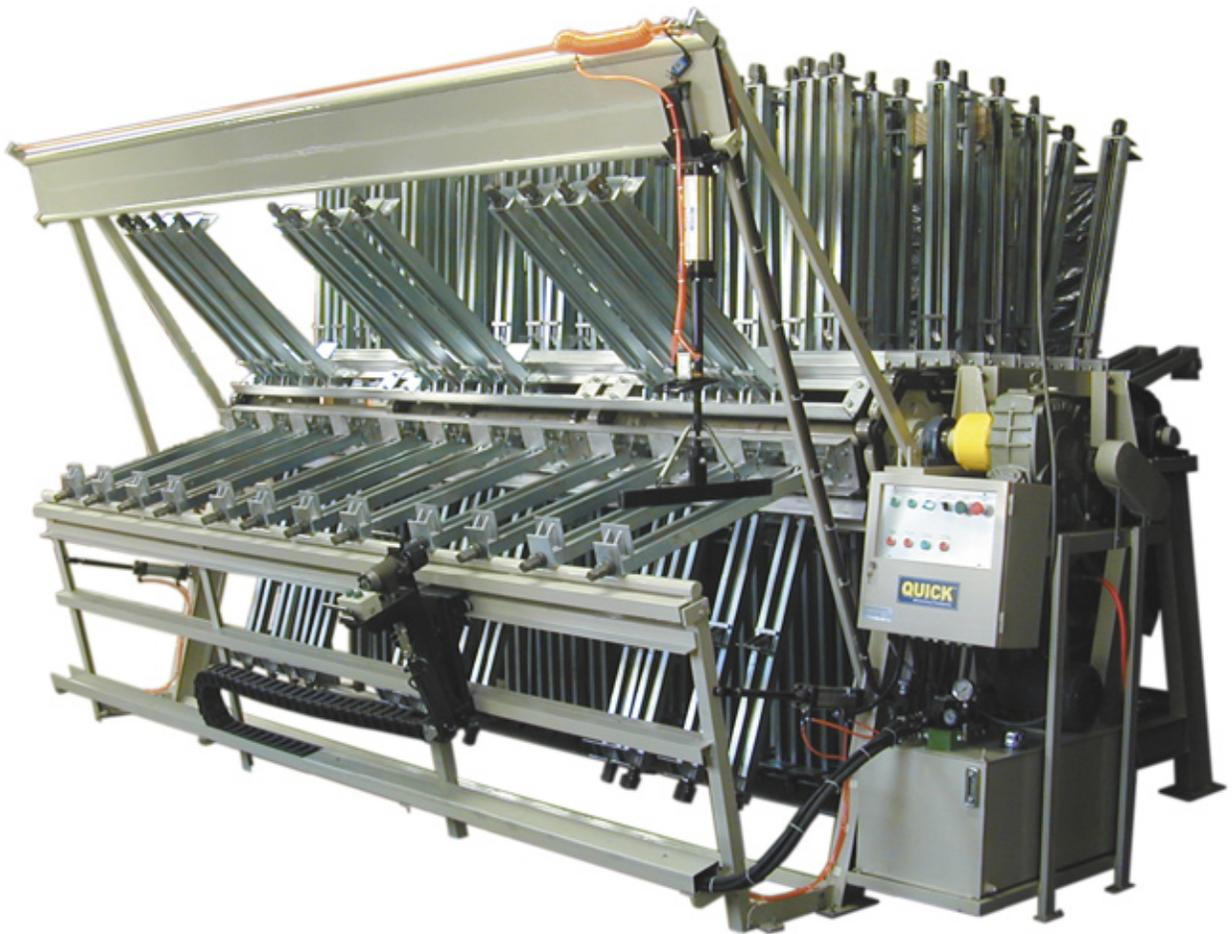


# Hydraulic Clamp Carrier

## Installation & Operation Manual









# **Hydraulic Clamp Carrier**

## **Installation & Operation Manual**



**Quick Machinery Company**

8272 Peninsula Drive  
Kelseyville, CA 95451

phone: (707) 272-6719

fax: (707) 278-0102

e-mail: [service@quickmachinerycompany.com](mailto:service@quickmachinerycompany.com)

web: <http://www.quickmachinerycompany.com>



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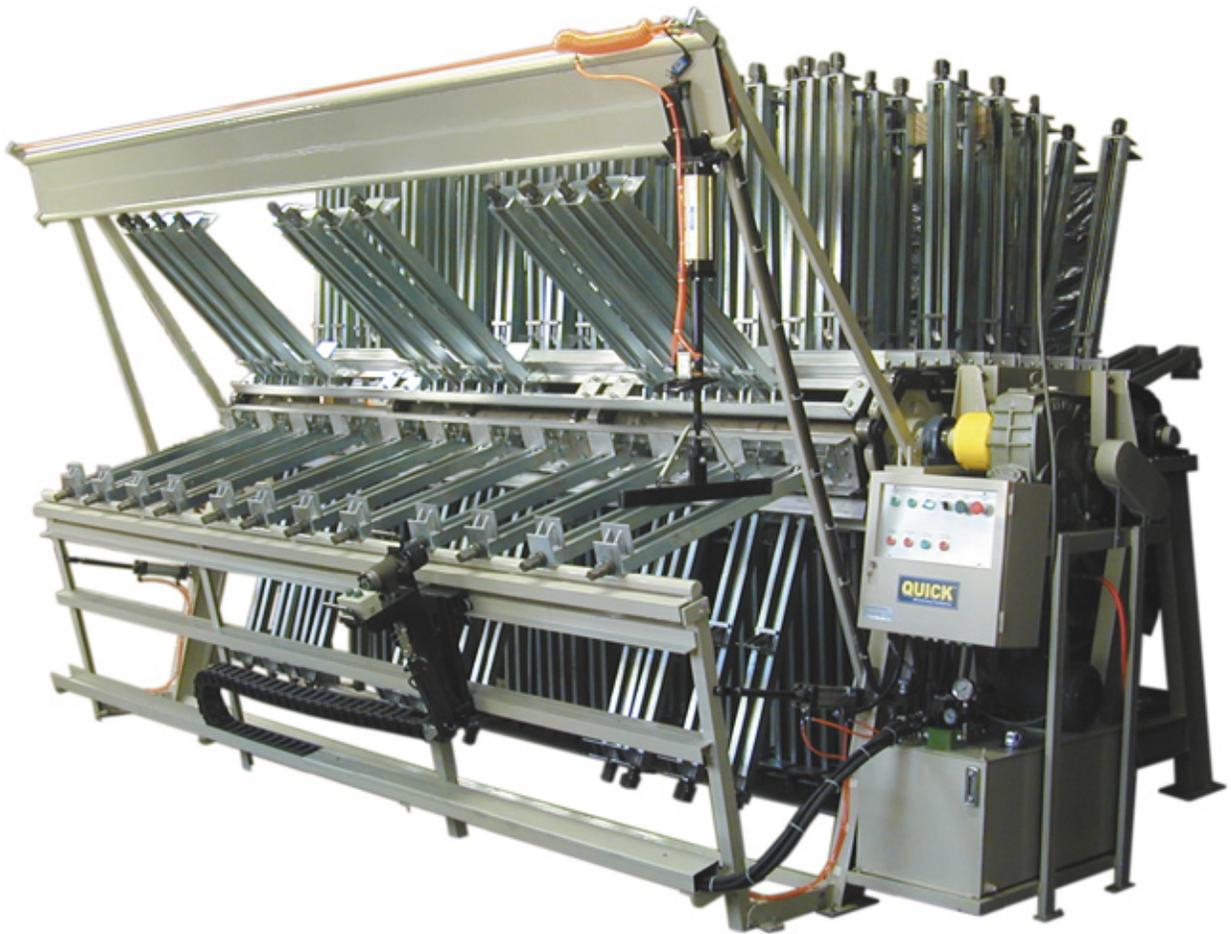
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# Introduction

Thank you for your purchase of a Quick Hydraulic Clamp Carrier. Your machine has been designed for many years of trouble-free performance. Please read this installation & operation manual and follow its instructions to correctly install, operate and maintain your Clamp Carrier. Doing so will help ensure optimum productivity and reliability of your machine.





