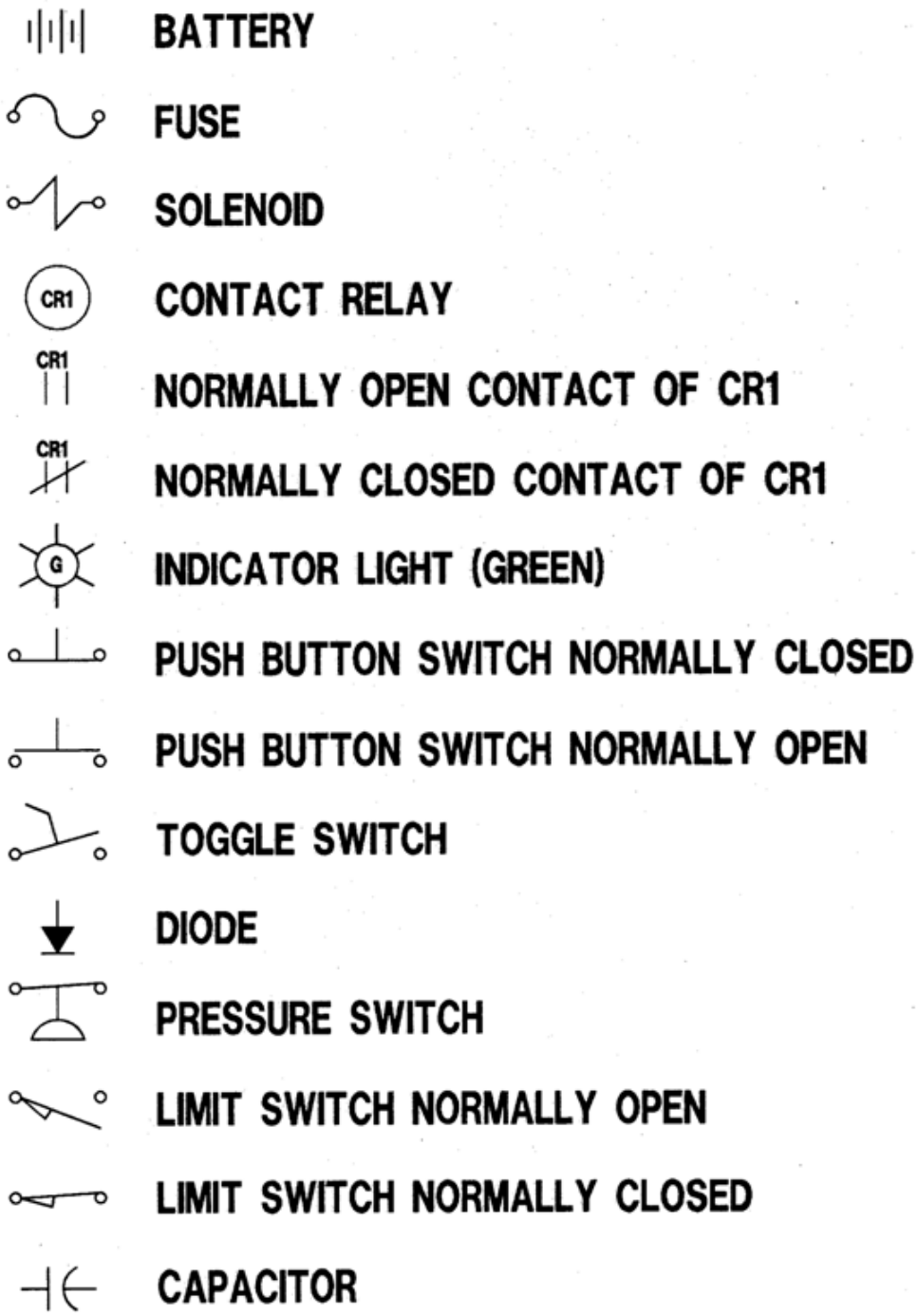


HYDRAULIC SYMBOLS (CONTINUED)



ELECTRICAL SYMBOLS

SYMBOL DEFINITIONS



SECTION 2
INSTALLATION

CONTACT INFORMATION

Technical Service and Warranty:

877-258-1105

Parts:

800-528-5308

For parts visit our eCommerce Marketplace at **www.mecomerchant.com**.

If you do not have a user name and password, contact our Parts Department and they will assist with your registration.

Normal Business Hours:

Monday-Friday 8:00am - 5:00pm

(Central Standard Time)

GENERAL INSTALLATION

These operating instructions are not intended as a substitute for training and experience in proper use and safety procedures in operating this equipment. Marathon Equipment Co. does not assume responsibility for the installation procedures of this equipment. Conformance to applicable local, state, and federal laws concerning installation rests with the customer.

This baler is designed for INDOOR USE ONLY.

⚠ CAUTION

Review this manual before making the installation. Study the job site and installation requirements carefully to be certain all necessary safeguards or safety devices are provided to protect all personnel and equipment during the installation and as a completed system. Special attention is directed to the most current ANSI Z245.5.

Concrete Pad or Floor

The pad or floor should be a minimum 3000 psi concrete, steel reinforced, 4” thick. It is recommended that the pad or floor be flush with the surrounding area. Working clearance for the panel box must comply with state and local building codes. Allow enough space in front of bale chamber for bale handling vehicle.

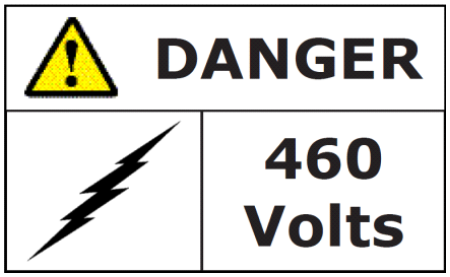
Anchoring

Anchor the closed end baler to the pad or floor using anchor plates at the corners of baler base. Four 1” diameter anchor bolts 3 3/4” long are required, Red Head type recommended. Anchor bolts are not provided by Marathon.

Decals

Installation of the baler is not complete until an inspection of the warning decals has been made. Decals should be clearly visible, legible, securely applied and in the proper location. For decal description and location, see **Replacement Parts** of this manual.

ELECTRICAL INSTALLATION



The panel box contains high voltage components. Only authorized service personnel should be allowed inside. See **Lock-Out & Tag-Out Instructions** in the **Service** section.

⚠ DANGER

Before making any electrical connection, be sure that the disconnect switch has been locked-out and tagged-out.

1. Use the **FUSE AND CIRCUIT BREAKER** 56 charts and the **WIRE SIZE** 56 charts in the **Service** section of this manual for reference during the electrical installation.
2. Before connecting power to the baler, check the incoming line voltage with a voltmeter. Also, check voltage wiring in the baler panel box. If the baler is not wired to the proper voltage, make necessary corrections before proceeding.
3. A lockable disconnect switch is provided on the baler and is sized in accordance with the baler. Three phase power should be connected to the top of this switch. Be careful not to let incoming wires touch each other. A properly sized equipment ground should be connected to the enclosure ground lug.

⚠ WARNING

All equipment should be grounded per National Electric Code.

Grounding Instructions

This appliance must be connected to a grounded, metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the appliance.

If there is any doubt whether the equipment is properly grounded, a qualified electrician should be consulted.

START-UP INSTRUCTIONS

⚠ CAUTION

Make sure all persons and installation materials are clear of charge box area.

1. After the electrical connections are complete, check motor rotation by the following:
   a. Turn disconnect switch to the ON position.
   b. Have someone start the baler and immediately depress the EMERGENCY STOP button. Check motor rotation by watching the hub coupling through the slot in the pump-to-motor adapter. A rotation decal on the power unit shows correct rotation. In the event that this decal is missing, look at the hub coupling from the motor end. Rotation should be clockwise.

⚠ CAUTION

If the pump rotates backward, stop immediately! The pump will be damaged if it is operated in reverse even for short periods. Reversing any two incoming power lines will change the motor/pump rotation. Follow the **Lock-Out & Tag-Out Instructions** 6 of this manual.

2. With the ram in the full retract position, check to be sure the oil reservoir is filled to the 3/4 level on the sight gauge (refer to the maintenance chart for hydraulic **oil recommendations** 8). The hydraulic system pressure has been factory set.
3. The closed end baler is equipped with a photocell, a keyed interlock switch, a push button limit switch, and a forward/reverse limit switch. These items have been factory adjusted. Check the proper function of each of these prior to operation start-up. See the procedures in **Service Section** of this manual.
4. Make sure that the operators are thoroughly trained in the proper use of this equipment.

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SECTION 3
OPERATION

CONTACT INFORMATION

Technical Service and Warranty:

877-258-1105

Parts:

800-528-5308

For parts visit our eCommerce Marketplace at **www.mecomerchant.com**.

If you do not have a user name and password, contact our Parts Department and they will assist with your registration.

Normal Business Hours:

Monday-Friday 8:00am - 5:00pm

(Central Standard Time)

PRE-OPERATION INSTRUCTIONS

Employers should allow only authorized and thoroughly trained personnel to operate this baler.

This baler is equipped with a key operated locking system. Keys should be in possession of only authorized personnel. Turn off and remove the key after use.

NOTICE

Federal regulation prohibits the use of this equipment by anyone under 18 years of age.

⚠ WARNING

Do not operate baler until operating instructions are thoroughly understood. Wear safety glasses and gloves when operating this equipment.

⚠ WARNING

Stay clear of all internal baler parts and all moving external baler parts when in operation. Failure to do so could result in serious personal injury or death!

⚠ WARNING

Never enter any part of baler unless the disconnect switch has been turned off, padlocked, and all stored energy sources have been removed. See **Lock-Out/Tag-Out Instructions** 6.

⚠ WARNING

Before starting baler, be sure no one is inside. Be certain that everyone is clear of all operation points and pinch point areas before starting.

⚠ WARNING

This baler is controlled by photocells and will start automatically when photocells detect ANY OBJECTS in the charge box.

⚠ WARNING

The compression ram in this baler travels at a very fast speed. Stand clear of the baler when in operation.

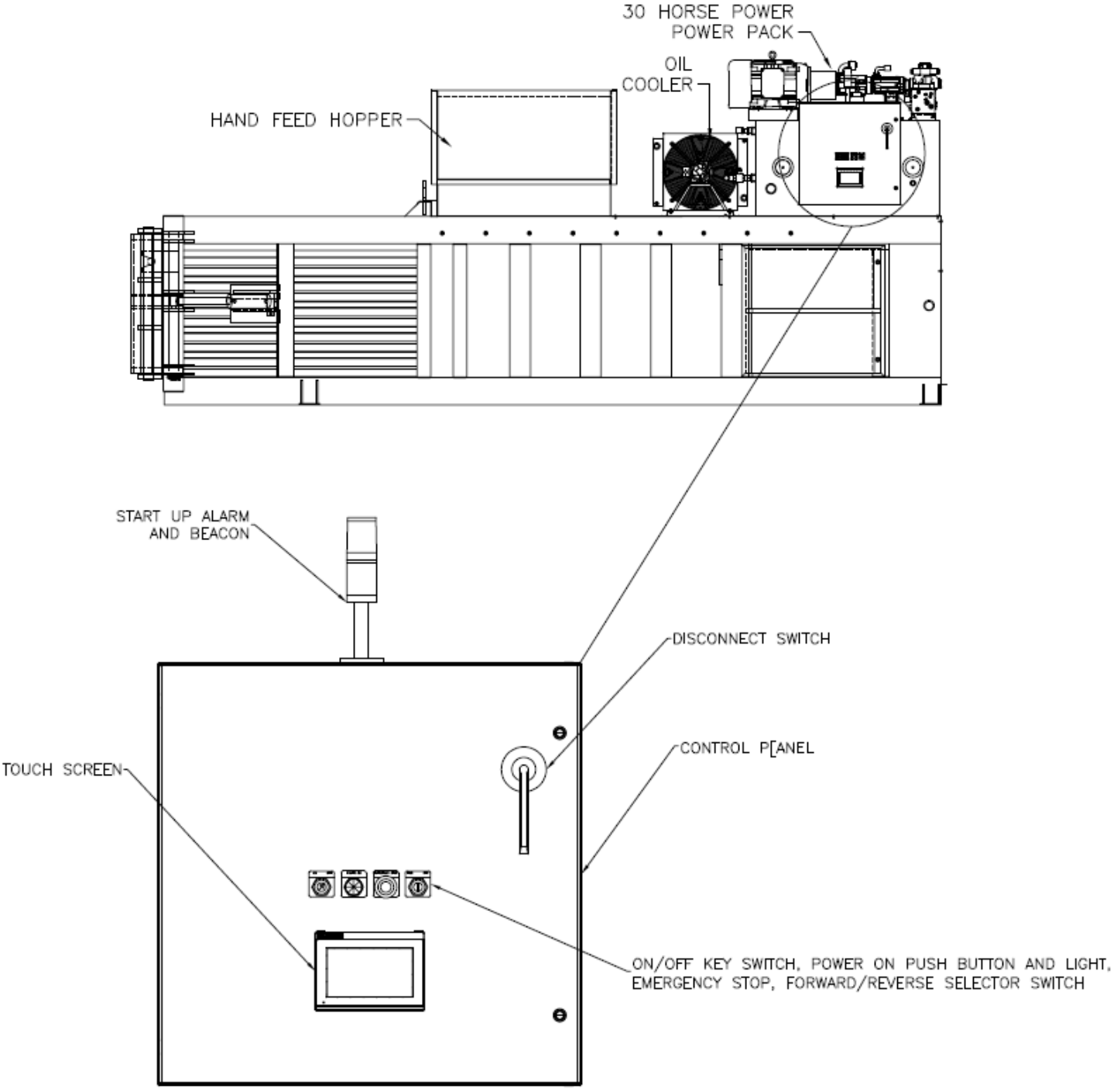
⚠ WARNING

ONLY AUTHORIZED PERSONNEL SHOULD BE ALLOWED INSIDE PANEL BOX. The panel box contains high voltage components. See **Lock-Out/Tag-Out Instructions.** 6

⚠ CAUTION

The baler hydraulic system operates at high pressures and at high temperatures. If you suspect a leak, do not check with your hands and avoid contact with piping, hoses, and cylinders.

CONTROLS



CONTROL DESCRIPTION

1. **POWER ON** Push Button with a Green Indicator Light

   This light is illuminated when the push button is depressed.

2. **ON-OFF** (Keyed Selector Switch)

   Turning this switch to the ON position energizes the controls on the control station. The baler cannot be operated unless the key switch is in the ON position. The purpose of this switch is to allow only authorized and trained personnel to operate the baler. The key should be removed from the baler when not in use and should stay in the possession of only trained and authorized personnel.

NOTICE

The ram must be fully retracted before activating this function.

⚠ WARNING

Stay clear of all moving parts when the baler is in the photocell on mode. Failure to do so could result in serious personal injury or death!

⚠ WARNING

Stay clear of moving parts when the baler is in auto cycle mode. Failure to do so could result in serious personal injury or death!

3. **EMERGENCY STOP** (Red Mushroom Head Push button)

   Depressing this button will stop the baler instantly at any point in the cycle.

4. **FORWARD/REVERSE** (SELECTOR SWITCH)

   This switch will cause the ram to advance in either the forward or reverse direction when held in either direction. When the switch is released the ram will stop movement. By turning and holding this switch in either direction for 20 seconds the baler can be started.

