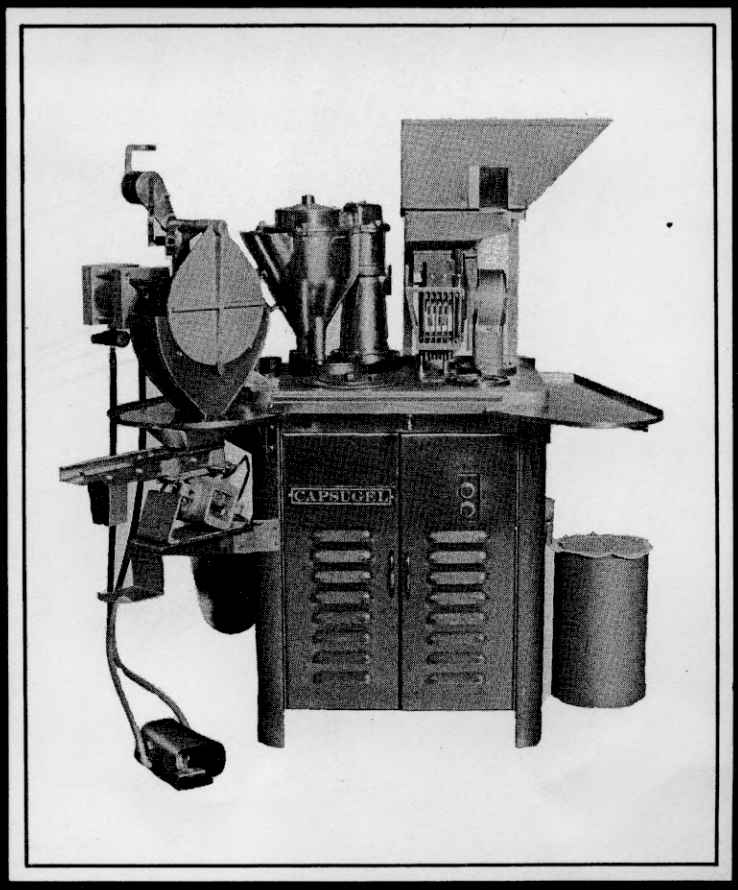
INSTALLATION, OPERATION AND MAINTENANCE MANUAL

TYPE 8



CAPSUGEL FILLING MACHINE

CAPSUGEL®
DIVISION OF WARNER-LAMBERT

Installation, Operation and Maintenance of the Type 8 Capsule Filling Machine

CAPSUGEL®

DIVISION OF WARNER-LAMBERT

Installation, Operation and Maintenance of the Type 8 Capsule Filling Machine

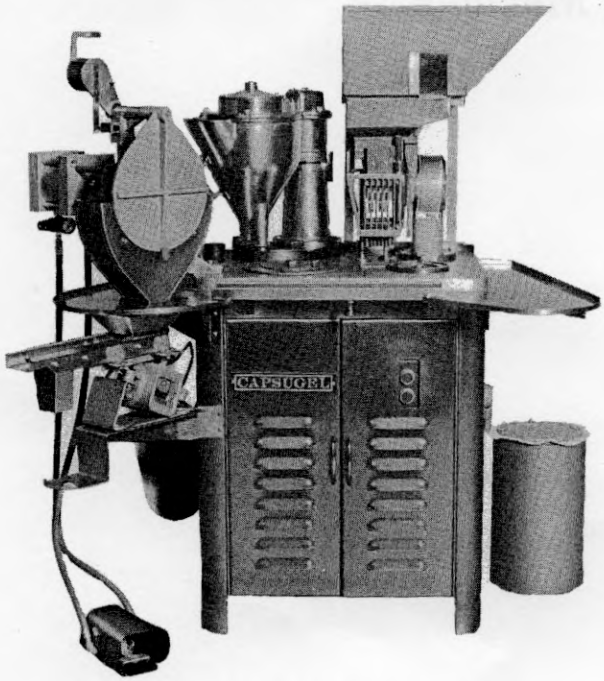
7/8" and 1" Models

(1" Model for size 000 capsules only)

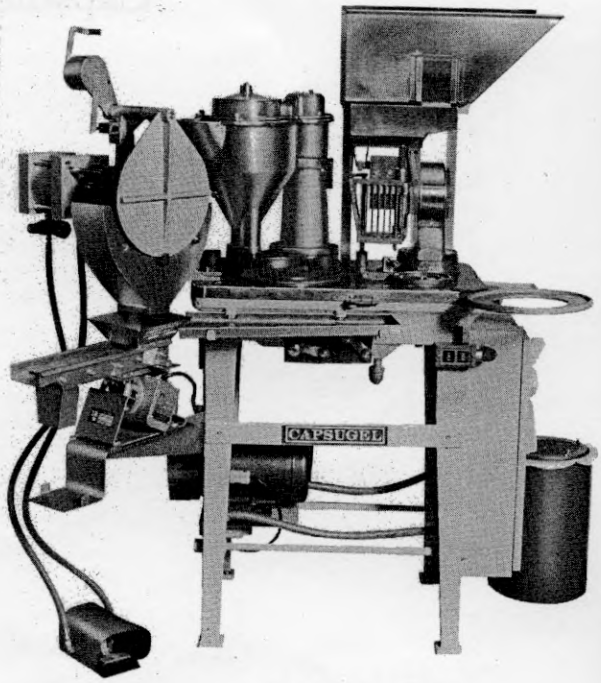
With this manual you can install, set up, operate and troubleshoot the Type 8 Capsule Filling Machine. Illustrated, detailed, step-by-step procedures are included throughout.

A VHS videotape entitled, "Installing & Operating the P-D Type 8 Capsule Filling Machine" is also available. This step-by-step, instructional video, in conjunction with this manual, will help you install the machine, change parts for different capsule sizes, fill, and troubleshoot. It is also useful for operator training. Contact your Capsugel Representative for information on how to obtain this video.

Capsugel also offers on-site assistance. Our Technical Service staff is available to help you set up and adjust your filling machine for the most efficient operation.



SHROUDED TYPE 8



SPECIAL TYPE 8

The only difference between the Standard and Special models is that the Standard Type 8 is painted while the Special is chrome plated from the top of the machine bed up. The Standard machine *can not* be used in the United States due to FDA regulations.

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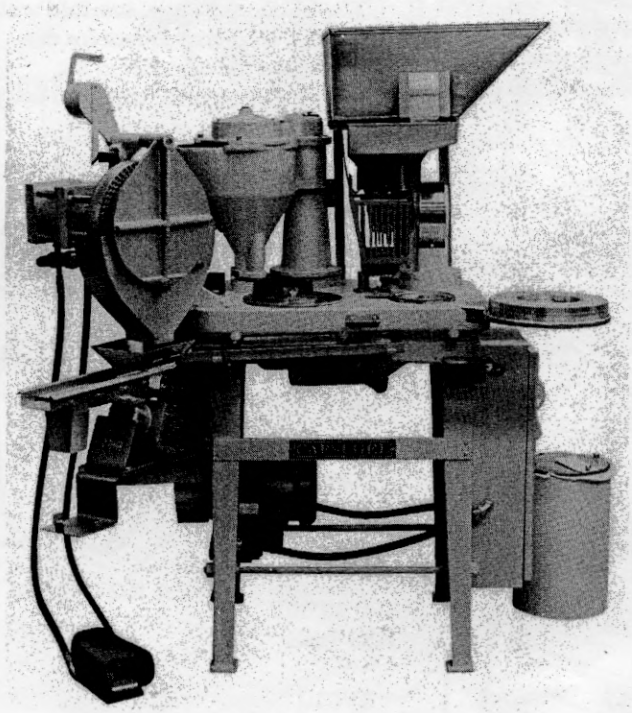


STANDARD TYPE 8

SECTION 1

This Operator's Manual will alert you to certain procedures or situations which require careful attention. This symbol:

next to information means that if you ignore those instructions, risk of serious injury is present. Follow instructions carefully.

This information symbol:

NOTE

appears next to information that, if ignored, could result in damage to the PD Type 8 Capsule Filling Machine or its accessories.

General Information

The Type 8 Capsule Filling Machine is a special purpose production machine, used to fill two-piece gelatin capsules, sizes 5 to 000 with beadlets, granules, flakes or powders to an accuracy of 4%. Tablets or caplets can also be filled into capsules with our ACF-8 attachment for the Type 8. See Accessory Section

Services Required for Operation of the Machine

A. Electrical: Standard 220 or 440 volts; 3 phase, 60 cycle. Electrical facilities often vary for different countries and these details should be provided with your order to ensure that motors of proper specification are supplied.

B. Compressed Air: An air compressor is not supplied as standard equipment with the machine. We supply a compressor as optional equipment or you can connect the Type 8 to your central air supply. Approximately 50 psi at 1.5 cfm is required.

C. Vacuum: An oil-less vacuum pump is supplied with the machine.

Description of Major Units

A. **The Machine Bed** provides the work surface and houses the gear train and drive for individual components.

B. **The Rectifier/Feeder** is a hopper-fed mechanism that feeds the empty capsules, cap up, into the capsule holding ring.

C. **The Powder Hopper** is an auger-driven powder feed mechanism that is automatically engaged when the hopper is manually positioned over the capsule holding ring.

D. **The Capsule Joiner** is a compressed air-operated device that joins the empty cap half of the capsule with the filled body half and ejects the filled capsules from the capsule holding ring.

E. **The Vacuum Pump**, standard with the machine, supplies vacuum for the machine to seat the capsules in the holding ring and separate cap from body.

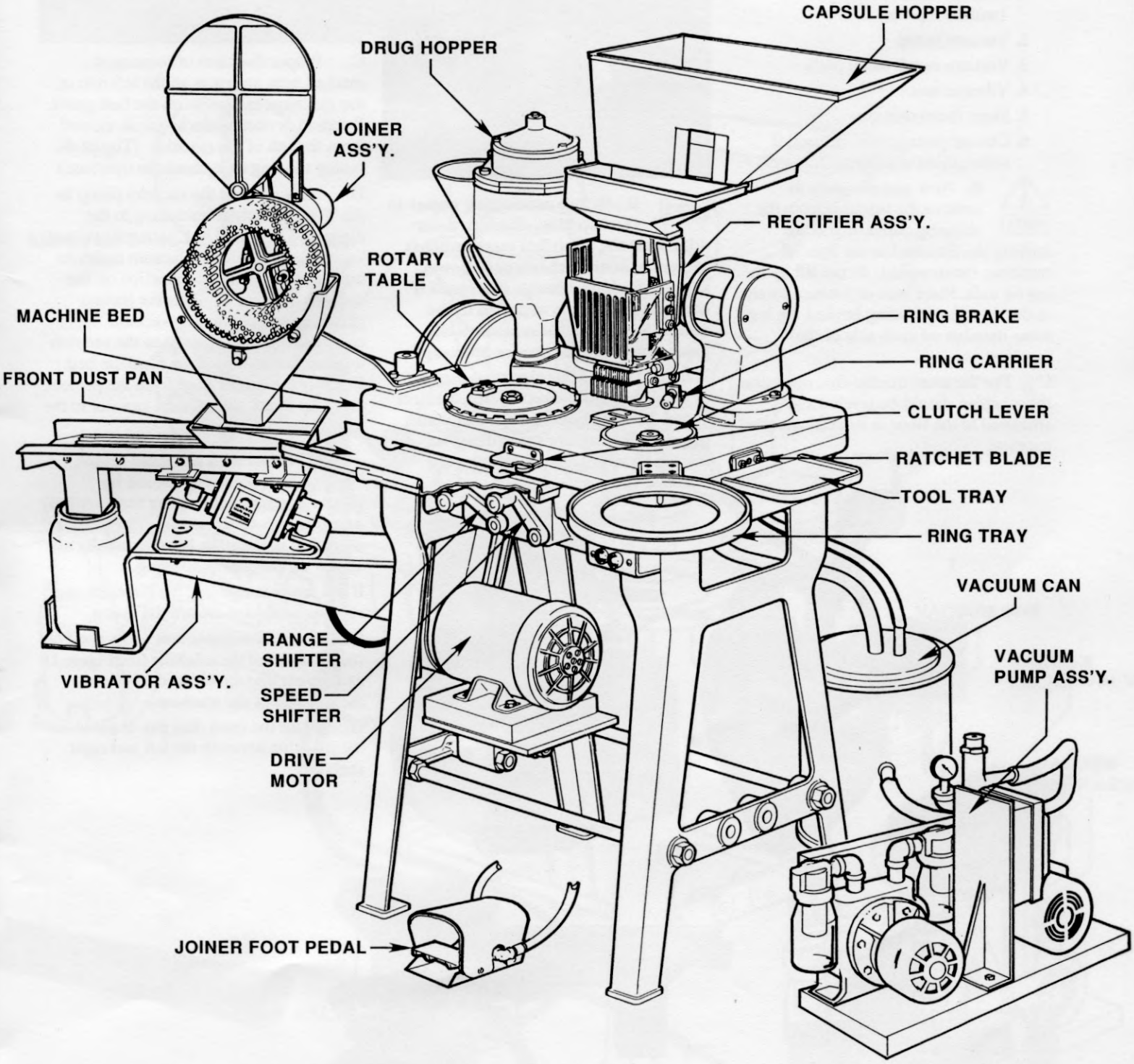


FIG. 1 - TYPE 8 CAPSULE FILLING MACHINE

SECTION 2

Installation

Uncrating

A. The first step in setting up your Type 8 is to remove the crating carefully and identify the following items which have been removed from the machine to facilitate shipment:

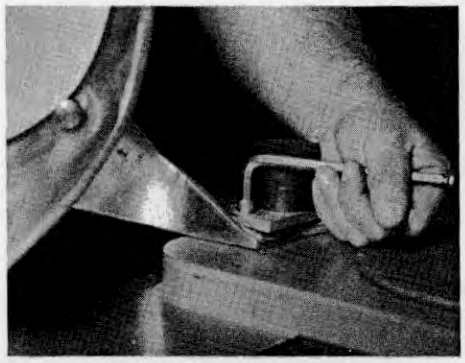
1. Joiner bracket assembly (with foot pedal)
2. Vacuum pump
3. Vacuum can & small parts
4. Vibrator unit
5. Sheet metal dust pan
6. Change parts in fiber drum(s) if ordered (not shown)

⚠ NOTE B. Now you are ready to remove the machine from the shipping pallet. If you are moving the Standard or the Special machine, (unshrouded) do not lift by the leg tie rods. Place bars or timbers parallel to the tie rods extending beyond the leg cross member on each side of the machine.

