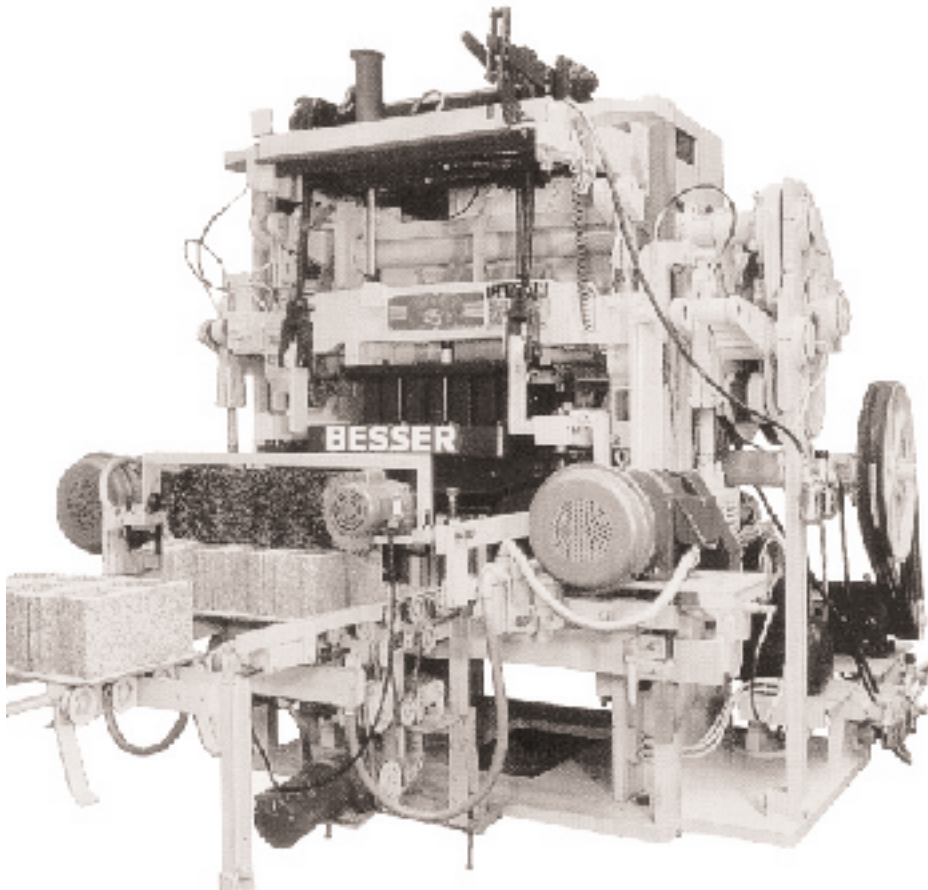




VIBRAPAC

3 AT A TIME



OPERATION/MAINTENANCE MANUAL
466365F9802US

OCTOBER 1999 • US\$250

BESSER World Headquarters
801 Johnson St. • Alpena, Michigan, 49707 • U.S.A.
Phone (517) 354-4111

BESSER

COMPANY NAME:

SERIAL NUMBER:

ASSEMBLY NUMBER:

WIRING DIAGRAM NUMBER:

INSTALLATION DRAWING NUMBER:

VIBRAPAC

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SAFETY BULLETIN

This notice is issued to advise you that some previously accepted shop practices may not be keeping up with changing Federal and State Safety and Health Standards. Your current shop practices may not emphasize the need for proper precautions to insure safe operation and use of machines, tools, automatic loaders and allied equipment and/or warn against the use of certain solvents or other cleaning substances that are now considered unsafe or prohibited by law. Since many of your shop practices may not reflect current safety practices and procedures, particularly with regard to the safe operation of equipment, it is important that you review your practices to ensure compliance with Federal and State Safety and Health Standards.

IMPORTANT

The operation of any machine or power-operated device can be extremely hazardous unless proper safety precautions are strictly observed. Observe the following safety precautions:

-  Always be sure proper guarding is in place for all pinch, catch, shear, crush and nip points.
-  Always make sure that all personnel are clear of the equipment before starting it.
-  Always be sure the equipment is properly grounded.
-  Always turn the main electrical panel off and lock it out in accordance with published lockout/tag-out procedures prior to making adjustments, repairs, and maintenance.
-  Always wear appropriate protective equipment like safety glasses, safety shoes, hearing protection and hard hats.
-  Always keep chemical and flammable material away from electrical or operating equipment.
-  Always maintain a safe work area that is free from slipping and tripping hazards.
-  Always be sure appropriate safety devices are used when providing maintenance and repairs to all equipment.
-  Never exceed the rated capacity of a machine or tool.
-  Never modify machinery in any way without prior written approval of the Besser Engineering Department.
-  Never operate equipment unless proper maintenance has been regularly performed.
-  Never operate any equipment if unusual or excessive noise or vibration occurs.
-  Never operate any equipment while any part of the body is in the proximity of potentially hazardous areas.
-  Never use any toxic flammable substance as a solvent cleaner.
-  Never allow the operation or repair of equipment by untrained personnel.
-  Never climb or stand on equipment when it is operational.

It is important that you review Federal and State Safety and Health Standards on a continual basis. All shop supervisors, maintenance personnel, machine operators, tool operators, and any other person involved in the setup, operation, maintenance, repair or adjustment of Besser-built equipment should read and understand this bulletin and Federal and State Safety and Health Standards on which this bulletin is based.

SAFETY SIGNS

Sign	Description	Required
1	All Panels	1
2	Mixer	4
3	Concrete Products Machine.....	1
	Depalleter.....	2
4	Mixer	2
5	Skiploader	4
6	Skiploader/Mixer Platforms	8
7	Skiploader/Mixer Platforms	8
8	Vertical: Pallet Transport System	2
	Horizontal: LSC-40A/LSC-100	6
	Pallet Transport System	4
9	Besser-Matic	4
10	Besser-Matic	4
11	Skiploader	4
12	All Panels	1
13	Overhead Block Transfer	4
14	Concrete Products Machine.....	1
15	Concrete Products Machine.....	2
16	Conveyors	12
17	Cuber	8
18	Cuber	3
	Block Turnovers.....	2
	Slat Conveyors	2

**To order safety decals, contact your local Besser representative
or the Besser Central Order Department.
Thank you!**


1
Large 113236F0409

High Voltage

Width 4 1/2 inch

Height 9 5/8 inch

Small 113236F0204

High Voltage

Width 2 inch

Height 4 1/8 inch


2
113237F0410

Mixer Blade Hazard

Width 4 1/2 inch

Height 1/4 inch


3
113240F0307

Crush Hazard

Width 3 1/2 inch

Height 7 1/2 inch


4
114692F1006

Nip Points

Width 5 3/4 inch

Height 9 1/2 inch


5
114688F0906

Crush Hazard

Width 6 1/4 inch

Height 9 1/2 inch


6
114689F0804

Fall Hazard

Width 4 1/2 inch

Height 7 3/4 inch

**7**

114690F0805
Falling Objects
Width 4 3/4 inch
Height 8 inch

**8**

Vertical: 113245F0704
Horizontal: 113245F1005
Crush Hazard
Vertical: Width 4 1/8 inch
Vertical: Height 7 inch
Horizontal: Width 10 inch
Horizontal: Height 5 3/4 inch

**9**

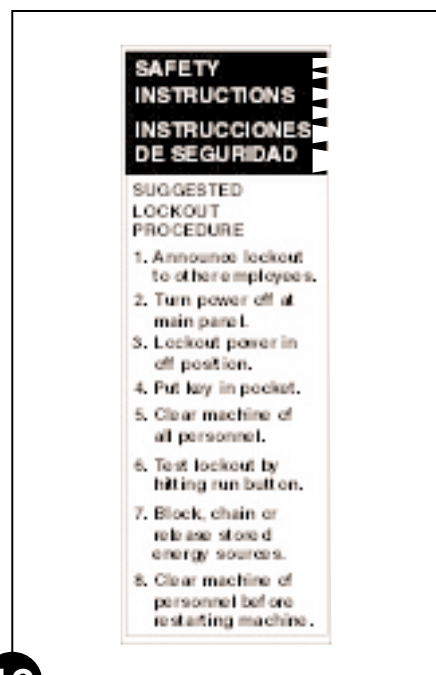
113242F0409
Crush Hazard
Width 4 1/2 inch
Height 9 5/8 inch

**10**

113243F0410
Falling Objects
Width 4 1/2 inch
Height 10 inch

**11**

114691F1006
Shear and Fall Hazards
Width 5 3/4 inch
Height 9 3/4 inch

**12**

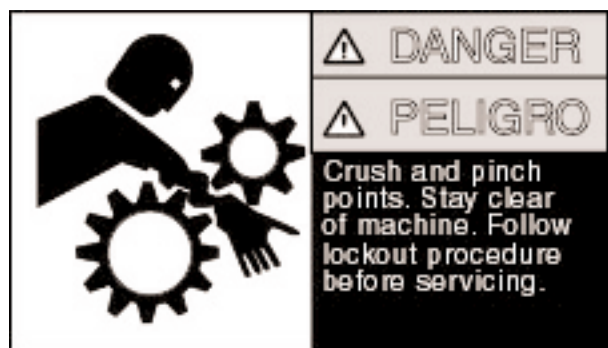
113249F0410
Safety instructions decal-
Suggested Lock-out procedure
Width 4 inch
Height 10 inch


13

113238F1005
Crush Hazard
Width 10 inch
Height 5 3/4 inch


14

113239F0604
Crush Hazard
Width 6 5/8 inch
Height 4 inch


15

113241F0605
Crush and Pinch Points
Width 6 5/8 inch
Height 4 inch


16

113246F0704
Nip Hazard
Width 7 inch
Height 4 1/2 inch


17

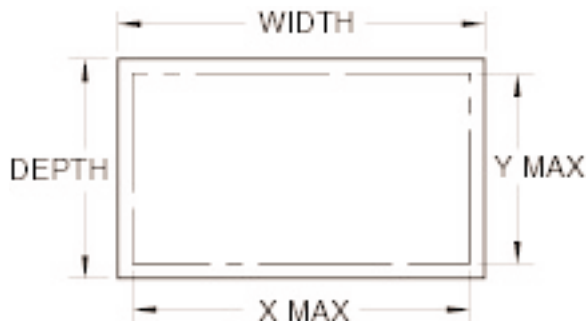
113247F1006
Crush Hazard
Width 10 inch
Height 6 inch


18

113250F1006
Crush and Pinch Points Hazard
Width 10 inch
Height 6 inch

VIBRAPAC SPECIFICATIONS

<u>TOTAL WEIGHT:</u>	36,000 Lbs [16,330 Kg]
<u>AIR LINE FITTING DIMENSIONS:</u>	1/2" [12mm]
<u>MINIMUM AIR PRESSURE:</u>	80 psi [5.5 bars]
<u>NOISE RATING:</u>	102 to 114 DBA
<u>MACHINE SPEED:</u>	up to 9 cycles / minute
<u>PRODUCTION CAPACITY:</u>	up to 1,620 blocks / hour
<u>MINIMUM PRODUCT SIZE REQUIREMENT:</u>	2 3/8" high [60mm]
<u>MAXIMUM PRODUCT SIZE REQUIREMENT:</u>	12" high [304.8mm]
<u>REVOLUTIONS PER MINUTE OF VIBRATOR MOTORS:</u>	1700 RPM
<u>REVOLUTIONS PER MINUTE OF MOLD SHAFTS:</u>	2800 RPM (\pm 20 RPM from left to right shaft)

PALLET REQUIREMENTS:


WIDTH & DEPTH = Actual size of steel pallet.

XMAX & YMAX = Maximum production area of steel pallet.

WIDTH	DEPTH	THICK.*	X MAX	Y MAX	PALLET NO.
26.0" [660mm]	18.5" [470mm]	.313" [8mm]	25.0" [635mm]	17.625" [448mm]	470750F0001
26.0" [660mm]	20.5" [521mm]	.313" [8mm]	25.0" [635mm]	19.500" [495mm]	470750F0002
26.0" [660mm]	26.0" [660mm]	.313" [8mm]	25.0" [635mm]	25.000" [635mm]	470750F0003
29.0" [737mm]	18.5" [470mm]	.313" [8mm]	26.5" [673mm]	17.625" [448mm]	470750F0004
29.0" [737mm]	20.5" [521mm]	.313" [8mm]	26.5" [673mm]	19.500" [495mm]	470750F0005
THICKNESS TOLERANCE : -0.010" [0.25mm] / +0.030" [0.76mm]					

* Pallets should have same thickness for constant product.

Table A STEEL PALLET SPECIFICATIONS

VIBRAPAC ELECTRICAL DATA

PLANT POWER SUPPLY (VOLTS)	TOTAL HORSEPOWER (HP)	TOTAL KILOWATTS (Kw)	CONTROL PANEL TRANSFORMER (VOLT-AMPS)	BRANCH CIRCUIT DISTRIBUTION SWITCH (AMPS)	BRANCH CIRCUIT FUSE FRS-R (AMPS)	BRANCH CIRCUIT FEEDER THHN	BRANCH CIRCUIT FEEDER CONDUIT	SHORT CIRCUIT INTERRUPTING CAPACITY (AIC)
220V-240V 50/60 Hz	38	28.4	1500	200	150	2 AWG 33.6MM ²	1.0 IN. 25MM	200,000
380V 50 Hz	38	28.4	1500	100	100	4 AWG 21.6MM ²	1.0 IN. 25MM	200,000
415V 50 Hz	38	28.4	1500	100	90	6 AWG 13.3MM ²	0.75 IN. 20MM	200,000
440V-480V 50/60 Hz	38	28.4	1500	100	80	6 AWG 13.3MM ²	0.75 IN. 20MM	200,000
575V 60 Hz	38	28.4	1500	100	70	8 AWG 8.4MM ²	0.5 IN. 13MM	200,000

Table B VIBRAPAC ELECTRICAL DATA

Please consult the table above to find the appropriate electrical data for your VIBRAPAC. First, find your corresponding plant power supply in the first left column. You will then find the corresponding electrical data on the same row than your power plant supply.

EX: Your power plant supply is 460V at 60 Hz. According to the table, you will then get these values:

<u>PLANT POWER SUPPLY :</u>	460 Volts - 60 Hertz
<u>TOTAL HORSEPOWER :</u>	38
<u>TOTAL KILOWATTS :</u>	28.4
<u>CONTROL PANEL TRANSFORMER :</u>	1500 volt-amperes
<u>BRANCH CIRCUIT DISTRIBUTION SWITCH :</u>	100 amp
<u>BRANCH CIRCUIT FUSE RECOMMENDED (FRS-R) :</u>	80 amp
<u>BRANCH CIRCUIT FEEDER RECOMMENDED (THHN) :</u>	6 AWG (13.3mm ²)
<u>BRANCH CIRCUIT FEEDER CONDUIT RECOMMENDED :</u>	0.75 in.(20mm)
<u>SHORT CIRCUIT INTERRUPTING CAPACITY :</u>	200,000 AIC

VIBRAPAC ELECTRICAL COMPONENTS

DEVICE	HORSEPOWER	KILOWATTS
MAIN DRIVE	15	11.2
VIBRATOR-RIGHT	10	7.5
VIBRATOR-LEFT	10	7.5
AGITATOR	2	1.5
AUTOFEED	1	0.7
TOTAL :	38	28.4

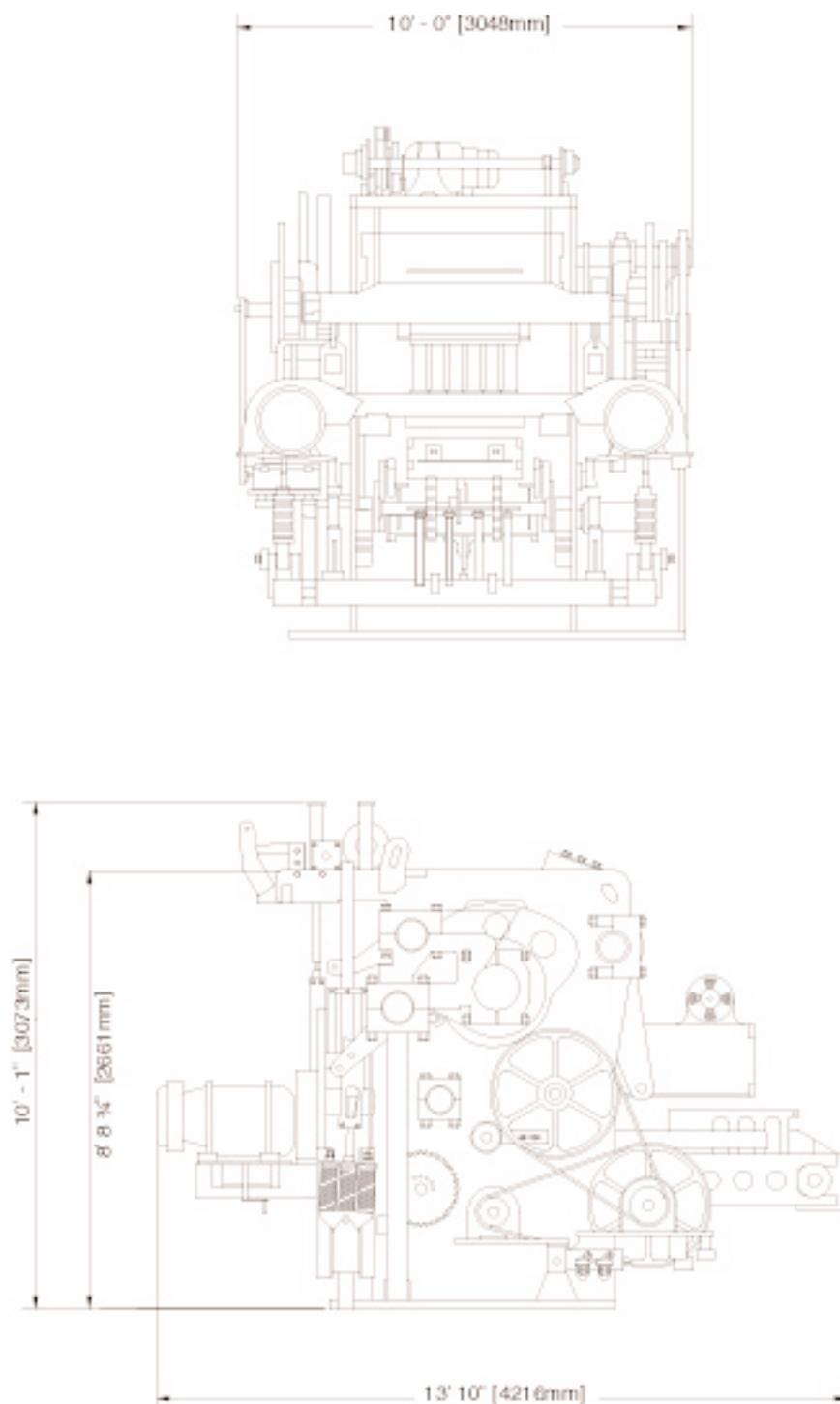
Table C VIBRAPAC ELECTRICAL COMPONENTS.

SUMMARY OF ACOUSTICS

Files #	+	MEM #	Frg.	Condition	Distance	Overall		< 550Hz		> 550Hz	
						C	A	C	A	C	A
1.	+	1/21	5 kHz	Start of cycle	0.5m	112	111	109	100	110	110
2.	+	2/22	5 kHz	End of cycle	0.5m	116	114	112	105	113	114
3.	+	3/23	5 kHz	Start of cycle	0.5m						
4.	+	4/24	1 kHz	End of cycle	0.5m						
5.	+	5/25	5 kHz	Start of cycle	1.0m	111	108	108	98	107	107
6.	+	6/26	5 kHz	End of cycle	1.0m	114	111	112	103	110	110
7.	+	7/27	1 kHz	Start of cycle	1.0m						
8.	+	8/28	1 kHz	End of cycle	1.0m						
9.	+	9/29	5 kHz	Start of cycle	2.0m	110	106	108	96	105	105
10.	+	10/30	5 kHz	End of cycle	2.0m	110	109	109	99	108	108
11.	+	11/31	1 kHz	Start of cycle	2.0m						
12.	+	12/32	1 kHz	End of cycle	2.0m						
13.	+	13/33	5 kHz	Start of cycle/ no pallet	0.5m	113	112	108	103	112	112
14.	+	14/34	5 kHz	End of cycle/ no pallet	0.5m	110	108	107	102	106	106
15.	+	15/35	1 kHz	Start of cycle/ no pallet	0.5m						
16.	+	16/36	1 kHz	End of cycle no pallet	0.5m						

Table D SUMMARY OF ACOUSTICS.

OVERALL DIMENSIONS:



SECTION 1

LOCKING OUT THE MACHINE



CAUTION: For safety reasons, it is IMPORTANT for all personnel to read and understand the following Lock-out procedure.

Whenever you have to make adjustments, service the machine, do any kind of checkup or stop production of units, you must lock out the machine. Locking out insures that the machine will not start-up accidentally, thus preventing possible grave injuries. It is a question of safety for all personnel.

When you have to lock out the machine, please follow this procedure:

1. Announce lockout to other employees.
2. Turn power OFF at main panel.
3. Lockout power in OFF position.
4. Put key in pocket.
5. Clear machine of all personnel.
6. Test lockout by hitting run button.
7. Block, chain or release stored energy sources.
8. Clear machine of personnel before restarting machine.

Note: You will also find this procedure on a decal affixed on the machine.

SECTION 2

INTRODUCTION

2.1 HOW A CONCRETE PRODUCT MACHINE WORKS.

The VIBRAPAC is a three-at-a-time unit machine rated at up to 1,620 units per hour. A concrete unit is made when concrete is fed into a mold and is then vibrated and compacted. Once it has been compacted, it is stripped out of the mold and delivered onto a conveyor. Many types of molds can be fitted on the machine to obtain a wide variety of products.

Refer to section 2 "MACHINE DESCRIPTION" to learn about the names and locations of the machine's components.

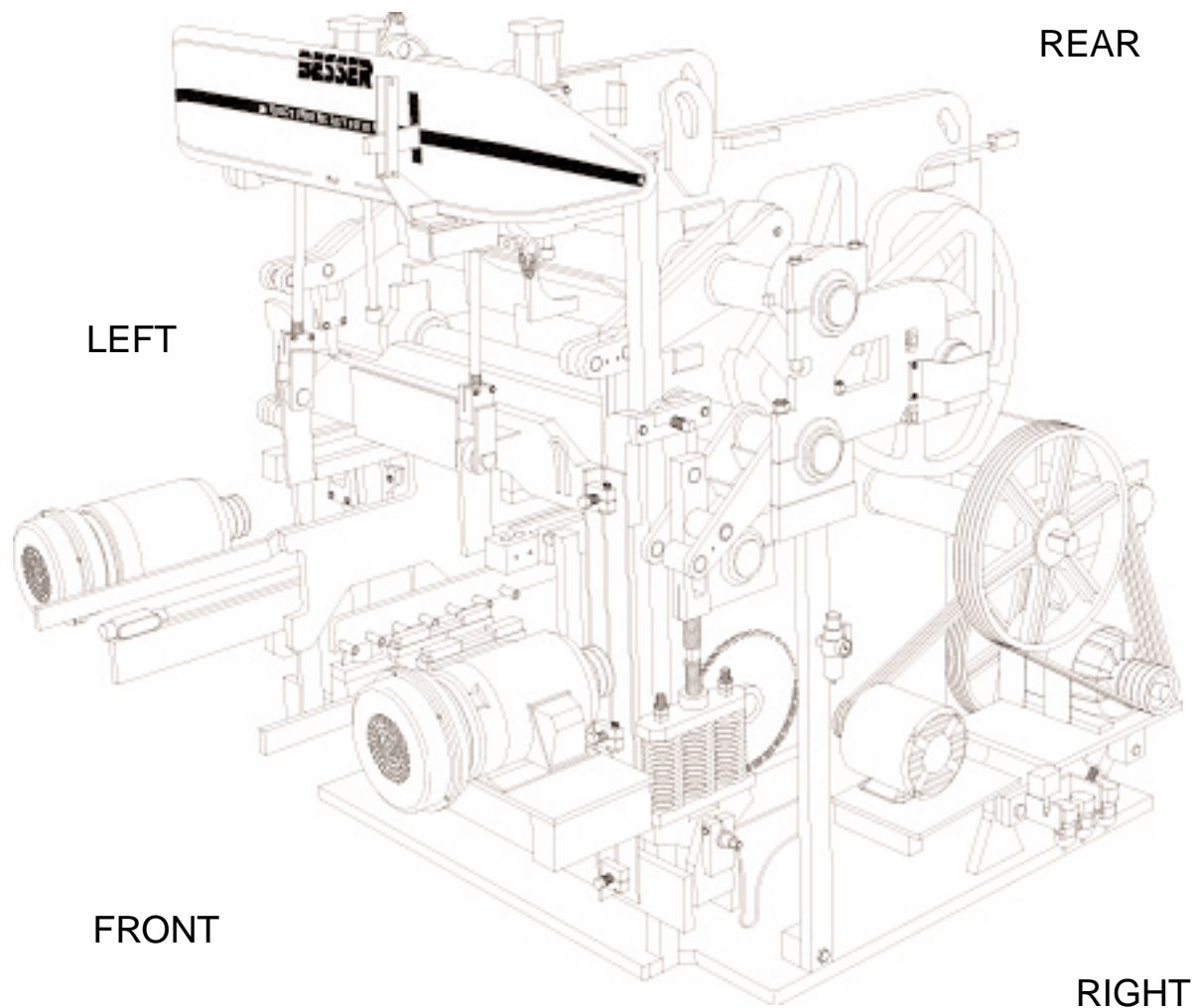
All of the machine's movements are controlled by cams located on a main shaft. As the cams turn with the main shaft, they activate rollers which are connected to link rods which in turn are connected to the components. These components either go forward and backward or up and down. One cam brings a component forward (or up) and another brings it backward (or down). The main shaft is powered by a motor and a clutch. The motor runs all the time. It is the clutch/brake unit that will start and stop all machine movements. A cam activates a conveyor which transports empty pallets from the pallet magazine. Then a block delivery arm feeds these empty pallets to the mold and pallets with blocks to the exit conveyor.

The pallet has to be lifted at one point in the process; a cam does that. A stripper head frame is also connected to two different cams to move it up and down. A stripper head, which is part of the mold, has to be installed on the stripper head frame. This stripper head will press on top of the units to compact them. A pallet receiver frame is located below the stripper head. This component holds the pallet and the mold in place during the concrete unit forming process (stripper head is pressing and the mold is vibrating). The pallet receiver is connected by links to a cam on the main shaft to move up and move down through gravity. The last two cams will bring a feed box forward and backward. This feedbox pushes the material (concrete) to the mold. Concrete will fall into the feedbox through a hopper located on top of the machine. An agitator grid placed in the feedbox will agitate the material as it falls in the mold for better distribution of the concrete. The agitator is powered by a motor located on the feedbox.

Finally, one motor on each side of the machine vibrates the mold. The vibration occurs when the concrete is fed in by the feedbox and when the units are being compressed by the stripper head. Vibration only lasts a few seconds but it is crucial to making concrete units.

OPERATOR ORIENTATION:

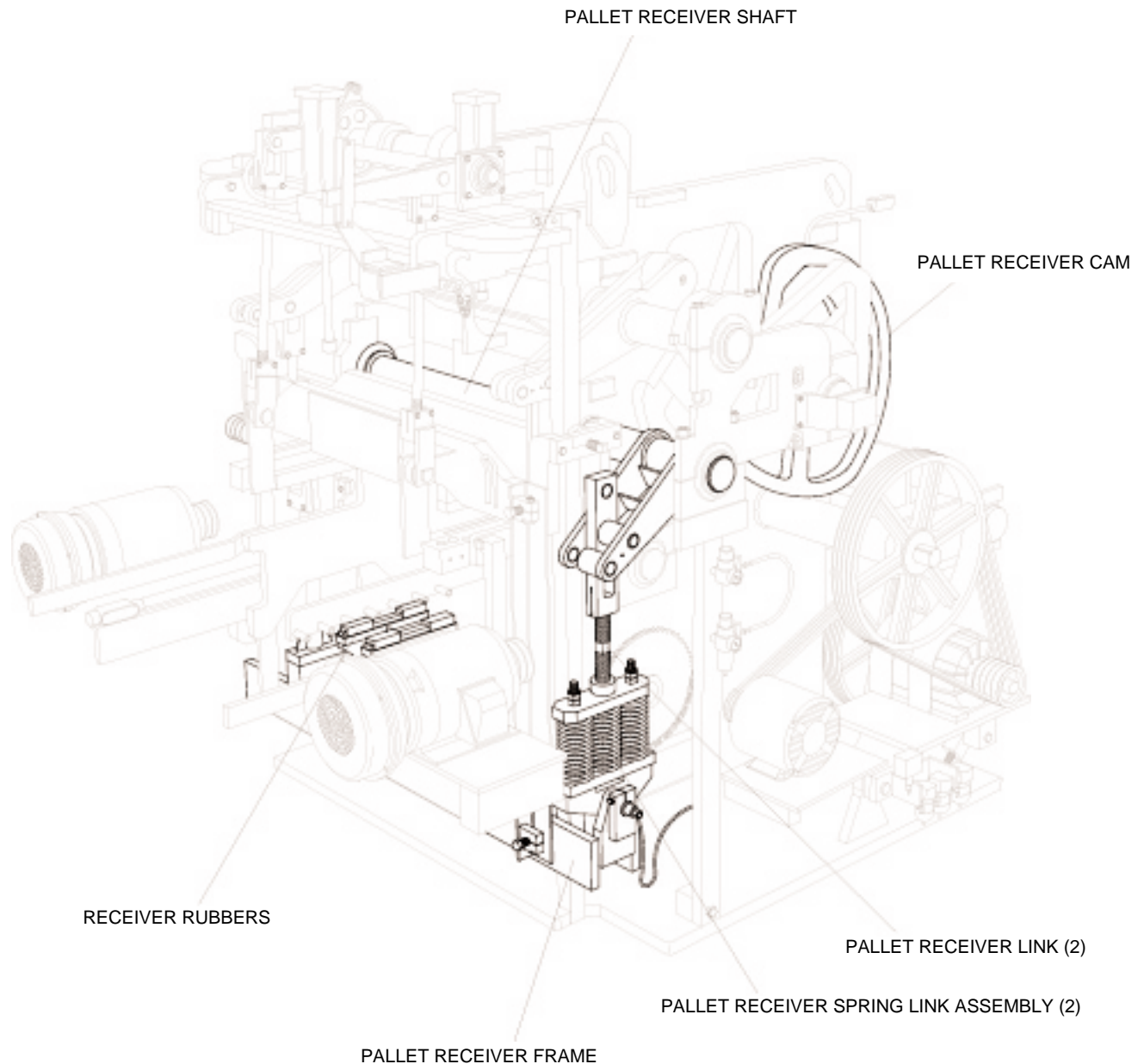
The directions left, right, front and rear, as mentioned throughout this manual are as seen when operator is facing the machine as shown below.



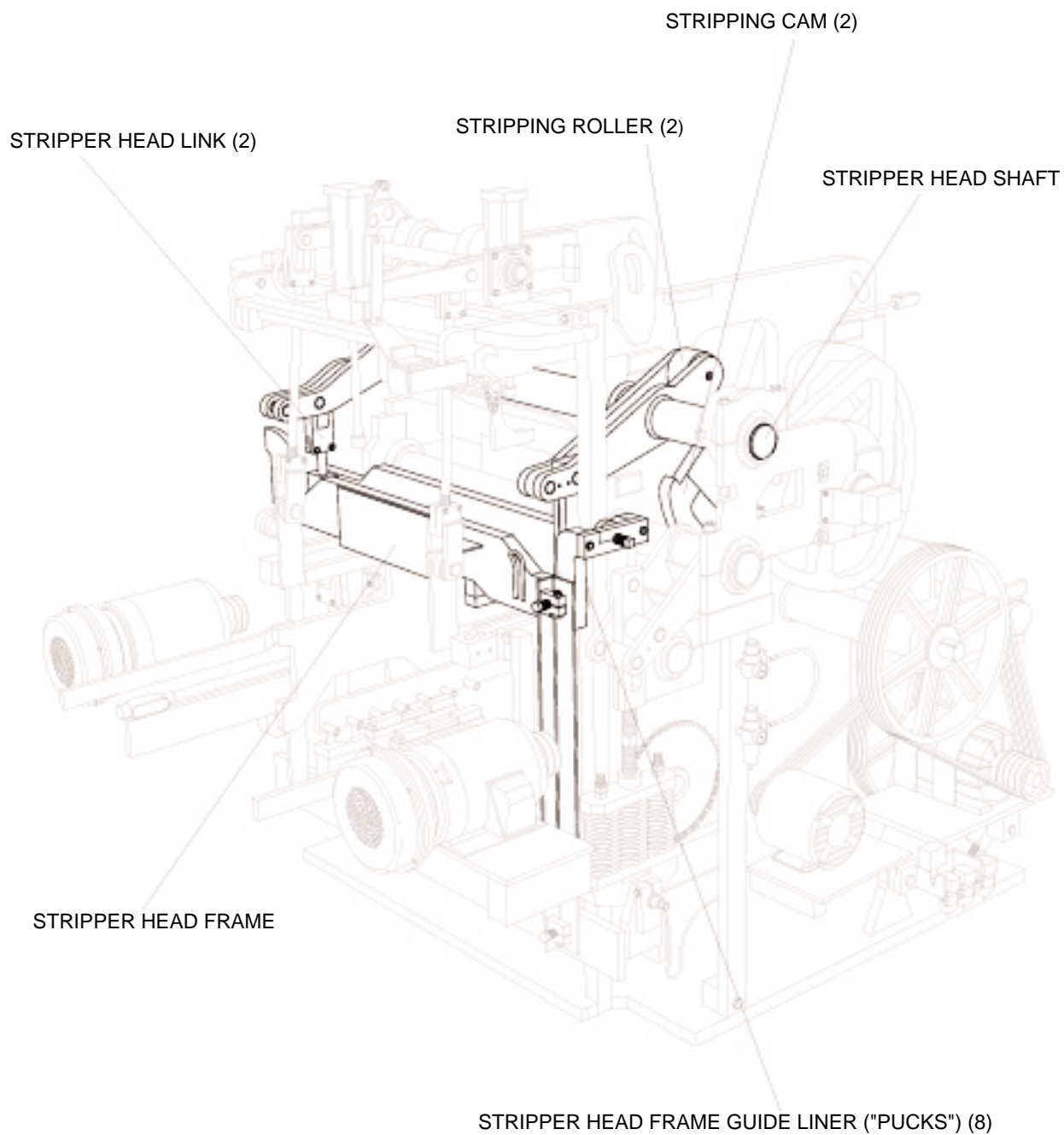
SECTION 3

MACHINE DESCRIPTION

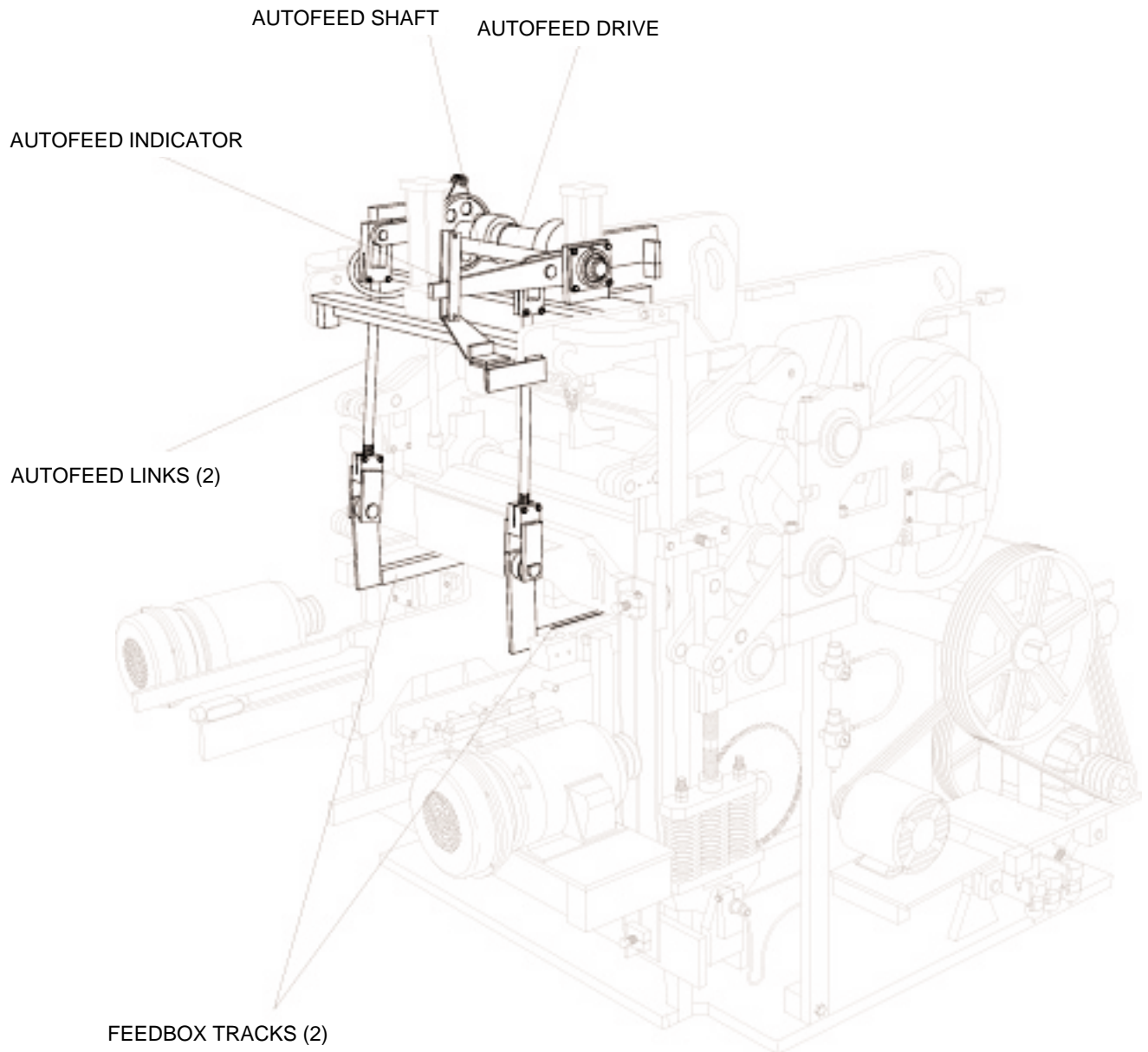
3.1 PALLET RECEIVER ASSEMBLY



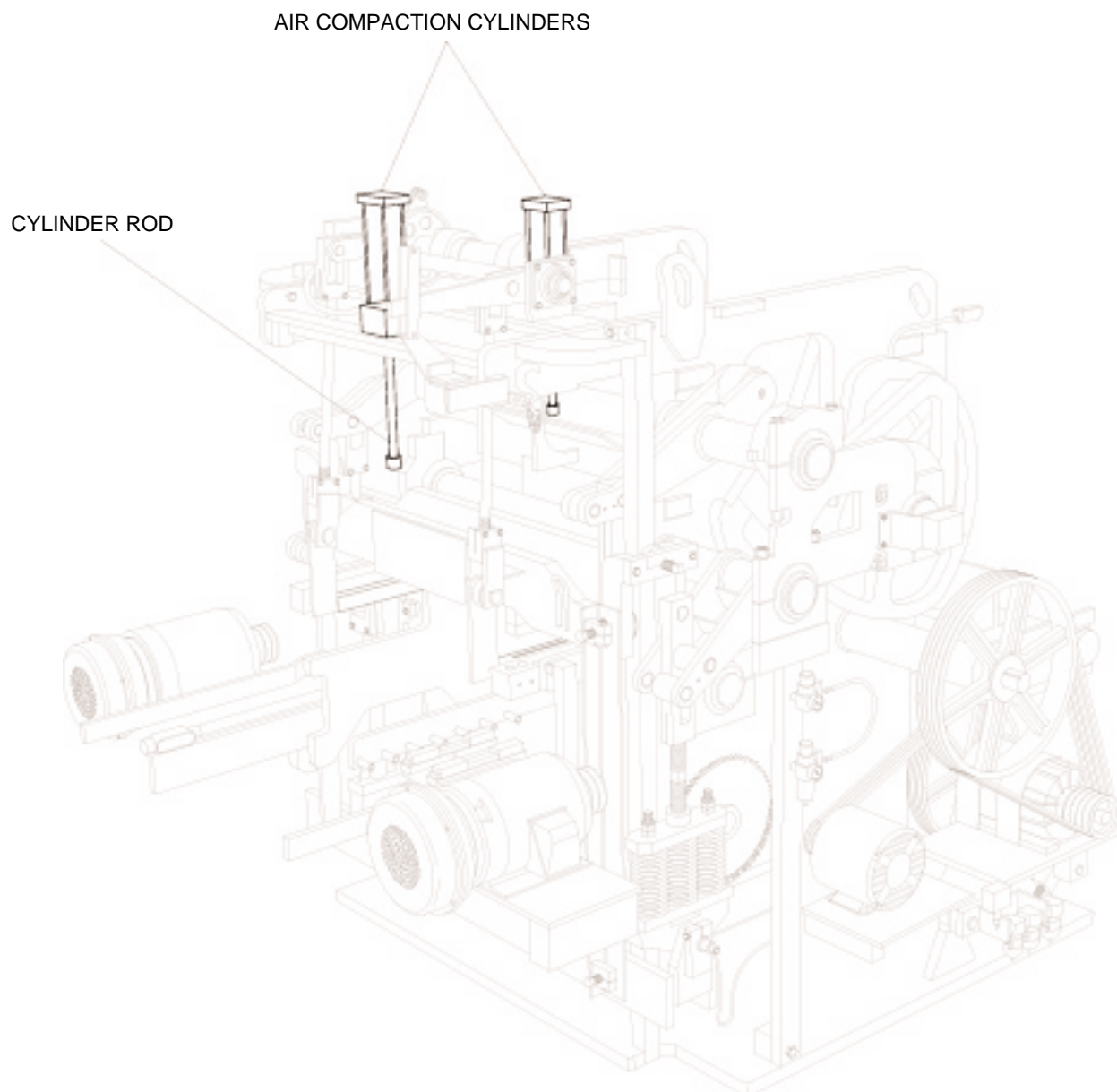
3.2 STRIPPER HEAD FRAME ASSEMBLY



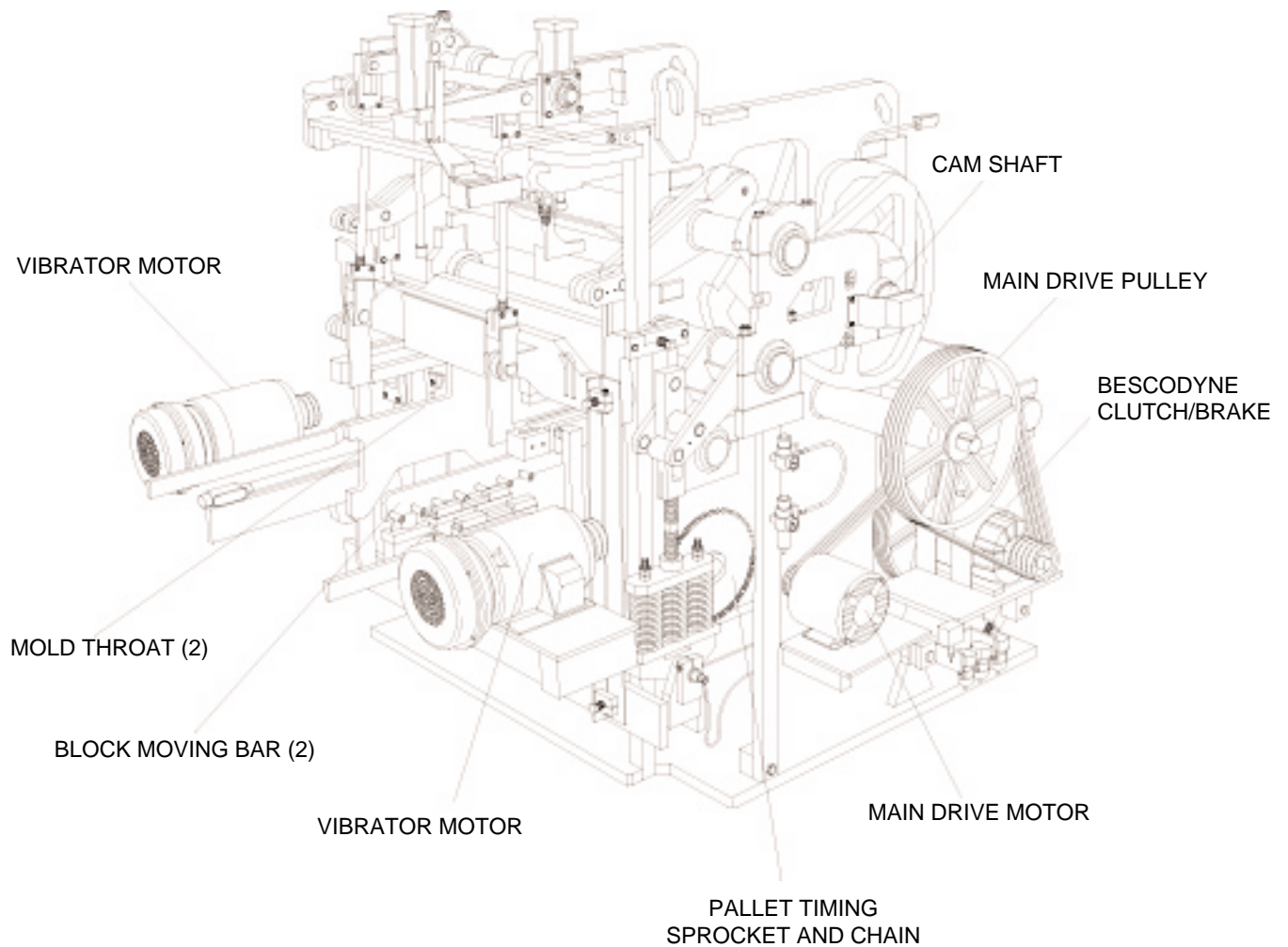
3.3 AUTOFEED MECHANISM ASSEMBLY



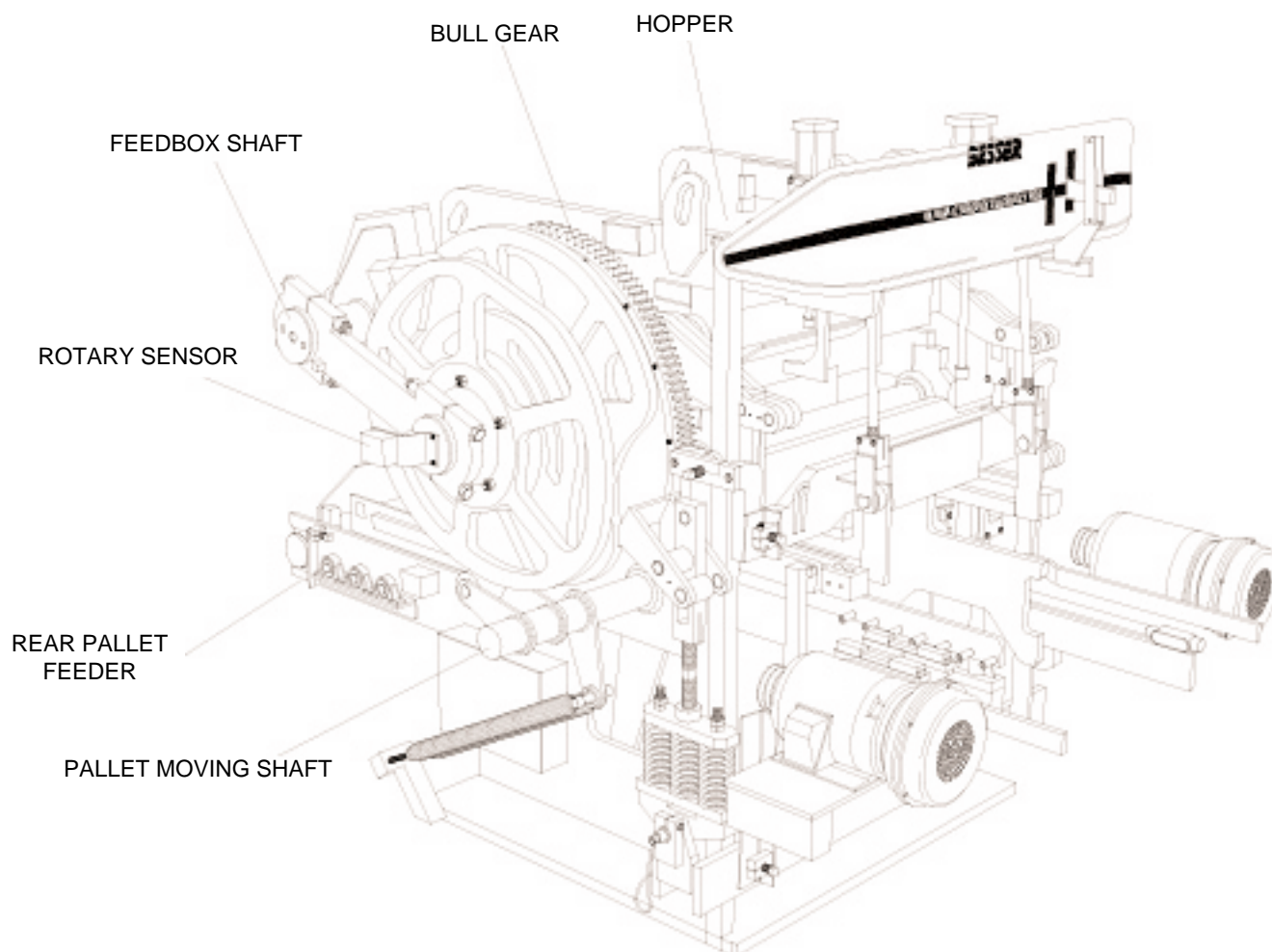
3.4 AIR COMPACTION ASSEMBLY (OPTIONAL)



3.5 GENERAL COMPONENTS



3.6 GENERAL COMPONENTS



SECTION 4

MACHINE SET UP FOR SPECIFIC MOLD

4.1 60mm HIGH UNITS IN A 66mm RAMPED MOLD

INITIAL CONDITION: No mold in the machine.

The following instructions will put the machine in approximate adjustment without the mold in the machine. Final adjustments will be necessary when concrete units are produced. See sections 5 and 6 of this manual.



CAUTION: Be sure to mechanically lock out the electrical panel when working on the concrete product machine. Always follow the lockout procedure listed in section 1 of this manual!

4.1.1 Run machine to "first stop" (see figure 4.1)

"First stop" is obtained when the punch marks on the pallet receiver cam are in line with the roller.

4.1.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**

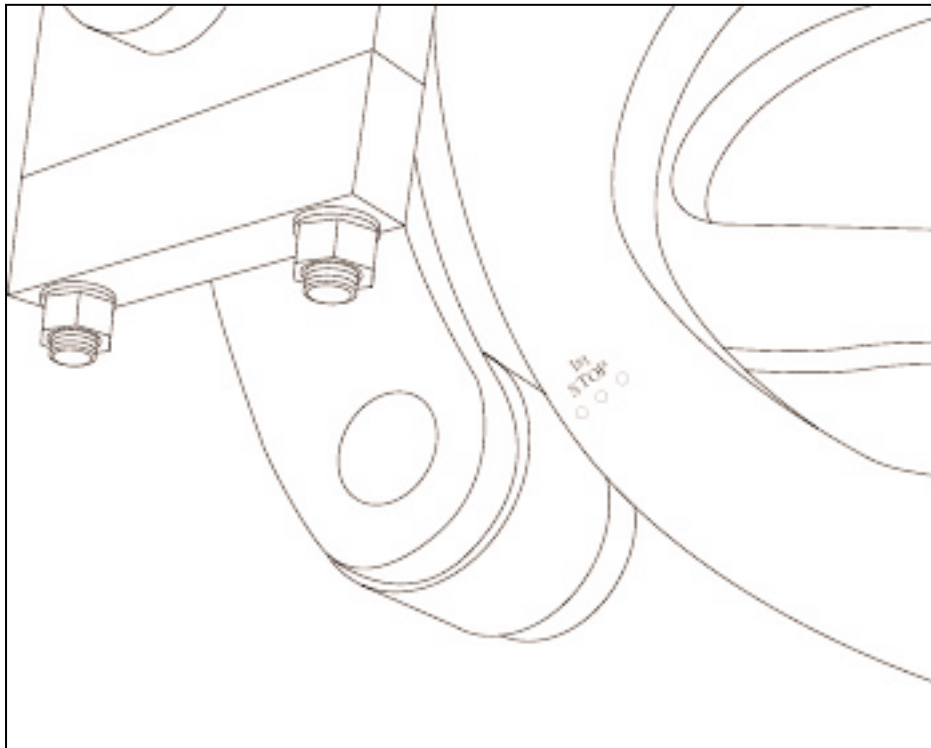


Figure 4.1 "FIRST STOP" (R.H. side of machine)

4.1.3 Install the 7" [178mm] long upper height stops (part # 25081) and adjust so that 3 5/16" [84mm] extend past the bottom of the castings (see figure 4.2).

4.1.4 Adjust the stripper head shock absorbers (part #242269) to a dimension of 8 13/16" [224mm] from the bottom of the clamp blocks to the bottom of the rubber pads (see figure 4.3).

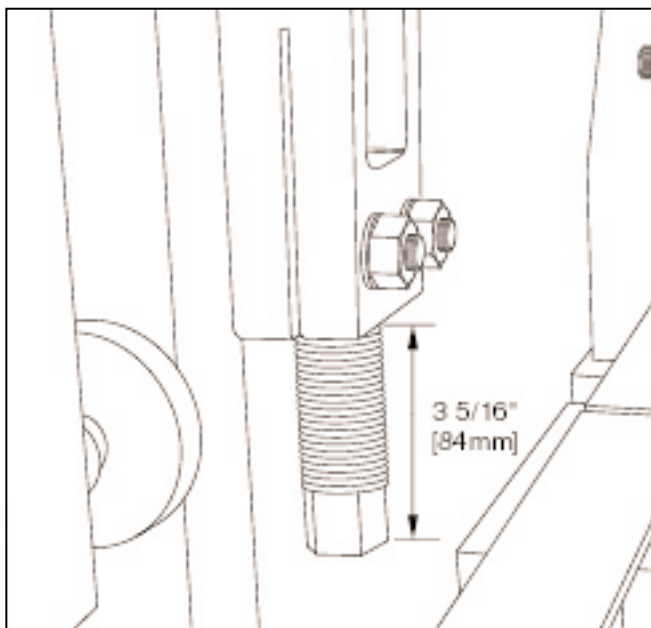


Figure 4.2 ADJUSTING UPPER HEIGHT STOPS

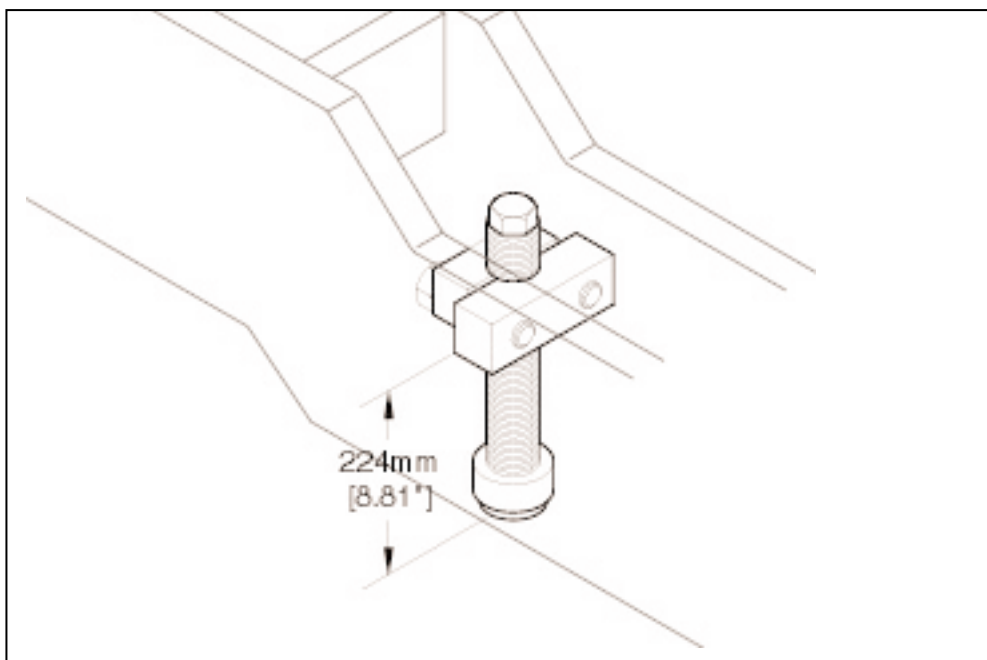


Figure 4.3 ADJUSTING STRIPPER HEAD SHOCK ABSORBERS

4.1.5 Run the machine to the stripped through position (stripper head frame shock absorbers resting on side frame pad).

4.1.6 Shut off clutch and turn power off. Wait until

motor has stopped completely. Also, **lock out machine**.

4.1.7 Install the reverse hopper gate (**part #225801**). See figure 4.4.

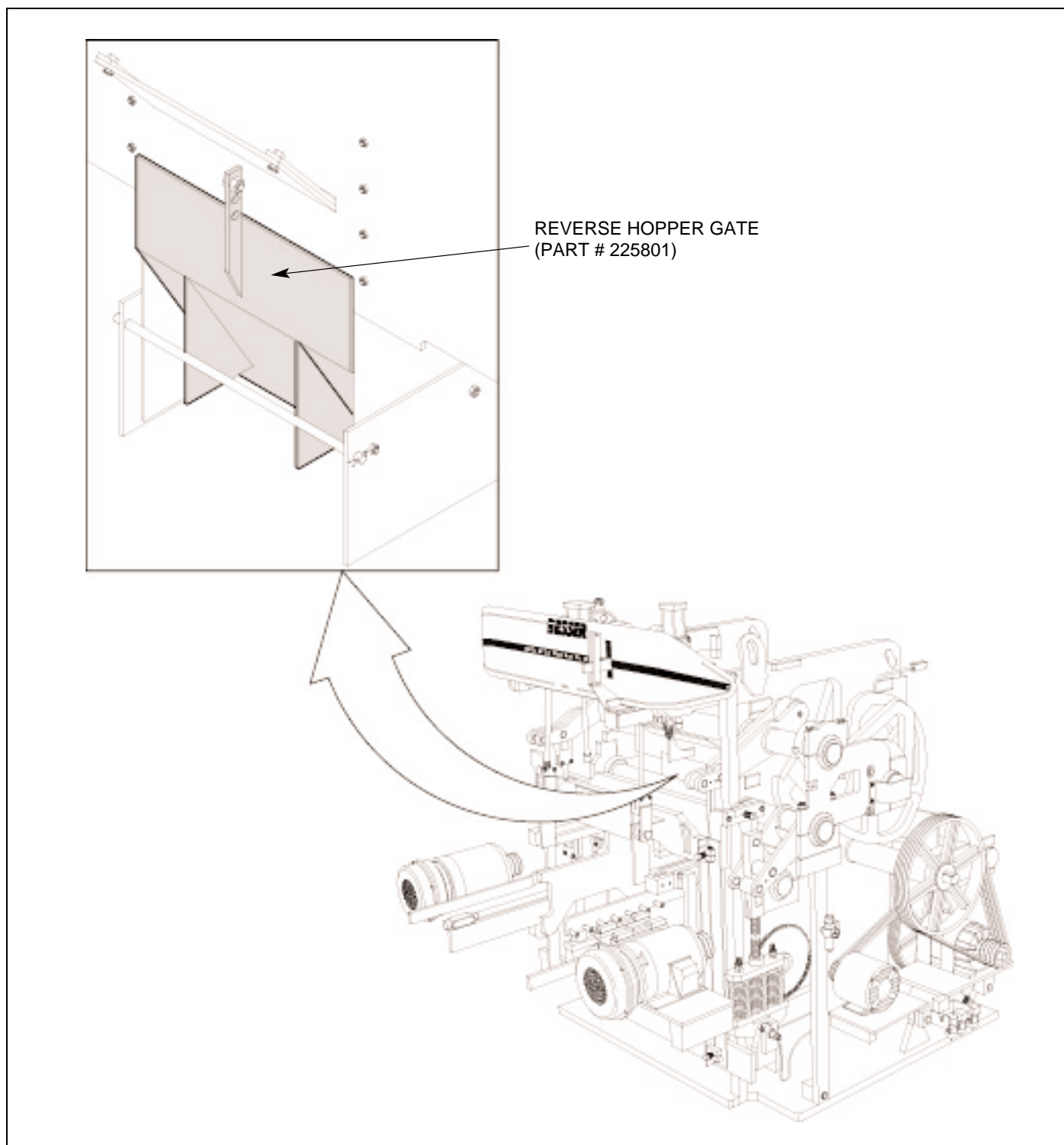


Figure 4.4 REVERSE HOPPER GATE

- 4.1.8 Jog the machine (see section 5.2) until the pallet receiver frame is at its maximum height. Stop machine before feedbox comes forward.
- 4.1.9 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.1.10 Place safety blocking of **6" [150mm]** high under the pallet receiver frame (see figure 4.5).

- 4.1.11 Turn machine on. **Do not** start main motor. Jog the machine until the pallet receiver frame coasts down onto the safety blocking.
- 4.1.12 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.1.13 Position the pins in the outer holes of the pallet receiver shaft arms (see figure 4.6)

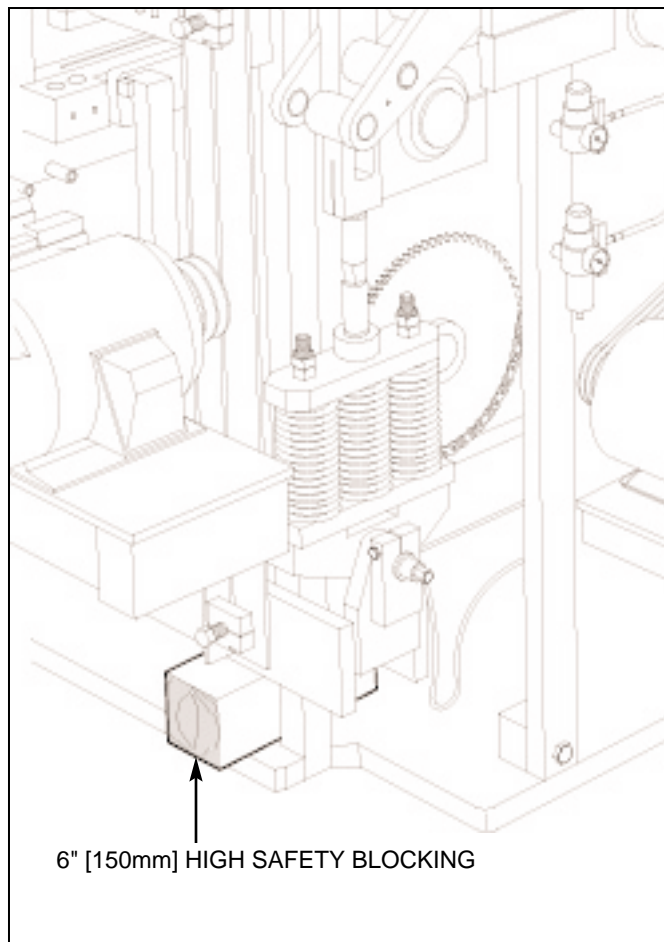


Figure 4.5 PLACING SAFETY BLOCKING.

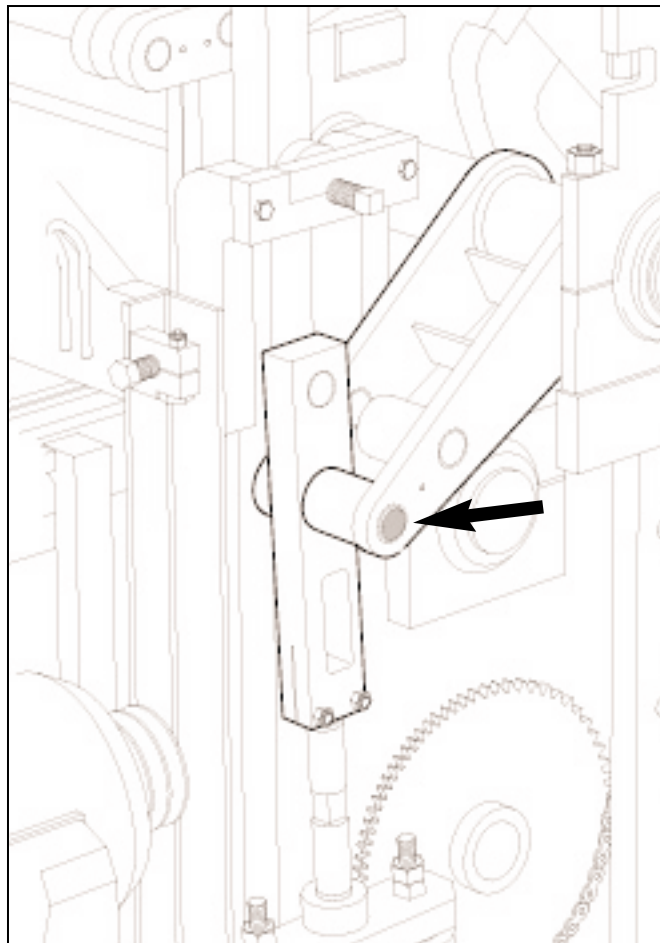


Figure 4.6 POSITIONING PINS IN OUTER HOLES.

- 4.1.14 Adjust the pallet receiver link assemblies to a dimension of **7" [178mm]** (A) between the upper and lower link assemblies (see figure 4.7). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

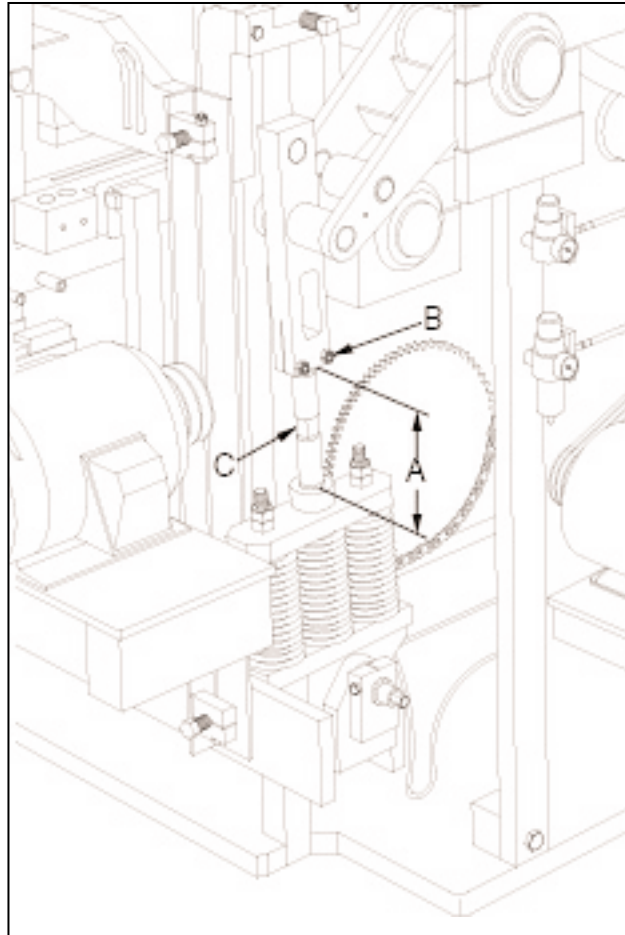


Figure 4.7 ADJUSTING PALLET RECEIVER LINKS

4.1.15 Position the pins in the inner holes of the stripper head shaft arms (see figure 4.8).

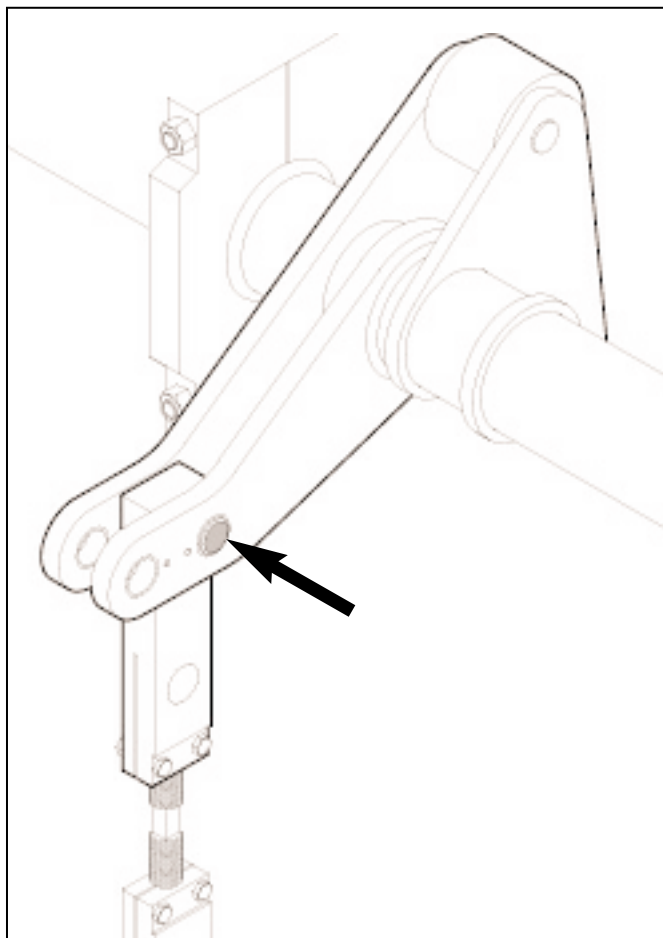


Figure 4.8 ADJUSTING STRIPPER HEAD ARMS

4.1.16 Adjust the stripper head links to a dimension of **3 5/8" [92mm]** (A) between link ends (see figure 4.9). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

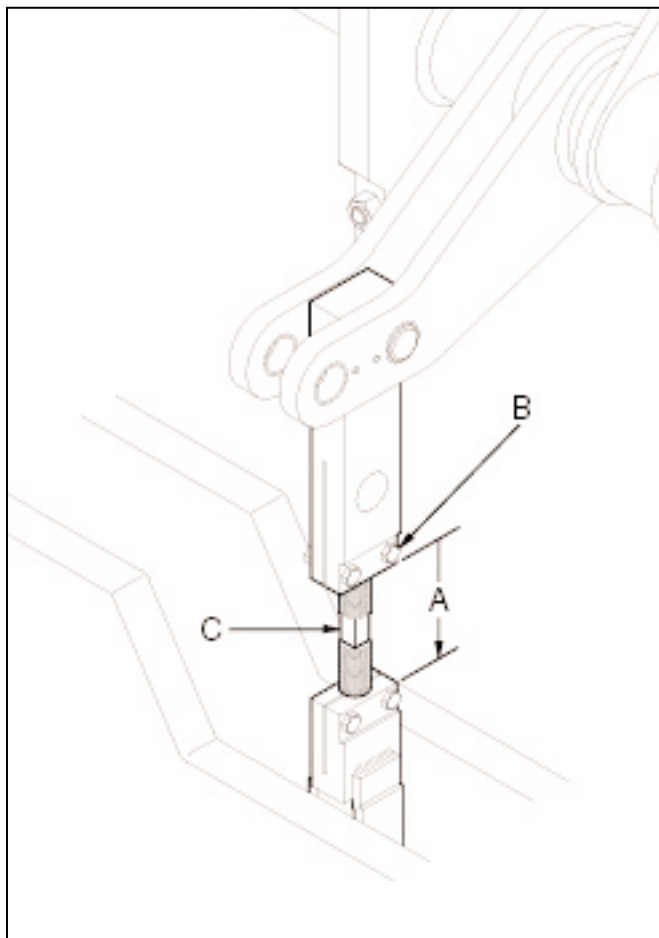


Figure 4.9 ADJUSTING STRIPPER HEAD LINKS

- 4.1.17 Measure the column of spacers supporting the pallet feeder assembly (at all four corners): if column is **8 3/4" [222mm]** high, go to step 4.1.27. If not, go to step 4.1.18 (see figure 4.10).

