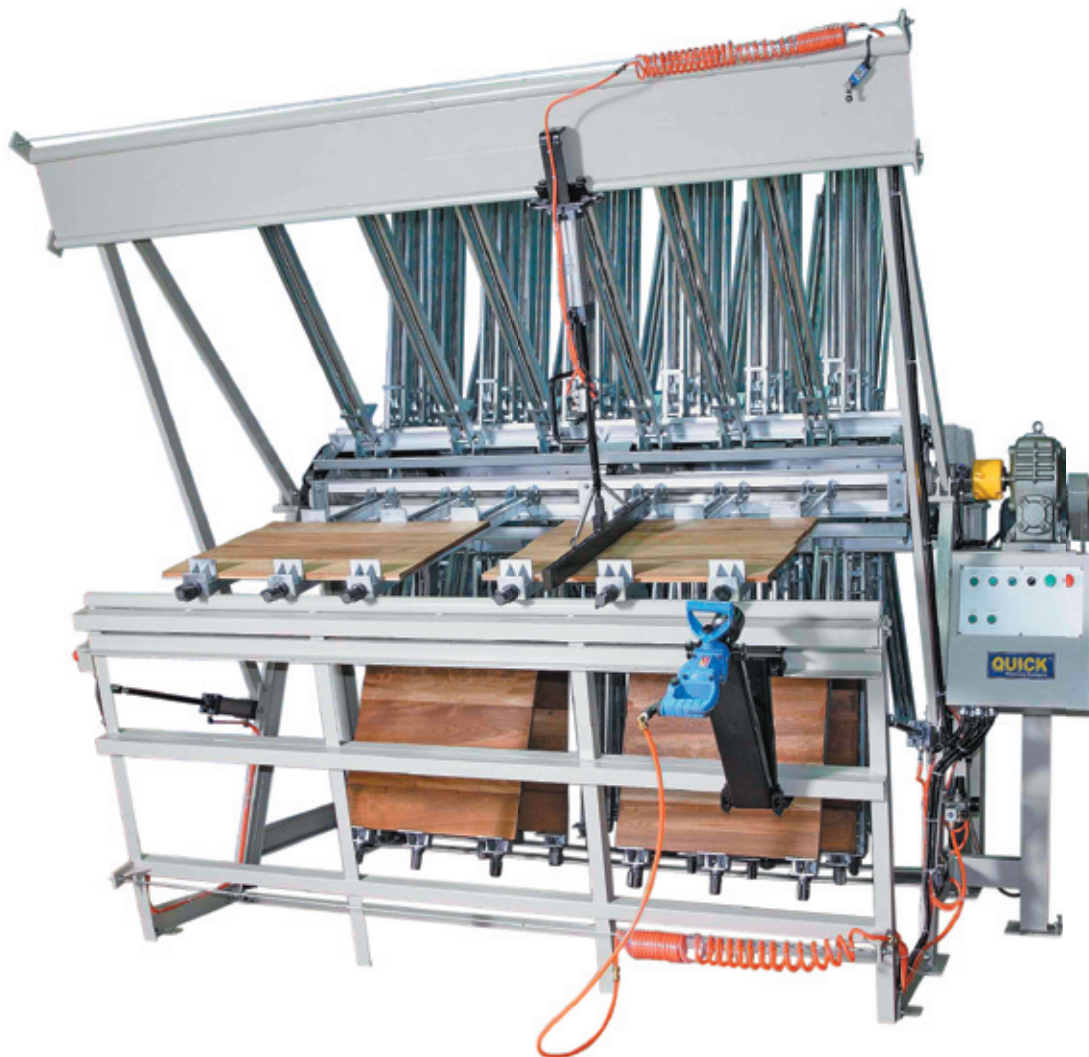


# Pneumatic Clamp Carrier

## Installation & Operation Manual









# **Pneumatic 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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# Introduction

Thank you for your purchase of a Quick Pneumatic 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.





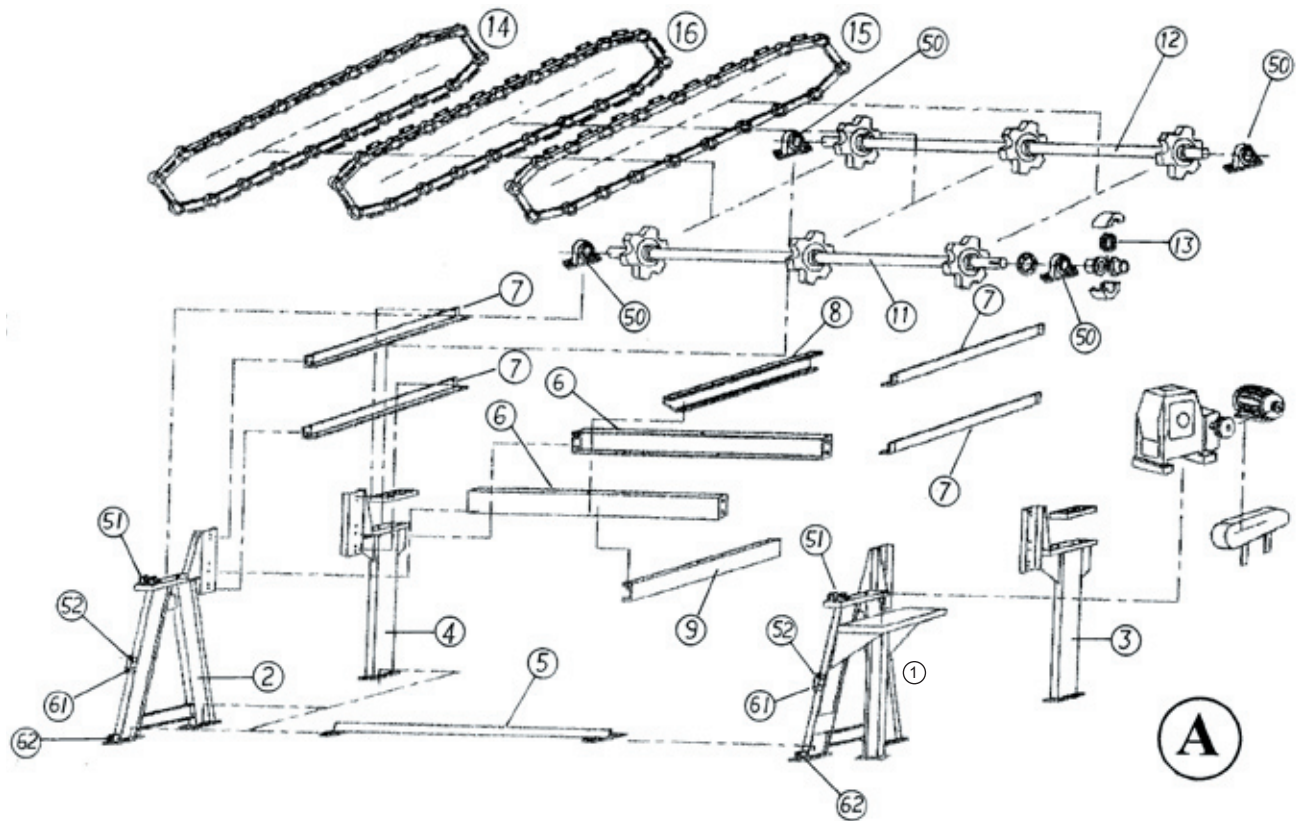
# Installation

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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