C. For the most trouble-free operation, the machine should be leveled and anchored to the floor in its permanent location.

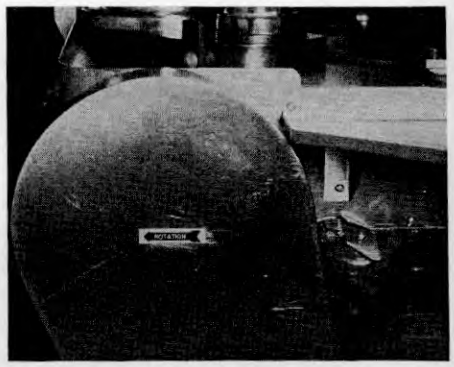
Assembly of the Type 8 Machine

A. The joiner bracket should be bolted to the front left corner of the machine bed cover with the (2) 3/8" Allen head cap screws shipped in place on the machine bed.



NOTE B. **Before connecting power to the machine, check to determine that the electrical requirements of your machine match your power supply. Serious damage can result if the wrong power is supplied to the motor. See electrical schematic diagrams for detail of proper hook-up.**

If needed, contact an electrical contractor in your area familiar with your electrical codes. When you are certain that your power supply matches the filling machine's requirements, connect the machine to power.



C. Proper direction of rotation is marked with an arrow on the left rear of the machine, as well as on the belt guard. Rotation is counterclockwise as viewed from the left of the machine. (Top of the pulley moving away from the operator.)

D. Now connect the vacuum pump to the Type 8 machine according to the diagram in Figure 1A. Connect one plastic vacuum hose from the vacuum outlet on the pump to the side connection on the vacuum canister. Connect the second plastic hose from the top vacuum connection on the canister to the vacuum inlet on the bottom of the machine bed. Connect the rubber hose from the petcock valve on top of the vacuum canister to the rear of the raceway.

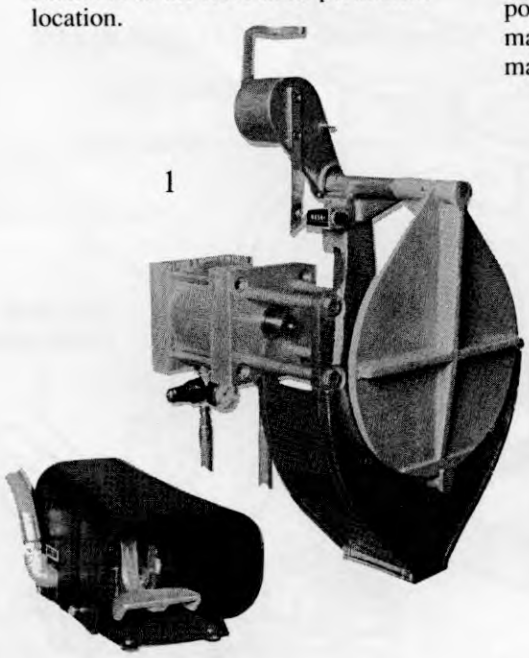
NOTE E. **As with the main motor, specifications should be checked before connecting the vacuum pump motor to electricity. The proper direction of rotation is indicated by an arrow on the pump housing.**

If the arrow is missing, the direction of rotation is always toward the motor.

F. Place the vibrator unit on its shelf on the left front of the machine (see Figure 1) and plug it into the electrical outlet on the left side of the machine.

G. Place the front dust pan in place on the machine between the left and right shelves.

1



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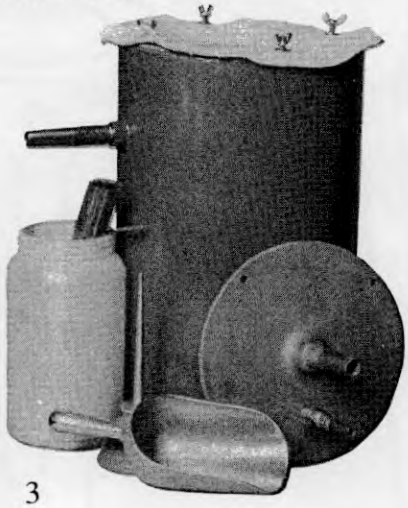

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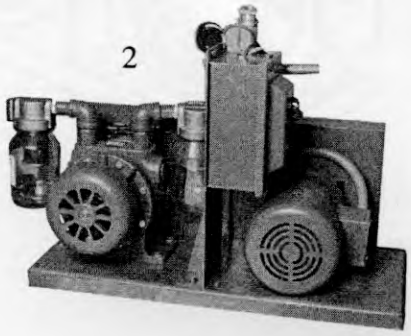

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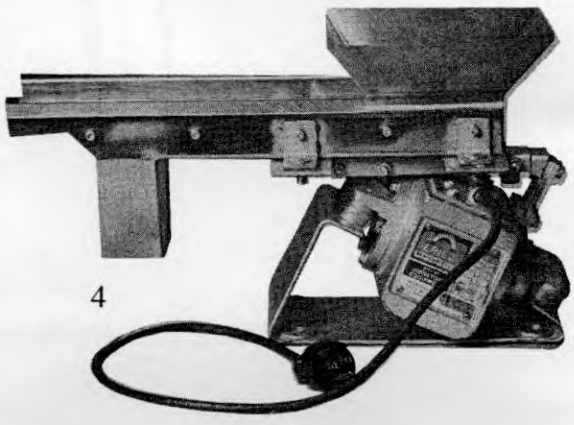

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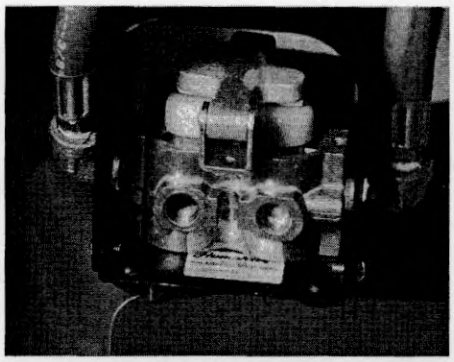


Air Compressor Hook-Up (Accessory)

A. If you have compressed air in your plant, simply connect the air to the rear of the foot pedal with a rubber hose rated to withstand 100 psi of pressure.

NOTE B. If you purchased the air compressor furnished as an accessory, plug the unit into the proper electrical supply and connect to the rear of the foot pedal as in (A) above.

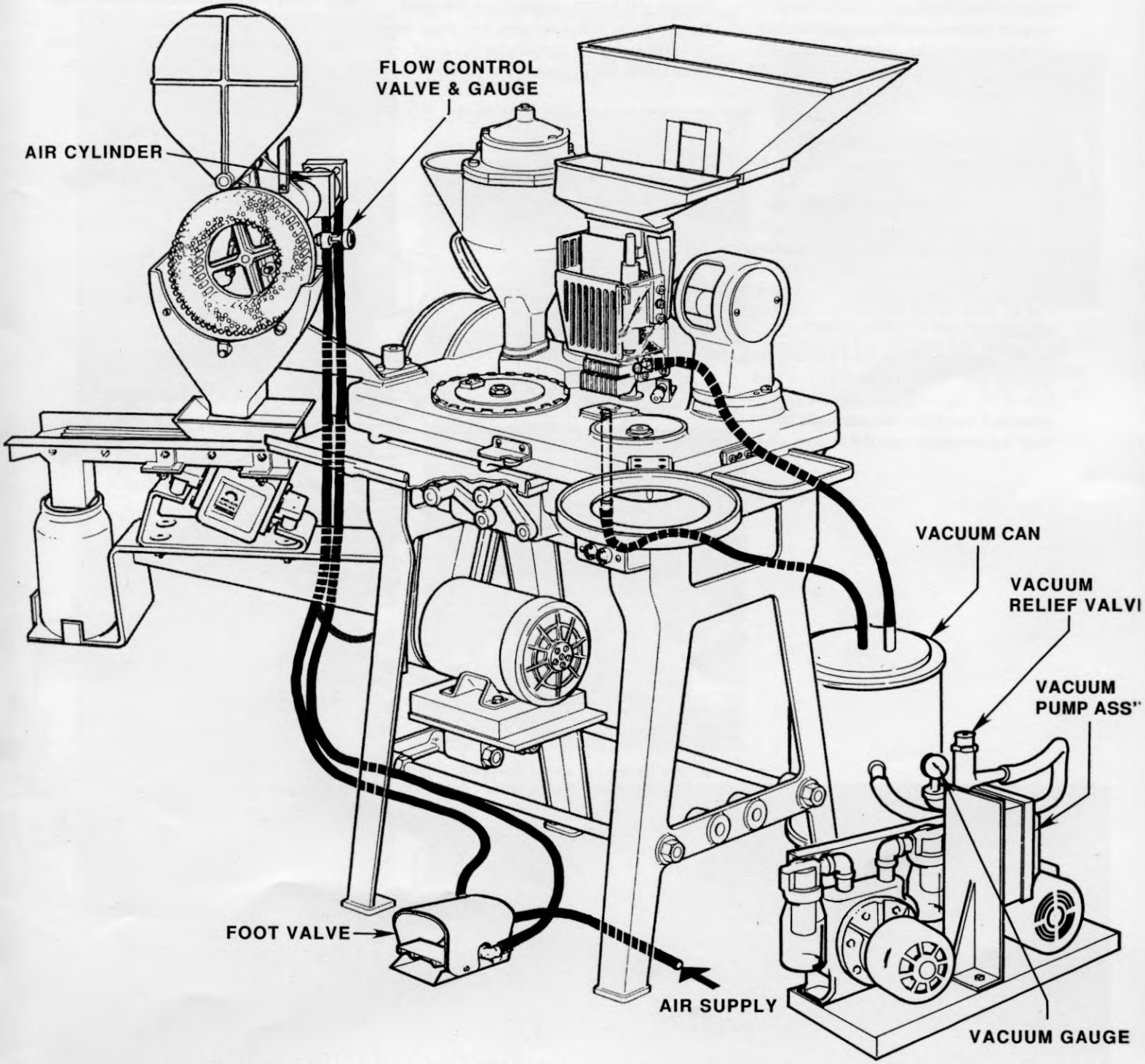


FIG. 1A - TYPE 8 VACUUM ASSEMBLY HOOKUP

SECTION 3

PRINCIPLES OF OPERATION

The Type 8 Capsule Filling Machine does mechanically what you would do if you were filling capsules by hand; that is,

- it separates the capsule body and cap,
- then the body half of the capsule is filled with active ingredients,
- and finally, the cap and body are rejoined in the closed position.

Capsules in the pre-closed position are emptied from the bottom of the large capsule hopper into the magazine. [A] (See Figure 2) The magazine gate [B] releases one capsule from each tube [C] at the bottom of each stroke of the machine.

From the magazine, the capsules drop into the slots in the raceway [D] and are pushed forward to the rectifying area [E] by the push blade. The rectifier block descends, turning the capsules in each slot due to greater "squeeze" on the larger cap. Now all the capsules are in the "cap up" position and are dropped into each row of holes in the capsule holding ring assembly.

As the capsules fall into the holding ring, the caps seat on the counterbore in each hole in the top ring. The capsules are separated when the vacuum pulls the body halves down into the bottom ring.

When all rows of the ring assembly are full, the ring assembly is lifted off the ring carrier [F] and placed on the rotary table [G]. Here, the upper ring is lifted off and set aside for later reassembly. The body halves, located in the lower ring, are now ready for filling.