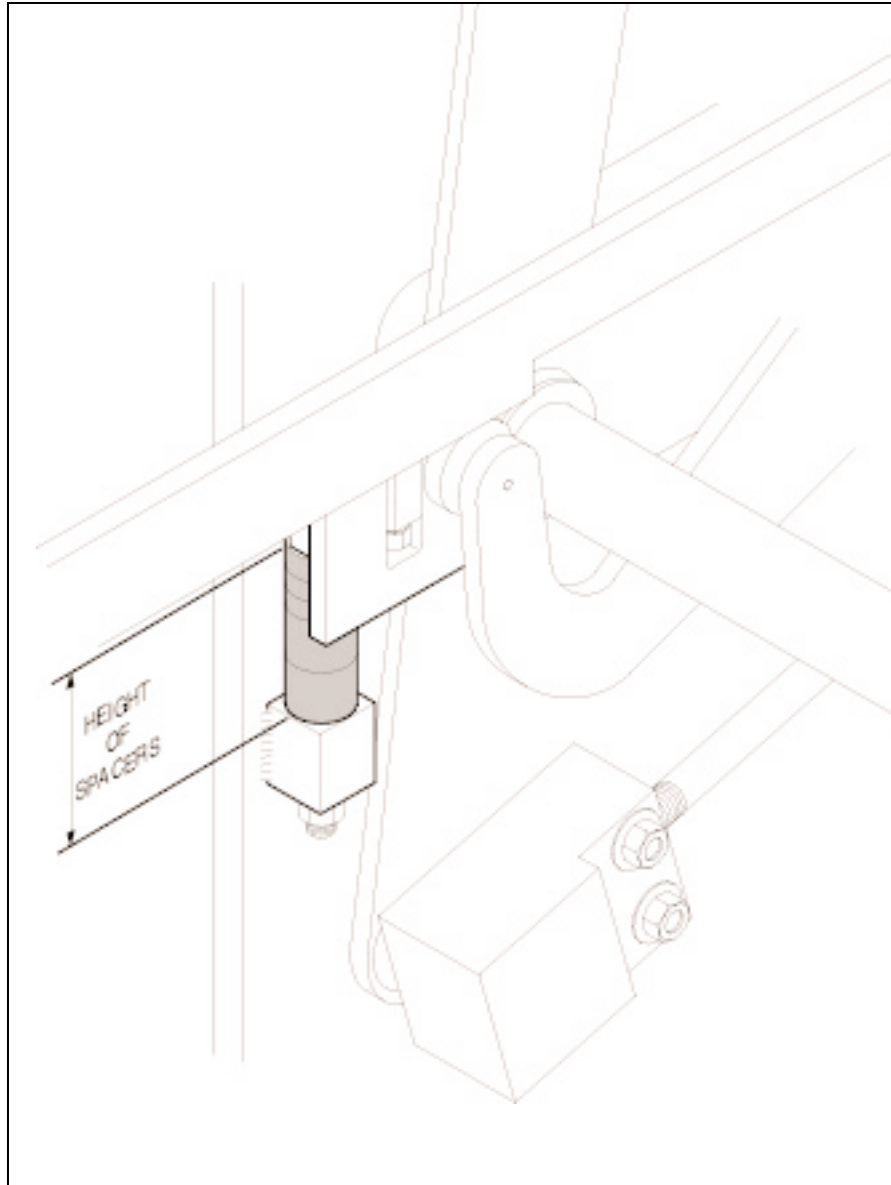


Figure 4.10 MEASURING COLUMN OF SPACERS

- 4.1.18 Measure and record the distance from the rear of the pallet magazine to the front of a chain lug on the pallet moving chain (see figure 4.11). Refer to section 6, "*Timing the pallet feeder.*"

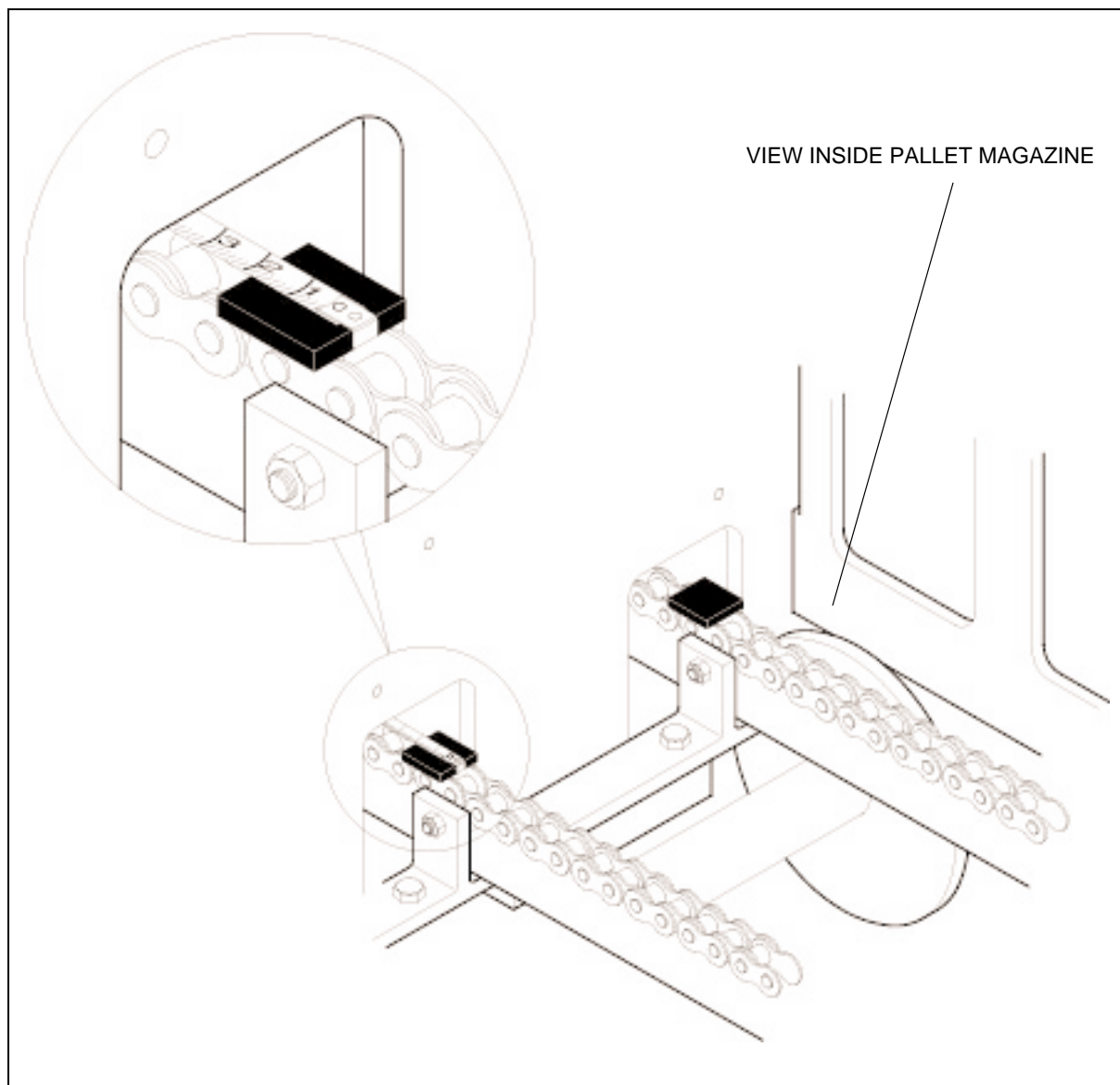


Figure 4.11 MEASURING DISTANCE FROM REAR OF PALLET MAGAZINE TO A CHAIN LUG

4.1.19 Remove the shear bolt from the pallet feeder drive sprocket (see figure 4.12).

4.1.20 Loosen the pallet feeder drive chain tensioner by unscrewing the two bolts and loosening the tensioner. Disconnect the drive chain and remove from the feeder sprocket (see figure 4.13).

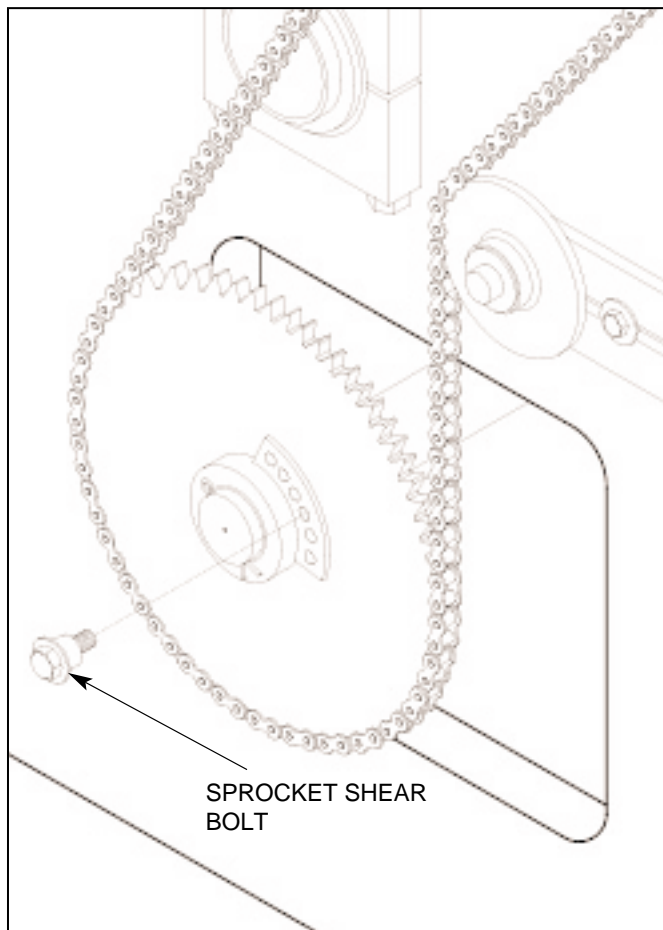


Figure 4.12 REMOVING SHEAR BOLT

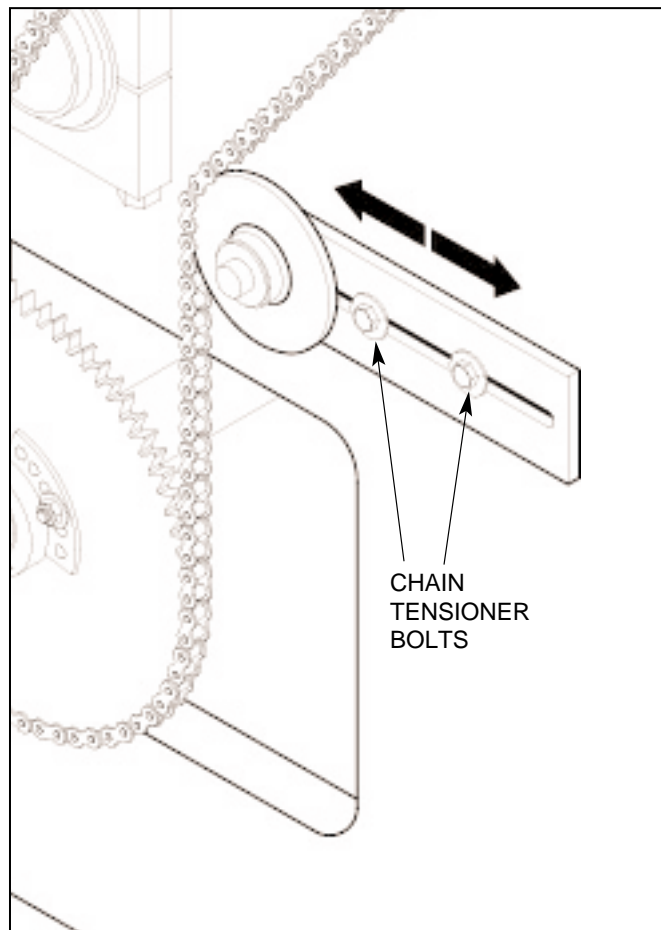


Figure 4.13 LOOSENING CHAIN TENSIONER

- 4.1.21 Loosen bolt of column spacers at all four corners (see figure 4.14).
- 4.1.22 Use a jack on all four corners to raise frame. Take spacers out on all corners (see figure 4.14).
- 4.1.23 Now, insert a column of spacers **8 3/4" [222mm]** high between the side frame supports and the pallet feeder supports (see figure 4.14).
- 4.1.24 Lower the pallet feeder on the spacers.
- 4.1.25 Reconnect the pallet feeder drive chain (change number of links if necessary) and adjust the chain tensioner assembly (see figure 4.13).
- 4.1.26 Check and reset if necessary the chain lug dimension recorded in step 4.1.18. Reinsert the shear pin in the drive sprocket.
- 4.1.27 Run the machine to first stop.
- 4.1.28 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.1.29 Remove safety blocking under pallet receiver frame.
- 4.1.30 Install stripping cam insert **part # 339697** (see figure 4.15).
- 4.1.31 Install the **2 3/8" [60mm]** mold attachment using the procedures in section 5 of this operating manual.

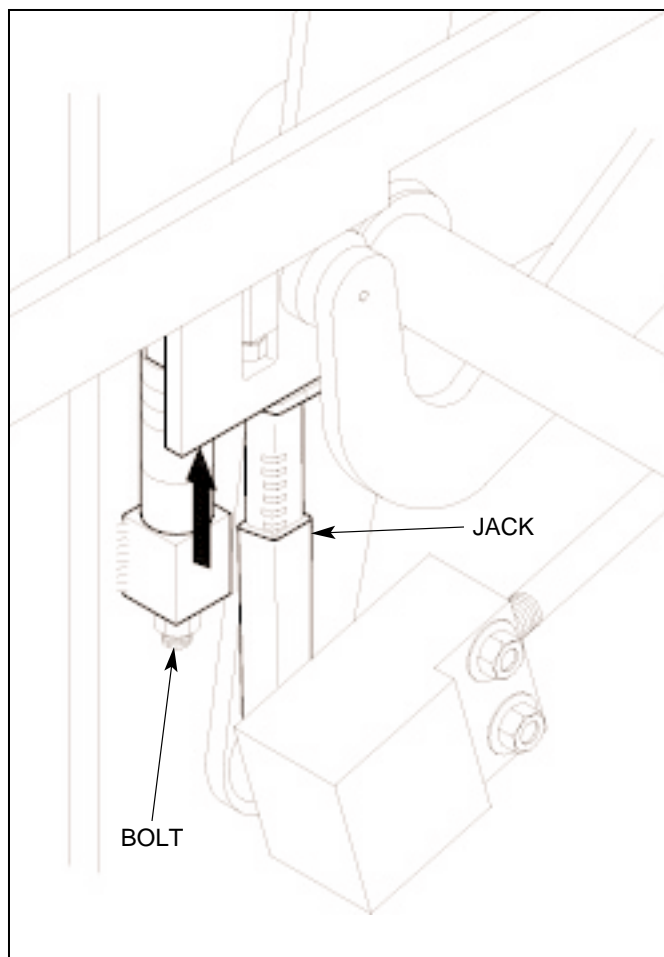


Figure 4.14 MEASURING COLUMN OF SPACERS

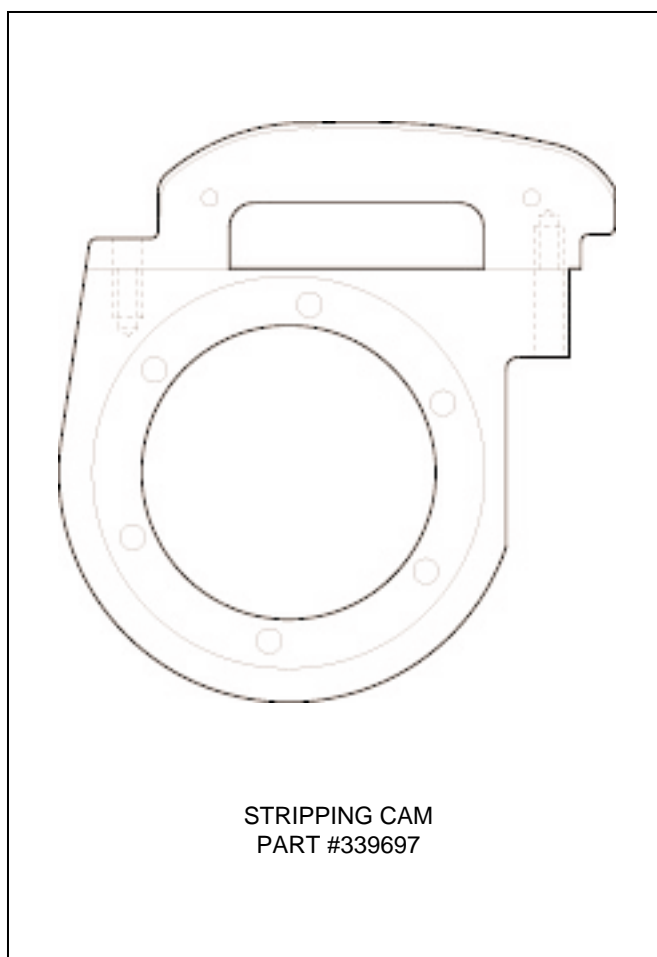


Figure 4.15 STRIPPING CAM INSERT

- 4.1.32 Insert **1¼" [32mm]** of blocking in addition to the **1½" [38mm]** of blocking already affixed to the stripper head frame. The above blocking assumes a stripper head frame of **14 3/16" [360mm]** from the top of the stripper head plate to the bottom of the shoes (see figure 4.16).

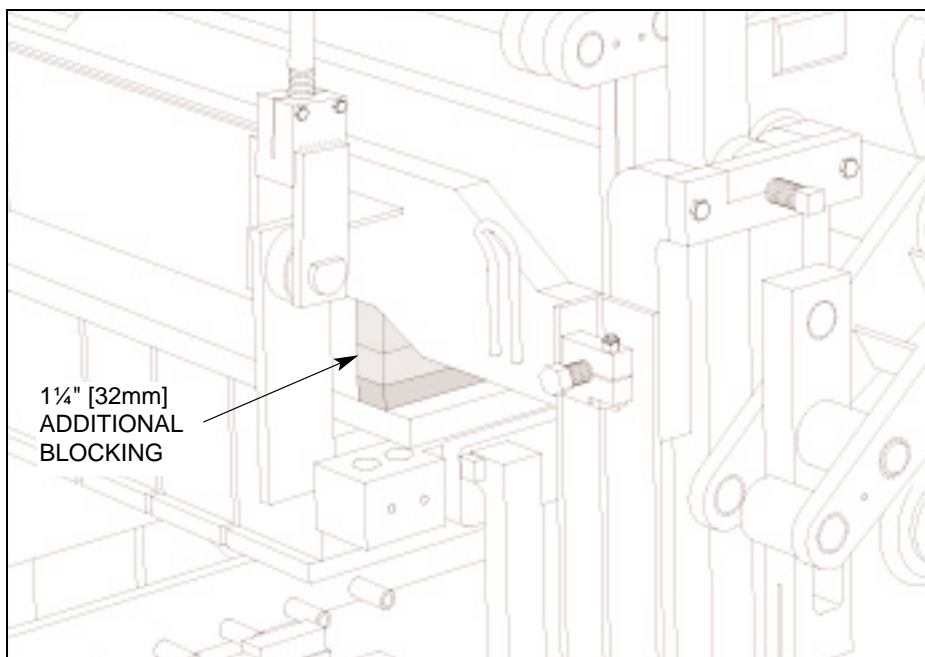


Figure 4.16 PLACING BLOCKING TO THE STRIPPER HEAD FRAME.

4.2 80mm HIGH UNITS IN A 86mm RAMPED MOLD

INITIAL CONDITION: No mold in the machine.

The following instructions will put the machine in approximate adjustment without the mold in the machine. Final adjustments will be necessary when concrete units are produced. See sections 5 and 6 of this manual.



CAUTION: Be sure to mechanically lock out the electrical panel when working on the concrete product machine. Always follow the lockout procedure listed in section 1 of this manual!

4.2.1 Run machine to "first stop" (see figure 4.17)

"First stop" is obtained when the punch marks on the pallet receiver cam are in line with the roller.

4.2.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**

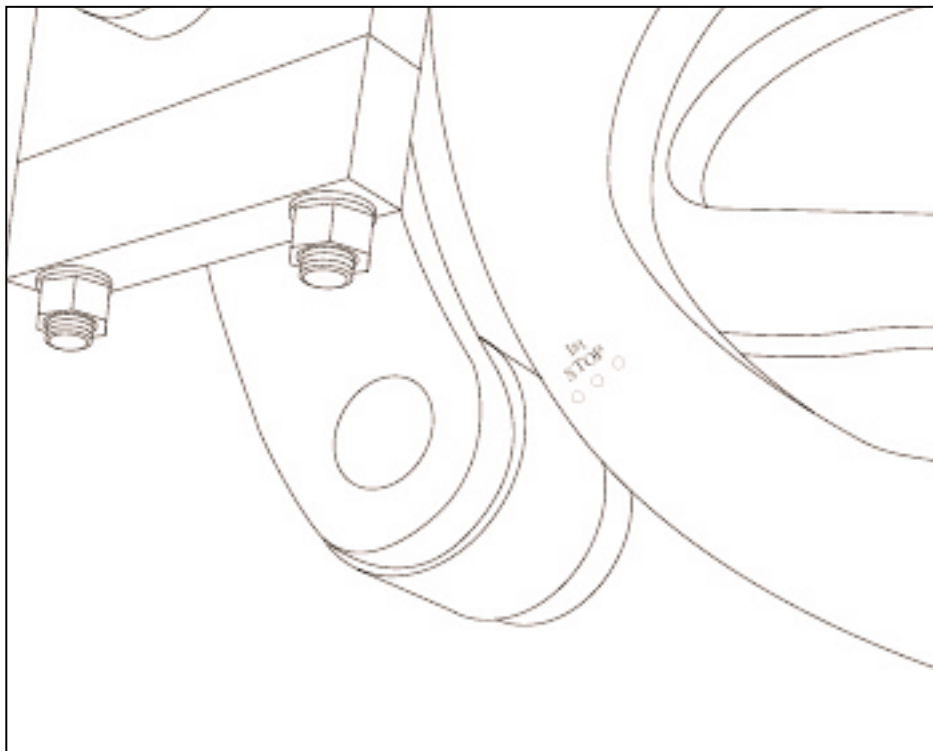


Figure 4.17 "FIRST STOP" (R.H. side of machine)

4.2.3 Install the **178mm [7"]** long upper height stops (**part # 25018**) and adjust so that **3 5/16" [84mm]** extend past the bottom of the castings (see figure 4.18).

4.2.4 Adjust the stripper head shock absorbers to a dimension of 204mm [8.04"] from the bottom of the clamp blocks to the bottom of the rubber pads (see figure 4.19).

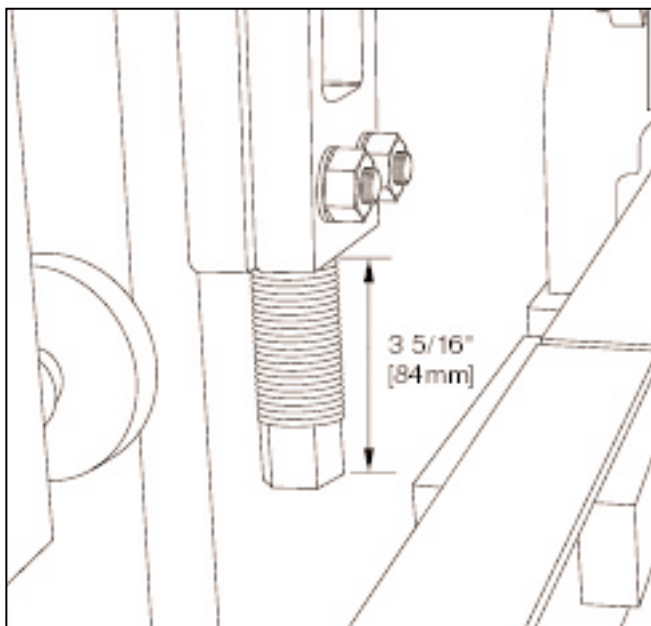


Figure 4.18 ADJUSTING UPPER HEIGHT STOPS

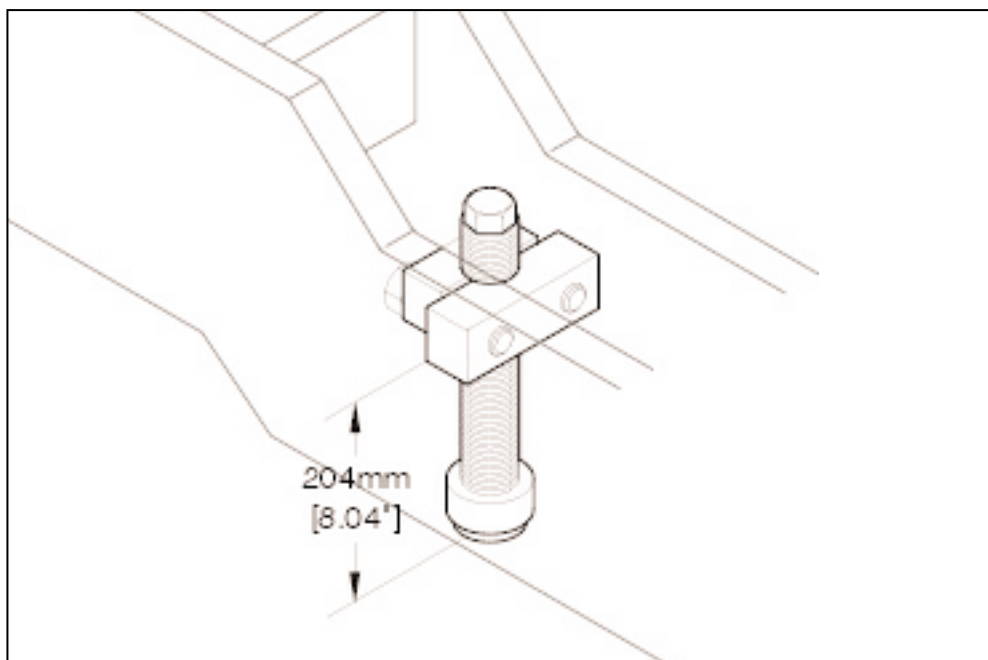


Figure 4.19 ADJUSTING STRIPPER HEAD SHOCK ABSORBERS

- 4.2.5 Run the machine to the stripped through position (stripper head frame shock absorbers resting on side frame pad).
- 4.2.6 Shut off clutch and turn power off. Wait until

motor has stopped completely. Also, **lock out machine**.

- 4.2.7 Install the reverse hopper gate (**part #225801**). See figure 4.20..

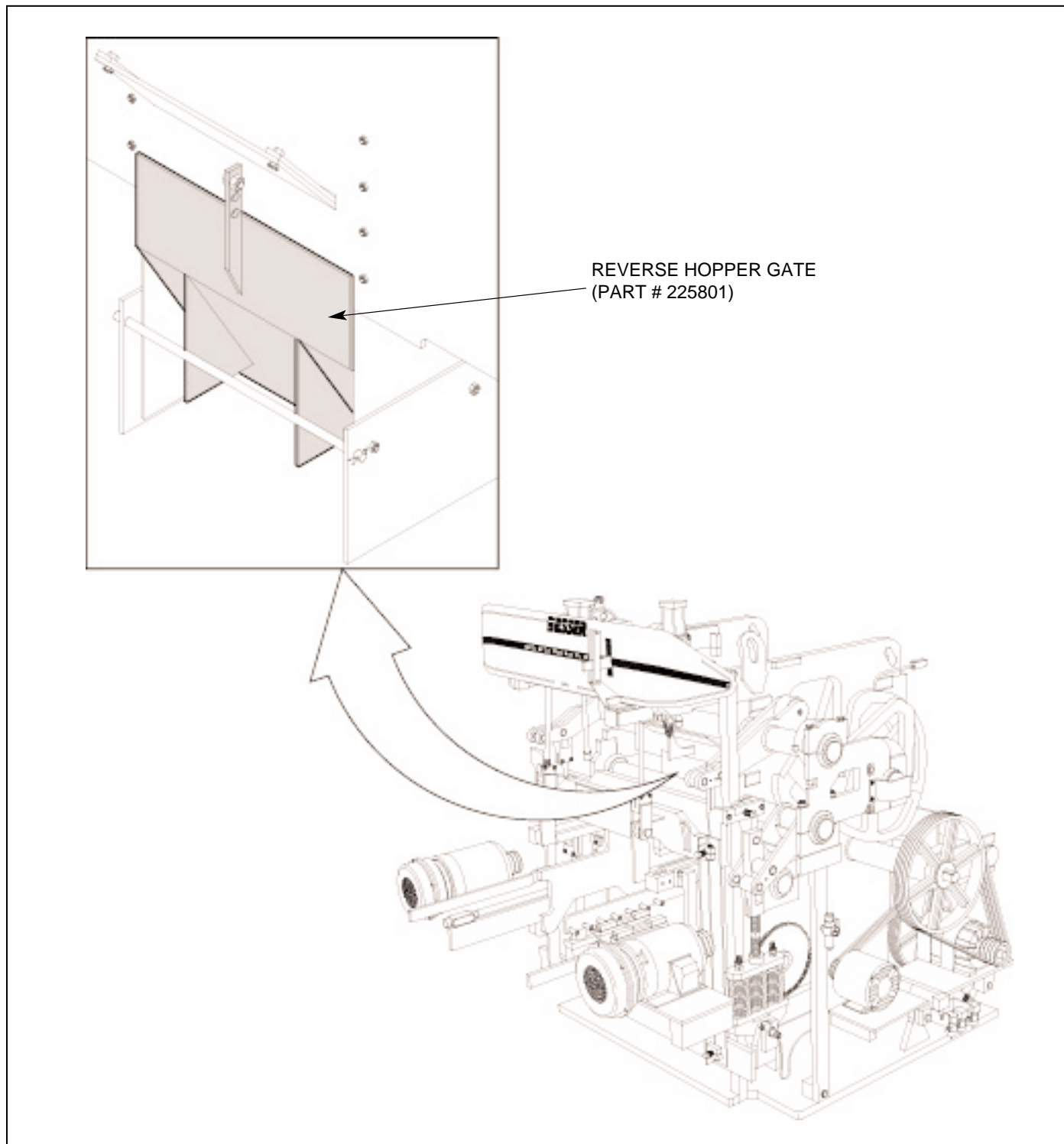


Figure 4.20 REVERSE HOPPER GATE

- 4.2.8 Jog the machine (see section 5.2) until the pallet receiver frame is at its maximum height. Stop machine before feedbox comes forward.
- 4.2.9 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.
- 4.2.10 Place safety blocking of **6" [150mm]** high under the pallet receiver frame (see figure 4.21).

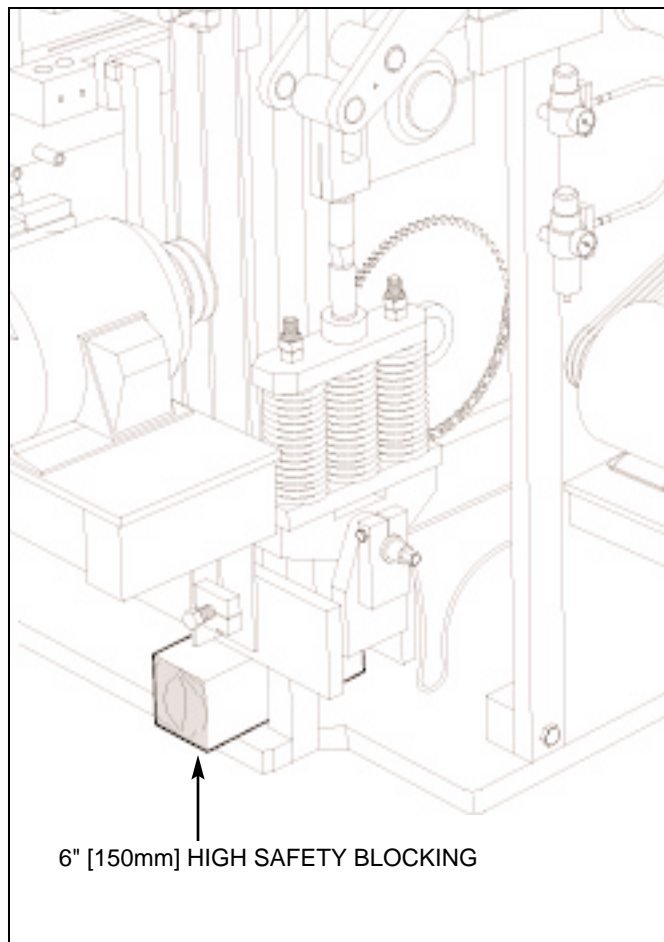


Figure 4.21 PLACING SAFETY BLOCKING.

- 4.2.11 Turn machine on. **Do not** start main motor. Jog the machine until the pallet receiver frame coasts down onto the safety blocking.
- 4.2.12 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.
- 4.2.13 Position the pins in the outer holes of the pallet receiver shaft arms (see figure 4.22).

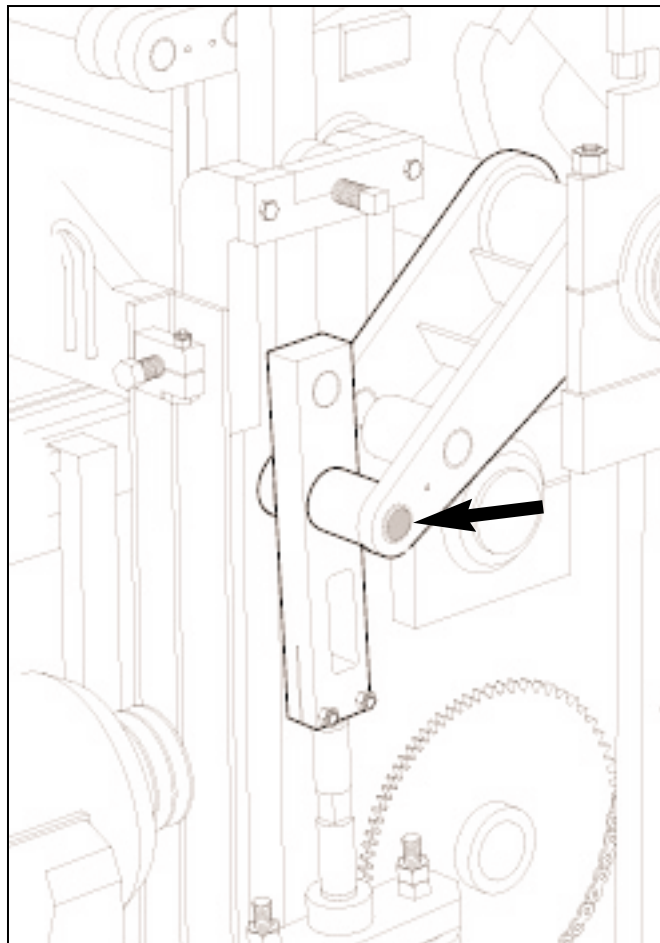


Figure 4.22 POSITIONING PINS IN OUTER HOLES.

- 4.2.14 Adjust the pallet receiver link assemblies to a dimension of **7" [178mm]** between the upper and lower link assemblies (see figure 4.23) (A). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

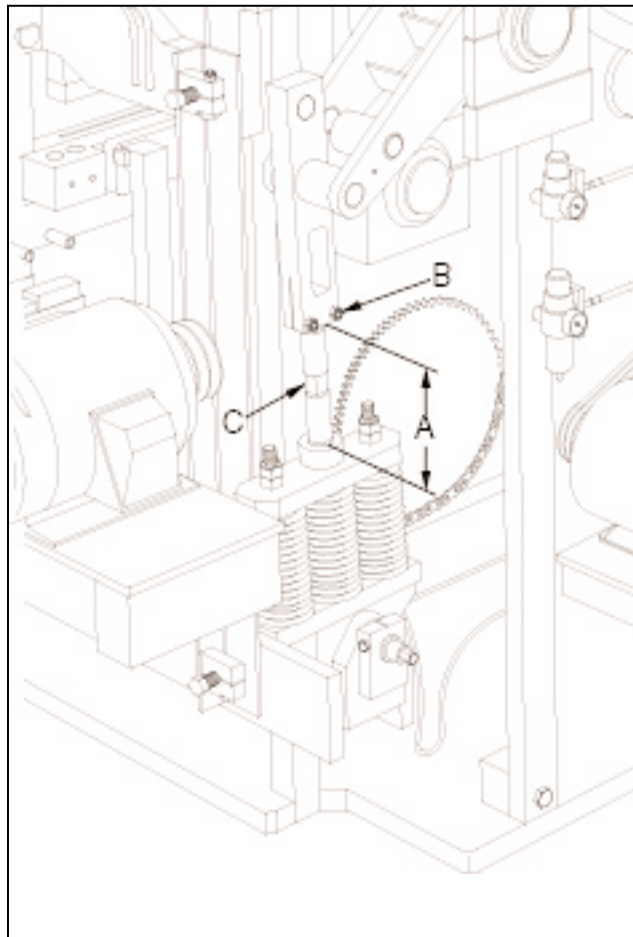


Figure 4.23 ADJUSTING PALLET RECEIVER LINKS

4.2.15 Position the pins in the inner holes of the stripper head shaft arms (see figure 4.24).

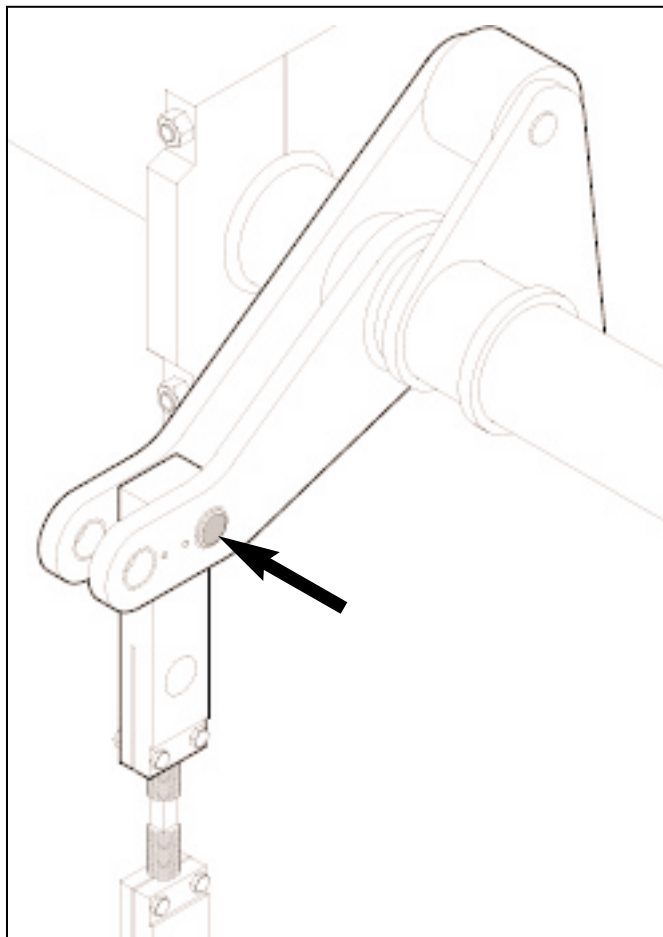


Figure 4.24 ADJUSTING STRIPPER HEAD ARMS

4.2.16 Adjust the stripper head links to a dimension of **92mm [3.61"]** between link ends (see figure 4.25) (A). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

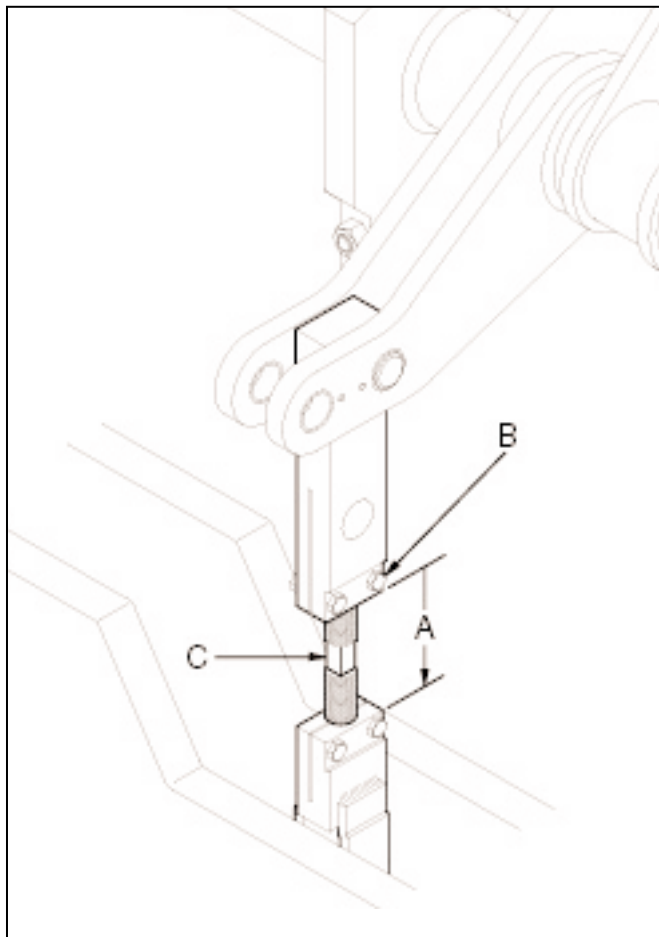


Figure 4.25 ADJUSTING STRIPPER HEAD LINKS

- 4.2.17 Measure the column of spacers supporting the pallet feeder assembly: if column is **222mm [8.75"]** high, go to step 4.2.27. If not, go to step 4.2.18 (see figure 4.26).

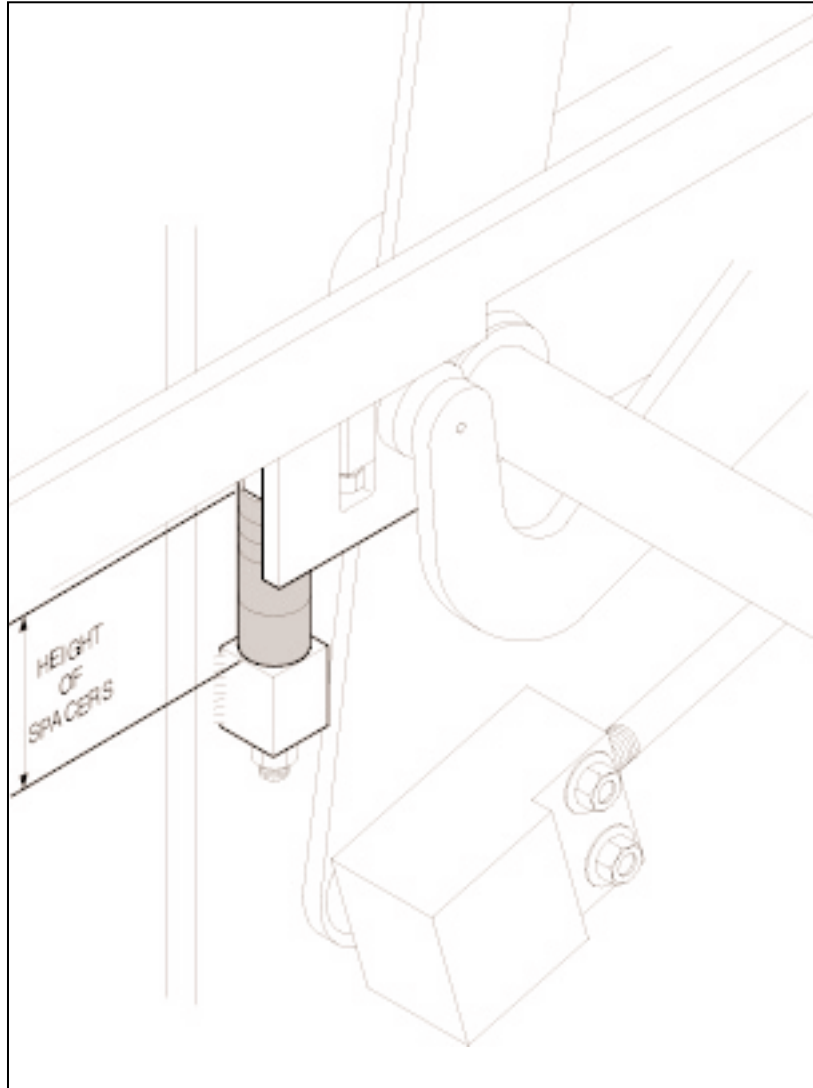


Figure 4.26 MEASURING COLUMN OF SPACERS

- 4.2.18 Measure and record the distance from the rear of the pallet magazine to the front of a chain lug on the pallet moving chain (see figure 4.27). Refer to section 6, "*Timing the pallet feeder*".

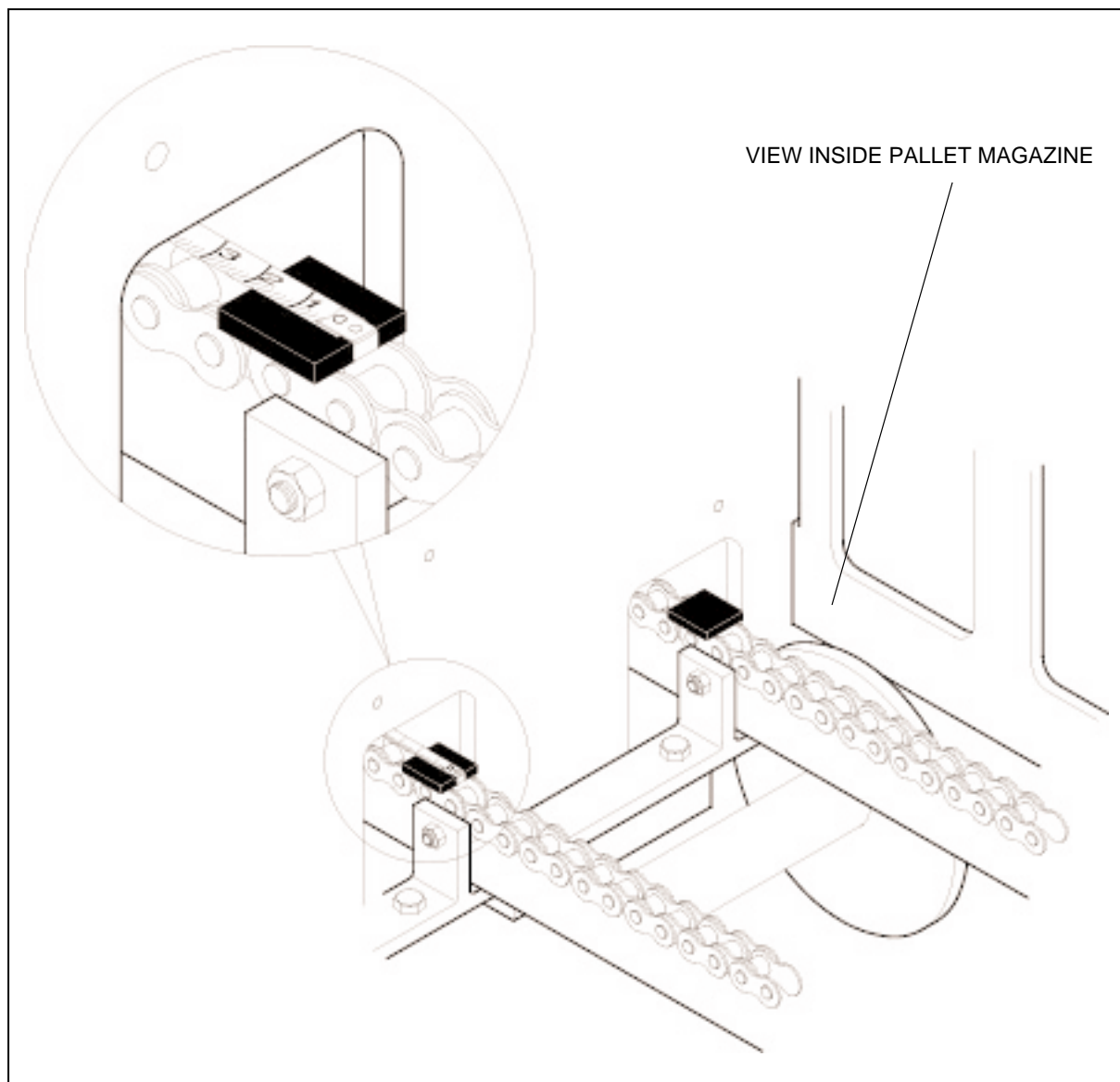


Figure 4.27 MEASURING DISTANCE FROM REAR OF PALLET MAGAZINE TO A CHAIN LUG

4.2.19 Remove the shear bolt from the pallet feeder drive sprocket (see figure 4.28).

4.2.20 Loosen the pallet feeder drive chain tensioner by unscrewing the bolts and loosening the tensioner. Disconnect the drive chain and remove from the feeder sprocket (see figure 4.29).

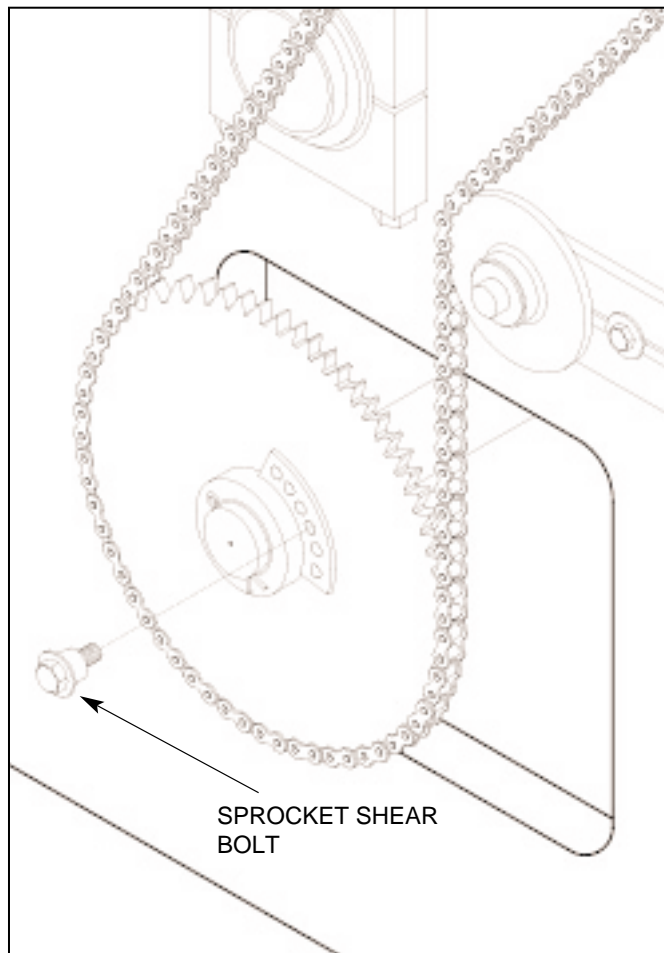


Figure 4.28 REMOVING SHEAR BOLT

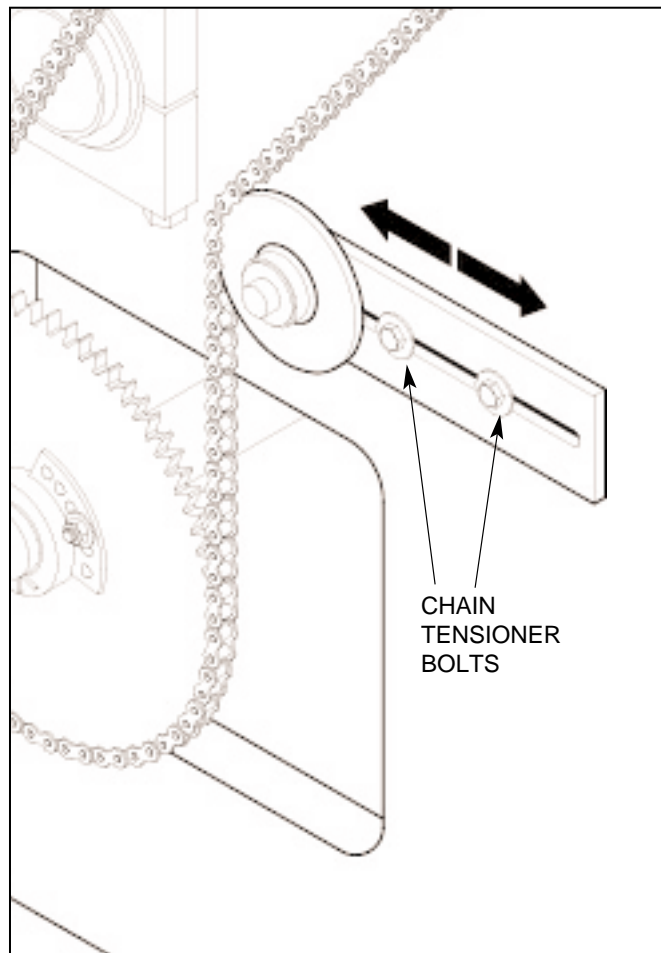


Figure 4.29 LOOSENING CHAIN TENSIONER

- 4.2.21 Loosen bolt of column spacers at all four corners (see figure 4.30).
- 4.2.22 Use a jack on all four corners to raise frame. Take spacers out on all corners (see figure 4.30).
- 4.2.23 Now, insert a column of spacers **8 3/4" [222mm]** high between the side frame supports and the pallet feeder supports (see figure 4.30).
- 4.2.24 Lower the pallet feeder on the spacers.
- 4.2.25 Reconnect the pallet feeder drive chain (change number of links if necessary) and adjust the chain tensioner assembly (see figure 4.29).

- 4.2.26 Check and reset if necessary the chain lug dimension recorded in step 4.2.18. Reinsert the shear pin in the drive sprocket.
- 4.2.27 Run the machine to first stop.
- 4.2.28 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.2.29 Remove safety blocking under pallet receiver frame.
- 4.2.30 Install stripping cam insert **part # 258977** (see figure 4.31).
- 4.2.31 Install the **3 1/8" [80mm]** mold attachment using the procedures in section 5 of this operating manual. When installing the stripper head, insert **1/2" [13mm]** of blocking between the stripper head plate and the stripper head frame.

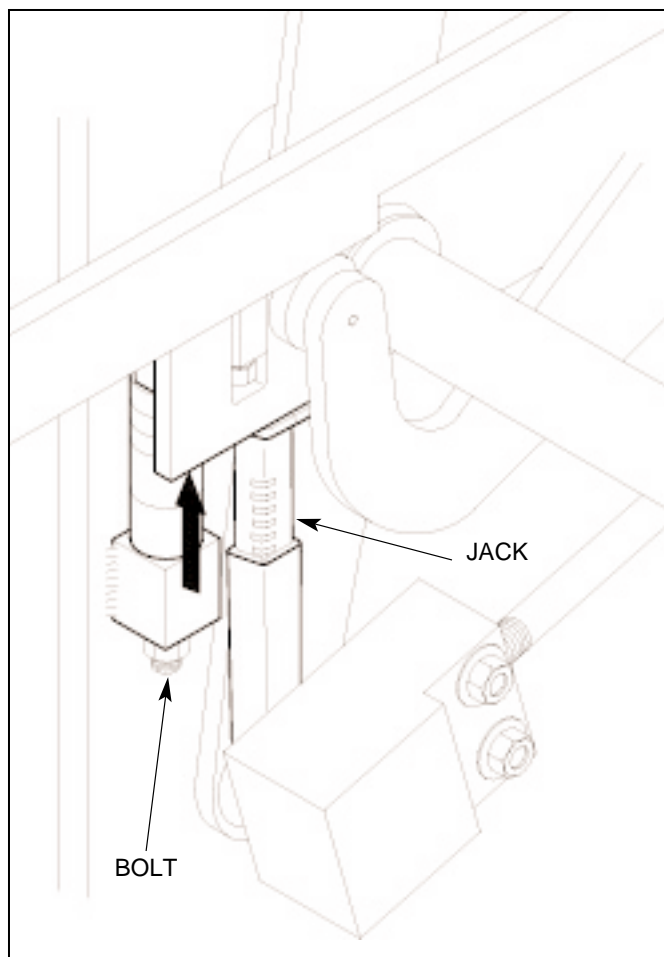


Figure 4.30 MEASURING COLUMN OF SPACERS

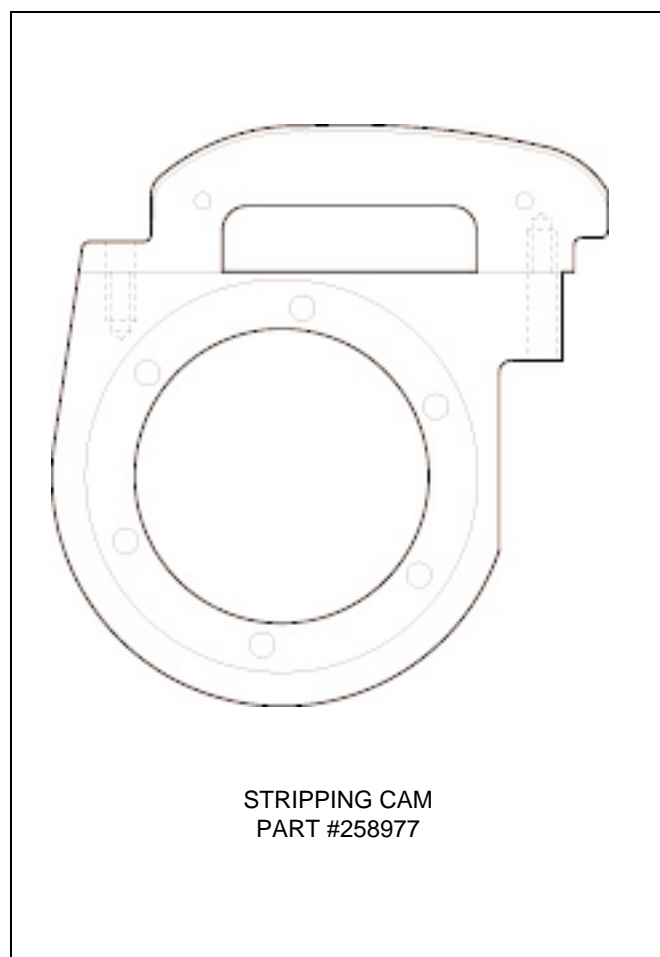


Figure 4.31 STRIPPING CAM INSERT

4.3 3 5/8" HIGH UNITS IN A 3 7/8" NON-RAMPED MOLD

INITIAL CONDITION: No mold in the machine.

The following instructions will put the machine in approximate adjustment without the mold in the machine. Final adjustments will be necessary when concrete units are produced. See sections 5 and 6 of this manual.



CAUTION: Be sure to mechanically lock out the electrical panel when working on the concrete product machine. Always follow the lockout procedure listed in section 1 of this manual!

4.3.1 Run machine to "first stop" (see figure 4.32)

"First stop" is obtained when the punch marks on the pallet receiver cam are in line with the roller.

4.3.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**

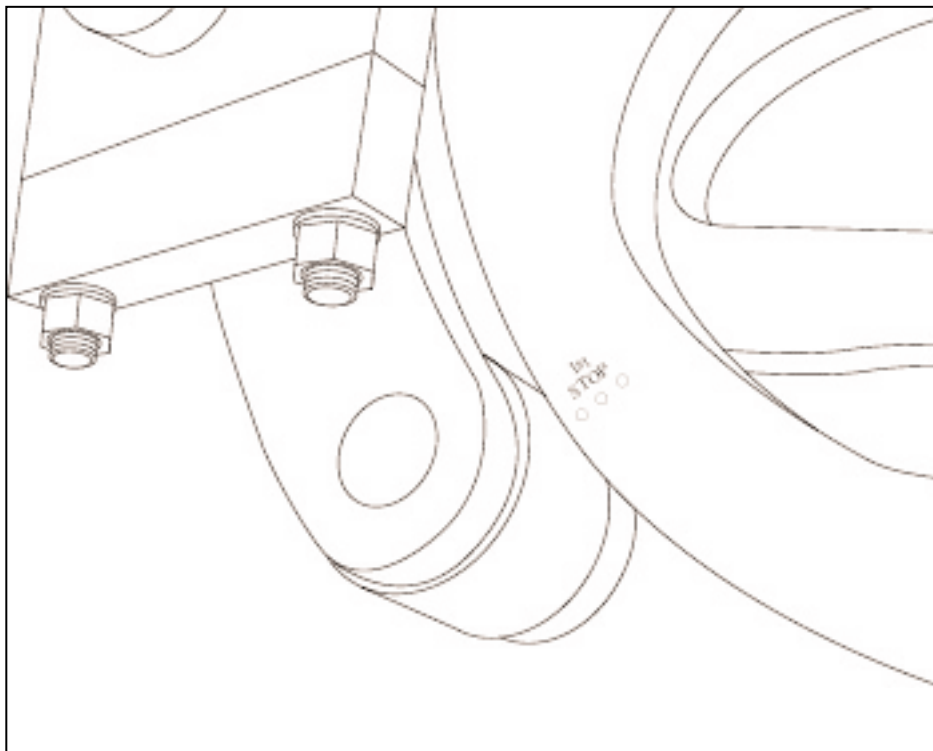


Figure 4.32 "FIRST STOP" (R.H. side of machine)

4.3.3 Install the 7" [178mm] long upper height stops and adjust so that 3 5/16" [84mm] extend past the bottom of the castings (see figure 4.33).

4.3.4 Adjust the stripper head shock absorbers to a dimension of 3 5/16" [192mm] from the bottom of the clamp blocks to the bottom of the rubber pads (see figure 4.34).

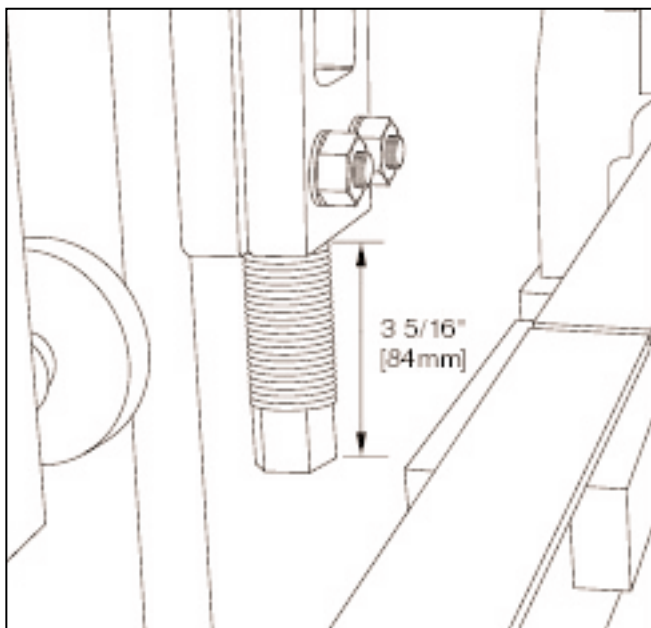


Figure 4.33 ADJUSTING UPPER HEIGHT STOPS

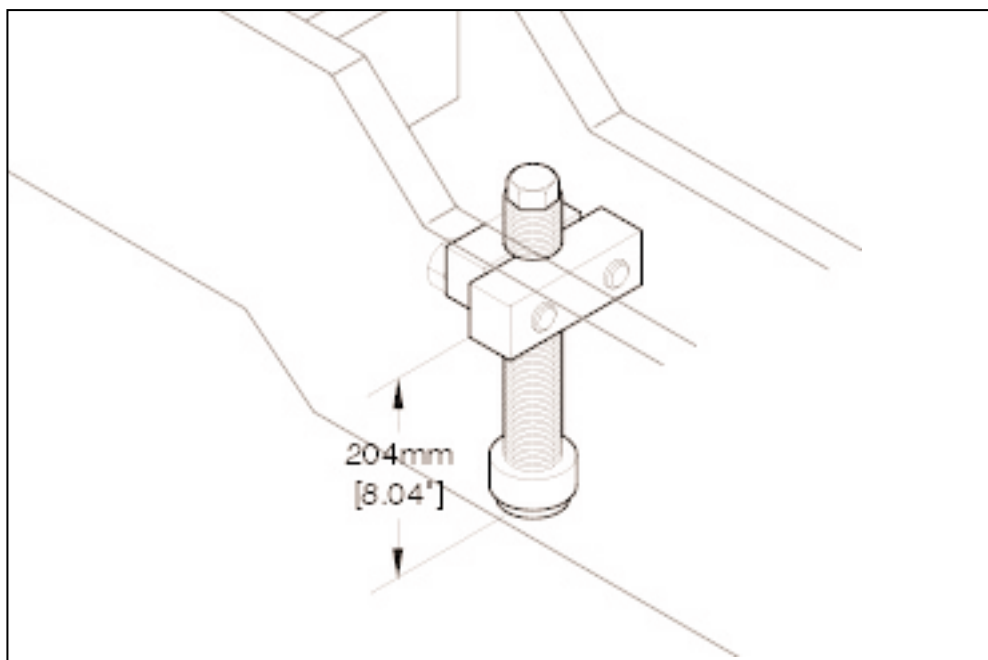


Figure 4.34 ADJUSTING STRIPPER HEAD SHOCK ABSORBERS

4.3.5 Run the machine to the stripped through position (stripper head frame shock absorbers resting on side frame pad).

4.3.6 Shut off clutch and turn power off. Wait until

motor has stopped completely. Also, **lock out machine**.

4.3.7 Install the reverse hopper gate (**part #225801**). See figure 4.35.

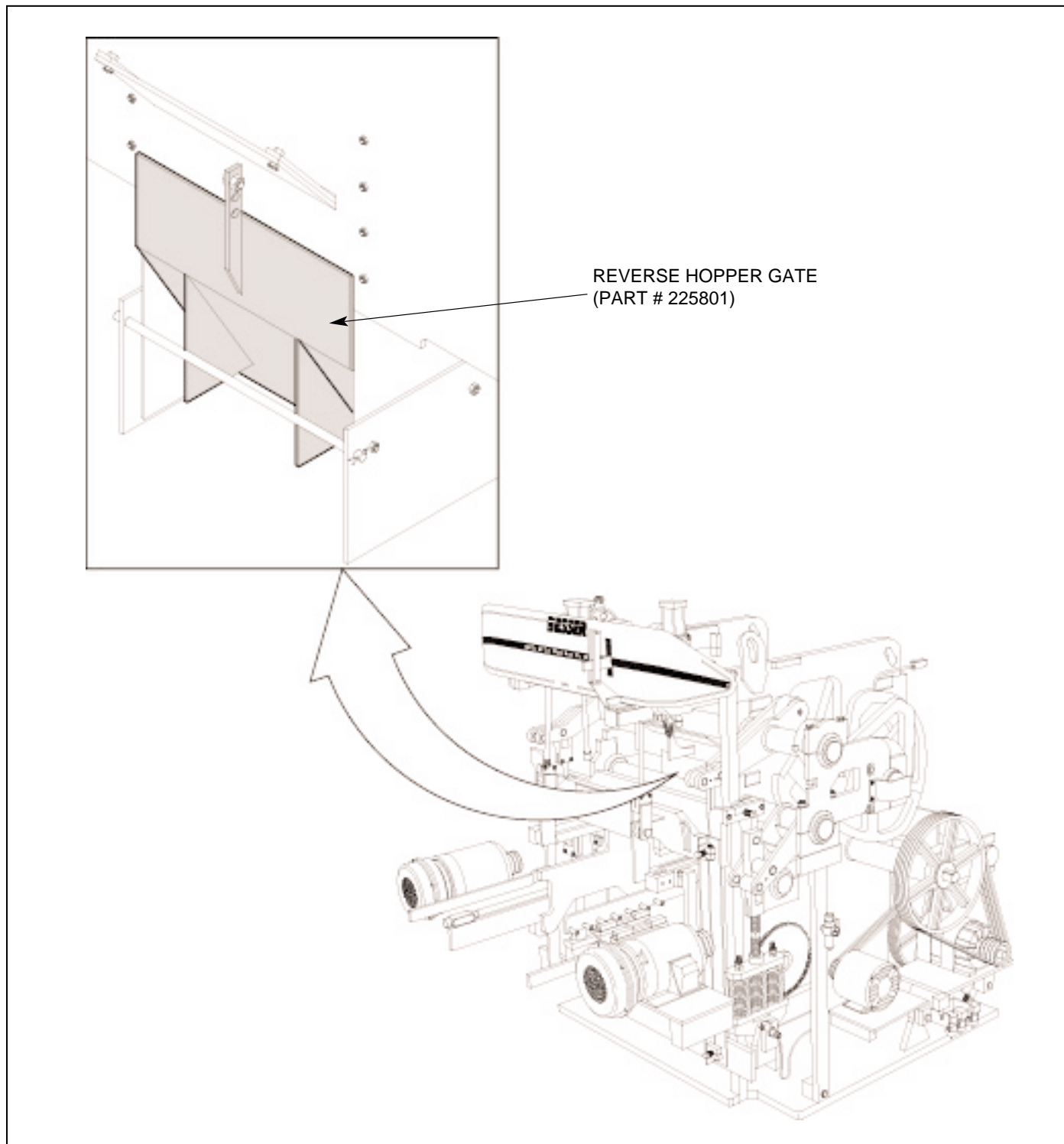


Figure 4.35 REVERSE HOPPER GATE

- 4.3.8 Jog the machine (see section 5.2) until the pallet receiver frame is at its maximum height. Stop machine before feedbox comes forward.
- 4.3.9 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.
- 4.3.10 Place safety blocking of **6" [150mm]** high under the pallet receiver frame (see figure 4.36)

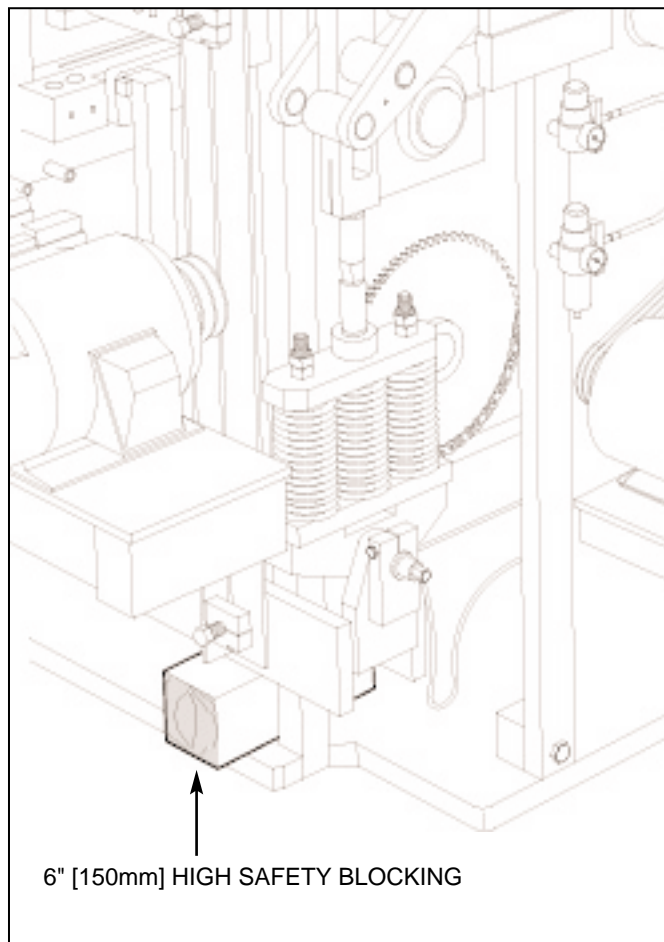


Figure 4.36 PLACING SAFETY BLOCKING.