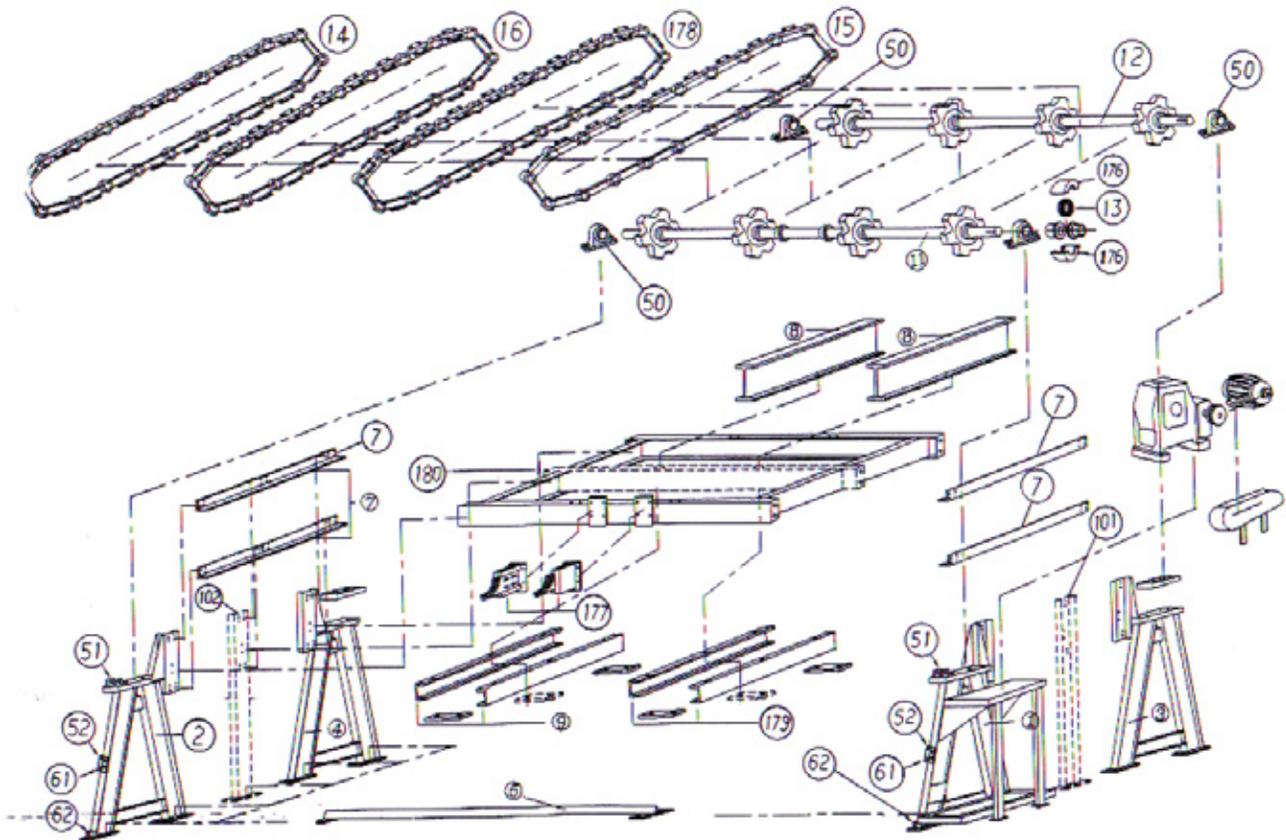
# Installation

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## **Locate a Clean, Level, Protected Space**

1. Locate a clean, level space on a concrete floor to install the Clamp Carrier. Be sure to select a location where the rear of the machine will be up against a wall, or else build a steel fence to enclose the rear of the Clamp Carrier, to protect people from walking into the clamps that project from the rear of the machine.

# Installation



## Assemble the Frame

1. Place the four main legs (1, 2, 3, 4) upright and into position. If the Carrier has more than 30 sections, also place the center legs (101, 102) into position.

Note: In the following 5 steps, leave the bolts a little loose, then tighten them all at once in step 9, after the frame has been squared up.

2. Attach the foot connector bars (5) to the feet on the Clamp Carrier legs, according to their markings.
3. Attach all four side runways (7) to the legs. There will be two runways on each side of the machine.
4. Attach the cross beam frame (180) to the legs. Make sure the shaft supporters (177) point toward the front of the machine.
5. Install the two upper I-beams (8) and four lower channels (9, 179) onto the cross beam frame (180). Connect the lower channels (9, 179) together with steel plates (10).
6. Install the front shaft (11) onto the tops of the two front legs (1,2). Bolt the front shaft bearings (50) to the tops of the two front legs (1,2). Match up the sprocket on the end of

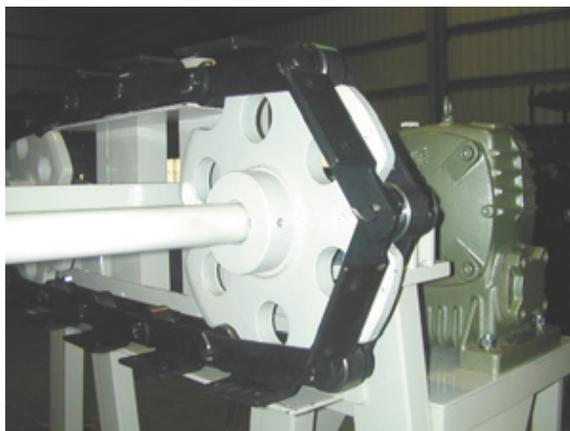
# Installation

the front shaft with the sprocket on the gear reducer. Couple the two sprockets together with the two-row chain (13). Connect the two ends of the two-row chain together with the link pin. Install the chain cover over the two-row chain.

7. Install the rear shaft (12) onto the tops of the two rear legs (3,4). Bolt the rear shaft bearings (50) to the tops of the two rear legs (3,4).
8. Check and make sure that the frame is square. Also check and make sure that the frame is level both horizontally and vertically.
9. Tighten all of the bolts installed in steps 2 through 7. However, keep the rear shaft adjustment bolts (Carrier chain tension adjustment bolts) loose for now; they will be tightened after the Carrier chains have been installed.

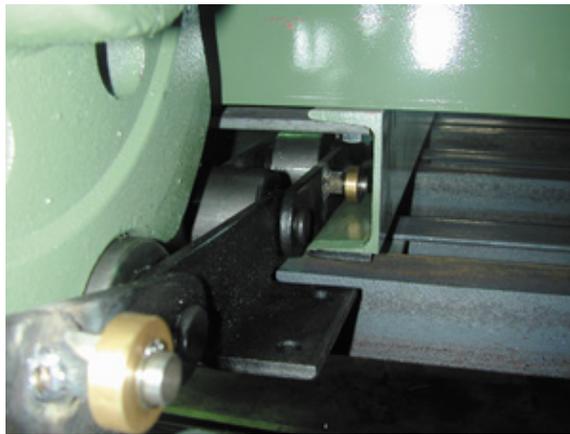
## Install the Carrier Chains

1. Connect electrical power to the electrical cable whose other end is attached to the large circuit breaker that's inside the electrical control box.
2. Without the Panel Flattener limit switches connected, the Rotate Up and Rotate Down buttons will not work yet. So, try rotating the Carrier's front shaft by pressing the magnetic switches MF and MR, directly to the right of the large circuit breaker, with an insulated screwdriver.
3. Install the two side Carrier chains (17,15; these two chains have angle beam attachment tabs on one side only). Place the chains on the front sprockets, with the angle beam attachment tabs pointing **inward**. Rotate the front shaft and sprockets by pressing the magnetic switch MR, and feed the chains up and over the upper side runways (7), around the rear sprockets, and back toward the front of the machine, running them on top of the bottom side runways (7). Join the two ends of each chain by inserting a roll pin into the chain, then inserting a locking pin into the roll pin (make sure that the locking pin is on the **inward** side of the chain). Bend the locking pin to secure it in place.



# Installation

4. Install the center Carrier chain (16; this chain has angle beam attachment tabs on both sides of the chain, extending outward from the chain). Press the Rotate Up button, and feed the chains up and over the upper I-beam or box beam (8), around the rear sprockets, and back toward the front of the machine. On a 14-section Carrier, since it has no lower channels (9), the lower portion of the center chain simply hangs underneath the Carrier, with no support. On a 20-section or larger Carrier, **make extra sure that the brass chain rollers are inserted inside the lower channels (9)**, and that the angle beam attachment tabs are **outside** the lower channels (9):

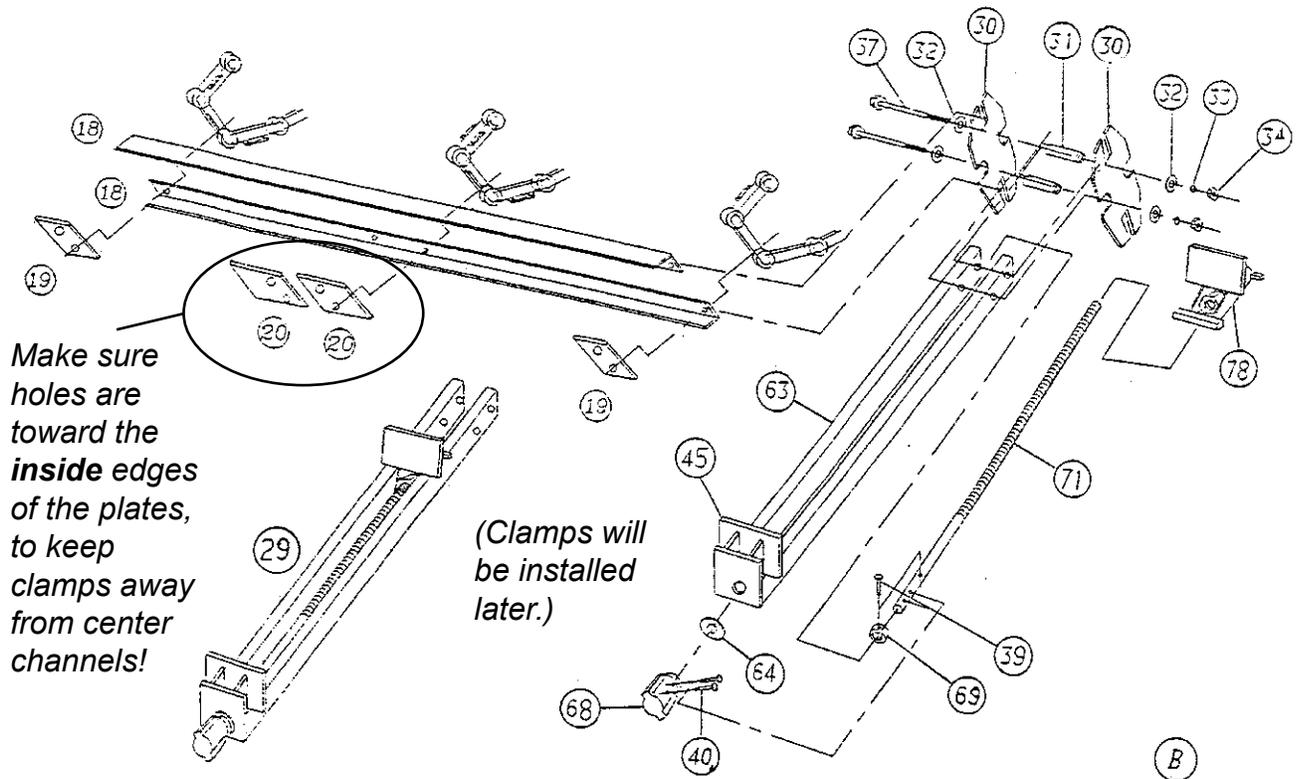


Join the two ends of the center chain by inserting a roll pin into the chain, then inserting a locking pin into the roll pin. Bend the locking pin to secure it in place.