The rotary table can be operated at any of eight speeds to adjust fill weight in the capsules. The faster the ring is turning, the lower the weight of fill deposited in the capsule bodies. To begin filling, the drug hopper is swung out over the rotating ring and an auger in the drug hopper [H] forces powder into the open body halves. When the ring has made one revolution and all capsule bodies have been filled, the hopper is swung back off of the ring. Now the upper ring previously removed that holds the caps is placed over the lower ring holding the filled bodies ready for joining.

To join the capsules, the ring assembly is placed on the joiner [I] and the joiner plate [J] is swung down into position to hold the capsules in the ring. The peg ring pegs [K] are entered into the holes of the body holding ring and compressed air pushes the body and caps together into the closed position. The holding ring assembly is now pushed by hand away from the joiner plate and onto the peg ring. This pushes the closed capsules out of the ring assembly into the chute feeding the vibrator which removes dust and drops the capsules into a container.

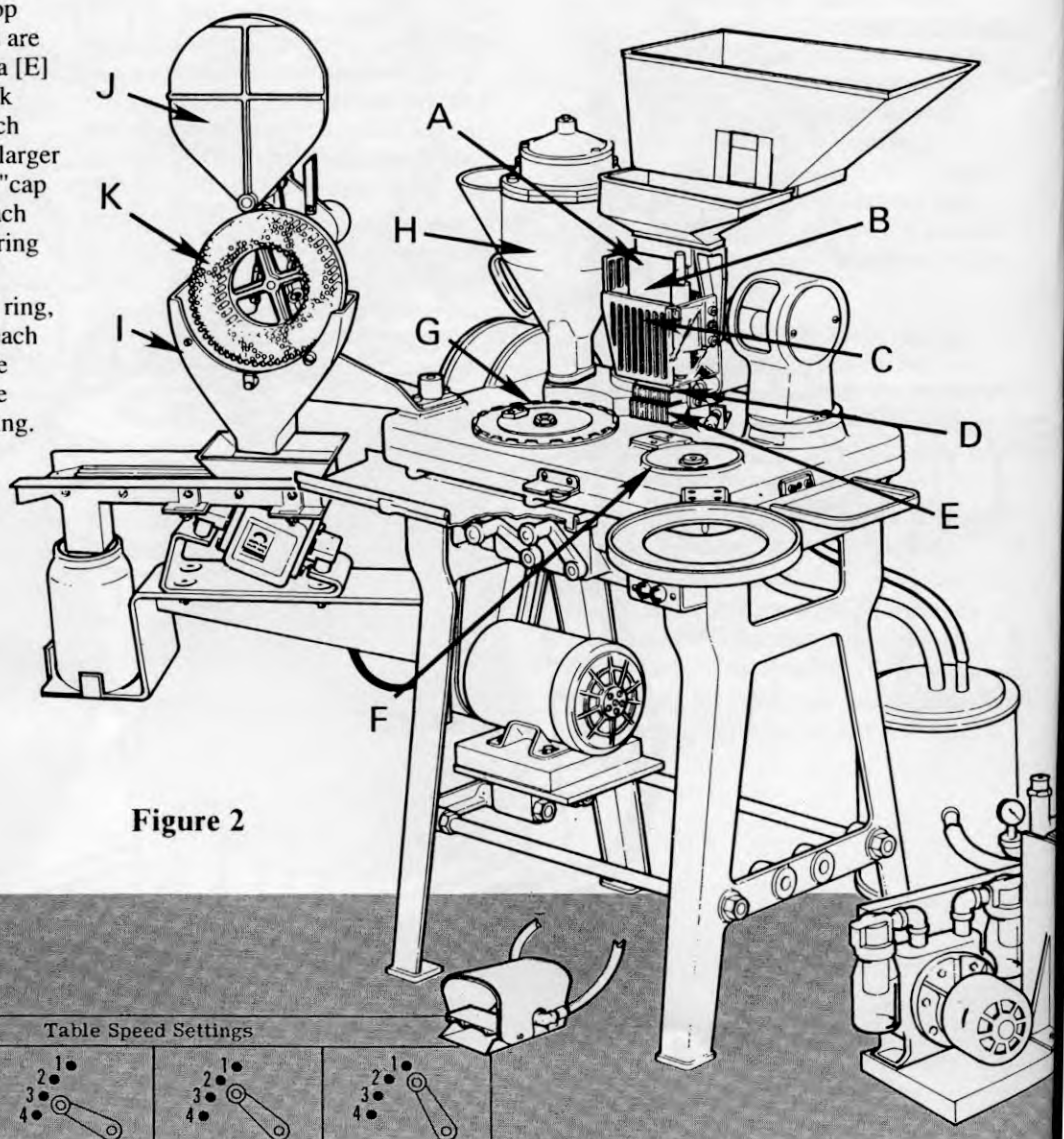
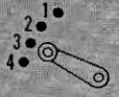
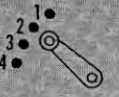
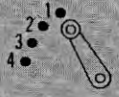
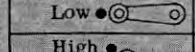
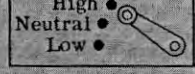


Figure 2

	Table Speed Settings			
				
	2 rpm	2 ½ rpm	3 rpm	3 ½ rpm
	4. 31 rpm	5. 35 rpm	6. 51 rpm	7. 8 rpm

SECTION 4

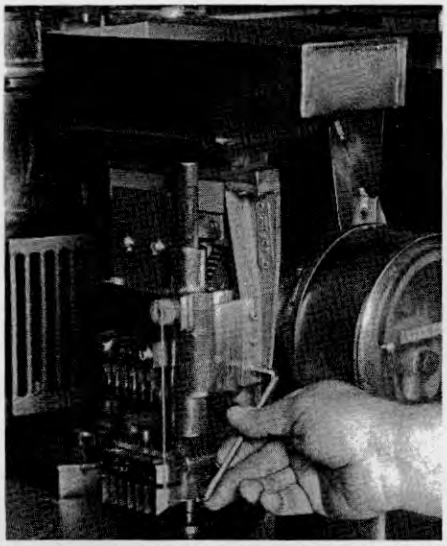
Change Over & Set-Up

Change parts for your requested capsule size have already been installed on your machine at our facility. To fill a different capsule size, follow these procedures to install the necessary change parts.

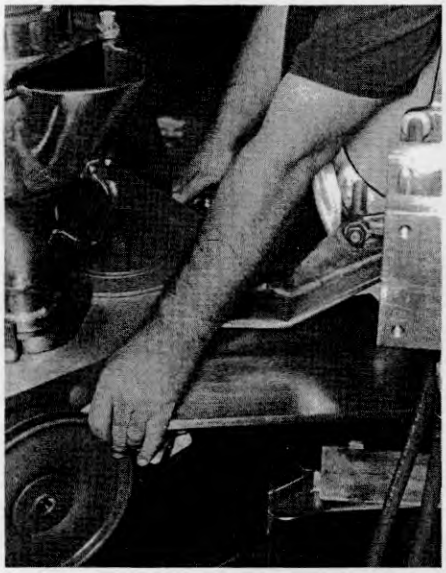
Change Over

NOTE

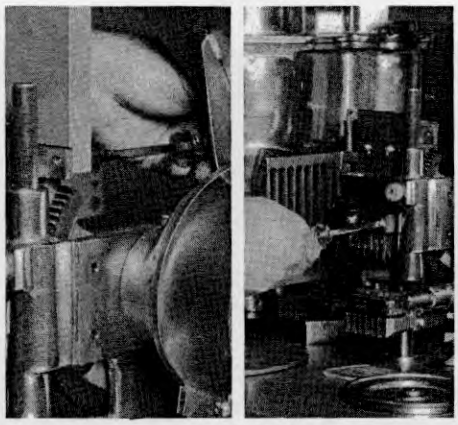
A. **Make certain the main electrical power switch is in the "off" position. This switch is located at the disconnect box on the right side of the machine.**



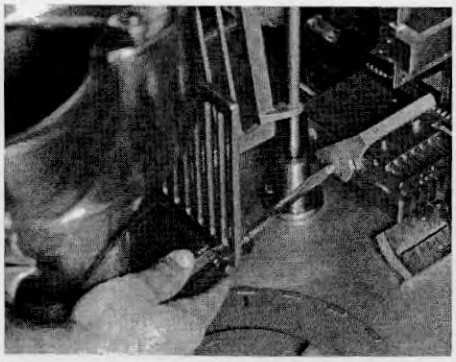
B. Fold back the large capsule hopper and detach the small capsule hopper by removing the two screws on the right-hand side of the assembly.



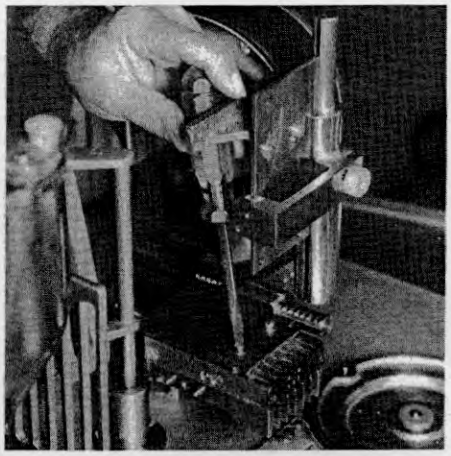
C. Engage the clutch and turn the machine over by hand until the vertical guide rack is at the top of the stroke. Now swing the rectifier guard open and hold back.



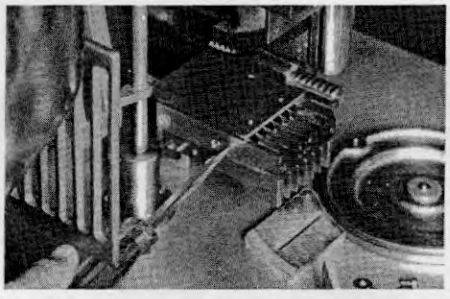
D. Remove the magazine by removing the two 10-24 x 3/4" screws holding it and the rectifier block by removing two 10-24 x 1-1/4" screws.



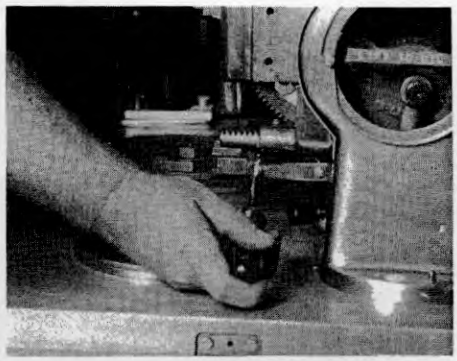
E. Now, remove the gate lifter by removing one 10-24 x 3/8" screw.



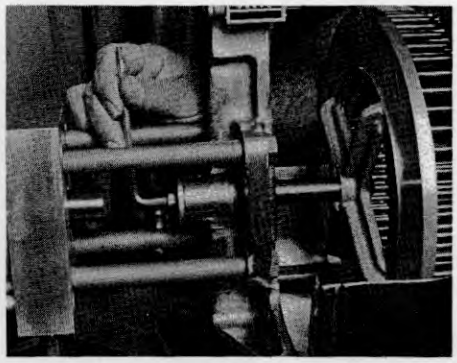
F. The push blade is secured with two 10-24 x 1/4" screws. Remove them to remove the push blade.



G. Remove the two oval head 10-24 x 3" screws that hold the raceway in position.



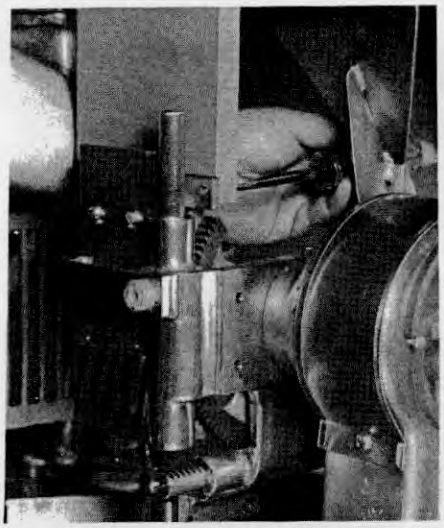
H. And remove the capsule slide by removing its two 10-24 x 1/2" machine screws.



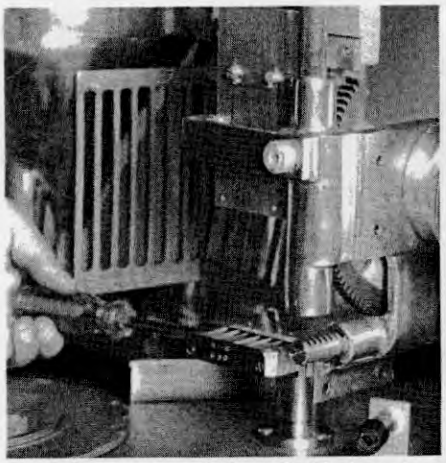
I. Finally, remove the peg ring by loosening the 10-24 x 1/2" Allen head cap screw, the wing nut holding the stop post in position and rotating the stop post 90^{O}.

Set-Up

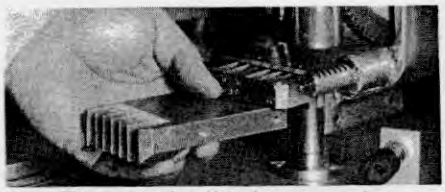
A. From the Change Parts Combination Table (page 17), select the proper combination of change parts for the capsule size you want to fill.