- 4.3.11 Turn machine on. **Do not** start main motor. Jog the machine until the pallet receiver frame coasts down onto the safety blocking.
- 4.3.12 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.
- 4.3.13 Position the pins in the outer holes of the pallet receiver shaft arms (see figure 4.37).

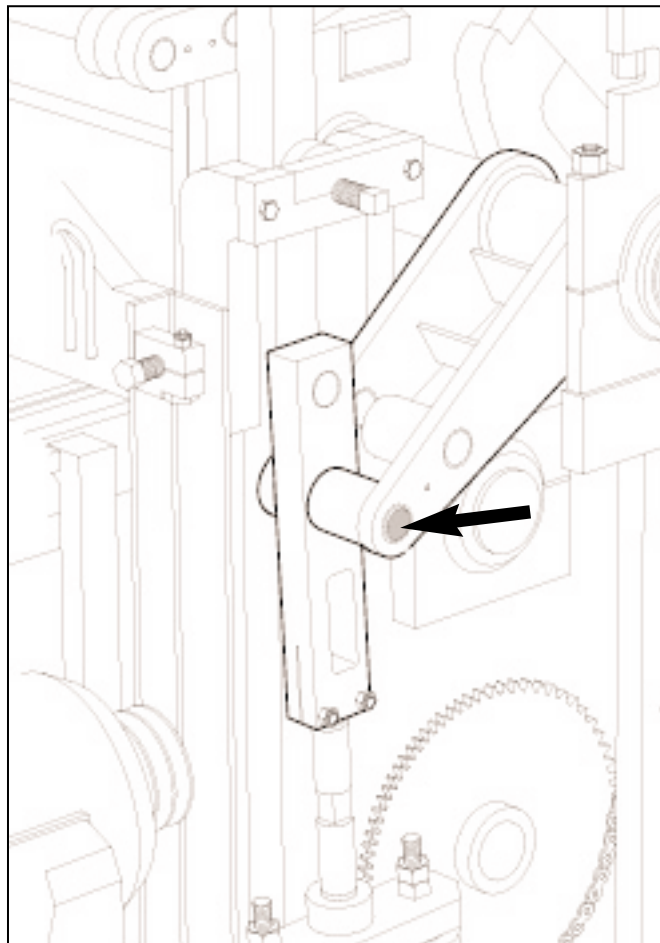


Figure 4.37 POSITIONING PINS IN OUTER HOLES.

- 4.3.14 Adjust the pallet receiver link assemblies to a dimension of **7" [178mm]** between the upper and lower link assemblies (see figure 4.38) (A). To do so, loosen the two bolts and turn up or turn down with a wrench.

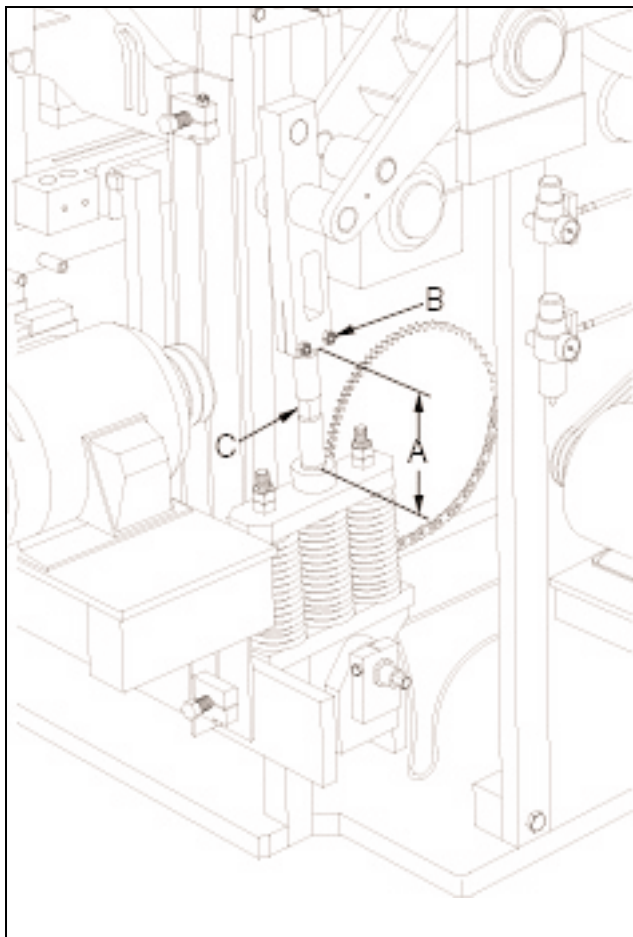


Figure 4.38 ADJUSTING PALLET RECEIVER LINKS

4.3.15 Position the pins in the inner holes of the stripper head shaft arms (see figure 4.39).

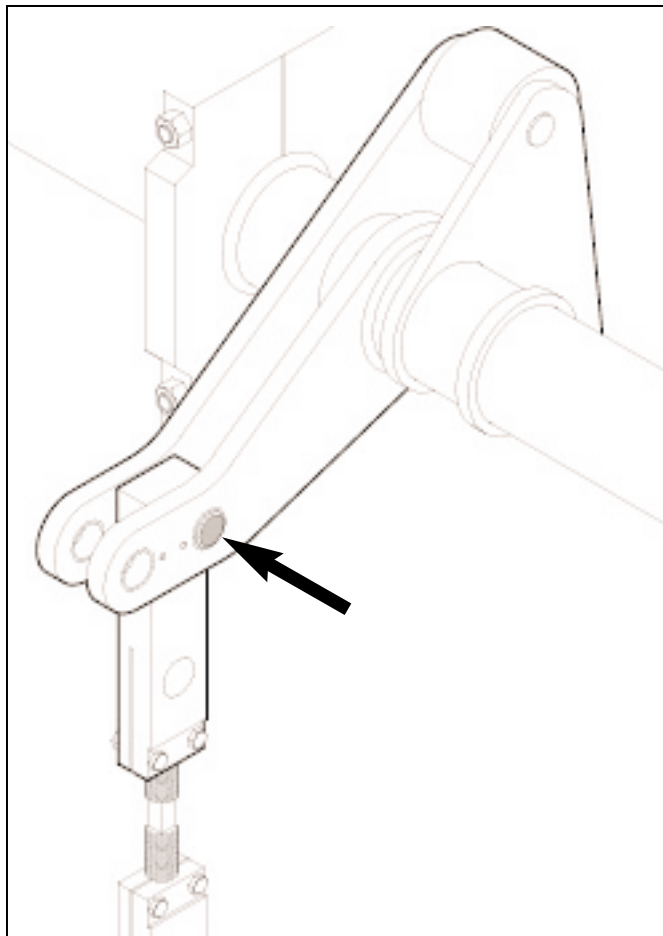


Figure 4.39 ADJUSTING STRIPPER HEAD ARMS

4.3.16 Adjust the stripper head links to a dimension of **3 5/8" [92mm]** (A) between link ends (see figure 4.40). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

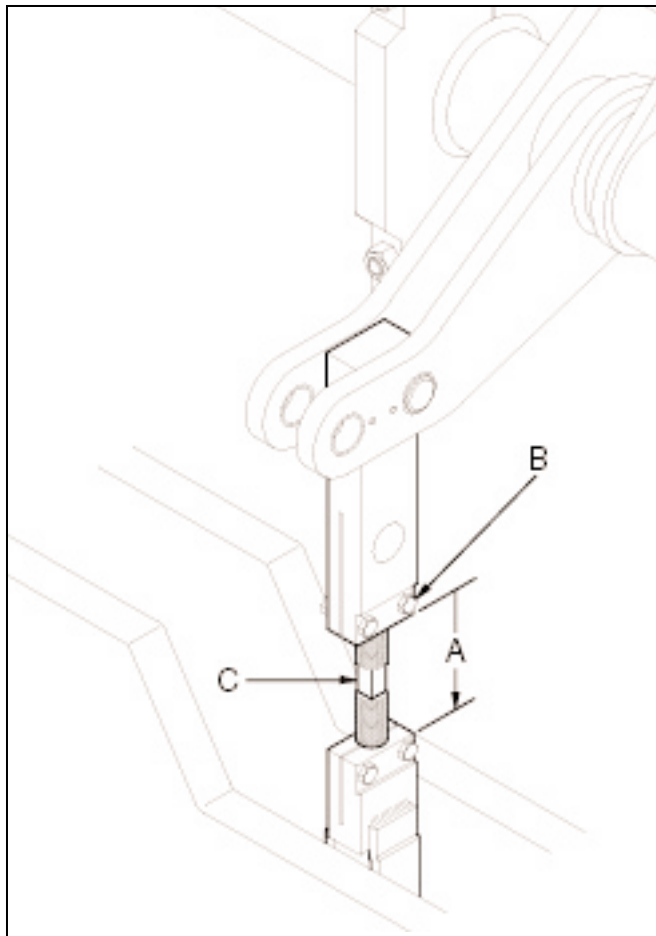


Figure 4.40 ADJUSTING STRIPPER HEAD LINKS

- 4.3.17 Measure the column of spacers supporting the pallet feeder assembly: if column is **8 3/4 [222mm]** high, go to step 4.3.27. If not, go to step 4.3.18 (see figure 4.41).

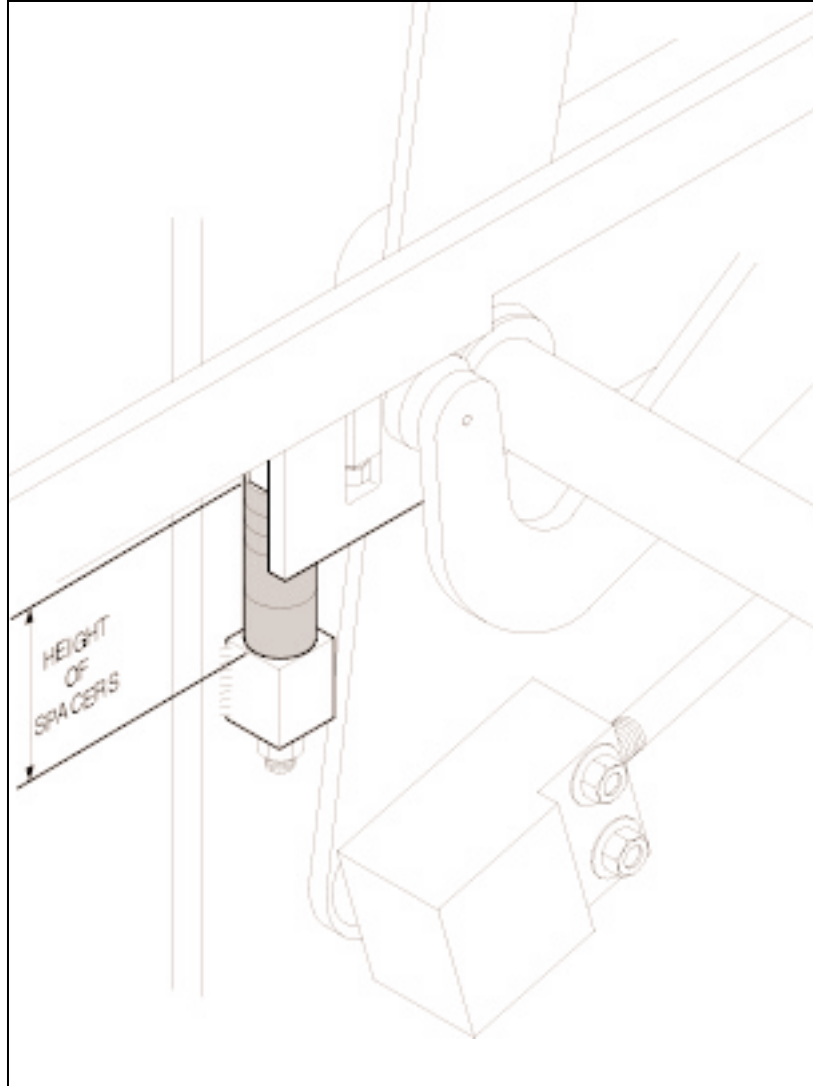


Figure 4.41 MEASURING COLUMN OF SPACERS

- 4.3.18 Measure and record the distance from the rear of the pallet magazine to the front of a chain lug on the pallet moving chain (see figure 4.42). Refer to section 6, "*Timing the pallet feeder*".

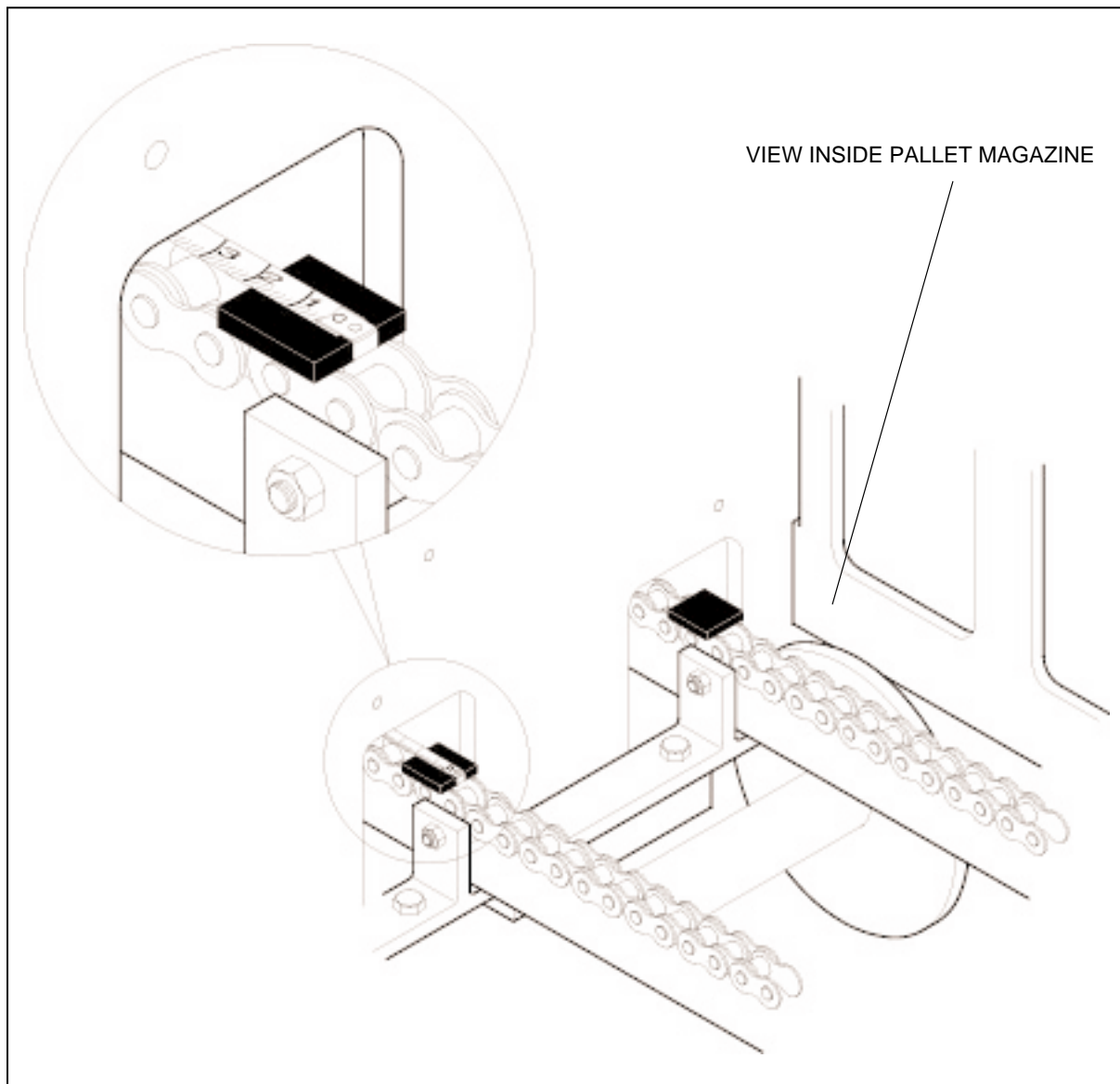


Figure 4.42 MEASURING DISTANCE FROM REAR OF PALLET MAGAZINE TO A CHAIN LUG

4.3.19 Remove the shear bolt from the pallet feeder drive sprocket (see figure 4.43).

4.3.20 Loosen the pallet feeder drive chain tensioner by unscrewing the bolts and loosening the tensioner. Disconnect the drive chain and remove from the feeder sprocket (see figure 4.44).

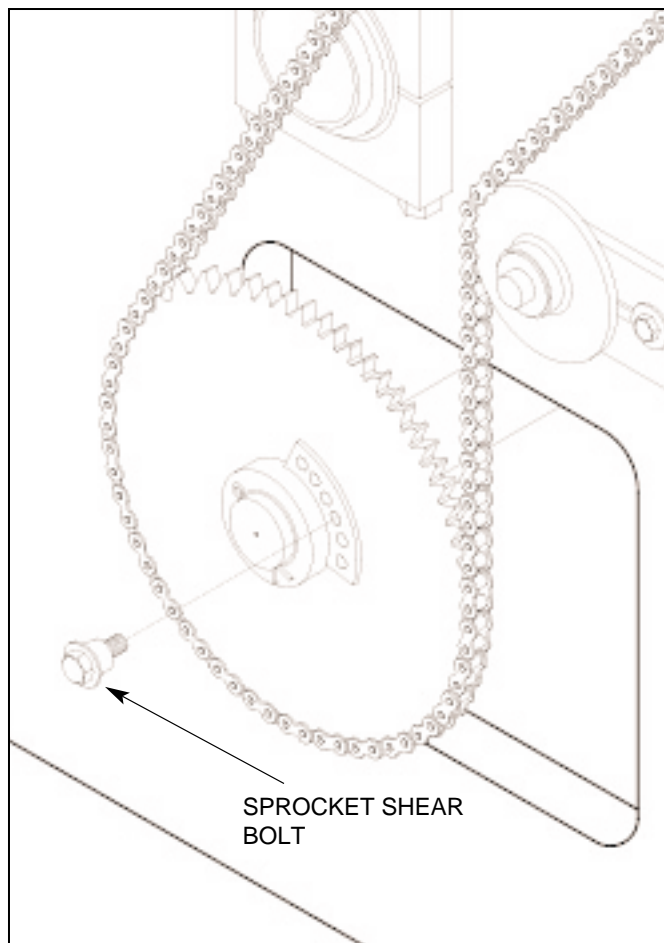


Figure 4.43 REMOVING SHEAR BOLT

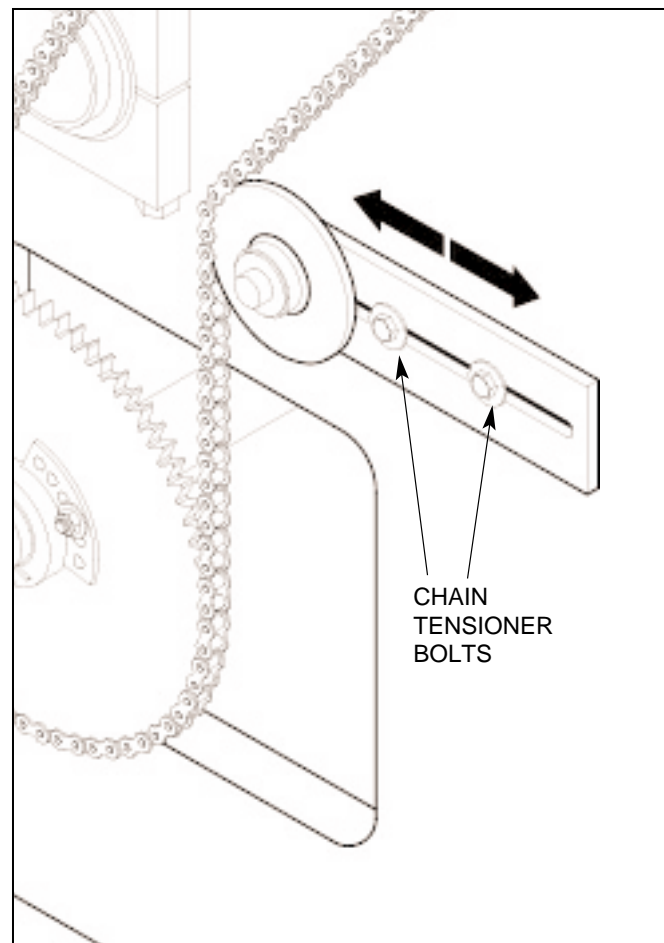


Figure 4.44 LOOSENING CHAIN TENSIONER

- 4.3.21 Loosen bolt of column spacers at all four corners (see figure 4.45).
- 4.3.22 Use a jack on all four corners to raise frame. Take spacers out on all corners (see figure 4.45).
- 4.3.23 Now, insert a column of spacers **8 3/4" [222mm]** high between the side frame supports and the pallet feeder supports (see figure 4.45).
- 4.3.24 Lower the pallet feeder on the spacers.
- 4.3.25 Reconnect the pallet feeder drive chain (change number of links if necessary) and adjust the chain tensioner assembly (see figure 4.44).

- 4.3.26 Check and reset if necessary the chain lug dimension recorded in step 4.3.18. Reinsert the shear pin in the drive sprocket.
- 4.3.27 Run the machine to first stop.
- 4.3.28 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.3.29 Remove safety blocking under pallet receiver frame.
- 4.3.30 Install the **3 5/8" [92mm]** stripping cam insert **part # 258977** (see figure 4.46).
- 4.3.31 Install the **3 7/8" [98mm]** mold attachment using the procedures in section 5 of this operating manual.

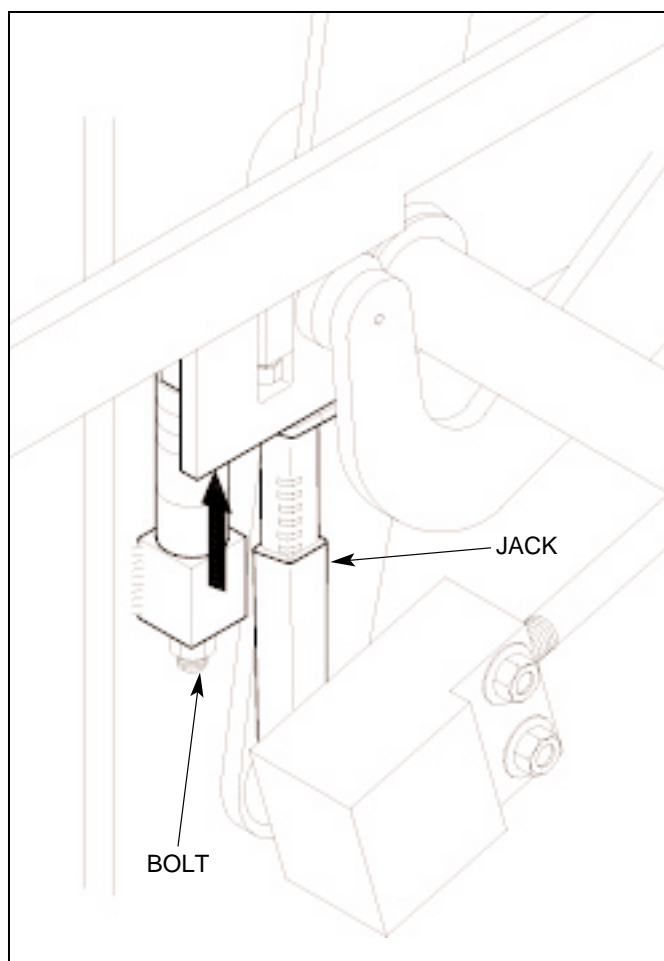


Figure 4.45 MEASURING COLUMN OF SPACERS

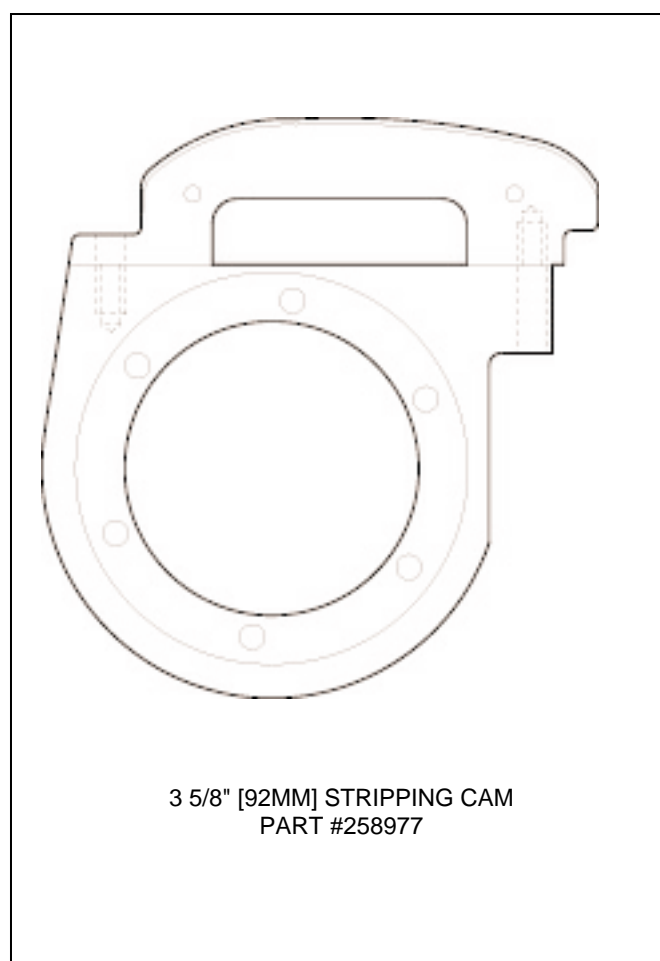


Figure 4.46 STRIPPING CAM INSERT

4.4 7 5/8" HIGH UNITS IN A 8 1/4" NON-RAMPED MOLD

INITIAL CONDITION: No mold in the machine.

The following instructions will put the machine in approximate adjustment without the mold in the machine. Final adjustments will be necessary when concrete units are produced. See sections 5 and 6 of this manual.



CAUTION: Be sure to mechanically lock out the electrical panel when working on the concrete product machine. Always follow the lockout procedure listed in section 1 of this manual!

4.4.1 Run machine to "first stop" (see figure 4.47)

"First stop" is obtained when the punch marks on the pallet receiver cam are in line with the roller.

4.4.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**

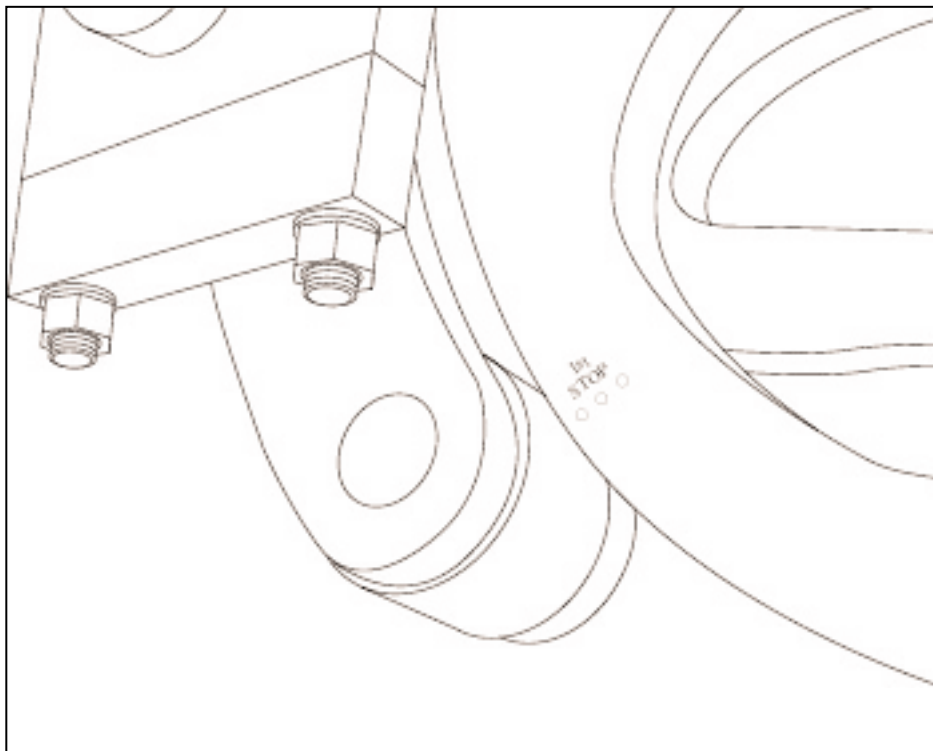


Figure 4.47 "FIRST STOP" (R.H. side of machine)

- 4.4.3 Install the **12 1/2" [318mm]** long upper height stops (**part # 047356**) and adjust so that **7 7/16" [189mm]** extend past the bottom of the castings (see figure 4.48).

- 4.4.4 Adjust the stripper head shock absorbers to a dimension of **3 3/16" [81mm]** from the bottom of the clamp blocks to the bottom of the rubber pads (see figure 4.49).

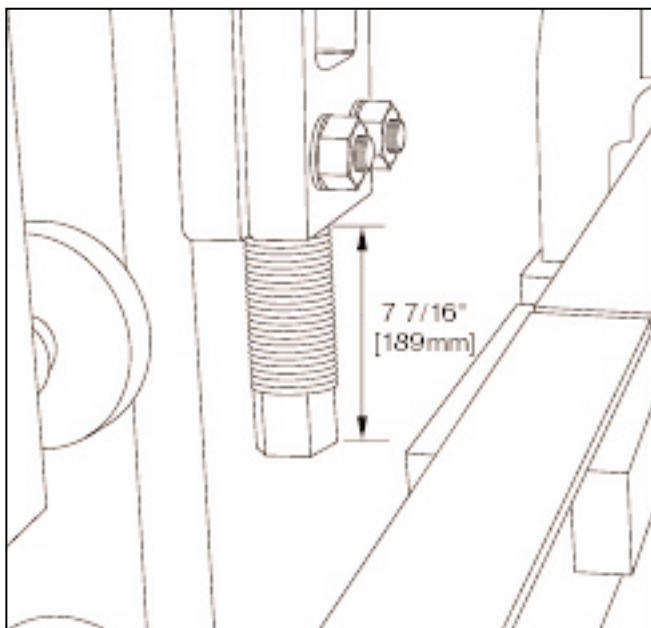


Figure 4.48 ADJUSTING UPPER HEIGHT STOPS

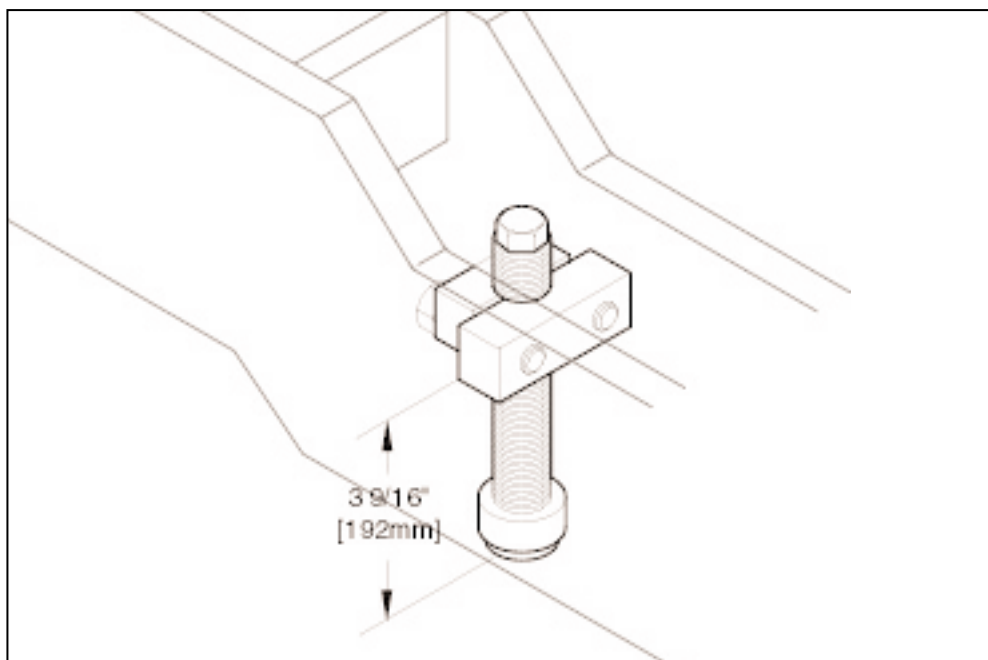


Figure 4.49 ADJUSTING STRIPPER HEAD SHOCK ABSORBERS

- 4.4.5 Run the machine to the stripped through position (stripper head frame shock absorbers resting on side frame pad).
- 4.4.6 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.4.7 Jog the machine (see section 5.2) until the pallet receiver frame is at its maximum height. Stop machine before feedbox comes forward.
- 4.4.8 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.4.9 Place safety blocking of **6" [150mm]** high under the pallet receiver frame (see figure 4.50).
- 4.4.10 Turn machine on. **Do not** start main motor. Jog the machine until the pallet receiver frame coasts down onto the safety blocking.
- 4.4.11 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine.**
- 4.4.12 Position the pins in the inner holes of the pallet receiver shaft arms (see figure 4.51).

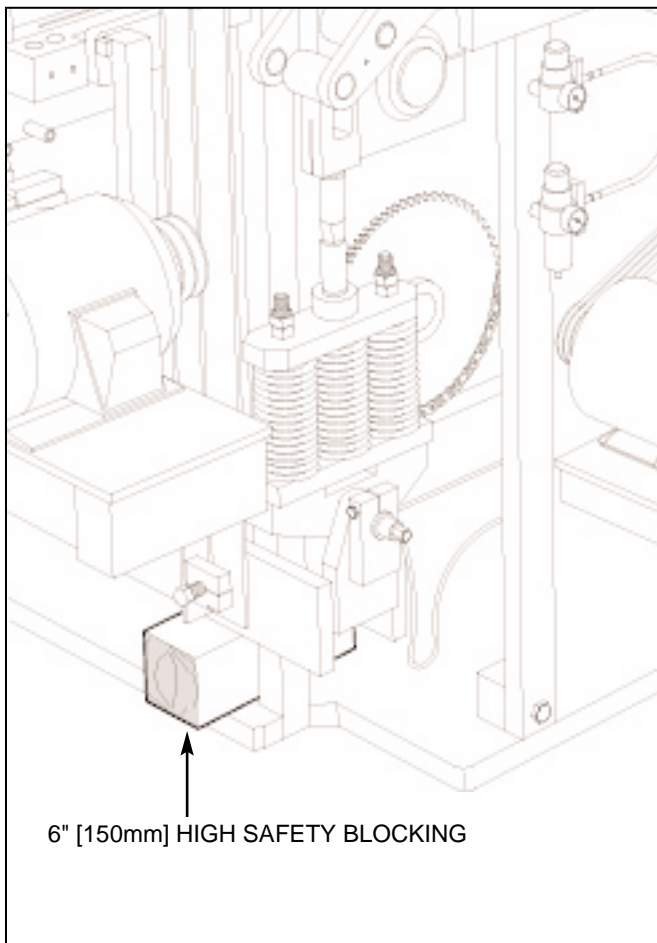


Figure 4.50 PLACING SAFETY BLOCKING.

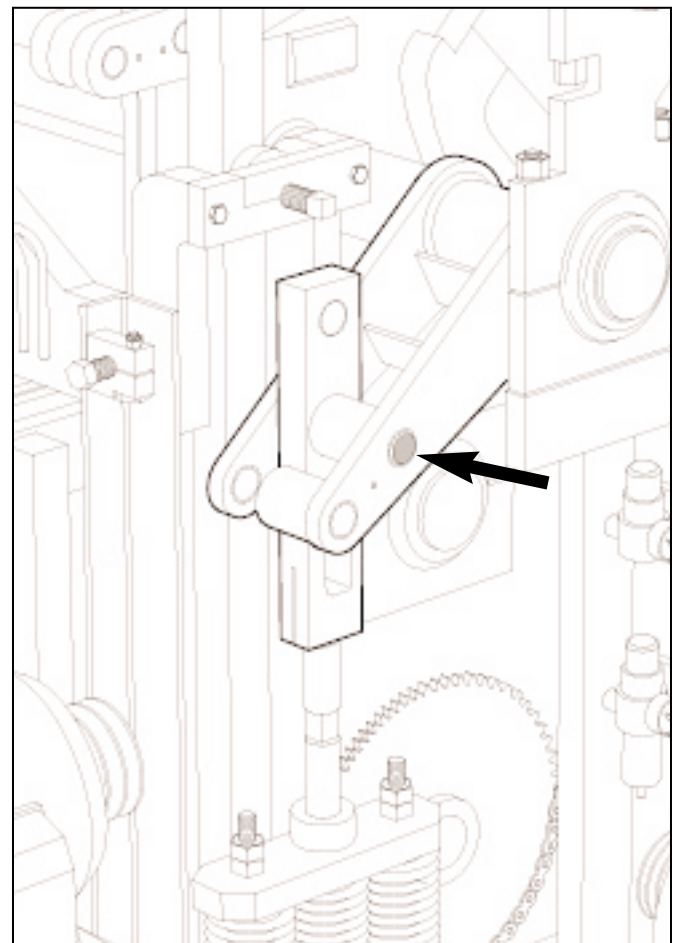


Figure 4.51 POSITIONING PINS IN INNER HOLES.

- 4.4.13 Adjust the pallet receiver link assemblies to a dimension of **10 1/16" [256mm]** between the upper and lower link assemblies (see figure 4.52) (A). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

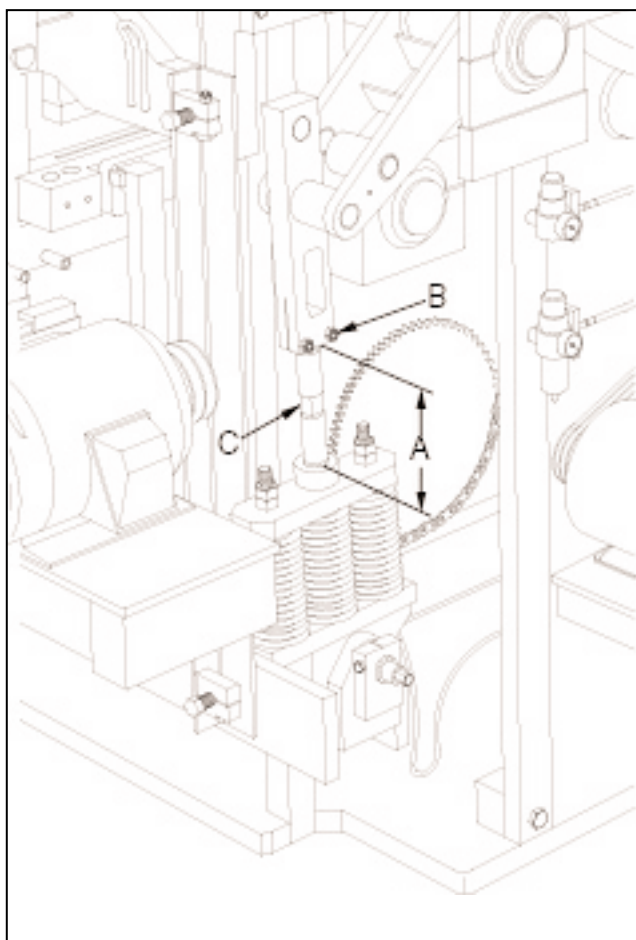


Figure 4.52 ADJUSTING PALLET RECEIVER LINKS

4.4.14 Position the pins in the inner holes of the stripper head shaft arms (see figure 4.53).

4.4.15 Adjust the stripper head links to a dimension of **3 5/8" [92mm]** (A) between link ends (see figure 4.54). To do so, loosen the two bolts (B) and turn up or turn down (C) with a wrench.

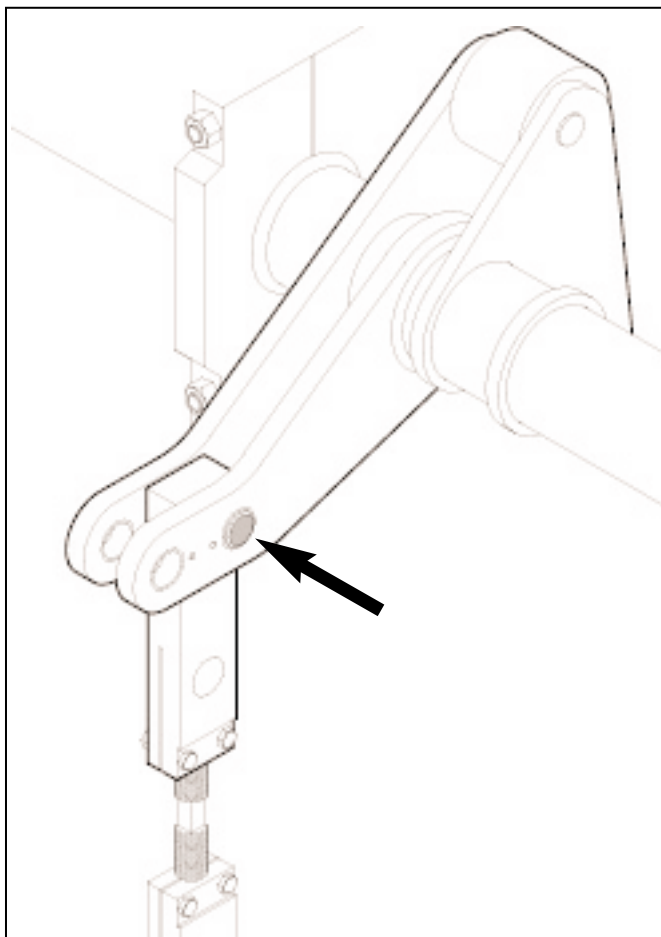


Figure 4.53 ADJUSTING STRIPPER HEAD ARMS

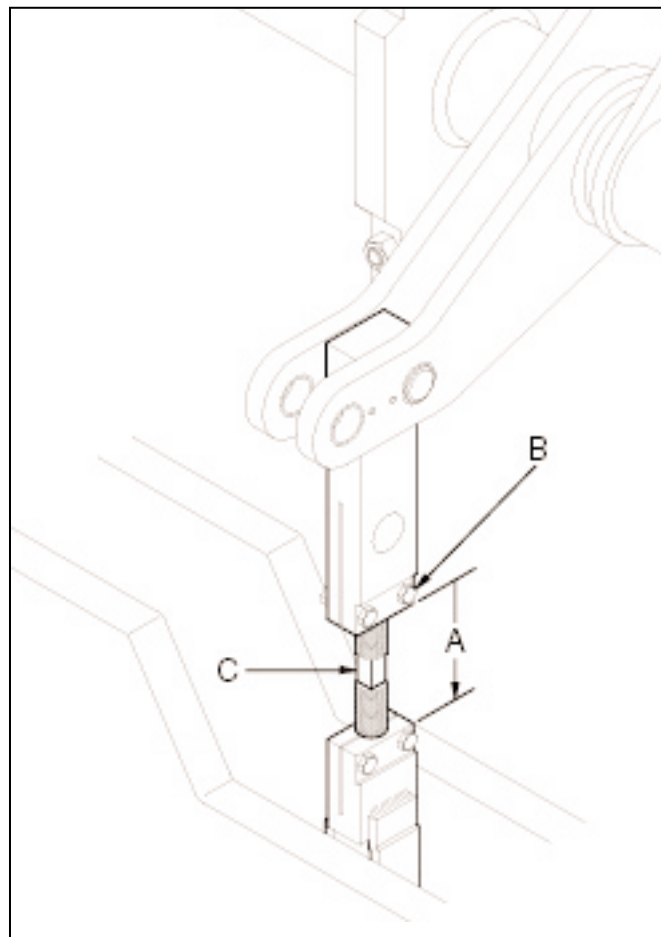


Figure 4.54 ADJUSTING STRIPPER HEAD LINKS

- 4.4.16 Measure the column of spacers supporting the pallet feeder assembly: if column is **8 3/4" [222mm]** high, go to step 4.4.27. If not, go to step 4.4.18 (see figure 4.55).

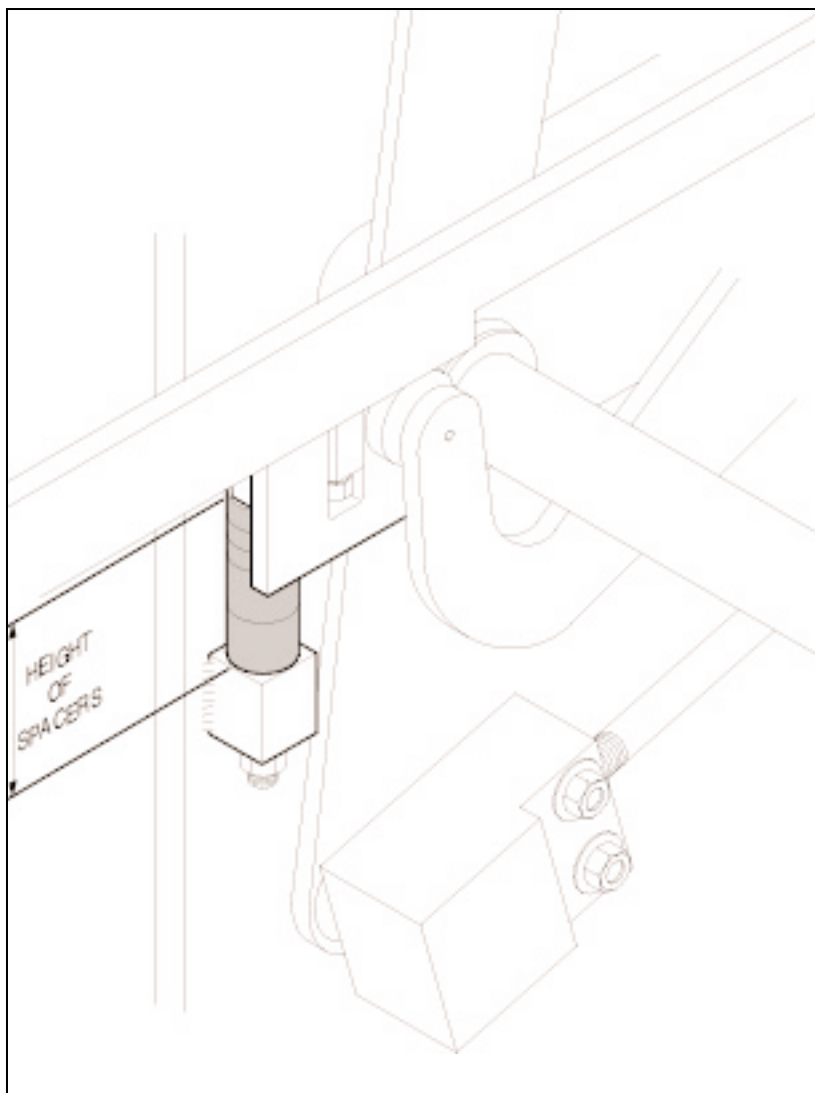


Figure 4.55 MEASURING COLUMN OF SPACERS

- 4.4.17 Measure and record the distance from the rear of the pallet magazine to the front of a chain lug on the pallet moving chain (see figure 4.56). Refer to section 6, "*Timing the pallet feeder*".

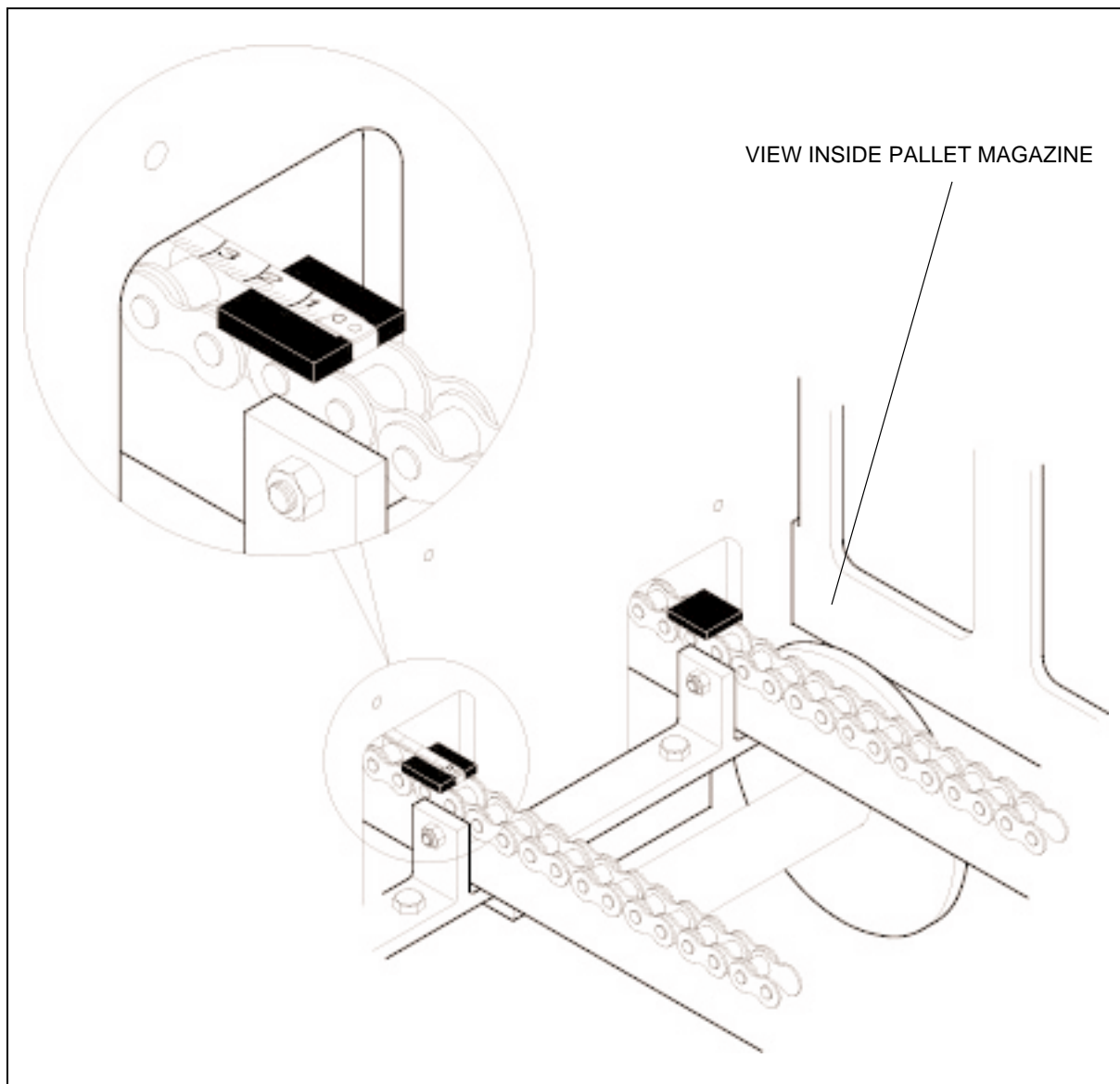


Figure 4.56 MEASURING DISTANCE FROM REAR OF PALLET MAGAZINE TO A CHAIN LUG

4.4.18 Remove the shear bolt from the pallet feeder drive sprocket (see figure 4.57).

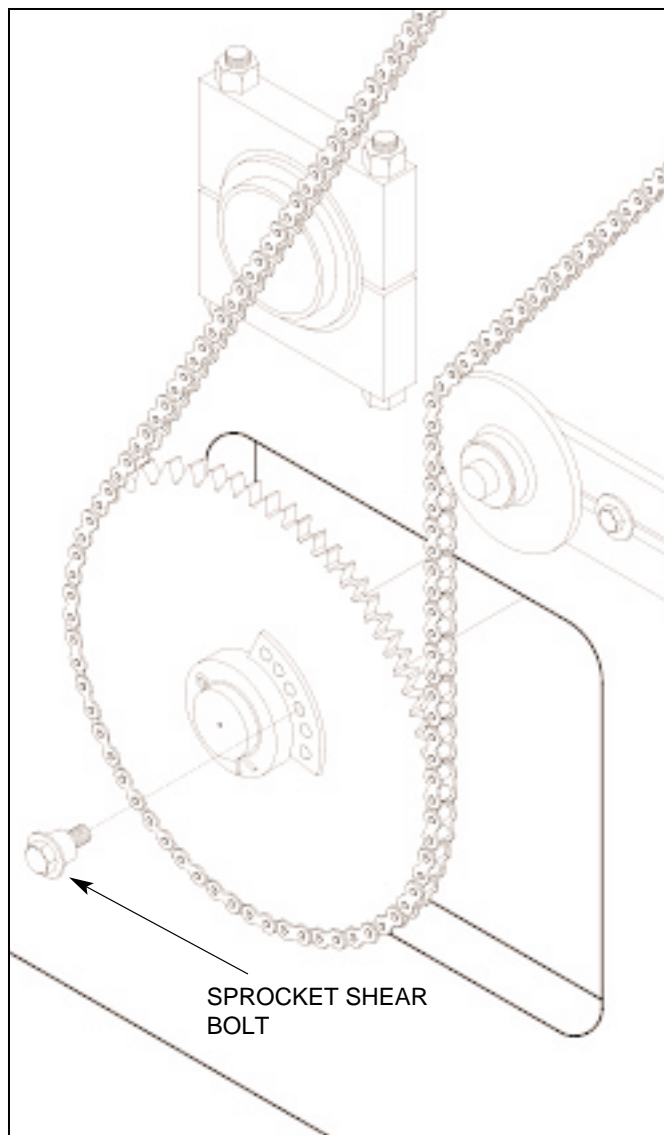


Figure 4.57 REMOVING SHEAR BOLT

4.4.19 Loosen the pallet feeder drive chain tensioner by unscrewing the bolts and loosening the tensioner. Disconnect the drive chain and remove from the feeder sprocket (see figure 4.58).

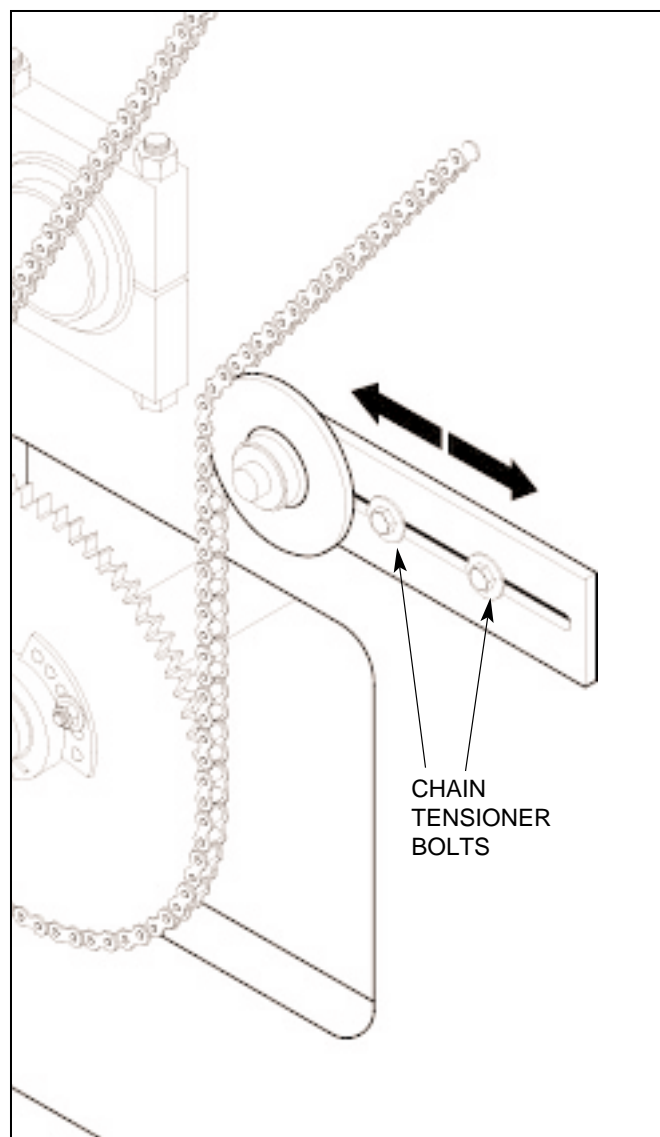


Figure 4.58 LOOSENING CHAIN TENSIONER

- 4.4.20 Loosen bolt of column spacers at all four corners (see figure 4.59).
- 4.4.21 Use a jack on all four corners to raise frame. Take spacers out on all corners (see figure 4.59).
- 4.4.22 Now, insert a column of spacers **8 3/4" [222mm]** high between the side frame supports and the pallet feeder supports (see figure 4.59).
- 4.4.23 Lower the pallet feeder on the spacers.
- 4.4.24 Reconnect the pallet feeder drive chain (change number of links if necessary) and adjust the chain tensioner assembly (see figure 4.58).
- 4.4.25 Check and reset if necessary the chain lug dimension recorded in step 4.4.18. Reinsert the shear pin in the drive sprocket.
- 4.4.26 Run the machine to first stop.
- 4.4.27 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.
- 4.4.28 Remove safety blocking under pallet receiver frame.
- 4.4.29 Install the **7 5/8" [194mm]** stripping cam insert **part # 264454** (see figure 4.60).
- 4.4.30 Install the **8 1/4" [194mm]** mold attachment using the procedures in section 5 of this operating manual.

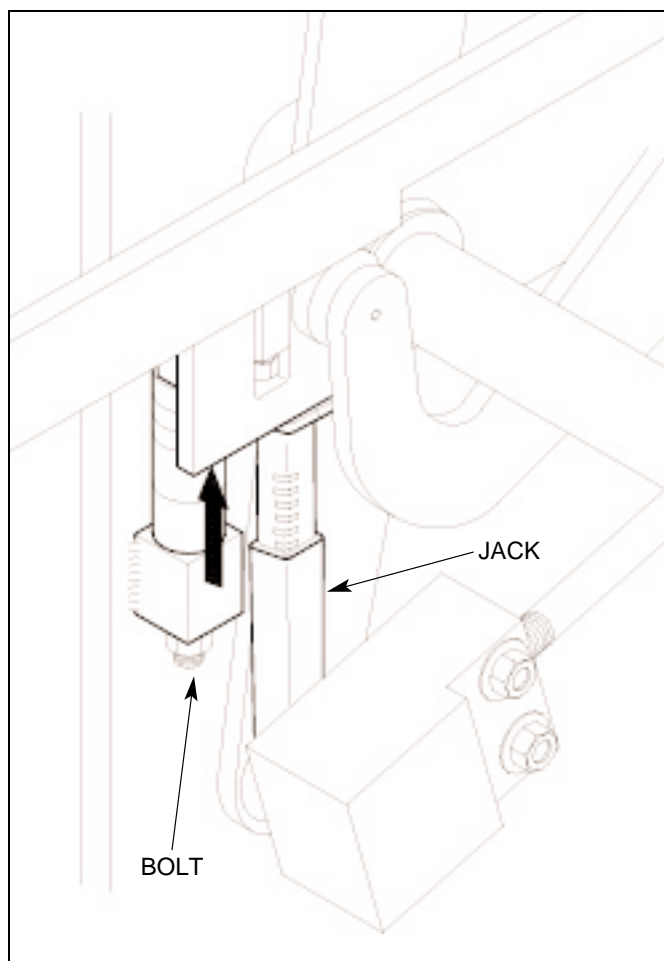


Figure 4.59 MEASURING COLUMN OF SPACERS

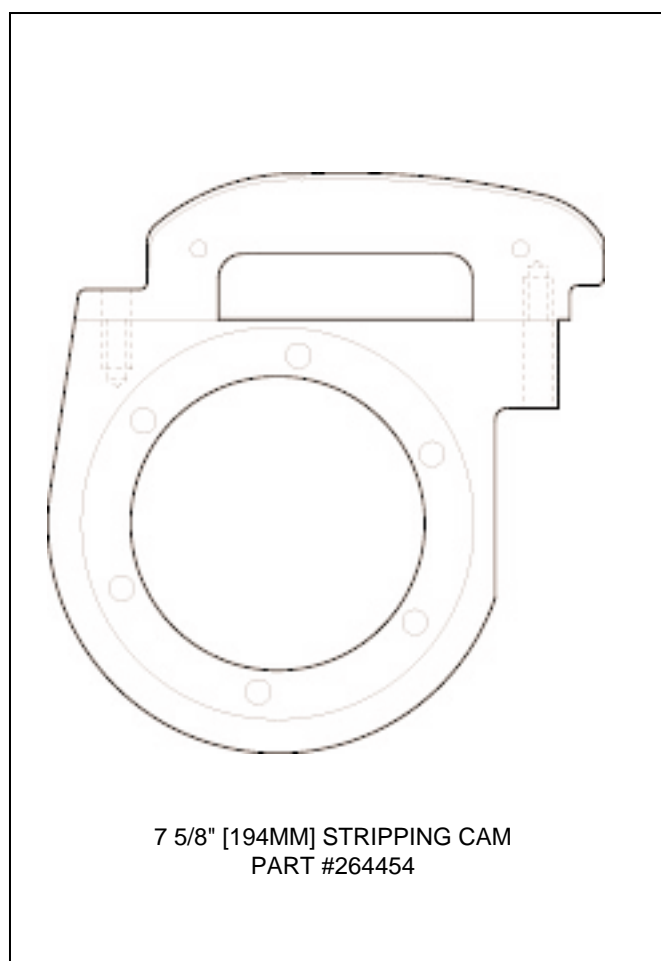


Figure 4.60 STRIPPING CAM INSERT

SECTION 5

MOLD & STRIPPER HEAD INSTALLATION

NOTE: AS AN INITIAL CONDITION, IT IS ESSENTIAL YOU REVIEW SECTION 4 "MACHINE SET UP FOR SPECIFIC MOLD" BEFORE GOING THROUGH THIS SECTION.

5.1 BESSER MOLD ASSEMBLY & TORQUE REQUIREMENTS.

Longer mold life can be achieved by observing a few basic rules. Be sure to clean all parts and mating surfaces thoroughly before assembly. Always be sure parts are properly aligned and use proper torque requirements. To assure that parts are square, start with a good working surface (mold jig). A visual inspection is suggested to make sure parts are not burred or scored.

Note: Always start with new lock washers and use only a brass hammer.

Note: Use an adequate torque wrench to tighten at the proper torque.

5.1.1 Outside division plates should be torqued to 625 - 675 LB-FT, (930 - 1005 N-M). Outside division plates with cutouts for face liners should be torqued to 175 - 195 LB-FT (260 - 290 N-M).

5.1.2 Threaded inside division plates should be torqued to 40 - 50 LB-FT, (60 - 70 N-M). Tanged inside division plates should be torqued to 100 - 120 LB-FT, (150 - 180 N-M).

5.1.3 End liners should be torqued to 100 - 140 LB-FT, (150 - 210 N-M).

5.1.4 Core bars should first be fitted initially front and back.

5.1.5 Core bars should be torqued to 70 - 90 LB-FT, (105 - 135 N-M). Align front and back as uniformly as possible to the mold side bars. Check cores for center between division plates to assure uniformly block dimensions. (A wire can be secured through the hold down bolt heads as a safety to prevent the bolts from coming loose during constant vibration.)

5.1.6 Vibrator bolts should be torqued to 220 - 300 LB-FT, (330 - 450 N-M).

5.1.7 Stripper shoes should be torqued to 65 - 75 LB-FT, (100 - 110 N-M).

5.1.8 Align the stripper shoes.

5.1.9 Secure plungers to stripper head plate - 100 - 140 LB-FT, (150 - 210 N-M).

5.1.10 Center vibrator weights as close as possible to assure uniform vibration and that the nuts face towards the outside of the mold. Double weights should be located 0.5" [12.5mm] from edge of bearing enclosure.

Note: If the machine is equipped with optional Smartpac vibration system, vibrator weights are factory-positioned on shaft.

5.2 JOGGING AND RUNNING THE MACHINE.

There is two ways to operate the machine: you can jog it, or simply run it. Run the machine when you want to cycle it. Jog the machine when you want to stop the machine at a precise position. All controls to jog or run the machine are located on the Graphic Control Station (please refer to section 9 for more details).

1. To run the machine, follow this procedure:

- A) Push the "MAIN DRIVE START" button.
- B) With the main drive running, turn the "CLUTCH" selector switch to "ON". The machine starts cycling.

2. To jog the machine, follow this procedure:

- A) Turn the "CLUTCH" selector switch to "JOG".
- B) Depress and release the "JOG" button to move the machine gradually as the main drive is functioning.

5.3 REMOVING A MOLD

Follow this step by step procedure in order to remove a mold and stripper head from an VIBRAPAC.

- 5.3.1 Run machine to "first stop" (feed box all the way forward). See figure 5.1.
- 5.3.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.
- 5.3.3 Remove cut off bar and agitator grid.
- 5.3.4 Make sure no one is standing on or near machine and turn power back on. Hit MCR reset button and start drive motor.



DANGER: Always turn power off and mechanically lock out electrical panel before working on Concrete Product Machine. **Always** follow the safety tips listed in the Safety section of this manual (see section 1). During the course of the following procedure, you will be asked to periodically turn power off and lock out machine. It is important **you do so** for your safety and the safety of personnel working on the VIBRAPAC !



WARNING: No one should be standing next to machine when running machine to "first stop". Feed box coming forward is dangerous and could lead to serious injuries!

- 5.3.5 Run machine to "third stop". (Stripper head frame and pallet receiver frame all the way down).
- 5.3.6 Turn clutch to "JOG" until stripper head is high enough above mold to insert blockings inside mold.
- 5.3.7 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

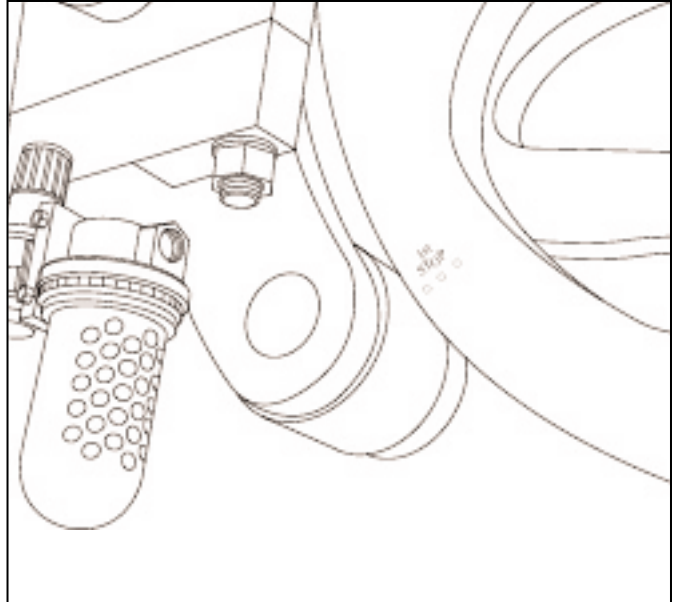


Figure 5.1 "FIRST STOP" (R.H. side of machine).

