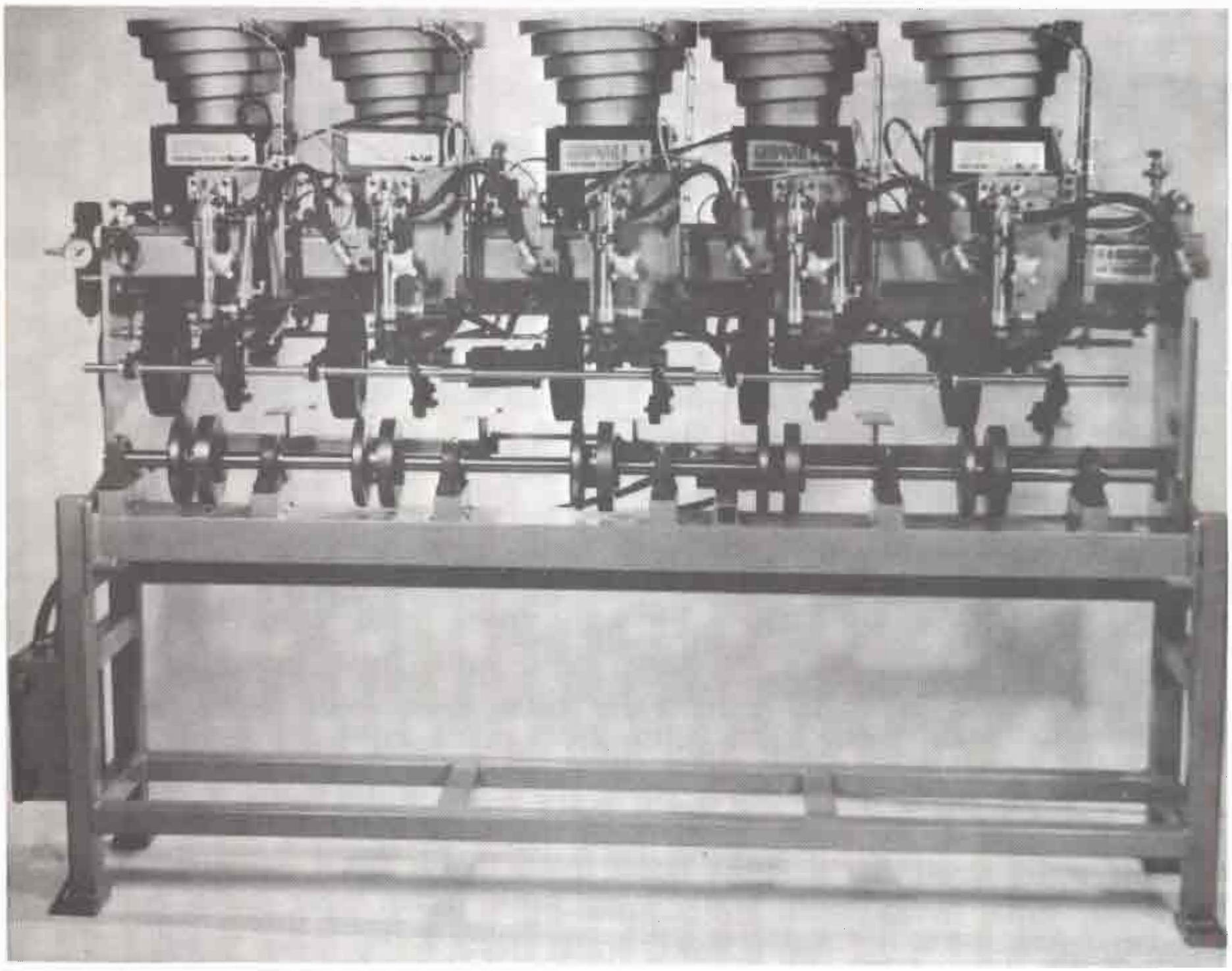
OPERATING INSTRUCTIONS

GRIPNAIL MULTI-HEAD FASTENING CENTER

Models #491, #492



GRIPNAIL®
FASTENING SYSTEMS

OPERATING INSTRUCTIONS

FOR

GRIPNAIL MULTI-HEAD FASTENING CENTER

Models #491/ #492; -2, -3, -4

Gripnail has a continuing program of improving its equipment. Modifications are continually being made so some of the earlier models may be slightly different from those described in this manual. If any questions exist, please contact our service department.