OPERATING INSTRUCTIONS - MAKING A BALE

⚠ WARNING

Before starting baler, be sure no one is inside. Be certain that everyone is clear of all operation points and pinch point areas before starting.

⚠ WARNING

Do not operate baler until operating instructions are thoroughly understood.

IN CASE OF EMERGENCY: Push the large RED button to STOP!

IMPORTANT! Before starting the first bale, insert a bale tie through each of the slots in the bale chamber side (next to the bale door). Guide and push each bale tie through the bale chamber and out through the opposite bale chamber wall. Leave about three feet of the “loop end” of each bale tie sticking out the opposite side of the bale chamber. See the diagram on page 28.

This baler can be operated in either an automatic mode or a manual mode.

Automatic Mode

1. Insert the key into the key switch and turn it to the ON position. Depress the POWER ON button. The green light should remain illuminated after the button is released.
2. Touch and hold the AUTO CYCLE button on the touch screen for 20 seconds. An audible alarm will sound for 5 seconds and the red beacon will flash for the entire 20 seconds. After the 20 seconds elapse the baler will start and complete one cycle. When the ram reaches the fully retracted position touch the PHOTOCELL MODE button on the touch screen. This will place the baler into photocell mode for automatic operation. From this point the baler will start up and cycle anytime the photocell detects ANY OBJECT in the charge chamber. If 15 minutes (adjustable through the touch screen) elapses without a cycle being initiated or use of the controls, the power unit will shutdown. If the photocell detects ANY OBJECT in the charge chamber the baler will start up and cycle automatically.

⚠ WARNING

In this mode, the power unit will restart the ram automatically anytime the photocell detects ANY OBJECT in the charge box.

3. Feed materials into the baler. When a bale is completed, the BALE MADE light will come on, the audible alarm will sound, and the baler will shut down automatically. Bale tie off and ejection instructions are on the next page.

Manual Mode

1. Insert the key switch and turn to the ON position and push the POWER ON button. The power on light should remain illuminated after the button is released.
2. To bale material in the Manual Mode, first, completely fill the charge box with material.
3. Touch and hold the AUTO CYCLE button on the touch screen for 20 seconds. After the start up sequence is complete the baler will start up and make one complete cycle and return to the fully retraced position. Repeat steps 2 and 3 until the BALE MADE light is activated and the baler shuts down.

Shut down

In either the Automatic Mode or the Manual Mode, to shut down the baler, depress the EMERGENCY STOP pushbutton. Turn the key switch to the OFF position and remove the key. Do not enter the baler for any reason unless the baler has been locked-out and tagged out per the instructions.

OPERATING INSTRUCTIONS - BALE TIE OFF/BALE EJECT

When the BALE MADE light is illuminated and the audible alarm sounds, it is time to tie off the bale and begin ejection of the completed bale from the baler. See next page for a diagram of bale tie off and ejection.

Wear safety glasses and leather gloves during the following operations.

1. When the BALE MADE light starts flashing and the audible alarm sounds, the ram will have stopped against the completed bale. Next, pull the straight end of each bale tie around the bale and insert through the tie slots in the ram face until the ends come out the other side of the baler.
2. Go to the opposite side of the bale chamber and tie each bale tie (hand-tight only to allow for expansion during ejection).
3. Insert a new set of bale ties through the bale chamber side slots and guide them through the second set of tie slots on the ram face (when looking through the slots in the chamber sides, you will notice that the ram has two wire guides located at each side slot. Leave approximately three feet of each bale tie sticking out of the opposite side of the bale chamber.

⚠ CAUTION

Before opening the bale chamber door, make sure that all personnel are clear of the bale chamber door and door latch areas. Before standing in front of the bale chamber door, make sure that the latch is fully open and there is no pressure exerted on the bale chamber door by the compacted material.

4. To reset the BALE MADE indicator and alarm, press the EMERGENCY STOP button. Restart the baler using the manual FORWARD/REVERSE controls and retract the ram completely. Open the bale door latch by touching the DOOR OPEN button on the touch screen and hold it until the door latch is completely open. Open the bale chamber door past 90 degrees and leave it in that position.
5. Place the baler back in the PHOTOCELL MODE and resume feeding material into the charge chamber. The baler will cycle until it senses that the previous bale has been ejected. At that time, the BALE MADE light will start flashing, the audible alarm will sound and the baler will shut down.
6. Remove the tied off bale from the end of the baler. To reset the bale made indicator and alarm press the EMERGENCY STOP button. Restart the baler using the manual FORWARD/REVERSE controls and retract the ram completely. Close the bale door completely and close the door latch using the DOOR CLOSE button on the touch screen.
7. Resume baling material using either PHOTOCELL MODE or the AUTO CYCLE.

DIAGRAM - BALE TIE OFF/BALE EJECT

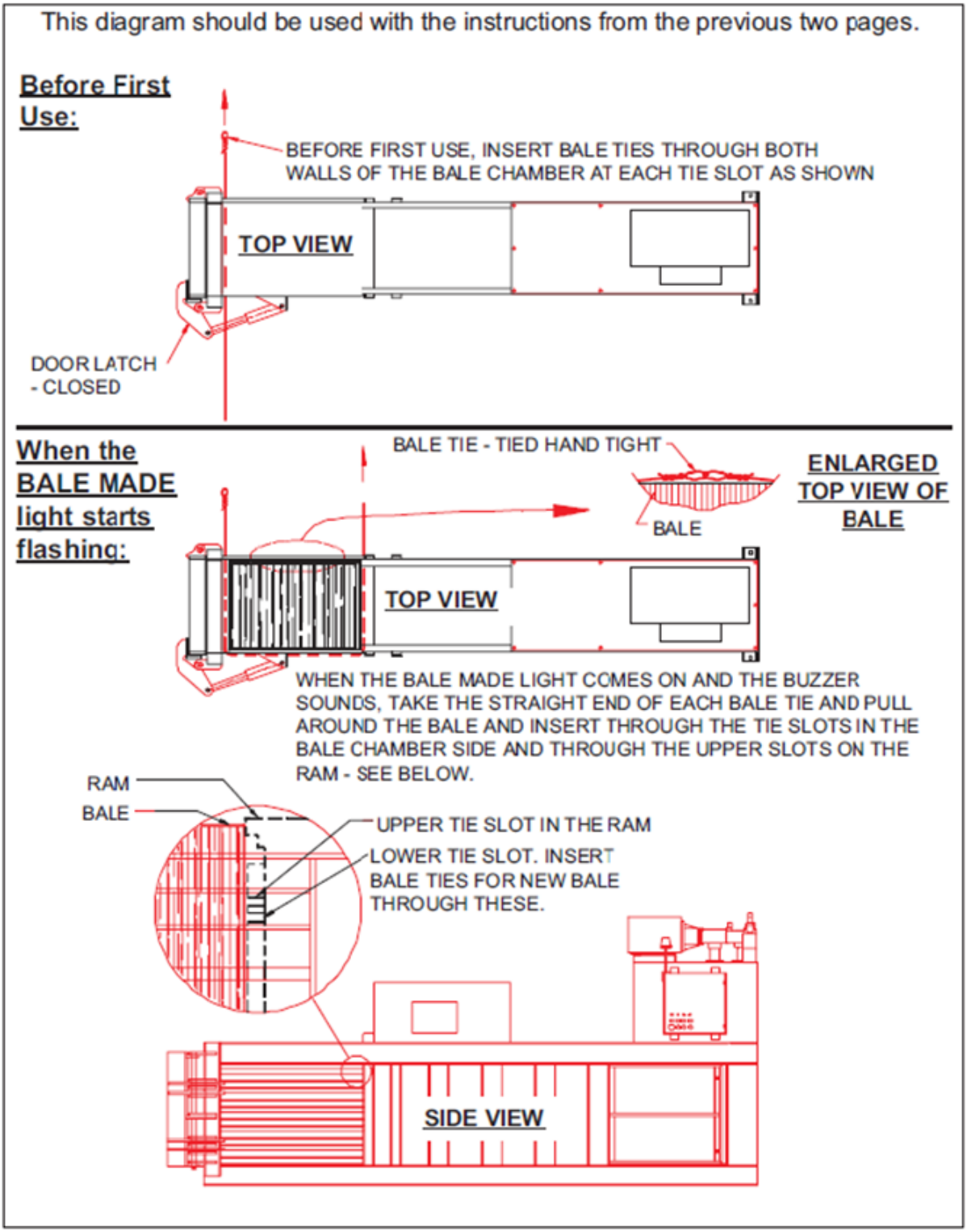
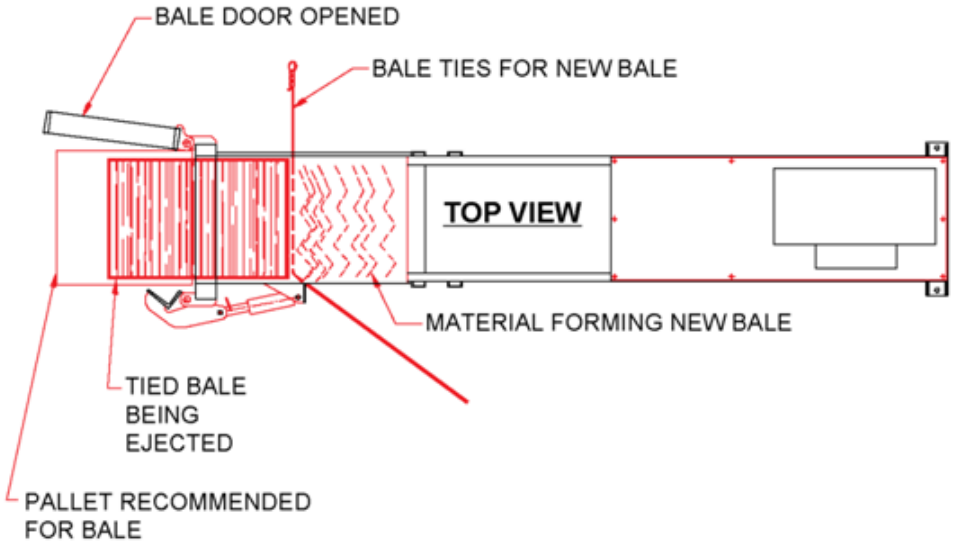
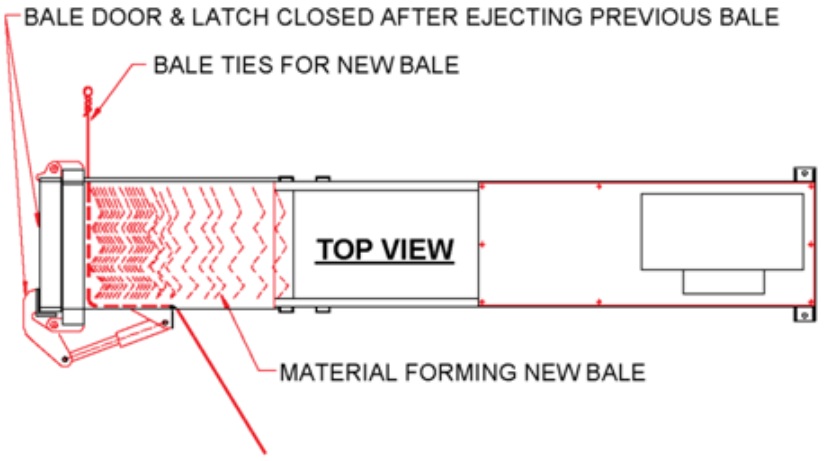


DIAGRAM - BALE TIE OFF/BALE EJECT (CONTINUED)

After the first bale is tied off and the bale door is opened:



After ejection of tied bale while next bale is being formed:



TOUCH SCREEN CONTROLS

The following touch screen controls are for the following models:

CE-604242-830

CE-504842-830

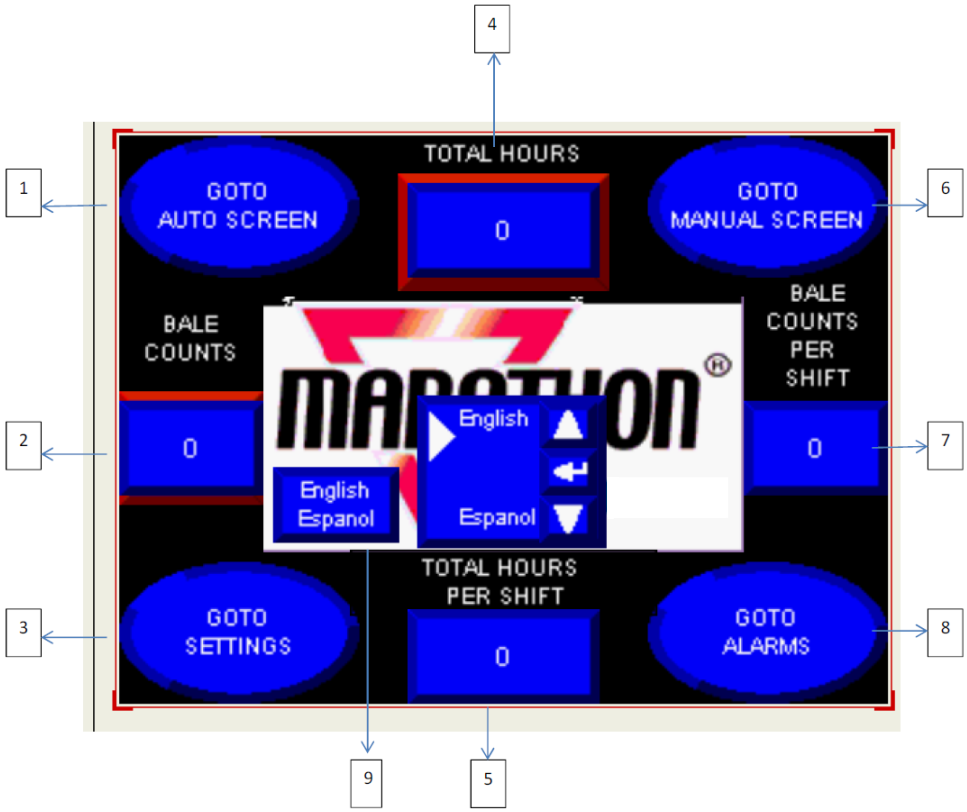
CE-504242-830

CE-503042-830

CE-503042-720

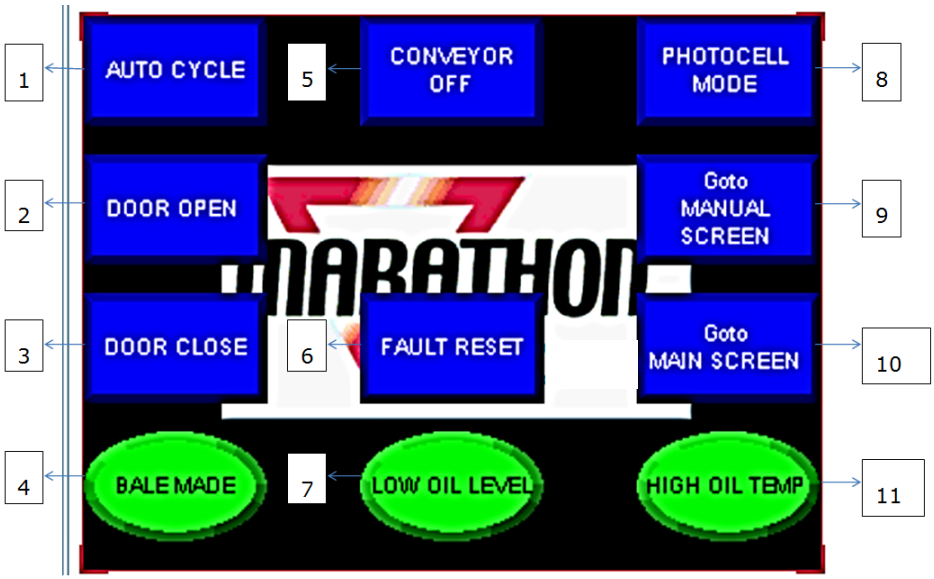
CE-303042-720

MAIN SCREEN



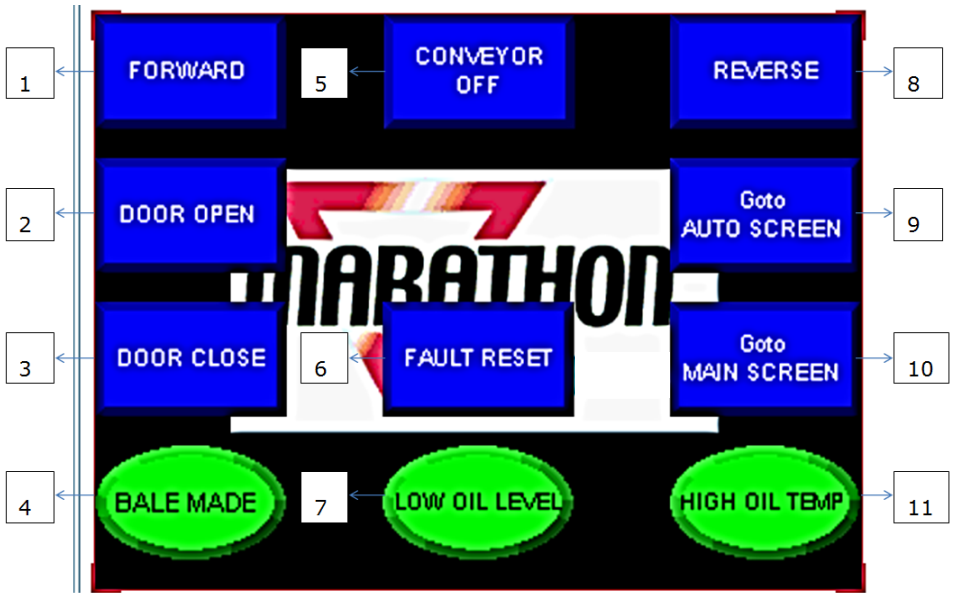
1. **GO TO AUTO SCREEN**. Touching Go to Auto Screen will take you to the screen for automatic control. See details on **Automatic Screen** 32.
2. **BALE COUNTS**. The Bale Counts display shows the overall number of bales produced by the baler. It cannot be reset.
3. **GO TO SETTINGS**. Touching Go to Settings will take you to the settings screen where adjustments to how the baler operates can be made. See detail on **Settings screen** 34.
4. **TOTAL HOURS**. The Total Hours display shows the overall number of hours the main motor and pump have run. It cannot be rest.
5. **TOTAL HOURS PER SHIFT**. The Total Hours Per Shift display shows the number of hours the main motor and pump have run during a specific period of time or shift. It can be reset from the settings screen.
6. **GO TO MANUAL SCREEN**. Touching the Go to Manual Screen will take you to the screen for manual control. See details on **Manual screen** 33.
7. **BALE COUNTS PER SHIFT**. The Bale Counts Per Shift display shows the total number of bales made during a certain period of time or shift. It can be reset from the settings screen.
8. **GO TO ALARMS**. Touching Go to Alarms will take you to the alarm screen. See details on **Alarm screen** 36.
9. **LANGUAGE SELECTOR.** Touching this button will cause the Language Selection box to appear. Use the up arrow to choose English and the down arrow to choose Spanish. Use the enter button to enter the selected language. There will be a couple second delay before the language changes on the screen. The selection box will stay on the screen for5 seconds before hiding in the back ground again.

AUTOMATIC SCREEN



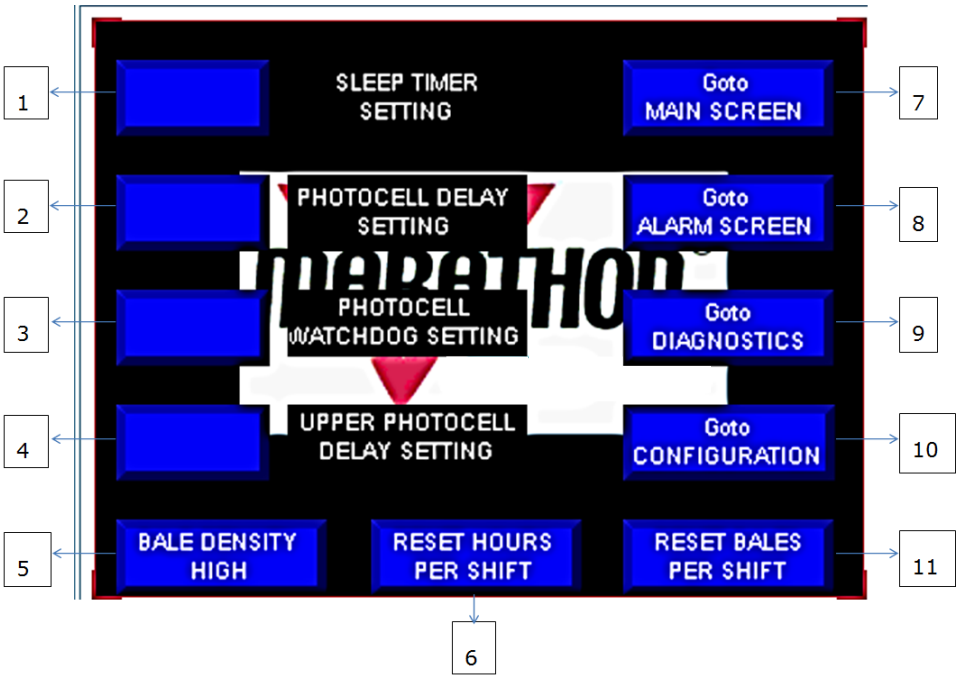
1. **AUTO CYCLE**. Touching Auto Cycle will start the baler and cause the baler to make one complete cycle and return to the rear limit switch.
2. **DOOR OPEN**. Touching Door Open will open the door latch.
3. **DOOR CLOSE**. Touching Door Close will close the door latch.
4. **BALE MADE**. When the baler reaches the bale made pressure setting the Bale Made indicator will illuminate red and will be accompanied by a warning horn. When a bale is made the baler will cease operation. Follow the procedures for bale tie off and removal.
5. **CONVEYOR OFF/ON/AUTO**. Touching Conveyor Off/On/Auto will change the setting for the conveyor control. The image will also change to indicate what state the conveyor control is set to.
6. **FAULT RESET**. If a fault should occur the Fault Reset button will flash red and the image will change to read PUSH TO RESET FAULT. Touching Fault Reset will reset the fault. If the fault condition has not been corrected the fault condition will return.
7. **LOW OIL LEVEL**. If your baler is equipped with the Oil Management Package the Low Oil Level indicator will be visible on the screen. When the oil level in the hydraulic reservoir is at normal levels the indicator will illuminate green. If the oil level should drop below normal levels the indicator will illuminate red and will be accompanied by a warning horn. The baler operation will cease. Once the hydraulic oil level has been returned to normal levels the Low Oil Level alarm can be reset and baler operation may be resumed.
8. **PHOTOCELL MODE**. Touching Photocell Mode will allow the baler to cycle anytime the material level in the charge chamber blocks the photocell beam. The baler will cycle until the material level falls below the level of the photocell. The baler must be running and the ram must be fully retracted before it can be placed into photocell mode. The photocell delay setting and photocell watchdog timer setting can be adjusted from the settings screen.
9. **Go to MANUAL SCREEN**. Touching Go to Manual Screen will take you to the screen for manual control.
10. **Go to MAIN SCREEN**. Touching Go to Main Screen will take you to the main start up screen.
11. **HIGH OIL TEMP**. If your baler is equipped with the Oil Management Package the High Oil Temp indicator will be visible on the screen. When the temperature of the oil in the hydraulic reservoir is at normal levels the indicator will illuminate green. If the oil temperature should rise above normal levels the indicator will illuminate red and will be accompanied by a warning horn. The baler operation will cease. Once the hydraulic oil temperature has been returned to normal levels the High Oil Temp alarm can be reset and baler operation may be resumed.

MANUAL SCREEN



1. **FORWARD**. Touching Forward will start the baler and cause the main ram to move forward. As long as the Forward button is held the ram will extend until it reaches the end of the cylinders stroke.
2. **DOOR OPEN**. Touching Door Open will open the door latch.
3. **DOOR CLOSE**. Touching Door Close will close the door latch.
4. **BALE MADE**. When the baler reaches the bale made pressure setting the Bale Made indicator will illuminate red and will be accompanied by a warning horn. When a bale is made the baler will cease operation. Follow the procedures for bale tie off and removal.
5. **CONVEYOR OFF/ON/AUTO**. Touching Conveyor Off/On/Auto will change the setting for the conveyor control. The image will also change to indicate what state the conveyor control is set to.
6. **FAULT RESET**. If a fault should occur the Fault Reset button will flash red and the image will change to read PUSH TO RESET FAULT. Touching Fault Reset will reset the fault. If the fault condition has not been corrected the fault condition will return.
7. **LOW OIL LEVEL**. If your baler is equipped with the Oil Management Package the Low Oil Level indicator will be visible on the screen. When the oil level in the hydraulic reservoir is at normal levels the indicator will illuminate green. If the oil level should drop below normal levels the indicator will illuminate red and will be accompanied by a warning horn. The baler operation will cease. Once the hydraulic oil level has been returned to normal levels the Low Oil Level alarm can be reset and baler operation may be resumed.
8. **REVERSE**. Touching Reverse will start the baler and cause the ram to retract. As long as the Reverse button is held the ram will retract until it reaches the rear limit switch.
9. **Go to AUTOMATIC SCREEN**. Touching Go to Automatic Screen take you to the screen for automatic control.
10. **Go to MAIN SCREEN**. Touching Go to Main Screen will take you to the main start up screen.
11. **HIGH OIL TEMP**. If your baler is equipped with the Oil Management Package the High Oil Temp indicator will be visible on the screen. When temperature of the oil in the hydraulic reservoir is at normal levels the indicator will illuminate green. If the oil temperature should rise above normal levels the indicator will illuminate red and will be accompanied by a warning horn. The baler operation will cease. Once the hydraulic oil temperature has been returned to normal levels the High Oil Temp alarm can be reset and baler operation may be resumed.

SETTINGS SCREEN

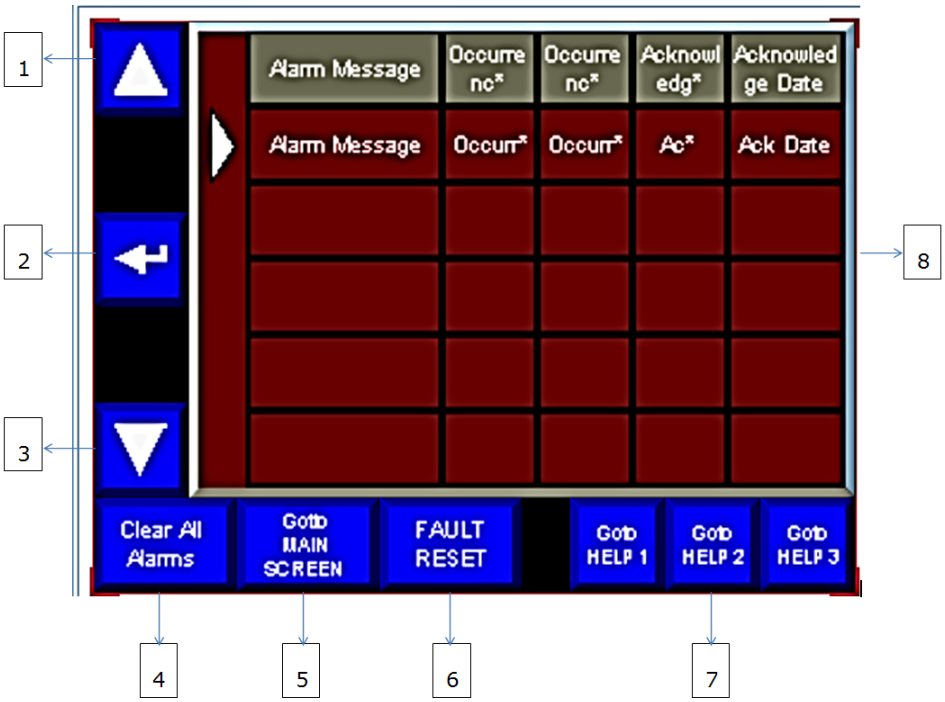


1. **SLEEP TIMER SETTING**. The sleep timer is a function that will shut the main motor down if the baler sits idle for a specified amount of time. The baler will restart on its own if it is in photocell mode and the photocell is blocked. The sleep timer setting can be adjusted by touching the blue box to the left of the caption. When it is touched a numerical entry display will pop up on the screen. Enter the desired amount of time and touch the enter button. The new value will be entered into the PLC program and will show on the display.
2. **PHOTOCELL DELAY SETTING**. The photocell delay is the amount of time it takes after the photocell is blocked before the machine will cycle. The photocell delay time can be adjusted by touching the blue box to the left of the caption. When it is touched a numerical entry display will pop up on the screen. Enter the desired amount of time and touch the enter button. The new value will be entered into the PLC program and will show on the display.
3. **PHOTOCELL WATCHDOG SETTING**. The photocell watchdog setting is a function that will shut the baler down if the photocell remains blocked for a specified amount of time. If the baler shuts down because of the photocell watchdog function, an alarm will appear on the screen accompanied by a warning horn. The condition must be corrected before the alarm can be reset and cleared. The photocell watchdog time setting can be adjusted by touching the blue box to the left of the caption. When it is touched a numerical entry display will pop up on the screen. Enter the desired amount of time and touch the enter button. The new value will be entered into the PLC program and will show on the display.
4. **UPPER PHOTOCELL DELAY SETTING**. The upper photocell delay setting is a function that is used to control a conveyor if the baler is equipped with one. If your baler is not equipped with an upper photocell this setting will not appear on the screen. The upper photocell delay time setting can be adjusted by touching the blue box to the left of the caption. When it is touched a numerical entry display will pop up on the screen. Enter the desired amount of time and touch the enter button. The new value will be entered into the PLC program and will show on the display.
5. **BALE DENSITY**. The bale density control is used to change the bale made pressure setting from a high pressure setting to a low pressure setting. This controls how densely compressed the bale is before the bale made indicator is triggered. To adjust the bale density setting, simply touch the button. It will toggle between Bale Density High and Bale Density Low. If your baler is not equipped with this option it will not appear on the screen.

