



MACHINES THAT WORK FOR YOU

OPERATION & MAINTENANCE MANUAL FOR THE ANYBOARD REMOVER™



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U.S. Patent # 7,117,586

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Purpose Statement

The purpose of this manual is to provide an overview of the safety, operational, and maintenance features of this product. The content assumes the reader is a trained, qualified maintenance technician, has a maintenance responsibility for the equipment, and requires additional information beyond their common mechanical or electrical skills.

Notice: The dimensions, tolerances, parameters, and measurements contained in this document may be subject to change at any time. No certification or representation is made as to the accuracy or adequacy of these values over time.

HOW TO USE THIS MANUAL

ARRANGEMENT

This manual is arranged in six primary sections. Pages, paragraphs, figures, and tables are numbered sequentially.

Section 1 – Safety

This section contains critical information essential to the safe operation of the machine.

Section 2 – Equipment Overview, Installation, and Moving

This section contains the purpose of the machine, a description of the equipment, optional equipment, what to expect when the machine is running optimally, installation instructions, and how to move the machine.

Section 3 – Controls and Indicators

This section identifies and describes the machine controls and indicators.

Section 4 – Operation and Adjustment

This section contains pre-operational checks, starting and stopping, operation, operator troubleshooting, and a list of frequently asked questions.

Section 5 – Maintenance

This section contains procedures for performing maintenance on machine components, a list of available spare parts, and preventative maintenance items.

Section 6 – Control Drawings

This section contains the Industrial Resources control drawings for the electrical and hydraulic systems.

Note:

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SECTION ONE - SAFETY

1-1 GENERAL

Operation of the AnyBoard Remover™ pallet dismantling machine involves high voltage electrical energy and a pressurized hydraulic system. Safety awareness is essential. You can help prevent accidents that may cause injury to yourself and others or damage to the equipment by observing all the standard shop safety rules enforced at the workplace and by taking these additional precautions. Follow all safety warning notes throughout this instruction manual and labels applied to the equipment. These instructions are for everyone's safety.

1-2 EXPLANATIONS OF SYMBOLS



WARNING

REFERS TO A PRACTICE OR CONDITION THAT IS POTENTIALLY HAZARDOUS TO THE OPERATOR OR MAINTENANCE PERSONNEL AND COULD RESULT IN INJURY OR DEATH.



CAUTION

REFERS TO A PRACTICE OR CONDITION THAT COULD POTENTIALLY RESULT IN DAMAGE TO THE EQUIPMENT OR MACHINERY.

NOTE

REFERS TO A PRACTICE OR CONDITION THAT REQUIRES EMPHASIS OR PROVIDES SUPPLEMENTAL CLARIFICATIONS, HELPFUL HINTS, OR INFORMATION OF PARTICULAR IMPORTANCE TO THE OPERATOR OR MAINTENANCE PERSONNEL.

1-3 MACHINERY PRECAUTIONS

- DO NOT operate the machine if there are obstructions in the way of moving machine parts.
- Keep the work area clean by removing all scraps, bottles, etc. that could cause accidents.
- Never operate the machine without all guards in place. Approach moving parts with caution.
- Wear safety glasses to deflect flying fragments and leather gloves for handling rough and splintered pallets.
- Wear hearing protection at times when machine is running.
- Understand the location and function of all machine controls, especially the EMERGENCY STOP button.
- Know and respect the machinery. Always be attentive for machine malfunctions or unusual noises. These can indicate problems requiring immediate attention. Notify the supervisor immediately in such instances.
- Maintain system hydraulic pressure within specified limits to prevent damage to the system.
- KEEP THE DOOR TO THE ELECTRICAL CABINET CLOSED!
- Use extreme caution when performing maintenance or troubleshooting procedures for this machine. ONLY QUALIFIED MAINTENANCE PERSONNEL SHOULD PERFORM MAINTENANCE OR TROUBLESHOOTING OPERATIONS!