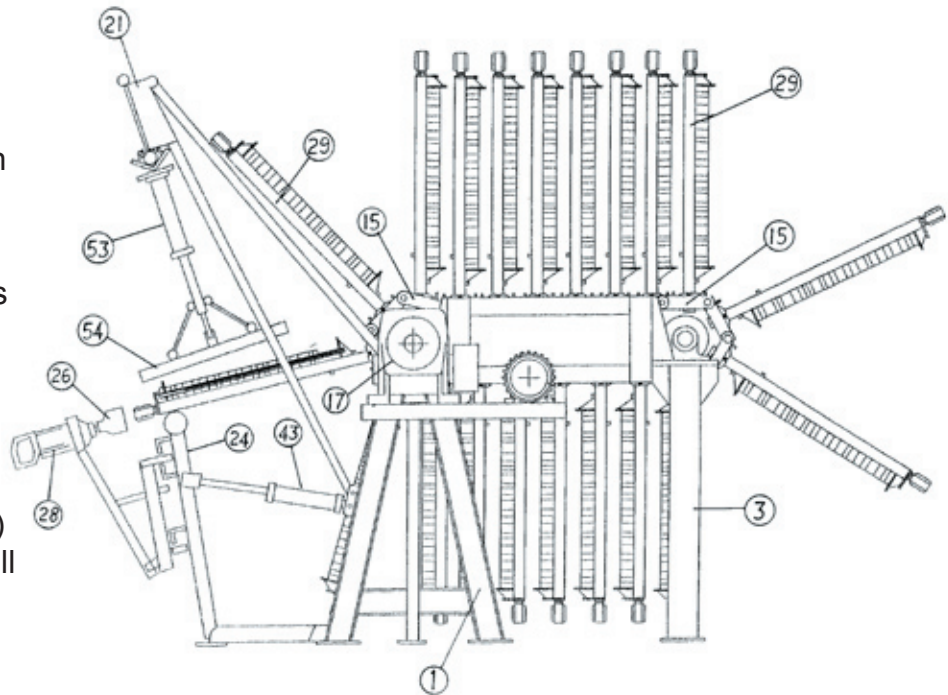
1. Place the four main legs (1, 2, 3, 4) upright and into position.

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 two cross beams (6) to the legs.
5. Install the upper I-beam (8) and the lower channel (9) onto the cross beams (6).
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 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).

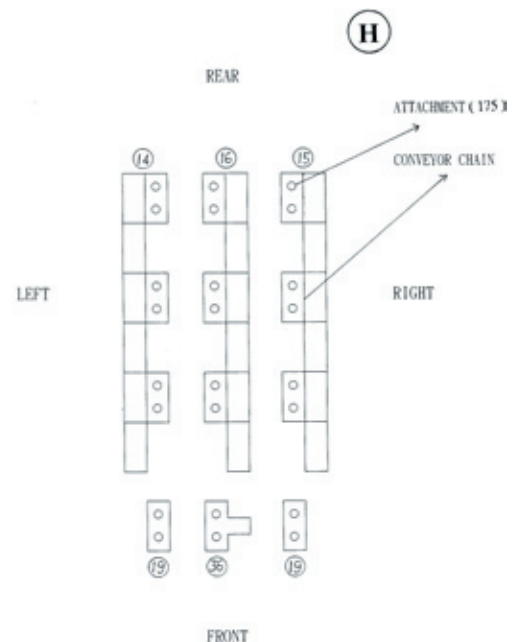
# Installation

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.



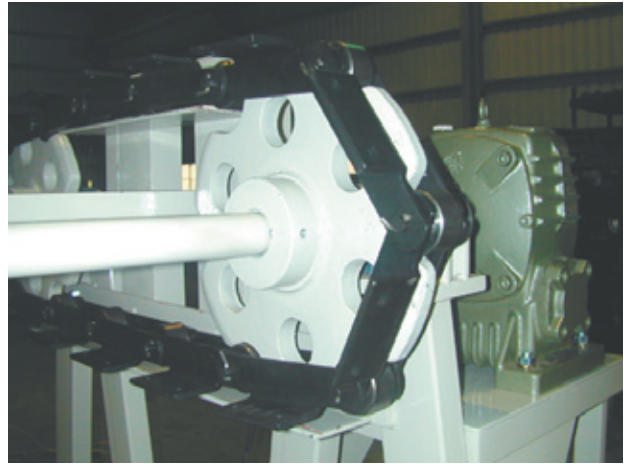
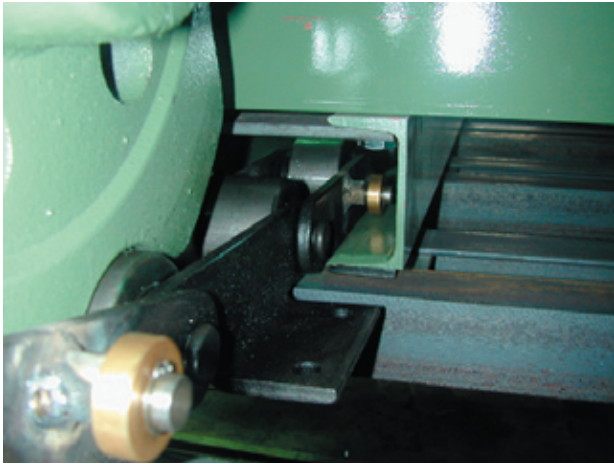
## Install the Carrier Chains

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 switch 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, inside the electrical box, directly to the right of the large circuit breaker, with an insulated screwdriver.
3. Install the two side Carrier chains (14, 15). Place the chains on the front left and right 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



