MARATHON®

COMPACTION & RECYCLING SOLUTIONS

www.marathonequipment.com 1-877-258-1105

OPERATION, MAINTENANCE, AND INSTALLATION MANUAL

TIEger® Series Auto-Tie Balers

(PC, WC, and EWC Models)

1-800-633-8974 www.marathonequipment.com

MARATHON® Compaction & Recycling Solutions

• OMI Manual No. 0064-1, Rev. 07/14

Table of Contents

1 - OPERATION

Introduction

Thank you for purchasing a TIEger® Auto-Tie 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 and safely install, operate, and maintain the baler. 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 baler should also read and understand the most current version of the following applicable standards:

ANSI Standard No. Z245.5, "Safety Requirements For Baling Equipment"

A copy of this standard may be obtained from ANSI (www.ansi.org):

25 West 43rd Street

New York, NY 10036

OSHA Title 29 CFR, Part 1910.147

"The Control of Hazardous Energy (Lock-Out and Tag-Out)" (www.osha.gov)

Any service or repair instructions contained in this manual should be performed by factory authorized personnel only.

If you should need assistance with your baler, please contact your distributor. When contacting your distributor, you will need to provide:

- Serial Number: _____
- Installation Date: _____
- Electrical Schematic Number: _____

If you have any safety concerns with the equipment, or need further information, please contact us at 1-800-633-8974 or:

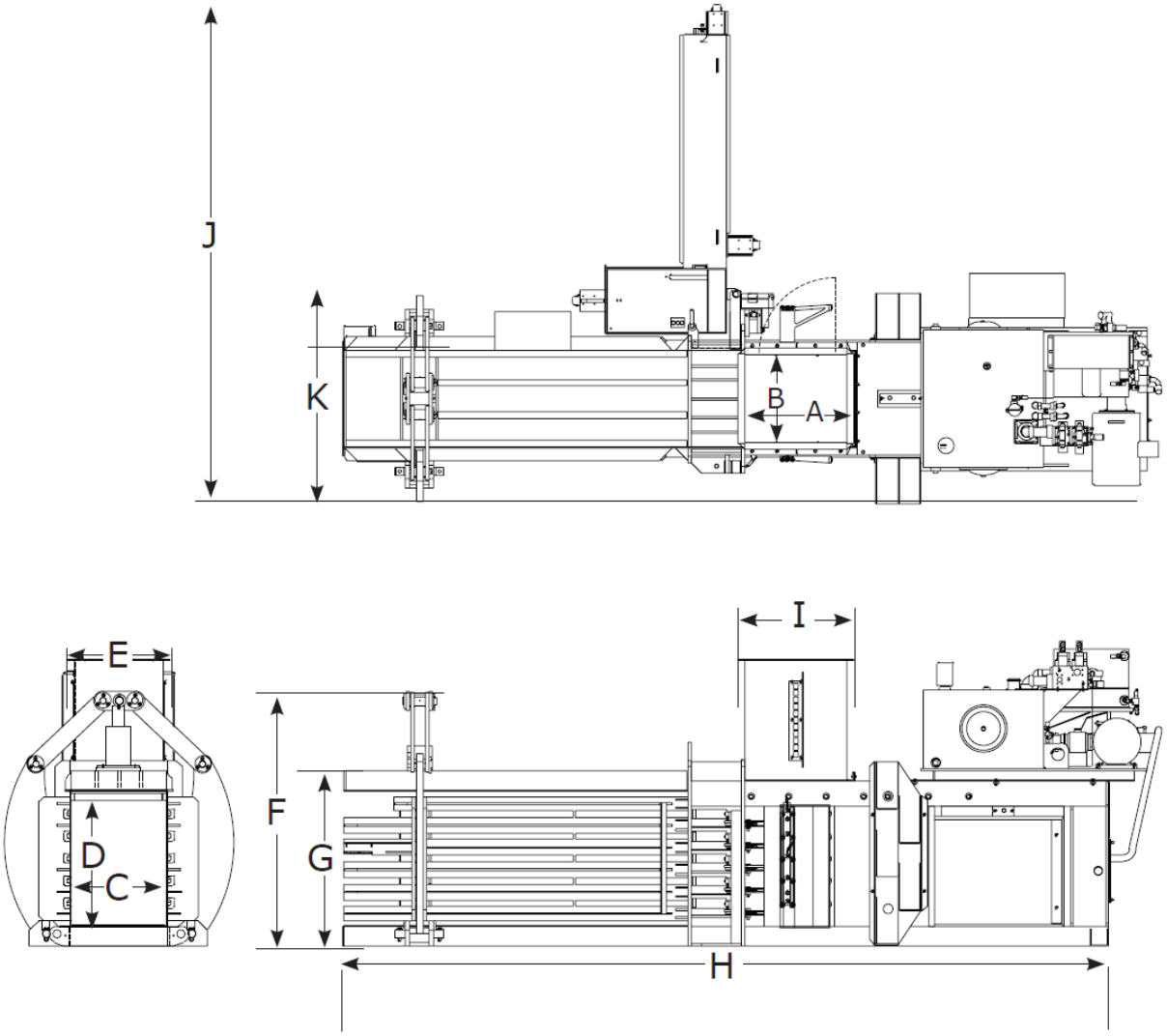
Marathon Equipment Company

Attn: Field Service Department

P.O. Box 1798

Vernon, AL 35592-1798

Specifications



Specifications (Continued)

	(All units in inches)	PC Models				WC Models		EWC Models	
	Model #	115-32	150-32	115-44	150-44	150-60	150-72	150-60	150-72
A	Charge Chamber Length	30	30	49	49	65	77	65	77
B	Charge Chamber Width	37	37	30	30	42	42	48	48
C	Bale Width	30	30	30	30	42	42	48	48
D	Bale Height	42	42	42	42	42	42	42	42
E	Feed Hopper Width	28	28	28	28	39	39	45	45
F	Tensioner Height	80	80	80	80	81 1/4	81 1/4	81 1/4	81 1/4
G	Body Height	52	52	52	52	55	55	55	55
H	Body Length	278	278	302	302	356	380	356	380
I	Feed Hopper Length	32	32	44	44	60	72	60	72
J	Overall Width	157	157	157	157	186	186	186	186
K	Tensioner Width	72 1/4	72 1/4	72 1/4	72 1/4	84 1/4	84 1/4	90 1/4	90 1/4

Pre-Operation Instructions

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

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!

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" on page 2-2.

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.

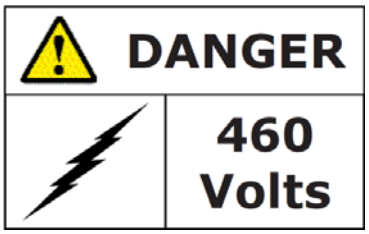
This baler is controlled by photocells and will start automatically when photocells detect ANY OBJECTS in the charge box.

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

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. Federal regulation prohibits operation by persons under 18 years of age. Turn off and remove the key after use.

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

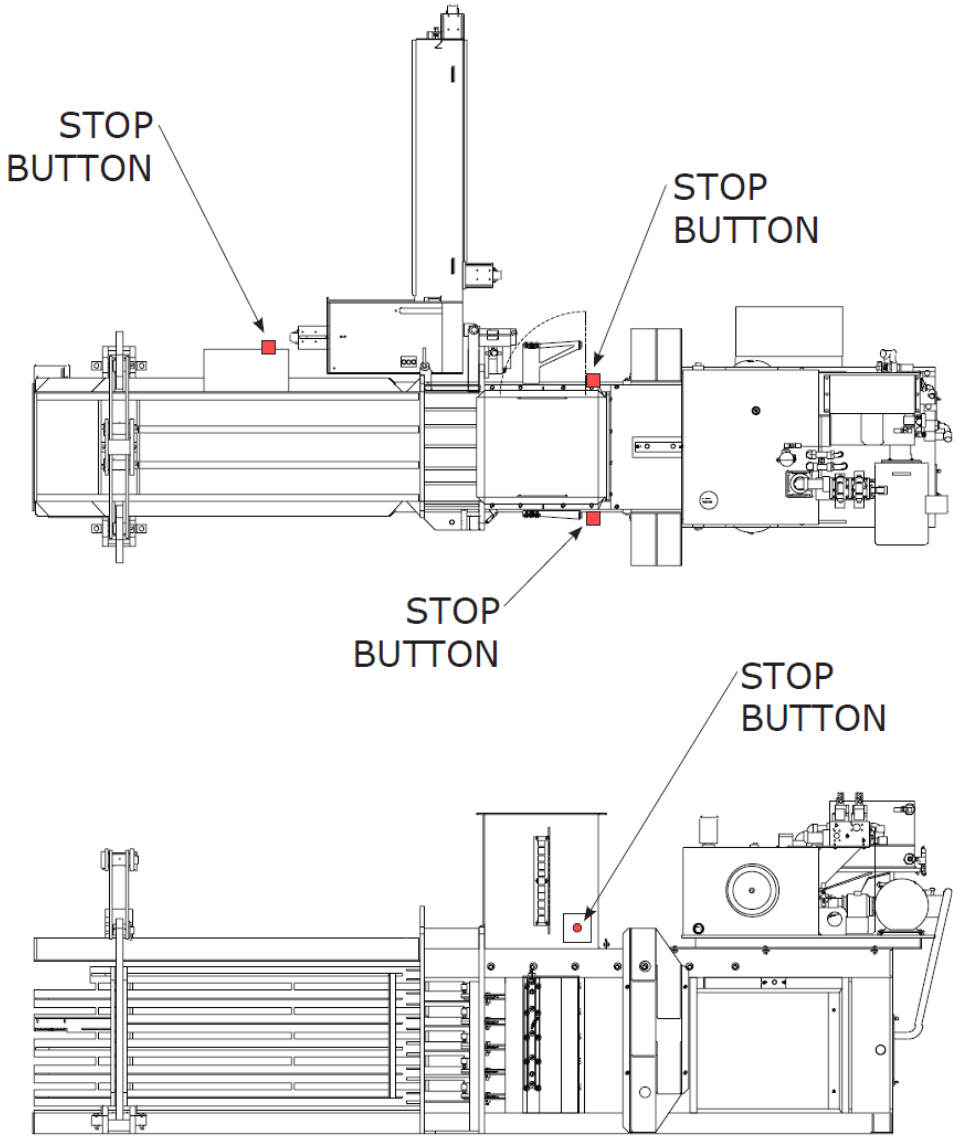


ONLY AUTHORIZED PERSONNEL SHOULD BE ALLOWED INSIDE PANEL BOX. The panel box contains high voltage components. See **"Lock-Out & Tag-Out Instructions" on page 2-2.**

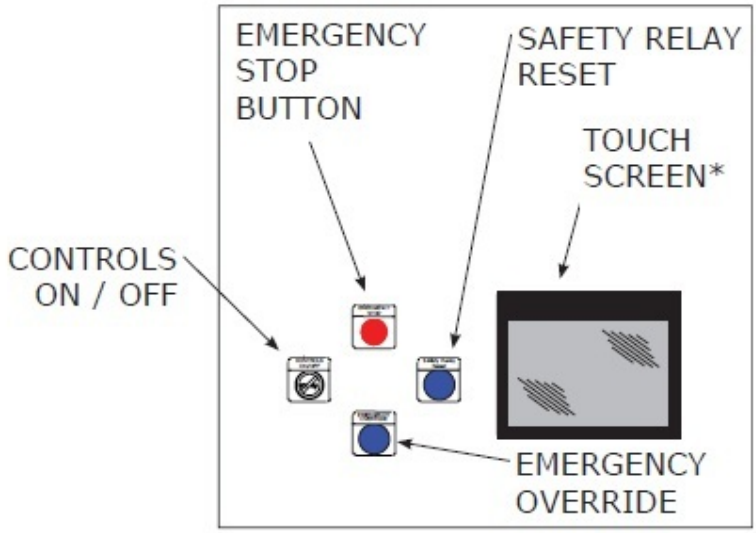
Emergency Stop Locations

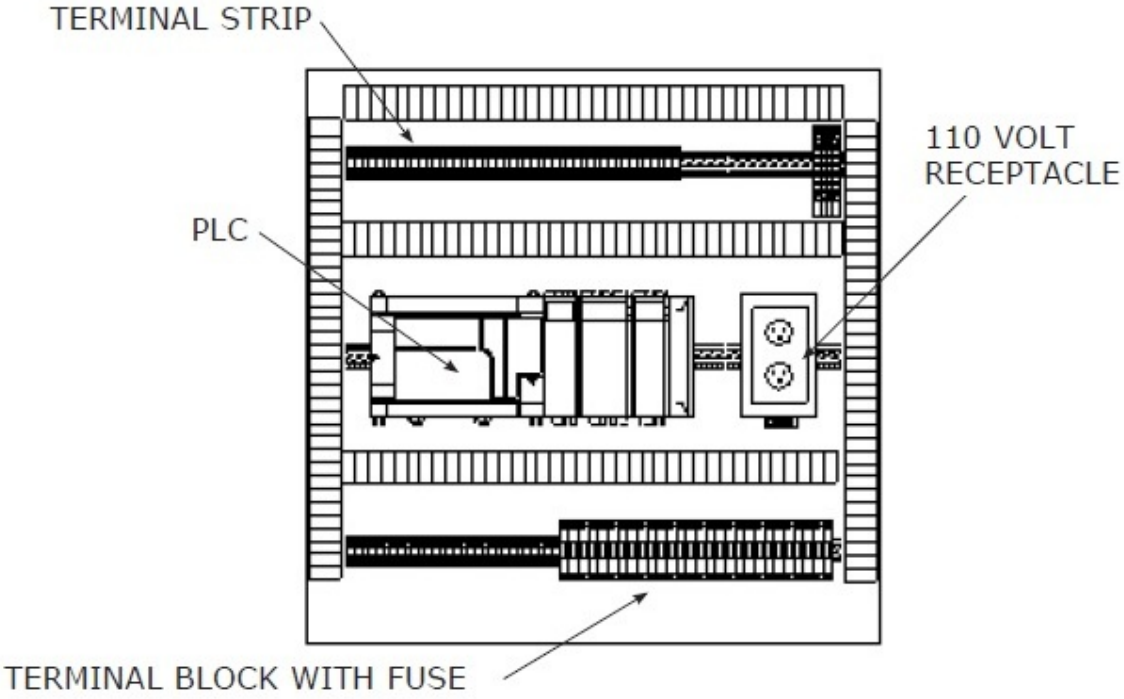
In case of emergency, push any one of three red mushroom-head stop buttons on baler (see diagram below for locations). Make sure all personnel operating baler know where all stop buttons are located. Make sure area around each stop button is clean and free of any debris or operator hazards. Check operation of each stop button as outlined in the Maintenance section of this manual.

All equipment in the processing stream of baler should have emergency stop buttons located for easy operator access. These stop buttons should be connected so as to shut down all power to baler when depressed.



Typical Control Panel and Panel Box





* Touch Screen Instructions begin on **“Security Screen” on page 1-12.**

Standard Operation - Baler Start Up

IN CASE OF EMERGENCY:

Push the large RED button to STOP

Prior to start-up of the baler each day, check the items found in the "DAILY" list in **"Periodic Maintenance" on page 2-4.**

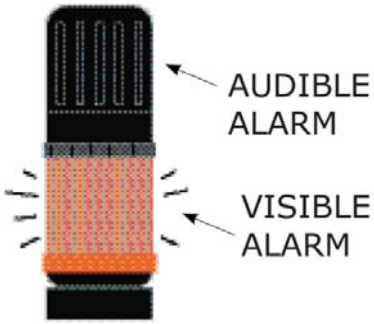
Note: The TIEger® Auto-Tie Baler features an ANSI Z245.5 - 5.10 compliant start-up alarm that is both audible and visible during the activation of the baler motor(s).

Standard operation includes baler start-up for Manual and Automatic Operation.

Baler Start Up

1) Check work area and make sure that all personnel are clear of baler.
2) Turn electrical disconnect to "ON" position.
3) Insert CONTROL key and rotate switch to "ON" position.
4) Make sure all Emergency Stop Buttons are pulled out.
5) Touch the "SAFETY RELAY RESET" button. (Allow for a brief delay for control processor to initialize).
6) Touch "ACK ALL" (acknowledge all) and "Reset" on touch screen to clear alarm screen. The screen will change to Main Menu.
7) Touch and hold "MOTOR START" button for 20 seconds.
   a) Both an audible and visual start-up alarm will energize for 5 seconds.
   b) After 5 seconds, the audible alarm stops and the visual alarm continues for an additional 15 seconds.
   c) The main motor(s) will start after the 20-second delay and the operator should remove their finger from "Motor Start" button.

   This completes the BALER START UP sequence.



START-UP ALARM

(Mounted on Control Panel)

Touch Screen Instructions begin on **"Security Screen" on page 1-12.**

Standard Automatic Operation

Automatic Operation Mode

1) Start the baler per start-up procedures on the previous page.

2) Touch the “MANUAL MODE” button and the screen will advance to “MANUAL-MODE-SCREEN”.

3) Touch the “RAM REVERSE” button until the ram is fully retracted.

4) Touch the “MAIN MENU” button.

5) Touch the “AUTO MODE” button and the screen will advance to the “AUTO MODE-SCREEN”. Touch the “AUTO MODE” button and the baler will automatically cycle when the designated photocell is blocked by an incoming product.

6) Touch the CONVEYOR “AUTO” button, if you want the baler to control the flow of material. You may control the flow of material manually by touching the CONVEYOR “ON - OFF” button as required. (Optional controls)

7) Touch the “MANUAL MODE”, “MAIN MENU”, or “CYCLE STOP” button to end AUTO MODE. To resume AUTO MODE, you will have to begin at step 1 of this procedure.

Manual Operation Mode

1) Start the baler per start-up procedures on the previous page.

2) Touch the “MANUAL MODE” button and the screen will advance to the “MANUAL MODE SCREEN”.

3) Touch the “RAM REVERSE” or the “RAM FORWARD” button for manual ram operation.

   Note: The manual controls will lock if not moved in 60 seconds. If this happens, press the POWER ON button to reset the timer.

Touch Screen Instructions begin on **“Security Screen” on page 1-12.**

Procedure For Manually Tying Bale

Note: Baler must be in operation and in “MANUAL MODE” and on the “MANUAL MENU” to perform this function.

1) Press the “TIE CYCLE” button.

2) Press and hold “RAM EXTEND” until “RAM EXTENDED” illuminates and “RAM AT TIE POSITION” illuminates.

3) Press the “GO TO “MANUAL TIE” button.

4) Press and hold “NEEDLES IN” until the needles are fully extended.

5) Press and hold “NEEDLES OUT” until the needles are fully retracted.

6) Press and hold “TWISTER IN” until the twister head is fully extended.

7) Press and hold “TWIST” until all rotation stops.

8) Press “TWISTER CUT POSITION”.

9) Press and hold “TWISTER OUT” until the twister head is fully retracted (this will cut the wires).

10) Press “TWIST” once. This will return spin heads back to the home position.

11) Press “TWISTER IN”. Then press “TWISTER OUT” until the twister head is fully retracted to ensure no wires are in the spin heads.

12) Press “Manual Ram” to go back to the manual menu.

13) Press and hold “RAM RETRACT” until “RAM RETRACTED” illuminates.

14) Press the “MAIN MENU” button.

15) Press the “AUTO MENU” button.

Making a Bale

IN CASE OF EMERGENCY:

Push the large RED button to STOP

Warning: Do not operate baler until operating instructions are thoroughly understood.

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

Automatic Mode

1) Insert the key into the keyswitch and turn to the ON position.

2) Depress the PHOTOCELL ON pushbutton. The baler warning alarm sounds for 5 seconds, the rotating beacon light flashes for 20 seconds, then the power unit starts. From this point, the ram starts automatically any time the photocell senses that the feed hopper/charge box has ANY OBJECT in it. If 15 minutes elapses without a cycle being initiated by the photocell or without operation of any of the pushbuttons, the power unit will shut down.

   Warning: In this mode, the power unit will restart the ram automatically any time the photocell detects ANY OBJECT in the charge box.

3) Feed materials into the baler. When a bale is completed, the BALE MADE light comes on, the buzzer sounds, and the unit shuts down automatically. Bale tie off and ejection instructions are on the next page.

Manual Mode

1) Insert the key into the keyswitch and turn it to the ON position.

2) To bale material in the Manual Mode, first completely fill the charge box with material.

3) Depress and hold the AUTOCYCLE pushbutton until the power unit starts. The baler will cycle one time (one complete extend and retract of the ram) and shut down.

4) Repeat steps 2-3 until BALE MADE light comes on and the buzzer sounds. The closed-end baler can also be operated using the MANUAL MODE pushbutton along with the FORWARD or REVERSE to create a bale.

Shutdown

In either the Automatic Mode or the Manual Mode, to shut down the baler, depress the EMERGENCY STOP pushbutton. Turn the keyswitch to the OFF position and remove the key. Do not enter the baler for any reason until you perform the **"Lock-Out & Tag-Out Instructions" on page 2-2.**

Security Screen

Login - Press after entering the password to login to the interface.

Return - Press to return to the main menu (see next page).

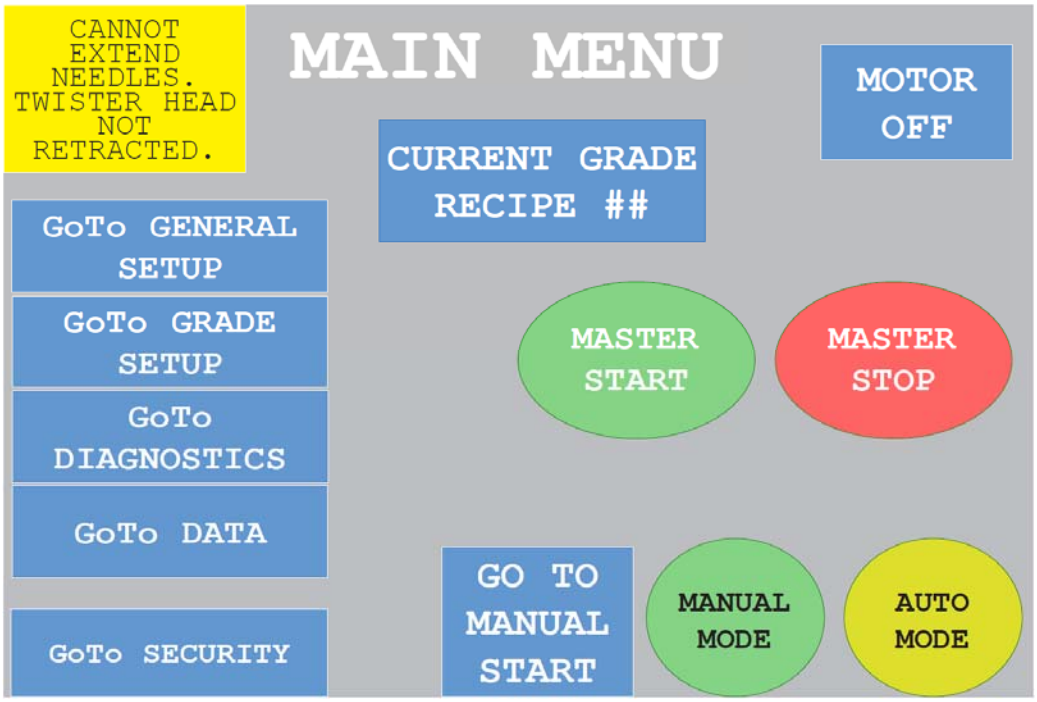
Logout - Press when operator or supervisor is ready to logout of the interface.

########## - Press to select either “operator” or “supervisor” as usernames. once selected, a numeric keypad is displayed for you to type in your password. Default passwords are “1234” for operators and “8710” for supervisors. These may be changed by selecting “New Password”.

New Password - Allows operator or supervisor to choose a new password.

Verify Password - Re-enter new password to verify and save.

Main Menu Screen



Cannot extend needles. Twister head not retracted - The yellow info/error window explains the interruption of the process.

Go To General Setup - Login as "supervisor" to access General Setup. Refer to **"General Setup** Screens **Screens" on page 1-22.**

Go To Grade Setup - Press button to go to Grade Setup. Refer to **"Grade Setup Screens" on page 1-26.**

Go To Diagnostics - Press button to go to Diagnostics. Refer to **"Diagnostics Menus" on page 1-34.**

Go To Data - Press button to go to the Data screen. Refer to **"Data Screens" on page 1-38.**

Go To Security - Press to go back to the Security/Login screen.

Go To Manual Start - Press to go to the Manual Start screen where you can manually start the motor(s).

Motor Off - The blue info window indicates the status of motors.

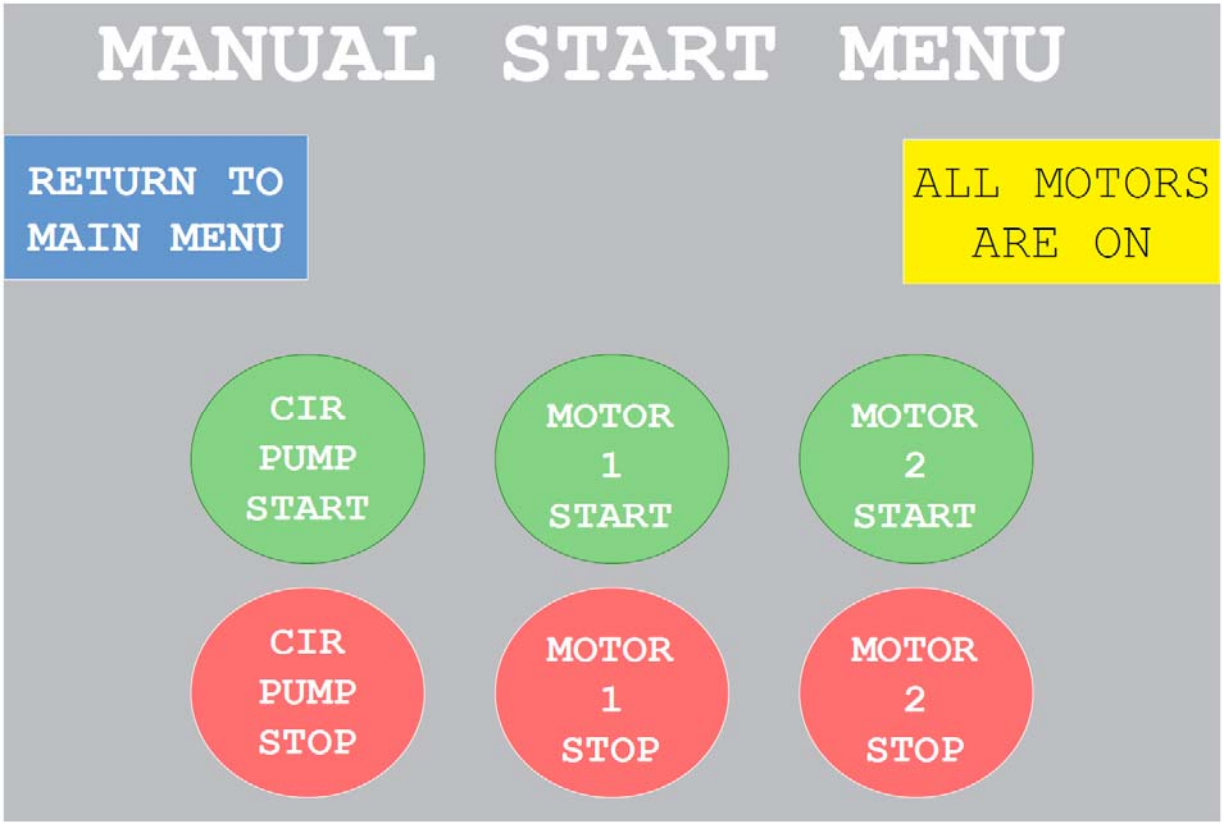
Master Start - Press and hold for 20 seconds to start motors. See the countdown in the blue info window.

Master Stop - Press to stop all motors in operation.

Manual Mode - Press to go to the Manual Menu screen. Refer to **"Manual Menu Screens" on page 1-16.**

Auto Mode - Press to start the Auto Mode.

Manual Motor Start Screen



Return To Main Menu - Press this button to go to the Main Menu screen.

All Motors Are On - Indicator screen that displays the status of the motor(s).

Cir Pump Start - Press this button to start the circulating pump.

Cir Pump Stop - Press this button to stop the circulating pump.

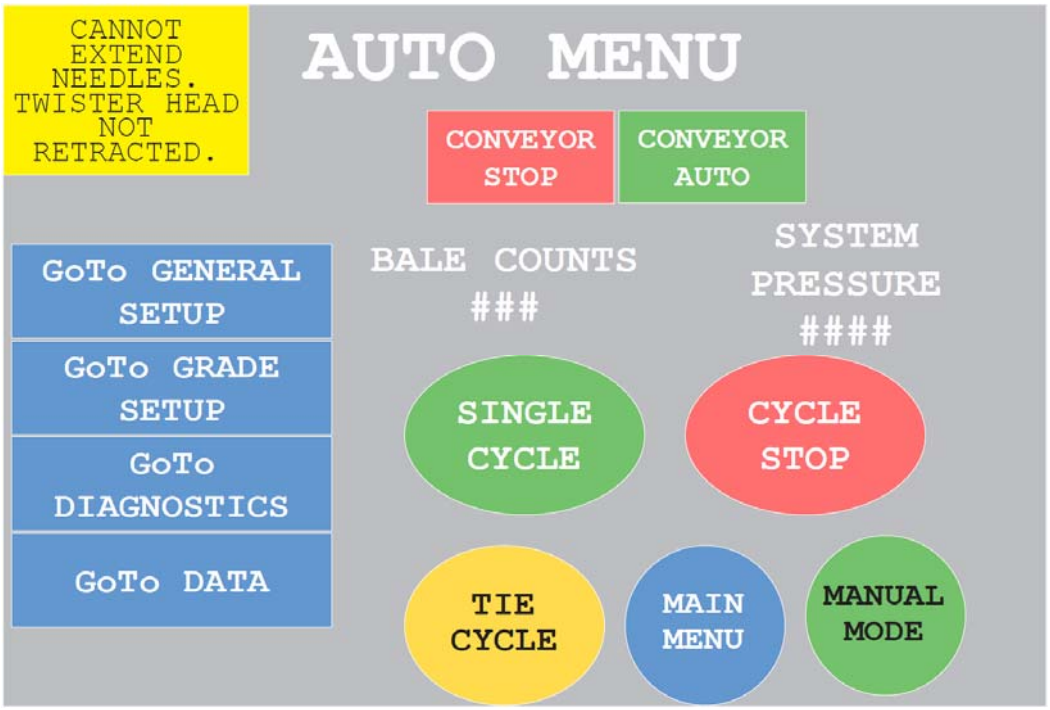
Motor 1 Start - Press this button to start Motor #1.

Motor 1 Stop - Press this button to stop Motor #1.

Motor 2 Start - Press this button to start Motor #2.

Motor 2 Stop - Press this button to stop Motor #2.

Auto Menu Screen



Cannot extend needles. Twister head not retracted - The yellow info/error window explains the interruption of process.

Go To General Setup - Login as "supervisor" to access General Setup. Refer to **"General Setup Screens" on page 1-22.**

Go To Grade Setup - Press button to go to Grade Setup. Refer to **"Grade Setup Screens" on page 1-26.**

Go To Diagnostics - Press button to go to Diagnostics. Refer to **"Diagnostics Menus" on page 1-34.**

Go To Data - Press button to go to the Data screen. Refer to **"Data Screens" on page 1-38.**

Conveyor Stop - Press button to stop the conveyor.

Conveyor Auto - Press button to start the conveyor. The conveyor defaults to Stop once the upper photocell is blocked.

Single Cycle - Press button to cycle the main ram once.

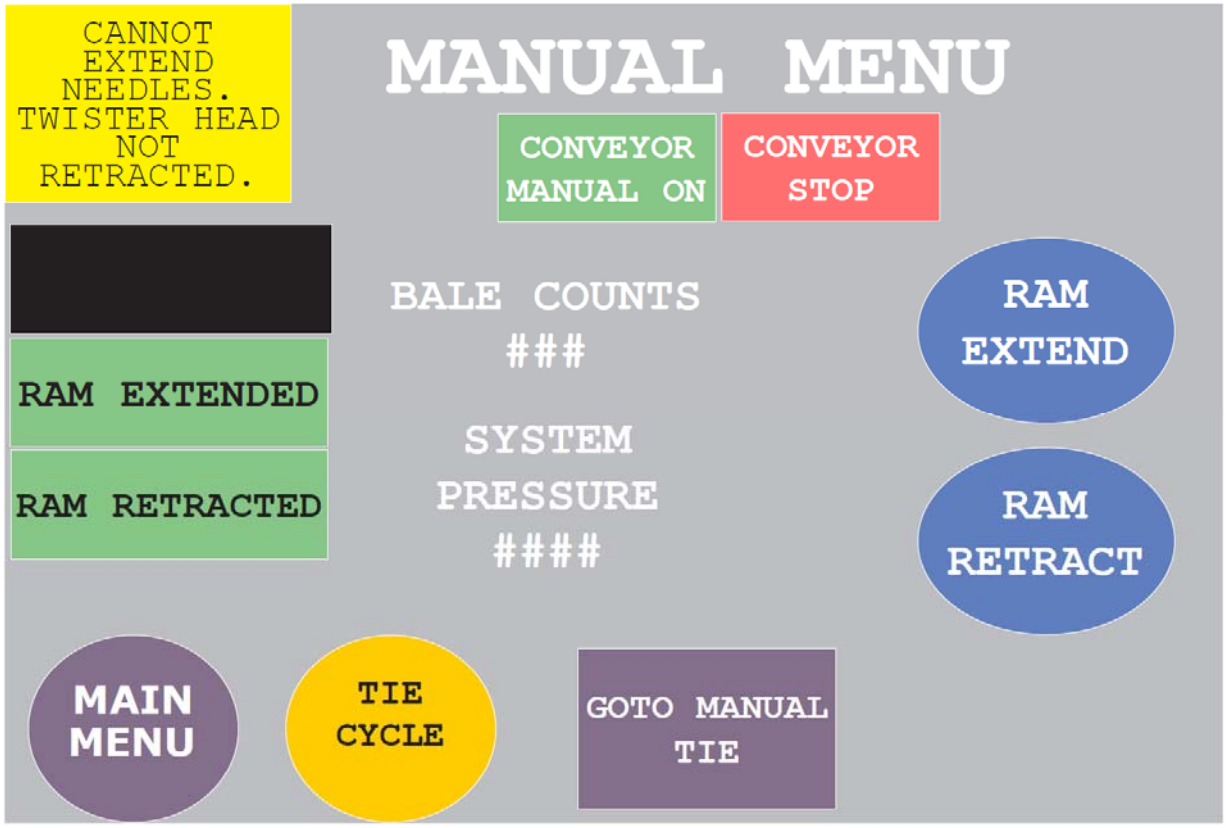
Cycle Stop - Press button to stop the cycle.

Tie Cycle - This acts as a manual tie override. Pressing this button takes the ram to the tie position.

Main Menu - Press button to go to the Main Menu.

Manual Mode - Press button to switch to the Manual Menu screen. Refer to **"Manual Menu** Screens **Screens" on page 1-16.**

Manual Menu Screens



(Green or Gray Indicators) - The indicators on the left display the position of the ram as follows:

- Green indicates that the ram is in the indicated position.
- Gray indicates the ram is not in the indicated position.

Main Menu - Press this button to go to the Main Menu screen.

Tie Cycle - Acts as a manual tie override. Press this button to take the ram to the tie position.

Conveyor Manual On - Press this button to manually start the conveyor.