- 5.3.8 Put 2 X 4's wooden blockings in mold as shown in figure 5.2. Use two pieces of 2" x 4" x 8" wood blocking, and one piece of 2" x 4" x 7-1/2" to assure a space between stripper head plate and mold top plate. Use the 8" blockings in the rear corners and the 7-1/2" blocking in the front center to clear bolt holes in the stripper head top plate

- 5.3.9 Make sure no one is standing on or near machine and turn power back on. Hit MCR reset button. **Do not** start main drive motor.
- 5.3.10 Jog machine until stripper head frame is resting on 2 X 4's blockings. Weight of stripper head will turn machine in reverse.
- 5.3.11 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

- 5.3.12 Remove bolts holding the head assembly (figure 5.3).
- 5.3.13 Make sure no one is standing on or near machine and turn power back on. Hit MCR reset button.
- 5.3.14 Jog machine to bring stripper head high enough to connect safety chain (figure 5.4).
- 5.3.15 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

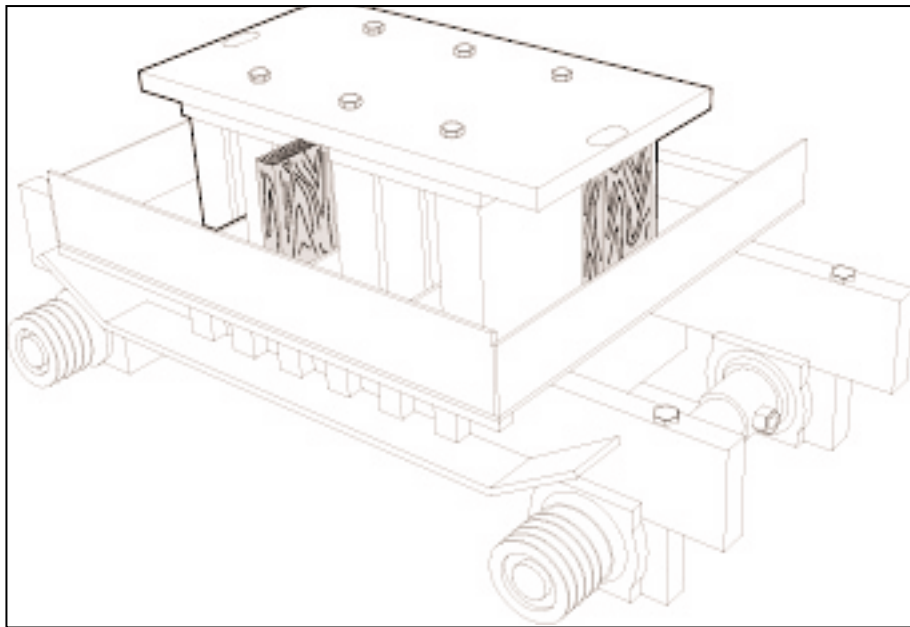


Figure 5.2 WOODEN BLOCKINGS IN MOLD.



Figure 5.3 REMOVING BOLTS FROM BOLT STRIPPER HEAD PLATE.

- 5.3.16 Hook safety chain as shown in figure 5.4.
- 5.3.17 Make sure no one is standing on or near machine and turn power back on. Hit MCR reset button. **Do not** start main drive motor.
- 5.3.18 Jog clutch until stripper head comes down and is supported by safety chain.
- 5.3.19 Keep jogging until pallet receiver is at lowest position.

- 5.3.20 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

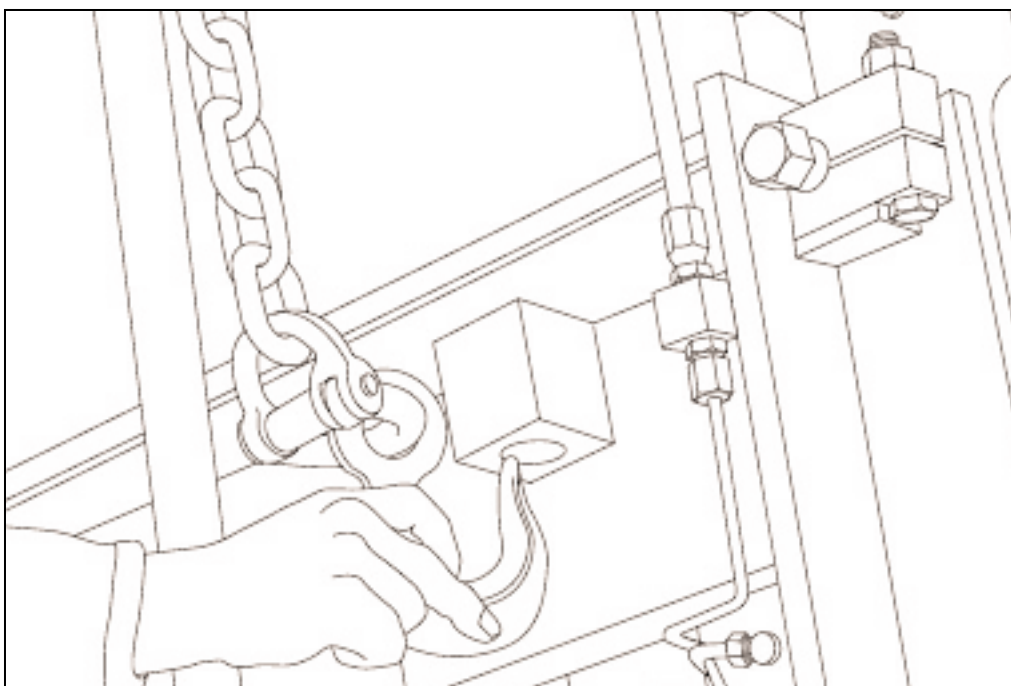


Figure 5.4 ATTACHING STRIPPER HEAD FRAME WITH SAFETY CHAIN.

5.3.21 Disconnect vibrator shaft hose from dump valve and cap (on Smartpac vibration system only).

5.3.22 Lift up vibrator guards.

5.3.23 Raise both vibrator motors with screw jacks (C) (see figure 5.5).

5.3.24 Remove V-belts from vibrating motor sheaves to vibrating shaft sheaves.

5.3.25 Open mold locks (left and right) as shown in figure 5.6.

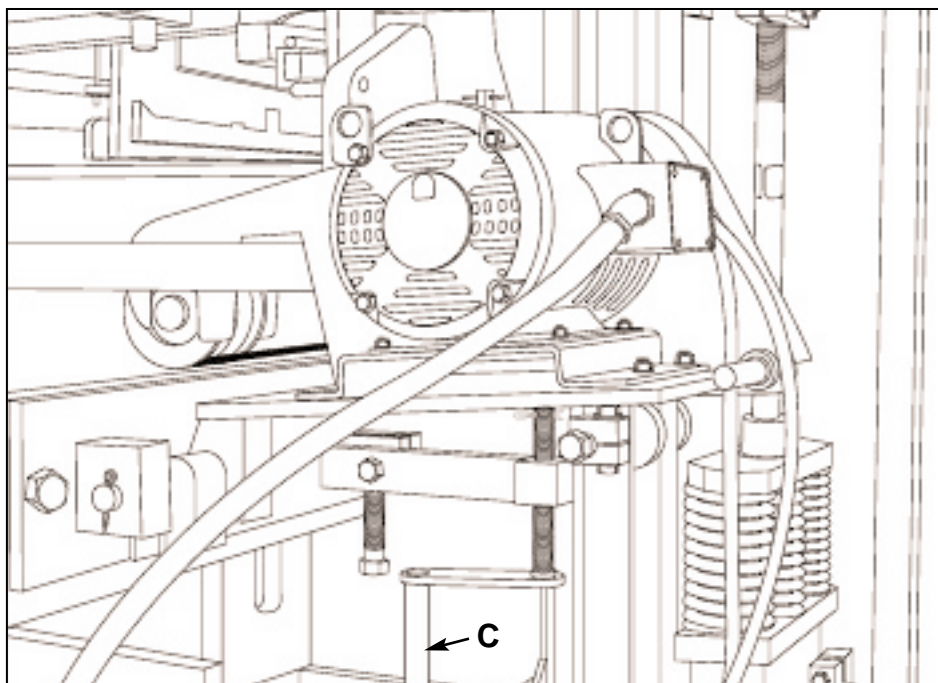


Figure 5.5 RAISING THE VIBRATOR MOTORS WITH SCREW JACK (C).

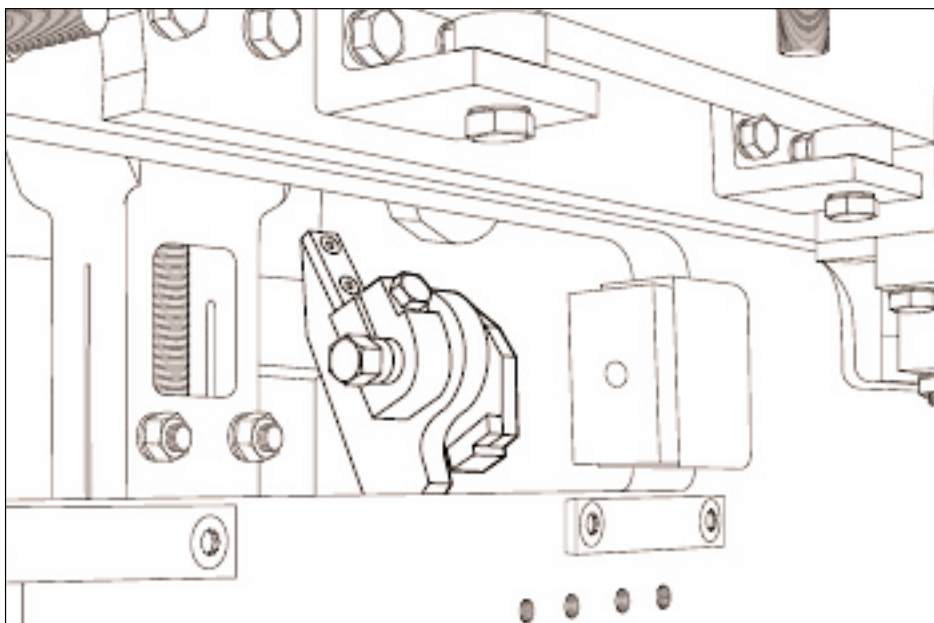


Figure 5.6 MOLD LOCKS IN OPEN POSITION (LEFT LOCK SHOWN).

5.3.26 If your machine is equipped with a Mold Insertion Device, push carriages under shaft assembly of mold. Then raise carriage to carry position using the hand control. Figure 5.7 shows the Mold Insertion Device in its lower position.

5.3.27 Pull mold forward.

5.3.28 Chain mold as shown in figure 5.8.

5.3.29 Remove mold. We recommend the use of an overhead crane.



CAUTION: Molds are heavy pieces of equipment. Handle with extreme care.

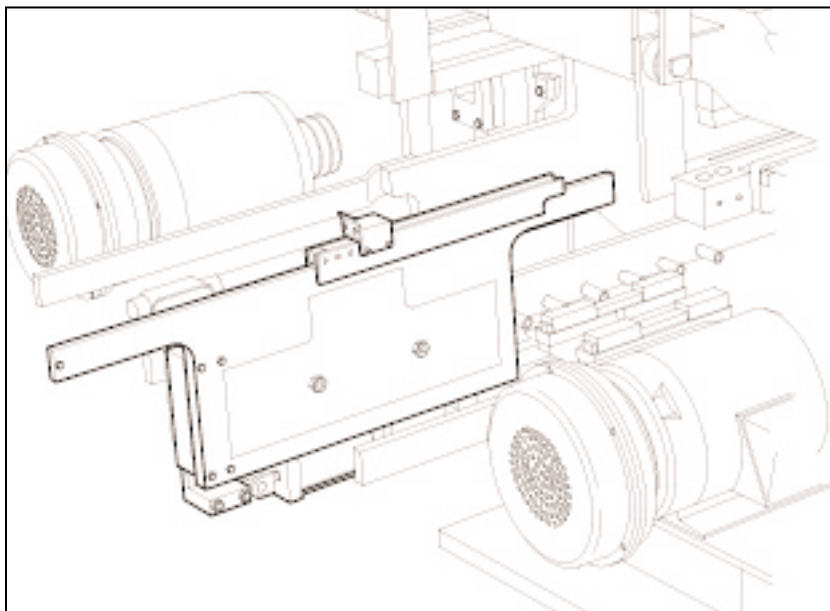


Figure 5.7 MOLD INSERTION DEVICE IN LOWER POSITION.
This figure has been simplified for illustration purposes.

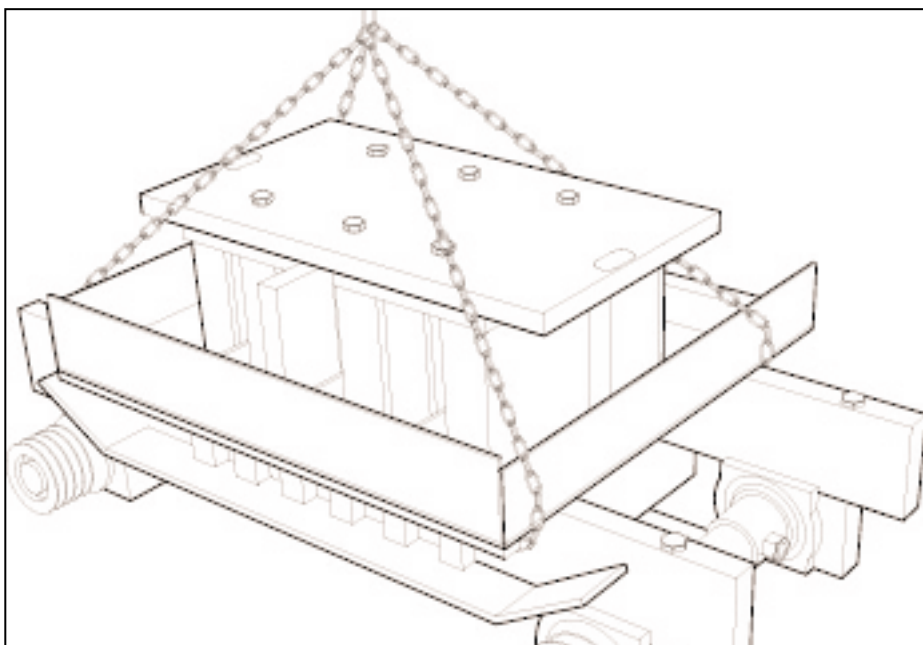


Figure 5.8 MOLD IS CHAINED, READY TO BE TAKEN OUT OF MACHINE.

5.4 INSTALLING THE MOLD.



DANGER: Always turn power off and mechanically lock out electrical panel before working on Concrete Product Machine. Always follow the safety tips listed in the Safety section of this manual (see section 1). During the course of the following procedure, you will be asked to periodically turn power off and lock out machine. It is important **you do so** for your safety and the safety of personnel working on the VIBRAPAC !

A. Preparing the machine for the mold

- 5.4.1 Starting with machine in a stripped through position, both the pallet receiver frame and the stripper head frame are all the way down. Mold locks are in closed position and latched.
- 5.4.2 Jog the machine until the stripper head is high enough to hook up safety chain but before the feedbox starts forward (figure 5.9).
- 5.4.3 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

- 5.4.4 Hook safety chain to stripper head frame (see figure 5.9).



DANGER: Do not go on with this procedure without hooking safety chain to stripper head frame!

- 5.4.5 Make sure no one is standing on or near machine and turn power back on. Hit MCR reset button. **Do not** start main drive motor
- 5.4.6 Jog the machine to lower the stripper head so it hooks on the safety chain. The pallet receiver will lower. When it is low enough to allow easy mold change without interference with pallet receiver, that is sufficient.
- 5.4.7 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

Note: Sometimes the main drive pulley (ref. page 2.5) may have to be manually rotated clockwise to allow the pallet receiver to lower. To do so, the motor should be stopped and the clutch on.

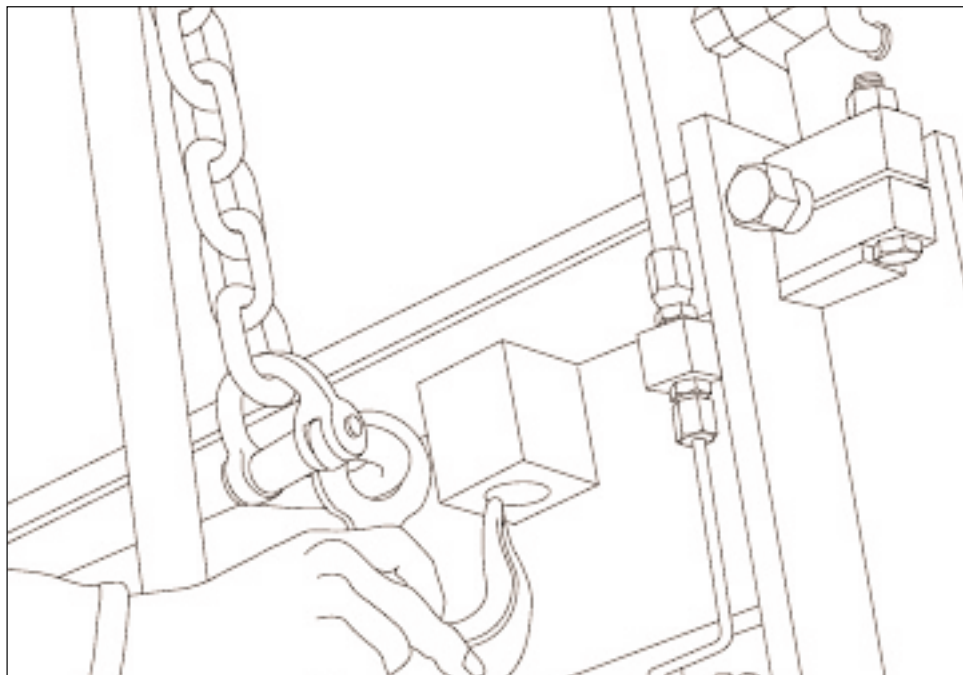


Figure 5.9 ATTACHING STRIPPER HEAD FRAME WITH SAFETY CHAIN.

5.4.8 Open mold locks as shown in figure 5.10 below (one on each side).

5.4.9 Place stripper head down in mold using two pieces of 2" x 4" x 8" wood blocking, and one piece of 2" x 4" x 7-1/2" to assure a space between stripper head plate and mold top plate. Use the 8" blockings in the rear corners and the 7-1/2" blocking in the front center to clear bolt holes in the stripper head top plate (see figure 5.11).

Note: Make sure the cutoff bar and the agitator grid have been removed before putting a mold in the machine !



CAUTION: Stripper heads are heavy pieces of equipment. Handle with extreme care.

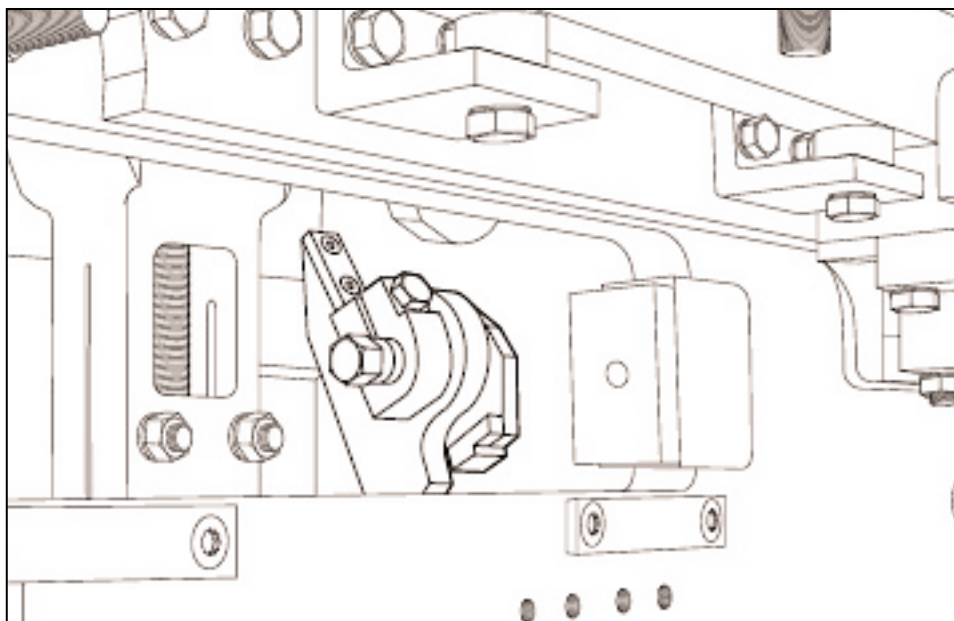


Figure 5.10 MOLD LOCKS IN OPEN POSITION (LEFT LOCK SHOWN).

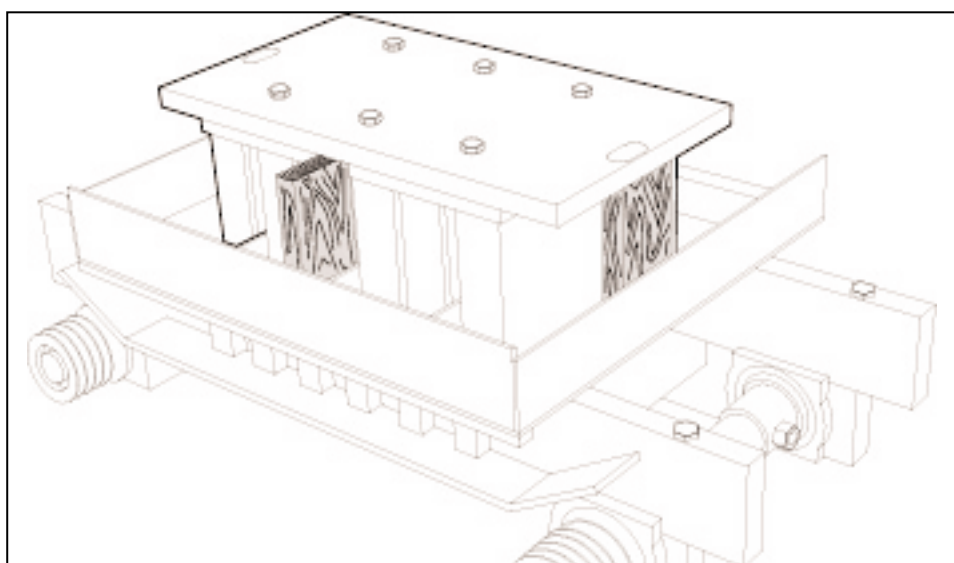


Figure 5.11 STRIPPER HEAD POSITIONED IN MOLD.

5.4.10 Chain mold with stripper head as shown in figure 5.12 below. We recommend the use of an overhead crane. The weight of a complete mold is approximately between 2000 lbs [910 Kg] and 2500 lbs [1135 Kg].

Mold is now ready to be placed in machine.

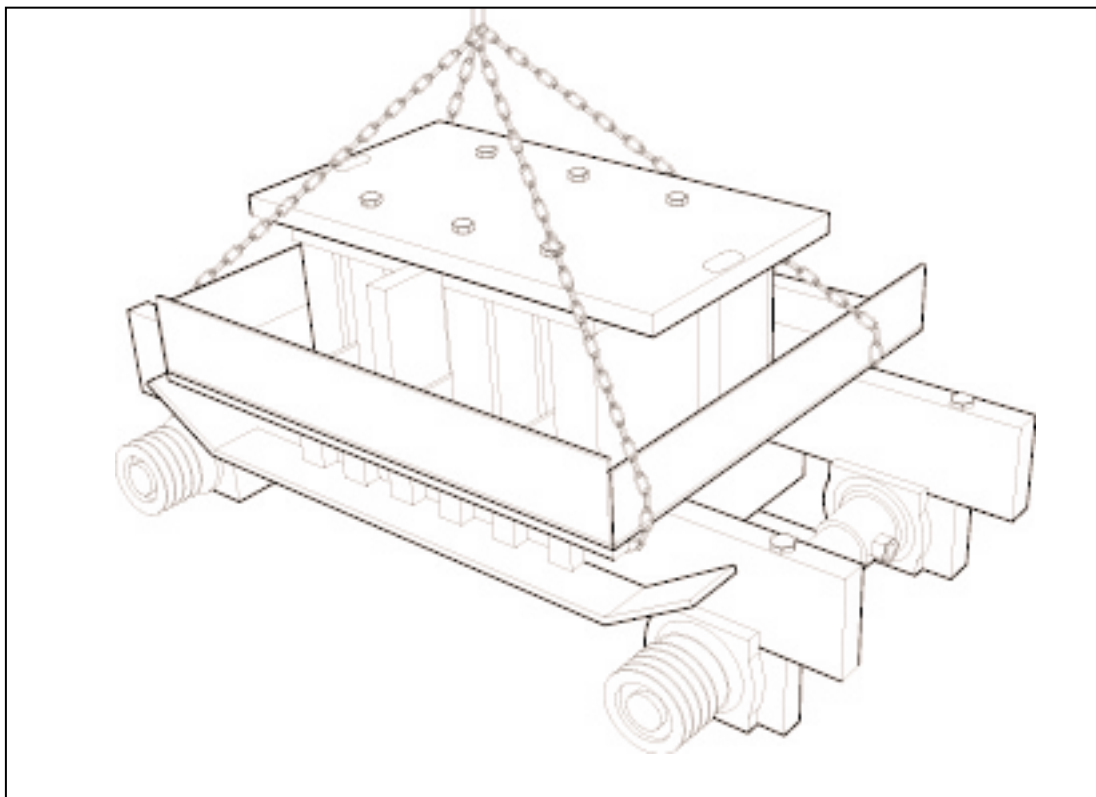


Figure 5.12 MOLD IS CHAINED, READY TO BE PLACED IN MACHINE.

B. Placing mold and stripper head in machine without the use of the optional Mold insertion device.

5.4.11 Place mold and stripper head in machine (see figure 5.13), back against mold throat liners (E) (see figure 5.13b).

5.4.12 Close mold locks (A) and latch (B) (see figure 5.13b).

5.4.13 Loosen the clamp bolt (C) (see figure 5.13b).

5.4.14 Tighten the bolt (D) hand tight and then back off 1/4 of a turn (see figure 5.13b).

5.4.15 Tighten the clamp bolt (C) (see figure 5.13b).

Figure 5.13b SECURING THE MOLD.

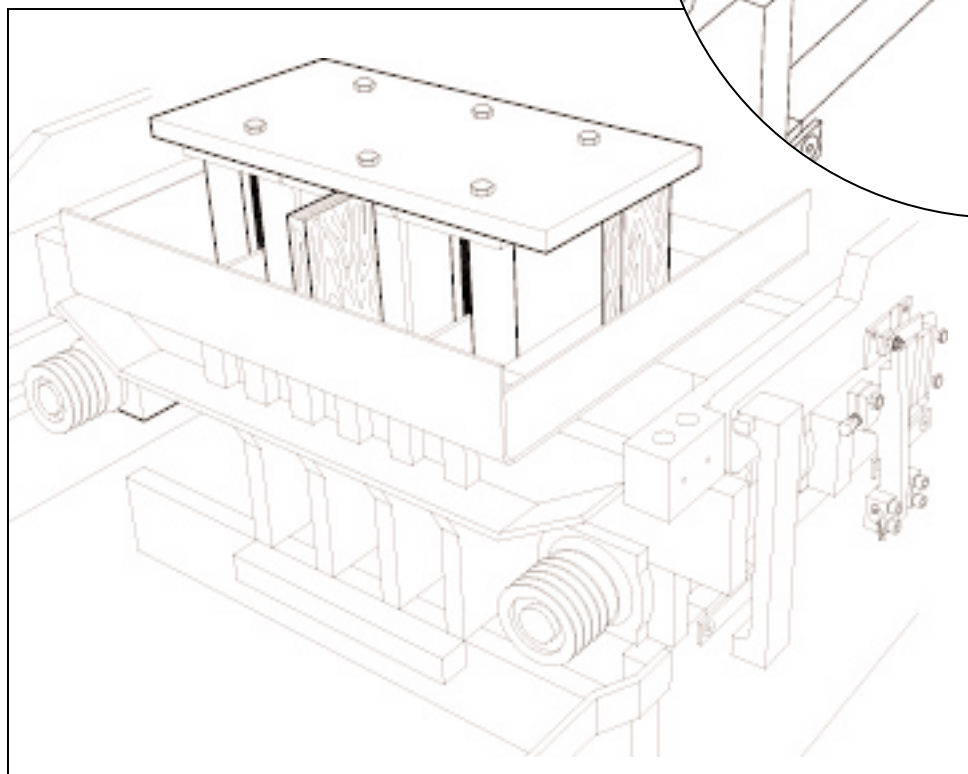
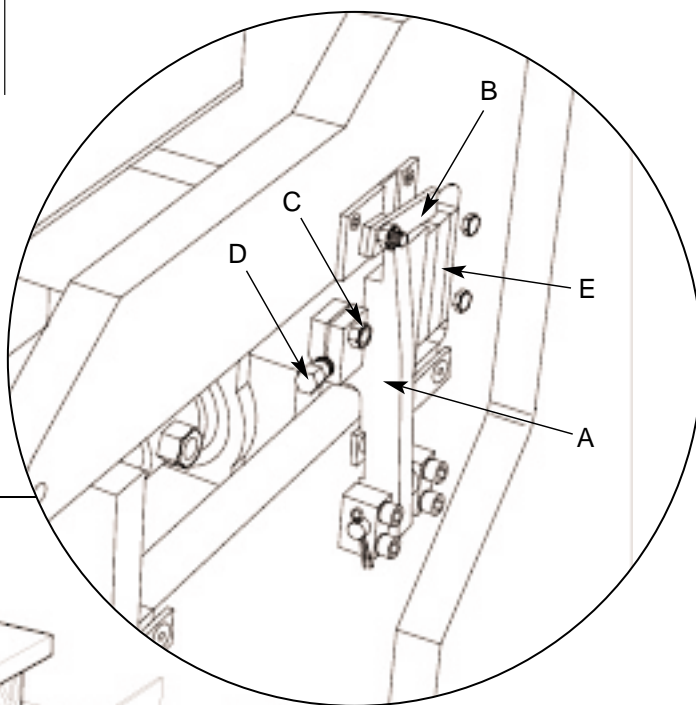


Figure 5.13 PLACING MOLD AND STRIPPER HEAD IN MACHINE.
NOTE: This figure has been simplified for illustration purposes.

- 5.4.16 Raise both vibrator motors with screw jacks (C) (see figure 5.14). Screw vibrators jacks up and place V-belts from vibrating motor sheaves to vibrating shaft sheaves. On a standard vibration system, you must install 4 belts on each side. On a Smartpac system, you must install 2 belts on each side.
- 5.4.17 Lower right hand vibrator motor, then left hand vibrator motor to tighten belts. Make sure sheaves are aligned. Lower jack screws to cotter pins.
- 5.4.18 Make sure no one is standing on or near machine and turn power back on. Hit MCR reset button and start main drive motor.
- 5.4.19 Jog machine to raise the stripper head frame just high enough to disconnect safety chain.
- 5.4.20 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

- 5.4.21 Disconnect safety chain, and hang it on chain hook.



WARNING: Do not raise the stripper head frame too high; otherwise the feed-box will come forward resulting in crush hazard!

- 5.4.22 Turn power back on. **Do not** start main drive motor. Turn clutch switch to the "Jog" position and push the "Jog" button to allow the stripper head frame to lower to the top of stripper head plate.
- 5.4.23 Bolt stripper head plate to stripper head frame. **Do not tighten bolts completely.** Tighten until head plate contacts the stripper head frame (see figure 5.15).
- 5.4.24 Place a good pallet on the pallet receiver rubbers.

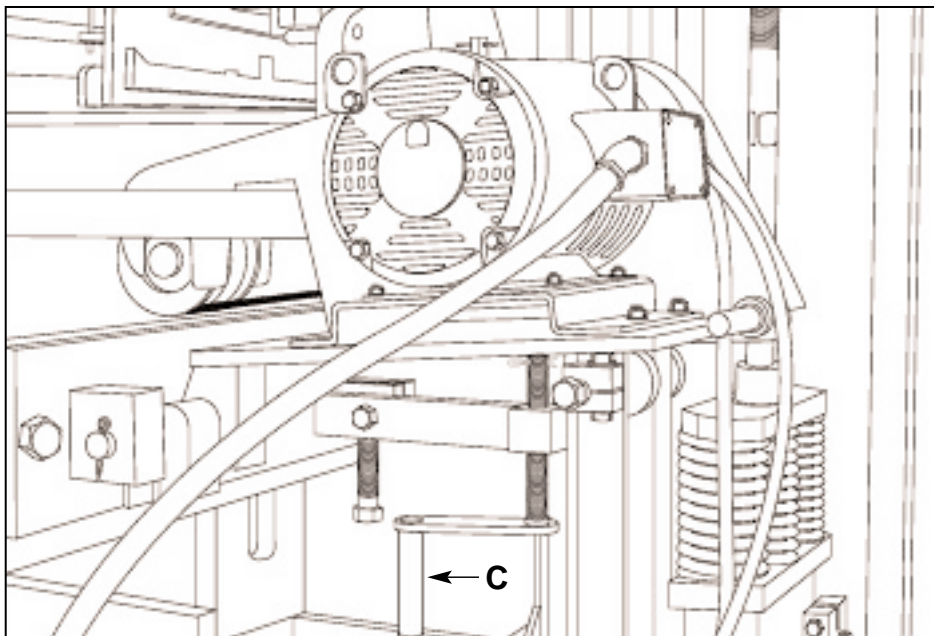


Figure 5.14 RAISING THE VIBRATOR MOTORS WITH SCREW JACK (C).

5.4.25 Start main drive motor. Jog machine to raise stripper head just high enough to remove 2"x4" blocking from under stripper head plate.

5.4.26 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

5.4.27 Remove the rear blocks first, then remove the front block.

5.4.28 Make sure no one is standing on or near

machine and turn power back on. Hit MCR reset button.

5.4.29 Cycle machine to "first stop" position (feedbox all the way to the front), turn clutch switch off and stop drive motor. At this point the mold and pallet should be on the pallet receiver rubbers (see figure 5.16).

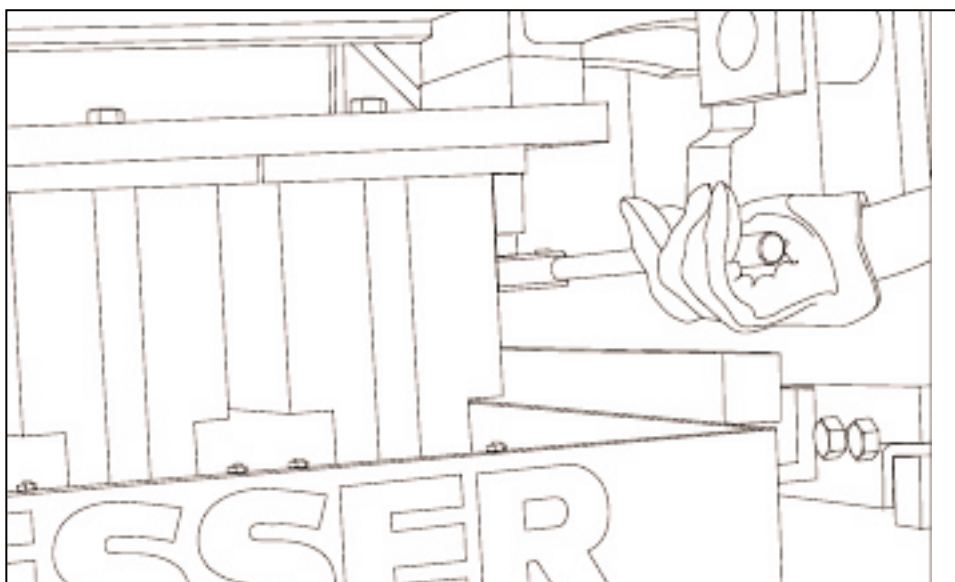


Figure 5.15 BOLT STRIPPER HEAD PLATE TO STRIPPER HEAD FRAME.

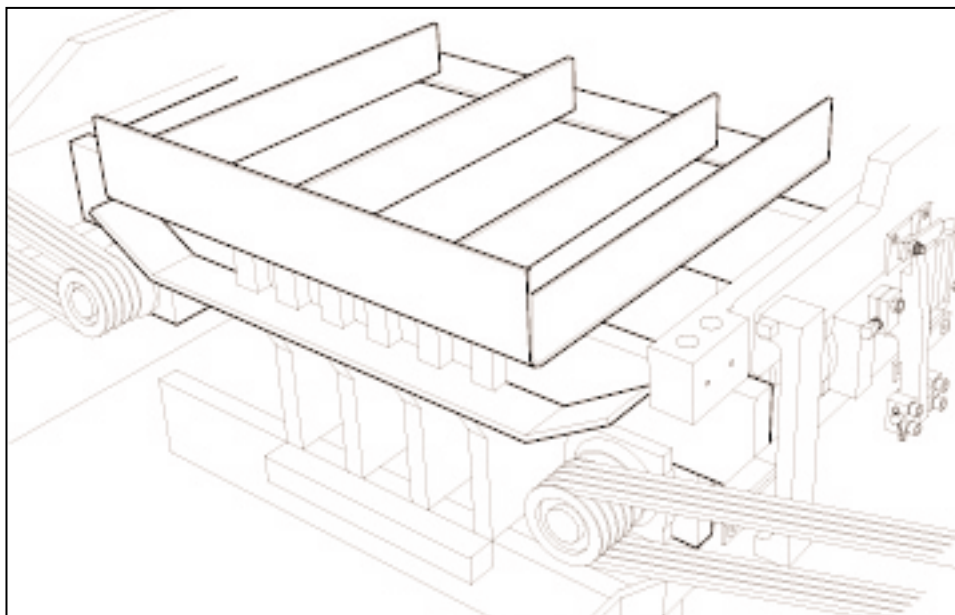


Figure 5.16 MOLD RESTING ON THE PALLET RECEIVER.

5.5 ADJUSTING THE MOLD

A. Levelling the mold

- 5.5.1 Run machine to "first stop" (feedbox all the way forward) (see figure 5.1).
- 5.5.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.
- 5.5.3 Check level of mold from side to side and from front to back until bottoms of mold side bars are approximately 5/8" [16mm] above mold throat plates at all four check points (see figure 5.17).
- 5.5.4 If the dimension on each side is not approximately 5/8" [16mm], adjustment must be made using the pallet receiver link rods (B) (see figure 5.18, next page), after loosening nut (A) (see figure 5.18).
- 5.5.5 Turn power back on and vibrate mold.
- 5.5.6 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.
- 5.5.7 Check level of mold from side to side and from front to back until bottoms of mold side bars are 5/8" [16mm] above mold throat plates at all four check points (see figure 5.17).

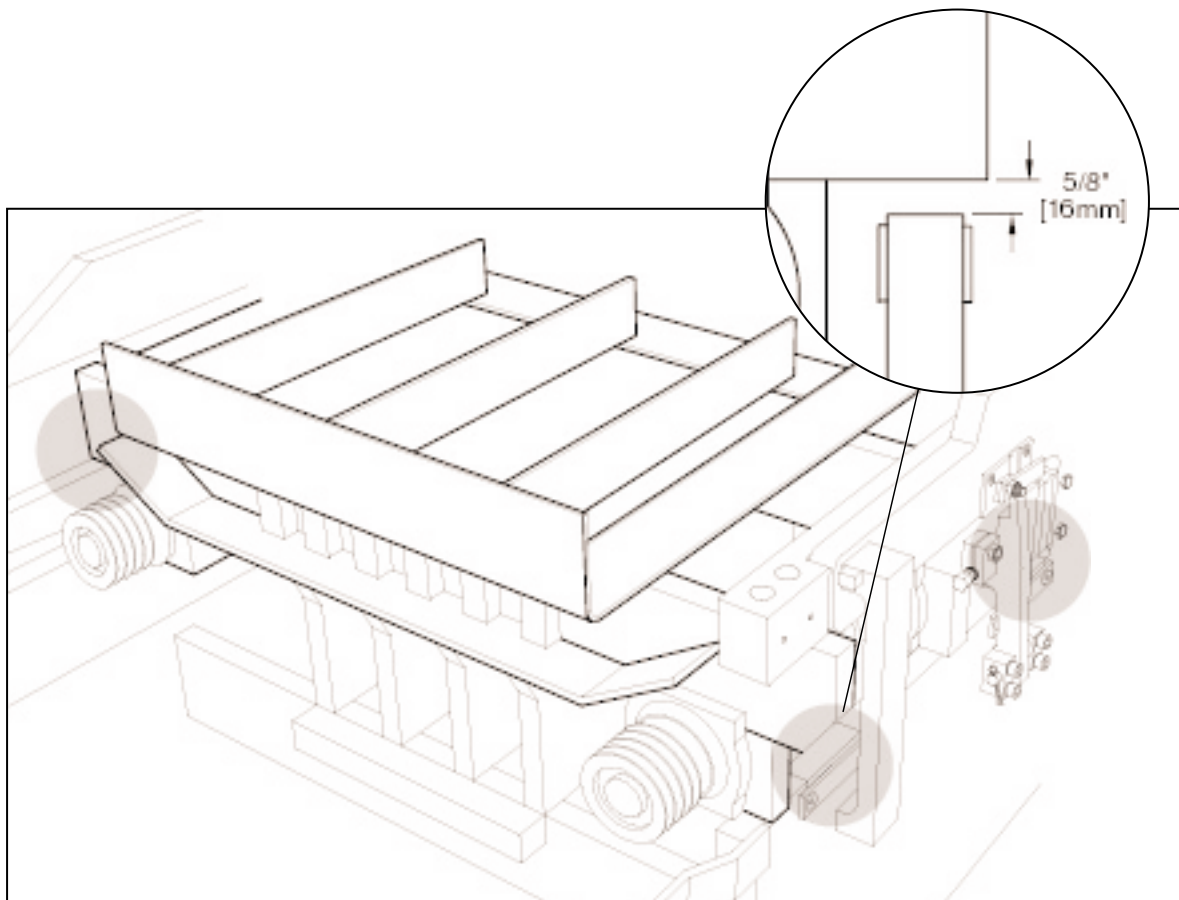


Figure 5.17 SIDE TO SIDE DIMENSION (3 of the 4 check points shown).

5.5.8 If the dimension on each side is not 5/8" [16mm], adjustment must be made using the pallet receiver link rods (B) (see figure 5.18), after loosening nut (A) (see figure 5.18).

5.5.9 Turn power back on and vibrate mold again.

5.5.10 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

5.5.11 Recheck level of mold and adjust following steps 5.5.3 to 5.5.5 until mold is perfectly levelled. Tighten nut (A) (see figure 5.18).

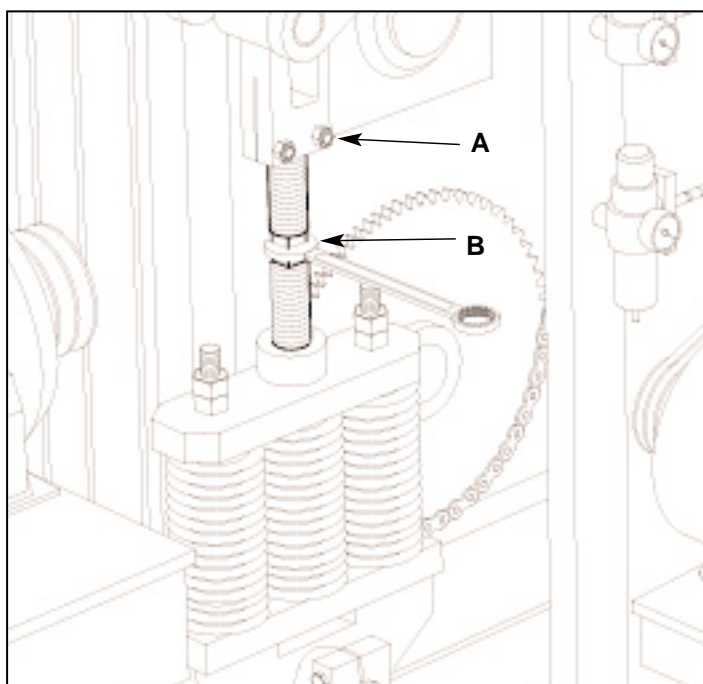


Figure 5.18 PALLET RECEIVER LINK
ROD (RIGHT SIDE SHOWN).

5.5.12 If the dimension in front and back is not 5/8" [16mm], carry out adjustment by first checking clearance of bottom guide liners on both sides of the machine. If clearance is off, tighten front screw hand tight and then back off 1/4 of a turn balancing out both guide liner adjusting screws. These screws are located at the bottom of the pallet receiver frame at the slide shaft on both sides of the machine (see figure 5.19).

5.5.13 Now, make the following adjustments on the upper guide liners on the left hand side of the machine (see figure 5.20):

1. Loosen the nut (A).
2. Adjust the guide liner (B) as desired.
3. Tighten the nut (A).

5.5.14 Vibrate between each adjustment. Turn clutch off and power off before checking dimensions and/or making adjustments.

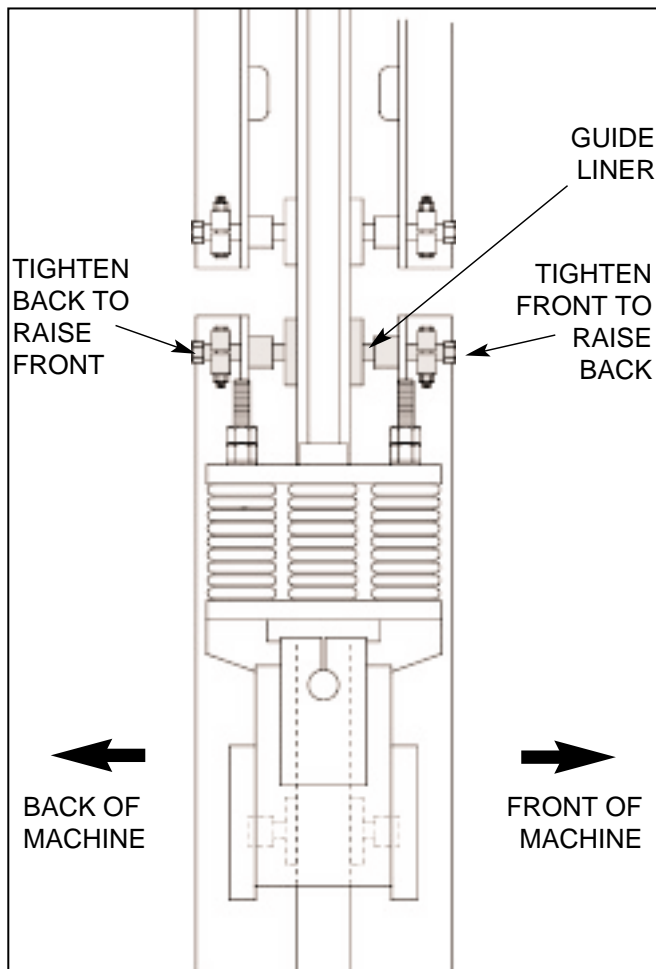


Figure 5.19 PALLET RECEIVER FRAME ADJUSTMENT.

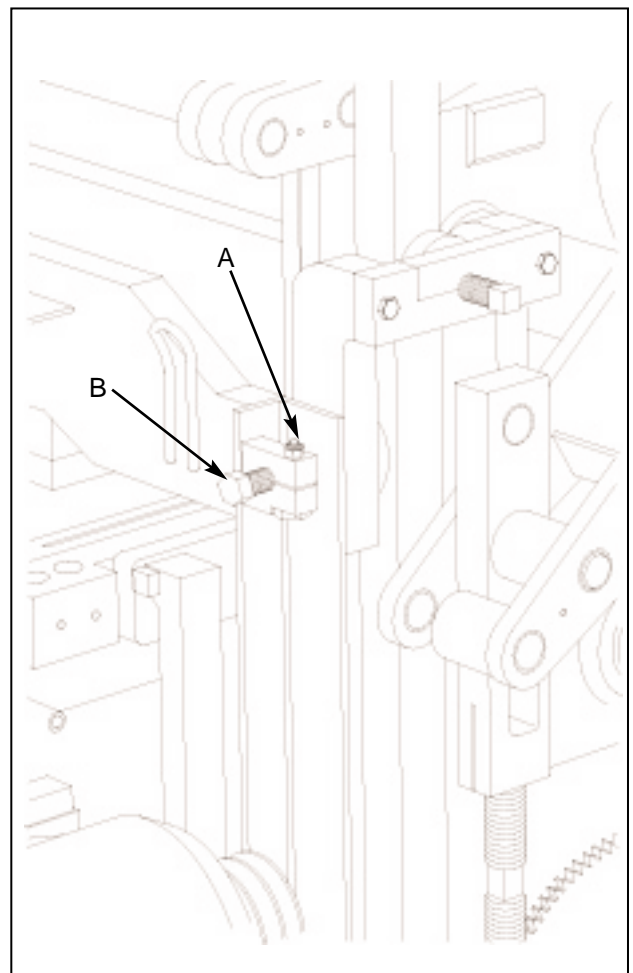


Figure 5.20 GUIDE LINER ADJUSTMENT SCREW. This figure has been simplified for illustration purposes

B. Mold lateral adjustment.

Note: The mold and pallet are supported by the pallet receiver frame.

5.5.15 Vibrate mold.

5.5.16 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out**

machine.

5.5.17 Check for centered position in machine. Mold is centered when mold side bars are approximately 1" [25.4mm] between vibrator bearing blocks and the inside of mold throat plates (see figures 5.21 and 5.22).

Note: The 1" [25.4mm] wide gooseneck pry bar (part #61397) works nicely for mold centering.

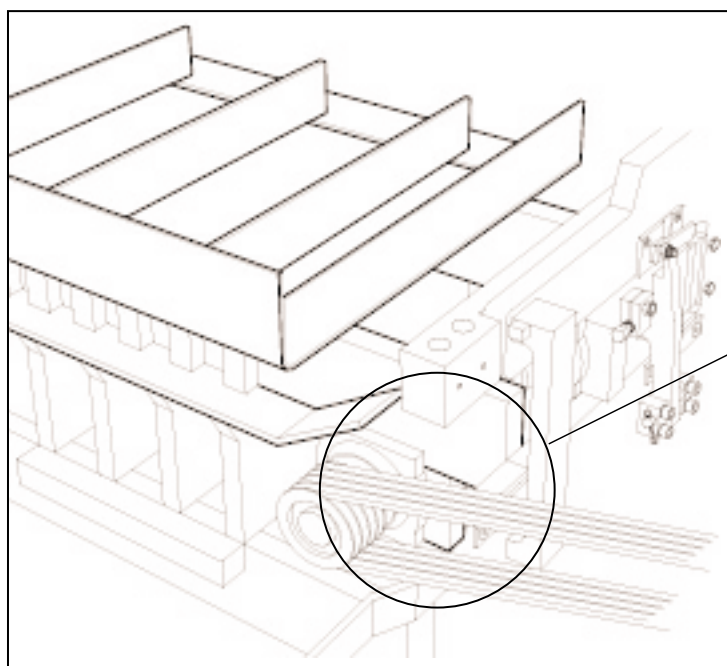


Figure 5.21 CENTERING THE MOLD.

Note: This figure has been simplified for illustration purposes.

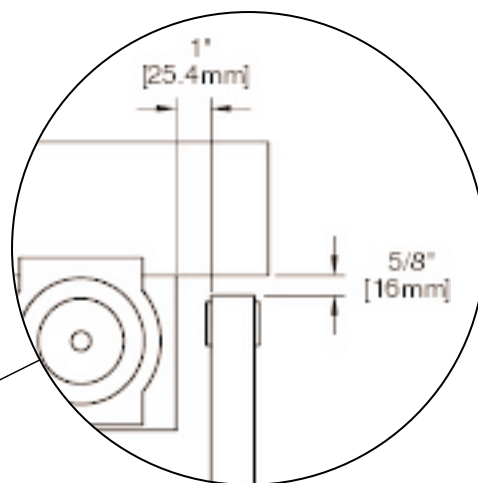


Figure 5.22 USING THE 1" [25.4mm] DIMENSION TO CENTER THE MOLD.

- 5.5.18 Loosen clamp bolt (A) (see figure 5.23).
- 5.5.19 Turn adjusting screw (B) up until it contacts under side of right hand vibrating motor support plate (see figure 5.23). The adjusting screw (B) is located under the right vibrating motor.
- 5.5.20 Turn power back on. Hit MCR reset button.
- 5.5.21 Vibrate mold.
- 5.5.22 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

- 5.5.23 Recheck 1" dimension. During vibration, if mold works off center to the right, turn adjusting screw (B) up (see figure 5.23) which will move the vibrating motor up. If molds works off center to the left, turn adjusting screw (B) down (see figure 5.23).

Note: Make sure base is not on the jacking screw (C) when adjusting vibrating motor height (see figure 5.23).

- 5.5.24 Repeat step 5.5.24 if necessary, until mold automatically remains centered. No adjustment is required on left hand vibrating motor. Equal belt tension is automatically maintained.

- 5.5.25 Tighten clamp bolt (A).

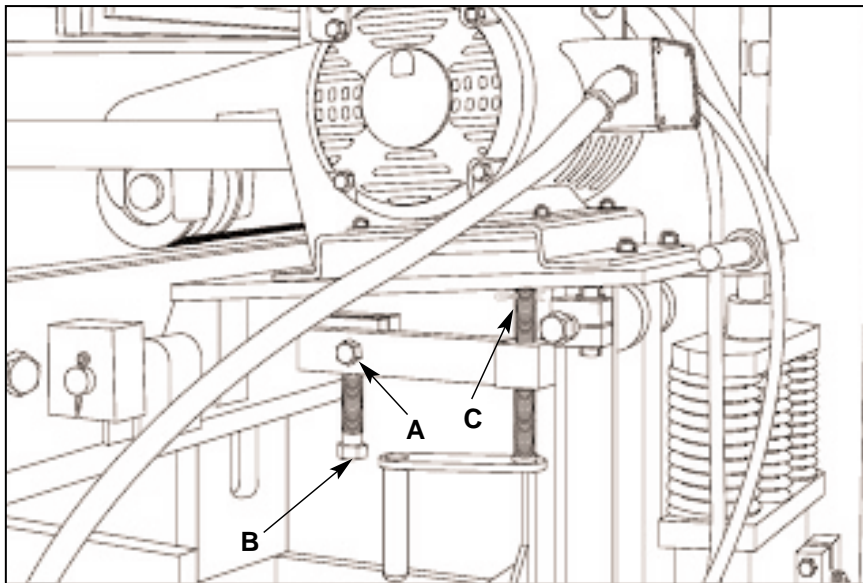


Figure 5.23 VIBRATING MOTOR HEIGHT ADJUSTMENT SCREW (B).

5.6 APRON PLATE ADJUSTMENT



WARNING: The following procedure must be done with power off and machine locked-out!

- 5.6.1 Adjust so the apron plate is 1/8" [3mm] above the mold top plate (figure 5.25) with the machine at "first stop".

Note: 1/8" [3mm] is a good reference provided the feedbox does not contact the mold during vibration.

- 5.6.2 Check to see that there is approximately 1/32" [0.8mm] clearance between the apron plate and the back of the mold top plate (see figure 5.24 and 5.25).
- 5.6.3 If necessary, adjust apron plate. Loosen nut "A" - there is one nut on each side - and move forward or back with nut "B" - there is one nut on each side.(see figure 5.26).

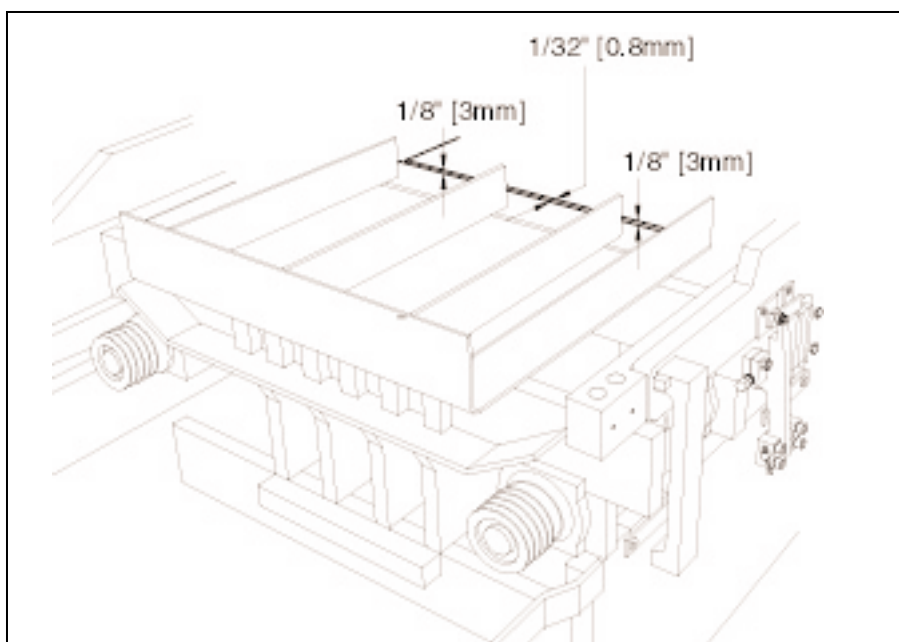


Figure 5.24 APRON PLATE CLEARANCE.

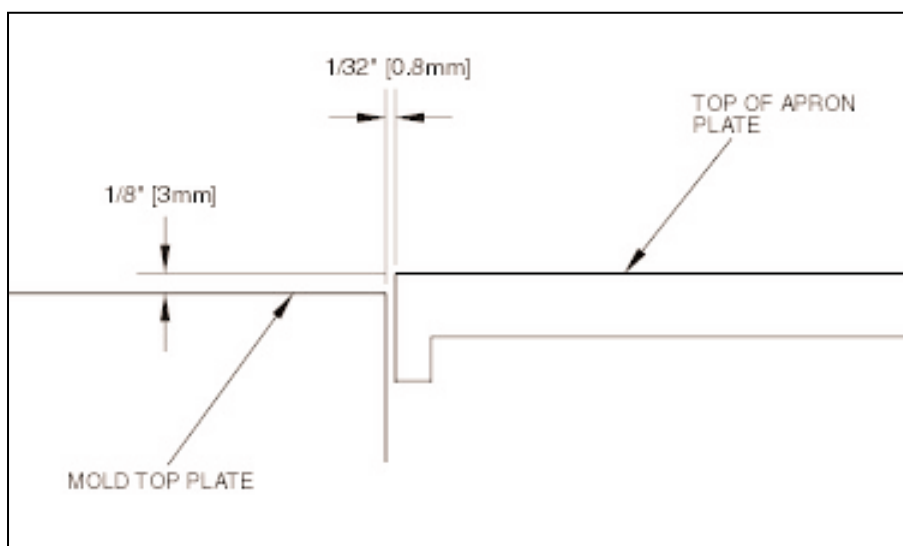


Figure 5.25 APRON PLATE CLEARANCE.

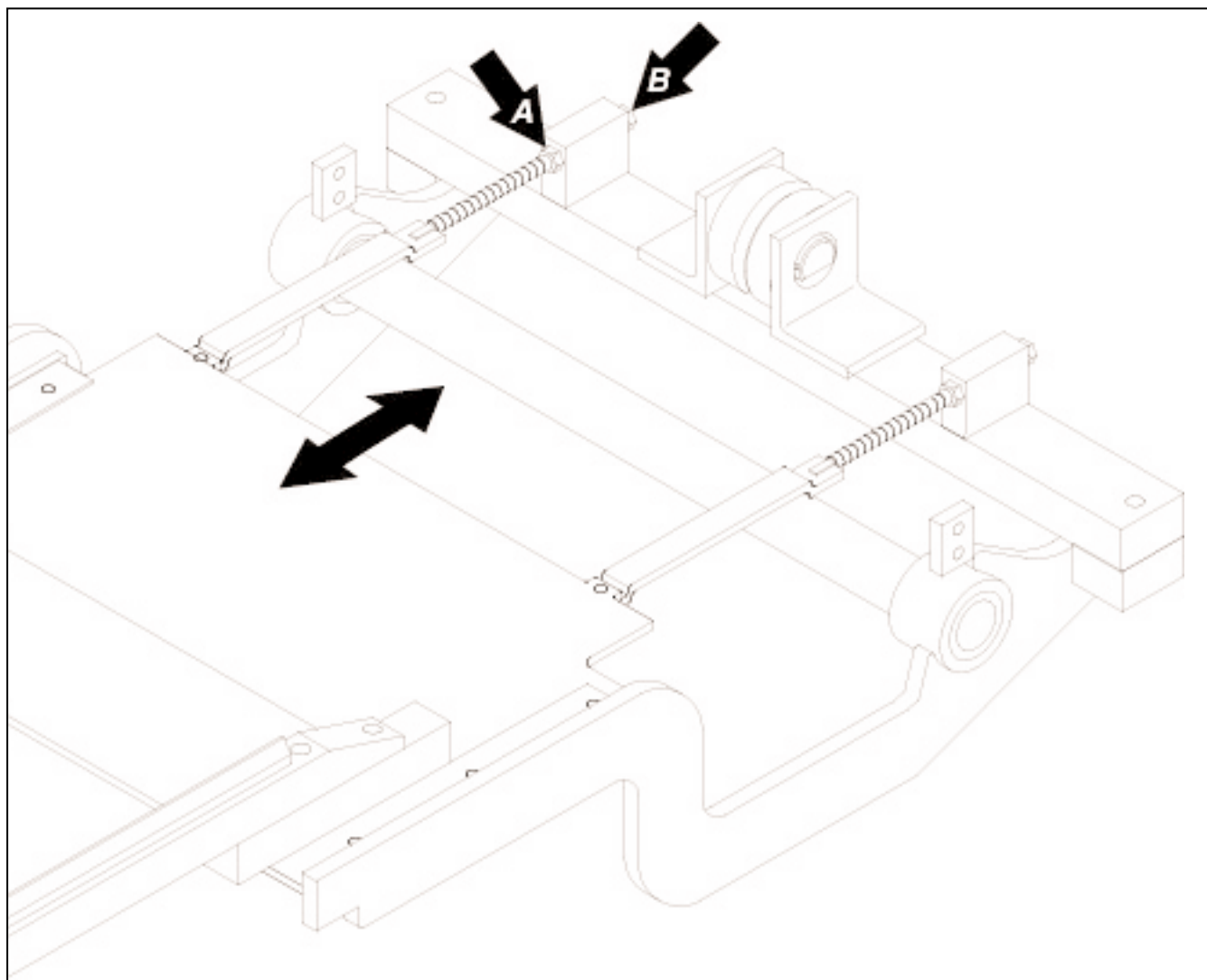


Figure 5.26 APRON PLATE ADJUSTMENT (FORWARD TO BACK).

5.7 HEIGHT PIN ADJUSTMENT

5.7.1 Run machine to “first stop” (feed box all the way forward). See figure 5.1.

5.7.2 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

5.7.3 Measure from bottom of shoe to top of mold end liners. Measurement should be approximately 4” [102MM] (see figure 5.27). Add dimension “C” to this measurement (dimension “C” is the amount of compression. For detailed explanations, see section 5.8).

5.7.4 Loosen nuts (A) and set height pins (B) to be this far away – the final result of the measurement in 5.7.3 – from lower height stops (figure 5.28).

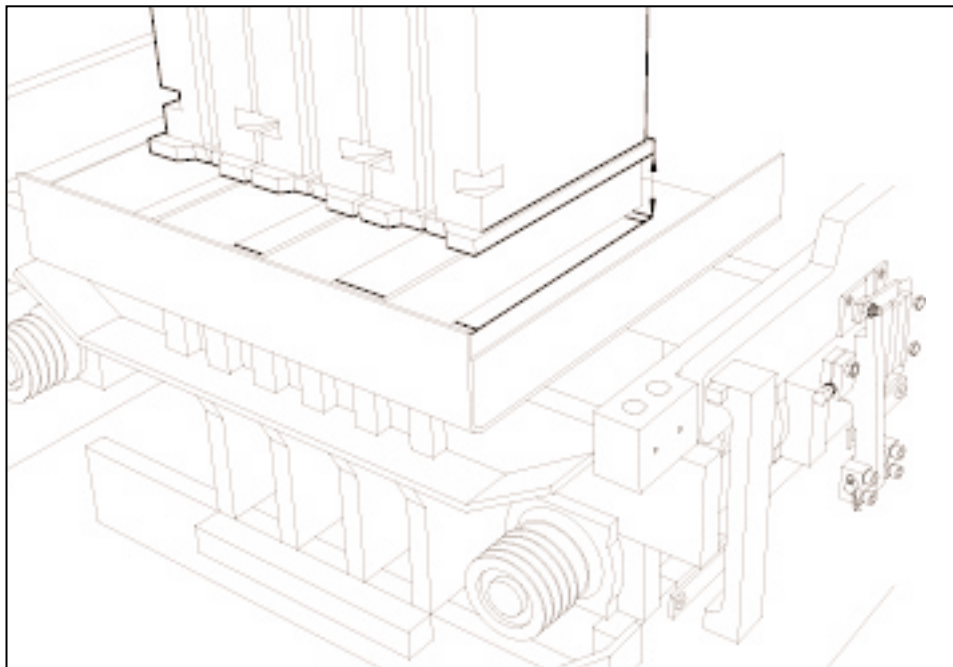


Figure 5.27 SHOES 4” [102MM] ABOVE MOLD.

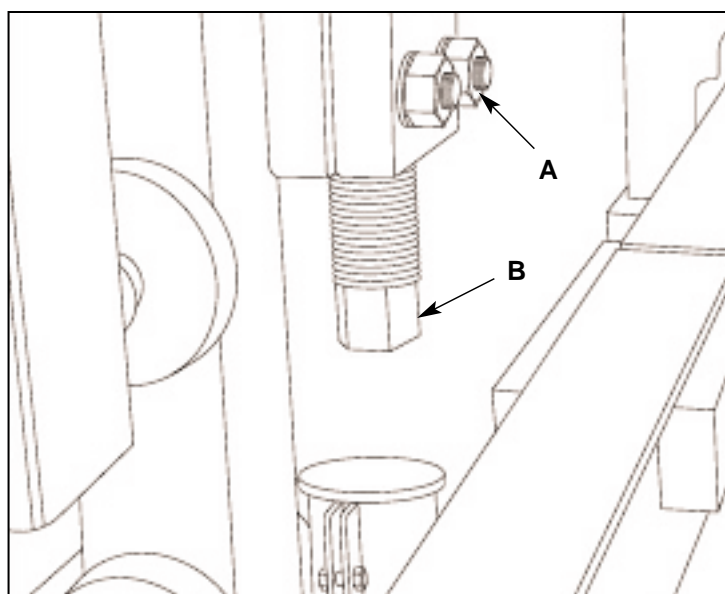


Figure 5.28 HEIGHT PINS ADJUSTMENT (LEFT SIDE SHOWN).

5.8 ADJUSTING STRIPPER HEAD

- 5.8.1 Run machine to "first stop" (feed box all the way forward). See figure 5.1.
- 5.8.2 To determine if the head is level with mold (left to right and front to back), measure how far the top of the stripper shoes are above the mold end liners at all 4 corners (A, B, C and D) (see figures 5.30 & 5.30b).

- 5.8.3 If the head is not levelled side to side (A to B) (see figure 5.30), adjust the left hand stripper head adjusting link (see figure 5.29).

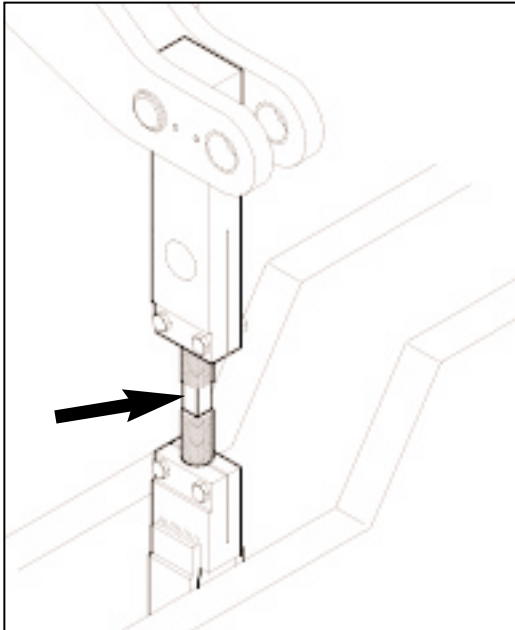


Figure 5.29 L.H. STRIPPER HEAD LINK.

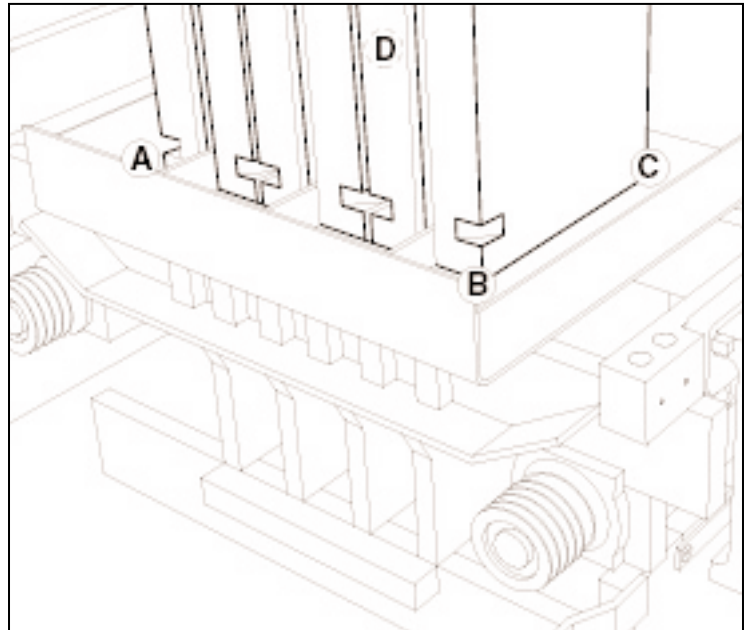


Figure 5.30 STRIPPER SHOES POSITION.

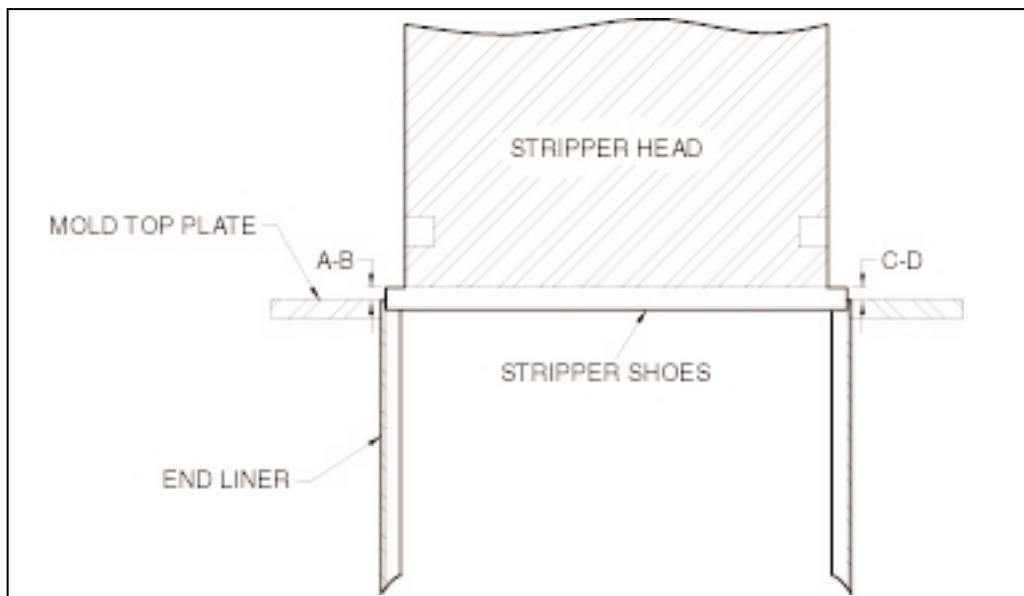


Figure 5.30b STRIPPER SHOES POSITION.(SIDE VIEW)

- 5.8.4 If the stripper head is not level (B to C) (see figure 5.30) with the mold from front to back, back out both lower guide liner adjusting screws on the stripper head frame at the slide shaft on the lower right hand side of machine (see figure 5.31). Loosen nut (A) and adjust with bolt (B).

