

Operations & Maintenance Manual

HammRRTM Press

End-Plating Press for Railroad Ties



Includes the MiTek Infeed and Outfeed System Instructions

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Notice of Change

RETAIN THIS NOTICE AND INSERT BEFORE THE TABLE OF CONTENTS

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The following pages of the above mentioned document has been revised. Please ensure the most recent page revision is included in your document.*

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Safety Indicators

The following symbols are used throughout this document to indicate safety hazards. Please pay careful attention when you see one of them. Failure to comply with the accompanying instructions may result in property damage, personal injury, or even death. The graphic inside the logo may change to indicate the type of hazard, but the color of the logo will always indicate the hazard level described below. For example, an electrical hazard that may result in significant personal injury will be indicated with the following logo.



Personnel must follow all safety procedures and practices to ensure the safest possible operation and maintenance of this equipment. However, at no time is this document a substitute for common sense. Personnel must ensure that the work environment is safe and free of distractions.



DANGER

Could result in severe personal injury or death



WARNING

Likely to result in significant personal injury, but generally less serious than loss of limb or life



CAUTION

May result in equipment damage



NOTICE

Calls attention to information that is significant to understanding the operation at hand



ENVIRONMENTAL

Applies to conditions that may affect the environment but does not have an immediate, direct effect on personnel or equipment

General Safety Rules


Read this manual completely before using this equipment. Do not operate this machine unless you have a thorough knowledge of the controls, safety devices, emergency stops, and general operating procedures outlined in this manual. All warnings and cautions should be read and observed before operating the machine or performing any maintenance work. Failure to comply with these instructions may result in economic loss, personal property damage, and/or serious personal injury including death. This manual must always be available to personnel operating and maintaining the machine.

- Check operation of all safety devices before each shift start.
- Note illegible labels. Labels that are worn or unreadable should be replaced immediately.
- Check for worn and damaged parts, and repair or replace them immediately.
- All protective guards and safety devices must be in place before and during use of the machine. Never disconnect or bypass any safety device or electrical interlock.
- Always wear safety glasses and hearing protection.
- Use caution when lifting heavy parts or material.
- Wear proper apparel. Do not wear loose clothing or jewelry. Confine long hair.
- When using solvents on and around the machine, remove power to the machine to eliminate the chance of sparking, which may result in explosion or fire. Wear a respirator approved for use with solvents. Wear protective clothing, gloves, and safety glasses.
- Keep children away. All visitors should be kept a safe distance from work area. Due to their unfamiliarity with the machine, visitors may not be able to effectively identify hazards.
- In case of machine malfunction, stop the machine immediately and report it to a supervisor.
- Never leave machine running unattended. **TURN POWER OFF!** Do not leave until all parts have come to a complete stop and all electrical power has been shut off.
- Do not use in damp or wet locations, or expose the machine to rain.
- Keep work areas well lit.
- Only qualified personnel should attempt to perform any repair and/or maintenance.
- Do not use any liquids in the interior of electrical cabinets.
- Prior to performing work on the machine, the power must be turned off at the main disconnect. **All lockout/tagout guidelines must be met, according to OSHA 29 CFR 1910.147.** These guidelines should be part of your company's Energy Control Program, defined below.

The employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative. —OSHA 29 CFR 1910.147

Introduction

The primary function of the **HammRR™ Press** is to embed **MiTek®** connector plates into the ends of wooden railroad ties for the purpose of preventing such members from splitting and to hold closed the splitting that has already occurred.

DANGER	
	<p>Read this manual completely before using this equipment!</p> <p>Do not operate this machine until you have a thorough understanding of all controls, safety devices, emergency stops, and operating procedures outlined in this manual.</p> <p>All warnings must be read and observed. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel operating and maintaining this equipment.</p>

Variations of Machine

This machine can be manufactured in two different sizes to accommodate ties 8 to 9 ft long or 8 to 10 ft long. Within these ranges, the Press can handle ties that come in 6 in. increments, varying no more than +/- 2 inches at each increment. Both Press lengths can be a right-hand press, meaning the press cylinder is on the operator's right side when facing the Press from the infeed side, or it can be a left-hand press. It can also have the variation of a right-hand or left-hand electrical enclosure, indicating which side the main electrical enclosure is on compared to an operator facing the Press from the infeed side. All models can be manufactured with a cycle speed of 12-seconds per cycle or 6-seconds per cycle.

The different options for a press configuration are described in Table 1-1. For example, one version of **HammRR Press** that may be ordered is a 10-ft right-hand press with a left-hand electrical enclosure and a 12-second cycle. A **MiTek** representative can help you determine which model best fits your needs.

There are several different components that comprise a complete **HammRR Press** system. Each component is described in Table 1-5 or Table 1-6 and illustrated in Figure 1-1 or Figure 1-2.

Table 1-1: Press Variations for an 8-9 ft Press

Press Cylinder	Electrical Enclosure	Speed (sec. per cycle)	Part #
Right side	Right side	6	*
		12	*
	Left side	6	89010-504
		12	*
Left side	Left side	—	81811-502 (Replaced by 89010-504)
		6	*
	Right side	12	*
		6	*
	Left side	12	*
		6	*

Table 1-2: Press Variations for an 9-10 ft Press

Press Cylinder	Electrical Enclosure	Speed (sec. per cycle)	Model #
Right side	Right side	6	89010-502
		12	*
	Left side	6	*
		12	*
Left side	Right side	6	*
		12	*
	Left side	6	*
		12	*

Table 1-3: Optional Equipment

Name	Part #
Infeed System from MiTek (current designs)	81955-501
	83610
Outfeed System from MiTek (current designs)	81956-501
	83650
Automatic Plate Feeder System (APFS)	84735-501

* Indicates that the configuration has not yet been given a drawing number

Table 1-4: Electrical Assembly Variations

Name	Description	Press Cylinder	Electrical Enclosure	Speed (sec. per cycle)	Part #
Electrical Assembly	Electrical assembly for all press variations	Right-hand	Right side	6	90455-502
			*	12	*
		Left side	Left side	6	90455-501
			*	12	*
		Left-hand	Right side	6	*
			*	12	*
*	Left side	6	*		
*	12	*			
Infeed control junction only (mandatory if not purchasing 90451)	For a customer-supplied infeed system	Right-hand	Right side	6	90453
			*	12	*
		Left side	Left side	6	90453
			*	12	*
Left-hand	Right side	6	90453		
	*	12	*		
*	Left side	6	90453		
*	12	*			
Infeed/outfeed system (optional)	For a MiTek infeed and outfeed system	To be determined			90451
Selector switch add-on (optional)	For customer-controlled switches for a non-MiTek infeed or any other operation that must be controlled from the press operator station	All variations			90454
Auto Plate Feeder System (optional)	For systems with an APFS	All variations			90456

* Indicates that the configuration has not yet been given a drawing number

Components of the HammRR Press

Table 1-5: Main Components of the HammRR Press

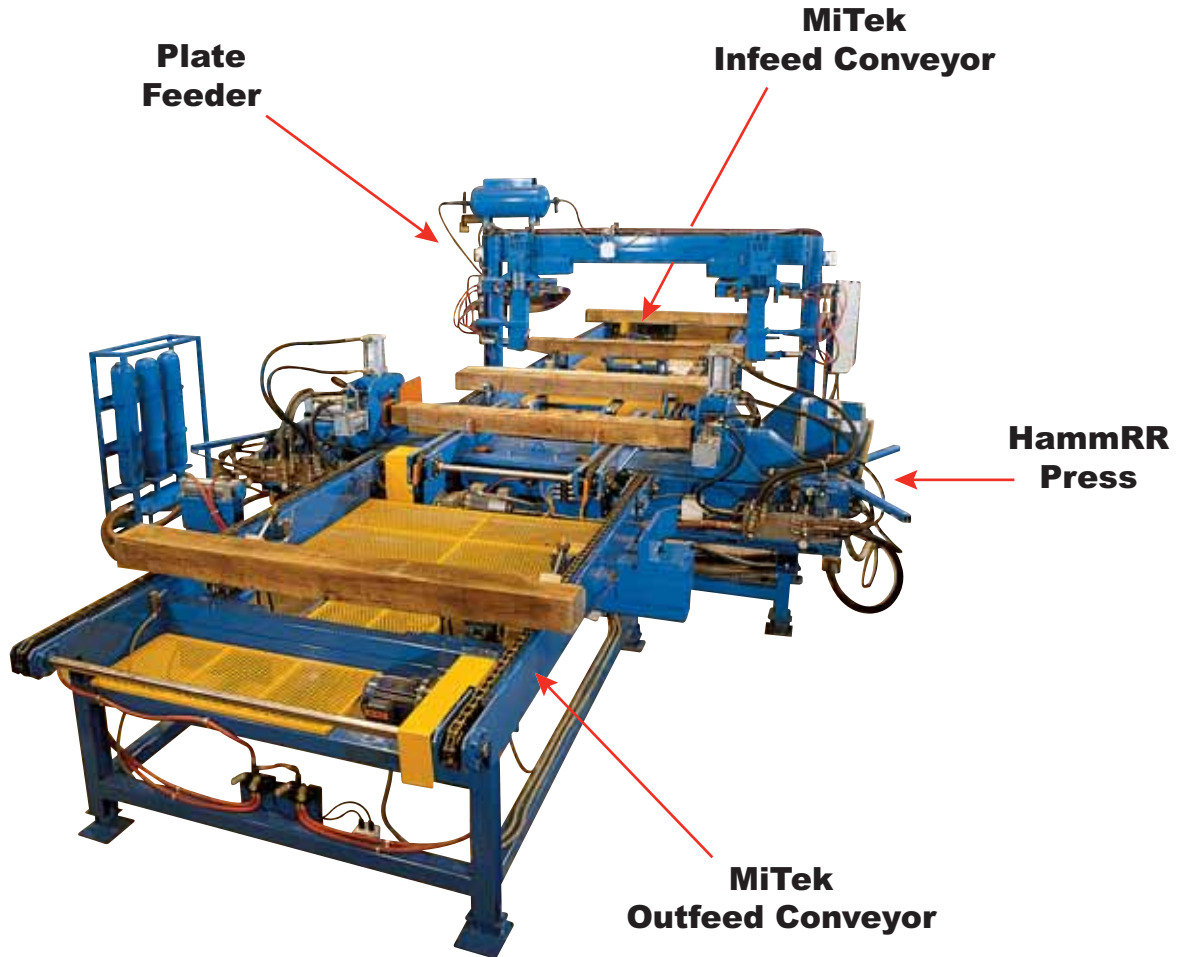
Carriages	Left and right-hand carriages hold the floating squeeze chambers.
Squeeze Chambers	Vertical and horizontal hydraulic cylinders are mounted on each squeeze chamber, providing the necessary squeezing action to close existing end-splits in the member prior to connector plate embedment. The squeeze cylinder platens move up and down freely to allow for a degree of variance in the wood members.
Press Conveyors	Two conveyors, each incorporating an adjustable Tie Stop, are mounted on the machine base. The conveyors are driven by an electric motor with a clutch driving a single shaft, enabling the conveyors to act in unison to convey a wood member into place against the Tie Stops. The Tie Stops are driven by pneumatic cylinders and contain a jack screw that allows the operator to adjust exactly where along the conveyor the tie will be stopped and pressed.
Anvil	The anvil is mounted on the machine base at the end of the machine base and serves to embed the connector plate into the wood member as it is being pushed from the press cylinder end. The anvil is adjustable in six-inch increments to accommodate different wood member lengths and houses a self-aligning platen.
Press Cylinder	The press cylinder is a 7" bore hydraulic cylinder with a self-aligning platen that pushes a plate into one end of the wood member as it is ramming the other end of the wood member against the anvil to embed the plate at the other end. A spring bushing allows the press-end platen to evenly align with the edge of the railroad ties.
Hydraulic Power Unit	The Hydraulic Power Unit provides pressurized oil to the cylinders.
Electrical Assembly	The electrical assembly provides power to the machine and allows the operator to control the machine through a touch screen interface. It includes the main electrical enclosure, electrical junction box located on the Press, and the touch screen computer.
Accumulator Rack	The Accumulator Rack is a separate component holding three (3) accumulators that store fluid energy to be used during operation.

Table 1-6: Optional Equipment

Infeed Conveyors	Conveyor designed specifically to carry ties to the HammRR Press . It uses a lift-gate system to load ties onto the Press one at a time.
Outfeed Conveyors	Conveyor designed specifically to carry ties away from the HammRR Press . Optional features include an alignment cylinder and kerf-cut blades.
Automatic Plate Feeder System (APFS)	A system that automatically places one corner of the connector plates onto the ties, reducing the amount of personnel required to operate the system. See the APFS manual for more information.

Figure 1-1: Complete HammRR Press System

8-9 ft Right-Hand HammRR Press With Plate Feeder and Infeed and Outfeed Conveyors



10-ft Right-Hand Press

Optional Equipment Not Shown

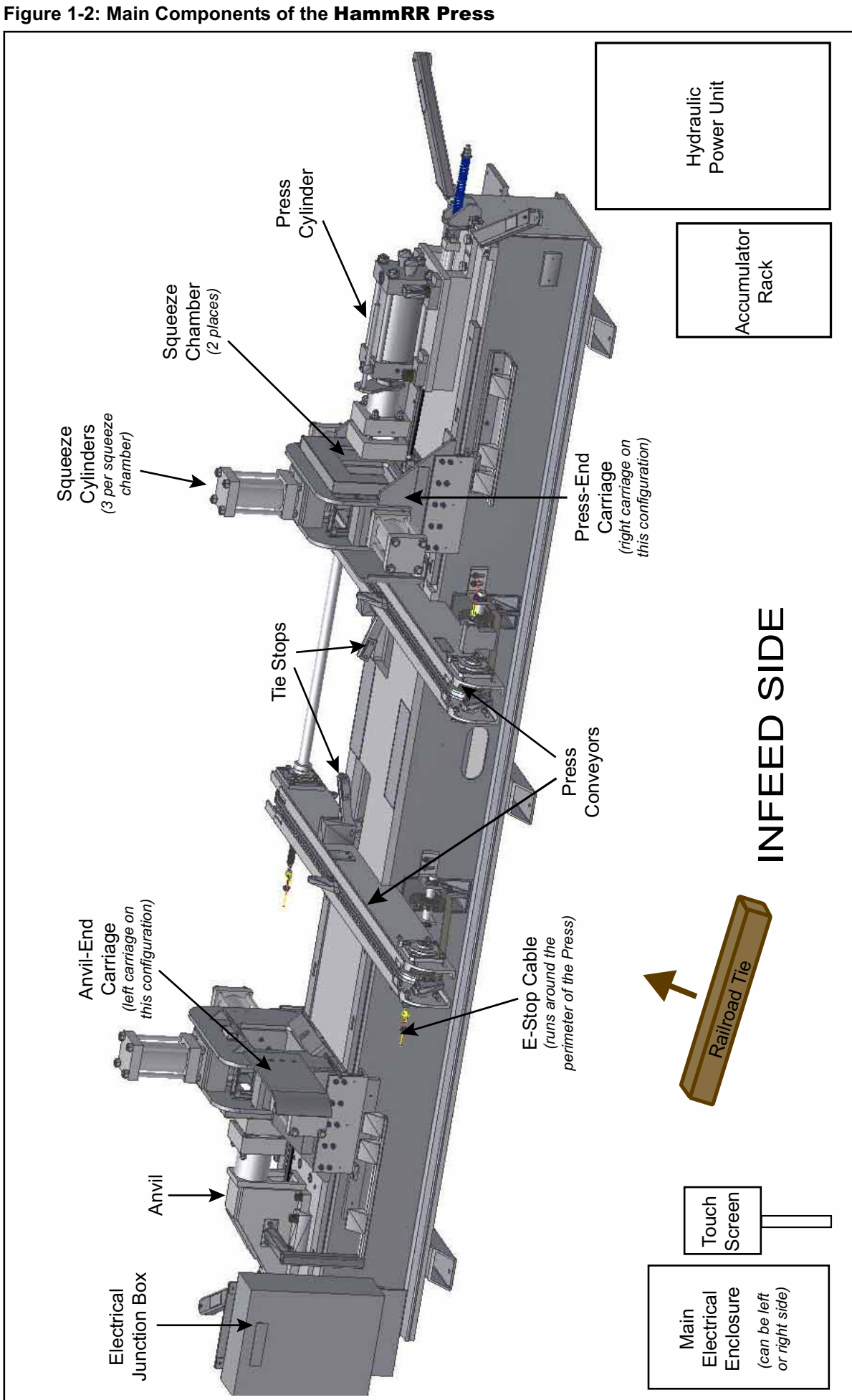


Figure 1-2: Main Components of the HammRR Press



Prior to Installation

Chapter 2

Overview

The assembly and installation of the **HammRR Press** system is the customer's responsibility. If preferred, you can arrange to have the process coordinated and supervised by **MiTek** personnel. They will oversee layout, placement, leveling, connecting, assembling, and complete installation of the units.

Before the installation of your machine, the items in this chapter must be arranged, purchased, and completed before the installation occurs. Table 2-1 is an overview of these items. The topics are in the same order in both the table and the text following it.

If a **MiTek** representative is managing the installation of your equipment, the requirements in Table 2-1 must be satisfied before the scheduled installation date, or the installation may need to be rescheduled.

*Failure to provide the services, material, and personnel described in this chapter may delay system start-up and incur additional charges for **MiTek** personnel delayed on site.*

Table 2-1: Pre-Install Requirements

Space	The HammRR Press system requires enough space to allow for the machine dimensions listed in Table 2-2, plus additional working space for operation and maintenance, and the additional components and optional equipment used with the Press. Operation space should ensure safety, freedom of movement, storage, and free flow of raw and finished materials. Space should have adequate lighting.
Floor Structure	The flooring should be of concrete, a minimum of 6" thick with 5000 psi compressive strength.
Environment	The HammRR Press should be enclosed to provide adequate protection from the elements, including adequate heating and ventilation to protect against extreme temperatures. The MiTek warranty policy will be voided if equipment is used outdoor or without adequate temperature protection.
Electrical	The standard electrical requirements are shown in Table 2-3. Contact your MiTek representative if custom power specifications need to be arranged.
Hydraulic Oil	Customers must have enough oil on-hand to fill the 150-gallon reservoir plus all of the hydraulic lines. Use one of the recommended oils shown in Table 2-4.
Compressed Air	Refer to Table 2-5 and your specific Layout.
Customer-Supplied Parts	The supplies listed in Table 2-6 are the responsibility of the customer to have on-hand at the time of installation.

Space Requirements

Adequate space must be allocated for the Press, its accessories, and for safe operation and maintenance of the equipment. Refer to the guidelines below when planning your space allocation. **MiTek** can provide help in plant layout and space utilization if requested. Refer to your specific layout for guidance also.

Space for the *HammRR Press*

It is the customer's responsibility to provide adequate space for the installation, operation, and protection of the **HammRR Press** system. Physical dimensions are shown in Table 2-2, but additional space is required for optional equipment, operation, and maintenance.

Table 2-2: Dimensions of System Components

	Width	Length or Depth	Height	Location
9 ft Press	9 ft	18 ft 6-1/4 in	5 ft 4 in	Determines the locations of other components
10 ft Press	9 ft	19 ft 6-1/4 in	5 ft 4 in	
HPU	7 ft	42 in	9 ft	Within 30 ft of Accumulator Rack
Accumulator Rack	55 in	22 in	6 ft	Within 4 ft of press-cylinder end
Main Electrical Enclosure	42 in	21 in	7 ft	Within 30 ft of electrical junction box on Press
Touch Screen Enclosure	29 in	17 in	5 ft 4 in	Near anvil end

Space for Optional Equipment

Additional space is required for infeed and outfeed conveyors, whether supplied by **MiTek** or the customer. The amount of space needed depends on the size of your conveyors. If ordered from **MiTek**, the length of each conveyor can be specified to fit your requirements. If purchasing an Automatic Plate Feeder System, refer to its manual for space requirements.

Space for Operation and Maintenance

Operation space should provide safety, freedom of movement, free flow of materials, ease of handling, and storage. Space must be provided for personnel to pre-plate the ends of ties. The number and capability of the personnel may affect system performance.

Adequate space is also required for maintenance, specifically directly in front of each manifold.

Location Requirements

Floor Structure

A level and structurally adequate concrete slab must be provided for the installation of the **HammRR Press** system. This slab should be designed and installed in accordance with local building code requirements and, if required, under supervision of a local professional engineer. Concrete should be a minimum of 6” thick of 5,000 psi compressive strength concrete.

Environment

The building to house the **HammRR Press** system must provide adequate protection from the elements. The equipment can not be exposed to moisture including rain, sleet, snow, and condensation.

The machine should be installed in a well-lit area for proper operation, maintenance, and safety.

Electrical Requirements

The standard electrical requirements are shown in Table 2-3. Check the voltage at the location the **HammRR Press** will be operating as early as possible, and notify **MiTek** immediately if the electrical requirements can not be met. Certain revisions can be made to the machine to meet your electrical requirements before the system is manufactured.

Table 2-3: Electrical Requirements Prior to Installation

	HPU Motor	Conveyor Motor	Fan Motor	Total MiTek In/Outfeed System
Location of Motor	HPU	Press	HPU	Optional Equipment
Horsepower	125 hp	5 hp	3 hp	16 hp
Voltage	460 VAC	460 VAC	460 VAC	460 VAC
Amperage	156 amps	7.6 amps	4.8 amps	25 amps
Cycles (Frequency)	60	60	60	60
Phases	3-phase	3-phase	3-phase	3-phase
Motor Frame Size	254 TC	N/A	N/A	N/A
Electrical Protection on Machine at Disconnect Switch	225 amps			40 amps

Hydraulic Oil

The customer must have enough hydraulic oil to fill the reservoir, accumulators, and hydraulic lines for the initial charge. The hydraulic reservoir, when filled to within two inches of the top, holds 150 gallons. The amount of additional oil required to charge the lines will depend on the length of your hydraulic lines.

Table 2-4: Hydraulic Oils Specification

Reservoir Capacity	150 gallons	
Accumulator Rack Capacity	30 gallons	
Hydraulic Lines Capacity	Varies with each system	
Viscosity	80-170 SUS at 100° F, grade of 32	
Recommended Oil	Mobile Oil	DTE #24
	Exxon Oil	Nuto H 32
	Shell Oil	Tellus 32
	Sun Oil	Sunvis 816 WR
	Texaco Oil	Rando HD 32

Compressed Air Requirements

Compressed air flow requirements and locations can be found on your specific layout which your **MiTek** representative will provide to you. Table 2-5 gives an overview of the system requirements. Because the location of the air source differs with each customer, supplying and hooking up the compressed air is the customer’s responsibility. You will need to determine the exact location of the compressed air source, the distance to the required drop points, and the hose and connections required to install the system. If you need assistance, contact your **MiTek** representative.

A sample layout of a complete system can be seen in Figure 3-1 in the *Installation* chapter.

Table 2-5: Compressed Air Connection Points

Component		Pressure (psi)	Flow Rate (scfm)	Location
HammRR Press		80	1.5	Below the Press conveyors at outfeed side
OPTIONAL	Plate Feeder	100	10.5	Top of Plate Feeder
	MiTek Infeed Conveyor	TBD	TBD	Dependent upon customer requirements, refer to your layout
	MiTek Outfeed Conveyor	TBD	TBD	Dependent upon customer requirements, refer to your layout

Customer-Supplied Parts

The parts in Table 2-6 are the responsibility of the customer to supply before or at the time of installation. You may purchase them independently or purchase them from **MiTek** if a vendor part number is supplied.

Table 2-6: Customer-Supplied Parts

Item	Description	Vendor Part Number	
<p>Hoses <i>To be used between the HPU, Accumulator Rack, and Press.</i></p> <p><i>Exceeding the hose lengths specified will reduce system operating pressure and increase machine cycle times.</i></p>	<p>The lengths required for each of the following hoses are based upon the location of the HammRR Press and the HPU. Due to the lack of flexibility of the hoses, the exact length of hose required needs to be known when they are purchased.</p> <p>If pipe is desired instead of hose, it must have a 3000 psi minimum working pressure rating according to ANSI B31.3/B31.1 specifications. Seamless steel schedule XXS pipe is required for the size of pipe recommended to operate the HammRR Press. All joints should be welded to ASME specifications by a professional welder with ASME pressure vessel certification.</p>		
	<p>Pressure Supply Lines</p>	<p>Qty: 1—3000 psi working pressure, 1-1/4" ID, max 50 ft, female swivel 37° JIC hose end on both ends, rated at 3000 psi</p>	H43020E-620-620-XX* FT
	<p>Return Lines</p>	<p>Qty: 2—600 psi working pressure, 2" ID, max 75 ft, female swivel 37° JIC hose end on both ends, rated at 600 psi</p>	H600932U-632-632-XX* FT
		<p>Qty: 2—1250 psi working pressure, 3/4" ID, max 75 ft, female swivel 37° JIC 45° tube elbow hose end on both ends, rated at 1250 psi</p>	H10412U-692-692-XX* FT
<p>Compressed Air</p>	<p>Piping or hose and 3/8" NPT fittings are required to connect the compressed air source to the equipment. The customer is responsible for supplying the air source and all supplies needed to connect it to the Press, and the MiTek infeed and outfeed systems.</p>	N/A	
<p>Electrical</p>	<p>All supplies needed for mounting, wiring, and connecting the main power source to the main electrical enclosure supplied by MiTek is the customer's responsibility. Refer to the electrical drawings and Table 2-3.</p>	N/A	
<p>Transport Equipment</p>	<p>A 5-ton capacity fork lift will be needed to move the equipment from the truck to its exact location.</p>	N/A	
<p>Railroad Ties</p>	<p>A minimum of 100 ties will be needed to make the proper adjustments during installation and start-up.</p>	N/A	
<p>Connector Plates</p>	<p>A minimum of 200 plates will be required to adequately test the equipment. The plates can be ordered from MiTek: Prod. Line 1810</p>	11-053063E or 11-062070E	

* XX in the part number indicated the hose length, including fittings, in feet

Shipping Information

Table 2-7: Shipping Information

Contents of Shipment	Press	12,000 lb
	Power Unit	3650 lb
	Accumulator Rack	1300 lb
	Main Electrical Enclosure	900 lb
Optional Equipment	Infeed Conveyor System	varies
	Outfeed Conveyor System	varies
	Automatic Plate Feeder System	see manual

Review the *Prior to Installation* chapter to ensure all requirements have been met before installation occurs.

By standard definition, the assembly and installation of the **HammRR Press** system is the customer's responsibility. If you prefer, you can arrange to have the process coordinated and supervised by **MiTek** personnel. They will oversee layout, dimensioning, lining, leveling, connecting, assembling, and complete installation of the units.

Regardless of who installs the equipment, **MiTek** always provides on-site guidance at the time of startup. A **MiTek** representative will ensure the system is operating correctly, make final adjustments, and provide operating and maintenance instructions to your personnel.

Unloading

Whether a **MiTek** representative is present or not, it is the customer's responsibility to provide equipment and labor for unloading, placement, and wiring of the **HammRR Press**. Exercise extreme caution to avoid damage or misalignment during handling. Do not apply pressure on any moving parts or fittings. Support the weight at the bottom of the machine base.

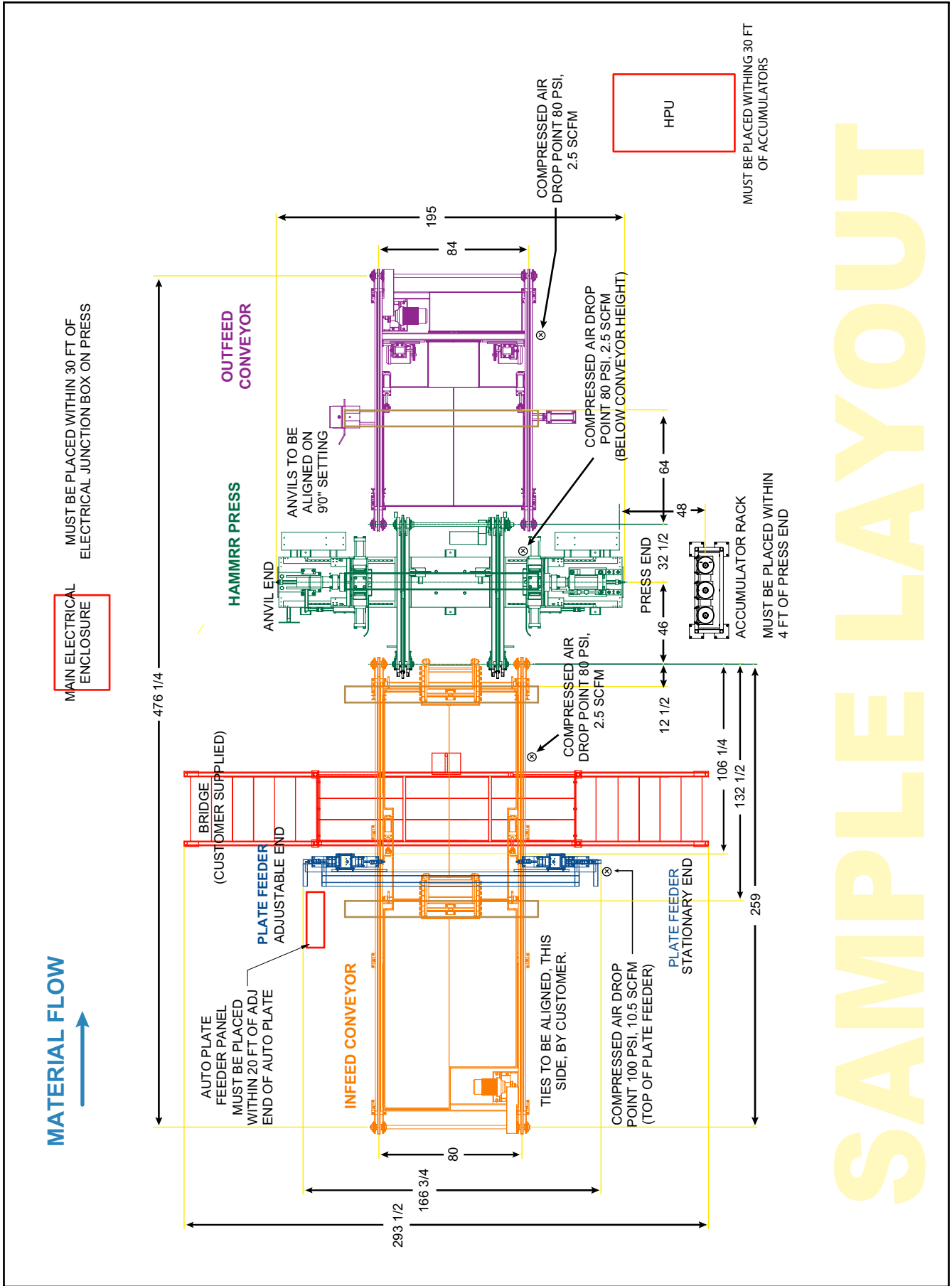
A heavy-duty forklift or truck wrecker with at least a 5-ton capacity will be required to move the Press during unloading and placement of the machine. If there are any questions regarding the unloading or placement process, please contact your **MiTek** representative.

CAUTION	
	<p>Chains used to lift and unload the equipment must be rated appropriately. If a chain breaks while moving equipment, personal injury and equipment damage may result.</p> <p>See Table 2-7 for the shipping weight of each component.</p>

Unpacking

After successful unloading, remove the protective crating material from the pallets. Detach and set aside all loose parts. Move the equipment to the desired location using a forklift or crane appropriate to the weight of each unit as shown in Table 2-7. Lift the equipment to remove the pallet, and gently place each unit in its new location.

Figure 3-1: Sample of a Layout for a Complete HammRR Press System With Plate Feeder and Conveyors



Component Locations

All components and connection points are shown in Figure 6-16 through Figure 6-26 at the end of the Maintenance chapter. Remove the pages from the Maintenance chapter and place them in front of you before performing the installation procedures.

Refer to your layout and drawings for further clarification.

Customer-supplied hoses and other supplies are described in Table 2-6 in the Prior to Installation chapter of this manual.

The following items will need to be placed in a location predetermined by you and your **MiTek** representative. After the location of each component is decided, you should receive a layout specific to your system configuration. It is important that you carefully follow the guidelines and dimensions on your layout to avoid potential problems later in the installation and operation process. The layout shown in Figure 3-1 is a sample only, to give a general idea of location requirements. After setting each component in place, the items listed below will need to be connected to the **HammRR Press**. The connection process and all materials required are the sole responsibility of the customer, unless otherwise stated.

Table 3-1: HammRR Press System Components

Component	Location
Hydraulic Power Unit	Must be placed within 30 ft of the Accumulator Rack
Accumulator Rack	Must be placed within 4 ft of the press end of the Press
Main Electrical Enclosure	Must be placed within 30 ft of the electrical junction box located on the Press
Touch Screen Enclosure	Must be placed in a location where the operator has a clear view of the Chambers and of the ties as they are entering the Press, being squeezed/pressed, and exiting the Press
Press	All other components are dependent on the Press location

Assembling the Press

Remove all bands and ties keeping loose supplies and parts attached to the Press. Among these supplies should be the safety pull-cord arms and hardware. There are four (4) arms that need to be bolted to the Press base to support the pull-cord, two for each end.

Figure 3-2: Point of Attachment for Pull-Cord Arms

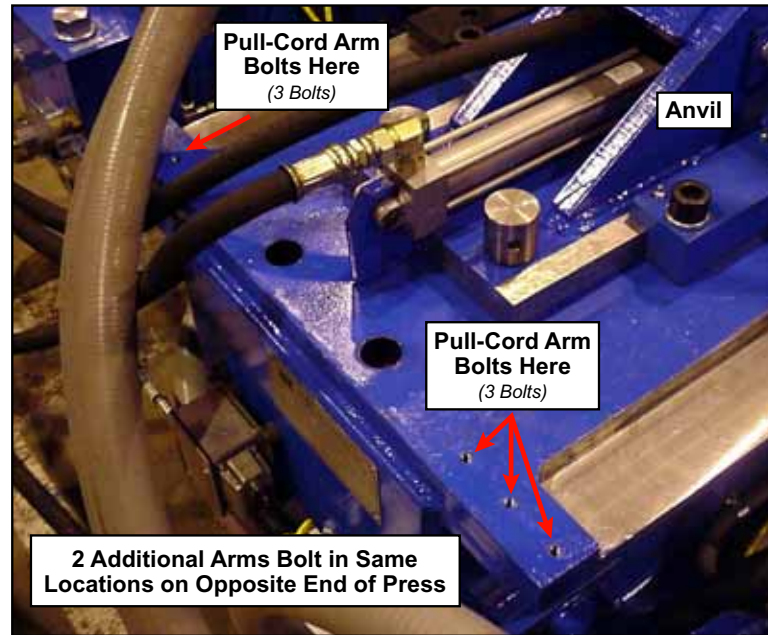
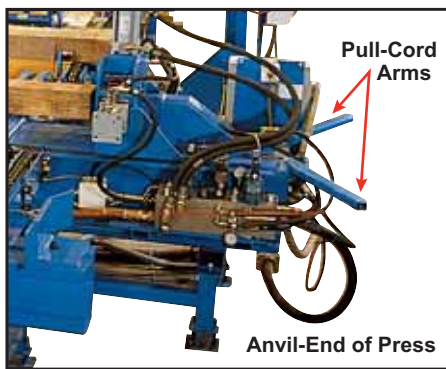


Figure 3-3: Pull-Cord Arms



Electrical

WARNING	
	<p>Electrical hazard!</p> <p>All electrical work must be performed by a qualified electrician.</p> <p>Follow approved lockout and tagout procedures (OSHA 29 CFR 1910.147).</p>

Main Power Source

See Table 2-3 for the electrical requirements for the **HammRR Press**.

All supplies needed for mounting, wiring, and connecting the main power source to the **HammRR Press'** main electrical enclosure is the customer's responsibility. Refer to the electrical drawings and Table 2-3.

The heater on the Hydraulic Power Unit (HPU) must have power supplied to it at all times. Refer to the next section for wiring the heater separately from the rest of the main electrical enclosure.