5. After installing the three chains, adjust the chain tension with the chain tension screws (align the adjustment marks), then tighten the rear shaft bearing plate bolts.



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## Install the Angle Beams

1. Attach the angle beams (18) to the angle beam attachment tabs on the chains. On each set of attachment tabs, attach two angle beams (18), facing each other.

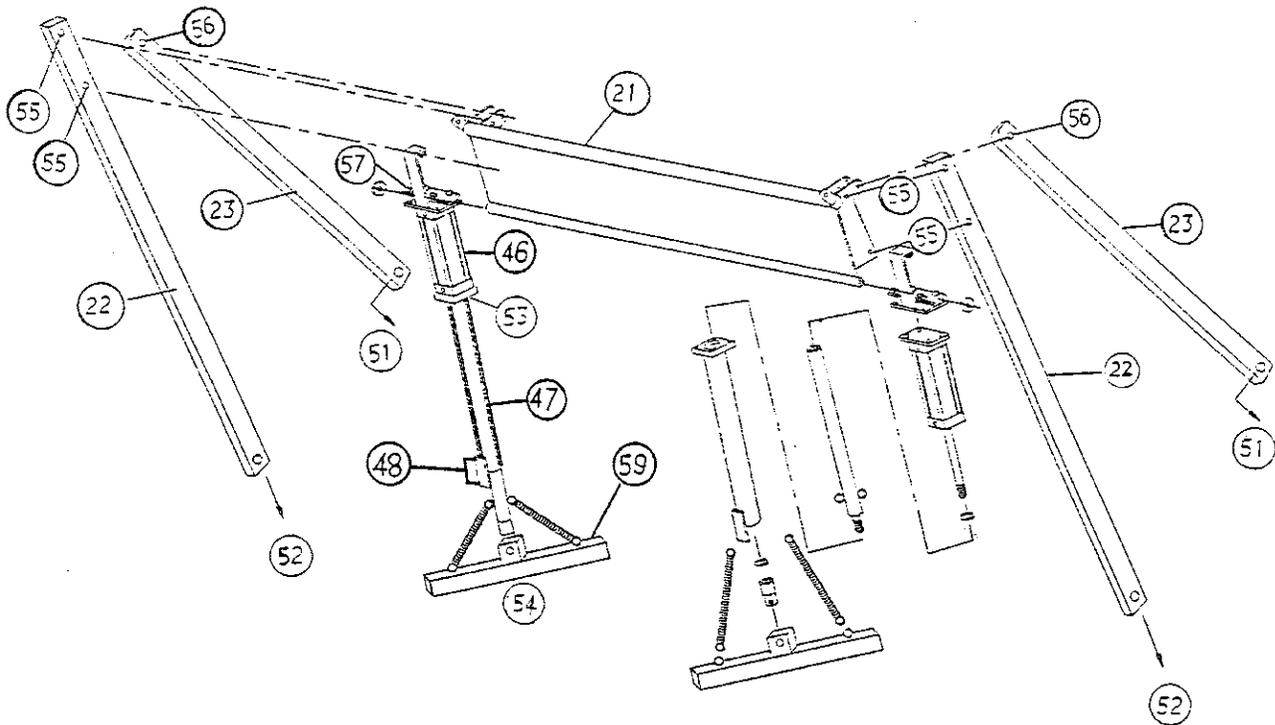
On the center chain, attach the two angle beams with two plates (20) **with the holes toward the inside edges of the plates**, bolts (38), lock washers (33) and nuts (34).

On the two side chains, attach the two angle beams with plates (19), bolts (38), lock washers (33) and nuts (34).

Again, when rotating a 20-section or larger Carrier, **make extra sure that the brass chain rollers are inserted inside the lower channels** (9).

CODE	SKETCH	ITEM	SIZE	QUANTITY
19		FASTEN PLATE		42
20		FASTEN PLATE		82
30		MOUNTING FIXTURE		490
31		TUBE	5 / 8"	490
32		WASHER	1 / 2"	980
33		SPRING WASHER	1 / 2"	260
34		ANTI ROOSEN NUT	1 / 2"	750
37		SCREW	1/2" x 5-1/2"	490
38		SCREW	1/2" x 1-3/4"	490

# Installation

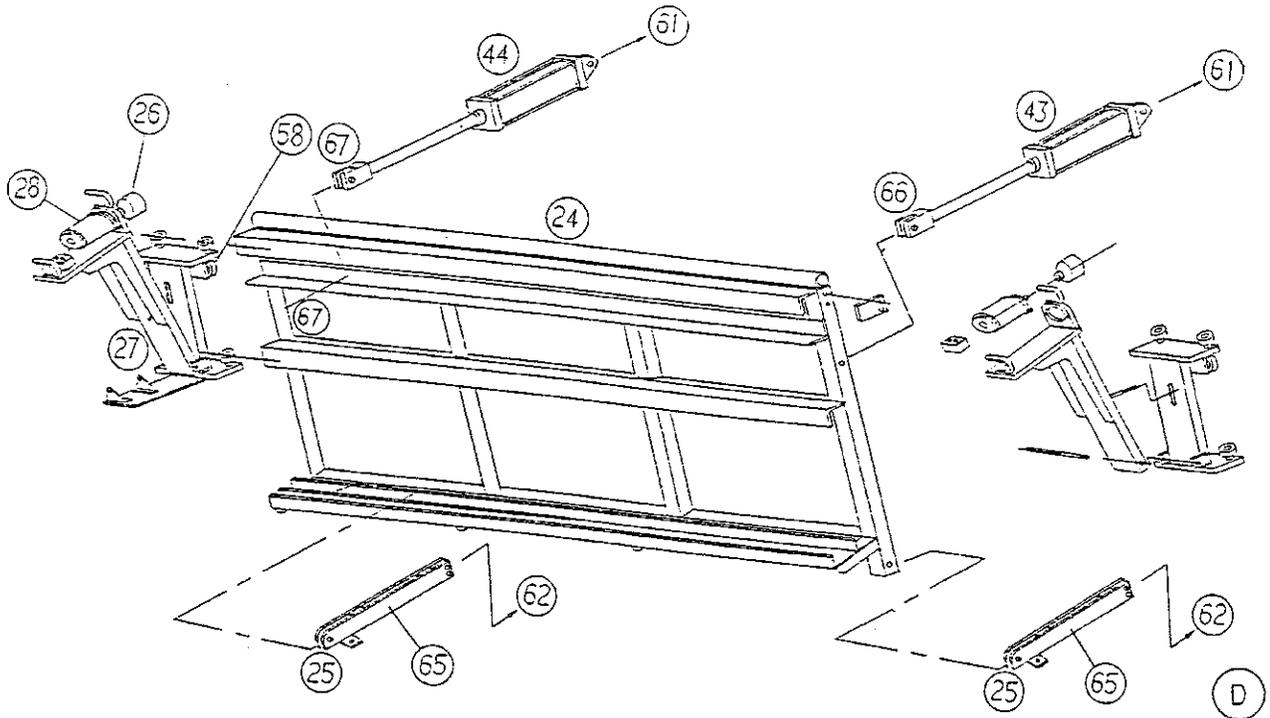


C

## Install the Panel Flattener(s)

1. Attach the two long connecting bars (22) to the overhead panel flattener beam (21) with two bolts (55) per bar.
2. Attach the two short connecting bars (23) to the overhead panel flattener beam (21) with one (56) bolt per bar.
3. With the panel flattener beam lying on the floor, attach the free ends of the long connecting bars (22) to the upper holes (52 on drawing A, page 12) on the brackets that are welded to the middle of the front legs.
4. Swing the panel flattener beam up into position. Attach the free ends of the short connecting bars (23) to the brackets (51 on drawing A, page 12) that are welded to the tops of the front legs.
5. Tighten all bolts securely.
6. Remove the square cap from one end of the lower panel flattener beam tube, slide the panel flattener(s) (54) onto the panel flattener beam, and replace the square cap.
7. (Air hoses will be attached later).