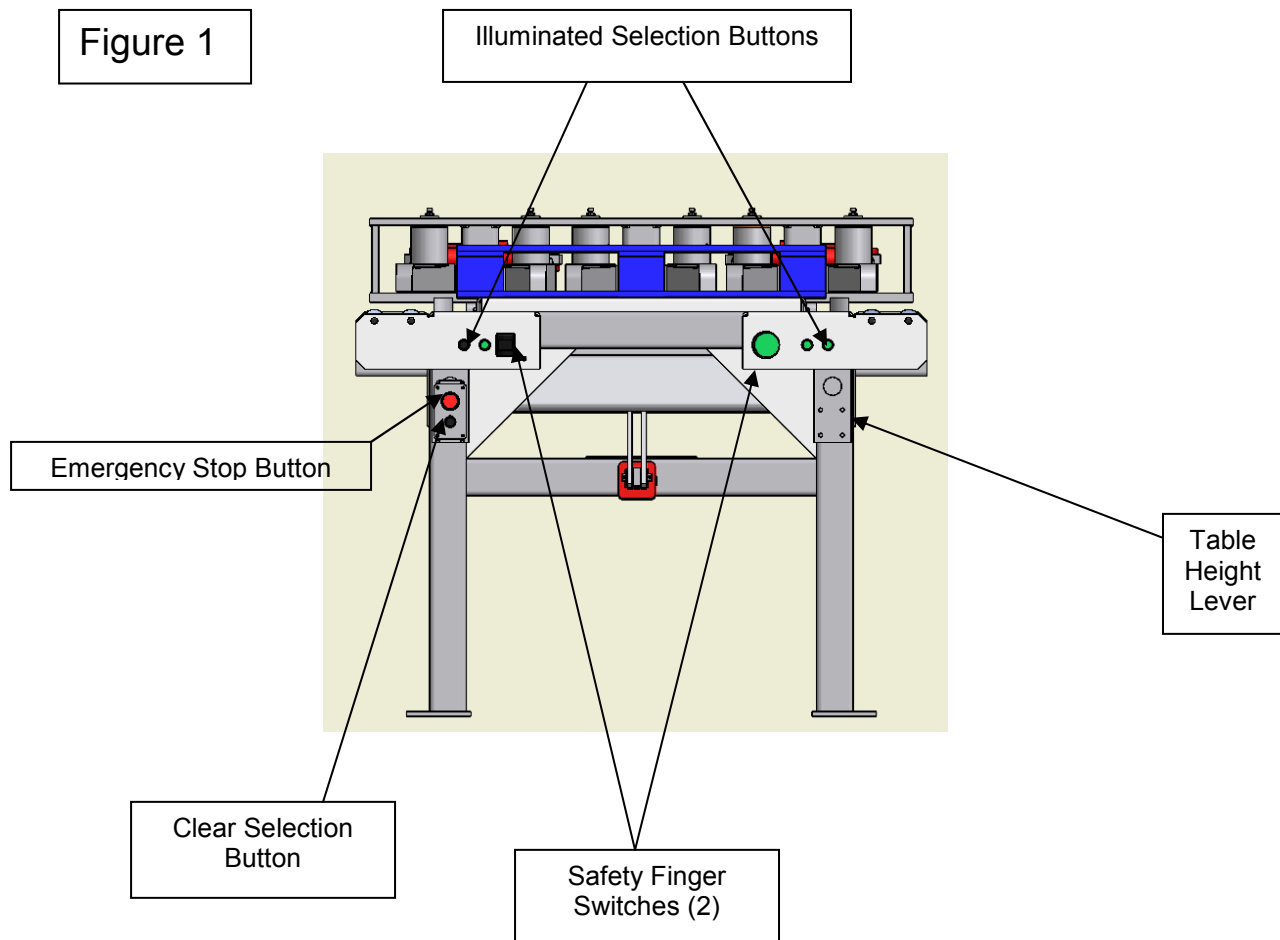
WARNING: ALL ENERGY SYSTEMS MUST BE DISABLED AND LOCKED-OUT PRIOR TO HANDLING ANY MACHINE COMPONENTS OR PERFORMING ANY MAINTENANCE. FAILURE TO DISABLE ELECTRICAL AND HYDRAULIC SYSTEMS COULD CAUSE SERIOUS INJURY!

SECTION TWO - EQUIPMENT OVERVIEW

2-1 MACHINE OVERVIEW

The AnyBoard Remover™ machine removes individual deck boards from blocks of custom size pallets using a set of steel blades. The operator positions the pallet in the machine aligning the blades with the desired board to be removed. By pressing buttons, the operator instructs the machine to cut the left, center, right or all block connections. Once selected, the operator uses safety finger switches to activate the cutting blades. Nails are cut cleanly and the blades return to an open position, ready for the operator to move the pallet to another position, or remove it completely.

The AnyBoard Remover™, shown in Fig. 1, uses hydraulic and electrical energy. The electrical components power and control the hydraulic systems to operate the machine.