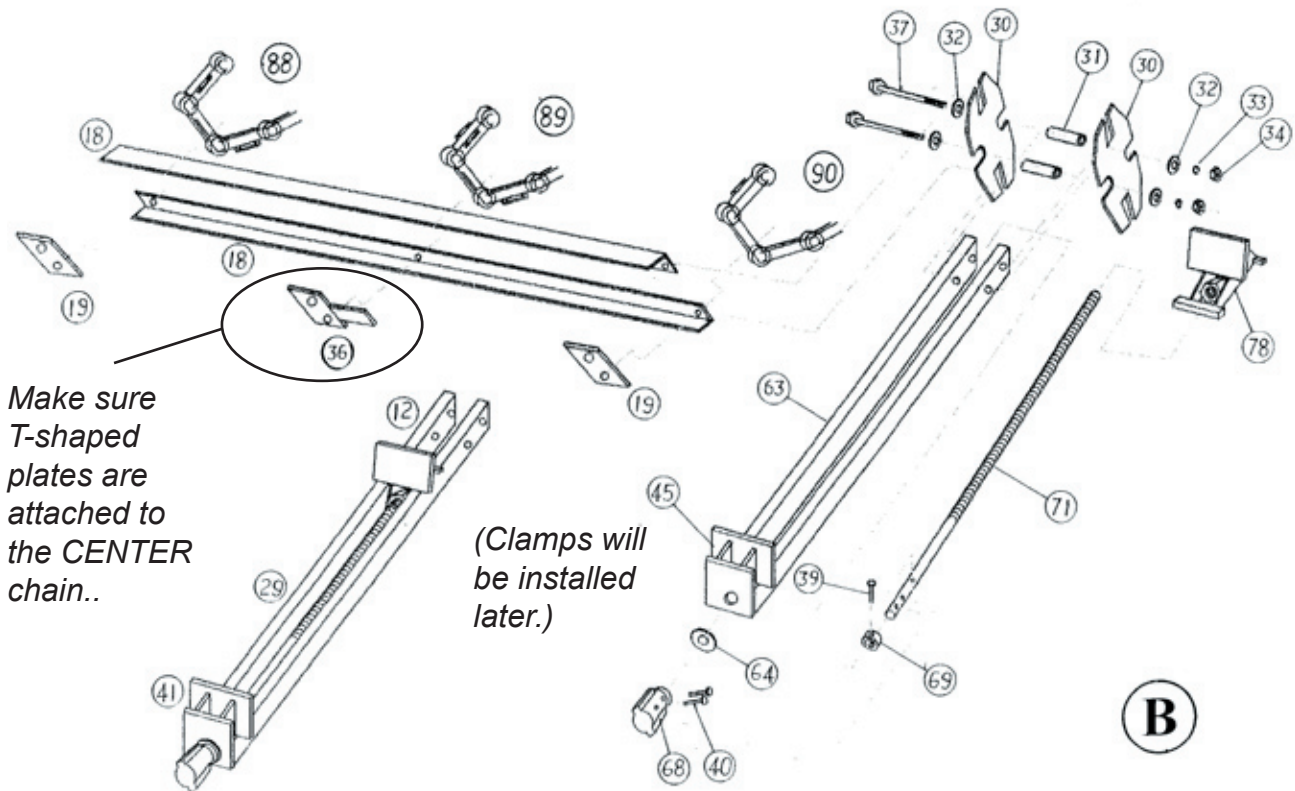
4. Install the center Carrier chain (16). Press the Rotate Up button, and feed the chain up and over the center sprocket and upper I-beam (8), around the rear center sprocket, and back toward the front of the machine. **Make extra sure that the brass chain rollers are inserted inside the lower channel (9),** and that the angle beam attachment tabs face toward the left (see drawing at lower right on page 13):

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.



# Installation



## Install the Angle Beams

1. Attach the angle beams (18) to the angle beam attachment tabs on the three chains (88, 89, 90). Onto each set of attachment tabs, attach two angle beams (18), facing each other.

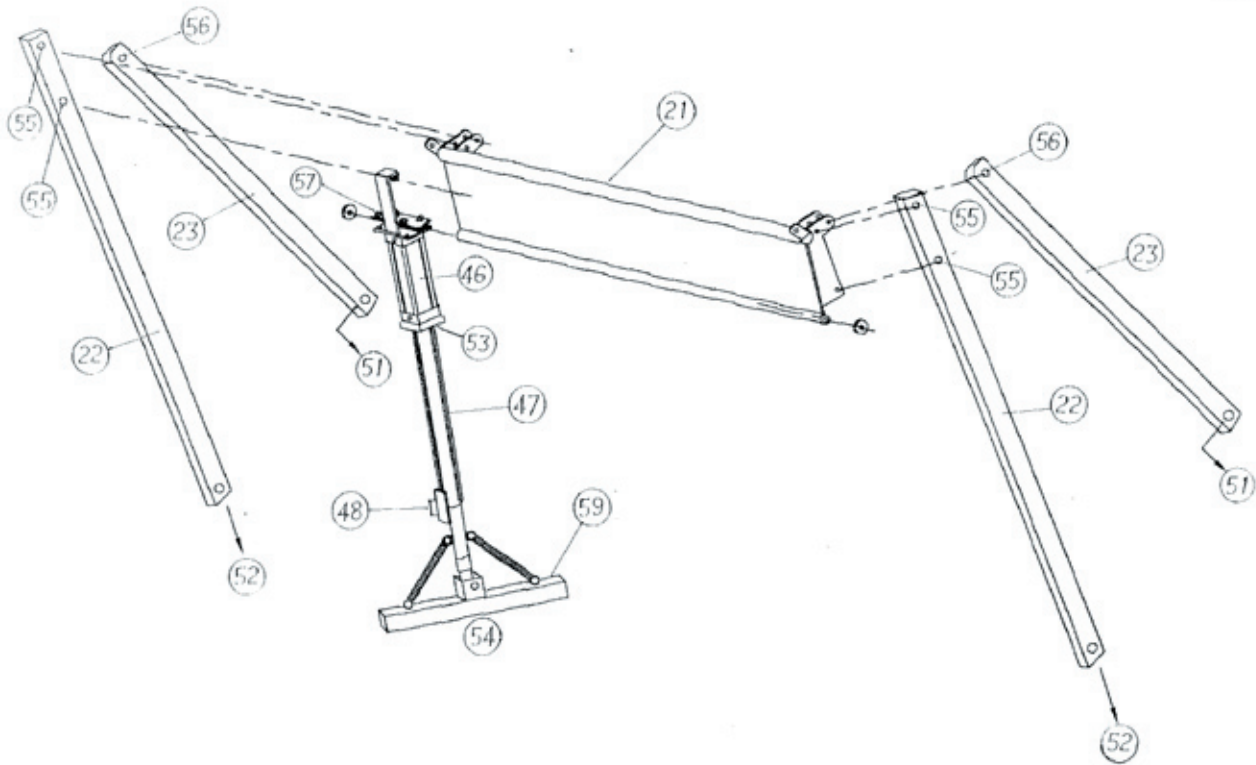
On the **center** chain (89), attach the two angle beams with T-shaped plates (36), bolts (38), lock washers (33) and nuts (34). Make sure the plates' welded-on tabs points toward the right-hand side of the machine, to keep the clamps from sliding into contact with the center chain.

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

CODE	SKETCH	ITEM	SIZE	QUANTITY
19		FASTEN PLATE		
36		FASTEN PLATE		
30		MOUNTING FIXTURE		
31		TUBE	16m/m	
32		WASHER	12m/m	
33		SPRING WASHER	12m/m	
34		ANTI LOOSEN NUT	12m/m	
37		SCREW	12 X130m/m	
38		SCREW	12 X 45m/m	