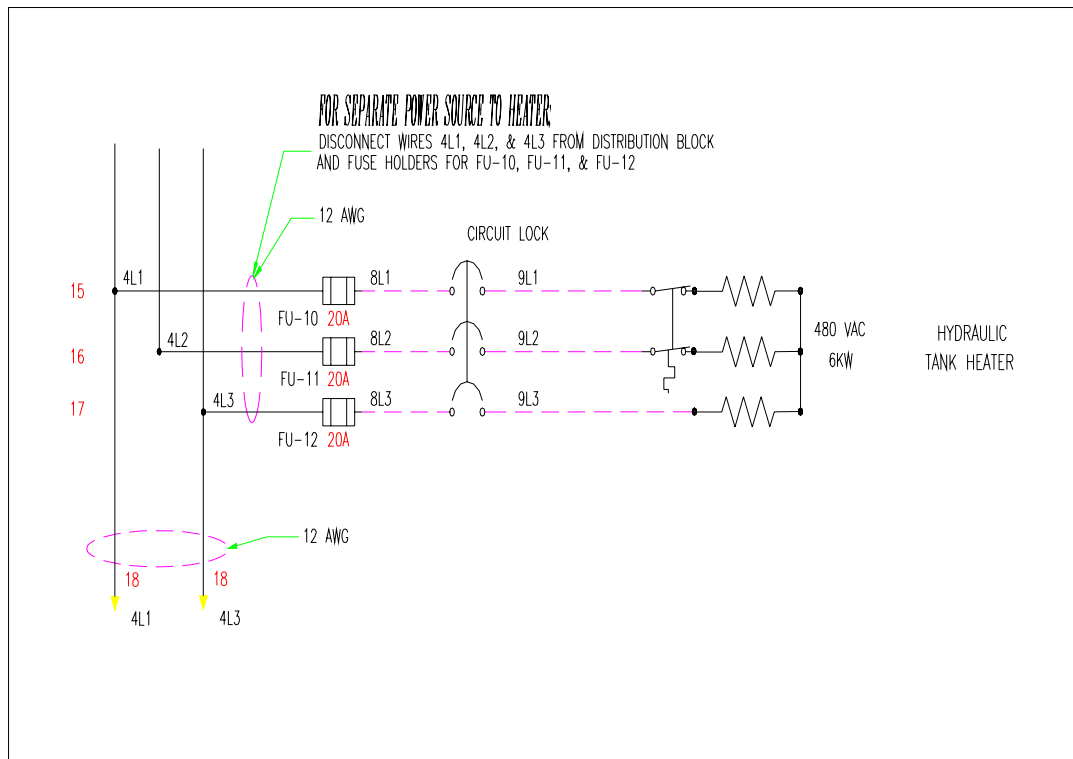
HPU Heater Circuit

CAUTION	
	<p>The heater on the Hydraulic Power Unit must have power supplied to it at all times. If the hydraulic oil becomes cold, it will thicken and can cause extensive damage to the pump.</p>

If electrical power will be supplied to the Hydraulic Power Unit at all times, the heater may be wired according to the electrical schematics. If your policy is to turn power off to the machine at the end of the day, you must separate the hydraulic tank heater from the main electrical enclosure and place it on it's own dedicated power source.

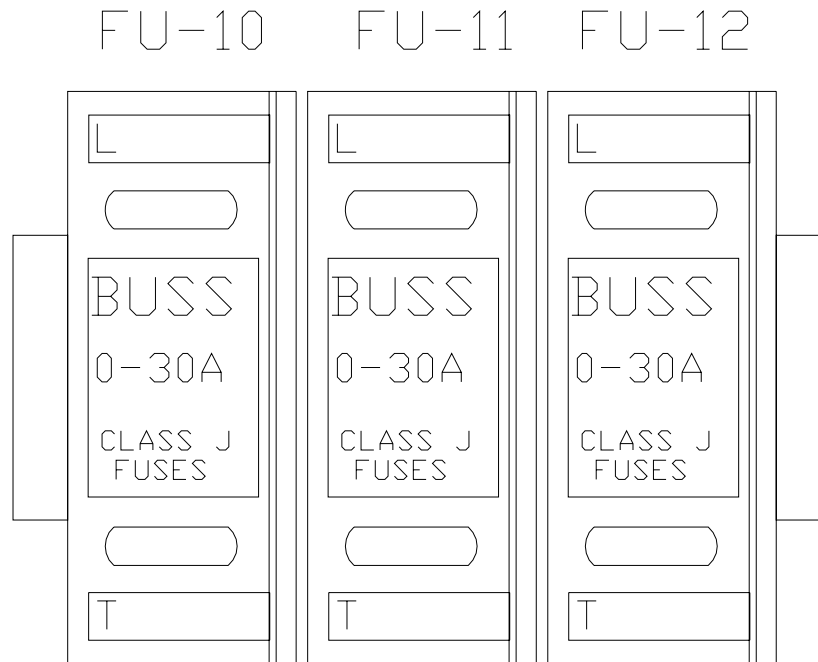
Figure 3-4 is a view of the standard wiring to the tank heater when the heater is wired-in with the rest of the main electrical enclosure. The procedure in this section overrides the electrical schematics if your heater needs to be on its own dedicated power source.

Figure 3-4: Standard Wiring Schematic for Main Electrical Enclosure



1. Lockout/tagout the main electrical enclosure.
2. Locate fuses FU-10, FU-11, and FU-12.

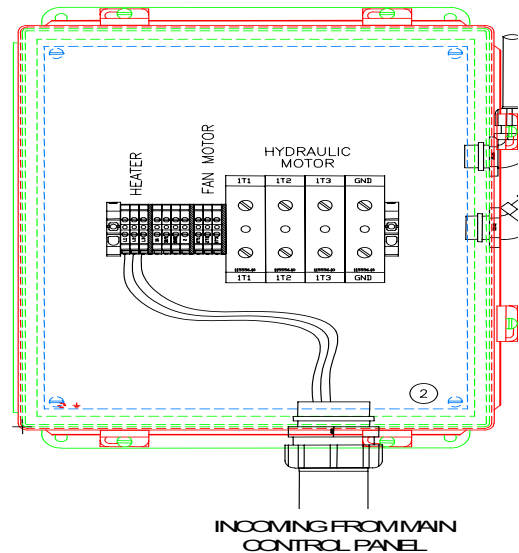
Figure 3-5: Fuses



3. Locate the wires 4L1, 4L2, and 4L3. These wires need to be removed completely from the existing wiring within the panel.
4. Pull and remove the Safety-J fuse retainer from the fuse holder.
5. The wires are attached to the top side of FU-10, FU-11, and FU-12 and should be attached on the other end to the distribution block. Failure to remove wires from the power distribution block will leave unprotected wires with live voltage since you will be removing the fuses and fuse holders at a later step.
6. Remove the wires (8L1, 8L2, 8L3) from the bottom side of the same fuses. These wires continue through the conduit going to the Hydraulic Power Unit. These wires may be protected and capped or completely removed from the system.

7. Remove the Safety-J fuse block holders from the din rail.
8. Locate the Hydraulic Power Unit junction box and open the enclosure
9. Locate and remove the wires (8L1, 8L2, 8L3) from the bottom side of the terminal blocks reserved for the heater. Figure 3-6 shows the wires coming from the main electrical enclosure and the terminal blocks reserved for the heater circuit.

Figure 3-6: HPU Junction Box



Supplying a New Disconnect

WARNING	
	<p>Electrical hazard!</p> <p>All electrical work must be performed by a qualified electrician.</p> <p>Follow approved lockout and tagout procedures (OSHA 29 CFR 1910.147).</p>

A local electrician must supply a new disconnect enclosure suitable for the current requirement of the heater. It may include a non-fused disconnect. The Safety-J fuse holders (with the 20A fuses) need to be remounted into the new disconnect enclosure. The heater requires 6KW for operation.

$$6000/460V=13A \quad 13 \times 1.75=22.75 \text{ max. fuse protection}$$

The 20A fuses removed from the main electrical enclosure should be used for branch protection of the heater circuit. All local and NEC codes should be followed.

When the new enclosure is complete and mounted to the wall, the electrician may reconnect the heater circuit by routing the necessary wires from the new disconnect enclosure to the hydraulic panel. Reconnect the new wiring to the same terminal blocks which the wires were previously removed from.

Once all wiring has been reconnected and verified by the electrician, power may be established to the new disconnect and the main electrical enclosure.

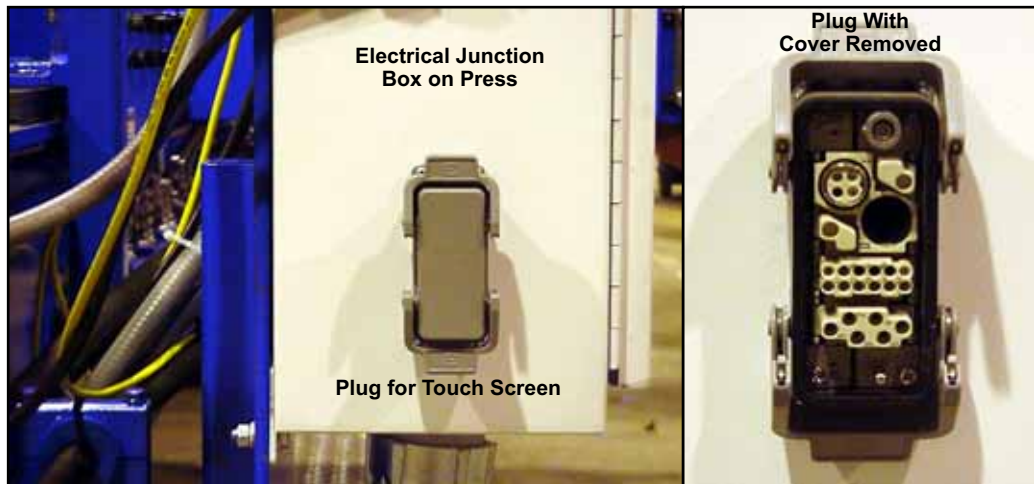
Connecting the Components With Power

Two (2) electrical conduit hoses are attached to the electrical junction box on the Press before the Press is shipped. The main electrical enclosure will be attached to the Press at the electrical junction box when the equipment is delivered. Remove any tape or ties securing the conduit. Place the free end of the conduit through two of the holes on the side of the main electrical enclosure and wire into the main electrical enclosure per Drawing 90450.

One (1) electrical conduit hose is attached to the Hydraulic Power Unit before it is shipped. Place this cabling through the remaining hole on the side of the main electrical enclosure, and wire into the main electrical enclosure per Drawing 90450

The touch screen enclosure has wires attached to it that must be connected to the electrical junction box on the Press. Figure 3-7 shows the connection point. Remove the cover from the plug on the outside of the electrical junction box on the Press and store it inside the touch screen enclosure. Plug the wires directly into the outlet holes according to Drawing 90450.

Figure 3-7: Connection Between Touch Screen and Press

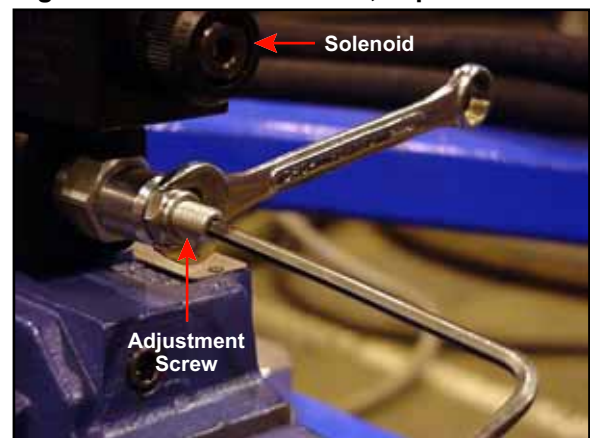


Hydraulic System

Tips for Adjusting the Hydraulic System

- Some changes have been made to the original design of the **HammRR Press** hydraulic system. Any system received before August 2003, which includes serial numbers 10231017090-01, 11191017669-01 and 11191017669-02, is considered to be **Hydraulic System #1**. Anything received after August 2003, which includes all serial numbers not listed above, is considered to be **Hydraulic System #2** in this manual.
- A **Hydraulic Power Unit manual** is provided from the manufacturer. Refer to that manual for any information regarding the hydraulic system that is not provided in this manual.
- To adjust most **adjustment screws for valves** in the hydraulic system, loosen the nut on the screw (threaded rod) protruding from the valve and turn the screw with an Allen wrench inserted into the middle of the screw. See Figure 3-8.
- To **manually actuate a valve** on the manifolds, place an Allen wrench in the hole in the solenoid and hold it. On hydraulic system #1, the hole is in the back of the solenoid. On hydraulic system #2, the hole is in the front.
- There are many **graphics** provided in this manual to supplement the text. The procedure described will be much easier if you use them. Remove the graphic pages at the end of the *Maintenance* chapter and place them in front of you before performing the installation procedures. You must ensure the pages are placed back into the *Maintenance* chapter for future use.
- For further clarification, refer to **Drawing 81855** for Hydraulic System #1 and **Drawing 89009** for Hydraulic System #2.
- **Customer-supplied hoses** and other supplies are described in Table 2-6 in the Prior to Installation chapter of this manual.

Figure 3-8: Directional Valve, Top of Manifold



Making Connections on the Press: *Hydraulic System #1 Only*

This section applies only to Presses received before August 2003, (serial numbers 10231017090-01, 11191017669-01, 11191017669-02).

For Presses received after August 2003 (all serial numbers not listed above), proceed to the next section.

1. Lockout/tagout all power to the equipment.
2. Attach the Hydraulic Power Unit to the Accumulator Rack by running a customer-supplied Pressure Line hose from the correct port on the Hydraulic Power Unit (PO) to the single port on the right side of the Accumulator Rack (PI). The hose is vendor number H43020E-620-620-XX FT.
3. Attach the Accumulator Rack to the Press by running the supplied hose (PN 780392) from the Pressure Line port on the press-end manifold (P2) to a port on the left side of the Accumulator Rack (PO1). This hose should already be connected to the manifold when the Press is delivered.
4. Another hose (PN 780394) is supplied to run from the Pressure Line port on the anvil-end manifold (P2) to the remaining port on the Accumulator Rack (PO2). This hose should already be connected to the manifold when the Press is delivered.
5. Attach the Press to the Hydraulic Power Unit with customer-supplied hoses.
 - a) One Return Line hose should run from the Return Line port on the press-end manifold (T2) to a Return Line port on the Hydraulic Power Unit (PR1).
 - b) One Return Line hose should run from the Return Line port on the anvil-end manifold (T1) to the remaining Return Line port on the Hydraulic Power Unit (AR1).
 - c) A Drain Return Line hose should run from the Drain Return Line port on the press-end manifold (DR2) to the correct port on top of the Hydraulic Pressure Unit (PR2).
 - d) A Drain Return Line hose should run from the Drain Return Line port on the anvil-end manifold (DR1) to the correct port on top of the Hydraulic Pressure Unit (AR2).

Graphics That Will Help...



Drawing 81855

Your Layout

Figures in Back of *Maintenance Chapter*

Making Connections on the Press: *Hydraulic System #2 Only*

This section applies only to Presses received after August 2003 (all serial numbers not listed below).

For Presses received before August 2003, (serial numbers 10231017090-01, 11191017669-01, 11191017669-02), return to the previous section.

1. Attach the Hydraulic Power Unit to the Accumulator Rack by running a customer-supplied Pressure Line hose from the correct port on the Hydraulic Power Unit (PO) to the single port on the right side of the Accumulator Rack (PI). The hose is vendor number H43020E-620-620-XX FT.
2. Attach the Accumulator Rack to the Press by running the supplied hose (PN 780392) from the Pressure Line port on the press-end manifold (P1) to a port on the left side of the Accumulator Rack (PO1). This hose should already be connected to the manifold when the Press is delivered.
3. Another hose (PN 780394) is supplied to run from the remaining port on the Accumulator Rack (PO2) to the Pressure Line port on the anvil-end manifold (P1). This hose should already be connected to the manifold when the Press is delivered.
4. Attach the Press to the Hydraulic Power Unit with customer-supplied hoses.
 - a) One Return Line hose should run from the Return Line port on the press-end manifold (T1) to a Return Line port on the Hydraulic Power Unit (PR1).
 - b) One Return Line hose should run from the Return Line port on the anvil-end manifold (T5) to the remaining Return Line port on the Hydraulic Power Unit (AR1).
 - c) A Drain Return Line hose should run from the Drain Return Line port on the press-end manifold (DR) to the correct port on top of the Hydraulic Pressure Unit (PR2).
 - d) A Drain Return Line hose should run from the Drain Return Line port on the anvil-end manifold (DR5) to the correct port on top of the Hydraulic Pressure Unit (AR2).

Graphics That Will Help...



Drawing 89009


Your Layout

Figures in Back of *Maintenance* Chapter

The following pages apply to all Presses.

Hydraulic Oil

See Table 2-4 in the *Prior to Installation* chapter for hydraulic oil specifications and recommendations.

CAUTION	
	<p>Hydraulic tank must be filled with fluid before starting machine. Running the pump without fluid will cause damage to the pump.</p>

Hydraulic Power Unit (HPU)

1. Fill the Hydraulic Power Unit reservoir to within 2” from the top of the tank with one of the hydraulic oils recommended in Table 2-4, using the site gauge as a guide. Refer to the *Maintenance* section of this manual or the Hydraulic Power Unit manual for more specific information.
2. Locate the Suction Line Ball Valve on the Hydraulic Power Unit. The suction line runs from the reservoir to the pump.

Figure 3-9: Suction Line Ball Valve



WARNING	
	<p>Suction Line Ball Valve must be in the open position before turning on the HPU.</p> <p>If the valve is closed, the pressure will cause the hose to burst and may result in personal injury.</p>

3. Ensure that the valve is open before turning on the Hydraulic Power Unit. It is open when the handle is in the position shown in Figure 3-9, parallel with the tube.
4. Check the Hydraulic Power Unit motor rotation.
 - a) Once the touch screen is operational, the motor can be started by simply turning on the hydraulics. See the *Manual Operation* section in the *Operation* chapter for instructions.
 - b) Look under the orange cover on the motor to view the direction the motor is turning.
 - c) Compare the direction of the motor rotation with the arrow on the motor indicating the correct rotation.

WARNING	
	Electrical Hazard! All electrical work must be performed by a qualified electrician. Follow approved lockout and tagout procedures (OSHA 29 CFR 1910.147).

5. If the rotation is incorrect, it must be adjusted.
 - a) Disconnect power to make the adjustment.
 - 1) Activate an emergency stop.
 - 2) Disconnect power at the main power source to the machine. Follow all lockout and tagout procedures to ensure power is disconnected before opening the electrical enclosure.
 - b) Open the main electrical enclosure, and switch any two of the three large cables running out of the bottom of the motor starter to the output side of the overload. See Figure 6-26.
 - c) Restore power to the machine.
 - d) Restart the motor and check the rotation again. It should now be correct.
6. Check the system for oil leaks.

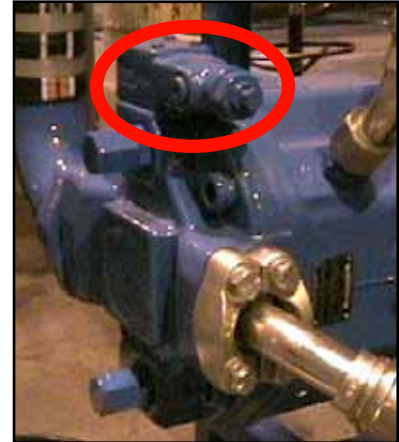
When the hydraulic system is turned on, be prepared for leaks or the possibility of busted hoses.


Stand a safe distance away from the Hydraulic Power Unit.

It is advisable to have an oil-absorbing agent available to safely clean up oil spilled or sprayed onto the floor.

- a) Set the system pressure to 1000 psi by adjusting the Pressure Compensator on the Hydraulic Power Unit pump. To adjust it, turn the hex head bolt shown in Figure 3-10 with an adjustable wrench while observing the system pressure on the gauge.
 - b) Carefully check all ports and hoses for leaks. If any are found, fix them before continuing.
7. After checking for leaks, set the system pressure to 3250 psi at the Safety Relief Valve.
- a) Increase the allowed pressure by turning the hex head bolt on the Pressure Compensator (shown in Figure 3-10) until you hear oil passing through the Safety Relief Valve (located on the top of the Hydraulic Power Unit).
 - b) Read the current pressure on the Hydraulic Power Unit pressure gauge.
 - c) Loosen the nut on the Safety Relief Valve and turn its adjustment screw until you no longer hear the oil passing through it.
 - d) Repeat steps “a” and “b” until the system pressure reaches 3250 psi.
8. Adjust the Pressure Compensator so the system pressure is set to 2950 psi.

Figure 3-10: Pressure Compensator



CAUTION	
	Operating the system at or above the safety relief valve pressure could cause premature failure of hydraulic components.

Manifolds: *Hydraulic System #1 Only*

This section applies only to Presses received before August 2003, (serial numbers 10231017090-01, 11191017669-01, 11191017669-02).

For Presses received after August 2003 (all serial numbers not listed above), proceed to the next section.

Carriage Proportional Valve Stacks

The following steps will need to be done for both Proportional Valves for the carriage cylinders. One is located on top of the anvil-end manifold and one is located on top of the press-end manifold. The order that these valves are set is irrelevant.

1. On the first manifold, locate the two (2) Pressure Relief Valves, located between the manifold block and the carriage cylinder Proportional Valve.
2. Adjust both Pressure Relief Valves on that manifold (one is for the extend and one is for the retract stroke) using ONE of the methods described below. Because accuracy is not critical in this step, the simplest method is the “estimation method”.
 - a) Estimation method:
 - 1) Loosen the nut.
 - 2) Using an Allen wrench in the center of the threaded rod, turn the adjustment screw (threaded rod) clockwise until it bottoms out.
 - 3) Count the number of counterclockwise turns to back the adjustment screw all the way out until it stops. It is recommended that you have a black marker to mark one of the flats on the nut to determine a full turn.
 - 4) Take the number of turns it took to back it out, and divide by two (2).
 - 5) Turn the screw clockwise again for that number of turns.
 - 6) Tighten the nut to hold the adjustment screw in place.
 - 7) This sets the pressure relief at approximately 1500 psi.
 - b) Using an inline gauge:
 - 1) Plum a gauge (not supplied) in-line between the manifold and the extend/retract hose.
 - 2) Set the center Pressure Reducing Valve to 2000 psi.
 - 3) Extend/retract the cylinder and hold it at the end of the stroke using the touch screen.
 - 4) Adjust the Pressure Relief Valve until the inline gauge reads 1500 psi.
 - 5) Remove the gauge from the manifold.
3. Adjust the Pressure Reducing Valve for the carriage (located on the front of that manifold) until the gauge reads 1000 psi.
4. Repeat the steps above for the other manifold.

Squeeze Cylinder Directional Valves

The following steps will need to be done for all three (3) Squeeze Directional Valves. Two are located on top of the anvil-end manifold and one is located on top of the press-end manifold. The order that these valves are set is irrelevant.

1. Place a railroad tie at the Tie Stops on the Press conveyor. This will be used for the cylinders to squeeze while pressures are being adjusted.
2. Move both of the carriages out around the tie so the squeeze cylinder platens will not hit the press or anvil platens when the valves are activated. See the *Operation* chapter for detailed instructions on how to manually move carriages out and have them hold their position.
3. Completely open both cartridges of the Pilot Choke Valve on the Directional Valve that you are setting by turning their adjustable screws counterclockwise to allow full pilot pressure flow. See Figure 3-11.
 - a) The adjustment screw on the front side is for the extend stroke.
 - b) The adjustment screw on the back side is for the retract stroke.
4. Manually actuate the Directional Valve.
5. Adjust the squeeze cylinder Pressure Reducing Valve located directly in front of and below the Directional Valve that you are setting.
 - a) Turn the adjustment screw on the correct Reducing Valve until the gauge reads 1900 psi. Refer to Table 3-2.
 - b) Stop actuating the Directional Valve.

Figure 3-11: Pilot Choke Adjustment Screws

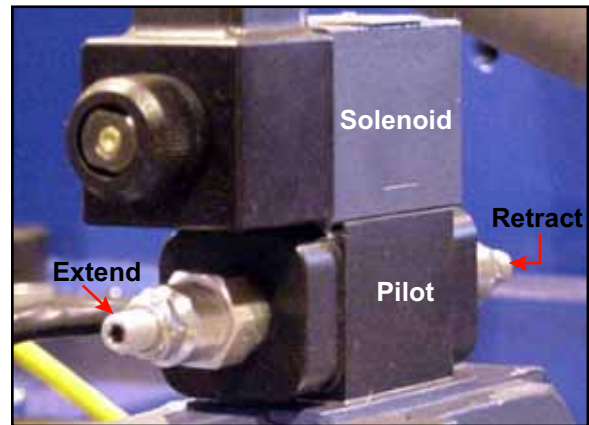


Table 3-2: Ports to Adjust the Pressure Reducing Valves for Squeeze Cylinders

	Press-End Manifold	Anvil-End Manifold
Top Squeeze	N/A	PRV3
Side Squeeze	PRV4	PRV1

6. Adjust both Flow Control Valves for the Directional Valve that you are setting by turning the adjustment screw for both the extend and retract strokes.
 - a) It is located in-line between the manifold and the cylinder being adjusted.

- b) Turn the adjustment screw for both the extend and retract stroke clockwise until they bottom out.
- c) For the extend stroke, turn the adjustment screw counterclockwise until the yellow stripe is visible (about 3 turns) to set the flow control to approximately 40 GPM.
- d) For the retract stroke, turn the adjustment screw counterclockwise until the yellow stripe is visible (approximately 2 1/2 turns) to set the flow control to approximately 30 GPM.

Note: Flow controls can be adjusted to allow more flow, but this may cause premature failure to the flow dividers.

7. Adjust the Pilot Chokes. See Figure 3-11.
 - a) Tighten the adjusting screw on the Pilot Chokes for both the extend and retract strokes of the press cylinder by turning it clockwise in small increments.
 - 1) The adjustment screw on the front side is for the extend stroke.
 - 2) The adjustment screw on the back side is for the retract stroke.
 - b) Manually jog the machine by actuating the Directional Valve.
 - c) Repeat the previous two steps until the cylinder hesitates on the applicable stroke.
8. Turn the adjusting screw for both strokes counterclockwise now, just slightly, until there is no longer a hesitation on the applicable stroke.
9. Repeat the procedure in this section for the remaining three (2) Directional Valves.

Press Cylinder Valve Stack

1. Place a railroad tie at the Tie Stops. This will be used for the cylinder to squeeze while pressures are being adjusted.
2. Completely open both cartridges of the Pilot Choke Valve on the Directional Valve that you are setting by turning their adjustable screws counterclockwise to allow full pilot pressure flow. See Figure 3-11.
 - a) The adjustment screw on the front side is for the extend stroke.
 - b) The adjustment screw on the back side is for the retract stroke.
3. Manually actuate the Directional Valve and hold.
4. Adjust the press cylinder Pressure Reducing Valve located directly in front of and below the Directional Valve that you are setting.
 - a) Turn the adjustment screw on the Reducing Valve until the gauge reads 2400 psi.

- b) Stop actuating the Directional Valve.
5. Adjust the Flow Control Valves for the press cylinder Directional Valve to resolve timing issues within the cycle. Make this adjustment by turning the adjustment screws on the Flow Control Valves clockwise, as needed. One valve is for the extend stroke and one is for the retract stroke.
6. Adjust the Pilot Chokes.
 - a) Tighten the adjusting screw on the Pilot Chokes for both the extend and retract strokes of the press cylinder by turning it clockwise in small increments.
 - b) Manually jog the machine by actuating the Directional Valve that is directly above the press cylinder Pilot Choke.
 - c) Repeat the previous two steps until the cylinder hesitates on the applicable stroke.
7. Turn the adjustment screw on both Pilot Chokes for the press cylinder counterclockwise slightly, until there is no longer a hesitation on either stroke when you manually jog the machine.

Manifolds: *Hydraulic System #2 Only*

This section applies only to Presses received after August 2003 (all serial numbers not listed below).

For Presses received before August 2003, (serial numbers 10231017090-01, 11191017669-01, 11191017669-02), return to the previous section.

Carriage Proportional Valve Stacks

Refer to Figure 6-21 and Figure 6-23. The following steps will need to be done for both Proportional Valves for carriage cylinders. One is located on top of the anvil-end manifold and one is located on top of the press-end manifold. The order that these valves are set is irrelevant.

1. On the first manifold, locate the two (2) Pressure Relief Valves, located under the Proportional Valve (RV3A and RV3B.)
2. Adjust both Pressure Relief Valves on that manifold (one is for the extend and one is for the retract stroke) using ONE of the methods described below. Because accuracy is not critical in this step, the simplest method is procedure “a”.
 - a) Estimation Method:
 - 1) Loosen the nut.
 - 2) Using an Allen wrench in the center of the threaded rod, turn the adjustment screw (threaded rod) clockwise until it bottoms out.
 - 3) Count the number of counterclockwise turns to back the adjustment screw all the way out until it stops. It is recommended that you have a black marker to mark one of the flats on the nut to determine a full turn.
 - 4) Take the number of turns it took to back it out, and divide by two (2).
 - 5) Turn the screw clockwise again for that number of turns.
 - 6) Tighten the nut to hold the adjustment screw in place.
 - 7) This sets the pressure relief at approximately 1500 psi.
 - b) Using an inline gauge:
 - 1) Plum a gauge (not supplied) in-line between the manifold and the extend/retract hose.
 - 2) Set the center Pressure Reducing Valve to 2000 psi.
 - 3) Extend/retract the cylinder and hold it at the end of the stroke using the touch screen.
 - 4) Adjust the Pressure Relief Valve until the inline gauge reads 1500 psi.
 - 5) Remove the gauge from the manifold.

Graphics That Will Help...



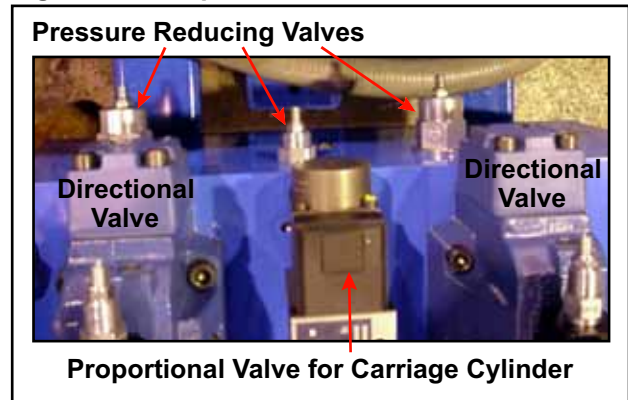
Drawing 89009

Your Layout

Figures in Back of *Maintenance* Chapter

3. Adjust the center Pressure Reducing Valve located on the back of that manifold (PRV3) until the gauge reads 1000 psi.
4. Repeat the steps above for the other manifold.

Figure 3-12: Top and Back Sides of Manifolds



Squeeze Cylinder Directional Valves

Refer to Figure 6-21 and Figure 6-23. The following steps will need to be done for all three (3) Squeeze Directional Valves. Two are located on top of the anvil-end manifold and one is located on top of the press-end manifold. The order that these valves are set is irrelevant.

1. Place a railroad tie at the Tie Stops on the Press conveyor. This will be used for the cylinders to squeeze while pressures are being adjusted.
2. Move both of the carriages out around the tie so the squeeze cylinder platens will not hit the press or anvil platens when the valves are activated. See the *Operation* chapter for detailed instructions on how to manually move the carriages out and have them hold their position.
3. Completely open both cartridges of the Pilot Choke Valve on the Directional Valve that you are setting by turning their adjustment screws counterclockwise to allow full pilot pressure flow. See Figure 3-13.
 - a) The adjustment screw on the front side is for the extend stroke.
 - b) The adjustment screw on the back side is for the retract stroke.
4. Adjust the Pressure Reducing Valve (directly behind the Directional Valve that you are setting) until the gauge reads 1900 psi. Refer to Table 3-2 and Figure 3-12.

Figure 3-13: Pilot Choke Cartridge

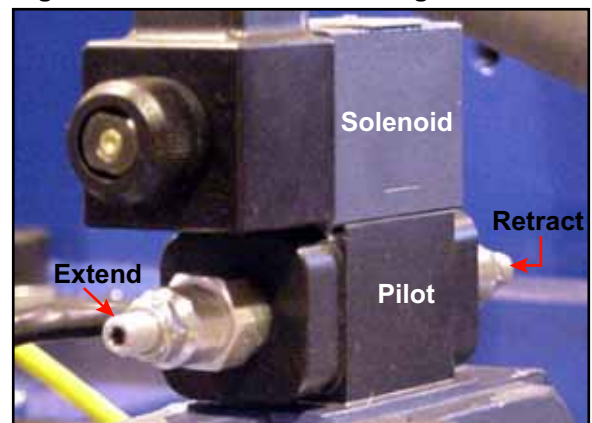


Table 3-3: Ports to Adjust the Pressure Reducing Valves for Squeeze Cylinders

	Press-End Manifold	Anvil-End Manifold
Top Squeeze	N/A	PRV2
Side Squeeze	PRV2	PRV4

5. Adjust both Flow Control Valves for the Directional Valve that you are setting by turning the adjustment screw for both the extend and retract strokes. Refer to Table 3-5.

Table 3-4: Ports to Adjust the Flow Control Valves for Squeeze Cylinders

Cylinder	Stroke	Press-End Manifold	Anvil-End Manifold
Top Squeeze	Extend	N/A	FC2A
	Retract	N/A	FC2B
Side Squeeze	Extend	FC2A	FC4A
	Retract	FC2B	FC4B

- a) Turn both the extend and retract adjustment screws clockwise until they bottom out. The extend stroke valve is located on the front of the manifold. The retract stroke valve is located on the side of the manifold.
 - b) For the extend stroke, turn the adjustment screw counterclockwise approximately 3-1/2 turns to set the flow control to approximately 40 GPM.
 - c) For the retract stroke, turn the adjustment screw counterclockwise approximately 3 turns to set the flow control to approximately 30 GPM.
- Note: Flow controls can be adjusted to allow more flow, but this may cause premature failure to the flow dividers.*
6. Tighten the adjustment screw on the Pilot Choke by turning the adjustment screws clockwise with an Allen wrench until the cylinder hesitates on the applicable stroke.
 - a) The adjustment screw on the front side is for the extend stroke.
 - b) The adjustment screw on the back side is for the retract stroke.
 7. Turn the adjustment screw for both strokes counterclockwise slightly, until there is no longer a hesitation on the applicable stroke.
 8. Repeat the procedure in this section for the remaining three (3) Directional Valves. They are labeled in Figure 6-21 and Figure 6-23.

Press Cylinder Valve Stacks

1. Place a railroad tie at the Tie Stops. This will be used for the cylinder to squeeze while pressures are being adjusted.
2. Locate the Pilot Choke located on the Directional Valve for the press cylinders. It is the center stacked valve on the press-end manifold.
3. Open the Pilot Choke all the way by turning it counterclockwise to allow full pilot pressure flow.
4. Adjust the press cylinder Pressure Reducing Valve (PRV4) that is on the back of the press-end manifold to 2400 psi by turning the adjustment screw.
5. Adjust the Flow Control Valves for the press cylinder Directional Valve to resolve timing issues within the cycle. Make this adjustment by turning the adjustment screws on the Flow Control Valves clockwise, as needed. One valve is for the extend stroke (FC4A) and one is for the retract stroke (FC4B). Refer to the illustrations in the back of the *Maintenance* chapter.
6. Adjust the Pilot Chokes.
 - a) Tighten the adjusting screw on the Pilot Chokes for both the extend and retract strokes of the press cylinder by turning it clockwise in small increments.
 - b) Manually jog the machine by actuating the Directional Valve is directly above the press cylinder Pilot Choke.
 - c) Repeat the previous two steps until the cylinder hesitates on the applicable stroke.
7. Turn the adjusting screw on both Pilot Chokes for the press cylinder counterclockwise slightly, until there is no longer a hesitation on either stroke when you manually jog the machine.

Pressure Switches: *Hydraulic System #1 Only*

There are three (3) Pressure Switches on the **HammRR Press** base that may need adjusting. Two are on the press end and one is at the anvil end. All are located at the very end of the machine base, near the floor, at the locations listed in Table 3-5. Refer to Figure 6-16 for a diagram of the locations.

Table 3-5: Pressure Switch Locations

Cylinders Affected	Location of Pressure Switch	Labels
Press Cylinder	Press end on right side when facing the end of the Press	PS1—Port A2
Press-End Squeeze Cylinders	Press end, on left side when facing the end of the Press	PS2—Port A4
Anvil-End Squeeze Cylinders	Anvil end	PS3—Port A1

The following procedure sets the Pressure Switch for the appropriate cylinder at a pressure just below that of the Pressure Reducing Valve for the same cylinder.

1. Loosen the nut on the outer screw (the screw closest to the cover, circled in Figure 3-14).
2. Set the Pressure Switch to the maximum setting by turning the screw clockwise several turns.
3. Start the machine and run it until it stops. The cycle will stop at the end of the stroke you are adjusting because it will not receive a signal from the Pressure Switch just adjusted. The red light will come on when the Pressure Switch is not being made.

