

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### HEIGHT CHANGE REQUIREMENTS & MISC. ADJUSTMENTS

#### Stops and spacer requirements:

If the replacement mold is of a different height, spacers and stops on the machine must be exchanged and other machine adjustments must be performed as defined in the following procedures.



If the change requires removal of stripper beam stops and lowering of the stripper beam, it may be necessary to lower the pallet feeder assembly first to prevent damage to the front hook assembly located on the front of the pallet feeder. Single push pallet feeders are not affected when lowering the stripper beam. Refer to pallet table height adjustment, pallet feeder height adjustment. The stripper rotary valve must also be adjusted to the height selected. (See applicable section.)

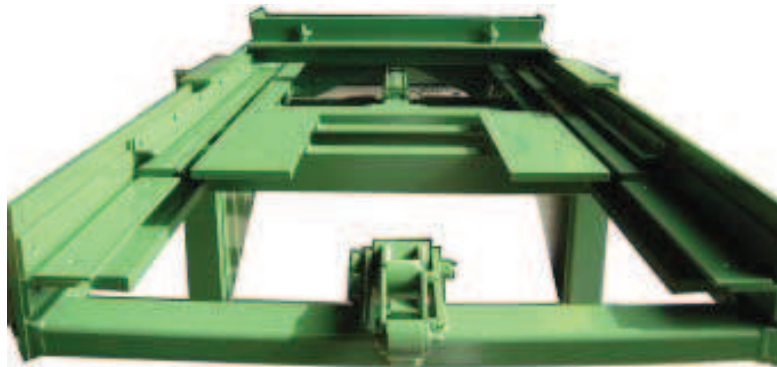


Figure 22, New Style Pallet Feeder (Single Push Pallet Feeder)

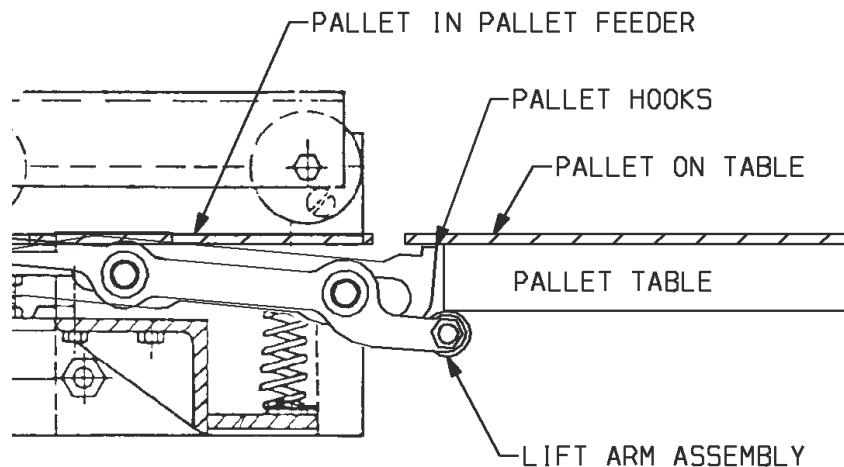


Figure 23, Old Style Pallet Feeder

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### Block Machine Spacer Determination:

For ease of use, Columbia supplies a list of spacer setups for common mold heights. However, the need may arise to determine spacer settings for a unique mold. Machines spacer settings may be determined using the following directions. It is assumed that the correct mold assembly, head assembly, and head spacer are already installed.



Be aware not to lower the pallet table below the level of the pallet feeder while determining spacer settings or damage may result to some machine parts at the front hook assembly.

### Compression Beam Spacers:

- Lower compression beam to the down positions.
  - The bottom of the mold shoes should protrude through the bottom of the mold by half their thickness. If the shoes protrude beyond half, you will need to add enough spacers to make up the difference. If the shoes protrude less than half, you will need to remove enough spacers to make up the difference.
- Figure 21

### Pallet Table Spacers:

- Install the lowest pallet table spacer setting for your machine (1/4" for 1600, 3/4" for 16).
- Raise the stripper beam to the up position.
- Measure the distance from the top of the pallet table (with a pallet on it) to the bottom of the mold. Round up to the nearest 1/4". Add this amount of spacers to the pallet table spacers and adjust pallet table to correct setting. Figure 24

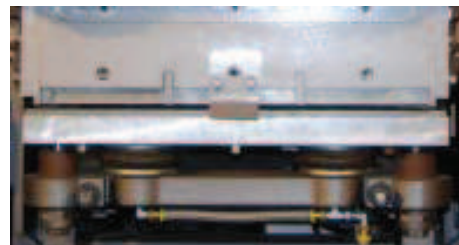


Figure 24

### Stripper Beam Spacers:

- Raise the compression beam to the up position.
- Lower the stripper beam to the down position.



Be aware not to lower the pallet table below the level of the pallet feeder while determining spacer settings or damage may result to some machine parts at the front hook assembly.

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- Measure the distance from the top of the pallet table (with a pallet on it) to the bottom of the mold. This distance needs to be equal to the product height plus at least  $\frac{1}{2}$ ". Add or subtract stripper beam spacers to make up the difference. Figure 25
- Make sure not to bottom out the stripper cylinders.

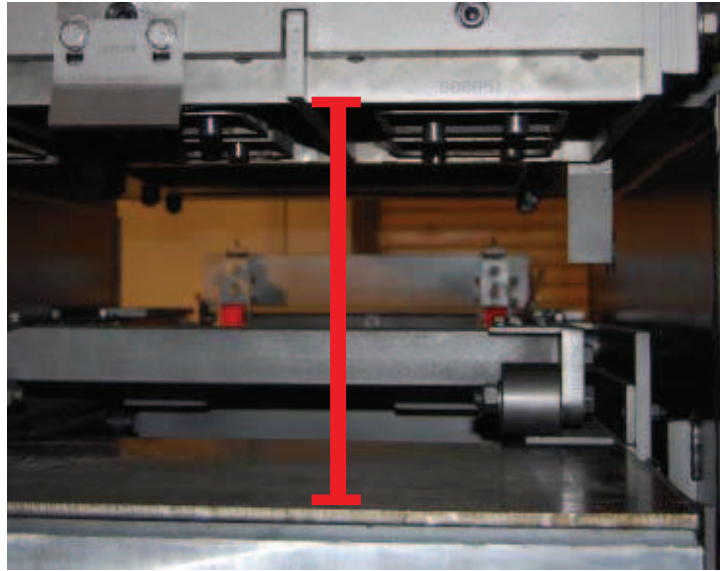


Figure 25

### Stop Bolts:

- Raise the stripper beam to the up position.
- Lower the compression beam until the stop bolts make contact.
- The distance between the top of the pallet table (with a pallet on it) to the bottom of the mold shoes will be the product height. Create Product, measure the height, then adjust as necessary.

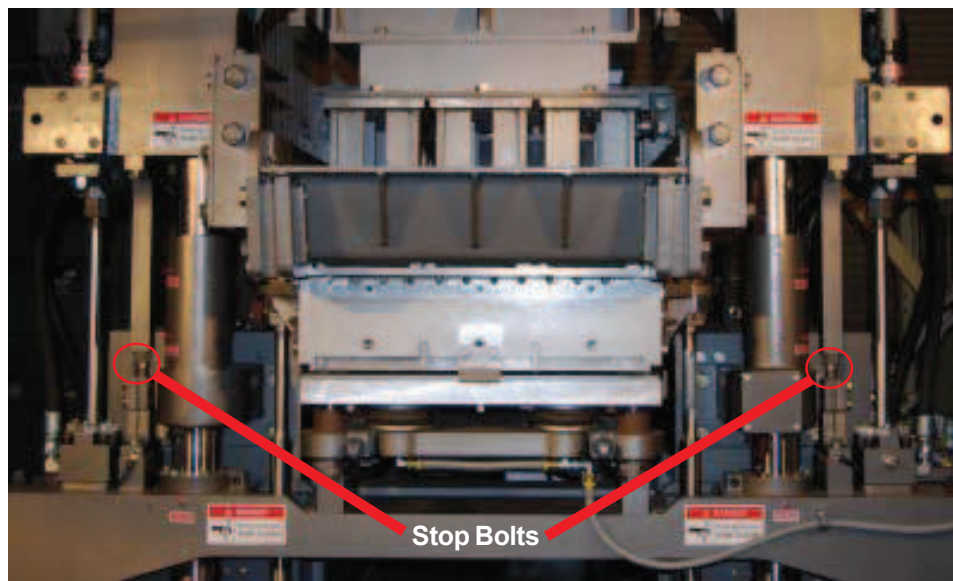


Figure 26, Stop Bolt Location



### NOTE

Height stops must be adjusted to the same height on both sides. They are not to be used to adjust for filling problems.

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## MODEL 16/1600 BLOCK MACHINE

### Initial Set-up of Stripper Stops

Lower height stops are set at the factory, but if replacement is necessary, they must be set so that when the main beam is in its lowest position it will rest on the stops and not bottom out the stripper cylinders. Adjustment is done by removing all beam stop spacers. Loosen jam nut on beam stop stud. Lower stud about two (2) turns, then lower beam to lowest point. Screw studs up till they meet bottom of beam. Raise beam, turn studs up one (1) full turn (about 1/16") and retighten lock nut. This will stop cylinders from bottoming out during lowest position of stripper beam.