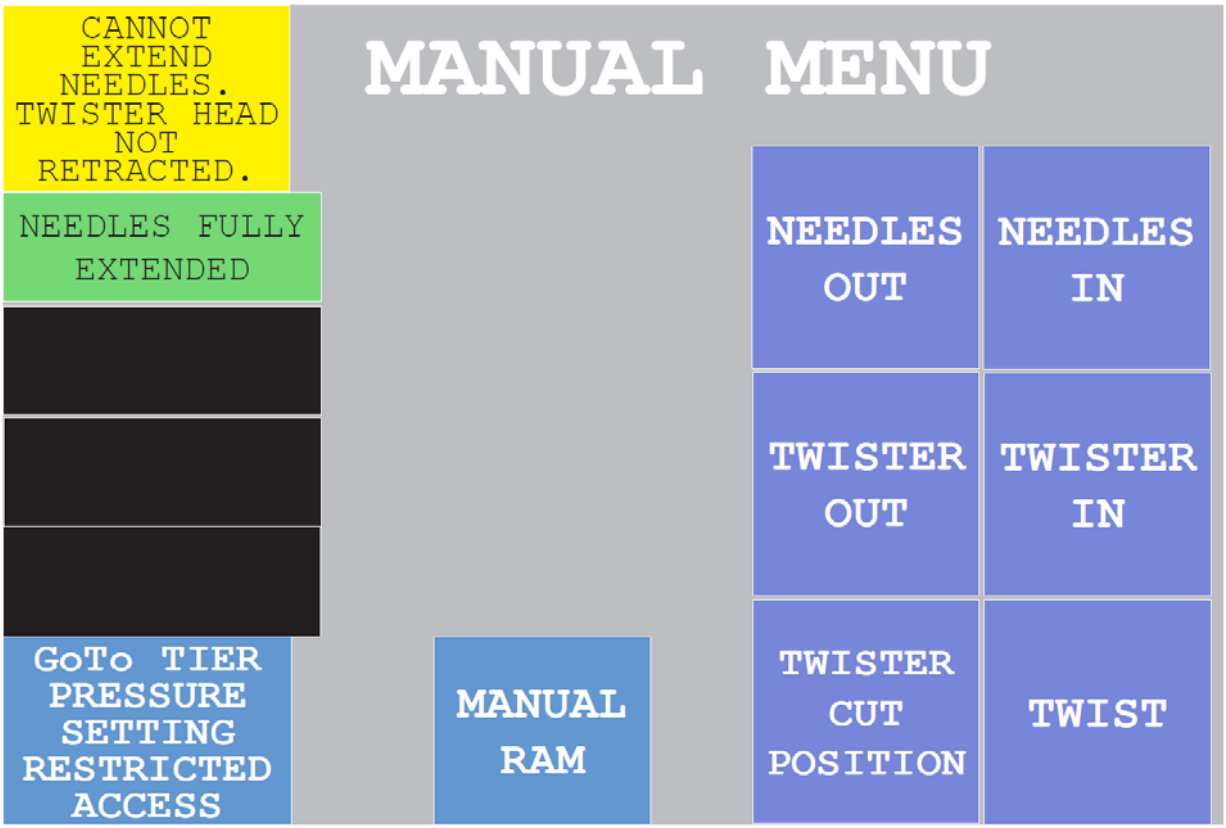
Conveyor Stop - Press this button to manually stop the conveyor.

Ram Extended - Press this button to manually extend the main ram.

Ram Retract - Press this button to manually retract the main ram.

Go To manual Tie - Press this button to go to the next Manual Menu screen (see next page), where you can manually control the tying process.

Manual Menu Screen - 2



(Green or Gray Indicators) - The indicators on the left display the position of the ram as follows:

- Green indicates that the ram is in the indicated position.
- Gray indicates the ram is not in the indicated position.

Go To Tier Pressure Setting Restricted Access - You must be logged in as "supervisor" to access. It takes you to Manual Menu Screen 3.

Manual Ram - Takes you back to Manual Menu Screen 1.

Needles In - Extends the inserter needles.

Needles Out - Retracts the inserter needles.

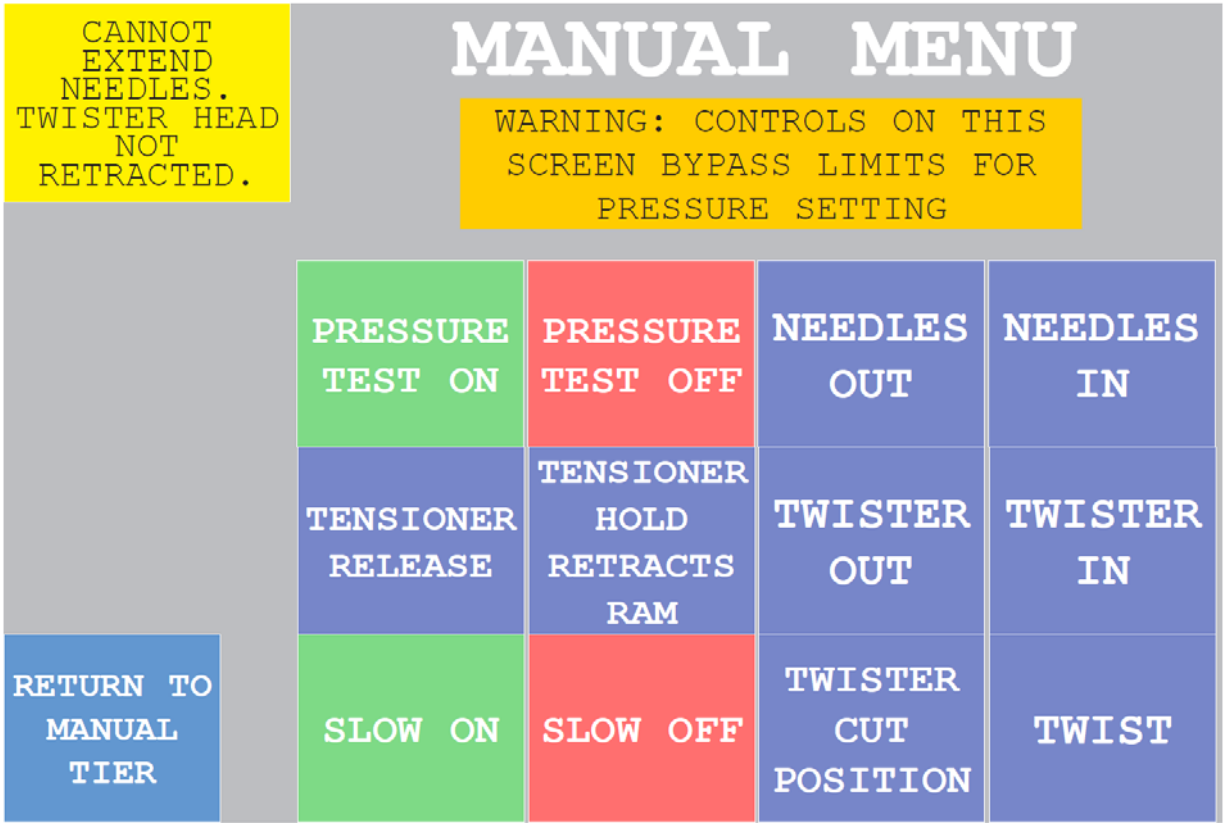
Twister In - Extends the twister head.

Twister Out - Retracts the twister head.

Twister Cut Position - Pressing this button rotates the wire twisters into the cut position to cut the bale wires.

Twist - Pressing this button manually twists the bale wires together a preset number of times.

Manual Menu Screen - 3



Return to Manual Tier - Takes you back to Manual Menu Screen 2.

Pressure Test On/Off - When "On", it allows you to bypass limits for the pressure setting in order to set release.

Tensioner Release - Releases pressure on the tensioner to allow for bale ejection and expansion.

Tensioner Hold Retracts Ram - Retracts the ram while the tensioner maintains pressure.

Slow On/Slow Off - When "On", it slows the operations of the baler.

Warning: Controls on This Screen Bypass Limits for Pressure Setting - Indicator screen.

Needles In - Extends the inserter needles.

Needles Out - Retracts the inserter needles.

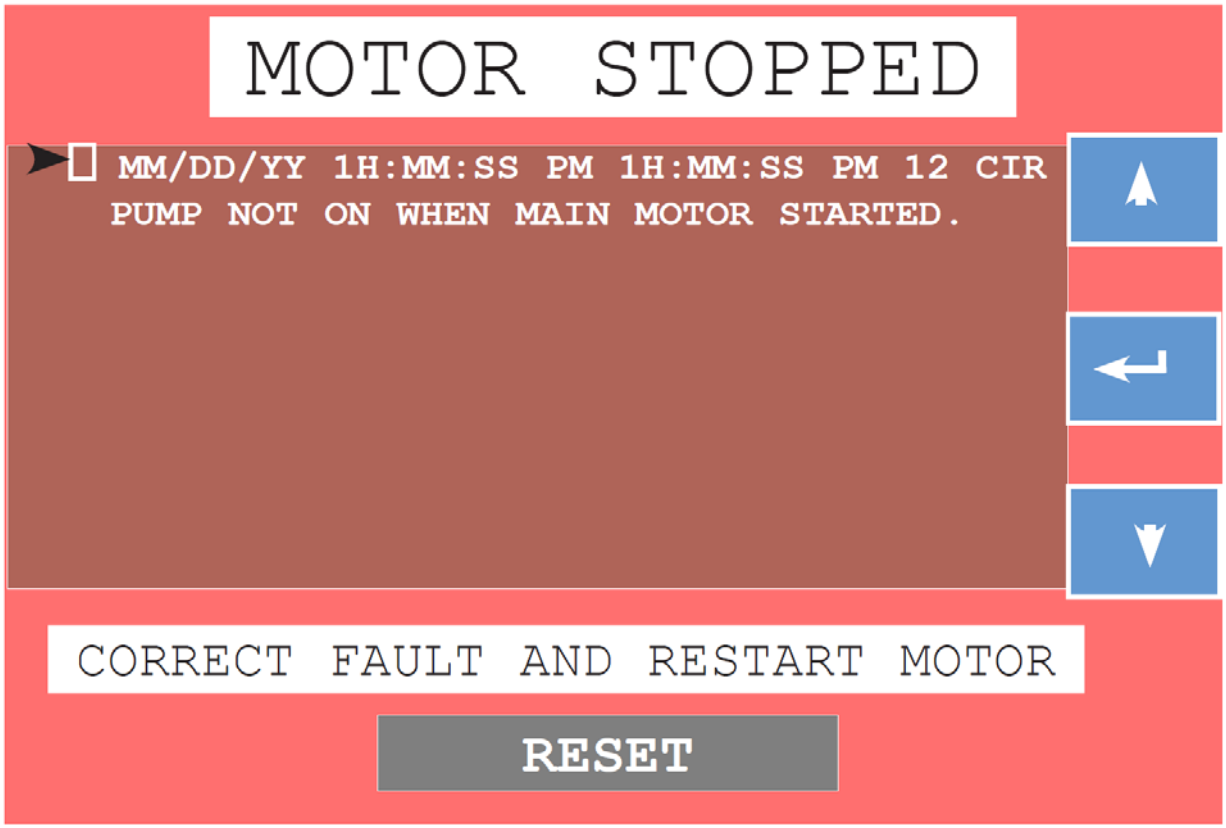
Twister In - Extends the twister head.

Twister Out - Retracts the twister head.

Twister Cut Position - Pressing this button rotates the wire twisters into the cut position to cut the bale wires.

Twist - Pressing this button manually twists the bale wires together a preset number of times.

Fault Screen



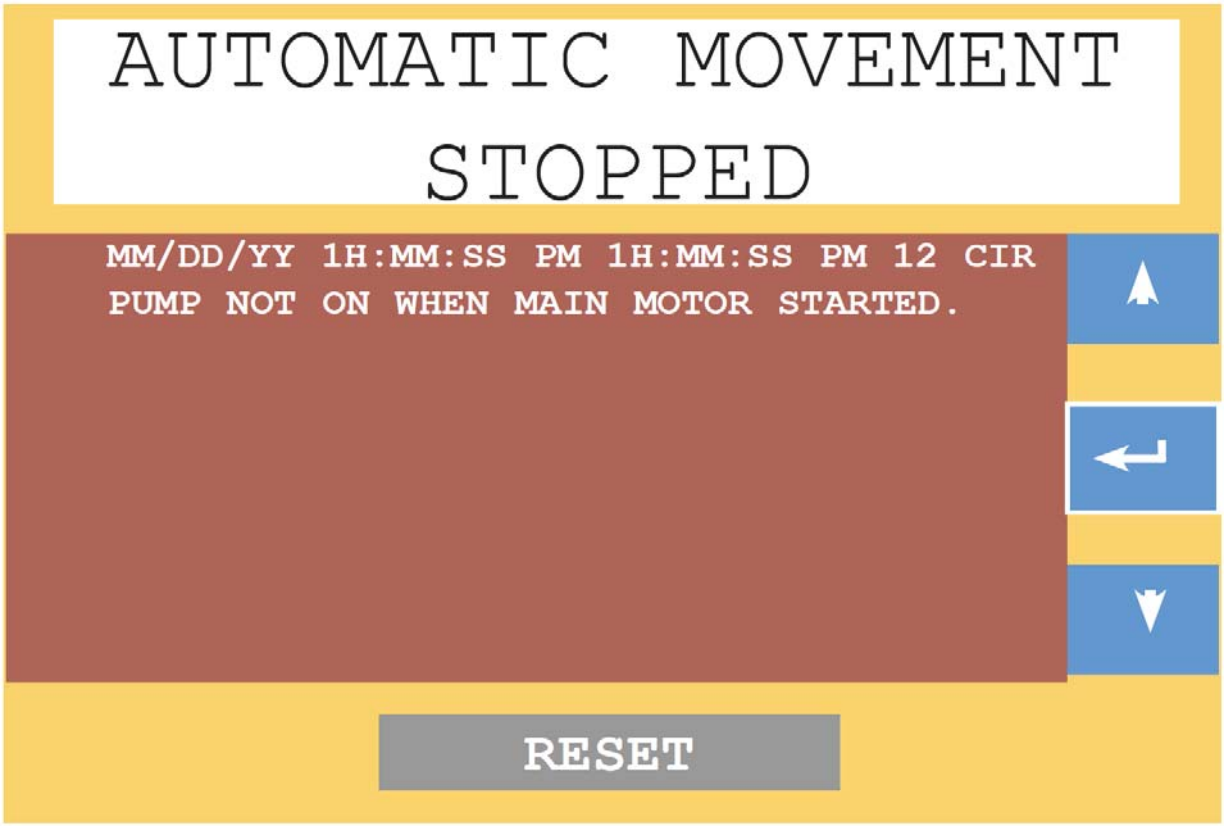
This is a fault screen indicating that the machine has encountered a problem and operation cannot continue until the fault is corrected. Scroll through the faults using the up and down arrows.

The date and time of the fault are recorded here as well.

Press the “Reset” button to clear all listed faults.

Refer to the **“Fault List” on page 1-21** for a complete listing of possible faults.

Major Fault Screen



This screen indicates a fault condition exists. Automatic movement of the baler was stopped because it was not able to complete a function. For example, the ram could not reach the extend position proximity switch, due to too much material in the charge box.

- Press “Ack All” (acknowledge all) on the alarm banner.
- Press “Reset” on the fault list screen.
- Place the machine in Manual and correct the problem area.
- Then return all parts of the baler to their start position and return the baler to Automatic.

Fault List

The following faults will stop the baler motor.

The fault must be cleared and the motor restarted to continue operation.

1) An E-Stop is pressed or interlocked cover or door is open.

2) Suction valve is closed.

3) Main motor overload tripped.

4) Oil cooler overload tripped.

5) Low oil level.

6) High oil temperature.

   - Check the fan motor starter, output fuse, and auxiliary contact.
   - Check the main motor starter, output fuse, and auxiliary contact.

The following faults will stop automatic movement of the baler ram or tie system. The fault must be cleared and all parts of the baler returned to their starting position before automatic operation can continue.

1) Twister could not find the home position.

2) Ram cannot retract. Needles are not retracted.

3) Twister cannot extend. Needles are not retracted.

4) Needles cannot extend. Twister is not retracted.

5) Needles cannot extend. Ram is not at the tie position.

6) False cycle. Too many cycles without change in the photoeye.

7) Wire did not cut.

8) Ram jammed. Ram could not reach extend proximity switch.

   - Check photoeyes. Upper eye is blocked, lower eye is clear.

9) Ram could not retract or rear proximity switch failure.

10) Extend proximity switch failure.

11) Bale length proximity counter failure. No change in counter.

12) Needles could not extend or Needles Extended Limit Switch failure.

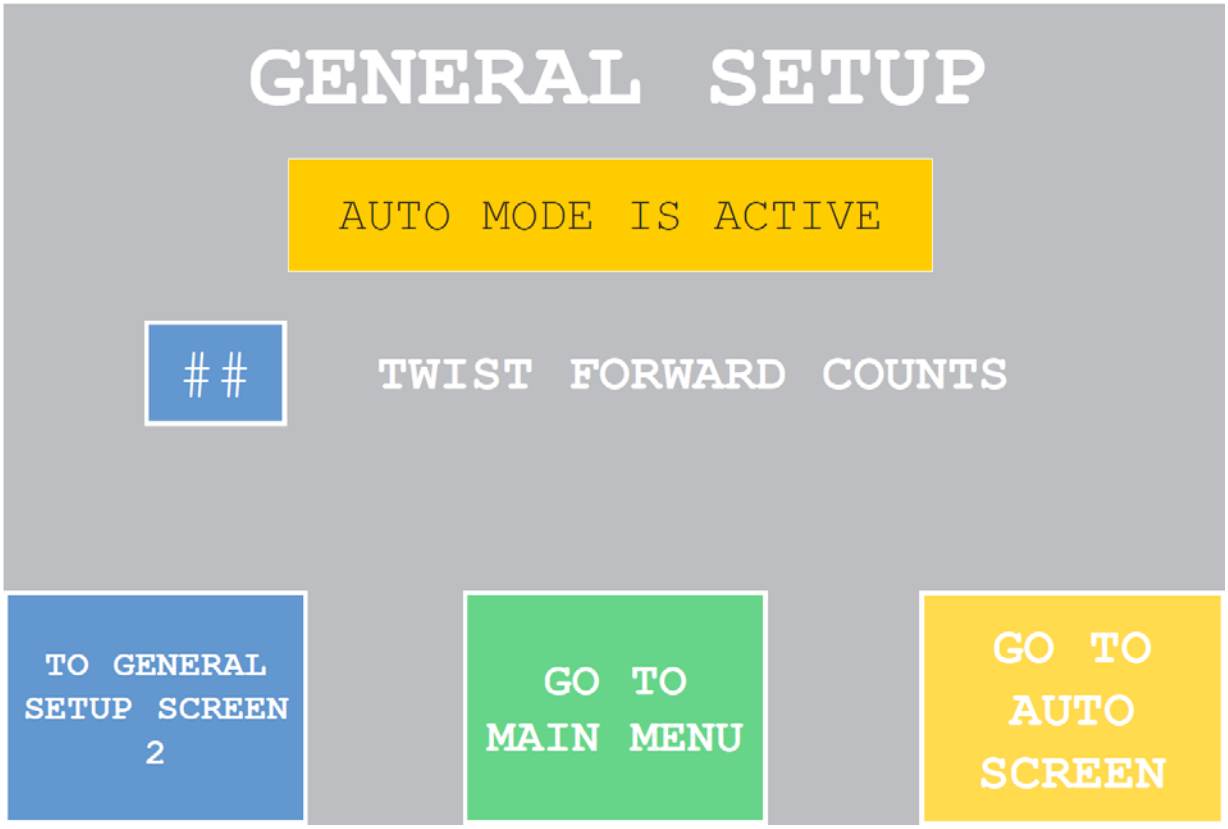
13) Needles could not retract or Needles Retract Limit Switch failure.

14) Twister Head could not reach home position proximity switch.

15) Tie system out of position.

16) Unloading valve failure.

General Setup Screens



Auto Mode Is Active - Indicator screen.

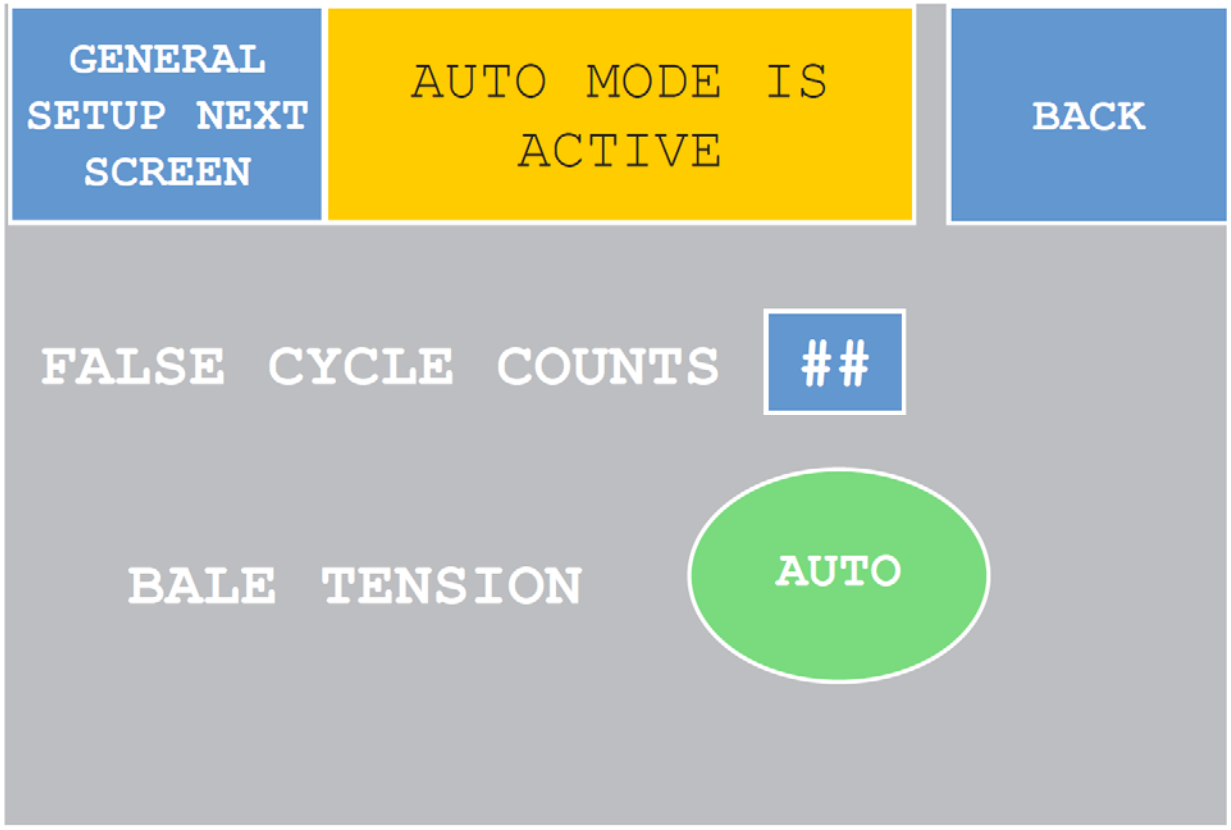
Twist Forward Counts - Press the number box (##) to display a numeric keypad for you to select the number of times the bale wires are twisted together.

To General Setup Screen 2 - Press this button to go to the next General Setup screen.

Go To Main Menu - Press this button to go to the Main Menu screen.

Go To Auto Screen - Press this button to go to the Auto Menu screen.

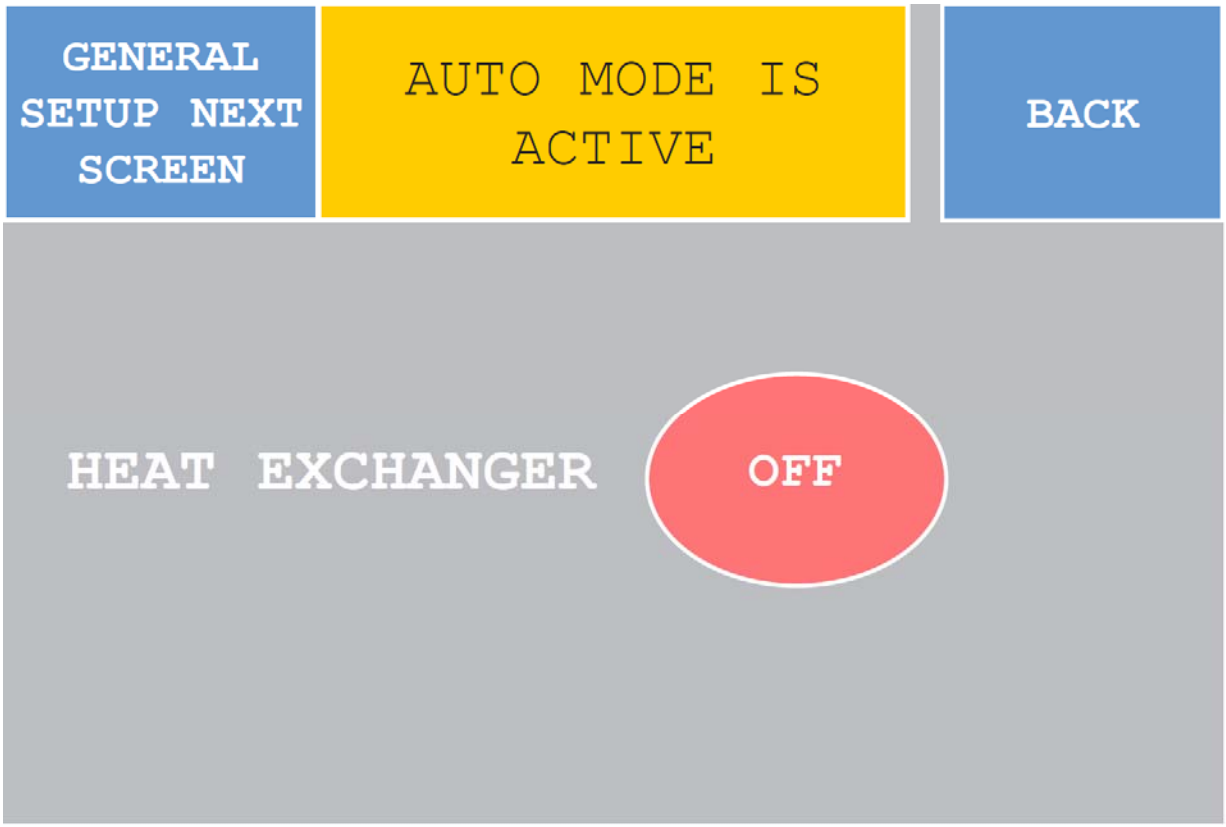
General Setup Screen 2



False Cycle Counts - Press the number box (##) to display a numeric keypad. Select the number of counts the baler will cycle with the upper photocell blocked. Gives fault.

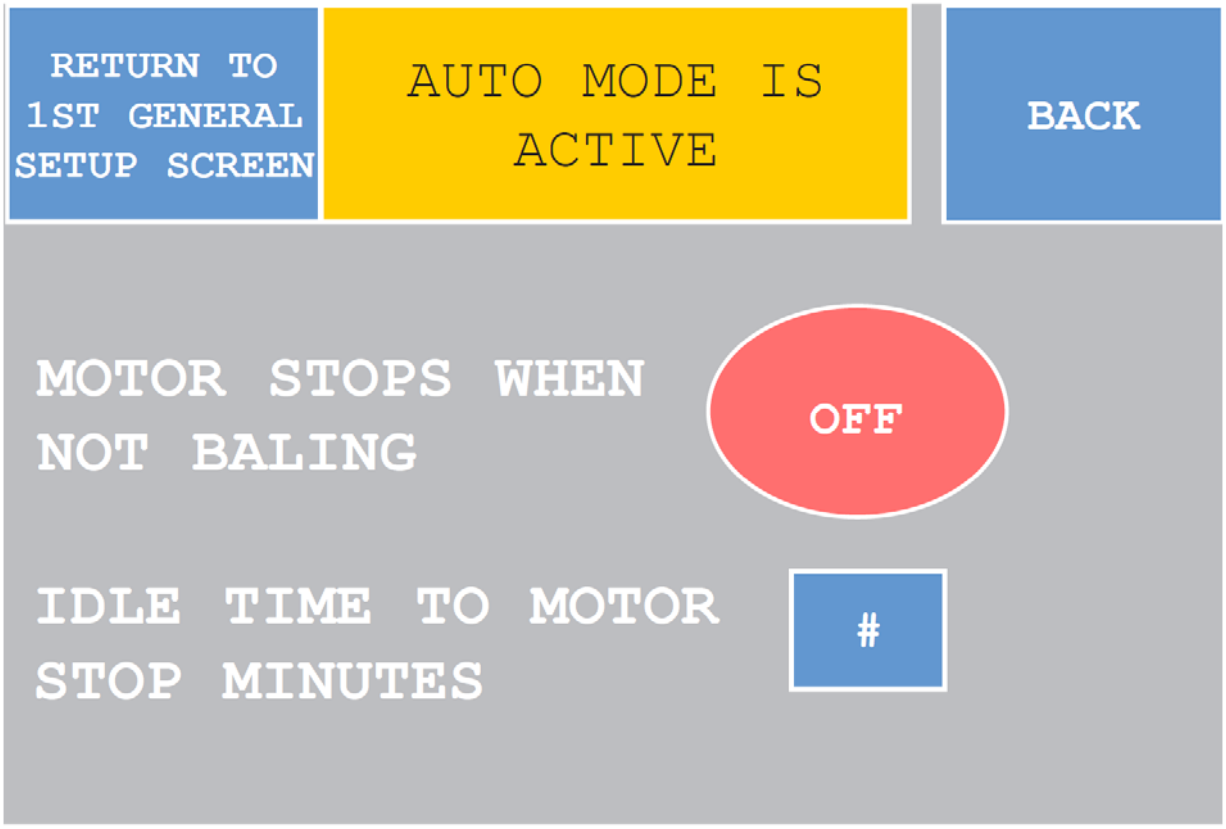
Bale Tension - Can be set for “auto” (always recommended) or set to be “off”.

General Setup Screen 3



Heat Exchanger - Pressing this button switches the heat exchanger (oil cooler) to the “Auto” mode. It is recommended to keep this on “Auto” during operation, not “Off”.

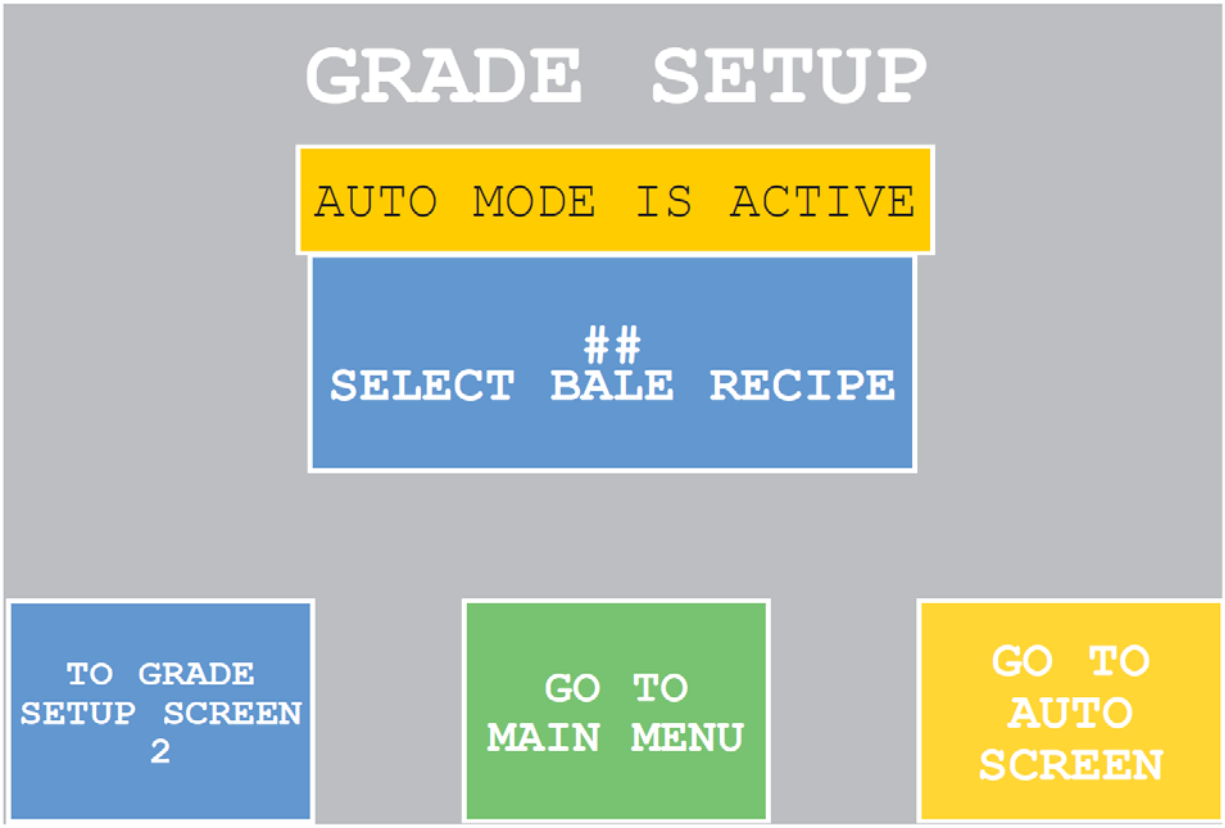
General Setup Screen 4



Motor Stops When Not Baling - Pressing this button switches to the "On" setting, which programs the baler to stop after a set length of idle time.

Idle Time To Motor Stop Minutes - Pressing this button displays a numeric keypad which allows you to choose the length of idle time (in minutes) before the motor(s) automatically shut down.

Grade Setup Screens



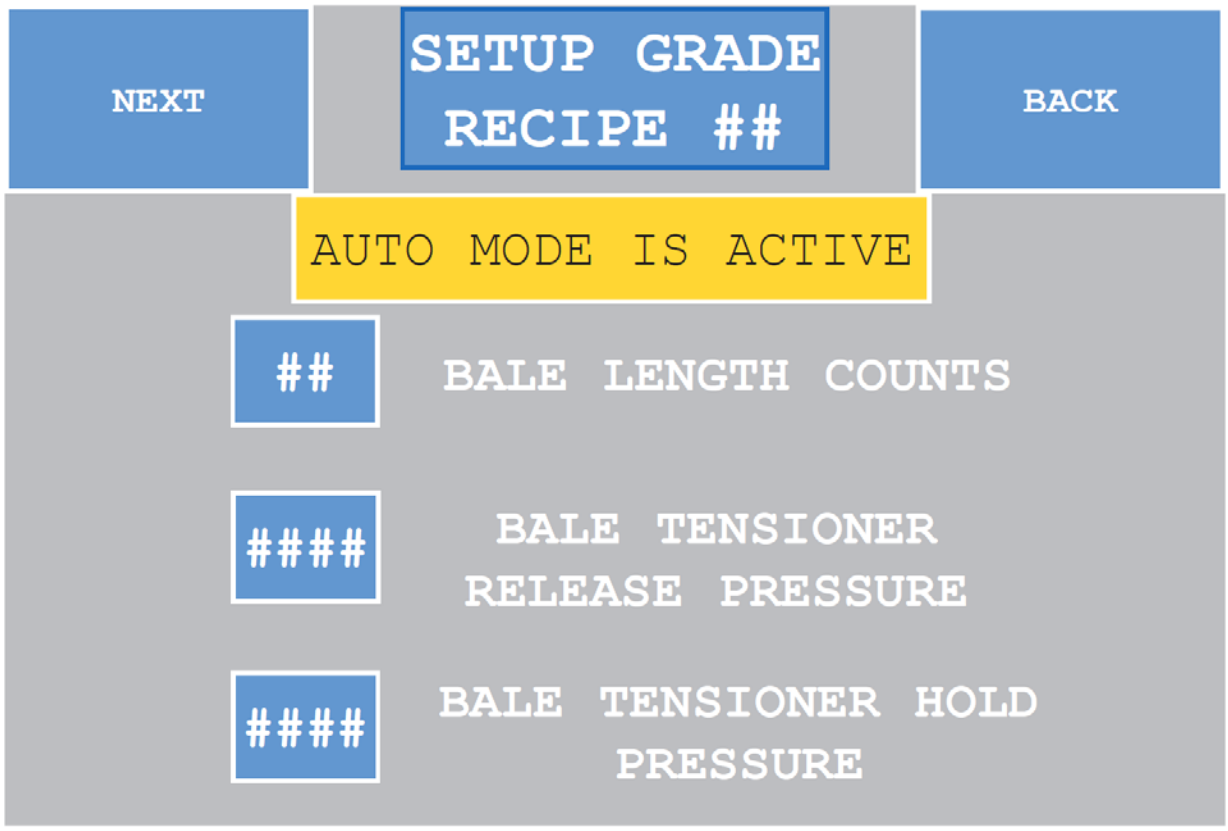
Select Bale Recipe - You must login as the operator to change the Bale Recipe.