Figure 3-14: Pressure Switch Adjustment



WARNING	
	<p>Moving parts and hoses can crush and cut. Stay clear of all moving parts while adjusting the Pressure Switch.</p> <p>When the correct pressure is reached, the machine may automatically begin to cycle. This will initiate movement of mechanical parts and a forceful vibration of the hydraulic hoses.</p>

4. Turn the screw on the Pressure Switch counterclockwise in small increments until the red light turns off and the cycle continues. Ensure that all personnel and equipment are clear of moving parts before beginning this step.

When adjusting the switches for the squeeze portion of the cycle, both switches must be made before the cycle will continue.

5. Turn the screw another 1/2 to 1 full turn counterclockwise to set the Pressure Switch just below the Pressure Reducing Valve setting.

Pressure Switches: *Hydraulic System #2 Only*

There are three (3) Pressure Switches on the **HammRR Press** base that may need adjusting. Two are on the press end and one is at the anvil end. All are located at the very end of the machine base, near the floor, at the locations listed in Table 3-5. Refer to Figure 6-16 for a diagram of the locations.

Table 3-6: Pressure Switch Locations

Cylinders Affected	Location of Pressure Switch	Labels
Press Cylinder	Press end on right side when facing the end of the Press	PS1—Port A4
Press-End Squeeze Cylinders	Press end, on left side when facing the end of the Press	PS2—Port A2B
Anvil-End Squeeze Cylinders	Anvil end	PS3—Port A4A

The following procedure sets the Pressure Switch for the appropriate cylinder at a pressure just below that of the Pressure Reducing Valve for the same cylinder.

1. Loosen the nut on the outer screw (the screw closest to the cover, circled in Figure 3-14).
2. Set the Pressure Switch to the maximum setting by turning the screw clockwise several turns.
3. Start the machine and run until it stops. The cycle will stop at the end of the stroke being adjusted because it will not receive a signal from the Pressure Switch just adjusted. The red light will come on when the Pressure Switch is not being made.

Figure 3-15: Pressure Switch Adjustment



WARNING	
	<p>Moving parts and hoses can crush and cut. Stay clear of all moving parts while adjusting the Pressure Switch.</p> <p>When the correct pressure is reached, the machine may automatically begin to cycle. This will initiate movement of mechanical parts and a forceful vibration of the hydraulic hoses.</p>

4. Turn the screw on the Pressure Switch counterclockwise in small increments until the red light turns off and the cycle continues. Ensure that all personnel and equipment are clear of moving parts before beginning this step.

When adjusting the switches for the squeeze portion of the cycle, both switches must be made before the cycle will continue.

5. Turn the screw another 1/2 to 1 full turn counterclockwise to set the Pressure Switch just below the Pressure Reducing Valve setting.

The following pages apply to all Presses.

Cushion Adjustment

All cylinders used on the **HammRR Press** have cushion adjustments to control how much force is applied to the mechanism controlled by the cylinder. Turn the cushion screw on a particular cylinder clockwise to increase the cushion, and counterclockwise to reduce the cushion using a small, slotted screwdriver. The cushion adjustment screw should look like Figure 3-16 and be labeled. The locations of the cushion adjustments are shown in Table 3-7.

Figure 3-16: Cushion Adjustment Screw



Table 3-7: Location of Cushion Adjustments

Press End	Anvil End	Other
2 Side Squeeze Cylinders	2 Side Squeeze Cylinders	2 Tie Stop Cylinders
1 Top Squeeze Cylinder	1 Top Squeeze Cylinder	
Press Cylinder		

Press Conveyor Motor

1. Start the conveyor motor using the touch screen, in Manual Mode.
 - a) From the Main Menu, press the MANUAL button.
 - b) At the Manual Operations screen, press the button labeled CONVEYOR—JOG FWD.
2. Notice the direction the conveyor chain is traveling. It should be traveling away from your infeed side.
3. If the chain is traveling in the incorrect direction, reverse two of the wires exiting from the output side of the VFD. See Figure 6-26.
4. If the motor is running and the torque on the chain is not strong enough to keep the chain moving under normal operating conditions, or if the chain does not stop moving when an obstruction occurs, adjust the Torque Limiter by following the instructions in the next section.

Torque Limiter

*Keep in mind that the purpose of this Torque Limiter is to protect the gear motor if a large torque is encountered that could damage the conveyor motor. Adjustment should be made only if there is not enough torque to operate the conveyor under **normal** operating conditions.*

The Torque Limiter protects the conveyor and gear motor by causing the gear drive to spin in place when the conveyor is placed under extreme loads. If set correctly, the chain will move forward and backward under normal operating conditions, but will not move if a large torque is encountered that could cause the gear motor to stall. Perform the following steps to adjust the torque setting, referring to Figure 3-17 and Figure 3-18.

Figure 3-17: Torque Limiter

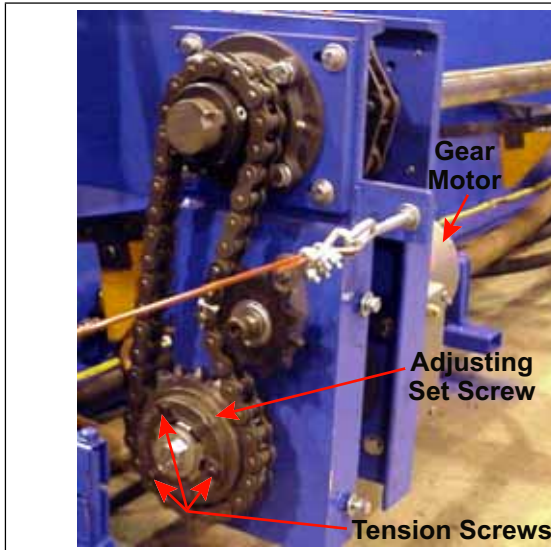
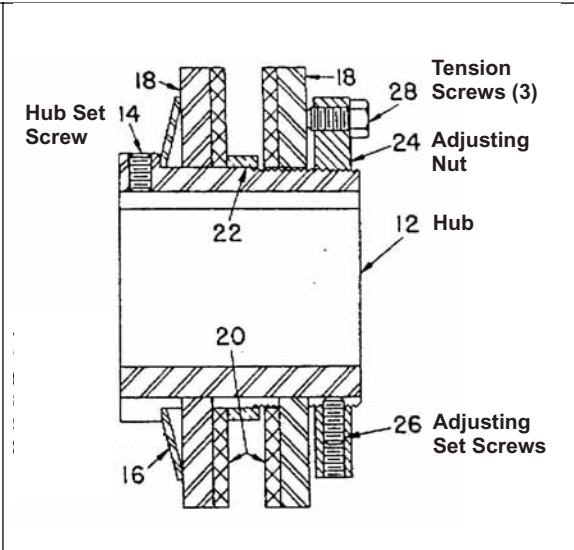


Figure 3-18: Cross Section



1. Back off the tension screws #28 at least three turns.
2. Loosen the adjusting nut set screw #26 at least nine turns.
3. Reset the adjusting nut #24. Turn it clockwise for more torque or counterclockwise for less. Do not tighten the adjusting nut beyond finger tight.
4. Tighten the adjusting nut set screw #26 in the nearest spline notch. Do not tighten the set screw on threads of hub.
5. Tighten the tension screws #28 alternately and evenly until the desired torque is reached. Do not use washers under the heads of these screws.
6. Drive the conveyor chain both forward and backward with at least two (2) ties on the conveyor to determine if the maximum setting of the Torque Limiter will allow the conveyor to operate adequately.
7. If the conveyor does not operate adequately, repeat the previous steps until the Torque Limiter is operating correctly.
8. Place a tie in a position that should stall the motor and drive the chain to ensure that the operating torque is adequately set to stall the gear motor under normal operating conditions.
9. If the motor does not stall when a tie is in a bind, loosen the adjusting nut #24 slightly and repeat the previous three steps.

Tie Stops

Speed of Tie Stops

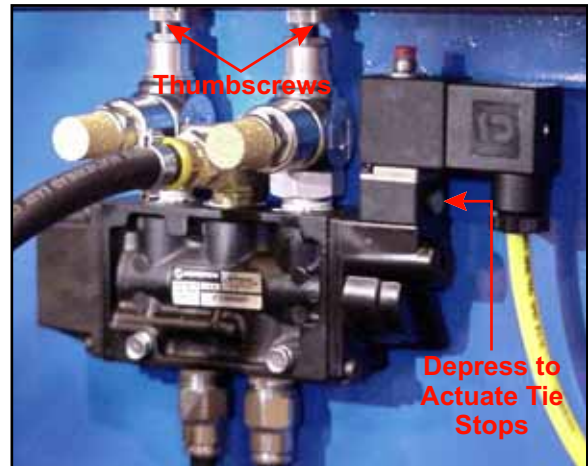
The speed of the Tie Stops is controlled by the pneumatic system. To adjust the speed that the Tie Stops raise and lower, locate the Pneumatic Flow Control. Figure 3-19 shows the valve attached to the base of the machine behind the Press conveyor gear motor. The thumbscrew on the left adjusts the retract stroke. The thumbscrew on the right adjusts the extend stroke.

The speed does not have to be set to an exact measurement. They need to raise quickly enough to be in position to stop the ties, but slowly enough so they do not cause unnecessary wear on the parts involved. The noise heard from the Tie Stops retracting should be minimal.

To reduce the air flow and slow the speed of each stroke, loosen the nut below the appropriate thumbscrew and manually turn the thumbscrew clockwise. To increase the air flow and increase speed, turn the appropriate thumbscrew counterclockwise.

To manually actuate the Tie Stops to test the speed, press an Allen wrench into the socket on the right side of the Flow Control.

Figure 3-19: Pneumatic Valve

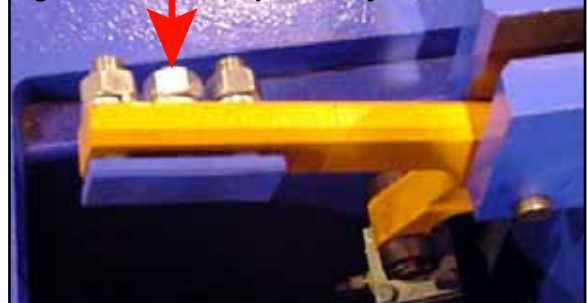


Adjusting the Location Where the Tie is Stopped

To adjust the exact location that the Tie Stops cause the tie to stop for clamping and pressing, complete the following steps.

1. Loosen the three nuts shown in Figure 3-20.
2. Turn the middle set screw with an Allen wrench to adjust the pad the desired amount. See Figure 3-20.
 - a) Turn it clockwise to stop the ties further from the Tie Stop.
 - b) Turn it counterclockwise to stop the ties closer to the Tie Stop.
3. Once the pad is in position, tighten all three (3) nuts.

Figure 3-20: Tie Stop and Adjustment Screw



Infeed & Outfeed Conveyor Installation

*This equipment is optional and refers only to **MiTek** conveyor systems. It may not be included in your system. If you are using a non-MiTek conveyor system, you must align, level, and hook-up power on your own accord.*

Positioning the Conveyors

1. Refer to your layout when positioning the infeed & outfeed conveyors.
2. Align the center lines of the idler shafts on the infeed & outfeed conveyors with the idler shafts on the Press.
3. Adjust the height of the conveyors so that the top of the chain is at the same height as the Press conveyor. Refer to Drawing 81921.
 - a) There are two (2) leveling screws at the bottom of each conveyor leg. Begin with the conveyor closest to the Press for both the infeed and outfeed systems.
 - b) Adjust the two (2) nuts on each leveling screw until the end closest to the Press is even with the Press conveyor.
 - c) Level the other end of the conveyor.
 - d) Repeat the process for each conveyor.
4. Align the anvil on the outfeed conveyor with the anvil on the **HammRR Press** at their maximum setting.
 - a) Remove the two (2) screws from the anvil on the outfeed conveyor.
 - b) Move the anvil to its maximum setting and replace the screws.

Conveyor Connections

1. Make all electrical connections as shown in Drawing 90451.
2. Connect compressed air to both systems at their specified drop points. Locations and flow requirements are specified on your layout.
3. Check the direction the conveyors are moving.
 - a) From the Main Menu, press the INFEED/OUTFEED button.
 - b) At the Infeed & Outfeed Operations screen, press the button labeled INFEED CONVEYOR—JOG/START FWD, and note if the infeed conveyor is moving in the correct direction (toward the Press).

- c) At the Infeed & Outfeed Operations screen, press the button labeled OUTFEED CONVEYOR—JOG/START FWD, and note if the outfeed conveyor is moving in the correct direction (away from the Press).
 - d) If either of the conveyors are moving in the wrong direction, switch two of the output wires from the applicable VFD.
4. Verify that the kerf-cut saw blades are moving in the correct direction.
- a) From the Main Menu, press the INFEED/OUTFEED button.
 - b) At the infeed & outfeed Operations screen, press the button labeled LEFT SAW BLADE—JOG, and note if the left kerf -cut saw blade is rotating in the correct direction (towards the Press).
 - c) Repeat the previous step for the right kerf -cut blade.
 - d) If either of the blades are moving in the wrong direction, switch two of the output wires on that motor.

Anchoring the Conveyors to the Floor

Bolt the conveyors to the floor with 1/2" concrete anchors (not supplied).

New Installations

Establishing and Verifying Communications

Before applying power, complete steps #1 - 5.

1. Verify that the Operator Station Assembly Plug (located on the touch screen enclosure) is connected to one of the two designated power and communication ports located at either end of the Press.
 - a) Two receptacles are provided on the Press. One is located on the electrical junction box on the Press, and the other is located on the opposite end. Refer to Figure 3-21 and Figure 3-22.

**Figure 3-21: Port on Press
Junction Box**



Figure 3-22: Port on Press, Opposite End



2. Verify inside the touch screen enclosure that the blue communication cable is securely connected to DH+ Com port located on the side of the touch screen computer.

Figure 3-23: Front of Touch Screen

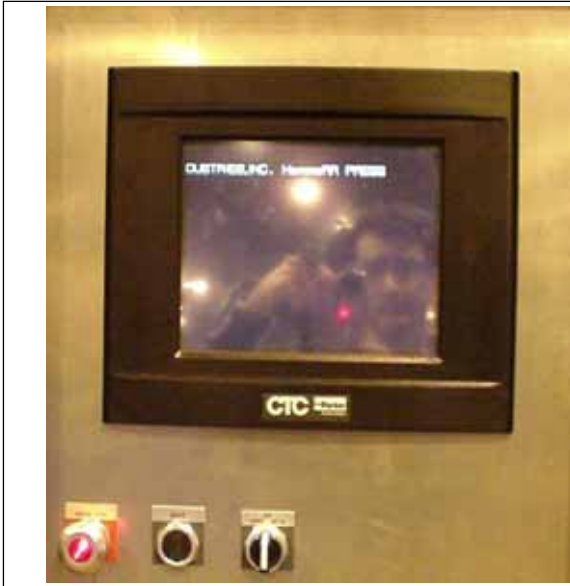


Figure 3-24: Inside Touch Screen Enclosure, Back of Touch Screen



3. Verify that the other end of the blue communication cable is connected to the PLC controller located inside the main electrical enclosure.

Figure 3-25: PLC Controller and Input/Output Cards



Figure 3-26: Communication Cable



4. Verify that the RUN MODE has been selected on the PLC controller by turning the key to the RUN position

When power is cycled to the touch screen, the unit will always run through a Power-On Test boot procedure, establish communications, and then display the press logo.

Figure 3-27: PLC Key



DANGER	
	<p>DO NOT ATTEMPT TO START THE SYSTEM WITHOUT A MITEK REPRESENTATIVE PRESENT!</p> <p>Serious injury and/or equipment damage may result.</p>

DANGER	
	<p>DO NOT ATTEMPT TO START THE SYSTEM WITHOUT A MITEK REPRESENTATIVE PRESENT!</p> <p>Serious injury and/or equipment damage may result.</p>

Touch Screen Communication Status

*These steps can not be done without the operations software program, which will be installed by a **MiTek** representative during the start-up procedure.*

1. Touch anywhere on the logo screen and the Main Menu will display.

Figure 4-1: First Screen When Touch Screen is Turned On

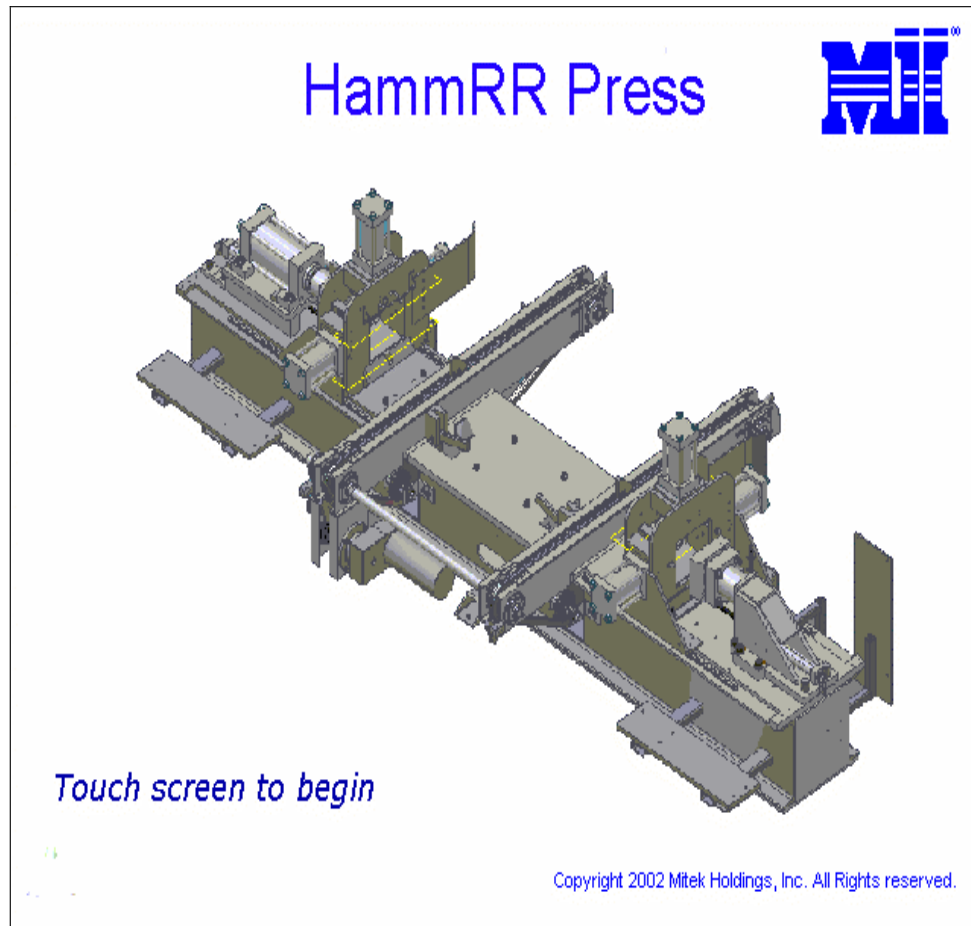
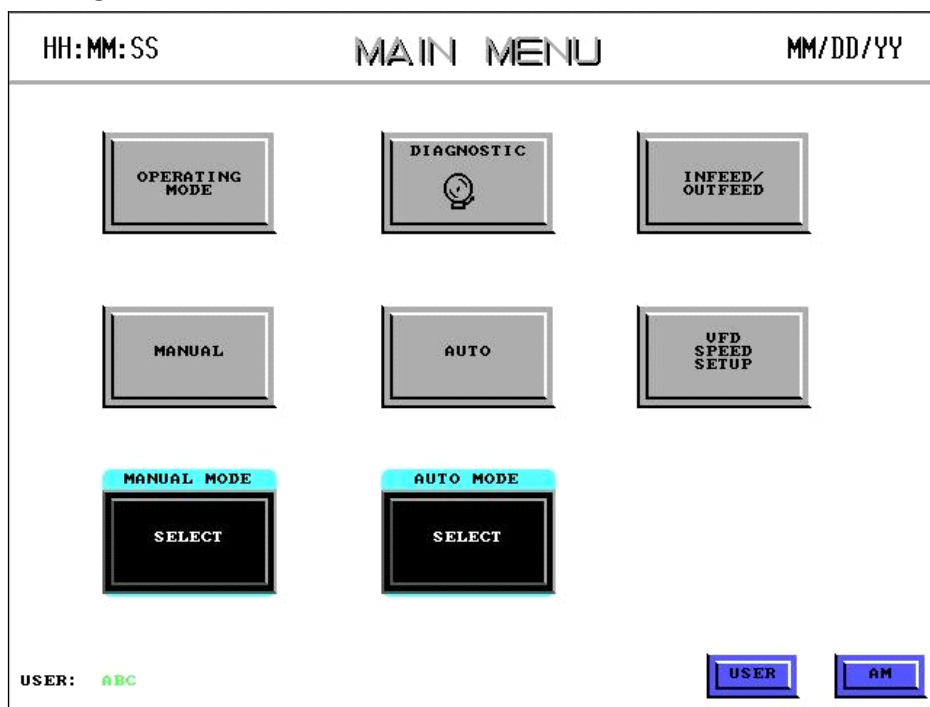


Figure 4-2: Main Menu on Touch Screen



2. Select DIAGNOSTIC and the screen will display the Diagnostic Menu.
3. Select T-SCREEN STATUS to verify touch screen communications. Verify the ERROR STATUS box has a zero (0) for communicating.
 - a) If the status is zero (0), the operator may return to the Main Menu and proceed to the *Operation* chapter.
 - b) If the status is not zero or the operator would like to clear the previous error status codes, proceed with the following steps.

Resetting the Communication Status

1. Return to the Main Menu by selecting the appropriate pushbutton.
2. Select USER and enter the password using the pop-up keyboard display. Hit ENTER when the password is entered. The AM selection will be accessible when the proper user-level password has been entered.

A MiTek representative will provide a password during the start-up procedure.


3. Select AM and an Interact Menu will display. Select GO TO DRIVER and the Communications Driver Menu will display. Log the driver OFF, pause, log the driver ON, and CLEAR the errors.
4. Return to the Interact Menu by selecting GO TO AM. Return to the Main Menu by selecting GO TO MODULE.

5. Repeat steps 3 and 4 to verify that all entries in the Touch Screen Status screen are now zero (0).
6. When the PLC and touch screen are communicating, the **HammRR Press** may be used for Manual or Auto operations.

Reset user level to “operator” before leaving the equipment.

7. To reset the Operator Level, repeat step 2 and press the space bar instead of entering the password. Press ENTER to re-lock password protected levels.

WARNING	
	<p>Do not leave password protection un-locked.</p> <p>Some protected features may be altered causing injury to personnel and equipment. Only authorized personnel with password information may change locked variables and should immediately re-lock password before leaving machine.</p>

DANGER	
	<p>Read this manual completely before using this equipment!</p> <p>Do not operate this machine until you have a thorough understanding of all controls, safety devices, emergency stops, and operating procedures outlined in this manual.</p> <p>All warnings must be read and observed. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel operating and maintaining this equipment.</p>

Once the installation and start-up procedures are complete, the Press is ready to operate. This chapter provides instructions for every day operation using a **HammRR Press** touch screen that is programmed with software versions 1.0 and higher.

DANGER	
	<p>Before turning on the Press, make sure all personnel and equipment are clear.</p>


CAUTION	
	<p>Before operating the HammRR Press, run the hydraulic system for five minutes to circulate and warm up the hydraulic fluid. If the machine is stored where the overnight temperature drops below 50°F, follow the steps in the <i>Procedure During Cold Temperatures</i> section.</p>

Table 5-1: Operation Chapter Outline

Section	Starting Page
Before Beginning Operation	5-2
Main Menu-	5-5
Automatic Mode	5-8
Changing Tie Length	5-14
Manual Mode	5-12
Diagnostics	5-16
System Parameters	5-36
Infeed/Outfeed	5-39

Emergency Stops

Emergency stops (E-stops) immediately shut down all system power to the Press and its components. The touch screen power will remain on and active. The **HammRR Press** system has two types of E-stops: mushroom-shaped pushbuttons and pull-cord safety switches.

There are two (2) mushroom-shaped pushbuttons. One is on the front of the touch screen enclosure and one is on the front side of the main electrical enclosure. Simply press it in to activate it. To resume operation, you must return the pushbutton that was pushed in back to its operating position by grasping the button and pulling out on it. Both buttons will light up in red if any of the E-stop devices are engaged.

The second method is a pull-cord method. There are two separate pull-cords running around the perimeter of the Press base, one on each end. To activate a pull cord, increase the tension on its switch by pulling or pushing the cord at any location. The cord will disengage the safety switch it is attached to, shown in Figure 5-1, and the mushroom-shaped E-stop buttons will turn red. Once the pull-cord's safety switch has been engaged, it must be reset by pressing the button on the safety switch cover. If you do not know which switch was activated, press the button on both safety switches to resume operation.

The Emergency Stop screen on the Diagnostic Menu will show which E-stop is activated.

Figure 5-1: Pull Cord Reset




Touch Screen Pointers

- Auto Operation, or Auto Mode, allows the machine to continually run per the settings that have been previously entered. Most production will be done in Auto Mode, versus Manual Operation (or Manual Mode) which is used when setting up, making adjustments, doing maintenance, etc.
- The actual view of certain screens is dependent upon selections made. Because of this, the screens will not always appear exactly as shown in the graphics in this document. Some buttons are invisible depending upon the choices the operator made up to that point.
- To select a button on the touch screen, gently touch the screen at the location of the button. If the touch is not acknowledged, press slightly more firmly, making sure your entire finger tip is in contact with the screen.

Figure 5-2: Touch Screen Enclosure



Procedure During Cold Temperatures

CAUTION	
	<p>Running the press with cold oil can cause premature failure of the pump.</p> <p>If the Press is not run for an extended period of time, the procedure to warm up the hydraulic oil must be repeated.</p>

Recommended minimum operating temperature for hydraulic oil is approximately 70 degrees F. In order to obtain this operating temperature in cold climates, the heater needs to be run throughout the night. If your company policy requires that the main disconnect be shut off when not in use, the installation chapter provides guidance on how to provide power to the heater separately.

Although heating the reservoir will maintain an adequate operating temperature for the oil in the reservoir, the oil that is left in the lines and manifolds will not be heated. In order to bring this oil up to operating temperature, the Press needs to be cycled a few times with a short break between cycles. As the outside temperature decreases, the break between cycles should increase.

1. Before running the first cycle, observe the temperature of the oil in the reservoir by looking at the temperature gauge on the side of the HPU.
2. Run one cycle of the Press.
 - a) Ensure that the clamp chambers are in the “home” position. See *Manual Operations* to return the chambers to the “home” position.
 - b) Press START HYDRAULIC SYSTEM.
 - c) Press START CYCLE.
 - d) The AUTO FEED button should remain off, which means it is white with the word “START” visible, as shown in Figure 5-4.
 - e) With the selector switch that is on the touch screen enclosure in AUTO mode, hit the RAISE button that is also on the touch screen enclosure until a tie has entered the Press.
 - f) Allow one cycle to occur.
3. Notice any temperature drop on the temperature gauge, and wait until the temperature returns back to the original temperature.
4. Repeat the process until the temperature drop is only a few degrees.
5. At this point, you may operate the Press as normal.

Figure 5-3:
Temp. Gauge



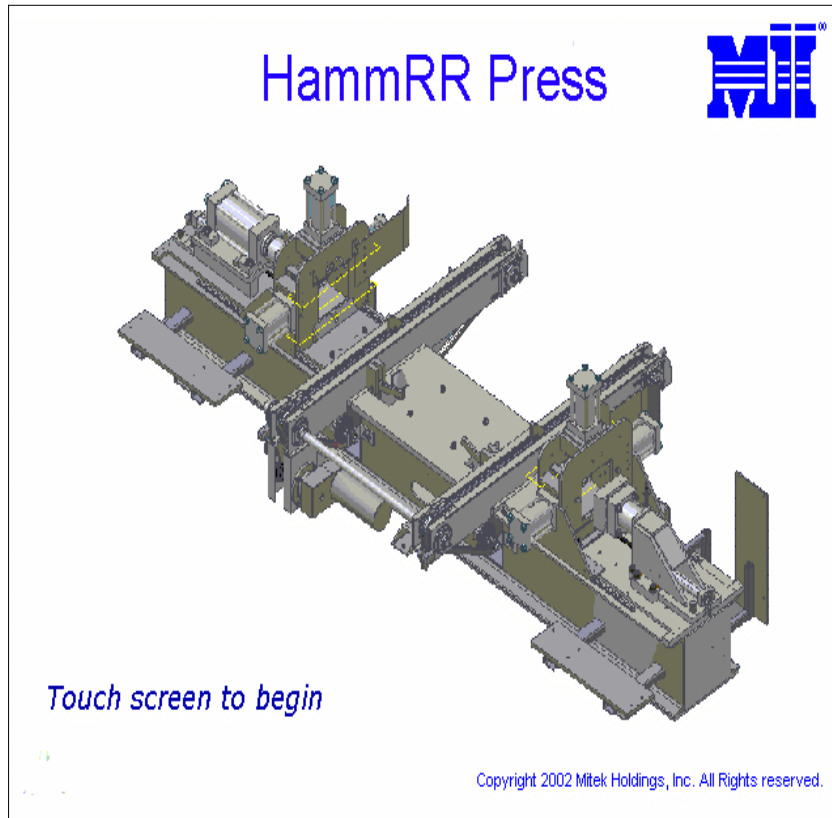
Figure 5-4:
Auto Feed Button



Starting Out

When the touch screen is first powered on, you will see the image shown in Figure 5-5. Touch anywhere in the image to proceed to the Main Menu. The **HammRR Press** system controls can be broken down into four different categories. They are shown in to assist in navigating this chapter.

Figure 5-5: The First Screen on the Touch Screen



Operations

Main Menu

Figure 5-6: Main Menu Screen

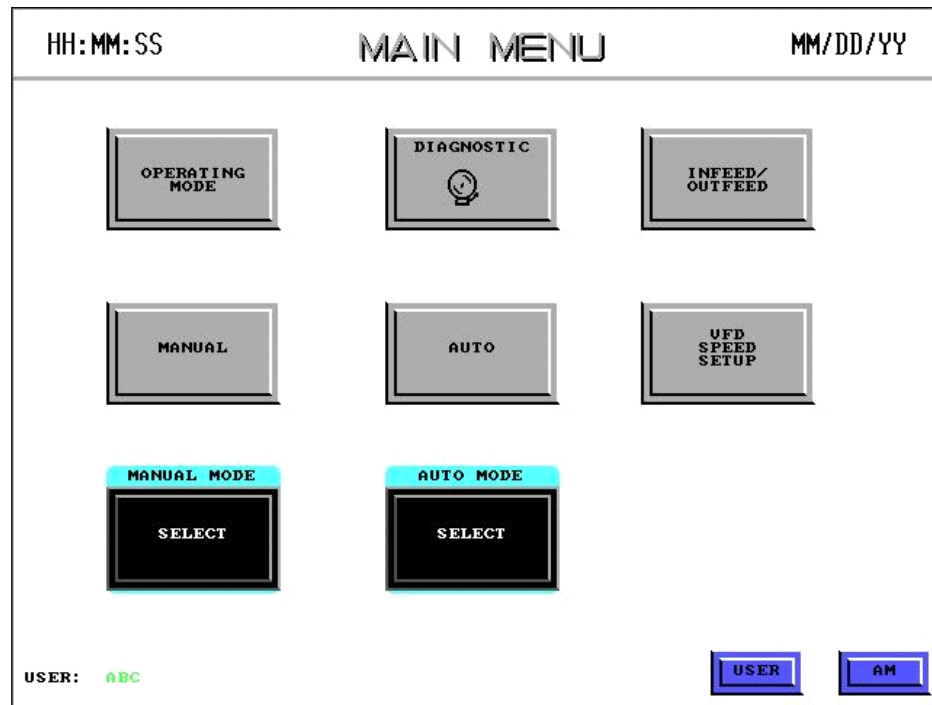


Figure 5-6 shows all of the possible buttons on the Main Menu screen, but the actual view of the Main Menu screen is dependent upon selections made. Some buttons are invisible depending upon whether the operator has chosen auto or manual functions and what options are installed.

An operator is not allowed to access manual functions if Auto Mode has been selected and vice versa. This helps prevent an operator from performing manual functions or changing operating modes while the system is selected to run automatically.

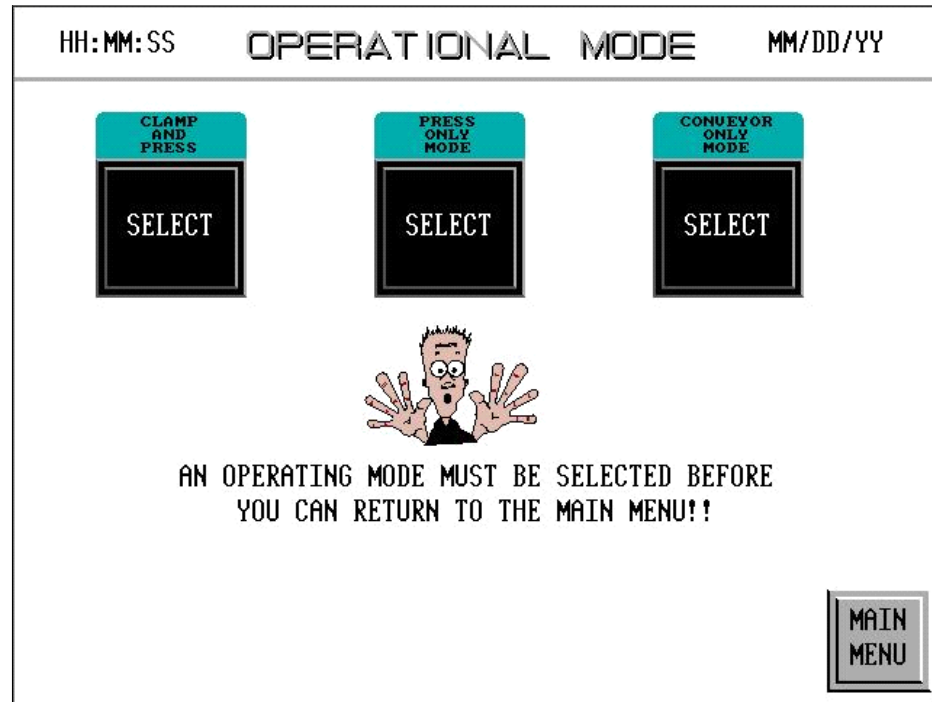
The infeed/outfeed button is only visible when a **MiTek** infeed/outfeed system is purchased and the option is installed.

Table 5-2: Buttons on the Main Menu Screen

Button/Indicator	Function
Operating Mode <i>(visible if Manual Mode is selected)</i>	Tells the system which functions it will be performing
Diagnostic	Allows control of the physical abilities of the system, see <i>Diagnos-tics</i> section for details
Infeed/Outfeed <i>(only visible w/MiTek system)</i>	Controls a Mitek infeed/outfeed conveyor system if installed, see <i>Infeed/Outfeed Operations</i> section for details
Manual <i>(visible if Manual Mode is selected)</i>	Select and displays when system is in Manual Mode
Auto <i>(visible if Auto Mode is selected)</i>	Select and displays when system is in Auto Mode
VFD Speed Setup	Controls the speed of the conveyors, see <i>System Parameters</i> for details
Manual Mode (Select)	Press here to set the machine in Manual Mode, shows SELECT when ready to select, SELECTED when chosen
Auto Mode (Select)	Press here to set the machine in Auto Mode, shows SELECT when ready to select, SELECTED when chosen

Operating Mode

Figure 5-7: Operational Mode Screen



The OPERATIONAL MODE screen is where the operator selects which Operating Mode listed in Table 5-3 should be used. Once entering this screen, the operator will not be able to return to the Main Menu until an Operating Mode has been selected. Only one Operating Mode may be active at any time.