# Installation

©

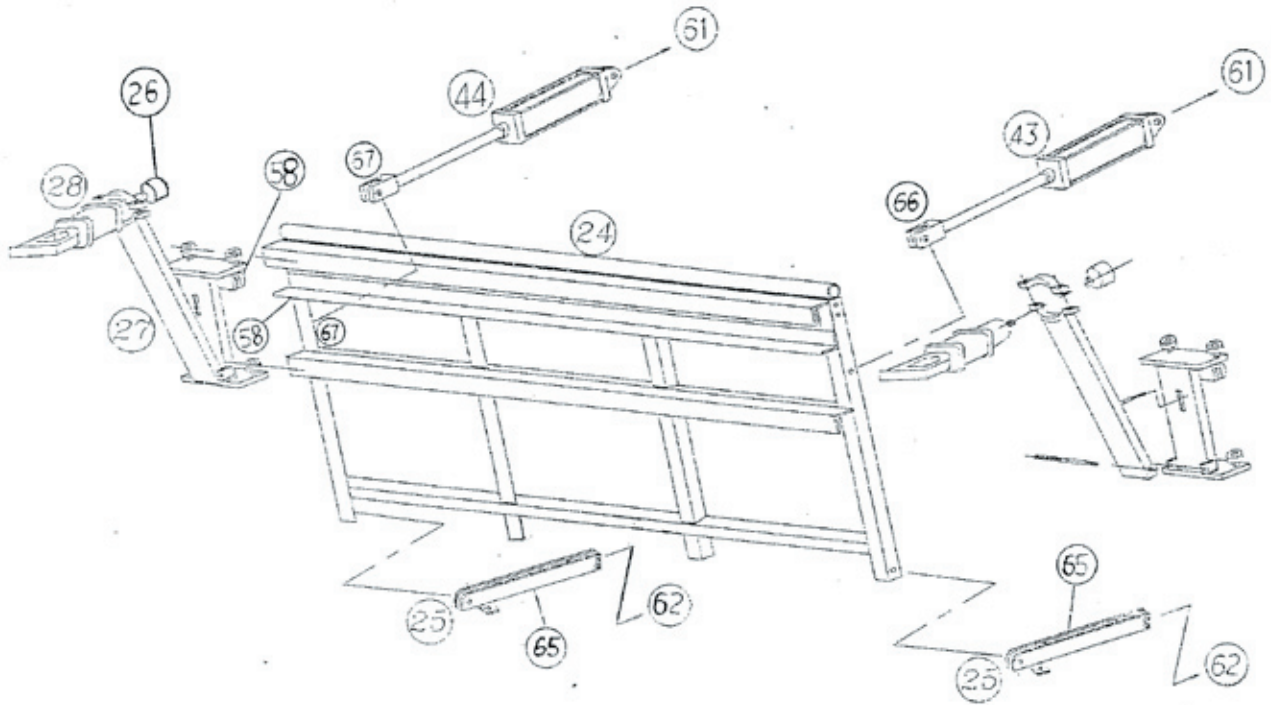


## Install the Panel Flattener

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 middles 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 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 (54) onto the panel flattener beam, and replace the square cap.
7. (Air hoses will be attached later).



# Installation



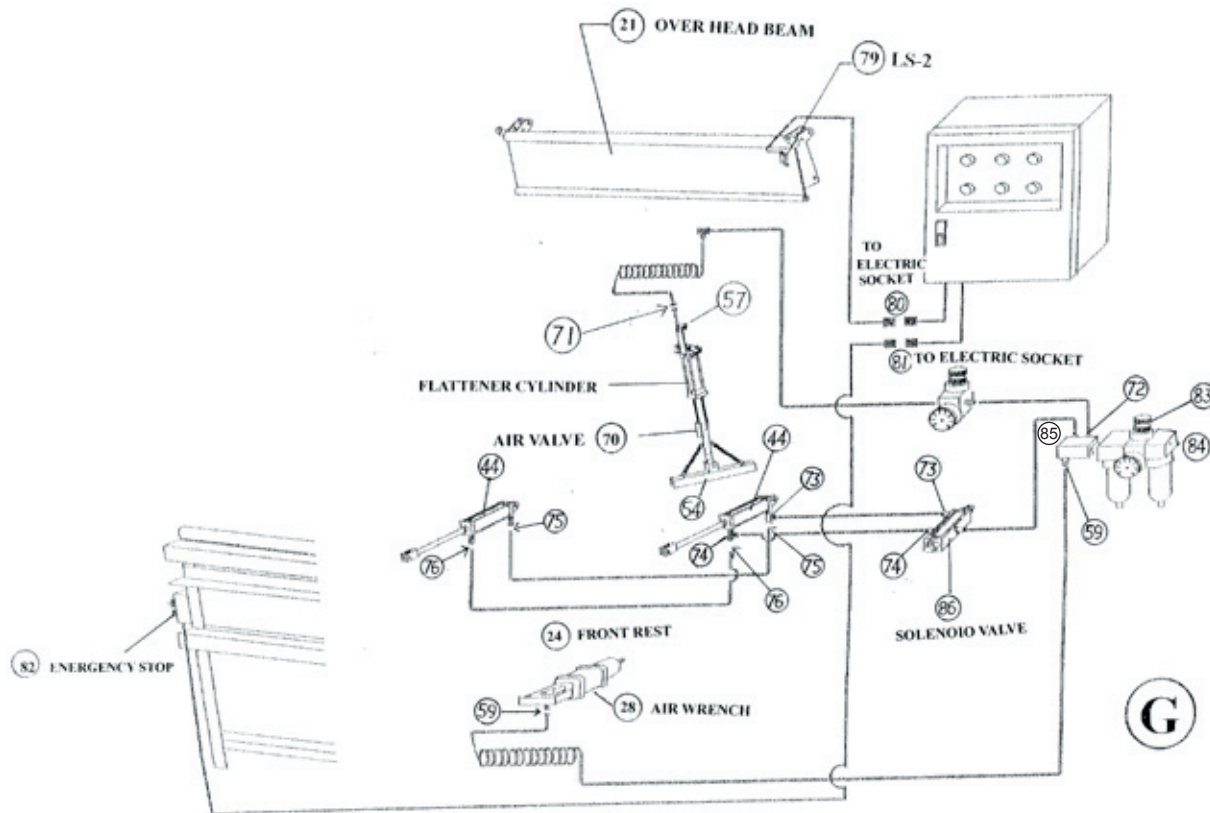
## Install the Front Rest

1. Attach the square ends (62) of the front rest positioners (65) to the brackets on the bottoms of the front legs.
2. Attach the front rest (24) to the rounded 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 on drawing A, page 12) on the brackets that are welded to the middles 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 Carriage