SETTINGS SCREEN (CONTINUED)

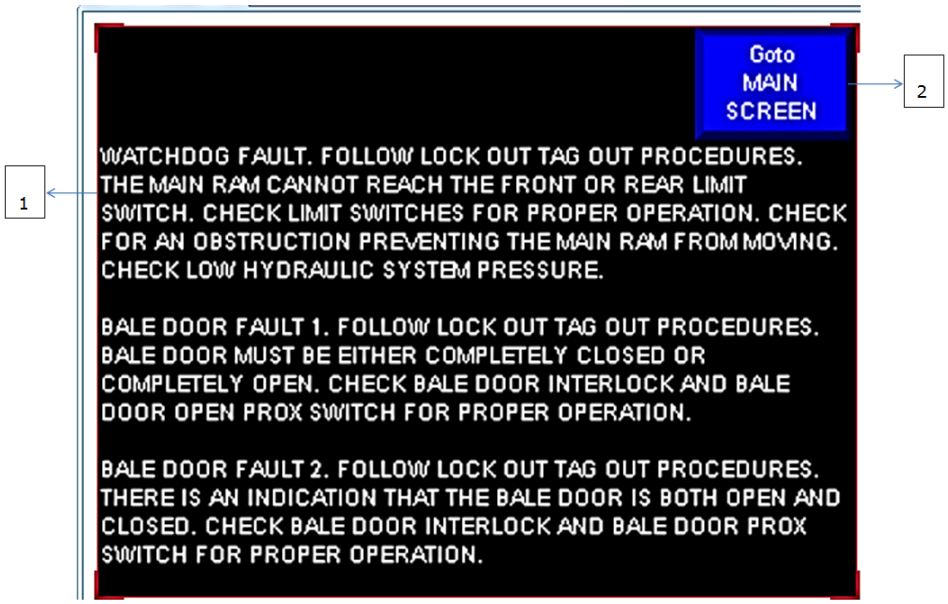
6. **RESET HOURS PER SHIFT**. To reset the Hours Per Shift display on the Main screen, simply touch the Reset Hours Per Shift button.
7. **Go to MAIN SCREEN**. Touching Go to Main Screen will take you to the main start up screen.
8. **Go to ALARM SCREEN**. Touching Go to Alarm Screen will take you to the alarm screen.
9. **Go to DIAGNOSTICS SCREEN**. Touching Go to Diagnostics Screen will take you to the diagnostic screen.
10. **Go to CONFIGURATION SCREEN**. Touching Go to Configuration Screen will take you to the diagnostic screen. A user/password request will pop up on the screen. This screen is used by Marathon Equipment during manufacturing to set the baler up with the correct options and settings. Should there be a reason you need to access this screen please contact Marathon Equipment Company's Service Department at 800-633-8974.
11. **RESET BALES PER SHIFT**. To reset the Bales Per Shift display on the Main screen, simply touch the Reset Bales Per Shift button.

ALARM SCREEN



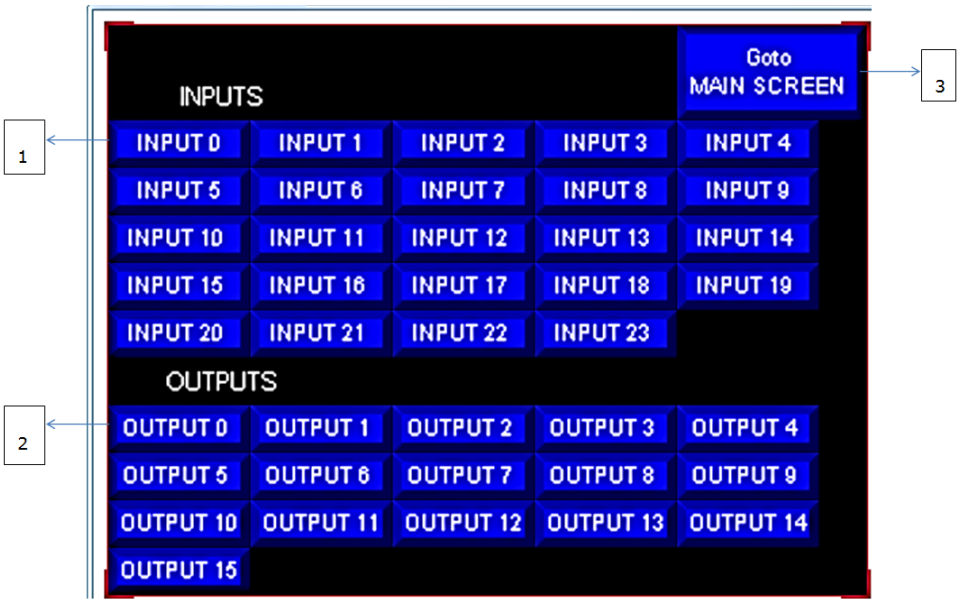
1. **SCROLL UP**. The scroll up button allows you to scroll to the top of the alarm log.
2. **ENTER BUTTON**. The enter button can be used to acknowledge alarms on the log.
3. **SCROLL DOWN**. The scroll down button allows you to scroll to the bottom of the alarm log.
4. **CLEAR ALL ALARMS**. The clear all alarms button will clear all alarms from the alarm log when touched.
5. **Go to MAIN SCREEN**. Touching Go to Main Screen will take you to the main start up screen.
6. **FAULT RESET**. If a fault should occur the Fault Reset button will flash red and the image will change to read PUSH TO RESET FAULT. Touching Fault Reset will reset the fault. If the fault condition has not been corrected the fault condition will return.
7. **Go to HELP 1-2-3**. The Go to Help 1-2-3 buttons will only appear if there is a fault that has not yet been reset. If a help button is present, touching it will take you to a help screen that will display text to direct you to what the possible causes of the fault may be. If you cannot find the cause of the fault or need assistance, please contact Marathon Equipment Company's Service Department at 800-633-8974 or contact your local Marathon Equipment distributor.
8. **ALARM LOG DISPLAY**. The alarm log displays alarms or faults in a list organized by time and date of occurrence. Each time an alarm or fault occurs it will appear in the list with an occurrence time and occurrence date. If the fault or alarm has been acknowledged there will also be an acknowledged time and acknowledged date displayed. The alarm log can be used to track the frequency of reoccurring alarms or faults. This can be helpful when trouble shooting problems.

HELP SCREEN 1-2-3



1. **HELP SCREEN DIALOG**. If a fault occurs a help button will appear on the alarm screen. Touching the help button will bring you to the corresponding help screen. On the help screen text will be displayed directing you to things that may be the cause of the fault. In most cases only one text box will appear although on rare occasions more than one may appear or there may be more than one help button available. If you cannot find the cause of the fault or need assistance please contact Marathon Equipment Company's Service Department at 800-633-8974 or contact your local Marathon Equipment distributor.
2. **GO TO MAIN SCREEN**. Touching Go to Main Screen will return you to the main start up screen.

DIAGNOSTIC SCREEN



1. **INPUT INDICATOR**. The input indicators show the status of the inputs on the PLC. If an input is on its corresponding indicator will illuminate green.
2. **OUTPUT INDICATOR**. The input indicators show the status of the outputs on the PLC. If an output is on its corresponding indicator will illuminate green.
3. **GO TO MAIN SCREEN**. Touching Go to Main Screen will return you to the main start up screen.

SECTION 4
SERVICE

CONTACT INFORMATION

Technical Service and Warranty:

877-258-1105

Parts:

800-528-5308

For parts visit our eCommerce Marketplace at **www.mecomerchant.com**.

If you do not have a user name and password, contact our Parts Department and they will assist with your registration.

Normal Business Hours:

Monday-Friday 8:00am - 5:00pm

(Central Standard Time)

LOCK-OUT & TAG-OUT INSTRUCTIONS FOR HORIZONTAL BALERS

⚠ DANGER

Before entering any part of the baler, be sure that all sources of energy have been shut off, all potential hazards have been eliminated, and the baler is locked-out and tagged-out in accordance with OSHA and ANSI requirements.

The specific Lock-Out and Tag-Out instructions may vary from company to company (i.e. multiple locks may be required, or other machinery may need to be locked-out and tagged-out). The following instructions are provided as minimum guidelines.

INSTRUCTIONS

1. Notify all affected employees that servicing or maintenance is required on the baler and that the baler must be shut down and locked out to perform the servicing or maintenance.
2. Perform a hazard assessment;
   a. The authorized employee shall refer to the company procedure to identify the type and magnitude of the energy that the baler utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. Wear proper personal protective equipment.
4. If baler is operating, it must be shut down by the normal stopping procedure. If the ram is pressing against a load, move the ram rearward before shutting the baler down.
5. De-activate the energy isolating device(s) so that baler is isolated from the energy source(s).
   a. Shut down all power sources.
   b. Move the main disconnect lever to the OFF position.
6. Lockout the energy isolating device(s) with assigned individual lock(s).
   a. Padlock the disconnect lever with a keyed padlock and take the key with you.
   b. Along with the padlock, place an appropriate, highly visible, warning tag on the disconnect lever. The tag should provide a warning such as:

      “Danger: Do not operate equipment. Person working on equipment.” or

      “Warning: Do not energize without the permission of _____.”

   c. Place operating components in such a position so as not to be subject to possible free fall and/or install additional blocking devices to prevent this potential for any raised or elevated component.
7. Stored hydraulic energy must be removed from the baler hydraulic circuit for complete Lock-Out and Tag-Out. Make sure that this energy has been relieved by manually depressing the solenoid valve pin located in the center of each coil end of the directional control valve.
8. After locking and tagging the baler, ensure that the baler is disconnected from the energy source by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate. Try to start and operate the baler (as outlined in the Operating Instructions) to make sure the Lock-Out and Tag-Out is effective. If the Lock-Out and Tag-Out is effective, remove the key from the key switch and take it with you.

LOCK-OUT & TAG-OUT INSTRUCTIONS (CONTINUED)

9. Before entering baler perform hazard assessment for confined space requirements (hazardous fumes, dust or other toxic material).

10. The baler is now locked out.

RESTORING SERVICE

When the servicing or maintenance is completed and the stationary baler is ready to return to normal operating condition, the following steps shall be taken:

1. Check the baler and the immediate area around the baler to ensure that nonessential items have been removed and that the baler components, guards and covers are operationally intact.

2. Check the work area to ensure that all employees have been safely positioned or removed from any hazardous area.

3. Verify that the controls are in neutral.

4. Remove the lockout devices and re-energize the baler.

NOTICE

The removal of some forms of blocking may require re-energizing of the baler before safe removal.

5. Notify affected employees that the servicing or maintenance is completed and the baler is ready for use.

6. Reassess area to determine all hazards are protected.

PERIODIC MAINTENANCE

⚠ WARNING

ONLY AUTHORIZED AND TRAINED PERSONNEL SHOULD PERFORM THE FOLLOWING PROCEDURES. **LOCK-OUT AND TAG-OUT** 6 THE BALER PER THE INSTRUCTIONS SPECIFIED.

Daily

1. Check for any oil leaks. Keep all hydraulic fittings tight.
2. Check oil level in hydraulic reservoir. Maintain oil level at least to 3/4 full in sight gauge. Do not overfill hydraulic reservoir. Leave room for thermal expansion of hydraulic fluid.
3. Check the oil filter indicator on the oil filter housing (filter/housing is located on top of reservoir at the end of the oil return line). If this indicator shows RED, change filter immediately.

Weekly

1. Clean around power pack and machine to remove operator hazards.
2. Check all interlock switches to ensure free movement.
3. Clean photocell head.
4. Clean photocell reflector.
5. Oil door hinge.
6. Oil door latch hinge.

Monthly

1. Check all hoses for chaffing, rubbing, or other deterioration and damage.
2. Check for any obvious unsafe conditions in baler area.
3. Check operation of standard controls and options.
4. Check cylinder pins and make sure they are secure.
5. Check ram blade and fixed charge box blade.
6. Check hold down bars above ram.

Three Months

1. Change the return oil filter element in the oil filter housing (filter/housing is located on top of reservoir at the end of the oil return line).

Semi-Annually

1. Send oil sample out for evaluation.
2. Check baler structure for any signs of problems (i.e., cracked welds, bending, etc.).
3. Check all electrical connections.

Annually

1. Change the hydraulic fluid or filter it with a 3 micron filter.
2. Rotate the cylinder rod 180 degrees.
3. Grease electric motor bearings.

FILTER & PRESSURE SETTINGS PROCEDURES

⚠ WARNING

ONLY AUTHORIZED AND TRAINED PERSONNEL SHOULD PERFORM THE FOLLOWING PROCEDURES. **LOCK-OUT AND TAG-OUT** 6 THE BALER PER THE INSTRUCTIONS SPECIFIED.

Annual Filter Maintenance

1. The hydraulic suction filter(s) should be cleaned at regular annual intervals.
2. On baler models with the 30/75 and 20/50 power unit modules, the two suction strainers may be removed from the power unit by disconnecting the pump suction flanges and pulling the suction lines and strainers through the suction flange openings in the top of the reservoir.
3. Care should be exercised in cleaning the filter to insure that the element is not torn. Clean the element with a soft brush and standard industrial solvent.
4. Replace the filter(s) after cleaning and check fittings for tightness. Pump noise and a "crackle" sound is most often caused by air entering the pump suction line. Tightening the suction fittings will usually eliminate the problem.

Hydraulic System Pressure Setting: 720 Power Unit (20 HP/ 50 GPM) & 830 Power Unit (30 HP/ 75 GPM)

720 & 830 pressure switch setting	=	2300 psi
720 & 830 relief valve setting	=	2500 psi
720 & 830 unloading valve setting	=	800 psi

1. **Lock-Out and Tag-Out** 6 the baler per the instructions.
2. Remove the set screw cover from pressure switch 1 circuit 1 and turn the set screw 3 or 4 turns counterclockwise.
3. Remove the Lock-Out Tag-Out provisions and turn the power on to the baler. Turn the FORWARD/REVERSE selector switch to the FORWARD position and hold it. The ram will fully extend and build pressure. Using valve RV2, set the pressure to 800PSI on the pressure gauge installed in port BG.
4. Back the set screw out on valve PS1 3 or 4 turns and then turn in it clockwise until you hear the motor pitch change. Tighten the lock nut on PS1.
5. Adjust the relief valve RV2 until the pressure reads 2300PSI.
6. Turn the setscrew on pressure switch 1 circuit 1 clockwise until the input on the PLC for the pressure switch comes on. Refer to the schematic provided with the baler for the correct input. The bale made pressure is now set.
7. Loosen the top of the pressure switch and pull the cover up so that the switch cannot be activated.
8. Adjust the relief pressure using RV2 until the pressure gauge reads 2500PSI and tighten the lock nut. The main relief pressure is now set.
9. Replace the cover on the pressure switch.