2-2 DESCRIPTION OF FEATURES

HYDRAULIC POWER

An electric motor drives a hydraulic pump. The pump provides continuous pressure and flow to the system. Solenoid operated valves open and close sending pressurized fluid to individual cylinders connected to the arms. When at rest, an electronic pressure switch opens a relief valve freely circulating hydraulic fluid back to the tank, saving energy until needed. To assist the system, a pressure accumulator tank is used to produce rapid power to the arms during activation. The pump recharges the tank after switch activation, and until the pressure level is reached as sensed by the pressure switch.

POWER DISTRIBUTION BOX

The power distribution box houses electrical components. The main feature of the box is a power disconnect switch, used to switch incoming high voltage to the AnyBoard Remover™. There are no user-operated parts inside the box. Inside are a power supply, programmable logic controller, relays, fuses, and a safety finger switch controller. This box should remain closed at all times. Only authorized personnel should open the box for maintenance purposes.

OPERATOR PUSHBUTTON SWITCHES

On the front of the AnyBoard Remover™ are pushbutton switches. These switches are used to select which arms will operate, to operate the arms, and to disable the system in an emergency. A 'reset' button is included to cancel blade selection inputs in case an error was made.

CUTTING BLADES

Opposing blades are mounted to the end of arms aligned. One blade is rigidly mounted, and its opposing blade is flexibly mounted. The resulting action allows the flexible blade to mesh with the rigid blade and shear off nails. The rigid blade is the higher of the two, so the flexible blade will dive under it. The height is controlled by a) one of two spaces located in the arm pivot, and b) by an adjustment on the top of the arm mounting frame.

CUTTING ARM CYLINDER

Three hydraulic cylinders operate three sets of cutting arms. These cylinders are fitted with motion-limiting spacers (internal) and their adjustment in length is critical to the operation.

ADJUSTABLE HEIGHT TABLE

To provide the ability to cut between interconnecting boards, the operator is assisted by raising or lowering the table. This is accomplished using a hand-operated hydraulic valve and a cylinder mounted under the table.

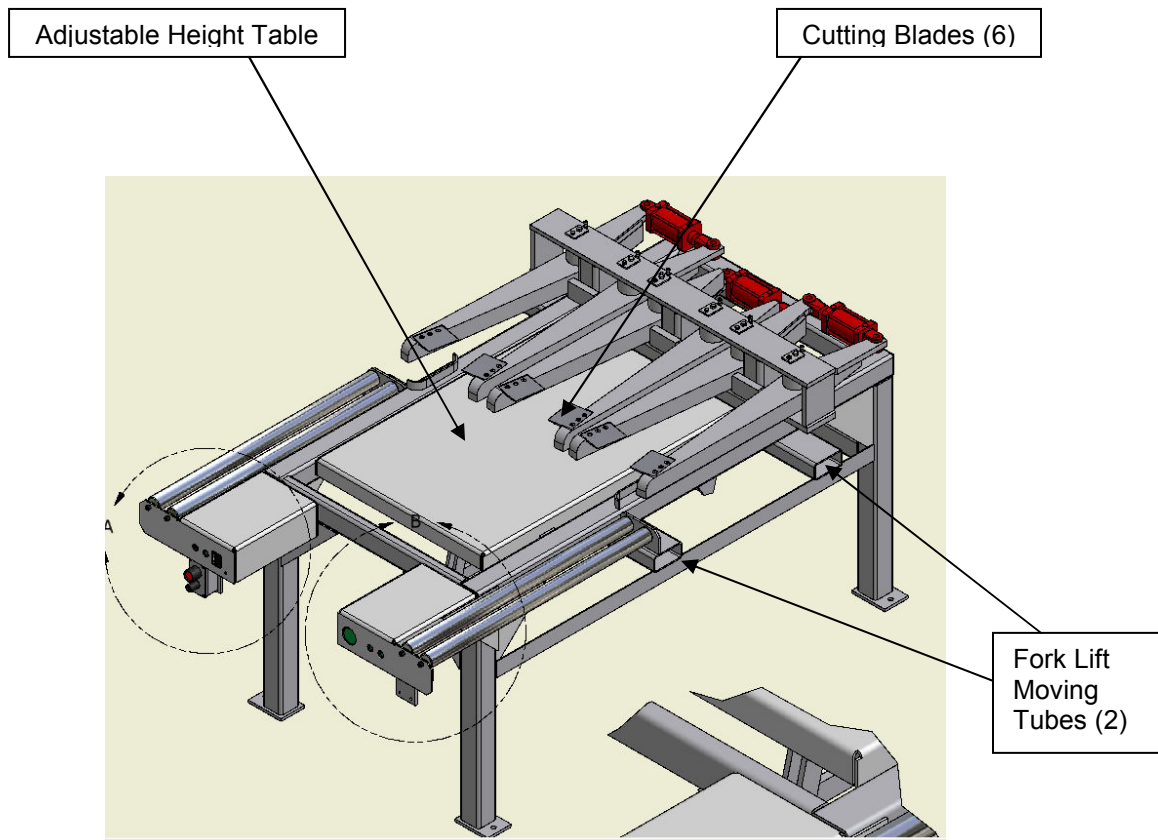
2-3 MACHINE EXPECTATIONS AND SPECIFICATIONS