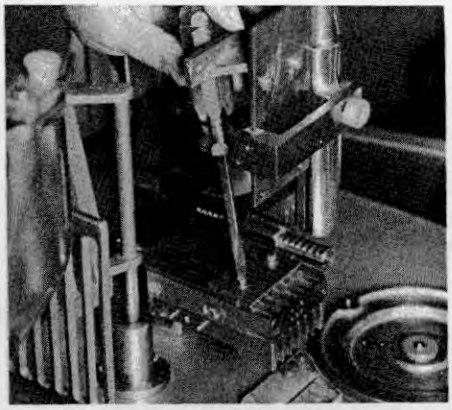
B. Now position the magazine with the spring gate facing the front of the machine. Secure the magazine with two 10-24 x 3/4" screws from the back side through the non-threaded holes in the magazine into the threaded holes in the magazine mounting bracket.



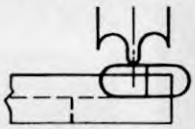
C. The raceway is installed below the horizontal guide plate. Secure with two oval-head 10-24 x 3" screws through the non-threaded holes in the raceway into the threaded holes in the rack guide bracket casting.

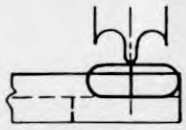


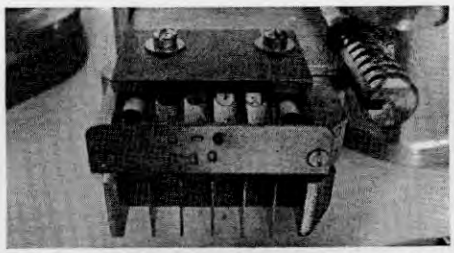
D. The capsule slide is mounted directly under the raceway. Secure with two 10-24 x 1/2" machine screws through the non-threaded holes in the rack guide bracket into the threaded holes in the capsule slide.

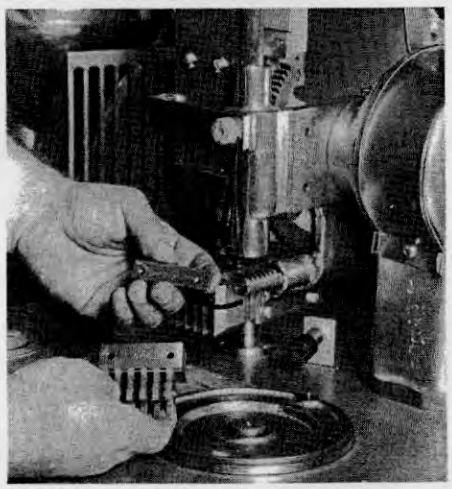


E. The push blade is installed on the top front of the horizontal guide plate with two 10-24 x 1/4" screws and washers through the slots in the push blade into the threaded holes in the horizontal guide plate. A general rule for rough positioning is to locate the working face of the push blade slightly more than a capsule length back from the front of the raceway. For final adjustment, the capsules should be observed while the machine is in operation and the push blade adjusted so the rectifier strikes the capsules just at the cut edge of the cap.

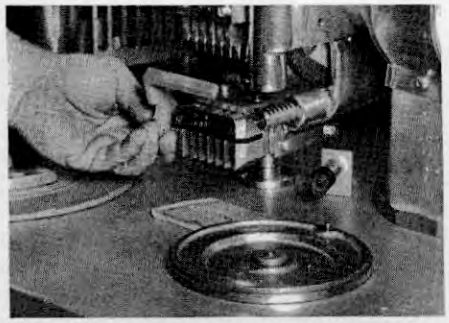




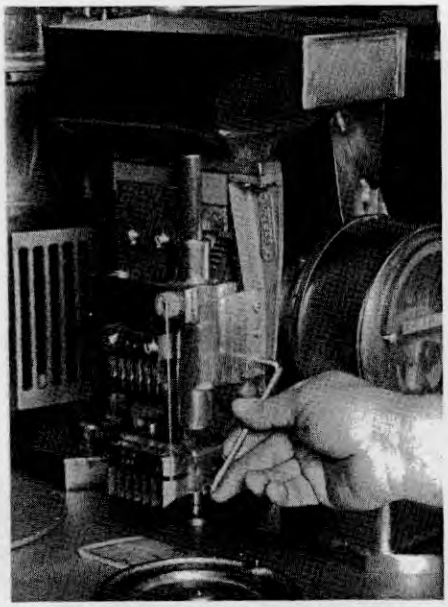




F. The rectifier block is mounted on the bottom front of the vertical guide plate. Note the threaded holes in the steel back plate are closer to one edge than the other. Position this plate with the holes nearer the bottom. Secure with two 10-24 x 1-1/4" screws through the non-threaded holes in the rectifier block and guide plate into the threaded holes in the steel back plate.



G. The gate lifter is mounted over the two locating pins on the left side of the capsule slide and is secured with one 10-24 x 3/8" screw.

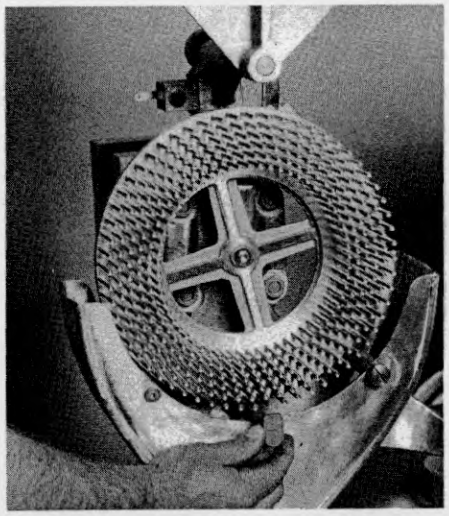


H. Now, reattach the capsule hopper.

I. At this point it is necessary to ensure that all parts have been installed correctly. Close the rectifier guard, engage the clutch and turn the machine over slowly by hand. If binding is encountered, the machine may be turned backward by hand, holding the clutch lever in engagement. Check the change parts just installed to determine the source of the binding.

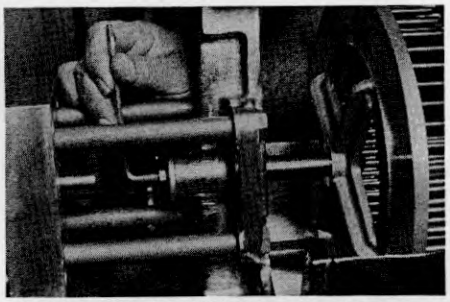
NOTE **Correct the problem before proceeding or serious damage may result to the machine parts.**

Only after all binding has been eliminated can the machine be properly operated. If the machine is not properly operating at this point, see the Troubleshooting Section in this manual for further assistance.



J. Insert the peg ring into the hole in the center of the joiner bracket. Return the joiner plate stop to the "up" position and

secure the wing nut. The peg ring washer is now secured to the end of the shaft



with the 10-24 x 1/2" Allen head cap screw.

After the machine has been checked by hand operation and all problems eliminated, the electricity may be turned on and the trial continued under power.

SECTION 5

Preparation/Lubrication

NOTE A. Insert a clean vacuum bag in the vacuum canister. This bag should be emptied and cleaned out at least once each day during continuous operation.

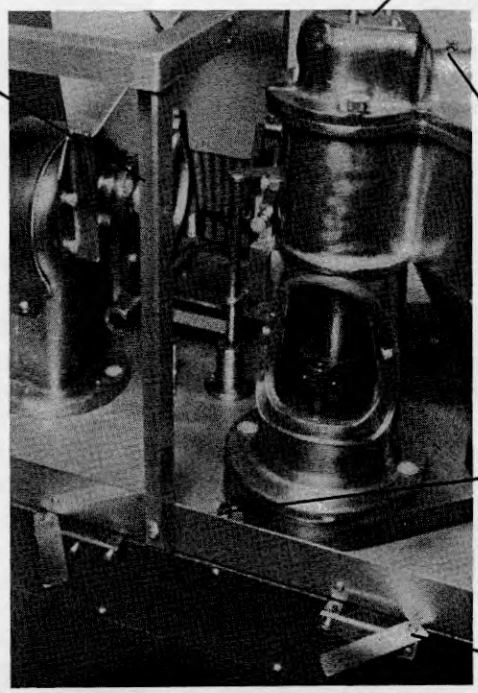
NOTE B. Check to make certain that capsule rings are clean and free from caked-on powder. See cleaning procedures in Section 7.

NOTE C. Check change parts mounting screws for tightness.

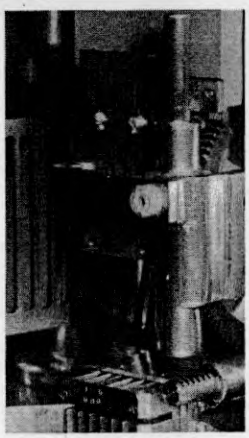
NOTE D. Make sure proper lubrication is provided before operation of the machine. The machine bed is shipped filled with 600-W transmission oil. The felt in the two oil reservoirs at the rear of the machine bed must be saturated before start-up with 20W lubricating oil.

A few drops of oil should be added before start-up (and daily thereafter) to the oil cups on:

- the drug hopper drive shaft
- rectifier head sector shaft
- the drug hopper cross shaft
- the bed cover at the base of the drug hopper support
- the rotary table spindle
- oil reservoir



- the rectifier head connecting rod.
- the ring carrier spindle

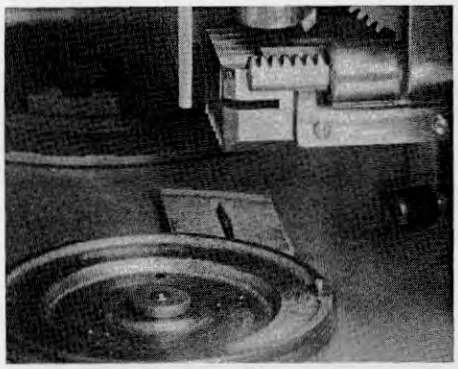


NOTE

In addition, a drop of oil should be applied daily to the vertical and horizontal guide racks, rack guide bracket and peg ring shaft.

Preparation for filling

A. Turn on the compressed air supply and set regulator for approximately 40 psi pressure. Some capsules or fills may require more or less pressure for proper closing.



B. After placing the leather vacuum pad over the two pins adjacent to the vacuum hole in the machine bed, turn on the vacuum pump. With the vacuum slot blocked, adjust vacuum if necessary to approximately 10"-12" of mercury on the vacuum gauge.

C. Place capsules in the capsule hopper and put product to be filled into the powder hopper. Now the Type 8 is ready for capsule filling.

Operation

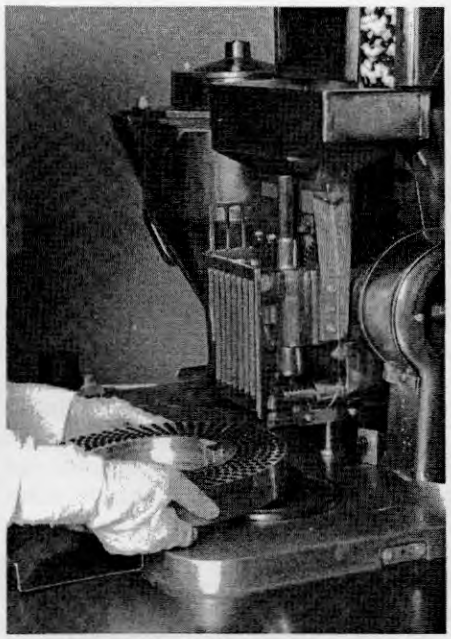
Feeding empty capsules

A. To begin operation, place a capsule holding ring on the ring carrier and turn clockwise until it stops firmly against the drive pin. Then press the "start" button.

B. Start the ring carrier by moving the clutch lever to the right.

C. As the last row of empty capsules is deposited into the capsule holding ring, stop the ring carrier by moving the clutch lever to the left.

NOTE D. **Turn the capsule holding ring at least three complete counter clockwise revolutions to provide additional exposure to the vacuum to assure capsule separation. This is required for good capsule separation.**



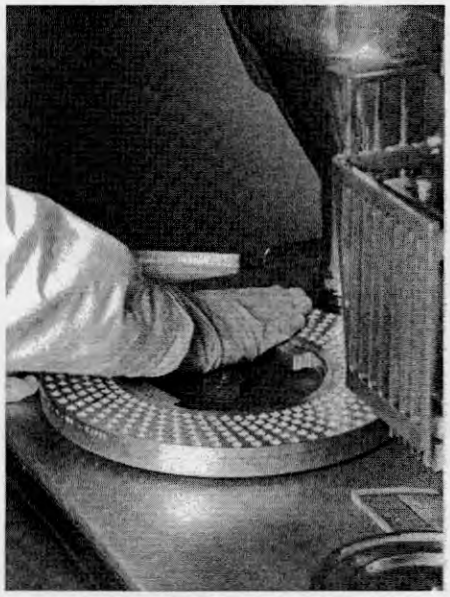
E. Remove the capsule holding ring from the ring carrier being careful to hold it horizontally to avoid spilling the capsules.