Figure 27, Compression Beam Stops

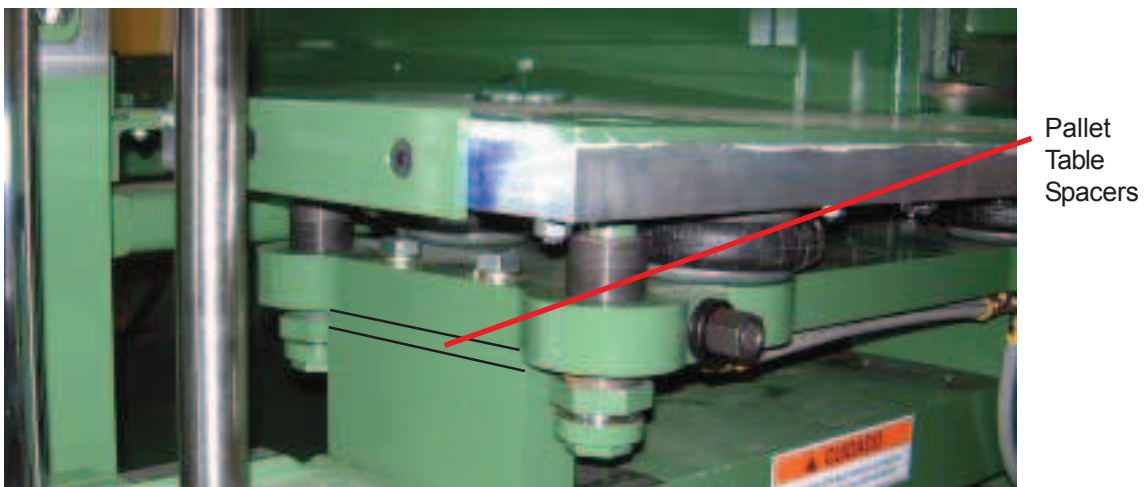


Figure 28, Pallet Table Spacers

## Columbia Concrete Products

### MODEL 16/1600 BLOCK MACHINE

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Figure 29

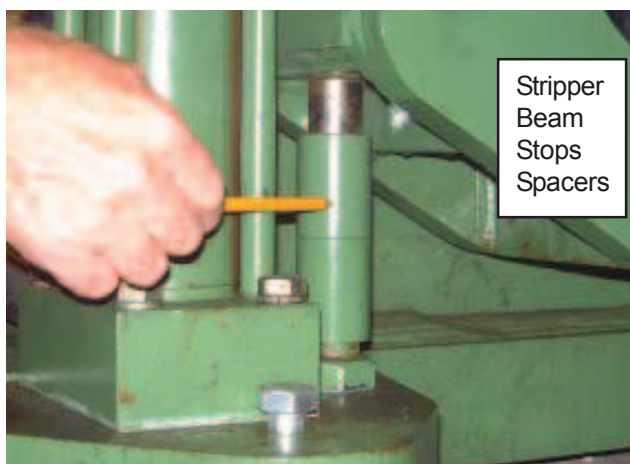


Figure 30

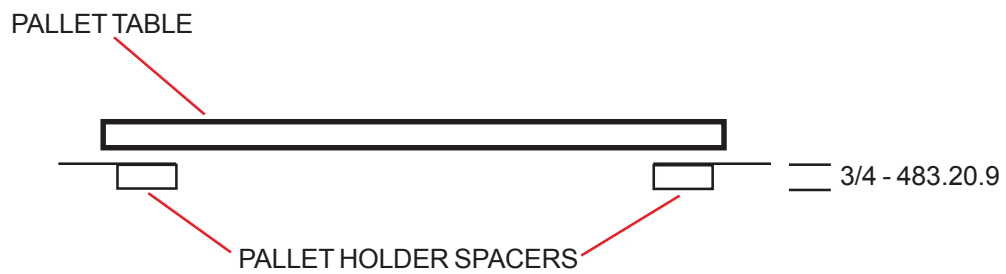
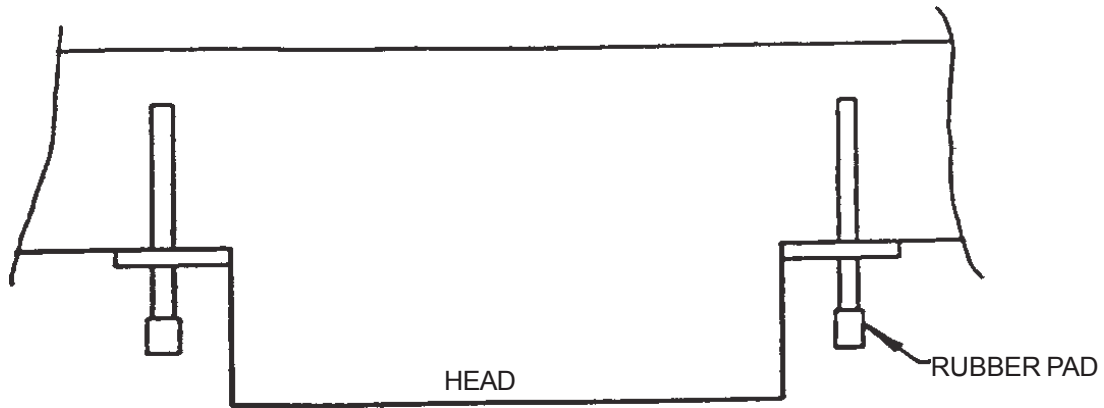
The table on page 55 defines spacer and stop requirements in relation to block height. Figures 31 through 42 show installation requirements. The various height dimensions given may be made up by adding or subtracting stops and spacers as required. Various retaining hardware lengths are provided for installation of different size pallet table spacers.

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 16 Block Machine



STRIPPER BEAM STOP FOR 12"  
BLOCKS

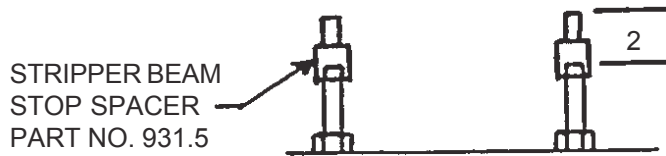
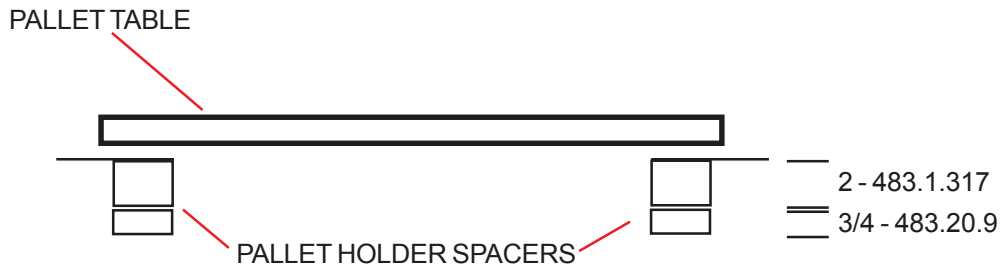
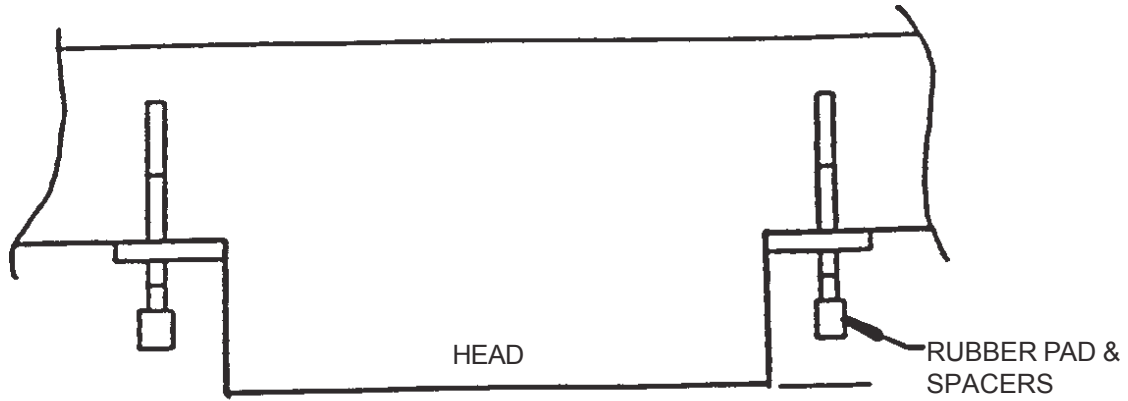
Figure 31, Height Change Spacer/Stop Installation for 16 Block Machines

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 16 Block Machine



FOR 10" BLOCKS

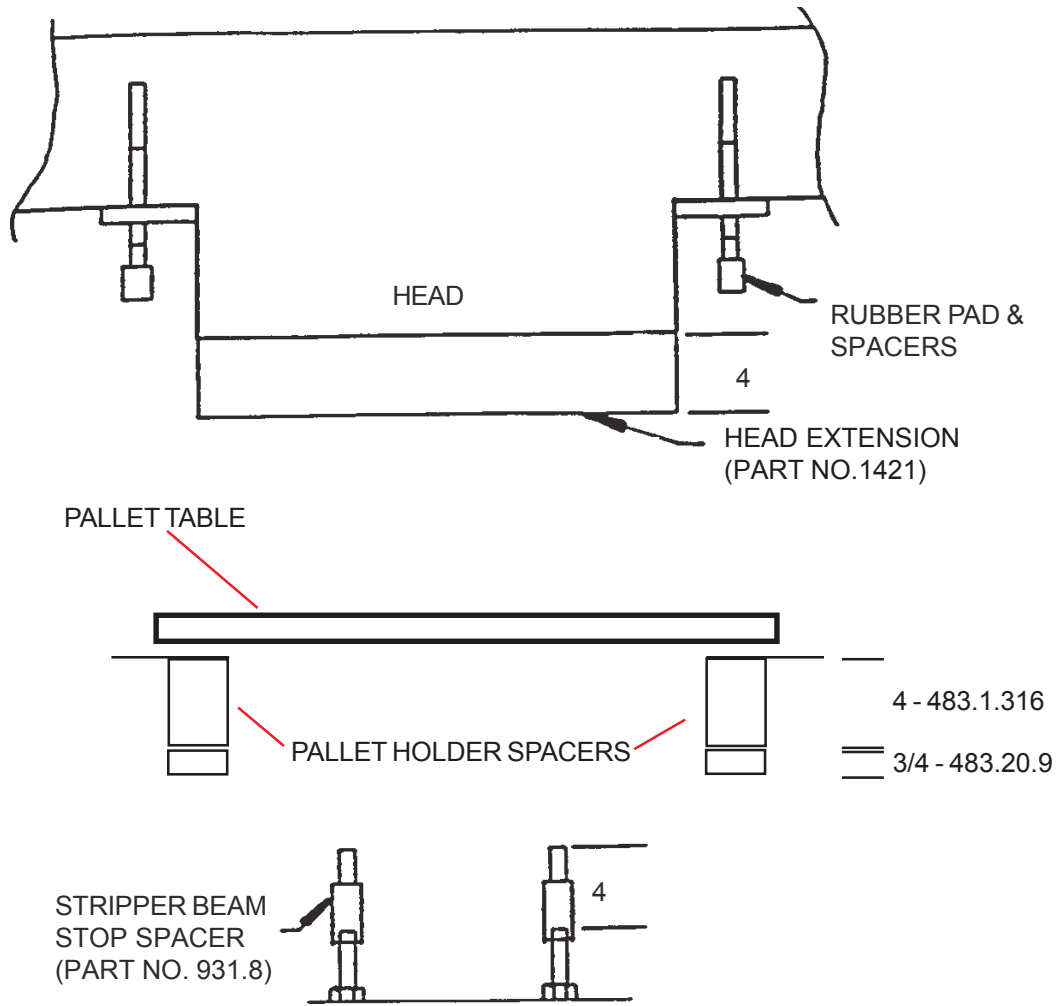
Figure 32, Height Change Spacer/Stop Installation for 16 Block Machines