Features / Benefits

- Designed to remove any component of a block-style pallet.
- PLC control for component selection.
- OCEA compliant double finger switch control with anti-tie timer.
- Can be operated to work with various styles of block pallets. This includes the 48x40 U.S. pallet, as well as different European styles
- Heavy Duty Steel Construction

Specifications

- Up to 4 second time cycle
- Self-contained power unit
- Weight: _____ lbs
- Power Unit: ___ hp motor, direct drive
- Overall dimensions: _____ w x _____ d x _____ h



2-4 MACHINE OPTIONS

There are currently no unique options available on the AnyBoard Remover™.

2-5 MACHINE INSTALLATION

Perform the following steps as a general guide to safely installing the AnyBoard Remover™ machine:

1. Remove all packaging and banding material.
2. The machine and hydraulic power unit **must be level** in order for it to operate properly. Place a level on the frame, as shown below, and shim under the pads to the proper height.
3. The machine **MUST BE ANCHORED** to the floor with ½" to ¾" anchor bolts in the four pads. The hydraulic unit is **not** to be anchored to the floor.



2-6 ELECTRICAL SUPPLY INSTALLATION

WARNING!

**ONLY A QUALIFIED ELECTRICIAN SHOULD HOOK-UP ELECTRICAL POWER TO THE MACHINE.
MISHANDLING AN ELECTRICAL HOOK-UP COULD RESULT IN SERIOUS INJURY OR DEATH!**

1. Before connecting to an electrical power supply, open the control panel and check ALL screw terminals to ensure they are tight. Some fasteners can become loose during shipping and if they fall out while power is connected will cause damage to the machine and possibly cause injury.
2. Wire the machine for the voltage that is labeled on the electrical box.
3. Electrical power and a wall mounted master shut off are supplied and connected by the customer. This must be accomplished in accordance with local and national electrical codes.
4. Connect power to L1, L2, L3, and ground in the electrical box.
5. Proper phase connection will be accomplished by testing the hydraulic motor fan rotation.

2-7 HYDRAULIC SUPPLY INSTALLATION

1. Connect all wiring to the power panel.
2. The Connect hydraulic hoses from the power unit manifold to the appropriate hoses connected to the AnyBoard Remover™.
3. Warning: Pressure settings for low, high, and overall pressures are preset at the factory.

2-8 SEQUENCE OF OPERATION

The AnyBoard Remover™ machine will perform the following steps in its sequence of operation:

1. The operator places pallet to be dismantled on the leveling table.
2. The operator checks the level of the table, ensuring that the blade lines up between the desired block and board connection.
3. The operator aligns the pallet with the cutting blade.
4. The operator selects which connections to cut (left, center, right, or all).
5. The operator engages the two safety finger switches to activate the arms and blades, cutting the nails between the boards selected.
6. The operator moves the pallet to the next position, and repeats the selection and activation of the blades. The operator may also remove the pallet and flip it over to cut boards on the opposite side.
7. When finished, the operator removes the pallet, loose boards, and debris.

2-9 MOVING THE MACHINE



1. Disconnect all electrical and hydraulic supplies from the machine.
2. Unbolt machine from floor.
3. **Caution: Only pick up machine using built in forklift tubes and a forklift. Use extreme caution when moving the machine. Ensure the forklift tines go in the fork lift tubes completely and come out completely before moving the machine.**
4. Follow the installation process listed in sections 2-5, 2-6, and 2-7 above, ensuring the machine is on a level sturdy floor.

SECTION THREE - CONTROLS AND INDICATORS

3-1 MACHINE CONTROLS

Refer to Figure 1 for descriptions of the controls for the AnyBoard Remover™. Refer to Section 6 for complete electrical and hydraulic system drawings.