To Grade Setup Screen - You must login as a Supervisor to go to the next Grade Setup screen.

Go To Main Menu - Press this button to go to the Main Menu screen.

Go To Auto Screen - Press this button to go to the Auto Menu screen.

Grade Setup Screen 2

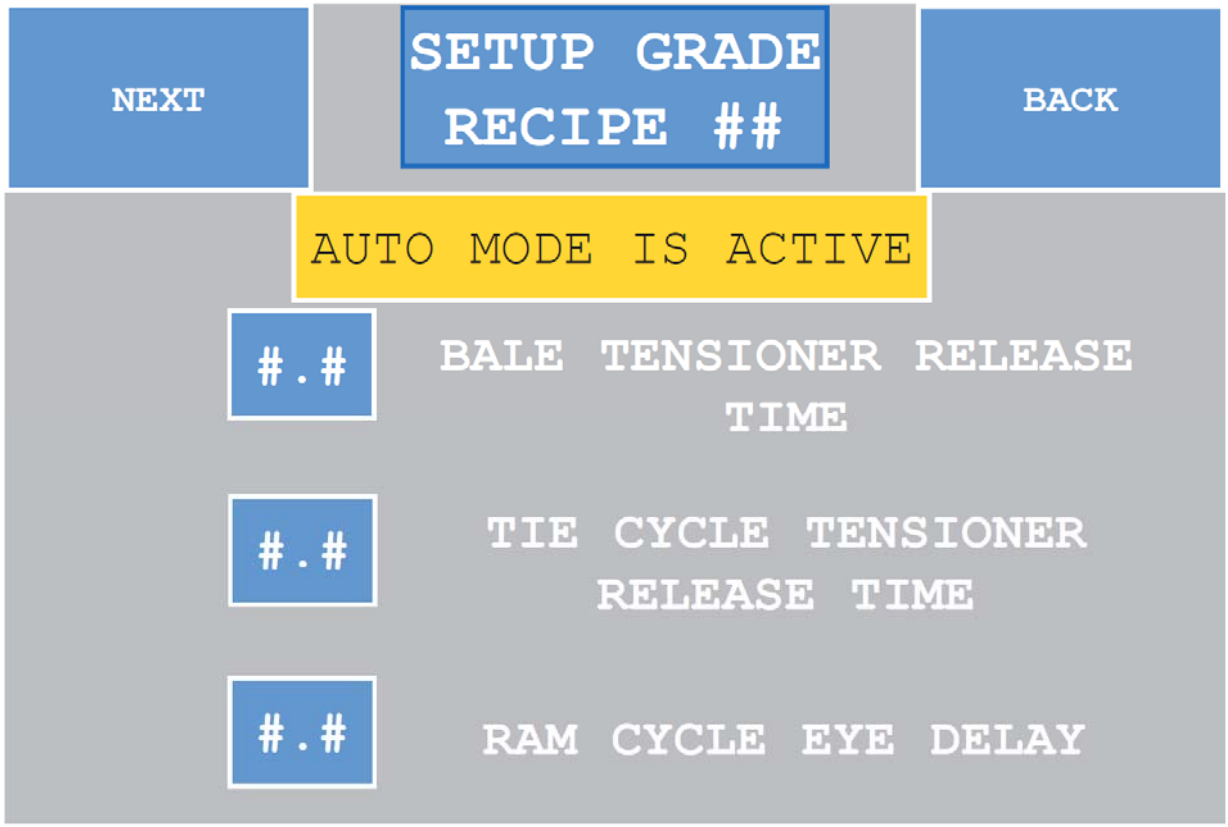


Bale Length Counts - Displays the number of counts by the wheel counter.

Bale Tensioner Release Pressure - This is the set pressure at which point the tensioner releases the pressure on the bale.

Bale Tensioner Hold Pressure - This is the set pressure at which point the tensioner stops tensioning and holds until the set release pressure is reached.

Grade Setup Screen 3

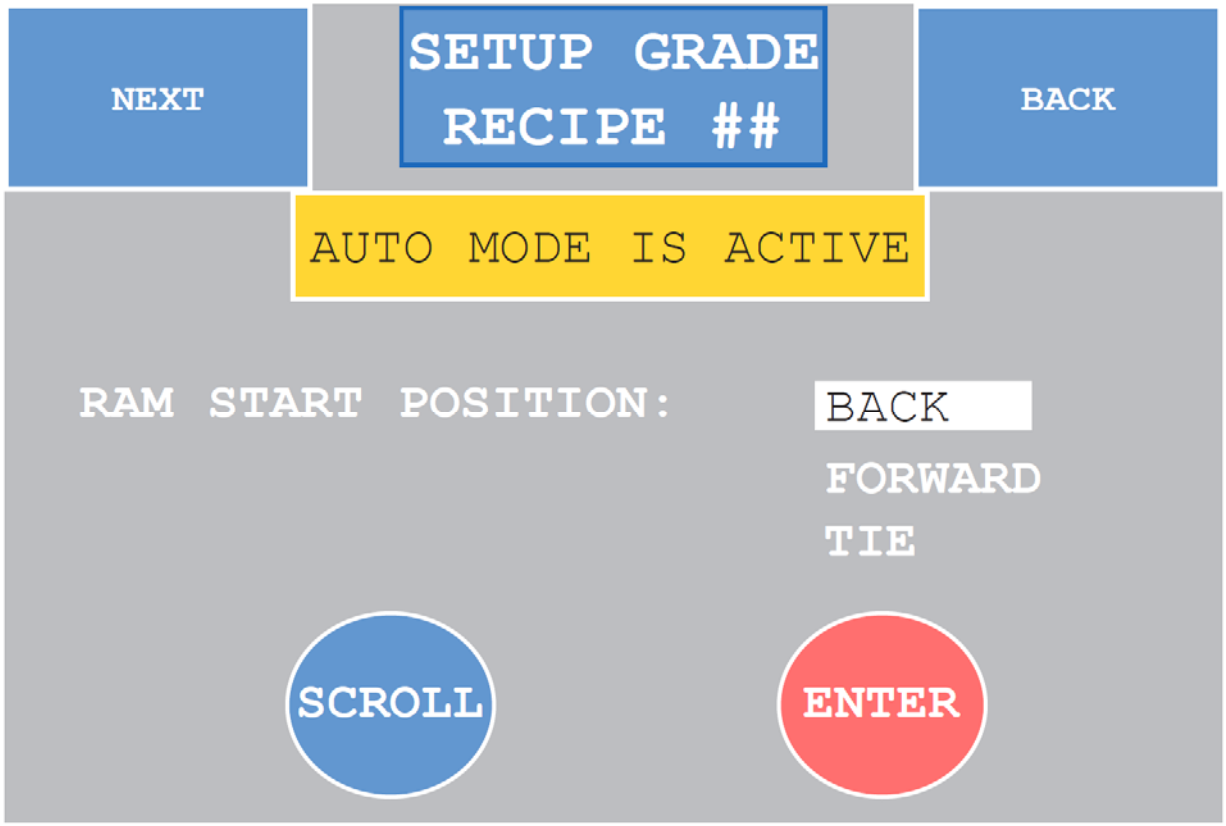


Bale Tensioner Release Time - Press the number box to display a numeric keypad that allows you to choose the amount of time (to one-tenth of a second) the bale tensioner releases pressure to allow for bale ejection and expansion.

Tie Cycle Tensioner Release Time - Time (to one-tenth of a second) additional to the bale tensioner release time which pressure is released to allow for the bale to be tied.

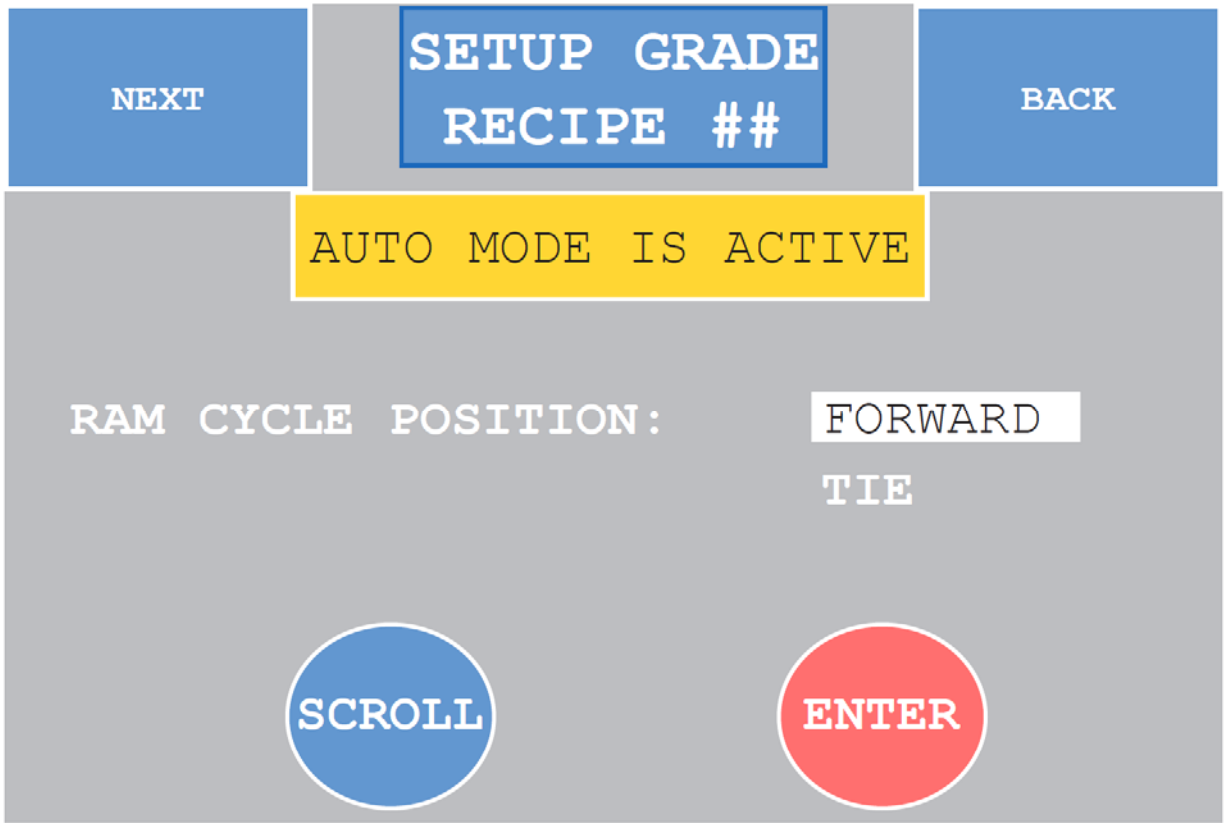
Ram Cycle Eye Delay - Time that the photocell is to be blocked before the ram activates. Can be set within one-tenth of a second.

Grade Setup Screen 4



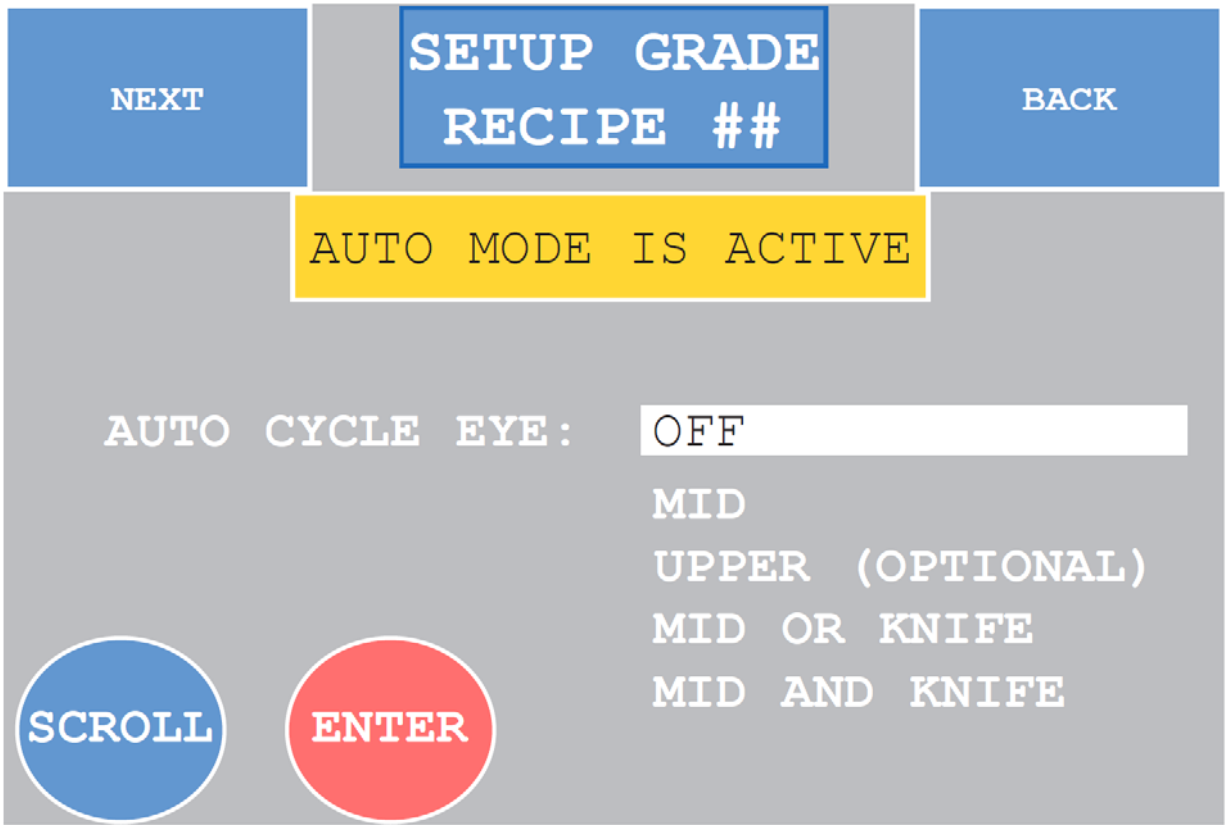
Ram Start Position - Push the "Scroll" button to select "Back", "Forward", or "Tie" for the starting position of the ram. Press "Enter" once the selected position is highlighted.

Grade Setup Screen 5



Ram Cycle Position - Push the "Scroll" button to select "Forward" or "Tie" for the position to which the ram extends. Press "Enter" once the selected position is highlighted.

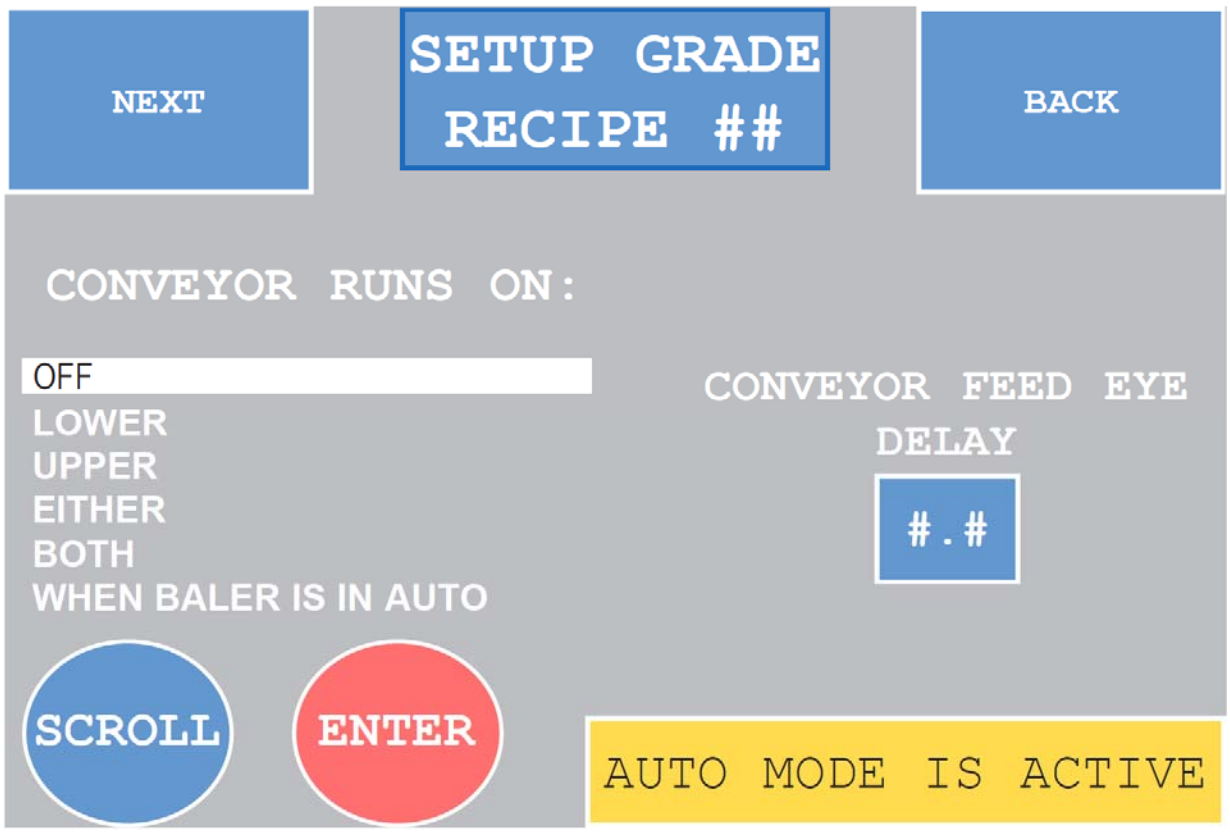
Grade Setup Screen 6



Press the “Scroll” button to select the photocell (in the Auto Cycle Eye list) that activates the main ram to begin auto-cycling. Press “Enter” once the selected photocell is highlighted. This setting is changed according to baling material size. For example, when baling larger material such as corrugated cardboard, select the “Upper” photocell. When baling smaller material such as office paper, select either one or both of the lower photocells, depending on material density.

Note: Not all auto-tie baler models contain all of the photocell options shown above.

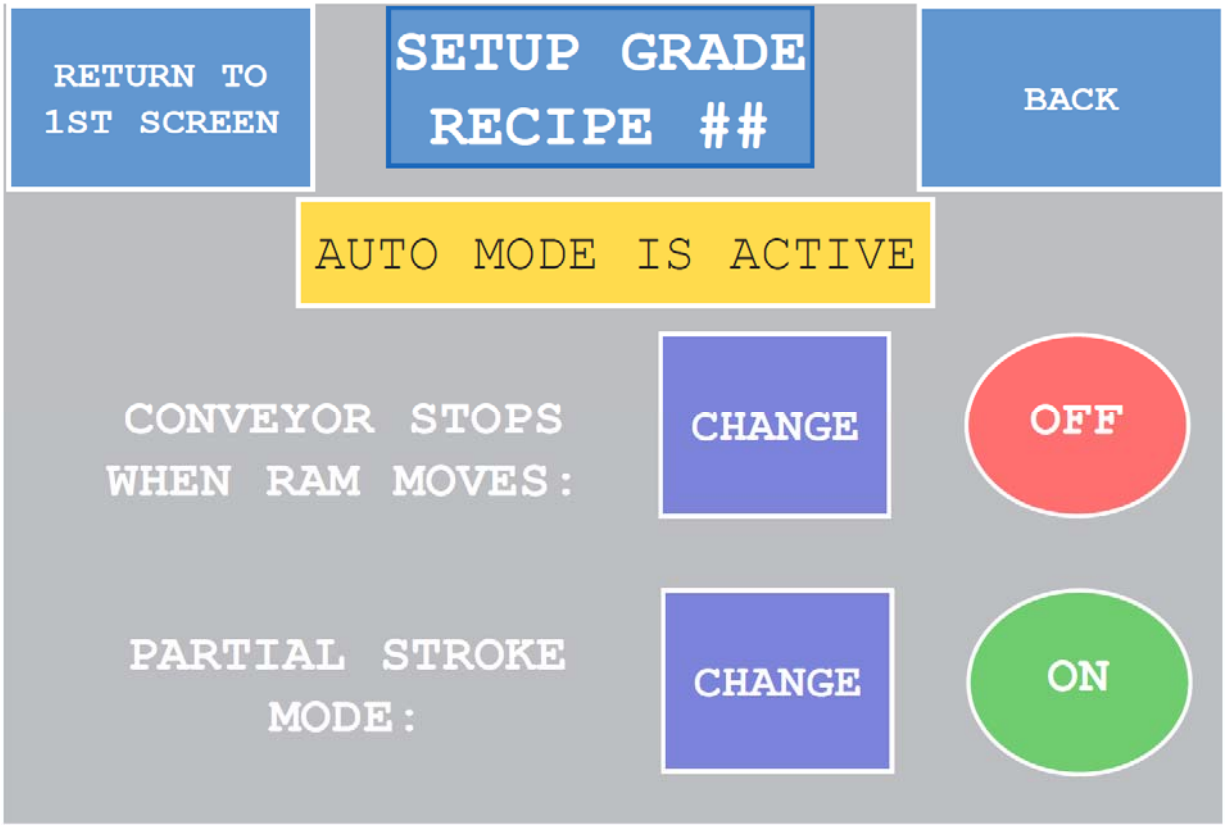
Grade Setup Screen 7



Conveyor Runs On - Press the blue scroll button to select which photocell stops the conveyor for the duration of the ram cycle. Press "Enter" once the selected photocell is highlighted.

Conveyor Feed Eye Delay - Press this button to display a numeric keypad to select the length of time, in seconds, the photocell is blocked before the conveyor stops.

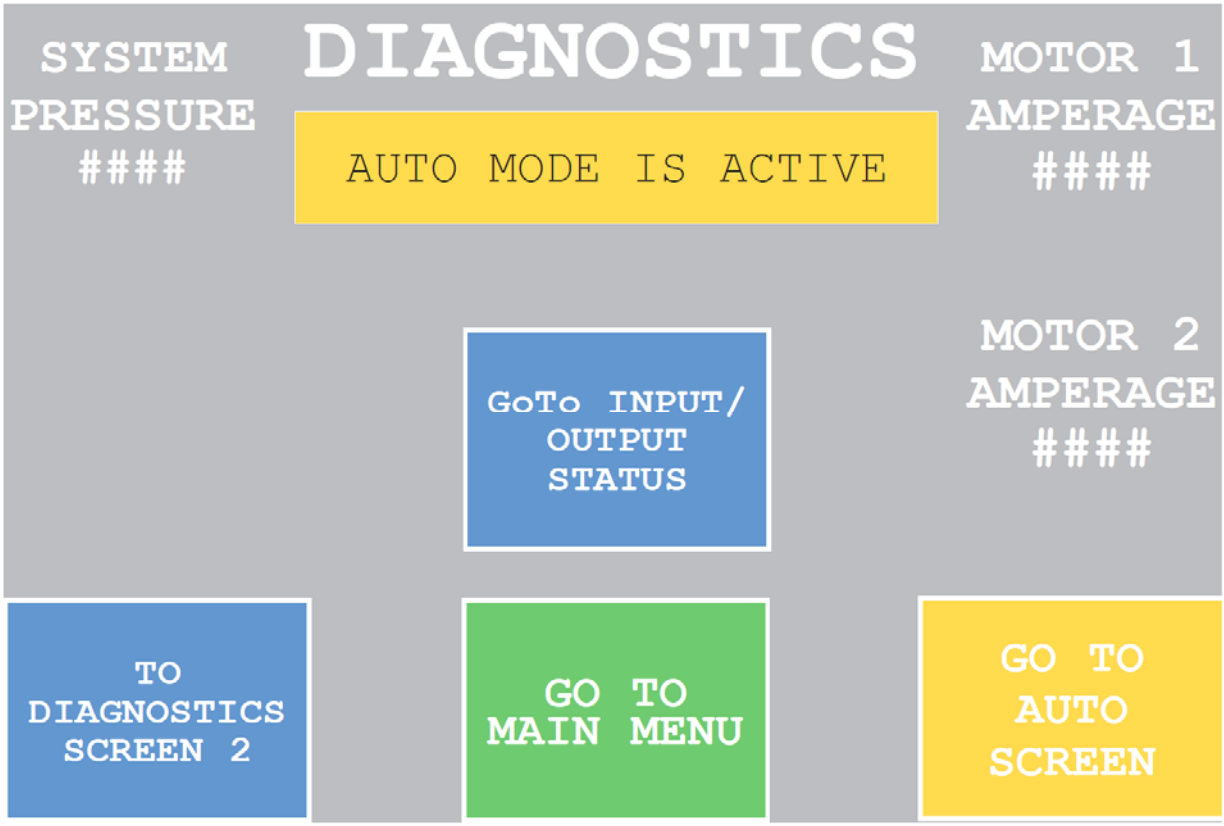
Grade Setup Screen 8



Conveyor Stops When Ram Moves - This setting controls the conveyor when the ram is in motion. Press “Change” to choose this function to be “Off” or “On”.

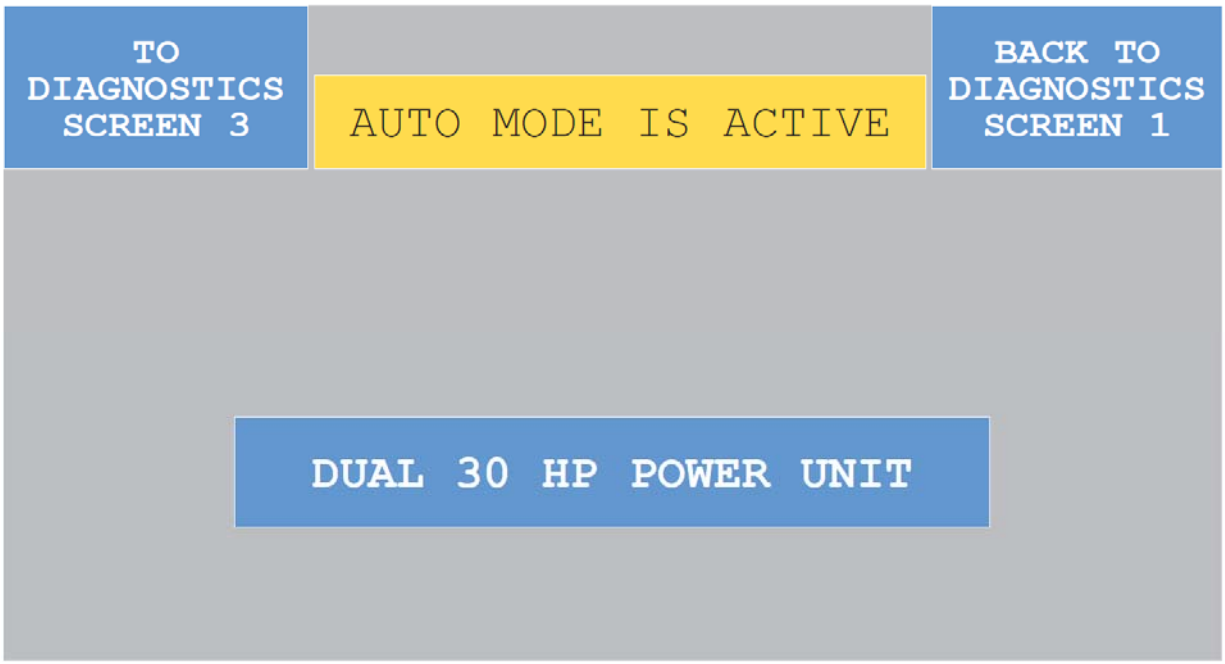
Partial Stroke Mode - This option is only available on shear model auto-ties. When “On”, it allows the baler to calculate whether or not a partial ram cycle is needed to create an average, consistent bale length.

Diagnostics Menus

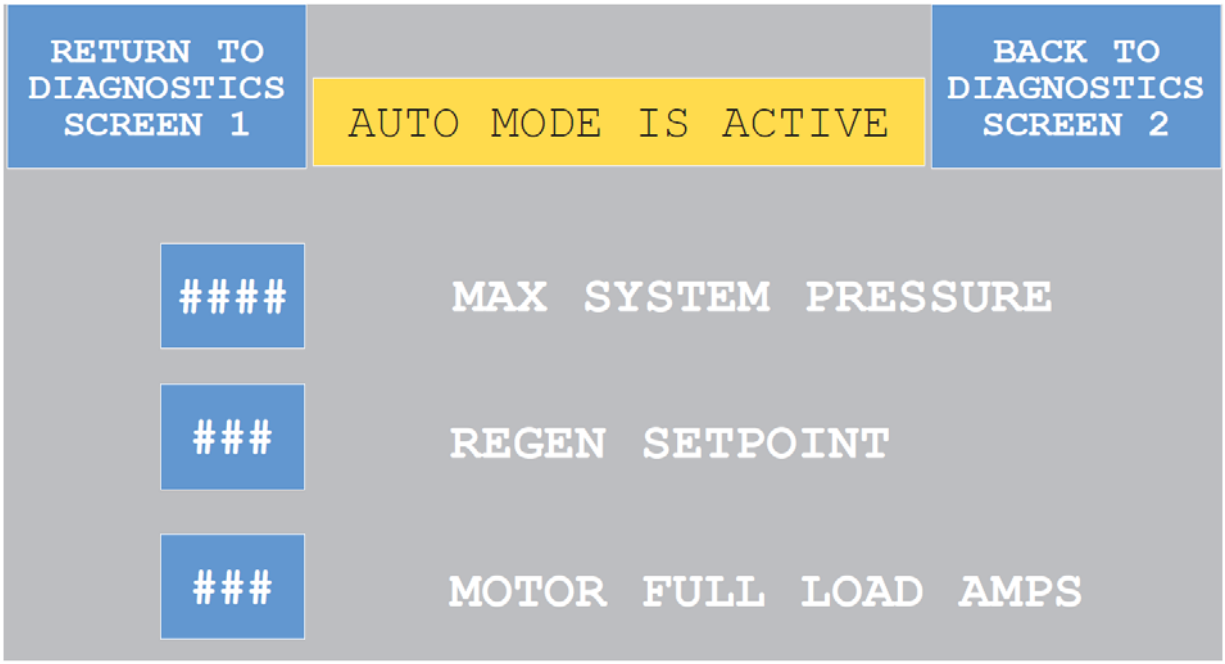


Note: The Diagnostics Menu and subsequent screens may only be accessible by Marathon personnel. In the event that you need to access this, please call our service department at 1-800-633-8974 and proper instructions will be given accordingly.