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 16 Block Machine



FOR 8" BLOCKS

Figure 33, Height Change Spacer/Stop Installation for 16 Block Machines



# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 16 Block Machine

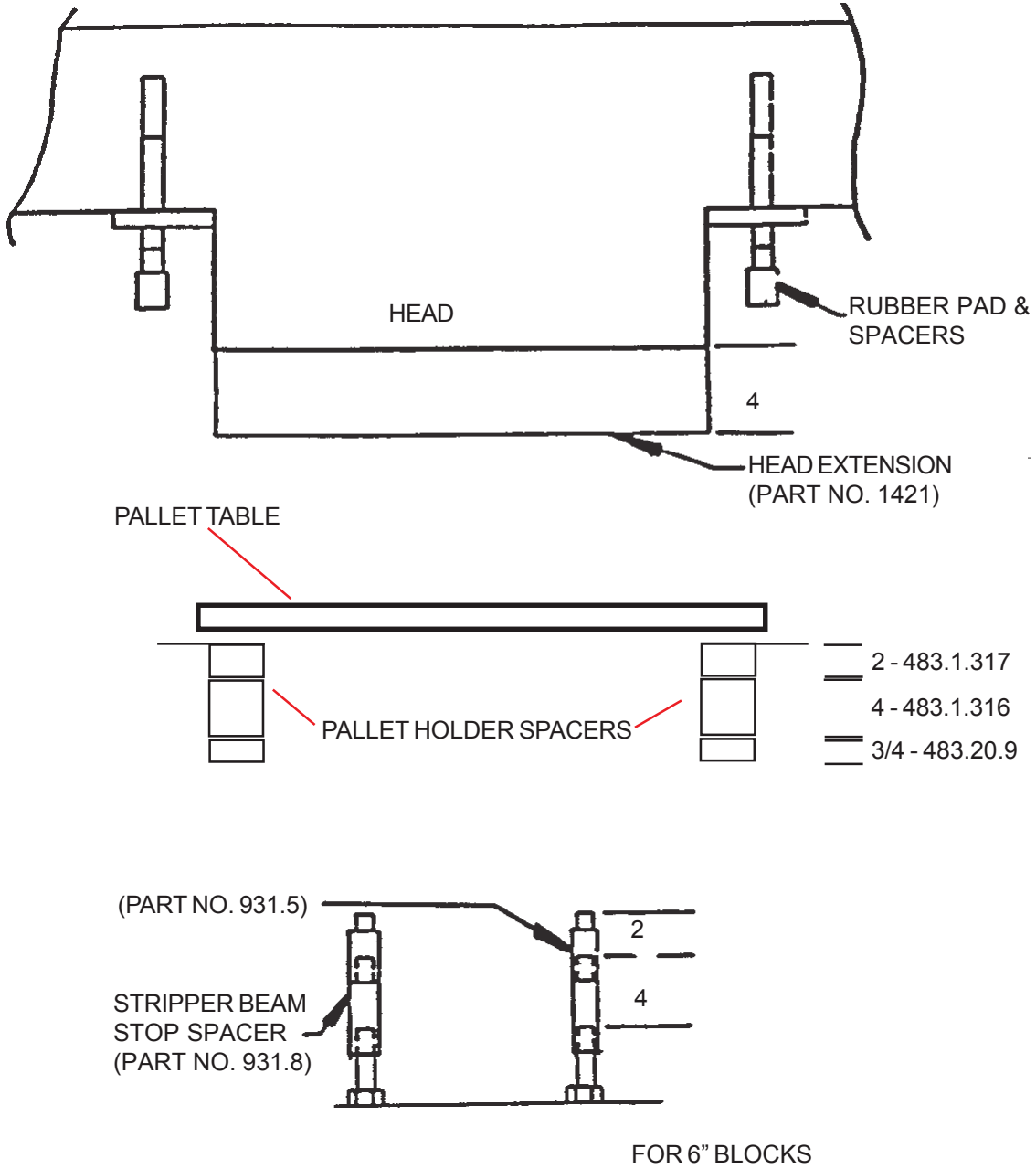


Figure 34, Height Change Spacer/Stop Installation for 16 Block Machine

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

For 16 Block Machine

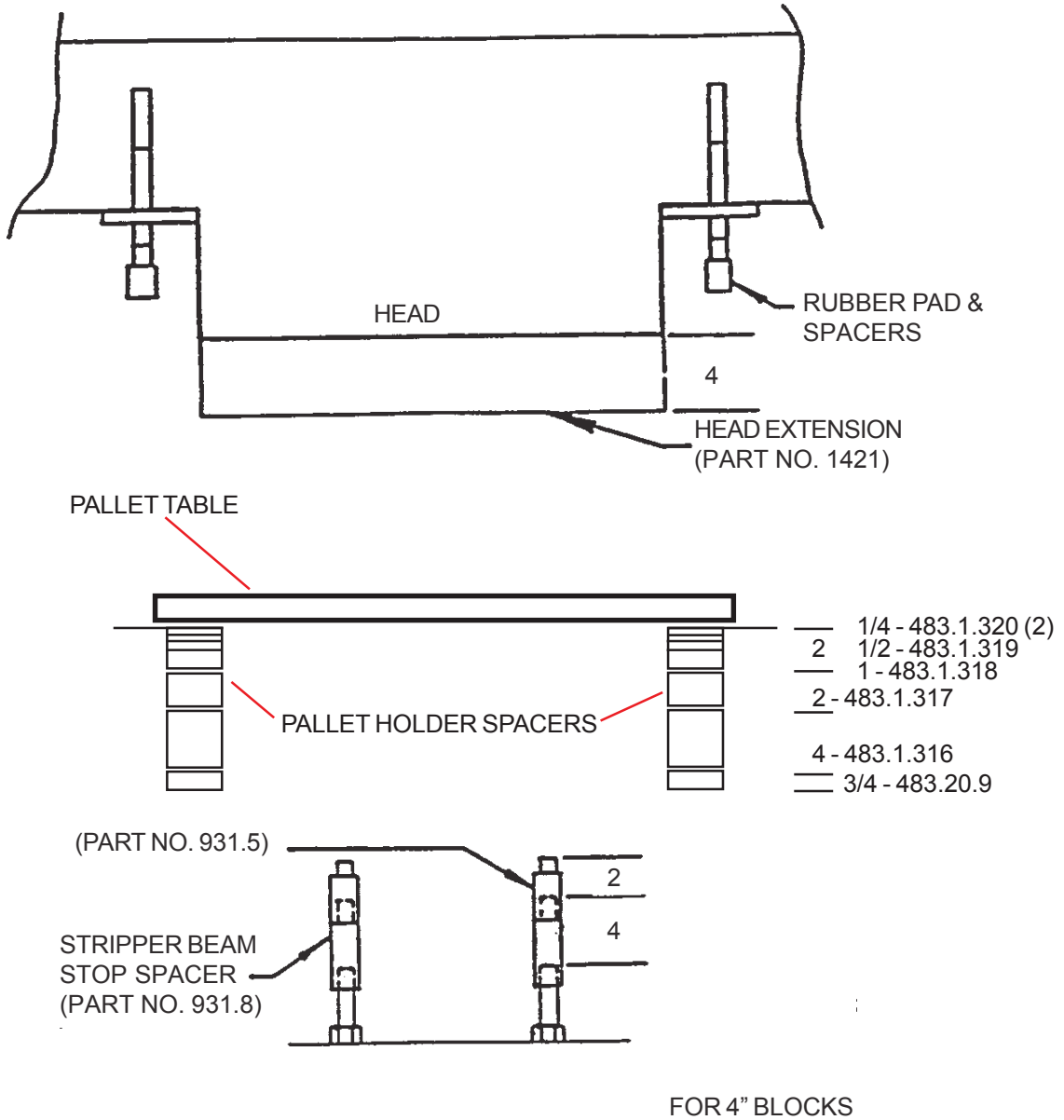


Figure 35, Height Change Spacer/Stop Installation for 16 Block Machine

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

For 16 Block Machine

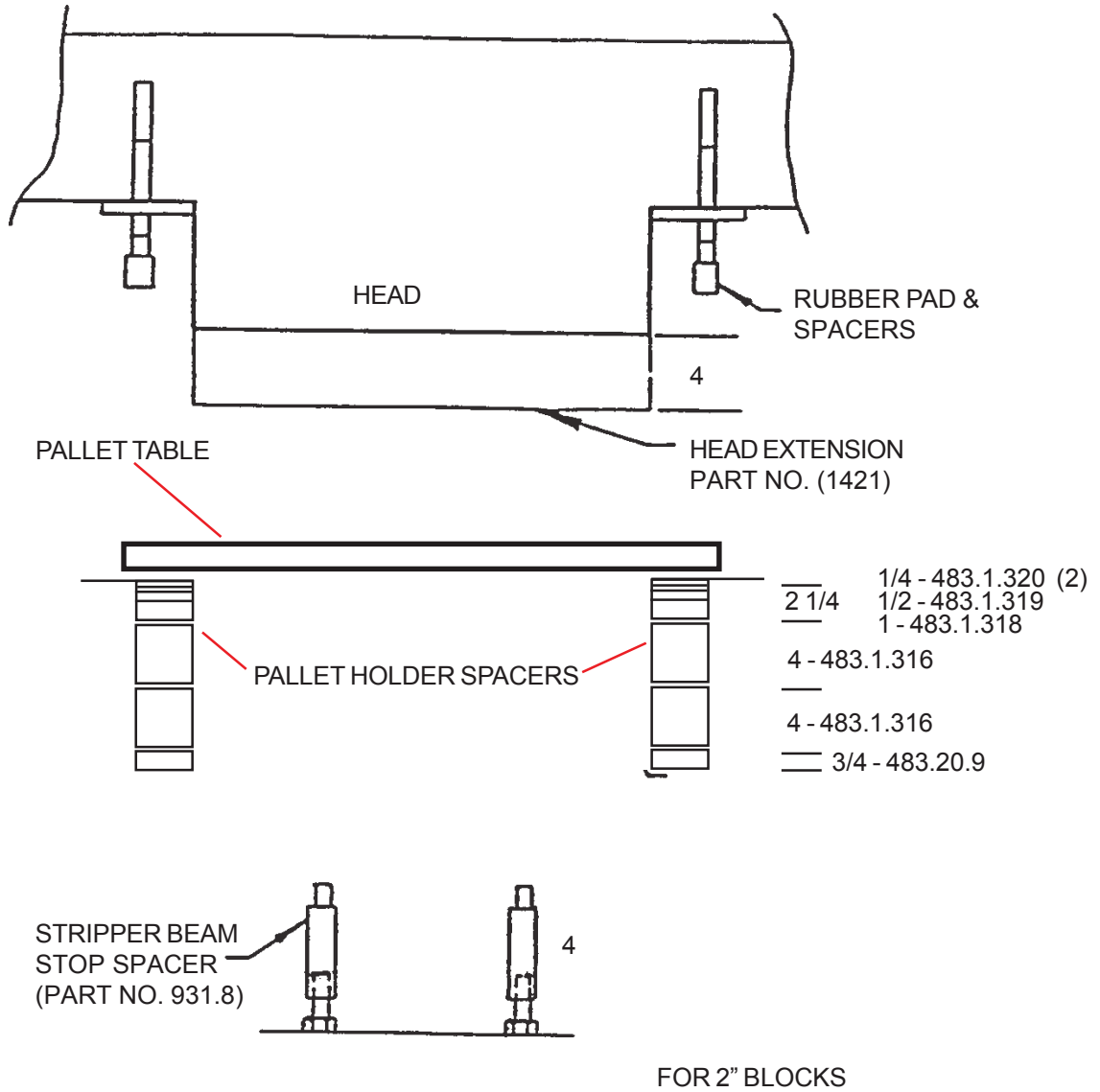


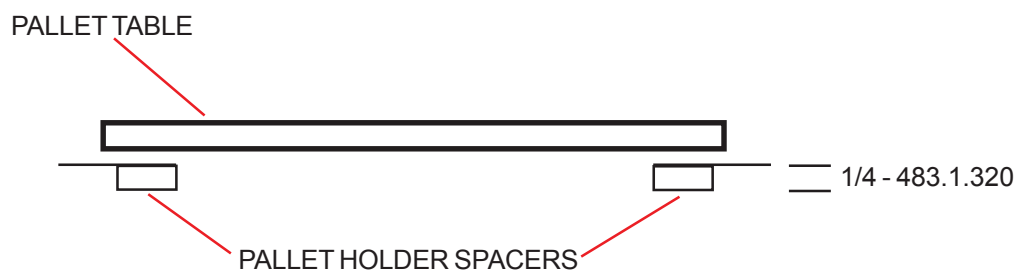
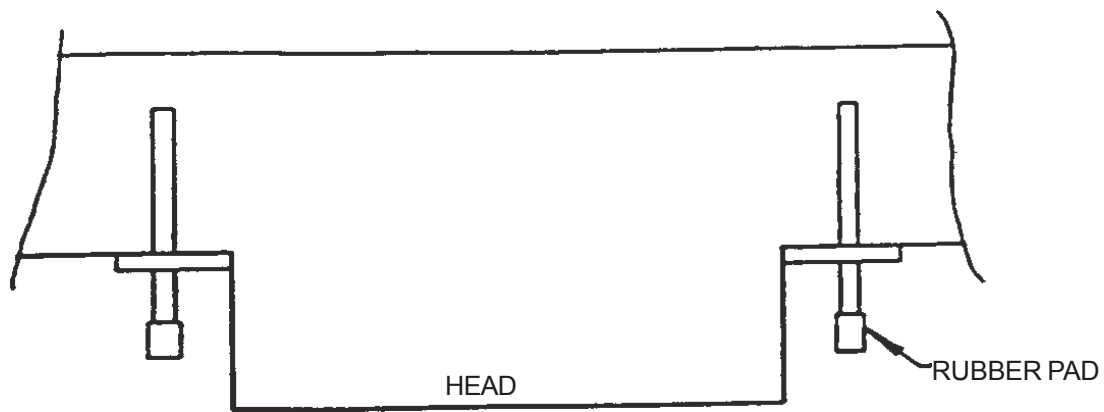
Figure 36, Height Change Spacer/Stop Installation for 16 Block Machines