GRIPNAIL
FASTENING SYSTEMS

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97 Dexter Road • East Providence, Rhode Island 02914

(401) 431-1791

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GRIPNAIL FASTENING SYSTEMS

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GENERAL OPERATION

DRIVE CYCLE:

When signaled by the controller, the drive valve will open and allow air to enter the cylinder. This extends cylinder downward, applying Gripnail to sheet metal. At end of cycle, cylinder will return to "up" position.

DRIVE CYCLE INTERLOCK:

To prevent accidental activation of drive cylinder, a micro switch (50203) with steel roller has been mounted to side of load cylinder V block (see page 9). This switch is closed only by a return stroke of the load cylinder at the end of the loading cycle. Closed switch indicates full return stroke has been completed by load cylinder. Now drive cylinder can be safely operated as needed. If at any time switch is open (load cylinder not in retracted position) drive cylinder cannot be activated by controller.

LOAD CYCLE:

When magnetic reed switch (44110) or micro switch (50203) located to right side of drive cylinder is closed the load cylinder will be permitted to extend (see page 6). This operation loads next Gripnail onto magnetic driver (30295). At end of cycle, load cylinder retracts to original position.

LOAD CYCLE INTERLOCK:

Depending upon model, magnetic reed switch is activated or micro switch roller is depressed when drive cylinder is in "UP" position (see page 6), ensuring magnetic driver is ready to receive next Gripnail. Downward stroke of driver releases and deactivates switch. Drive cylinder return to "UP" position re-activates. Load cylinder will operate only when drive cylinder is in "UP" position.

AIR PRESSURE SYSTEM

HIGH PRESSURE TANK:

This tank contains main air pressure supply and primarily operates drive cylinders. Adjusting pressure will control impact power of cylinders. Tank also supplies air for load cylinder, track level sensor and powered roller operation.

LOW PRESSURE TANK:

Low pressure air supply controls return of drive cylinder after each cycle. Tank holds constant pressure near 10 PSI.

Note: Earlier models use approximately 20-25 PSI to retract the powered rollers and return the drive cylinders.

POWERED ROLLERS SYSTEM

The purpose of this system is to hold the sheet metal firmly against the rolling anvils for proper application of the Gripnails. It consists of level-mounted wheels powered by two air cylinders (see page 22). The cylinders are controlled by a valve which is electrically activated by a limit switch. A flow control valve, in conjunction with the electric valve, governs the application speed of the rollers. The regulator (see page 19c). controls the application pressure.

Note: Early Models — Regulator mounted adjacent to Head #3
Late Models — Regulator remotely mounted on end of upper tank.

The limit switch (#50208, page 23) is triggered by the leading edge of the sheet metal as it enters. This signals the electric valve and supplies air pressure to the cylinders. They apply pressure to the rollers to firmly hold the metal during Gripnail application. The metal's trailing edge releases the limit switch as it exits, permitting the rollers to return.

GENERAL MAINTENANCE

DAILY MAINTENANCE:

1. Keep air and electric supply disconnected when Fastening Center is not in use.
2. Drain water from air tanks and air filter-regulator.
3. Lubricate all cylinder shafts with light machine oil.
4. Keep anvils and magnetic drivers clean from adhesive build-up.
5. Check magnetic drivers and all bolts and other fittings to see they are tightly fastened.
6. Keep all machine guards in place.

WEEKLY MAINTENANCE:

1. Lubricate drive and load cylinders —
   a. Disconnect upper and lower drive cylinder hoses and apply several drops of light machine oil to cylinder.
   b. Disconnect load cylinder air hose and apply oil through fitting, directly into cylinder.

2. Clean Air Sensors — Needle valve (44101) controls air stream passing from input sensor (30110) through track to output sensor (30111). Plastic tubing attaches here and connects to air pressure switch located in wire duct box.
   a. Disconnect air supply.
   b. Disconnect plastic tubing from both sensors.
   c. Loosen two mounting screws (60103) and remove sensor. Be careful not to misplace spacers (30208). See track assembly, page 18A.
   d. Wash sensor in solvent to remove any glue spray or insulation dust.
   e. Refasten mounting screws, spacers and plastic tubing.