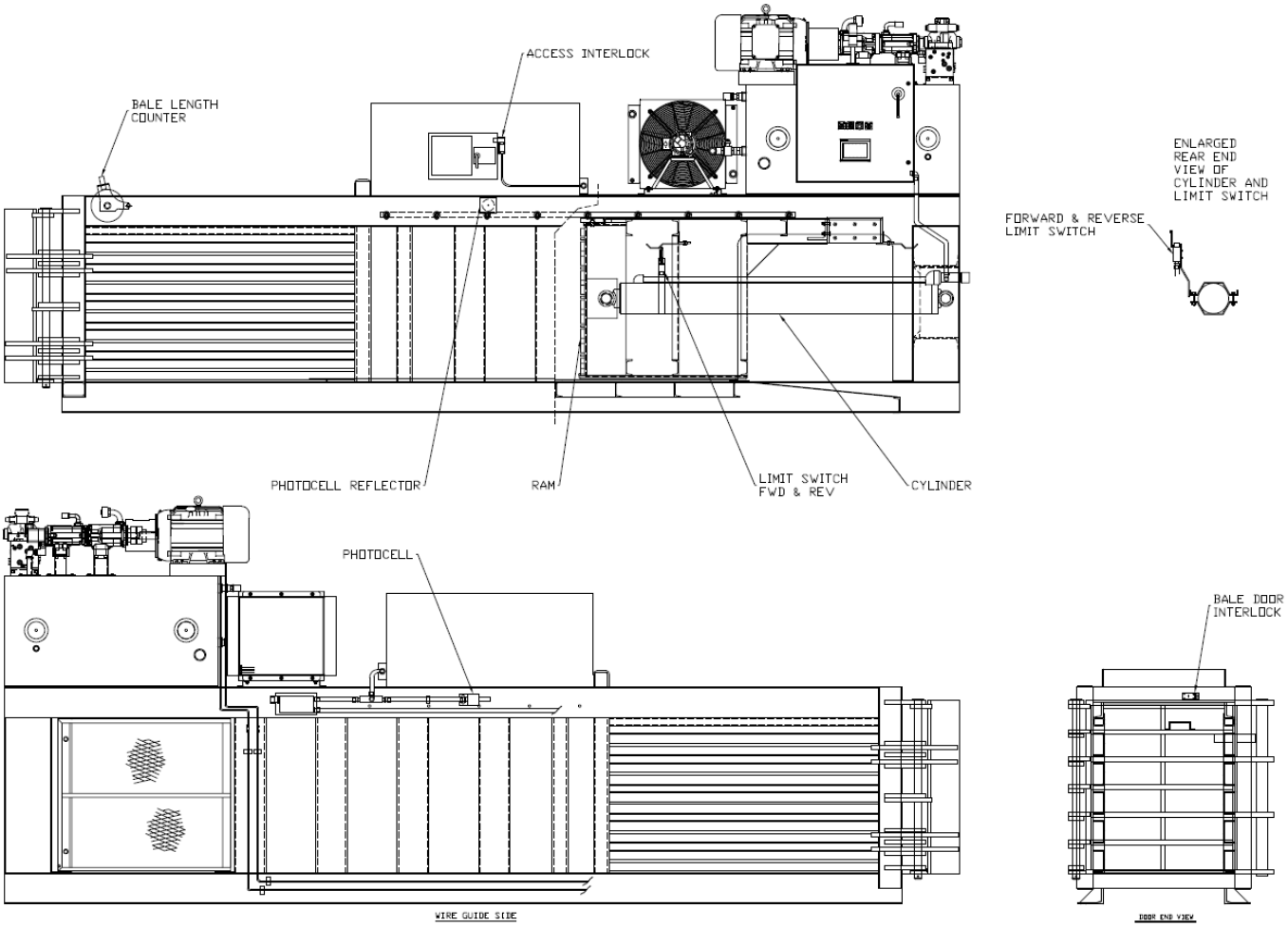
PHOTOCELL, INTERLOCK & LIMIT SWITCH PROCEDURES

Photocell, Interlock, and Limit Switch Testing

The procedures found on the following pages describe the proper testing of the automated photocell, the interlock, and the limit switches found on the closed-end baler. Only authorized and trained service personnel should perform any testing or repairs to the photo cell, interlocks or limit switches. The diagram below shows the location of the photocell, interlocks, and limit switches.

⚠ DANGER

Never override the photocell, interlocks or limit switches! Tampering with these items could result in serious damage to the baler, serious personal injury, or death! Never enter any part of the baler unless the disconnect switch has been turned off and padlocked per the **Lock-Out and Tag-Out** 6 instructions. Do not make any adjustment to the photocell, interlocks, or the limit switches until the disconnect switch has been turned off and padlocked per the lock-out and tag-out instructions.



PHOTOCELL, INTERLOCK & LIMIT SWITCH PROCEDURES (CONTINUED)

Photocell Testing

1. Start the baler using the AUTO CYCLE or FORWARD/REVERSE controls. The main ram must be fully retracted and on the rear limit switch before the baler can be placed into photocell mode. Place the baler in photocell mode by touching the PHOTOCELL MODE button on the touch screen (see Touch Screen Controls). The baler will not cycle until the photocell light beam has been blocked.
2. To test the photocell place something solid (small piece of cardboard or paper) in front of the photocell.

⚠ WARNING

Do not enter the baler or reach inside the hopper to block the photocell! Doing so may result in serious personal injury or death!

3. The baler will react after the photocell delay timer setting is complete and make a complete cycle. The baler will continue to cycle as long as the light beam on the photocell is blocked.
4. If the photocell does not perform as specified, Lock-Out and Tag-Out, the baler and thoroughly clean the photocell lens and the photocell reflector.

⚠ WARNING

If the photocell is not working properly, disconnect the power and lock-out and tag-out the baler until repairs can be made.

Keyed Interlock Testing (Feed Hopper Door)

1. This baler is equipped with a keyed interlock switch..
2. To check the switch, turn the key switch to the ON position. When the feed hopper door is open the power on light should not operate. When the feed hopper door is closed the power on light should operate.
3. If further testing is required a volt meter, set to 120 volts, may be connected to terminal #5 and terminal #7 in the panel box. The meter should read zero volts with the door open and 120 volts with the door closed. Always refer to the schematic supplied with the baler for the correct terminals numbers as these terminal numbers may change.

⚠ WARNING

If the interlock is not working properly, disconnect the power and lock-out and tag-out the baler until repairs can be made.

PHOTOCELL, INTERLOCK & LIMIT SWITCH PROCEDURES (CONTINUED)

Push button Interlock Testing & Adjustment (Bale Door)

The baler has one push button interlock that prevents the forward movement of the ram when the bale door is open. To test this interlock the baler must be empty.

1. Turn the key switch to the ON position and depress the POWER ON button. Start the baler using the FOWARD/ REVERSE controls and retract the main ram completely. See Controls 24, Controls Description 25, Operating Instructions 26 and Touch screen Controls 30 .
2. Open the bale door latch using the controls on the touch screen. Open the bale door until it is off of the bale door interlock but do not open the door completely.
3. At the control panel, touch the AUTO CYCLE button on the touch screen. The main ram should not move and an alarm should appear on the screen accompanied by an audible alarm. Next, touch the FORWARD button on the touch screen or turn the FORWARD/REVERSE selector switch to the FORWARD position. The same alarm should appear on the touch screen accompanied with the audible alarm. If the main ram moves forward in either attempt, shut the baler down and follow the Lock-Out Tag-Out procedures 6. Call Marathon Equipment's field service department for assistance.

This interlock adjustment is factory set and should not need re-adjusting. If you suspect a problem with the adjustment, consult the factory.

Limit Switch Adjustment

The closed end baler has one limit switch:

1. Forward/Reverse Limit Switch - This switch signals that the main ram is either fully extended or fully retracted. The switch is located on the left side of the main ram cylinder when viewed from the rear of the baler looking towards the front of he baler and is attached to the main ram cylinder. See next page for instructions on adjusting the limit switch.

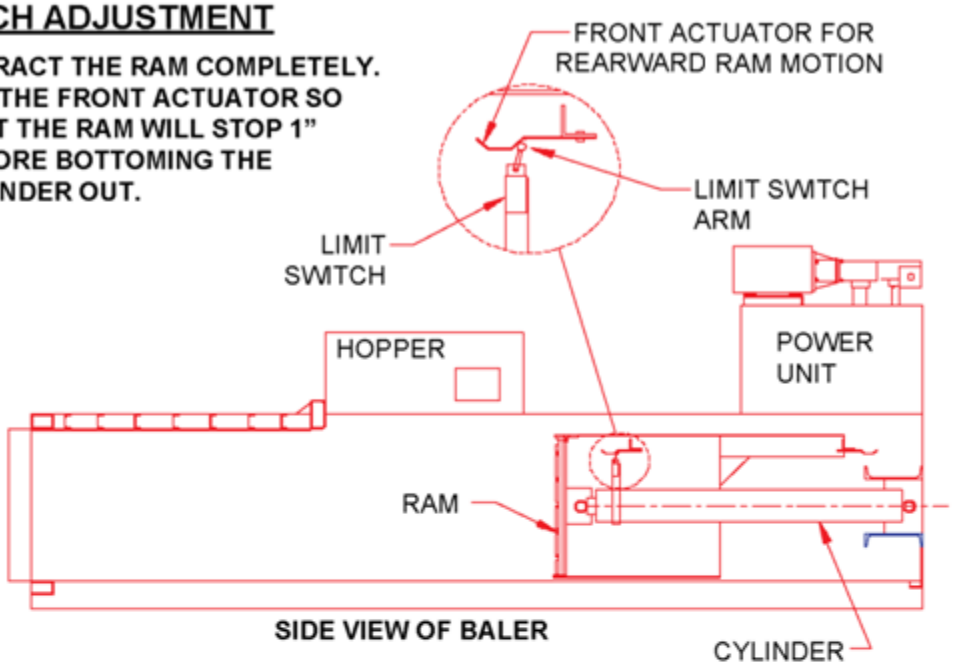
⚠ WARNING

Do not make any adjustment to the photocell, interlocks, or the limit switches until the disconnect switch has been turned off and padlocked per the **Lock-Out and Tag-Out** 6 instructions.

PHOTOCELL, INTERLOCK & LIMIT SWITCH PROCEDURES (CONTINUED)

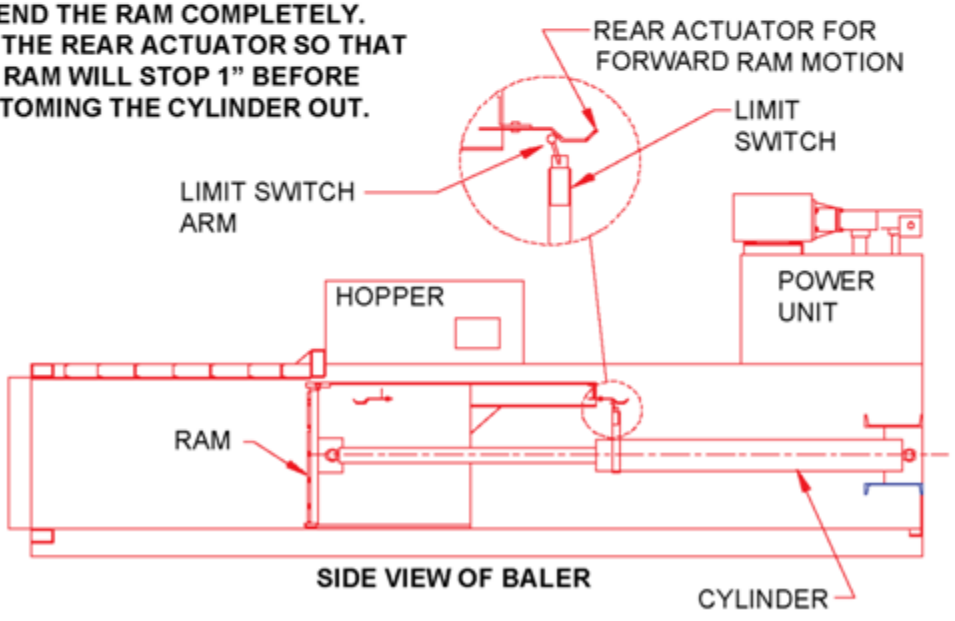
FORWARD/REVERSE LIMIT SWITCH ADJUSTMENT

1. RETRACT THE RAM COMPLETELY. SET THE FRONT ACTUATOR SO THAT THE RAM WILL STOP 1" BEFORE BOTTOMING THE CYLINDER OUT.



SIDE VIEW OF BALER

2. EXTEND THE RAM COMPLETELY. SET THE REAR ACTUATOR SO THAT THE RAM WILL STOP 1" BEFORE BOTTOMING THE CYLINDER OUT.



SIDE VIEW OF BALER

HOLD DOWN BAR MAINTENANCE

⚠ WARNING

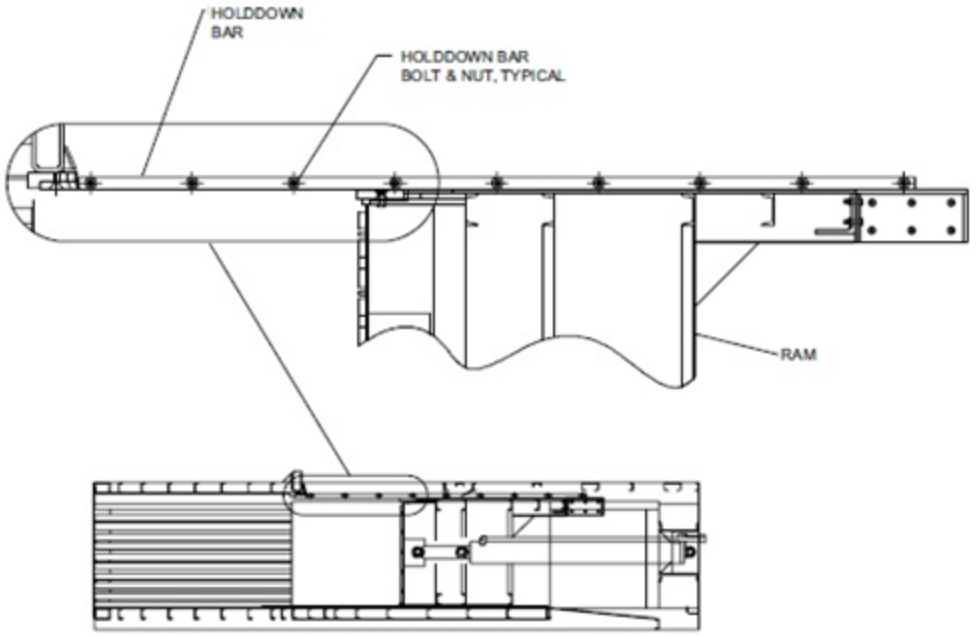
Do not perform any maintenance to the hold down bars until the disconnect switch has been turned off and padlocked per the **Lock-Out and Tag-Out** 6 instructions.

NOTICE

It is critical that the hold down bars are always in contact with the ram top. If a gap develops between the hold down bar and the ram top which exceeds the gap between the shear blades, then the shear blades will collide and cause serious damage to the baler.

The hold down bars need to be inspected to see if the bottom surface contacting the ram top is wearing evenly. If the wear is not even, this usually indicates that the hold down bars are not contacting the ram throughout the ram cycle and need to be adjusted downward to contact the ram throughout the cycle. The hold down bars need to also be inspected to see if the wear has reached the bolt heads. If the wear has reached the bolt heads, the hold down bars need to be rolled to the top side.

To adjust the hold down bars downward, loosen all of the bolts and nuts on each bar (see diagram below). Commonly, the ram will be positioned 12 to 24” into the charge box so that the hold down bar has an equal amount hanging off the front end and rear end of the ram. All bolts and nuts need to be snugged and then the ram needs to be cycled to assure that the hold down bars contact the ram top throughout the ram cycle. When this is complete, torque all bolts and nuts to 150 ft-lbs, lubricated*.



SECTIONAL SIDE-VIEW OF BALER

*MOST BOLTS CONTAIN A LIGHT COAT OF OIL AND ARE THEREFORE DEEMED LUBRICATED.

SHEAR BLADE MAINTENANCE

⚠ WARNING

Do not perform any maintenance to the ram blade or the body blade until the disconnect switch has been turned off and padlocked per the **Lock-Out and Tag-Out** 6 instructions.