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 1600 Block Machine



STRIPPER BEAM STOP FOR 12"  
BLOCKS

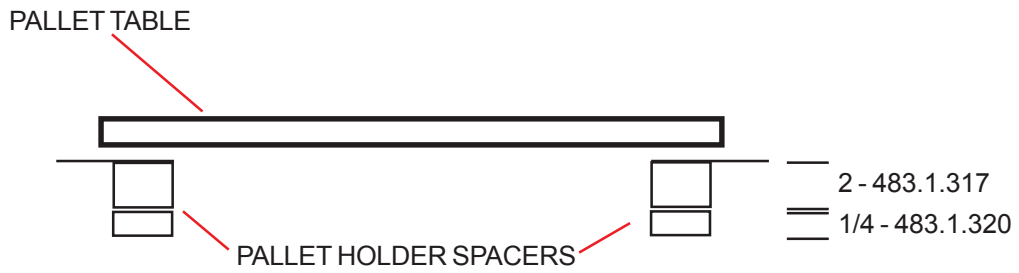
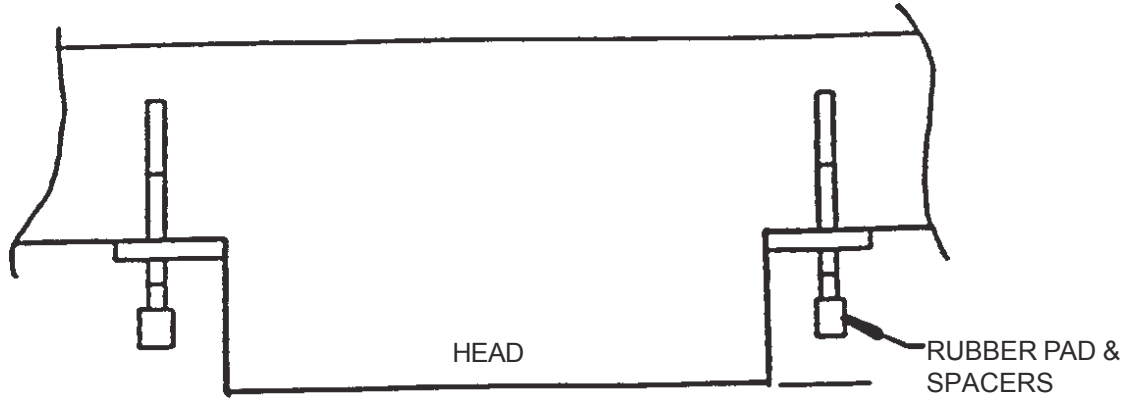
Figure 37, Height Change Spacer/Stop Installation for 1600 Block Machines

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 1600 Block Machine



FOR 10" BLOCKS

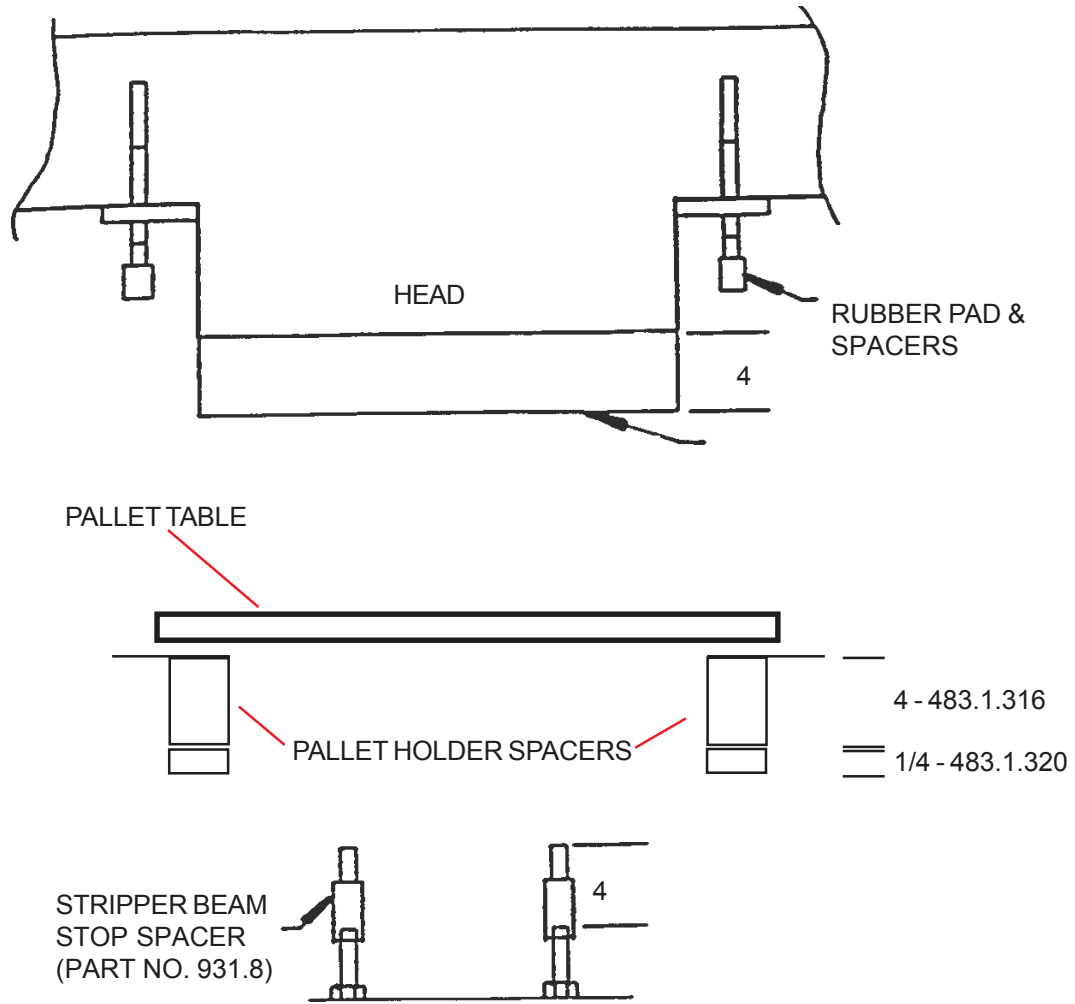
Figure 38, Height Change Spacer/Stop Installation for 1600 Block Machines