# Installation



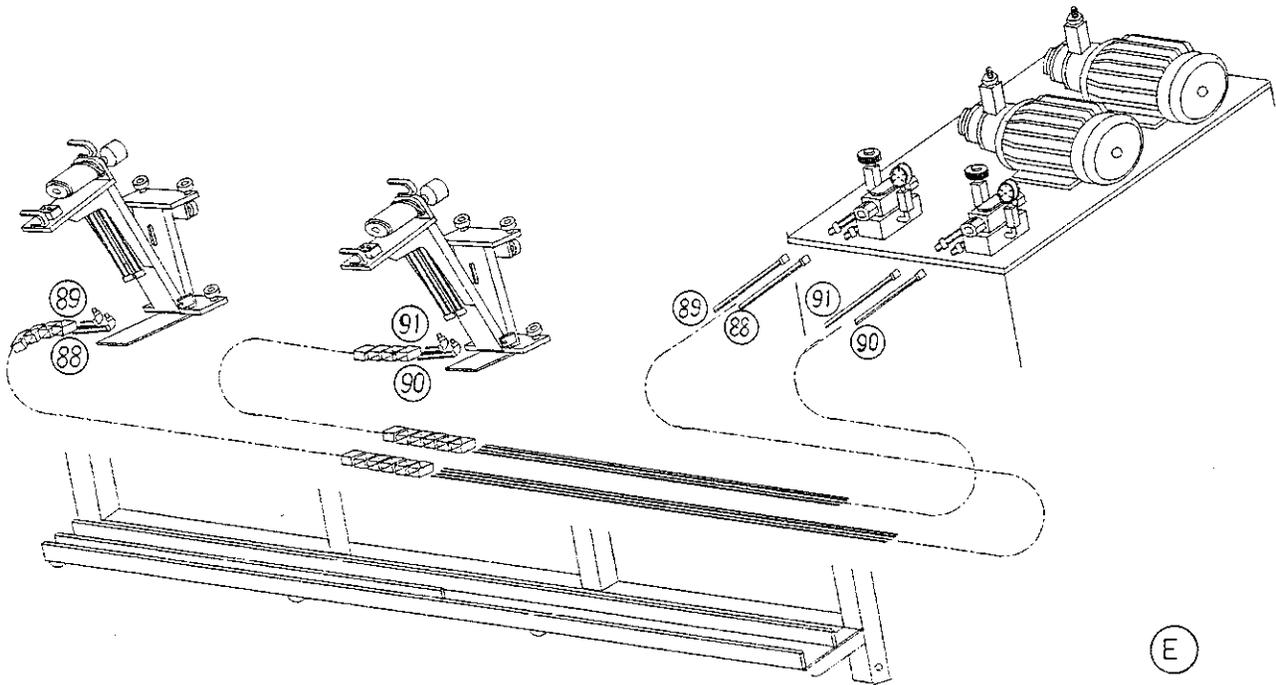
## Install the Front Rest

1. Attach the square ends (62) of the front rest positioners (65) to the brackets (62 on drawing A, page 12) on the bottoms of the front legs.
2. Attach the front rest (24) to the round ends (25) of the front rest positioners (65).
3. Attach the cylinder ends (61 & 61) of the front rest air cylinders (43 & 44) to the lower holes (61 & 61 on drawing A, page 12) on the brackets that are welded to the middle of the front legs. The right-hand cylinder has “tee” fittings; the left-hand cylinder has “elbow” fittings. The fittings should face downward.
4. Attach the small ends (66 & 67) of the front rest air cylinders (43 & 44) to the holes (66 & 67) in the sides of the front rest.
5. Tighten all bolts securely.

## Install the Clamp Tightener Carriages

1. Remove the rectangular cap from one end of the front rest, slide the clamp tightener carriage(s) (27) onto the front rest, and replace the cap.

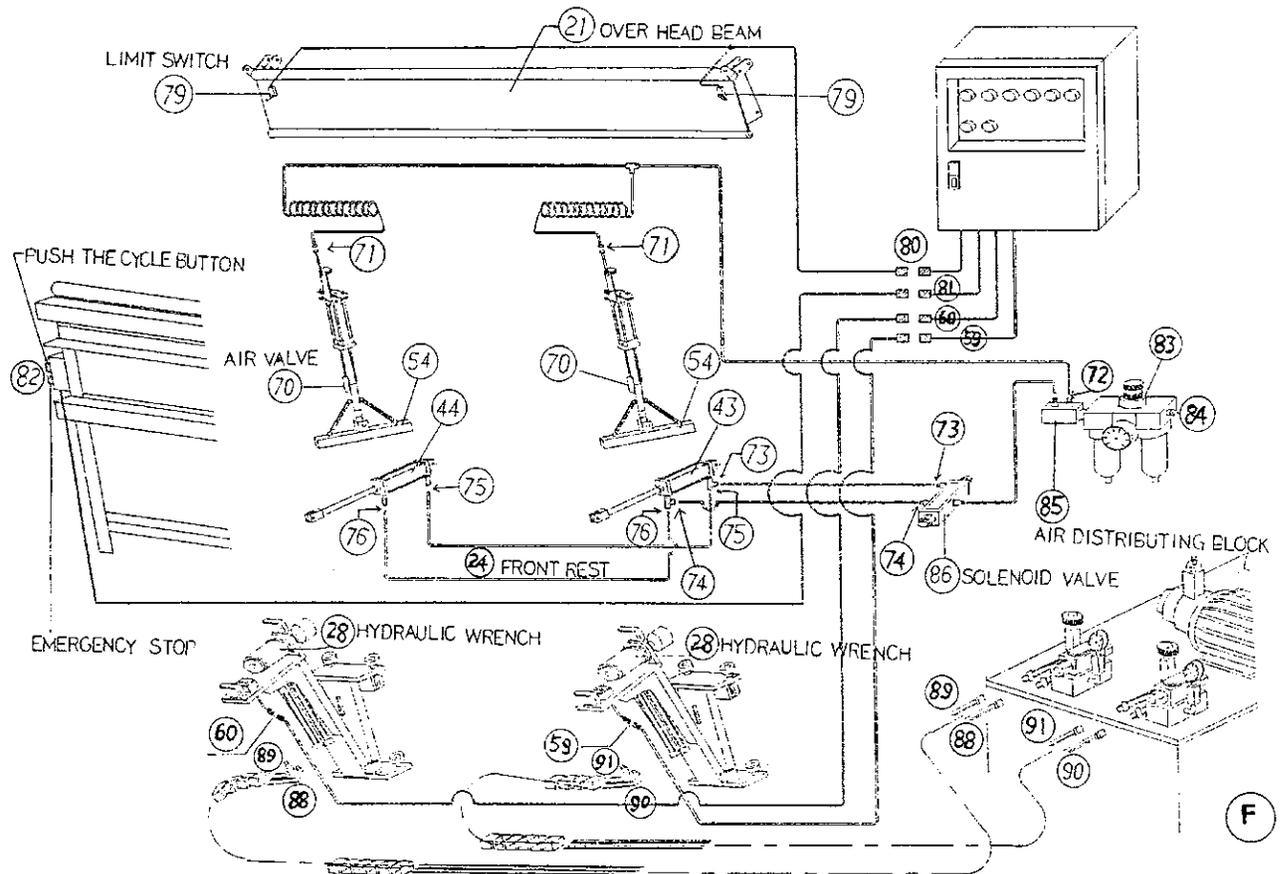
# Installation



## Attach the Clamp Tightener Hydraulic Hoses

1. Attach the Clamp Tightener hoses according to the drawing above (the drawing shows two Clamp Tighteners; your machine may only have one). The left-hand Clamp Tightener should connect to the left-hand valve assembly on the hydraulic pump unit, and the right-hand Clamp Tightener should connect to the right-hand valve assembly on the hydraulic pump unit. The hose ends are marked for easy match-up.