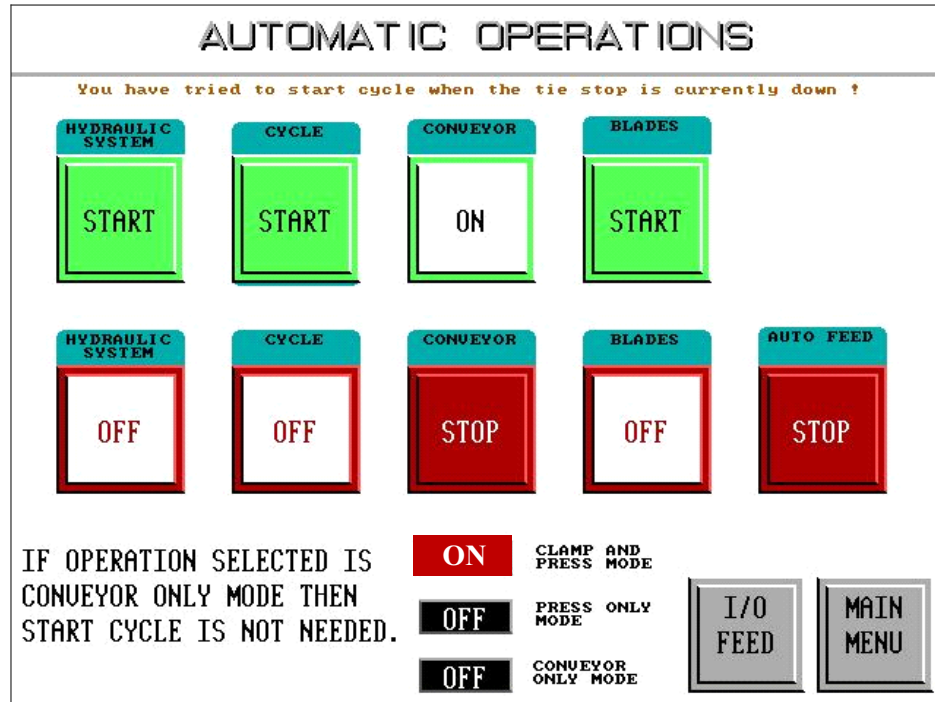
Table 5-3: Operating Modes

Clamp and Press	Advances the tie to the Tie Stops, clamps the ends of the tie, presses the plates into the end, and then conveys the tie off the conveyor
Press Only	Advances the tie to the Tie Stops, presses the plates into the end, and then conveys the tie off the conveyor.
Conveyor Only	Advances and the conveys the tie off the conveyor, Tie Stops will remain down while this mode is selected

When an Operating Mode has been selected, the corresponding panel will acknowledge with SELECTED on the pushbutton. The MAIN MENU button will be invisible until an operator has selected the Operating Mode. After an Operating Mode has been selected, return to the Main Menu by pressing the MAIN MENU button which should now be visible.

Automatic Operation

Figure 5-8: Automatic Operations Screen



The screen above shows the controls required to run in Auto Mode. It also lists the three Operating Modes at the bottom, indicating which one is chosen. To change the Operating Mode, you must return to the Main Menu, select MANUAL MODE, and choose OPERATING MODE.

CAUTION	
	<p>Be sure that the clamp chambers are in the “home” position before allowing any ties to enter the conveyor or damage to the machine may result.</p>

Quick Start

1. Ensure that the clamp chambers are in the “home” position. See *Manual Operations* to return the chambers to the “home” position.
2. Press START HYDRAULIC SYSTEM.
3. Press START CYCLE.
4. Press the AUTO FEED so that the button is red with “STOP” visible to start the infeed system.
5. Introduce the first tie to the system. If you have a **MiTek** infeed system, follow the steps in *Infeed System* in the *Automatic Operation* section.
6. Press START CONVEYOR.

Stopping the Automatic Operation

You may press the STOP button to stop just the Press conveyor or the one that stops the entire cycle, or press the STOP button for the hydraulic system to stop both the hydraulic system and cycle at the same time.

To stop the automatic feeding of the ties from any infeed system, press the STOP AUTO FEED button on the touch screen.

To stop the entire system, push an E-stop pushbutton or pull the pull cord discussed in the *Emergency Stops* section at the beginning of this chapter.

Infeed System in Automatic Operation

When the infeed system has ties available for the Press, the Automatic Operations may be started.

The automatic cycle is designed to continuously feed the ties through the Press. The first tie, though, must be presented to the Press by the operator via the selector switch and pushbutton located on the enclosure below the touch screen. Follow the steps below to introduce the first tie to the Press.

1. Verify the AUTO FEED pushbutton on the Automatic Operation Screen is red with the word STOP visible. If the pushbutton is white with the word START visible, press the button once to start the Auto Feed function.
2. Place the HAND/AUTO selector switch into the HAND position.
3. Press the RAISE pushbutton and hold until the tie has been presented to the Press.
4. Release the RAISE button and place the selector switch into the AUTO position.



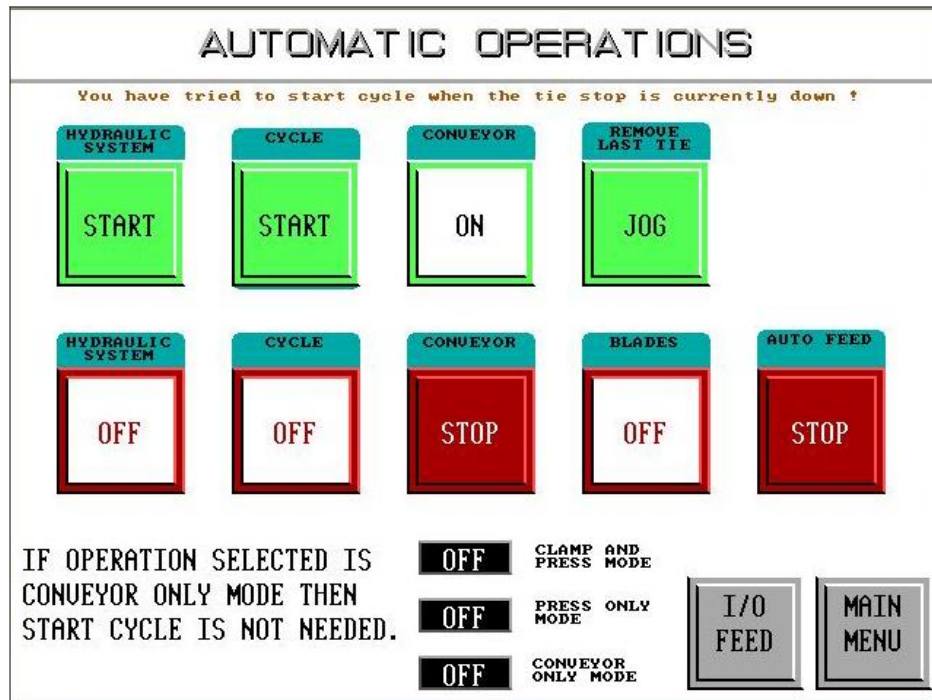
Figure 5-9: Controls Below the Touch Screen



Alternate Auto Screen

There are custom screens available to customer who have unique (customer supplied) infeed equipment. In Figure 5-10, the START-BLADES button on the standard Automatic Operations screen has been replaced with a JOG-REMOVE LAST TIE button to enable the removal of the last tie. The START/STOP BLADES button is only for systems that have the **MiTek** infeed/outfeed option installed. This button is invisible when this option is not installed.

Figure 5-10: Alternate Screen for Optional Equipment in Automatic Mode



To remove the last tie in the Press, press the REMOVE LAST TIE-JOG button and hold until the tie clears the Press conveyor. The system will be ready to start again when the infeed has a tie available to feed into the Press. After introducing the first tie, the system will resume auto functions as long as ties are available at the infeed.

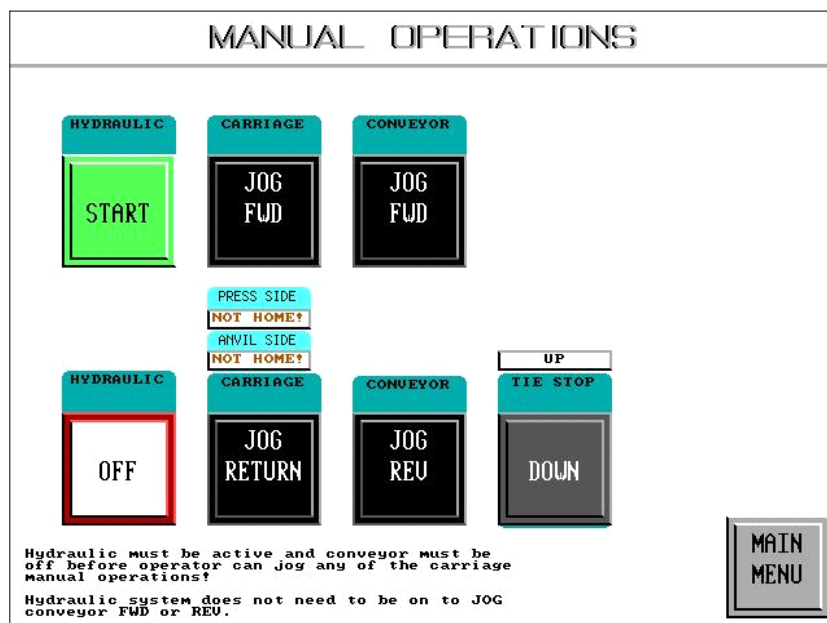
Manual Operation

To choose Manual Mode, you must do so from the Main Menu screen.

Press the button that displays MANUAL MODE-SELECT. The button will turn to SELECTED, and the MANUAL button will appear above it.

Once the Manual Operations screen has been entered, the operator can power up the Hydraulic Power Unit and start manual functions only.

Figure 5-11: Manual Operations Screen



The operator can operate several functions while in Manual Mode, but **CANNOT** perform clamp and press functions in Manual Mode. These are functions that are reserved for Automatic Operations only. The manual functions that an operator can perform in Manual Mode are shown in Table 5-4.


Table 5-4: Manual Functions on Touch Screen

Button/Indicator	Function
HYDRAULIC-START	Starts the hydraulic pump
HYDRAULIC-STOP	Stops the hydraulic pump
CARRIAGE-JOG FORWARD	Moves the carriage chambers forwards while button is depressed
CARRIAGE-JOG RETURN	Moves the carriage chambers backwards while button is depressed
CONVEYOR-JOG FORWARD	Jogs the conveyor forward only while button is depressed
CONVEYOR-JOG REVERSE	Jogs the conveyor backwards while button is depressed
TIE STOP	Toggles the Tie Stop up and down

Table 5-5: Informational Indicators on the MANUAL OPERATIONS Screen

Button/Indicator	Function
Press Side <i>Located above the CARRIAGE JOG RETURN button</i>	Indicates if the press-end carriage is in its “home” position or “not home” position
Anvil Side <i>Located above the CARRIAGE JOG RETURN Button</i>	Indicates if the anvil-end carriage is in its “home” position or “not home” position
<i>Located above the TIE STOP button</i>	Indicates whether the Tie Stops are in the up or down position

Operating the Tie Stops

DANGER	
	<p>To prevent unguarded machine movement, never leave the Tie Stops in the down position when leaving manual screen operations.</p> <p>Leaving the Tie Stops in the down position may cause them to eject a tie off of the conveyor and cause personal injury and/or property damage.</p>

The Tie Stops are in resting position when they are up. They automatically go down after each cycle of the operation that has been chosen is complete. Always return the Tie Stops to the up, or resting, position between operations or when the machine is not in use. There are instances when the Tie Stops will automatically raise which can cause a tie to be thrown if it was conveyed over the top of a Tie Stop. To prevent sudden and dangerous movement, **ALWAYS** remember to raise the tie stops when done with any manual operations.

To reduce the possibility of leaving the Stops down when leaving the Manual Screen, the MAIN MENU return button is not visible on the touch screen when the Stops are down.

Changing the Tie Length

Electrical Requirements to Change the Tie Length

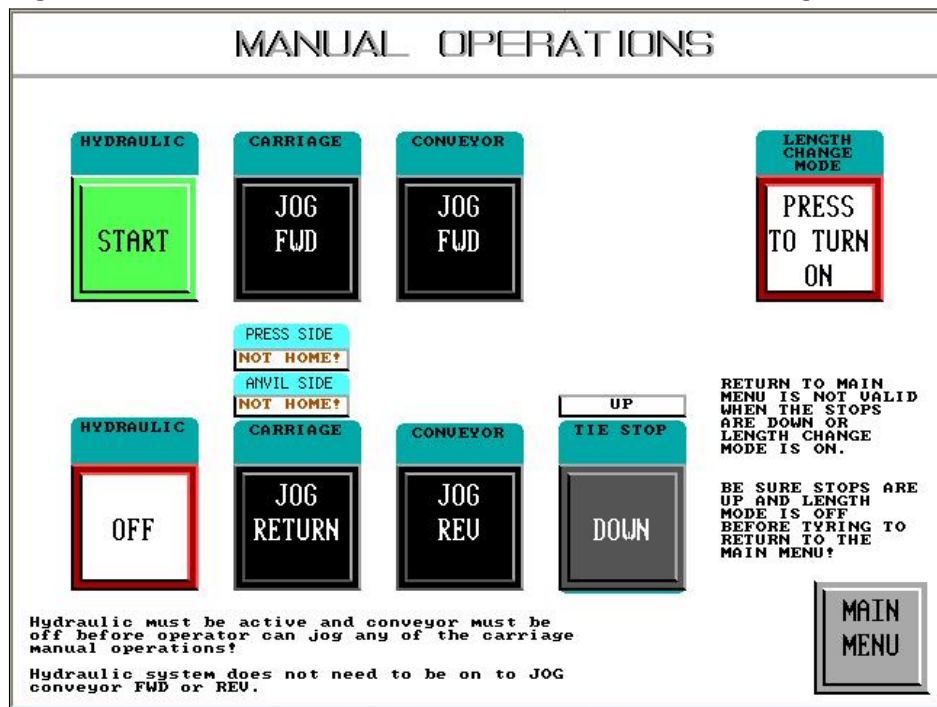
For program Rev. 1.0, the standard Manual Operations screen does not have a LENGTH CHANGE MODE button as Figure 5-13 does. The only electrical requirement to change the tie length is to turn the selector switch shown in Figure 5-12 to the HAND or OFF position. You may then use the selector switch located on the back side of the electrical junction box on the Press to move the carriage in small increments. The remainder of the process is described in the next section.

For program Rev. 1.1 and higher, it is necessary to press the LENGTH CHANGE MODE button on the Manual Operations screen shown in Figure 5-13, then proceed with the procedure above.

Figure 5-12: Touch Screen Selector Switch



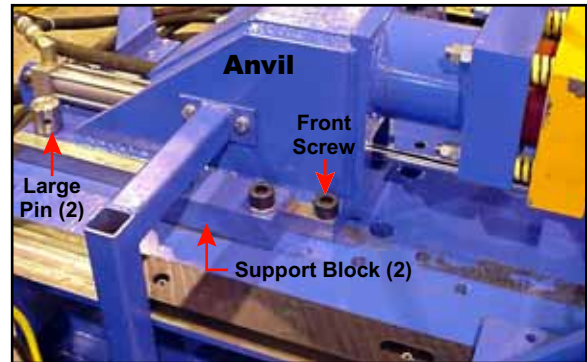
Figure 5-13: MANUAL OPERATIONS Screen for Rev. 1.1 and Higher



Changing the Tie Length

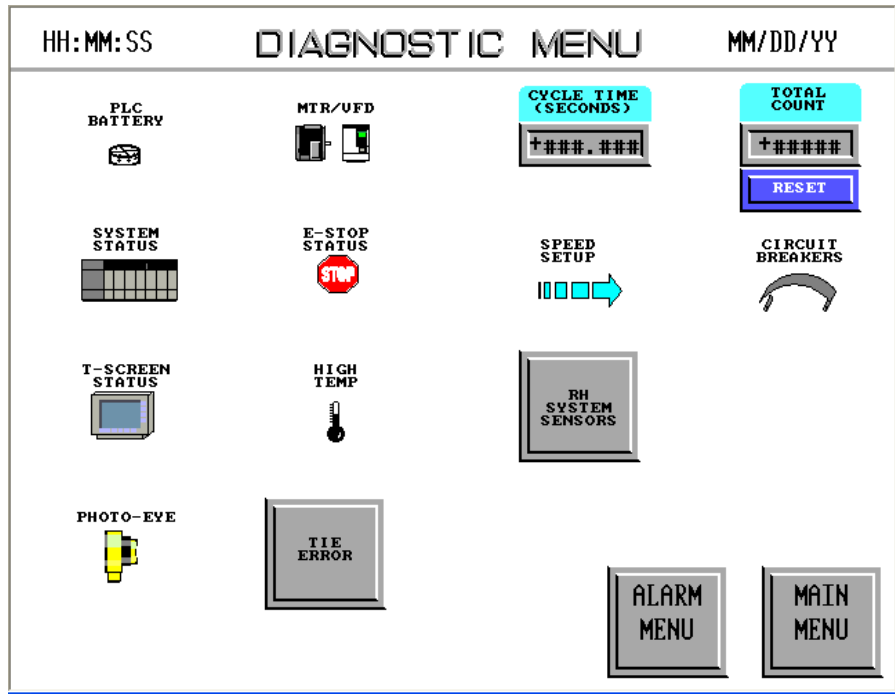
1. Using the selection switch on the back of the main electrical enclosure, move the anvil-end carriage to a position where the holes in the base of the carriage support is lined up with one set of holes in the base top plate for the pins to fit through.
2. Engage an E-stop.
3. Refer to Figure 5-14 for the following steps. Place a pin through the hole on each side of the carriage to hold the squeeze cylinder in place while adjusting the anvil. The pins should be stored on the inner side of the carriage frame, one on each side, near the squeeze chamber.
4. Remove the anvil pin cap that is covering each of the two (2) large pins. Four (4) socket head cap screws hold these caps in place.
5. Remove the two (2) large pins at the back of the anvil by pulling straight up.
6. Remove the two (2) front screws on the anvil (one on each side).
7. Loosen the four (4) screws on the support blocks (two (2) screws on each of two (2) support blocks).
8. Use the selector switch to move the entire anvil forward or back until it lines up with the correct holes for the length of tie being used.
9. Replace the large pins in the back of the anvil.
10. Replace the anvil pin caps.
11. Replace the two (2) front screws and tighten the four (4) screws on the support blocks.
12. Remove the small pins from the carriage and place them back in their storage holes.

Figure 5-14: Hardware for Moving Anvil



Diagnostics

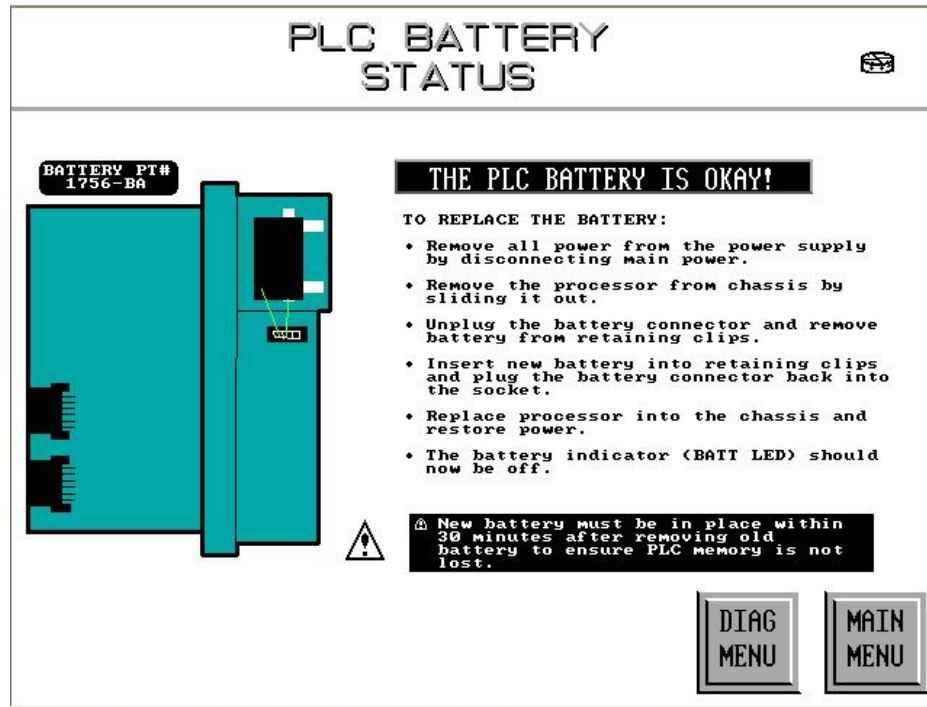
Figure 5-15: Diagnostics Menu Screen



Button/Indicator	Function
PLC Battery	Shows battery status and instructions
System Status	Shows software and options installed, and allows enabling of the selector switches for additional controls which customers may use to control their infeed components; they are shown in Figure 5-2
Touch Screen Status	Shows the operator communication errors between the PLC controller and the touch screen monitor
Photo Eye	Shows when the photo eyes are not working properly
Motor/VFD	Shows VFD and motor faults
E-Stop Status	Shows the state and location of the emergency stop pushbuttons
High Temperature	Monitors the temperature alarm for the hydraulic unit
Tie Error	Screen automatically displays when the PLC controller detects that a tie has entered the Press in a crooked manner
Speed Setup	Sets carriage speed, see <i>System Parameters</i> for more detail
System Sensors	Shows the layout of the limit and pressure switches located on the Press and monitors their current status
Cycle Time	Shows the last cycle time of processing the railroad tie
Total Count & Reset	Shows the total number of ties run through a cycle since the Reset button was last pushed; the Reset button sets that number back to zero
Circuit Breakers	Shows the status of the circuit breakers

PLC Battery

Figure 5-16: PLC Battery Status Screen

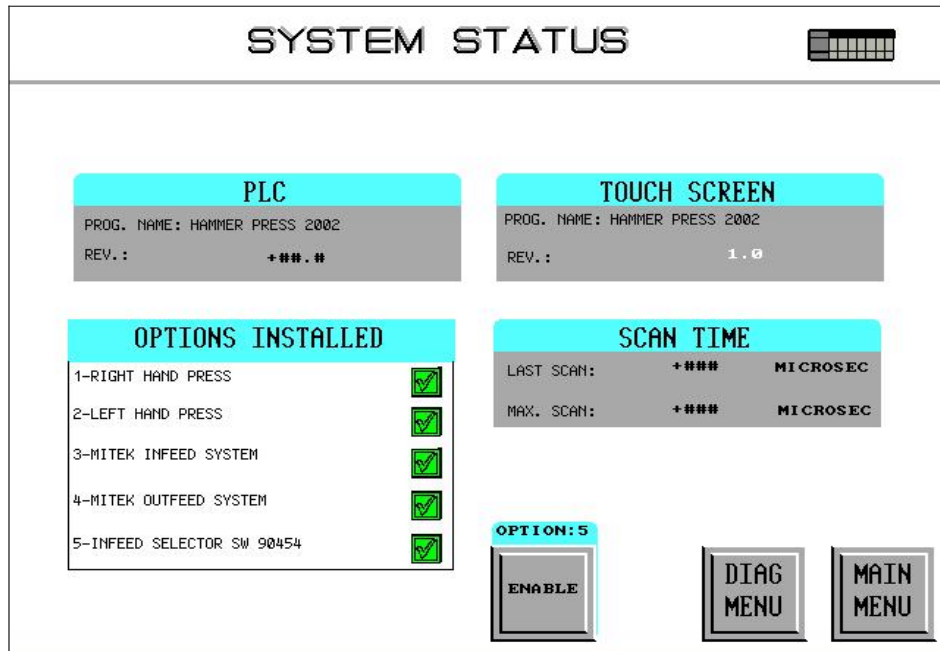


The PLC Battery Status screen informs the operator when the backup battery is low and provides instructions on how to change the battery. The new battery must be in place within 30 minutes after removing the old battery to ensure the PLC memory is not lost. To replace the battery, complete the following steps.

1. Remove all power from the power supply by disconnecting the main power.
2. Remove the processor from chassis by sliding it out.
3. Unplug the battery connector and remove battery from retaining clips.
4. Insert new battery into retaining clips and plug the battery connector back into the socket.
5. Replace processor into the chassis and restore power.
6. The battery indicator (BATT LED) should now be OFF.

System Status

Figure 5-17: System Status Screen



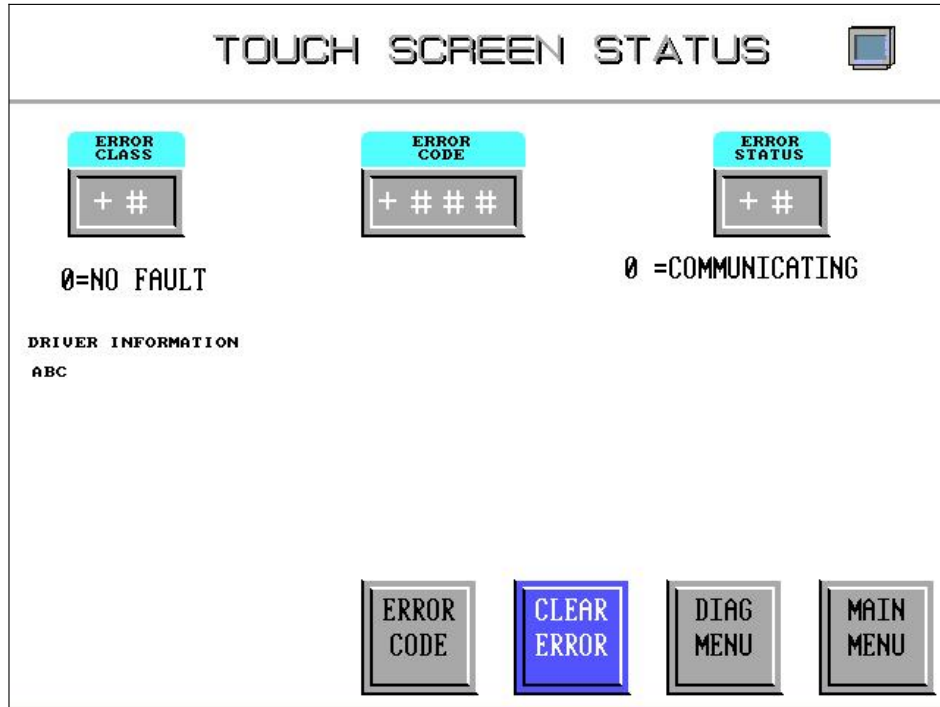
The System Status screen displays information regarding the active software version running on the system and installed options. From here, the operator may enable or disable the infeed selector switch, return to the Diagnostic Menu, or return to the Main Menu. The information being monitored is shown in Table 5-6.

Table 5-6: Information Displayed on the System Status Screen

Indicator	Function
PLC	Program name and revision level displayed
Touch Screen	Program name and revision level displayed
Scan Time	Last scan rate of program and the maximum scan rate logged on the PLC controller
Options Installed	The indicates an option is installed. Options must be installed by MiTek personnel, except the infeed selector switch option
Right-Hand Press	Standing at infeed side, looking toward the Press, press head is on the right
Left-hand Press	Standing at infeed side, looking toward the Press, press head is on the left
MiTek Infeed System	Infeed system with variable speed control for infeed conveyor
MiTek Outfeed System	Outfeed system with variable speed control for outfeed conveyor
Infeed Selector Switch	Off/On control station for control of customer's conveyors. The password protection must be removed to change this option; the customer can install and enable without a Mitek representative on site
Scan Time	Last scan rate of program and the maximum scan rate logged on the PLC controller

Touch Screen Status

Figure 5-18: Touch Screen Status Screen



The Touch Screen Status screen will inform the operator of any communication error between the PLC controller and the touch screen computer. The ERROR CLASS and ERROR STATUS fields have the available codes listed below the error code display. These should remain at zero for normal operations.

If an error is displayed in the ERROR CODE field, a separate screen exists to view the Error Code descriptions. It can be reached by pressing the ERROR CODE button at the bottom of the screen in Figure 5-18. The Error Code screen offers some brief troubleshooting procedures so that the operator may check for potential problems. It is shown in Figure 5-19.

Should there be any listed errors, refer to the *Start-Up* chapter on how to clear the communication errors and re-establish communications between the PLC and the touch screen computer. It is normal to see errors in the code displays when the touch screen is powered up, the PLC has been taken out of RUN mode, or the cable has been unplugged. These errors **should** be cleared, so that communication can be verified before attempting to operate the equipment.

Figure 5-19: Screen to View Error Code Descriptions

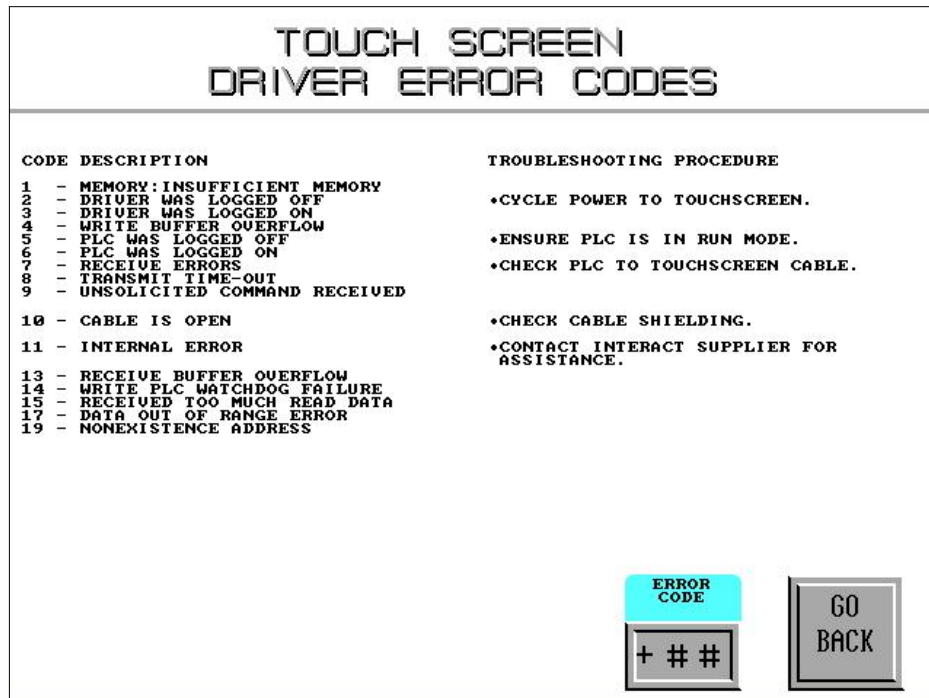


Table 5-7: Touch Screen Errors

Error Code	Touch Screen Driver Error Codes
1	Memory: Insufficient Memory
2	Driver was Logged OFF
3	Driver was logged ON
4	Write Buffer Overflow
5	PLC was Logged OFF
6	PLC was Logged ON
7	Receive Errors
8	Transmit Time Out
9	Unsolicited Command Received
10	Cable is Open
11	Internal Error
13	Receive Buffer Overflow
14	Write PLC Watchdog Failure
15	Received Too Much Read Data
17	Data Out of Range Error
19	Nonexistence Address

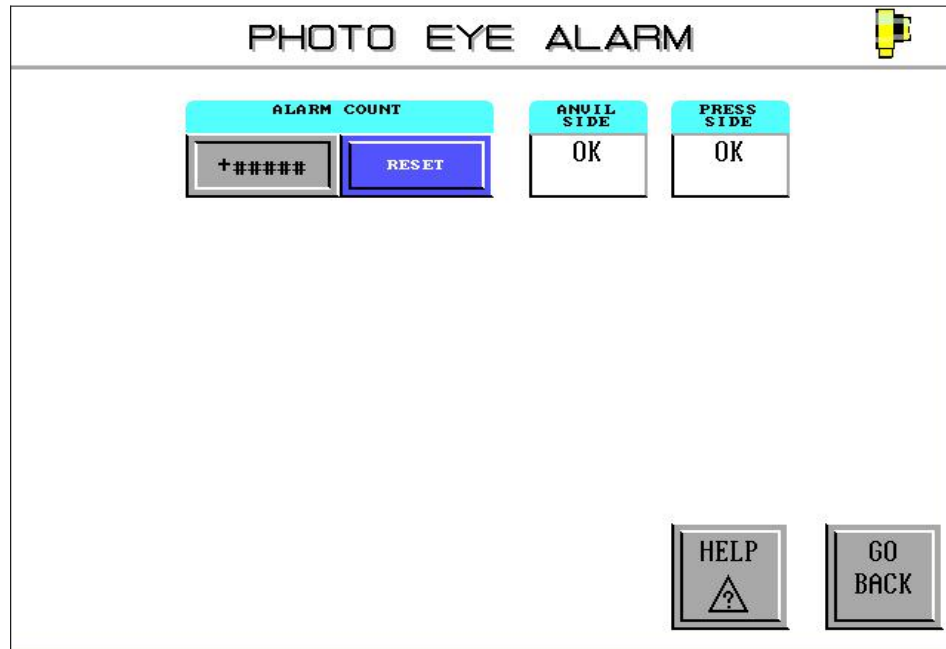
Troubleshooting Procedures

(Listed on Touch Screen Driver Error Codes screen.)

- Cycle power to touch screen
- Ensure PLC is in RUN mode
- Check PLC to touch screen cable
- Check cable shielding
- Ensure cable routed away from High Voltage sources
- Ensure PLC & touch screen communication settings are same

Photo Eye

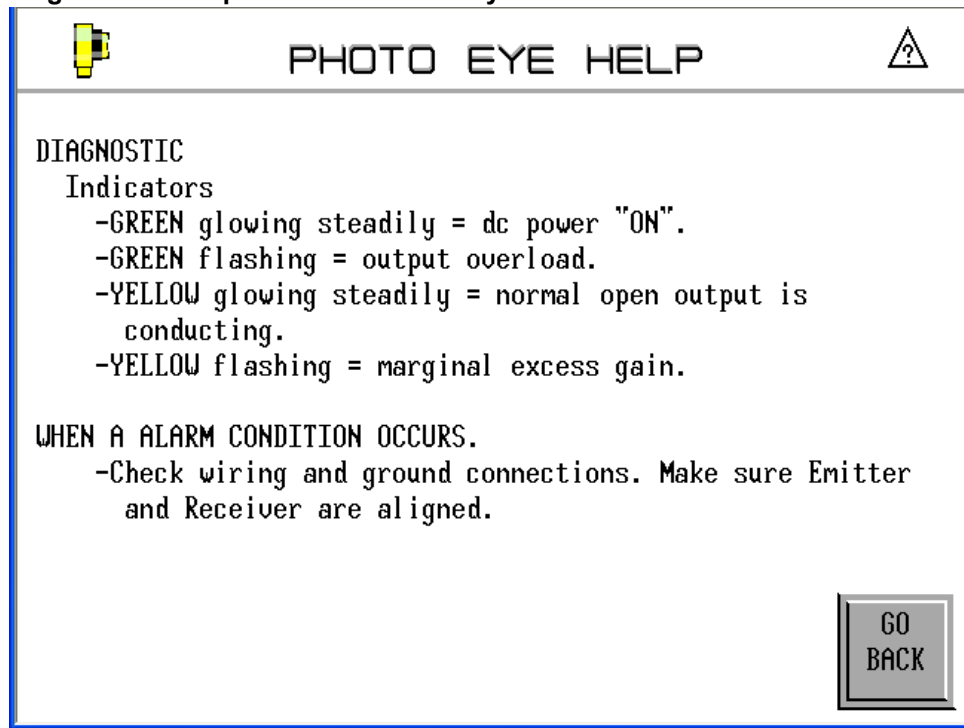
Figure 5-20: Photo Eye Alarm Screen



The photo eyes detect the tie entering and exiting the press chamber and helps to control the stopping speeds to achieve a side clamp press close to the end of the tie. The photo eyes are located on each squeeze chamber. The eye on the side of each squeeze chamber closest to the center of the Press detects the tie entering the chamber. The eye on the side of each squeeze chamber that is facing away from the center of the Press detects the tie exiting the chamber.

When the eyes detect that a tie did not enter and exit the squeeze chamber properly, the number under ALARM COUNT on the screen in Figure 5-20 will increase by one. The machine will continue to operate as normal. To view the number of ties that did not align with the photo eyes, go to this screen from the Diagnostics Menu. You may touch the RESET button to set the alarm count back to zero (0).