F. Place the ring on the rotary table on the left side of the machine, remove the top half of the ring and place it on the ring tray at the right of the machine.

G. Before proceeding with the filling operation, another empty capsule holding ring should be placed on the ring carrier to start loading.

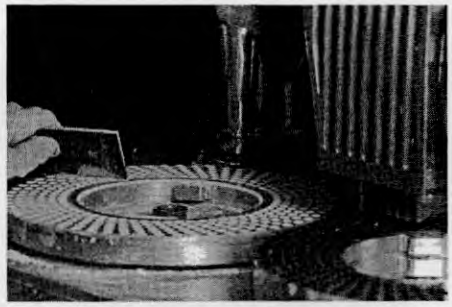
Filling the capsules

A. The bottom half of the capsule holding ring previously placed on the rotary table on the left side of the machine, should be rotated counter clockwise until the lug engages the stop.

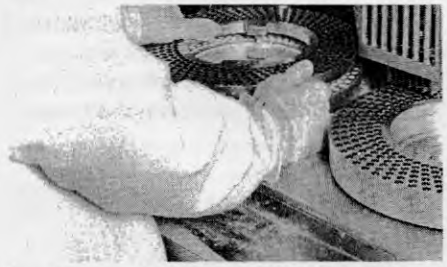


B. The operator should run a hand lightly over the bottom half of the capsule holding ring to make certain all capsules are below the surface of the ring.

C. The drug hopper is swung over the face of the ring and held in position during filling. Care should be taken that the ring is swung off the ring at the end of one revolution with as little overlap as possible. Excessive overlap causes overfill and weight variations. For adjustments to the fill weight, see Section 6.

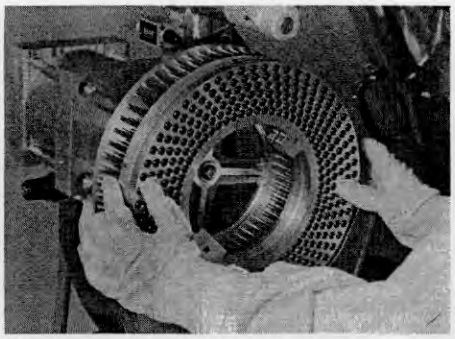


D. Use the plastic scrapper provided to remove excess fill from the top of the ring.



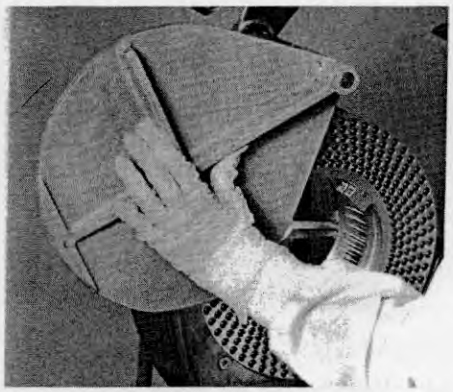
E. The top half of the capsule holding ring is now carefully reassembled to the bottom, making certain the large and small lugs match.

NOTE **If you experience problems in matching the lugs, stop the machine immediately. Your hands could be seriously injured at the rear of the rotating ring.**



Joining filled capsules

A. The capsule holding ring is placed on the ring supports of the joiner with the cap half toward the operator. Make certain the ring does not separate allowing fill to leak from the capsule body.



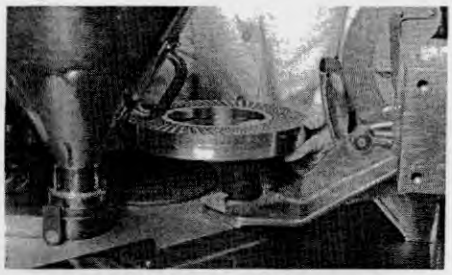
B. Swing the joiner plate down into position and pull the capsule holding ring snugly against it.

C. Pull the peg ring out to the capsule holding ring, rotating as necessary to align the pins with the holes. Ease the peg ring pins into the capsule holding ring until the capsules have started to join. Some hand pressure is required to pre-close the capsules. To accomplish this, squeeze the peg ring and capsule holding ring together, keeping the capsule holding ring against the joiner plate to prevent the capsules being pushed out of the ring before closing.

D. Depress the foot valve to complete the joining.

E. Push the capsule holding ring back completely onto the peg ring to eject the capsules.

F. Swing the joiner plate to the up position and remove the capsule holding ring.



G. Bump the ring against the rubber bumper to remove excess powder. Brush the rotary table clean and repeat the filling cycle.

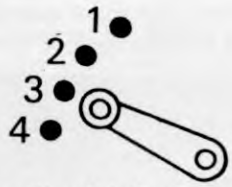
H. Be sure to place a scoop of powder in the drug hopper for each ring filled to maintain a constant level in the hopper.

SECTION 6

Fill Weight Adjustments

A. Two factors govern fill weight, rotary table speed and the amount of powder in the hopper.

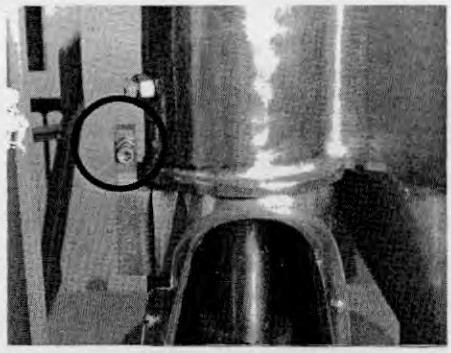
B. The two levers on the front of the machine bed provide a possibility of eight speeds. The left lever has three positions - high range, neutral, and low range. The right hand lever has four positions producing four speeds for each of the two speed range settings.



C. Capsule fill weight is increased as the table speed is decreased.

D. Capsule fill weight is increased as the level of powder in the powder hopper is increased.

E. While a heavier fill may be obtained by allowing a second revolution of the capsule holding ring under the powder hopper, this should be avoided whenever possible as it produces unreliable results and could damage the machine.



F. You may also need to adjust the stopping point of the forward swing of the hopper. This adjustment is used to balance the fill weights between the inner and outer rows of capsules in the capsule holding ring.

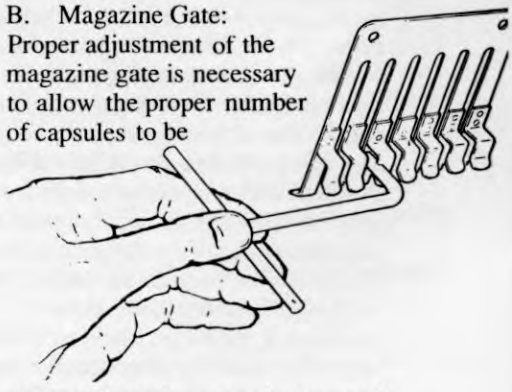
NOTE **Clockwise turning of the adjusting screw makes the inner rows heavier; counter clockwise makes the outer rows heavier.**

G. Additional auger designs are available from Capsugel and are pictured in the Accessory Section of this manual. Ask your Service Representative which auger design would be best for your situation.

Operating Adjustments

A. Push Blade: The general rule for push blade positioning is to locate the working face of the push blade slightly more than a capsule length back from the front of the raceway. But this does not take into consideration the momentum of the capsules during operation under power. For final adjustment, the capsules should be observed while the machine is operating and the push blade adjusted so it strikes the capsules just at the cut edge of the cap. See page 10.

B. Magazine Gate: Proper adjustment of the magazine gate is necessary to allow the proper number of capsules to be

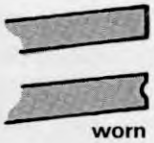


released from the magazine on each stroke of the machine. If the gate knees are bent too far in, they strike the lifter too soon and release too many capsules. If the knees are bent too far out, they may not strike the lifter solidly enough to release any capsules. With the special gate knee adjusting tool, carefully bend the individual knees until they engage the gate lifter simultaneously near the bottom of the stroke. The smaller the capsule, the nearer the bottom of the stroke this engagement should take place.

C. Ring brake: If the rectifier head tends to fall to the bottom of the stroke when the machine is shifted out of gear, the ring brake should be tightened up. This adjustment is made by turning the adjusting screw at the rear of the ring brake with a 3/16" Allen wrench; clockwise to tighten and counter clockwise to loosen.

Just enough pressure to hold the disengaged rectifier in place is sufficient. Too much pressure will result in excessive heating and wear on the brake shoe and difficulty in releasing the rectifier head clutch.

D. Ratchet Blade: If the table oscillates and fails to index forward, a ratchet blade adjustment should be made. The ratchet blade is mounted on the right end of the bed cover. By removing two screws, the ratchet blade and holder assembly can be removed for adjustment.



Mounting Screw

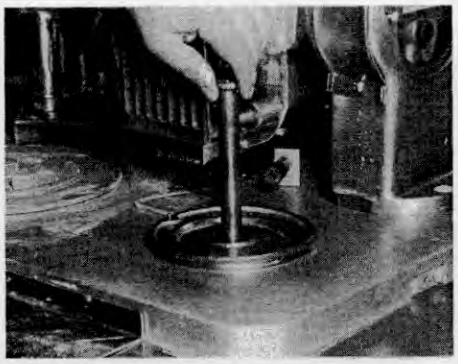
If the blade is worn, it should be replaced.

Adjusting Screw

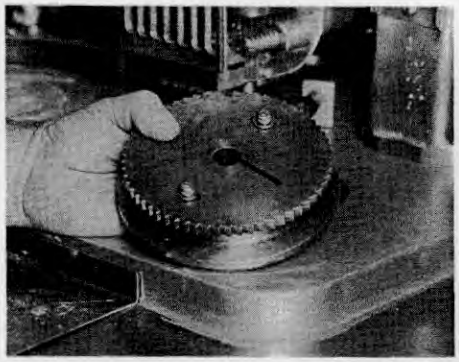
NOTE For adjustment, the blade mounting screw is loosened and the adjusting screw backed out. The blade is then pushed back against the adjusting screw. The blade mounting screw should be snugged and the holder replaced. Now start the machine and engage the table clutch. The table will advance past the stop and back up to the blade. Advance the blade adjusting screw a little at a time until the table advances only to the stop and does not back up. Adjustment beyond this point will result in oscillation. When the proper adjustment has been established, the rachet blade and holder assembly should be removed, the blade mounting screw tightened securely, and finally returned to the machine bed.

E. Ratchet Wheel: This adjustment is set when the machine is manufactured and needs readjustment only as a result of severe wear. If ring carrier oscillates, or if capsules fail to enter the ring properly, adjustment may be necessary. Remove collar from index table shaft and push up on the shaft until it can be grasped from the top and pulled out.

⚠ NOTE **Caution: Do not start the machine with this shaft out.**



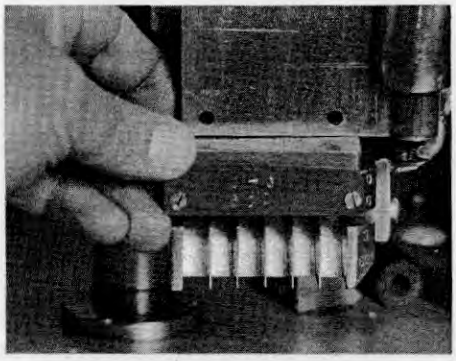
After removing the shaft, lift the index table and ratchet plate assembly out of the machine. Scribe a line across the



ratchet plate and table hub. Loosen the two Allen head screws, and rotate the ratchet plate a small amount in the desired direction. Tighten the screws and reassemble the machine for tryout. When the ring holes line up with the vacuum hole and the capsule slide, the adjustment is correct.

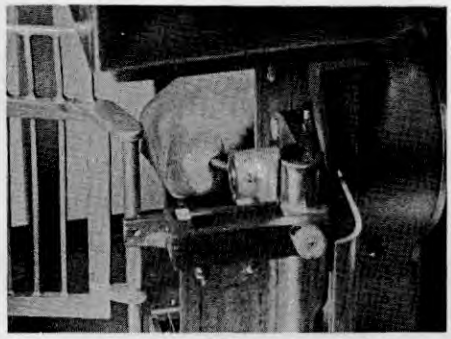
F. Hopper Stop: (See Fill Weight Adjustments, page 13.)

G. Vertical Guide Plate Timing: Remove the rectifier block and turn the machine over by hand until the vertical guide plate reaches the extreme bottom of the stroke. If the timing is correct, the distance between the bottom of the vertical guide plate and the top surface of the raceway should be 9/32". If the timing is not correct, the sector gear taper pin probably has been partially or completely sheared.



To remove a sheared pin, the machine must be positioned to realign the holes. This is done by placing a 9/32" spacer on the raceway and positioning the sector so that the vertical guide plate touches the spacer at the bottom of the stroke. Remove the small hopper and the magazine. If pin is bent, set back to 9/32" position and knock out pin by striking it from the rear of machine.

NOTE Using a *brass* rod, tap the sheared or bent pin until it's free of the tapered hole. Adjust to 9/32" using the spacer and install and tighten a set screw in the threaded hole in the sector. Ream the tapered hole with a taper pin reamer until a new pin will seat firmly. When the reaming has been completed, blow any metal chips out of the hole with compressed air before inserting a new taper pin.