Sharpening of Shear Blades

There are two shear blades on the closed-end baler: The “fixed” body shear blade and the Ram shear blade, which moves with the ram. The shear blades in the baler must have the proper cutting edge and shear gap to assure optimum cutting of the baled materials. When the blade cutting edge becomes worn, rounded, or nicked, the blade needs to be sharpened.

Each edge of the Ram shear blade can be used as a cutting edge. As one edge comes dull, remove the countersunk-head screws in the top of the blade and flip the blade over. When all four edges are dull, the blade can be sharpened using a standard shop grinder.

NOTICE

The ram should be positioned about midway of the charge box when servicing this blade and the hold down bars will need to be loosened before removing the Ram shear blade.

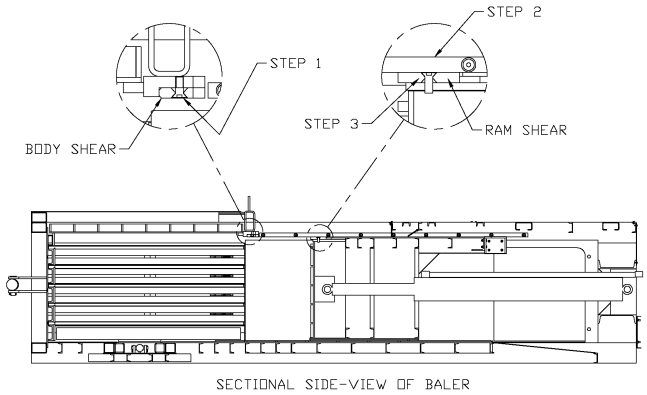
The Body shear blade can be sharpened with a hand-held shop grinder. Care should be taken to maintain the same angles on this blade as originally provided. In sharpening either blade, remove only the least amount of material required to sharpen the edge.

When replacing blades, torque all shear blade bolts to 290 ft-lbs, lubricated.

STEP 1 - The body shear can be removed for sharpening or sharpened with a hand-held grinder. Blade cannot be rotated. Torque shear bolts to 290 ft-lbs, lubricated.

STEP 2 - Before removing the ram shear, the hold down bars on each side of the body will need to be raised. Loosen all bolts on each bar. When the blade has been replaced, the hold down bars must be pressed down onto the ram top and all of the bolts torqued to 150 ft-lbs, lubricated. See **Hold down Bar Maintenance** 49 for more information on hold down adjustment.

STEP 3 - The ram shear can be rotated so that either of the 4 cutting edges can be used. The blade can also be sharpened while it is still mounted using a hand-held grinder. Torque shear blade bolts to 290 ft-lbs, lubricated



SECTIONAL SIDE-VIEW OF BALER

SHEAR BLADE MAINTENANCE (CONTINUED)

Checking the Shear Blade Gap

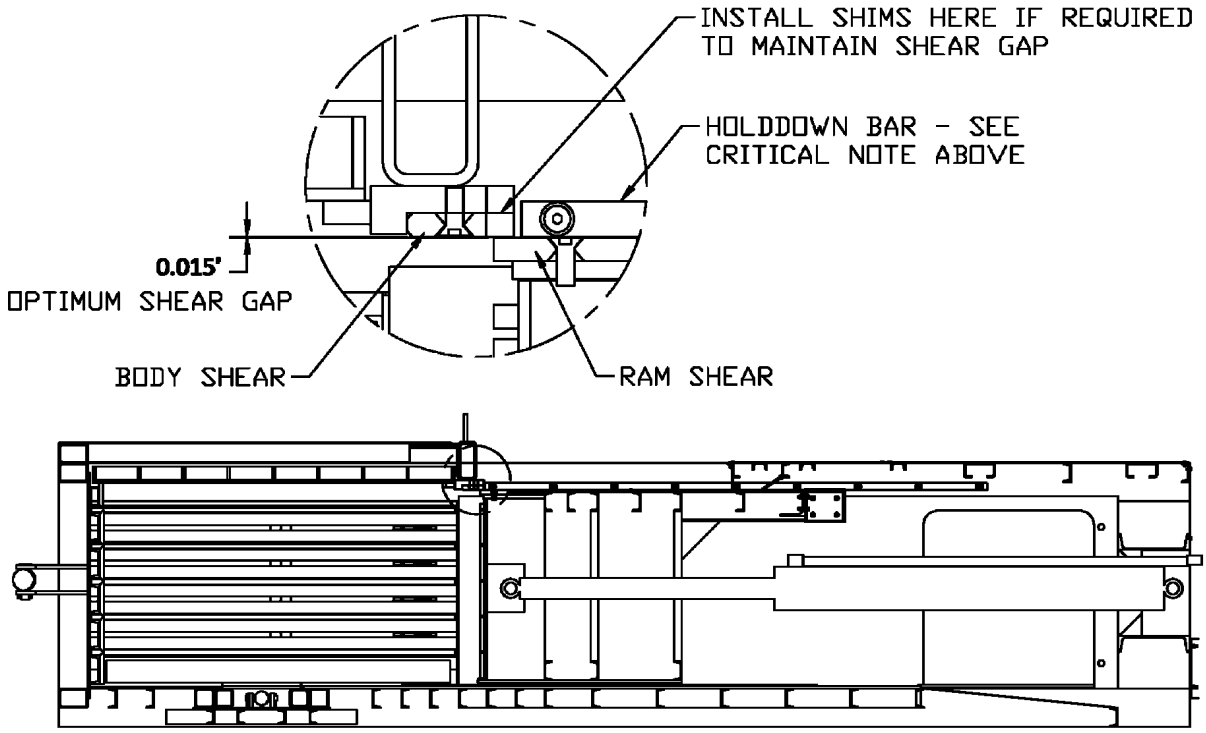
Over time, it is normal for the floor liner in the baler and the floor liner on the ram to wear so that a gap develops between the blades. Some materials will shear with a gap between the blades and some will not. The optimum shear gap for many materials is 0.015" (see diagram below) measured with a feeler gauge and the ram positioned 2” – 4” past the cutting edge of the body shear blade.

Adjusting the Shear Blade Gap

Shim kits are available from the factory for shimming the body blade downward so that the shear gap can be maintained. Shim stock can also be obtained from automotive supply stores. The shims must completely cover the entire area of the blade top surface. After installing shims, torque the body blade shear bolts to 290 ft-lbs, lubricated.

NOTICE

It is critical that the hold down bars are always in contact with the ram top. If a gap develops between the hold down bar and the ram top that exceeds the gap between the shear blades, the shear blades will collide and cause serious damage to the baler.



SECTIONAL SIDE-VIEW OF BALER

PRINCIPLES OF OPERATION

Closed End Baler Operating Characteristics

Electrical

The Marathon Closed-End Horizontal Balers are equipped with a programmable logic controller (PLC).This controller is a computer that monitors inputs, determines what action is needed, and turns on outputs to make the baler function. The PLC is made up of three basic parts: inputs, outputs and the central processing unit.

All of the inputs and outputs on the horizontal closed-end baler are digital. They are either on or off. They are also all equipped with LED lights to tell the operator if an input or output is on or off.

The central processing unit (CPU) is the brain of the PLC. The CPU takes the information supplied by the input devices and decides when to open and close the output contacts. In the event that a problem should arise in the CPU or its program, the CPU FAULT light will be illuminated. The baler cannot run until the fault has been cleared. To clear the fault, turn off the power and wait 60 seconds. Then turn the power back on. If the fault light remains on, call the service department at Marathon Equipment Co. If the fault light goes out and the RUN light is illuminated, the baler will run properly.

The sequence of operation which the baler should follow is stored electrically as a program in the PLC's memory. The Program is also stored on the EEPROM that is shipped inside the panel box. The EEPROM is a back-up in the event of memory loss in the PLC.

The baler can be stared by touching one of the function buttons on the touch screen (AUTO CYCLE, FORWARD, REVERSE) for 20 seconds. After the 20 second delay the PLC will start the motor.

Once the motor is running, the machine can be cycled by pushing any of the function buttons. The functions are described on the following page.

Auto cycle

The baler may be started by touching and holding this button on the touch screen for 20 seconds. During the 20 seconds the audible alarm will sound for 5 seconds and the beacon light will flash for 20 seconds. Once the baler has started this button will also cause the baler to make one complete cycle. The forward solenoid, on the hydraulic control valve, will energize and direct hydraulic fluid to the base end of the cylinder causing the main ram to move forward. When the ram actuates the limit switch in the forward position, energizing its input on the PLC, the forward solenoid will de-energize and the reverse solenoid will energize. The hydraulic control valve will shift and direct hydraulic fluid to the rod end of the cylinder causing it to retract. When the limit switch is actuated in the reverse direction the reverse solenoid will de-energize and the main ram will stop in the retracted position. The motor will continue to run and the baler will be ready for another cycle.

Forward

The baler may be started by touching and holding this button on the touch screen for 20 seconds. During the 20 seconds the audible alarm will sound for 5 seconds and the beacon light will flash for 20 seconds. Once the baler has started this button will cause the main ram to move in the forward direction. If the button is released the ram movement will stop. If the FORWARD button is held the ram will move forward until the cylinder travels to the end of its stroke. The FORWARD button will override the limit switch and allow the baler to build full system pressure.

PRINCIPLES OF OPERATION (CONTINUED)

Reverse

The baler may be started by touching and holding this button on the touch screen for 20 seconds. During the 20 seconds the audible alarm will sound for 5 seconds and the beacon light will flash for 20 seconds. Once the baler has started this button will cause the main ram to move in the reverse direction. If the button is released the ram movement will stop. If the REVERSE button is held the ram will move rearward until the limit switch is actuated in the reverse direction. The ram will stop and wait in this position. The motor will continue to run and the baler will be ready for another cycle.

Photocell Mode

When the baler is placed into photocell mode the baling process is automated. To place the baler into photocell mode, start the baler, retract the main ram completely and touch the PHOTOCEL MODE button on the touch screen. Material can now be fed into the baler. When the material blocks the photocell beam the main ram will automatically complete one cycle. This process is repeated until the bale made pressure is reached and the bale made indicator and alarm are activated.

Bale Made Light

When the baler has enough material in the bale chamber to allow the hydraulic power unit to reach the bale made pressure setting, pressure switch 1 (PS1) will activate its input on the PLC. The BALE MADE indicator, on the touch screen, will flash red and will be accompanied by an audible alarm. The baler will shutdown with the main ram holding the completed bale in position for tie off.

Hydraulic

Description of hydraulic valves - To allow for a sensible description of the hydraulic system used on the Marathon Closed End 720 and 830 balers, the following nomenclature has been assigned to the valves in the hydraulic system. Refer to this information when reading the Pressure Setting Procedures, Principals of Operation and the hydraulic schematic provided with the baler.

SV1A - Controls pilot pressure to shift the hydraulic directional control valve and extend the main ram.

SV1B - Controls pilot pressure to shift the hydraulic directional control valve and retract the main ram.

SV1B - Opens the door latch.

SV2B - Closes the door latch.

CV1 - Low volume pump check valve.

CV2 - Check Valve. Keeps the low volume pump flow from returning to tank.

CV3 - Pilot operated check valve. Opens during main ram retract to allow oil to quickly return to tank.

PS1 - Sequence valve. Opens at 800PSI to unload the high volume pump through EV1.

EV1 - Unloading valve. Directs flow from high volume pump to tank.

RV2 - Relief valve. Sets the hydraulic system pressure for the main ram to 2500PSI.

CP1 Relief Valve - Sets hydraulic system pressure for the door latch to 2500PSI.

CP3 Check Valve - Pilot operated check valve that prevents the door latch cylinder from drifting open.

PSW 1 - Pressure switch 1. Used to sense bale made pressure.

PRINCIPLES OF OPERATION (CONTINUED)

HI/LO Pump Operation - All of the Closed End balers are equipped with a HI/LO hydraulic pump system. The purpose of this system is to maximize the efficiency of the hydraulic system by providing high flow at low pressures for a faster cycle time, and then reduce the flow to achieve high pressure to produce dense bales. The HI/LO system uses two pumps to operate the main compression cylinder:

CE 830 = 25GPM and 52GPM

CE 730 = 18GPM and 32GPM

Using the CE 830 as an example, the 25GPM pump is contributing flow throughout the pressure range from 0-2500PSI. The 52GPM pump contributes flow to the system from 0-800PSI only. When the pressure reaches 800PSI, the sequence valve PS1 will allow the unloading valve EV1 to open and direct the flow from the 52GPM pump back into the tank. This allows the system to continue to build pressure with the 25GPM pump, up to 2500PSI. Check valve CV2 prevents the 25GPM pump from returning to tank during this time.

When sequence valve PS1 senses the system pressure has dropped below 800PSI it will close, causing the unloading valve EV1 to close. The low pressure pump (52GPM) will then push check valve CV2 open and its flow will rejoin the system.

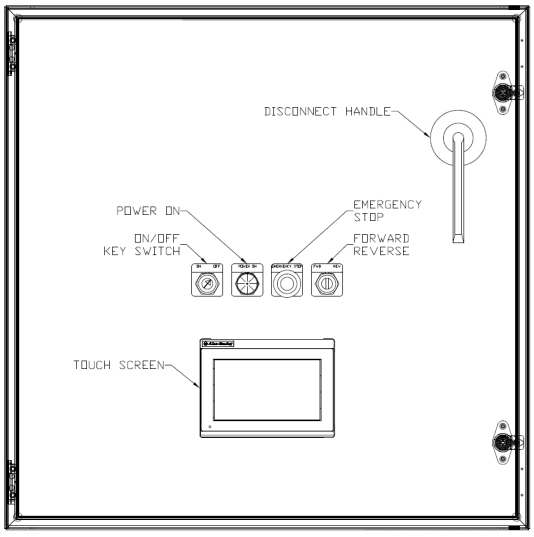
See the **Hydraulic Schematics** 61 in this section of the manual.