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 1600 Block Machine



FOR 8" BLOCKS

Figure 39, Height Change Spacer/Stop Installation for 1600 Block Machines

# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 1600 Block Machine

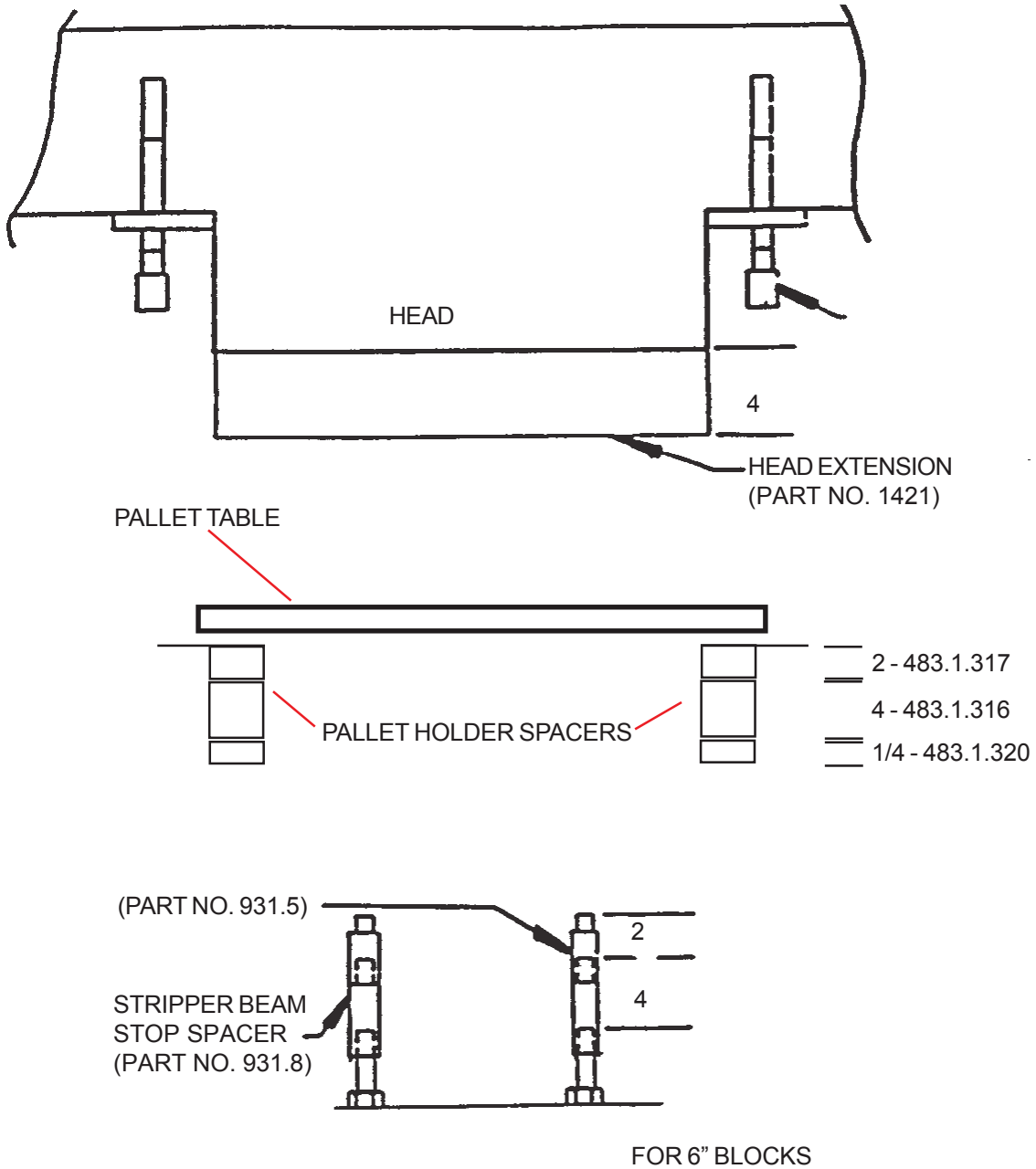


Figure 40, Height Change Spacer/Stop Installation for 1600 Block Machine

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

For 1600 Block Machine

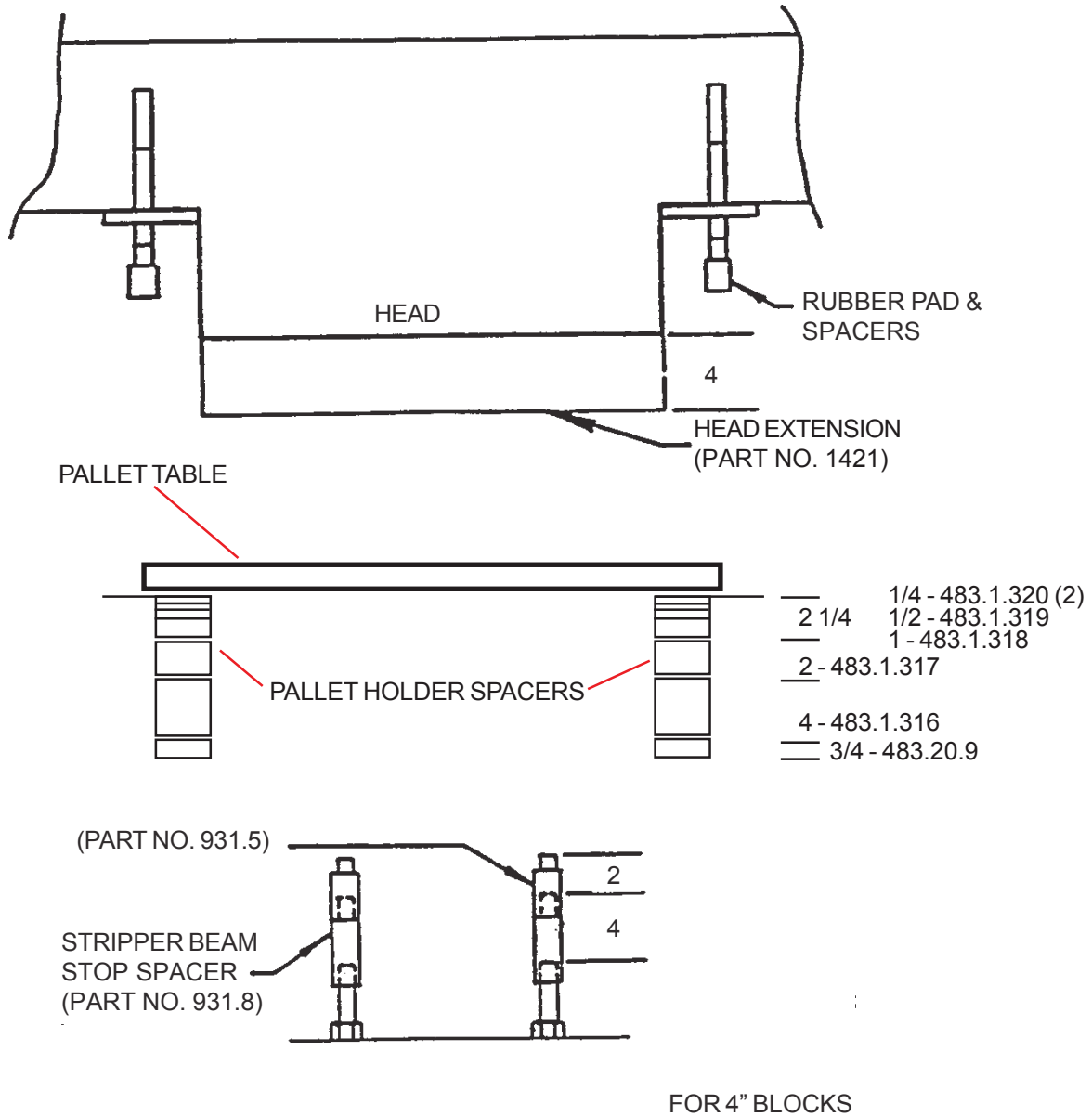


Figure 41, Height Change Spacer/Stop Installation for 1600 Block Machine

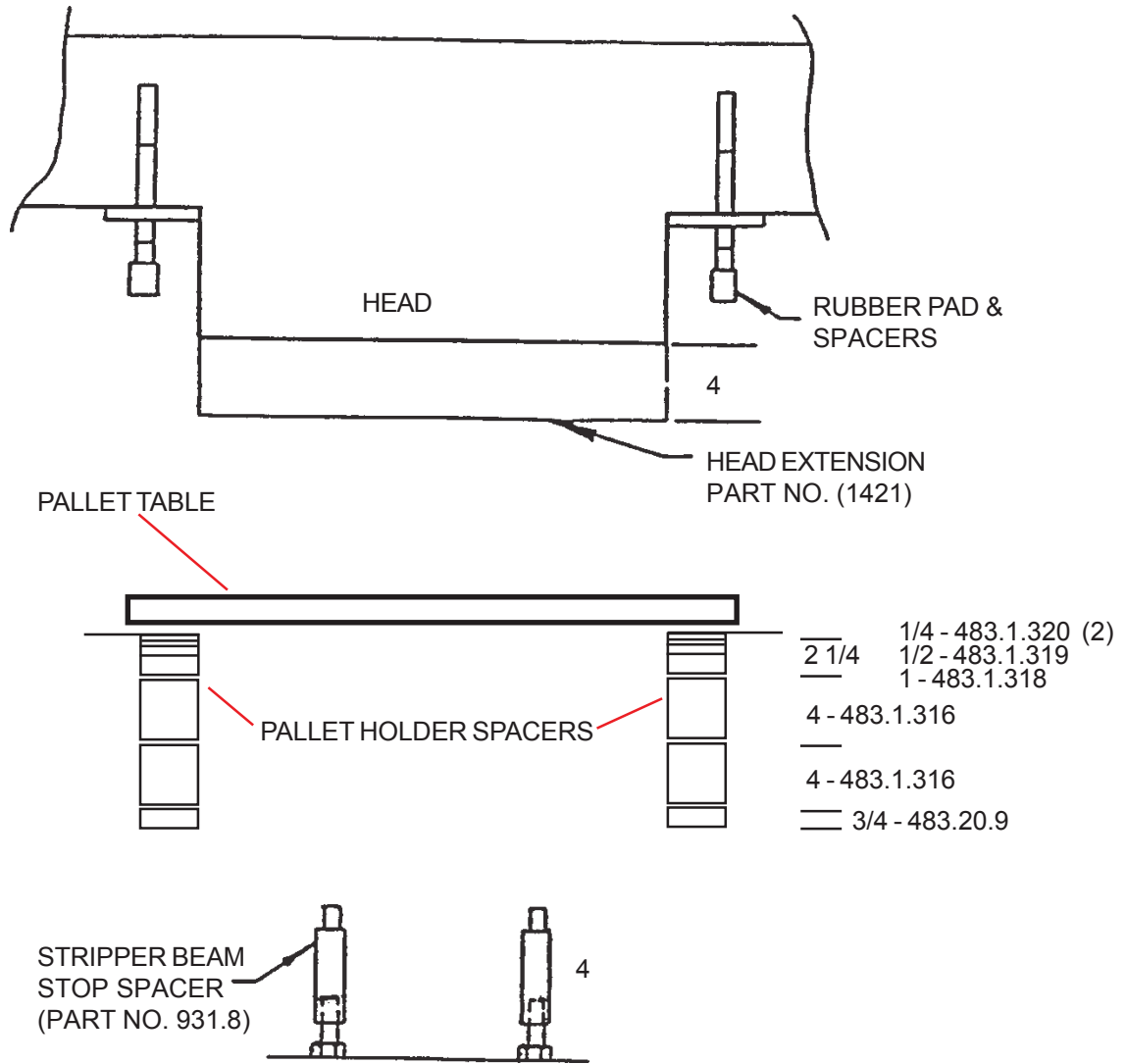


# Columbia Concrete Products

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## MODEL 16/1600 BLOCK MACHINE

For 1600 Block Machine



FOR 2" BLOCKS

Figure 42, Height Change Spacer/Stop Installation for 1600 Block Machines

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### MODEL 16 SPACER/STOP CONFIGURATION (Total In.)

| <u>Block Height (in.)</u> | <u>Lower Height Stop</u> | <u>Compression Beam</u> | <u>Pallet Holder</u> | <u>Head Spacer</u> | <u>Air Bag Height</u> |
|---------------------------|--------------------------|-------------------------|----------------------|--------------------|-----------------------|
| 2                         | 4                        | 10                      | 10-3/4               | 4                  | 2-3/16                |
| 4                         | 6                        | 8                       | 8-3/4                | 4                  | 2-3/16                |
| 6                         | 6                        | 6                       | 6-3/4                | 4                  | 2-3/16                |
| 8                         | 4                        | 4                       | 4-3/4                | 4                  | 2-3/16                |
| 10                        | 2                        | 2                       | 2-3/4                | 0                  | 2-3/16                |
| 12                        | 0                        | 0                       | 3/4*                 | 0                  | 2-3/16                |

\* SPACER PART NUMBER 483.20.9

### MODEL 1600 SPACER/STOP CONFIGURATION (Total In.)

| <u>Block Height (in.)</u> | <u>Lower Height Stop</u> | <u>Compression Beam</u> | <u>Pallet Holder</u> | <u>Head Spacer</u> | <u>Air Bag Height</u> |
|---------------------------|--------------------------|-------------------------|----------------------|--------------------|-----------------------|
| 2                         | 4                        | 10                      | 10-1/4               | 3-3/4              | 2-5/16                |
| 4                         | 6                        | 8                       | 8-1/4                | 3-3/4              | 2-5/16                |
| 6                         | 6                        | 6                       | 6-1/4                | 3-3/4              | 2-5/16                |
| 8                         | 4                        | 4                       | 4-1/4                | 3-3/4              | 2-5/16                |
| 10                        | 2                        | 2                       | 2-1/4                | 0                  | 2-5/16                |
| 12                        | 0                        | 0                       | 1/4*                 | 0                  | 2-5/16                |

SPACER PART NUMBER 483.1.320



Unless otherwise noted, do not attempt to perform any adjustment procedures when the hydraulic pump is running. Ensure that all personnel are clear of machine before pump is started.

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### Pallet Table Spacer Adjustment Procedure:

- Close pressure line orifice ball valve located at rear of machine. Figure 12
- With all personnel clear of machine, remove Lockout from pump and open main shut-off valve and Depress PUMP START pushbutton.
- Raise the pallet de-elevator to the UP position.
- Position the stripper beam so that the bottom of the pallet table is a couple of inches higher than the pallet de-elevator.
- Stop hydraulic pump, close main shut-off valve, and Lockout after accumulator dump valve has released all system pressure.
- Remove the four bolts securing the pallet table to the stripper beam.
- Place two steel bars so that they are supported by the pallet feeder and pallet de-elevator, and when the stripper beam is lowered, the fittings on the bottom of the pallet table will rest on these steel bars.
- With all personnel clear of machine, remove Lockout from pump and open main shut-off valve and Depress PUMP START pushbutton.
- Lower the stripper beam so that the pallet table is supported on the steel bars, and the pallet table spacers are accessible.
- Stop hydraulic pump, close main shut-off valve, and Lockout after accumulator dump valve has released all system pressure.
- Adjust pallet table spacers as necessary. Figure 44
- Drop new pallet table bolts into place to help aid in alignment of spacers.
- With all personnel clear of machine, remove Lockout from pump and open main shut-off valve and Depress PUMP START pushbutton.
- Raise stripper beam until the pallet table is no longer resting on the steel bars.
- Stop hydraulic pump, close main shut-off valve, and Lockout after accumulator dump valve has released all system pressure.
- Tighten pallet table bolts. Torque to 266 ft lbs.
- Remove steel bars.