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

# Installation



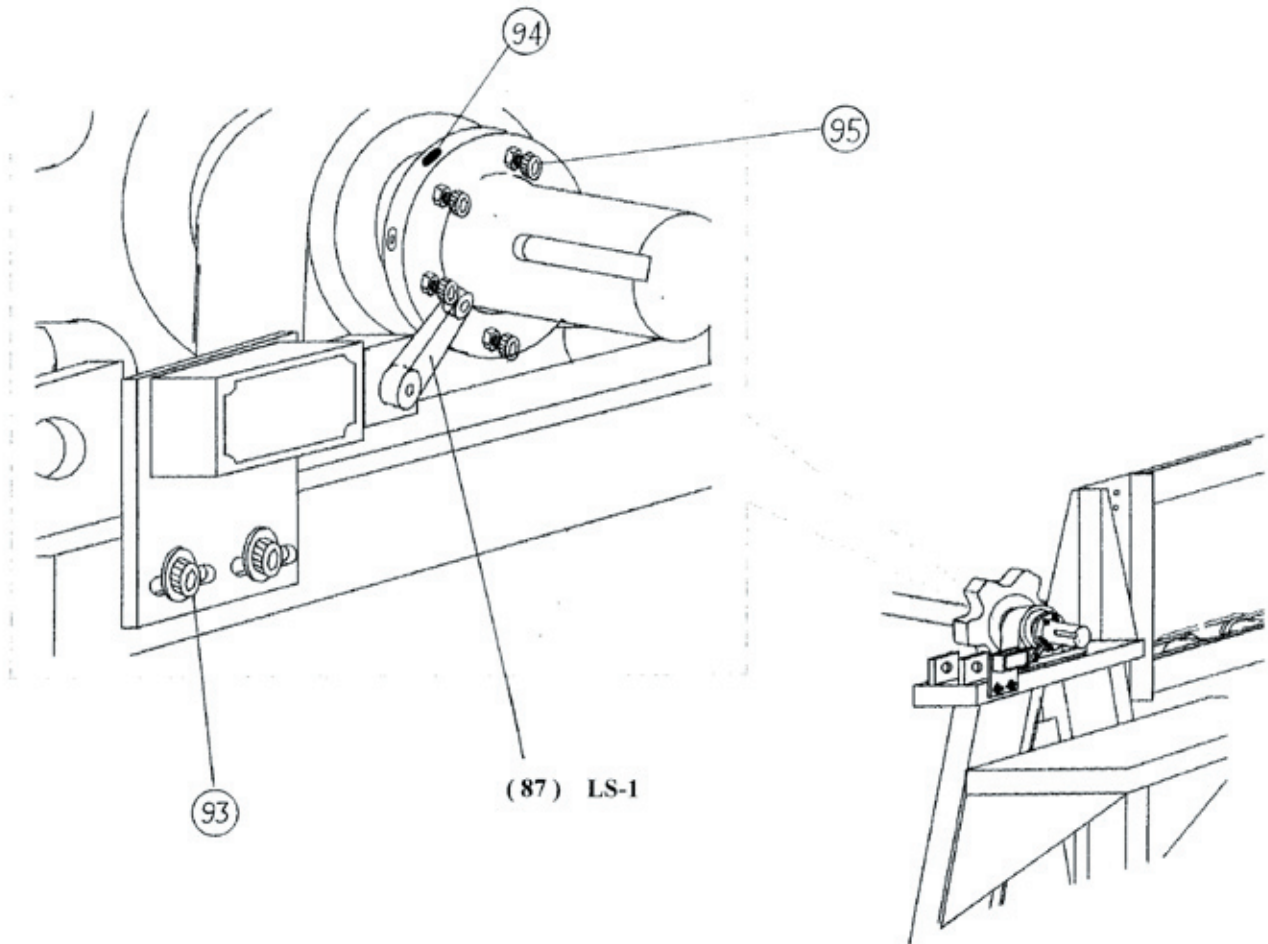
## Connect the Air Hoses

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 (71) on the panel flattener beam (21) to the panel flattener (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).
4. Connect the air hose (59) from the Clamp Tightener (28) to the air distribution block (85).

## Connect the Electrical Wires

1. Connect the wires from the panel flattener limit switch (79) and left-side emergency stop button box (82) to the terminal strip inside the electrical box, noting their numbered markings.
2. If not done previously, connect the machine to suitable 3-phase power.