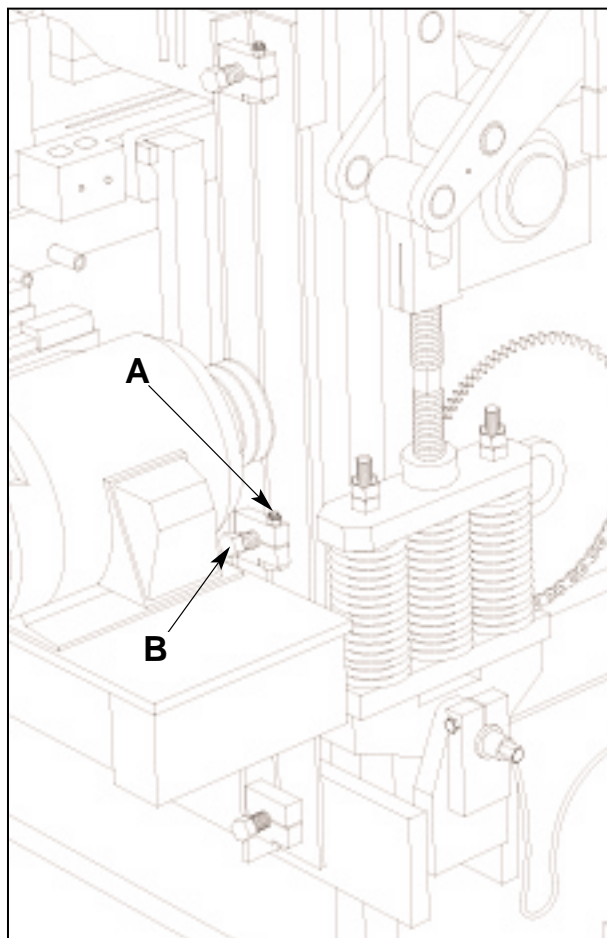


Figure 5.31 GUIDE LINER ADJUSTMENT SCREW.
This figure has been simplified for illustration purposes.

- 5.8.5 After head is level with mold, tighten both adjustment screws against the slide shaft on the left hand side (see figure 5.31). Then loosen the front adjustment screws 1/4 of a turn and tighten clamp bolts.
- 5.8.6 Turn power back on. Hit MCR reset button.
- 5.8.7 Turn height pins OFF. Jog machine to "second stop" (Ref. section 7.3). Stripper shoes should be in mold and height pins should touch.
- 5.8.8 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

- 5.8.9 Adjust bottom of shock absorbers to pads to dimension of unit height plus 3/4" [19mm].
- 5.8.10 Put in agitator grid and cut-off bar, and check feedbox alignment. There should be a minimum clearance of 1/4" [6mm] between the wiper assembly and the stripper shoe as shown in figure 5.32.
- Note:** For units higher than 3 5/8", clearance with stripper head plate must also be maintained.
- 5.8.11 If adjustment is necessary, adjust the feedbox linkages (see figure 5.33).

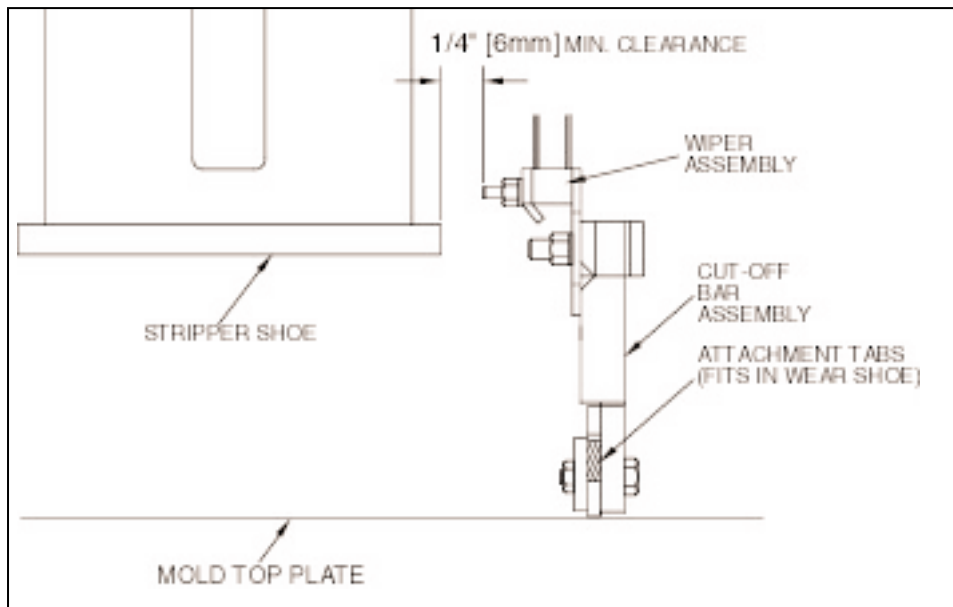


Figure 5.32 FEEDBOX ADJUSTMENT.

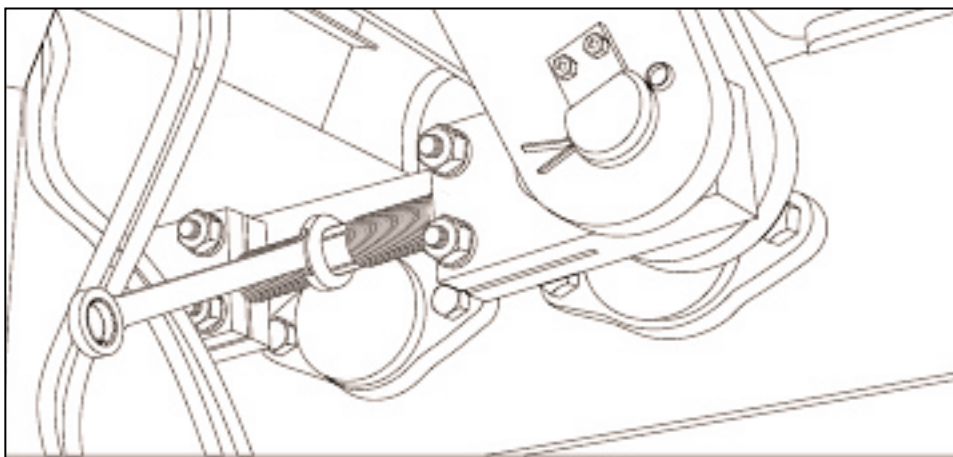


Figure 5.33 FEEDBOX LINKAGE.

5.8.12 Turn power back on. Hit MCR reset button.

5.8.13 Make sure that machine is at "second stop"
(Ref. section 7.3).

5.8.14 Shut off clutch.

5.8.15 Turn vibrator switch to "hand" position for 5 seconds.

5.8.16 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out** machine.

5.8.17 Tighten the head bolts (figure 5.34).

5.8.18 Turn height pins ON.



WARNING: Make sure **guards** are in **place** over vibrator belts!

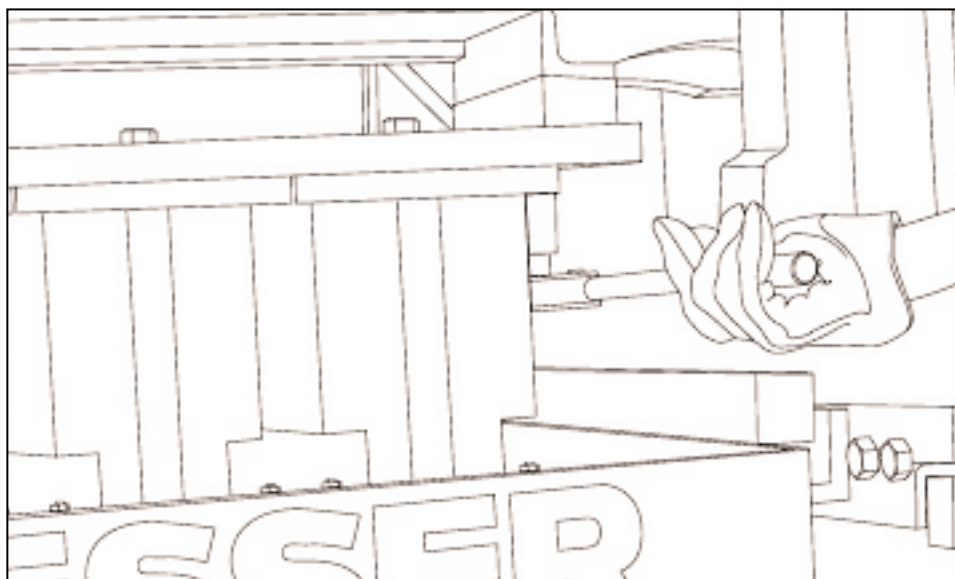


Figure 5.34 TIGHTENING THE HEAD BOLTS.

5.9 COMPRESSION CALCULATION

5.9.1 To correctly evaluate the amount of compression needed from the stripper head to make units of the desired height, the operator may use the following equation:

$$SAL = UH - MH + ST$$

In this equation, UH represents Unit Height, MH is Mold Height and SST is Stripper Shoes Thickness. The result, SAL, is the height of the stripper Shoes Above end Liners.

Figure 5.35 will help you visualize the equation. Letters A, B and D represents respectively unit height, mold height and stripper shoes thickness.

Letter E is the height of the stripper shoes above end liners (letter C is the **amount of compression**).

EX: Suppose the operator wants to make 7 5/8" [194mm] high units in a 8 1/4" [209mm] high mold with stripper shoes of 1 1/2" [38mm] thickness. The operator gets a result of 7/8" [23mm] for the height of stripper shoes above end liners:

$$7 \frac{5}{8}" - 8 \frac{1}{4}" + 1 \frac{1}{2}" = 7/8"$$

Or, in millimeters:

$$194\text{mm} - 209\text{mm} + 38\text{mm} = 23\text{mm}$$

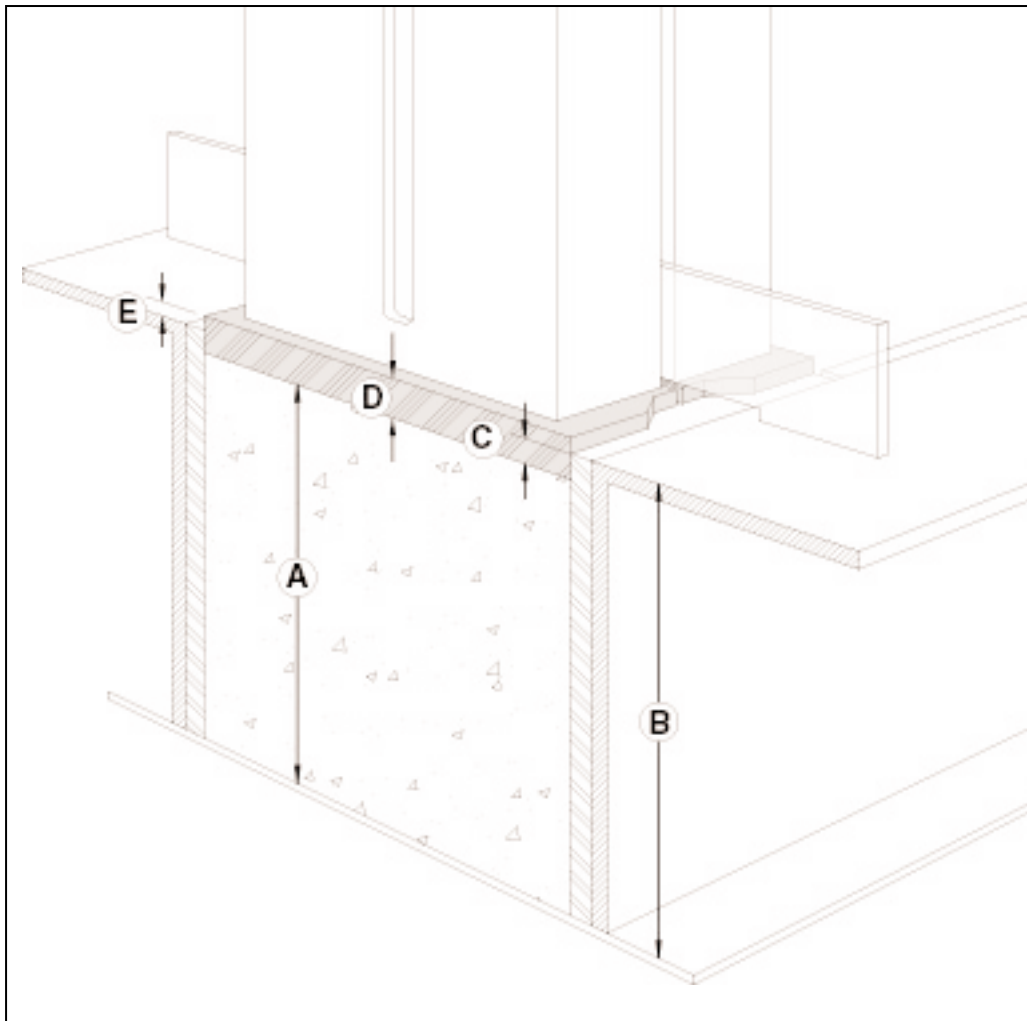


Figure 5.35 MOLD AND STRIPPER HEAD DIMENSIONS FOR HEIGHT PINS ADJUSTMENTS.

5.10 SPRING OPENING ADJUSTMENT

5.10.1 Turn height control "ON", jog the machine until the bottom of the mold side bars set down on the machine side frame.

5.10.2 The spring opening should be between $1/32$ " [0.8mm] and $1/16$ " [1.6mm] maximum (see figure 5.36). This is all that is required to make most units on an VIBRAPAC.

5.10.3 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, lock out machine.

5.10.4 If adjustment is needed, adjust the right hand stripper head adjusting link (clockwise for more, counterclockwise for less); keep an accurate count of how many flats you turn the right hand link (see figure 5.37).

5.10.5 Turn power back on. Hit MCR reset button.

5.10.6 In order to keep stripper head frame level, turn the left hand stripper head link in the same direction. Also turn it the same number of flats as was used to turn the right hand link.

Note: Spring opening may differ on each side.

5.10.7 Jog the machine to the stripped-through position. At this point, the stripper shoes should protrude through the mold by $1/8$ " [3mm] to $1/4$ " [6mm].

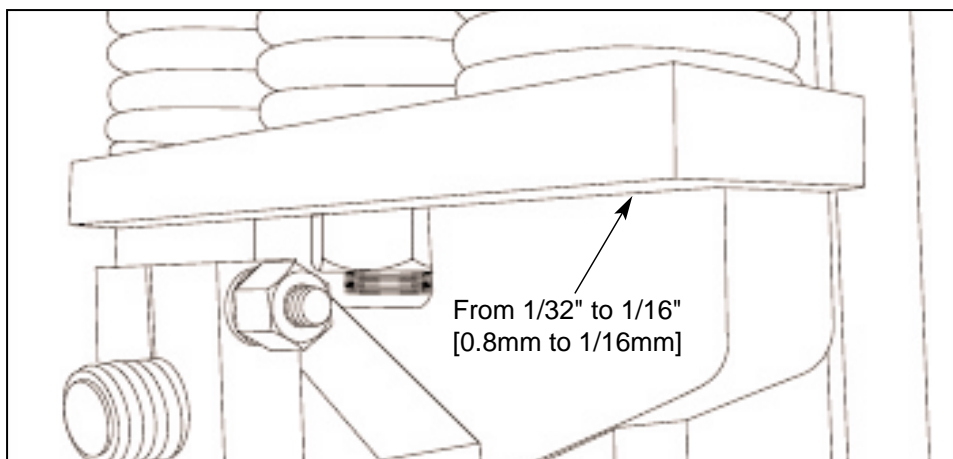


Figure 5.36 SPRING OPENING.

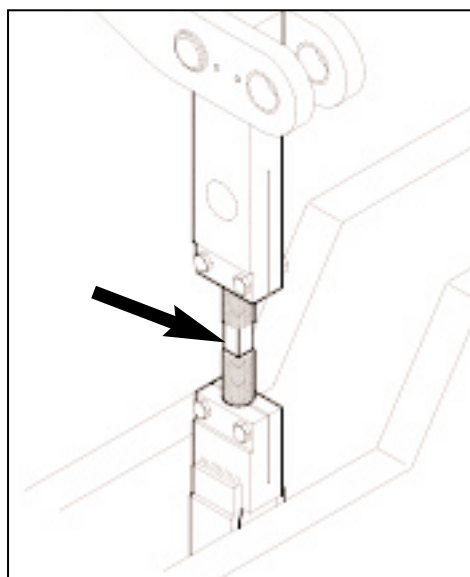


Figure 5.37 STRIPPER HEAD LINK (RIGHT SHOWN).

5.10.8 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.

5.10.9 If adjustment is needed, adjust the shock absorbers. Record the adjustment made for future calibration.

5.10.10 Start machine and run machine to second stop, when height pins first meet.

5.10.11 Shut off clutch and turn power off. Wait until motor has stopped completely. Also, **lock out machine**.

5.10.12 The machine is ready to run; final adjustment may be needed when production is started. The shock absorbers should be adjusted so they take equal load on each side (see figure 5.38).



WARNING: All safety guards must be in place when the VIBRAPAC is running.

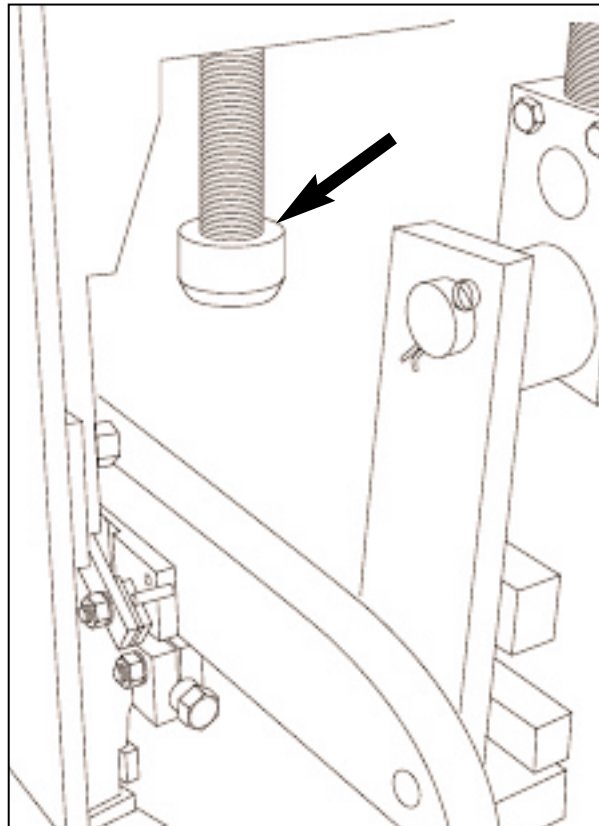


Figure 5.38 SHOCK ABSORBERS.

SECTION 6

TIMING THE PALLET FEEDER

It is important that the pallet feeder be well synchronized with the rest of the machine. This adjustment must be done before the machine is run for the first time and each time a mold change is done.

6.1 INITIAL CONDITIONS

6.1.1 No mold or head in machine.

6.1.2 Pallet receiver stroke set for mold (see section 4).

6.1.3 Machine has no excessive wear or damage.

6.1.4 Front delivery conveyor 36 13/16" [884mm] above top of machine base to make 7 5/8" units; or 28 13/16" [732mm] above top of machine base to make 11 5/8" units (see section 4).

6.1.5 Make sure the pallet feeder drive chain and lug chains (see figure 6.1 and 6.2) are well adjusted. To adjust those chains, follow the procedure presented on the next two pages.

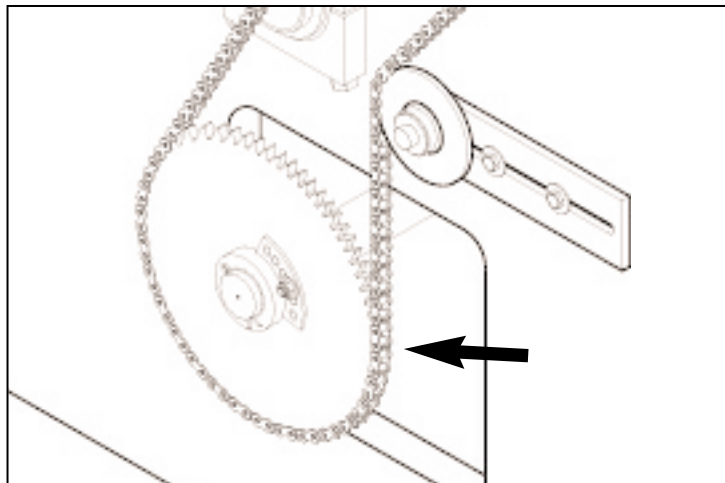


Figure 6.1 PALLET FEEDER DRIVE CHAIN.

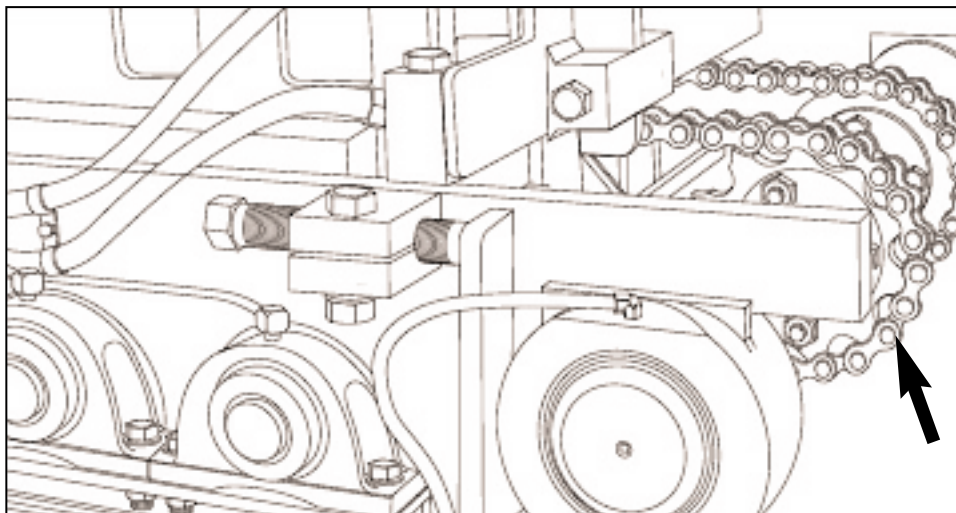


Figure 6.2 PALLET FEEDER LUG CHAINS.

A. PALLET FEEDER DRIVE CHAIN ADJUSTMENT

Check pallet feeder drive chain tension on right hand side of machine. Tension chain until it cannot be moved back and forth by hand more than 1/4" [6MM]; recheck periodically.



WARNING: The following procedure must be done with power off and machine locked-out!

To adjust the pallet feeder drive chain tension, follow this procedure (see figure 6.3):

- A. Loosen the fixing bolts.
- B. Move the tensioner left or right as required.
- C. Tighten the fixing bolts.

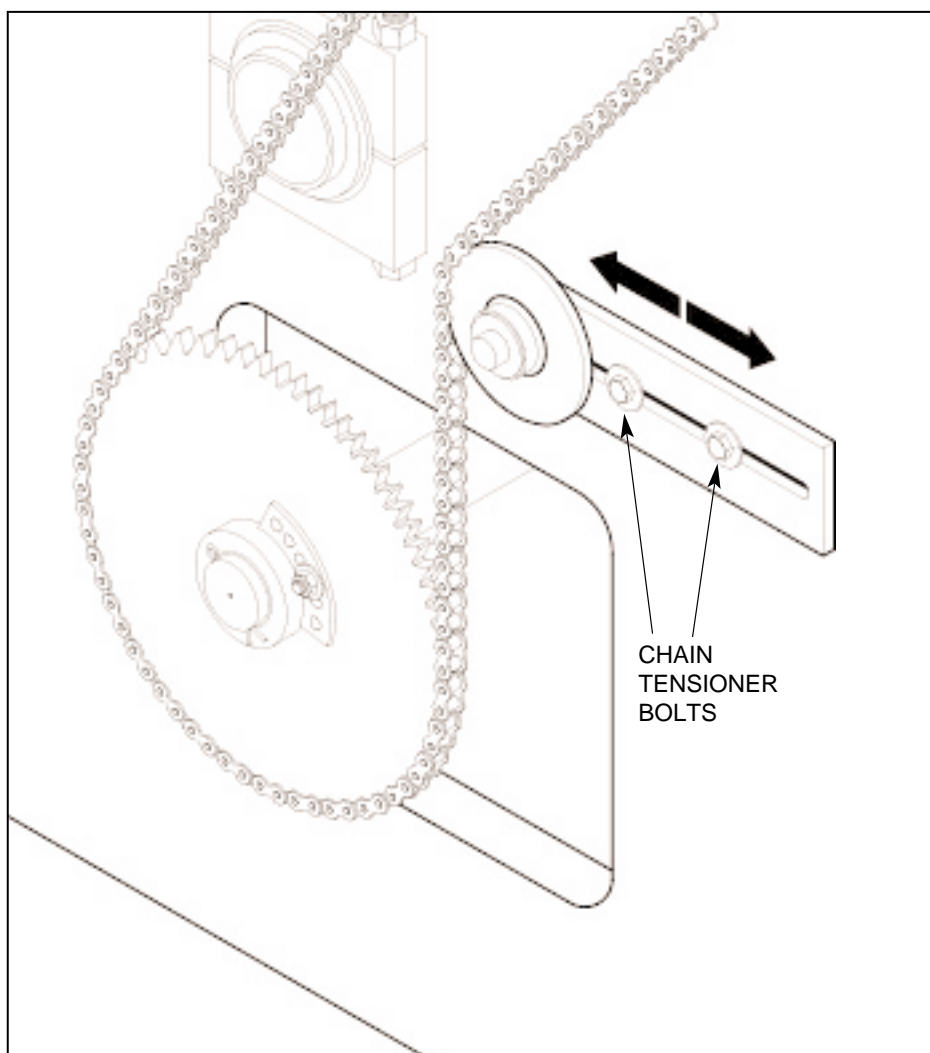


Figure 6.3 PALLET FEEDER DRIVE CHAIN ADJUSTMENT.

B. PALLET FEEDER LUG CHAINS ADJUSTMENT

Check tension of pallet feeder lug chains. Adjust tension at rear end of pallet feeder. Bottom strand of each chain sags down in center by approximately 1/2" to 3/4" [13mm to 19mm]; recheck periodically.



WARNING: The following procedure must be done with power off and machine locked-out!

To adjust the pallet feeder drive chain tension, follow this procedure (see figure 6.4 and 6.5):

- A. Loosen the clamp bolts (A) on the inside and on the outside of the machine.
- B. Adjust the tension with the tensioning screw (B).
- C. Tighten the clamp bolts (A).

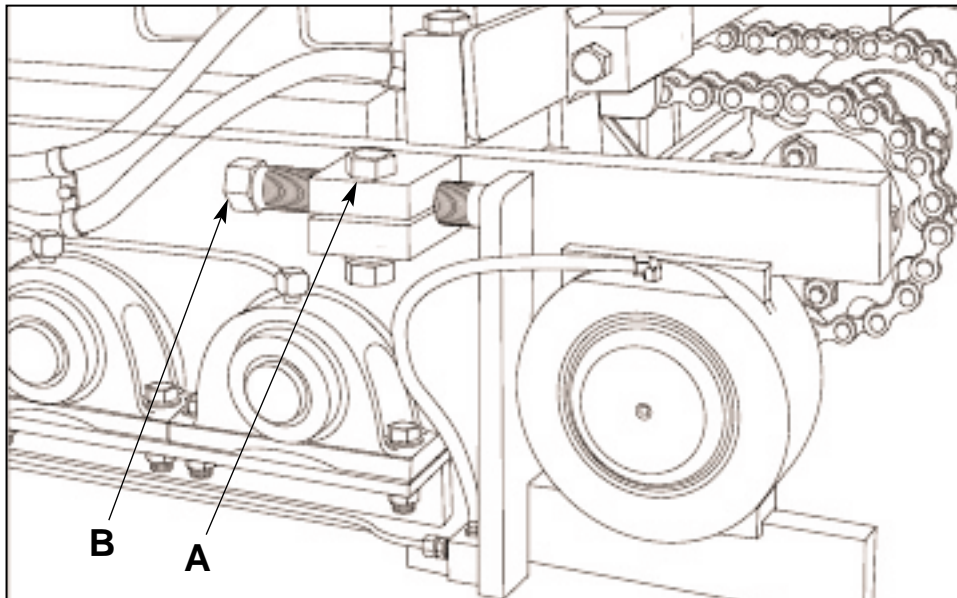


Figure 6.4 PALLET FEEDER CHAIN TENSIONING (RIGHT OUTSIDE VIEW).

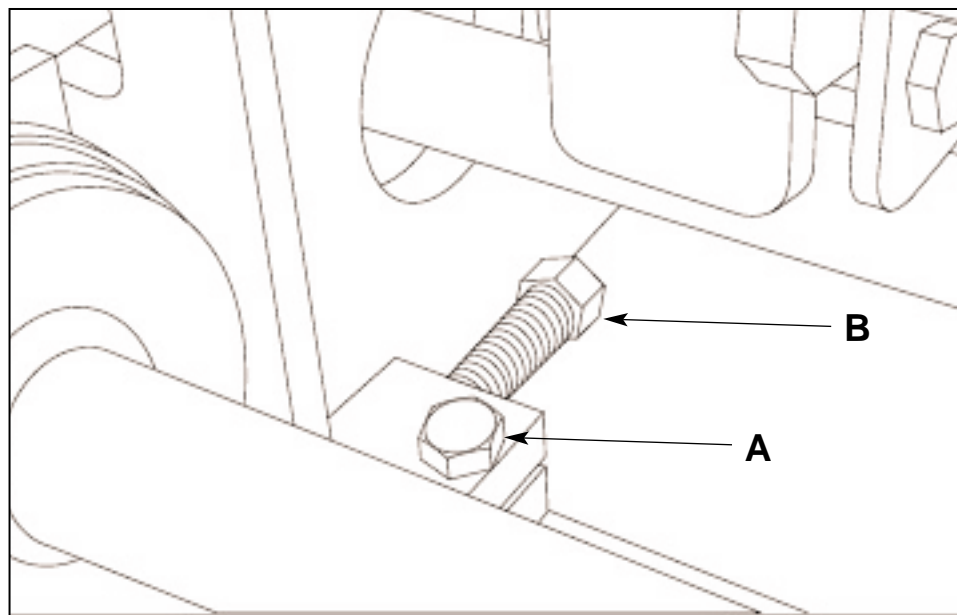


Figure 6.5 PALLET FEEDER CHAIN TENSIONING (RIGHT INSIDE VIEW).

6.2 TIMING THE PALLET FEEDER

6.2.1 Operate machine until front edge of any chain lug is 3-3/4 inches from back edge of magazine rear plate (see figure 6.6).

6.2.2 Remove shear bolt assembly (see figure 6.7).

6.2.3 Operate machine until pallet feeder timing mark is in line with center of roller (see figure 6.8).

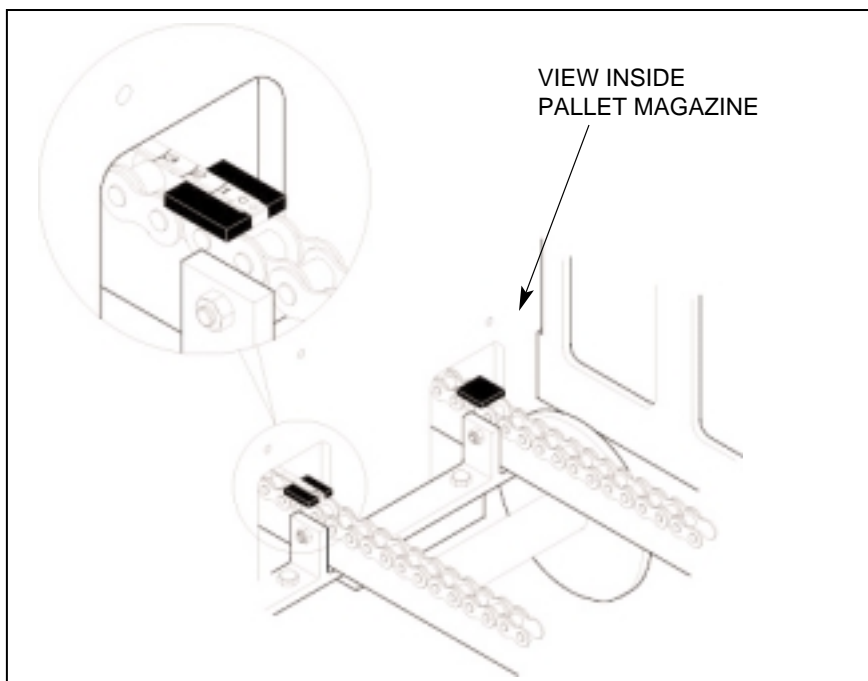


Figure 6.6 ADJUSTMENT OF CHAIN LUGS

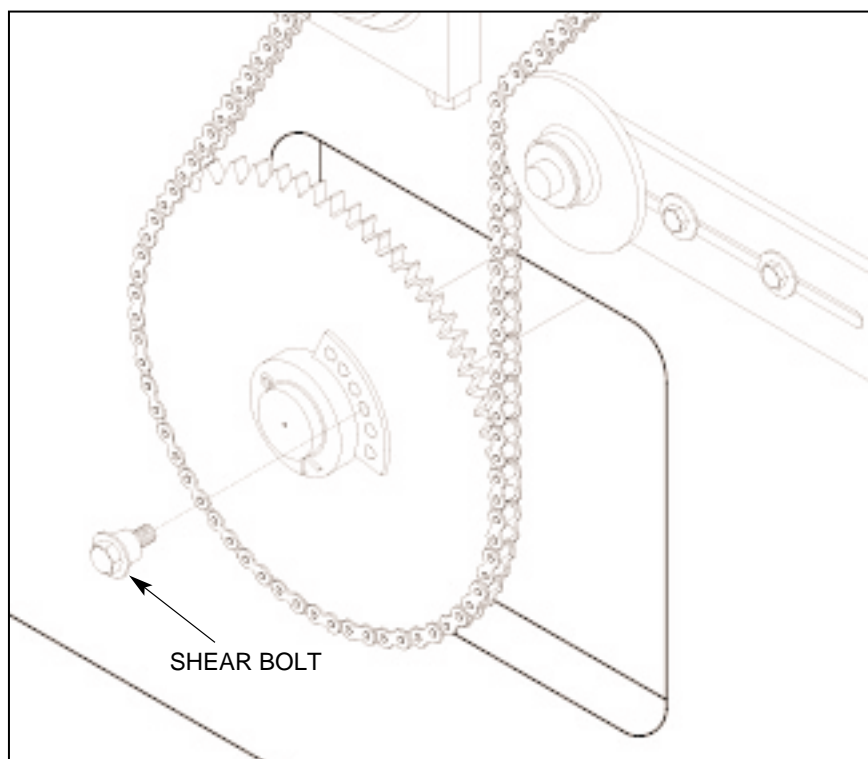


Figure 6.7 SHEAR BOLT ASSEMBLY

6.2.4 Jack up and hold pallet moving bars at front of machine when manually moving chain lugs and pallet lowering cam (see figure 6.9). Hold the moving bars high enough to prevent roller to

touch cam.

When jacked up, check pallet moving roller (A) to make sure it rolls smoothly and is bolted tightly.

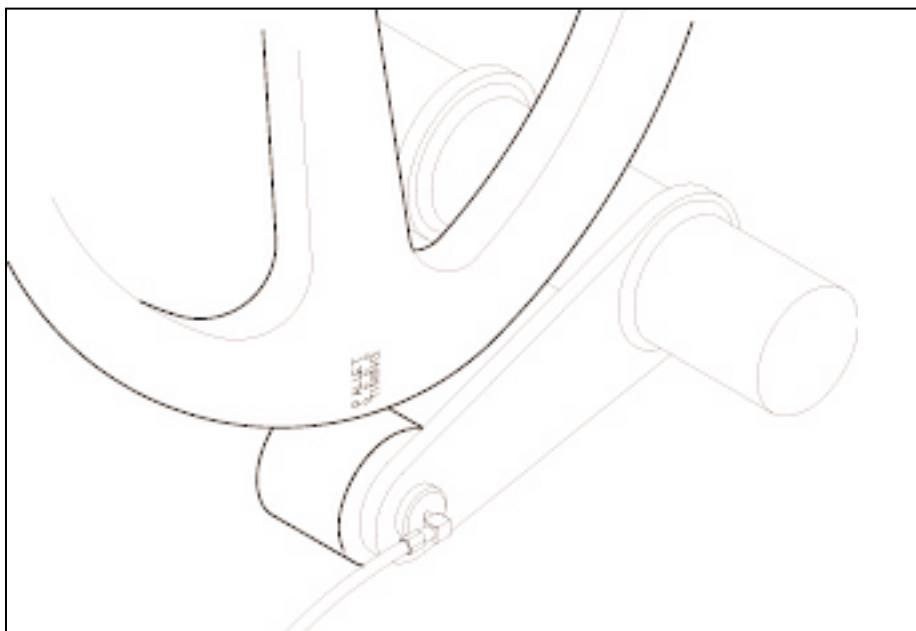


Figure 6.8 ALIGNING PALLET FEEDER TIMING MARK WITH ROLLER

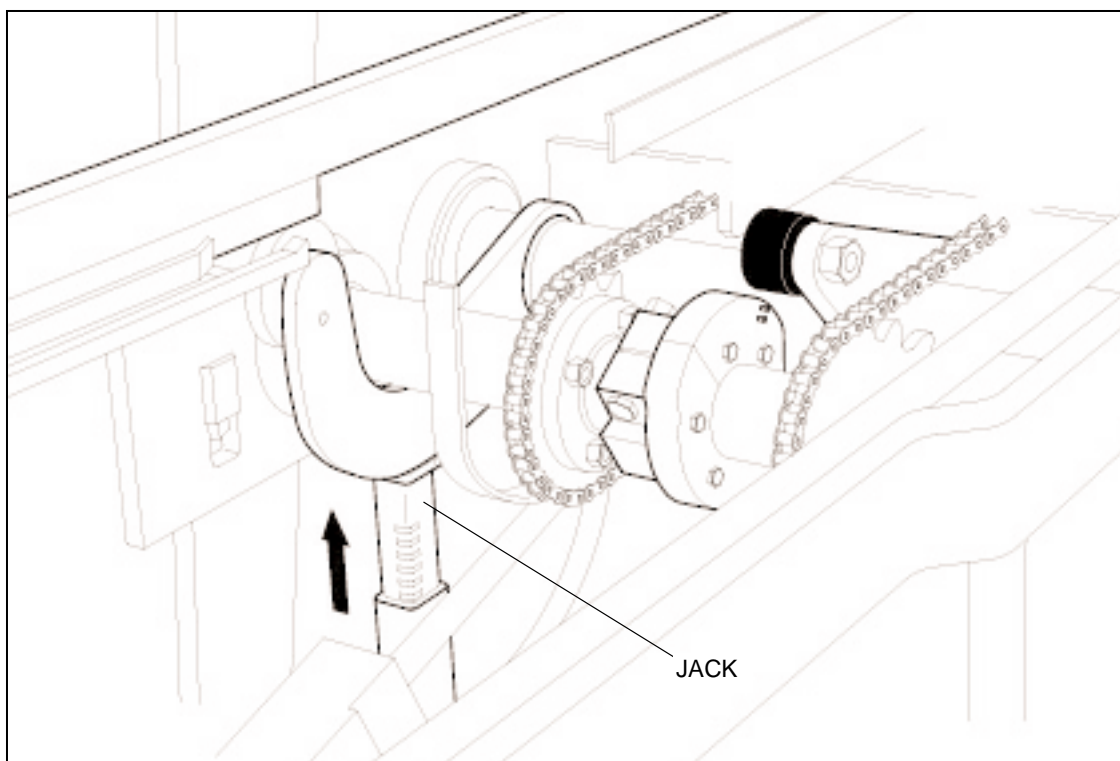


Figure 6.9 JACKING AND HOLDING PALLET MOVING BARS

- 6.2.5 Re-check chain lugs for 3-3/4 inches dimension (see figure 6.6). If lugs have moved pry chain at magazine rear plate to move lug back to 3-3/4 inches dimension.

Note: Lugs may also be manually moved by rotating pallet feeder back shaft with chain wrench or pipe wrench (see figure 6.10).

- 6.2.6 Insert shear bolt assembly into hub and sprocket holes which are nearest to alignment. Tighten nut.



WARNING: DO NOT INSERT finger into hole when checking alignment of shear bolt.



CAUTION: Figure below is shown with guard removed and are for illustration purposes only. **Never** operate machine without the guards. Machine should be locked and tagged.

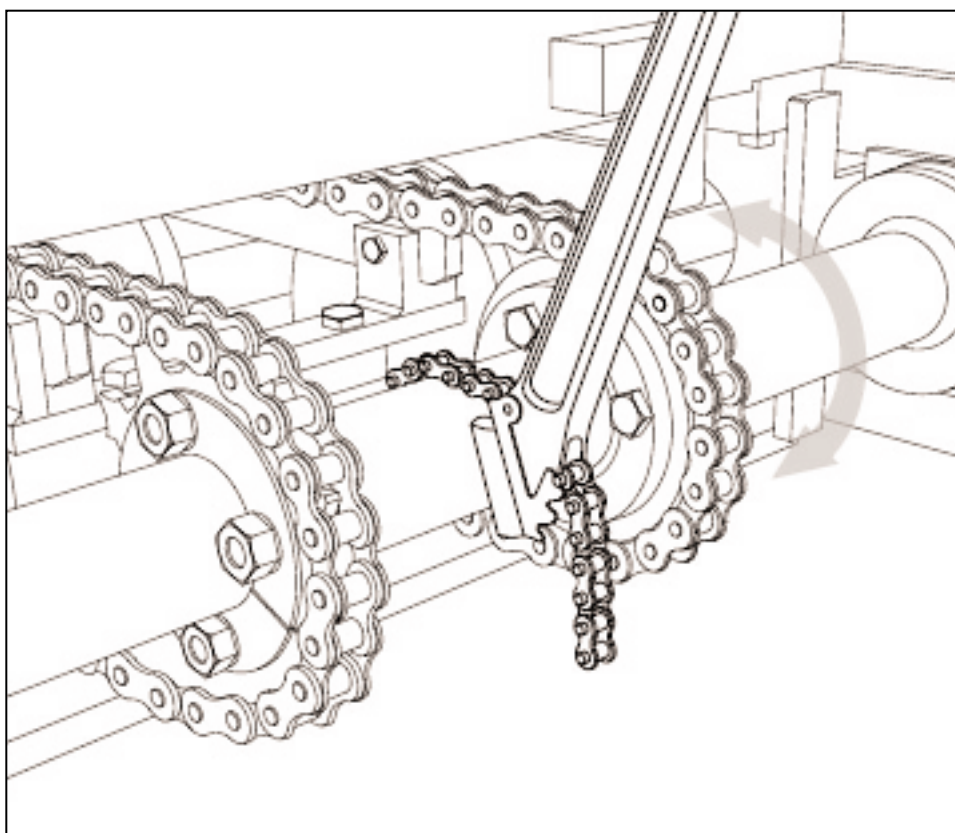


Figure 6.10 MOVING LUG CHAINS WITH PIPE WRENCH

- 6.2.7 Crawl under machine and loosen clamp bolts (A) for pallet lowering cam (see figure 6.11)
- 6.2.8 Align small pins or punch marks (B) on side of pallet lowering cam, with center of roller (see figure 6.11).
- 6.2.9 Let jack down from pallet moving bars at front of machine and lower bars back down onto rollers.
- 6.2.10 Put a few pallets into pallet magazine.
- 6.2.11 Operate machine to bring a pallet forward on pallet moving bars until pallet moving arms start to lift. Adjust pallet moving bar link assembly (see figure 6.13) until pallet is picked up off of chains and brought forward with pallet in cradles as shown (see figure 6.12).

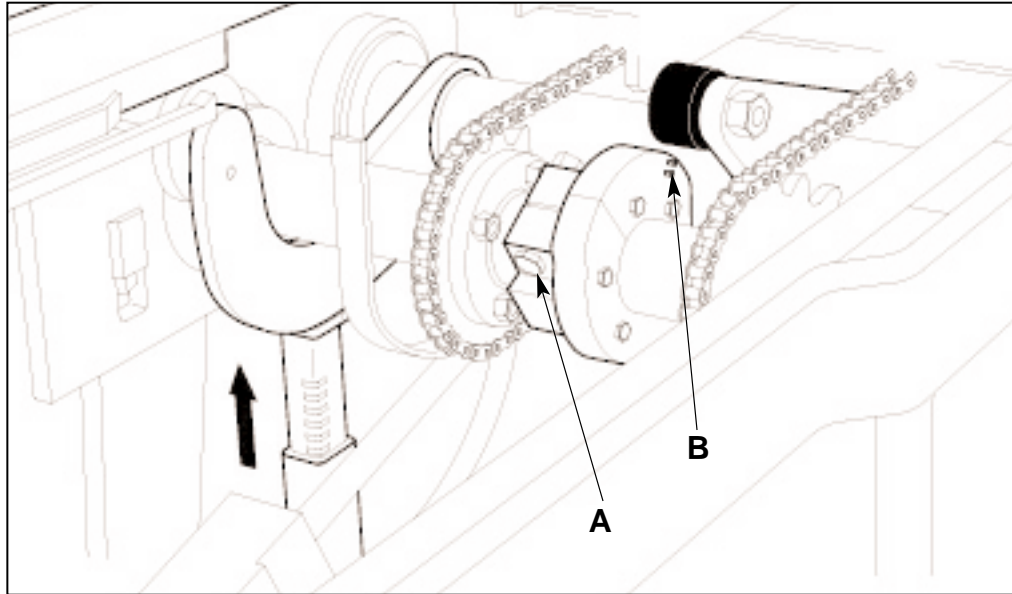


Figure 6.11 PALLET LOWERING CAM

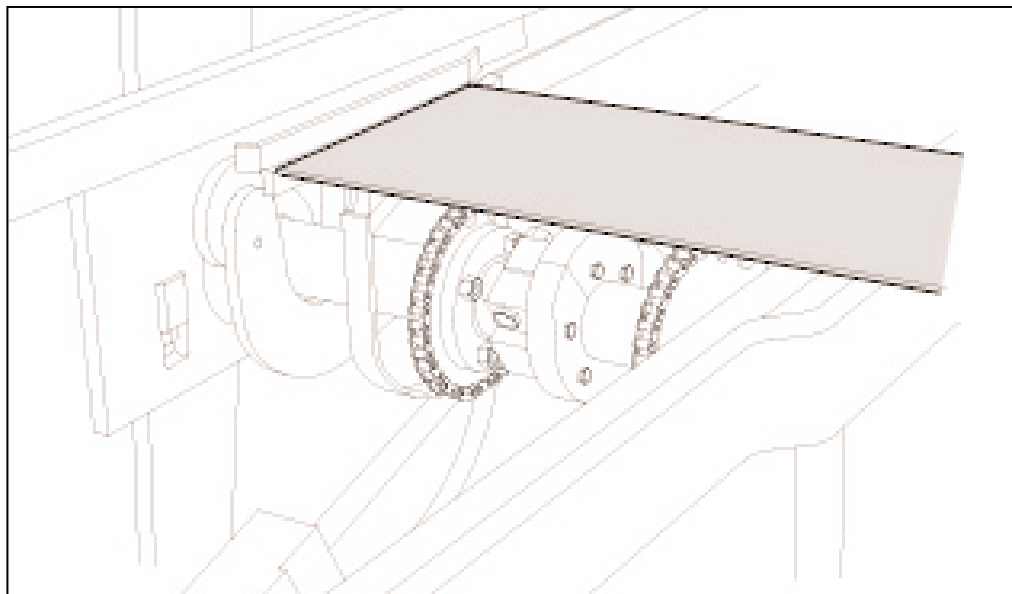


Figure 6.12 PALLET IN CRADLES

- 6.2.12 Adjust spring stops (pallet positioning springs) to be at 1/2 inch from pallet when fully forward on lug chains (see figure 6.14). To adjust, loosen the two bolts (A) on each spring stop and slide them forward or backward. Adjust spring stops height by loosening the two bolts (B).

Note: When pallet is sitting on chain, top of spring stops should be even with top of pallet

- 6.2.13 Jog machine to inch pallet up under mold. If pallet clears mold pallet guides, run several

pallets through machine. If pallets are raised under mold too far forward or too far back, steps 1 through 13 must be repeated, changing the 3-3/4 inches dimension (see figure 6.6) according to the amount that pallet must be shifted to be correctly placed under the mold.

- 6.2.14 Record final dimension (see figure 6.6).

- 6.2.15 Mark shear pin and sprocket location (see figure 6.7) on shaft of pallet feeder drive for future use (see section 6.3). Also, mark the shear pin hole.

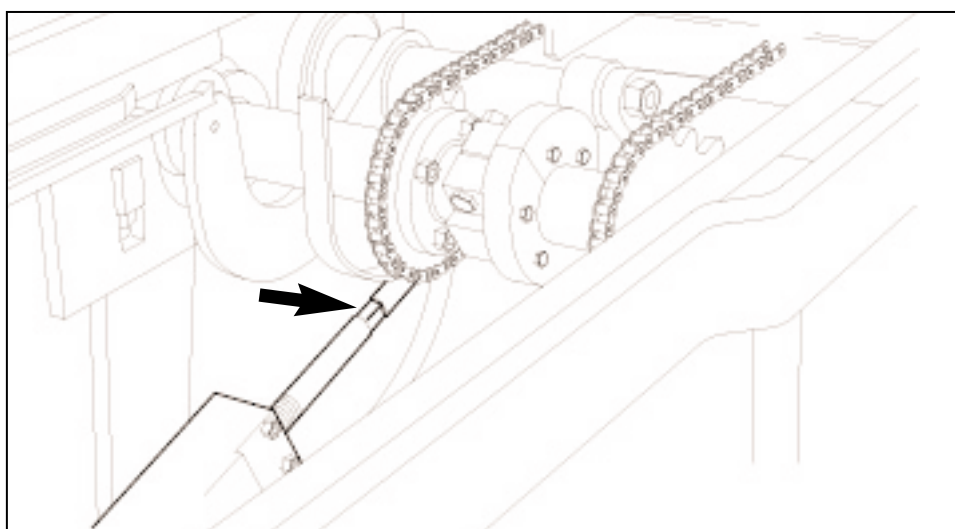


Figure 6.13 PALLET MOVING BAR LINK ASSEMBLY

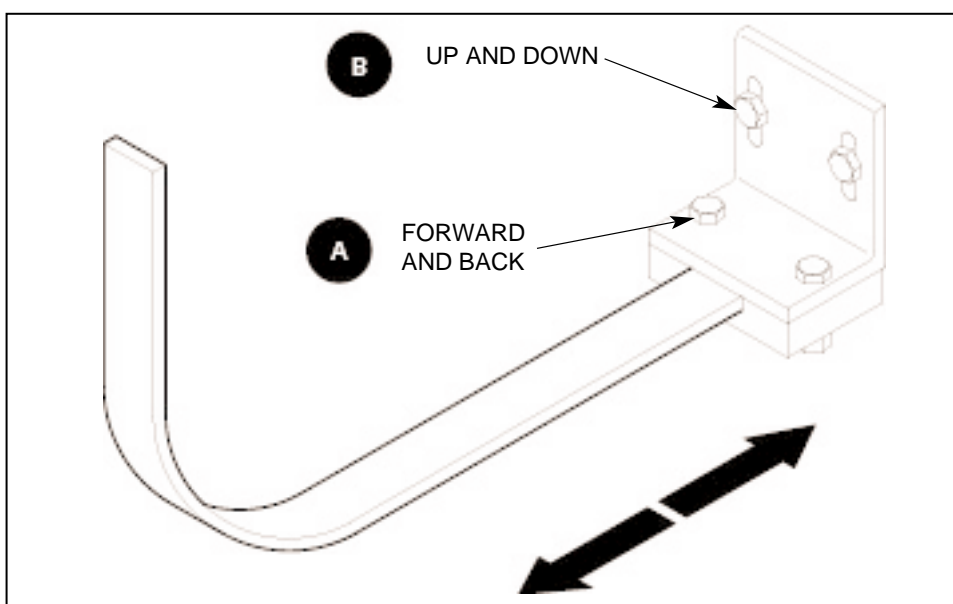


Figure 6.14 ADJUSTING PALLET POSITIONING SPRINGS

6.3 RE-TIMING PALLET FEEDER

If pallet feeder drive sprocket has sheared shear bolt, retime pallet feeder as follows:

- 6.3.1 Correct jammed condition which caused shear bolt to shear.
- 6.3.2 Without disturbing any other adjustments, install new shear bolt in same holes, in hub and sprocket, as they were in before (see section 6.2.16). Align mark on sprocket with mark on shaft.

Note: Pallet moving bars may have to be lifted or



WARNING: DO NOT INSERT finger into hole when checking alignment of shear bolt.

blocked up to relieve weight from pallet raising cam.

- 6.3.3 Re-check machine for correct timing. Pallet raising cam should start lifting pallet moving bars just as bars reach back position. Cam should set pallet on front delivery conveyor just as bars reach forward position. Pallet moving bars should pick pallet up off of chains with pallet resting in cradles (see figure 6.12). When pallet is conveyed forward in cradles, pallet should be raised to desired position.

SECTION 7

ROTARY SENSOR SETTING

The rotary sensor setting should be done each time the rotary sensor has been removed or disconnected. It should also be done after a “rotary sensor is out of sync.” fault has appear on the screen.

7.1 As an **initial condition**, cycle the machine to the “first stop” position “First stop” is obtained when the punch marks on the cam are in line with the roller.(see figure 7.2). In this position, the feedbox should be all the way forward and the roller should be centered on the first stop mark of the pallet receiver cam. At this point, the “Rotary sensor value” should be indicating 100° on the rotary sensor adjustment screen (see figure 7.1, for more details see section 10.4). To reach this screen, press “F2” from the main menu.

7.2 If the rotary sensor value shown in the screen is not 100°, loosen rotary sensor coupler (A) (as shown in figure 7.3) and make adjustment. To adjust, turn rotary sensor coupler until 100° is reached. Use the screen to monitor the rotary sensor. Make sure you tighten rotary sensor coupler before resuming adjustment.

7.3 Run the machine to “second stop” position which is controlled by the rotary sensor. The roller should be centered with the “second stop” marks on the pallet receiver cam. “Second stop” is the point where the stripper head shaft roller just falls off the high lobe of the stripper head raising cam. The “rotary sensor value” should be indicating 180° at this point.

Note: As the machine ran from first stop to second stop, the value must count in a positive direction (meaning from 100° to 180° in 1° increments). If the value is not incrementing in a positive direction, rotate the screw on the back of the rotary sensor to opposite position.

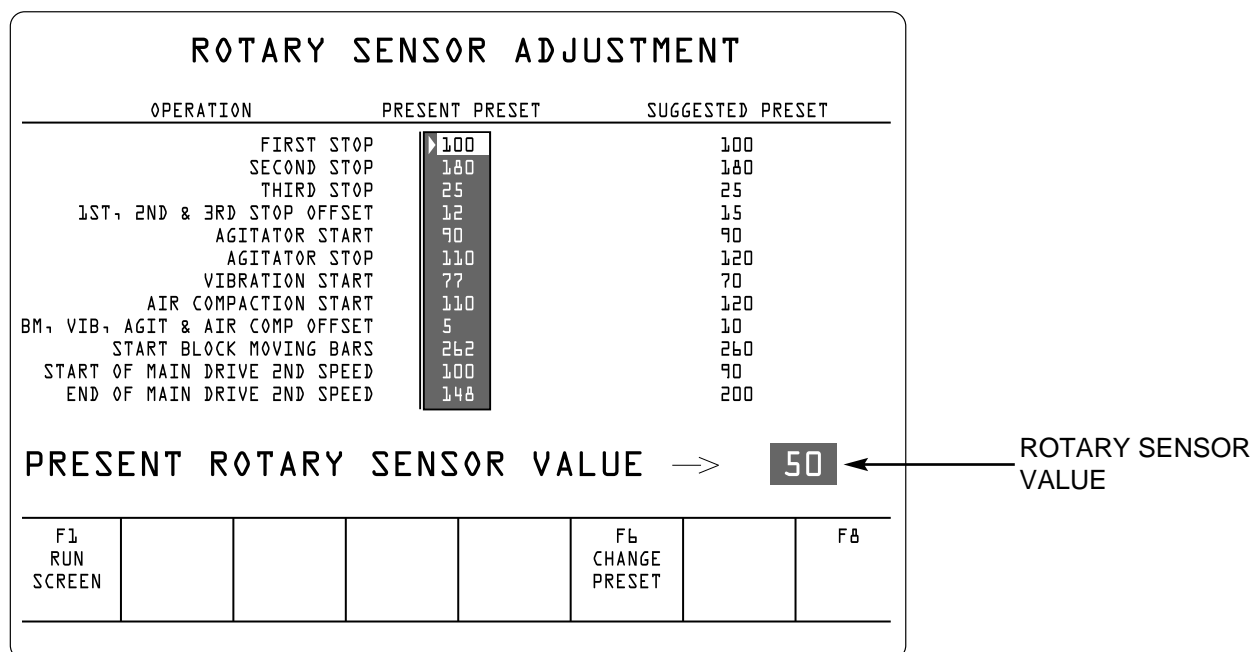


Figure 7.1 ROTARY SENSOR ADJUSTMENT SCREEN.

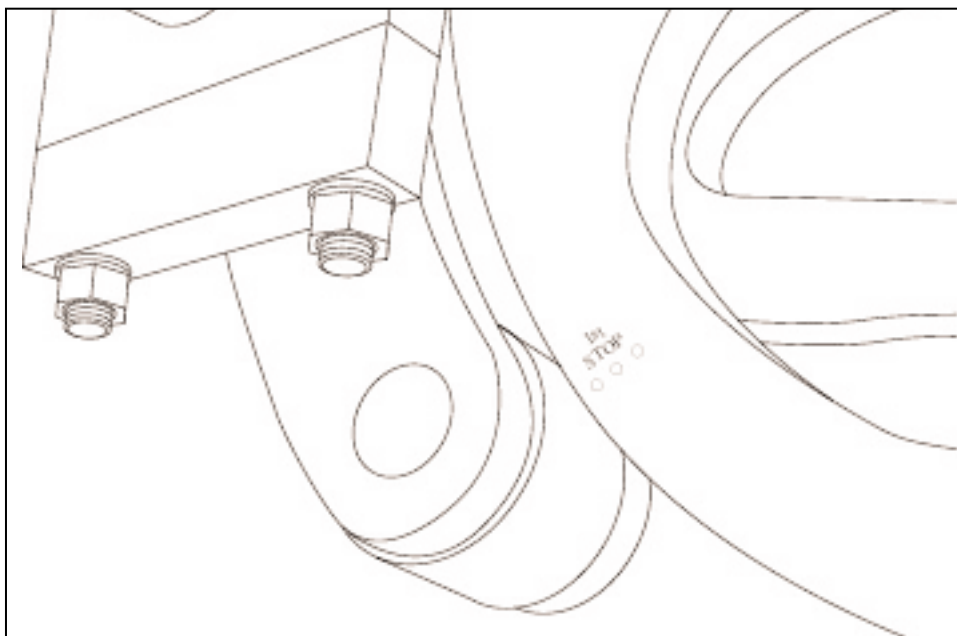


Figure 7.2 "FIRST STOP" (R.H. side of machine).

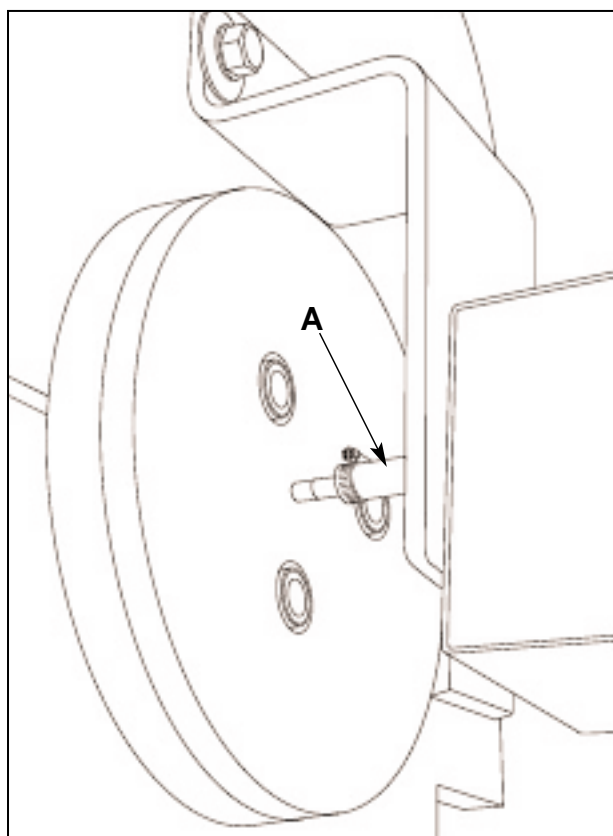


Figure 7.3 ROTARY SENSOR COUPLER
ADJUSTMENT.

SECTION 8

OPERATING THE MACHINE

8.1 OPERATING THE VIBRAPAC

This section will guide you, the operator, through the actual operation of the VIBRAPAC. First, read the sequence of the machine in order to have a good understanding of how the machine works and how you can make adjustments to produce perfect concrete blocks or pavers. Of course, the machine has to be setup before it can be operated properly. Adjustments on the pallet feeder, on machine timing and on adjustments for specific molds have to be made prior to the sequence outlined in this section.

8.2 HOW A CONCRETE PRODUCT MACHINE WORKS

The VIBRAPAC is a three-at-a-time unit machine rated at up to 1,620 units per hour. A concrete unit is made when concrete is fed into a mold and is then vibrated and compacted. Once it has been compacted, it is stripped out of the mold and delivered onto a conveyor. Many types of molds can be fitted on the machine to obtain a wide variety of products.

Refer to section 2 "MACHINE DESCRIPTION" to learn about the names and locations of the machine's components.

All of the machine's movements are controlled by cams located on a main shaft. As the cams turn with the main shaft, they activate rollers which are connected to link rods which in turn are connected to the components. These components either go forward and back or up and down. One cam brings a component forward (or up) and another brings it back (or down). The main shaft is powered by a motor and a clutch. The motor runs all the time. It is the clutch that will stop and start all machine movements. A cam activates a conveyor which transports empty pallets from the pallet magazine. Then a block delivery arm feeds these empty pallets to the mold and pallet with blocks to the exit conveyor.

The pallet has to be lifted at one point in the process; a cam does that. A stripper head frame is also connected to two different cams to move it up and down. A stripper head, which is part of the mold, has to be installed on the stripper head frame. This stripper head will press on top of the units to compact them. A pallet receiver frame is located below the stripper head. This component holds the pallet and the mold in place during the concrete unit forming process (stripper head is pressing and the mold is vibrating). The pallet receiver is connected by links to a cam on the main shaft to move up and move down through gravity. The last two cams will bring a feed box forward and back. This feed box pushes the material (concrete) to the mold. Concrete will fall into the feedbox through a hopper located on top of the machine. An agitator grid placed in the feedbox will agitate the material as it falls in the mold for better distribution of the concrete. The Agitator is powered by a motor located on the feedbox.

Finally, one motor on each side of the machine vibrates the mold. The vibration occurs when the concrete is fed in by the feedbox and when the units are being compressed by the stripper head. Vibration only lasts a few seconds but it is crucial to making concrete units.

8.3 MACHINE SEQUENCE OF OPERATION:

1. Machine cycle begins with feedbox ready to start forward when main drive clutch solenoid is energized.
2. With feedbox on its way forward, vibrators and agitators begin functioning.
3. Feedbox completes its forward stroke and stops over mold. At this point, the machine stops (at the position called "FIRST STOP").

While in "first stop", the following occurs:

- Feed timer is turned ON
 - Feed timer times out, which re-starts machine.
4. Feedbox returns to home position, at which time-
 - Agitator turns OFF(At this time, machine keeps cycling)
 5. Stripper head drops onto concrete in mold. At this point, machine stops (this position is "SECOND STOP").

While at "second stop", the following occurs:

- Height pin control circuit is turned ON
 - Finish timer starts and autofeed control circuit is enabled.
 - When height pins meet, finish indicator stops and delay timer begins. At this point, the Autofeed bar or feed time is adjusted, if necessary (actual finish time was not equal to desired finish time).
 - Delay timer times out which:
 - Starts the strip delay timer - Turns off vibrators
 - Strip delay timer times out which-
 - Turns ON main drive
6. Machine strips units from the mold. If a fault occurs, machine stops. If no fault occurs, pallet moving bars pick up empty incoming pallet from pallet feeder conveyor. Pallet with blocks is deposited on block moving support fingers while:
 - Stripper head is raising
 - Block moving bars travel to their most forward position.
 7. Block moving bars lower and return to extreme rear position.

Machine cycle is complete; a new one begins.

8.4 MACHINE SEQUENCE AND THE ROTARY SENSOR

The figure below represents the machine sequences in accordance with the rotary sensor values (in degrees). It will help you understand better how the machine cycle works and how to adjust parameters such as feed time, finish time, delay time and strip delay time which are crucial in making good quality concrete products.

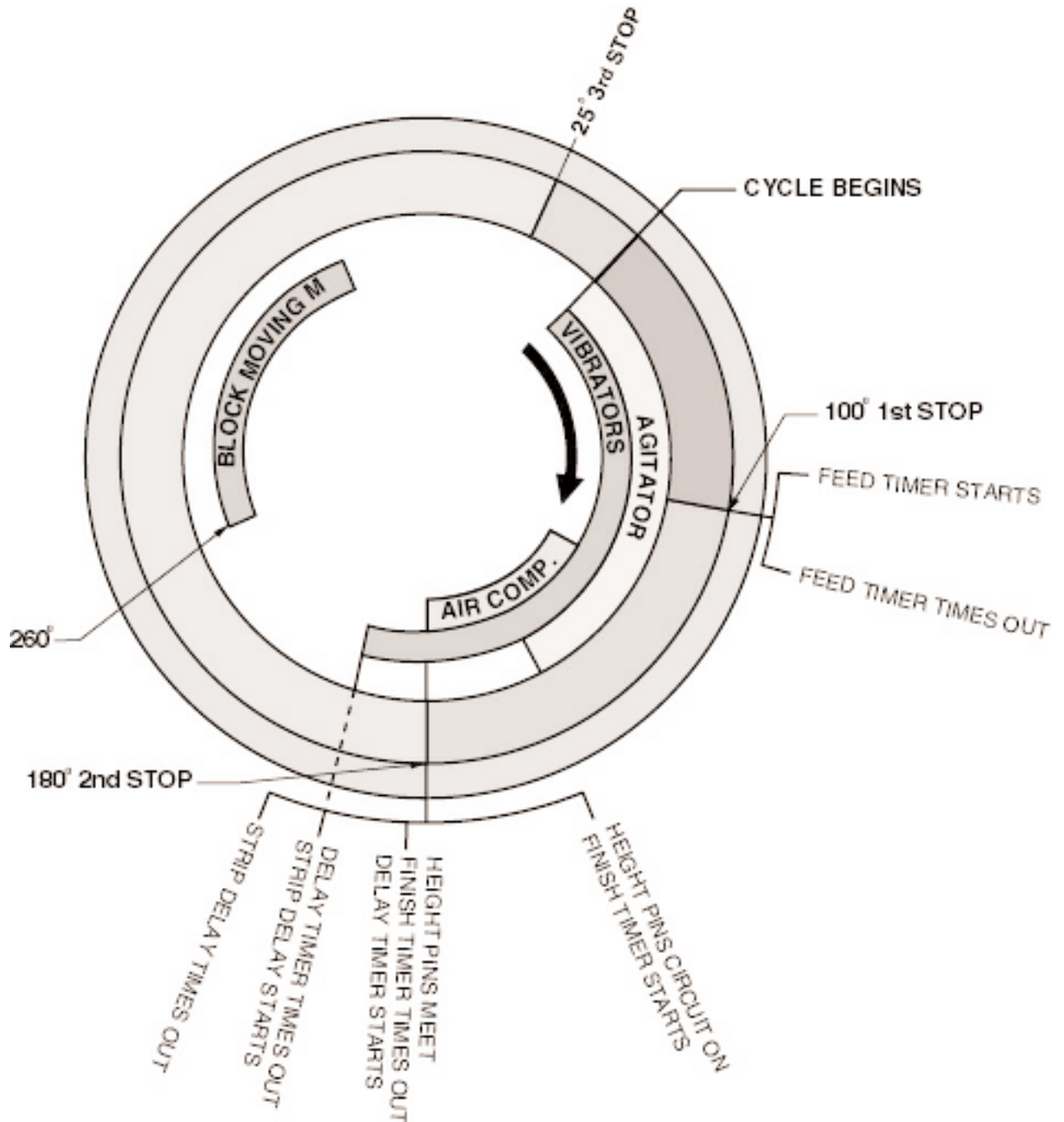


Figure 8.1 MACHINE SEQUENCE CYCLE.

8.5 INITIAL STARTING POSITION

Make sure all the following are set properly.

1. Make sure "EMERGENCY STOP" button is pulled out.
2. Make sure "CLUTCH" switch is "OFF".
3. Make sure "VIBRATOR" switch is "OFF".
4. Press and release "MCR RESET" push button. Machine will start.
5. Press and release "VIBRATOR START" push button. The vibrators will start (with Smartpac only).
6. Press F1 from the run screen and verify all selections are correct:
 - Height pins are [ENABLED].
 - Agitator is [ON].
 - Air compaction is [ON].
 - Slump mode is [OFF].
 - Smartpac warm-up (with Smartpac only) [OFF].
 - Feed time adjust is [OFF].
 - Autofeed is in [AUTO].
 - Auto height pin by pass is [DISABLE].
 - Horizontal core is in [HAND].

Note: Enabling these items may not be required for all products.