Table 1: Machine Controls

CONTROL/INDICATOR	FUNCTION
<p>ON/OFF SWITCH- Main Power Disconnect Red Handled Switch</p>	<p>Rotating this switch 90° to the right allows electricity to flow into the control box.</p>
<p>BOARD SELECTOR (4) Green Pushbutton</p>	<p>Pushing this button identifies which blade arms will operate when the finger start buttons are engaged (left, center, right, or all).</p>
<p>RESET Black Pushbutton</p>	<p>Resets selections made with any or all of the Board Selector switches.</p>
<p>FINGER START Black optical interrupt button (2)</p>	<p>The operator must simultaneously insert a finger in two switches to engage the blades. This is a safety lock-out switch that prevents accidental operation.</p>
<p>TABLE UP/DOWN Black metal lever</p>	<p>Lifting the lever raises the table to assist in positioning the blades on the pallet. Lowering the lever lowers the table.</p>

SECTION FOUR - OPERATION AND ADJUSTMENT

4-1 DAILY START UP AND OPERATION



Certain procedures must be followed daily to ensure safety, machine life, and high productivity. A little time invested in the beginning will greatly pay off throughout the day and over the years.

1. Clear all debris.
2. Pull out the “emergency stop” button for the machine to operate.
3. Pushing the green Board Selector buttons will select which blades operate. Each will illuminate when engaged properly.
4. Pushing the “stop” button will stop the motor.
5. The table “up and down” lever is used to position the pallet joint in line with the cutting blades.

4-2 MACHINE OPERATION AND ADJUSTMENT

1. Checking for Proper Motor Rotation (once during installation only)
2. Turn the main wall-mounted disconnect switch on.
3. Pull out the emergency stop button.
4. Slide the pallet on the table, against the blades.
5. Adjust the height of the table to meet the desired cutting point.
6. Press the selection button for the desired cut of the left, middle, or right blades.
7. Simultaneously engage the safety finger buttons.

A. BLADE HEIGHT ADJUSTMENT

1. With the machine empty (no pallet or debris on the table), operate each set of blades. Observe the blades as they meet. The blades should not meet at the same height. The rigidly fixed blade should be on top, the flexible blade should dive below the rigid blade.
2. Loosen the locknut on the adjustment screw above the arm to be adjusted.
3. Adjust the screw clockwise to raise the arm (and blade).
4. Operate the arms and blades to verify proper alignment.
5. Tighten the locknut to retain the screw in place.

WARNING: If the blade needs any further adjusting, call Industrial Resources. DO NOT ADJUST ANY OTHER SCREWS. SERIOUS DAMAGE TO PEOPLE AND MACHINERY MAY RESULT.

B. CYCLE TIMER ADJUSTMENT

1. The cycle timer adjustment is to be made only by authorized maintenance personnel. It is located inside of the high voltage electrical box.
2. The cycle time refers to the amount of time the blades remain closed after actuating them with the safety finger switches. An adequate amount of time is required for all nails to be cut while under pressure from the hydraulic system.
3. Increase or decrease the timing with the switch as marked. Do this in small increments and test with actual operation cutting pallets.

C. TABLE HEIGHT ADJUSTMENT

The table actuator allows the operator to adjust the height of the table to accommodate different board removal points. It is operated using the UP and DOWN lever on the front of the machine.

4-3 TROUBLESHOOTING

Use Table 2 to identify possible causes and solutions for many common machine problems. This table does not address all problems that may occur, but should act as a good guide. Frequently asked questions are in table 3.

Table 2: Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Hydraulic pump motor does not power up when pulling out the Emergency stop button.	<ul style="list-style-type: none"> a) Power is not being supplied to the machine. b) Main power disconnect switch is off. c) Main wall-mounted electrical disconnect is turned OFF. d) Motor starter overload has tripped. e) Loose wire/bad connection in control unit. f) Faulty button/worn contacts in control circuit. 	<ul style="list-style-type: none"> a) Confirm that the machine is connected to power. b) If not locked-out, rotate the main power switch 90 degrees to the on position. c) Turn wall-mounted electrical disconnect ON. d) Have a qualified electrician check and/or reset the thermal overload. Set the O.L. to 120% of FLA. e) Have a qualified electrician check the entire system for proper voltage supply. f) Replace worn button/control circuits.
Hydraulic pump operates but does not provide adequate power (blades move slowly).	<ul style="list-style-type: none"> a) Incorrect voltage is being supplied to the machine. b) Machine is jammed. c) Incorrect hydraulic pressure adjustment. d) Dump valve not closing properly. 	<ul style="list-style-type: none"> a) Have a qualified electrician check and compare building and machine voltage. b) Clear all jams and obstructions. c) Adjust the hydraulic pressure limit switches. d) Inspect the relay that operates the dump valve. Inspect the dump valve.
Table sits crooked or becomes crooked when adjusted	<ul style="list-style-type: none"> a) Table guide is bent from damage b) Debris is clogging the table guide 	<ul style="list-style-type: none"> a) Adjust the table close to the desired height, then shim between the table guides and the table to make level. b) Clean away all debris.