# Installation



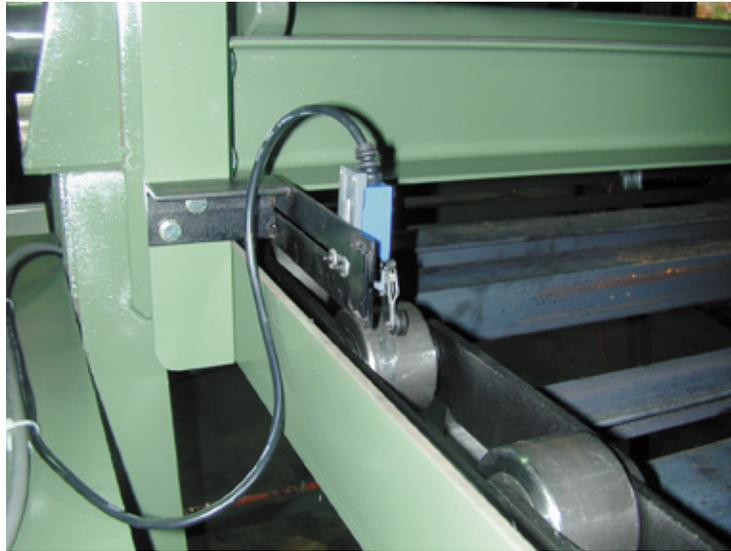
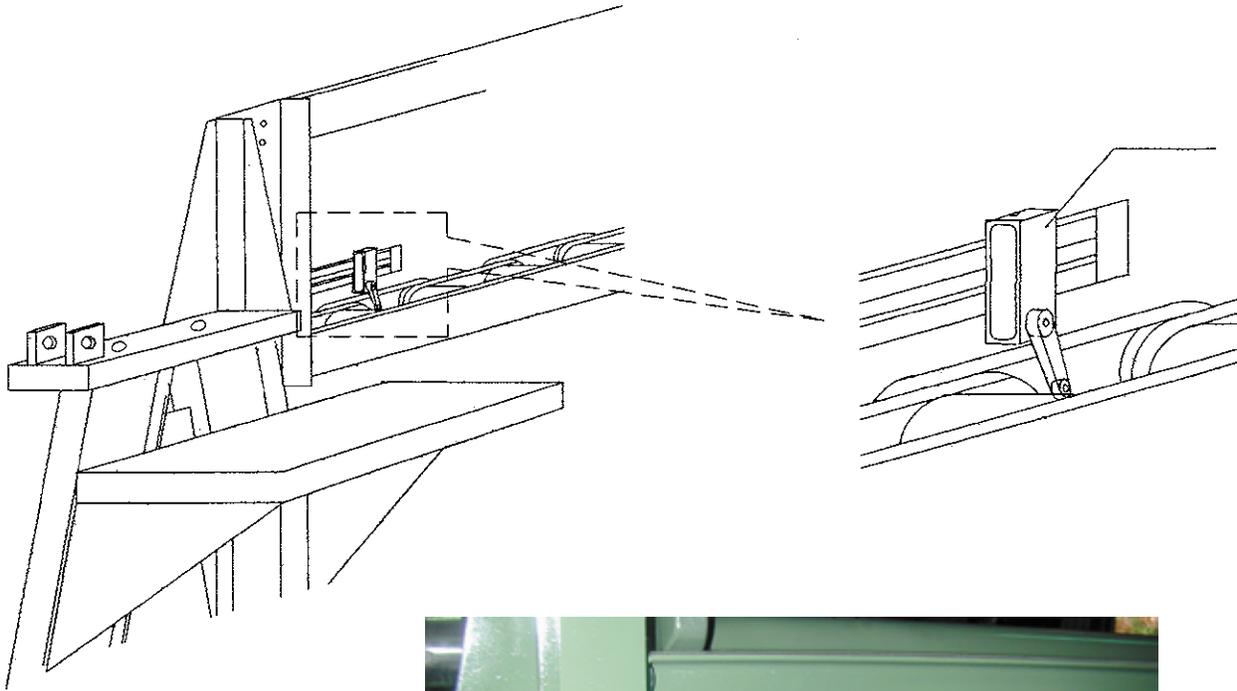
## Connect the Air Hoses

1. Connect a (5 hp) compressed air supply to the filter/lubricator/regulator air inlet (84).
2. Connect the air hose (72) from the air distribution block (85) to the air hose on the panel flattener beam (21). Connect the air hose(s) (71) on the panel flattener beam (21) to the panel flattener(s) (54).
3. Connect the air hoses (73 & 74) from the solenoid valve (86) to the horizontal connectors on the “tee” fittings on the right-hand front rest cylinder (43). Connect the air hoses (75 & 76) from the vertical connectors on the “tee” fittings on the right-hand front rest cylinder (43) to the “elbow” fittings on the left-hand front rest cylinder (44).

## Connect the Electrical Wires

1. Connect the wires from the panel flattener limit switches (79), left-side cycle-start button box (82; only on machines with 2 Clamp Tighteners), left-hand Clamp Tightener (60), and right-hand Clamp Tightener (59) to the terminal strip inside the electrical box, noting their numbered markings. Connect the wire(s) (59, 60) to the Clamp Tightener(s) (58).

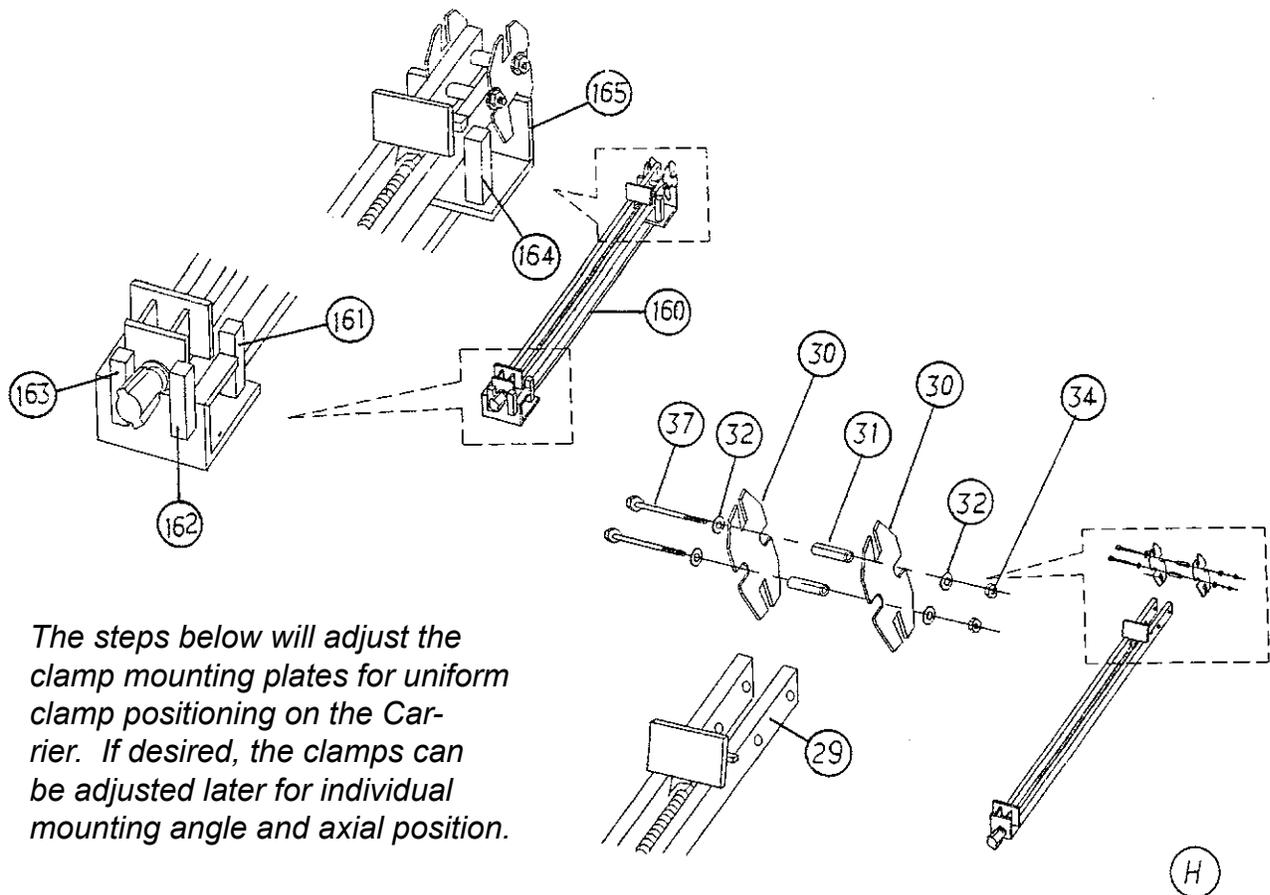
# Installation



## Install the Carrier Indexing Limit Switch

1. Mount the carrier indexing limit switch onto the vertical frame member that's just behind the Electric Motor Drive platform.
2. Adjust the switch such that in Automatic mode, the Carrier stops with all the clamps just lightly touching the front rest. If the Carrier rotates too far, you won't be able to move the clamps; if the Carrier doesn't rotate far enough, the clamps will float in the air above the front rest.

# Installation



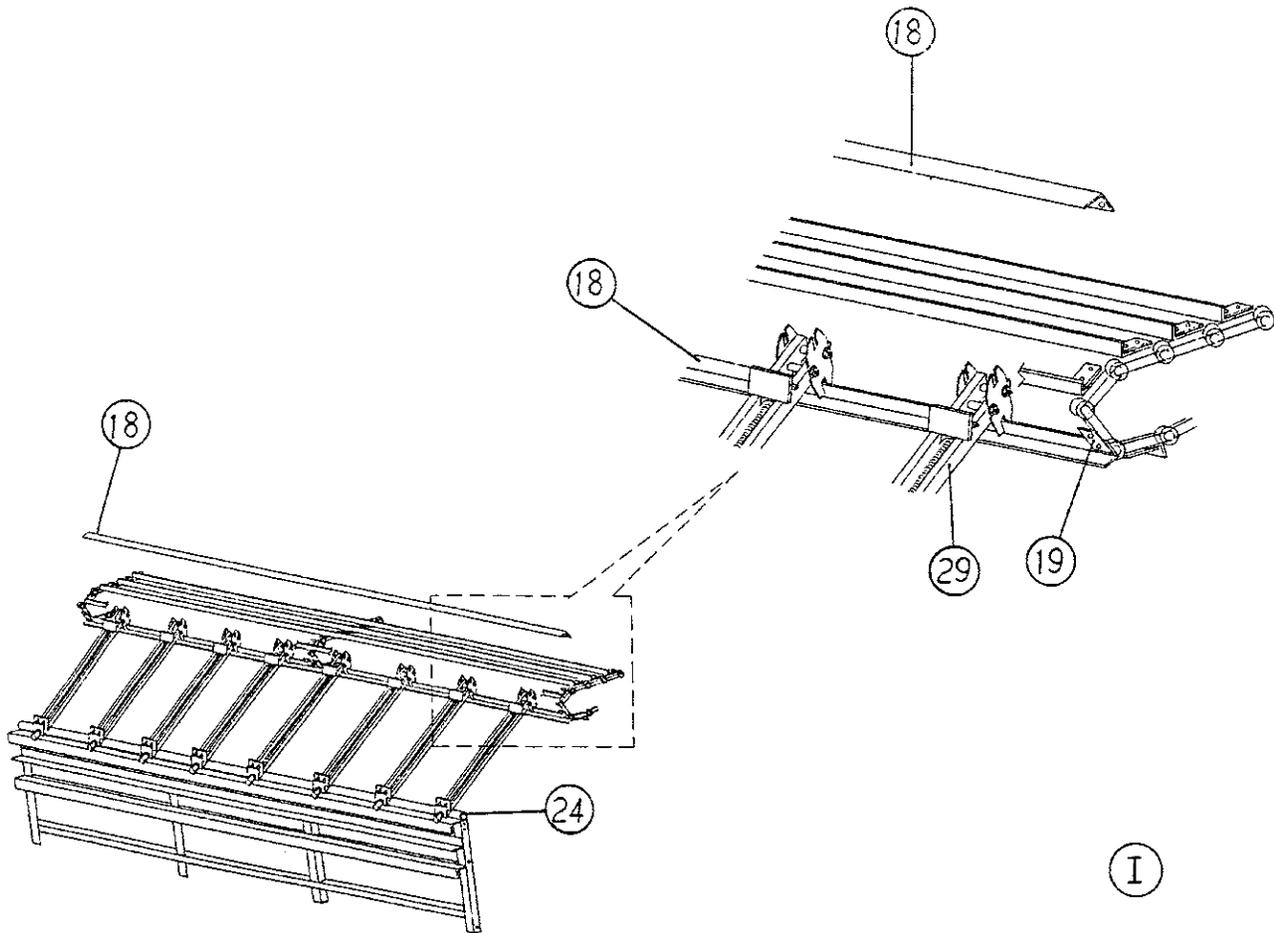
*The steps below will adjust the clamp mounting plates for uniform clamp positioning on the Carrier. If desired, the clamps can be adjusted later for individual mounting angle and axial position.*