Figure 5-21: Help Screen for Photo Eye Alarm Menu

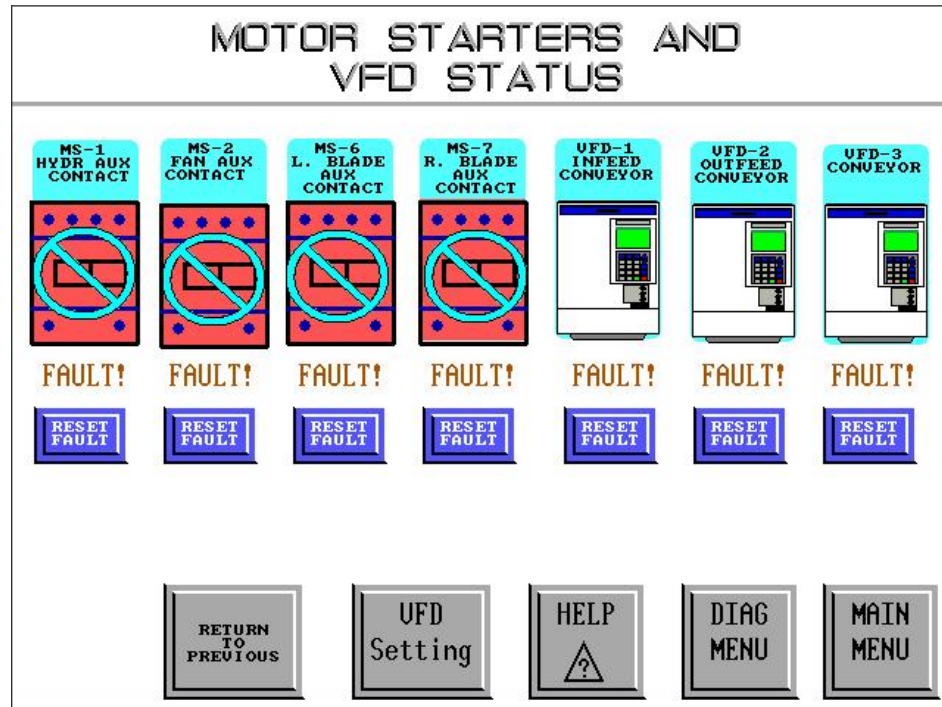


The Photo Eye Help screen will cover typical troubleshooting procedures for resolving diagnostic indicators and monitoring the photo eye condition. Refer to *Troubleshooting* for more information.

The GO BACK option returns the operator to the prior Photo Eye Alarm screen.

Motor/VFD

Figure 5-22: Motor Started And VFD Status Screen



From the MOTOR STARTER AND VFD STATUS screen, an operator can verify and perform the following:

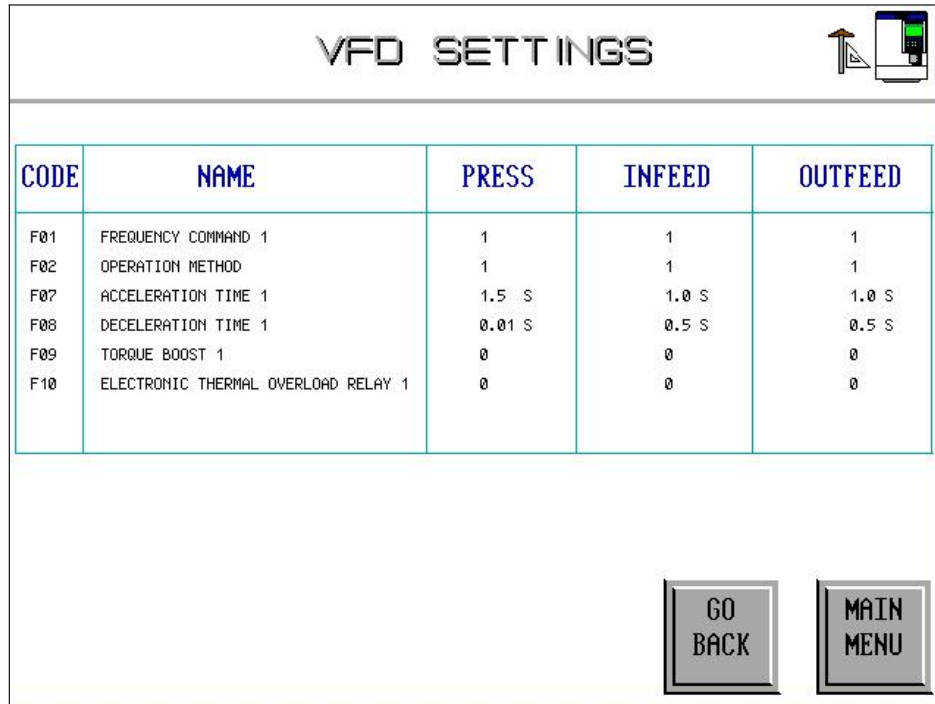
1. Verify and Reset a Motor Fault condition.
2. Verify a faulted VFD condition.
3. View the factory default settings for the VFDs.
4. View the Troubleshooting Screen.
5. Return to the Main Menu or the Diagnostic Menu.

Any fault condition triggers a flashing display on the component device. The operator should reset all faults on the screen using the RESET FAULT button.

When a fault occurs, the system programming immediately displays this screen for the operator. The operator should acknowledge and reset the fault before proceeding to other menu pages. By pressing the RETURN TO PREVIOUS button, the operator will be able to return to the screen he was at prior to the fault. If the operator chooses to move to another screen before returning to the previous screen, the system will not retain the screen prior to the fault.

See the *Troubleshooting* section for more information.

Figure 5-23: VFD Settings Screen



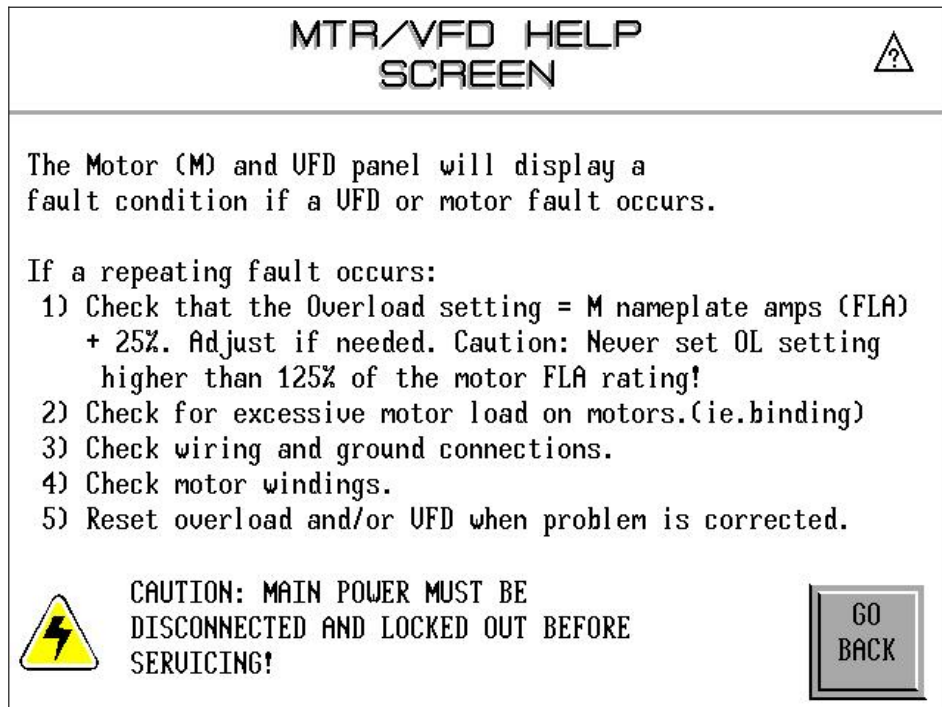
VFD SETTINGS				
CODE	NAME	PRESS	INFEED	OUTFEED
F01	FREQUENCY COMMAND 1	1	1	1
F02	OPERATION METHOD	1	1	1
F07	ACCELERATION TIME 1	1.5 S	1.0 S	1.0 S
F08	DECELERATION TIME 1	0.01 S	0.5 S	0.5 S
F09	TORQUE BOOST 1	0	0	0
F10	ELECTRONIC THERMAL OVERLOAD RELAY 1	0	0	0

The settings listed on the VFD Settings screen are the factory default settings for the Press conveyor and the **MiTek** infeed/outfeed system. These settings are functional settings and do not control speeds. The VFD Settings screen should be used for ease of maintenance. A qualified maintenance person may restore **MiTek** factory settings if a VFD is ever replaced by referring to the manual shipped with the new VFD. The correct **MiTek** settings are shown in Figure 5-23.

The VFD Speed Setup screen will help operator to control speed settings.

The GO BACK option returns the operator to the prior Motor Starter And Vfd Status screen or the operator may also press the MAIN MENU button to return to the Main Menu.

Figure 5-24: Help Screen for the Motor and VFD

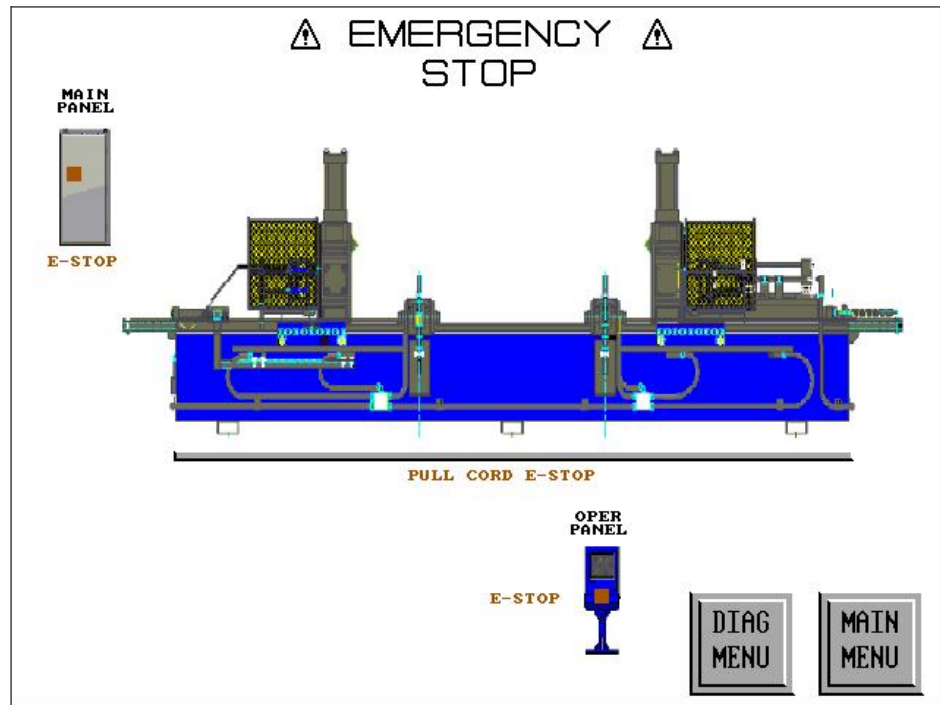


The MTR/VFD Help Screen covers typical faults that occur, such as overloads, single phasing, and loose connections. A motor fault may also occur when the PLC controller tells a motor to turn on and the auxiliary contact from the starter contactor does not respond due to malfunction of the auxiliary contact or a loose wire connection. Refer to *Troubleshooting* for more information.

The GO BACK option returns the operator to the prior Motor Starter And VFD Status screen.

Emergency Stops

Figure 5-25: Emergency Stop Screen



The Emergency Stop screen shows the status and location of the emergency stop devices. When an emergency stop (E-stop) is activated, the appropriate image on this screen will flash, telling you which E-stop has been activated.

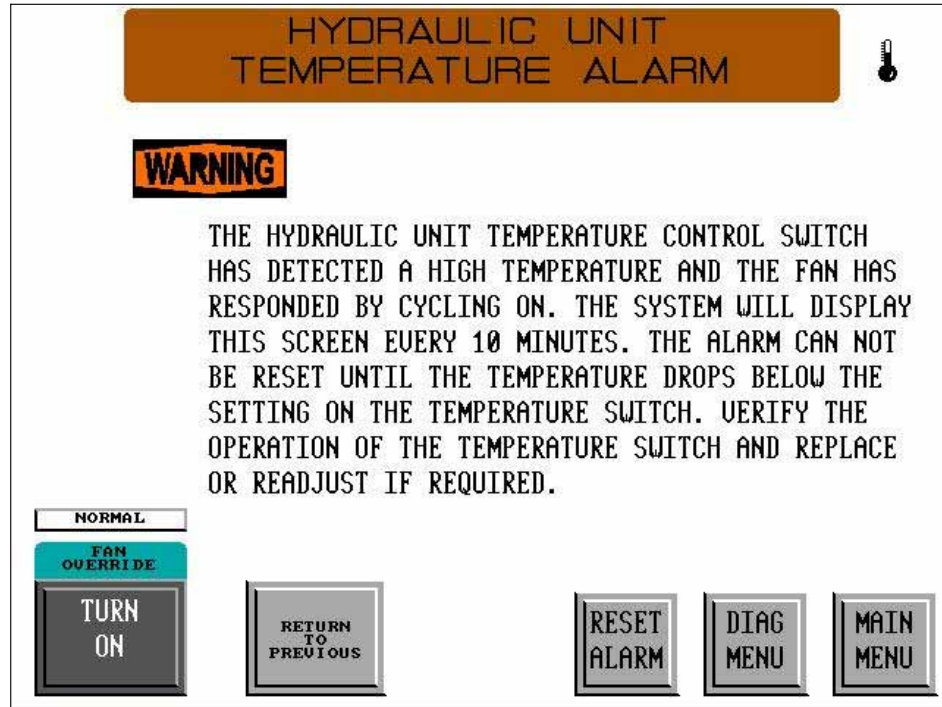
The operator can not reset E-stop conditions from this page. To reset an E-stop, locate the activated stop and physically reset it by disengaging the mushroom-shaped pushbutton or pushing the reset button on the correct pull-cord safety switch.

See *Emergency Stops* at the beginning of the *Operations* chapter for more information on stopping the system.

WARNING	
	Do not alter the emergency stop circuits. Altering protective circuits may cause injury to personnel and equipment.

High Temperature

Figure 5-26: Hydraulic Unit Temperature Alarm Screen

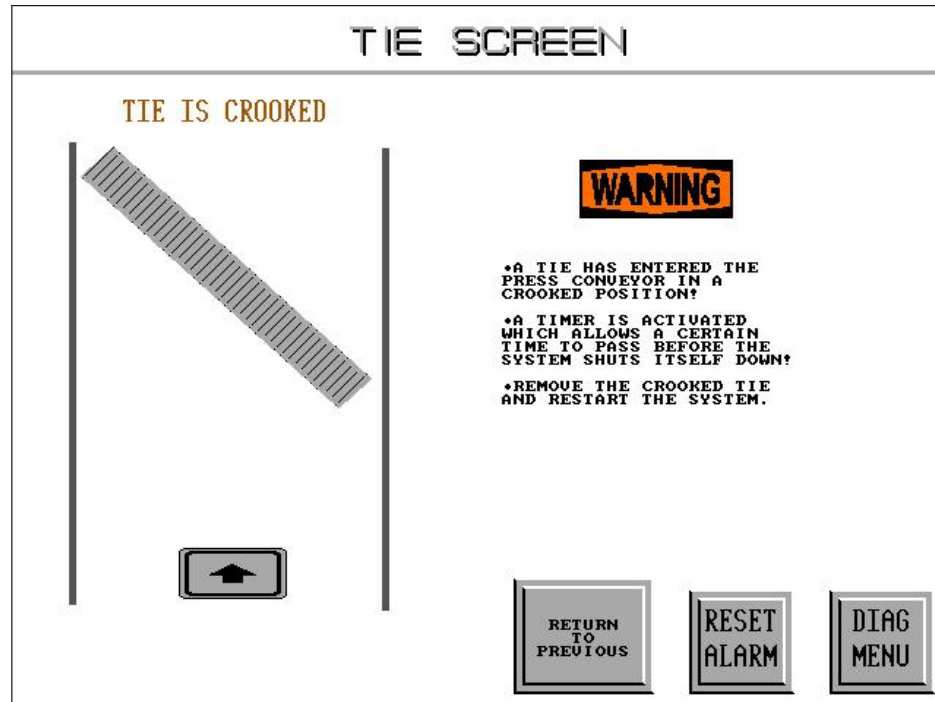


The Hydraulic Unit Temperature Alarm screen monitors the temperature for the Hydraulic Power Unit. If the temperature increases past the set point, the fan motor responds automatically, and the temperature alarm responds. Once the PLC controller has turned on the fan, it will stay on until the alarm has been reset and the temperature is lower than the actual set point on the thermostat. The menu header will flash until the alarm is able to be reset. An operator may reset the alarm by pressing the RESET ALARM button on this screen.

If the PLC controller does not successfully turn on the fan motor, then the system will set the Motor Fault. See the Motor Fault Status screen and Help screen or go to the *Troubleshooting* section for more information.

Tie Error

Figure 5-27: Tie Screen



The Tie Screen automatically displays when the PLC controller detects that a tie has entered the Press in a crooked manner. This is an extremely important function of the press to safeguard the operator and the equipment.

The two center limit switches (#7 and #8), which tell the PLC control system that the tie is in place, are monitored for the time difference between actuation of each switch. If the time between the actuation of the switches exceeds two (2) seconds, the fault is set, the screen in Figure 5-27 displays, and the system will immediately shut down. Power will remain on, but the condition must be reset before operator may return to the previous screen or the Diagnostic Menu.

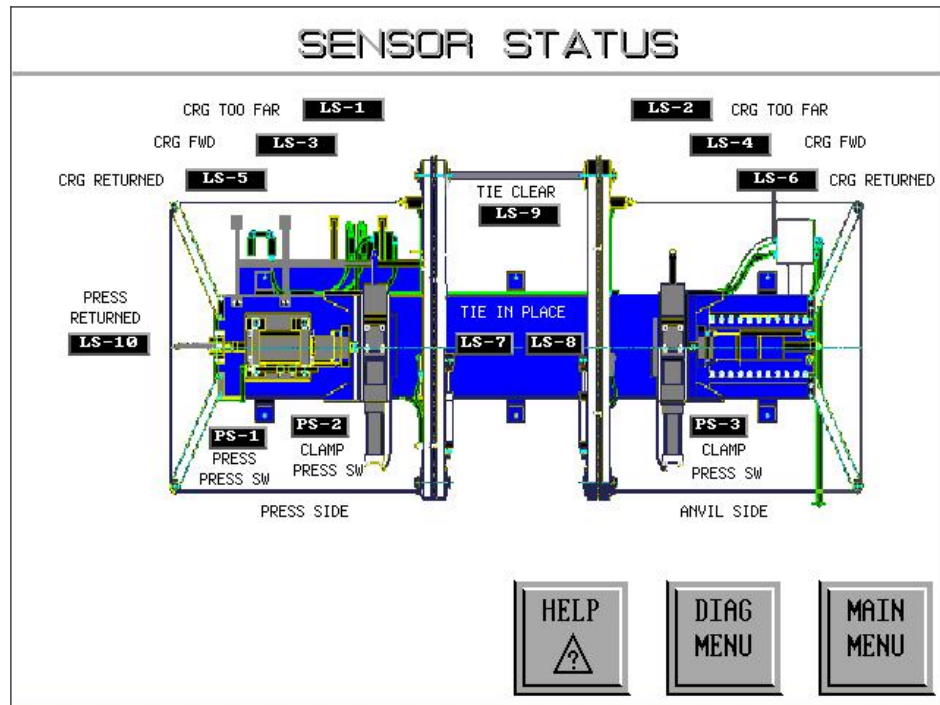
The instructions on the screen explain that a tie is crooked and must be removed. To do so, follow this procedure:

1. Straighten the tie and situate it on the infeed side of the center limit switches.
2. Press the RESET ALARM button on this screen; the image of the tie will disappear, but the screen will remain visible.
3. Press the RETURN TO PREVIOUS button and this screen will disappear.
4. Restart the system as described in the *Operations* chapter.

For more information, see the *Troubleshooting* section.

System Sensors

Figure 5-28: Sensor Status Screen for a Left-Hand Press



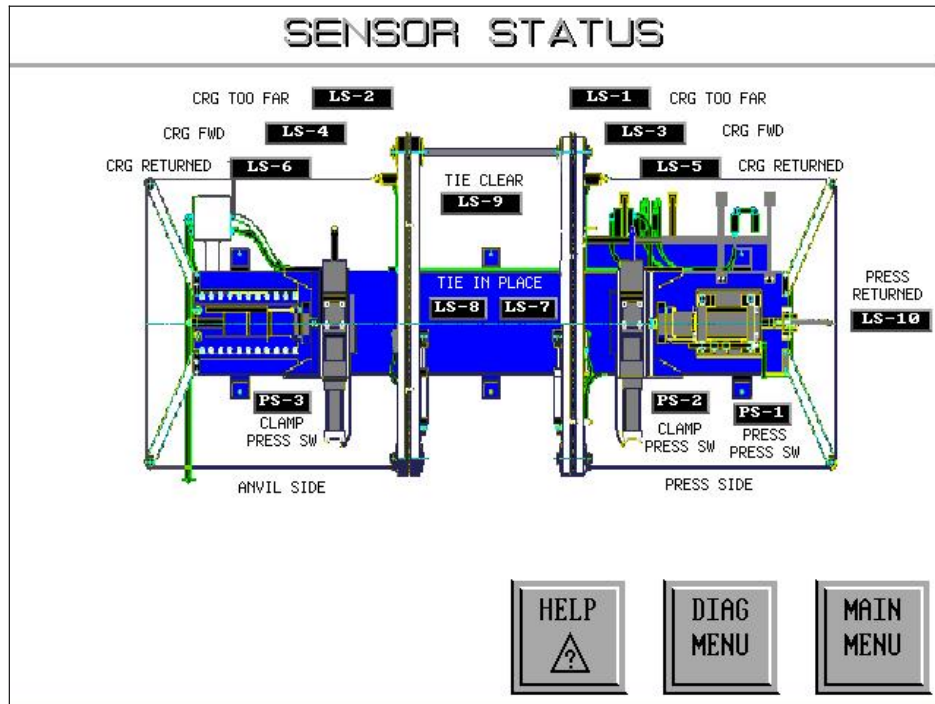
The Sensor Status screen shows the layout of the limit and pressure switches located on the Press. The screen will monitor their current status and lists the name of each sensor switch. When the switch has been actuated into the ON condition, the indicator will change from a black background to a white background with the LS-# descriptor in red.

The operator can quickly monitor all input conditions from the Press on one screen.

The operator will be able to access the Help screen which gives troubleshooting information, and return to either the Main Menu or Diagnostic Menu.

This view is for the left-hand Press configuration, where the press head assembly is located to the left of the machine when facing the Press from the infeed side. For a right-hand Press view, see the next page. The left/right orientation is selected within the system configuration and only the view relevant to your Press will be visible to an operator via the touch screen.

Figure 5-29: Sensor Status Screen for a Right-Hand Press



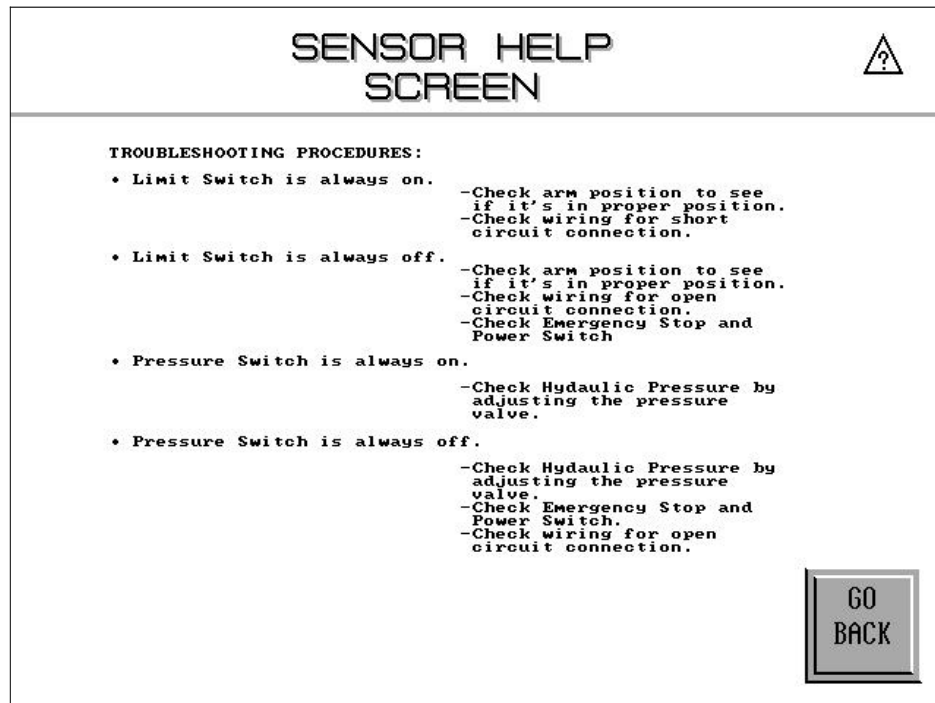
The Sensor Status screen shows the layout of the limit and pressure switches located on the Press. The screen will monitor their current status and lists the name of each sensor switch. When the switch has been actuated into the ON condition, the indicator will change from a black background to a white background with the LS-# descriptor in red.

The operator can quickly monitor all input conditions from the Press on one screen.

The operator will be able to access the HELP screen which gives troubleshooting information, and return to either the Main Menu or Diagnostic Menu.

This view is for the right-hand Press configuration, where the press head assembly is located to the right of the machine when facing the Press from the infeed side. For a left-hand Press view, see the previous page. The left/right orientation is selected within the system configuration and only the view relevant to your Press will be visible to the operator via the touch screen.

Figure 5-30: Help Screen for Sensors

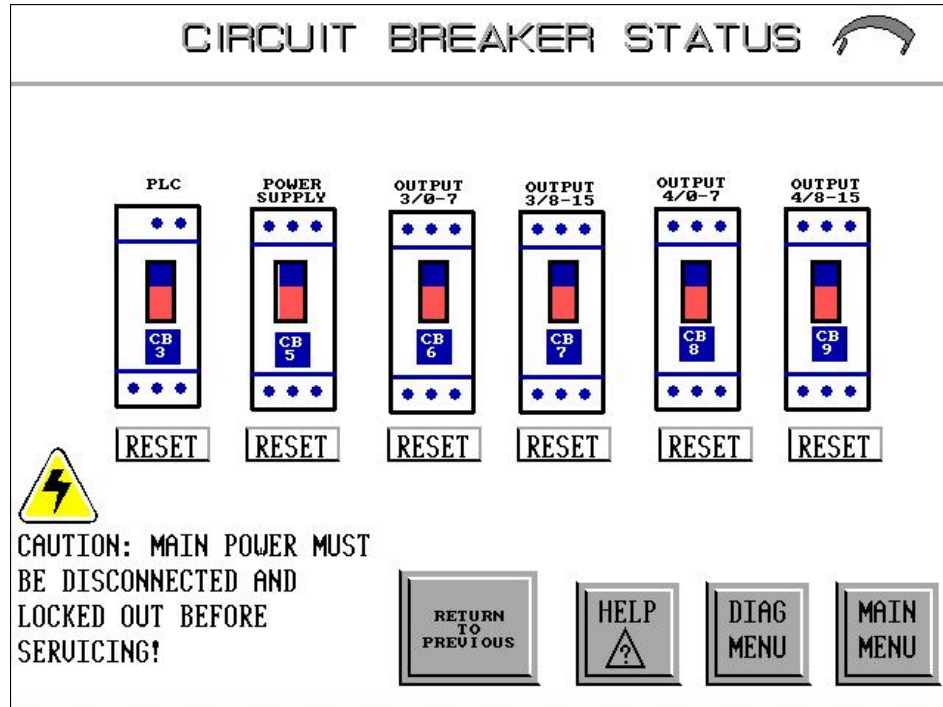


The sensor help screen will cover typical troubleshooting procedures for sensors depending on the faulty condition. Refer to the *Troubleshooting* section for more information.

The GO BACK option returns the operator to the prior Sensor Status screen.

Circuit Breakers

Figure 5-31: Circuit Breaker Status Screen

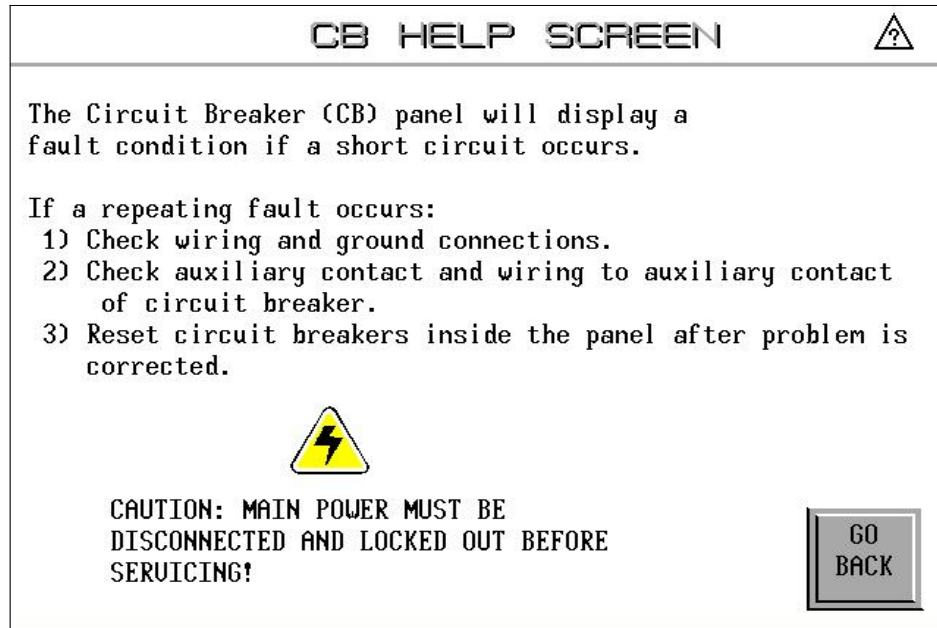


From the Circuit Breaker Status screen, an operator will be able to verify and perform the following:

1. Verify a tripped circuit breaker.
2. View the Help Screen.
3. Return to previous screen, Main Menu or Diagnostic Menu.

Any fault condition will trigger a flashing RESET to display under the component device. The operator will reset all faults manually in the main electrical enclosure. Review electrical drawings for placement of circuit breakers.

Figure 5-32: Help Screen for Circuit Breaker Status



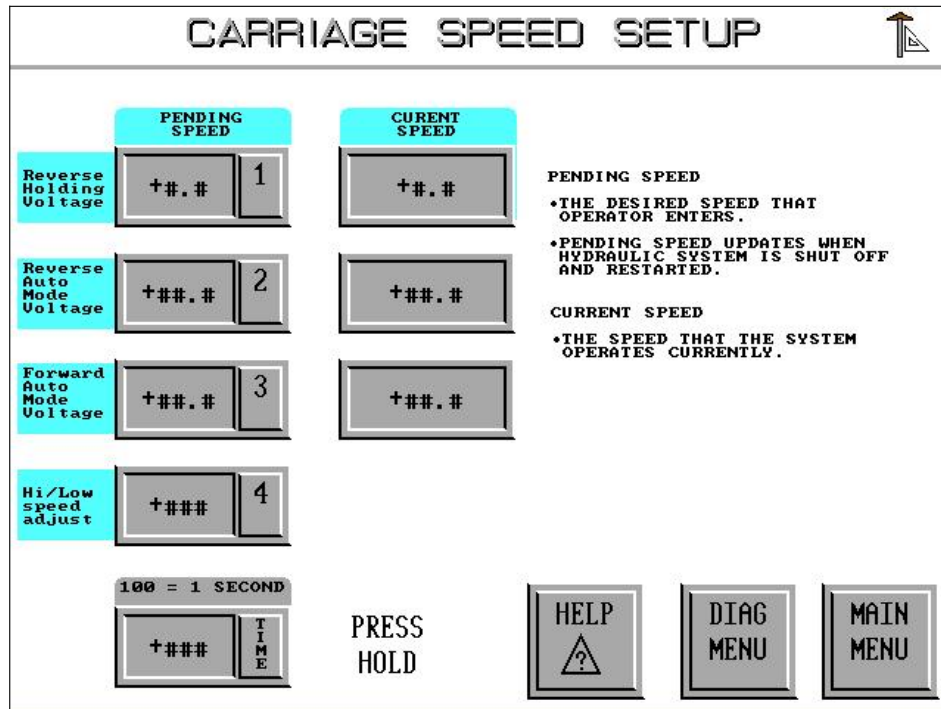
The Circuit Break Help screen will cover typical troubleshooting procedures for short circuits and monitoring the tripped circuit breaker condition. Refer to the *Troubleshooting* section for more information.

The GO BACK option returns the operator to the prior Circuit Breaker Status screen.

System Parameters

Carriage Speed Setup

Figure 5-33: Carriage Speed Setup Screen



The Carriage Speed Setup screen provides System Parameter control, but it is reached through the Diagnostics Menu which is shown in Figure 5-15. Hit the SPEED SETUP button to reach this screen. From here, an operator can verify and alter the speed of the carriages. Only those with password access will be able to alter the speeds. It is recommended that the default values be used to maintain the cycle timing and stability of the equipment. The three variables that may be altered from this screen are described here:

1. Carriage Reverse Holding Speed

This setting maintains a constant minimum back pressure on the carriages in the reverse direction when not advancing forward. Because of this, if the carriages are left in the forward position, they will very slowly drift back to their “home” position. It may be advantageous to set the carriage reverse holding speed at a low value when doing maintenance or adjustments.

2. Carriage Reverse Auto Mode Voltage

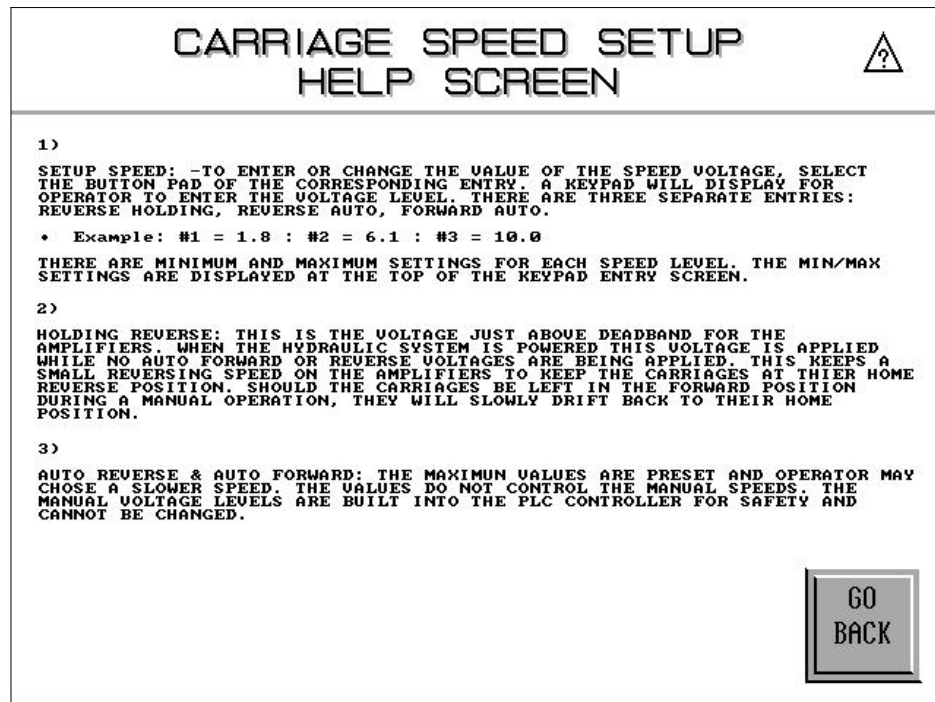
This is the reverse speed of the carriages while in the Auto Mode. The speed may be altered up to a set maximum allowable speed. While in Manual Operations, the speed is fixed and cannot be altered by the operator.

3. Carriage Forward Auto Mode Voltage

This is the forward speed of the carriages while in Auto Mode. The speed may be altered up to a set maximum allowable speed. While in Manual Operations, the speed is fixed and cannot be altered by the operator.