4-4 FREQUENTLY ASKED QUESTIONS

Table 3: Frequently Asked Questions

Question #1	Do I need to hire a qualified and licensed electrician to hook up my new AnyBoard Remover™'s power?
Answer	Yes. Only qualified and licensed electricians should hook up a AnyBoard Remover™ to power. Unqualified personnel attempting to apply power to a AnyBoard Remover™ run the risk of causing major irreparable damage to motor and electrical components.

Question #2	Should I periodically check and tighten component mounting screws in electric box?
Answer	Yes, Periodically check and tighten component mounting screws in electric box. Vibration from normal use oftentimes loosens component mounting screws in the electric box. Components can come loose from their mounts, fall inside the box, contact other components, and short out.

Question #3	Can I attempt repair of a warranted item such as a valves, a motor, or a transformer?
Answer	No, Do not attempt to repair warranted items. Attempted repairs of factory-warranted components by non-factory certified personnel will invalidate future warranty claims.

Question #4	Can I put my own rubber material under my flexible blade?
Answer	No. The shape and consistency of the neoprene gasket under the flexible blade is a critical design requirement. Failure to use factory authorized material will increase blade and mounting screw breakage.

If you have any questions concerning maintenance and repair of an Industrial Resources AnyBoard Remover™, please refer to the owner's manual or call 1-800-748-0306 to speak with an Industrial Resources technician.

3123 Wilson Drive NW
Grand Rapids, MI 49544

Phone: (800) 748-0306 Fax: (616) 791-7501
www.irinc.us

SECTION FIVE - MAINTENANCE

5-1 PREVENTATIVE MAINTENANCE SCHEDULE

Refer to standard plant procedures and the following table to perform the preventative maintenance for the AnyBoard Remover™.



WARNING: THOROUGHLY READ THE INFORMATION INCLUDED IN THE SAFETY SECTION, SECTION ONE, OF THIS MANUAL PRIOR TO PERFORMING ANY MAINTENANCE OPERATIONS. FAILURE TO COMPLY WITH SPECIFIED SAFETY INSTRUCTIONS COULD LEAD TO PERSONAL INJURY OR MACHINE DAMAGE.

Table 4: Preventative Maintenance Schedule

ACTION NEEDED	FREQUENCY
- Clean hydraulic pump cooler filter	Each shift
- Check blades and blade mounting screws for breakage	Daily
- Grease arm pivots (6 per machine) – NGLI Grade #2 Lithium	72 hours of operation
- Check fluid level in hydraulic reservoir - A/W Hydraulic Oil 46	Weekly
- Check bolts and nuts for tightness	Weekly
- Check pushbuttons for tightness	Weekly
- Check hydraulic hoses for wear, leaks	Monthly
- Lubricate table hinge pins	Monthly
- Tighten connections In electric panel	3 Months
- Replace hydraulic fluid filter	3 Months
- Replace hydraulic fluid - A/W Hydraulic Oil 46	Annually

5-2 MAINTENANCE PROCEDURES

1. Clean hydraulic pump cooler filter

Using an air hose, blow all dust and debris from the inlet of the filter.