## Install the Mounting Plates onto Each Clamp

1. Assemble the clamp mounting hardware onto the clamp (29): two mounting plates (30), two spacers (31), two bolts (37), four flat washers (32) and two nuts (34). Leave the nuts loose for now.
2. Place the clamp (29) into the clamp mounting plate positioning fixture (160) that was included with the machine. Make sure that the clamp is up tight against the three front positioning posts (161, 162, 163) and up tight against the one rear positioning post (164). Hold the mounting plates flat against the rear positioning plate (165, also see photo at lower right).
3. Tighten the two nuts securely, but not so tight that they crush the clamp bodies.



# Installation



## Mount the Clamps onto the Clamp Carrier Frame

1. In Manual mode, rotate the Carrier until a section of two angle beams (18) is facing the front rest (24). Bring the front rest “in,” so clamps can rest on it.
2. Loosen the bolts that attach the upper of the two angle beams. Lift one end of the beam up at an angle.
3. While holding the upper beam up at an angle, place a row of clamps onto the lower angle beam. The clamps will rest on the lower angle beam at the rear (with the beam inserting into the lower slots of the clamp mounting plates), and on the front rest at the front.
4. Lower the upper angle beam down, making sure that the upper beam inserts into the upper slots in the clamp mounting plates. Tighten all the section’s bolts (19) securely.
5. Rotate the Carrier by TWO sections until half of the sections are filled. Doing so will help keep the Carrier in balance.
6. Repeat steps 2 through 5 until all sections are fully outfitted with clamps.

# Installation

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## Grease the Chain Rollers

1. Grease the Carrier chain rollers with the grease supplied with the machine.

## Apply Bates Glue Release to the Clamps and Clamp Screws

**This is very important!** Taking an hour to do this now will save many hours of future clean-up time. It is MUCH easier (and much better for the equipment) to apply regular coatings of Glue Release than it is to chisel rock-hard, dried glue build-up off of uncoated clamps! A free sample of Bates Glue Release should have been supplied with your machine.

1. Apply a thin coating of Bates Glue Release to the tops of the clamp bodies (where the wood will contact the clamps), and apply a thick coating of Glue Release to the clamp screws. Apply with a cloth, sponge, paint brush (our preferred method), or spray it on. Run the clamp jaws all the way up and back to distribute the Glue Release evenly over the screw threads. The Glue Release will only partially dry, leaving a thick, waxy film in the troughs of the screw threads. Note: Since Bates Glue Release is a lubricant as well as a glue release product, you will not need to oil the screws if you use the Glue Release regularly.
2. Make it a habit to ALWAYS keep your clamps coated with a waxy layer of Bates Glue Release; it should be part of your daily and/or weekly routine. This will keep clean-up time to a bare minimum, and will maximize the service life of your clamps.

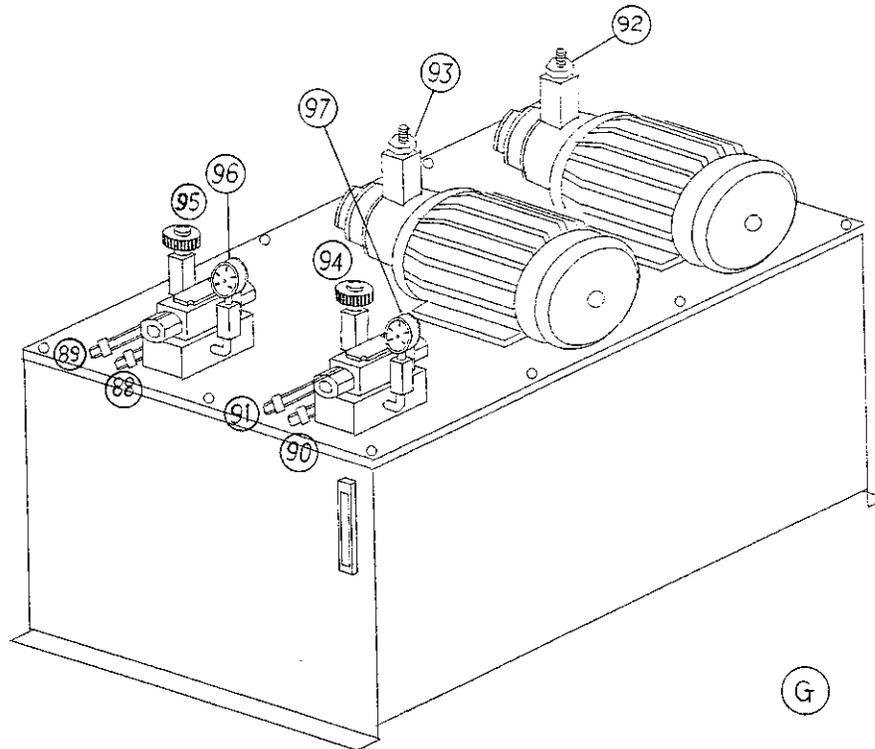


# Operation

## Apply Bates Glue Release to the Clamps and Clamp Screws

This is normally done at the END of each working day. However, if it has not been done yet, it MUST be done before starting your very first production run. Please see page 23 for details.

## Check the Hydraulic Oil Level & Clamp Tightener Pressure



1. View the hydraulic oil level in the sight glass mounted on the side of the oil reservoir. The tank should be kept 2/3 full; add oil if needed.
2. Turn the “Power” switch on the control box to “ON.” Start the hydraulic pump motor(s) by pressing the “Hydraulic Pump ON” button.
3. The main system hydraulic pressure(s) has been set at the factory to approximately 70 kg/cm<sup>2</sup> (adjusted via pressure regulators 92 and 93). You should not need to adjust this pressure(s).
4. You will, however, routinely adjust the Clamp Tightening pressures (via pressure regulator knobs 94 and 95; you can check the pressures by looking at gauges 97 and 96 when the hydraulic pump motors are running). Operating pressures will normally be between 25 kg/cm<sup>2</sup> and 45 kg/cm<sup>2</sup>, although you can turn the pressures all the way up to the system pressure of 70 kg/cm<sup>2</sup> if needed. If your glued panels have open joints, you have

# Operation

too little pressure; if you crush the wood, you have too much pressure. With a little practice, you will discover the optimum clamping pressures for your various production runs.

## Load Stock Into the Clamps

1. Place stock to be glued, with glue already applied to the edges of the boards, into the clamps.

## Tighten the Clamps

1. Push the Panel Flattener away from yourself, to disengage it from its stop at the end of the Panel Flattener beam, then roll the Flattener to a position that's in between the first two clamps that you want to tighten. Energize the Panel Flattener by pressing down on the handle. The Flattener comes down and flattens the stock.
2. Bring the Clamp Tightener up into position and press the "Tighten" button to tighten the clamp. The Clamp Tightener motor will stop when the designated clamp tightening pressure has been reached. Move on to the next clamp and tighten it.
3. De-energize the Panel Flattener by pulling up on its handle. Position it between the next two clamps to be tightened, and energize it, flattening the panel. Tighten the two clamps.
4. Continue flattening and tightening until all of the clamps are tight.



## Rotate the Carrier (Manual Mode) or...

1. Turn the "Mode" switch to "MANUAL."
2. Make sure that the Panel Flattener(s) are all the way to the sides, where they contact the

# Operation

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limit switch(es). This is a safety feature that only allows the Carrier to rotate when the Panel Flatteners are out of the way of the rotating clamps.