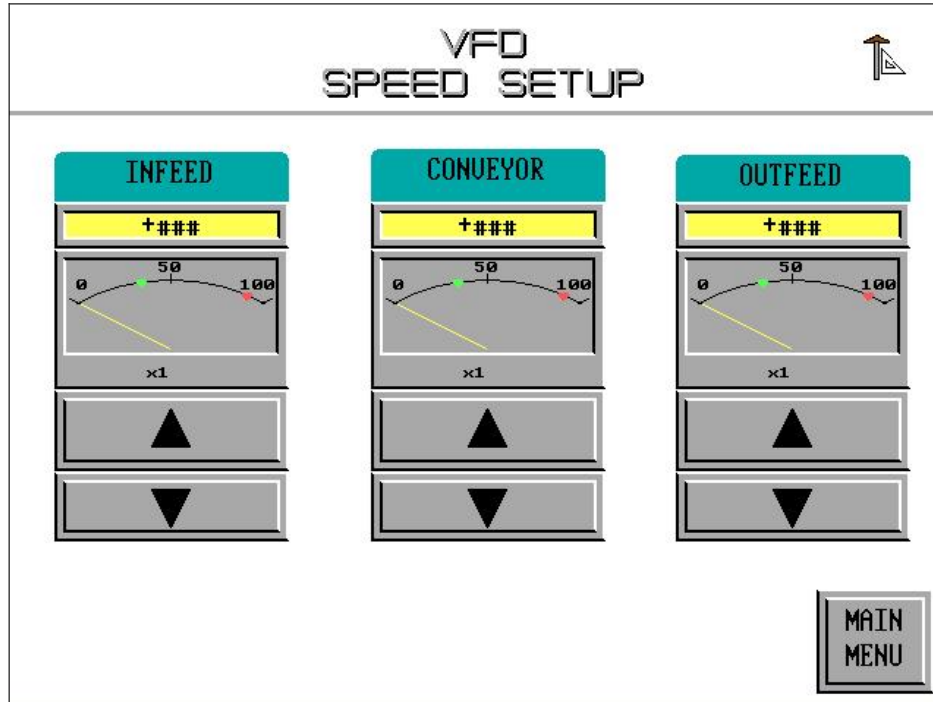
The operator may view the Carriage Speed Setup Help Screen by pressing the HELP button at the bottom of the Carriage Speed Setup screen. From the Help screen, you may return to the Main Menu or Diagnostic Menu.

Figure 5-34: Help Screen for Carriage Speed Setup



VFD Speed Setup

Figure 5-35: VFD Speed Setup Screen



This screen is reached directly from the Main Menu. The CONVEYOR column adjusts the speed of the conveyor on the Press itself. It only applies to Auto Operations. The speed will not be affected if moving in Manual Mode. The control of the infeed and outfeed conveyor speeds are adjusted on this screen if the **MiTek** infeed/outfeed option is installed. It only applies to **MiTek** infeed/outfeed conveyors installed by **MiTek** personnel. The adjustments are invisible if the option is not installed.

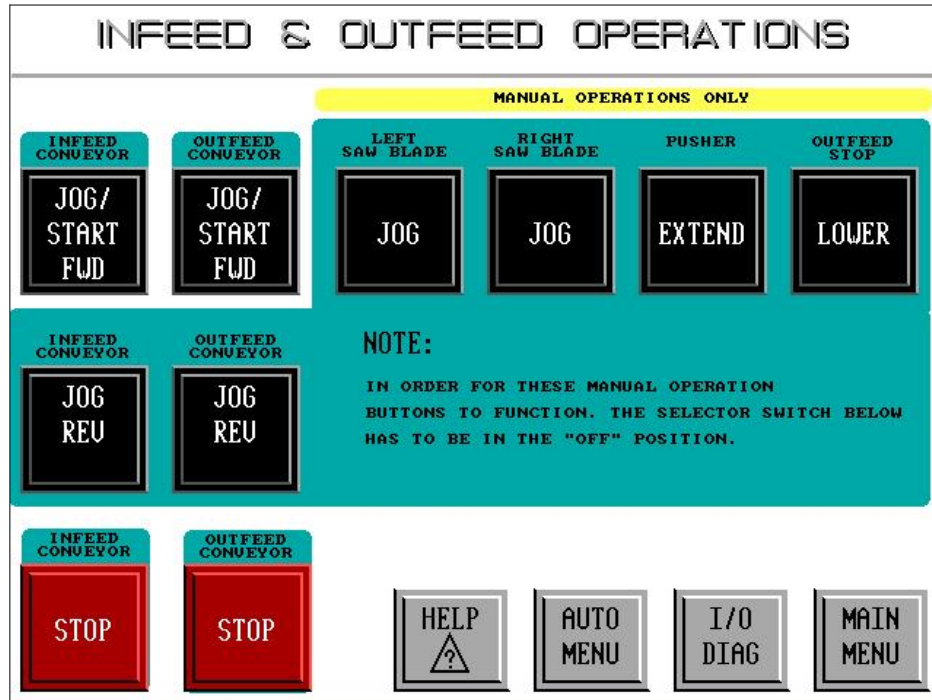
To adjust a conveyor speed, press the up or down arrows to increment or decrement the current speed. These can be adjusted any time. The current speed will be displayed in numeric format above as well as a visual on the meter. For every increment or decrement of speed, the value changes by multiples of 5. Example: 25, 30, 35, 40, etc. A value of 100 is the maximum possibility. The speed ranges are placed into three categories with a color designation.

Table 5-8: Conveyor Speed Ranges

Low Speed	YELLOW	Speed Range 5 to 30
Normal Speed	GREEN	Speed Range 35 to 85
High Speed	RED	Speed Range 90 to 100

Infeed/Outfeed Option

Figure 5-36: Infeed & Outfeed Operations Screen



This screen is reached directly from the Main Menu. The Infeed & Outfeed Operations screen is only applicable if you have a **MiTek** infeed/outfeed conveyor system. This conveyor system is supplied upon request from **MiTek** and is controlled via the touch screen to make the entire infeed, Press, and outfeed one complete system by allowing the operator to toggle between the Infeed & Outfeed Operations screen and the Automatic Operations screen.

The infeed conveyor has a lift-gate system to present the tie to the Press and give the necessary input signal to tell the Press that a tie is ready to enter. It has the ability to let the operator know when the infeed is full so that proceeding equipment may be temporarily paused.

The outfeed conveyor system has a pusher/alignment system to align ties prior to the kerf blades. Compressed air extends the Pusher, which pushes each tie against the outfeed conveyor anvil so the kerf cuts are consistent. It has the ability to let the customer know when the outfeed is full so that the Press and any proceeding equipment may be temporarily paused.

To adjust the Pusher speed, press the I/O DIAG button on the Infeed & Outfeed Operations screen, and it will take you to the Alignment Pusher Setup Time screen. To adjust the speed of the conveyors, return to the Main Menu and push the VFD SPEED SETUP button.

There are two saw blades at the end of the outfeed conveyor to make kerf cuts in the ends of the ties. The blades are also controlled by this screen, and are included in the function of the CONVEYOR—ON button on the Automatic Operations screen.

Table 5-9 gives an explanation of each button on the Infeed & Outfeed Operations screen.

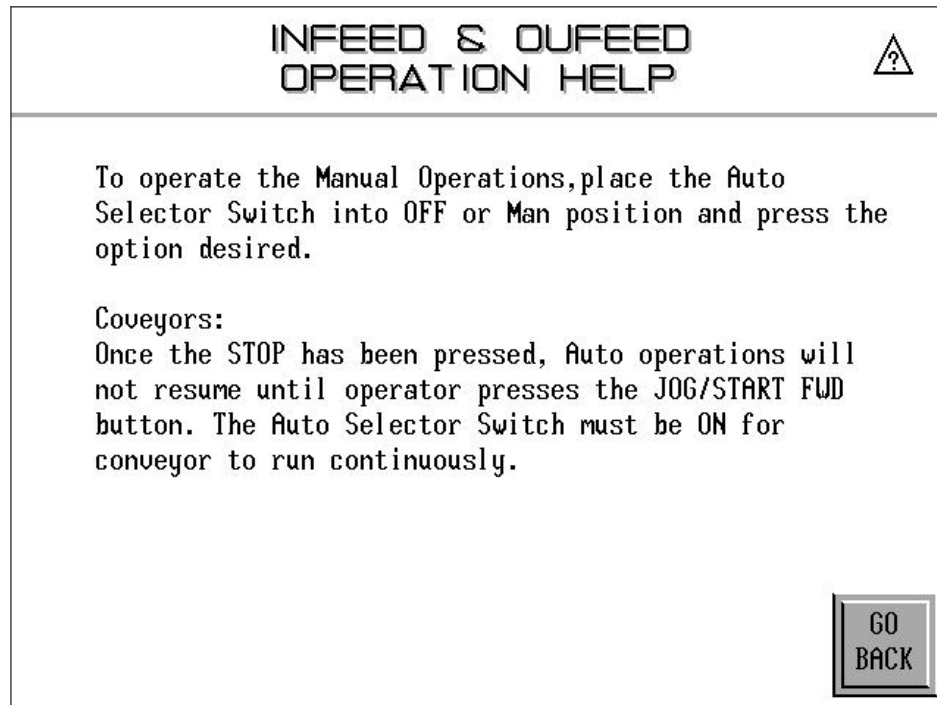
The buttons highlighted in green function when the infeed/outfeed system is in manual mode only. This means the selector switch under the touch screen must be in the OFF position so the infeed system is not functioning automatically. Manual operation of the infeed/outfeed system is not related to the automatic or manual operation of the Press.



Table 5-9: Infeed and Outfeed Functions on the Touch Screen

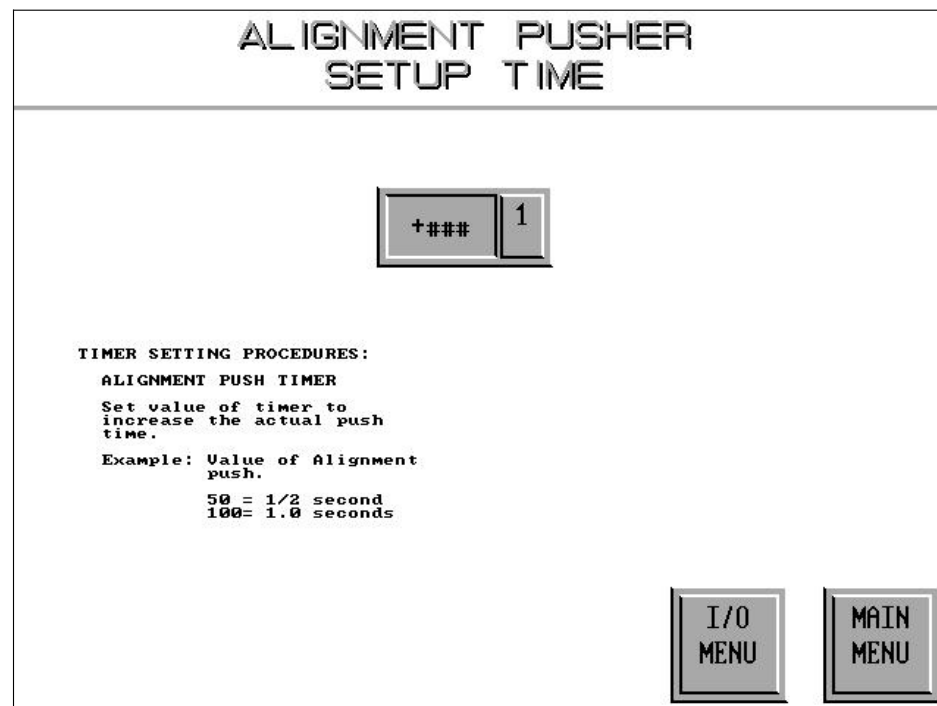
BUTTON	Function
INFEED AND OUTFEED-JOG/START FWD	Starts the conveyor—when selector switch is on AUTO
	Jogs the conveyor forward only while operator presses the button—when selector switch is on HAND
LEFT SAW BLADE-JOG	Jogs the kerf blade on while button is depressed
RIGHT SAW BLADE-JOG	Jogs the kerf blade on while button is depressed
PUSHER	Extends or retracts Pusher
OUTFEED STOP	Raises or lowers Tie Stops on outfeed conveyor
INFEED AND OUTFEED JOG REVERSE	Jogs the infeed or outfeed conveyor in reverse only while the operator presses the button
INFEED AND OUTFEED STOP	Stops the infeed or outfeed conveyor
HELP	Takes you to the Help screen, shown in Figure 5-37
AUTO MENU	Takes you to the Press Auto Operations screen
I/O DIAG (ALIGNMENT PUSHER SETUP TIME)	Takes you to the Alignment Pusher Setup Time screen (see Figure 5-38)
MAIN MENU	Takes you to the Main Menu screen

Figure 5-37: Help Screen for Infeed & Outfeed



Pusher Alignment

Figure 5-38: Alignment Pusher Setup Time Screen



This **HammRR Press** manual contains sufficient information for proper operation and maintenance under most conditions. However, certain operating environments may necessitate additional maintenance at more frequent intervals


DANGER	
	<p>Read this manual completely before using this equipment!</p> <p>Do not operate this machine until you have a thorough understanding of all controls, safety devices, emergency stops, and operating procedures outlined in this manual.</p> <p>All warnings must be read and observed. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel operating and maintaining this equipment.</p>

Figure 6-1: Accumulator Dump Valve Warning Sign

WARNING	
	<p>Before any maintenance is done, open the Accumulator Dump Valve on the HPU to relieve pressure from the accumulator and the hydraulic lines.</p>



Lubrication

Proper amounts of motor oil and grease must be maintained at all times. The type of lubrication used, frequency of application, oxidation, and contamination of the lubricant affect service life and parts efficiency of gears and bearings. Improved performance will be obtained by following the guidelines in this manual. Lubrication guidelines are given in the *Maintenance* chapter text about each part or system that requires lubrication. The information is also on the *Maintenance Checklist* appendix.

Hydraulic System

A Hydraulic Power Unit manual from John Henry Foster (S.O. #507288, JHF Drawing #MI071802-B) was provided with your equipment. Refer to that manual for any information regarding the hydraulic system that is not provided in this manual.

For replacement parts pertaining to the hydraulic system that are not called out in this section, refer to your drawings.

Hydraulic Oil

The hydraulic oil level can be checked using the site gauge on the side of the reservoir above the pump. The reservoir should be filled to approximately 2” from the top of the tank. The oil level should be checked daily and filled with a recommended oil listed in Table 6-1.


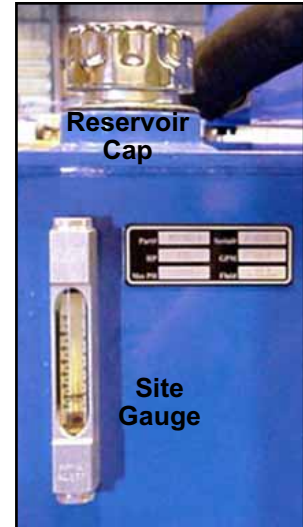
CAUTION	
	<p>If oil level is continually found to be low, the location of the oil loss should be located and repaired to prevent damage to the system.</p>

Figure 6-2: Hydraulic Oil Reservoir



To fill or add hydraulic oil to the reservoir, unscrew the reservoir cap and pour the appropriate oil into the reservoir until it is at a level about 2” from the top. Replace the cap immediately to prevent dirt or debris from falling into the reservoir. The cap and site gauge are shown in Figure 6-2

Table 6-1: Hydraulic Oils Specification

Reservoir Capacity	150 gallons	
Temperature	Operating temperatures shall not exceed 145°F	
	At start-up, oil shall not be below 5°F	
Grade of oil	32	
Viscosity	80-170 SUS at 100°F	
Recommended Oil	Mobile Oil	DTE #24
	Exxon Oil	Nuto H 32
	Shell Oil	Tellus 32
	Sun Oil	Sunvis 816 WR
	Texaco Oil	Rando HD 32

Most hydraulic problems are due to poor preventive maintenance. A large number of service calls are due to easily avoidable issues such as:

- Insufficient oil in the reservoir
- Clogged and dirty oil filters
- Loose intake lines
- Improper grades of oil

Estimates show that up to 70% of all hydraulic problems are traced back to the fluid. Sampling and testing fluid periodically is necessary to obtain reliable performance.

Oil Filters

There are two filters to monitor on the Hydraulic Power Unit. There is a Pressure Filter located after the pump and a Return Line Filter located just after the cooler.

The Pressure Filter has a pop-up gauge, which “pops up” when the replacement element becomes bypassed or clogged. Filter elements should be checked daily and changed immediately if required.

The Return Line Filter has a site gauge. The replacement element should be changed before the needle enters the red area on the gauge.

Replacement part numbers can be found in the *Replacement Parts* Appendix.

Figure 6-3: Pressure Filter

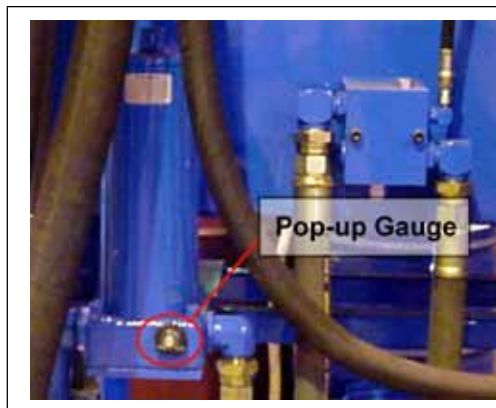


Figure 6-4: Return Line Filter



Hydraulic Oil Changes

	WARNING
	Open the Accumulator Dump Valve before servicing this machine!

The acceptable time between hydraulic oil changes depends on both the fluid used and the operating conditions involved, but it is recommended that the hydraulic oil be changed at least once a year. Use an oil recommended in Table 6-1.

The reservoir holds 150 gallons of hydraulic oil. The volume needed to fill the hydraulic lines varies with each system. Ensure there is an adequate amount of oil in stock to refill the reservoir and lines before beginning the oil changing procedure.

Electronic Temperature Control

The electronic temperature control system on the Hydraulic Power Unit keeps the hydraulic oil in the reservoir at an acceptable temperature to be safely and effectively used. A brochure pertaining to the A310 Electronic Temperature Control was provided with the Hydraulic Power Unit manual.

The temperature of the Hydraulic Power Unit is monitored by a thermal transfer switch. The switch has a sensor in the reservoir to monitor the temperature of the oil. When the oil reaches the set temperature, the switch sends a signal to the PLC and a message is displayed on the touch screen. The fan on the Hydraulic Power Unit is then turned on.

The cut-in adjustment and differential adjustment was set at the factory and should not need to be reset.

For more specific information, refer to the A310 Electronic Temperature Control brochure.

Replacing the HPU Pump & Motor

The pump and motor are connected by a 3-piece coupling, which is enclosed in a bell housing.

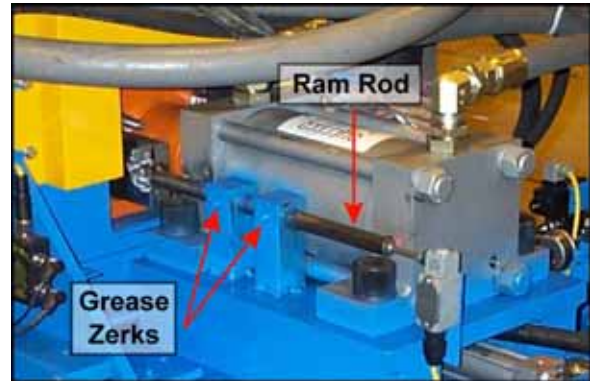
1. Remove the pump.
 - a) Disconnect all hoses from the pump.
 - b) Remove screws from the orange bell housing cover and remove the cover.
 - c) Loosen the set screws between the pump shaft and the coupling.
 - d) Remove the mounting screws from the pump and remove the pump.
2. Remove the motor.
 - a) Remove the screws from the orange bell housing cover and remove the cover.
 - b) Loosen the set screws between the motor shaft and the coupling.
 - c) Remove the mounting screws which attach the bell housing to the motor.
 - d) Remove the screws which attach the motor to the HPU base.
 - e) Remove the motor from the HPU base with a forklift.
3. Replace the pump.
 - a) Slide the pump shaft into the coupling and insert the pump mounting screws.
 - b) Tighten the set screws between the pump shaft and coupling.
 - c) Replace the bell housing cover.
4. Replace the motor.
 - a) Mount the motor on the HPU base and replace the mounting screws.
 - b) Slide the bell housing onto the motor shaft and insert the mounting screws between the bell housing and the motor.
 - c) Tighten the set screws between the motor shaft and coupling.
5. Replace the bell housing cover.

Press Cylinder

Ram Guide Rod Blocks (Hydraulic System #1 Only)

On the 8-9 ft Press, there are two guide blocks which are used for alignment of the press head. These blocks should be lubricated with a NLGI-grade 2 grease approximately once per month. There is one grease fitting on each Ram Guide Rod Block. Use the same procedure given for greasing the Press conveyor bearings.

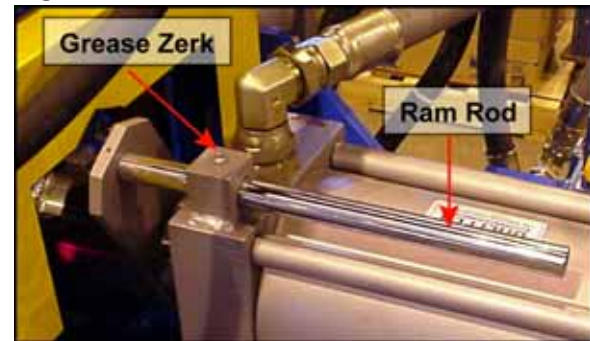
Figure 6-5: 9 ft Press Ram Guide Rod Blocks



Ram Guide Rod Block (Hydraulic System #2 Only)

On the 8-10 ft Press, there is only one guide block, which is used for alignment of the press head. This block should be lubricated with a NLGI-grade 2 grease approximately once a month. There is one grease fitting on the Ram Guide Rod Block. Use the same procedure given for greasing the Press conveyor bearings.

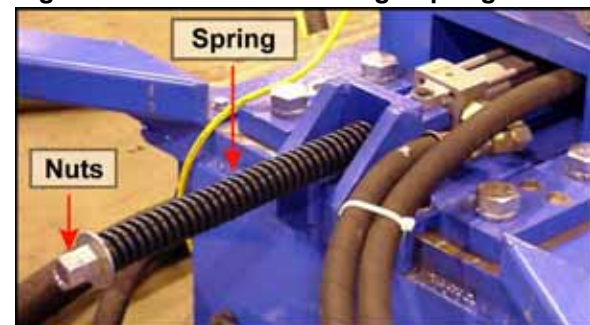
Figure 6-6: 10 ft Press Ram Guide Rod Block



Press-End Carriage Spring

The spring on the rod behind the press cylinder allows the carriage cylinder to extend it's movement past it's normal end of stroke during the press cycle. The spring needs to be replaced when it no longer is able to return the carriage cylinder to it's retracted position.

Figure 6-7: Press-End Carriage Spring



To replace the spring, loosen and remove the two (2) nuts and washer on the end of the rod, pull the spring off, place the new spring onto the rod, and replace the two nuts.

Replacing Cylinders

Press Cylinder

1. To remove the old cylinder, move the press-end carriage all the way out and hold it in place. See the *Operations* chapter for instructions on how to do this.
2. Lockout/tagout all power to the machine.
3. Open the Accumulator Dump Valve to relieve all system pressure and close the Suction Line Ball Valve on the Hydraulic Power Unit to prevent oil seepage.
4. Ensure all pressure is relieved from the hoses and remove them from the cylinder to be replaced.
5. If your Press has Hydraulic System #1, remove the ram rod from the platen and from the linear bearings.
6. On Presses with hydraulic system #2, remove the mechanical limit switch from the rear port of the cylinder.
7. Remove the platen and platen hub from the cylinder shaft by placing a wrench across the flats on the cylinder shaft and breaking the platen hub loose by tapping it with a hammer in the opposite direction the threads are running.
8. Remove the four mounting screws and remove cylinder.
9. Reverse the steps above to install the new cylinder.

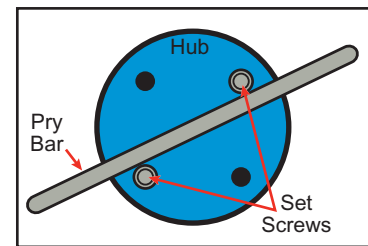
Blue Loctite should be used on all threaded connections

Squeeze Cylinders

1. Use the touch screen to extend the carriage all the way out and hold it in place.

Once the carriage extends and the button is released, the carriage will slowly drift back. The following steps should be completed quickly to prevent system pressure from causing the carriage to interfere with the procedure.
2. Change the Reverse Holding Speed to lowest speed allowed on the Carriage Speed Setup screen. Refer to the *Systems Parameters* section in the *Operations* chapter.
3. Relieve all pressure from the squeeze cylinder valve
 - a) Manually actuate the squeeze cylinder valve.
 - b) Shut down the hydraulic system while continuing to actuate the squeeze cylinder valve until all pressure is relieved.

4. Lockout and tagout all power to the machine.
5. Open the Accumulator Dump Valve to relieve all system pressure and close the Suction Line Ball Valve on the Hydraulic Power Unit to prevent oil seepage.
6. It may take several minutes for all pressure to relieve from the hydraulic lines.
7. Remove four socket head cap screws holding the platen to the platen hub. (The platen hub is attached to the cylinder shaft.)
8. Remove the hydraulic lines from the cylinder, keeping track of which hose goes to the rod end of the cylinder and which hose goes to the cap end of the cylinder.
9. Remove the platen hub from the cylinder rod.
 - a) Place two (2) set screws in two opposing tapped holes in the platen hub. Do not tighten the screws completely down; leave enough length above the platen hub to place a pry bar between the two screws.
 - b) Place a pry bar between the set screws as shown in Figure 6-8. Place a wrench on the flats of the cylinder rod. Loosen the hub by rotating the pry bar and wrench in opposite directions.
10. Remove the four (4) nuts holding the cylinder to its mounting plate.

Figure 6-8: Removing Hub

It may be necessary to remove the squeeze chamber from the carriage to have access to the mounting nuts.

11. Reverse the steps above to install the new cylinder.

Carriage Cylinders and Tie Stop Cylinders

1. Lockout/tagout all power to the machine.
2. Open the Accumulator Dump Valve to relieve all system pressure and close the Suction Line Ball Valve on the Hydraulic Pressure Unit to prevent oil seepage.
3. Ensure all pressure is relieved from the hoses and remove them from the cylinder to be replaced.
4. Remove the snap ring and clevis pin on the rod end and cap end.
5. Remove the clevis from the rod.
6. Reverse the steps above to install the new cylinder.

Hydraulic Adjustments

For any hydraulic system adjustments not described here, refer to the *Installation* chapter. These adjustments are made at the time of installation, and should not need to be made again unless something is replaced or a major operational change occurs.

Pressure Switches

There are three (3) Pressure Switches on the Press that must be set to a pressure just below that of the Pressure Reducing Valve for the same cylinder. See the Pressure Switch section of the *Installation* chapter for the location of each switch and instructions on how to adjust them. They can only be set while the machine is operating.

WARNING	
	<p>Cycle may continue as soon as correct pressure is reached.</p> <p>Moving parts can crush and cut.</p> <p>Use caution while making adjustments.</p>

Cushion Adjustment

All cylinders used on the **HammRR Press** have cushion adjustments to control how much force is applied to the mechanism controlled by the cylinder. Refer to the *Cushion Adjustment* section in the *Installation* chapter for instructions on adjusting the force applied.

Hose Support Brackets

The hydraulic hoses running along the base of the Press are held in place by support brackets. If a hose needs to be replaced, you must open these support brackets to remove the hose, and tighten them securely once the new hose is in place.

1. Remove the two (2) screws from the top of the first support and lift off the top half.
2. Replace the hose in the rubber bushing.
3. Replace the top of the support and the screws.
4. Repeat for the other supports along the base of the Press

Figure 6-9: Hose Support Brackets



Accumulators

Accumulators are devices used to store fluid power for intermittent duty cycles, provide standby power, and compensate for leakage loss. The pressure for each accumulator should be checked every month to ensure it matches the pressure guidelines below. The pressure can be tested and charged using a Bosch-Rexroth kit PN 0-538-103-013.

Accumulator on the Hydraulic Power Unit

There is one 5-gallon accumulator on the Hydraulic Power Unit. It is a bladder-type accumulator. The pressure should be set at 75 psi.

Accumulator Rack

There are three 10-gallon accumulators on the Accumulator Rack. They are the same bladder-type accumulators that are on the Hydraulic Power Unit. The accumulator pressure for the Accumulator Rack should be set to 2040 psi.

Moving the Anvil for a Different Tie Length

See *Changing the Tie Length* section in the *Operations* chapter for instructions on adjusting the Press for different tie lengths.

Press Conveyor

Press Conveyor Bearings

There are eight conveyor bearings on the Press. Four (4) are located on the infeed side of the Press and four (4) are on the outfeed side of the Press. Each bearing should be lubricated with a high quality NLGI-grade 2 lithium soap grease with petroleum oil approximately once a month by completing the steps below.

Bearings fail more often because of dirt introduced during greasing than from insufficient grease. Before beginning the oiling or greasing process, remove all dirt and old lubricant from the area around filler plugs and grease fittings. Filler plugs should not be removed nor grease-fitting connections made until the initial cleaning is finished. After lubrication is completed, surplus oil and grease may be removed with the use of a grease solvent.

1. Stop all moving parts on the machine.
2. Clean the grease fitting and area around them. See note above.
3. Using a standard grease gun, slowly add grease to each fitting until a small bead of grease is present at the seals.
4. Start equipment slowly, making sure all tools and personnel are clear of moving parts.
5. If more purging of the grease is necessary, stop equipment and repeat the steps above.

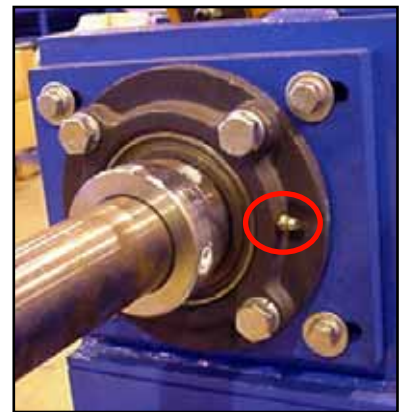
The recommended relubrication grease charge for a 1-15/16" shaft is .19 ounces.

A temperature rise (sometime 30°F) after relubrication is normal. Typically, the temperature will decrease after a short operating time when excess grease has purged and the bearing has stabilized.

Adjusting the Torque Limiter

The Torque Limiter protects the conveyor and gear motor by causing the gear drive to spin in place when the conveyor is placed under extreme loads. If set correctly, the chain will move forward and backward under normal operating conditions, but will not move if a large torque is encountered that could cause the gear motor to stall.

Figure 6-10: Grease Zerk on Press Conveyor



Refer to the *Torque Limiter* section in the *Installation* chapter for instructions on adjusting the Torque Limiter.

*Keep in mind that the purpose of this Torque Limiter is to protect the gear motor if a large torque is encountered that could damage the conveyor motor. Adjustment should be made only if there is not enough torque to operate the conveyor under **normal** operating conditions.*

Gear Motor on Press Conveyor

Inspection

1. Inspect the motor at regular intervals, approximately every 500 hours of operation or every three months, whichever occurs first. Keep the motor clean and the ventilation openings clear. The following steps should be performed at each inspection.
2. Keep the interior and exterior of the motor is free of dirt, oil, grease, water, etc. Oily vapor, sawdust, textile, lint, etc. can accumulate and block motor ventilation. If the motor is not properly ventilated, overheating can occur and cause early motor failure.
3. Use a Megger periodically to ensure that the integrity of the winding insulation has been maintained. Record the Megger readings on the maintenance checklist. Immediately investigate any significant drop in insulation resistance.

Gear Motor Lubrication

Oil

The oil level should be kept within 1/2 in. of the bottom of the fill plug threads, which is located between the autovent and drain plug. An ISO VG220 mineral-based oil must be used. The recommended oil brands are shown in Table 6-2.

Table 6-2: Press Conveyor Gear Motor Oil

Brand Name	Origin of Gearbox Assembly
Texaco Meropa 220	NORD USA
Shell Omala EP220	NORD Canada

The oil in the gear motor should be changed annually. The drain plug is a metric socket head cap screw located at the lowest part of the gearbox.

Gear Motor Bearing Lubrication

The bearings in the gear motor had Texaco Multifak EP2 bearing grease applied at the factory. Because the bearings used are shielded and greased already, there is no maintenance lubrication required.

Replacing the Gear Motor

1. Remove the screw, lock washer and flat washer that is holding the shaft in place. See Figure 6-11.
2. Support the gear motor with a fork lift or and overhead crane.
3. Remove the four (4) hex nuts and lock washers from the flange mount.
4. Slide the gear motor off the mounting bolts and drive shaft. Be careful not to lose the key.
5. Follow the *Removing Gear Motor* procedure in reverse order.
 - a) Ensure that the keyways line up between the hollow bore shaft and the drive shaft.
 - b) Insert the key prior to replacing the hardware to hold the shafts in place.


CAUTION	
	Ensure that the gear motor is installed in the same orientation it was before removal to allow for adequate lubrication.

Figure 6-11: Gear Motor



Tie Stops

Making Adjustments

Refer to the *Tie Stops* section in the *Installation* chapter for information on adjusting the speed and location of the Tie Stops.

Bumpers

The Tie Stop bumpers pad the machine base from the force of the Tie Stops when they are extended (raised). The bumpers help to minimize the noise created and protects both the Tie Stops and frame from unnecessary wear. To replace the bumpers, remove the screw in the current bumper, place the new bumpers in the same location, and replace the screw.

Wear Strips

Wear strips are plastic strips that act as spacers to allow the carriages to slide across the base of the machine. There are three (3) wear strips on both sides of both carriages, which makes a total of 12 wear strips on the machine.

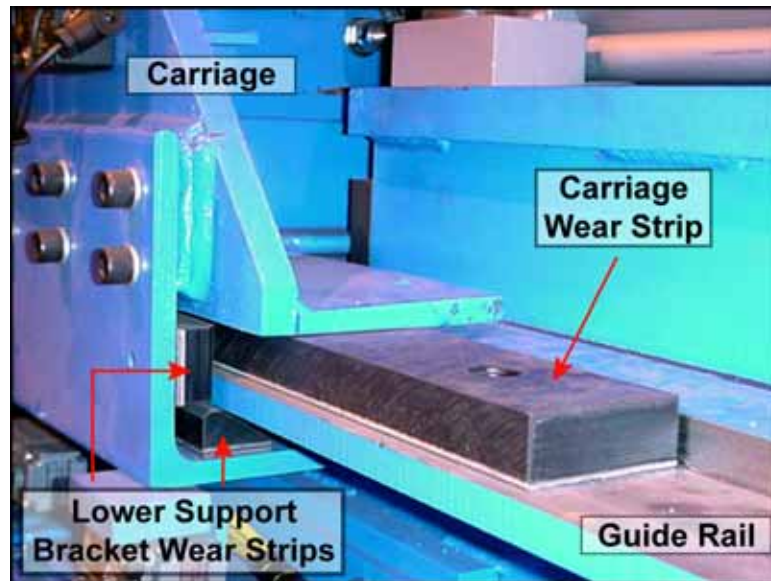
Under each new wear strip one or more sheet metal shims may be needed to bring the height of the strip up to its ideal position. As the plastic wear strips become worn and thinner, additional shims should be added below the wear strip. Continue adding shims as needed, until the bolt heads in the wear strip are making contact with the mating material. At this time, the entire wear strip will need to be replaced and only one shim will be needed.

Using the additional shims will prolong the time between having to replace the entire wear strip. When it does become necessary to replace a wear strip, it is recommended that you replace all six (6) wear strips on each carriage at the same time in order to keep the carriage level and for ease of replacement.

Table 6-3: Wear Strip and Shim Descriptions

Part Name		9' Press	10' Press	Description	Part #
Lower Support Bracket Shims		Both ends	Both ends	11 and	81967
Lower Support Bracket Shims		Both ends	Both ends	16 ga.	81968
Carriage Shims		Both ends	Press end	11 ga.	81963
		—	Anvil end	11 ga.	89006
Lower Support Bracket Wear Strips	Side Strip	Both ends	Both ends	3/4" x 1-1/2"	81931
	Bottom Strip	Both ends	Both ends	3/4" x 1-1/2"	81930
Carriage Wear Strips		Both ends	Press end	1" x 3"	81932
		—	Anvil end	1" x 3"	89004

Figure 6-12: Wear Strips



Lower Support Bracket Shims and Wear Strips

It is highly recommended that you replace all four (4) lower support brackets on each carriage at the same time in order to keep the friction even and for ease of replacement. The wear strips need to be replaced or shims added to prevent the carriage from rubbing and to keep it traveling smoothly.

Pay close attention to the lower support brackets on both sides of each carriage. As they begin to wear, the carriage may travel in a wavy pattern which will cause the wear strips to wear unevenly, requiring them to be replaced more often. As soon as this wavy motion is detected, shims should be added to force the carriage to travel in a straight line.

1. Remove the ten (10) socket head screws and washer from the lower support bracket on one side of the carriage with an Allen wrench and remove the lower support bracket.

2. Remove the three (3) socket head cap screws holding the s to the lower support bracket.
3. Either add the appropriate shims or replace both wear strips on that side.
4. Place the lower support bracket back onto the Press and tighten the ten screws snugly.
5. Repeat the procedure for the other side of that carriage immediately.