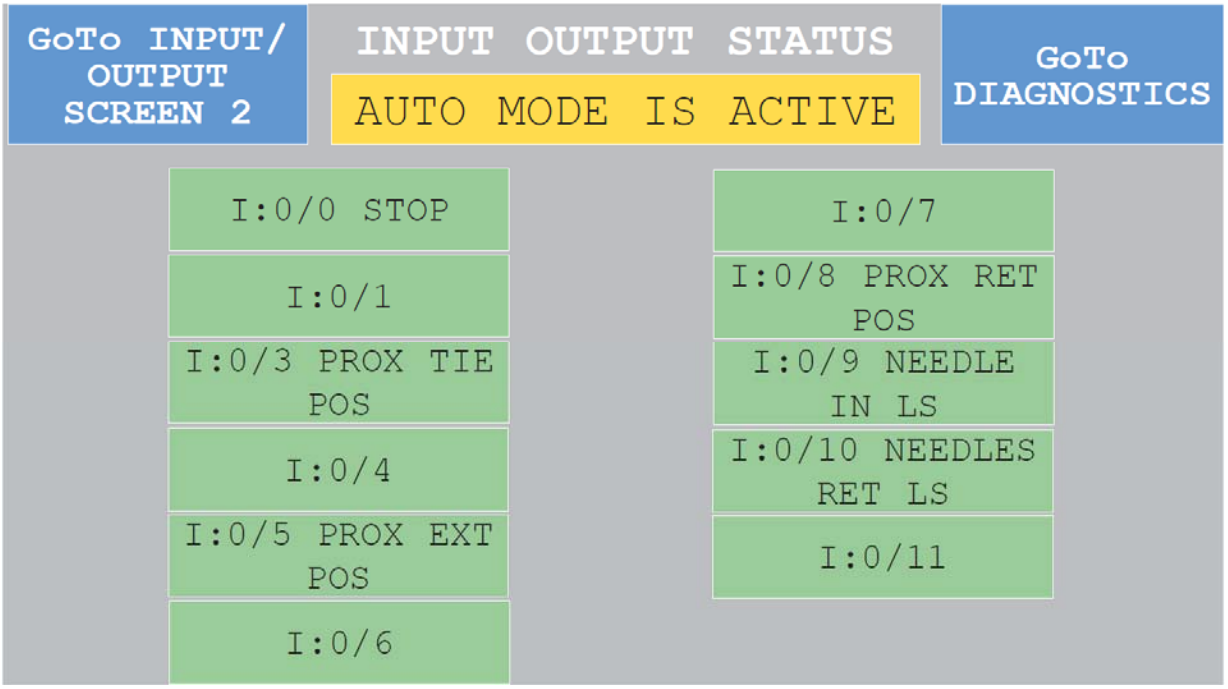
Diagnostics Menu 2



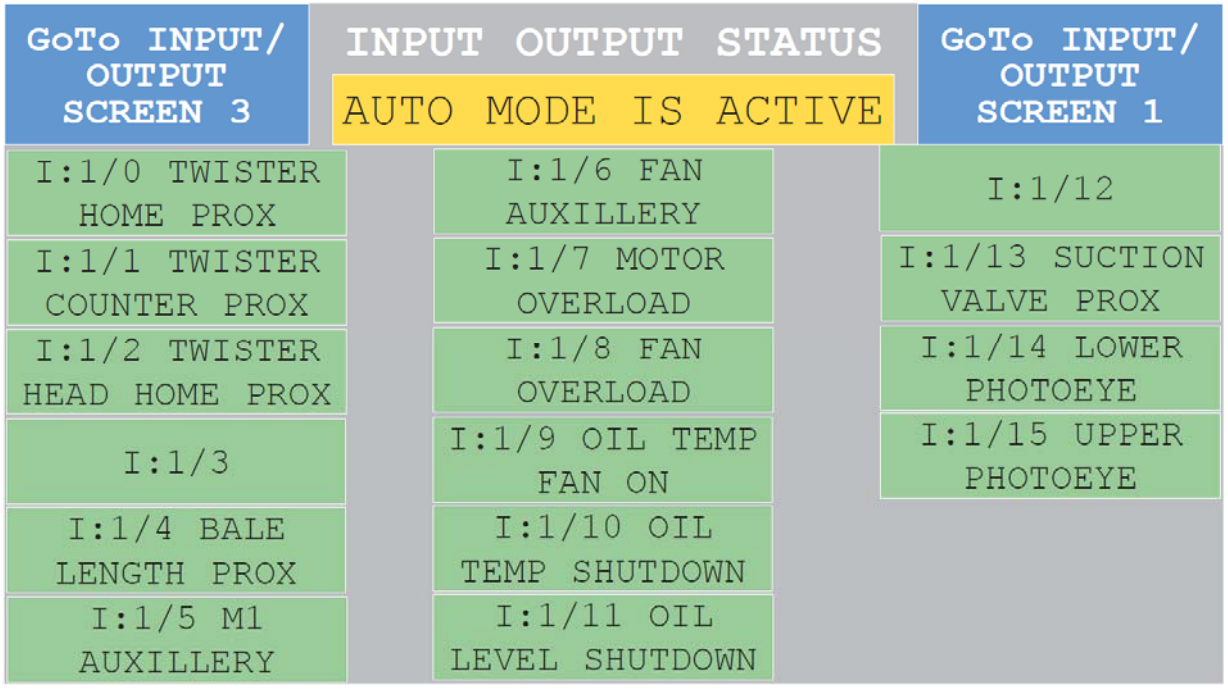
Diagnostics Menu 3



Input/Output Status Screens

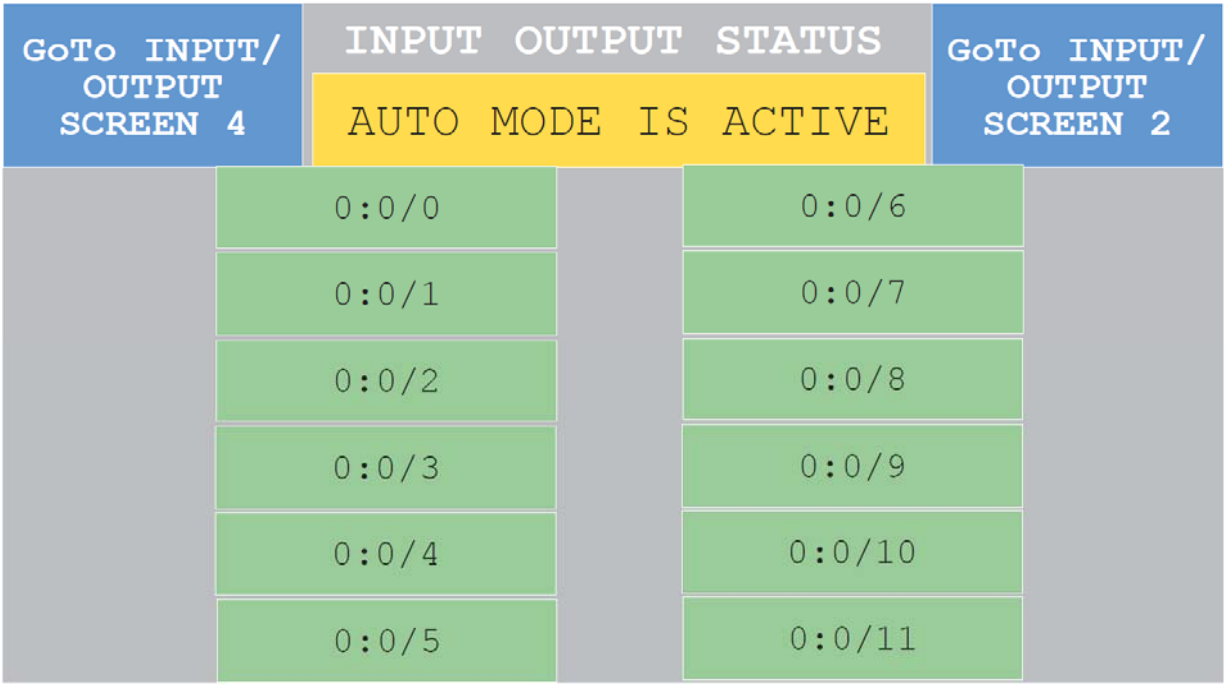


Input/Output Status Screen 2

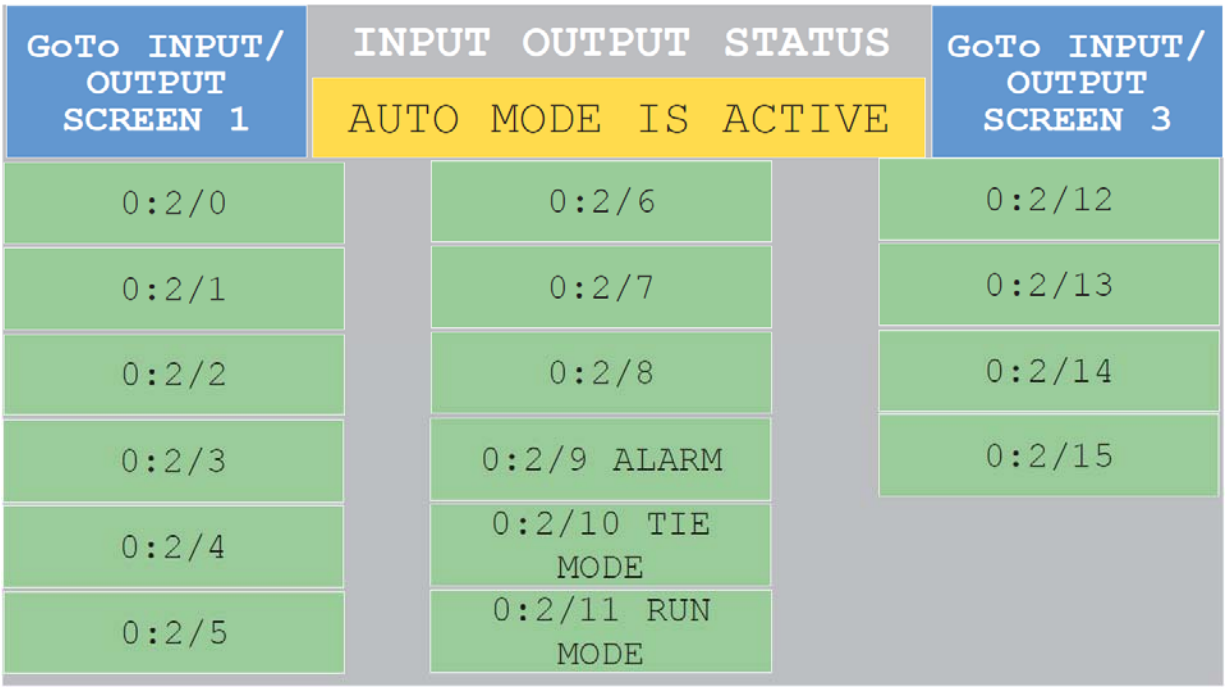


The Input/Output screens coincide with the PLC and electrical schematic to show which components have power to them by illuminating green. If there is no power to the specific input/output, the box remains gray.

Input/Output Status Screen 3

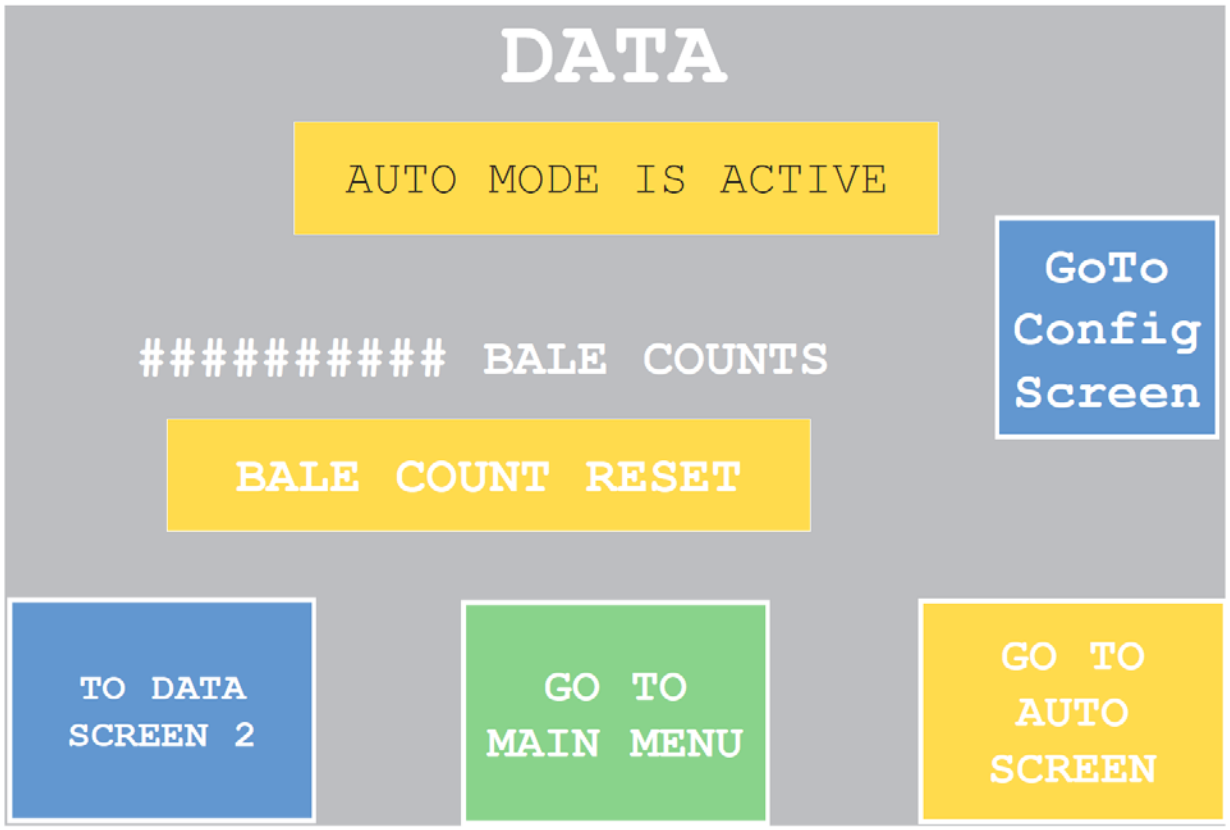


Input/Output Status Screen 4



The Input/Output screens coincide with the PLC and electrical schematic to show which components have power to them by illuminating green. If there is no power to the specific input/output, the box remains gray.

Data Screens



Bale Counts - Indicates number of bales made since the last reset.

Bale Count Reset - Press to reset the bale counter.

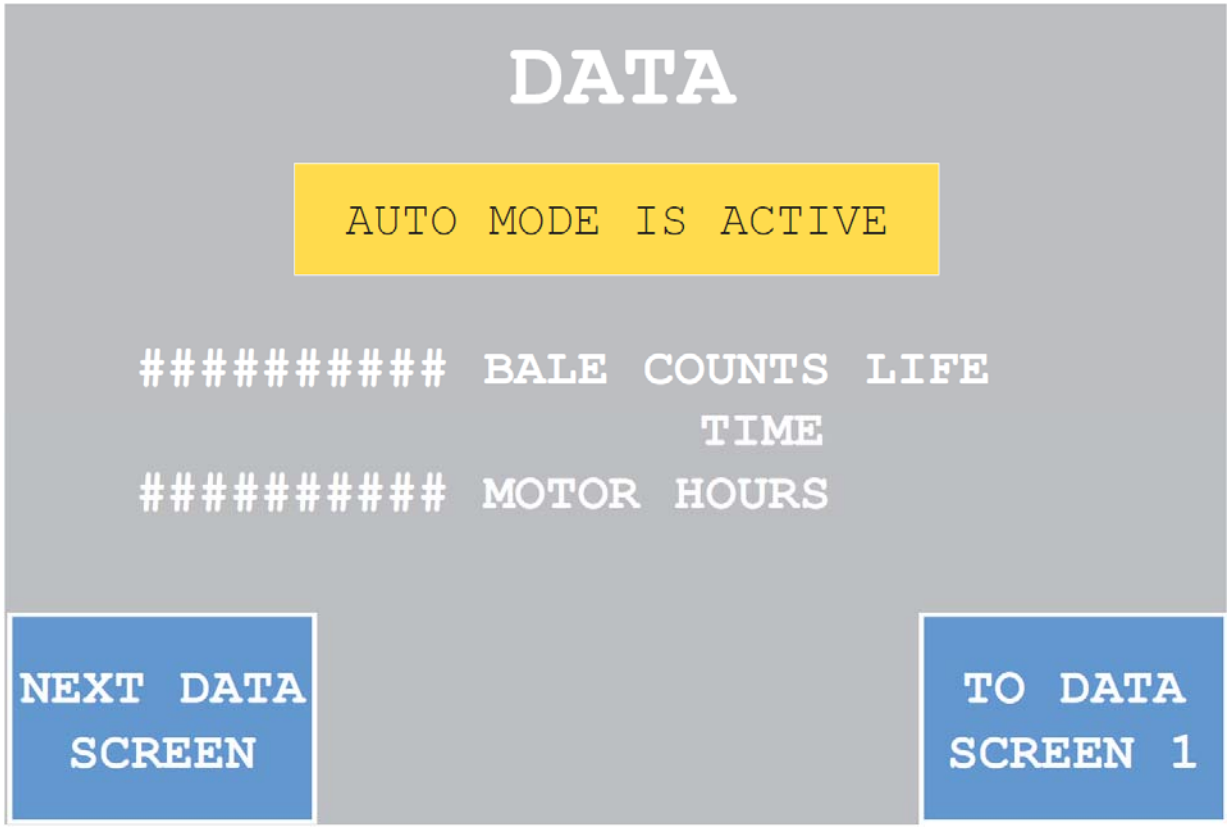
To Data Screen 2 - Takes you to the next Data screen.

Go To Main Menu - Takes you to the Main Menu.

Go To Config. Screen - Press this button to take you to the Configuration screen, which should only be used to change the time and date for date stamping and fault analysis. Other functions in this mode are to be used by trained personnel only.

Go To Auto Screen - Takes you to the Auto Menu.

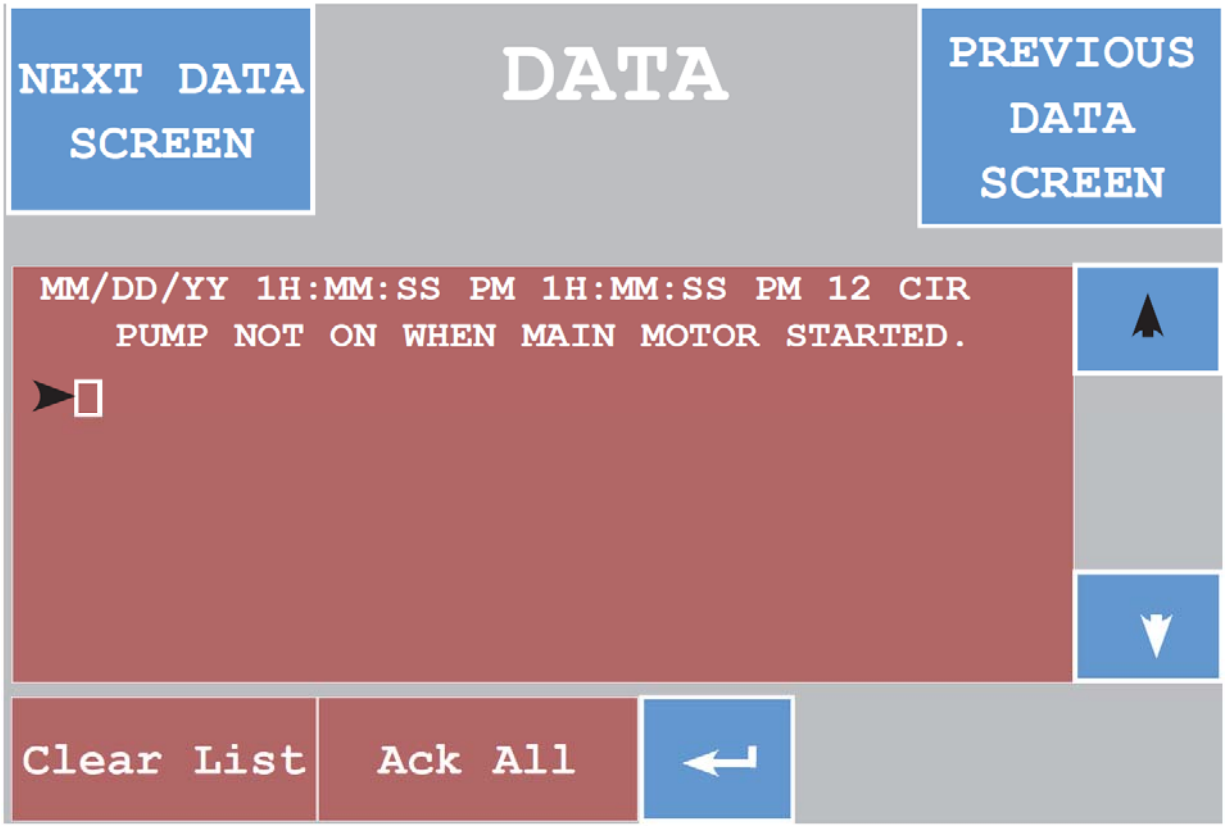
Data Screen 2



Bale Counts Life Time - Indicates the number of total bales made during the life of baler.

Motor Hours - Indicates the total number of hours the motor(s) have been in operation.

Data Screen 3



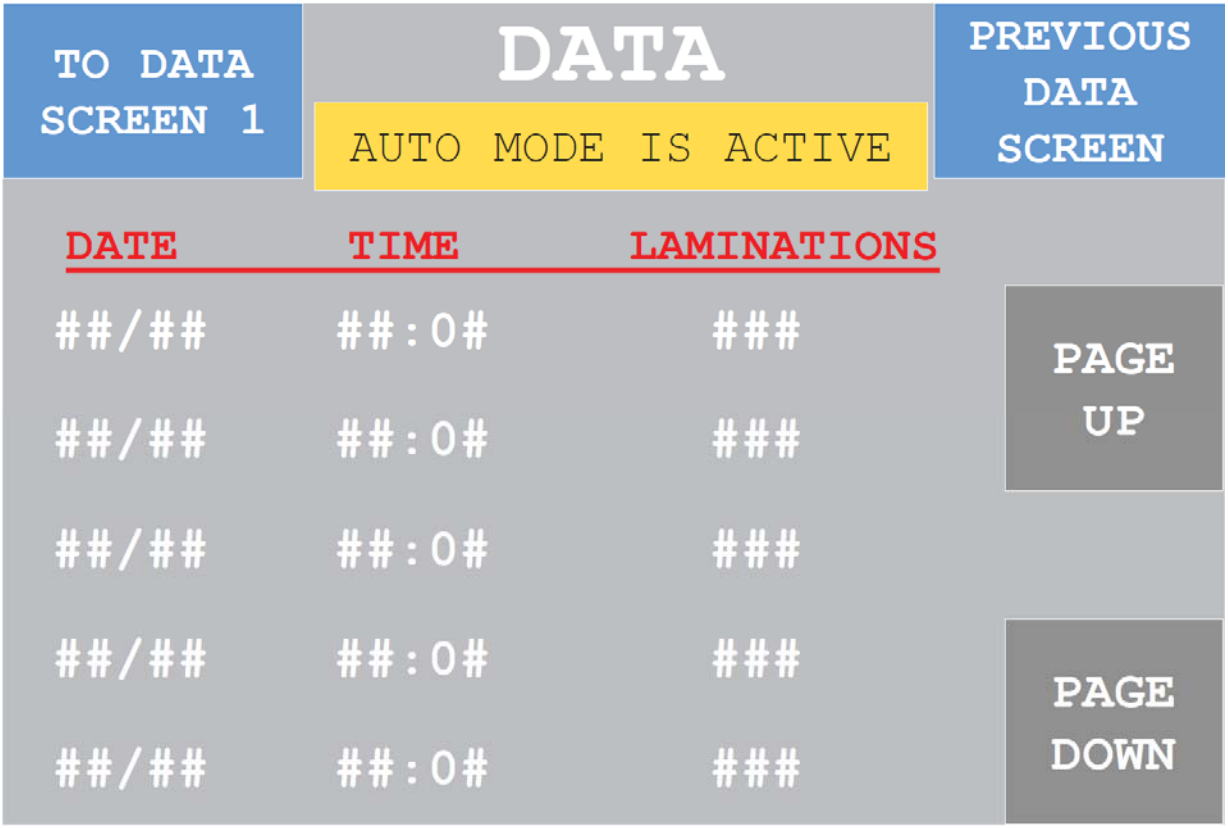
This is a Data screen listing the last 10 faults the baler has encountered. Scroll through the faults using the up and down arrows.

The date and time of the fault are recorded here as well.

Press the “Clear List” button to clear all listed faults.

Refer to the **“Fault List” on page 1-21** for a complete listing of possible faults.

Data Screen 4

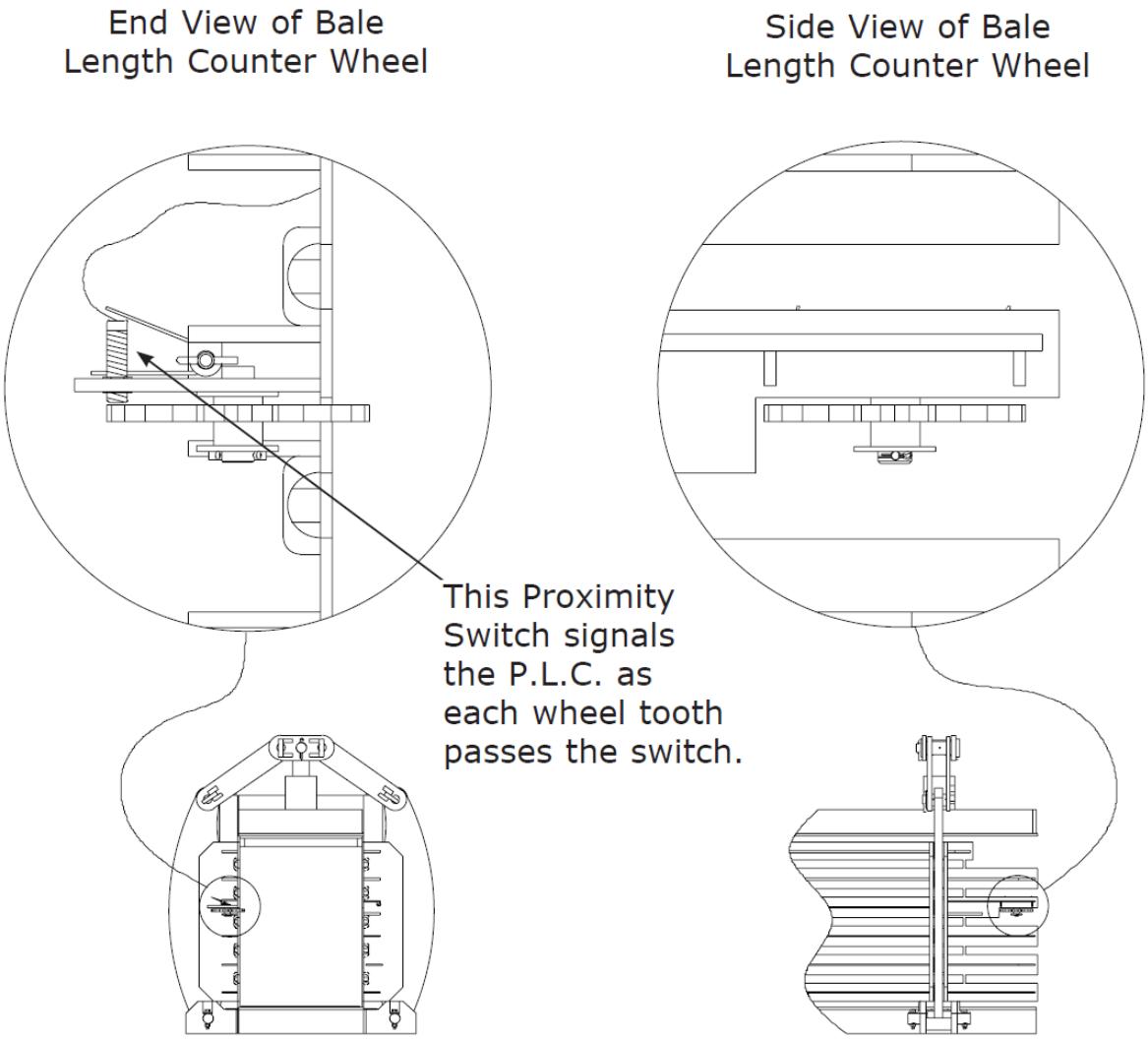


This screen (and subsequent screens) stores the statistics for the last 50 bales made. Scroll through using the “Page Up” and “Page Down” buttons.

Bale Length Counter

Setting Bale Length Counter

1) Bale length counter is set in **“Grade Setup** Screens **Screens” on page 1-26.**



Bale Plug Instructions

To begin baling process, it is necessary to build a plug or barrier in the extrusion chamber, to form a compaction wall. The bale plug process is as follows:

1) Lock-Out and Tag-Out per **"Lock-Out & Tag-Out Instructions" on page 2-2.**

2) Insert 2” x 2” boards through tie slots. (see drawing below)

3) Manually tie wire* to post. (see drawing)

   - Twist and tie wire behind post. (see drawing)

   *See the next two pages for wire box installation instructions and diagrams.

4) Perform machine start up per instructions.

5) Press “Manual tie” cycle to tie wires.

6) Remove scrap wire tied to post.

7) Load feed chamber with material to create first bale.

8) Press “START CYCLE” button. The ram will move forward and compact material and return to its retract position.

9) Continue to cycle ram until 2 x 2”s break.

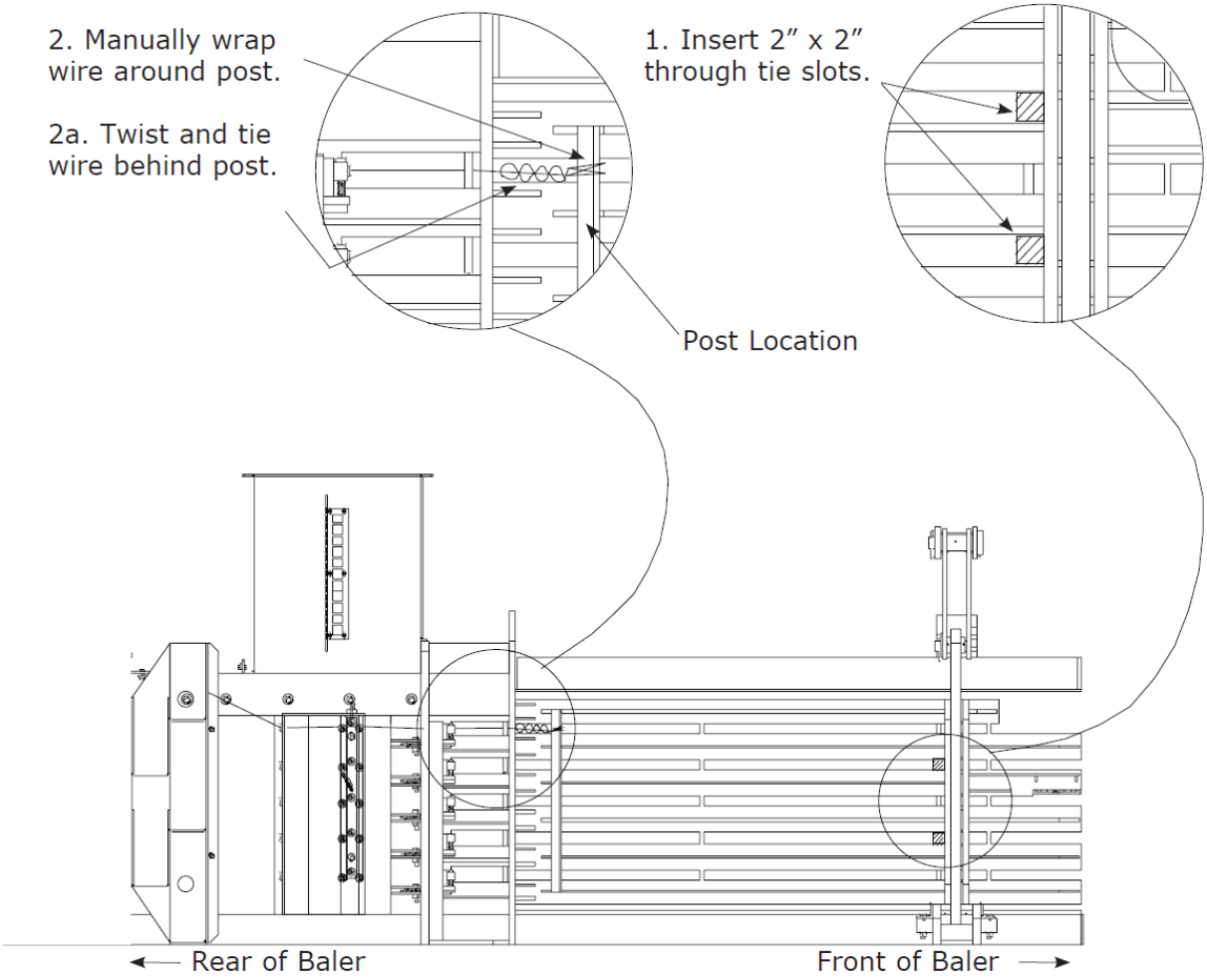
10) Press tie cycle to tie off bale.

11) Follow the **"Lock-Out & Tag-Out Instructions" on page 2-2.**

12) Remove 2 x 2's.

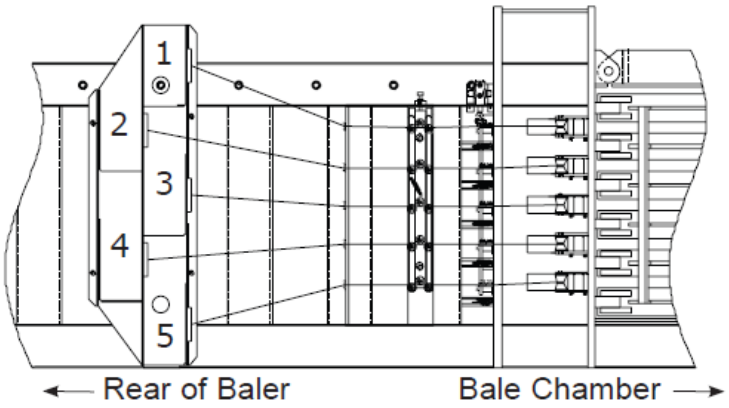
13) Start normal baling processing.

Bale Plug Instructions (Continued)

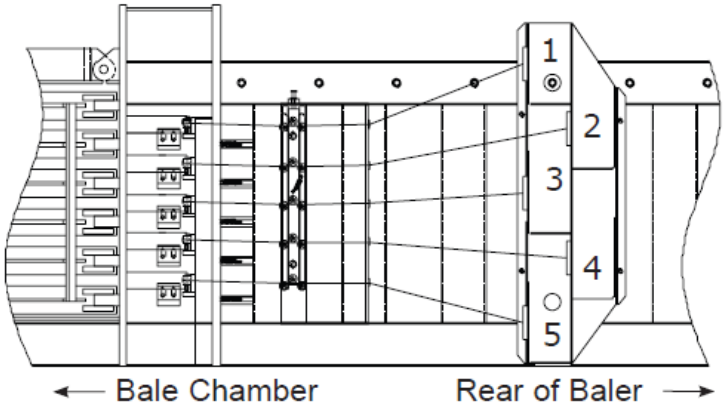


Wire Box Loading

Typical Wire Box Installation



WIRE TIER SIDE VIEW

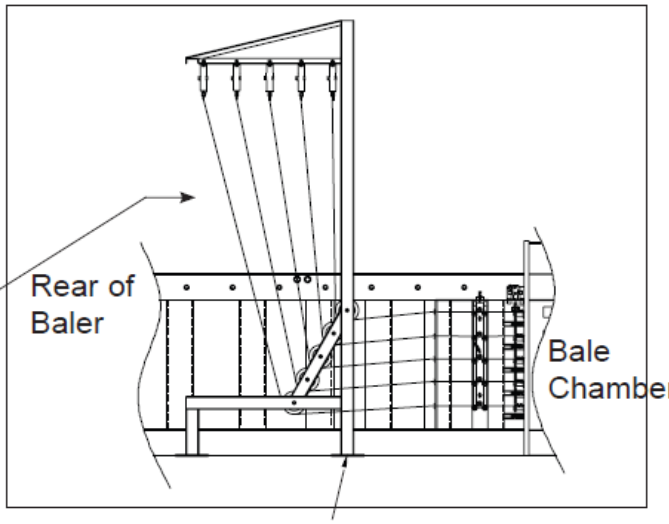


OPPOSITE VIEW

Load individual wire boxes in each compartment (labeled # 1 - 5 in diagram) on each side of the baler.

Optional Wire Installation

Optional 1000# Coil Stump Feed System - Wire feeds into baler in a similar manner.



Optional wire feed stand straddles baler frame

General Overview of the Auto-Tie Cycle

During tie cycle, the Inserter Needles travel across the width of the baler and capture the wires on the side opposite the tier. The needles then retract, capture the wires on the tier side and position the wires to be twisted, then cut.

The hydraulic Wire-Feeding Arms on the tier side of the baler lift the wires as the Inserter Needles travel across the baler and lower the wires as the needles retract. This ensures that the wire on the tier side is captured upon return of the needles.

The Spring Feeder Arms on the side opposite the wire-tier must be manually adjusted if the Inserter Needles miss the wires on that side. The instructions BELOW AND on the following pages describe wire-routing for each side, along with Wire-Tensioner adjustment and Spring-Feeder adjustment.

Prior to routing wires in the auto-tie baler, the compaction ram must be moved to the tie position using the baler controls.

Wire Routing and Installation

(see **“Wire Box Loading” on page 1-45**)

The wires must be properly routed on each side of the baler from the five installed wire boxes (or optional stump feed system). First cut the tape binding the wire spool together inside the box. Then pull the wire through the wire nozzles, wire-tensioner, and wire feeder arms (shown **on page 1-47**).

Adjusting the Wire-Tensioner

(see **“Wire Installation & Adjustment” on page 1-47**)

The Wire-Tensioner can be adjusted to put more or less tension in the wire by loosening the Jam Nut and turning the Adjustment Bolt. The bolt can be tightened for more tension in the wire and loosened for less tension.

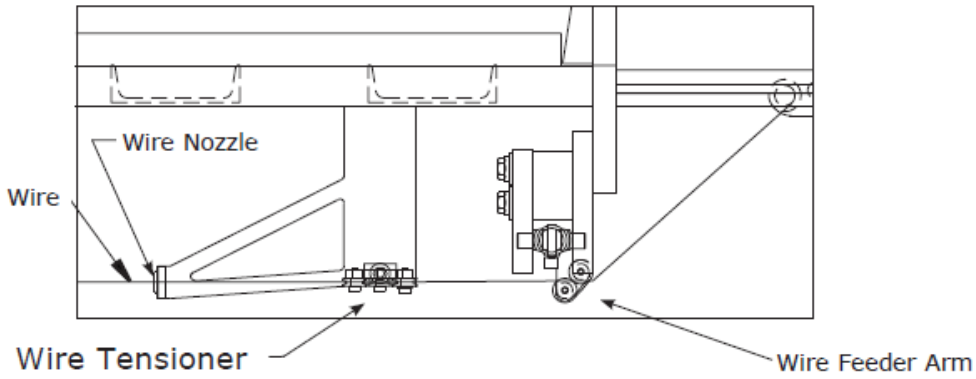
To load the wire in the wire-tensioner, first loosen the Jam Nut, then turn the adjustment bolt counter-clockwise to raise the center bank of rollers to allow just enough room to insert the wire. Insert the wire behind the Wire Shields, on top of the 2 lower rollers and under the top adjusting roller.

Turn the Adjustment Bolt clockwise to lower the center bank of rollers until all rollers contact the wire and then turn one more complete turn. Tighten the Jam Nut.

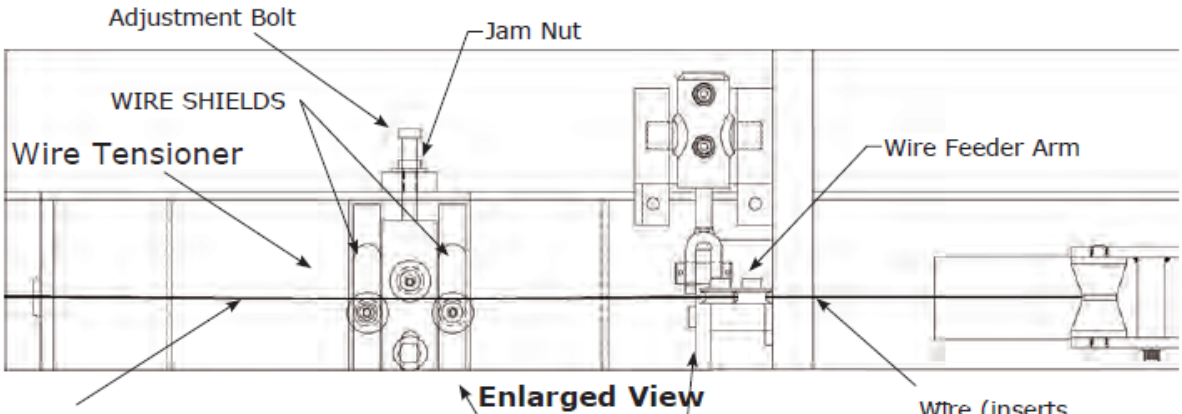
Note: The correct wire tension depends on the wire gauge, the tensile strength of the wire, the amount of oil on the wire, if any, and other factors. More or less tension may be required as bale density increases. If there is too much slack in the wire, the tensioner needs to be tightened. If the wire isn't being pulled from one side or if the wire breaks, the tensioner needs to be loosened.