NOTE **Caution: When the pin has been replaced, be sure to remove the set screw.**

SECTION 7

Cleaning The Type 8

A. The machine top, rotary table, drug hopper, and front dust pan should be cleaned thoroughly at the end of each day's operation.

B. The capsule holding ring assemblies should be washed daily with a mild soap solution and thoroughly rinsed, dried and cooled before using.

NOTE **Caution: Strong caustic cleaning solutions should not be used on the aluminum capsule holding rings as severe chemical etching will occur.**

C. The vacuum bag should be emptied frequently during each period of operation and laundered periodically according to your sanitation requirements.

NOTE **Caution: The vacuum bag must be thoroughly dry before using after laundering.**

D. Rectifying accessories should be kept clean, dry, and free from oil for best operation.

E. The peg ring should be carefully washed with mild soap solution to prevent a build-up and cross contamination of drug fills.

SECTION 8
TROUBLE SHOOTING

Symptom	Possible Cause	Remedy
1. Failure to feed in one or more tracks	Insufficient capsules in the capsule hopper	Add capsules
	Clogged magazine tube	Run the rawhide poker down the magazine tube while holding the corresponding gate knee open by hand
	Magazine gate out of adjustment or worn out	Adjust magazine gate according to instructions in Section 6
	Damaged or bent magazine	Replace
	Sector gear taper pin sheared	Check 9/32" dimensions in Section 6
	Gate lifter loose or bent	Remove gate lifter and check with a square
2. Capsules fail to rectify	Separated capsules telescoping on other capsules in the empty capsule hopper (double caps)	Sort or discard capsules
	Push blade not properly adjusted	Adjust according to Section 6
	Incorrect size, worn or bent rectifier block	Repair or replace
	Raceway openings bent or worn	Repair or replace. Openings should lightly hold body of capsule
	Vacuum leather not sealing	Reseat leather by sand papering
	Machine running too fast	Check variable pulley adjustment. Machine pulley should turn 400 rpm
3. Capsules fail to enter capsule holding ring assembly	Ring upside down or mismatched ring assemblies	Check ring serial numbers
	Ring not driving against pin	Rotate clockwise to the drive pin
	Ring drive pin worn	Turn or replace
	Ring holes caked with powder	Clean according to Section 7
	Body ring holes damaged or burred	Deburr with countersink or replace
	Vacuum leather not sealing against the ring	Reseat vacuum leather by sand papering
	No vacuum	Check vacuum system
	Push blade not adjusted correctly	Adjust according to Section 6
	Sector gear pin sheared	Check 9/32" dimensions; repin according to Section 6
	Broken or worn ratchet blade	Replace or adjust according to Section 6
	Broken ratchet pawl, pawl pin or cam follower	Remove ratchet lever and inspect
4. Capsules fail to separate	No vacuum	Check vacuum system
	Insufficient vacuum	Empty vacuum bag
	Vacuum leather worn or improperly fitted	Reseat vacuum leather by sand papering
	Mismatched ring assembly	Check ring serial numbers
	Ring holes caked with powder	Clean according to Section 7
	Body ring holes damaged or burred	Deburr with countersink or replace
	Rings improperly assembled (rotated 180o or body ring upside down)	The large lugs and small lugs should correspond. The large holes of the body ring should face the cap ring
	Ring alignment pins bent or holes badly worn	Repair or replace

Symptom	Possible Cause	Remedy
5. Capsules fail to rejoin	Bent or dirty pins on peg ring	Clean per Section 7 , repair, or replace
	Rings caked with powder or worn	Clean per Section 7
	Ring supports bent or loose	Repair or replace
	Capsules damaged on filling table	Clean rings
	Incorrect peg ring	Replace
	Peg ring shaft too tight	Lubricate
	Joiner plate shaft or bushings worn or bent	Repair or replace
6. Capsules split	Overfill	Overlap on filling table
		Select faster table speed
		Use less diluent
		Use larger capsule size
	Joined too tightly	Use less air pressure
		Use fewer joining strokes
	Ring alignment pins bent or holes badly worn	Repair or replace
7. Fill weights vary	Overlap on filling table	Instruct operator
	Hopper stop adjustment	Adjust per Section 6
	Hopper relief hole plugged	Empty drug hopper & clean
8. Capsule lengths vary	Joiner plate shaft or bushings worn	Repair or replace
9. Damaged capsules	Not seated in ring during filling	Clean rings per Section 7
	Too much air pressure on joiner	Adjust air pressure
	Too many joining strokes	Instruct operator
	Insufficient fill	Use more diluent or smaller capsules
	Ring alignment pins bent or holes badly worn	Repair or replace
10. Rectifier table oscillates	Worn or broken ratchet blade	Repair, replace or adjust per Section 6
	Ratchet wheel damaged	Remove and inspect teeth
11. Rotary table does not turn	Machine not solidly in gear	Move shift gear levers
	Pin sheared in 20-21 gear	Replace pin
12. Machine will not stay in gear	Check for proper rotation of drive pulley	See Section 2
	Check drag leather on clutch lever guard	Replace if worn
13. Hopper will not start	Weak spring on vertical clutch	Replace
	Clutch linkage binding	Lubricate
	Hopper frozen	Overhaul hopper
14. No vacuum	Overload heaters open	Push reset button
	Vacuum bag full	Empty vacuum bag
	Vacuum leather worn	Replace
	Vacuum canister top not sealed	Tighten wing nuts
	Clogged vacuum hose	Clean hose
	Vacuum pump intake filter clogged	Clean filter

SECTION 9

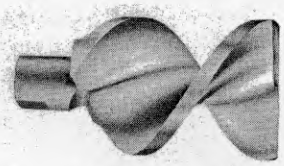
Accessories

ACF-8 Auto Caplet Filler - This attachment replaces the powder hopper on any Type 8 machine to fill caplets into all standard capsules.

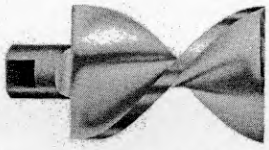
Augers - The standard auger supplied with the Type 8 Capsule Filling Machine is commonly known as the "Three-Way" auger. A "Way" is normally understood to be a 90° twist in an auger blade.

When filling beadlets, the auger should be removed.

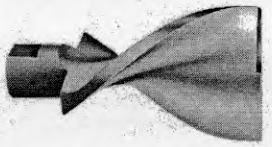
Several optional augers are available for use with the Type 8 machine and can be ordered from Capsugel. The various augers available are as follows:



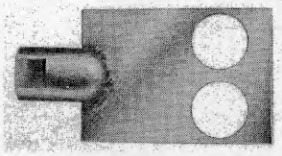
1. "Three-Way" (270° twist) - The standard auger is used for filling most products. This 270° twist auger exerts a strong downward force on the powder mixture and is generally used on that larger size capsules or where it is desirable to compact the powder into the capsules.



2. "Two-Way" (180° twist) - Very often useful where moist powders are being filled. This auger may also be used to obtain a lighter fill than normally obtained with a "Three-Way" auger.



3. "One-Way" (90° twist) - The 90° twist is used for filling a normally dry powder into a smaller capsule size. It is used to obtain a very light fill.



4. "Straight" or "Spade"(no twist) - This is really not an auger, but a straight blade with two holes in the face. It is used mainly to help keep a free-flowing powder properly stirred so it will flow evenly into the capsules.

Change Parts - Various parts required for the set-up of any given capsule size.

Fill Ring Cap Holder (Vertical) - Easel holder for cap half of fill ring.

0-6 Fill Ring, Special Spacing - To be used on the Elanco Type 8 Filling Machine.

Horizontal Closing Station - Used where horizontal capsule closing is desired to prevent loss of fill and capsule splitting during the capsule closing operation.

Type 8 Manual - Operator's guide includes all details of installation, operation and troubleshooting the Type 8 capsule filling machine.

Special Tools - Includes Allen wrenches, capsule picks, scoop, scraper, gate adjustment tool, screwdriver, oil can, and nylon brush.

Type 8 Video - A companion to the Manual, this video takes the viewer step-by-step through all details of machine installation, operation, and maintenance.

TFR-8 Tablet Filling Ring - A special filling ring to aid in the filling of tablets into capsules.

Table 1

Change Part Combinations

												SUPRO SIZES →				
Capsule Size	#000	#00	#0	#0	#1	#2	#3	#3	#4	#4	#5	A	B	C	D	E
8CF186 PEG RING	186A 3-Row	186B 4-Row	186C 5-Row	186E[2] 6-Row	186G[3] 7-Row	186F 7-Row	186F 7-Row	186H 8-Row		186F 7-Row		186B 4-Row		186E 6-Row	186G 7-Row	
8CF101 MAGAZINE GATE	101A	101B	101C	101D	101E	101F		101G		101H		101M		101P	101Q	101R
8CF104 MAGAZINE	104A	104B	104C	104D	104E	104F		104G		104H		104M		104P	104Q	104R
8CF114 PUSH BLADE	114A	114B	114C	114D	114E			114F		114G		114M		114P	114Q	
8CF130 RECTIFIER RACEWAY	130A	130B	130C	130D	130E	130F	130G	130H	130J	130I	130K	130M	130N	130P	130Q	130R
8CF131 CAPSULE SLIDE	131A	131B	131C	131D	131E		131F	131G	131I	131H	131J	None	131N	131P	131Q	
8CF133 RECTIFIER BLOCK	133A	133B	133C	133D	133E			133F	133G	133H		133M		133P	133Q	
8CF106 FILL RINGS	N/A	106A	106B	106C	106D	106E	106F	106G	106I	106H	106J	106M	106N	106P	106Q	106R
8CF105[1] FILL RINGS	105A	105B	105C	105D	105E	105F	105G	105H	105J	105I	105K					

[1] 1" Machine Only

[2] 186D 6-Row 1/8"

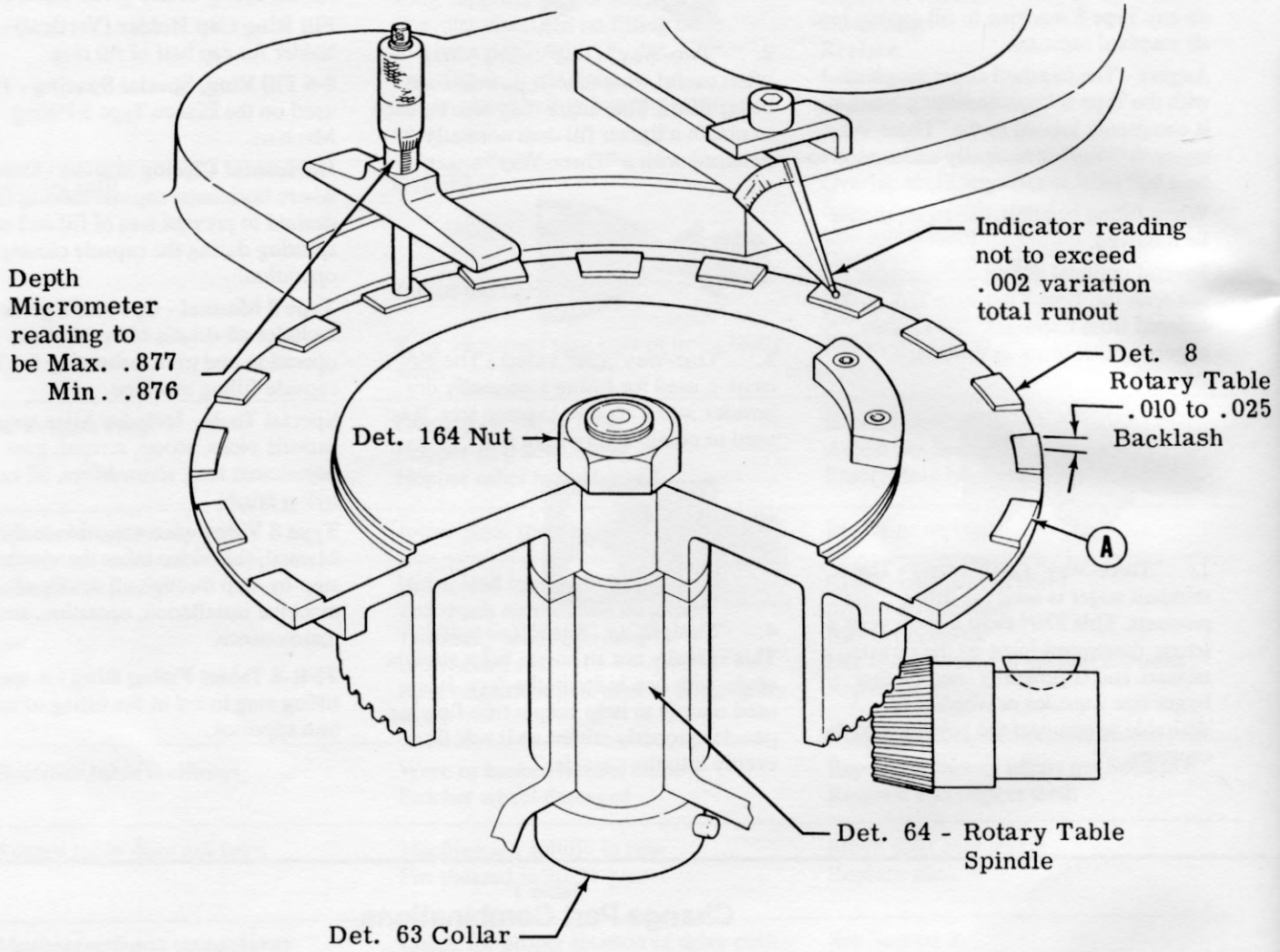
[3] 186F 7-Row 1/8"

Note: Peg Rings (186E & 186G) sizes 0 & 1 are 3/16"
Fill Rings (106C & 106D) are standard 3/16" hole

Screws for assembly

1 - 8CFOOM
2 - 8CFOAA
2 - 8CFOAF
2 - 8CFOAG
2 - 8CFOAD *
2 - 8CF162

* 8CFOAD - 10-24 X 1-1/4 Fillister Head; 2 extra for 00 & 000



Instructions for installing Rotary Table Det. #8

Install Rotary Table Det. #8 complete with spindle Det. #64 and Thrust Washer Det. #62.