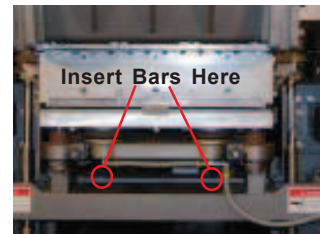


Figure 43, Steel Bar Placement



Figure 44, Pallet Table Spacers

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### Lower Height Stop Adjustment Procedures

To set the stops, loosen the stop locknuts and turn stops down below main beam. Run the main beam down as far as it will go, bottoming out the cylinders. At this point, turn the stops up until they make contact with the main beam. Run the main beam up, then raise the stops up one complete turn of the threads and lock in place. This procedure will assure that the stripper cylinders do not bottom out by approximately 1/16 inch. After adjustments have been made lower the stripper beam back down against stops, Using a measuring tape measure from the base of the machine flat clean surface where the stripper cylinders bolts down to the top of the stripper beam on both sides. The dimension should be the same. If this dimension is off by more then 1/32 inch recheck stop adjustments. To insure beam rest tight against stops raise stripper beam and install additional 4 inch stops. Lower stripper beam down against stops and check to see if you can turn either of the additional stops. Again check measurements. If the beam racks when lowered to the stops, adjustments must be made or inspection of stops being used (if worn out call Columbia for replacements to avoid damage) to insure beam sets on stops without racking beam from side to side as this will cause premature failure of stripper rod seals, column bracket seals, main guide bar bushings, and set up problems with the pallet table.

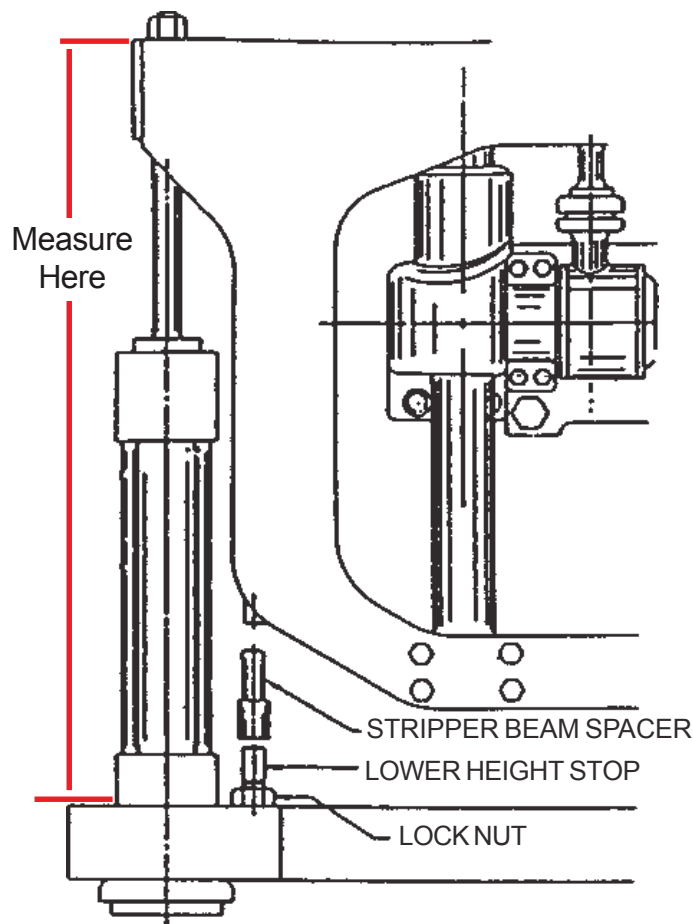


Figure 45, Typical Lower Spacer Installation

## Columbia Concrete Products

### MODEL 16/1600 BLOCK MACHINE

- Check that AUTO switch is in OFF position
- Close pressure line orifice ball valve located at rear of machine. Figure 12
- With all personnel clear of machine, remove Lockout from pump and open main shut-off valve and Depress PUMP START pushbutton.
- Switch COMPRESSION BEAM and STRIPPER BEAM selector switches to UP position.
- Install appropriate spacer(s) on each lower height stop in relation to block height requirements (Figure 45).
- Loosen nuts on top cam that operates rotary valve (main beam flow control valve) (Figure 46) and slide it up to the top of its slots.
- Slowly lower main beam on height stop.
- Reposition rotary valve top cam so point of cam ramp is on cam bearing only.
- With main beam sitting on the height stops, slide the cam down until the control arm roller reaches the high point of the cam. Lock in place. Additional adjustment may be necessary to assure smooth operation. (Refer to main beam rotary valve adjustment.)

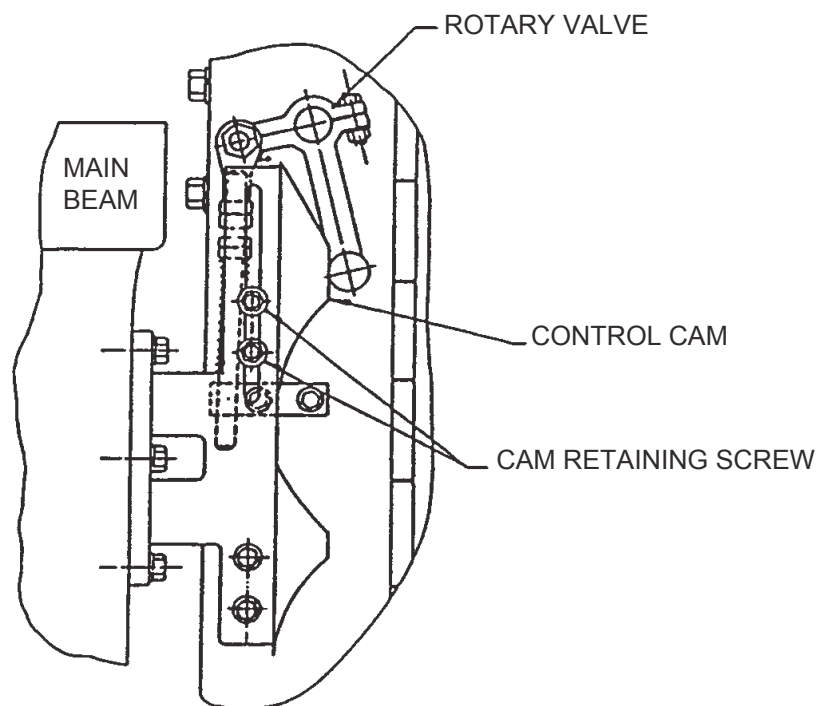


Figure 46, Main Beam Cushioning Adjustment

## MODEL 16/1600 BLOCK MACHINE

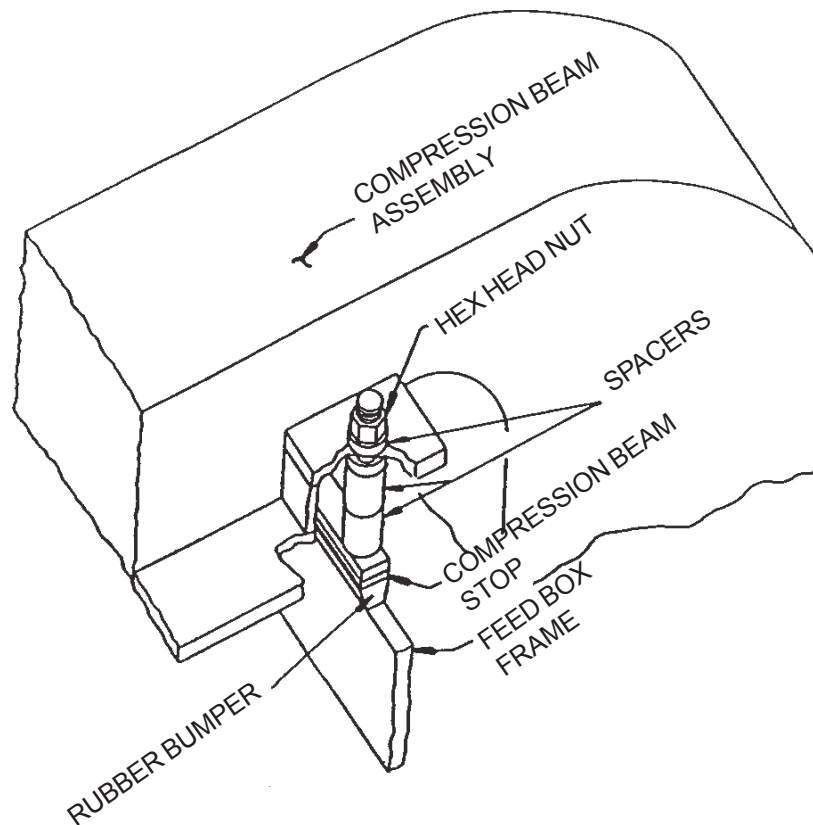


Figure 47, Typical Compression Beam Stop Installation

- As shown on Figure 47, install appropriate compression beam stops in relation to block height requirements.

Compression beam down motion is controlled by compression beam stops. Appropriate spacers must be added or removed to allow the compression beam to lower to the point that the shoes extend to the bottom of the mold half shoe beyond.

If changing to a shorter mold, spacers must be moved from top to bottom. If changing to a higher mold, spacers must be moved from bottom to top. The proper amount of spacers will allow the shoes to extend to the bottom of the mold or half way beyond when the rubber bumper strikes the top of the feed box frame.

- Set pallet feeder switch so that it is closed when main beam is in full down position.
- Install appropriate spacer(s) under each side of pallet table in relation to block height requirements (Figure 48).



Height spacers on the system conveyor-elevator must also be changed to correspond to pallet table height.