The machine will sound an alarm for 7 seconds and begin cycling..

To stop the machine, set the clutch switch to "OFF" or push in the "EMERGENCY STOP" button.

8.6 PROCEDURES TO RUN MACHINE FOR FIRST TIME OR WHEN NEW MOLD HAS BEEN INSTALLED

First, the operator has to decide of the quality of concrete units he wants to produce.

The quality depends on two (2) factors:

- the mix.
- the machine adjustments.

The machine adjustments for making units are done by adjusting the forming time and the autofeed adjustment. The forming time includes the feed time, the finish time and the delay time. The following is a description of these parameters on the machine which will help you understand how to adjust the machine.

Note: These explanations are better covered in section 9: Hand & Machine Interface.

FEED TIME:

Amount of time the feed box is stopped over the mold. This will control the amount of material (concrete) placed in the mold.

FINISH TIME:

Preset time that you will expect desired finish time, from the moment stripper head shoes hit material to when height pins meet each other. Machine will adjust the finish time by adjusting the autofeed mechanism or the feed time (the operator has to select which one he prefers the machine to change. See section 9.3: "Hand & Machine Set-up".

Note: It's a good thing to verify vibrator brakes before changing a finish time. The amount of vibration made could be altered by bad vibrator brakes adjustment. This would modify the real amount of compression made, hence modifying real finish time.

DELAY TIME:

The time of vibration after height pins meet.

STRIP DELAY TIME:

Time from the moment vibration stops to when units are stripped out of the mold. Note that the strip delay does not influence the quality of the units. The strip delay will simply slow down the process.

1. Adjust parameter for feed time to approximately 1 1/2 seconds.

2. Adjust parameter for finish time to approximately 1 1/2 seconds.
3. Adjust parameter for delay time to approximately 1 1/2 seconds.
4. Set "Autofeed" to "MAN" position.
5. Adjust it to 1/2" [13mm].
6. Start making units (start machine) (see section 8.5).
7. Check units coming out. Check for cracks, dimensions and density.
8. If units are not perfect, modify finish time until units are perfect. To modify finish time, refer to section 9.5: "Timer adjustment".
9. If units continue being cracked, check delay time; it is probably not sufficient. Too much material introduced in the mold can also cause the cracks.
10. If the units are still not perfect, see section 10: "Troubleshooting" for more details.
11. Set the "Autofeed Mechanism" to "AUTO". See section 9.3: "Hand & Machine Set-up".

Note: We strongly suggest you use the Autofeed Mechanism correction for most units. It will allow you to produce consistent products. The use of Autofeed Mechanism correction is not recommended for low height units.

8.7 MANUAL OPERATION OF THE AUTOFEED MECHANISM

It is possible to manually operate the AUTOFEED MECHANISM. The autofeed mechanism makes possible a continuing adjustment of the height of the feedbox over the mold to produce consistent concrete units.

8.7.1 THEORY OF OPERATION

The autofeed mechanism compares the finish time (see section 9.0) with the autofeed dwell time:

- A. If finish time is greater than dwell time (too much concrete in mold), the autofeed mechanism will lower the feedbox (less material will be poured in mold).
- B. If finish time is smaller than dwell time (not enough concrete in mold), the autofeed mechanism will raise the feedbox (more material will be poured in mold).

A difference between finish time and dwell time can have many causes:

- A. Changing moisture of material.
- B. Difference in coarseness (repartition of aggregates throughout material)
- C. Type of concrete used.

8.7.2 TO MANUALLY OPERATE THE AUTOFEED SYSTEM

The correction of the amount of travel of the feedbox is normally controlled automatically by the computer. However, in certain circumstances, you might want to operate manually the autofeed mechanism. To do so, follow these steps:

1. Go to the "HAND & MACHINE SET UP" screen. To access this screen, press **F1** from the RUN SCREEN (see section 9).
2. Press **F8** to change the autofeed system from automatic to manual mode. The screen should read "**F8** - AUTOFEED IS IN MANUAL"
3. Now, with the UP and DOWN arrow keys on the keypad, you can raise or lower the autofeed over the mold. The UP arrow key will raise the autofeed, the DOWN arrow key will lower it. Once autofeed is in manual mode, the arrow keys can

be used at any time to adjust the height of the autofeed, even when machine is in operation.

Note: To adjust the amount of travel up or down of the autofeed either in manual or automatic mode, you have to adjust timer 8 (in manual mode) or timer 10 (in automatic mode). Please refer to section 9.3 to adjust these timers.

8.7.3 TESTING THE AUTOFEED MECHANISM

It is possible to check if the autofeed mechanism is working properly. To do so, put a rag on the top of the lower height pin. They won't make contact so finish timer will time out first (before height pins meet). This will notify the computer that there is too much material. The autofeed should then go down if working appropriately.

8.8 TIPS ON OPERATING THE VIBRAPAC

Here is a list of common sense tips that help to planify an efficient and smooth-running production of concrete units with the Vibrapac.

Operator of the Vibrapac should know:

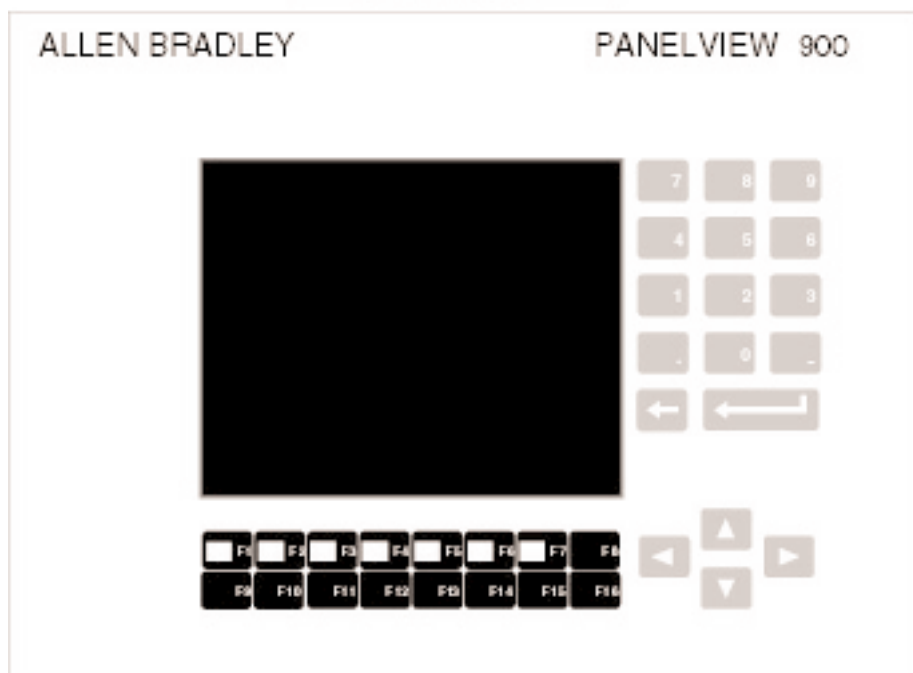
- 8.8.1 The production goal (example: 85 batches a day; 500 batches a week).
- 8.8.2 Desired coarseness of material.
- 8.8.3 Average time cycle of machine.
- 8.8.4 It is better to make blocks on the short side. Less height is better than more.

SECTION 9

GRAPHIC CONTROL STATION

9.0 GRAPHIC CONTROL STATION

Note: In this section, the term "SLC" will be used in reference of the "Small Logic Controller"



F1 To **F8** Use these keys to select a menu.

F9 To **F16** These keys are not in use.

0 To **9** These keys are used to enter a name or parameters



These keys are used to move cursor up and down and left to right.



This key allows the operator to erase a parameter.



This key is used to accept a parameter after it has been typed in.

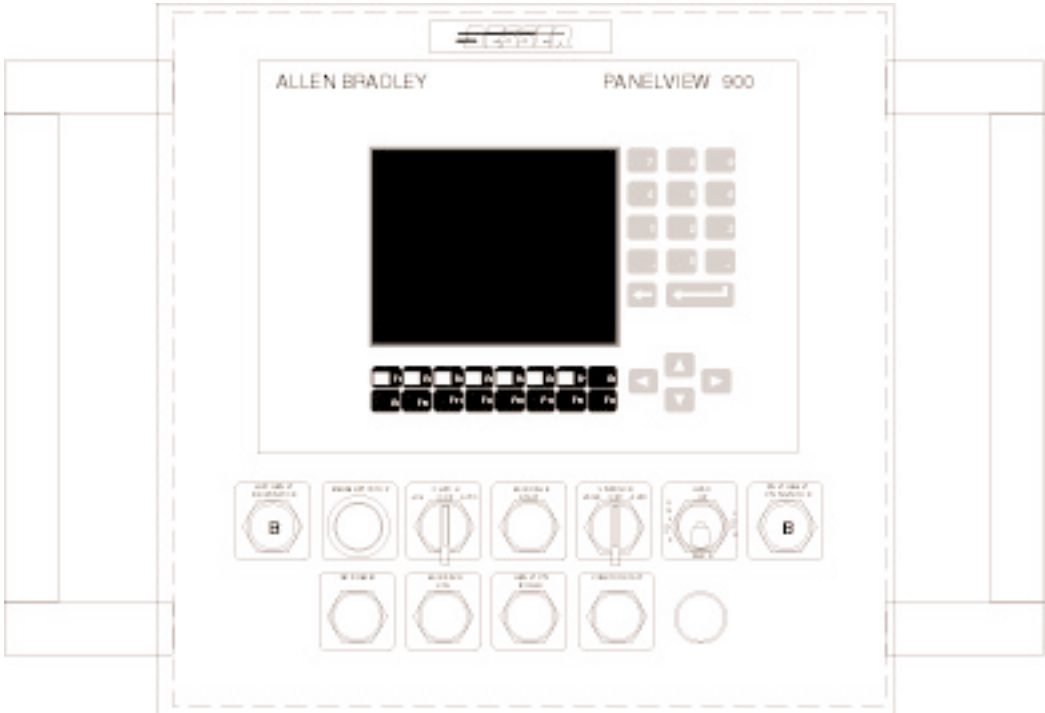
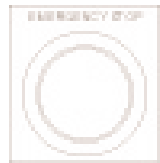
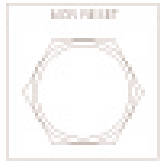


Figure 9.1 GRAPHIC CONTROL STATION.



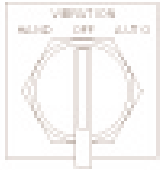
Emergency stop,complete shut off of machine.
Needs to be pulled out to start the machine.



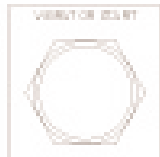
Master control delay reset.
Enables the machine to function (emergency button has to be pull out first).



This will override the height pins (simulate the meeting of height pins).



HAND mode: vibration will start whenever switch is set to this position.
 AUTO mode: vibration will occur during the appropriate time during the operation of machine.



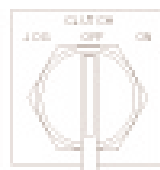
Start vibrating motors but not the vibration itself.
 To start actual vibration, use the "hand-off-auto" button.



Starts the main drive, but not the machine operation (clutch).

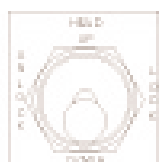


Jogs the machine only when the clutch selector switch is set to "Jog".



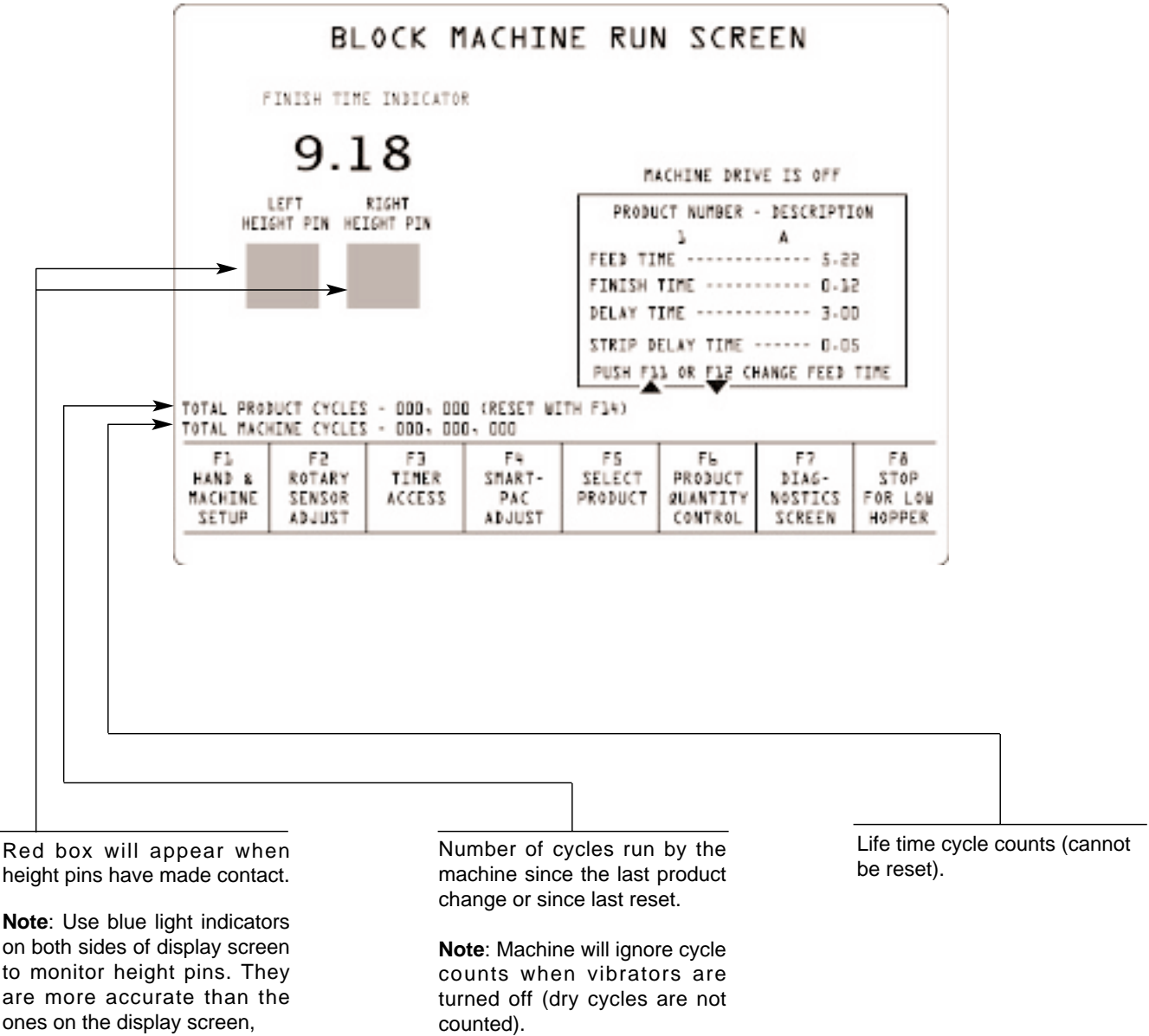
To start automatic operation.
 At "Off", it stop the auto operation.
 At "Jog", the machine can be jogged with the "Main drive jog" button.

OPTIONAL



Used to remove or install the mold with the stripper head.
 Lock and unlock.
 Raise and lower.

9.1 BLOCK MACHINE RUN SCREEN




BLOCK MACHINE RUN SCREEN


FINISH TIME INDICATOR

9.18

LEFT
HEIGHT PIN



RIGHT
HEIGHT PIN



MACHINE DRIVE IS OFF

PRODUCT NUMBER - DESCRIPTION

3 A

FEED TIME ----- 5.22

FINISH TIME ----- 0.12

DELAY TIME ----- 3.00

STRIP DELAY TIME ----- 0.05

PUSH F11 OR F12 CHANGE FEED TIME

TOTAL PRODUCT CYCLES - 000, 000 (RESET WITH F14)

TOTAL MACHINE CYCLES - 000, 000, 000

F1	F2	F3	F4	F5	F6	F7	F8
HAND & MACHINE SETUP	ROTARY SENSOR ADJUST	TIMER ACCESS	SMART-PAC ADJUST	SELECT PRODUCT	PRODUCT QUANTITY CONTROL	DIAG- NOSTICS SCREEN	STOP FOR LOW HOPPER

FEED TIME

Amount of time the feed box is stopped over the mold. This will control the amount of material (concrete) placed in the mold.

8 alpha-numeric digits are used to name a particular product (ex.: B001 for block 1). Use keys 0 to 9 and A to F

FINISH TIME

Preset time that you will expect desired finish time, from the moment stripper head shoes hit material to when height pins meet each other. Machine will adjust the finish time by adjusting the autofeed mechanism or the feed time (the operator to select which one he prefers the machine to change with (uses F1, F7 or F8).

DELAY TIME

The time of vibration after height pins meet (F3 timer 2)

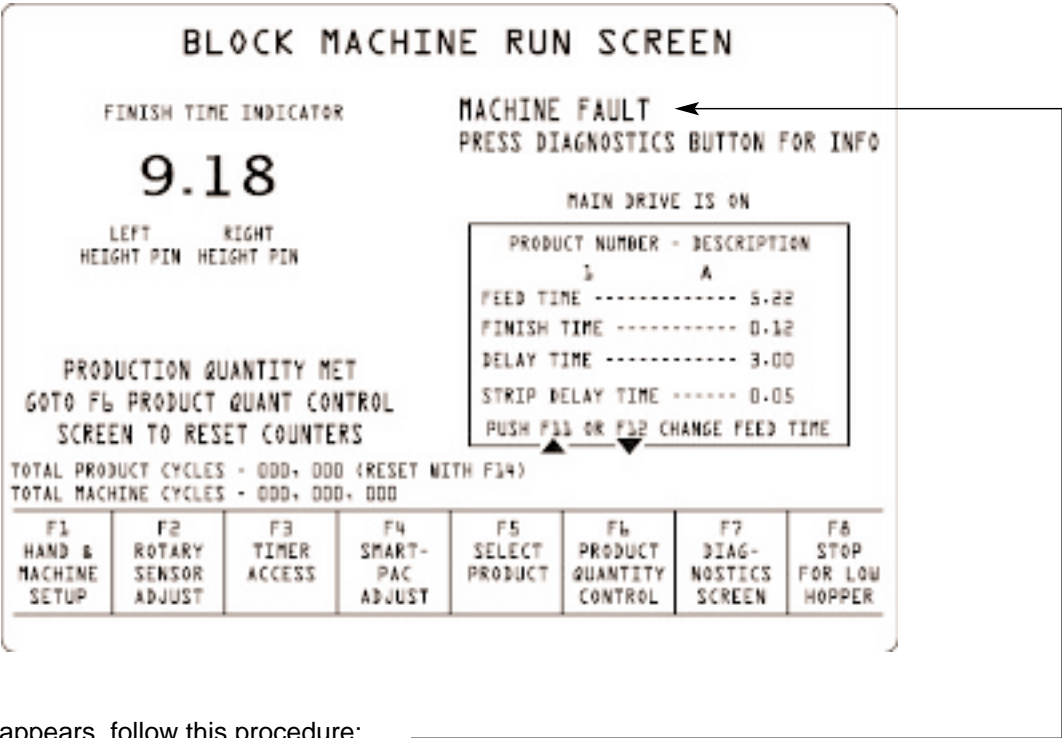
STRIP DELAY TIME

Time from the moment vibration stops to when units are stripped out of the mold.(F3 timer 3)

Use F11 & F12 KEYS to modify feed time by 0.1 second increments.

9.2 FAULT MESSAGE ON BLOCK MACHINE RUN SCREEN

This screen will be displayed every time a fault occurs.



When this message appears, follow this procedure:

1. Press F7 to inquire about the fault.
2. Correct the fault (see Trouble Shooting section).
3. Turn the clutch selector switch to "OFF".
4. Press the F9 key.
5. Turn clutch switch "ON"

The machine will sound an alarm and restart.

9.3 HAND & MACHINE SET UP F1

This screen allows the operator to turn some of the machine's components ON and OFF.

To access this screen from the **RUN SCREEN**, press **F1**.

```

F1  - RETURN TO RUN SCREEN
F2  - HEIGHT PINS ENABLED
F3  - AGITATOR IS ON
F4  - AIR COMPACTION IS OFF
F5  - SLUMP MODE IS DISABLED
F6  - SMARTPAC WARMUP IS OFF
F7  - FEED TIME ADJUST HAND
F8  - HORIZONTAL CORE IS OFF
F9  - AUTO HEIGHT PIN BYPASS DISABLED
F10 - HORIZONTAL CORE IS OFF
F11 - MAIN DRIVE MODE DUAL SPEED
F12 - INCREASE BLOCK MOVING SPEED
F13 - DECREASE BLOCK MOVING SPEED

      T O G G L E
  
```

F2: Normally enabled. The machine will not continue beyond point where height pins meet. It can be useful for single cycle runs.

F3: Turns the agitator ON or OFF .

F4: Turns the air compaction cylinders ON or OFF

F5: If enabled, machine only needs 1 height pin to meet in order to continue cycle.

F6: Turns the pallet cleaner ON or OFF.
Note: The pallet cleaner is optional.

F7: If enabled, the feed time will be automatically adjusted, otherwise, no adjustment will be made by the machine. The automatic feed time adjustment will be made with 0.1 sec increments. If you wish to change this increment, change value of register of N7:35 (see section 10.9, data table display "F7"). Here, the normal value is equivalent to 0.1 seconds.

F8: Turns the autofeed system ON or OFF

ref. timer 8 = manual adjustment increment
(time of travel)

ref. timer 10 = automatic adjustment increment
(time of travel)

F9: If enabled, a timer will control the finish time (refer to timer 23)

F10: Turns horizontal core ON and OFF (optional)

F11: Main drive speed selection (single or dual speed)

F12: ***Only on Dynapac*** Selects speed pf block moving bars

F13: ***Only on Dynapac*** Selects speed pf block moving bars

9.4 ROTARY SENSOR ADJUSTMENT F2

This screen allows the user to change the preset values of the rotary sensor. The rotary sensor is located at the end of the main shaft. Its purpose is to synchronize the machine and all its components. This screen also allows the user to acknowledge the present rotary sensor value. To access this screen from the **RUN SCREEN**, press **F2**.

ROTARY SENSOR ADJUSTMENT		
OPERATION	PRESENT PRESET	SUGGESTED PRESET
FIRST STOP	100	100
SECOND STOP	180	180
THIRD STOP	25	25
1ST, 2ND & 3RD STOP OFFSET	12	15
AGITATOR START	90	90
AGITATOR STOP	110	120
VIBRATION START	77	70
AIR COMPACTION START	110	120
BM, VIB, AGIT & AIR COMP OFFSET	5	10
START BLOCK MOVING BARS	262	260
START OF MAIN DRIVE 2ND SPEED	100	90
END OF MAIN DRIVE 2ND SPEED	148	200
PRESENT ROTARY SENSOR VALUE →		50
F1 RUN SCREEN		F6 CHANGE PRESET

First stop:
Should occur when indicating 100°.

Second stop:
Should occur when indicating 180°.

Third stop:
Should occur when indicating 25°.

1st, 2nd & 3rd stop offset:
Window for stop position. (accuracy)
Ex.: If offset is 10°, 1st stop can be between 90° and 100°
This value (10) will be subtracted from the stop value (100) to give range of operation to the rotary sensor to determine a stop.

Agitator start:
The location on the rotary sensor where the agitator is turned ON.

Agitator stop:
The location on the rotary sensor where the agitator is turned OFF.


Vibration start:
The location on the rotary sensor where the vibrators start (no stop location)(stop is controlled by a delay time).

Air compaction start:
The location on the rotary sensor where the air compaction starts (no stop location) (stop when height pins meet).

BM, VIB, AGIT & Air comp offset:
Window for these components. (accuracy)
Ex.: If offset is 10°, BM bars can be between 250° and 260°
This value (10) will be subtracted from the value (250) to give range of operation to the rotary sensor to determine a stop.

Start block moving bars:
The location on the rotary sensor where the block moving bars start.

Start of main drive 2nd speed & End of main drive 2nd speed: Used with main drive frequency control. Establishes when you start and stop 2nd speed.

F6 Press this key to change any of the preset values. Use arrows to select. Use numbers to change values. Use  to make changes.

PRESENT ROTARY SENSOR VALUE : 50
It will indicate the rotary sensor location at present time.

9.4.1 TO CHANGE PRESETS

To change any of the rotary sensor value, follow these steps:

1. From the RUN SCREEN, press the **F2** key.

The display will read:

ROTARY SENSOR ADJUSTMENT		
OPERATION	PRESENT PRESET	SUGGESTED PRESET
FIRST STOP	100	100
SECOND STOP	180	180
THIRD STOP	25	25
1ST, 2ND & 3RD STOP OFFSET	12	15
AGITATOR START	90	90
AGITATOR STOP	150	120
VIBRATION START	77	70
AIR COMPACTION START	150	120
ON, VIB, AGIT & AIR COMP OFFSET	5	10
START BLOCK MOVING BARS	262	260
START OF MAIN DRIVE 2ND SPEED	100	90
END OF MAIN DRIVE 2ND SPEED	146	200

PRESENT ROTARY SENSOR VALUE → 50

F1 RUN SCREEN					F6 CHANGE PRESET	F8
---------------------	--	--	--	--	------------------------	----

2. Use the arrows to move the cursor to the item you wish to modify the Rotary Sensor value.
3. Press the F6 key.


The display will read:

ROTARY SENSOR ADJUSTMENT		
OPERATION	PRESENT PRESET	SUGGESTED PRESET
FIRST STOP	100	100
SECOND STOP	180	180
THIRD STOP	25	25
1ST, 2ND & 3RD STOP OFFSET	12	15
AGITATOR START	90	90
AGITATOR STOP	150	120
VIBRATION START	77	70
AIR COMPACTION START	150	120
ON, VIB, AGIT & AIR COMP OFFSET	5	10
START BLOCK MOVING BARS	262	260
START OF MAIN DRIVE 2ND SPEED	100	90
END OF MAIN DRIVE 2ND SPEED	146	200

Enter value:
(0 to 359)

PRESENT ROTARY SENSOR VALUE → 50

F1 RUN SCREEN					F6 CHANGE PRESET	F8
---------------------	--	--	--	--	------------------------	----

4. Enter new Rotary Sensor value, from 0 to 359 (0 to 359 degrees).
5. Press the  key.

9.5 TIMER ADJUSTMENT F3

These two screens allow the operator to visualize and to change preset timer values. There are 24 timers (0 to 23) which are accessible through these screens. Additional timers are accessible through the DATA TABLE DISPLAY (F7 then F4). See appendix "A" for all timer addresses and descriptions. Each timer has a specific function related to the machine's overall performance. The timers and their functions are listed on the next page. Timers 0 to 3 are the most used timers; they control functions which are directly related to production. To access this screen from the **RUN SCREEN**, press **F3**.

Press **F1** to go to previous page or to return to the **RUN SCREEN**.

TIMER ACCESS				PAGE 1
TIMER	PRESET	CURRENT	DESCRIPTION	
0	05.22	00.00	FEED TIME	
1	00.12	00.00	FINISH TIME - SETS MINIMUM UNTI QUALITY	
2	03.00	00.00	DELAY TIME - CONTINUES VIB AFTER HEIGHT PINS	
3	00.05	00.00	STRIP DELAY - DELAY AFTER VIBRATION STOPS	
4	00.20	00.00	VIBRATOR BRAKE ON TIME	
5	00.30	00.00	LUBE PUMP OFF TIME - (0.10 = 10sec)	
6	00.15	00.00	LUBE PUMP ON TIME - (0.10 = 10sec)	
7	00.20	00.00	AUTOFEED DWELL TIME - WINDOW ABOVE FINISH	
8	00.30	00.00	AUTOFEED MANUAL INCREMENT TIME	
9	00.09	00.00	DELAY A 3RD STOP LOCKOUT - MK	
10	00.10	00.00	AUTOFEED CORRECTION TIME - ARM TRAVEL	
11	09.85	00.00	DELAY A LOW AIR SUPPLY FAULT	
F1 RUN SCREEN			F4 CHANGE PRESET	F8 NEXT PAGE

Use arrows on the keyboard to select a timer.

Press **F4** to change preset value.

Press **F8** to go to the next page (timers 12 to 23).

TIMER ACCESS				PAGE 2
TIMER	PRESET	CURRENT	DESCRIPTION	
12	00.23	00.00	MACHINE IDLE TIMER - (0.10 = 10sec)	
13	09.88	00.00	DELAY DETECTION OF LOW SPEED LOCKOUT	
14	00.80	00.00	SET A ROTARY SENSOR READING	
15	00.00	00.00	DELAY A PALLET MAGAZINE LOW LOCKOUT	
16	00.30	00.00	DELAY A HOPPER LOW LOCKOUT	
17	00.30	00.00	DELAY GETTING A HOPPER YIELD	
18	06.55	00.00	FAULT HEIGHT PIN BYPASS (0.10 = 10sec)	
19	00.40	00.00	DELAY HEIGHT PIN CIRCUIT	
20	00.00	00.00	DELAY VIB AT 1ST STOP (ONLY W/MULTI VIB)	
21	00.50	00.00	DELAY VIB AT 2ND STOP (ONLY W/MULTI VIB)	
22	00.00	00.00	NOT IN USE	
23	00.12	00.00	AUTO HEIGHT PIN BYPASS (ENABLE/DISABLE)	
F1 RUN SCREEN			F4 CHANGE PRESET	F8 NEXT PAGE

9.5.1 TO CHANGE PRESETS

To change any of the Timer value, follow these steps:

1. From the RUN SCREEN, press the **F3** key.

The display will read:

TIMER ACCESS				PAGE 1		
TIMER	PRESET	CURRENT	DESCRIPTION			
0	05.22	00.00	FEED TIME			
1	00.12	00.00	FINISH TIME - SETS MINIMUM UNITS QUALITY			
2	03.00	00.00	DELAY TIME - CONTINUES VIB AFTER HEIGHT PINS			
3	00.05	00.00	STRIP DELAY - DELAY AFTER VIBRATION STOPS			
4	00.20	00.00	VIBRATOR BRAKE ON TIME			
5	00.30	00.00	LUBE PUMP OFF TIME - (0.10 = 10sec)			
6	00.15	00.00	LUBE PUMP ON TIME - (0.10 = 10sec)			
7	00.20	00.00	AUTOFEED SWELL TIME - WINDOW ABOVE FINISH			
8	00.30	00.00	AUTOFEED MANUAL INCREMENT TIME			
9	00.04	00.00	DELAY A 3RD STOP LOCKOUT - MK			
10	00.10	00.00	AUTOFEED CORRECTION TIME - ARM TRAVEL			
11	04.55	00.00	DELAY A LOW AIR SUPPLY FAULT			
				F1 RUN SCREEN		F8 NEXT PAGE

2. Use the arrows to move the cursor to the timer of which you wish to modify the value.

3. Press the **F4** key.

The display will read:

TIMER ACCESS				PAGE 1		
TIMER	PRESET	CURRENT	DESCRIPTION			
0	05.22	00.00	FEED TIME			
1	00.12	00.00	FINISH TIME - SETS MINIMUM UNITS QUALITY			
2	03.00	00.00	DELAY TIME - CONTINUES VIB AFTER HEIGHT PINS			
3	00.05	00.00	STRIP DELAY - DELAY AFTER VIBRATION STOPS			
4	00.20	00.00	VIBRATOR BRAKE ON TIME			
5	00.30	00.00	LUBE PUMP OFF TIME - (0.10 = 10sec)			
6	00.15	00.00	LUBE PUMP ON TIME - (0.10 = 10sec)			
7	00.20	00.00	AUTOFEED SWELL TIME - WINDOW ABOVE FINISH			
8	00.30	00.00	AUTOFEED MANUAL INCREMENT TIME			
9	00.04	00.00	DELAY A 3RD STOP LOCKOUT - MK			
10	00.10	00.00	AUTOFEED CORRECTION TIME - ARM TRAVEL			
11	04.55	00.00	DELAY A LOW AIR SUPPLY FAULT			
				F1 RUN SCREEN		F8 NEXT PAGE

4. Enter new Timer value, from 0 to 32767.

5. Press the  key.

TIMER	FUNCTION
0.	FEED TIME. Amount of time the feed box is stopped over the mold. This time controls the amount of concrete placed in the mold.
1.	FINISH TIME. Preset time that you will expect desired finish time. Finish time is from the moment stripper head shoes hit material to when height pins meet. Machine will adjust the finish time by adjusting either the autofeed mechanism or the feed time.
2.	DELAY TIME. Amount of time of vibration after height pins meet.
3.	STRIP DELAY TIME. Delay between time when vibration stops and when units are stripped out of the mold.
4.	VIBRATOR BRAKE ON TIME. The amount of time the vibrator brake is energized. Note: If your machine is equipped with Smartpac, timer 4 is not used.
5.	LUBE PUMP OFF TIME. This is the time (over a period of 1 minute) that the lubrication pump is OFF. (IMPORTANT: 0.01 = 1 second) Note: This is the timer that should be used to adjust lubrication time.
6.	LUBE PUMP ON TIME. This is the time (over a period of 1 minute) that the lubrication pump is ON. (IMPORTANT: 0.01 = 1 second) Note: Use timer 5 above to adjust lubrication time. Timer 5 + timer 6 = total cycle time of lubrication pump.
7.	AUTOFEED DWELL TIME. If the finish time is greater than this amount, the autofeed will not adjust the finish time. Ex.: Finish time = 1 second Timer 7 = 0.40 second If finish time is between 1 sec. and 1.4 sec., the autofeed will not adjust finish time. If finish time is 1.50 sec., autofeed mechanism or feed time will be incremented down. If finish time is 0.9 sec., autofeed mechanism or feed time will be incremented up. Note: See section 9.3: "Hand & machine setup" - F7 and F8.
8.	AUTOFEED MANUAL INCREMENT TIME. The amount of autofeed correction in manual mode. Note: This is necessary to manually increase or decrease the amount of travel done by the autofeed mechanism each time you manually operate it. This timer is related to the ruler on top of the autofeed mechanism.
9.	DELAY A 3RD STOP LOCKOUT. After the product is stripped out of the mold, it is possible that a third stop is necessary. The third stop may be required for slow product delivery. The delay you will be presetting here will be considered acceptable. Above this time (9 seconds), the computer will show a fault signal.
10.	AUTOFEED CORRECTION TIME - ARM TRAVEL - Same as timer 8 but with the automatic mode on.
11.	DELAY A LOW AIR SUPPLY FAULT. Won't stop the machine in case of small air pressure fluctuation. If the air pressure fluctuation lasts longer than this preset time, the SLC will show a fault.

TIMER	FUNCTION
12.	MACHINE IDLE TIMER. If your machine is part of a plant integration, this timer will be used. No fault condition created.
13.	DELAY DETECTION OF LOW SPEED LOCKOUT. In case of mechanical jam or underspeed condition, the machine will stop after this delay.
14.	GET A ROTARY SENSOR READING. This timer is preset and should not be adjusted by the operator.
15.	DELAY A PALLET MAGAZINE LOW LOCKOUT. The amount of acceptable time the magazine is low on pallets before a fault is actuated.
16.	DELAY A HOPPER LOW LOCKOUT. The amount of acceptable time the hopper is low on material before a fault is actuated.
17.	DELAY GETTING A HOPPER YIELD. Used in plan integration.
18.	NOT IN USE.
19.	DELAY HEIGHT PIN CKT - IGNORE PIN BOUNCE. Amount of time before height pin circuit are enabled. Used to ignore pin bounce on low height products.
20.	DELAY VIBRATION AT 1 ST STOP. Delay of normal vibrating start at first stop (feed vibration). Note: Only with double vibration
21.	DELAY OF 2 nd STOP VIBRATION. Delay of normal vibrating start at second stop (finish vibration). Note: Only with double vibration
22.	NOT IN USE.
23.	AUTO HEIGHT PIN BYPASS. This period would be the desired finish time. This is possible only if the auto height pin bypass has been enabled. To enable or disable the auto height pin bypass, go to screen: "Hand & machine set-up" (section 9.3 - Function F9).

9.6 INPUT / OUTPUT STATUS

These screens represent the status of all electrical components on the block machine. They can be used to isolate one component on the machine or to locate an electrical fault on one of the components.

To access this screen from the **RUN SCREEN**, press **F7** to go to the Diagnostics screens, then press **F3**. Press **F8** to go to the next page.

INPUT/OUTPUT STATUS				PAGE 1			
ADDRESS		STATUS DESCRIPTION		ADDRESS		STATUS DESCRIPTION	
I:1/00	OFF	MCR ENERGIZED		I:2/00	OFF	LS-10 LUBE LOW	
I:1/01	OFF	CLUTCH AUTOMATIC		I:2/01	OFF	LS-11 LUBE CYCLE	
I:1/02	OFF	CLUTCH JOG		I:2/02	OFF	PS-13 MAIN AIR OK	
I:1/03	OFF	MAIN DRIVE START		I:2/03	OFF	MAIN DRIVE OVERLOAD	
I:1/04	OFF	VIBRATORS AUTOMATIC		I:2/04	OFF	VIB-AB,AF,PC OVERLOAD	
I:1/05	OFF	VIBRATORS MANUAL		I:2/05	OFF	BLK MVG OVERLOAD	
I:1/06	OFF	VIBRATORS START		I:2/06	OFF	LS-7 BLK MVG FORWARD	
I:1/07	OFF	LS-111 HORZ CORE OUT		I:2/07	OFF	LS-6 BLK MVG HOME	
I:1/08	OFF	LS-2A PALLET ON FBC		I:2/08	OFF	PRS-12/13 HEAD LOCKED	
I:1/09	OFF	PRS-3 PALLET SKIP		I:2/09	OFF	PRS-14/15 HEAD UNLOCK	
I:1/10	OFF	HOPPER LEVEL LOW		I:2/10	OFF	PRS-16 MOLD HEAD UP	
I:1/11	OFF	PRS-8 MAG LOW UNIT		I:2/11	OFF	PRS-17 MOLD HEAD DOWN	
I:1/12	OFF	HEIGHT PIN #1		I:2/12	OFF	MANUAL HEAD UP	
I:1/13	OFF	HEIGHT PIN #2		I:2/13	OFF	MANUAL HEAD LOCK	
I:1/14	OFF	TS-1 M3 OVER TEMP		I:2/14	OFF	MANUAL HEAD DOWN	
I:1/15	OFF	TS-2/3 VIB OVER TEMP		I:2/15	OFF	MANUAL HEAD UNLOCK	
F1							F8
DIAG-							NEXT
NOSTICS							PAGE
SCREEN							

INPUT/OUTPUT STATUS				PAGE 2			
ADDRESS		STATUS DESCRIPTION		ADDRESS		STATUS DESCRIPTION	
I:4/00	OFF	MAIN DRIVE STARTER		I:6/00	ON	BLK MVG BARS BRAKE	
I:4/01	OFF	VIBRATOR STARTER		I:6/01	OFF	BLK MVG BARS CLUTCH	
I:4/02	OFF	HORZ CORE INTO MACHINE		I:6/02	OFF	SMARTPAC AIR SOL#1	
I:4/03	OFF	AUTOFEED UP STARTER		I:6/03	OFF	SMARTPAC HYD SOL#3	
I:4/04	OFF	AUTOFEED DOWN STARTER		I:6/04	OFF	SMARTPAC AIR SOL#2	
I:4/05	OFF	BLOCK MOVING BARS MOTOR		I:6/05	OFF	SMARTPAC HYD SOL#4	
I:4/06	OFF	AGITATOR STARTER		I:6/06	OFF	SMARTPAC START	
I:4/07	OFF	LUBE PUMP		I:6/07	OFF	HORZ CORE OUT OF MACH	
I:5/00	OFF	MAIN DRIVE CLUTCH					
I:5/01	OFF	AIR COMPACTION - UP					
I:5/02	OFF	AIR COMPACTION - DOWN					
I:5/03	OFF	ALARM					
I:5/04	ON	BLOCK MVG SPEED SLOWER					
I:5/05	OFF	LOCK MVG SPEED FASTER					
I:5/06	OFF	MACHINE IS RUNNING					
I:5/07	ON	HEIGHT PIN ENABLE					
F1							F8
DIAG-							NEXT
NOSTICS							PAGE
SCREEN							

9.7 MACHINE SETUP

Machine Setup enables the user to enter some of the basic data into the machine such as the type of machine and control station. It is also possible to enable and disable some of the machine's components. This is done when a new start-up is done or when a lost program or SLC-500 malfunction occurs.

To access this screen from the **RUN SCREEN**, press **F16**.

MACHINE SETUP

F2 - BLOCK MACHINE TYPE ----- DYNAPAC/ULTRAPAC/SUPERPAC

F3 - CONTROL STATION TYPE ---- GRAPHIC DISPLAY UNIT

F4 - SMARTPAC WITH AFC ----- ENABLE

F5 - MAIN DRIVE FREQ CONTROL - ENABLE

F6 - BLOCK MVG SPEED CONTROL - ENABLE

F7 - HORIZONTAL CORE ----- ENABLE

T O G G L E

F1 RUN SCREEN	F2 BLOCK MACHINE TYPE	F3 CONTROL STATION TYPE	F4 SMART- PAC	F5 MAIN DRIVE FREQ	F6 BLOCK MOVING SPEED	F7 HORZ CORE	F8
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9.8 PRODUCT TABLE F5

This menu allows you to store and retrieve preset recipes which include Feed time, Finish time, Delay time, and Strip delay time and other parameters. There is a possibility of 100 product numbers. To access this menu from the **RUN SCREEN**, press **F5**. To return to the **RUN SCREEN**, press **F1**

With this menu, you may:

- Enter into the SLC memory a name for different products.
- Enter preset recipes for each of those products.
- Modify any preset recipe for any product.

The screen below shows an example of a product number. As an example, we gave the name TEST. From here, the user may select a product number, edit recipe data, save recipe settings, change product name and load product to run..

SELECT PRODUCT TO RUN							
ADDRESS STATUS DESCRIPTION							
1	TEST	13		25			
2		14		26			
3		15		27			
4		16		28			
5		17		29			
6		18		30			
7		19		31			
8		20		32			
9		21		33			
10		22		34			
11		23		35			
12		24		36			
F1 RUN SCREEN	F2 SELECT PRODUCT NUMBER	F3 EDIT DATA SCREEN	F4 SAVE SETTINGS TO RECIPE	F5 CHANGE PRODUCT NAME	F6 LOAD PRODUCT TO RUN	PRODUCT SELECTED 1	F8 NEXT PAGE

- F1** Return to RUN SCREEN.
- F2** SELECT PRODUCT NUMBER: Used to select an existing product number.
- F3** EDIT DATA SCREEN: Used to enter data such as product height, unit types etc.
- F4** SAVE SETTINGS TO RECIPE: Used to save recipe settings, once you have entered data for recipe.
- F5** CHANGE PRODUCT NAME. Since each product has a name, it is possible to change a product name with this function.
- F6** LOAD PRODUCT TO RUN: .Machine won't use the recipe parameters until you load product to run.

9.8.1 TO SELECT A PRODUCT NUMBER:

1. From the SELECT PRODUCT SCREEN, press the **F2** key.

The display will read:

SELECT PRODUCT TO RUN			
ADDRESS STATUS DESCRIPTION			
1	TEST	13	25
2		14	26
3		15	27
4			
5			
6			
7			
8			
9			
10			
11			
12			
		22	34
		23	35
		24	36
F1 RUN SCREEN	F2 SELECT PRODUCT NUMBER	F3 EDIT DATA SCREEN	F4 SAVE SETTINGS TO RECIPE
F5 CHANGE PRODUCT NAME	F6 LOAD PRODUCT TO RUN	PRODUCT SELECTED 1	F8 NEXT PAGE

2. Enter product number you wish to change, edit or load. (from 0 to 100)

3. Press

The screen will now show the selected product number.

9.8.2 TO EDIT RECIPE DATA:

- 1. From the SELECT PRODUCT SCREEN, press the **F3** key.

The display will read:

EDIT DATA SCREEN
SMARTPAC DATA INFORMATION

PRODUCT HEIGHT (DIVIDED BY 10) - 0000

EXAMPLE: 25 = 2.5(INCHES/mm)

UNITS OF TYPE (A) PER PALLET - 0012

UNITS OF TYPE (B) PER PALLET - 0012

PERCENTAGE OF (A) TO TOTAL (0-100%) - 0012

UNITS OF TYPE (A) PER CUBE - 0012

UNITS OF TYPE (B) PER CUBE - 0012

NOT USED - 0000

NOT USED - 0000

NOT USED - 0000

NOT USED - 0000


NOT USED - 0000

NOT USED - 0000

WORKING PRODUCT NUMBER - 1

PRODUCT DESCRIPTION - A

F1 PRODUCT SELECT SCREEN		F3 TIMER ACCESS			F6 CHANGE PRESET	F7	F8 NEXT PAGE
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- 2. Use arrows to move cursor to any of the preset you wish to modify.
- 3. Press the F6 key to change preset. Value can be from 0 to 65535.
- 4. Press  to enter preset into memory.

From this screen, you may also access the timers by pressing F3 and the Smartpac settings by pressing F8.

Once you are finished entering data for presets, press F1 key to return to previous screen.

9.8.3 TO SAVE SETTINGS TO RECIPE:

1. From the SELECT PRODUCT SCREEN, press the **F4** key.

The display will read:

SELECT PRODUCT TO RUN							
ADDRESS STATUS DESCRIPTION							
1	TEST	13		25			
2		14		26			
3		15		27			
4		16		28			
5		17		29			
6		18		30			
7		19		31			
8		20		32			
9		21		33			
10		22		34			
11		23		35			
12		24		36			

F1 RUN SCREEN	F2 PRODUCT SELECT SCREEN	F3 EDIT DATA SCREEN	F4 SAVE SETTINGS TO RECIPE	F5 CHANGE PRODUCT NAME	F6 LOAD PRODUCT TO RUN	PRODUCT SELECTED 1	F8 NEXT PAGE
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SAVING RECIPE

9.8.4 TO ENTER OR CHANGE PRODUCT NAME:

This function is used to load the product number currently selected.

1. From the SELECT PRODUCT SCREEN, press the **F3** key.

The display will read:

DESCRIPTION ENTRY SCREEN

Number/letter A

0
1
2
3
4
5
6
7
8
9
A
B

F9 F10 F11 F12 F13 F14 F15 F16

CHARACTER ENTRY
MUST START WITH F9

Select a letter to the left using arrow keys.
Then select the character using the Fkeys designated.

F1 PREV MENU				F5 CLEAR TEXT	F6 SAVE ENTERED TEXT	F7/F8 SCROLL UP LETTERS	F8/F7 SCROLL DOWN LETTERS
--------------------	--	--	--	---------------------	-------------------------------	----------------------------------	------------------------------------

2. Use arrows to move cursor to any number from 0 to 9 or any letter from A to Z. A "space" and "end text" is also available.
3. Press the F9 key.
4. Use arrows to move cursor to any other character listed above.
5. Press the F10 key.
6. Repeat same steps using F10, F11, F12, F13, F14, F15 and F16 until 8 character name is complete.
7. Press the F6 key to save entered text.

Note:

- At any time, press F5 key to erase all character in box.
- You may also use F7 and F8 keys to scroll up and down.

9.8.5 TO LOAD PRODUCT TO RUN.

1. From the SELECT PRODUCT SCREEN, press the **F6** key.

The display will read:

SELECT PRODUCT TO RUN		
ADDRESS STATUS DESCRIPTION		
1	13	25
2	14	26
3	15	27
4		
5		
6		
7		
8		
9		
10	22	34
11	23	35
12	24	36

Enter value:
(0 to 100)

F1 RUN SCREEN	F2 SELECT PRODUCT NUMBER	F3 EDIT DATA SCREEN	F4 SAVE SETTINGS TO RECIPE	F5 CHANGE PRODUCT NAME	F6 LOAD PRODUCT TO RUN	F7 PRODUCT SELECTED 1	F8 NEXT PAGE
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2. Enter product number you wish to change, edit or load. (from 0 to 100)

3. Press

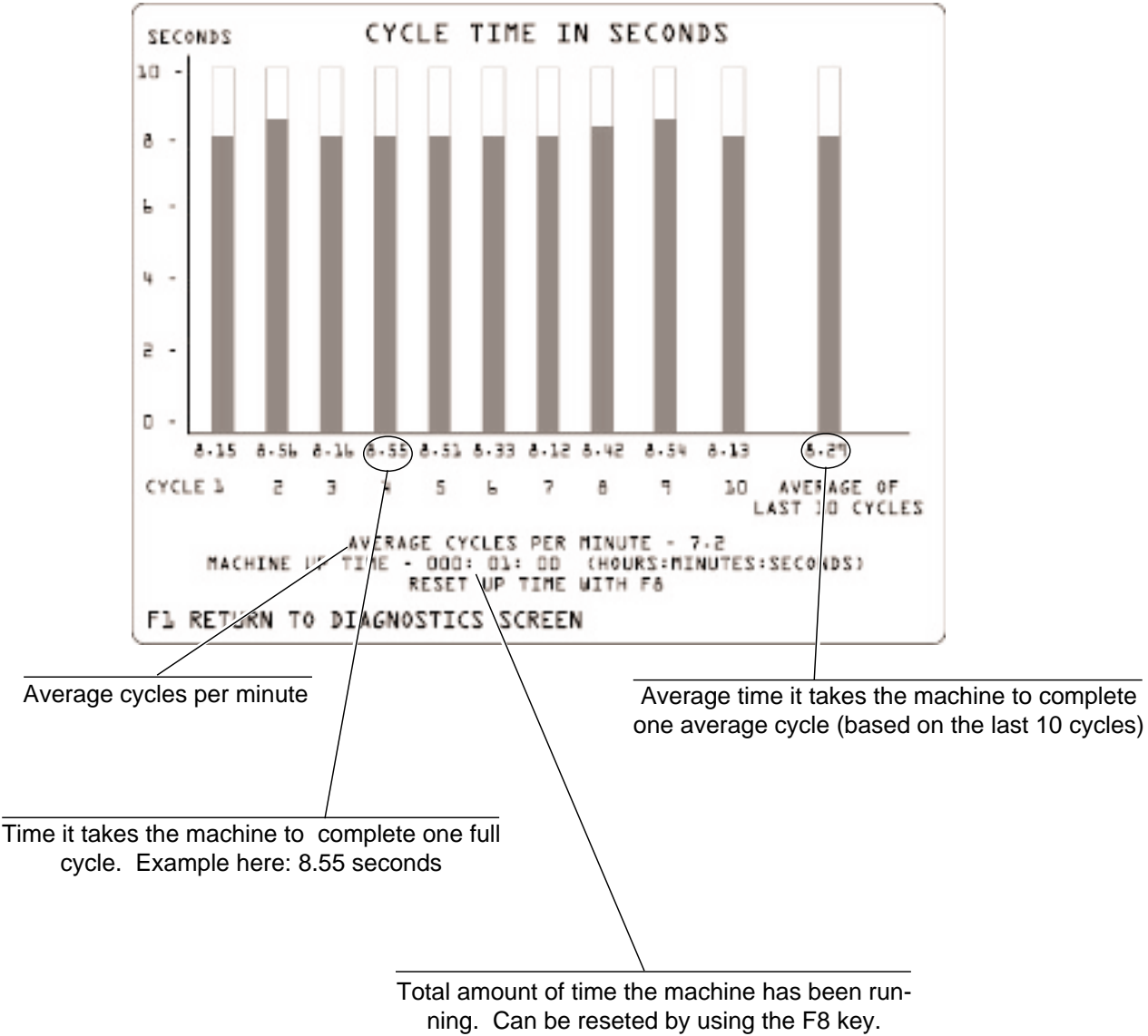
The screen will now show the selected product number.

9.9 CYCLE TIMER

This menu allows the operator to monitor each machine cycle through a graph. It will indicate the time it took to do each cycle and also it will show the average time for the last 10 cycles.

To access this screen from the **RUN SCREEN**, press **F7**. Then press the **F4** key.

The display will read:

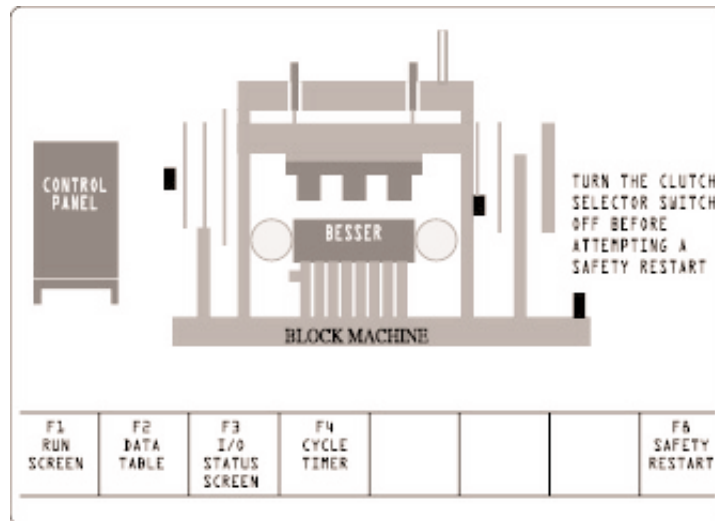


9.10 DIAGNOSTICS F7

This menu allows the operator to monitor the machine once a fault condition has occurred.

To access this screen from the **RUN SCREEN**, press **F7**. To return to the **RUN SCREEN**, press **F1**

The display will read:



This screen will show a diagram of the machine and indicate where the fault is located.

From this screen, you can access the Data table. The Data table enables the operator to monitor or change parameters concerning: Control relays, Timer and Counter presets as well as Integer value.

To access the Data table, press the **F2** key.

The display will read:

DATA TABLE DISPLAY							
STATUS WORD S2:00				WORD VALUE 00004			
BIT NUMBER							
15	14	13	12	11	10	9	8
7	6	5	4	3	2	1	0
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
F1 PREV MENU	F2 SLC500 STATUS (S)	F3 CONTROL RELAY (R)	F4 TIMER PRESET (T-PRE)	F5 COUNTER PRESET (C-PRE)	F6 COUNTER ACCUM. (C-ACC)	F7 INTEGER VALUE (N)	F8

From this screen, the operator has access to 6 different menus. See next pages for description of these menus.

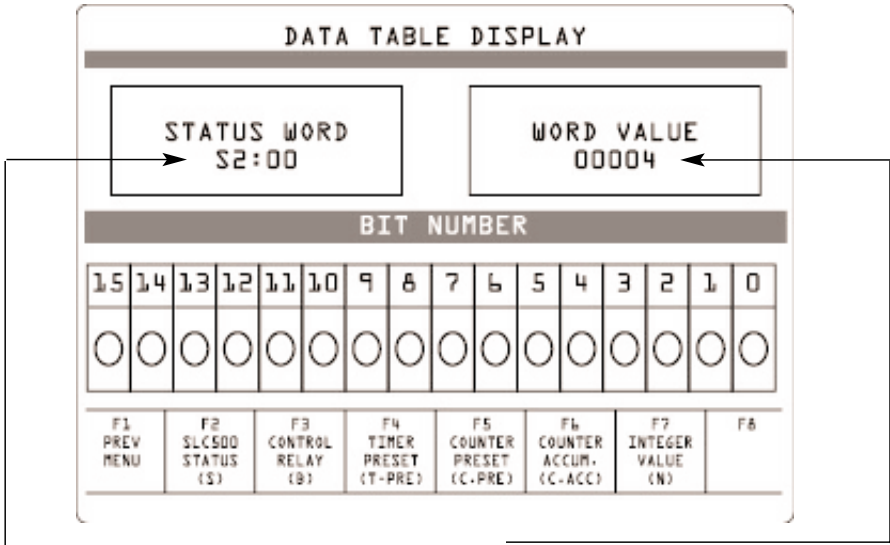
To change or monitor any of the parameters, press any of the keys between **F2** and **F7**.

9.10.1 TO MONITOR A SLC500 STATUS (F2):

From the **RUN SCREEN**, press **F7**.

- 1. Press the **F2** key.

The display will read:



- 2. Press the **F2** key.

The SLC shows here the word preset value.

- 3. Enter a status *word* here then press ENTER. A *word* is an address to a memory location for a timer, a counter, an integer value or a control relay. Refer to appendix A for address location.

To change a preset value:

- 4. Press the **F16** key.
- 5. Enter new value.
- 6. Press ENTER.

9.10.2 TO MONITOR A CONTROL RELAY (F3):

From the **RUN SCREEN**, press **F7**.

1. Press the **F2** key.

The display will read:

DATA TABLE DISPLAY

BIT ADDRESS
 B3/000

BIT VALUE
 1

BIT NUMBER

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

F1 PREV MENU	F2 SLC500 STATUS (S)	F3 CONTROL RELAY (B)	F4 TIMER PRESET (T-PRE)	F5 COUNTER PRESET (C-PRE)	F6 COUNTER ACCUM. (C-ACC)	F7 INTEGER VALUE (N)	F8
--------------------	-------------------------------	-------------------------------	----------------------------------	------------------------------------	------------------------------------	-------------------------------	----

2. Press the **F3** key.

The SLC shows here bit value for this address.

0 = OFF

1 = ON

3. Enter a *control relay* bit address here then press ENTER. Refer to the logic diagram in appendix A for proper address location.

To change a preset value:

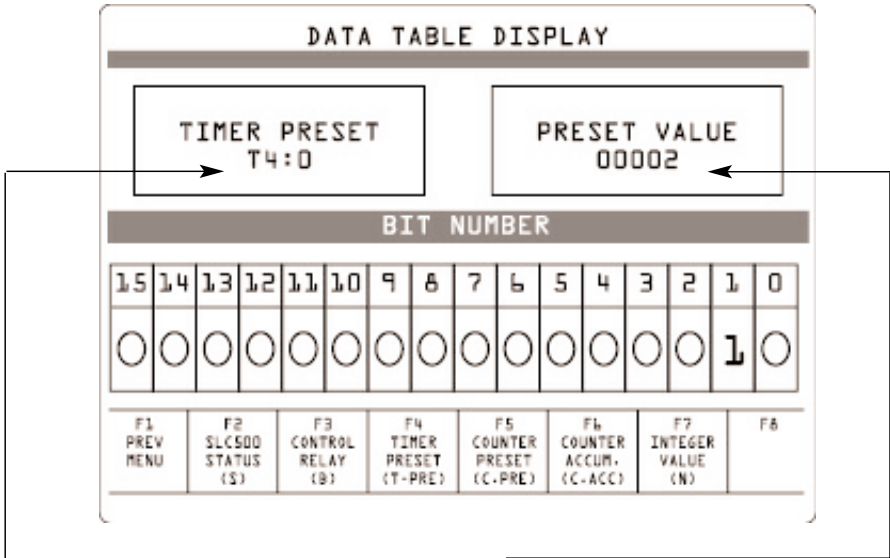
4. Press the **F16** key.
5. Enter new value.
6. Press ENTER.

9.10.3 TO MONITOR OR CHANGE A TIMER PRESET (F4):

From the **RUN SCREEN**, press **F7**.

- 1. Press the **F2** key.

The display will read:



- 2. Press the **F4** key.
- 3. Enter a *Timer* address here then press ENTER.
(Example here is 0) Refer to appendix A for proper address location and description.

The SLC shows here the preset value for this timer.
NOTE: A time base should be taken into account when establishing true time value.

To change a preset value:

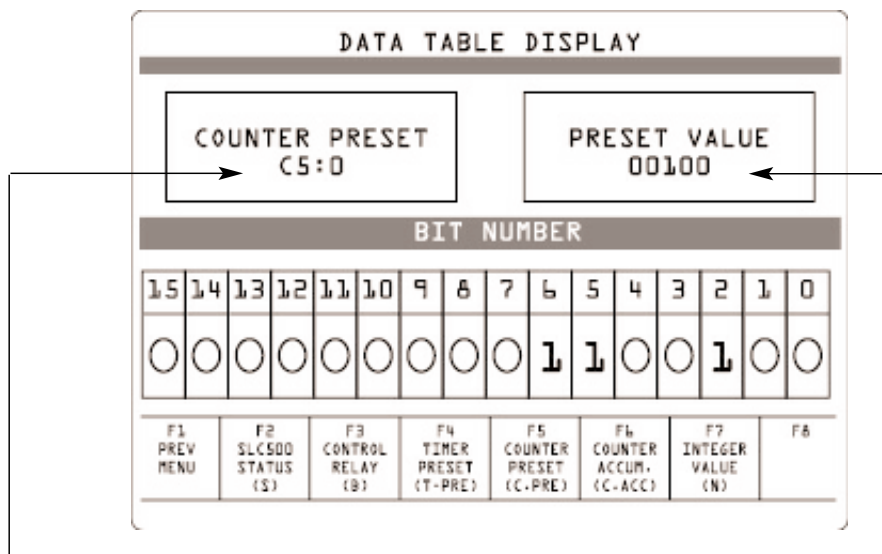
- 4. Press the **F16** key.
- 5. Enter new value.
- 6. Press ENTER.

9.10.4 TO MONITOR OR CHANGE A COUNTER PRESET (F5):

From the **RUN SCREEN**, press **F7**.

1. Press the **F2** key.

The display will read:



2. Press the **F5** key.

The SLC shows here the preset value for this counter.

3. Enter a *Counter* address here then press ENTER.
(example here is 5) Refer to appendix A for proper address location and description.

To change a preset value:

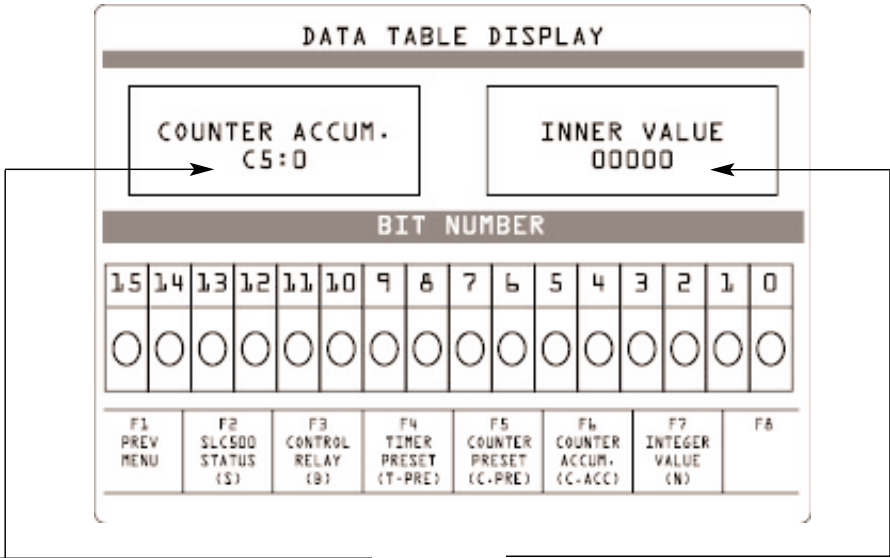
4. Press the **F16** key.
5. Enter new value.
6. Press ENTER.

9.10.5 TO CHANGE THE ACCUMULATED VALUE OF A COUNTER (F6):

From the DATA TABLE DISPLAY SCREEN,

- 1. Press the **F2** key.

The display will read:



To change the accumulated value of a counter:

The SLC shows the inner value for this counter.

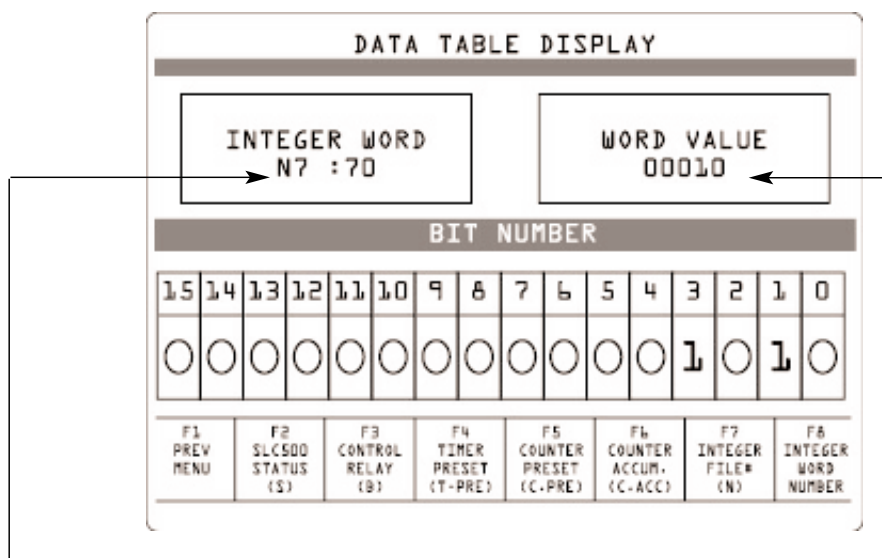
- 2. Press the **F16** key.
- 3. Enter new value.
- 4. Press ENTER.

9.10.6 TO MONITOR OR CHANGE A INTEGER WORD VALUE (F7):

From the **RUN SCREEN**, press **F7**.

1. Press the **F2** key.

The display will read:



2. Press the **F7** key.

The SLC shows the *word* value for this *Integer*.

3. Press the **F7** key.

4. Enter a *Integer file* number here then press ENTER.(example here is 7)

5. Press the **F8** key.

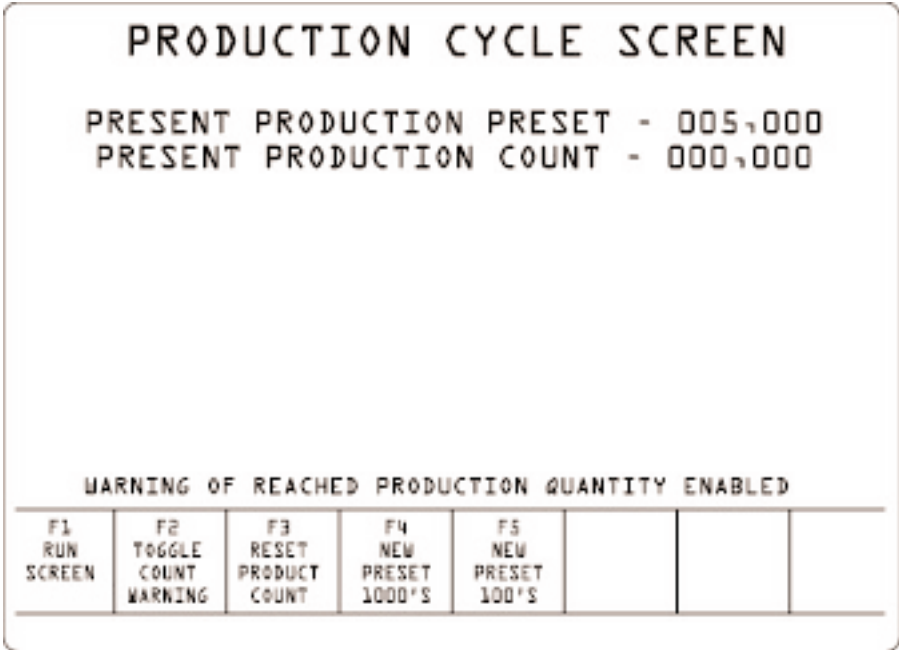
6. Enter a *word* number then press ENTER (example here is 70)

7. Press F16 to change word value.

Refer to the logic diagram in appendix A for proper address location and description.

9.11 PRODUCT QUANTITY CONTROL F6

This menu allows the operator to enter a desired preset production count and to set the count warning. To access this screen from the **RUN SCREEN**, press **F6**.



9.11.1 TO HAVE THE PRODUCTION COUNT WARNING SHOW:

Press the F2 key to toggle between Disabling and Enabling the production count warning.

9.11.2 TO RESET THE PRODUCTION COUNT:

Press the F3 key and the production count will be reset.

9.11.3 TO SET A NEW PRODUCTION COUNT WARNING:

1. Press the F4 key to set new preset in the thousands.
2. Enter a new present production preset (1=1000 / 999 = 999,000)
3. Press ENTER.
4. Press the F5 key to set new preset in the hundreds.
5. Enter a new present production preset (1=1 / 999 = 999)
6. Press ENTER.

When the machine cycle count will have reached this preset value, a warning will show on the screen if you have enabled this warning.

This warning is shown on the next page.

Once this warning has occurred, press any key to return to the RUN SCREEN.

Note: This will automatically reset the production count to 0.

PRODUCT
QUANTITY REACHED

PRESS ANY KEY

9.12 SMARTPAC ADJUSTMENT F4

This menu allows the operator to enter desired vibrator speed and amplitude for the SMARTPAC vibrating system. The operator can also access some other data such as speed and amplitude range. To access this screen from the **RUN SCREEN**, press **F4**. (SMARTPAC VIBRATION)

Single vibration

Double vibration

SMARTPAC VIBRATION

RIGHT VIBRATOR FEED SPEED - 2750
LEFT VIBRATOR FEED SPEED - 2720
FEED AMPLITUDE - 0800

RIGHT VIBRATOR FINISH SPEED -
LEFT VIBRATOR FINISH SPEED - 3000
FINISH AMPLITUDE - 3000

SINGLE VIBRATION MODE
USES FEED SPEED AND AMPLITUDE

SINGLE VIBRATION
SELECTED

WORKING PRODUCT NUMBER - 1
PRODUCT DESCRIPTION - A

SPEED RANGE ----- 2500 TO 3100
AMPLITUDE RANGE -- 350 TO 3000

F1 RUN
SCREEN

F2 PRODUCT
SELECT
SCREEN

F3 SELECT
VIB
MODE

F4 SAVE
SETTINGS
TO RECIPE

F6 CHANGE
PRESET

F7

F8 TEST
FINISH
SPEED

In this case, the
Single vibration
mode has been
selected.

9.12.1 TO CHANGE VIBRATION PRESET VALUES:

1. Press the **F3** key to select a vibration mode. The screen above shows an example where the operator has selected the Single vibration mode. To change the Smartpac preset value, press the **F6** key.

The display will read:

SMARTPAC VIBRATION

RIGHT VIBRATOR FEED SPEED - 2750
LEFT VIBRATOR FEED SPEED - 2720

RIGHT VIBRATOR
LEFT VIBRATOR
F2
Enter value:
(0 to 3200)

SINGLE VIBRATION MODE
USES FEED SPEED AND AMPLITUDE

SINGLE VIBRATION
SELECTED

WORKING PRODUCT
PRODUCT DESCRIPTION - A

SPEED RANGE ----- 2500 TO 3100
AMPLITUDE RANGE -- 350 TO 3000

F1 RUN
SCREEN

F2 PRODUCT
SELECT
SCREEN

F3 SELECT
VIB
MODE

F4 SAVE
SETTINGS
TO RECIPE


F6 CHANGE
PRESET

F7

F8 TEST
FINISH
SPEED

Speed and amplitude
ranges:
If values is not within
these values, the
message "value out of
range" will appear on
screen.