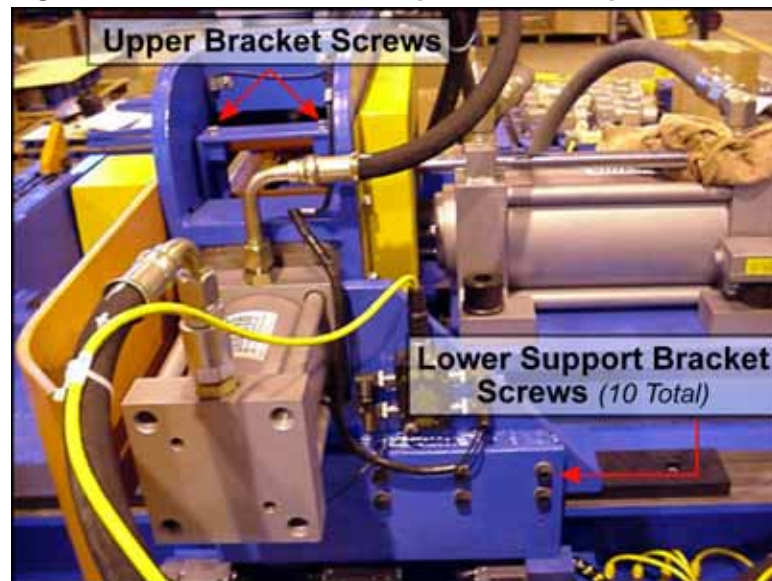
Adding Carriage Shims

Refer to the instructions for *Replacing Carriage Wear Strips*, but instead of replacing the entire wear strip, add shims under the carriage wear strips. It is recommended that you add carriage shims to both sides of the carriage at the same time. Refer to Figure 6-12.

Replacing Carriage Wear Strips

It is recommended that you replace both carriage wear strips on each carriage at the same time in order to keep the carriage level and for ease of replacement. The strips need to be replaced to prevent the carriage from rubbing or making contact with the top plate on the base of the machine. Refer to Figure 6-12.

Figure 6-13: .Screws Used to Replace Wear Strips



1. Remove the two (2) hex head screws from the upper bracket on both sides of the carriage.
2. Lift up on each bracket and remove it from the squeeze chamber assembly. Set it aside

3. Remove the ten (10) socket head screws and washer from the lower support bracket on both sides of the carriage with an Allen wrench and set the lower support bracket aside.

It is recommended that the lower support bracket wear strips are shimmed or replaced while the lower support bracket is removed.

WARNING	
	<p>The squeeze chamber assembly must be securely and safely attached to a lifting mechanism capable of lifting 1200 lb in order to remove it from the machine base.</p> <p>Failure to lift and move the carriage in a safe manner may result in severe personal injury and property damage.</p>

4. Remove the squeeze chamber assembly from the carriage.
 - a) Relieve the pressure in the squeeze cylinder hoses.
 - b) Remove the hoses from the squeeze cylinders. There are two (2) squeeze cylinder hoses on each cylinder, and there are three (3) squeeze cylinders on each end of the Press.
 - c) Using a chain and a crane or lift capable of safely lifting 1200 lb, remove the squeeze chamber assembly from the carriage by lifting straight up.
 - d) Set the squeeze chamber assembly aside.
5. Remove the entire carriage from the base of the machine by lifting straight up with a crane or comparable lifting mechanism, and set it aside.
6. Remove the screws from each wear strip.
7. Discard the wear strips, but keep the screws.
8. Assemble the new wear strips in the same locations the old ones were removed, using the same screws.
9. Once both carriage wear strips are securely attached to the machine, place the carriage back onto the machine base.
10. Replace the lower support brackets on both sides.
11. Replace the brackets that were removed from the squeeze chamber assembly, on both sides.

Safety Switch for Pull-Cord E-Stop

A turnbuckle connects the pull-cord E-stop to the safety switch. It can be adjusted by turning either end of the turnbuckle to tighten or loosen the cable in order to move the control mechanism in the safety switch box to the center of the mechanism. If this control mechanism is not in the correct position, the machine will not operate.

Figure 6-14: Pull Cord Safety Switch Cover



Main Electrical Enclosure

Fuses

If a fuse blows, determine which fuse needs to be replaced by noting what functions are not working and referring to the electrical drawings. The part number is shown on the electrical drawings.

Replace the blown fuse by pulling it off of the din rail and snapping a new fuse in its place.

PLC (Programmable Logic Controller)

The PLC is shown in Figure 6-26 and the part # can be found in the electrical portion of the *Replacement Parts* appendix as well as on the electrical drawings. The PLC is needed for communication between the touch screen and the Press.

Input/Output Cards

Refer to the electrical drawings to identify the part number if an input or output card needs to be replaced. The description printed on each card will be of assistance.

VFD (Variable Frequency Drive)

The VFD, labeled in Figure 6-26, allows the speed of the Press conveyor to be adjusted. The *Operations* chapter provides instructions for programming a new VFD if the replacement is shipped directly from the Manufacturer. If the replacement is shipped from MiTek, it will already have the correct defaults programmed. It is very important that the proper default settings are programmed after wiring the VFD in place. Refer to the electrical schematics for guidance on wiring.

If the conveyor is moving in the wrong direction, switch two (2) of the wires exiting the VFD's overload.

The part number can be found in the electrical portion of the *Replacement Parts* appendix as well as on the electrical drawings.

The infeed and outfeed conveyors have separate VFDs located in their own electrical enclosure. See the *Infeed and Outfeed Conveyors* section.

Electrical Junction Box on the Press

The electrical junction box located on the Press itself houses terminal connections and a selector switch to control the anvil-end carriage when the Press is in Manual Mode. To access this enclosure, the door must be removed. To do so, push one end of the pin running through the hinge with a pointed object until enough of the pin is free to grab with your hand. Pull the pin completely out of the hinge and remove the door.

Limit Switches on the Press

There are a total of ten (10) limit switches on the Press itself. Their functions and locations are described in Table 6-4. Do not discard the faulty limit switch until the new switch is in possession. Nine of the ten limit switches are the same part number, but some have a lever or hardware associated with them that will need to be transferred from the previous limit switch. Refer to the *Replacement Parts* appendix for the limit switch part numbers.

If replacing a limit switch, ensure it is mounted in the same orientation as the original limit switch.

Table 6-4: Limit Switches on the Press

LS #	LS Name	Qty	Location	Function
1 & 2	Carriage Too Far	2	On infeed side of Press base, on both ends	Tells the machine the carriage should stop, a backup to the “exiting chamber” photo eye
3 & 4	Carriage Forward	2	On infeed side of Press base, on both ends	Tells the machine the carriage should begin to slow down in preparation of stopping, a backup to the “entering chamber” photo eye
5 & 6	Carriage Return	2	On infeed side of Press base, on both ends	Tells the machine the carriage is in its “home” position, completely retracted; the tie can then be released
7 & 8	Tie in Place	2	Near the Tie Stops on the Press	Tells the machine that a tie is in place to enter the squeeze chambers; the carriage can then move forward
9	Tie Down Stream	1	On the left side of the Press conveyor at the outfeed side	Tells the machine that a tie has exited the Press; a new cycle can begin with the <i>tie in place</i> step
10	Press Return	1	Near RAM rod on the press cylinder	Tells the machine when the platen head on the press cylinder is completely retracted; the tie can then be released

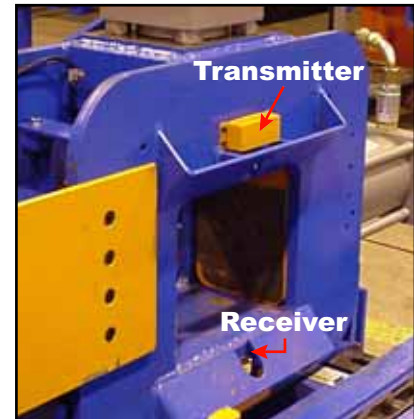
Refer to Figure 6-17 for a diagram of limit switch locations

Photo Eyes

There are four (4) photo eye sets located on the squeeze chambers of the Press. A set consists of a transmitter and a receiver. One photo eye set is located on the side of each squeeze chamber that is facing the center of the Press. It is directed vertically. When these eyes detect the beginning of a tie entering the squeeze chamber, the carriages slow down in preparation of stopping. Another photo eye set is located on the outer side of each squeeze chamber. They are behind a guard and directed horizontally. When they detect that the tie has protruded through the outer side of each squeeze chamber, the carriage stops to allow the squeeze and press functions to occur.

If the screws holding these photo eyes in place come loose, the transmitter and receiver will be out of alignment and will not operate properly.

Figure 6-15: Photo Eye at Entrance to Squeeze Chamber



Infeed & Outfeed Conveyor

*This section refers only to **MiTek** infeed and outfeed conveyor systems. This equipment is optional, and may not be included in your system.*

Hydraulic Cylinders

A hydraulic cylinder is located near the end of the infeed conveyor to control the lift-gate. There is a Flow Control Valve to adjust the pressure reaching this cylinder. Turn the thumbscrew on the valve to adjust it.

There is another hydraulic cylinder located at the entrance into the Automatic Plate Feeding System (if you have that option). Adjust its Flow Control Valve as described above.

To replace either of these two cylinders, use the procedure shown in *Replacing Cylinders—Carriage Cylinders and Tie Stop Cylinders*.

Gear Motor on Infeed and Outfeed Conveyors

Both the infeed and outfeed conveyors have a gear motor. Refer to the *Gear Motor on Press Conveyor* section earlier in this chapter for inspection, lubrication, and replacement instructions. The part numbers are listed in the *Replacement Parts* appendix.

Conveyor Bearings

There are eight (8) bearings on the infeed conveyor and eight (8) bearings on the outfeed conveyor. Each bearing should be lubricated with a high quality NLGI-grade 2 lithium soap grease with petroleum oil approximately once a month by completing the same steps outlined in the *Press Conveyor Bearing* section.

Anvil

The anvil on the outfeed conveyor should be adjusted to match the anvil setting on the Press. Refer to the *Infeed and Outfeed Conveyor Installation* section in the *Installation* chapter for instructions for adjusting the anvil.

Pusher

The outfeed conveyor uses an pneumatic cylinder to operate a Pusher that pushes each tie against the outfeed conveyor anvil after it exits the Press. Lining each tie up against the anvil allows the kerf cuts to be made in the same location every time.

Replacing the Cylinder

To replace the Pusher cylinder, remove the platen and the four (4) bolts holding the cylinder in place.

Reed Switch

The reed switch tells the machine when the Pusher's cylinder is completely retracted. It is referred to as Limit Switch #13 on the electrical drawings and in Table 6-5.

Kerf-Cut Saws

The outfeed conveyor has two saws at the far end of the conveyor for the purpose of cutting kerf cuts into the ties as they are exiting the system. Refer to Drawing 81921.

Replacing a Saw Blade

To replace a saw blade, remove the nut holding the blade onto the shaft. Pull the blade off and replace with a new blade. The part number can be found in the *Replacement Parts* appendix.

Lubrication

The saw shaft bearing requires grease to be added according to the instructions for the Press conveyor bearings.

Adjusting the Location of the Saws

The saws are attached to a motor adjustment plate that allows minor adjustment of the position of the saws. To adjust, loosen the four (4) bolts holding the saw to the plate. Move the saw to the desired location and tighten the bolts

VFD (Variable Frequency Drive)

The infeed and outfeed conveyors' speed is controlled by their own VFDs. They are located in the infeed/outfeed electrical enclosure. If the infeed or outfeed conveyor is moving in the wrong direction when it is hooked up, switch two (2) of the output wires at the applicable VFD.

If a VFD needs to be replaced, refer to the *Main Electrical Enclosure* section regarding the VFD for Press conveyor for details on programming defaults.

Limit Switches on Infeed and Outfeed Systems

Table 6-5: Limit Switches on the Infeed and Outfeed Conveyors

	LS #	LS Name	Qty	Location	Function
Infeed	11 A&B	Tie in Place at Lift-Gate	2	Prior to lift-gate (if you have an APFS)	Tells machine a tie is ready to be sent into the lift gate at the entrance to the APFS
		Tie in Place at Lift-Gate	2	Prior to lift-gate	Tells machine a tie is ready to be sent into the lift gate at the entrance to the Press
	12	Queue is Full	1	Beginning of Infeed	Tells the Press the infeed is full
Outfeed	13	Alignment Push Retracted (Reed Switch)	1	On back of Pusher	Tells the machine the Pusher is retracted so another tie may move forward
	14 A&B	Tie is Ready to Push	2	At Tie Stops	Tells machine the tie is at the alignment RAM stops
	15	Out Queue is Full	1	After LS #16	Tells the Press the outfeed is full
	16	Tie is Aligned	1	Immediately after the Pusher	Tells the machine the tie has been pushed into alignment and moved away from the Pusher

Figure 6-16: HammRR Press Maintenance Diagram

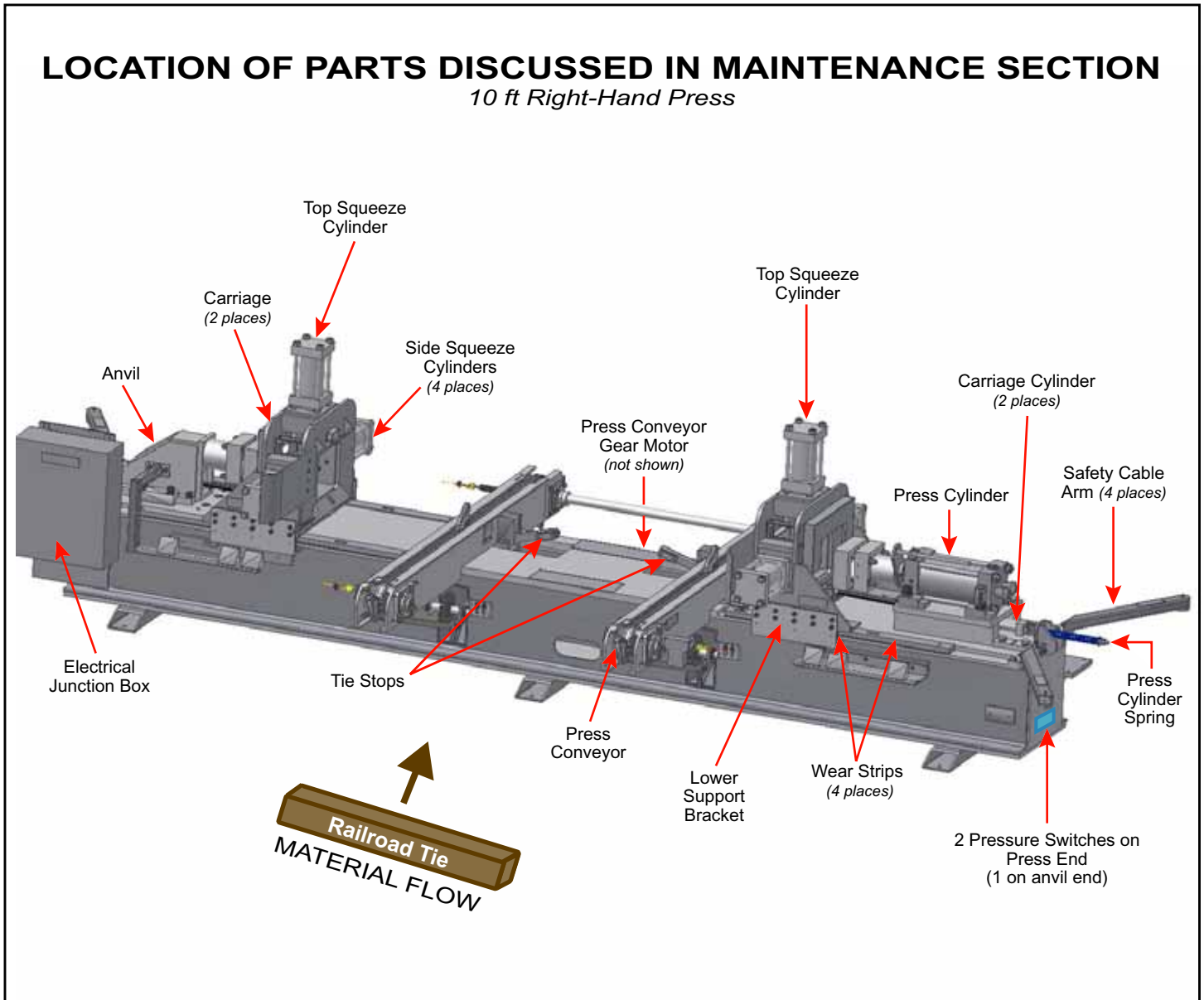
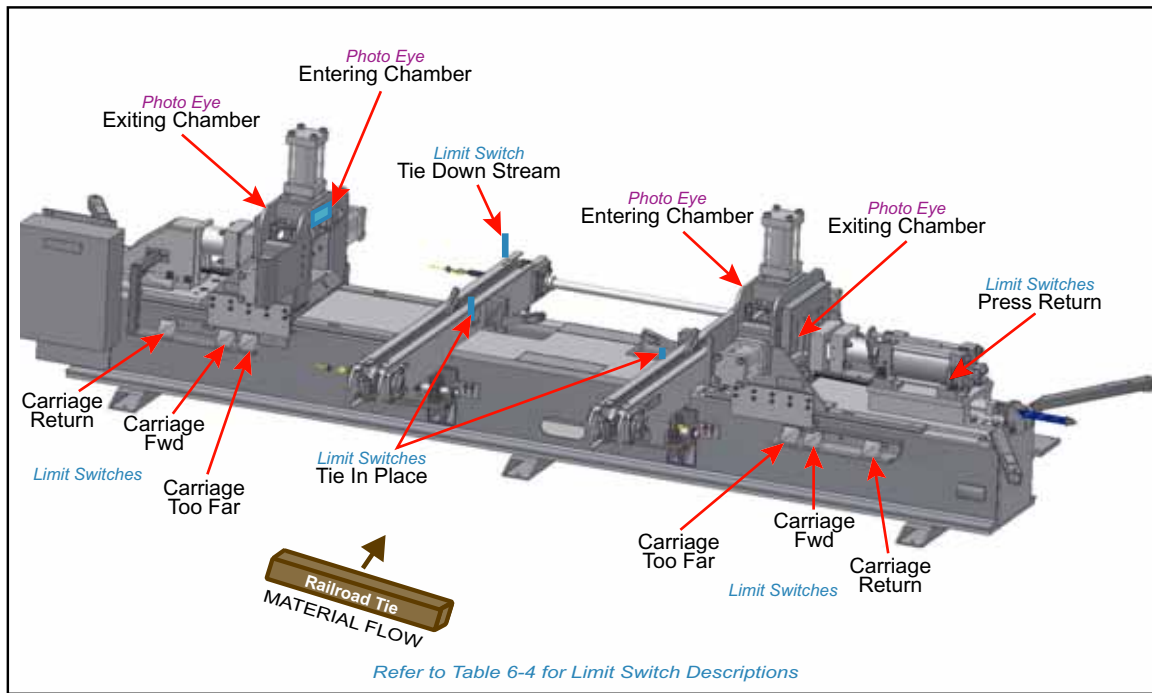


Figure 6-17: Location of Photo Eyes and Limit Switches



Refer to Table 6-4 for a description and identification number for each limit switch.

Figure 6-18: Side View of HPU

HYDRAULIC POWER UNIT (HPU)

Side View

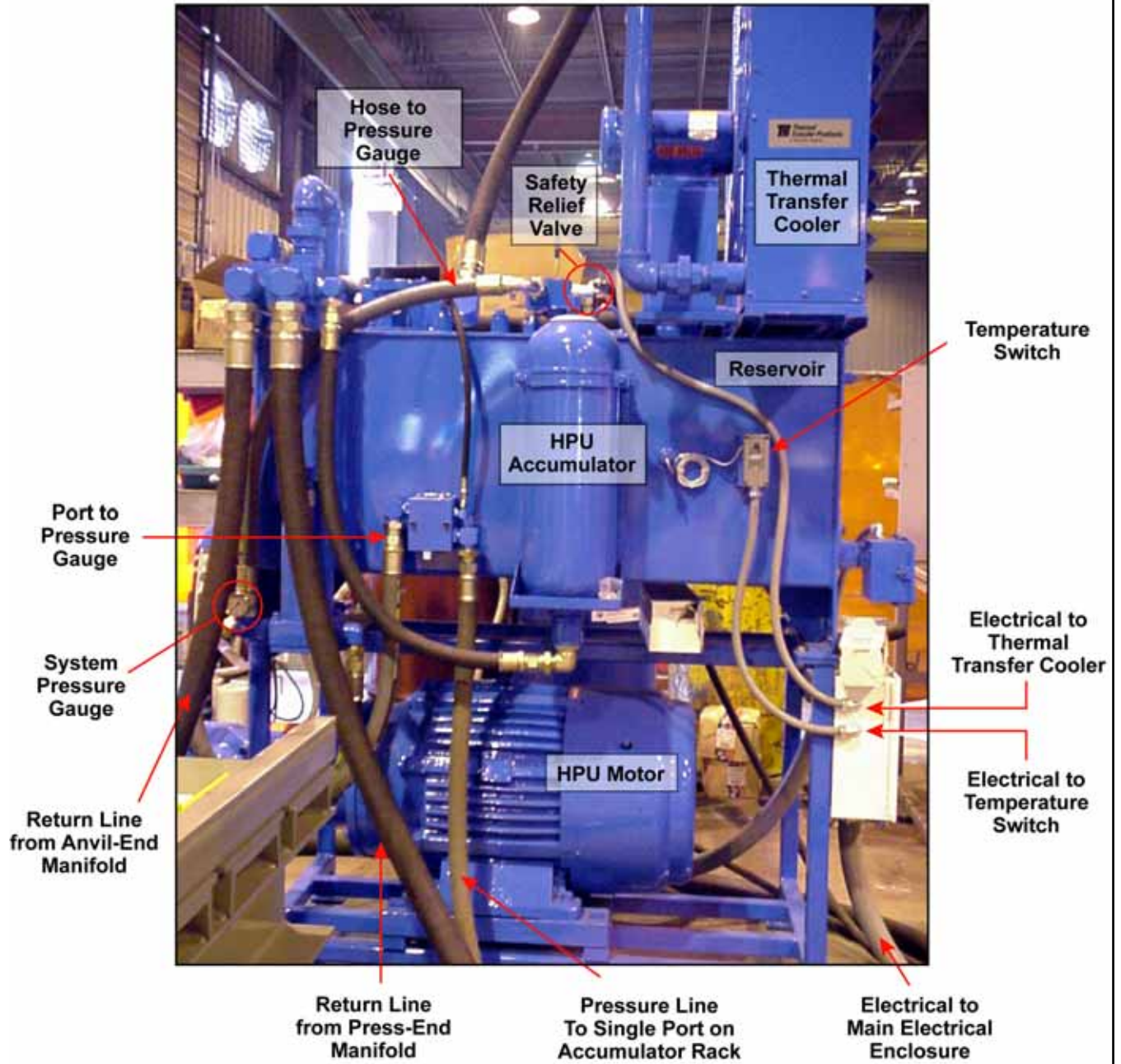


Figure 6-19: End View of HPU

HYDRAULIC POWER UNIT (HPU) *Facing It From the Pump End*

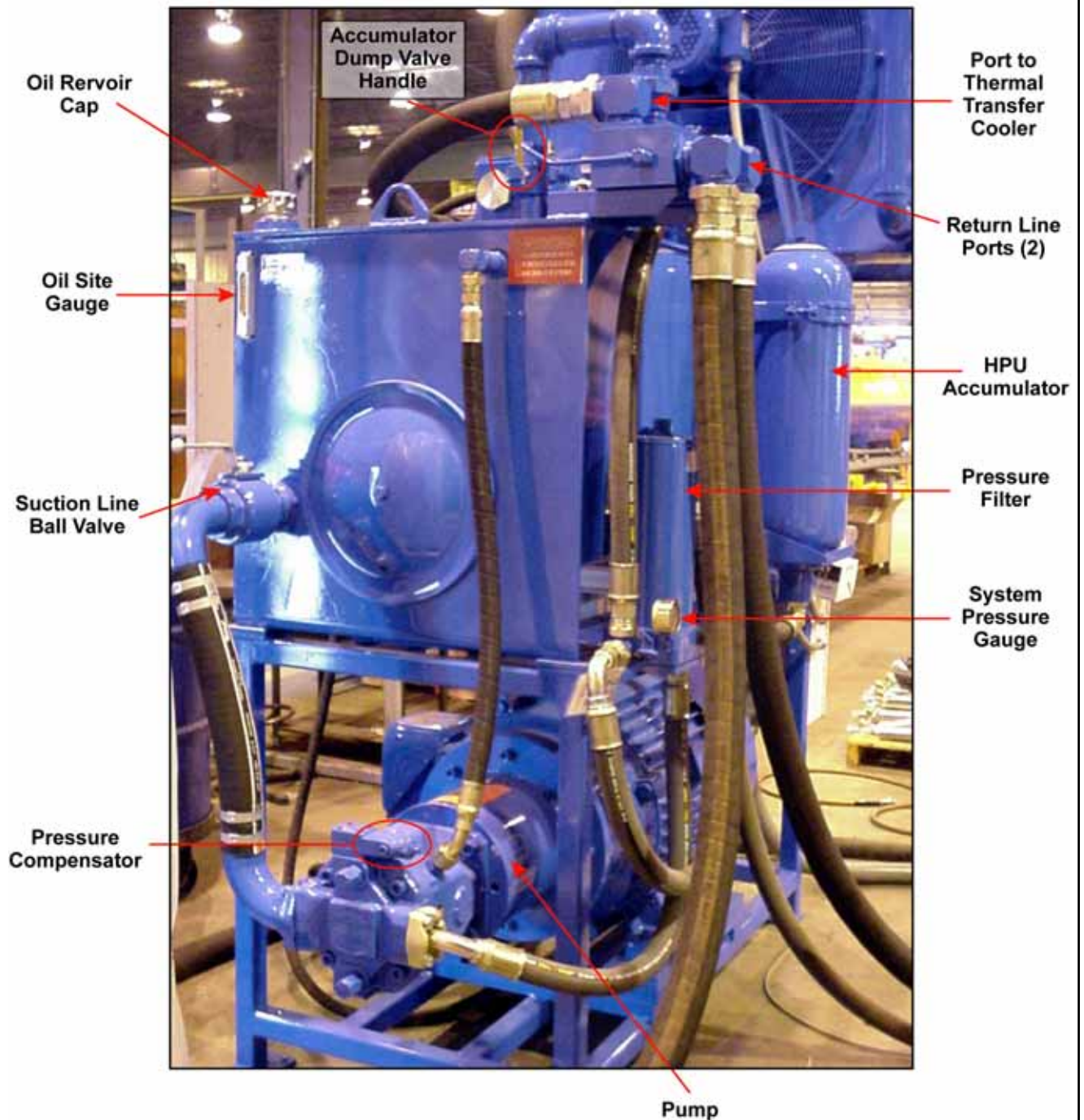


Figure 6-20: top View of HPU

HYDRAULIC POWER UNIT (HPU) *Top View*

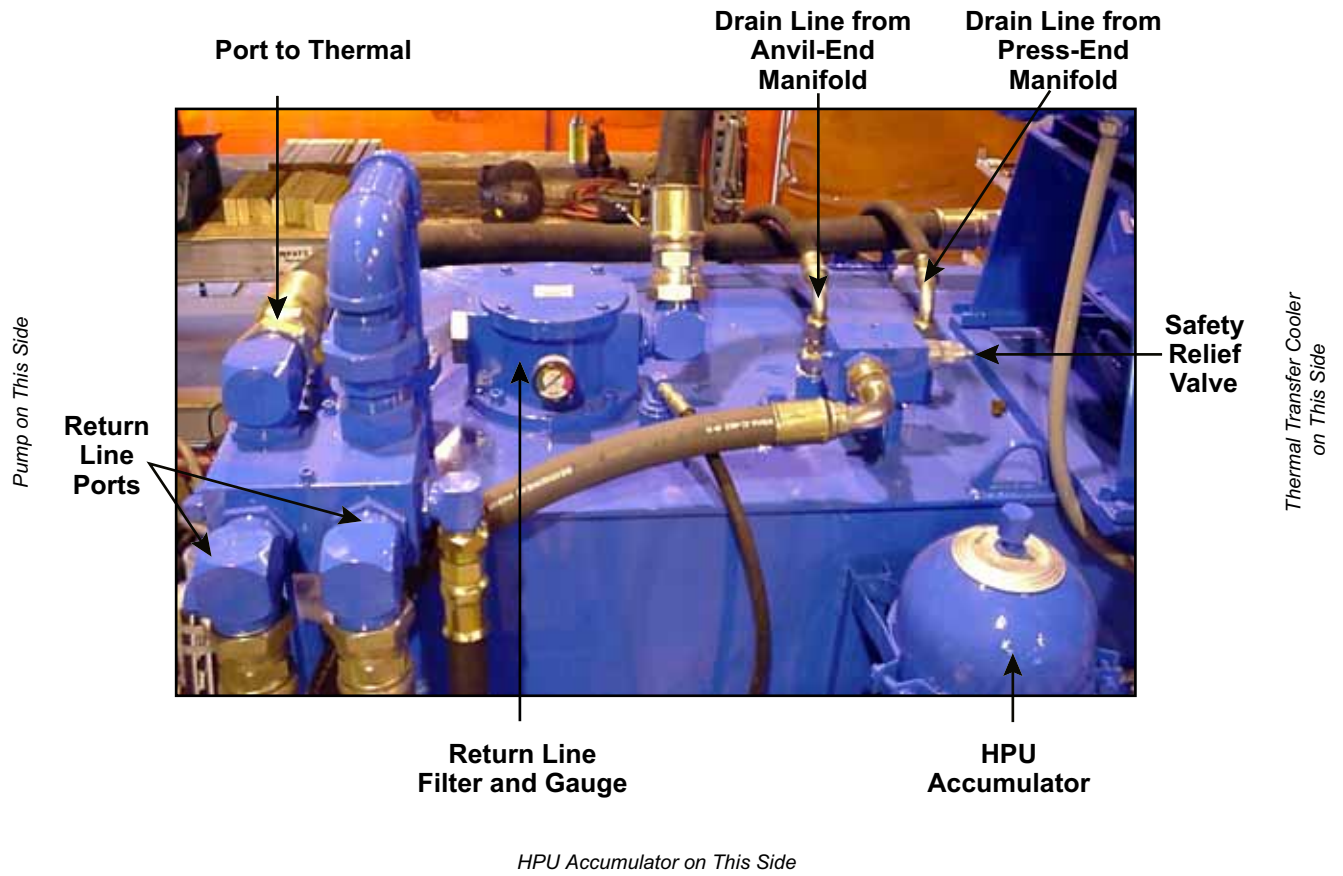
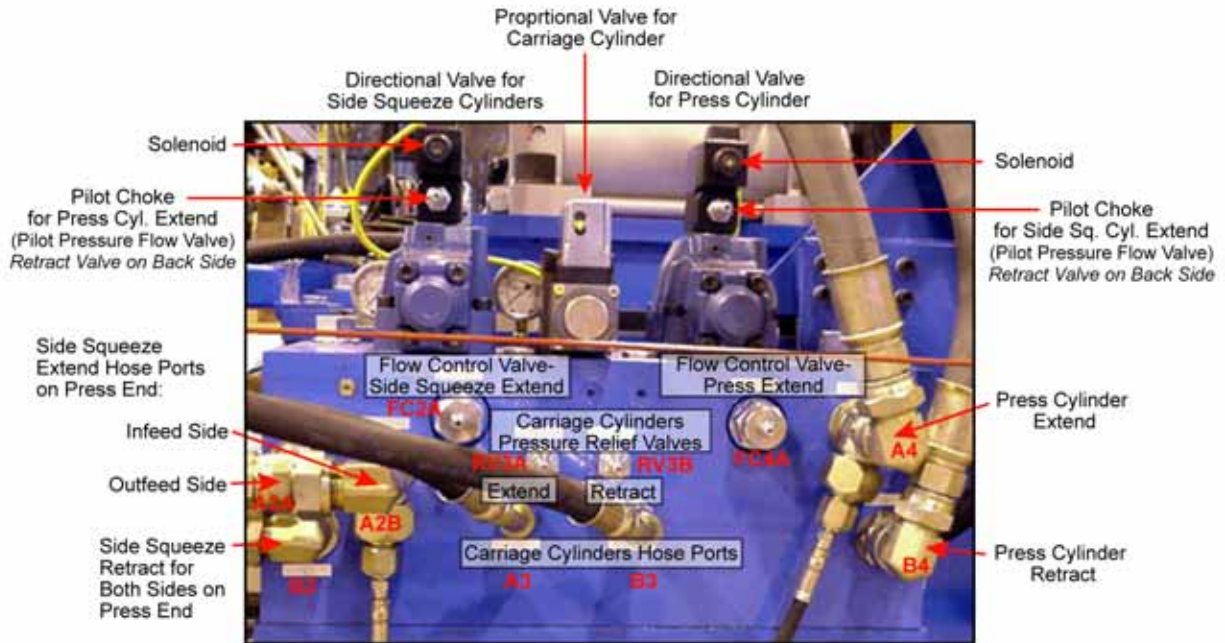


Figure 6-21: Ports and Valves on Press-End Manifold, Hydraulic System #2

PRESS-END MANIFOLD

(After Hoses are Connected)

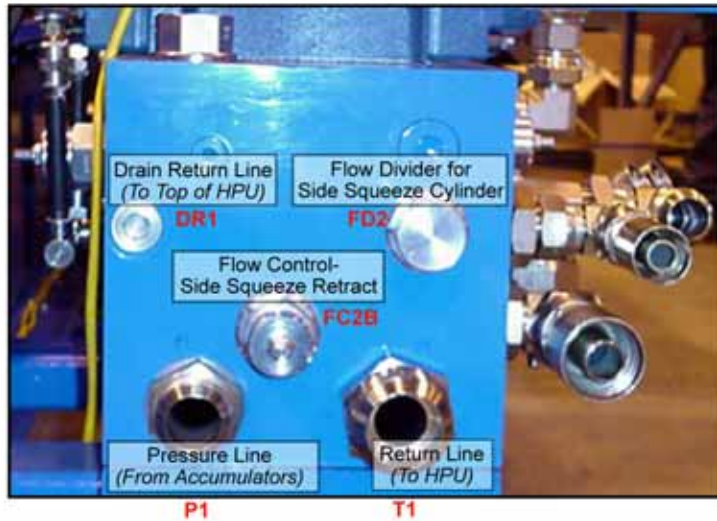
Hydraulic System #2 Only



3 Pressure Reducing Valves on Opposite Side of Manifold
(1 Lined Up With Each Valve on Top of Manifold)
Left to Right: PRV2, PRV3, PRV4

LEFT SIDE OF PRESS-END MANIFOLD

When Facing Press From Outfeed Side



RIGHT SIDE

When Facing Press From Outfeed Side



Figure 6-22: Ports and Valves on Press-End Manifold, Hydraulic System #1

Hydraulic System #1 Only

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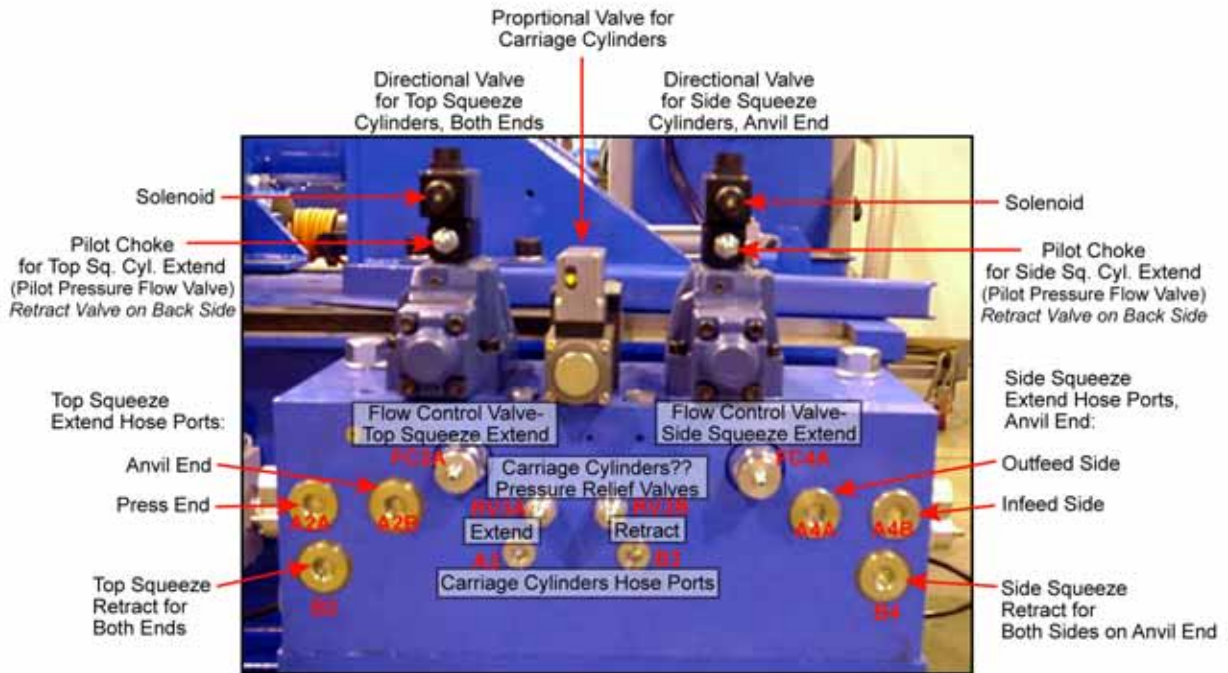
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Figure 6-23: Ports and Valves on Anvil-End Manifold