Wire Installation & Adjustment

Wire-Tier Side



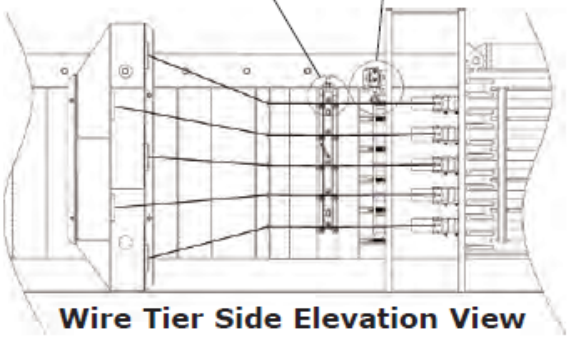
Enlarged Top View



Enlarged View

Wire (inserts on top of 2 lower rollers & under top adjusting roller behind wire shields)

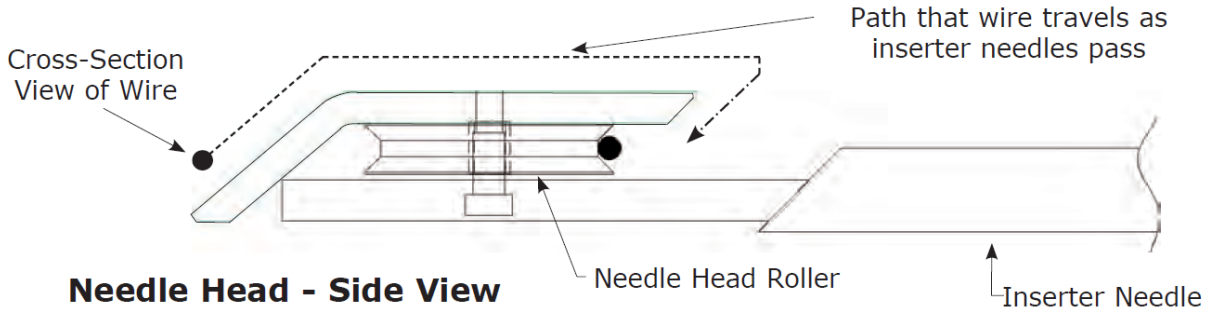
Wire (inserts between 2 rollers on hydraulic arm)



Wire Tier Side Elevation View

Wire Installation & Adjustment Opposite Wire-Tier Side

As the Inserter Needles traverse to the opposite side of the baler, the wires MUST travel up and over the Needle Heads and drop down into the gap behind. When the needles retract, the wire is forced against the Needle Head Roller and brought back to the tier side of the baler.

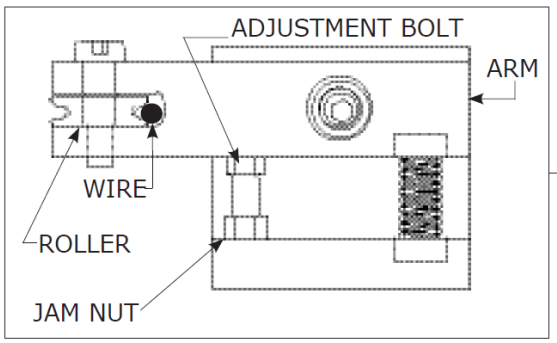


Needle Head - Side View

Spring Feeder Adjustment - Opposite Wire-Tier Side

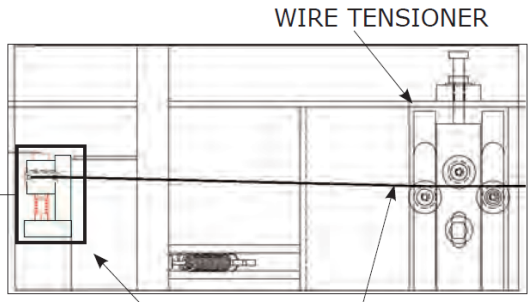
Note: Spring feeder arm positions have been factory set and should ensure correct position for needles to capture wire. However, in the event that the needle heads do not capture the wire, the spring feeders can be adjusted to raise OR lower the roller arms for correct alignment.

The Spring Feeders are located on the side of the baler opposite the wire tier and hold the bale tie wire at the correct height for the Inserter Needles to pass underneath the wire. If the wire is too low, the needles will pass over the wire and will not capture it. The Arms need to be raised by first loosening the Jam Nut, then turning the adjustment bolt counterclockwise. The Jam Nut must be retightened once the Arms are in the correct position. If the wire is too high, it will not be forced into the gap behind the needle head and the needles will not capture it. in this case, The arms need to be lowered by turning the Adjustment Bolt clockwise.



Spring Feeder - Front View

View has been rotated 90° from side view.

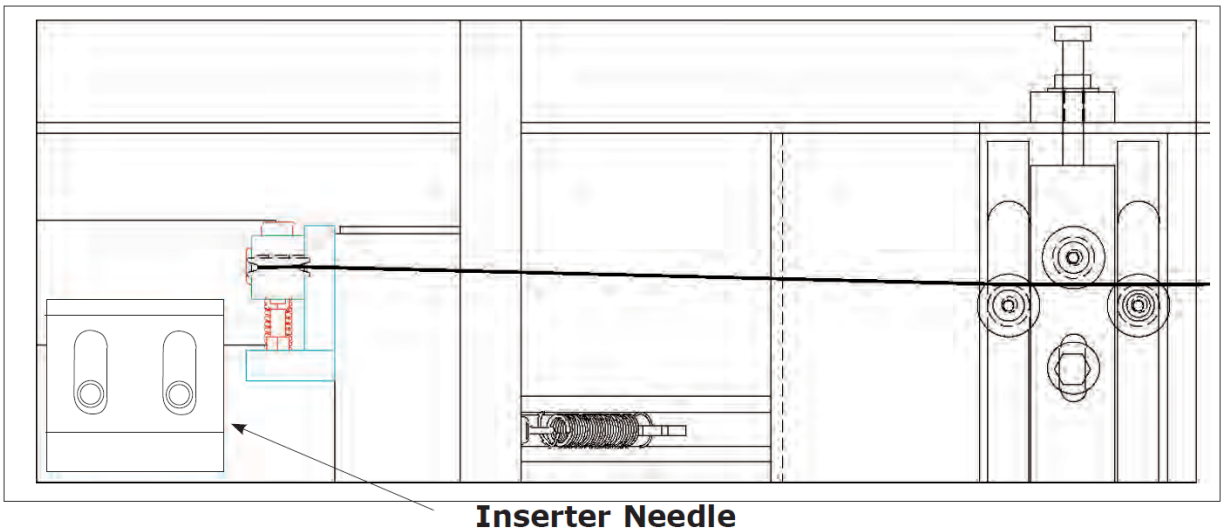


Spring Feeder Side View

Wire (inserts on top of 2 lower rollers & under top adjusting roller behind wire shields after passing through the wire nozzle.

Inserter Needle Risers

The Inserter Needle Risers serve as ramps to raise the needles as they pass through the width of the baler to the side opposite the wire tier. To ensure that the needles are in the correct position to capture the wire, the risers can be adjusted by loosening the two bolts, moving the chamfered wear pads up or down, and then retightening the bolts.



Inserter Needle Riser - Side View

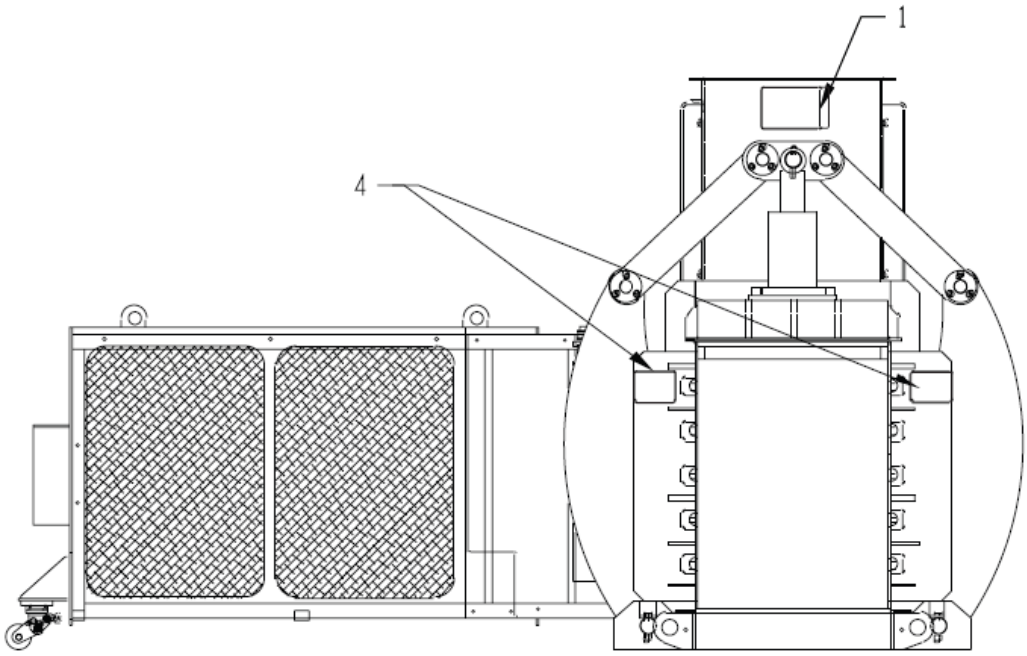
Wire Installation - Initial Wire Connection

Once all of the wires have been inserted through the wire nozzle, wire tensioner, and the roller arms on both sides of the baler (hydraulic feeder arms on the tier side and spring feeder arms on the opposite side), the wire must be fed across the baler from the side opposite the wire tier to the tier side. Both wires must be twisted together with wire pliers at least 10 times to ensure a good wire knot.

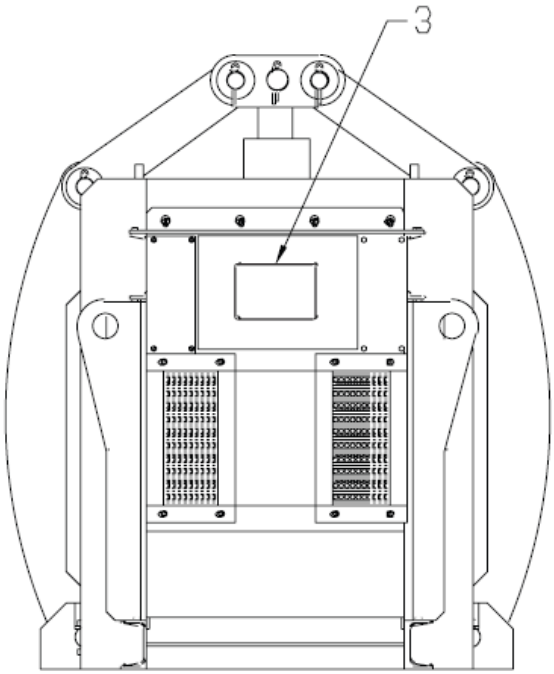
The baler is now ready to begin or resume baling.

Decal Diagram

Refer to **“Decal Description” on page 1-52** for descriptions.



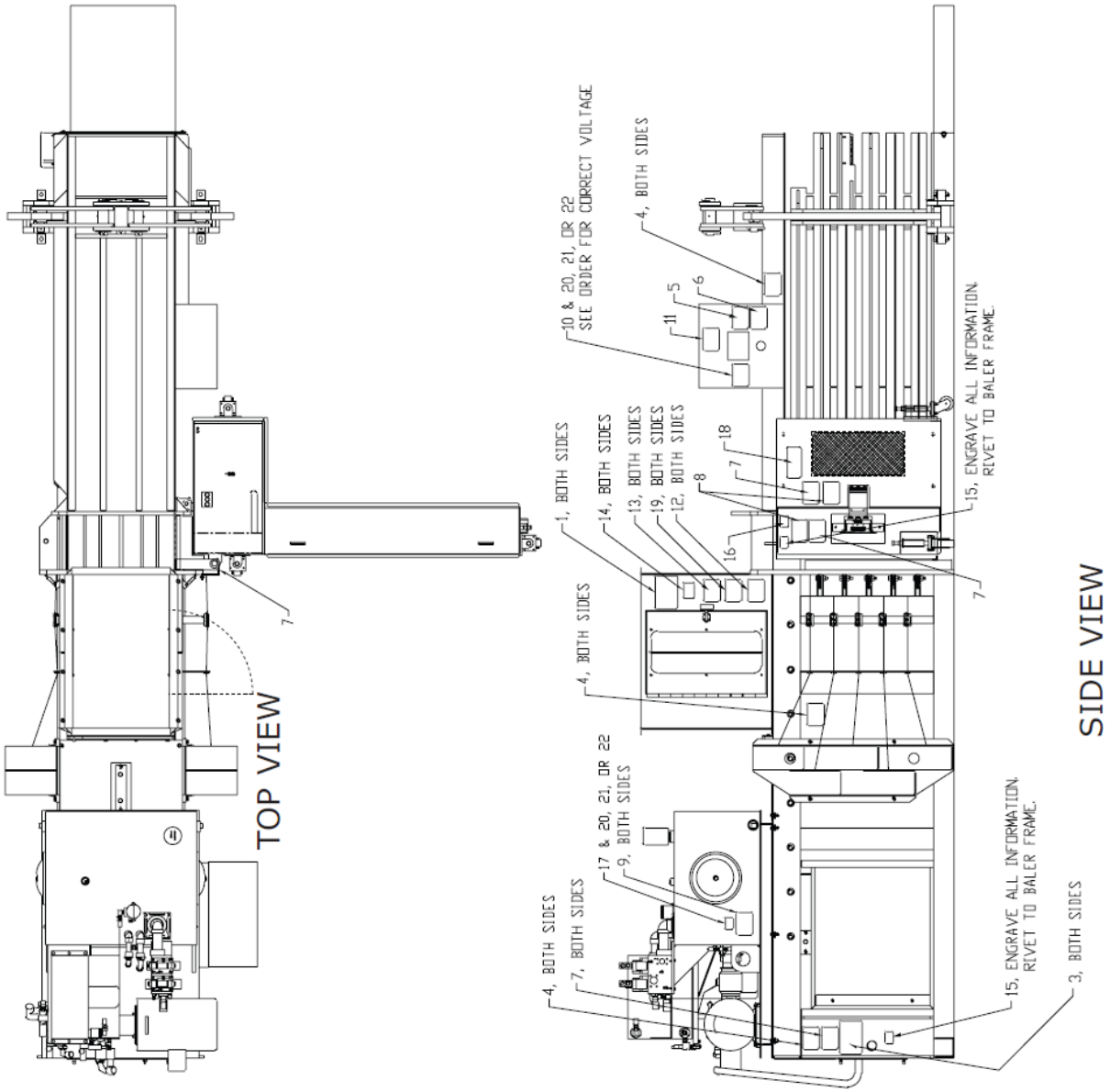
Front View



Rear View

Decal Diagram (Continued)

Refer to **“Decal Description” on page 1-52** for descriptions.



Decal Description

Warning Decal Requirements

When your baler leaves the factory, several Warning Decals are installed for everyone's protection. These labels are subject to wear and abuse due to the nature of baling operation. All DECALS MUST BE MAINTAINED. Replacement decals may be purchased through your distributor or by contacting the Service Department listed in the Maintenance Section.

Images of decals are shown on the next page.

Part #	Ref #	Description
06-2751	1	Marathon Compaction & Recycling Solutions 6”X10”
06-0249	3	Danger: High Voltage, Crushing, Pressurized Fluid
06-0475	4	Caution: Crushing Hazard - Keep clear while in operation
06-0121	5	Caution: Federal reg prohibits operation under 18.
06-0129	6	Caution: Periodic maintenance is required...
06-0038	7	Warning: Do not remove access cover
06-0120	8	Danger: Disconnect and lock-out power before...
06-0133	9	Warning: Fall Hazard - Do not climb on equipment
06-3044	10	Danger: Volts _____ (insert appropriate decal)
06-0250	11	Danger: Lock out and tag out power before...
06-0041	12	Warning: Crushing Hazard - Machine starts automatically
06-0039	13	Danger: Crushing/Shearing Hazard - Do Not Enter
06-1839	14	American Flag
06-0097	15	Serial Number Plate Non UL
06-0003	16	Patent Pending
06-3053	17	Danger Volts _____ (2” X 4”)
06-3049	18	TIEger Auto-Tie Balers Logo
06-3123	19	Danger: Confined Space
06-2684	20	208 (Insert on 06-3044 as required for voltage)
06-2686	21	230 (Insert on 06-3044 as required for voltage)
06-2690	22	460 (Insert on 06-3044 as required for voltage)

Decal Images

06-0003

06-0038

06-0039

06-0041

06-0120

06-0121

06-0129

06-0133

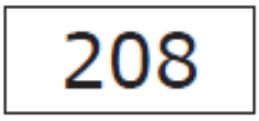
06-0249

06-0250

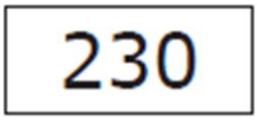
06-0475

06-1839

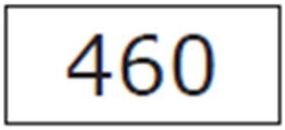
06-2684



06-2686



06-2690



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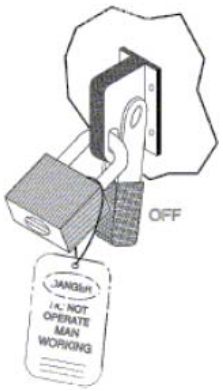
2 - MAINTENANCE

Lock-Out & Tag-Out Instructions



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 baler is locked-out and tagged-out in accordance with OSHA and ANSI requirements.

If ram is pressing against a load, move ram rearward before shutting baler down. 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.

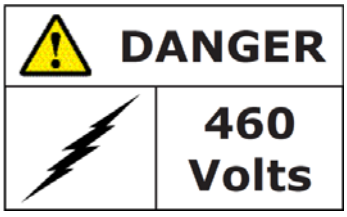
Instructions:

1) Move main disconnect lever to OFF position.

2) Padlock disconnect lever with a keyed padlock and take key with you.

3) Along with padlock, place an appropriate, highly visible, warning tag on disconnect lever. Tag should provide a warning such as: "**Danger**: Do not operate equipment. Person working on equipment. **Warning**: Do not energize without permission of _____."

4) After locking and tagging baler, try to start and operate baler (as outlined in Operating Instructions) to make sure lock-out and tag-out is effective. If lock-out and tag-out is effective, remove key from key switch and take with you.



Electrical: The panel box contains high voltage components. Only authorized service personnel should be allowed inside box. Authorized service personnel should be allowed inside box only after baler has been locked-out and tagged-out.

Hydraulic: Stored hydraulic energy must be removed from baler hydraulic circuit for complete lock-out and tag-out. Make sure that all personnel are clear of compaction and ejection areas. To remove pressure from system, make sure the ram is not pressing against a load. Manually depress poppet valve pin located in center of each poppet valve on main manifold and hold pin for a couple of seconds. See power unit layouts in this section of manual for poppet and manifold location.

Business Hours:

8am - 5pm

Monday - Friday

(**C**entral **S**tandard **T**ime)

For Parts & Warranty please call:

1-800-528-5308

For Technical Assistance please call:

1-877-258-1105

Periodic Maintenance

Danger: Only authorized and trained personnel should perform the following procedures. Lock-Out and Tag-Out the baler per as specified in **"Lock-Out & Tag-Out Instructions" on page 2-2.**

After Start-Up

1) Replace return line filter after the start-up technician has completed the initial start-up of the machine.

Daily (Operator)

1) Open wire twister cabinet and check for material build-up in bottom of cabinet. Clean out any material found in twister or its enclosure.

2) Check for material build-up behind the compaction ram.

3) Check for material build-up under bale length counter cover.

4) Check oil level and temperature in hydraulic reservoir. Maintain oil level above 3/4 full in sight gauge. Temperature should be below 160° F.

5) Check all remote emergency stop locations. Make sure each emergency stop button is not obstructed, damaged, or depressed.

6) Make sure operator area and access door are free from hazards that could cause a slip, trip, or fall.

7) Make sure that there is an adequate supply of wire on all wire reels.

8) Inspect for hydraulic system leak.

Weekly (Operator)

1) Check all limit switches to ensure free movement.

2) Clean photocell heads and reflectors.

3) Check function of all emergency stop buttons and interlock switches.

4) Check return line filter indicator located on top of power unit. See power unit drawings located later in this section. If indicator is in red portion of scale, discontinue use of baler and call for service.

Periodic Maintenance (Continued)

Monthly (Service Personnel)

1) Check all hoses for chaffing, rubbing, or other deterioration and damage.

2) Inspect breather cap on hydraulic reservoir. Clean or replace as necessary.

3) Check cylinder pins and make sure they are secure.

4) Check holddown bar clearance above ram. Clearance should be 1/32" or less. Adjust as necessary. See procedure later in this section of the manual.

5) After the first 160 hours of operation, return line filter needs to be replaced. After this replacement, return line filter maintenance/replacement will be extended to every 600-1000 hours of operation.

6) Inspect baler floor plate and liners for excessive wear.

7) Lubricate access door hinges and extrusion chamber hinges.

8) Apply a thin covering of lubricant to all tier gears and inserter chain.

Recommended lubricants are:

- CRC Dry Moly Lubricant (high solids molybdenum disulfide), 16 ounce spray can. Available from Grainger #2F138.
- Slip Plate Graphite Dry Film Lubricant, 16 ounce spray can. Available from Grainger #2F138.

Semi-Annually (Service Personnel)

1) Send oil sample out for evaluation.

2) Check baler structure for any signs of problems (such as cracked welds, bending, etc.).

3) Inspect cylinder rod of compression ram cylinders for nicks and abrasions. Check main cylinder rod seals for damage. Inspect cylinder pins for movement or missing cotter pins.

Annually (2000 hours of operation)

1) Send oil sample out for evaluation. If contaminated, replace hydraulic fluid of the entire system. The hydraulic tank should be cleaned inside with a nonflammable solvent and thoroughly dried before replacing oil.

2) Lubricate electric motor bearings as recommended by manufacturer.

Periodic Maintenance (Continued)

Annually

1) Change hydraulic fluid in entire system. If existing oil is reused, it should be tested by a laboratory to ensure it meets necessary specifications. Additives can be added to bring oil back to standards. Before returning oil to tank, it should be filtered through a minimum 6 micron filter. Hydraulic tank should be cleaned inside with a nonflammable solvent and thoroughly dried before replacing oil.

2) Lubricate electric motor bearings as recommended by manufacturer.

3) Filter maintenance:

   a) Hydraulic suction filters should be cleaned at yearly intervals.

   b) Filters may be removed from unit by disconnecting the union on the suction side of pump (circulating pump for oil cooler), or by removing four bolts that retain suction flange to main pump, and lifting the filter from reservoir.

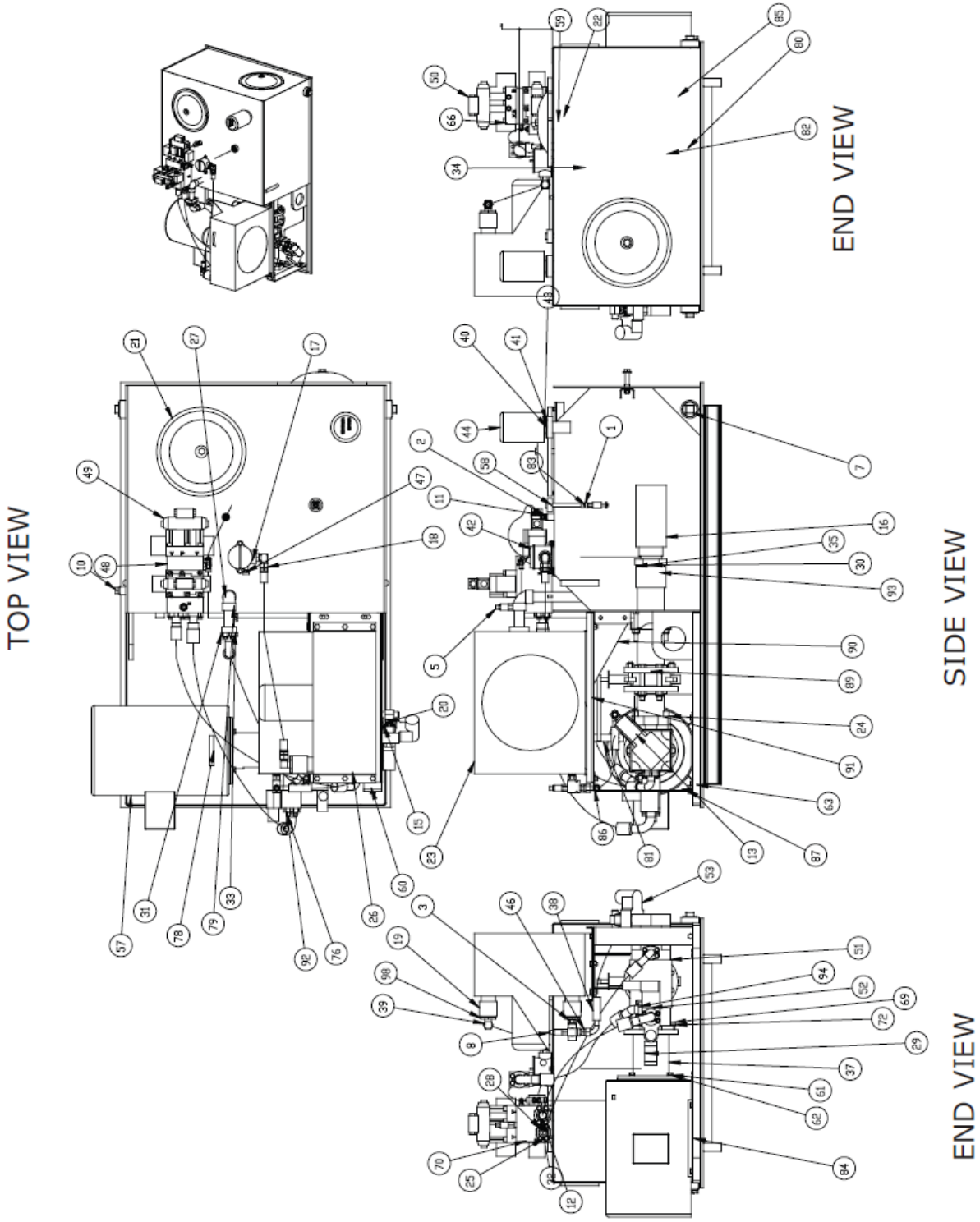
   c) Care should be exercised in cleaning the filter to ensure that the element is not torn. Clean the filter with a soft brush and standard industrial solvent.

   d) Replace filter after cleaning. Tighten union, or bolts, securely. Pump noise and a “crackle” sound is most often caused by air entering the pump suction line. Tightening suction fittings will usually eliminate problem.

Recommended Oils

- 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
- Quaker State-Dextron II (ATF) Automatic Transmission Fluid
- Amoco-Rycon MV Cold Weather Fluid

Power Unit Drawing 30 HP



Power Unit Reference Numbers 30 HP

Part #	Ref. #	Description	Qty.
02-0021	1	COUPLING 1/4 NPT	1
02-0040	2	ADAPTER 3/8 NPTF X 1/2 NPTM	1
02-0048	3	NIPPLE 3/4 NPT	2
02-0132	4	ADAPTER 1/2 NPTF X 3/4 NPTM	1
02-0214	5	VALVE RELIEF 20 GPM CART PILOT	1
02-0215	6	GAUGE SIGHT LEVEL 5 INCH	2
02-0254	7	PLUG 2 NPT SQ HD	2
02-0300	8	VALVE RELIEF 20 GPM CART PILOT	1
02-0310	9	TEE 3/4 NPTF	1
02-0316	10	PLUG 3/4 NPT	1
02-0332	11	HOSE END 3/8 WB X 3/8 NPTM	1
02-0565	12	FLANGE C61 1 1/4 SPLIT	4
02-0606	13	TUBING END 3/8 X 6 ORM 90	2
02-0612	14	CLAMP TUBE 3/8 WELD	2
02-0634	15	FLANGE C61 1 #12 O-RING	1
02-0668	16	FILTER SUCTION 3 NPTF 100 GPMSEC-100-3	1
02-0697	17	ELL 12 ORM X 12 JICM	1
02-0698	18	HOSE END 3/4 WB X 12 JICF	2
02-0805	19	COUPLING 2 SCH 40	2
02-0822	20	TEE 12 JICM X 12 ORM BRANCH	1
02-0823	21	CLEAN OUT COVER 14	2
02-0824	22	CLEAN OUT COVER MNTG BRKT REMOVABLE	2
02-0863	23	OIL COOLER AOCH-20	1
02-0872	24	FLANGE C61 4 WELD 500 PSI	1
02-0878	25	FLANGE C61 1 SPLIT W/BOLTS	2
02-0879	26	HOSE END 1 WB X 1 F61 SPT 90	1
02-0883	27	ELL 1 1/4 WELDF 90 SCH 160	1
02-0908	28	HOSE END 1 WB X 1 F61 SPT	1
02-0932	29	HUB COUPLING 1 1/4-5/16 X 1 7/8-1/2	1
02-1028	30	NIPPLE 3 NPT SCH 40	1
02-1062	31	FLANGE C61 1 1/4 WELD COMP W61-20-20	1
02-1088	32	HOSE END 1 1/4 WB X 1 1/4 F61SPT 3000	1
02-1098	33	HOSE END 1 1/4 WB X 1 1/4 F6190 5000	2
02-2258	34	CLAMP FOR 1 1/2 ID HOSE BARB FITTING	1
02-3427	35	COUPLING 4 SCH 40 FEMALE NPT THREAD	1
02-3780	36	HOSE END 3/8 2WB X 6 JICF SWV	1

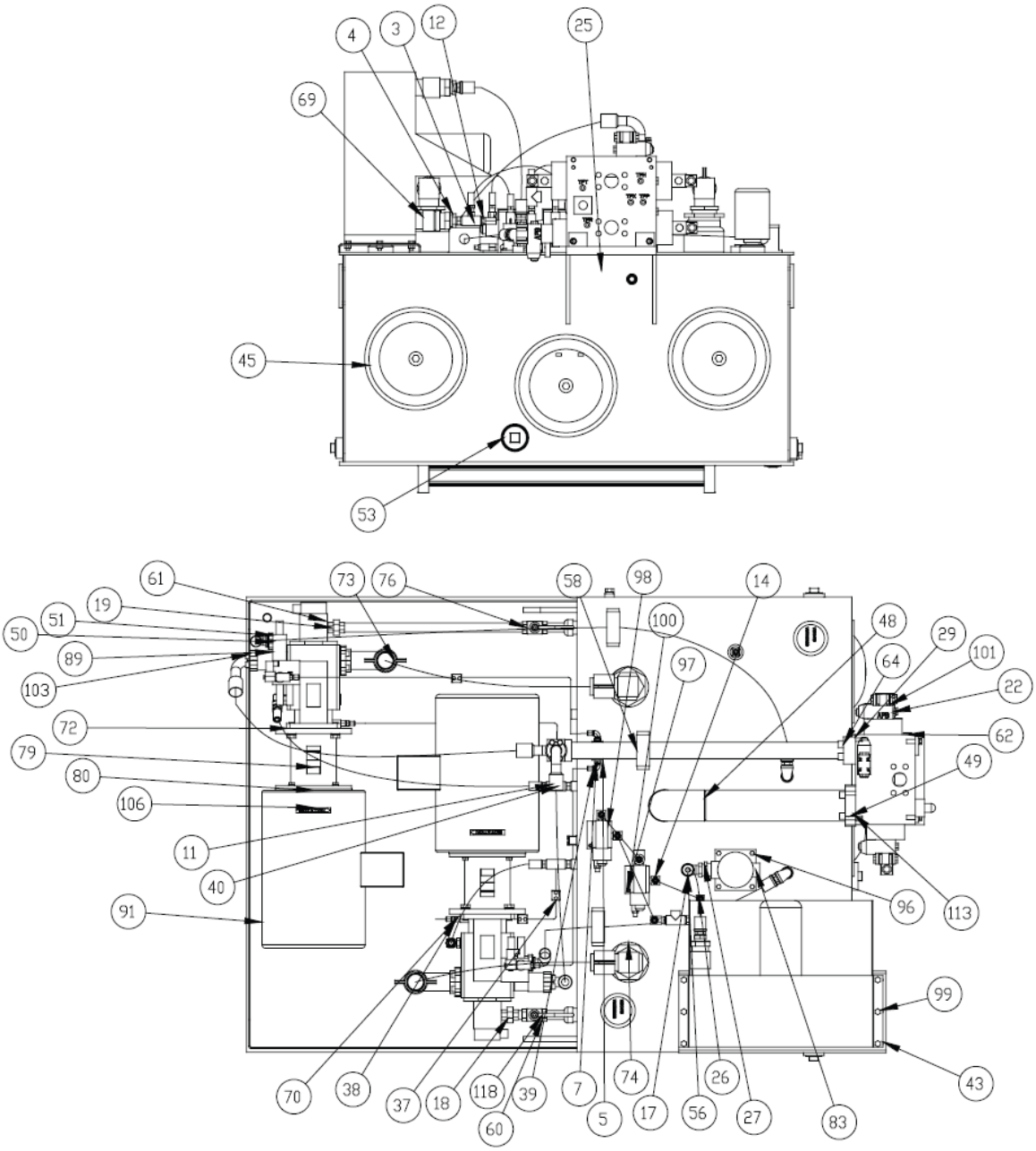
Power Unit Reference Numbers 30 HP (Continued)

Part #	Ref. #	Description	Qty.
02-4043	37	ADAPTER PUMP/MTR SAE C 2B X 286TC X 7.88	1
02-4154	38	HOSE END 3/4 WB X 12JICF 90 DAYCO#HY12-12FJ	2
02-4155	39	ELL 3/4 NPTM X 12 JICM 90 KRJOHNSON 2501-12-	1
02-4253	40	FILTER BREATHER BAYONET FLANGE 2 INCH	1
02-4254	41	FILTER BREATHER BASKET 2 INCH	1
02-4324	42	FILTER RETURN 12 ORM 6 MICRONTANK TOP VICKER	1
02-4328	43	FILTER BREATHER BAYONET ADAPTER F/ 02-3229	1
02-4330	44	FILTER BREATHER SPIN ON VICKERS V0211B1R03	1
02-4331	45	CAP 2 NPT SCH 40	1
02-4340	46	ADAPTER 1/2 NPTM X 12 JICM	1
02-4343	47	FILTER INDICATOR GAUGE 1/8 NPTM COLOR CODED	1
02-4404	48	MANIFOLD DUAL D08 REGEN 75 GPM	1
02-4405	49	VALVE 4-WAY 08 T 3-POS EXT P&D HI-FLOW	1
02-4406	50	VALVE 4-WAY 08 A TO T 3-POS EXT P & D HI-FLO	1
02-4407	51	PUMP VANE 53 18 12 VICKERS VMQ	1
02-4409	52	UNLOADING VALVE 1 1/4 W/ SOLENOID VENT	1
02-4410	53	VALVE CHECK 1 1/4 CODE 61 FLANGE 75 PSI CRAC	1
02-4411	54	ELL 6 ORM X 6 JICM	1
02-4426	55	VALVE BUTTERFLY 4 WAFFER SUCTION	1
02-4427	56	FLANGE ANSI 4 NPTF	2
03-1179	57	MOTOR 3O HP 1760 208-230/460V286TC TEFC SP	1
03-3689	58	SWITCH LEVEL PLUG ADAPTER 1 1/4	1
05-0015	59	NUT 3/8-16 UNC HEX SELF-LOCKING	4
05-0052	60	WASHER 1/2 FLAT	1
05-0061	61	BOLT 1/2-13 X 1 1/4 HEX HD GR2	8
05-0064	62	WASHER 1/2 LOCK	4
05-0075	63	NUT 1/2-13 HEX SELF-LOCKING	11
05-0105	64	NUT 5/16-18 HEX SELF-LOCKING	2
05-0148	65	BOLT 1/2-13 X 1	7
05-0199	66	BOLT 1/2-13 X 2 1/2 ALLEN HD	12
05-0236	67	BOLT, HEX, 3/4-10UNC X 5 1/2	4
05-0263	68	NUT 3/4-10 HEX LOCKING	4
05-0338	69	BOLT 5/8 X 1 1/2 GR 2 HHCS ZINC	2
05-0521	70	WASHER 1/2 LOCK GRADE 8 HI-COLLAR80-0123	12
05-0549	71	BOLT5/16-18 X 1 1/4 GRD 5 HEXHD`	6
05-0561	72	WASHER 5/8 LOCK	2