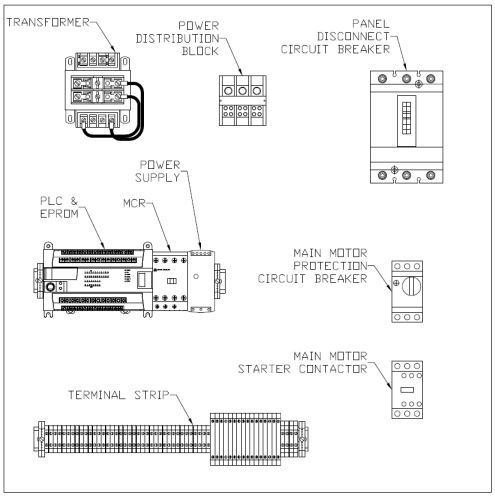
CHARTS

PRESSURE SETTINGS				
MODEL	HP	GPM	RELIEF VALVE (psi)	PRESSURE SWITCH (psi)
C-830	30	75	2500	2300
C-720	20	50	2500	2300

FUSES AND CIRCUIT BREAKERS					
MOTOR SIZE	VAC	FULL LOAD AMP	DUAL ELEMENT FUSE MAX.SIZE	CIRCUIT BREAKER MAX.SIZE	SERVICE DISCONNECT AMP.
20HP, 3PH	208	59.4	100	125	100
	230	54.0	90	125	100
	460	27.0	45	60	60
30HP, 3PH	208	88.0	150	225	200
	230	80.0	150	200	200
	460	40.0	70	100	100

WIRE SIZES - THW Copper 75°C (165°F)				
MOTOR SIZE	VOLTAGE	TO 100’	LENGTH TO 200’	TO 300’
20HP, 3PH	208	4	3	2
	230	4	3	2
	460	10	8	6
30HP, 3PH	208	1	0	00
	230	2	1	0
	460	6	6	4



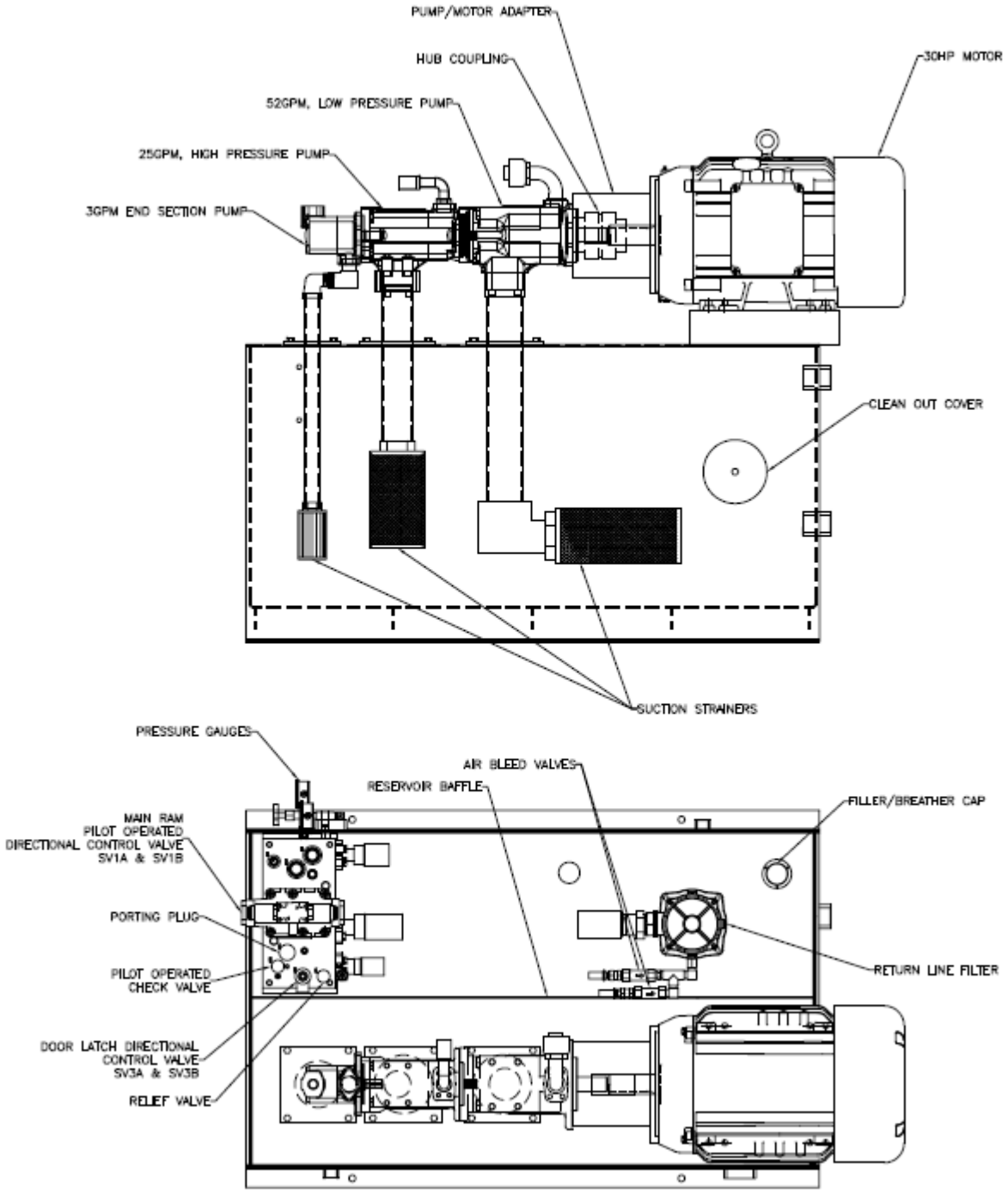


ELECTRICAL SCHEMATIC

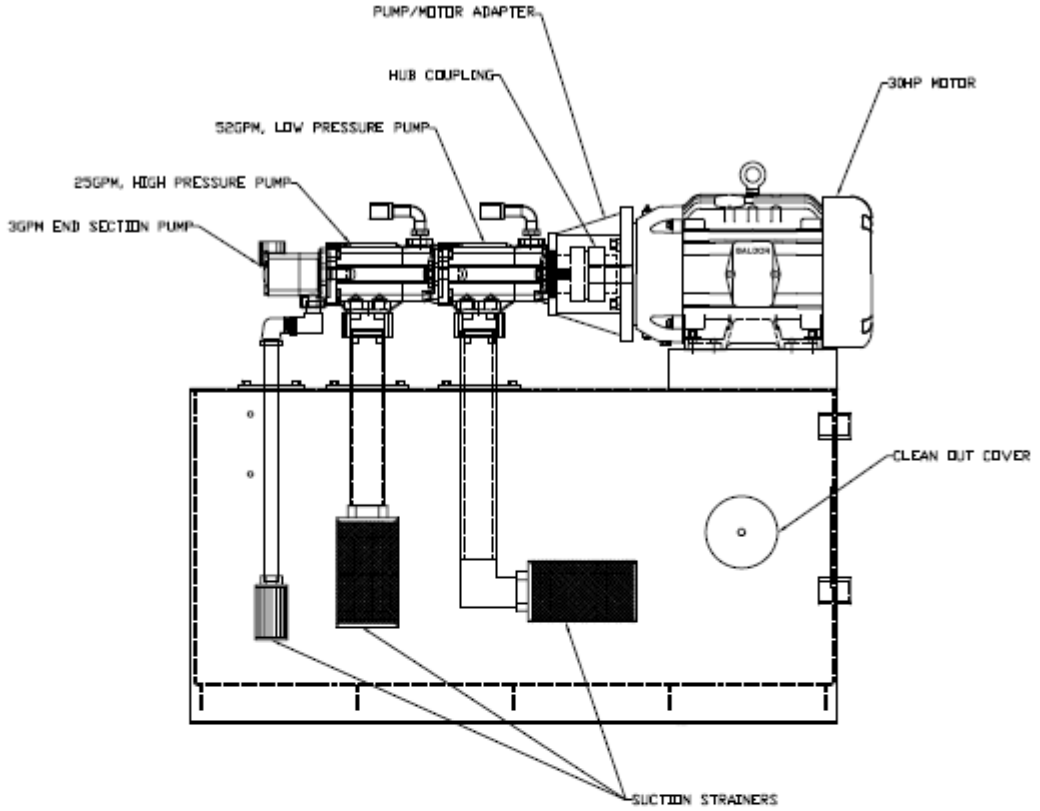
Refer to the electrical schematic shipped with your closed end baler or contact Marathon Equipment Co. Service Department at 800-633-8974.

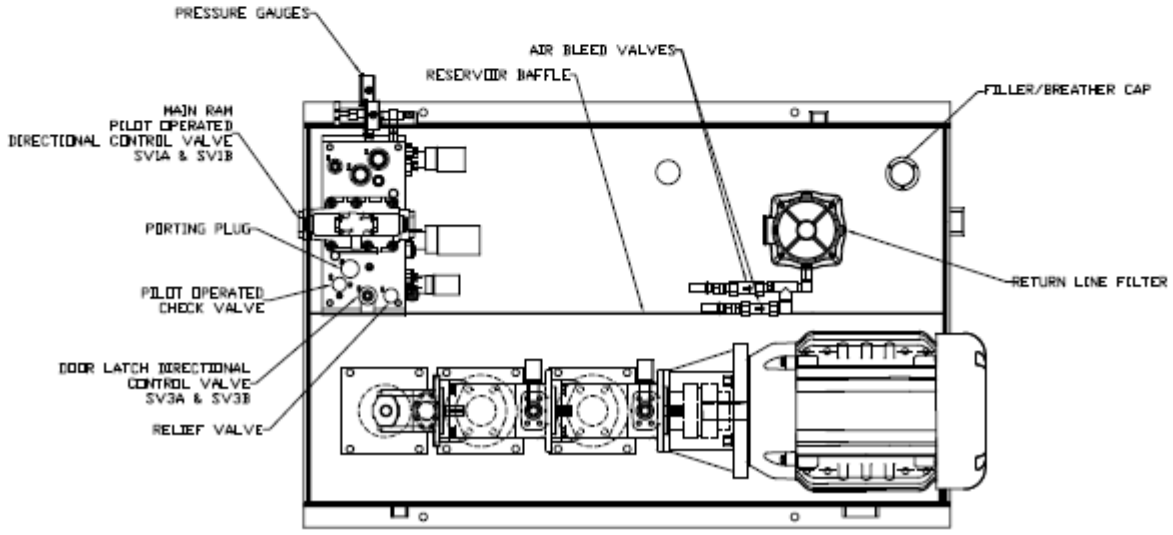
POWER UNITS

POWER UNIT FOR 830 (30 HP/ 75 GPM)



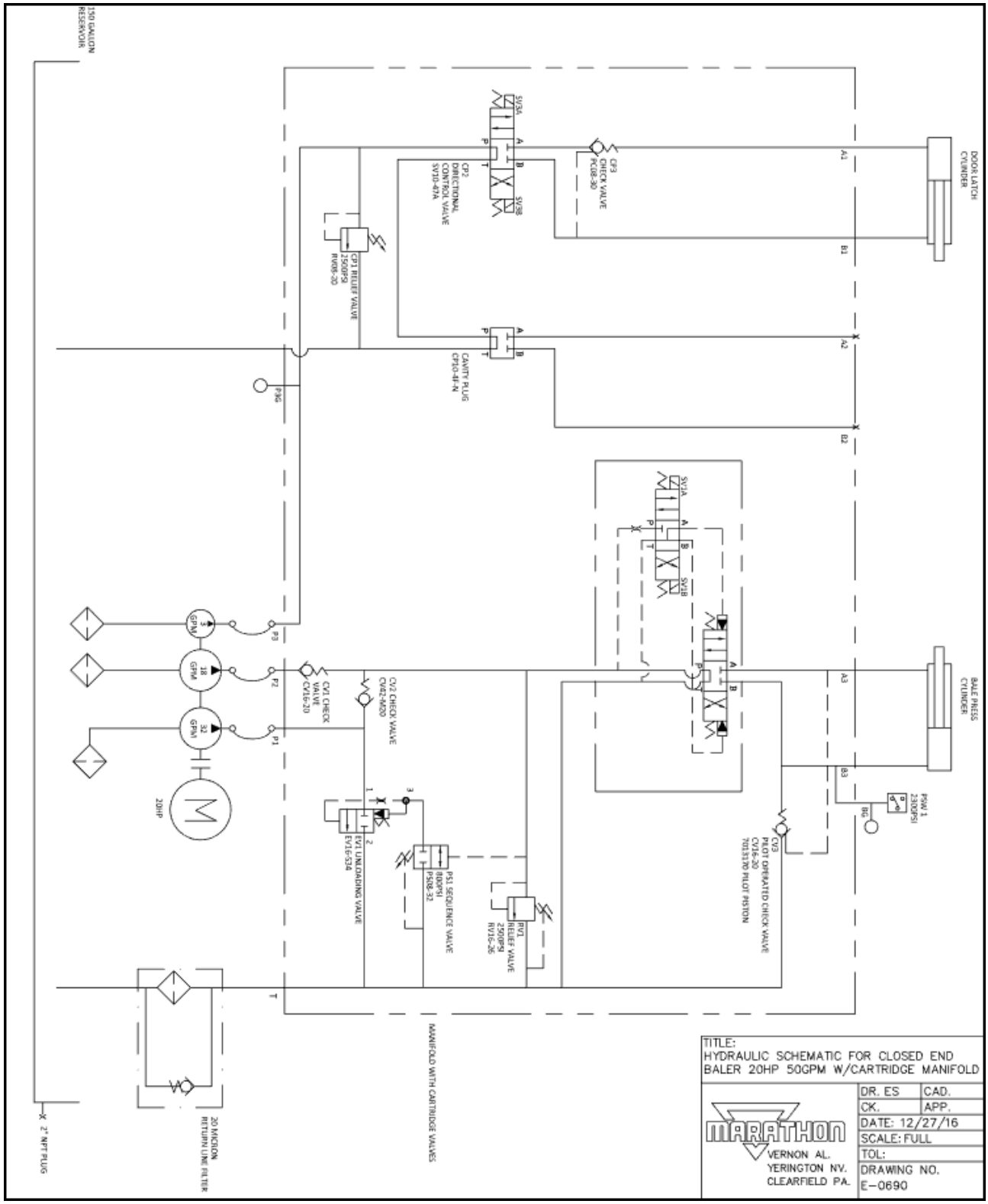
POWER UNIT FOR 720 (20 HP/ 50 GPM)



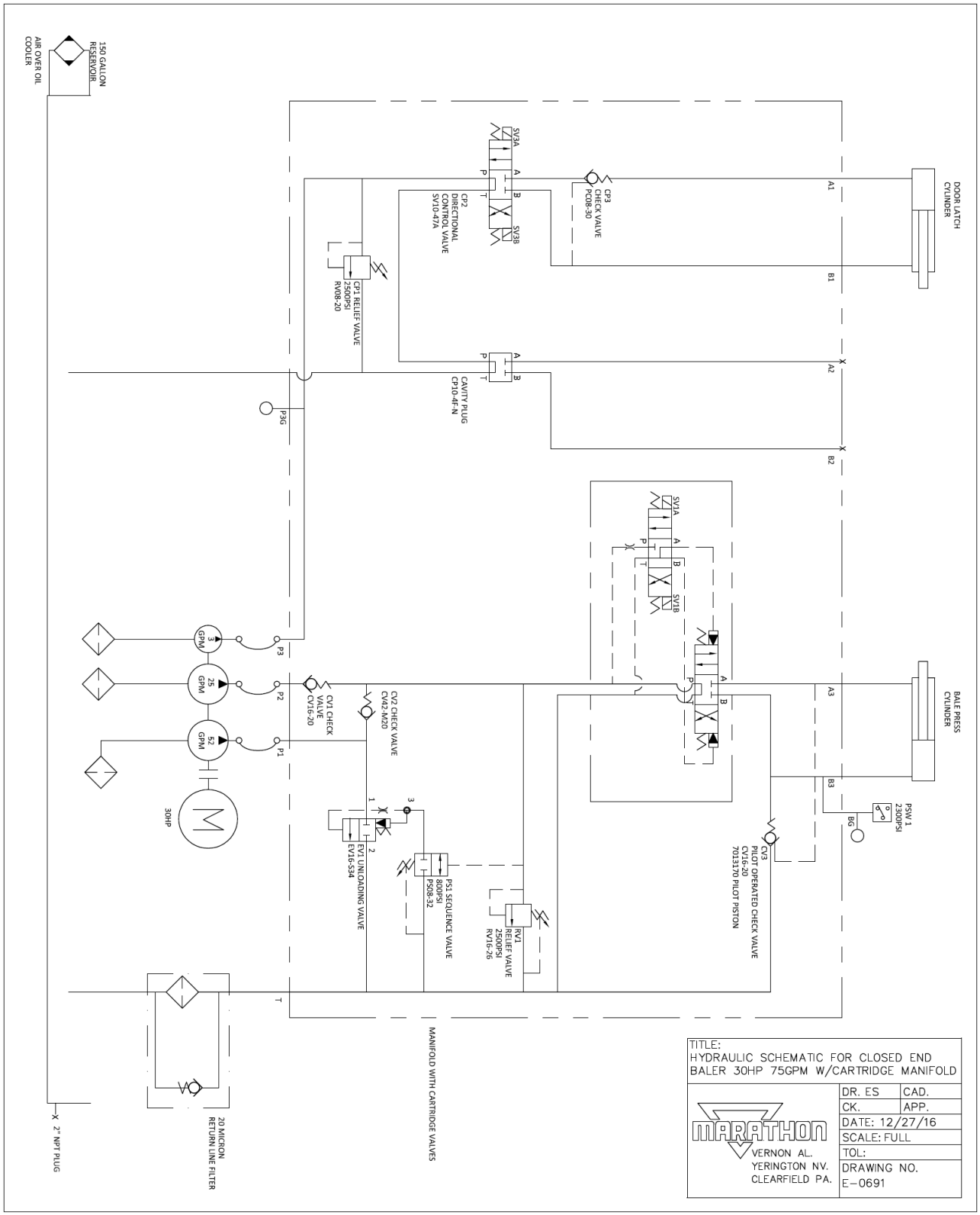


HYDRAULIC SCHEMATICS

HYDRAULIC SCHEMATIC FOR (20 HP/50 GPM) WITH CARTRIDGE MANIFOLD



HYDRAULIC SCHEMATIC FOR (30 HP/75 GPM) WITH CARTRIDGE MANIFOLD



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SECTION 5
REPLACEMENT PARTS

CONTACT INFORMATION

Technical Service and Warranty:

877-258-1105

Parts:

800-528-5308

For parts visit our eCommerce Marketplace at **www.mecomerchant.com**.