3. Press and hold the “Rotate UP” button for a second or two, rotating the Carrier in reverse until the clamps are positioned 4” or so above the front rest, then release the button.
4. Press the “Front Rest OUT” button. The front rest moves out away from the clamps.
5. Press and hold the “Rotate DOWN” button until the next section of clamps is positioned 4” or so above the front rest, then release the button.
6. Press the “Front Rest IN” button. The front rest moves in toward the clamps.
7. Press and hold the “Rotate DOWN” button again, until the clamps touch down lightly on the front rest, then release the button. It may take some practice to find the optimum amount to rotate down; too little and the clamps will float in the air above the front rest; too much and you will not be able to slide the clamps from side to side to set up for new panel sizes.

## **Rotate the Carrier (Automatic Mode)**

1. Turn the “Mode” switch to “AUTO.”
2. Press the “Cycle START” button. The Carrier automatically rotates in reverse, the front rest comes out, the Carrier rotates forward, the front rest comes back in, and the Carrier rotates forward until the clamps rest lightly on the front rest.

## **Loosen the Clamps**

1. Use the Clamp Tightener to loosen the clamps one by one, bringing the Clamp Tightener up into position on each clamp, engaging the clamp, and pressing and holding the “Loosen” button until the clamp’s rear jaw is at the desired position.

## **One Hour for Complete Cycle**

1. Continue the above steps for all the Carrier sections. You should completely rotate the Carrier in 60 minutes or so, which is sufficient time for the glue to dry. However, it is best to wait 24 hours before machining the panel, to avoid “sunken joints” caused by planing off the swollen glue joints before the moisture has had time to equalize throughout the panel.

## **Shut Down the Machine**

1. While unloading the last batch of panels for the day, scrape the dried, squeezed-out glue from the clamps and apply a coating of Bates Glue Release to the clamp bodies and screws, as per the instructions on page 23. Again, this is VERY IMPORTANT! Make it a habit to ALWAYS keep your clamps coated with a waxy layer of Bates Glue Release; it

# Operation

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should be part of your daily and/or weekly routine. This will keep clean-up time to a bare minimum, and will maximize the service life of your clamps.

2. Shut down the machine by pressing the “Hydraulic Pump OFF” button, then turning the “Power” switch to “OFF.”

# Maintenance

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## Daily

1. Drain the water from the air filter on the filter/lubricator/regulator assembly.
2. While unloading the final batch of panels for the day, scrape dried, squeezed-out glue off of the clamps, then apply a coating of Bates Glue Release to the tops of the clamp bodies (where the wood will contact the clamps), and to the clamp screws. Apply the Glue Release with a cloth, sponge, paint brush (our preferred method), or spray it on. Make it a habit to ALWAYS keep your clamps coated with a waxy layer of Bates Glue Release. Note: Since Bates Glue Release is a lubricant as well as a glue release product, you will not need to oil the screws if you use the Glue Release regularly.

## Weekly

1. Fill the oiler bowl on the filter/lubricator/regulator assembly with 10-weight oil.
2. Oil the clamp nuts and thrust washers with 30-weight motor oil.

## Monthly

1. Check the oil level in the hydraulic pump oil tank; it should be at least 2/3 full. Add oil if needed. Use Mobil DTE oil #26.
2. Grease the main Carrier chain rollers.
3. Check for proper adjustment of the Carrier Rotation limit switch. Adjust if needed (see page 22).

## Yearly

1. Change the oil in the Electric Motor Drive's gear reducer. Use Mobil gear oil #630.



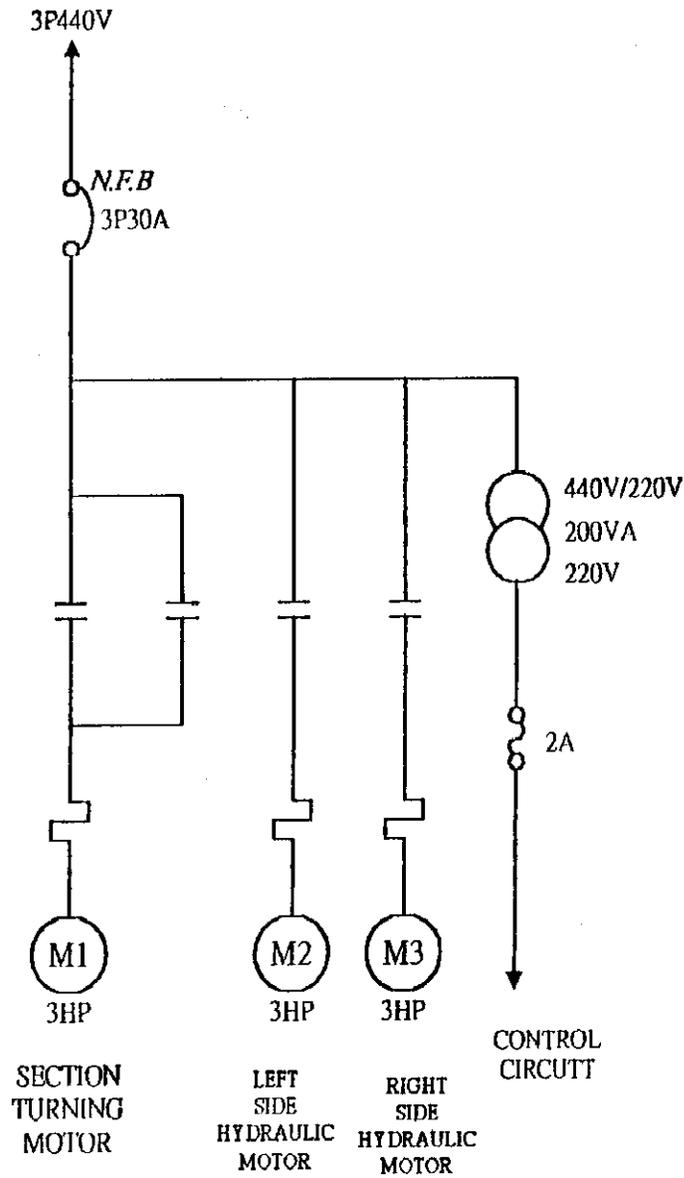
# Electrical Diagrams

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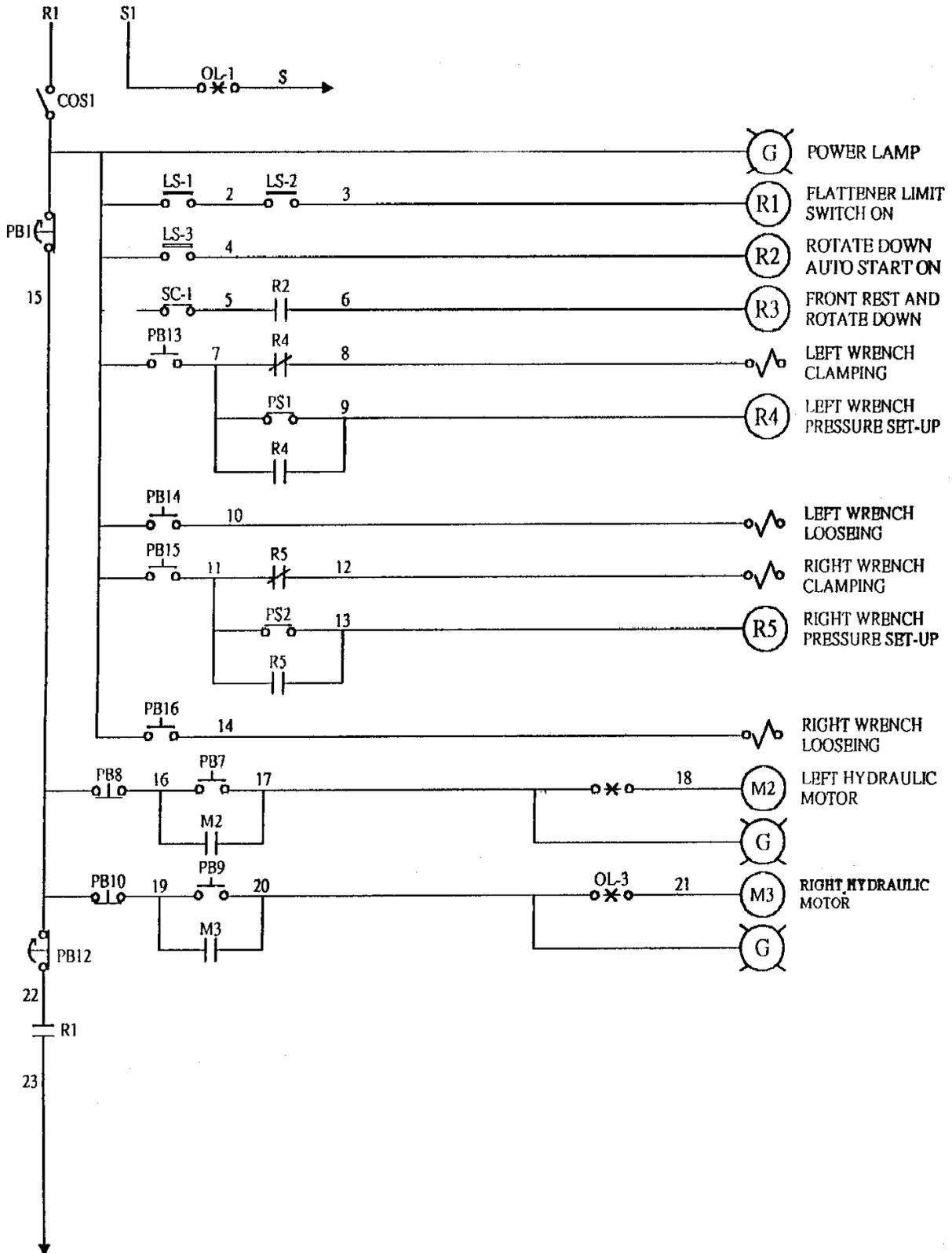
## Legend for Electrical Diagrams