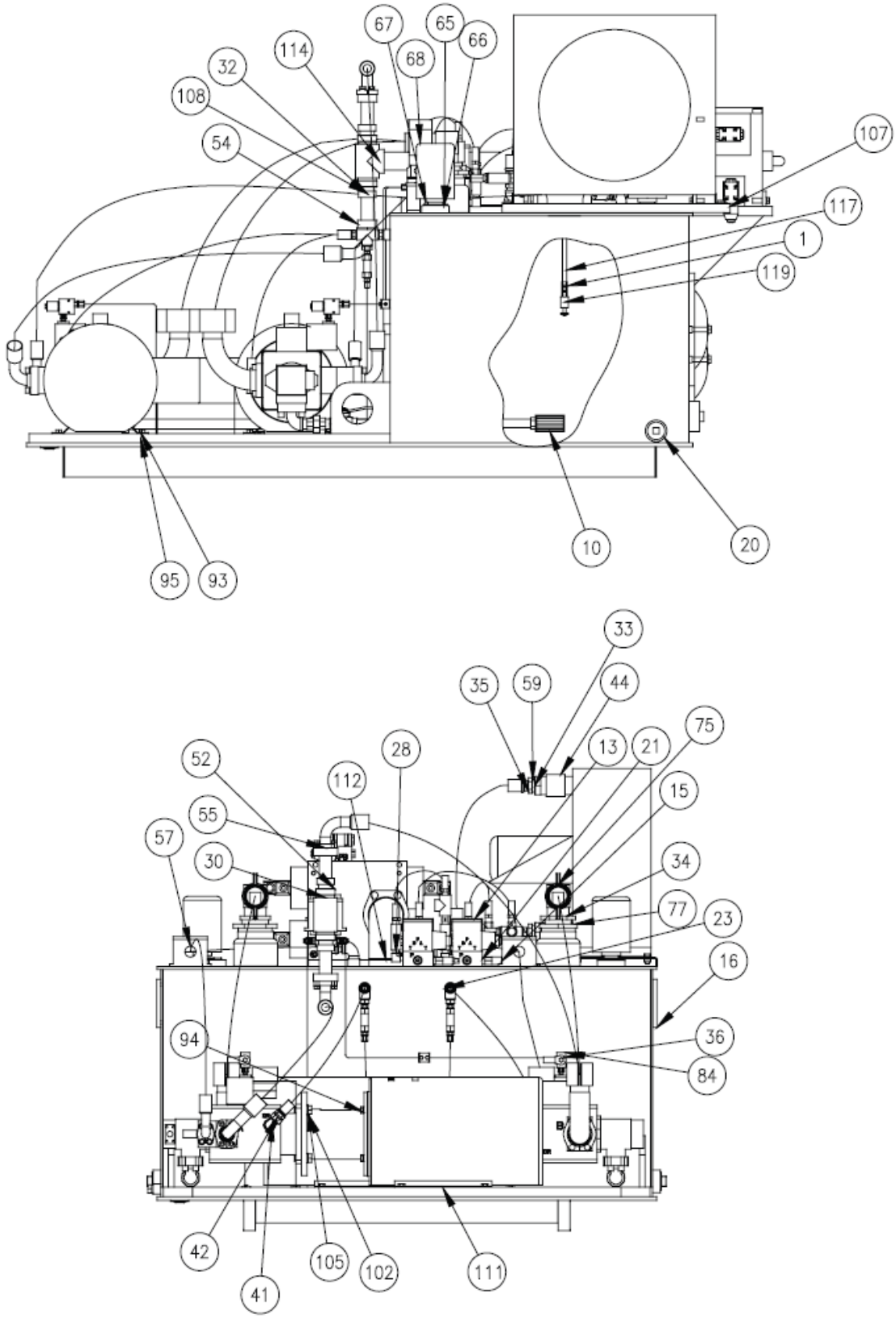
Power Unit Reference Numbers 30 HP (Continued)

Part #	Ref. #	Description	Qty.
05-2301	73	NUT 5/8-11 NC SLN	4
05-3644	74	BOLT 7/16-14 X 7 1/2 SOCKET HD GRADE 8	4
05-2001	75	WASHER, LOCK, 5/16"	4
06-0011	76	DECAL MOTOR ROTATION 3/4 X 4	1
23-5425	77	1 1/4 X SCH80 X 4 PIPE SQ CUT	1
26-9656	78	1/2 X SCH40 X 23 PIPE	1
27-5256	79	7GA X 1-1/4 X 5	1
28-1367	80	1 1/4 X SCH40 X 23 PIPE	1
28-1562	81	1/4 X SCH80 X 6 PIPE	1
28-1869	82	7GA X 13 X 14-3/4	1
28-6058	83	2 1/2 X SCH40 X 24 PIPE	1
28-6693	84	7GA X 3 X 20	1
28-6694	85	1/4 PL X 3 X 3	1
28-8762	86	4 X SCH40 X 6 PIPE	1
28-8763	87	4 X SCH40 X 15 PIPE	1
28-8953	88	7GA X 6-3/4 X 12 (1=2)	1
28-8963	89	7GA X 14 X 28-1/4	1
99-0676	90	WASHER 7/16 HI-COLLAR LOCKING	4
99-6723	91	ADAPTER 4 NPTM X 3 NPTF	1
99-6929	92	HOSE END 1 1/4 WB X 1 1/4 F61SPT 45	1
99-7009	93	SWITCH OIL LEVEL & TEMP NC UPTL 008180F	1
99-7152	94	COUPLING 4 DRESSER 4 BOLT X 5LONG	1
99-7235	95	BOLT 5/8-11 X 4 1/2 NOT PLATED	4
99-7783	96	ADAPTER 3/4 NPTF X 2 NPTM SCH80	2
02-0880	97	HOSE 1 WB 4000PSI	4
02-0335	98	HOSE 1 1/4 WIRE BRAID 5000	6
02-0333	99	HOSE 3/8 WIRE BRAID (TWO) 2500 PSI	2
02-3725	100	TUBING 3/8 OD .083 WAL	8
02-0327	101	HOSE 3/4 2WB 3100 PSI	5
02-1091	102	HOSE 1 1/2 WB 5000PSI	1

Power Unit Drawing - 2 X 30 HP Motors



Power Unit Drawing - 2 x 30 HP Motors (continued)



Power Unit Reference Numbers - 2 x 30 HP

Part #	Ref.#	Description	Qty.
02-0021	1	COUPLING 1/4 NPT	1
02-0025	2	NIPPLE 3/8 NPT	2
02-0029	3	ELL 1/2 NPTM X 1/2 NPTF SWV 90	2
02-0030	4	ADAPTER 3/4 NPTF X 1 1/4 NPTM	1
02-0035	5	TEE 1/2 NPTF	2
02-0036	6	NIPPLE 1/2 NPT	2
02-0040	7	ADAPTER 3/8 NPTF X 1/2 NPTM	2
02-0044	8	ELL 3/4 NPTM X 3/4 NPTF 90	3
02-0048	9	NIPPLE 3/4 NPT	4
02-0050	10	FILTER SUCTION 1 13 GPM 100 MESH	2
02-0124	11	ADAPTER 3/8 NPTF X 3/4 NPTM	2
02-0132	12	ADAPTER 1/2 NPTF X 3/4 NPTM	2
02-0157	13	VALVE 4-WAY 05 O 2-POS	2
02-0204	14	CHECK VALVE 1/2 NPTF	4
02-0214	15	VALVE RELIEF 20 GPM CART PILOT	2
02-0215	16	GAUGE SIGHT LEVEL 5 INCH	2
02-0238	17	ELL 1 NPTM X 1 NPTF SCH 40	5
02-0239	18	UNION 1 NPT	2
02-0240	19	NIPPLE 1 NPT CLOSE	3
02-0254	20	PLUG 2 NPT SQ HD	2
02-0264	21	SUBPLATE WITH RELIEF CAVITY	2
02-0297	22	VALVE 4-WAY 03 C 2-POS	5
02-0310	23	TEE 3/4 NPTF	4
02-0316	24	PLUG 3/4 NPT	1
02-0326	25	HOSE END 3/4 WB X 3/4 NPTM	2
02-0329	26	HOSE END 1/2 WB X 1/2 NPTM	6
02-0339	27	ADAPTER 1 1/4 NPTF X 1 1/2 NPTM	1
02-0555	28	ELL 1/2 NPTM X 1/2 NPTM	4
02-0558	29	FLANGE C62 2 WELD	1
02-0560	30	TEE 2 WELDF SCH 160	1
02-0565	31	FLANGE C61 1 1/4 SPLIT	2
02-0571	32	ADAPTER 1 1/4 WELDF X 1 1/2 WELDM SCH160	2
02-0578	33	ADAPTER 1 1/4 NPTF X 2 NPTM	2
02-0591	34	ADAPTER 2 1/2 FM X 3 NPTM	2
02-0603	35	ADAPTER 1 NPTF X 1 1/4 NPTM	2
02-0607	36	TUBING END 3/8 X 6 ORM	2
02-0612	37	CLAMP TUBE 3/8 WELD	6

Power Unit Reference Numbers - 2 x 30 HP (Continued)

Part #	Ref.#	Description	Qty.
02-0616	38	ADAPTER 1/4 NPTF X 4 ORM	2
02-0629	39	TUBING END 3/8 X 3/8 NPTM 90	2
02-0687	40	TUBING END 3/8 X 3/8 NPTM 90	2
02-0697	41	ELL 12 ORM X 12 JICM	2
02-0698	42	HOSE END 3/4 WB X 12 JICF	2
02-0804	43	OIL COOLER AOCH-25-3 208-230/460 60HZ	1
02-0805	44	COUPLING 2 SCH 40	2
02-0823	45	CLEAN OUT COVER 14	3
02-0824	46	CLEAN OUT COVER MNTG BRKT REMOVABLE	3
02-0859	47	VALVE CHECK 3/8 NPTF AIR BLEED	2
02-0871	48	ELL 4 WELD 90 SCH 40	1
02-0872	49	FLANGE C61 4 WELD 500 PSI	1
02-0878	50	FLANGE C61 1 SPLIT W/BOLTS	2
02-0879	51	HOSE END 1 WB X 1 F61 SPT 90	2
02-0881	52	ADAPTER 1 1/2 WELDF X 2 WELDM	2
02-0904	53	PLUG 3 NPT SQ HD	1
02-1062	54	FLANGE C61 1 1/4 WELD COMP W61-20-20	2
02-1098	55	HOSE END 1 1/4 WB X 1 1/4 F6190 5000	2
02-2255	56	ADAPTER 1 NPTM X 1 NPTF SWV	1
02-2330	57	CLAMP HOSE 1 WB W/RUBBER INS.	2
02-3064	58	CLAMP PIPE 2 STAUFF WELD	1
02-3076	59	HOSE END 1 WB X 1 NPTM	4
02-3107	60	VALVE BALL 1 NPTF W/ HANDLE	2
02-3540	61	FLANGE C61 1 1/2 X 1 NPT W/BOLTS	2
02-3560	62	MANIFOLD ASSEMBLY F/TR-12 100A TR-10 100 (RE	1
02-3884	63	O-RING 1/8 X 1.5 ID F/ 1 1/4 FLANGE	2
02-4079	64	BOLT KIT F/ 2 CODE 62 FLANGE	1
02-4253	65	FILTER BREATHER BAYONET FLANGE 2 INCH	2
02-4254	66	FILTER BREATHER BASKET 2 INCH	2
02-4328	67	FILTER BREATHER BAYONET ADAPTER F/ 02-3229	2
02-4330	68	FILTER BREATHER SPIN ON VICKERS V0211B1R03	2
02-4331	69	CAP 2 NPT SCH 40	1
02-4417	70	TUBING END 3/8 X 1/4 NPTM	2
02-4472	71	ADAPTER 4 ORF X 6 ORM K&R6410-6-4	4
02-4582	72	PUMP 69 GPM PISTON HP LIMITEDW/ 12 VANE KAWA	2
02-4584	73	HOSE END 2 1/2 BARB X 2 1/2 F61 90	2

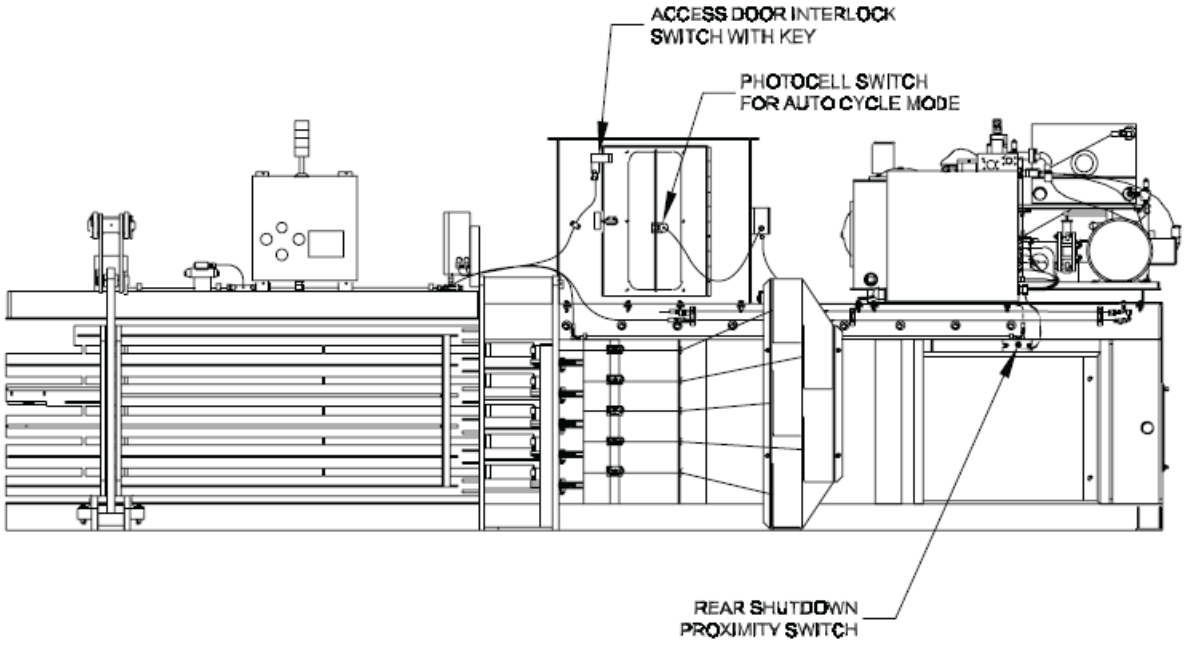
Power Unit Reference Numbers - 2 x 30 HP (Continued)

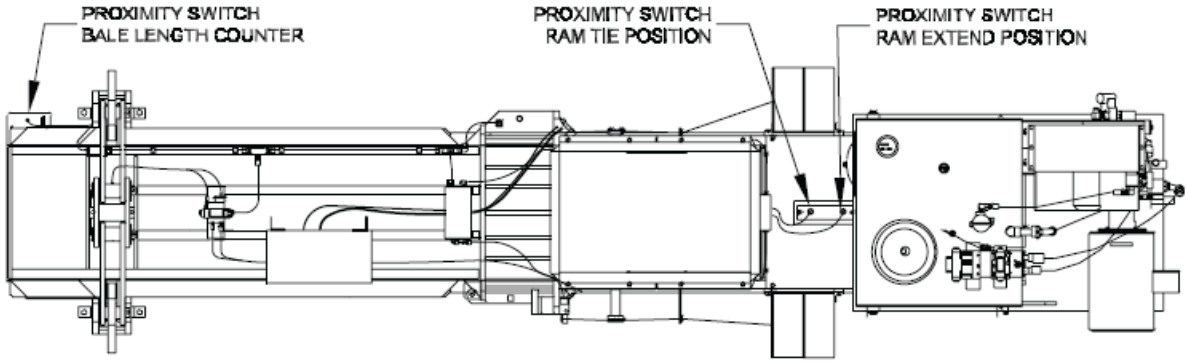
Part #	Ref.#	Description	Qty.
02-4585	74	ADAPTER 4 NPTF X 5 NPTF SCH 40	2
02-4586	75	HOSE END 2 1/2 BEADED X 2 1/2NPTM 90	2
02-4587	76	1 X SCH40 X 27 PIPE	1
02-4588	77	FILTER SUCTION 3 100 GPM 100 MESH TANK MOUNT	2
02-4589	78	5 X SCH40 X 25 PIPE	2
02-4590	79	HUB COUPLING 1 3/4-7/16 X 1 7/8-1/2 M500U IN	2
02-4591	80	ADAPTER PUMP/MTR SAE D4 X 286TC 8 1/2	2
02-4593	81	VALVE CHECK FLG MTD 1 1/4 C62BODY INSERTA IC	2
02-4594	82	VALVE CHECK INSERT USE W/02-4593 INSERTA ICS	2
02-4595	83	FILTER RETURN LINE 1 1/2 NPTF6 MICRON TANK M	1
02-4596	84	VALVE 2-WAY 4 ORF PORTS NO 120 VAC	2
02-4597	85	NIPPLE 4 ORM ADJUSTABLE	2
02-4604	86	HOSE END 1 1/4 WB X 1 1/4 F6290	2
02-4606	87	CLAMP HOSE FOR 2.5 ID 3.0625 OD SUCTION HOSE	4
02-4607	88	FLANGE C62 1 1/4 SPLIT	4
02-4608	89	VALVE RELIEF 1 1/4 C62 80 GPM	2
02-4609	90	FLANGE C61 2 1/2 SPLIT W/ BOLT KIT	2
03-1179	91	MOTOR 3O HP 1760 208-230/460V286TC TEFC SP	2
03-3689	92	SWITCH LEVEL PLUG ADAPTER 1 1/4	1
05-0061	93	BOLT 1/2-13 X 1 1/4 HEX HD GR2	20
05-0064	94	WASHER 1/2 LOCK	12
05-0075	95	NUT 1/2-13 HEX SELF-LOCKING	14
05-0096	96	BOLT3/8-16 X 1 HEX HD	4
05-0105	97	NUT 5/16-18 HEX SELF-LOCKING	4
05-0145	98	BOLT 1/4-20 X 1 1/2 ALLEN HD	8
05-0148	99	BOLT 1/2-13 X 1	6
05-0154	100	BOLT 5/16-18 X 2 1/4 ALLEN HD	4
05-0212	101	BOLT 10/24 X 1 1/4 ALLEN HD	20
05-0226	102	WASHER 3/4 LOCK	8
05-0521	103	WASHER 1/2 LOCK GRADE 8 HI-COLLAR80-0123	8
05-2276	104	BOLT 1/2-13 X 6 1/2 ALLEN HEAD	8
05-2557	105	BOLT 3/4-10 X 1 3/4 HX HD GD 5	8
06-0011	106	DECAL MOTOR ROTATION 3/4 X 4	2
09-4837	107	7GA X 13-1/2 X 30-1/8	1
09-5847	108	1 1/4 X SCH160 X 4 PIPE SQ CUT	2
14-2239	109	1/2 X 2 BAR X 2-11/16	4

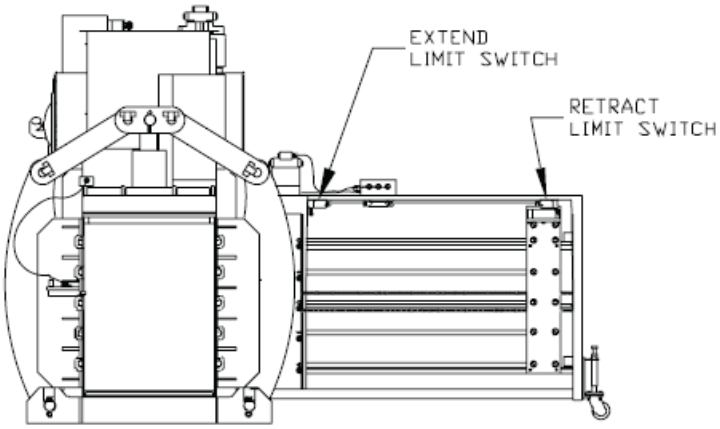
Power Unit Reference Numbers - 2 x 30 HP (Continued)

Part #	Ref.#	Description	Qty.
28-1366	110	1 X SCH40 X 23 PIPE	2
28-1869	111	7GA X 13 X 14-3/4	2
29-5510	112	4 X SCH40 X 29 PIPE	1
29-5526	113	4 X SCH40 X 21-1/2 PIPE SQ CUT	1
29-6008	114	2 X SCH160 X 40-3/4 PIPE SQ CUT	1
29-6066	115	1/2 X SCH40 X 24 PIPE	3
29-6067	116	3/4 X SCH40 X 25 PIPE	3
29-6090	117	1/4 X SCH80 X 10 PIPE	1
29-6554	118	1 X SCH40 X 24 PIPE	2
99-7009	119	SWITCH OIL LEVEL & TEMP NC UPTL008180F	1
02-4605	120	HOSE 2 1/2 SUCTION	7
02-0880	121	HOSE 1 WB 4000PSI	14
02-0327	122	HOSE 3/4 2WB 3100 PSI	6
02-0335	123	HOSE 1 1/4 WIRE BRAID 5000	8
02-0608	124	TUBING 3/8 OD .049 WALL	22
02-0330	125	HOSE 1/2 WB 3500PSI	3

Switch Location Diagram







Switch Description

1) **Proximity Switch, Bale Counter** - Mounted adjacent to bale length counter wheel. This proximity switch sends a signal to PLC input that controls bale length. Each pulse represents approximately 1 inch.

2) **Interlock Switch with Key** - Mounted next to hopper access door. This switch is used as a safety measure to prevent the machine from operation if and when the hopper door is opened.

3) **Tie Position and Ram Extended Proximity Switch** - These switches supply information to the PLC when the ram is in the TIE POSITION or EXTENDED position.

4) **Rear Proximity Switch** - Mounted at rear of baler. When this switch is actuated, ram stops its rearward movement and will stop or start forward, depending on control conditions.

5) **Twister Counter Proximity Switch** - This switch is mounted directly over twister hydraulic motor drive gear and senses and counts rotations of motor by means of a actuator pad welded onto the gear. The LED indicator on the switch should be illuminated when twister gear slots are open. This switch sends pulses or counts to the processor and controls tie operation. When twister stops in proper position, LED will be lit, otherwise machine will fault to prevent damage to twister/tier mechanism.

6) **Tier Forward and Rear Limit Switches** - These switches control travel of tier inserter.

7) **Bale Length Counter Proximity** - This proximity Switch signals the PLC one count when each gear tooth passes the proximity switch.

8) **Photocell Switch For Autocycle Mode** - This proximity switch will start or continue to operate baler if the photocell detects material in the feed hopper. (The baler must be in “AUTOCYCLE MODE” for this switch to function).

Twister Head Clock Adjustment - Left Hand Assembly

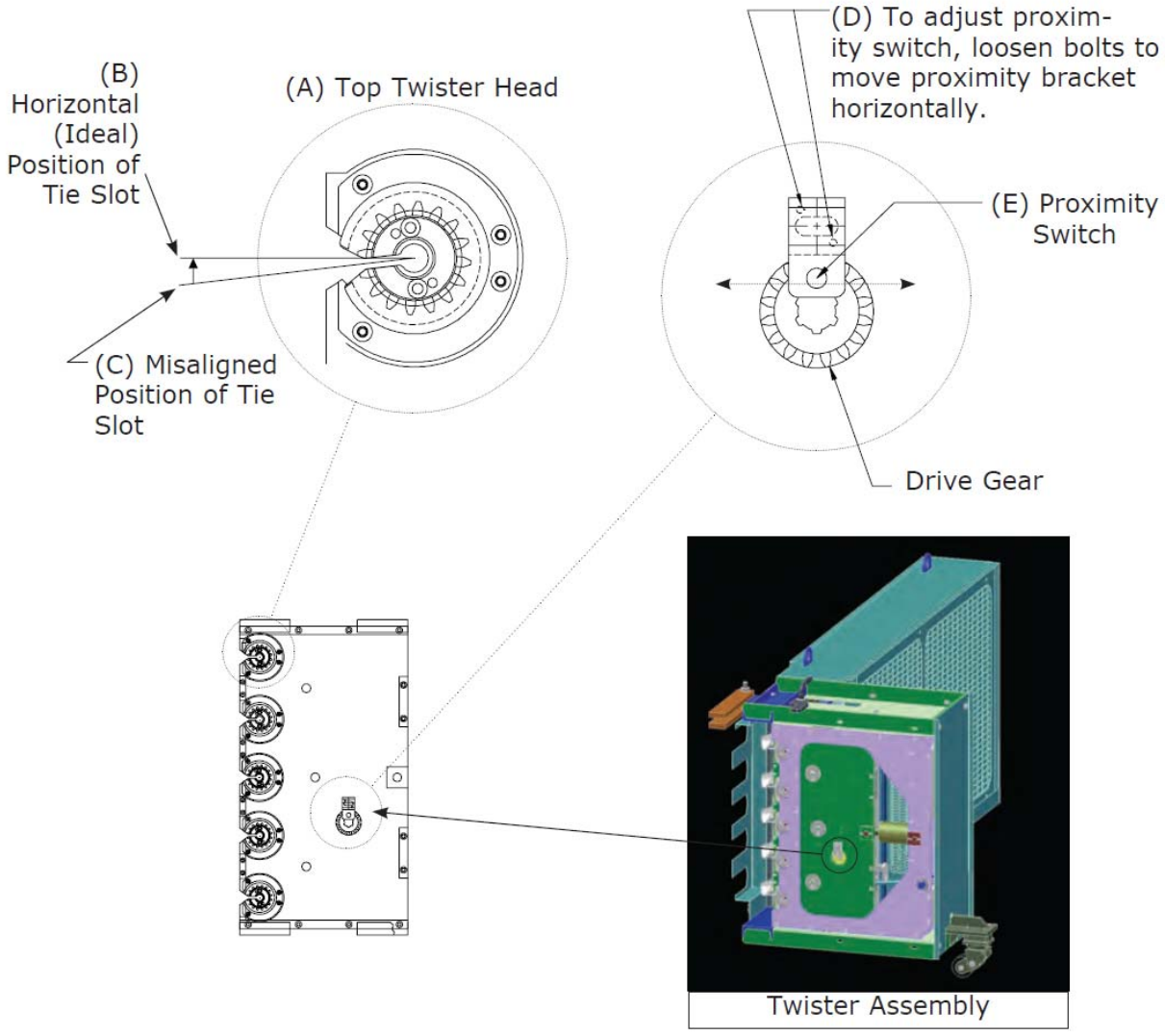
Note: The procedure below is for TIEger Auto-Tie balers with a left hand twister assembly only. The procedure for balers with right hand twister assemblies can be found on the next page. To assess the misalignment of the twister heads, look at the top twister head (A). The condition shown in the diagram below indicates that the top twister head is misaligned, indicated by the downward position of the tie slot (C), which needs to be adjusted to the horizontal position (B), as shown.

Adjustment Procedure:

1) Loosen the 2 bolts (see diagram below) on the proximity bracket (D).

2) Adjust proximity switch (E) to the left to adjust the twister head upward or to the right to adjust the twister head downward (the amount of adjustment should be done in increments of 1/16" or less at a time).

3) Once the twister head slot reaches the horizontal position (B), then retighten the 2 bolts that secure the proximity bracket (D).



Twister Head Clock Adjustment - Right Hand Assembly

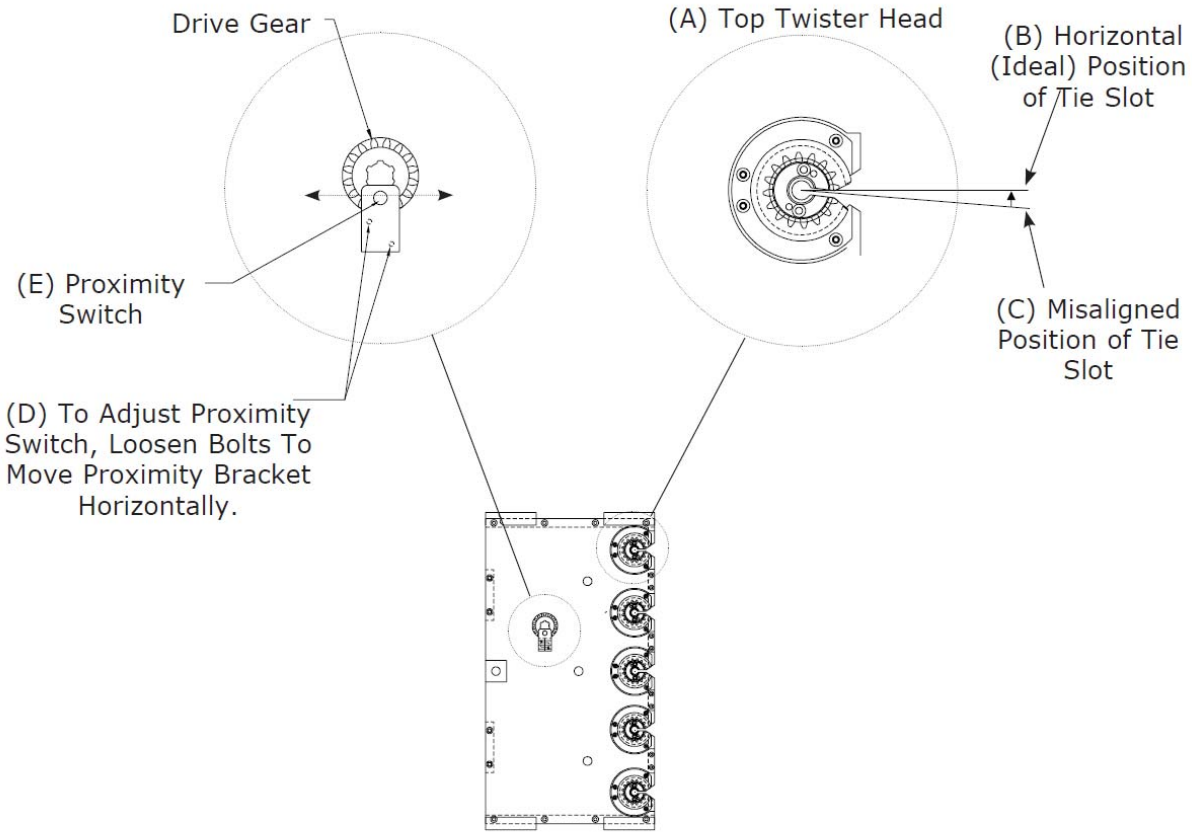
Note: The procedure below is for TIEger Auto-Tie balers with a right hand twister assembly only. The procedure for balers with left hand twister assemblies can be found on the previous page. To assess the misalignment of the twister heads, look at the top twister head (A). The condition shown in the diagram below indicates that the top twister head is misaligned, indicated by the downward position of the tie slot (C), which needs to be adjusted to the horizontal position (B), as shown.

Adjustment Procedure:

1) Loosen the 2 bolts (see diagram below) on the proximity bracket (D).

2) Adjust proximity switch (E) to the left to adjust the twister head upward or to the right to adjust the twister head downward (the amount of adjustment should be done in increments of 1/16" or less at a time).

3) Once the twister head slot reaches the horizontal position (B), then retighten the 2 bolts that secure the proximity bracket (D).



Twister Assembly

Electrical Schematic

Refer to the electrical and hydraulic schematics shipped with your open end auto-tie baler or contact Marathon Equipment Company at 1-800-633-8974 and ask to speak with the Field Service Department.

Please have model and serial number available when you call.

Electrical Charts

Motor Size	VAC	Total Full Load Amp	Dual Element Fuse Max Size	Circuit Breaker Max Size
30 HP Main Motor	208	88	150	200
	230	82	150	200
	460	40	70	100
	575	32	60	80
2 x 30 HP Main Motor 1 HP Fan Cooler	208	180.6	225	300
	230	164.2	200	250
	460	82.1	110	125
	575	65.7	80	110

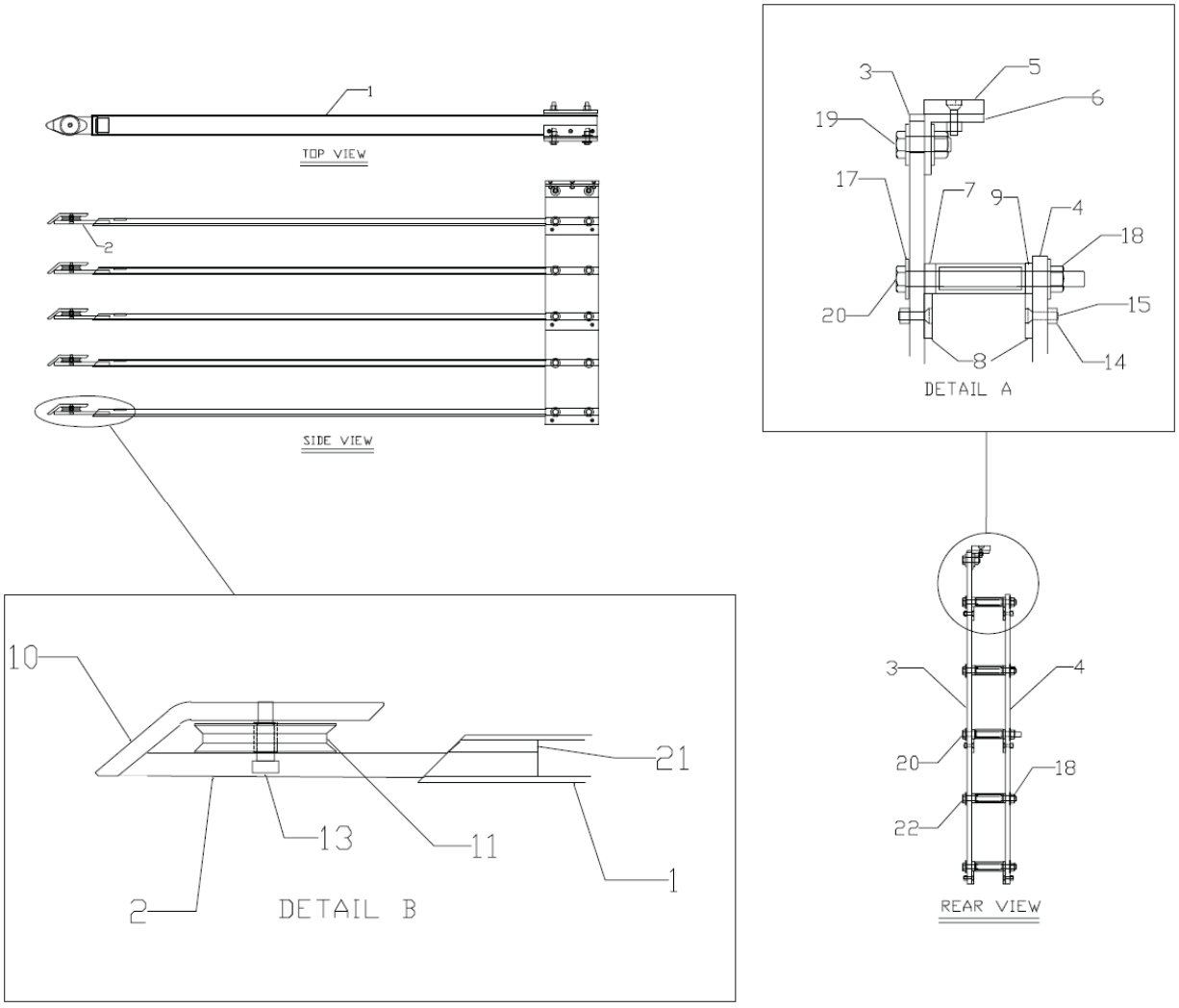
Spare Parts List

Part #	Qty	Description
02-0214	1	VALVE RELIEF 20 GPM CART PILOT OP
02-0700	1	GAUGE PRESSURE 1/4 NPTM 0-5000 W/ORIFICE
02-4330	1	FILTER BREATHER SPIN ON VICKERS V0211B1R03
02-4414	1	FILTER ELEMENT 6 MICRON F/ 02-4324 VICKERS
02-4512	1	COIL F/VICKERS VALVE D03 DIN CONNECTION 115AC
03-0010	1	LIMIT SWITCH ARM WITH ROLLER
03-0012	1	LIMIT SWITCH 5 DEGREE PRE-TRAVEL
03-0433	1	TRANSDUCER 0-4000 PSI 1-11 VDC
03-0476	1	FUSE 3 AMP DUAL 1 1/4 BUSS
03-0735	3	FUSE 2 AMP AGC STYLE
03-0798	1	FUSE 1 AMP AGC STYLE 250 VOLT
03-1179	1	MOTOR 30 HP 1760 RPM 208/230/460 VOLT
03-4152	1	RELAY SAFETY MONITORING 3 OUTPUT
03-4216	1	PHOTO CELL HARSH DUTY RECEIVER 24VDC SM30PRL
99-8222	1	PHOTO CELL HARSH DUTY EMITTER SMA30PEL
03-4229	1	SWITCH INTERLOCK OMRON D4BS-3AFS
03-4189	1	SWITCH PROXIMITY 12MM 10-30VDC SOURCING
03-4252	1	SWITCH PROXIMITY 30MM NO 6-48VDCSOURCING 28MM RANGE
03-4264	1	TRANSDUCER CURRENT 0-10VDC 100,150,200A
03-4313	1	SWITCH PROXIMITY 18MM 10-30VDC SOURCING 8MM RANGE
03-4364	1	LIMIT SWITCH 2 NO 2 NC MAKE IN BOTH DIRECTIONS
03-4392	1	SWITCH PROXIMITY 30MM NC 6-48VDCSOURCING 28MM RG
03-0935	2	KEY
80-0060	2	WIRE FEED TENSION ROLLER
05-4368	2	WIRE FEED GUIDE CERAMIC
05-4468	2	WIRE FEED GUIDE CERAMIC .200 ID
05-3656	5	BALE WIRE 11 GA 100 POUND BOX BLACK ANNEALED NON-OIL
28-8621	1	ROLLER, WIRE INSERTER NEEDLE
28-8362	1	TWISTER HEAD
06-2789	2	WIRE CUTTER
05-4420	2	BOLT FOR WIRE CUTTER 10-32 X 3/4
03-5266	3	SWITCH PROXIMITY

See the following pages for tier components diagrams and parts lists. To order replacement parts please contact your distributor or Marathon Equipment directly at 1-800-633-8974, M-F 8am-4:30pm CST.