If you do not have a user name and password, contact our Parts Department and they will assist with your registration.

Normal Business Hours:

Monday-Friday 8:00am - 5:00pm

(Central Standard Time)

Closed End Horizontal Balers
Replacement Parts

PART NO.	DESCRIPTION	CE-830	CE-720
020662	PUMP MOTOR ADAPTER	X	
020624	PUMP MOTOR ADAPTER		X
020647	BREATHER, 2" WITH STRAINER	X	X
026111	FILTER, RETURN LINE 20 MICRON	X	X
020050	FILTER, SUCTION 1" 100 MESH	X	X
020623	FILTER, SUCTION 2 1/2" 100 MESH	X	X
020388	FILTER, SUCTION 3" 100 MESH	X	
020215	GAUGE, SIGHT 5"	X	X
025768	HUB COUPLING 1-1/4 X 1 5/8-3/8		X
020664	HUB COUPLING 1 3/8-5/16 X 1 7/8-1/2	X	
025734	PUMP, VANE 2 SECTION 50GPM 32/18 SPLIT		X
025735	PUMP, VANE 2 SECTION 75GPM 52/25 SPLIT	X	
025736	PUMP, VANE 3GPM REAR SECTION	X	X
026189	MANIFOLD ASSY HI-FLOW D08 1 STN W/CART VALVES	X	X
026190	VALVE, 4-WAY 08 T 3-POS HI FLOW	X	
020680	VALVE, 4-WAY 08 T 3-POS		X
025730	VALVE CARTRIDGE 4 WAY 3 POS TANDEM CENTER 115VAC SIZE 10	X	X
025731	VALVE CARTRIDGE PO CHECK SIZE 08	X	X
025732	VALVE CARTRIDGE RELIEFE DIRECT ACTING POPPET SIZE 08	X	X
025733	PLUG CAVITY 4 WAY OPEN 1 TO 3 BLOCKED 2 TO 4 SIZE 10	X	X
020700	GAUGE PRESSURE 1/4 NPTM 0-5000PSI	X	X
020690	VALVE CHECK PILOT OPERATED	X	X
030010	LIMIT SWITCH ARM WITH ROLLER	X	X
030011	LIMIT SWITCH NC-NO 15 DEGREE PRE-TRAVEL	X	X
030013	PRESSURE SWITCH, SINGLE	X	X
030129	PHOTOCELL ASSY	X	X
030130	PHOTOCELL MOUNTING BRACKET	X	X
030761	REFLECTOR RECTANGULAR	X	X
030174	INTERLOCK, PUSH BUTTTON SWITCH	X	X
031470	INTERLOCK SWITCH, KEYED TYPE	X	X
997362	SWITCH PROXIMITY N.O. 30MM	X	X
033719	EXTENTION, ALUMINUM 4" F/STACK LIGHT	X	X
033638	LIGHT STROBE MODULE 120V RED	X	X
034283	ALARM STACK MODULE 120VAC 100DB	X	X
030139	OPERATOR 30 SELECTOR 3 RTN CNTR	X	X

030269	OPERATOR 30 SELECTOR 2 KEYED MAINT	X	X
030201	OPERATOR 30 PUSH/PULL MHD RED	X	X
030687	OPERATOR 30 PUSH BUTTON ILL GREEN	X	X
030477	LEGEND 30 'ON OFF'	X	X
030193	LEGEND 30 'EMERG STOP'	X	X
030846	LEGEND 30 'POWER ON'	X	X
037161	LEGEND 30 'FORWARD REVERSE'	X	X
030288	TRANSFORMER 150VA 208/230/460VAC PRI 120VAC SEC	X	X
030488	FUSE 1.5 AMP	X	X
030191	FUSE 2 AMP	X	X
034448	FUSE 2 AMP 5M X 20MM	X	X
031540	RELAY 4 POLE N.O. 120VAC 25A	X	X
034832	MOTOR STARTER IEC 9A CONTACTOR	X	
034832	MOTOR STARTER IEC 4-6.3A MPCB	X	
034835	MOTOR STARTER IEC 50A CONTACTOR	X	
035718	MOTOR STARTER IEC 37-50A MPCB	X	
034748	MOTOR STARTER IEC 32A CONTACTOR		X
034762	MOTOR STARTER IEC 24-32A MPCB		X
034827	BREAKER MECHANISM ROTARY HANDLE	X	X
033716	PLC AB EEPROM F/MICRO LOGIX 1200	X	X
036000	PLC AB MICOR LOGIX 1200 W/DUAL PORTS	X	X
036001	PLC AB CABLE MICRO LOGIX TO PC	X	X
035999	OPERATOR INTERFACE PANEL VIEW 800	X	X
034732	POWER SUPPLY 24VDC 60W 85-264VAC INPUT	X	X

Closed End Horizontal Balers
Replacement Parts

CYLINDERS AND SEAL KITS

BALER MODEL	PART NO.	BORE	ROD	STROKE
CE-303042-720	04-3679	7	4.5	68
SEAL KIT	04-3680			
CE-503042-720	04-3679	7	4.5	68
SEAL KIT	04-3680			
CE-503042-830	04-3641	8	4.5	68
SEAL KIT	04-3660			
CE-504242-830	04-3641	8	4.5	68
SEAL KIT	04-3660			
CE-504842-830	04-3641	8	4.5	68
SEAL KIT	04-3660			
CE-604242-830	04-3642	8	4.5	78
SEAL KIT	04-3661			
CE-604842-830	04-3642	8	4.5	78
SEAL KIT	04-3661			
CE-724842-830	04-3643	8	4.5	90
SEAL KIT	04-3662			

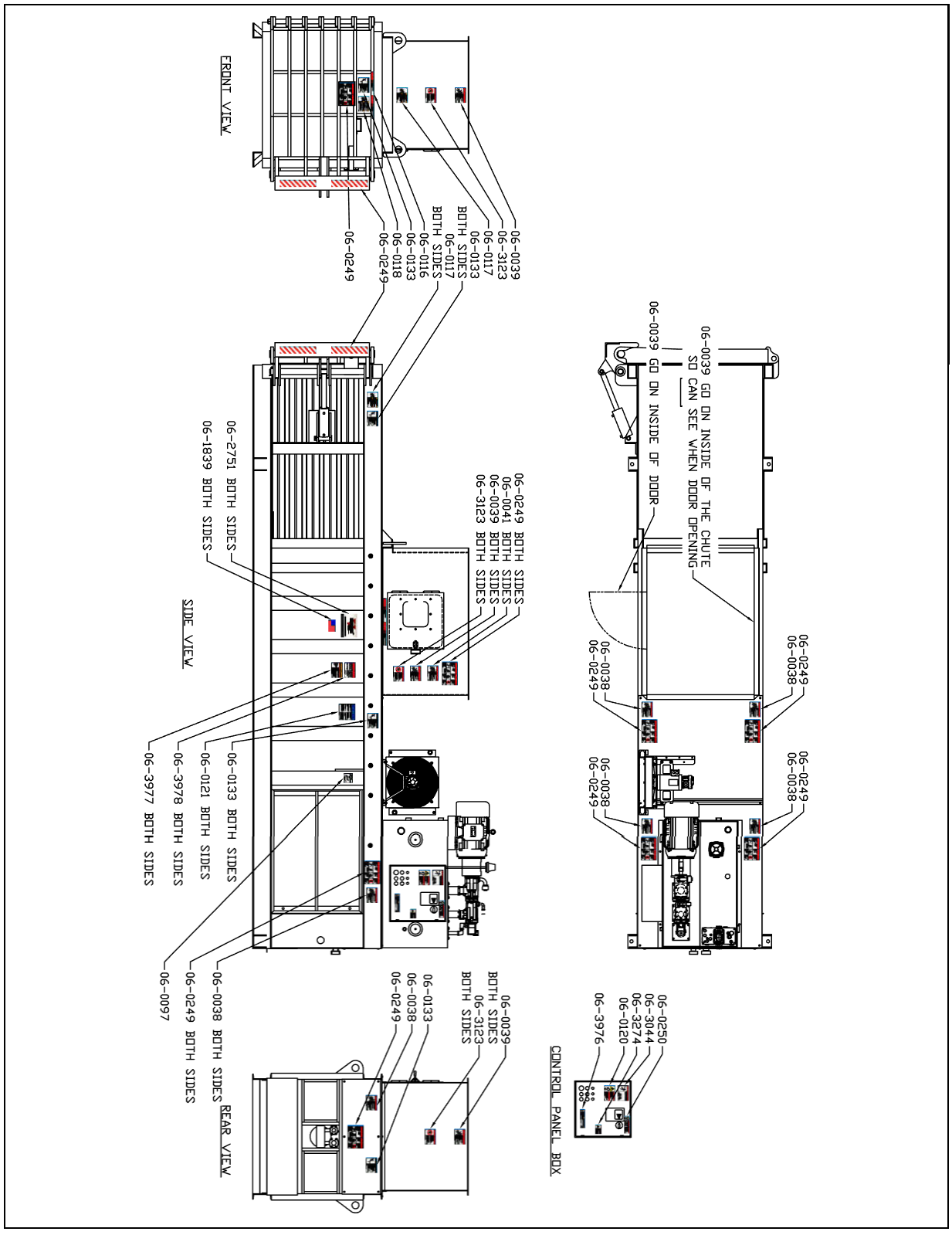
DECALS

Warning Decal Requirements

When your Closed-End Baler leaves the factory, several WARNING DECALS are installed for your protection. These labels are subject to wear and abuse due to the nature of operation. The FOLLOWING DECALS MUST BE MAINTAINED. Additional decals may be purchased through your distributor or directly from Marathon Equipment Company by either calling the parts department at 800-633-8974. Refer to the chart below and the images on the next 2 pages when ordering.

Part #	Description	Qty
06-0038	DECAL DANGER DO NOT REMOVE AC	7
06-0039	DECAL DANGER DO NOT ENTER	6
06-0041	DECAL DANGER THIS MACHINE START AUTO	2
06-0097	DECAL SERIAL NUMBER PLT	1
06-0116	DECAL DANGER KEEP HANDS OUT	2
06-0117	DECAL WARNING STAND CLEAR WHEN	3
06-0118	DECAL WARNING STAND CLEAR WHILE	1
06-0120	DECAL DANGER DISCONNECT & LOCK	1
06-0121	DECAL NOTICE FEDERAL REGULATIONS	2
06-0133	DECAL WARNING STAY OFF..DO NOT	5
06-0249	DECAL DANGER HAZARDOUS VOLTAGE	10
06-0250	DECAL DANGER LOCK OUT POINT DA	1
06-0254	DECAL RED/WHITE STRIPED 3X15.5	4
06-1839	DECAL AMERICAN FLAG	2
06-2751	DECAL MARATHON COMP & RECYC	2
06-3044	DECAL DANGER VOLTS W/BLANK SPA	1
06-3123	DECAL DANGER CONFINED SPACE	4
06-3274	DECAL WARNING "FLASH HAZARD" B	1
06-3976	DECAL WARNING SHOCK ARC FLASH	1
06-3977	DECAL WARNING DO NOT OPERATE	2
06-3978	DECAL DANGER DO NOT OVERRIDE OR	2

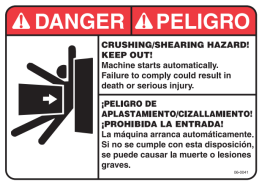
DECAL PLACEMENT DIAGRAM



DECAL IMAGES

06-0116

06-0041



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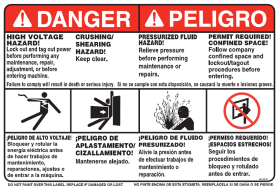
06-0097

06-2751

06-0117

06-3044

06-0249



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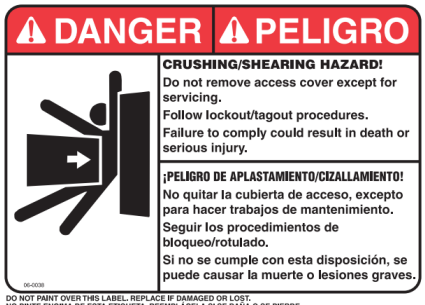
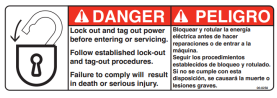


06-3123

06-0133

06-0250



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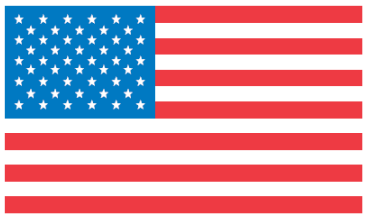

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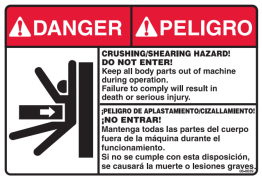

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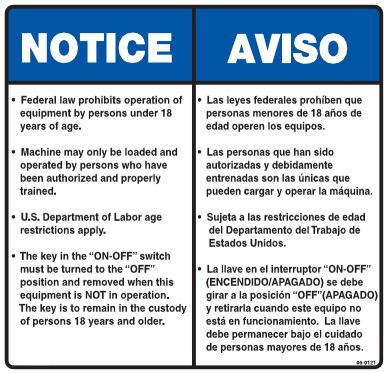

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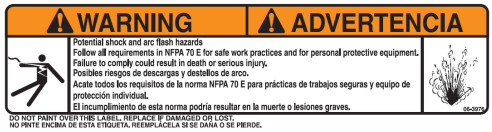

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Closed End Horizontal Balers
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