Test for backlash in gear teeth at outer edge of Rotary Table. If backlash exceeds .025, reduce thickness of Thrust Washer Det. #62. If backlash is less than .010, install a thicker Thrust Washer Det. #62.

New Rotary Table and Spindle assembly (Det. #8 and #64) will have extra stock at point A and will have to be lathe turned on centers to depth micrometer reading .876-.877.

SECTION 10

EXPLODED DRAWINGS

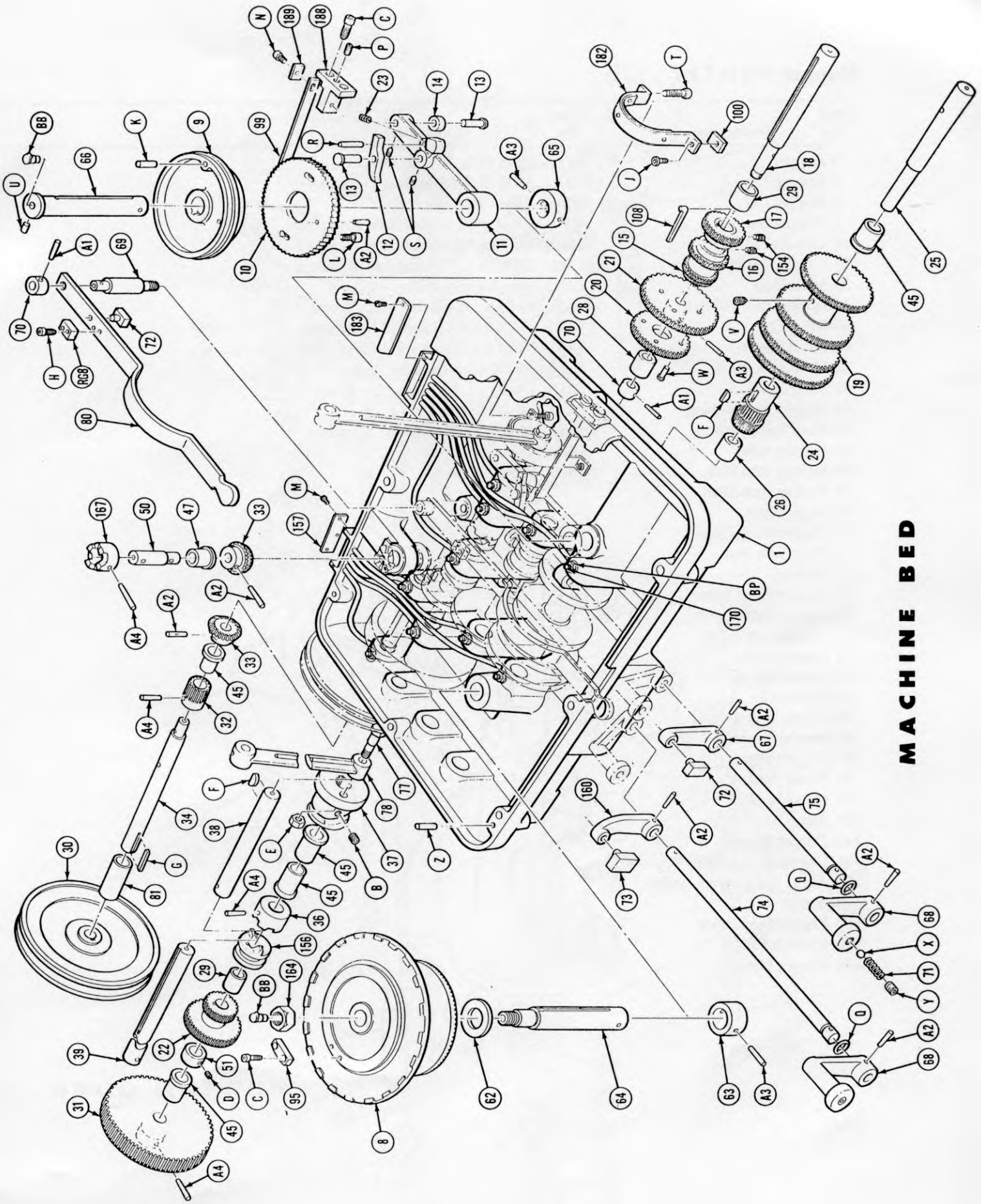
and

PARTS LISTS

Machine Bed Parts List

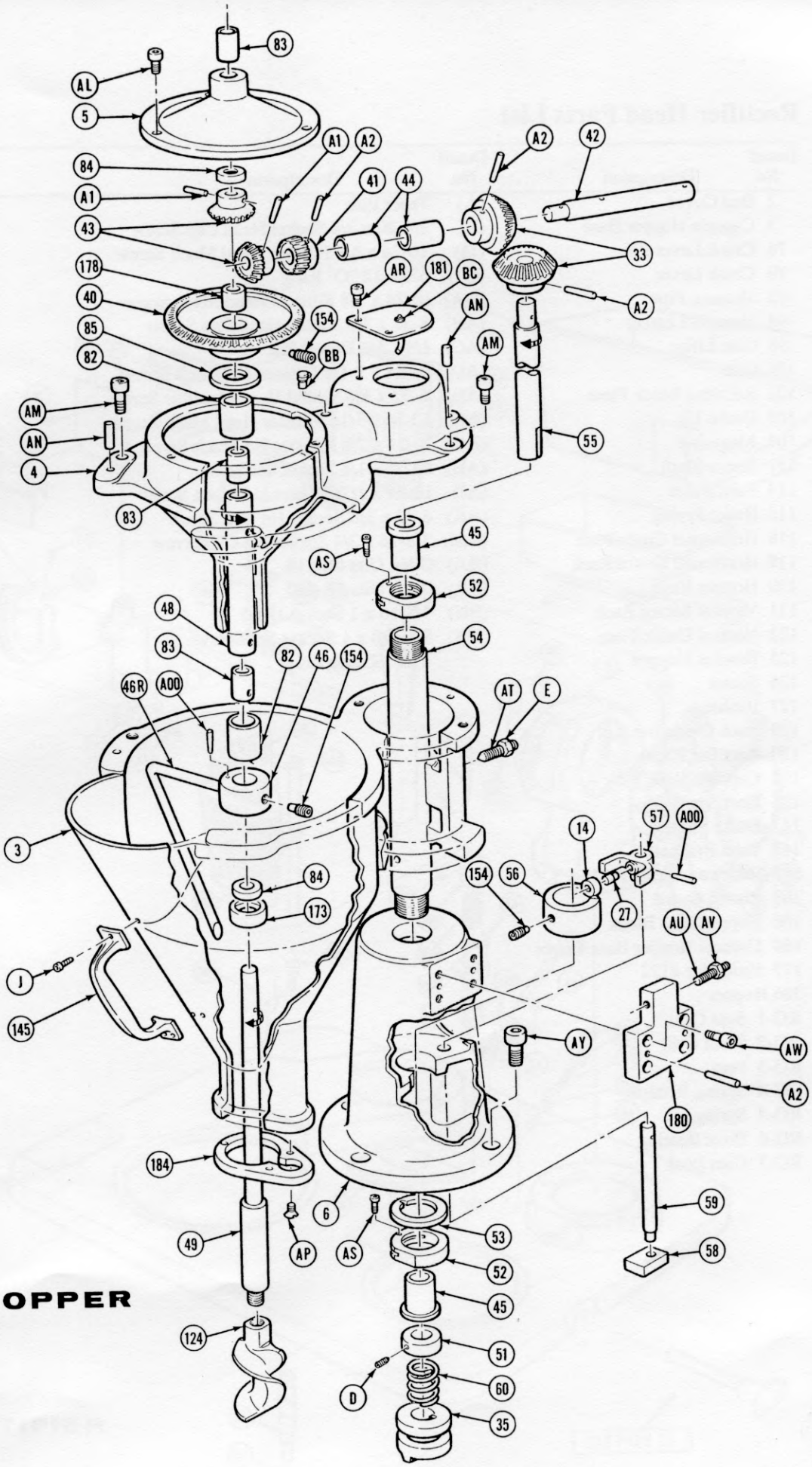
Detail No.	Description
1	Bed
8	Rotary Table
9	Ring Carrier
10	Ratchet Wheel
11	Ratchet Lever
12	Ratchet Pawl
13	Roller Pin
14	Cam Roller
15	Cone Gear Assembly
16	Cone Gear
17	Cone Gear
18	Intermediate Shaft
19	Cone Gear
20	Change Gear
21	Change Gear
22	Sliding Gear
23	Pawl Spring
24	Bevel Pinion
25	Drive Shaft
26	Drive Shaft Bushing
28	Intermediate Shaft Bushing
29	Intermediate Shaft Bushing
30	Pulley
31	Table Drive Gear
32	Table Drive Pinion
33	Miter Gear
34	Pulley Shaft
36	Table Drive Clutch
37	Cam Crank
38	Crank Shaft
39	Table Drive Shaft
44	Hopper Top Bushing
45	Pivot Tube Bushing
47	Vertical Shaft Bushing
50	Vertical Shaft
51	Hopper Shaft Collar
62	Thrust Washer
63	Spindle Collar
64	Rotary Table Spindle
65	Spindle Collar
66	Capsule Ring Spindle
67	Shifter Lever
68	Shifter Handle
69	Clutch Handle Stud
70	Stud Collar
71	Helical Spring
72	Gear Shifter
73	Gear Shifter
74	Shifter Rod
75	Shifter Rod
77	Crank Pin
78	Connecting Rod
80	Clutch Handle
81	Pulley Shaft Bushing
95	Table Stop Block
99	Ratchet Blade
100	Spacer Plate
108	Insert
154	Cone Gear Set Screw
156	Table Drive Clutch
157	Cover Plate
160	Lever
164	Spindle Nut
167	Hopper Drive Clutch
170	Dog Point Set Screw
182	Friction Collar
183	Oil Well Cover
188	Ratchet Blade Holder
189	Lock Plate
RG-8	Shifter Block

Detail No.	Description
(A)	Taper Pins
(B)	5/16-18 x 3/4 Socket Set Screw
(C)	1/4-20 x 1/2 Socket Head Cap Screw
(D)	5/16-18 x 3/8 Socket Set Screw
(E)	3/8-16 Hex Nut
(F)	#9 Woodruff Key
(G)	3/16 x 1-1/4 Sq. Key
(H)	8-32 x 1/2 Socket Head Cap Screw
(J)	10-24 x 5/8 Socket Head Cap Screw
(K)	3/16 x 1/2 Dowel Pin
(L)	1/4-20 x 7/8 Socket Head Cap Screw
(M)	10-24 x 3/8 Fillister Head Mach Screw
(N)	10-32 x 1/2 Socket Head Cap Screw
(P)	10-32 x 1/2 Socket Set Screw
(Q)	6227-7 "O" Ring
(R)	1/8 x 3/4 Dowel Pin
(S)	10-24 x 5/16 Socket Set Screw
(T)	1/4-20 x 1-1/4 Socket Head Cap Screw
(U)	3/16 x 3/8 Dowel Pin
(V)	3/8-16 x 1/2 Socket Set Screw
(W)	3/16 x 3/4 CR Rivet
(X)	5/16 dia. Ball
(Y)	5/16-18 x 1/2 Socket Set Screw
(Z)	1/4 x 1-1/2 Dowel Pin
(BB)	Oiler, Gits #E-402
(BP)	5/16-18 Hex Nut