## MODEL 16/1600 BLOCK MACHINE

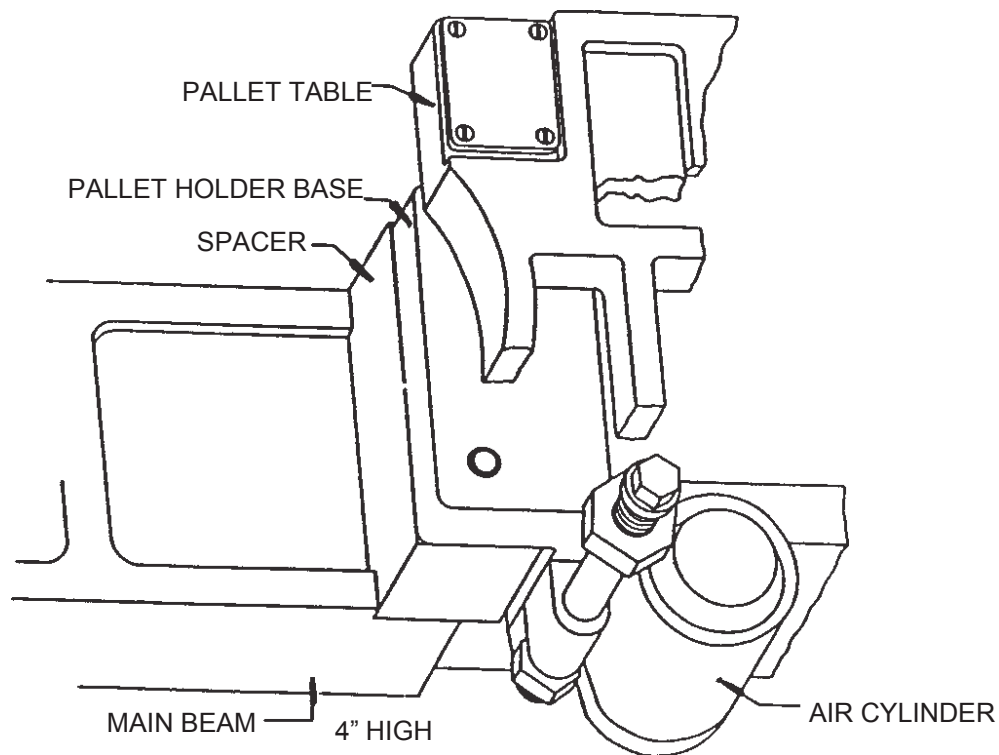


Figure 48, Pallet Holder Spacer Installation

### Main Beam Rotary Valve Adjustment

The main beam rotary valve must be properly adjusted to ensure cushioning of the main beam as it starts and stops the down-stroke. Adjustment consists of locating a control cam (Figure 46) in relation to main beam travel limits, which will vary according to mold size.

To initially set rotary valve for full flow position, follow these steps:

- Raise or lower the main beam until the cam roller on the control arm rests on the cam bar.
- Loosen the clamp bolt of the control arm and turn the rotor so that the flats on the rotor shaft are in a vertical position. This will insure rotary valve is completely open.
- Re-tighten the clamp bolt.
- Run the main beam up and down.

If speed is too slow or too fast when cam roll is on the high point of the cam, repositioning of the rotor is necessary. Slightly loosen the control arm lock bolt and turn the rotor a small amount, clockwise for faster speed, counterclockwise for slower speed. When the proper speed is obtained, re-tighten the clamp bolt. Must be sure cam roller is following cam bar 100% of travel.

## Columbia Concrete Products

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### MODEL 16/1600 BLOCK MACHINE

#### Advanced Spacer Method:

If you constantly change between two or more block heights, you can manipulate the spacers in a way that you do not need to change the pallet feeder height. The down side of this is that when running the shorter product, there is a longer strip cycle which can greatly cut into your productive output. This page will help you determine how to set up your spacers for this, and if it will save you time or not.

There is one condition that needs to be met if you would like to try this method for a 16/1600:

**The sum of the larger product height plus the difference of the product heights cannot be greater than 12.**

Example 1: If you want to go back and forth between an 8" and a 4" block.

$$8+(8-4)=8+4=12$$

This combination will work.

Example 2: If you want to go back and forth between an 8" and a 2" block.

$$8+(8-2)=8+6=14$$

This combination will NOT work.

Follow these steps to setup your 16/1600 block machine:

1. Set the machine up for the taller product as usual.
2. Now change to the shorter product mold/head assembly.
3. Set the compression beam spacers and pallet table spacers as usual for the shorter product.
4. Lower the stripper beam to the down position.
5. Measure the distance between the top of the pallet table (with a pallet on it) to the top of the pallet feeder (with a pallet on it).
6. Remove this amount from the stripper beam spacers.



#### NOTE

You may need to modify a standard Columbia Machine Inc. spacer to obtain your exact requirements.



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To determine if you will save time with this method, you need to run this calculation:

$$T_c = (T_f * V_{smax} * T_{cyc}) / (60 * H_d)$$

H<sub>d</sub> (in) = The difference in height of the two products

V<sub>smax</sub> (in/sec) = Maximum stripper speed. 10-15in/sec would be a reasonable number, but due to setup variations, you will need to measure this for the most accurate calculation.

T<sub>cyc</sub> (sec/cyc) = Average block machine cycle time of the shorter product

T<sub>f</sub> (min) = Time to change the pallet feeder height (remember you have already changed the compression beam spacers, proximity switch flags, and table spacers, so this is ONLY the time associated with the pallet feeder height and rotary valve adjustment.)

T<sub>c</sub> (hrs) = Given the other four variables, this is the time at which you break even between using the advanced spacer method vs changing the pallet feeder height. If you plan to run longer than this time, you should change the pallet feeder height. If you plan to run shorter than this time, you should use the advanced spacer method.

### As an example (using approximate numbers):

Lets say you want to go back and forth between 8" and 4" products on a regular basis. You will need to know if you should change the pallet table height or if you should use the advanced spacer method. Your values are as follows:

H<sub>d</sub> = (8"-4")=4in  
V<sub>smax</sub> =10in/sec  
T<sub>cyc</sub> =10sec/cyc  
T<sub>f</sub> =20min

First, determine if this is a valid combination using the condition "The sum of the larger product height plus the difference of the product heights cannot be greater than 12".

$$8" + (8" - 4") = 12"$$

This combination will work. Now calculate the break-even time.

$$T_c = (20\text{min} * 10\text{in/sec} * 10\text{sec/cyc}) / (60 * 4\text{in})$$
$$T_c = 8.33\text{hrs}$$

So in this example, the break even time where changing the pallet feeder height yields the same production as using the advanced spacer method is 8.33 hrs. So if you are running 8.33 hrs or less of the 4" product before changing back to the 8" product, you should use the advanced spacer method. Otherwise, you should change the pallet feeder height.

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### Pallet Table Adjustment

When a new mold is installed, the distance between the pallet table and the mold must be adjusted to ensure proper pallet clearance is achieved. Two basic pallet table settings (Tight & Loose) are suggested. (Figure 50).

#### 1. Tight Table Settings (normally used for most products)



#### NOTE

Check that pallet table surface is clean, flat and free of all objects.

- Check that AUTO switch is in OFF position.
- Pallet table AIR switch in AUTO.
- Pallet table air Front Low – 40 psi
- Pallet table air Rear Low – 40 psi
- Switch the manual selector switches in the sequence noted:
  - COMPRESSION BEAM UP
  - STRIPPER UP
  - PALLET FEEDER BACK



Figure 49



#### WARNING

Exercise extreme caution while performing this adjustment with the pump on.

- Vibrator and mold at top dead center (TDC) counter weights down.
- Place clean flat production pallet on table.
- Check for proper spacers under the pallet saddle as determined by mold height.
- Manually select STRIPPER UP keep energized holding pallet against mold slightly depressing air bags.
- With pallet table air switch in AUTO
- Set Low table air at 40 psi Front and Rear.
- With clamp bolts loose, turn adjustable bushings until a gap is obtained between the head of the pallet table bolt and adjustable bushing.

## MODEL 16/1600 BLOCK MACHINE

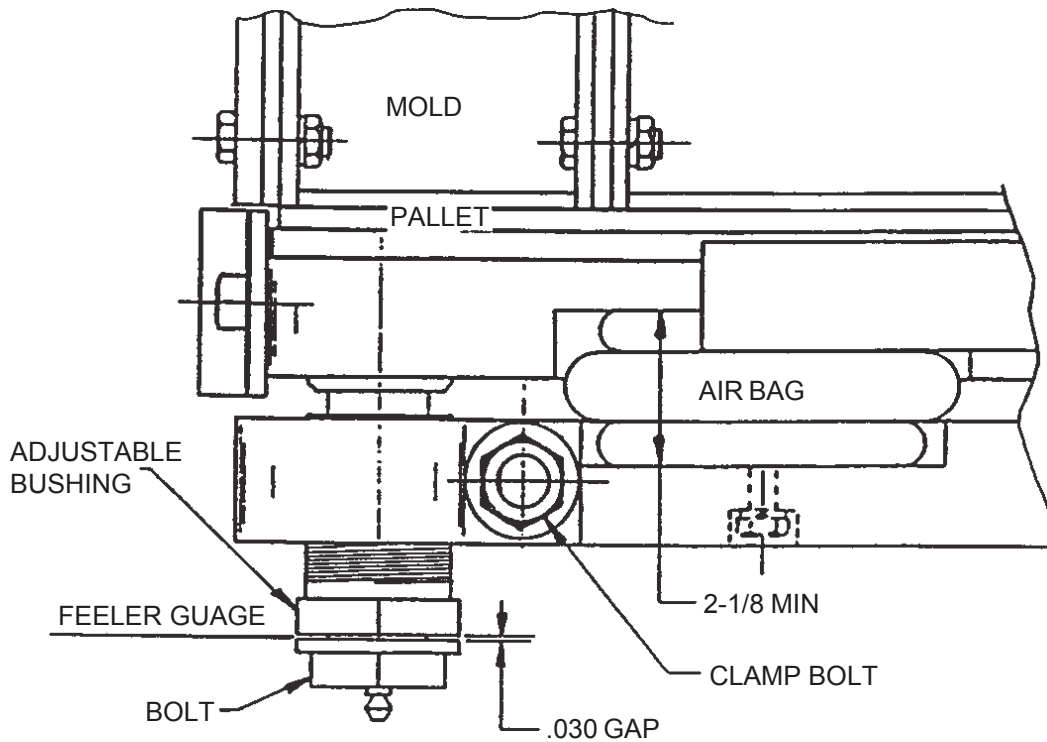


Figure 50, Pallet Table Height Adjustment

- Check bolt to bushing using a feeler gauge. Gap between bolt and bushing set at .030 thousands on all four corners.
- Once gap has been set tighten clamp bolts and torque to 100 ft. lbs. Maximum Torque should never exceed 150 ft. lbs.

**NOTE**

If stripper beam is lowered before tightening clamp bolts the air pressure must be released air bags collapsed before tightening clamp bolts. Severe damage can occur to bushing threads and table threads if clamp bolts are tightened with air on table.

# Columbia Concrete Products

## MODEL 16/1600 BLOCK MACHINE

### 2. Loose Table Settings



#### NOTE

Loose table setting can be used to control crushing and add vibration to filling mold.

- Check that pallet table surface is clean, flat and free of all objects.
- Check that AUTO switch is in OFF position.
- Pallet table AIR switch in AUTO.
- Pallet table air Front Low – 40 psi
- Pallet table air Rear Low – 40 psi
- Switch the manual selector switches in the sequence noted:
  - COMPRESSION BEAM UP
  - STRIPPER UP
  - PALLET FEEDER BACK



Figure 51



#### WARNING

Exercise extreme caution while performing this adjustment with the pump on.

- Vibrator and mold at bottom dead center (BDC) counter weights up.
- Place clean flat production pallet on table.}
- Check for proper spacers under the pallet saddle as determined by mold height.
- Manually select STRIPPER UP keep energized holding pallet against mold slightly depressing air bags.
- With pallet Table air switch in AUTO
- Set Low table air at 40 psi Front and Rear.
- With clamp bolts loose, turn adjustable bushings until a gap is obtained between the head of the pallet table bolt and adjustable bushing.
- Check bolt to bushing using a feeler gauge. Gap between bolt and bushing set at .030 thousands on all four corners.

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Once gap has been set tighten clamp bolts and torque to 100 ft. lbs. Maximum Torque should never exceed 150 ft. lbs.



If stripper beam is lowered before tightening clamp bolts the air pressure must be released air bags collapsed before tightening clamp bolts. Severe damage can occur to bushing threads and table threads if clamp bolts are tightened with air on table.