Inserter Needle Assembly

Refer to the parts list on the next page.

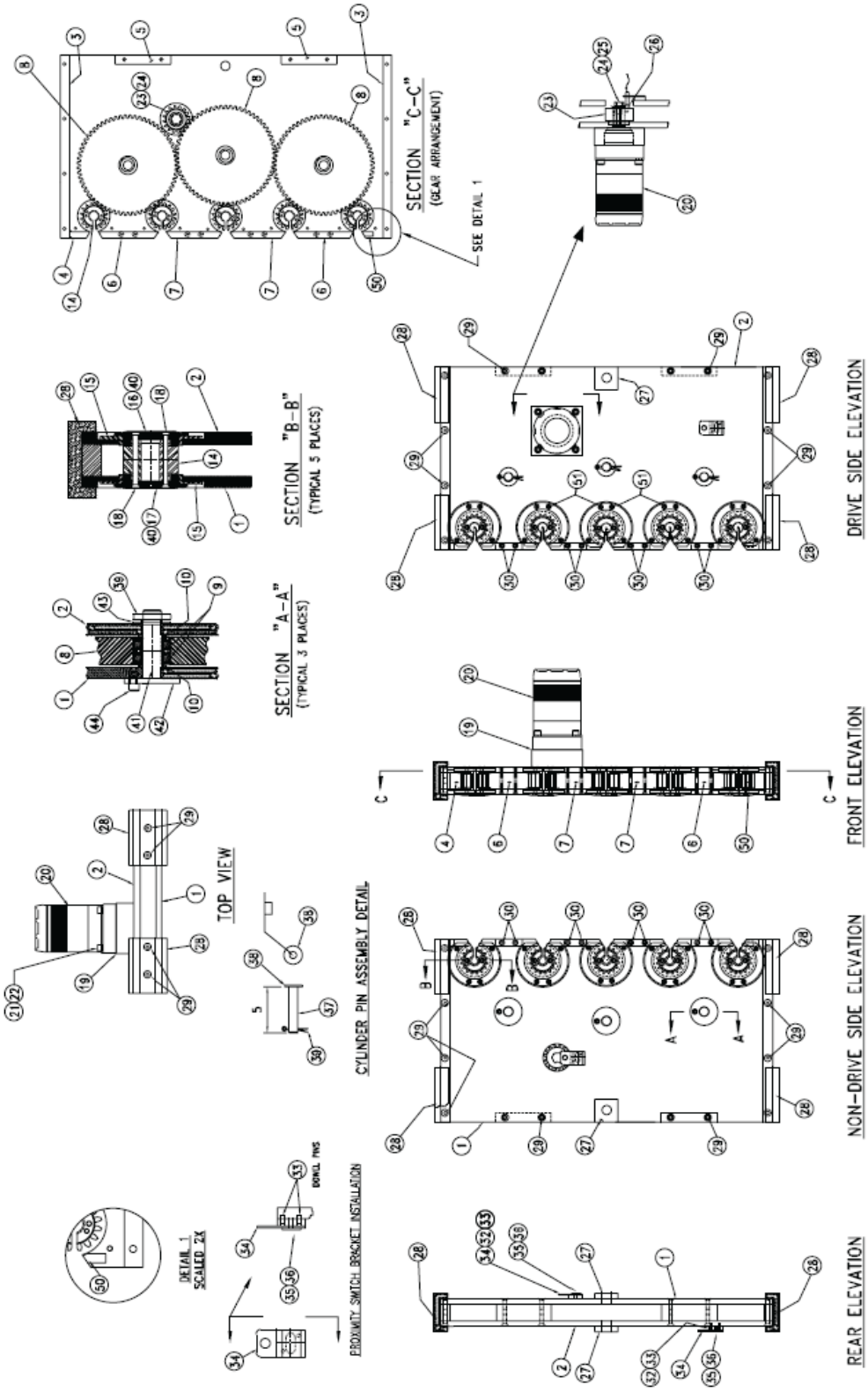


Inserter Needle Assembly - Parts List

Part #	Ref #	Description	Qty
294432	1	3 X 1 X .120 X 75 3/4 TUBING	5
288613	2	1/2 PL X 2 5/8 X 8 1/4	5
288614	3	1/2 X 8 X 36 BAR	1
288615	4	1/2 X 8 X 31 1/4 BAR	1
288617	5	UHMW 1/2 X 2 X 8	1
286008	6	L2 X 2 X 1/4 X 8	1
288616	7	3/8 X 1 X 8 BAR	5
288618	8	UHMW 1/4 X 1 1/2 X 8	10
288619	9	1/4 X 1 X 8 BAR	5
303763	10	3/8 PL X 3 X 6 3/8	5
288621	11	NEEDLE ROLLER 3 DIA X 3/4 WITH	5
800186	13	BOLT SHOULDER 3/8 X 3/4	5
050025	14	NUT 1/4-20NC HEX SELF-LOCKING	15
053222	15	BOLT 1/4 -20 X 1 FSHCS GR 5	12
050052	17	WASHER 1/2 FLAT	24
050018	18	NUT 1/2-13 HEX SELF-LOCKING	12
050319	19	BOLT 1/2- 13 X 1 3/4 HHCS GR 8	2
054358	20	BOLT 1/2- 13 X 6 HHCS GRD 8 (M	2
288622	21	1/4 X 2 X 1 7/8 BAR	5
052193	22	BOLT 1/2- 1 3 X 5 1/2 HHCS GR	8

Twister Head Assembly

Refer to the parts list on the next page.

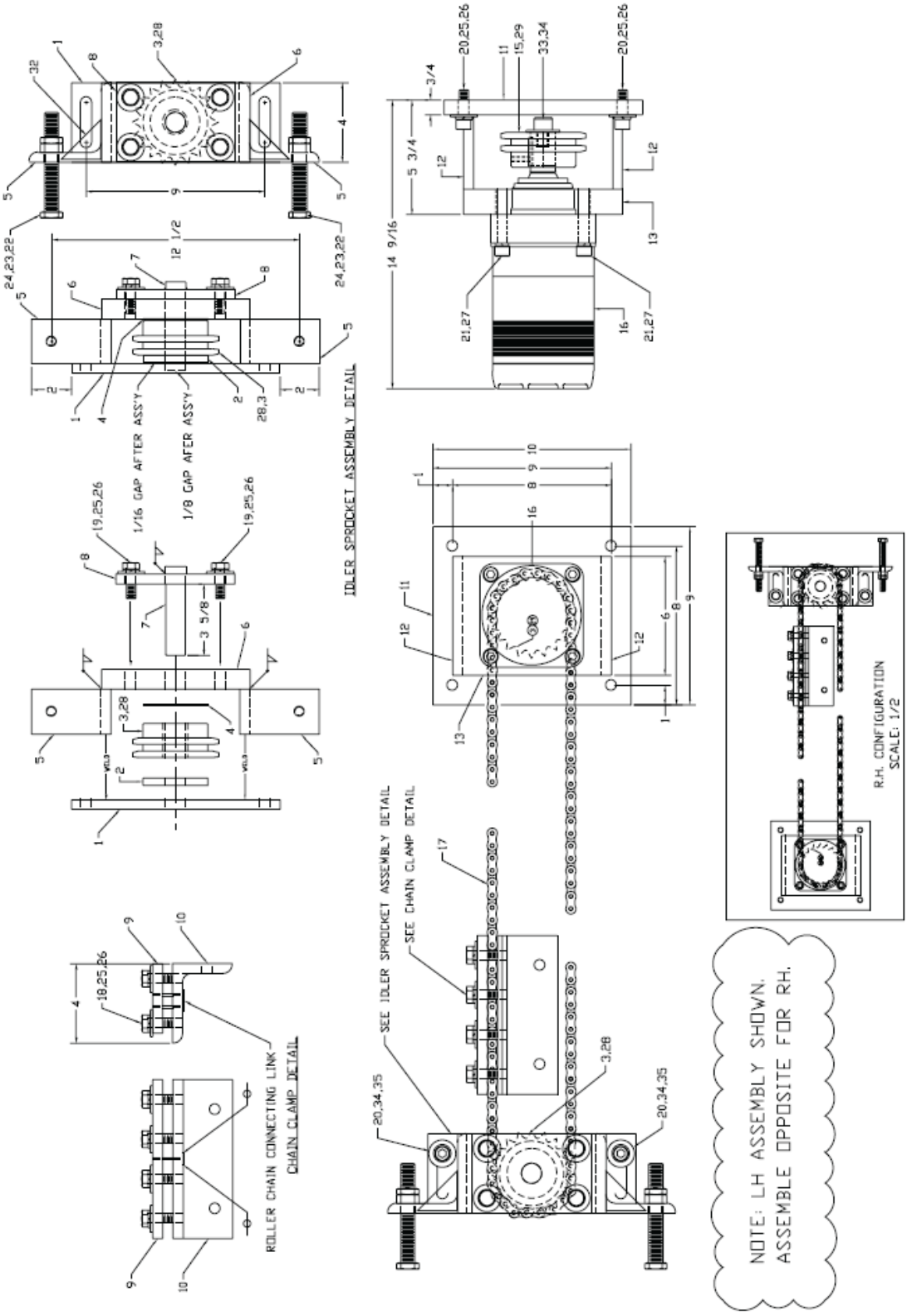


Twister Head Assembly - Parts List

Part #	Ref #	Description	Qty
29-6729	1	5/8 PL X 20 X 36	1
29-6730	2	5/8 PL X 20 X 36	1
30-8748	3	1 X 2 X 20 BAR	2
29-0627	4	3/4 X 2 X 2 1/4 BAR	1
29-7166	5	1 X 2 X 6 BAR	2
29-0629	6	3/4 X 2 X 6 1/2 BAR	2
29-0630	7	3/4 X 2 X 6 BAR	2
05-4350	8	GEAR SPUR 64T 14.5PD 6DP 1 1/2	3
05-4422	9	BEARING:NICE 7516 DLTN FOR 5 T	6
05-4363	10	WASHER THRUST IGLIDE THERMOPLA	6
05-4416	14	GEAR SPUR 16T 2.666PD 6DP 1 1/	5
05-4360	15	BUSHING 660 BRONZE 5 1/2 OD(	10
28-8362	16	TWISTER HEAD, CUT SIDE	5
29-0206	17	TWISTER HEAD, GUIDE SIDE	5
05-4417	18	BOLT 1/4 -28 X 1 FSHCS	20
29-7155	19	2 PL X 5 1/2 X 5 1/2	1
02-4618	20	MOTOR HYDRAULIC PARKER TG0785U	1
05-0339	21	BOLT 1/2- 13 X 3 SHCS GR 5	4
05-0521	22	WASHER 1/2 LOCK GRADE 8 HI-COL	4
05-4544	23	GEAR SPUR 16T 2.666PD 1 1/2 FA	1
05-4559	24	BOLT 5/8-18 X 3/4 SHCS	1
05-4558	26	REST BUTTON 1/2 X 1/2 MMC# 851	1
29-6181	27	5/8 PL X 2 1/2 X 2 1/2	4
06-2904	28	UHMW 1 1/2 X 4 3/16 X 6	4
05-0276	29	BOLT 3/8-16 X 1 1/4 FSHCS	32
05-3222	30	BOLT 1/4 -20 X 1 FSHCS GR 5	16
29-0713	32	3/8 X 1 1/2 X 1 1/2 BAR	2
05-4367	33	DOWEL PIN 3/16 X 1/2	4
29-0714	34	11 GA HI TEN X 1 1/2 X 2 5/8	2
05-3665	35	BOLT 1/4- 20 X 1/2 SHCS	4
29-0715	36	11 GA HI TEN X 1 X 1 1/2 BAR	3
29-6789	37	1 CR X 5 ROD	2
05-0293	38	WASHER 5/8 FLAT	1
05-3538	39	COTTER PIN 3/16 X 2	4
05-4365	40	DOWEL PIN 1/4 X 5/8	20
29-0711	41	1 G&P X 4 ROD	3
29-0712	42	1/4 PL X 3 O.D. X 1 I.D.	3
05-0069	43	WASHER FLAT 1 CAD PLT	3
05-2307	44	BOLT 3/8-16 X 1 SHCS	3
30-8747	50	1/2 X 2 X 1 1/4 BAR	1
05-4366	51	BOLT 1/4 -28 X 1/2 FSHCS	40

Drive Assembly For Twister Head

Refer to the parts list on the next page.

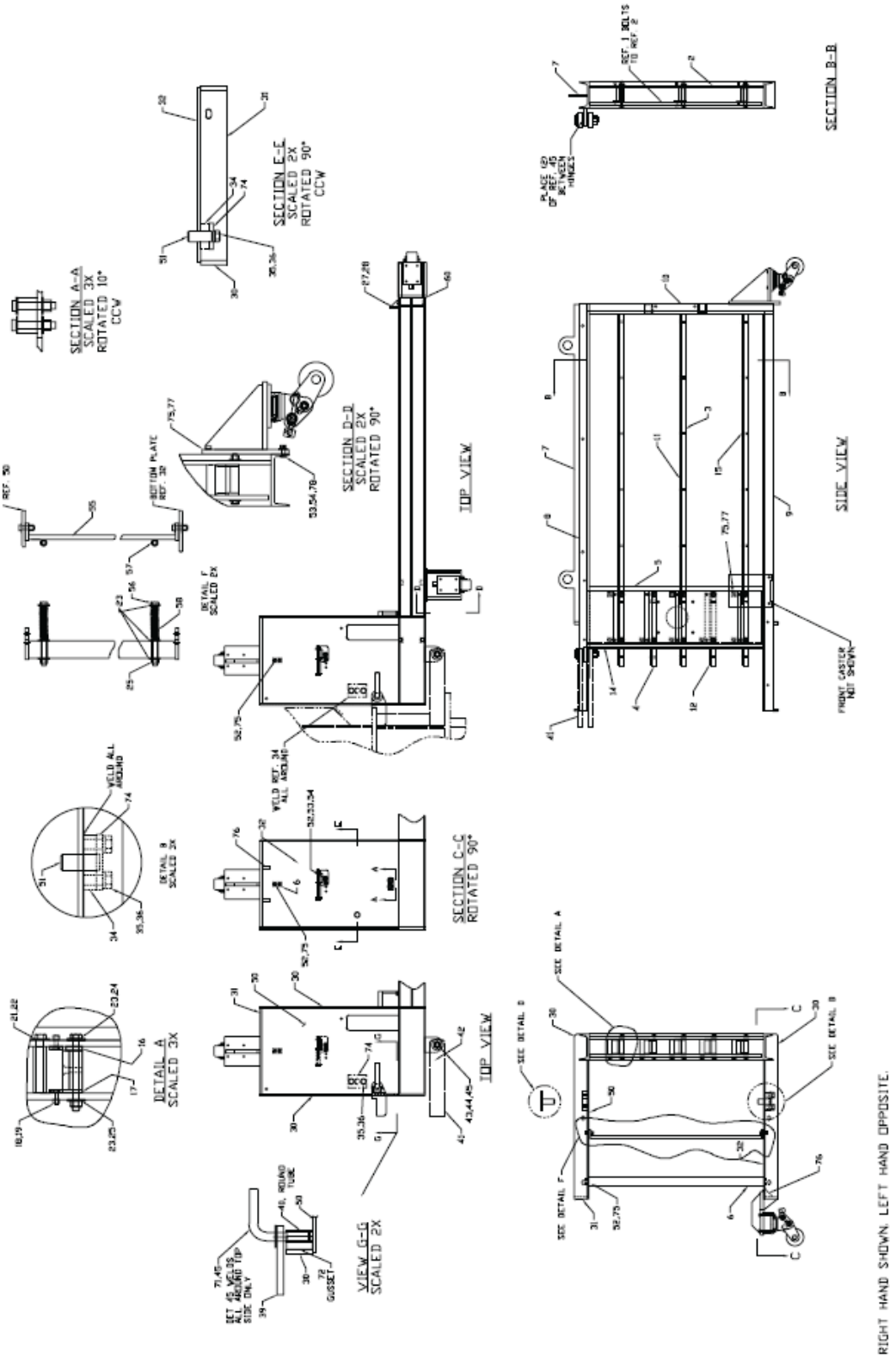


Drive Assembly For Twister Head - Parts List

Part #	Ref #	Description	Qty
800065		BEARING 2 OD X 1 ID PRESS FIT	2
801674		LINK CONNECTING FULL F/ 50-2 C	1
800139	1	1/2 X 4 X 10 1/2 BAR	1
800156	2	UHMW 3 1/4 X 3/8 ROD	1
054549	3	SPROCKET D50BS20HX1 1/4 5/16 K	1
800180	4	UHMW 3 1/4 X 1/16 ROD	1
290023	5	L4 X 4 X 1/2 X 2 1/4	2
800131	6	1 X 4 X 7 1/2 BAR	1
800153	7	1 X 4 1/2 CR ROD SQ CUT	1
800140	8	1/2 X 4 X 6 BAR	1
800142	9	1/2 X 3 1/2 X 8 BAR	1
290390	10	L4 X 3 X 1/2 X 8	1
289020	11	3/4 PL X 9 X 10	1
800141	12	1/2 PL X 3 3/4 X 6	2
297339	13	1 3/8 PL X 6 X 8	1
199219	15	SPROCKET TENSIONER COST MACH F	1
024618	16	MOTOR HYDRAULIC PARKER TG0785U	1
800116	17	CHAIN ROLLER RIVETED	18
050319	18	BOLT 1/2- 13 X 1 3/4 HHCS GR 8	10
052008	19	BOLT 1/2- 13 X 1 1/2 HHCS GRD	4
052452	20	BOLT 1/2- 13 X 1 1/2 HHCS GR 8	4
050339	21	BOLT 1/2- 13 X 3 SHCS GR 5	4
054372	22	BOLT 3/4-10 X 5 HHCS FULL THRE	2
052556	23	NUT 3/4-10 HEX JAM GR5	2
052433	24	NUT 3/4-10 HEX GR 5	2
050052	25	WASHER 1/2 FLAT	16
050064	26	WASHER 1/2 LOCK	16
050521	27	WASHER 1/2 LOCK GRADE 8 HI-COL	4
053668	29	SCREW 1/4-20 X 3/4 SET	1
223475	32	1/4 PL X 2 X 2 (1=2)	2
054559	33	BOLT 5/8-18 X 3/4 SHCS	1
052404	34	NUT 1/2-13 HEX GRADE 5	2
054242	35	WASHER 1/2 BEVEL (MCMASTER#915	2

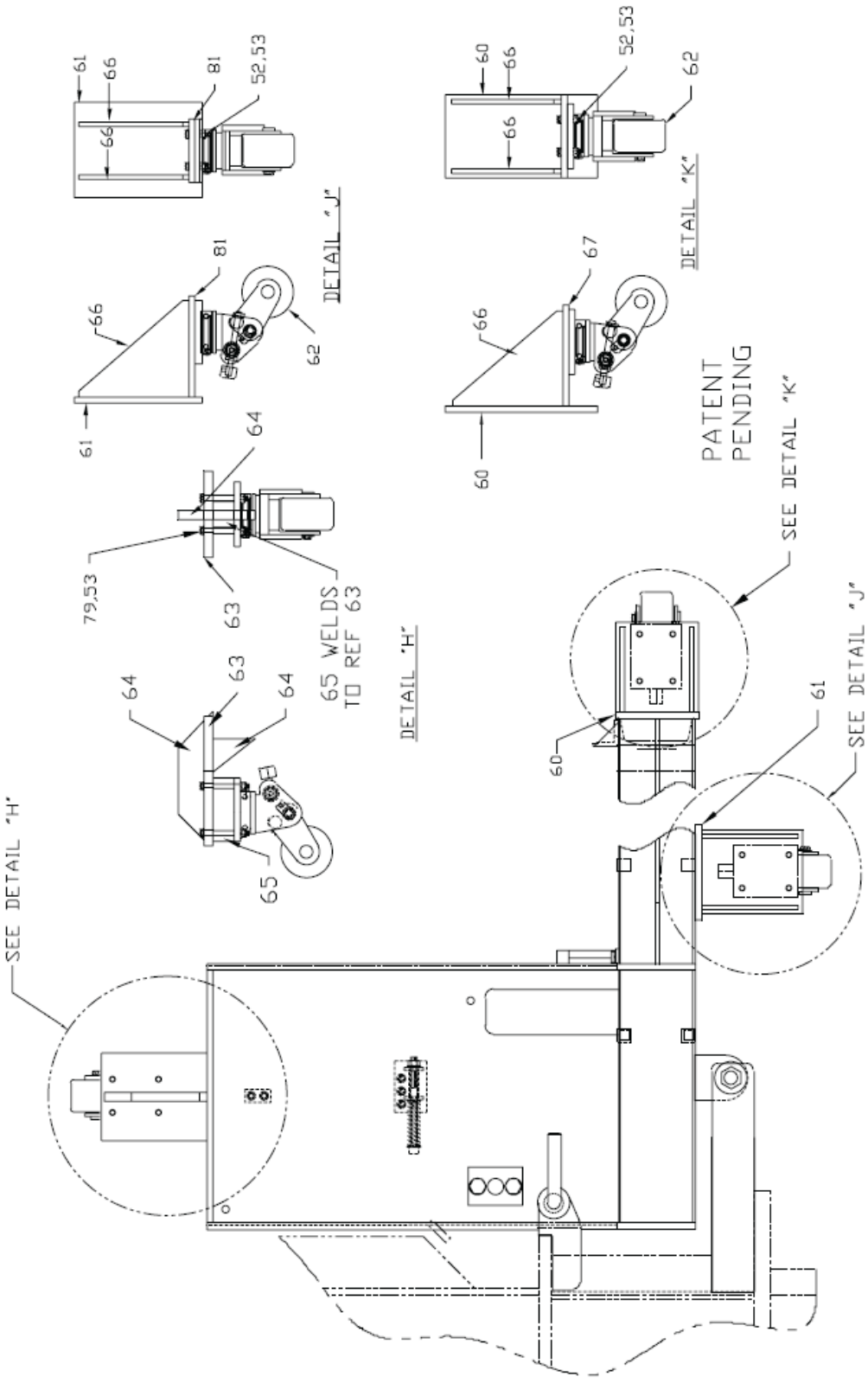
Inserter Frame Assembly

(1 of 2) Refer to the parts list on the next page



Inserter Frame Assembly

(2 of 2) Refer to the parts list on the next page.



Inserter Frame Assembly Parts List

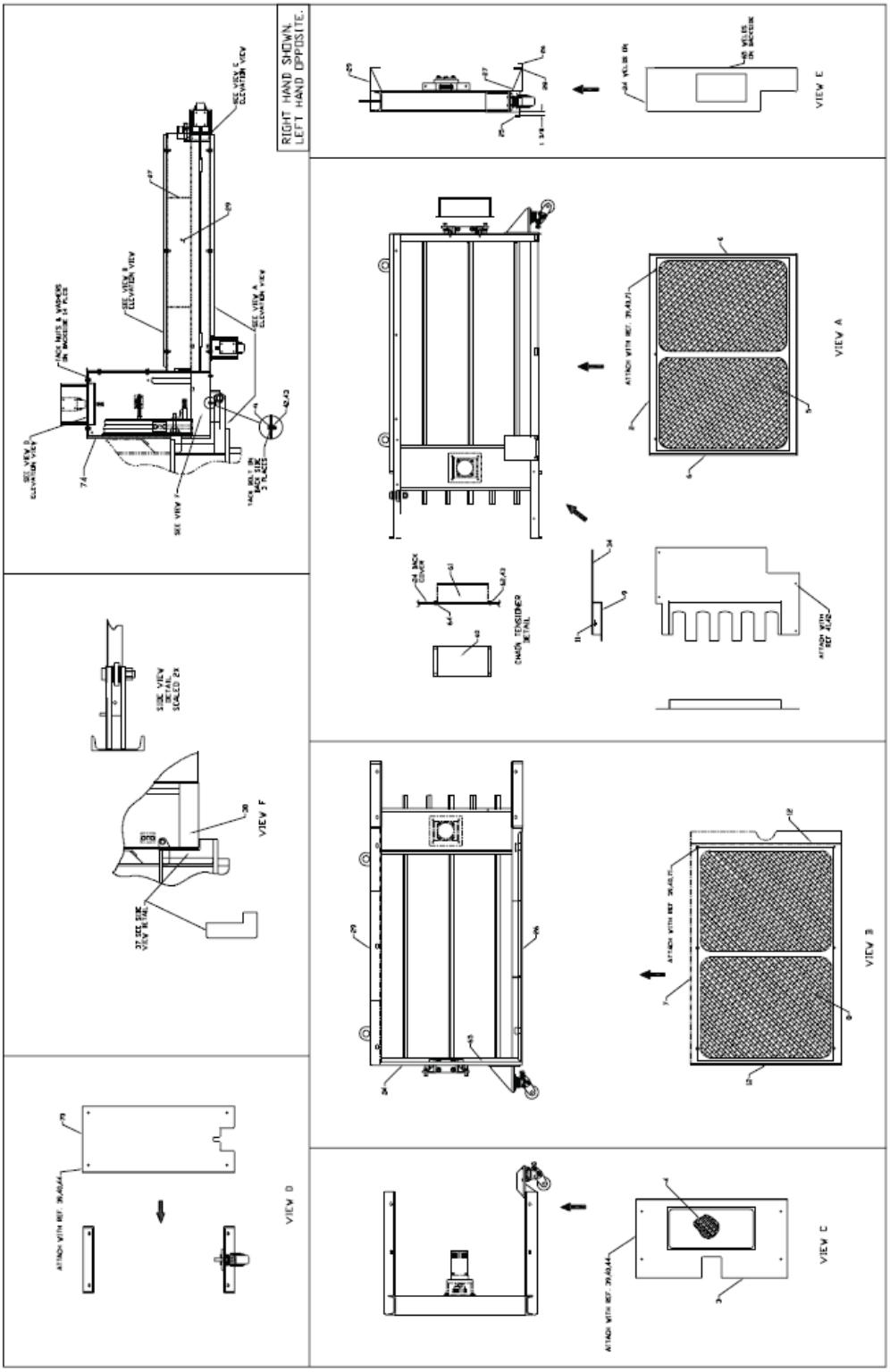
Part #	Ref #	Description	Qty
288767	1	1/2 PL X 12 X 39 3/4	1
288766	2	1/2 PL X 12 X 40 3/16	1
294424	3	1 X 3 X 81 1/4 CR BAR	3
288775	4	1 X 3 X 17 1/4 CR BAR	2
291538	5	1 X 1 X 40 3/16 BAR	2
290428	6	1 X 2 X 40 1/2 BAR	1
294425	7	3/8 PL X 6 3/8 X 73 1/8	1
309053	8	C6 X 13 X 93 3/4	1
309054	9	C6 X 13 X 9 19/16	1
288785	10	C6 X 13 X 42 5/16	1
294489	11	UHMW 1/2 X 3 X 80 3/4	3
288816	12	UHMW 1/2 X 3 X 17	2
288817	13	UHMW 1/4 X 1 X 12	10
288818	14	1 X 1 X .12 X 40 3/16 TUBING S	2
050276	15	BOLT 3/8-16 X 1 1/4 FSHCS	23
286238	16	5/16 X 1 1/4 X 12 BAR	5
286239	17	1/4 X 1 1/2 X 12 BAR	5
053222	18	BOLT 1/4 -20 X 1 FSHCS GR 5	20
050025	19	NUT 1/4-20NC HEX SELF-LOCKING	20
288823	20	1 X 1 X 3 9/16 CR BAR	8
050317	21	BOLT 1/2-13 X 1 1/2 HHCS GR 8	8
050064	22	WASHER 1/2 LOCK	8
050052	23	WASHER 1/2 FLAT	30
052193	24	BOLT 1/2- 1 3 X 5 1/2 HHCS GR	10
050018	25	NUT 1/2-13 HEX SELF-LOCKING	24
286230	27	L2 X 2 X 1/4 X 1 1/2 SQ CUT	2
271794	28	1/4 PL X 1 7/8 X 1 7/8 (1=2)	4
291543	30	1/2 PL X 3 X 38	4
297506	31	1/2 PL X 3 X 19 1/2	2
311787	32	3/8 PL X 20 1/16 X 32	1
290447	34	1 X 3 X 4 1/4 BAR	2
053163	35	BOLT 3/4-10 X 1 1/2 HHCS GR 8	4
050226	36	WASHER 3/4 LOCK	4
297434	39	3/4 PL X 3 1/4 X 7 15/16	1
294496	40	1 1/2 OD X .234 X 3 CDSM SQ CU	1
309042	41	1 PL X 3 1/4 X 17 15/16	2

Inserter Frame Assembly Parts List (Continued)

Part #	Ref #	Description	Qty
288849	42	3/4 PL X 3 1/2 X 4 1/8	1
050546	43	BOLT 1-8 X 5 HHCS GR8	1
050533	44	NUT 1-8 HEX SELF-LOCKING	1
050069	45	WASHER FLAT 1 CAD PLT	5
288863	46	1 1/4 X 1 1/2 X 2 3/4 BAR	1
050501	47	BOLT 1/2- 13 X 3 1/2 SQHCS	2
294429	49	3/8 PL X 2 X 3 5/8	2
311788	50	3/8 PL X 20 1/16 X 32	1
290435	51	1 1/4 X 3 CR ROD	2
052476	52	BOLT 3/8-16 X 1 1/2 HHCS GR 5	16
050015	53	NUT 3/8-16 HEX SELF LOCKING	16
050016	54	WASHER 3/8 FLAT	14
290436	55	1/2 X 2 X 39 3/8 BAR SQ CUT	1
054529	56	BOLT 1/2-13 X 7 ALLEN HEAD (MC	2
226878	57	3/4 OD X .125 X 2 CDSM SQ CUT	2
054530	58	SPRING COMPRESSION .938 OD-.14	2
310730	60	1/2 PL X 6 1/2 X 11 3/4 SQ CUT	1
309040	61	1/2 PL X 7 3/8 X 9 3/4	1
062926	62	CASTER SWIVEL ADJ HEIGHT 850#	3
316271	63	3/4 PL X 6 3/4 X 10	1
316272	64	3/4 PL X 6 X 10	1
316273	65	2 PL X 1 5/8 X 5 SQ CUT	1
310732	66	3/8 PL X 6 9/16 X 7 7/16	4
297405	67	1/2 PL X 6 5/8 X 7 13/16	1
294431	71	1 X 11 ROD	1
294497	72	1/4 X 1 1/2 X 3 BAR SQ CUT	2
290438	74	1/2 X 3 X 4 1/4 BAR	2
050159	75	WASHER 3/8 LOCK	7
290439	76	1/2 PL X 1 13/16 X 1 13/16 GUS	2
053737	77	BOLT 3/8-16 X 1 1/4 HHCS GR 8	2
052850	78	BOLT 3/8-16 X 1 1/2 FSHCS	2
053192	79	BOLT 3/8-16 X 3 1/2 SHCS GR 88	4
310731	81	1/2 PL X 5 X 7 13/16	1

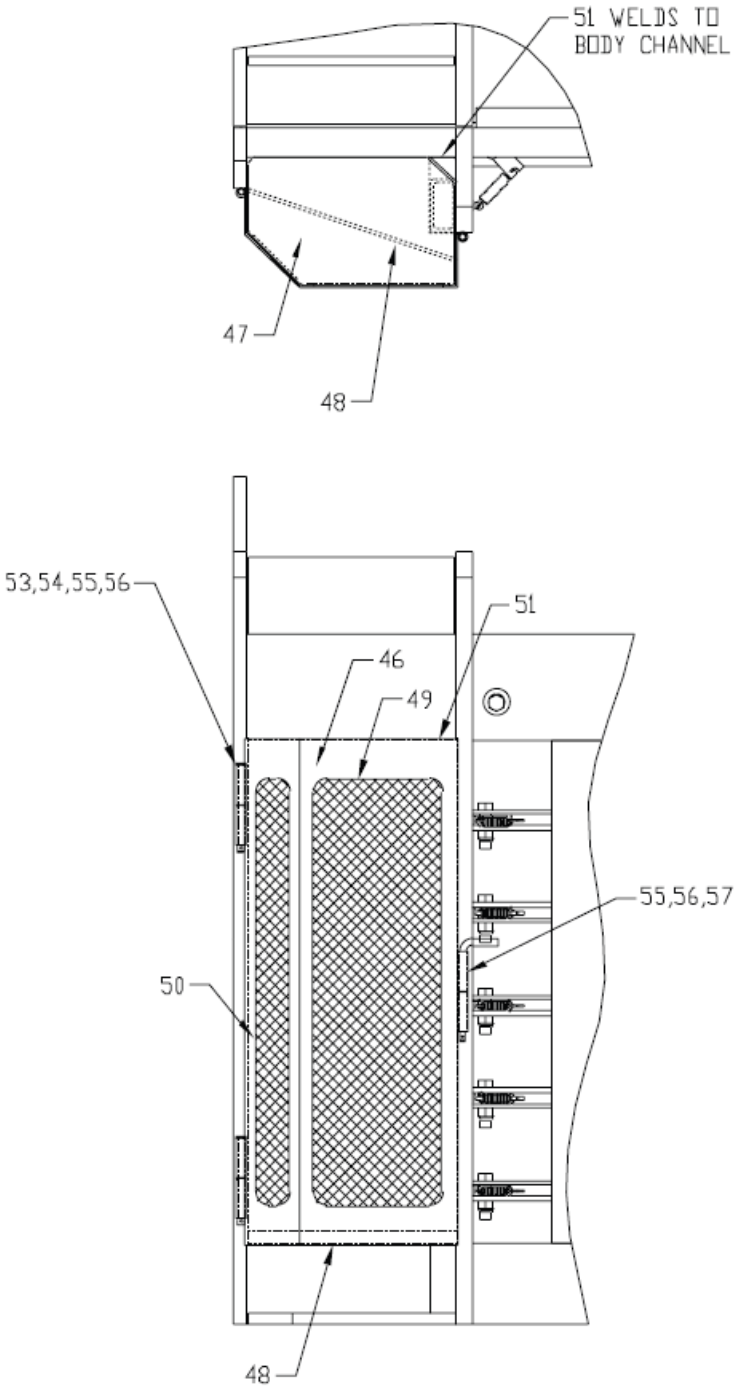
Inserter/Twister Covers

(1 of 2) Refer to the parts list on the next page.