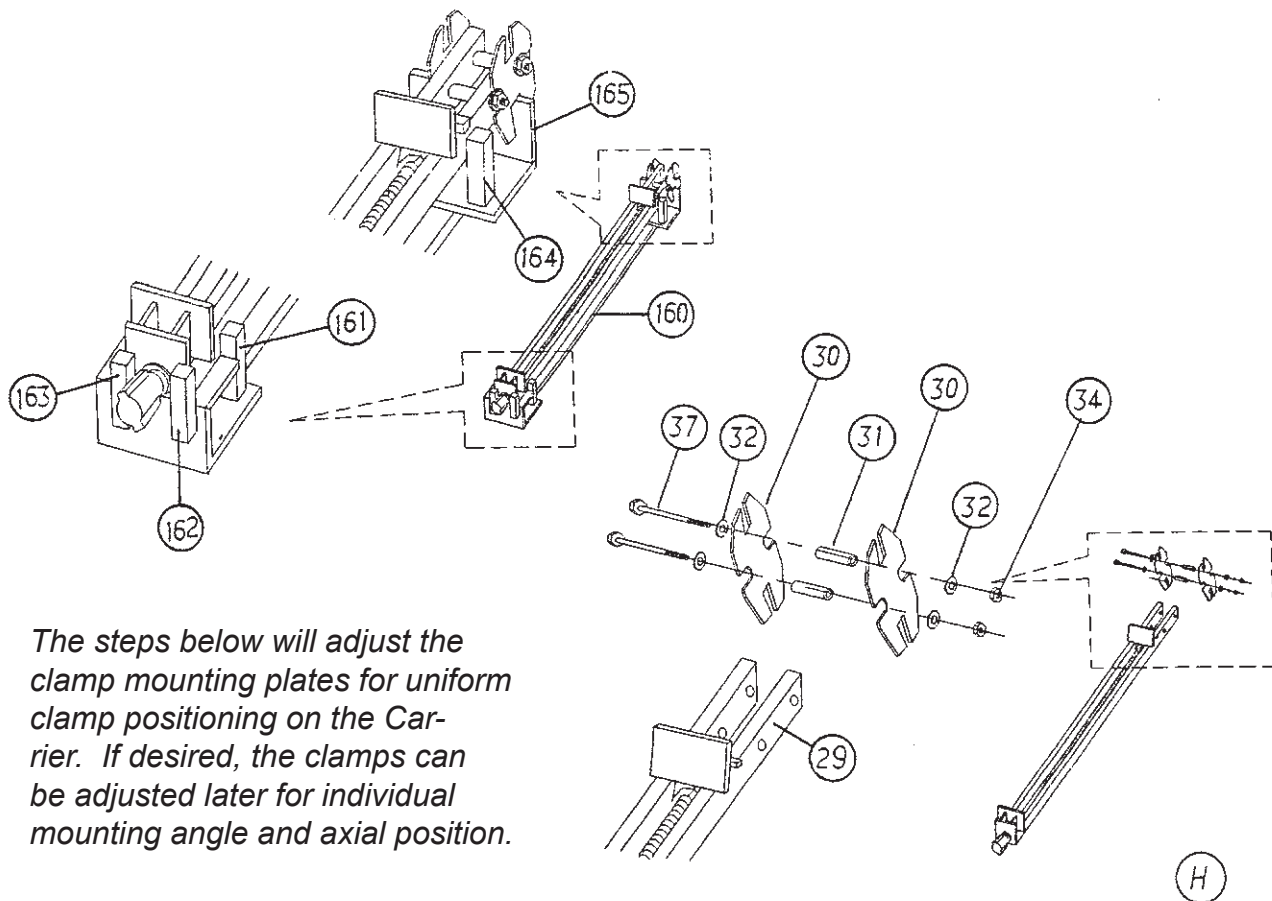
# Installation



## Install the Carrier Indexing Limit Switch

1. Make sure the Carrier Indexing Limit Switch LS-1 is installed correctly as per the drawing above.

# Installation



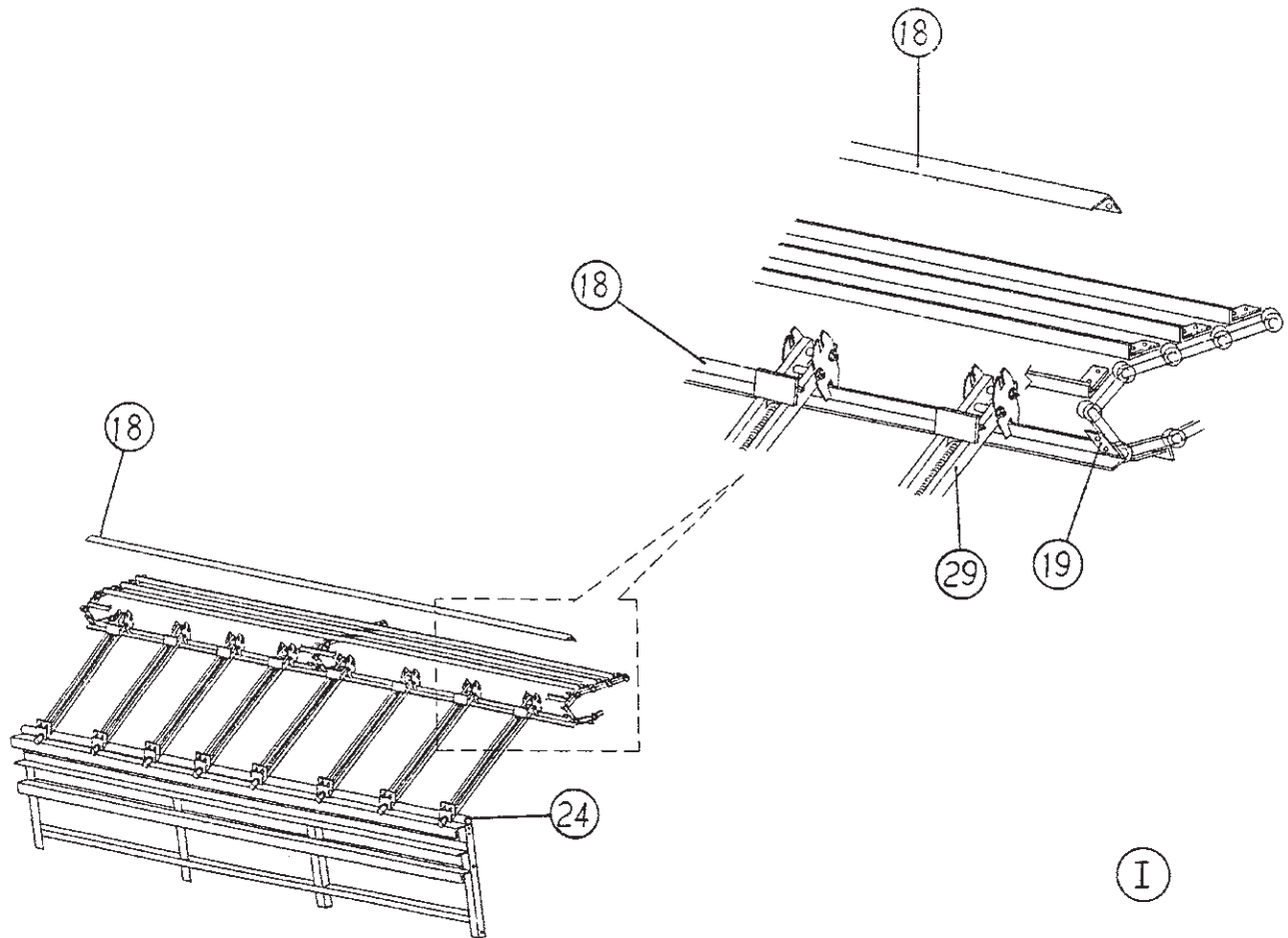
*The steps below will adjust the clamp mounting plates for uniform clamp positioning on the Carrier. If desired, the clamps can be adjusted later for individual mounting angle and axial position.*

## 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.

## Oil the Clamp Thrust Washers

1. Oil the thrust washers that are located between the clamp nuts and the clamp bodies, with 30-weight motor oil or equivalent.

## 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 22 for details.

## Start Up the Machine

1. Switch the machine on by switching the Power switch to "On".

## 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 it's 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 it's air valve toggle. The Flattener comes down and flattens the stock.
2. Set the Clamp Tightener air wrench for rotation in the "Tighten" direction. Bring the Clamp Tightener up into position and press the trigger to tighten the clamp. (Adjust the Clamp Tightener's tightening torque if needed.) Move on to the next clamp and tighten it.
3. De-energize the Panel Flattener by pulling up on it's toggle. 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.



# Operation



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

1. Turn the "Mode" switch to "MANUAL."
2. Make sure that the Panel Flattener is all the way to the right side, where it contacts the limit switch. This is a safety feature that only allows the Carrier to rotate when the Panel Flattener is 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 Carrier automatically stops rotating, with the clamps touching down lightly on the front rest. Release the button. (The clamps should touch down lightly on the front rest. If the Carrier rotates too little, 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. Adjust the Carrier rotation limit switch [LS1, see page 19] if needed.)



# Operation

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## **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. Set the Clamp Tightener air wrench for rotation in the "Loosen" direction. 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 the trigger 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 should be 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 22. 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.
2. Shut down the machine by switching 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 oil.

## Monthly

1. Grease the main Carrier chain rollers.

## Yearly

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

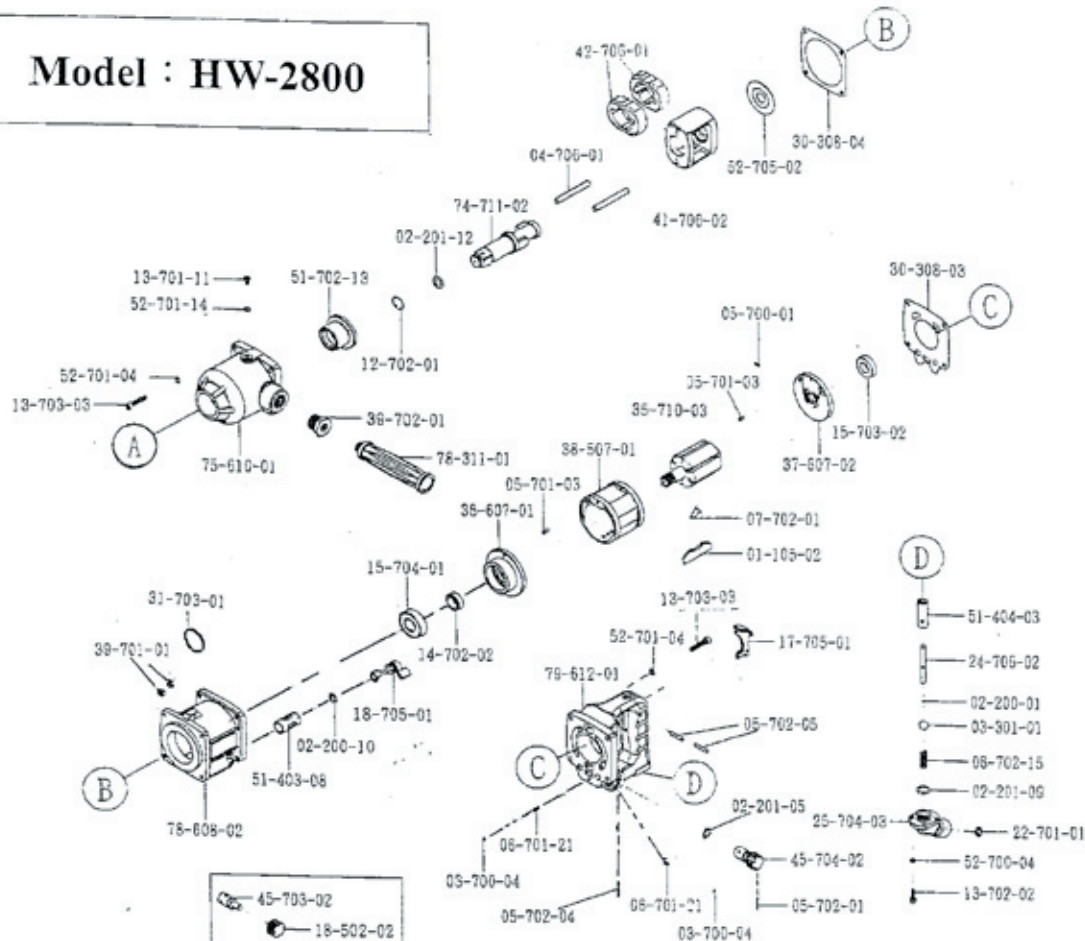
## As Needed

1. Check for proper adjustment of the Carrier Rotation limit switch. Adjust if needed (see page 19).
2. Replace the wear parts in the Clamp Tightener air wrench motor: #74-711-02 and #42-706-01:

# Maintenance

## (3/4") Air Heavy Duty Impact Wrench

Model : HW-2800



Part No.	Description	Q'ty	Part No.	Description	Q'ty	Part No.	Description	Q'ty
01-105-02	ROTOR BLADE	8	13-701-11	SCREW	1	39-701-01	BOLT	8
02-200-01	O-RING (P2x1.5)	1	13-702-02	SCREW	4	39-702-01	BOLT	1
02-200-10	O-RING (P9.2x2.5)	1	15-703-08	SCREW	8	41-700-02	HAMMER CASE	1
02-201-05	O-RING (P11x2.4)	1	14-702-02	OIL SEAL	1	42-700-01	RING	2
02-201-09	O-RING (P14x2.4)	1	15-703-02	BALL BEARING (6002)	1	45-704-02	SPEED SWITCH	1
02-201-12	O-RING (P12x3)	1	15-704-01	BALL BEARING (6205)	1	51-403-06	BUSHING	1
03-301-01	PLASTIC BALL	1	17-705-01	SWITCH LEVER	1	51-404-03	BUSHING	1
03-700-04	STEEL BALL (φ4mm)	2	18-705-01	REVERSE VALVE	1	51-702-13	PUSHING	1
04-700-01	PIN (φ7.6x52.5)	1	22-701-01	FILTER	1	52-700-04	WASHER	4
05-700-01	PIN (φ3x8)	2	24-700-02	VALVE ROD	1	52-701-04	WASHER	8
05-701-03	PIN (φ4x10)	2	25-704-03	AIR INLET	1	52-701-14	WASHER	1
05-702-01	PIN (φ2x20)	1	30-308-03	PACKING	1	52-705-02	WASHER	1
05-702-04	PIN (φ3x26)	1	30-308-04	PACKING	1	74-711-02	ANVIL	1
05-702-05	PIN (φ4x26)	2	31-703-01	HOOK	1	75-610-01	FRONT CAP	1
06-701-21	SPRING	2	35-710-03	ROTOR	1	78-311-01	HANDLE	1
06-702-15	SPRING	1	36-607-01	FRONT PLATE	1	78-608-02	HANDLE	1
07-702-01	SPRING	8	37-607-02	REAR PLATE	1	79-612-01	HANDLE	1
12-702-01	RETAINING RING	1	38-507-01	CYLINDER	1			

Model	Capacity (mm)	Free Speed (R.P.M)	Max Torque (N.M)	Over All Length (mm)	Weight (kg)	Air Inlet Size	Air Pressure (P.S.I)
	37	3500	1300	250	5.2	3/8"	120