2. Enter the new preset value (from 0 to 3200)

3. Press the  key.

9-32

466365F9802US F1 29OC99

SECTION 10

TROUBLESHOOTING

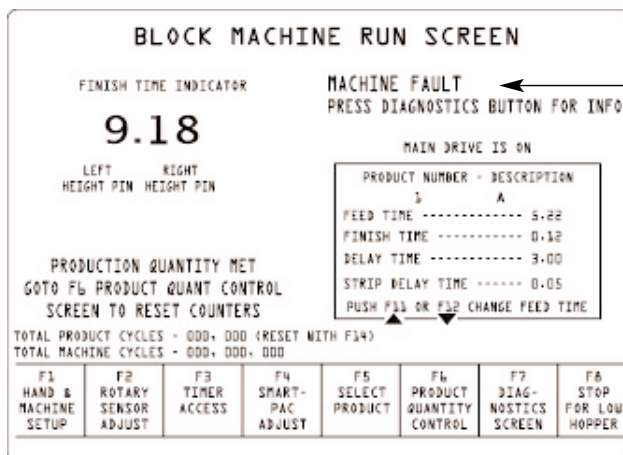
THIS SECTION WILL HELP YOU SOLVE TWO KINDS OF PROBLEMS:

1. Problems with machine. Those problems are diagnosed by the Small Logic Controller (see section 9) and will show up on the screen as outlined in section 10.1 below.
2. Problems with the concrete units. Those problems are diagnosed by looking at the concrete units as outlined in section 10.2.

10.1 SMALL LOGIC CONTROLLER FAULTS.

10.1.1 WHEN A MECHANICAL FAULT OCCURS, THE MACHINE STOPS AND THE FAULT SHOWS ON THE SCREEN. WHEN THIS HAPPENS:

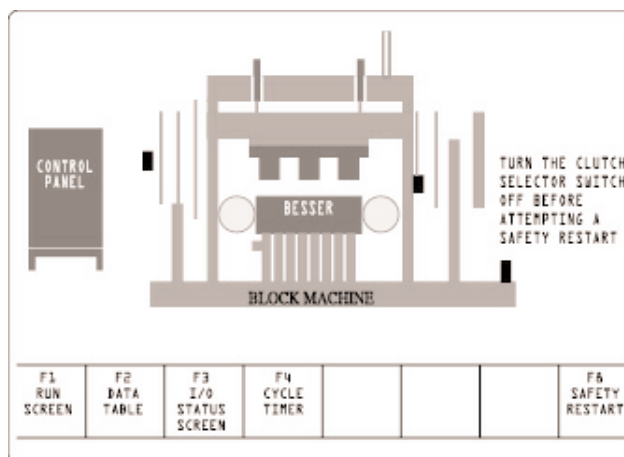
1. The display on your Graphic Control Unit will read:



Screen indicates that there is a fault in the machine.

2. Press F7 to inquire about the fault (diagnostic).

The display will read:



This screen shows a diagram of the machine and indicates where the fault is located.

3. Correct the fault.

Once the fault has been corrected:

4. Turn the clutch selector switch to "OFF".
5. Press the F9 key.
6. Turn clutch switch "ON".

The machine will sound an alarm and restart.

10.1.2 LIST OF CONCRETE PRODUCTS MACHINE FAULTS

1. THE VIBRATOR, AGITATOR, AUTOFEED OR PALLET CLEANER MCP OR OVERLOAD IS TRIPPED.

The vibrator, agitator, autofeed or pallet cleaner motor circuit protector (MCP) or overload is tripped. This error may indicate:

- Motor is not rotating freely. Verify motor rotation.
- Motor has an electrical short in its winding. Check resistance of winding.
- Wiring to the motor is shorted. Verify continuity of wiring to motor.

2. THE MAIN DRIVE MCP OR OVERLOAD IS TRIPPED.

The main drive motor circuit protector (MCP) or overload is tripped. This error may indicate:

- Motor is not rotating freely. Verify motor rotation.
- Motor has an electrical short in its winding. Check resistance of winding.
- Wiring to the motor is shorted. Verify continuity of wiring to motor.

3. THE SYSTEMS AIR PRESSURE IS LOW.

The system air pressure switch PS-13 indicates low pressure.

- Insure the air compressor is working properly.
- Check for proper connection of air lines.

4. THE LUBE RESERVOIR IS LOW.

The lube level switch LS-11 indicate that the grease reservoir is low.

- Refill grease reservoir as required (see section 11).

5. MACHINE ROTATION IS UNDER SPEED.

This condition can be caused by a motor or clutch deficiency. An object jammed in the machine can also cause this fault. If pallet jams the machine, the shear bolt on the timing sprocket will break to avoid further damage to the machine.

6. ROTARY SENSOR IS OUT OF SYNC.

The rotary sensor coupling has slipped. Adjust the rotary sensor to 100 degrees at 1st stop and tighten coupling clamps.

7. THE MATERIAL HOPPER IS LOW.

The material hopper is low of material and will not allow the machine to operate until additional concrete is delivered to the hopper. This condition may be bypassed by use of the "F8" key on the Run screen.

8. THE MAIN DRIVE BESCODYNE IS OVER NORMAL TEMPERATURE.

The temperature sensor on the main drive bescodyne has tripped.

- Check oil level of bescodyne drive to insure it is properly filled.
- Replace oil as required (see section 11).

9. THE HEAD IS NOT PROPERLY CLAMPED (only on machine with Mold Head Clamp Device).

The mold head clamp device is not in the "UP" and "LOCKED" position.

- Insure sensor head "UP" sensor (PRS-16) is tripped. If it has not, raise head with use of the graphic display station.
- Insure sensor head "LOCK" sensors (PRS-12 and PRS-13) are tripped. If not, lock the head with use of the graphic display station.

10. THE PALLET MAGAZINE IS LOW.

The pallet magazine is low. The concrete units machine will not operate until pallets are provided to the magazine.

11. A PALLET SKIP ERROR HAS OCCURRED.

A pallet was not present on the Pallet Skip switch PRS-3 when the height pins met.

- Check to insure pallets are moving freely through machine.

12. A PALLET HAS BEEN ON LS-2A TOO LONG.

A pallet is stopped over LS-2A on the front delivery conveyor too long.

- Check to insure the front delivery conveyor is running, if not restart conveyor.
- Check to insure pallets are moving freely on the front delivery conveyor
- Check to insure enough time is on T4 : 27 (timebase = 1.0 seconds)

13. THE MACHINE HAS CYCLED TOO MANY TIMES WITHOUT A LUBE CYCLE.

The lube cycle switch LS-11 has not toggled on or off within a preset amount of machine cycles (Counter C5:0).

- Check for blocked grease lines.
- Check to insure the lube pump is working properly.
- Increase lube pump cycle rate by decreasing the preset of lube pump timer (T4:5).

14. AIR OPERATING EQUIPMENT DOES NOT WORK PROPERLY.

- Check air filters, they might be clogged.
- Clean unit and replace filter element.

Note: The following items are not shown on display but are included for convenience.

15. PALLET RECEIVER RUBBERS ARE WEARING OUT BADLY.

- Check **DELAY TIME**. Might be not high enough.

16. MOLD PARTS ARE WEARING OUT BADLY.

- Check ground cable for height pins. It might be disconnected.

17. THERE IS MATERIAL IN THE CORE HOLE OF UNITS.

- Core holes are higher than division plate.

18. STRIPPER HEAD COMES DOWN AND MACHINE STANDS STILL.

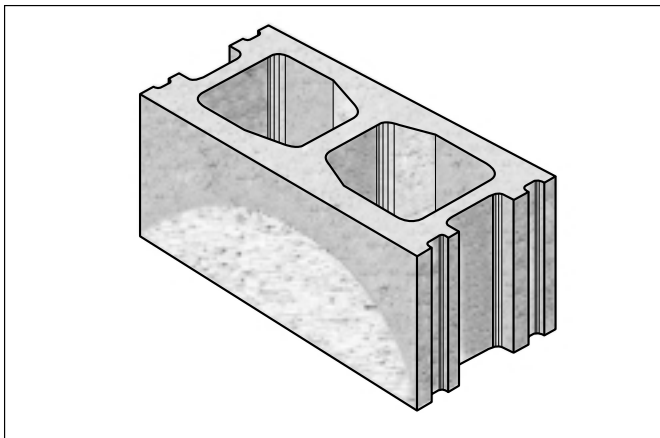
- Check height pins. They might be dirty, thus preventing them to meet together. Machine is waiting for contact of height pins to continue cycling.

19. MACHINE RINGS, RATTLES OR PALLETS ARE "SWIMMING" WITH THE MOLD.

- Check pipes (spacers) inside spring links.

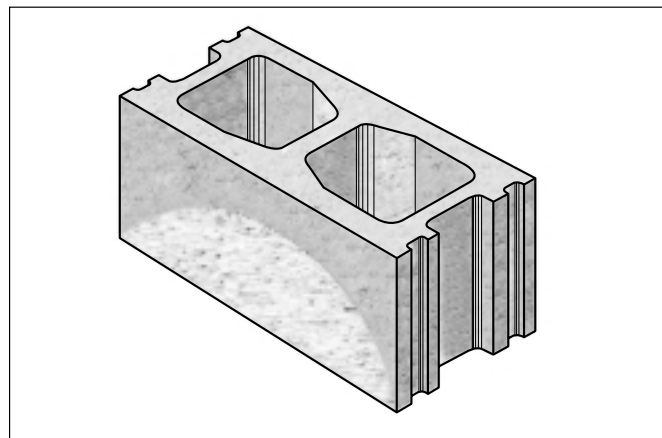
10.2 SOLUTIONS TO CORRECT DEFORMED AND CRACKED BLOCKS.

10.2.1 CRACKED FACE SHELLS



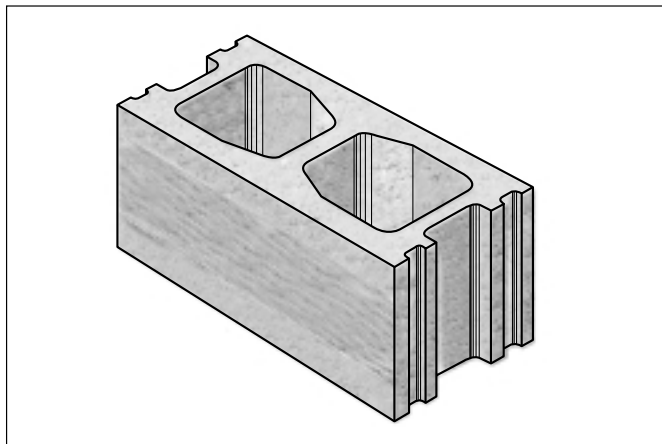
- a. Check mold to stripper head alignment (section 5).
- b. Check to see if core assembly is bent or twisted due to over tightening.
- c. Check mix (moisture content). An inconsistent moisture content in your mix may result in inconsistent concrete product quality. The use of a computerized moisture control unit in your mixer is recommended to improve product quality and consistency.
- d. Check pallet receiver guides on slide shaft (section 5).
- g. Increase *delay time* (section 9).
- h. Check shock absorbers.
- I. Check pallet receiver rubbers.
- J. Check admix.
- k. Check amount of material being left in mold after feedbox goes back.
- l. Check vibrator brakes (for a Vibrapac equipped with standard vibration).
- m. Check roller of block moving cam. It should never leave cam, otherwise you will get a jerky moment that might crack the units.

10.2.2 HALF-MOON ON FACE SHELL



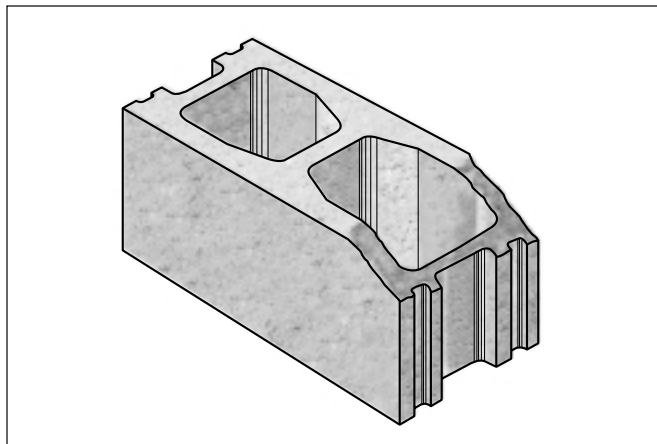
- a. Check for loose division plates.
- b. Check pallet receiver rubbers.
- c. Check that pallet is moving on the conveyor.
- d. Check vibrator bearings.
- e. Check pallet receiver rubbers (hardness).
- f. Check mold assembly.
- g. Check amount of admix in concrete.

10.2.3 LAMINATION ON FACE SHELL AND HORIZONTAL CRACKING

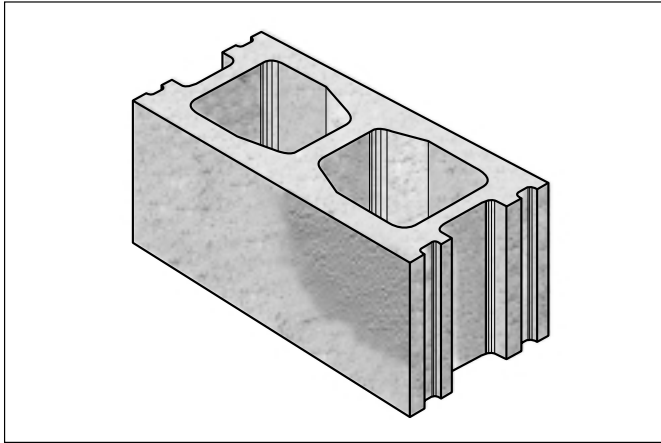


- a. Check vibrator shaft speeds for R.P.M. (they should turn within 2 R.P.M. of each other - adjust with screw.
- b. Check for metal to metal contact during vibration (mold vibrating against machine mold throat).
- c. Check back apron plate alignment to mold (section 5)
- d. Check that Feedbox is not vibrating on mold.
- e. Check vibrator bearings.
- f. Check delay time (decrease or increase). (section 9)
- g. Check mix design.
- h. Check for loose division plates.
- i. Check for lack of proper admix.
- j. Check slide shaft pucks (section 5).
- k. Check vibrator brakes (for a Vibrapac equipped with standard vibration).
- l. Check roller of block moving cam. It should never leave cam, otherwise you will get a jerky moment that might crack the units.

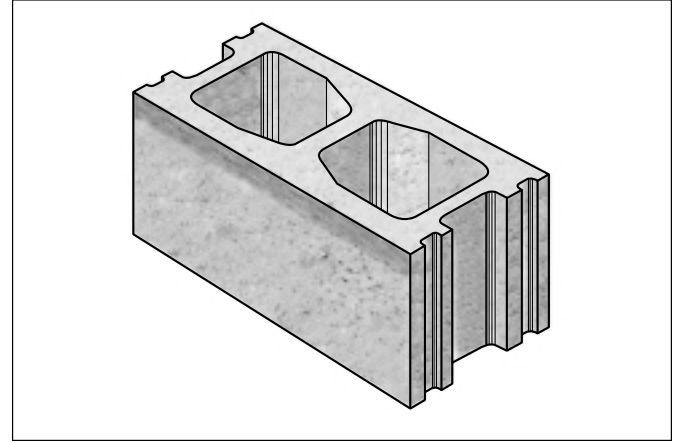
10.2.4 FRONT OF BLOCK NOT FILLED



- a. Check hopper gate setting.
- b. Check feedbox travel forward.
- c. Check agitator.
- d. Check for chunks in feedbox.
- e. Mix may be too wet.
- f. Check feed time. Increase if necessary. (section 8 and 9)

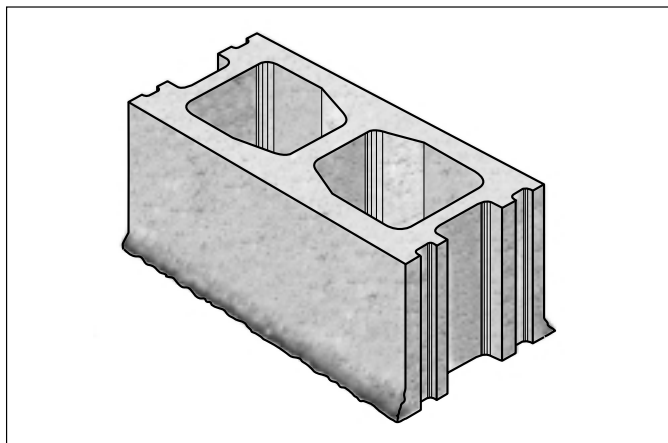
10.2.5 AREA OF FACE SHELL TOO COARSE

- a. Check machine hopper for build up.
- b. Make sure vibrator sheaves are properly aligned.
- c. Check vibrator weights for proper balance (equal length of clamping bolts and equal weight of nuts).
- d. Check for loose mold parts.
- e. Check for material segregation.
- f. Check vibrator shaft speed.

10.2.6 SMOOTH TOP EDGE ON FACE SHELL

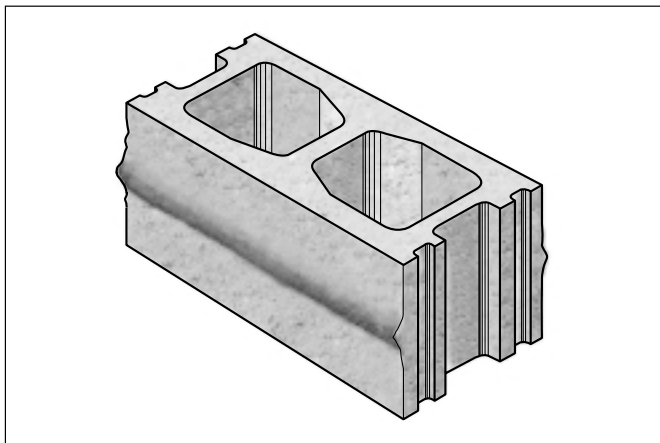
- a. Check for division plate wear.
- b. Make sure stripper shoes protrude through bottom of mold at completion of stripping.
- c. Check stripper head alignment. (section 5)
- d. Check for loose stripper shoes.
- e. Check pallet receiver frame for level. (section 5)
- f. Check moisture content of mix.
- g. Check finish times. (sections 8 and 9)
- h. Check feed time. Decrease if necessary. (sections 8 and 9)
- i. Check autofeed mechanism. Lower if necessary.

10.2.7 BOTTOM EDGE CRUSHED

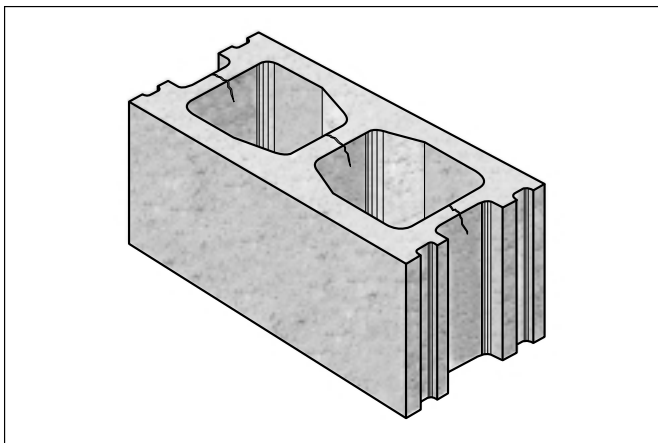
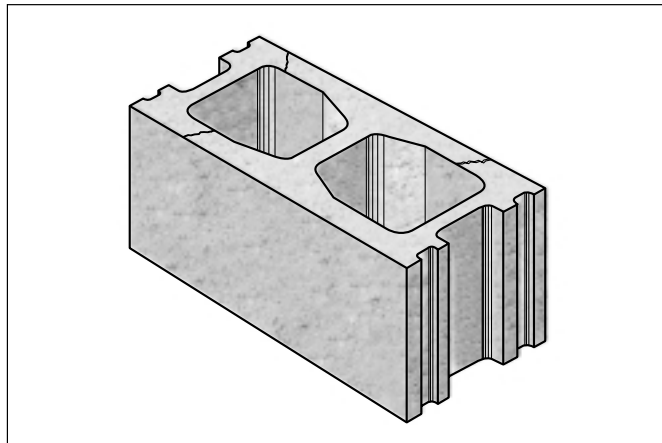


- a. Check spring opening. (section 5)
- b. Check delay time. (section 8 and 9)
- c. Check stripper head alignment. (section 5)
- d. Check pallet receiver rubbers.
- e. Check for build up on bottom of mold.
- f. Check for build up on pallets.
- g. Check for spillage on pallet.
- h. Check rubbers on cutoff bars.
- i. Check the mix (can be too dry).
- j. Check the air compaction setting (too much force).
- k. Make sure pallet is against bottom of mold.

10.2.8 BLOCK CRUSHED DURING STRIPPING



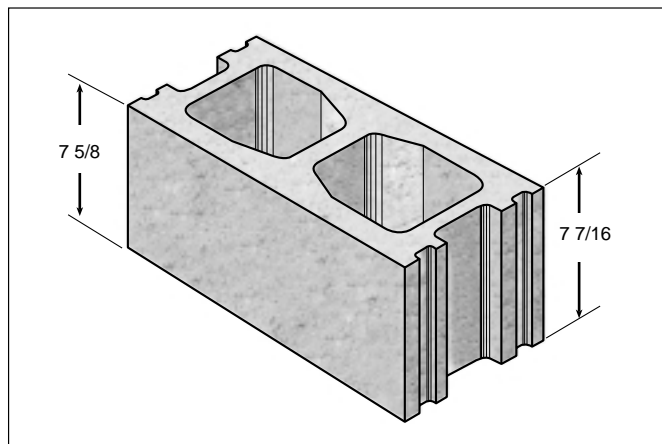
- a. Increase strip delay time. (section 9)
- b. Check spring opening. (section 5)
- c. Check moisture content of concrete.
- d. Check for excess feed. Decrease feed time and lower autofeed if necessary.
- e. Check vibrator brakes.
- f. Check pallet delivery and timing.
- g. Check air compaction setting.

10.2.9 CORE BAR CRACK**10.2.10 CRACKING AT PALLET SIDE**

- a. Check vibrator brake settings (for Vibrapac equipped with standard vibration).
- b. Check vibrators shaft speeds.
- c. Check for loose cores.
- d. Check vibrator sheave alignment.
- e. Check pallet guides. Rear guides may have a groove worn so pallets stick during stripping operation (this may not apply to V4).
- f. Check feed and finish time (it may need more).
- g. Check for material build-up on core bars or core assemblies.
- h. Check mix (it can be too dry).

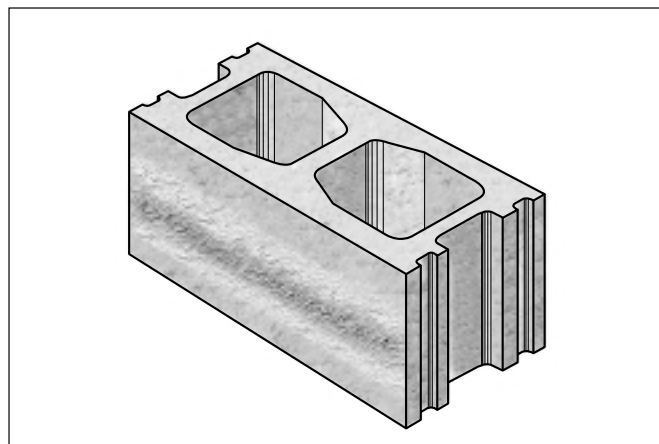
- a. Check for loose core assembly.
- b. Check for bent core assembly.
- c. Check pallet receiver frame for level.
- d. Check pallet receiver rubbers. Pallet may be moving during finish time (it may require pallet snubbers).
- e. Check pallet guides.
- f. Check core bars for material build-up.
- g. Check for thick and thin pallets.
- h. Check vibrator brakes (may be slipping) for Vibrapac equipped with standard vibration.
- i. Check for material between pallet and pallet receiver rubbers.
- j. Pallet receiver and stripper head alignments.

10.2.11 BLOCK HEIGHT NOT CORRECT FRONT TO REAR

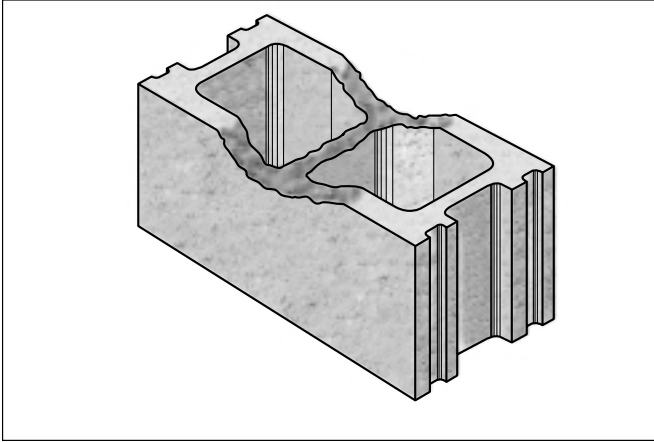


- Check pallet receiver frame for level (see section 5.4)
- Check stripper head frame in relation to pallet receiver frame alignment.
- Check stripper head for level.
- Check mold for $\frac{5}{8}$ " dimension off mold throat.
- Check for loose stripper shoe or plunger.
- Check agitator grid (see section x.x).
- Check delay time.

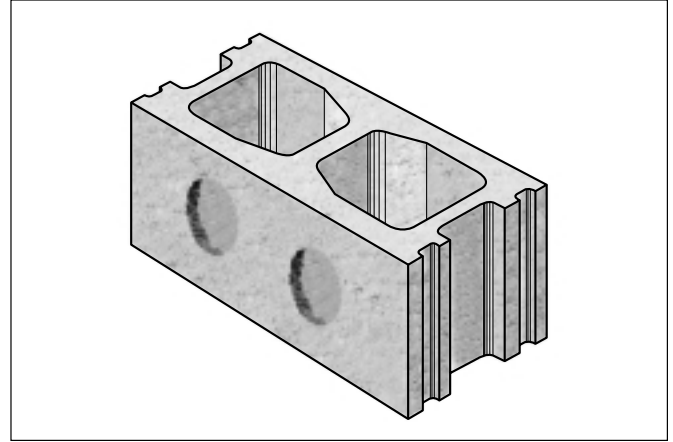
10.2.12 COARSE TEXTURE IN MIDDLE OF BLOCK FACE



- Check vibrator shaft speeds.
- Check material for coarse aggregate.
- Check (generally increase) feed time setting.
- Check material, could be too wet.
- Check autofeed, make sure it's turned on.
- Check for material segregation.
- Check vibrator motor rotation.
- H. Material segregation in machine hopper.

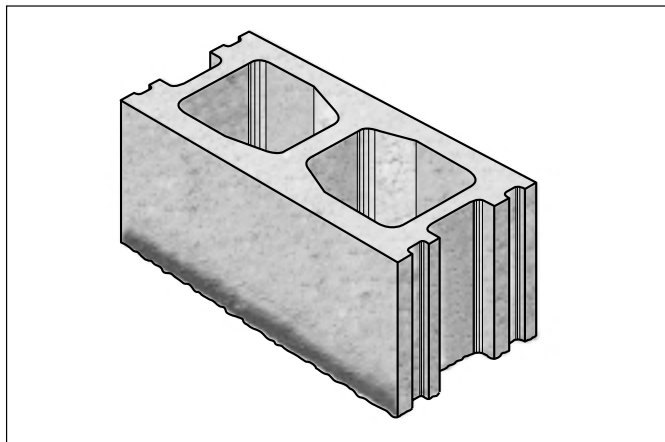
10.2.13 BLOCK NOT FILLED PROPERLY

- a. Check agitator grid for build up.
- b. Check agitator grid to make sure it is turned on.
- c. Material too wet and there may be moisture variations.
- d. Check that autofeed is on automatic.
- e. Check hopper gate setting.
- f. Check if there are chunks in feedbox.
- g. Check feed time.

10.2.14 FACE SHELLS SUCKED IN AT COMPLETION OF STRIPPING

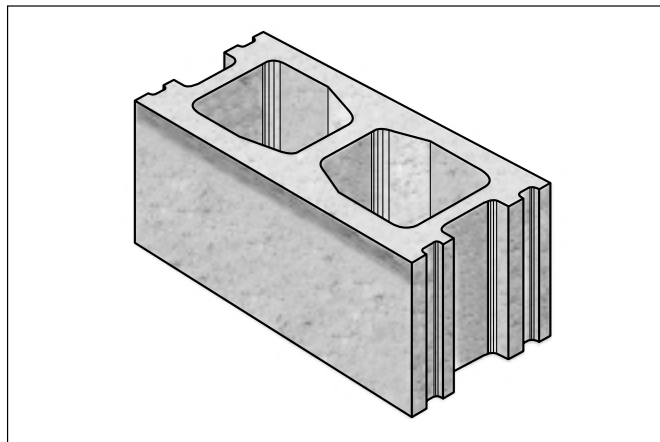
- a. Check core vents, may be plugged.
- b. Material too wet, moisture content variation.
- c. Check for worn division plates.
- d. Check for loose core assembly.
- e. Check stripping speed.
- f. Check admix.
- g. Check for frozen aggregate.
- h. Check core valve springs.

10.2.15 COARSENESS ON BOTTOM OF BLOCK LEAVING A BAD EDGE



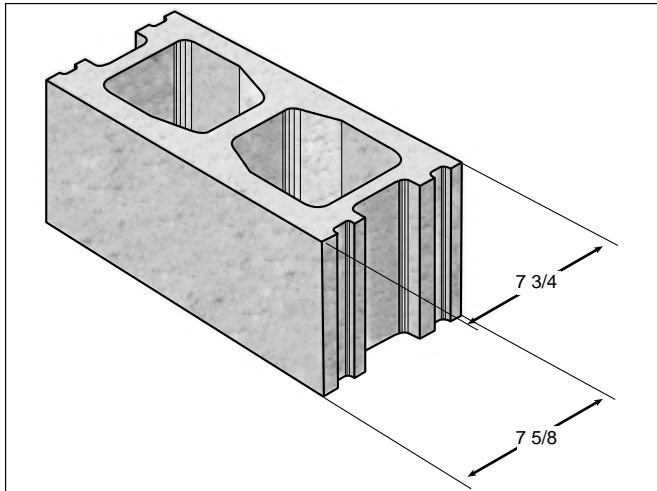
- a. Check pallet receiver rubbers.
- b. Check if pallet moves during vibration.
- c. Check vibrator weights, may have to change to larger or smaller vibrator weights.
- d. Check mold for loose parts.
- e. Check stripper head alignment.
- f. Check for material segregation.
- g. Check for build up on pallets or mold.
- h. Check for core spillage on pallet.
- i. Check moisture content of mix. It may be too dry.
- j. Check vibrator shaft rotation.
- k. Make sure pallet is against bottom of mold.

10.2.16 HAIRLINE CRACKING AND PULLING AT TOP OF BLOCK ON COMPLETION OF STRIPPING



- a. Check spring opening to assure height pins stay together during strip.
- b. Check to make sure stripper shoe protrudes through bottom of mold at completion of strip.
- c. Check adjustment for stripping.
- d. Check division plates for wear.
- e. Check for loose stripper shoes.
- f. Check moisture content of mix. It may be too wet.
- g. Check vibrator brakes (for a Vibrapac equipped with standard vibration).
- h. Check roller of block moving cam. It should never leave cam, otherwise you will get a jerky moment that might crack the units.

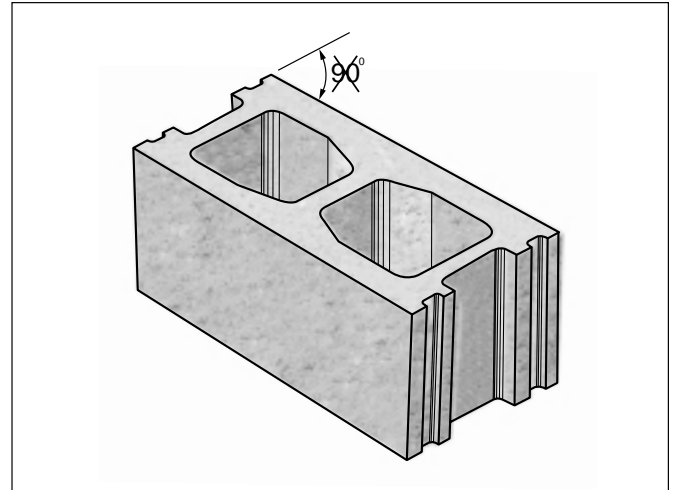
10.2.17 BLOCK WIDER AT TOP THAN AT BOTTOM



Note: There are no visible cracks on the blocks.

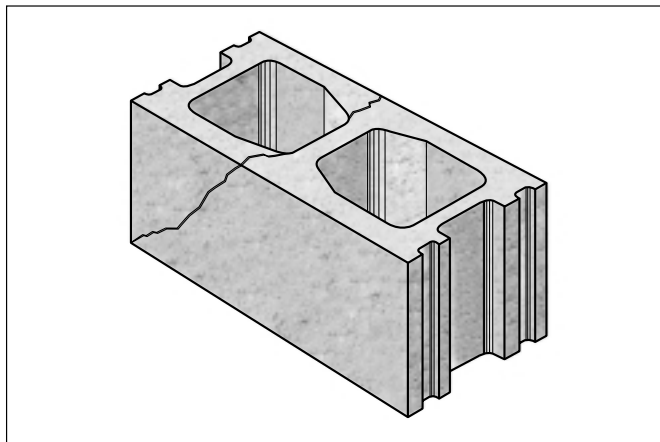
- Check block handling during movement to curing kilns.
- Check block delivery on machine.
- Check stripping adjustment.
- Check mold assembly for wear.
- Check curing cycle (preset & steam conditions).
- Check admix.

10.2.18 BLOCK OUT OF SQUARE (NOT 90° ON EACH CORNER)



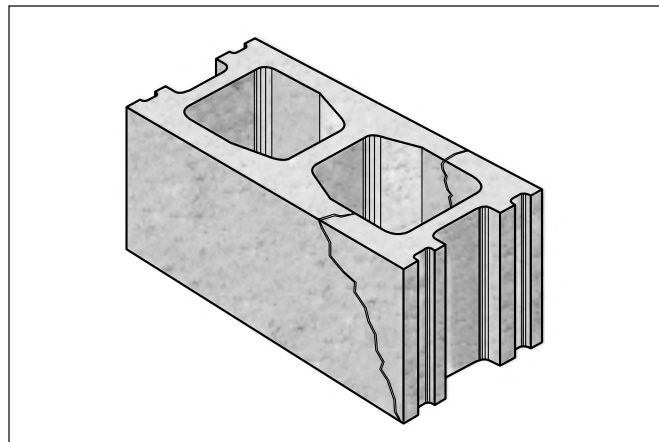
- Check mold assembly for wear.
- Check all mold parts for excessive wear.
- Check block delivery on machine.
- Check curing cycle (preset, steam, etc.).

10.2.19 DIAGONAL CRACK AT REAR OF BLOCK

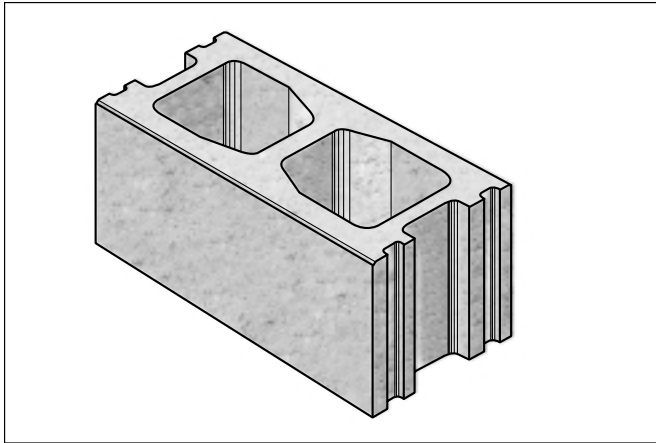


- a. Pallet setting on block moving bars may be too late.
- b. Check fork lift bumping rack on Besser-Matic.
- c. Check if pallet is setting down evenly on front delivery conveyor.
- d. Check for loose core.
- e. Check of loose plunger.
- f. Check mix design.
- g. Check vibrator weights.
- h. Check vibrator brakes (for a Vibrapac equipped with standard vibration).
- i. Check roller of block moving cam. It should never leave cam, otherwise you will get a jerky moment that might crack the units.

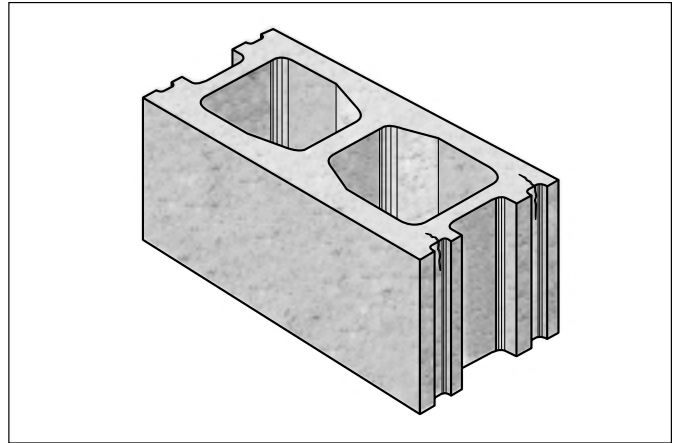
10.2.20 DIAGONAL CRACK AT FRONT OF BLOCK



- a. Check if pallet hit stop on front delivery too hard.
- b. Check fork lift bumping rack on Besser-matic.
- c. Check if pallet is not setting down evenly on front delivery conveyor.
- d. Check for loose core.
- e. Check for loose plunger.
- f. Check mix design.
- g. Check for wrong vibrator weights.
- h. Check vibrator brakes (for a Vibrapac equipped with standard vibration).
- i. Check roller of block moving cam. It should never leave cam, otherwise you will get a jerky moment that might crack the units.

10.1.21 FEATHER-EDGE AT TOP OF UNIT

- a. Check alignment of stripper shoes.
- b. Check for worn plungers and mold parts.
- c. Check Mix design and mixing procedure.
- d. Check stripping adjustment.
- e. Check for mold shifting.
- f. Check for loose mold parts.
- g. Check stripper head alignment.
- h. Check vibration.
- i. Check vibrator motor brake adjustments.
- j. Check admixture in batch.

10.1.22 CRACK IN MORTAR GROOVE

- a. Check vibrator brakes (for a Vibrapac equipped with standard vibration).
- b. Check for loose end liner.
- c. Check for worn end liner.
- d. Pallet snubbers may be necessary.
- e. Check vibrator shaft speeds.
- f. Check for loose mold parts.
- g. Check stripping adjustment.
- h. Check moisture content of mix.
- i. Check mix design.

SECTION 11

MAINTENANCE

11.1 PREVENTIVE MAINTENANCE

Correct maintenance is largely a matter of good judgment on the part of the operator in charge. The VIBRA-PAC, like any other machine, will do the work required just as long as it is properly cared for. A good preventive maintenance program based on the recommendations below will extend the machine's life at a high level of performance.

Check the following procedures daily and every time a product or mold change is done.

COMPONENT	REF. ¹	CHECK FOR	TOLERANCE ²	ACTION	HOURS ³
Upper and lower height stops	5.22	Loose clamp / wear	see torque chart	repair	400
Lower height stops wire	5.22	Loose / broken	0	repair / replace	400
Spring link assembly Spring opening	5.33	Gap as mold touches throat	1/16" [1.5mm]	adjust	400
Pallet receiver rubbers	4.14	All rubbers same height	max:015" [.38mm]	replace	400
Mold	5.9	Centered (after vibration)	± .030" [.76mm]	adjust	400
Mold locks and liner	5.2	Wear	0 to .125" [3mm]	replace	1000
Mold lock liner	5.2	Clearance	.020" ± .030" [.51mm ± .76mm]	adjust	1000
Apron plate	5.17	Clearance to mold	.030" ± .010" [.76mm ± .25mm]	adjust	every mold change
Apron plate	5.17	Height above mold	.125" ± .010" [3mm ± .25mm]	adjust	every mold change
Pallet receiver frame - guide liners	5.16	Clearance	.020" ± .005" [.51mm ± .13mm]	adjust	every week
Stripper head frame - guide liners	5.28	Clearance	.020" ± .005" [.51mm ± .13mm]	adjust	every week
Air filter	n.a.	Dirty or clogged filter	n.a	check ⁴	every week

Table 11.1 PREVENTIVE MAINTENANCE TABLE

¹ The "REF." column refers you to the figure in this manual where the component is illustrated and where adjustment instructions is given.

² If TOLERANCE is not respected, proceed to ACTION.

³ Hours of operation.

⁴ Check if filters are drained properly as required (dependent on air supply).

**11.2 GENERAL ADVICES AND TIPS FOR
SERVICING AND REPAIRING YOUR
VIBRAPAC**

Here is a list of general advices and tips to repair and service your Vibrapac safely and appropriately. Please read it carefully.

- 11.2.1 In a hot and/or humid area, all controls should be placed in a closed and air-conditioned room.
- 11.2.2 When servicing your Vibrapac, turn power off and **lock out** machine when you reach "FIRST STOP" (see section 5.3.1). This is a good position to work on the machine.
- 11.2.3 Drive is worn when machine kicks. That means gear tooth gap of pinion shaft and bull gear probably exceeds .030" (refer to figure 11.7).
- 11.2.4 **NEVER WORK** on the machine when stripper head is up without hooking it with the safety chain.
- 11.2.5 Don't use torch on equipment because hard-

ened parts will loose their properties if heated or cut.

- 11.2.6 Block moving springs should be tensioned so that rollers never come off cams.
- 11.2.7 Do not alter agitator grid.
- 11.2.8 Agitator grids are not universal. When setting up a new mold, please install the right agitator.
- 11.2.9 Do not drop agitator grid on floor to clean it. It could bent fingers.
- 11.2.10 Do not weld, cut, modify any mold part, especially harden parts such as the cut-off bars, agitator grid, stripper head plate, etc.
- 11.2.11 Liners in feed box can be replaced if worn-out.
- 11.2.12 Check gap between apron plate and feedbox. Replace apron plate when gap exceeds 1/8".
- 11.2.13 Check height pins cleanliness regularly. If dirty, it could cause malfunction of the machine. Before cleaning height pins, turn off power and **lock out** machine.

11.3 SERVICE AND REPAIRS

11.3.1 DRIVE MOTOR (not illustrated)

COMPONENT	CHECK FOR	ACTION	HOURS
Mounting bolts	Recommended torque	torque	installation
Bearings	.002 [.05mm] radial move	repair / replace	4000
Lubrication		lubricate	2000
Sheave	Wear - Match with gauge #112541	replace	400
Belts	Surface contamination, wear, cuts, cracks Match with gauge #112541	replace	400

Table 11.2

11.3.2 BESCODYNE CLUTCH/BRAKE UNIT (FIGURE 11.1)

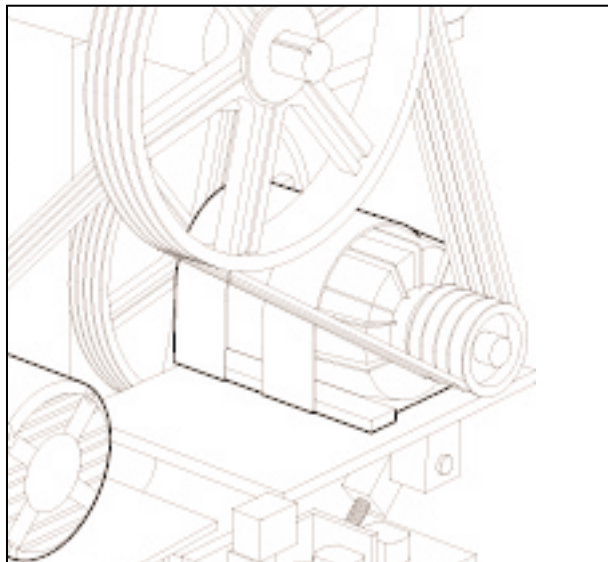


Figure 11.1

COMPONENT	CHECK FOR	ACTION	HOURS
Input sheave #103488	Match with gauge #112541	torque repair / replace	installation
Output sheave #106659	Match with gauge #112541		4000
Lubrication	Use Mobil Automatic Transmission Fluid ATF-210 (Type "F") or equivalent	check level	weekly
		change	3 months if 8-hour shift
Disc	Cracks, distortions, scoring	replace	400
Belts	Surface contamination, wear, cuts, cracks Match with gauge #112541	replace	400

Table 11.3

11.3.2 BESCODYNE CLUTCH/BRAKE UNIT (continued)

11.3.2.1 CHECKING THE OIL LEVEL

Every week or until experience dictates otherwise, check the oil level. Always check the oil level with the drive at room temperature and while it is not running.

The drive has an oil sight gauge located at the output end of the drive. The oil level is to be at the center of the gauge.

11.3.2.2 CHANGING THE OIL

IMPORTANT : Open the disconnects to the drive motors before attempting to change the oil.

Every three months, completely drain the oil from the drive using the drain plugs provided. If the oil sight gauge is dirty, it should be removed and cleaned.

Reinstall the drain plugs and refill the drive to the center of the sight gauge with fresh oil.

Note: Do not overfill the drive unit. Excess oil will cause the unit to overheat.

11.3.2.3 TYPE OF OIL

Use only Mobil Automatic Transmission Fluid ATF-21 0 (type "F") or Mobil Multi-purpose Automatic Transmission Fluid for most drives. Other fluids may be specified for special applications. Always use the type of fluid specified on the Name Plate.

11.3.2.4 CLEANING AND INSPECTION

Clean metal parts in a suitable solvent and dry in a stream of low pressure compressed air. The Clutch and Brake Drive Plates can be cleaned in solvent, but **DO NOT** clean the Clutch and Brake Friction Discs in solvent. Use only a clean, dry and lint-free rag to clean these Friction Discs. (Solvent will damage the resilient paper-based friction material used on the Friction Discs). Keep the Drive Plates and Friction Discs in the same order as they were removed. After cleaning, inspect parts for cracks, distortion, scoring, nicks, burrs or other damage would affect serviceability. Pay particular attention to the following:

1. Check the disc wear surfaces for scoring, galling or

evidence of uneven wear.

2. Check the clutch and brake plates for scoring or galling. Make sure they are flat. If a perceptible ridge is worn in any of the drive plates, replace all of the drive plates and friction discs as a complete set.
3. Carefully check the piston and bore surfaces for nicks, scratches, scoring or other damage which would affect operation or cause leakage.
4. Pay particular attention to Wear Sleeve (#250), Mating Ring (#4) and shafts in the area of rotary seals. Check for nicks or scratches which would cause leakage. Replace any damaged parts.
5. It is not necessary to remove the ball bearings to check their operation. Slowly rotate the free race of each bearing by hand checking to see if it turns freely without rough or flat spots.

11.3.2.5 REPAIR AND REPLACEMENT

A fine stone or crocus cloth may be used to remove minor surface defects from parts as long as the operating or sealing action of the part is not affected. The use of coarser abrasive or other machining methods should not be attempted. Otherwise, damaged parts should be replaced.

Replacement is recommended also for the following, as applicable:

1. Replace all O-Rings, Liners, Gaskets and Oil Seals removed during the course of disassembly.
2. Replace Clutch or Brake Discs and Drive Plates as complete sets only.

11.3.2.6 BELTS (ref. table 11.3)

Check wear and tension on input and output belts as described in table 11.3 (see figure 11.4 and 11.5).

Note: Refer to Bescodyne catalogue #502-03/20-001 for more complete instructions on this unit.

11.3.2.7 PROCEDURE FOR CHECKING BRAKE AND CLUTCH STACKS FOR WEAR.

An easy procedure has been established to visually check the brake and clutch stacks for wear to determine whether or not they need to be replaced.

Two "stack wear" grooves (A) have been machined in the input shaft (B) lugs to facilitate this visual check (see figure 11.2)



CAUTION: Disconnect and lock-out all electrical power to the drive motor. This step must be taken to avoid any possibility of personal injury or damage to the drive unit.

1. Remove the inspection pipe plug from the top of the input housing.

A. CLUTCH STACK WEAR

2. Apply air pressure to the clutch port.
3. Using a flashlight, observe the clutch stack (C) through the inspection port (see figure 11.2).

If the rear surface of the clutch thrust plate (D) has moved up to or past the "stack wear" groove (A), the clutch stack needs to be replaced (see figure 11.2).

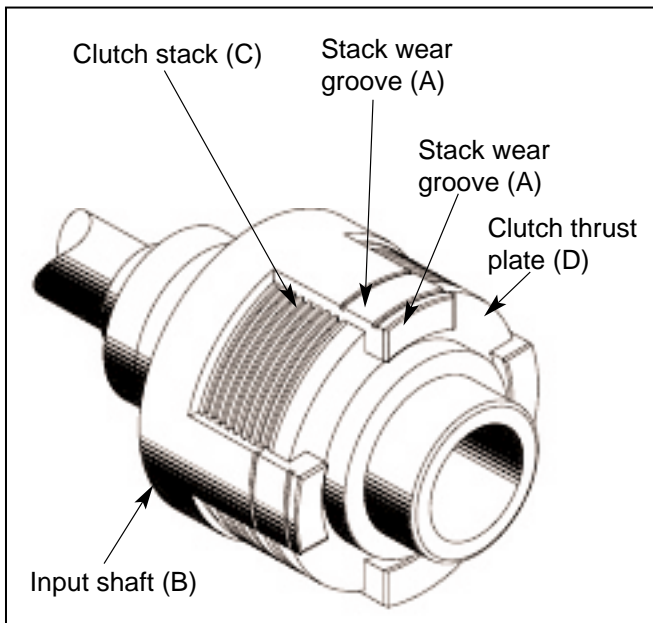


Figure 11.2 STACK WEAR GROOVES.

4. Exhaust the air pressure from the clutch port.

B. BRAKE STACK WEAR

5. Apply air pressure to the brake port.
6. Using a flashlight, observe the clutch stack through the inspection port (A) (see figure 11.3).

If the rear surface of the Thrust plate (E) has moved up to or past the "stack wear" groove #1, the brake stack is worn and needs to be replaced.

Note: Both the brake stack and the clutch stack can individually be checked for wear. If either stack is worn and needs to be replaced, both stacks should be replaced as a complete set. Refer to service manual and repair parts for clutch/brake drives (502-03/20-001) Besser catalog No. 437629F001, section 7 - DISASSEMBLY and section 9 REASSEMBLY for brake and clutch stack replacement.

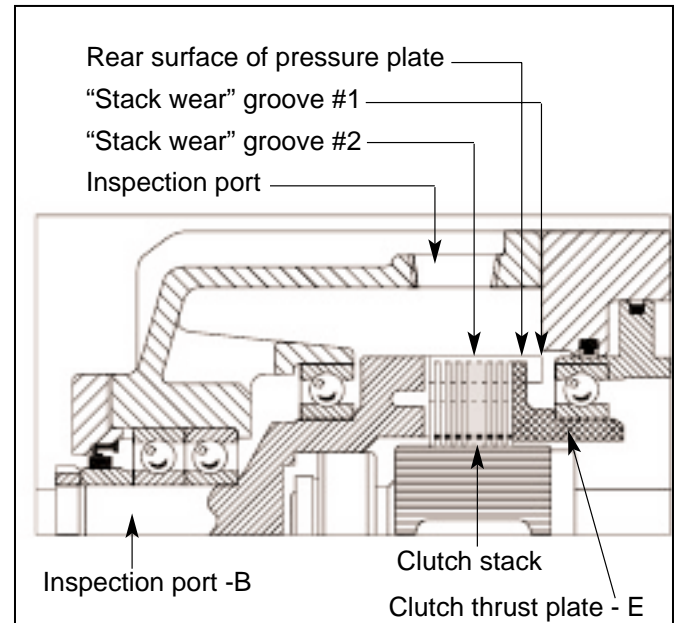


Figure 11.3 BRAKE AND CLUTCH STACKS FOR WEAR.

11.3.2.8 BESCODYNE UNITS SERVICE TIPS

- a. **KNOW THE AIR PRESSURES**
Don't guess, be positive. Use 70 psi (4.8 bar) for Clutch. Use 50 psi (3.4 bar) for Brake.
- b. **BRAKES**
Brakes are spring-boosted, so less air pressure is required.
- c. **GAUGES AND REGULATORS**
Use glycerine-filled gauges; they are accurate and last longer.
- d. **VIBRAPAC USES TWO DIFFERENT UNITS**
5S and 10S units use entirely different friction lining. Radically higher pressures will cause premature wear. Integrally piloted valve will not shift at pressures below 40 psi (2.8 bar) and must be converted to externally piloted. For a conversion, consult a Besser representative.
- e. **EXCEEDING 80 psi (5.5 bar)**
Exceeding this pressure on the clutch for any length of time can result in early failure of thrust bearings.
- f. **AIR LINE LUBRICATION**
Use an air line lubricator only when a lubricator has been used previously. A small trace of oil in the air valve and piston of the Bescodyne can extend life. Use the same ATF oil in the lubricator as used in the Bescodyne. When adjusting the lubricator, follow the adjustment procedures as outlined by the manufacturer.
- g. **CLEANER AIR**
Always invest in good quality air filters, regulators and lubricators. The result of using air filters, regulators and rubricators is clean air that is free of moisture and contaminants.
- h. **V-BELTS**
While it is necessary to maintain enough belt tension to drive the block machine, overtightening of V-belts on the output end of the Bescodyne drive could cause fatigue breakage of the spliced output shaft. When the 4 or 5 groove output sheave becomes worn, it is tempting to over-tighten the belt to prevent slipping. When slippage occurs, replace the output sheave.

- i. **CHANGING OIL**
Besser recommends changing the oil in Bescodynes drives every three months. Use a Multi-Purpose ATF 210 Automatic Transmission Fluid.

Note: Do Not Overfill.

Note: DO NOT FLUSH with any solvents; we recommend to simply change the oil.

- j. **EXCESSIVE HEAT**
Excessive heat can be a real enemy! Keep fans intact and fan shroud in place.

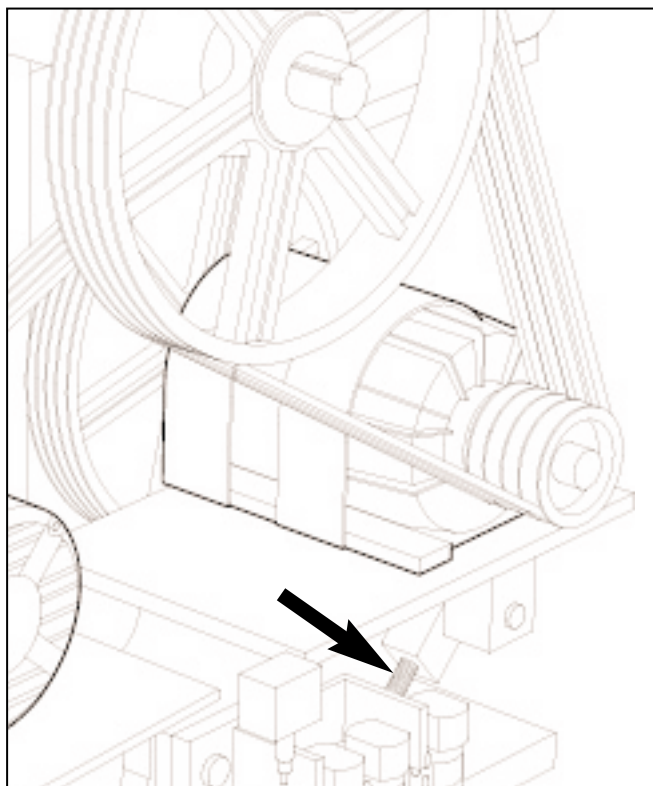


Figure 11.4 OUTPUT PULLEY BELT TENSION

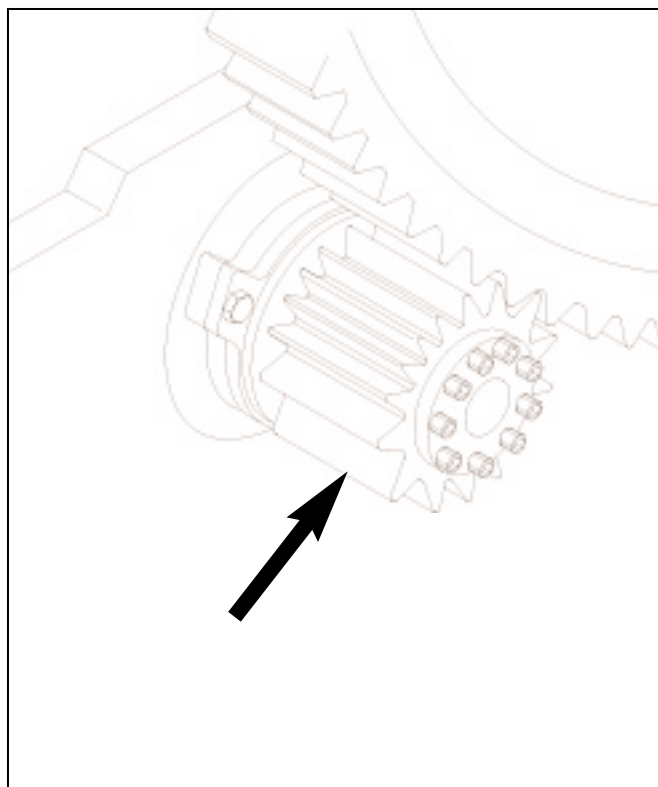


Figure 11.5 PINION SHAFT

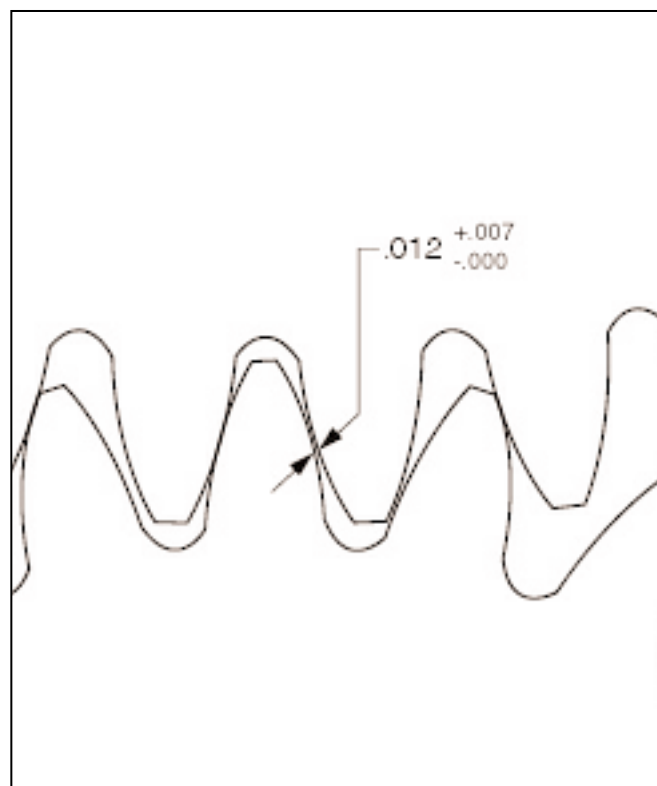


Figure 11.6 GEAR TOOTH GAP

11.3.3 REPLACING PINION SHAFT

Before replacing pinion shaft (see figure 11.7), make sure machine is in safe position. Stripper head frame and pallet receiver frame must be down. Also, make sure there is no tension on the pinion gear.

A. Removing the pinion shaft (see figure 11.7)

Important: Make sure ends of locking screws used for removal are ground flat and ends are slightly chamfered to eliminate damage to screw and collar threads during push-off.

1. Check to assure that axial movement of clamp collars - necessary for release of connection - is not restricted.
2. Remove all locking screws and transfer some into all push-off threads in clamp collar
3. Release collar by progressively tightening all push-off screws. Typically, the push-off screws appear to be completely tight after just one pass of tightening without any noticeable separation. Although it seems that screws can not be tightened further, several more rounds of torquing in a clockwise (or counter clockwise) sequence actually add more push-off force to the system and ultimately release part of the front collar. Afterwards, only the screws which are still tight, should be tightened further until complete dismounting is achieved.
4. Transfer locking screws used for dismounting of collar to all push-off threads in center collar. Release collar by repeating procedures outlined in step 3.

B. Installing the pinion shaft

Locking assemblies are supplied ready for installation. However, if for some reasons they have to be disassembled, make sure that in addition to lined-up slits in all collars, near and far-side clamp collars are not reversed. They are assembled correctly only if there are no holes or threads behind

1. Install shaft ass'y in machine and tighten caps. Apply pressure to drive end of shaft (pulley end) to assure shaft is fully seated against inner bearing race.
2. Slide pinion gear and locking device on shaft and using tool (467006) press pinion against spacer.
3. Tighten to 75 to 90 ft./lbs. Push locking device full into pinion and tighten to instructions, making sure shaft is seated to bearing and pinion is tight against spacer.
4. After 30 minutes, retorque locking assembly bolts.
5. Remove tool before running machine.

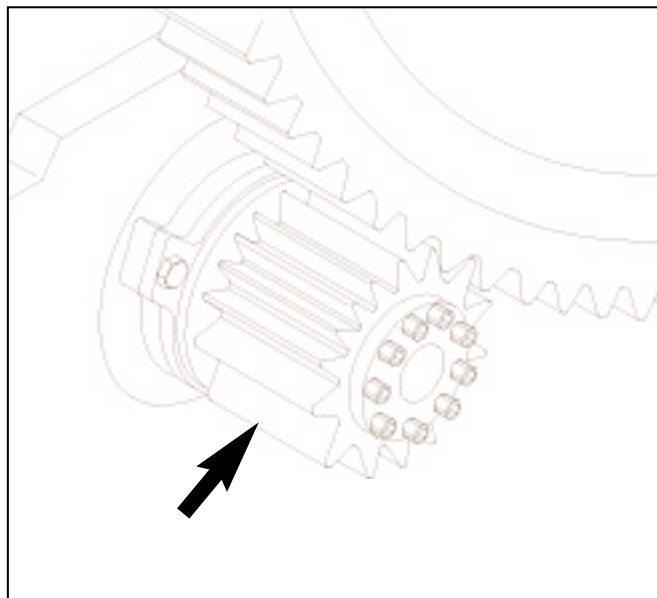


Figure 11.7 PINION SHAFT

11.3.4 TURNING BULL GEAR.

The bull gear must be turned in order to extend its life span. Turn bull gear when .020" (.5mm) clearance develops between pinion and bull gear teeth (figure 11.6).

Before turning bull gear, make sure machine is in its safe position. Stripper head frame and pallet receiver frame must be down.

1. Unbolt bull gear from hub (bolt A in figure 11.8).
2. Turn pinion shaft to turn bull gear 90°.
3. Finally, rebolt to hub.



CAUTION: The Bull Gear is a heavy piece of equipment. Handle with extreme care.



DANGER: Always turn power off and mechanically lock out electrical panel before working on Concrete Product Machine. **Always** follow the safety tips listed in the Safety section of this manual (see section 1).

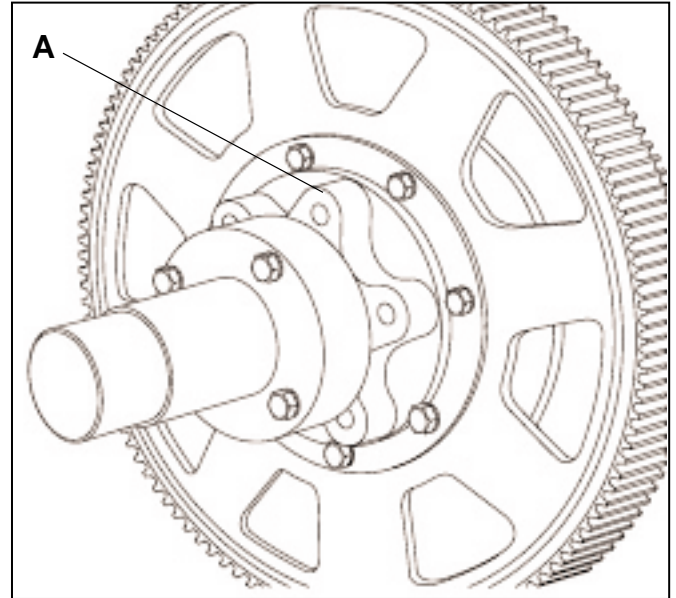


Figure 11.8 BULL GEAR

11.3.5 PINION SHAFT (FIGURE 11.6 AND 11.7)

COMPONENT	CHECK FOR	ACTION	HOURS
Sheave P/N 106022	Wear - Match with gauge #112541	replace	400
Bearings	.005" [.127mm] radial move	replace	2000
Pinion	Wear and clearance of 0.012" to 0.019" between teeth	Replace	
Taper lock-tight			
Lubrication	Automatic	-	-

Table 11.4

11.3.6 CAM SHAFT (NOT ILLUSTRATED)

COMPONENT	CHECK FOR	ACTION	HOURS
Bull gear	Alignment, wear and tightness	adjust	installation
Bearings	Clearance, seals	repair / replace	2000
Lubrication	See Lubrication section 11.4.2	-	-
Cam assemblies			

Table 11.5

11.3.7 FEED, STRIPPER HEAD AND PALLET RECEIVER SHAFTS & LINKS

COMPONENT	CHECK FOR	ACTION	HOURS
Bearings	Wear. .030" [.76mm] clearance	replace	1000
Rollers	Wear. .010" [.25mm] clearance	replace	1000
Bushings	Wear. .030" [.76mm] between feeler gauge pin and bushing	replace	1000
Pins	Wear. .010" [.25mm]	replace	1000
Links	Link ends tightness (see torque chart)	replace	400
Link bearings	Wear. .030" [.76mm] clearance	replace	1000
Link pins	Wear. .010" [.25mm] clearance	replace	1000
Spring openings (see section 11.9)	Between 1/32" [0.8mm] and 1/8" [1.6mm] clearance	adjust	each mold change
Height pins	cleanliness	clean	when dirty

Table 11.6

11.3.8 FEEDBOX

COMPONENT	CHECK FOR	ACTION	HOURS
Agitator motor	Lubrication (see manufac.'s manual)	lubricate	4000
Agitator sheave	Worn (match with gauge #112541)	repair / replace	400
Agitator belts	Wear and tension (match with gauge #112541)	replace	400
Agitator bearings	Wear	replace	400
Agitator nylons	Worn. .030" [.76mm] clearance	replace	400
Agitator rollers	Worn. .010" [.25mm] clearance	replace	400
Agitator bars	Worn more than 1/2" [13mm] in dia.	replace	400
Back bar and guide	Bent or worn more than .030" [.76mm]	clean & replace	Daily
Liners	Bent or worn more than .060" [1.5mm]	replace	Daily
Loose back bar	Bent or worn more than .100" [2.5mm]	replace	Daily
Hopper	Bent or worn more than .100" [2.5mm]	replace	Daily
Gate	Bent or worn more than .100" [2.5mm]	replace	Daily
Baffle	Bent or worn more than .100" [2.5mm]	replace	Daily
Apron plate	Worn more than .125" [3mm]	replace	Daily
Wear shoes	Worn more than .125" [3mm]	replace	Daily
Rollers	Worn more than .010" [.25mm]	replace	100
Bushings	Worn more than .030" [.76mm]	replace	100
Pins	Worn more than .010" [.25mm]	replace	100
Back top plate	Worn more than .100" [2.5mm]	replace	100
Feedbox track	Worn more than .060" [1.5mm]	replace	400

Table 11.7

11.3.9 PALLET & BLOCK DELIVERY

COMPONENT	CHECK FOR	ACTION	HOURS
Pallet conveyor chain	3% elongation of sloppy rollers	Adjust	1000
Pallet conveyor shafts	-	-	-
Pallet conveyor bearings	.020" [0.5mm] radial movement	replace	1000
Pallet conveyor sprockets	No longer smooth when engages chain	replace	1000
Pallet conveyor trunion shaft bearings	.020" [0.5mm] radial movement	replace	1000
Pallet conveyor chain track	1/8" [3mm] wear or can no longer adjust	replace	1000
Pallet lugs	Won't consistently push pallets	replace	1000

Table 11.8

11.3.10 PALLET & BLOCK MOVING BARS

COMPONENT	CHECK FOR	ACTION	HOURS
Linkage bearings	.010" [0.25mm] radial movement	replace	1000
"V" rollers	See section 11.4.8	replace	1000
Guide rollers	won't turn or .010" [0.25mm] radial movement	replace	1000
Pallet cradle	Bent, broken or uneven	replace	1000
Block fingers	Worn more than 1/16" [1.6mm]	replace	1000

Table 11.9

11.3.11 PALLET & BLOCK SUPPORT SHAFT

COMPONENT	CHECK FOR	ACTION	HOURS
Linkage bearings	.030" [0.76mm] radial movement	replace	1000
Bearings	.030" [0.76mm] radial movement	replace	1000
Cam rollers	won't turn or .005" [0.13mm] radial movement	replace	1000

Table 11.10

11.3.12 PALLET & BLOCK DRIVE

COMPONENT	CHECK FOR	ACTION	HOURS
Shaft bearings	.005" [0.13mm] radial movement	replace	1000
Link bearings	.005" [0.13mm] radial movement	replace	1000
Cam	Surface rough or panned	replace	1000
Chain sprocket bushing	wear	replace	1000

Table 11.11

11.3.13 MOLD AND VIBRATOR MOTORS

COMPONENT	ACTION	HOURS
Mold shaft bearings (see section 11.8)	grease	8
Warner vibrator motor gap (see section 12.2.1)	adjust gap	once a month

Table 11.12

11.3.14 TOOLS

TOOL	PART #
Belt & sheave gauge	#112541
Posydine stack indicator	Built inside unit
Belt tension gauge	#106666
Bearing feeler gauge - .015" [0.38mm]	#94133
Pry bar (Goose neck) (Mold centering)	#61397
Multiple lockout device	#111140
Padlock	#111139

Table 11.13

11.3.15 BOLT TORQUE CHART




THREADED DIAMETER	S.A.E. GRADE 2	S.A.E. GRADE 5
		
1/4"	60 - 80 LB-IN.	100 - 120 LB-IN.
3/8"	20 - 30 LB-FT.	30 - 40 LB-FT.
1/2"	40 - 60 LB-FT.	65 - 85 LB-FT.
5/8"	90 - 110 LB-FT.	140 - 160 LB-FT.
3/4"	145 - 165 LB-FT.	250 - 270 LB-FT.
7/8"	165 - 185 LB-FT.	420 - 440 LB-FT.
1"	230 - 250 LB-FT.	640 - 660 LB-FT.
1 1/4"	500 - 520 LB-FT.	1200 - 1250 LB-FT.
1 1/2"	600 - 620 LB-FT.	1400 - 1500 LB-FT.