Inserter/Twister Covers

(2 of 2) Refer to the parts list on the next page.



LEFT HAND SHOWN.
RIGHT HAND OPPOSITE.

Inserter/Twister Covers Parts List

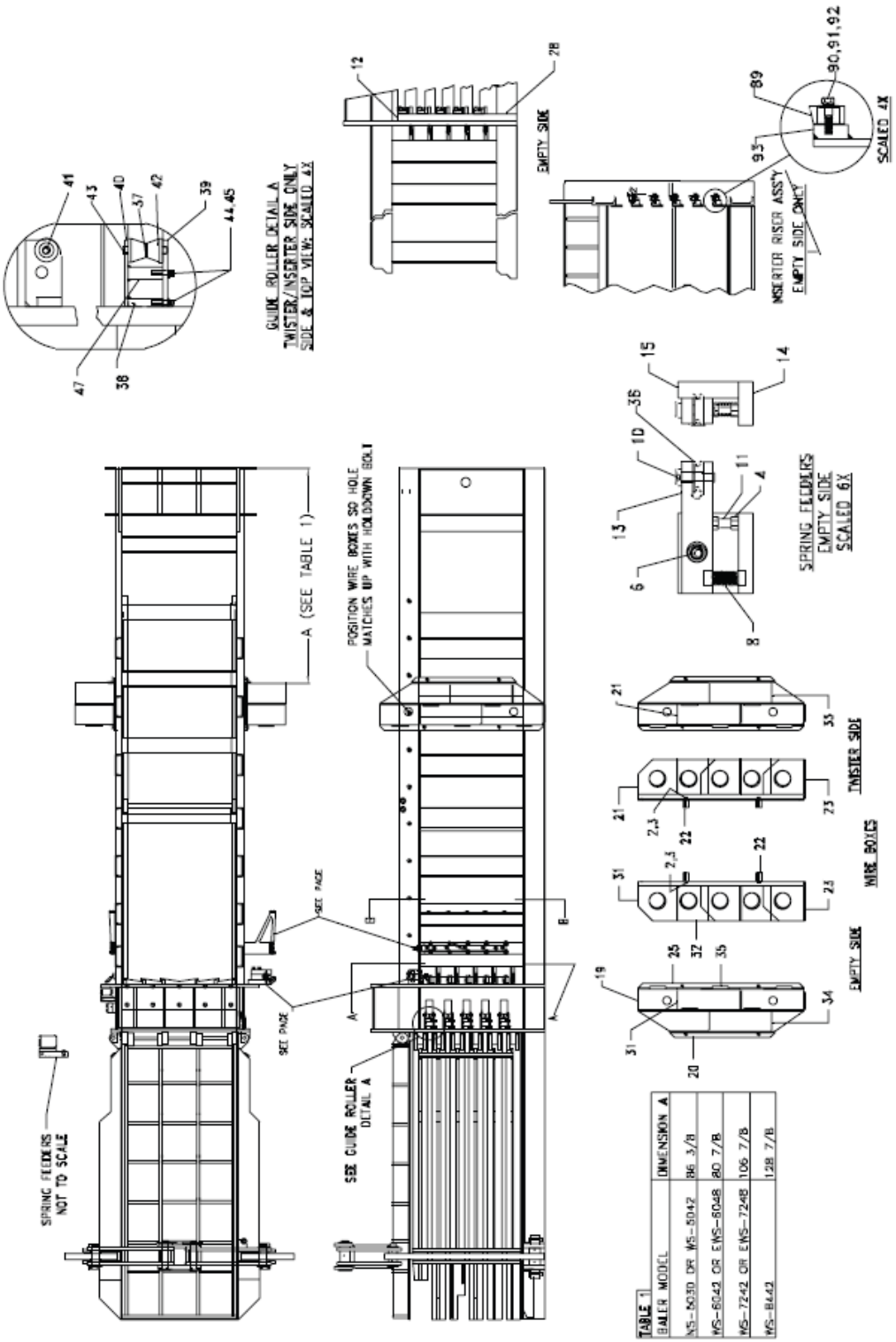
Part #	Ref #	Description	Qty
308941	2	11 GA HI TEN X 47 7/16 X 62 1/	1
297496	3	11 GA HI TEN X 26 1/4 X 52	1
294522	4	1/2-#13 EXP MTL X 13 X 28	1
308944	5	1/2-#13 FLT EXP MTL X 40 15/16	1
295023	6	1/4 X 1 X 45 3/8 BAR SQ CUT	4
295024	7	11 GA HI TEN X 48 1/4 X 71 15/	1
295025	8	1/2-#13 EXP MTL X 41 3/4 X 65	1
308942	9	11 GA HI TEN X 14 5/8 X 34 1/2	1
308943	11	11 GA HI TEN X 2 3/4 X 9 7/8	2
141284	12	1/4 X 1 X 46 1/4 BAR SQ CUT	2
294523	24	11 GA HI TEN X 13 3/8 X 46 5/8	1
291622	25	1/4 X 2 X 3 5/8 BAR	3
294524	26	11 GA HI TEN X 12 1/2 X 73 1/8	1
294525	27	11 GA HI TEN X 3 1/16 X 6 7/8	4
241012	28	1/4 X 2 X 2 BAR SQ CUT	2
294526	29	7 GA X 16 7/8 X 73 1/8	1
308940	34	11 GA HI TEN X 26 7/8 X 44 1/2	1
290565	37	11 GA HI TEN X 7 7/8 X 15 9/16	1
291627	38	11 GA HI TEN X 5 3/4 X 19 7/16	1
052008	39	BOLT 1/2- 13 X 1 1/2 HHCS GRD	14
052404	40	NUT 1/2-13 HEX GRADE 5	14
052850	41	BOLT 3/8-16 X 1 1/2 FSHCS	4
052016	42	NUT 3/8-16 HEX	4
050159	43	WASHER 3/8 LOCK	4
050052	44	WASHER 1/2 FLAT	11
289811	46	11 GA HI TEN X 24 9/16 X 38 1/	1
291477	47	11 GA HI TEN X 9 5/8 X 15 5/8	1
233913	48	1/4 X 1 X 16 1/2 BAR SQ CUT	1
289814	49	1/2-#13 FLT EXP MTL X 10 3/4 X	1
289815	50	1/2-#13 FLT EXP MTL X 4 5/8 X	1
291478	51	11 GA HI TEN X 1 7/8 X 1 7/8	1
289818	53	11 GA HI TEN X 3/4 DIA	2
289819	54	1/2 X 6 9/16 CR ROD	2
288020	55	3/4 OD X .125 X 3 CDSM SQ CUT	6
050565	56	PIN COTTER 1/8 X 3/4	3
289820	57	7/16 X 10 3/16 HR ROD	1

Inserter/Twister Covers Parts List (Continued)

Part #	Ref #	Description	Qty
291303	60	11 GA HI TEN X 9 1/2 X 28 7/8	1
291304	61	11 GA HI TEN X 5 11/16 X 15 7/	2
050155	62	BOLT 3/8-16 X 3/4 HHCS	4
050030	64	NUT 3/8-16 NC WELD	4
278718	65	1/4 X 1 X 43 1/2 BAR SQ CUT	1
310596	70	11 GA HI TEN X 22 5/16 X 46 15	1
054242	71	WASHER 1/2 BEVEL (MCMASTER#915	3

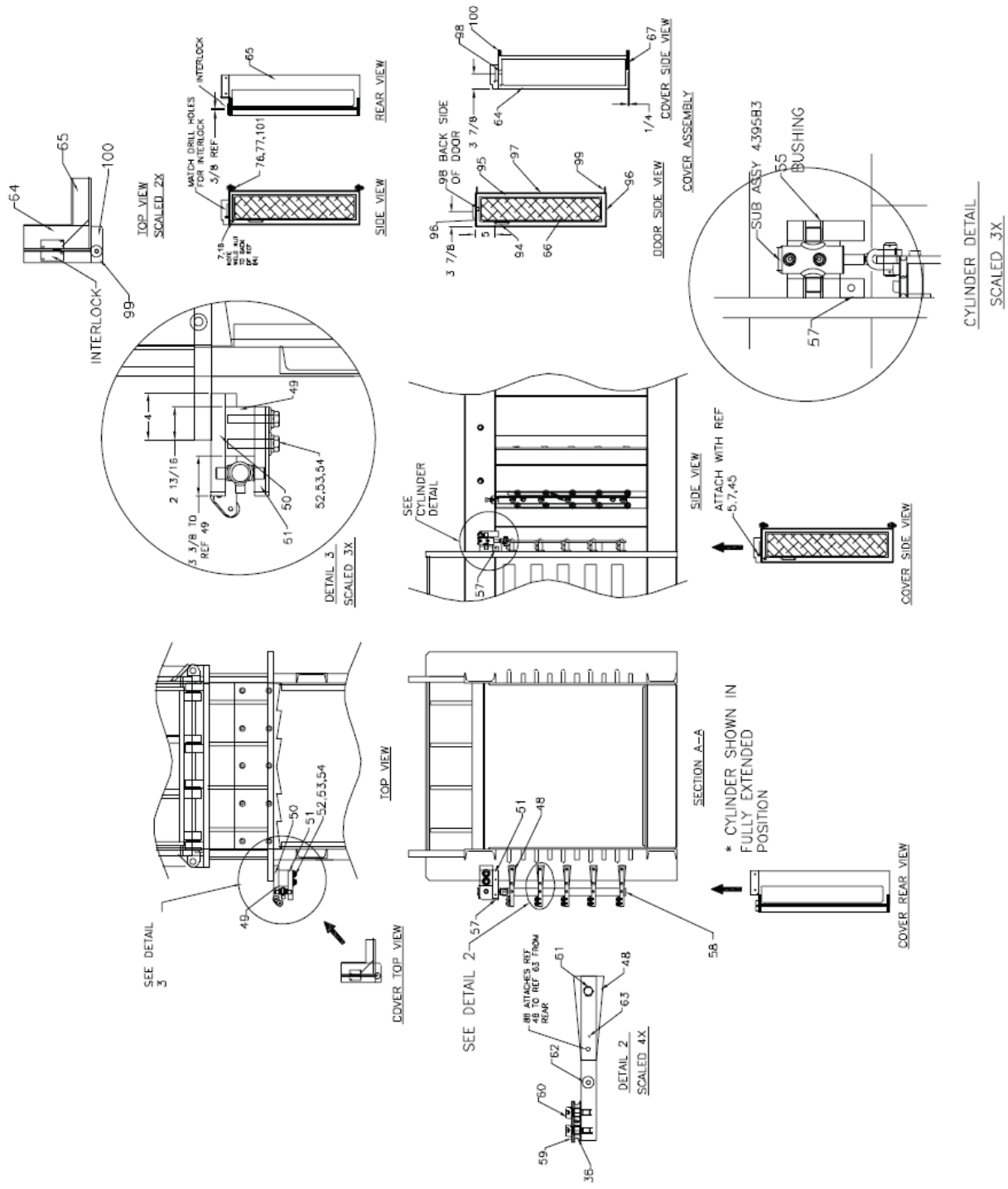
Wire Feed Components

Refer to the **"Wire Feed, Guides, & Tensioner Parts List" on page 2-40.**



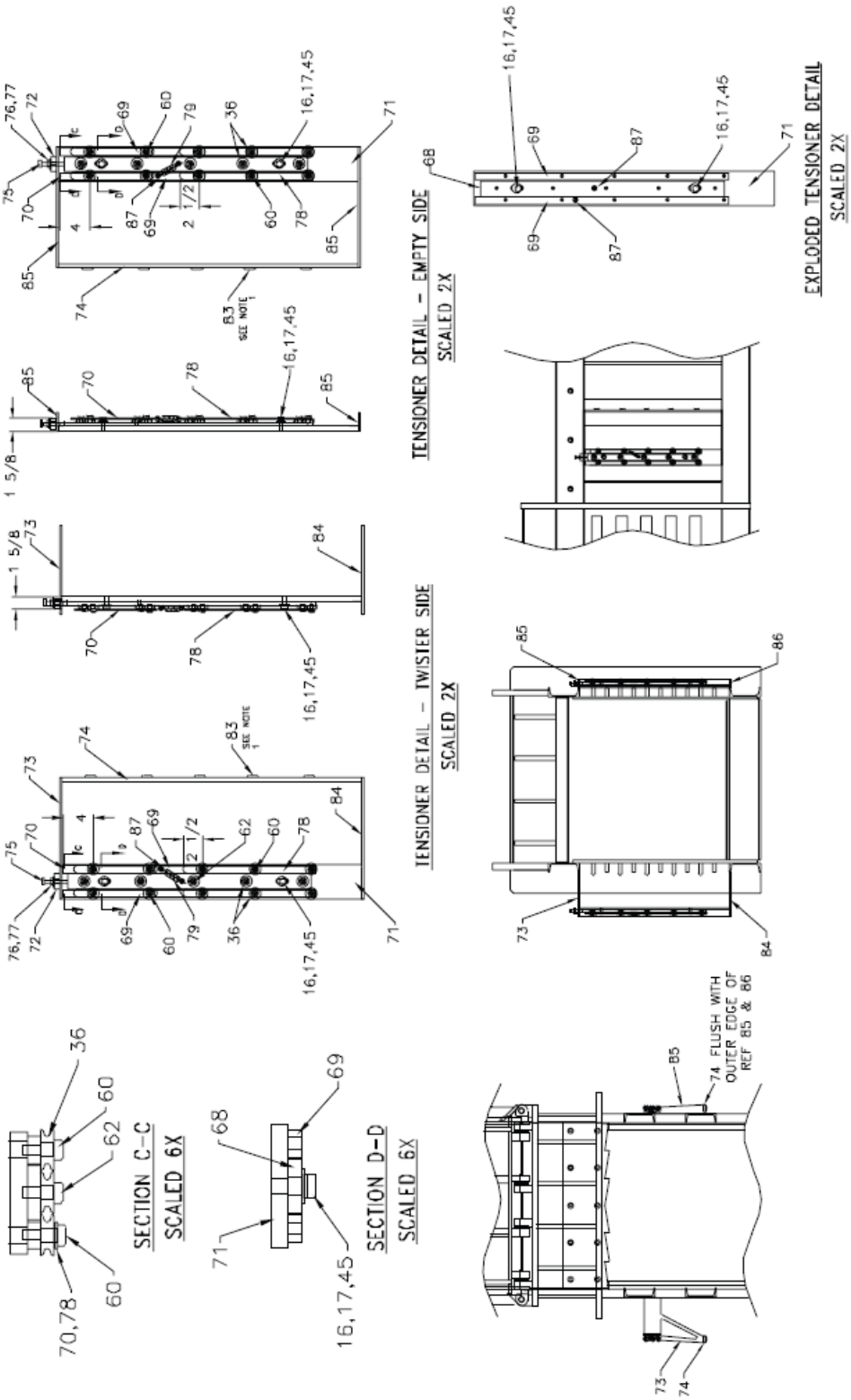
Hydraulic Wire Guides - Twister Side

Refer to the **“Wire Feed, Guides, & Tensioner Parts List” on page 2-40.**



Wire Tensioner Components

Refer to the parts list on the next page.



Wire Feed, Guides, & Tensioner Parts List

Part #	Ref #	Description	Qty
439583		CYL WIRE FEED ARMS	1
050064	2	WASHER 1/2 LOCK	8
050082	3	BOLT 1/2-13 X 2 HHCS	8
054677	4	NUT 3/8-16 UNC HEX SERR FLNG	5
052231	5	BOLT 3/8-16 X 1 HHCS GR5	4
054766	6	BOLT SHOULDER 1/2-13 X 5/8 X 1	5
052016	7	NUT 3/8-16 HEX	4
054332	8	SPRING .08 WIRE X 3/4 OD X 2	5
054392	10	BOLT SHOULDER 1/2 X 1 W/3/8-16	5
054393	11	BOLT 3/8-16 X 1 3/4 FULL THR	5
264902	12	11 GA HI TEN X 2 3/4 X 3 3/4 S	1
308972	13	1 1/2 X 1 1/4 X 6 1/2 BAR	5
285325	14	3/4 PL X 2 1/8 X 4	5
285326	15	3/4 X 4 X 3 BAR	5
052476	16	BOLT 3/8-16 X 1 1/2 HHCS GR 5	5
050016	17	WASHER 3/8 FLAT	4
298458	19	1/4 PL X 15 3/4 X 61 1/2	2
292367	20	L2 X 2 X 1/4 X 39 1/16	2
298454	21	7 GA X 14 1/2 X 22 1/4	3
292368	22	2 X 2 X 2 7/8 BAR	8
286966	23	1/2 PL X 6 5/8 X 14 1/2 SQ C	2
292369	25	L2 X 2 X 1/4 X 61 1/2	2
292371	28	4 X 3 X 1/4 X 44 3/4 TUBING SQ	1
298455	31	7 GA X 14 1/2 X 22 1/4	3
292374	32	7 GA X 14 1/2 X 61 1/2	2
298456	33	7 GA X 14 1/2 X 22 1/4	2
298457	34	7 GA X 14 1/2 X 22 1/4	2
290022	35	6 OD X 5.5 ID X 1	10
800060	36	SHEAVE 1 1/2 X 7/16 X 1/2 MC#3	45
063364	37	PIN SPRING 1/8 DIA X 1 1/4 MC#	5
300033	38	3/4 X 2 X 2 15/16 BAR	5
294487	39	3/8 PL X 3 1/8 X 5 3/4	5
294488	40	3/8 PL X 3 1/8 X 5 3/4	5
054464	41	BUSHING BRONZE 5/8 OD X 1/2	10
294181	42	2 X 2 15/16 1045 CR ROD	5
315456	43	7/16 X 3 15/16 CR ROD	5

Wire Feed, Guides, & Tensioner Parts List (Continued)

Part #	Ref #	Description	Qty
054134	44	BOLT 3/8-16 X 1 1/4 SHCS	10
050159	45	WASHER 3/8 LOCK	18
054468	46	CERAMIC INSERT .200 ID F/AUTO	5
300034	47	1 X 2 15/16 CR ROD	5
063177	48	NYLATRON GSM 1/4 X 2 X 5 1/2	5
308915	49	2 1/2 PL X 3 1/2 X 4 1/4	1
308916	50	1 1/4 PL X 3 1/2 X 8 13/16	1
313413	51	1 1/4 PL X 5 X 7 5/8	1
050049	52	WASHER 3/4 FLAT	2
050226	53	WASHER 3/4 LOCK	2
054863	54	BOLT 3/4-10 X 4 HHCS GR 8 FULL	2
054782	55	BUSHING BRONZE 1 ID X 1 1/4 OD	2
308983	57	1/4 PL X 1 1/4 X 1 1/2	1
304312	58	1/2 PL X 2 X 32	1
303726	59	11 GA X 1 1/2 X 3	5
054326	60	BOLT SHOULDER 1/2x5/8 SOC	20
054704	61	BOLT SHOULDER 1/2 X 2 1/4 MC#	5
054706	62	BOLT SHOULDER 1/2 X 1/2 MC#912	15
304311	63	1 PL X 2 X 10 5/8	5
313414	64	7 GA X 8 9/16 X 38 13/16	1
313415	65	7 GA X 8 15/16 X 38 1/4	1
313206	66	1/2-#13 EXP MTL X 6 1/2 31 3/4	1
221966	67	7 GA X 3 X 3 (1=2)	1
309139	68	1/2 X 2 X 31 3/4 BAR	2
309140	69	1/2 X 1 X 32 15/16 BAR	4
306520	70	11 GA X 1 X 10 7/8	4
309141	71	5/8 PL X 4 1/2 X 39 1/8	2
306522	72	3/4 PL X 1 1/4 X 2	2
309142	73	1/4 PL X 11 3/4 X 16 1/16	1
309147	74	1/2 X 2 X 39 1/8 BAR	2
054737	75	BOLT 1/2-13 X 3 HHCS FULL THRD	2
050052	76	WASHER 1/2 FLAT	6
050327	77	NUT 1/2-13 HEX SELF-LOCKING	4
306525	78	11 GA X 1 X 17 1/4	4
054736	79	SPRING, EXTENSION, 3/4 OD X .0	2
054368	83	CERAMIC INSERT F/AUTO TIE	10

Wire Feed, Guides, & Tensioner Parts List (Continued)

Part #	Ref #	Description	Qty
309145	84	1/4 PL X 11 13/16 X 16 1/16	1
306528	85	1/4 PL X 2 3/8 X 16 1/16	1
309150	86	1/4 PL X 2 3/8 X 16 1/16	1
054144	87	WELD-ON PAD EYE	4
054679	88	BOLT 1/4-20 X 1 1/2 FSHCS	5
062970	89	NYLATRON GSM 1 1/2 X 3 X 4	5
050547	90	BOLT 5/8-11 X 2 3/4 HHCS GR 8	10
050293	91	WASHER 5/8 FLAT	10
050561	92	WASHER 5/8 LOCK	10
299399	93	1 1/4 X 3 X 4 BAR	5
313294	94	3/8 X 9 CR ROD	1
313199	95	11 GA HI TEN X 8 3/4 X 34	1
313200	96	1/4 X 1 1/2 X 8 3/4 BAR SQ CUT	2
313201	97	1/4 X 1 1/2 X 33 1/2 BAR SQ CU	2
313202	98	11 GA HI TEN X 1 X 1 SQ CUT	1
313203	99	1/4 PL X 1 1/2 X 2 1/4	2
313204	100	1/4 PL X 1 1/2 X 4	4
050319	101	BOLT 1/2- 13 X 1 3/4 HHCS GR 8	2

Troubleshooting

This section is designed to assist in the diagnostics and resolution of common system faults. It is neither expressed nor implied that this list is comprehensive in nature. Effective troubleshooting involves a thorough understanding of the machine, all components, and system processes, including electrical, mechanical, and hydraulic operations. Only factory authorized and trained personnel should be allowed to perform maintenance on this machine. If the following troubleshooting methods fail to correct the problem, then contact the service department at 1-800-633-8974.

Warning: Do not perform any inspection, maintenance, adjustment, or repair without first locking-out and tagging-out the compactor per **"Lock-Out & Tag-Out Instructions" on page 2-2.**

Troubleshooting methodology should go as follows:

1) Identify the problem.

2) Identify the faulty operation.

3) Compile a list of components involved in the operation.

4) Identify the power source for each component.

5) Through deduction, identify the problematic component.

6) Test each applicable component.

Troubleshooting - Power Unit

Only thoroughly trained and experienced service personnel should perform troubleshooting and maintenance to this baler. Do not enter baler for any reason until baler has been locked-out and tagged-out per **"Lock-Out & Tag-Out Instructions" on page 2-2.**

Problem	Possible Cause	Solution
MAIN MOTOR WILL NOT START OR RUN	1) No incoming power.	1) Check main disconnect switch.
	2) No control circuit power.	2) Check primary/secondary fuses in motor control panel.
	3) Safety interlock switch.	3) Check for open hopper door.
	4) Emergency stop button depressed.	4) Check E-Stop buttons.
	5) Motor overload tripped.	5) Reset overload on motor starter. Check current load (AMPS).
	6) Electrical system malfunction.	6) Check electrical system.
	7) Programmable controller fault.	7) Check fault lights on P.C. Make sure PLC is in RUN mode.

Troubleshooting - Power Unit (Continued)

Problem	Possible Cause	Solution
PUMP NOISE	1) Oil level low. 2) Air leakage in suction line. 3) Worn pump.	1) Check oil level in tank. Add if necessary. 2) Check suction line for leaks. Check pump shaft seal. 3) Repair or replace hydraulic pump.
MAXIMUM HYDRAULIC PRESSURE NOT OBTAINABLE	1) Pressure relief set too low. 2) Cylinder bypass. 3) Worn pump. 4) Check valve on unloading valve. 5) Machine not shifting out of regen.	1) Check relief valve pressure setting. 2) Check for internal cylinder leak. 3) Repair or replace hydraulic pump. 4) Repair or replace. 5) Cylinder rod relief set too low. Pressure switch or transducer malfunction.
COMPRESSION RAM WON'T MOVE FORWARD	1) Photocell malfunction.	1) Replace photocell.
COMPRESSION RAM WILL NOT RETRACT (AUTO/MANUAL)	1) Foreign material jamming ram. 2) Compression cylinder rod puppet malfunction. 3) Compression cylinder rod end pressure puppet not opening. 4) Compression cylinder rod relief pressure set too low	1) Check for foreign material wedging between ram and shear bar. 2) Check solenoid valve. Check for plugged orifice. 3) Check solenoid valve. Make sure valve spool is shifting. 4) Reset pressure to correct setting.
COOLER/FILTER PUMP WILL NOT START/RUN	1) Motor overload tripped. 2) Cooler/filter pump fuses. 3) Electrical circuit malfunction.	1) Reset overload on motor starter. Check current load (AMPS). 2) Replace blown fuses. 3) Perform electrical system check.

Troubleshooting - Wire-Tier

Do not enter baler for any reason until baler has been locked-out and tagged-out per **"Lock-Out & Tag-Out Instructions" on page 2-2.**

Problem	Possible Cause	Solution
INSERTER NEEDLES NOT CAPTURING WIRE.	1) Wire is too low to pass over the needle head.	1) Adjust the Spring Feeder by loosening the Jam Nut, then loosening the Adjustment Bolt to raise the Spring Feeder to the proper height. Retighten Jam Nut. (see page **1-47**)
	2) Wire is too high to be captured against the needle head roller.	2) Adjust the Spring Feeder by loosening the Jam Nut, then tightening the Adjustment Bolt to lower the Spring Feeder. Retighten the Jam Nut. (see page **1-47**)
BALE WIRE BREAKING OR NOT BEING PULLED ACROSS THE BALER.	1) Too much tension on the wire.	1) Adjust the Wire-Tensioner by loosening the Jam Nut, then loosening the Adjustment Bolt to raise the center roller of the Wire Tensioner. Retighten Jam Nut. (see page **1-47**)
BALE WIRE IS SLACK AND/OR BALE DENSITY IS COMPROMISED.	1) Not enough tension on the wire.	1) Adjust the Wire-Tensioner by loosening the Jam Nut, then tightening the Adjustment Bolt to lower the center roller of the Wire-Tensioner. Retighten Jam Nut. (see page **1-47**)

Note: In all events, check output fuses.

Troubleshooting - Baler

Do not enter baler for any reason until baler has been locked-out and tagged-out per **"Lock-Out & Tag-Out Instructions" on page 2-2.**

Problem	Possible Cause	Solution
Material is getting behind the main ram.	Wiper strip is not making contact with the main ram.	Loosen the wiper strip bolts (behind the feed hopper) and lower wiper strip until it just makes contact with the top of the main ram. Tighten bolts.

3 - INSTALLATION

General Requirements

Caution:

Review this manual before beginning installation. Study job site and installation requirements carefully to be certain all necessary safeguards and/or safety devices are provided to protect all personnel and equipment during installation and as a completed system. Special attention is directed to the extract from most current version of the American National Standards Institute Z245.5.

Operating instructions in Section one of this manual are not intended as a substitute for training and experience in proper use and safety procedures in operating this equipment.

This baler is designed for indoor use ONLY.

Marathon does not assume responsibility for installation procedures of this equipment. Conformance to applicable local, state, and federal laws concerning installation rests with customer.

This section of manual covers assembly and installation of your Auto-Tie baler. The following pages cover general installation, electrical installation and start-up instructions.

Concrete Pad or Floor

The pad or floor should be a minimum 3000 psi concrete, steel reinforced, 6" thick. It is recommended that pad or floor be flush with surrounding area.

Working clearance for the panel box must comply with state and local building codes. Allow enough space in front of bale exit for bale handling vehicle. Also, allow enough space for installation and safe operation of auto-tie mechanism.

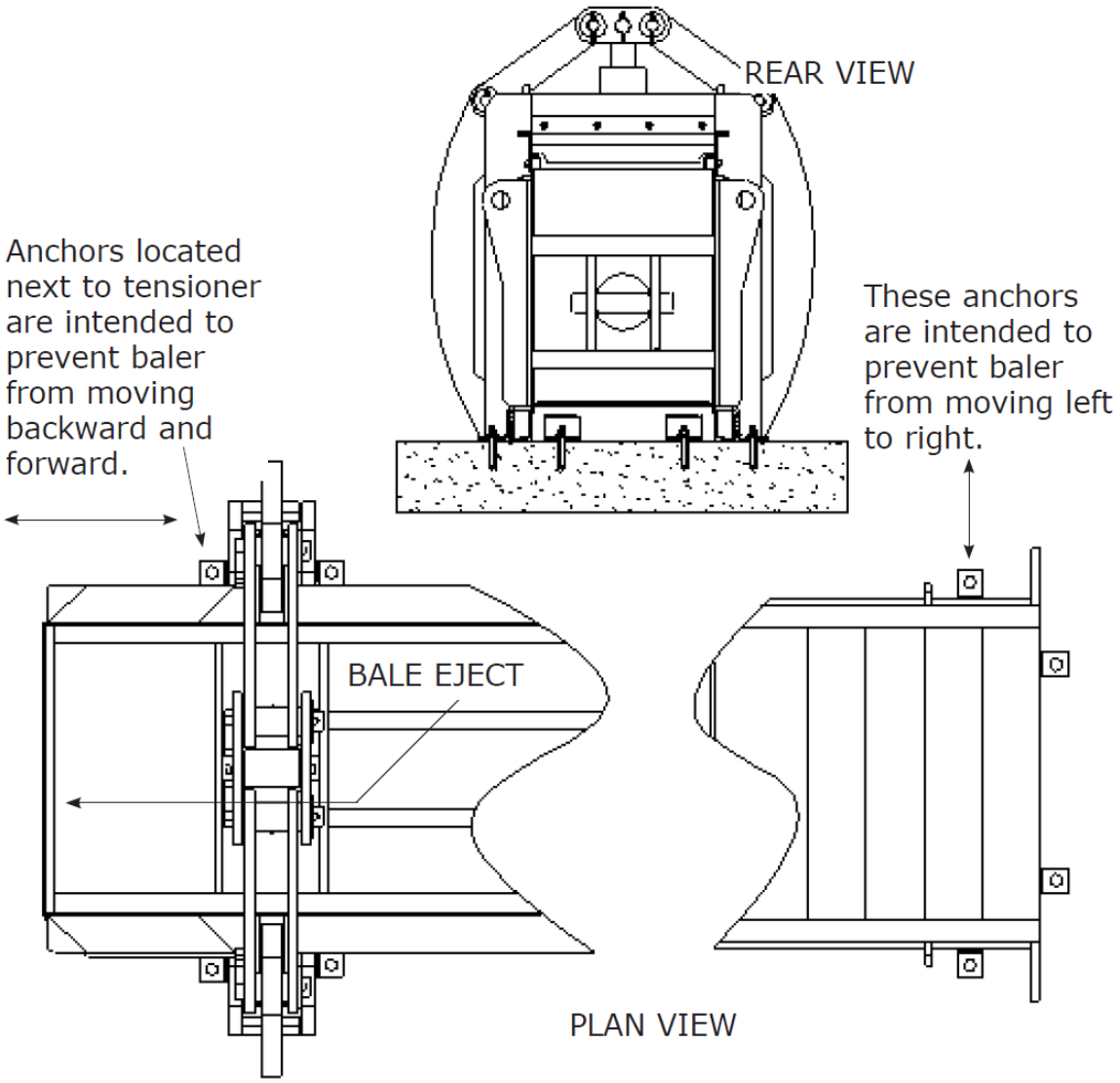
Anchoring

Anchor baler to pad using anchor plates on each side of baler base and (8) 1" diameter anchor bolts, 5 3/4" long, Red Head type recommended. After connecting all hydraulic lines, anchor power unit (if remote power unit) to pad using (6) 3/4" anchor bolts, 5 3/4" long. Anchor bolts are not provided by Marathon Equipment Company.

Decals

Installation of baler is not complete until an inspection of warning decals has been made. All warning decals must be in place prior to operating baler. Decals should be clearly visible, legible, securely applied and in proper location. For decal description and location, see Section One of this manual. Call your distributor or Marathon Equipment Company if any of warning decals are missing or become damaged and need replacing.

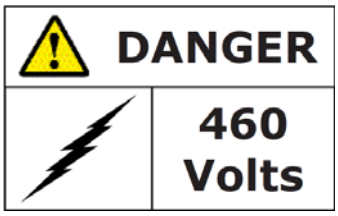
Anchoring Machine



1) Position baler in the desired location.
2) With a pencil, mark the location of anchor holes.
3) Remove anchor to view markings.
4) With a masonry bit, drill into the marked area.
5) Insert the concrete wedge bolts into drilled holes and tap with a hammer until set.
6) Set anchor in place add washers and nut to each anchor and tighten with wrench.

Note: Welding anchors to body is not required.

Electrical Installation



The panel box contains high voltage components. Only authorized service personnel should be allowed inside. See **"Lock-Out & Tag-Out Instructions" on page 2-2** in the Maintenance section.

Warning: Before making any electrical connection, be sure the disconnect switch has been locked-out and tagged-out per the instructions **on page 2-2**.

Grounding Instructions

Danger: All equipment should be grounded per National Electric Code.

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.

1) See the fuse and circuit breaker chart (**“Electrical Charts” on page 2-21**) and the wire size chart (_____) in the Maintenance section for reference during electrical installation.

2) Before connecting power to baler, check incoming line voltage with a voltmeter. Also, check voltage wiring in baler panel box. If baler is not wired for correct voltage, make necessary changes before proceeding.

3) A lockable disconnect switch is provided on baler control panel and is sized in accordance to baler. Three phase power should be connected to top of this switch. Be careful not to let incoming wires touch each other. A properly sized equipment ground should be connected to enclosure ground lug.

Start-Up Instructions

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

1) After electrical connections are complete, check motor rotation by doing the following:

   a) Turn disconnect switch to “ON” position.

   b) Insert Control key switch and turn to “ON” position.

   c) Touch “POWER ON” button.

   d) Touch “MOTOR START” button for 20 seconds until motor starts then touch “MOTOR STOP” button.

   e) Check motor rotation by ensuring the motor fan is rotating in the direction of the arrow decal on the motor. In the event this decal is missing, rotation should be clockwise looking from the motor end.

   f) Reversing any two incoming power lines will change motor/pump rotation.

   Caution: If pump rotates backward, stop immediately! Pump can be damaged if operated in reverse even for short periods of time.

2) With ram in full retract position, check to be sure oil reservoir is filled to 3/4 level on sight gauge (refer to maintenance chart for hydraulic oil recommendations). The hydraulic system pressure has been factory set.

3) This open end baler is equipped with photocells, a key type interlock on hopper door and a limit switch on the swing away tier assembly, and two limit switches on the Inserter. These items have been factory adjusted. Check proper function of each of these prior to operation start-up. See procedures in Section two of this manual.

   Make sure that operators are thoroughly trained in the proper use of this equipment.

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