ANVIL-END MANIFOLD

(After Hoses are Connected)

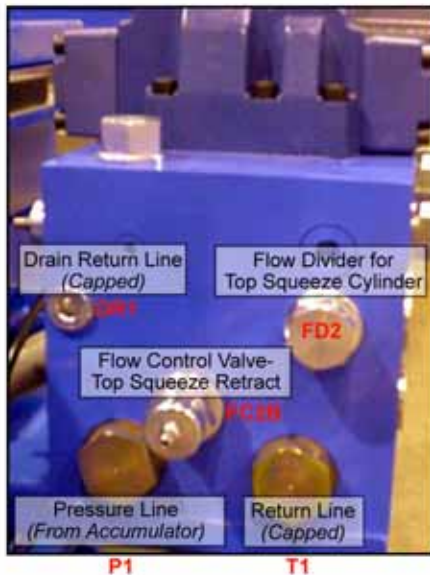
Hydraulic System #2 Only



3 Pressure Reducing Valves on Opposite Side of Manifold
(1 Line Up With Each Valve on Top of Manifold)

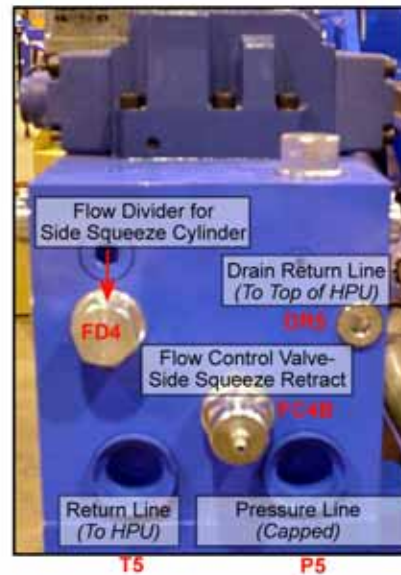
LEFT SIDE OF ANVIL-END MANIFOLD

When Facing Press From Outfeed Side



RIGHT SIDE OF ANVIL-END MANIFOLD

When Facing Press From Outfeed Side



Hydraulic System #1 Only

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Figure 6-25: Accumulator Rack



Figure 6-26: Main Electrical Enclosure

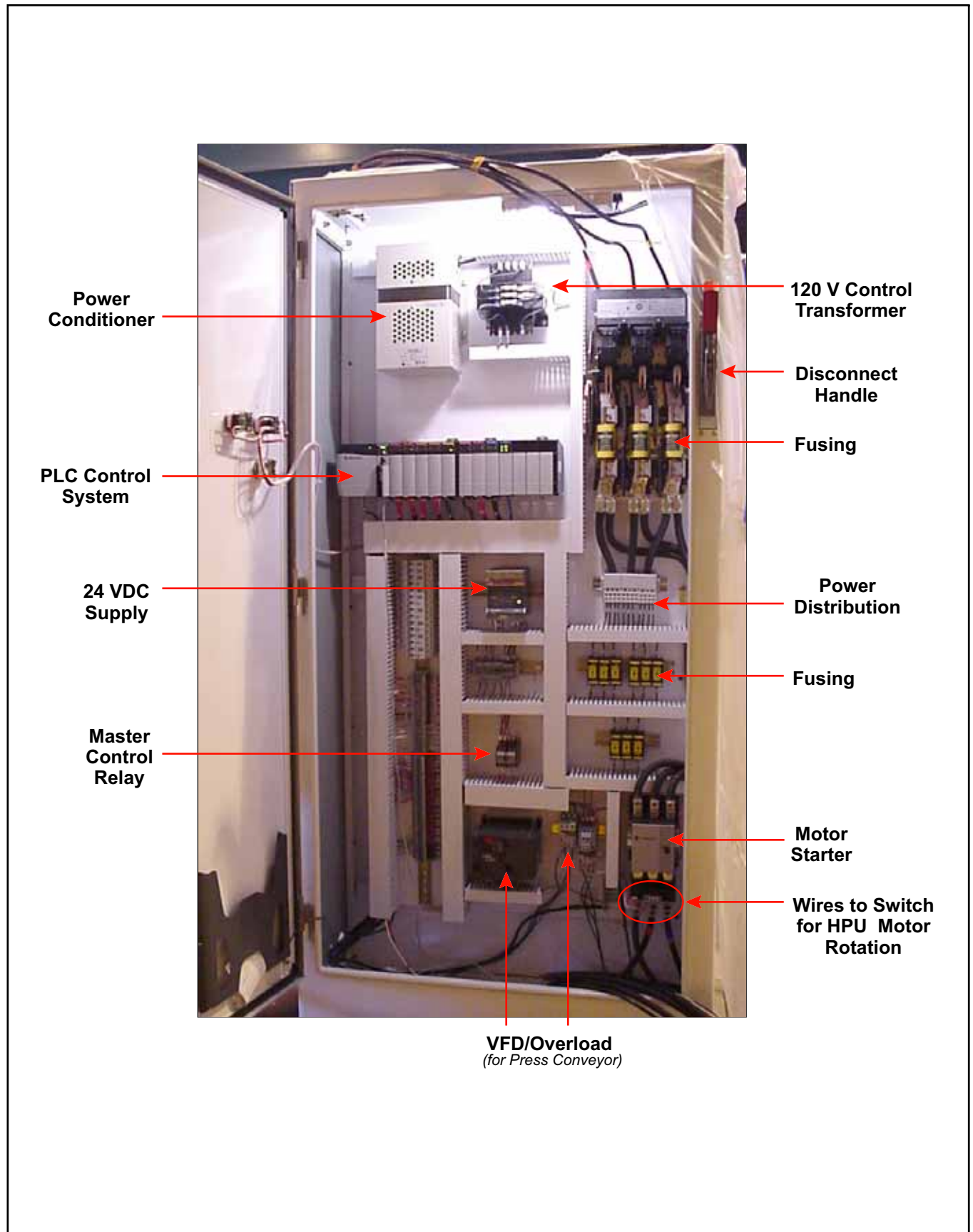


Table A-1: Troubleshooting the Hydraulic System

Problem	Possible Cause	Possible Solution
Cycle time slows down	Not enough oil in reservoir	Fill reservoir to 2" below top edge of tank
	Maximum volume control set to low	Adjust maximum volume control to deliver more flow
	Accumulator (stack) pressure is low	Ensure the accumulator pressure is 2040 psi
	Speed was manually lowered	Adjust the Carriage Speed from the Diagnostics Menu or the Conveyor Speed from the Main Menu
Oil getting hot	Oil flowing over Relief Valve	Adjust Pressure Relief Valve setting so it is greater than the pump compensator setting
		Replace Pressure Relief Valve
	Oil cooler is dusty	Clean oil cooler
	Oil cooling fan doesn't come on	Set temperature switch as a lower temperature
	Temperature switch not working	Check wiring between temperature switch to the input on PLC
		Replace temperature switch
	Temperature Fault is ignored by operator	Check temperature gauge if not relying on fault screens
	Fan motor not responding	Check fuses #7-#9
Reset Overload if it is tripped		
Replace fan motor		
Low on oil	Fill reservoir to 2" below top edge of tank	
Hydraulics won't start	Emergency stop engaged	Make sure all E-stops buttons are not depressed and the pull-cord switches are not engaged
	Fault (error) is detected	Check for fault pop-up screens on the touch screen monitor, then check the Diagnostics Menu
	Power key turned off	Turn the key on front of main electrical enclosure

Table A-2: Troubleshooting the Cycle

Problem	Possible Cause	Possible Solution
Conveyor motor will not start	Outfeed conveyor is full	Remove ties from conveyor
	Out Queue is Full limit switch (#15) is engaged	Determine what is engaging it and remove
	VFD Faulted	Reset fault at the MTR/VFD screen from the Diagnostic Menu
Conveyor motor starts but chain does not move	Torque Limiter is set at a torque that is too low	Increase torque setting for the Torque Limiter
Pressing occurs, all cylinder retract, but conveyor doesn't start	Carriages are not in their "home" position	Make sure carriage cylinders are fully retracted and home limit switches are engaged
	Conveyor motor is not receiving a signal to start	Check communication between conveyor motor, VFD, and PLC
	Outfeed queue is full	Remove ties from outfeed conveyor
	System thinks outfeed queue is full	Check status of <i>Out Queue is Full</i> (#15) limit switch
	<i>Press Return</i> (#10) limit switch is not responding	Replace or reposition limit switch
Conveyor moves tie to Stops, but neither carriage moves in	Conveyor motor is stalled	Make sure drive shaft can rotate freely
	Carriages are not in their "home" position	Make sure carriage cylinders are fully retracted and home limit switches are engaged
	Tie is crooked	Push tie up against stops so it is engaging both limit switches
	One or both of the <i>Tie In Place</i> limit switches at the stops (#7 & 8) are not engaged	Check the communication between the limit switches and the PLC; check the System Sensors screen from the Diagnostic Menu (see the <i>Operation</i> chapter)
	The Press Pressure Switch is energized at all times	Check the System Sensors screen from the Diagnostic Menu (see the <i>Operation</i> chapter)
	Carriage valves not responding	Check wiring; check test points for voltage levels, see Drawing 90450 page13
	Cycle has not been started	Start the cycle from the Automatic Operations Screen

Table A-2: Troubleshooting the Cycle (Continued)

Problem	Possible Cause	Possible Solution
Conveyor moves tie to Stops, but only one carriage extends	Carriage cylinder rod bent	Replace carriage cylinder rod
	Carriage cylinder Proportional Valve bad	Replace carriage cylinder Proportional Valve
	Wiring may be damaged	Check wiring: check test points for voltage levels, see Drawing 90450 page13
Carriages move in too far before squeezing	Photo Eyes are not seeing ties	Test communication between photo eyes and PLC
	<i>Carriage Too Far</i> (#1 & 2) or <i>Carriage Fwd</i> (#3 & 4) limit switches not positioned correctly	Adjust position
Carriages move in but one of the cylinders doesn't squeeze	Squeeze cylinder rod bent	Replace Squeeze cylinder rod
	Squeeze cylinder valve doesn't shift	Attempt to shift valve manually; if able, the problem is between the communication between the valve and the PLC; if not, the spool is stuck
	Spool is stuck on applicable cylinder valve	Rebuild or replace valve
	A Pressure Switch is energized at all times	Check the System Sensors screen from the Diagnostic Menu (see the <i>Operation</i> chapter)
Carriages move in and squeezes, but does not press	Squeeze cylinder pressure switch set too high	Adjust appropriate Pressure Switch; Clamp Pressure Switch is too high or Press Pressure Switch is too low
	press cylinder rod bent	Replace press cylinder rod
	press cylinder valve doesn't shift	Attempt to shift valve manually; if able, the problem is between the communication between the valve and the PLC; if not, the spool is stuck
	Spool is stuck on the press cylinder valve	Rebuild or replace valve
A squeeze or press cylinder will not extend or retract	press cylinder rod bent	Replace cylinder rod
	press cylinder valve doesn't shift	Attempt to shift valve manually; if able, the problem is between the communication between the valve and the PLC; if not, the spool is stuck
	Spool is stuck	Rebuild or replace applicable cylinder valve
Pressing occurs, but none of the cylinders retract	Press cylinder pressure switch set too high	Adjust the Press Pressure Switch to a lower activation pressure

Table A-2: Troubleshooting the Cycle (Continued)

Problem	Possible Cause	Possible Solution
Machine will not power-on	E-stop engaged	Ensure that both E-stop buttons are pulled out and press the reset button on both pull-cord safety switches
	Turnbuckle on pull-cord is not in contact with switch inside	Remove cover on both pull-cord safety switches and turn the turnbuckle until the switch is making contact
	Master Control Relay (MCR) not engaged	Check wiring through E-Stop circuit and wiring to MCR
	Tie in Crooked Fault	Reset Fault on screen (Diagnostic Screen - Tie error)
	Motor Fault / Overload	Reset Fault on Screen (Diagnostic Screen - MTR/VFD); Check Overload in main Control Panel
	Touchscreen not communicating Check Communications and cable (Diagnostic Screen - T-Screen Status)	Check Communications and cable (Diagnostic Screen - T-Screen Status)
	Blown Fuse	Check Disconnect branch fuses, 120V transformer fuses
	PLC Controller not powered	Check for tripped Circuit Breaker (Diagnostic Screen - Circuit Breakers)
	PLC not in RUN mode	Check PLC key switch in RUN (See page 3-31 Installation)
POWER light on main panel not on	Check power key switch on Main Control Enclosure is ON	

Table A-3: Troubleshooting the Electronic Temperature Control

Problem	Possible Cause	Possible Solution
Electronic Temperature Control not working	Wrong heating/cooling mode selected	Remove the cover and set the jumper blocks to desired mode
	Voltage applied is outside of 85-135 (or 170-270) VAC range	Check and fix wiring
	Temperature sensor is not functioning	Refer to Table 2 in the Electronic Temperature Control manual to determine if the reading taken by an ohmmeter matches the table
	If the previous two step do not fix the problem, the A319 Electronic Temperature Control needs to be replaced	Replace Electronic Temperature Control

Table A-4: Troubleshooting the Gear Motors

Problem	Possible Cause	Possible Solution
Runs Hot	Load exceeds the capacity of the reducer	Check rated capacity of reducer; if rated lower than actual load, replace with sufficient unit or reduce load
	Insufficient or excessive lubrication	Check lubricant level and adjust to recommended level
	Wrong lubrication	Flush out and refill with correct lubricant
Runs noisily	Loose foundation bolts	Inspect mounting; tighten loose bolts and/or reinforce mounting structure
	Worn RV disc	Check load on reducer; overloading can cause disc damage. Disassemble and replace disc
	Bearing failure due to lack of lubricant	Replace bearings. Clean and flush reducer and fill with recommended lubricant
	Bearing failure due to overload	Check rated capacity of reducer
Output shaft does not turn due to internal parts broken	Overloading reducer	Replace broken parts and check rated capacity of reducer
	Coupling loose or disconnected	Properly align and tighten reducer and coupling
Oil leaking	Worn Seals	Replace seals
		Check autovent and replace or clean if needed
		Do not overfill reducer

Sections of This Appendix

This appendix is divided into three (3) sections, in the order shown below. Each section is shown in its own table.

- Mechanical Replacement Parts
- Hydraulic Replacement Parts
- Electrical Replacement Parts

Part Location Categories

Each table is sorted by the Part Location categories listed below. The categories are arranged in alphabetical order. Each part description is arranged in alphabetical order within its category.

- a) Accumulator Rack
- b) Cylinders
- c) Documents
- d) Filters
- e) Infeed
- f) Hoses—Customer-Supplied
- g) HPU
- h) Main Electrical Enclosure
- i) Outfeed
- j) Press
- k) Safety Pull-Cord

Table B-1: Mechanical Replacement Parts

Location of Part	Part Description	MiTek Part #	Recommended Spare Part to Keep in Stock
Documents	Labels <i>Locate the part # printed in the corner of the label. If there isn't a #, refer to Drawing 89010.</i>		
Infeed	Chain	554276	
Infeed	Conveyor bearings (8)	419268	✓
Infeed	Gear motor—see Figure B-2 for specific parts	480379	
Outfeed	Bearing shim	83820	
Outfeed	Chain	554276	
Outfeed	Clevis pin, for Tie Stop cylinders (2)	426087	
Outfeed	Conveyor bearings (8)	419268	✓
Outfeed	Filter, regulator, lubricator	438568	
Outfeed	Gear motor—see Figure B-2 for specific parts	480379	
Outfeed	Kerf-cut saw blades (2)	811049	✓
Outfeed	Kerf-cut saw motors (2)	471311	
Outfeed	Pusher	83800	
Outfeed	Pusher cylinder	423588	
Outfeed	Roller chain	554009	
Outfeed	Saw shaft bearing	419823	✓
Outfeed	Tie Stop cylinder (2)	423587	
Press	Anvil pin (1)	81880	
Press	Carriage pins (2), small pins that hold carriage in place while moving anvil to change tie length	403040	
Press	Anvil pin cap (2)	81918	
Press	Dowel pins in blocks behind press cylinder	397419	
Press	Shims	See Table 6-3	✓
Press	Urethane spring on anvil head (1)	81174	✓
Press	Wear strips	See Table 6-3	✓
Press: Conveyor	Bearings—infeed side (4)	419268	✓
Press: Conveyor	Bearings—outfeed side (4)	419804	✓
Press: Conveyor	Chain, 30 ft	554276	
Press: Conveyor	Chain, connector link	554187	
Press: Conveyor	Chain, offset link	554188	
Press: Conveyor	Chain, roller, 3-1/2 ft	554008	
Press: Conveyor	Gear motor—see Figure B-1 for specific parts	480370	
Press: Conveyor	Torque limiter friction disks	546102	✓
Press: Tie Stops	Bumpers (2), for Tie Stops	446151	
Press: Tie Stops	Cotter pin for clevis on Tie Stops	394159	

Table B-1: Mechanical Replacement Parts (Continued)

Location of Part	Part Description	MiTek Part #	Recommended Spare Part to Keep in Stock
Press: Tie Stops	Tie Stop cylinder rod clevis (2 on ea. carriage cylinder)	426086	
Press: Tie Stops	Tie Stop cylinders (2)	423099	
Press: Tie Stops	Tie Stops Pin, clevis, 3/4 x 3-1/2	400142	
Press: Torque Limiter	Chain attachment	554342	
Press: Torque Limiter	Chain, offset link	554288	
Press: Torque Limiter	Key in sprocket	15000240024-2.88	
Press: Torque Limiter	Torque Limiter	546100	
Safety Pull-Cord	Cable clamp	271002	
Safety Pull-Cord	Thimble	271026	
Safety Pull-Cord	Turnbuckle (2)	271072	
Safety Pull-Cord	Wire rope (2) 20 ft ea.	270016	

Table B-2: Hydraulic System Replacement Parts

Location of Part	Part Description	MiTek Part #	Recommended Spare Part to Keep in Stock
Accumulator Rack	Accumulators (3)	806285	
Cylinders	Carriage cylinders (2)	798515	
Cylinders	Press Cylinder	Hyd. #1: 798512 Hyd. #2: 798519	
Cylinders	Press cylinder guide rod (Hyd. system #1 only)	81966	
Cylinders	Ram guide rod	81966	
Cylinders	Side squeeze cylinders (4)	798514	
Cylinders	Top squeeze cylinders (2)	798513	
Document	HPU manual from John Henry Foster— S.O. #507288, JHF Drawing # MI07182-B	N/A	
Filters	Pressure Filter	805245	
Filters	Pressure Filter element	805246	✓
Filters	Return Line Filter	508223	
Filters	Return Line Filter element	805224	✓
For all other hydraulic parts, including valves, gauges, hoses, and fittings, refer to your system's hydraulic drawing.		Hyd #1: 81855 Hyd #2: 89009	
Hoses, Customer-Supplied	Pressure Lines vendor #: H43020E-620-620-XX ft	refer to vendor #	
Hoses, Customer-Supplied	Return Lines vendor #: H104-12U-692-692-XX ft (1250 psi)	refer to vendor #	
Hoses, Customer-Supplied	Return Lines vendor #: H600932U-632-XX ft (600 psi)	refer to vendor #	
HPU	Accumulator	806284	
HPU	Electronic temperature control mechanism	504334	
HPU	Heater	526017	
HPU	Motor	473001	
HPU	Pump	800340	
HPU	Thermal Transfer Cooler	809034	
HPU	Thermal Transfer Switch	504534	
Press	Press-end carriage spring	26326	✓
Press Base	Pressure Switches (3)	515387	

Table B-3: Electrical System Replacement Parts

Location of Part	Part Description	MiTek Part #	Recommended Spare Part to Keep in Stock
Infeed/Outfeed	Limit switches #1-#9 and #11-#16	515069	✓
Infeed/Outfeed	Reed switch (LS #13) on Pusher	423589	✓
Infeed/Outfeed	VFD—Infeed conveyor	509721	
Infeed/Outfeed	VFD—Outfeed conveyor	509721	
Main Electrical Enc.	Input Cards—120 Volt	504157	
Main Electrical Enc.	Input Cards—24 Volt	504158	
Main Electrical Enc.	Output Cards	504159	✓
Main Electrical Enc.	See Drawing 90450, sheets 16 & 17		
Press	Limit switch #10 (part of press cylinder assembly)	Ask for limit switch associated with 798512	✓
Press	Photo eye assembly	90455-512	
Press	Photo eye emitter	515823	✓
Press	Photo eye receiver	515822	✓

Figure B-1: Press Conveyor Gear Motor Parts

SK1282 BIM 1020

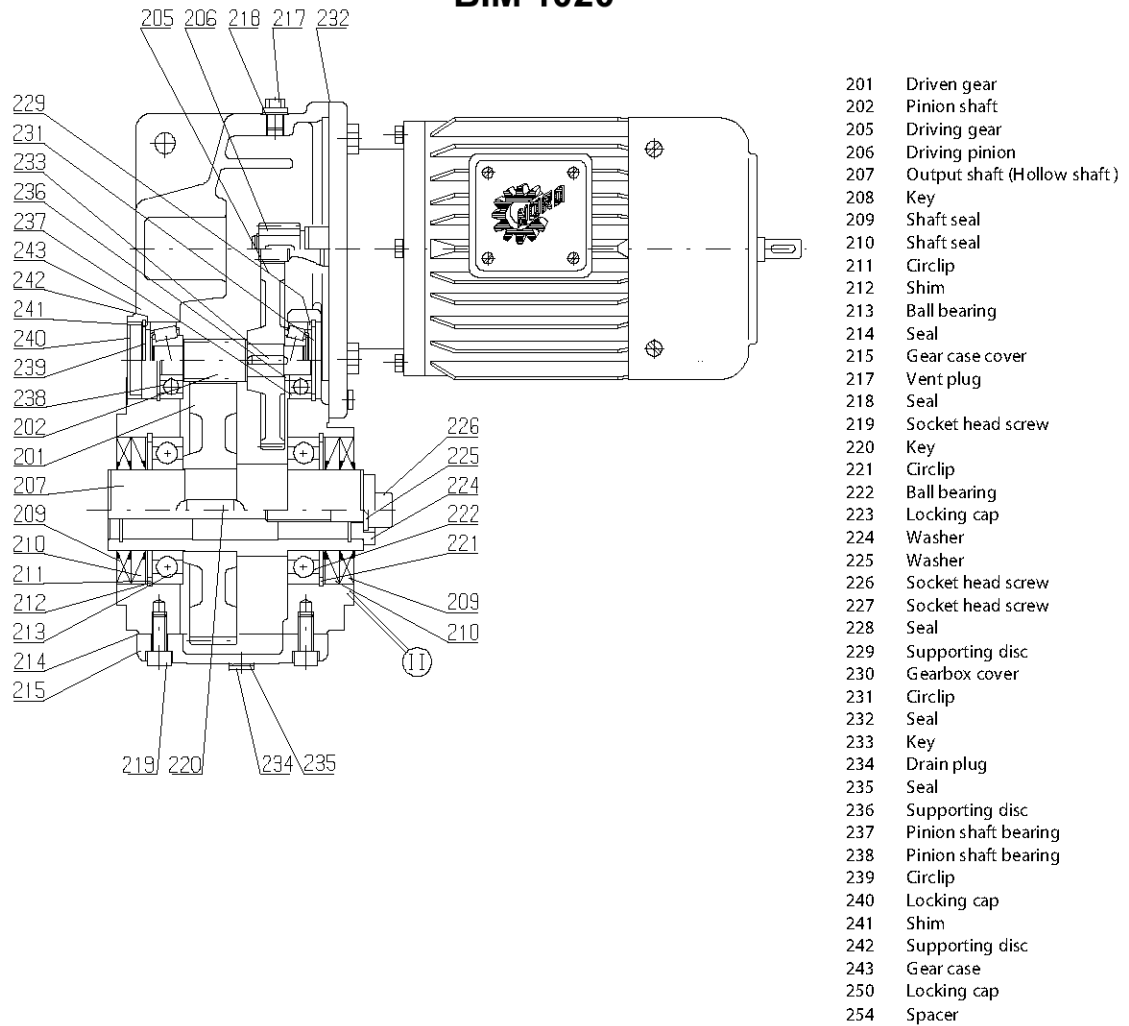
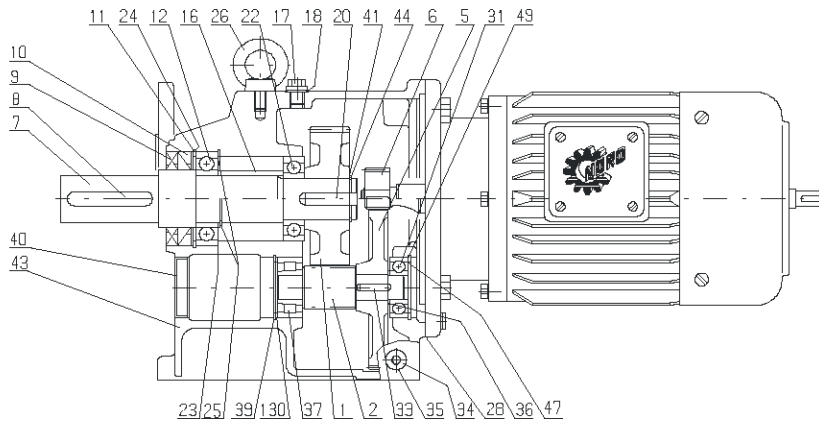


Figure B-2: Infeed and Outfeed Conveyor Gear Motor Parts

SK52 BIM 1010



- 1 Driven gear
- 2 Pinion shaft
- 5 Driving gear
- 6 Driving pinion
- 7 Output shaft
- 8 Key
- 9 Shaft seal
- 10 Shaft seal
- 11 Circlip
- 12 Output shaft bearing
- 13 NILOS ring
- 14 Seal
- 15 Gearcase cover
- 16 Spacer
- 17 Vent plug
- 18 Seal
- 19 Socket head screw
- 20 Key
- 21 Spacer
- 22 Output shaft bearing
- 23 Supporting disc
- 24 Shim
- 25 Circlip
- 26 Flanged eye bolt
- 27 Bolt
- 28 Seal
- 29 Spacer
- 30 Gearbox cover
- 31 Pinion shaft bearing
- 32 Seal
- 33 Key
- 34 Drain plug
- 35 Seal
- 36 Spacer
- 37 Pinion shaft bearing
- 38 Pinion shaft bearing
- 39 Circlip
- 40 Locking cap
- 41 Shim
- 42 Supporting disc
- 43 Gear case
- 44 Circlip
- 47 Shim
- 49 Circlip
- 130 Shim
- 131 NILOS ring
- 132 NILOS ring



Maintenance Checklists

Appendix C

RoofTracker System

Checklists for Preventive Maintenance

Daily & Weekly Checklist C-2

Long-Term Checklist C-3

Maintenance Checklists

Daily Checklist

Week of: _____ Year: _____

DAILY	SHIF T	MON	TUE	WED	THU	FRI	SAT	SUN
Check Hydraulic Oil level Required value: Approx. 2" from top of reservoir	1							
	2							
	3							
Check Pressure Filter—Gauge should NOT be popped out	1							
	2							
	3							
Check Return Filter—Indicator on gauge should be in green area	1							
	2							
	3							

Notes

Date

Maintenance Checklists

Weekly Checklist

Month _____ Year: _____

WEEKLY	Week 1	Week 2	Week 3	Week 4	Week 5
Press conveyor bearings—Grease					
Ram Guide Rod Block—Grease					
Infeed/outfeed conveyor bearings—Grease					

Notes

Date

Maintenance Checklists

Monthly Checklist

First Half of the Year

Year: _____

MONTHLY	Jan	Feb	Mar	April	May	June
Accumulator Rack pressure— 2040 psi						
Accumulator pressure on HPU— 75 psi						
Gear motor inspection (every 3 months)						
Check HPU motor oil level (every 3 months)						
Check HPU pump oil level (every 3 months)						
Check gear motor oil level (every 3 months)						
Infeed/outfeed conveyor gear motor—Grease						

Notes

Date

Maintenance Checklists

Monthly Checklist

Second Half of the Year

Year: _____

MONTHLY	July	Aug	Sept	Oct	Nov	Dec
Accumulator Rack pressure— 2040 psi						
Accumulator pressure on HPU— 75 psi						
Gear motor inspection (every 3 months)						
Check HPU motor oil level (every 3 months)						
Check HPU pump oil level (every 3 months)						
Check gear motor oil level (every 3 months)						
Infeed/outfeed conveyor gear motor—Grease						

Notes

Date

Maintenance Checklists

Annual Checklist

YEAR						
Hydraulic oil change						
Press conveyor gear motor—Oil						
Press conveyor gear motor—Grease						
Gear motor—Change oil and grease bearings						
Infeed/outfeed conveyor gear motor—Oil						
HPU motor—Change oil and grease bearings						

Notes

Date

Drawing Set

Drawings are inserted at the back of the manual.

Table D-1: Attached HammRR Press Drawings

Drawing Description	Hydraulic System #1	Hydraulic System #2	All Presses
Top-level mechanical assembly	not available	89010	
Mechanical assembly	81800	89000	
Hydraulic assembly	81855	89009	
Anvil assembly			81805
Tie Stop assembly			81851
Sheave assembly			81853
Lower support bracket assembly			81929
Squeeze chamber assembly			81954
Electrical—Press			90450
Electrical—Infeed/Outfeed system			90451
Electrical—Selector switch			90453
Electrical assembly			90455



Document Evaluation Form

Appendix E

Document Evaluation Form

Document Evaluation Form

We invite your comments to make this document more useful.

Document Identification:

HammRR Press™	<i>Operation and Maintenance Manual</i>	001073
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General Ratings:

	Poor	Fair	Good	Excellent
Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Examples/Illustrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Readability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Detailed Comments:

Page #	Comments

Compared to other truss machinery manufacturers documentation, how would you rate this document?

Poor Fair Good Excellent

General Comments:

Rate the quality of service you were given on the following topics:

	Poor	Fair	Good	Excellent
Delivered on time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installation process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Service Technician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the machine work as promised?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it handle the production load?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Suggestions for corrections or improvements to this document:

Instructions <i>Please fill out as much information as possible. Identify the page and paragraph, and include a proposed rewrite, if possible. Attach extra sheets as needed.</i>	JackRabbit® Coil-Fed Joint Maker
	<i>Operation and Maintenance Manual</i>
	001072a
<h2>Recommendation</h2>	
<h2>Reason for Recommendation</h2>	
Your Name:	Date:
Company Name:	Address:
Phone:	
Please mail this form to: MiTek Machinery Operations 301 Fountain Lakes Industrial Drive St. Charles, MO 63301 Attn: Engineering Manager	Or Fax this form to: Fax (636) 32809218
If you do not receive a reply within 45 days, please contact our Customer Service Department by phone: Phone (800) 523-3380	

accumulator, hydraulic	device that increases the efficiency of a hydraulic system by absorbing shock, compensating for leakage, and supplementing pump flow; one is located on the HPU and three are on the Accumulator Rack
Accumulator Rack	a component of the HammRR Press system that holds accumulators
Accumulator Dump Valve	a valve on the HPU that must be opened to release pressure held in the accumulators before doing maintenance
actuate	to activate, put into action
amperage	the strength of an electric current, expressed in amperes
anvil	a block of steel that acts as a stop when the press cylinder rams the tie thus embedding the connector plate on that end
APFS	see <i>Automatic Plate Feeder System</i>
Automatic Plate Feeder System	APFS, an optional component that places the plates on the ends of the ties automatically
carriage	the mobile component of the Press that encompasses the squeeze chamber on each end
carriage pins	the two small pins that are used to hold the anvil in place while making adjustments
connector plate	the nail-plate that is embedded into the ends of the tie
conveyor	A mechanical apparatus that transports material from one location to another
cushion	an attribute of a hydraulic cylinder that allows adjustment of the pressure in each cylinder
Diagnostic operations	the operational functions that allow the operator to monitor the system and any errors that may occur
electrical junction box	located on the Press itself, a junction between the main electrical enclosure and the electrical components on the Press
HPU	see <i>Hydraulic Power Unit</i>
Hydraulic Power Unit	abbreviated HPU, the component that houses the hydraulic reservoir, filter, pump, and motor

Hydraulic System #1	the system used on the HammRR Press before August 2003, serial numbers 10231017090-01, 11191017669-01, 11191017669-02
Hydraulic System #2	the system used on the HammRR Press after August 2003,
hydraulics	a system of movement that is operated by fluid under pressure
infeed system	a conveyor system that feeds ties into the Press
jog	to nudge, to travel at a slow pace
kerf-cut	a shallow cut or nick made on ties for alignment and stacking purposes
layout	a scaled diagram of the location of components and the space that they occupy
limit switch	an electro-mechanical device that consists of an actuator mechanically linked to a set of contacts; when an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection
lockout/tagout	a means of isolating a piece of equipment from its energy source so maintenance can safely occur; guidelines provided in OSHA 29 CFR 1910.147
manifold	a chamber having multiple apertures for making connections
Operational Mode	the function of the Press system, the operator can choose from three functions: clamp and press, press only, or conveyor only
outfeed system	a conveyor system that receives ties from the Press and carries them away
plate	see <i>connector plate</i>
platen	The flat surface that pushes the connector plate into the railroad tie
PLC	Programmable Logic Controller; a solid-state control device that can be programmed to control process or machine operations. It consists of five basic components: processor, memory, input/output module, the power supply, and the programming device
port	a connection point for a peripheral device
press conveyor	the conveyor that is part of the Press itself
press cylinder	the hydraulic cylinder that performs the pressing action

proximity switch	a switch that uses an electromagnetic field to detect when an object is near, there is no physical contact between the object and the switch; inductive proximity switches detect only metal objects, capacitive proximity switches can sense both metallic and non-metallic objects
pull-cord	an emergency stop mechanism running around the perimeter of the Press
Pusher	a hydraulic cylinder on the outfeed conveyor system that pushes the ties to align them before the kerf-cut is made
qualified person	a person or persons who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training, or experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work —ANSI B30.2-1983
shims	a thin piece of material used to fill gaps; used under the wear strips on the Press
solenoid	an assembly used as a switch consisting of a coil and a metal core free to slide along the coil axis under the influence of the magnetic field
squeeze chambers	two chambers on the Press that clamp the end of the tie and hold it for pressing
squeeze cylinders	the hydraulic cylinders that squeeze the tie in the squeeze chambers
Suction Line Ball Valve	the shut-off valve, positioned between the reservoir and the pump, which can be used to prevent oil flow from the reservoir during maintenance
System Parameters	the functions of the Press related to speed and timing
Tie Stops	pneumatically controlled mechanisms on the Press that cause the tie to stop at the correct location along the press conveyor so it can enter the squeeze chambers and be pressed or clamped
torque	a turning or twisting force
Torque Limiter	a mechanism that limits the amount of force it will allow on the press conveyor gear motor; when that force is exceeded, the conveyor will stop

touch screen

The monitor attached to the electrical enclosure that controls the variables on the machine; is operated by touching the screen on the desired button

VFD

Variable Frequency Device; controls the speed of the cycle

voltage

Equal to the difference of electric potential between two point on a conducting wire carrying a constant current of one ampere when the power between the points is one watt

wear strips

plastic strips that act as spacers to allow the carriages to slide across the base of the machine

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Operation & Maintenance Manual



HammRRTM Press

End-Plating Press for Railroad Ties

**001073
Revision A**

HammRR™ Press



001073
Rev. A

HammRR™ Press



001073
Rev. A

HammRR™ Press



001073
Rev. A

HammRR™ Press



001073
Rev. A

↑ After cutting lengthwise, cut here

↑ After cutting lengthwise, cut here