COS1	Flush Select Switch
COS2	Select Switch
LS	Limit Switch
PB1	Emergency Stop Button
PB2 - PB8	Push Buttons
T1 - T3	Timers
R1 - R6	Relays

# Electrical Diagrams

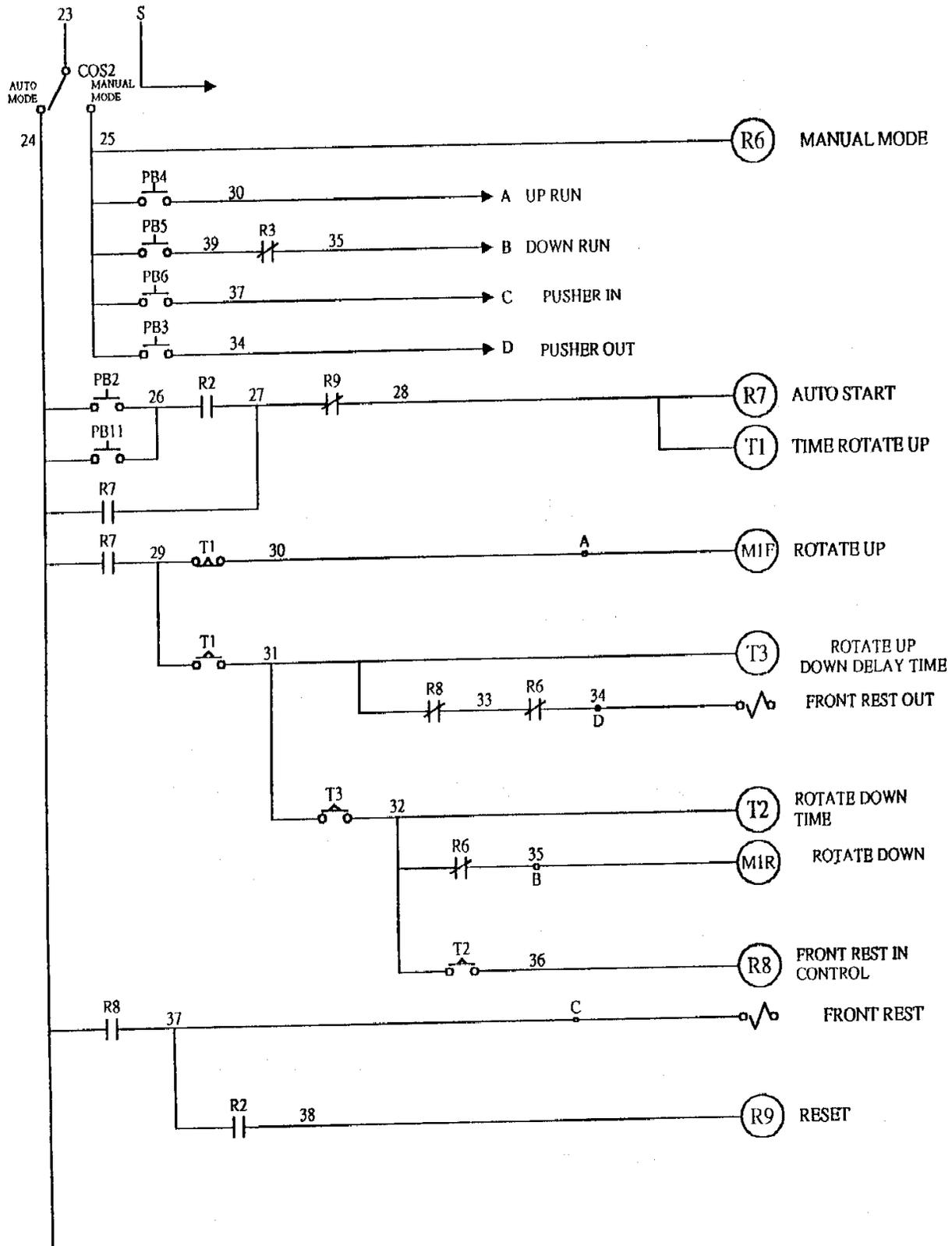


# Electrical Diagrams

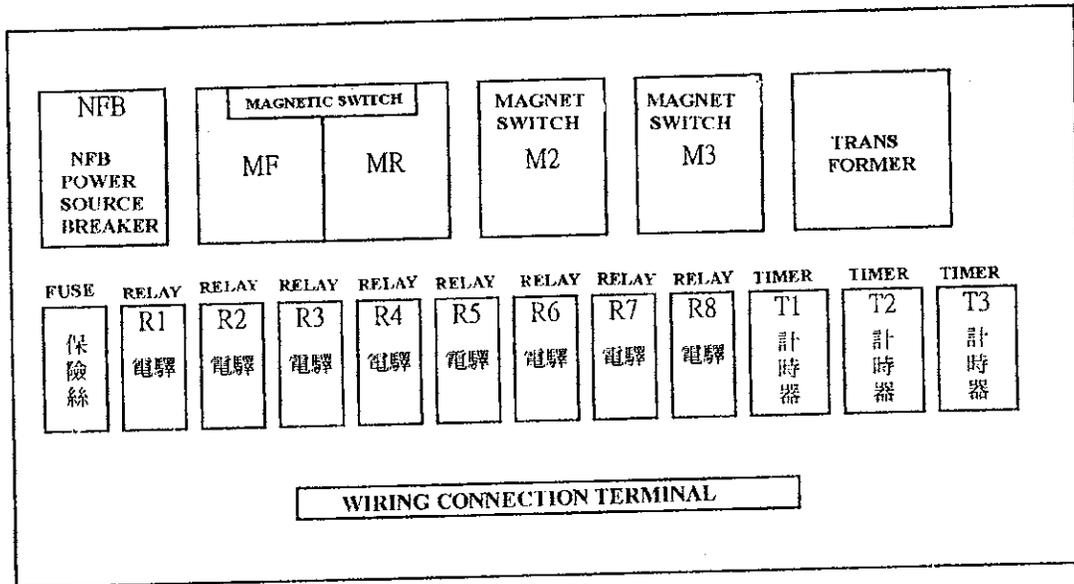


- (G) POWER LAMP
- (R1) FLATTENER LIMIT SWITCH ON
- (R2) ROTATE DOWN AUTO START ON
- (R3) FRONT REST AND ROTATE DOWN
- (R4) LEFT WRENCH PRESSURE SET-UP
- (R5) RIGHT WRENCH PRESSURE SET-UP
- LEFT WRENCH CLAMPING
- LEFT WRENCH LOOSEING
- RIGHT WRENCH CLAMPING
- RIGHT WRENCH LOOSEING
- (M2) LEFT HYDRAULIC MOTOR
- (M3) RIGHT HYDRAULIC MOTOR

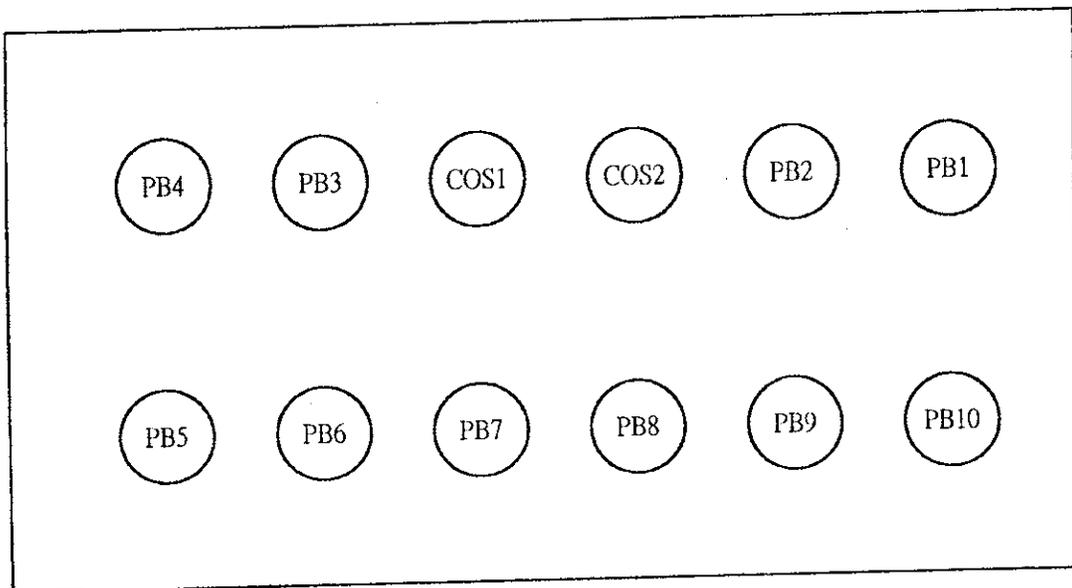
# Electrical Diagrams



# Electrical Diagrams



SWITCH BOARD ELECTRIC COMPONENTS LAY OUT



SWITCH BOARD BUTTON LAY OUT