2. Check fluid level in hydraulic reservoir

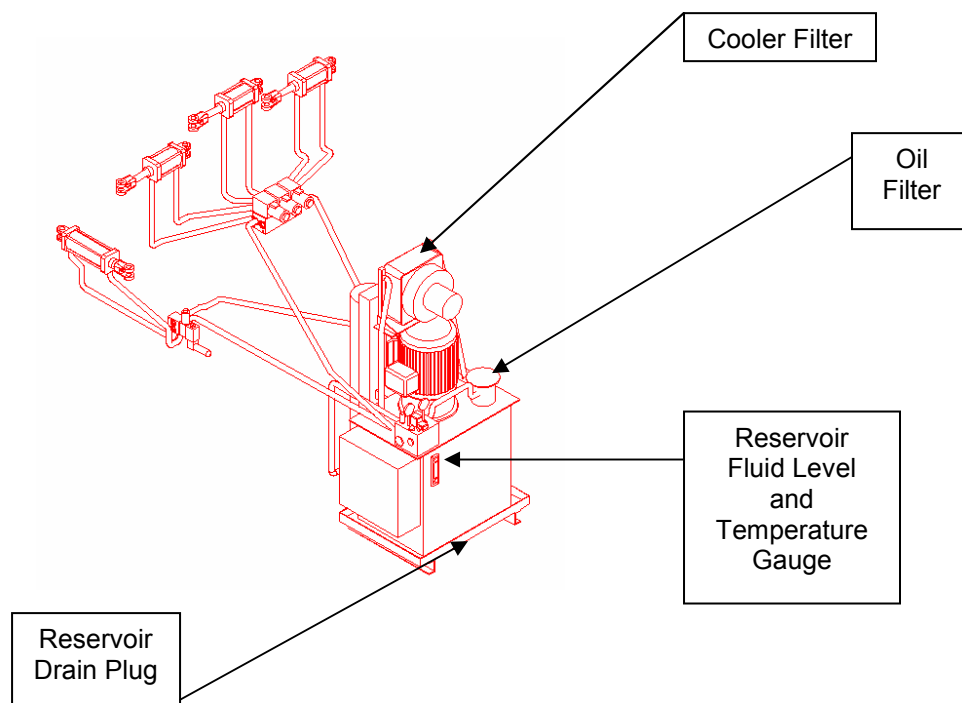
View the fluid level in the level/temperature gauge. The fluid level should be visible in the range between the red and black marker. Add hydraulic fluid as necessary. Do not over fill the tank.

3. Replace hydraulic fluid filter

The fluid filter is located in the filter canister. The filter can be removed after opening the filter top. Replace the filter and the cover securely.

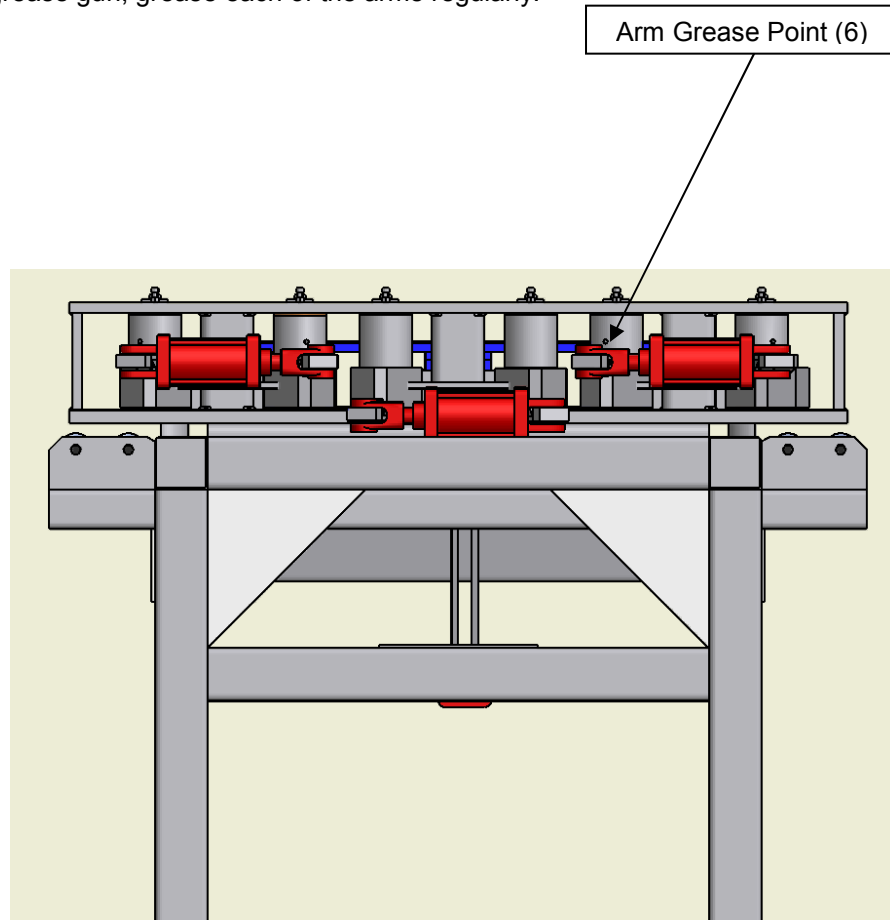
4. Replace hydraulic fluid

Open the reservoir drain and drain the fluid from the system. You may use a system flushing fluid, flush the system briefly, and re-drain the tank. Fill the tank with hydraulic fluid until the level is between the black and red level marks in the level/temperature gauge. Never over fill the reservoir tank.