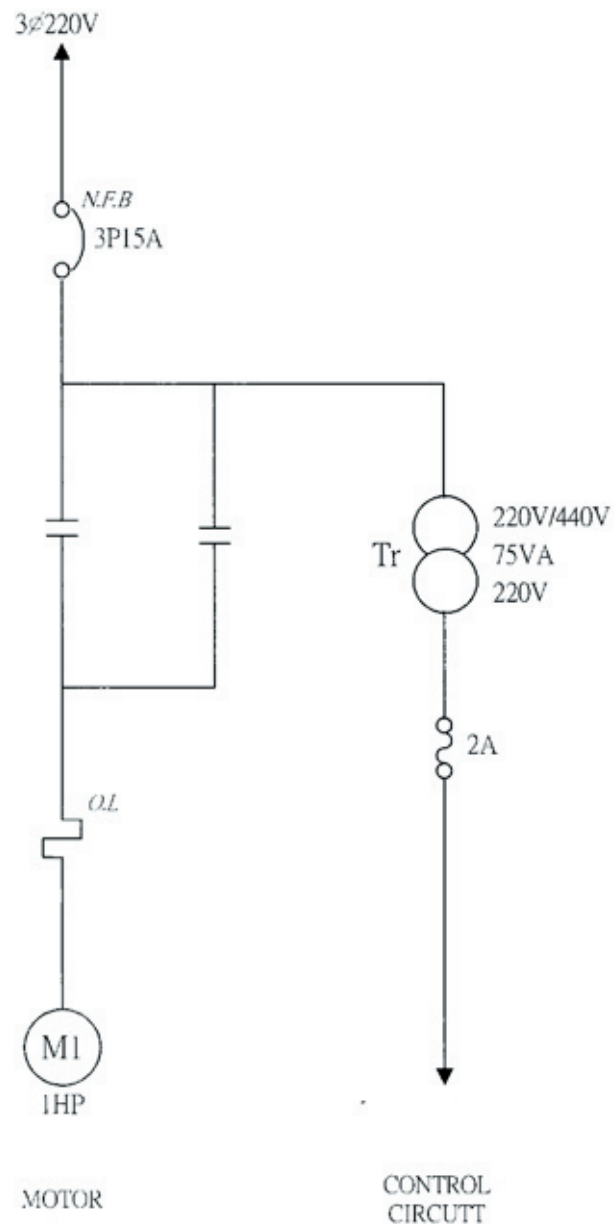
# Electrical Diagrams

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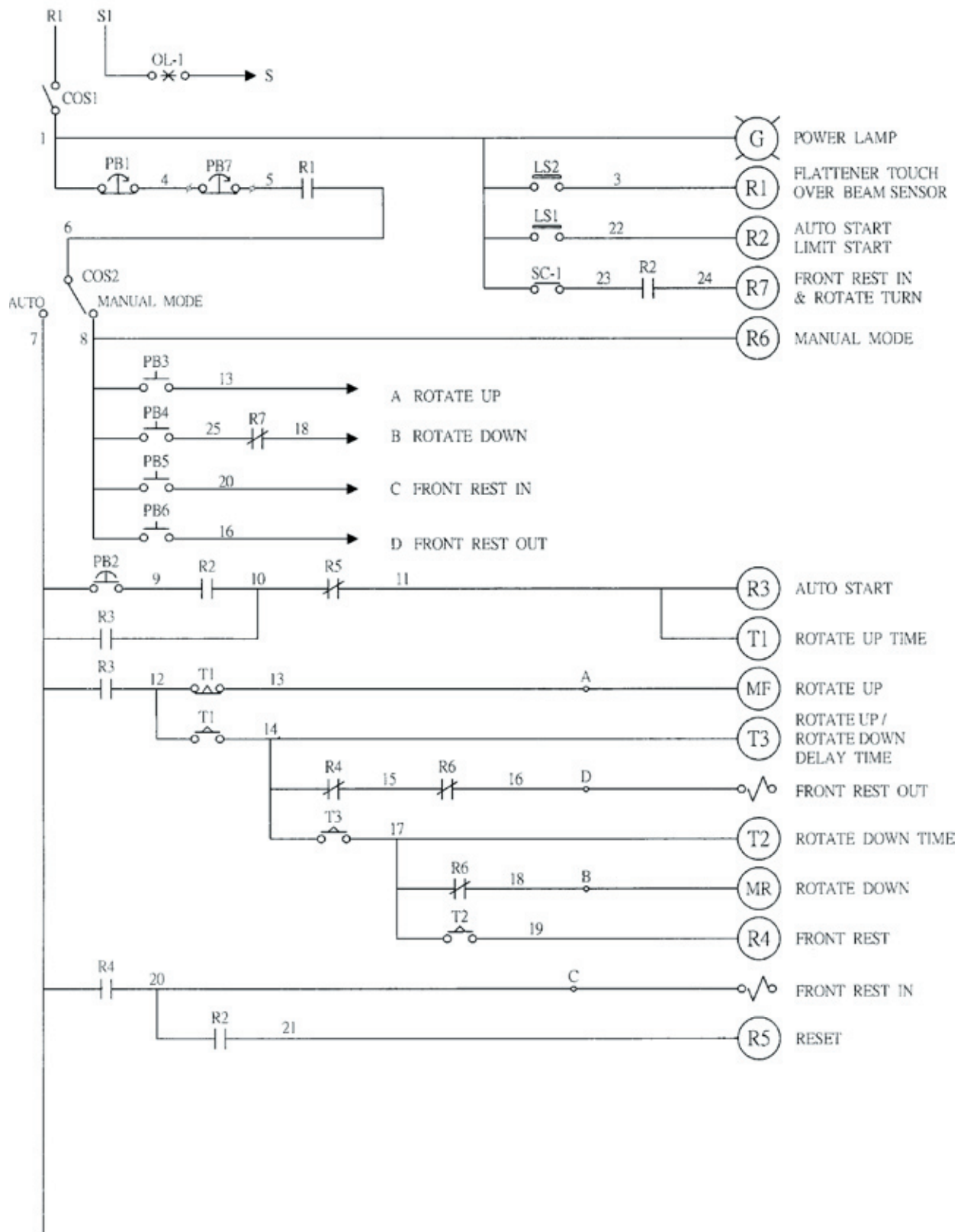
## Legend for Electrical Diagrams

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

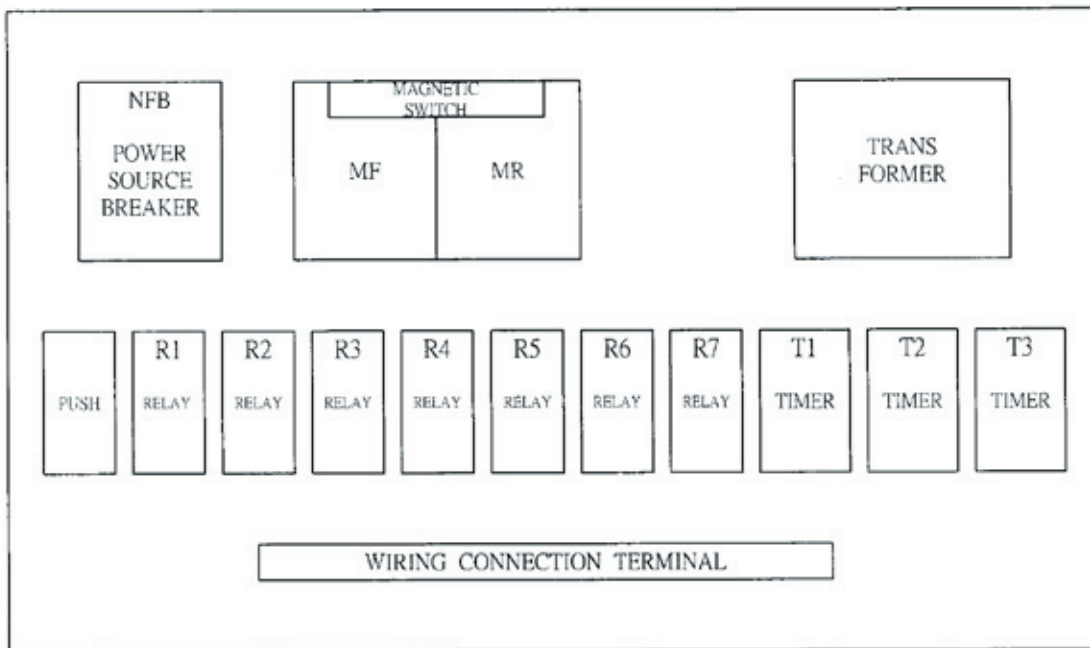
# Electrical Diagrams



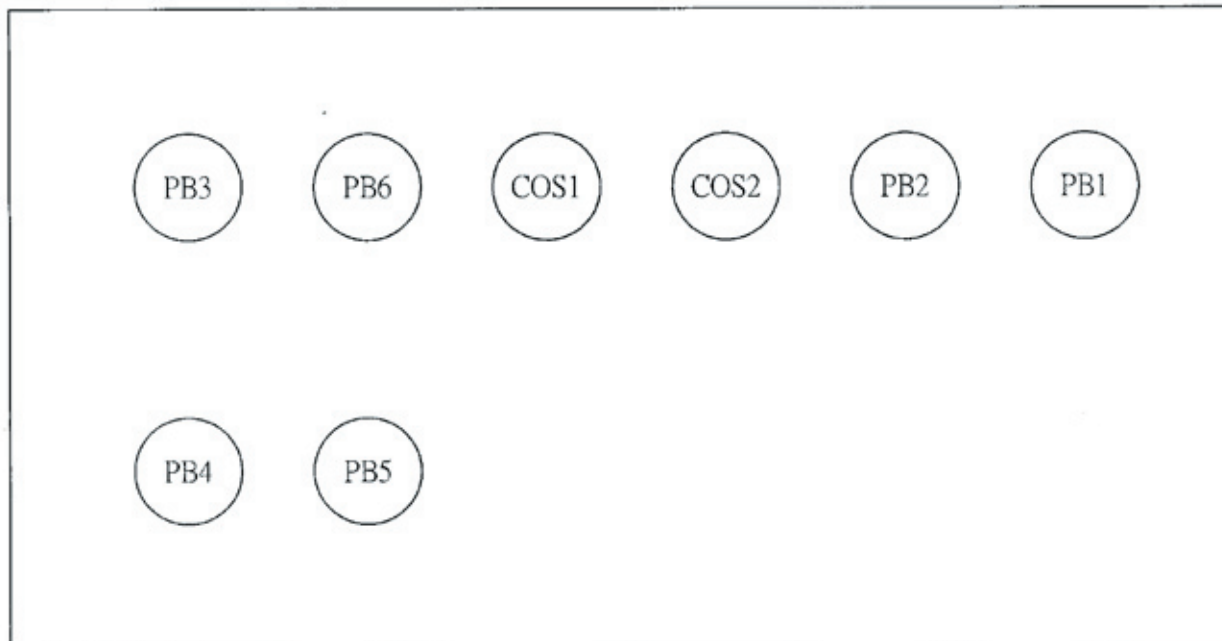
# Electrical Diagrams



# Electrical Diagrams



SWITCH BOARD ELECTRIC COMPONENTS LAY OUT



SWITCH BOARD PUSH BOTTON LAY OUT



# Electrical Diagrams

[illegible]