MACHINE BED

Hopper Parts List

Detail No.	Description	Detail No.	Description
3	Hopper	(A)	Taper Pins
4	Hopper Top	(D)	5/16-18 x 3/8 Socket Set Screw
5	Hopper Lid	(E)	3/8-16 Hex Nut
6	Hopper Base	(J)	10-24 x 5/8 Socket Head Cap Screw
14	Cam Roller	(AL)	1/4-20 x 5/8 Socket Hd Cap Screw
27	Cam Roller Pin	(AM)	3/8-16 x 3/4 Socket Hd Cap Screw
33	Miter Gear	(AN)	1/4 x 3/4 Dowel Pin
35	Hopper Drive Clutch	(AP)	10-24 x 1/2 Flat Hd Mach Screw
40	Bevel Gear	(AR)	10-24 x 1/4 Socket Hd Cap Screw
41	Bevel Pinion	(AS)	10-24 x 1/2 Socket Hd Cap Screw
42	Bevel Gear Shaft	(AT)	3/8-16 x 2 Socket Set Screw
43	Miter Gear	(AU)	1/4-20 x 1-1/4 Socket Set Screw
44	Hopper Top Bushing	(AV)	1/4-20 Hex Nut
45	Pivot Tube Bushing	(AW)	1/4-20 x 1 Socket Hd Cap Screw
46	Stirring Arm	(BB)	Oiler, Gits E-402
46R	Stirring Arm Rod	(BC)	Oiler, Gits R-301
48	Stirring Arm Shaft		
49	Auger Shaft		
51	Hopper Shaft Collar		
52	Pivot Tube Nut		
53	Washer		
54	Hopper Pivot Tube		
55	Hopper Drive Shaft		
56	Clutch Cam		
57	Clutch Guide		
58	Clutch Shifter		
59	Clutch Rod		
60	Clutch Spring		
82	Hopper Bushing		
83	Hopper Bushing		
84	Thrust Washer		
85	Thrust Washer		
124	Auger		
145	Hopper Handle		
154	Dog Point Set Screw		
173	Auger Shaft Thrust Washer		
178	Spacer		
180	Hopper Stop Block		
181	Cover for #4		
184	Hopper Plate		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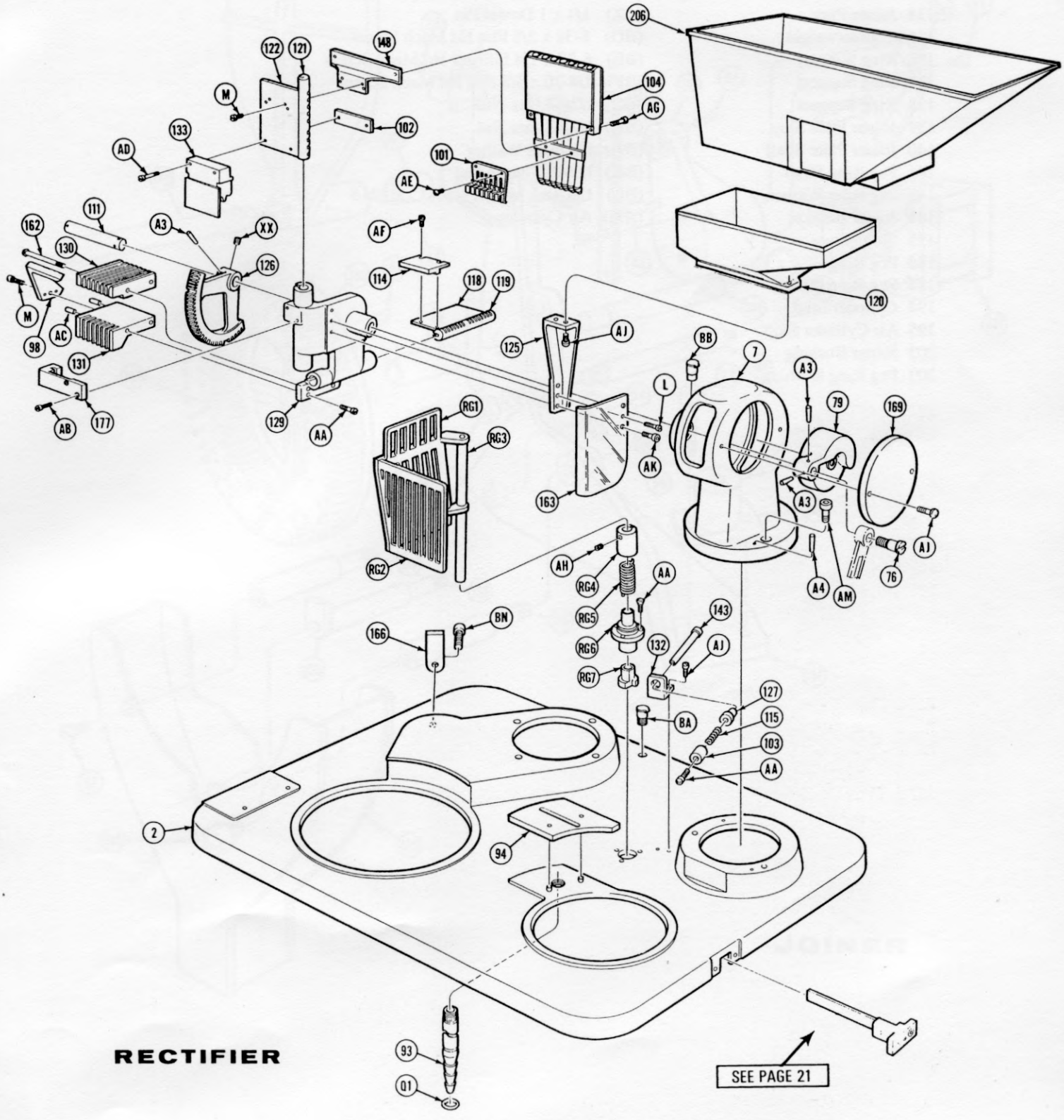
DRUG HOPPER

Rectifier Head Parts List

Detail No.	Description
2	Bed Cover
7	Capsule Hopper Base
76	Crank Lever Pin
79	Crank Lever
93	Vacuum Pipe
94	Vacuum Leather
98	Gate Lifter
101	Gate
102	Rectifier Block Plate
103	Brake Tip
104	Magazine
111	Sector Shaft
114	Push Blade
115	Brake Spring
118	Horizontal Guide Plate
119	Horizontal Sector Rack
120	Hopper Base
121	Vertical Sector Rack
122	Vertical Guide Plate
125	Bracket Hopper
126	Sector
127	Bushing
129	Rack Guide Bracket
130	Rectifier Raceway
131	Capsule Slide
133	Rectifier Block
143	Brake Shaft
148	Tube Bracket
162	Raceway Screw 10-24 x 3
163	Plastic Guard
166	Hopper Stop Block
169	Capsule Hopper Base Cover
177	Guide for #122
206	Hopper
RG-1	Side Grill
RG-2	Front Grill
RG-3	Post
RG-4	Spring Retainer
RG-5	Spring
RG-6	Pivot Bearing
RG-7	Cam Lock

Detail No.	Description
(A)	Taper Pins
(L)	1/4-20 x 7/8 Socket Head Cap Screw
(M)	10-24 x 3/8 Fillister Head Mach Screw
(Q1)	6227-12 "O" Ring
(AA)	10-24 x 5/8 Fillister Head Mach Screw
(AB)	8-32 x 3/8 Socket Head Cap Screw
(AC)	1/8 x 5/8 Dowel Pin
(AD)	10-24 x 1-1/8 Fillister Hd Mach Screw
(AE)	6-32 x 1/8 Round Head Machine Screw
(AF)	10-24 x 5/16 Fillister Head Mach Screw
(AG)	10-24 x 7/8 Fillister Hd Mach Screw
(AH)	10-24 x 1/4 Socket Set Screw
(AJ)	10-24 x 1/2 Fillister Hd Mach Screw
(AK)	6-32 x 3/8 Socket Hd Cap Screw
(AM)	3/8-16 x 3/4 Socket Hd Cap Screw
(BA)	Oiler, Gits #B-118
(BB)	Oiler, Gits #E-402
(BN)	3/8-16 x 1 Socket Head
(XX)	5/16-18 x 1 Socket Set Screw (for locating only)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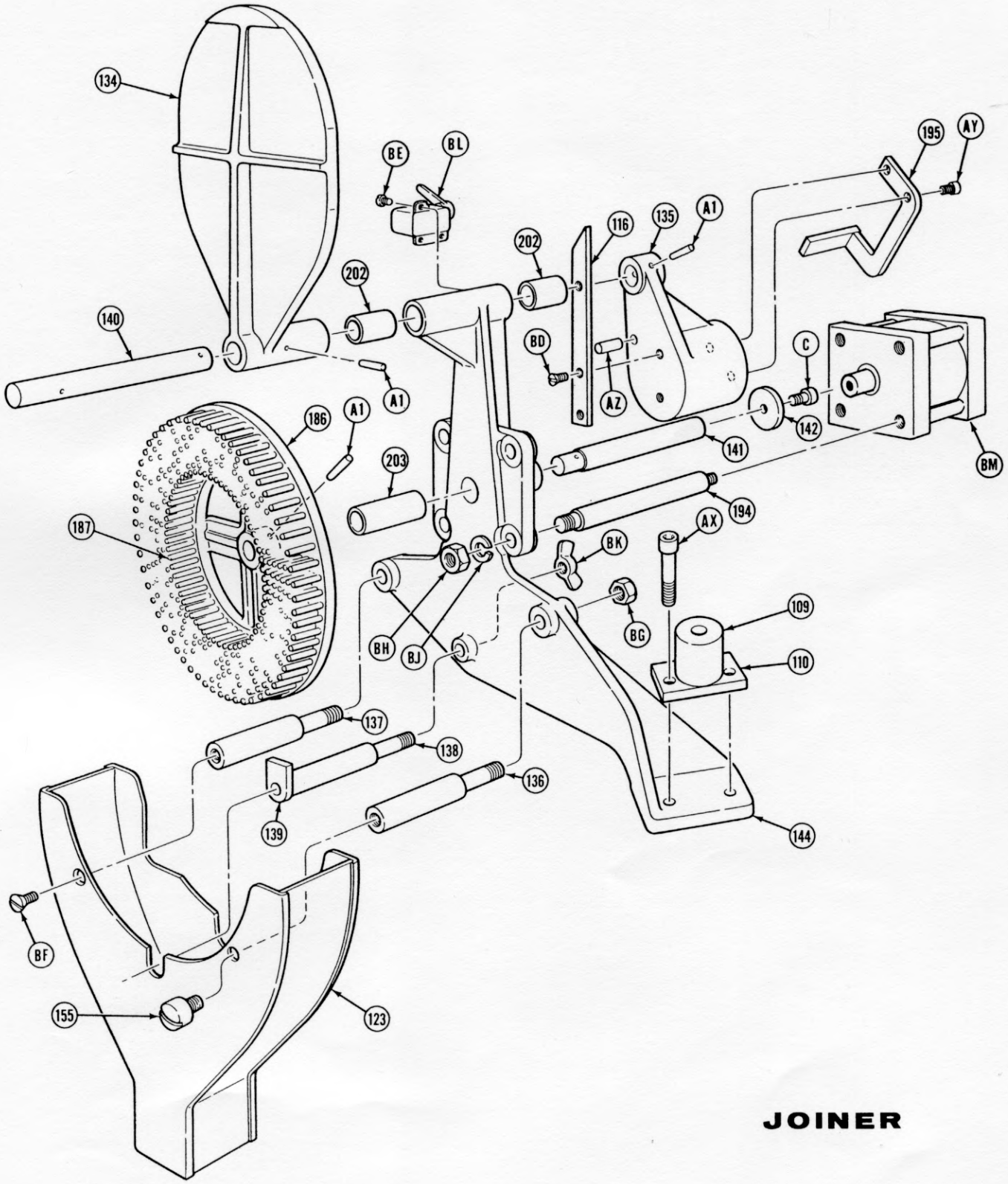
SEE PAGE 21

RECTIFIER

Joiner Parts List

Detail No.	Description	Detail No.	Description
109	Ring Bumper	(A)	Taper Pins
110	Bumper Plate	(C)	1/4-20 x 1/2 Socket Head Cap Screw
116	Push Arm (Counter)	(AX)	3/8-16 x 1-1/4 Soc Hd Cap Screw
123	Joiner Chute	(AY)	10-24 x 3/8 Soc Hd Cap Screw
134	Joiner Plate	(AZ)	1/4 x 1 Dowel Pin
135	Counterweight	(BD)	8-32 x 3/8 Flat Hd Mach Screw
136	Ring Support	(BE)	6-32 x 1/4 Fillister Hd Mach Screw
137	Ring Support	(BF)	1/4-20 x 5/8 Flat Hd Mach Screw
138	Ring Support	(BG)	1/2-13 Hex Nut
139	Joiner Plate Stop	(BH)	1/2-13 Jam Nut
140	Joiner Plate Shaft	(BJ)	1/2 Lock Washer
141	Peg Ring Shaft	(BK)	1/2-13 Thumb Nut
142	Peg Ring Washer	(BL)	Counter, Veeder Root C-112215
144	Joiner Bracket	(BM)	Air Cylinder
155	Stop Screw		
186	Peg Ring		
187	Peg Ring Pin		
194	Cylinder Stud		
195	Air Cylinder Stop		
202	Joiner Bushing		
203	Peg Ring Bushing		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JOINER