Table 11.14

11.4 TRABON PUMP MAINTENANCE

The adjustments covered in this section are:

1. PUMP IN-FEED PRESSURE.
2. THE SOLENOID FLOW ADJUSTMENT controls the speed the air piston shifts.
3. THE PUMP PISTON STROKE determines how much grease is pumped each stroke.
4. LUBRICATION RATE ADJUSTMENT Adjusted through the Graphic Control Station. Refer to section 9.5: "TIMER ADJUSTMENT" - F3 -Timers 5 and 6.
5. FILLING THE GREASE PUMP.

For more complete instructions on the TRABON PUMP, refer to "Trabon Pump Owner's Service Manual #437629F913".

Warning: Be very careful while adjusting or troubleshooting the lube system that the machine is not turning, and the main drive motor is off.

11.4.1 TRABON IN-FEED PRESSURE ADJUSTMENT

The Trabon pneumatic pump has a air-to-lube ratio of 30 to 1. The Trabon in-feed air pressure on many Besser Vibrapacs is supplied from the Bescodyne main drive brake air regulator. In this case when the brake regulator adjustment is changed, it also affects the Trabon pump. The Trabon pump pressure ideally should be 60-80 psi [4.1-5.5 bar], which can develop at least 1800 psi [124 bar] pumping pressure.

Note: It may be advantageous to connect your Trabon pump to the Bescodyne main drive clutch rather than to the brake. The clutch air pressure adjustment is higher than the brake. Starting in 1991, Besser block machines have a separate air regulator supplied to the Trabon pumps. The plastic air solenoids on double acting pumps may not operate with less than 70 PSI [4.8 bar].

11.4.2 TRABON PISTON STROKE ADJUSTMENT

AL-5M Pump stroke adjustment for Besser block machines:

On AL-5M pumps, we recommended in the past a setting of .020 which would be 20 thousandths cubic inches of grease per stroke or .328 cubic centimeters. .020 is the middle of 3 calibration marks.

On the right side of the pump, remove the calibrated silver cap. Put the open end of the cap up against the lock-nut. The stroke is how far the screw sticks out and matches the calibrations on the cap. To adjust the stroke, loosen the lock nut on the adjustment screw. Turn the screw inward or clockwise to reduce the stroke. Turn the screw outward or counterclockwise to increase the stroke. The lock nut has to be retightened and the cap placed up against it again to recheck the settings after you change them. After final adjustment, tighten lock nut, then tighten silver cap onto the adjustment screw.

L-25M Pump stroke adjustment:

On AL-25M pumps used on block machines, set the pump stroke on the mark between the 30 line and the .075 line. This will be a setting of approximately .052 cubic inches which is equal to .853 cubic centimeters. The method of adjustment is described and shown in the Pump owner's manual on page 4-2 and 4-3.

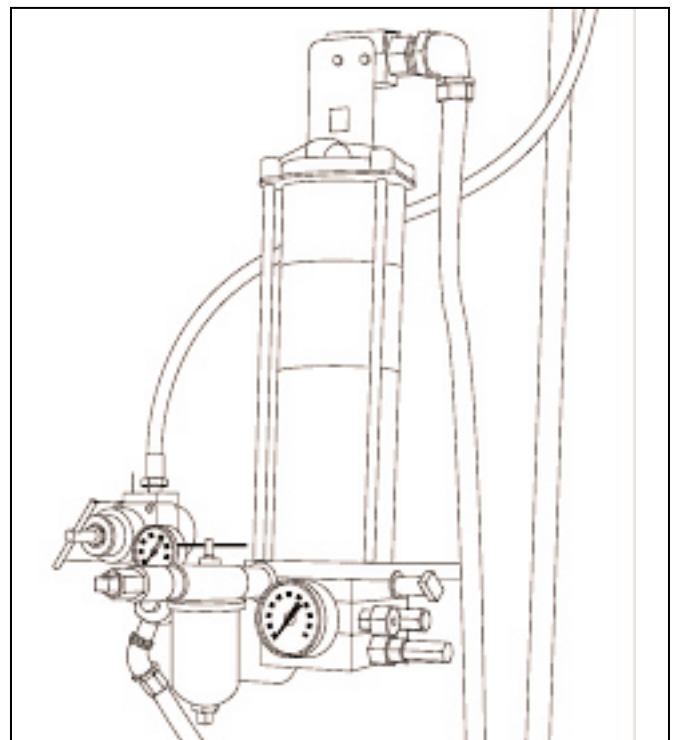


Figure 11.9 THE TRABON LUBE PUMP

AL-25M Pump stroke adjustment for Besser slump mixers:

Set the stroke adjustment for .030 cubic inches, .492 cubic centimeters for AL-5M and AL-25M pumps.

11.4.3 TRABON SOLENOID FLOW CONTROL ADJUSTMENT FOR ALS PUMPS

The solenoid flow adjustment controls the speed at which the Trabon air piston shifts. The solenoid flow controls should be adjusted to get a gentle but positive shift of the piston without slamming.

Single acting ALS pumps have one flow adjustment which controls the in-feed air into the SA port. Depending on the air plumbing, you may have to use an offset screwdriver to adjust the flow control.

Turn the solenoid adjusting screw clockwise all the way in. Back the adjusting screw out 1/16 to 1/4 turn. Press the manual shifting override button on the air solenoid.

You should be able to hear the air piston shifting and the exhaust air exiting the DA port. Adjust the solenoid as slow as possible while still getting a positive shift of the piston. If you place your hand on the air cylinder of the Trabon pump, you should also be able to feel it shifting.

11.4.4 TRABON SOLENOID FLOW CONTROL ADJUSTMENT FOR ALJ PUMPS

On the double-acting pumps when the solenoid flow controls are adjusted, the exhaust air flow is also adjusted. When the Trabon air piston shifts forward, air flows in the SA port and out the DA port. So, to adjust the speed of the piston shift forward, turn the front or right hand flow control which adjusts the air coming out of the DA port. Loosen the lock nuts and turn both screws all the way clockwise to shut off the flow. Start by backing both screws out 1/2 turn and testing the pump shift with the plastic manual override button. The reverse speed is controlled by air for the most part, but the return spring will also be helping. The reverse speed is controlled by the exhaust air coming out of the SA port which is the back or left hand flow control. Set both flow control adjustments to obtain a positive shift without a hard, slamming action. When adjustments are completed, tighten the lock nuts so the adjustment screws cannot move out of adjustment.

11.4.5 FILLING THE GREASE PUMP**Grease To Use:**

We recommend Lithium based E.P.-1 grease, such as Shell Alvania E.P. No. 1, or Mobilux E.P. No. 1. In colder climates and/or in colder months, Shell Alvania E.P. No. 0, Mobilux E.P. No. 0, or grease with equivalent specifications may be used.

Filling the Pump:

The Trabon Pump, on the average, should be filled with grease after 35 hours of operation. It is best if the pump never runs out of grease because excessive air can be introduced into the system. Before filling the pump, turn the filter handle a few times to clean it. Attach a filling pump hose to the fill stud quick disconnect located just ahead of the filter.

Warning: If a high pressure supply pump is used to fill the Trabon grease reservoirs, wear safety glasses. Pressure could build up high enough to fracture the reservoir and send particles flying.

Note: If air does get into the automatic greasing system, refer to the proper sections:

1. To bleed air from the Reservoir, refer to Section 1 in Pump owner's manual.
2. To bleed air from the Pump, refer to Section 6 in Pump owner's manual,
3. To bleed air from the Feeder Blocks and Grease Lines, refer to Section 9 in Pump owner's manual.

Operate the filler pump at a steady speed to allow air-free filling of the reservoir. Filling the pump too fast may form air pockets. Also to avoid inducing air into the pump, make sure there is enough grease in the supply source to fill the reservoir without disconnecting and reconnecting the filler hose. While filling the pump, watch the grease level rise. Stop adding grease when the level reaches the air bleed hole.

Note: Never fill over the air bleed hole; this will cause a vapor lock in the system. The air bleed hole is found about 2/3, the way up the plastic reservoir on the right. When filling is complete, turn the supply source off and disconnect supply line from the fill stud. Install the plastic dust cap over the fill stud to keep dirt out of the lube system.

11.5 BEARING MAINTENANCE

11.5.1 REMEMBER THESE DO'S AND DON'TS

When handling bearings:

DO:

1. Remove all outside dirt from housing before exposing bearing.
2. Treat a used bearing as carefully as you would a new one.
3. Work with clean tools in clean surroundings.
4. Handle with clean, dry hands, or preferably with clean canvas gloves.
5. Use clean solvents and flushing oils.
6. Lay bearings out on clean paper.
7. Protect disassembled bearings from rust and dirt.
8. Use clean lint-free cloths or rags to wipe bearings.
9. Keep bearings wrapped in oil proof paper when not in use.
10. Clean inside of housing before replacing bearing.

DON'T:

1. Don't work in dirty surroundings.
2. Don't use dirty, brittle or chipped tools
3. Don't use wooden pallets or work on wooden bench tops.
4. Don't handle with dirty, moist hands.
5. Don't use gasoline containing tetraethyl lead, as they may be injurious to health.
6. Don't spin unclean bearings.
7. Don't spin bearings with compressed air.
8. Don't use cotton waste or dirty cloths to wipe bearings.
9. Don't expose bearings to rust or dirt.
10. Don't nick or scratch bearing surface faces.

11.5.2 LUBRICATION TIPS

Lubrication is essential for the proper operation of bearings. Grease and oil are both used over a considerable range of speeds and operating temperatures. The choice of the type of lubricant should be made only after careful consideration of the several factors involved.

1. Keep lubricants clean. Dirt causes most bearing failures, and one easy way for it to get to bearings is to be put there in the grease. Keep covers tight on all grease cans. Use only clean dishes and clean spatulas with grease. Keep grease stored away from all dust, dirt, and metal chips,
2. Standardize your greasing procedures. Make sure all maintenance personnel understand proper greasing methods. Do not let inexperienced personnel take over greasing; it is too important. Establish precise instructions regarding cleaning of greasing equipment, grease fittings, grease cups (before refilling them). Oil cups and grease fittings can be marked with colored paints to systemize your relubrication.
3. Relubricate on schedule. Do not wait for trouble to signal the need for additional lubrication. Relubrication schedules should be posted on machines.
4. Use only high grade grease in bearings. Low grade grease is a false economy. Its use usually results in shortened bearing life. Also, try to use the grease recommended by the machine manufacturer.
5. Over-greasing is bad, It causes churning of the lubricant and subsequent over-heating. If bearing runs hot after relubrication, open the drain plug and let some of the grease run out while the bearing is operating. Never fill end-bells more than one third full when re-greasing.
6. Never start a new machine until the bearings have been lubricated according to directions.

11.5.3 WATCH OUT FOR DIRT

The most important precaution to be observed in handling or using bearings is to keep them clean. Dirt is the greatest enemy of bearings. It causes wear, destroys their accuracy, and shortens their life. To the

bearing user, metal chips, grit, abrasive, dust, etc., are all DIRT. Avoid them.

11.5.4 PREVENTIVE MAINTENANCE

Have a perfectly clean work bench on which to place bearings before and after cleaning. Place the bearing in a degreaser or in a container of appropriate solvent such as standard solvent, kerosene, methyl-chloroform, or similar solvents. "Swirl" the bearing around in the cleaning solvent allowing it to wash through the bearing, carrying away any grit particles and dissolving all oil or grease. Finally, slowly revolve the inner ring so the cleaning solvent reaches all parts of the bearing. Do not allow the bearing to rest on the bottom of the container. Cleaning of a bearing interior around the balls or rollers is often done with a normal paint brush. This is a satisfactory practice although care should be taken to use a good quality brush which does not lose its bristles, and that none of the bristles become lodged between the balls or rollers and separators or rings. A piece of bristle can be as harmful as a steel chip.

ONCE IN, DIRT IS HARD TO GET OUT - A clean bearing placed on a dusty bench always becomes contaminated. Dirt, once entrenched in the separator, is exceedingly difficult to remove. Make cleanliness your first rule for working with bearings,

Bearings with closures on both sides should not be cleaned by dipping, spraying and the like, which would wash out the grease. The outer surfaces of such bearings may be carefully wiped with a lint-free cloth and light oil or solvent, after which they can be lightly coated with a protective lubricant, and wrapped to protect against dirt and corrosion.

Throughout the cleaning process, and especially where a bearing has been solvent cleaned, remember that corrosion can be caused by perspiration from hands.

So if a bearing has been solvent cleaned, wipe it carefully before applying a protective oil coat.

USE AIR WITH CAUTION - Never use unfiltered air. Make sure all traces of water and dirt in the air line are trapped out. Dirty air can blow dust into the bearing ruining careful cleaning work. Never allow the air blast to spin a bearing. If you must use air, hold bearing and hose carefully.

11.5.5 RELUBRICATE AFTER CLEANING

Always re-lubricate bearings immediately after they have been cleaned. Immerse in light clean oil and rotate the inner ring very slowly until all the solvent has been removed. Oil has a tendency to slip away from metal surfaces already wet with solvents, leaving the bearing surfaces unprotected and in danger of rust and corrosion.

11.5.6 REWRAP AFTER CLEANING

Immediately after re-lubricating the bearing, wrap well in clean polyethylene or oiled paper. Replace in its box, making sure that inside of box is also clean. Reseal the box. A good shop practice is to write on the sealing tape the date of cleaning, the type of lubricant, and the name of the person cleaning the bearing.

11.5.7 BEARING REMOVAL

Bearings may have to be removed as part of an over-haul program to service another part, or to replace the bearing. In any case, even if the bearing is an obvious

failure, it should be removed with care to avoid damage to the shaft, housing or other machine parts and to avoid obliterating the cause of failure.

As mentioned before, at least one of the bearing rings is press fitted sometimes to a very tight fit. At this point, we are concerned largely with the proper handling of press fitted parts.

The first basic principle is that no press fit should be broken unless it is essential to the job being done, Many roller bearings are separable and when it is certain the bearing itself has not been damaged, it is best to leave the press fitted member in place. In addition to the time and trouble involved, removal may cause damage to the bearing seat. However, if any failure is evident, the entire bearing should be replaced. The second basic principle is that, in removing a ring, the driving force be directed through the inner or outer ring which is being removed, and not be transmitted through the balls, rollers, separators, closures and the like.

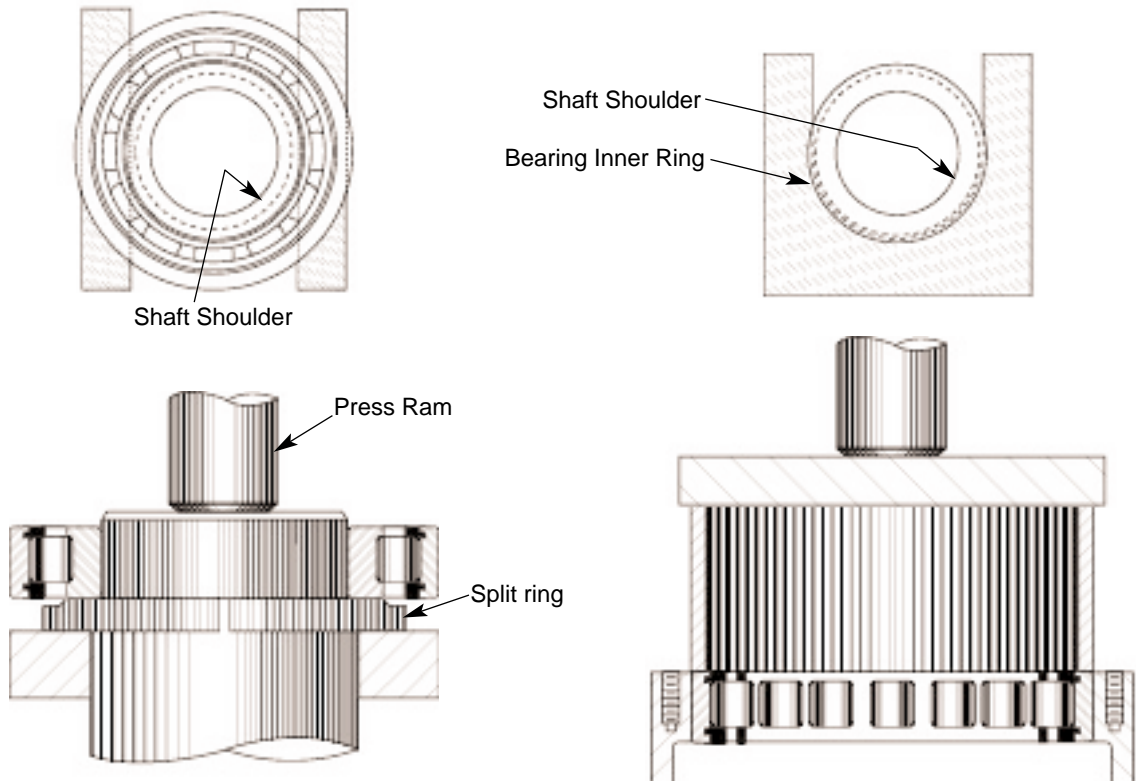


Figure 11.10 Bearings

The familiar arbor press is a very good machine for removing (or installing) bearings. If action is rapid, smooth and positive. In addition, it can supply a greater force than most other means. Further, it is a useful shop accessory for many other types of work. Unfortunately, space restrictions prevent its use in many jobs.

The arbor press requires various fixtures as an aid to removing or installing bearings. Although some of these aids are not inexpensive to make, their use is justified by the saving in time and by the freedom from damage to the equipment under repair. This is especially true if the job is a repetitive one.

The best fixture for pressing off inner rings from a shaft is a split ring with the outer area relieved. For most roller bearings, flat bars or U-shaped washers as shown here are quite satisfactory. They are not recommended for ball bearings since the outer ring or the closure may project beyond the inner ring face a small amount. A possible solution to this problem is to insert a small piece of shim stock about 0.01" [0.25mm] thick between the fixture and the inner ring face. Also, an interference condition can be checked by oscillating the outer ring while applying a little pressure.

The arbor press can also be used to remove outer rings from housings in those cases where the housing can be handled in the arbor press and where a portion of the outer ring is exposed. In the event the entire outer ring is exposed, a section of tubing capped by a flat bar can be used as illustrated. In other cases, where there is axial space restriction, a fiat bar can sometimes be inserted to bear against the face.

Next to the arbor press, the puller is the best removal tool and is often necessary because of size and space restrictions in the arbor press. Pullers are made in different configurations and sizes and with accessories to make them adaptable to various jobs. Larger sizes are available with a hydraulic piston and hand pump.

As with the arbor press, the pressure must be applied directly through the press fitted member. In addition, where screw adjustments to the arms are made, care should be taken to pull the press fitted part off straight and true. It is advisable to use a piece of soft metal in the shaft center to prevent scoring due to the pressure of the puller screws.

The least desirable method is removal of inner and outer rings by driving with a hammer. Where machine shop facilities are available, it may be worth the effort

to build a simple puller adapted to the job, especially if it is repetitive.

The use of a hammer and drift directly in the ring is very bad practice. An auxiliary fixture as shown here should be used.

Large roller bearing inner rings are particularly difficult to remove by any of the methods given here. Usually, these rings are separable and it is necessary to destroy them by heating or splitting. No specific instructions can be given here except that all attempts should be made to prevent damage to the shaft.

11.5.8 IDENTIFICATION DAMAGE AND FAILURE ON BEARINGS

INSPECTION:

When a machine or other piece of equipment is down for repair, the objective of the maintenance personnel is to repair it and get it going as soon as possible. However, some knowledge of bearing failure and damage identification is required to determine:

1. Whether the bearing is suitable for further service.
2. If there is some underlying cause for failure so that corrective measures can be applied before installing a new bearing. Here are some inspection tips and techniques to be used before or during machine dismantling. Before removing or replacing a "noisy" bearing, try to determine if the bearing is the cause. To start with, a common complaint is that the bearing is "noisy". This is a natural reaction of machine users to unusual noise emanating from a machine. Generally, a noisy bearing produces a continuous whine. A pulsating noise is usually the result of a malfunction of some other part. It must be remembered too that all ball and roller bearings have some noise level. Bearings in good condition tend to produce a pleasant sound compared to a harsh sound from one that is not functioning properly. Another point to remember is that a noisy machine is not always a sign of imminent bearing failure, but may indicate the need for lubrication.

On dismantling a machine, it is often possible to make pertinent examination of the bearing without removing it from the shaft or housing

This is especially true with separable roller bearings, including single row tapered bearings. In such cases, major damage or failure can readily be noted. Ball bearings, being non separable, present considerably more difficulty, especially those with seats or shields.

In all cases, if failure or damage is not obvious, look for these signs :

1. A loose fit of the rotating ring. This is probably a signal that the ring has rotated and that wear has taken place. Where the ring is not loose by normal feel but there are rust-like loose particles around the fit area, check carefully for wear.
2. Indents, flaking or heavy rust on the operating surfaces. In many cases, these conditions result from metal particles thrown off by failure of an adjacent gear, or the like.
3. Undue looseness in a radial bearing. In most cases, radial shake, which can be felt by hand, is an indication that undue wear has taken place. Another sign of wear is a gritty feel of the lubricant adjacent to the bearing. In connection with the noise problem discussed earlier, keep in mind that excessive bearing wear can be a cause of noise by allowing the rotating member to move due to unbalance or other forces.
4. Missing balls or rollers. If one or more balls or rollers fall out of a separator, sufficient wear to the separator may have occurred to indicate the need for bearing replacement.
5. Rough rotation or "sticking" of the bearing when rotated by hand. This test requires considerable judgment and experience. In the case of "open" bearings, the bearing should be cleaned and lightly oiled before testing. A good practice is to clean it again using a strong solvent like varnish remover, then oil and retest. If the roughness or sticking persists, discard the bearing. Ball bearings with closures cannot, of course, be washed and oiled. These can be given the hand rotation test, repeatedly rotating and oscillating while applying a little axial pressure in one direction and then the other.

We do not recommend rotating bearings by power to check the noise characteristics. Besides the obvious danger of damage, this test requires great experience to determine if the bearing is faulty. As pointed out before, all bearings have some sound level,

If a part adjacent to the bearing has failed, it is good practice to replace the bearing even though it is not obviously damaged. It is also good practice to replace a bearing which has seen considerable service. The good judgment of the maintenance person is required here to determine a balance between the cost and difficulty of replacement vs. the possibility of a subsequent breakdown.

11.5.9 TYPES OF BEARING DAMAGE

Here are photographs and a description of the more common types of bearing damage. Many of these type of damage, especially in ball bearings, cannot readily be seen without dismantling the bearing. Hence, this identification is of benefit in cases of chronic failure, where a specific cause is sought. These types of failure are grouped as those caused by:

- Installation
- Operating conditions
- Normal fatigue

11.5.10 INSTALLATION DAMAGE

BALL RING BRINELL: This type of brinelling on the shoulders is caused by excessive thrust which pushes the balls up on the pathway and creates a triangular shaped dent or "Brinell" spot at the junction of pathway and shoulder.

11.6 SMARTPAC MAINTENANCE AND CARE

1. Store in clean dry area.
2. Lubricate bearings before storing.
3. Keep quick disconnects clean and capped.
4. For extended storage, spray rust preventive in tube hole & seals.
5. Handle units with care; do not hit or pry the weights.
6. Mount to good mold side bars and make sure bearing housings are seated directly to bar and vibrator bolts are properly torqued. DO NOT force by hitting the bearing housing with a hammer.
7. Lift unit by the shaft, not by bearing housing as this can damage the seals.
8. Clean quick disconnects before engaging.
9. Replace "O" ring in quick disconnects at least every month or when they become worn or damaged.
10. Never operate system pressure above 80 psi (5.5 bar).
11. Use only new clean fluid when filling the system. Contamination will cause erratic operation.
- 12- Do not disassemble unit.
13. To prevent crimping of seals, Besser recommends the sheaves be tightened to 8 lbs ft. (12 N.M.) of torque. Tightening over 18 lbs ft.(27 N.M.) will cause rotary union to bind, reducing its life.
14. Never put undue pressure on rotary union fittings or connection hose.
15. Lubricate vibrator bearing every 8 hours with 1 oz [30 ml]. of clean high temperature synthetic grease #114135.
16. Always have guards in place when operating vibrator motors.
17. Keep system in top condition by replacing any worn belts, sheaves, etc...

11.7 VIBRATOR SHAFT BEARING REPLACEMENT

Mold shaft bearings are under great stress and wear during the operation of the Vibrapac. They must be changed according to preventative maintenance schedule.

Note: Use only brass hammer on bearing housing. Do not bang on the bearing housing.

To install bearings on a mold shaft, follow this procedure (see figure 11.11):

- 11.7.1 Remove shaft assembly from mold. Disassemble vibrator housings and remove sheave. Clean and inspect parts. Discard any worn or damaged parts.
- 11.7.2 Hold bare shaft in vice (use soft metal on vice jaws)
- 11.7.3 Press new vibrator bearings into housing.
- 11.7.4 Press new seals in closures if replacing.
- 11.7.5 Lubricate shaft seals and slide onto shaft.
- 11.7.6 Bolt bearing housings (#5) in place on jig plate at center distance (B) as shown.
- 11.7.9 Assemble shaft closures (#7), adapters (#8), and pins (#6) to housings (#5).
- 11.7.10 Maintain 5 5/16" dimension and tighten adapter nut so that a .002" feeler placed between bearing roller and outer race **on nut side of bearing only** will pass with slight drag.
- 11.7.11 Tighten second adapter nut in same manner as step 11.7.10.

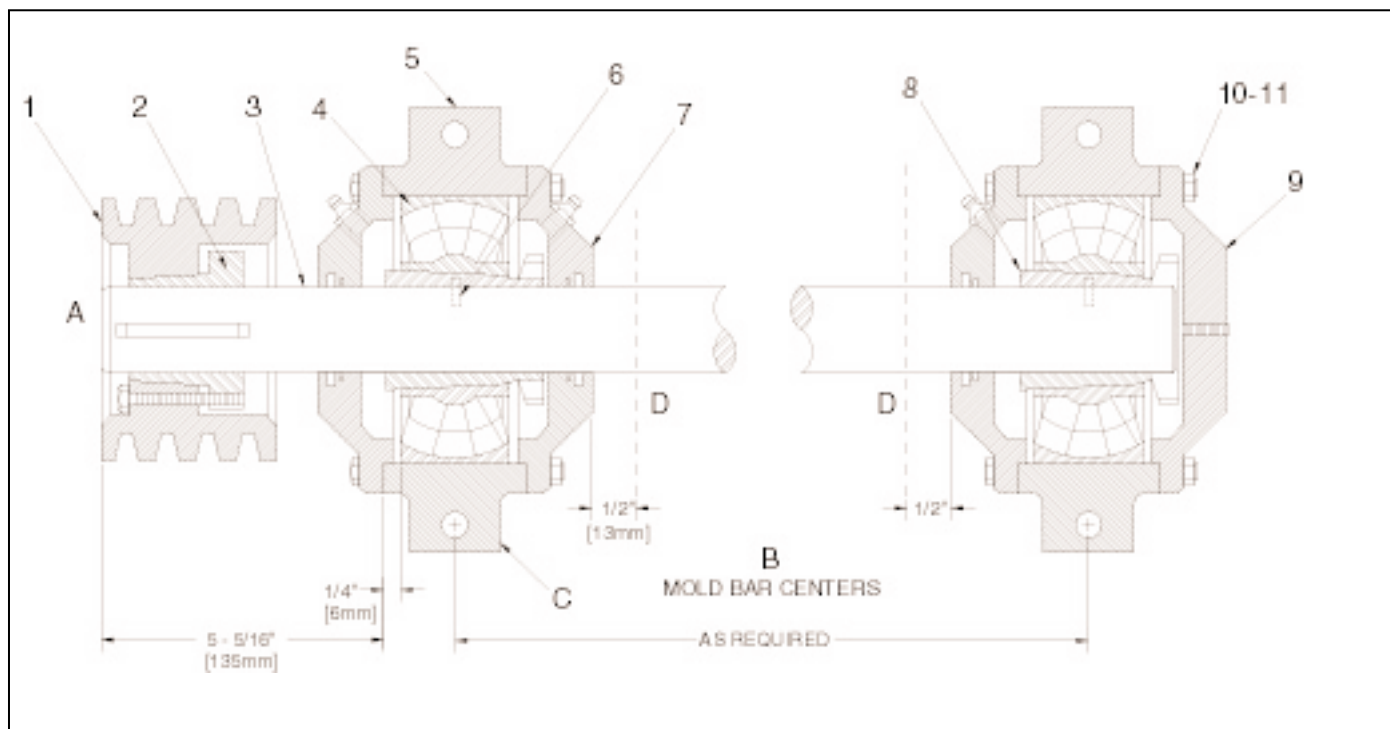


Figure 11.11 VIBRATOR SHAFT BEARING REPLACEMENT.

- 11.7.12 Bolt one closure to each housing (the side toward sheave end of shaft) and pump lubricant (refer to Besser lubrication chart) into each housing until grease starts to come thru each bearing all the way around bearing.
- 11.7.13 Bolt all closures in place.
- 11.7.14 Mount sheave (#1) flush with end of shaft at (A).
- 11.7.15 Observe break-in of shaft for first 30 minutes of operation.

11.8 VIBRATOR SHAFT BEARING MAINTENANCE

To ensure their longevity, their efficiency and to prevent breakdowns, every mold shaft bearing must be greased with **2 ounces [56g]** of grease by every 8-hour work shift.

11.9 SLC CONTROLLER MAINTENANCE

11.9.1 PREVENTIVE MAINTENANCE

The printed circuit boards of the controller must be protected from dirt, oil, moisture and other airborne contaminants. In order to protect these boards, the controller must be installed in an enclosure suited to the environment. The interior of the enclosure should be kept clean and the enclosure door should be kept closed whenever possible.

Regularly inspect your terminal connections for tightness. Loose connections may cause improper functioning of the controller or damage the components of the system.



CAUTION: To ensure personal safety and to guard against damaging equipment, inspect connections with incoming power OFF.

The National Fire Protection Association (NFPA) gives recommendations for electrical equipment maintenance. Refer to article 70B of the NFPA for general requirements regarding safety related work practices.

11.9.2 TROUBLESHOOTING

When troubleshooting, pay careful attention to these general warnings:



CAUTION: Have all personnel remain clear of the controller and equipment when power is applied. The problem may be intermittent and sudden.

Unexpected machine motion could result in injury. Have someone ready to operate an Emergency Stop switch in case it becomes necessary to shut off power to the controller equipment. Also, see NFPA 70E Part II for additional guidelines for safety related work practices.

Never reach into a machine to actuate a switch since unexpected machine motion can occur and cause injury. Use a wooden stick. A metal rod could damage the machine and/or conduct current to the person holding it.

Remove all electrical power at the main power disconnect switches before checking electrical connections or inputs/outputs causing machine motion.

The SLC controller will give you reliable service. If a problem should occur, the first step in the troubleshooting procedure is to identify the problem and its source. Do this by observing your machine or process and by monitoring the diagnostic LED indicators on the CPU, Power Supply and I/O modules. By doing this, the source of a problem can generally be narrowed down to the processor, wiring, or the input/output devices.

To assist you in identifying the source of the controller's operation problem, we have included some troubleshooting considerations including status indication, trouble description, probable causes and recommended action.

11.9.3 DIAGNOSTIC CHECKS

A. Battery

The SLC Controller has power supplied by a lithium battery. The battery is located in the power supply inside the control panel. Replace the battery if the low battery signal activates. See figure 11.12 (page 11-25).

B. Fuses

A burned-out fuse may cause the power supply indicator light to illuminate in controller. Check the two fuses, located behind the lithium battery. The battery is located in the SLC-500 control panel. Replace burned-out fuses with new fuses. See figure 11.12 (page 11-25).

C. Circuit breakers

A tripped circuit breaker may result for no apparent reason. Check the circuit breakers, located in the SLC control panel, and reset any tripped circuit breakers. See figure 11.12 (page 11-25).

D. Memory loss

When the power to the panel goes off due to a power surge, drop or a dead battery, a memory loss may result. The CPU fault light will illuminate to indicate problem. To restore the memory, turn the panel power OFF. Insert EPROM into the inside of the processor. Restore the power. The SLC-500 will automatically read the EPROM into its RAM and go into RUN mode. The CPU light will illuminate to indicate a successful transfer. Turn the power OFF. Remove the EPROM from the unit.

11.9.4 USING THE TROUBLESHOOTING CONSIDERATIONS TABLE GUIDE

To receive the maximum benefit of this Table Guide, we recommend the following steps in using its information:

1. Identify your Power Supply and CPU LED status indicators.
2. Match your controller's status LED indicators with the status LED indicators located in the first column in the Troubleshooting Considerations Table.
3. Once the LED status indicators are matched to the appropriate table, simply move across the table identifying trouble Description and Probable Causes.
4. Then follow the Recommended Action steps for each probable cause until the cause is identified.
5. If Recommended Actions do not identify the cause of trouble, contact your local Allen-Bradley Sales Office.

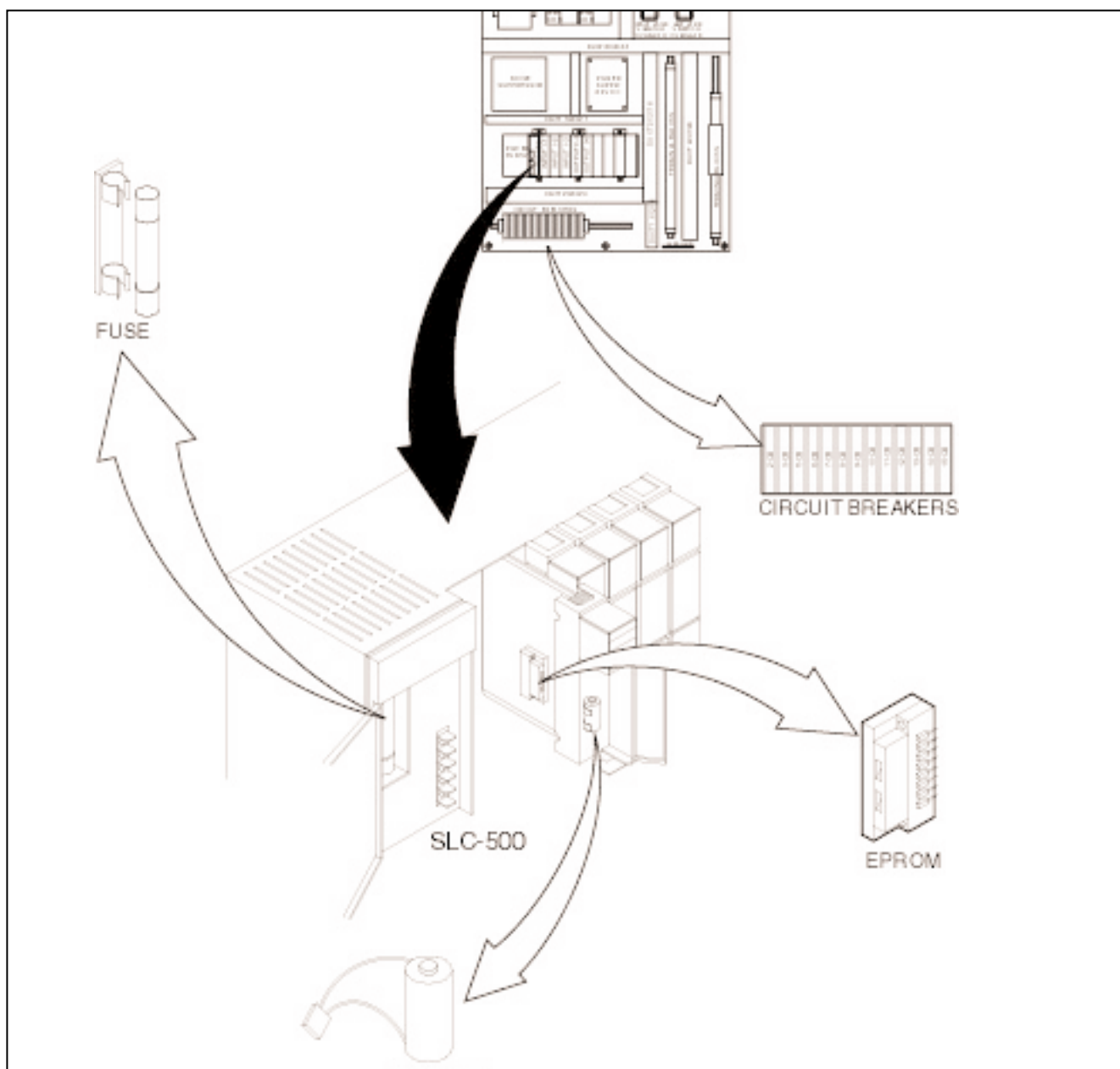





Figure 11.12 SLC CONTROLLER BATTERY, FUSES, EPROM AND CIRCUIT BREAKERS.

-  Indicates that LED is OFF
-  Indicates that LED is ILLUMINATED
-  Indicates that LED is FLASHING




Refer to the following log to determine the status of the LED indicators:











- ☐ Indicates that LED is OFF
☒ Indicates that LED is ILLUMINATED
☐ Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATION			
STATUS INDICATORS	DESCRIPTION	PROBABLE CAUSES	RECOMMENDED ACTION
<input checked="" type="checkbox"/> POWER ¹ <input type="checkbox"/> PC RUN <input type="checkbox"/> CPU FAULT <input type="checkbox"/> FORCED I/O <input type="checkbox"/> BATTERY LOW	Processor not in RUN mode	<p>User or user program logic selected mode</p> <p>Line power out of operating range</p> <p>Improper seating of power supply and/or CPU in the rack</p> <p>Defective CPU, power supply or rack</p>	<p>1. Verify selected processor mode.</p> <p>2. If in program/test modes attempt RUN mode entry.</p> <p>3. Check user program logic for suspend instructions if in suspend mode.</p> <p>Refer to either the Hand-Held terminal programming manual - Publication 1747 - 809 or the Advanced programming software manual - Publication 1747-801.</p> <p>1. Check proper 115/230 Volt power supply jumper placement.</p> <p>Refer to page 8-5 of the SLC manual for placing the jumper.</p> <p>2. Monitor for proper line voltage at power supply connections.</p> <p>1. Remove power and inspect the power supply rack connections and the CPU rack connections.</p> <p>2. Re-install the devices and re-apply power.</p> <p>IMPORTANT - The CPU will only operate in SLOT 0 rack #1.</p> <p>Refer to page 8-5 of the SLC manual for power supply installation and page 8-6 of the SLC manual for CPU installation.</p> <p>1. Attempt RUN mode selection using a programming device in existing rack.</p> <p>2. Place CPU in another rack not in the existing system. Apply power, reconfigure and attempt RUN mode selection. If unsuccessful, replace CPU.</p> <p>3. Try existing power supply in test rack. If unsuccessful, replace power supply. If RUN mode is allowed, replace the existing rack.</p>

¹ On modular SLC configuration systems, you will find the POWER LED indicator on the rack mounted power supply of each rack.




Refer to the following log to determine the status of the LED indicators:






-  Indicates that LED is OFF
-  Indicates that LED is ILLUMINATED
-  Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATION			
STATUS INDICATORS	DESCRIPTION	PROBABLE CAUSES	RECOMMENDED ACTION
 POWER ¹  PC RUN  CPU FAULT  FORCED I/O  BATTERY LOW	System inoperable no major CPU fault detected	User program logic error Defective I/O Devices or I/O wiring	1. Monitor logic in RUN mode and verify desired I/O status. 2. Check for minor CPU faults. Refer to Hand-Held programming manual - publication #1747-809 or Advanced programming software manual - publication #1747-801. 1. Test inputs and outputs according to start-up procedures covered in chapter 9 of the SLC manual.
 POWER ¹  PC RUN  CPU FAULT  FORCED I/O  BATTERY LOW	CPU fault	CPU memory error Fault memory module Faulty CPU/power supply	1. Cycle power. 1. Remove power and then remove the memory module from the CPU. 2. Re-install the CPU and cycle power. Note: If steady CPU FAULT LED changes to flashing, replace the existing memory module with a replacement module. Refer to chapter 3 of the SLC manual for removing and installing memory modules. 1. Place the CPU in another rack not in the existing system and cycle power. Note: If steady CPU FAULT LED reappears, replace the CPU. 2. If CPU FAULT LED clears, monitor line power to power supply in existing system. 3. Replace existing system power supply if line power checks OK. Refer to page 8-5 of the SLC manual for power supply installation.

¹ On modular SLC configuration systems, you will find the POWER LED indicator on the rack mounted power supply of each rack.




Refer to the following log to determine the status of the LED indicators:
















-  Indicates that LED is OFF
 Indicates that LED is ILLUMINATED
 Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATION			
STATUS INDICATORS	DESCRIPTION	PROBABLE CAUSES	RECOMMENDED ACTION
 POWER ¹  PC RUN  CPU FAULT  FORCED I/O  BATTERY LOW	CPU major error	<p>Initial CPU factory power-up condition.</p> <p>Hardware/software major fault detected.</p> <p>Note: erratic repetitive power cycling can cause a CPU major hardware fault.</p>	<p>1. Refer to chapter 9 of the SLC manual and follow the start-up procedures.</p> <p>1. Monitor status file word S2:6 for major error code.</p> <p>2. Refer to either the Hand-Held terminal programming manual - Publication 1747 - 809 or the Advanced programming software manual - Publication 1747-801 for major / minor fault identification.</p> <p>3. Remove hardware / software condition causing fault.</p> <p>4. Clear status file S2:1/13 major error halted bit.</p> <p>5. Clear status file S2:5 minor error bits, if set.</p> <p>6. Clear status file S2:6 major error code (optional)</p> <p>7. Attempt a CPU RUN mode entry.</p> <p>If unsuccessful, repeat recommended action steps above.</p>

¹ On modular SLC configuration systems, you will find the POWER LED indicator on the rack mounted power supply of each rack.

Refer to the following log to determine the status of the LED indicators:

-  Indicates that LED is OFF
-  Indicates that LED is ILLUMINATED
-  Indicates that LED is FLASHING

TROUBLESHOOTING CONSIDERATION			
STATUS INDICATORS	DESCRIPTION	PROBABLE CAUSES	RECOMMENDED ACTION
 POWER ¹  PC RUN  CPU FAULT  FORCED I/O  BATTERY LOW	System does not operate per ladder logic.	User forced I/O disabling operation	1. Monitor program file on-line and identify forced I/O. 2. Disable appropriate forces and test system conditions again. Refer to either the Hand-Held terminal programming manual - Publication 1747 - 809 or the Advanced programming software manual - Publication 1747-801.
 POWER ¹  PC RUN  CPU FAULT  FORCED I/O  BATTERY LOW	System does not operate per programmed forces.	Forces user programmed are not enabled.	1. Monitor program file on-line and identify programmed forces. 2. Enable appropriate forces and test system conditions again. Once forces are enabled FORCED I/O LED should be steady. Refer to either the Hand-Held terminal programming manual - Publication 1747 - 809 or the Advanced programming software manual - Publication 1747-801.
 POWER ¹  PC RUN  CPU FAULT  FORCED I/O  BATTERY LOW	CPU major error with low or NO battery back-up	Loss of RAM memory during power down period	1. Replace the battery. 2. Refer to CPU major error recommended action steps. Refer to either the Hand-Held terminal programming manual - Publication 1747 - 809 or the Advanced programming software manual - Publication 1747-801.

¹ On modular SLC configuration systems, you will find the POWER LED indicator on the rack mounted power supply of each rack.

² Regardless of any other LED status indicator conditions, always replace the battery when the BATTERY LOW LED indicator is illuminated if RAM battery back-up is desired.

SECTION 12

VIBRATION SYSTEM

This section will show you Smartpac vibration system. With this option, an electric motor (see figure 12.1) are turning all the time and a cam activated by air change position to start and stop vibration.

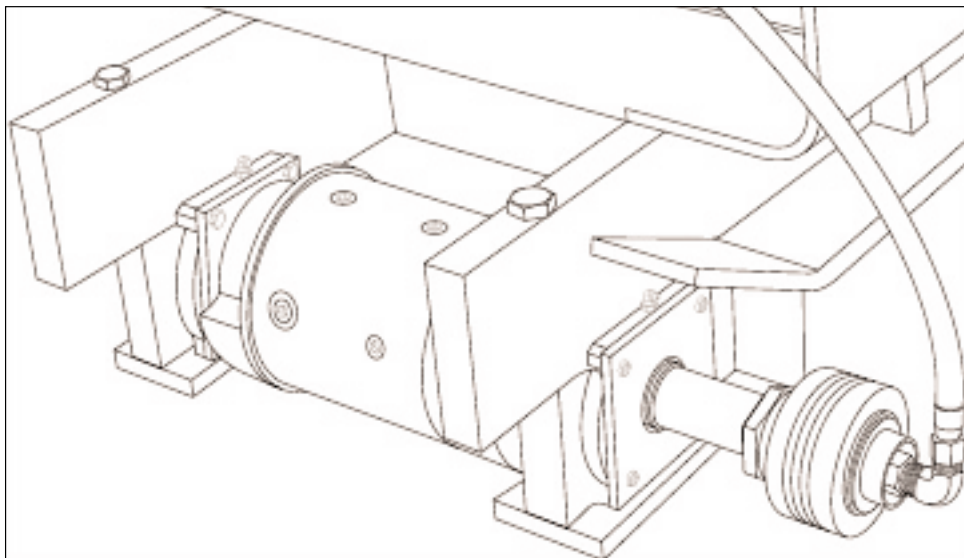


Figure 12.1 SMARTPAC

THEORY OF OPERATION

Concrete and mold combinations each have unique vibratory characteristics. Each has an optimum amplitude and frequency for filling and consolidating. Concrete units can be made to the highest quality in the shortest time by matching the optimum frequency and amplitude for feed and for finish.

12.1 AMPLITUDE

Limits have been preset for both low and high speed of the motors to prevent operation outside optimum parameters. Amplitude is adjustable from 0 to 100% of 9000,- 13,000 or 15,000 lb. depending on the model of concrete products machine and which shaft assemblies are used. Amplitude should not be set below 30% as vibration will not synchronize and will be erratic.

12.2 SYSTEM INSTALLATION

- 12.2.1 Installation of the system can be made on machines with mold locks or pin guidance.
- 12.2.2 Make mechanical and electrical changes according to drawing supplied by BESSER and check that all parts are aligned properly.
- 12.2.3 Attach correct length shafts to the mold you want to run.
- 12.2.4 Make sure the right hand shaft is on right side and the left one is on left side.

- 12.2.5 Disconnect lower hoses from "V" fitting on dump valve assemblies and fill with ATF fluid.
 - 12.2.6 Make sure all air is removed from the hoses.
 - 12.2.7 Fill control unit tank with ATF fluid. Keep tank 3/4 full during setup and operation.
 - 12.2.8 Connect 80 PSI – 5 SCFM air supply to control unit.
 - 12.2.9 Set air pressure for rod end of cylinder to 60 PSI and Cap End of cylinder to 30 PSI (see figure 12.2).
 - 12.2.10 Operate air valve to extend rod of air cylinder. Install mold with SmartPac vibrator shafts and attach hoses to dump valve assemblies.
 - 12.2.11 Retract air cylinder, wait 2 seconds, then extend rod, repeat process until both vibrators shift 90 degrees
- Note:** when rod is retracted. If vibrators don't shift fully, refill bottom hoses on dump valves.
- 12.2.12 When rod is extended, both weights return to balanced position.

Note: DO NOT run system if vibrators or control unit are not functioning properly.

12.3 VIBRATOR FREQUENCY

To set frequency of vibrator:

- 12.3.1 stop machine with feed drawer over the mold.
 - 12.3.2. Start vibrator motors with vibration off.
- Note:** Check that the top belts are both going towards the center of the machine.
- 12.3.3 Bring up the SmartPac screen on the monitor and set the speed of shafts to 2900 RPM. Note: Check the speed with a strobe light or photo tachometer.

- 12.3.4 Adjust one motor so it runs exactly the same speed as the other. Registers N10:30 and N10:31 may be used to adjust motor speeds.

Note: On non AFC units, adjust frequency drive to match shaft speeds.

12.4 AMPLITUDE ADJUSTMENTS

Amplitude adjustments are made with vibrator motors stopped and large cylinder rod fully extended. Adjust the transducer to read zero by monitoring register #N10:21 (see section 9.9.6).

12.5 TRANSDUCER ADJUSTMENT

To adjust transducer (see figure 12.2):

- 12.5.1 Loosen mounting (A) then move transducer (B) to get zero in register. Retighten screw.
- 12.5.2 Retract rod on air cylinder (C) by manually activating valve. The reading should go to between 900 and 1000 and both weights should be shifted 90 degrees.
- 12.5.3 Extend rod and recheck zero.
- 12.5.4 Enter 0 into register #N10:26.
- 12.5.5 Set amplitude on the SmartPac screen to 500 and with vibrator motors off, turn vibrator switch to "hand".
- 12.5.6 Check register #N10:21 reading and subtract 500, enter this into register #N 10:26 on SLC500. This is your Offset to compensate for delays in the system. This will have to be updated from time to time.
- 12.5.7 Operate vibration "hand" and check register N10:21 reading, it should be close to 500. The weights should be shifting about half way.

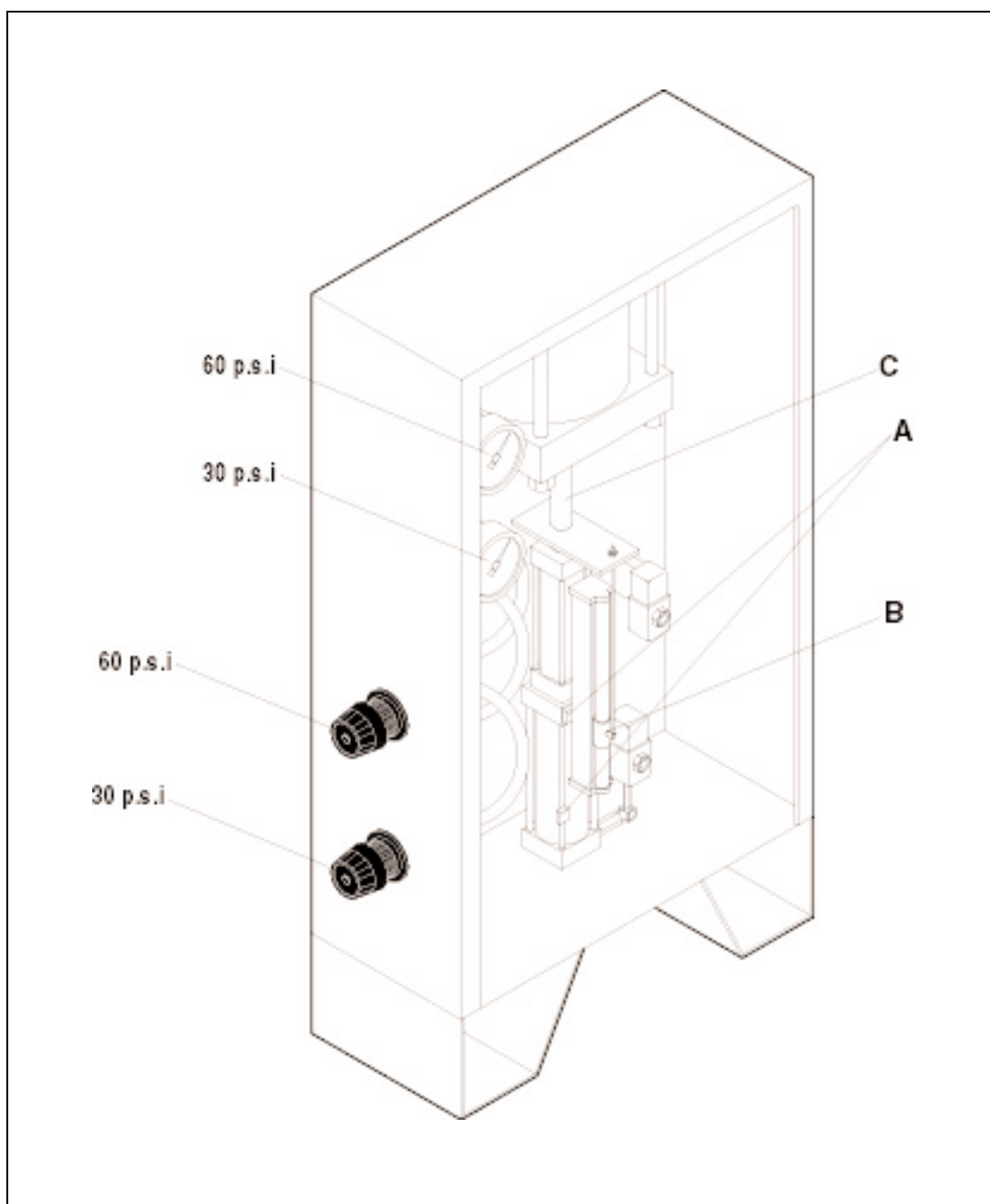


Figure 12.2 SMARTPAC PANEL

12.6 FREQUENCY DRIVE OPTION

12.6.1 DISPLAY PANEL KEY DESCRIPTIONS



Escape

When pressed, the ESCape key will cause the programming system to go back one level in the menu tree.



Select

Pressing the SElect key alternately causes the top or bottom line of the display to become active. The flashing first character indicates which line is active.



Increment/Decrement

These keys are used to increment and decrement a value or scroll through different groups or parameters.

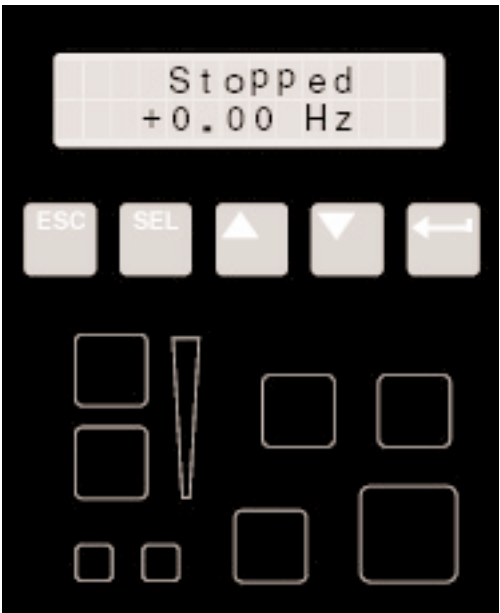


Figure 12.3 DISPLAY PANEL.



Enter

When pressed, a group or parameter will be selected or a parameter value will be entered into memory. After a parameter has been entered into memory, the top line of the display will automatically become active, allowing another parameter (or group) to be chosen.

12.6.2 OPERATION

EX: To change a preset input mode value on the main drive or Smartpac, follow the steps below:

1. The status display must read "Stopped + 0.00 Hz" (see figure 17.1).

2. Press the  key.

Status display reads "Choose Mode".

3. Press the  or  key.

Keep pressing until you reach "Program".

4. Press the  key.

5. Press the  or  key.



Keep pressing until you reach "Setup".


6. Press the  key.


7. Press the  or  key.

Keep pressing until you reach "Input Mode 2".

8. Press the  key.

You can now change the numerical value with the help of the   keys. Select the desired value.

9. Press 

The change is recorded. To come back to step 1 (initial position), press 

until "Stopped + 0.00 Hz" appears on display.

Note: Other parameters that can be changed in the Setup menu includes “Freq Select”, “Accel Time”, “Decel Time” and “Minimum Freq”. When in “Setup” mode, press increment/decrement keys to choose another one of these parameters.

Also, if you choose “Frequency Set” instead of “Setup” in step 5, you can establish preset frequencies: “Preset Freq 1” and “Preset Freq 2”. Follow the same steps to change preset frequencies.

12.6.3 LIST OF FREQUENCY PRESET VALUES FOR SMARTPAC

SET-UP

Input mode:	2
Freq. Select:	4-20 mA
Accel time 1:	3
Decel time 1:	4
Minimum Freq.:	50
Maximum Freq:	69
Stop Select 1:	COAST
Motor NP RPM:	(set to motor name plate data)
Motor NP Hertz:	(set to motor name plate data)
Motor NP Volts:	(set to motor name plate data)
Motor NP Amps:	(set to motor name plate data)

MOTOR CONTROL

Base Voltage:	(set to motor name plate data)
Base Frequency:	(set to motor name plate data)
Maximum Voltage:	(set to motor name plate data)

12.7 STANDARD VIBRATION SYSTEM

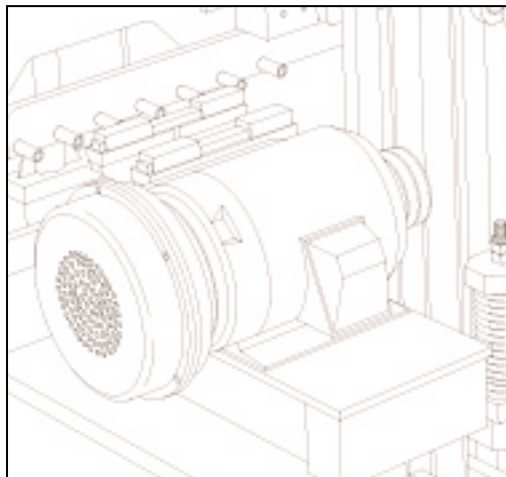


Figure 12.4 STANDARD VIBRATOR MOTOR BRAKE.

OPERATION

The standard vibrator motor brakes are electronically controlled by the computer. They vibrate the mold from the moment the feedbox is on its way forward until the strip delay timer starts. At this point, the computer powers the brake to stop vibrator motor.

GENERAL ADVICES ON STANDARD VIBRATION

- A. Vibration weights must be centered on shafts, with bolts on the outside.
- B. Always use same weights on both shafts.



WARNING: Make adjustments on vibrator motor brakes only with all power shut off. Disconnect motor and lock it out to avoid injuries.

12.7.1 WARNER BRAKE GAP ADJUSTMENT

If your Vibrapac is equipped with *Warner* vibrator motor brakes, you must ensure that there is a **1/16" [1.59mm]** gap between armature and magnet inside motor. To get a 1/16" gap, follow these instructions :

- A. Loosen bushing.
- B. Relocate bushing to get a **1/16" [1.59mm]** gap between armature and magnet
- C. This adjustment should be made at least once a month. When you cannot adjust gap anymore, that means magnet and armature have to be changed.

Note: For more information regarding your *Warner* vibrator motor, refer to your *Warner* vibrator motor brake owner's manual.

12.7.2 BESCOSTOP MOTOR/BRAKE CHECKS

If your Vibrapac is equipped with *Bescostop* vibrator motor brakes, make these operational checks if a brake does not seem to work properly (see figure 12.5):

- A. Make sure power is all shut off. Disconnect motor.
- B. Remove air breather (A) and reducer bushing from end housing (C). **Do not remove while motor is operating.**
- C. Apply 60 to 80 P.S.I. air pressure to the brake and observe the action of the piston through the air breather port. If the piston action is irregular, or if it tends to stick or bind, internal damage may be indicated.

Listen and look for air bubbles in the oil which would indicate piston leakage.

If the piston moves slowly and leaks are evident, the piston seals may be damaged.

- D. Exhaust the air pressure and observe that the piston returns quickly and smoothly back to the normal braking position.
- E. Re-install the reducer bushing and the breather (A) into the end housing (C).

Note: For more information regarding your *Bescostop* vibrator motor, refer to your owner's manual.



WARNING: Make adjustments on vibrator motor brakes only with all power shut off. Disconnect motor and lock it out to avoid injuries.

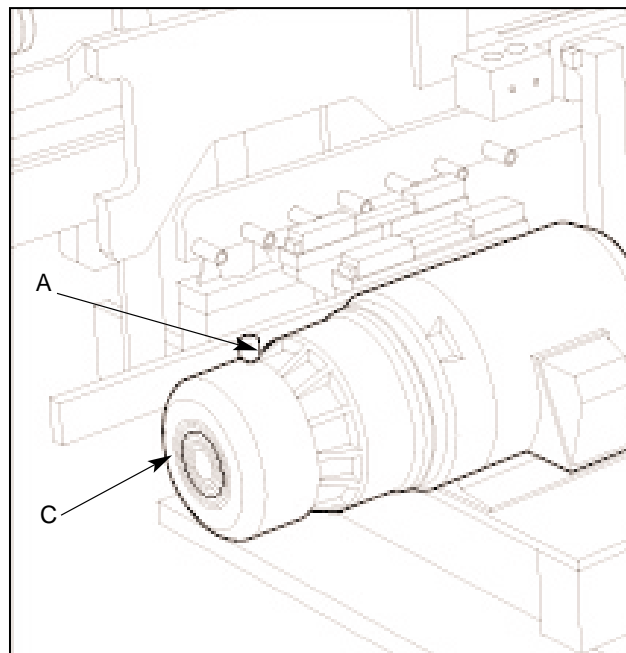


Figure 12.5 BESCOSTOP VIBRATOR MOTOR/BRAKE.

12.8 BESCOSTOP TROUBLESHOOTING TABLE

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Brake fails to engage properly	Piston sticking or binding. Weak or broken spring. Air pressure not exhausting or slow in exhausting.	Dissassemble to the extent necessary and inspect for damaged parts. Replace as needed. Check air regulator valve and replace if necessary.
B. Brake engages too quickly.	Low oil level.	Check oil level and correct.
C. Noise and vibration.	Improper or loose mounting on motor.	Check mounting and correct. If partial disassembly is required, refer to your owner's manual.
D. Brake fails to disengage properly.	Low air pressure. Piston sticking or binding. Air regulator valve not functioning properly.	Increase pressure (See Table 2. 1). Disassemble to the extent necessary and inspect for damaged parts. Check valve operation and replace if necessary.
E. Unit overheats. (Temperature over 225 OF).	Brake not engaging or disengaging properly causing excessive slippage. Improper oil level. Fan loose on shaft.	Refer to troubles A and D. Check level and add or drain as necessary. Tighten fan holding screw.
F. Oil leakage.	Lip seal damaged. O-ring seals.	Check for oil leaking around the shaft. Replace if necessary. Tighten all external bolts.
G. Oil leakage at breather.	Damaged seal around piston. Oil level too high.	Disassemble and replace. Drain excess oil.
H. Brake does not repeat.	Air pressure changed. Oil temperature changed.	Check and adjust air pressure. Check temperature.

APPENDIX A

COUNTERS, INTEGER WORDS AND TIMERS

THE FOLLOWING IS A DESCRIPTION AND A PRESET VALUE FOR ALL SLC'S COUNTERS, INTEGER WORDS AND TIMERS. THEY CAN BE USED TO SOLVE AN ELECTRICAL PROBLEM ON THE VIBRAPAC.

COUNTER	PRESET VALUE	ACTUAL VALUE (CUSTOMER)	DESCRIPTION
0	100		Amount of machine cycle before a "lube cycle" fault will occur. This counter is reset by LS-II changing state.
1	1000		Cycle count -Hundreds -Non resettable
2	1000		Cycle count -Thousands -Non resettable
3	1000		Cycle count -Millions -Non resettable
4	1000		Cycle count -Hundreds -Resettable
5	1000		Cycle count -Thousands -Resettable
6			
7	9999		Hopper yield cycle count.
8	9999		Cycle count -Hundreds -Production quantity
9	1000		Cycle count -Thousands -Production quantity
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

INTEGER WORD	PRESET VALUE	ACTUAL VALUE (CUSTOMER)	DESCRIPTION
N7:21	120		Low limit position for the "rotary sensor out of synchronization" Fault circuit.
N7:22	240		High limit position for the "rotary sensor out of synchronization" Fault circuit Note: The rotary sensor out of synchronization check is done when the height pins meet. (180 degrees).
N7:30	5		Release the block moving bars 5 degrees before the motor starts.
N7:35	1		Amount of time added or subtracted from the feed timer preset T4:0 when "auto feed time adjust" is enabled on the "hand & machine set-up" screen. (time base = 0.01) Example: 1 = 0.01 second increment
N7:62	50		Minimum time for the "auto feedtime adjust" circuit (50 = 0.50 seconds).
N7:63	500		Maximum time for the "auto feed time adjustment" (circuit 500 = 5.00 seconds).
N7:70	10		Feed time increment amount while using the arrow keys on the display unit - 10 = 0.10 seconds.
N7:75	240		Fault shutdown position low limit.
N7:76	250		Fault shutdown position high limit. The machine will fault out between these two rotary sensor positions for faults as described in sections 10.
N7:77	10		Time the vibration will stop before the end of feedtime. Used during dual vibration mode only. (time base - 0.01) Example: 10 = 0.10 seconds
N7:82	285		Rotary sensor position where the block moving bars start and main drive stops while jogging the machine.
N10:21	0-1000		Actual smartpac amplitude position.
N10:26	100		Smartpac amplitude offset. This value is subtracted from the desired amplitude (400-1000).
N10:30	4096		Smartpac right shaft speed offset. Adjust this value to match the displayed speed to measured speed.
N10:31	4096		Smartpac left shaft speed offset. Adjust this value to match the displayed speed to measured speed.

Note: All timers are accessible, through the data table. Timers 0 to 23 are also accessible through the timerscreen F3.

TIMER	PRESET VALUE	TIME BASE	ACTUAL VALUE (SECONDS)	DESCRIPTION
24	30	0.01	0.30	
				Start-up alarm, on time
25	30	0.01	0.30	
				Start-up alarm, off time
26	9999	0.01	99.99	
				Finish time indicator for display use only.
27	30	1.0	30	
				Amount of time before an "LS-2A" fault indication.
28	60	0.01	0.60	
				Amount of time vibration will stop before end of feed time. (non-adjustable, see N7:77)
29	-		-	
				-
30	-		-	
				-
31	700	0.01	7.0	
				Start-up alarm total time delays start of main drive clutch.
32	9999	0.01	99.99	
				Machine cycle time.
33	100	0.01	1.0	
				Amount of time before a "mold head not locked" fault.
34	-	-	-	
				-
35	-	-	-	
				-
36	-	-	-	
				-
37	-	-	-	
				-
38	-	-	-	
				-
39	-	-	-	
				-
40	-	-	-	
				-
41	-	-	-	
				-
42	-	-	-	
43	-	-	-	
44	999	0.01	9.99	Delay before propping solenoid #1 of Smartpac



TIMER	PRESET VALUE	TIME BASE	ACTUAL VALUE (SECONDS)	DESCRIPTION
45	0	0.01	0	Amount of vibration after end of feed time (used during dual vibration mode only).
46	-	-	-	
47	-	-	-	-
48	-	-	-	-
49	-	-	-	-
50	-	-	-	-
				-
				-

APPENDIX B

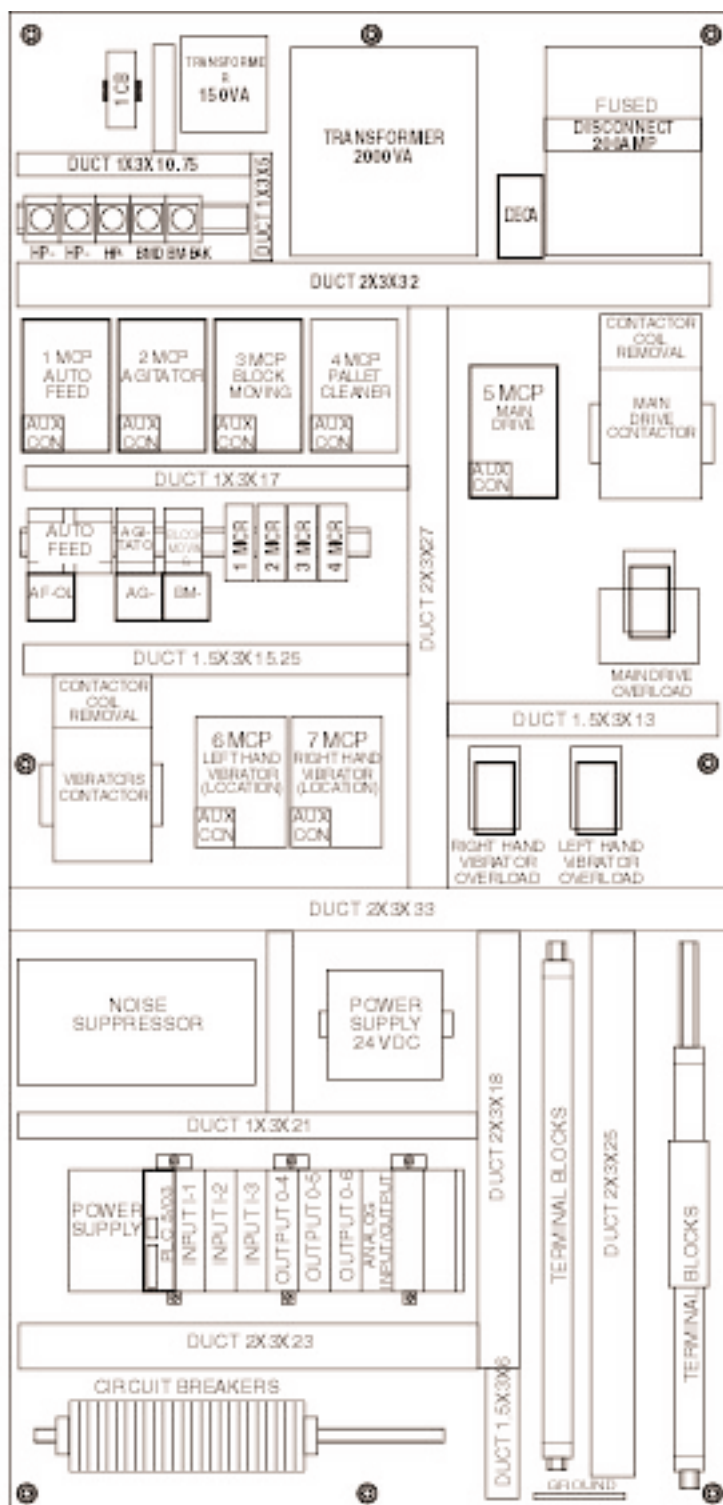
ELECTRICAL DIAGRAMS

Because of different voltages, models and customer's control preferences, we have not included the electrical wiring diagrams, list of materials and electrical information in this manual.

The electrical wiring diagrams of your machine and other electrical information are supplied with your equipment, depending of the type of controls and electrical system.

APPENDIX C

ELECTRICAL PANEL (REF.)



APPENDIX D

LIMIT SWITCH LOCATIONS