#### **Tight Table Settings vs. Loose Table Settings:**

Table settings may vary depending on the type of material you use and how well it feeds into the mold.

**Tight Table Setting:** A tight table setting does not allow the pallet to float between the pallet table and the mold bottom during fill and compression cycle. A gap between the pallet table bolt and bushing is set to keep the pallet tight against the mold bottom. Because the table is set when the mold is in its upper most travel the counterweights position will be in the down position, the pallet and table will stay in contact with the mold at all times. When the mold travels to its full down position the gap between the bolts and bushings increases by the throw of the vibrator. If the vibrator has .080 thousands throw the gap between the bolt and bushing will increase by .040 thousands. If it's .100 thousands throw the gap will increase by .050 thousands.

**Example:** Using a .080 thousands throw vibrator assembly the mold is in the up position counterweights in the down position the gap between the bolts and bushings is set at .030 thousands. As the vibrator rotates the mold is moved to its lowest position and the gap now has increased by .080 thousands with a total gap of .110 thousands.

**Advantages over loose table settings:** By using a tight table setting the bolt and bushing do not come in contact with each other during fill and compression cycle which extends the life of the bolt and bushing first by not hammering against each other and causing scallops to the bolt and bushings and damaging bushing and saddle threads..

Once the table has been set for a tight table setting we can get the same effect of a loose table by dropping the low table air from 40 to 35 or 30 to allow the pallet to rattle between the mold and table giving us the same effect as a loose table but without damaging the bolts and bushings. Again this will allow better fill in some cases and helps to evacuate entrapped air from the mold cavity.

**Loose Table setting:** A loose table setting allows the pallet to float between the pallet and the mold. A loose table also aids with air evacuation and may help to fill the mold. A loose table setting is set with the mold in the down position,

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### MODEL 16/1600 BLOCK MACHINE

counterweights in the up position; set the gap between the bolt and bushing at .030 thousands. Now when the mold travels up the table will stop moving up once the bolts and bushings make contact but the mold will continue moving up until it reaches the vibrators maximum throw. The gap which was set between the bolts and bushings is now between the pallet and mold. The .030 thousands gap between the pallet and mold allows the pallet to rattle during full and compression cycle. The pallet is only in contact with the bottom of the mold when the mold is in its full down position or vibrator throw is at the bottom (BDC).

Example: Using a .80 thousands throw vibrator assembly the mold is in the down position and counterweights in the up position the gap between the bolts and bushings are set at .030 thousands. As the vibrator rotates .030 the bolts and bushings make contact and therefore the table will not continue to move up with the mold. The vibrator continues to rotate an additional .050 thousand and the mold is now at its highest position. We now have .030 between the pallet and the bottom of the mold.



#### WARNING

Wear problem: Excessive wear to the bolt and bushing will occur due to the bolt and bushing coming into contact during fill and compression cycle using loose setting.

#### Example of Worn Bushing from Loose Setting



Figure 52

For your specific pallet table settings you may find for some products you like a tight table setting and others you may require a loose table setting.

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## MODEL 16/1600 BLOCK MACHINE

### PALLET FEED MECHANISM

Pallet feed components serve to receive and transfer pallets to the block-making section of the machine. Pallets are initially transferred from a pallet storage hopper by a carriage that is moved forward and backward by a hydraulic cylinder. The forward and back stroke is controlled through a rotary flow control valve and a flow control valve located on main manifold for FORWARD. Each pallet is transferred from the hopper by two pulling dogs that are mechanically positioned during the forward cycle. The forward movement of the carriage advances the pallets along the rails with wear strips. Hold down angles or wheels on the pallet feeder prevent shingling of pallets and ensure correct alignment for entry onto a pallet table in the block-making section.

The rotary flow control valve is cam-operated to permit variable speed of the pallet carriage. To prevent cracking of green block caused by sudden jerks or stops, the carriage movement is slowed at the beginning and end of each transfer stroke.

When changing from one block height to another due to mold changes, a hydraulic riser cylinder can raise the frame of the pallet feeder to match the new block height requirements.

As a part of the pallet supply system, cleaned pallets are re-circulated to the block machine and deposited in the pallet hopper. The bottom pallet in the hopper is then engaged and carried forward one pallet at a time by puller dogs. At the completion of a compression period, a clean pallet is then placed on the pallet table, ready for the next cycle. In the event the pallet hopper has less than three pallets, a proximity switch is opened to disable automatic machine operation until more pallets are received.

### Pallet Feeder Alignment And Height Adjustment



The proper sequence for changing pallet feeder height must be followed or damage may result to some machine parts.

Some models of pallet feeders utilize a front lift arm or a front hook assembly that contact the pallet table when the stripper beam comes down to the block strip position.

In this position, the pallet in the pallet feeder is at the same level as the pallet on the table. When attempting to change to a different height, never run the main beam down lower than this point, as it will damage the front hook or lift arm assembly (see Figure 19). Before making a pallet feeder height adjustment, the pallet feeder must be moved down.

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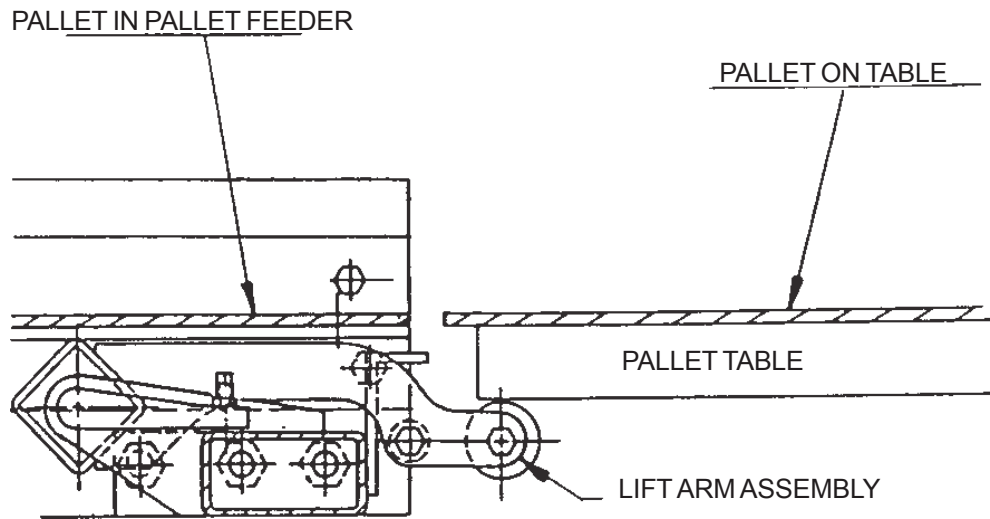


Figure 53, Pallet Feeder Height Adjustment

Alignment of the pallet feeder guides must be checked each time the pallet table is adjusted or a new mold is installed.

Using a pallet, check alignment of the pallet table with the pallet feeder. Stripper beam must be in down position. Guides should be aligned so that there is approximately 1/32-inch height difference between the pallet and table surface as the pallet is extended onto table.

When calibrating pallet feeder alignment, adjustments must be made equally at each of two mounting points at rear of pallet feeder. Once adjustment is accomplished, the pallet feed system must be tested for proper transfer of pallets before the machine is put into operation.

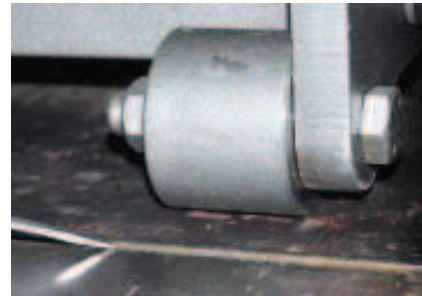


Figure 54

If alignment adjustment is necessary, small adjustments may be made using jacking screws located at the rear of the feeder frame (see Figure 20). To adjust, temporarily loosen all holding bracket bolts (1) and front clamp bolts (5). Rotate jacking screws (2) equally and lock in place with locknuts (3) when final alignment



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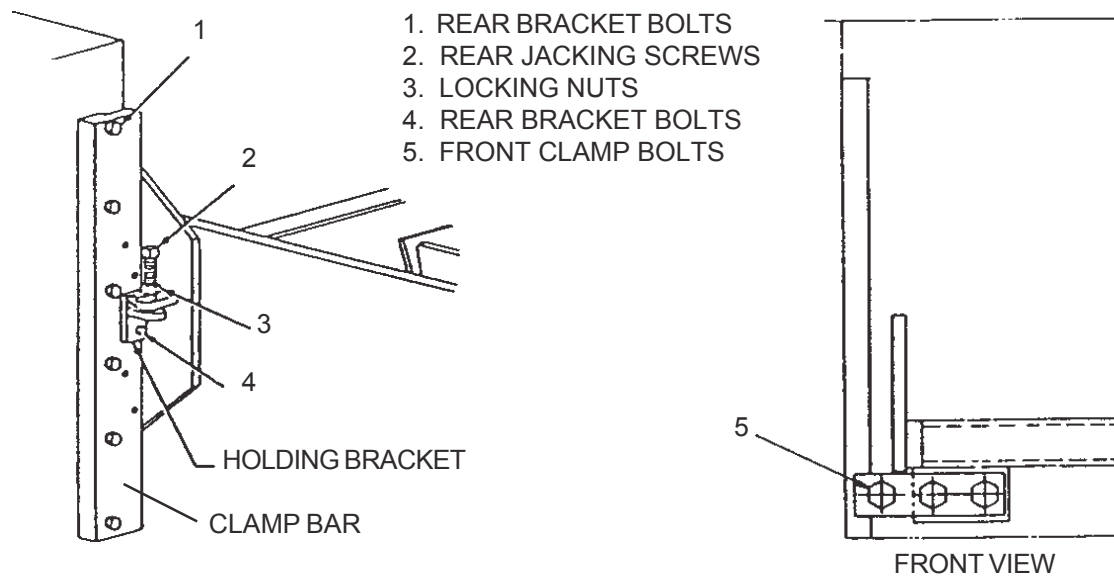


Figure 55, Pallet Feeder Alignment Adjustment

and testing is complete.

If a major adjustment is required because of a change in the mold height configuration, additional mounting holes are provided on the clamp bars for relocation of feeder adjustment brackets. Relocation of the adjustment brackets requires that the pallet feeder riser cylinder be used to re-establish pallet feeder vertical location. These procedures are presented below: (Refer to Figure 20)

- Loosen clamp bar bolts (1) and front clamp bolts (5) so that pallet feeder is free to move at both locations.
- Check that AUTO switch is in OFF position.
- With all personnel clear of machine, remove Lockout from pump and open main shut-off valve and Depress PUMP START pushbutton.
- Open riser cylinder shut-off valve.
- Using riser cylinder hand valve, raise pallet feeder so that jacking screws are free from adjustment brackets.



Pallet feeder jacking screws must be positioned above adjustment brackets. If brackets are to be moved up, raise pallet feeder accordingly.

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### **MODEL 16/1600 BLOCK MACHINE**

- Remove mounting bolts and relocate adjusting bracket to required position. Tighten mounting bolts (4) securely.
- Using riser cylinder hand valve, lower pallet feeder so that jacking screws rest on adjusting brackets.
- Lower riser cylinder completely.
- Close riser cylinder shut-off valve.
- Stop hydraulic pump and close main shut-off valve.
- Check for proper guide-to-table alignment as previously described. If necessary, adjust final alignment with jacking screws.
- Check pallet feeder operation alignment by jogging several pallets through guides to pallet table.