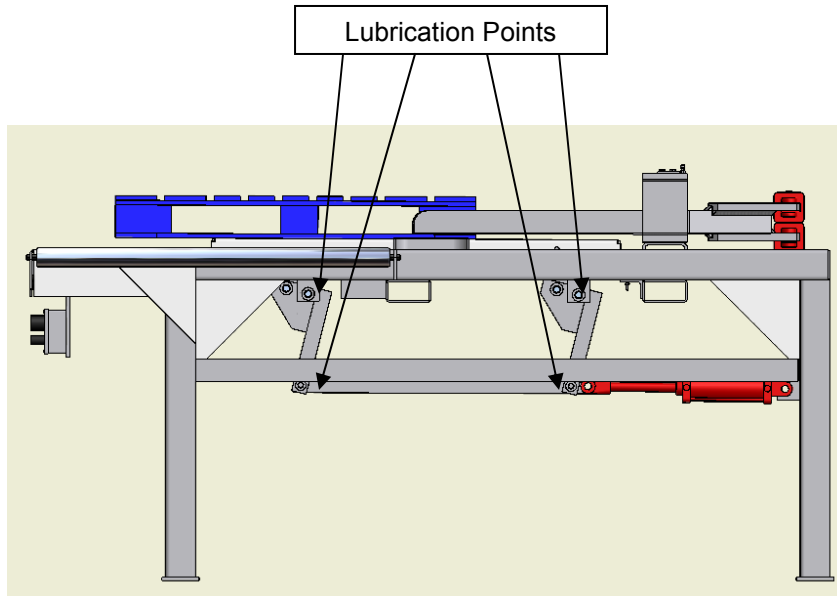


5. Check blades and blade mounting screws for breakage

Using a grease gun, grease each of the arms regularly.



6. Lubricate table hinge pins



5-3 SPARE PARTS

Table 6: Recommended Spare Parts

ITEM #	QTY.	DESCRIPTION	PART #
1	1	Valve, Hydraulic	LV200151
2	1	Cylinder, Hydraulic, AG, 2" x 8", Table	MO200140
3	1	Cylinder, Hydraulic, AG, 3" x 4", Arm	MO200141
4	1	Blade	IR040042

5-4 WARRANTY INFORMATION

Industrial Resources provides a 1-year product warranty on new product purchases. This warranty covers materials and workmanship for all non-wear items, and includes a 90-day labor warranty. Warranty excludes normal wear items such as fuses, lamps, belts, bearings, saw blades, tires, cutting blades, chains, filters, and fluids. Damage due to abuse, lack of proper maintenance, faulty air supply, water, storms, lightening, fire, electrical surges or static discharge is not covered.

To obtain warranty consideration, contact Industrial Resources. Place an order for a replacement part and explain the failure. Ask for warranty consideration. If requested, ship the defective part to Industrial Resources. You will receive a return authorization for the shipment. Send the part to Industrial Resources freight prepaid. (Warranty does not include return shipping costs.) Industrial Resources will evaluate the part, and if covered, issue a credit to your account for the amount of the replacement part purchased plus freight. Failure to return the part within 30 days of failure for warranty consideration voids the warranty.

To obtain warranty service, contact Industrial Resources technical services.

5-5 CONTACTING INDUSTRIAL RESOURCES

For Technical Support, to order Replacement Parts, or to ask questions about our products, call:

(800)748-0306	Toll Free (US and Canada)
(616) 791-7500	Worldwide
(616)791-7501	Fax
www.irinc.us	Website

Office Hours are weekdays from 8:00 AM to 5:00 PM EST (United States)

SECTION SIX – SCHEMATICS

Electrical schematics are located in the electrical panels, and should be left there for troubleshooting purposes. Any schematic contain within this manual may not match your system, and is for reference purposes only. If you cannot find your schematic, contact Industrial Resources to purchase additional copies.



EQUIPMENT STOP SHEET AND REPAIR RECORD

Equipment Name:	
Serial Number:	
Location:	
Start Date:	
End Date:	

Type of Stop

	FIRST SHIFT	SECOND SHIFT

Type of Repair

	Date	Technician