ADJUSTMENTS

PRESSURE REGULATORS:

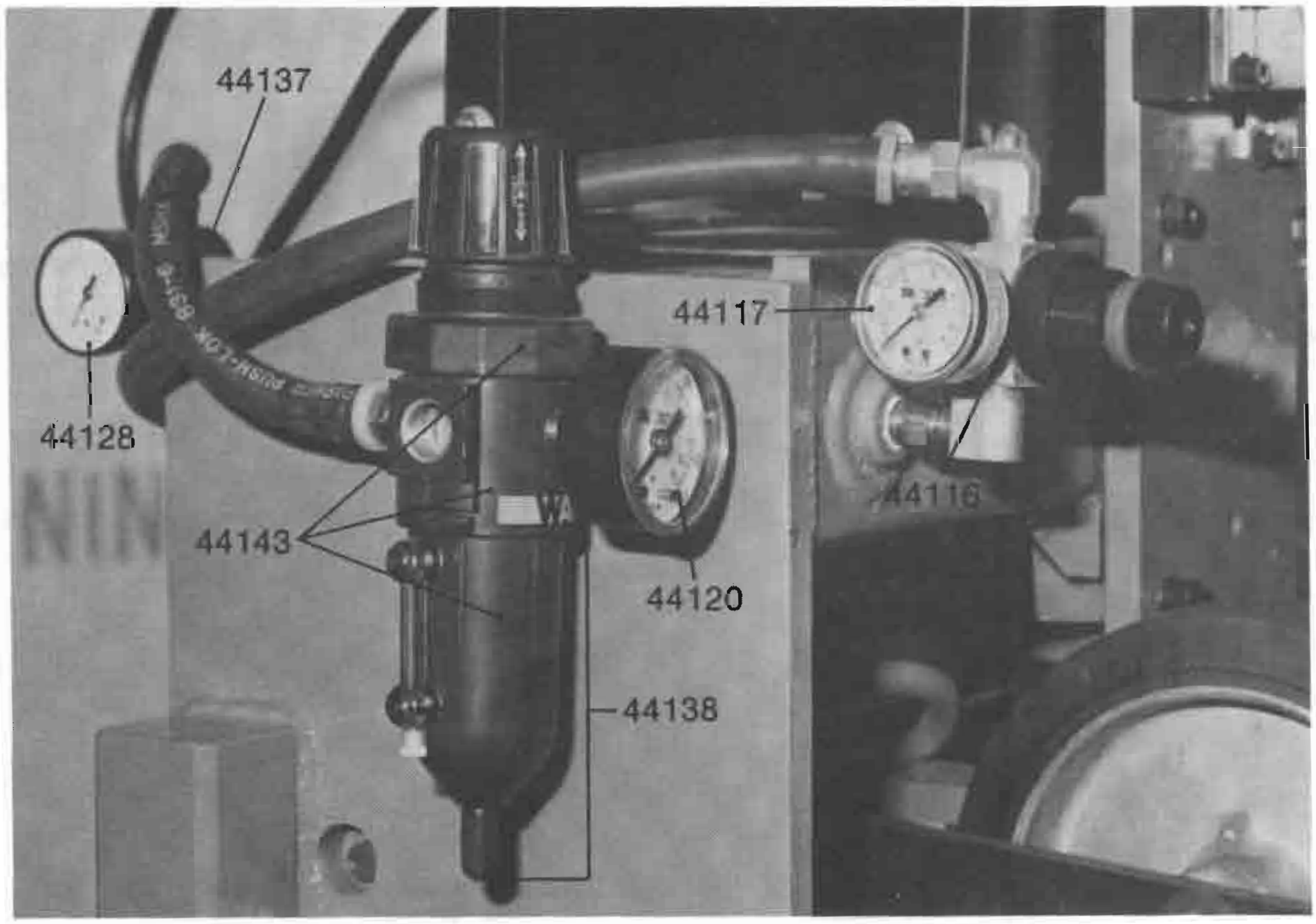
1. Shop supply pressure should be between 90 and 125 PSI.

2. **Main pressure regulator** (44143) with gage (44120) is factory set at 80 PSI. Readjustment may be necessary depending on gage of metal, density of liner or type of Gripnail applied.

3. **Low pressure regulator** (44137) with gage (44128) is factory set at 10 PSI. IMPORTANT: ANY ADJUSTMENT OF THIS REGULATOR IS NEITHER REQUIRED NOR RECOMMENDED.

4. **Load pressure regulator** (44116) with gage (44117) is factory set at 50 PSI. Before making adjustments, read Load Cylinder section in Troubleshooting chapter, page 12.

PRESSURE REGULATORS



Note: Some models may differ slightly, depending upon left, or right hand configuration.

MAGNETIC DRIVER:

1. Slightly loosen socket cap screws (60106). With drive cylinder in full "UP" position, rotate driver until face of driver aligns with line A.

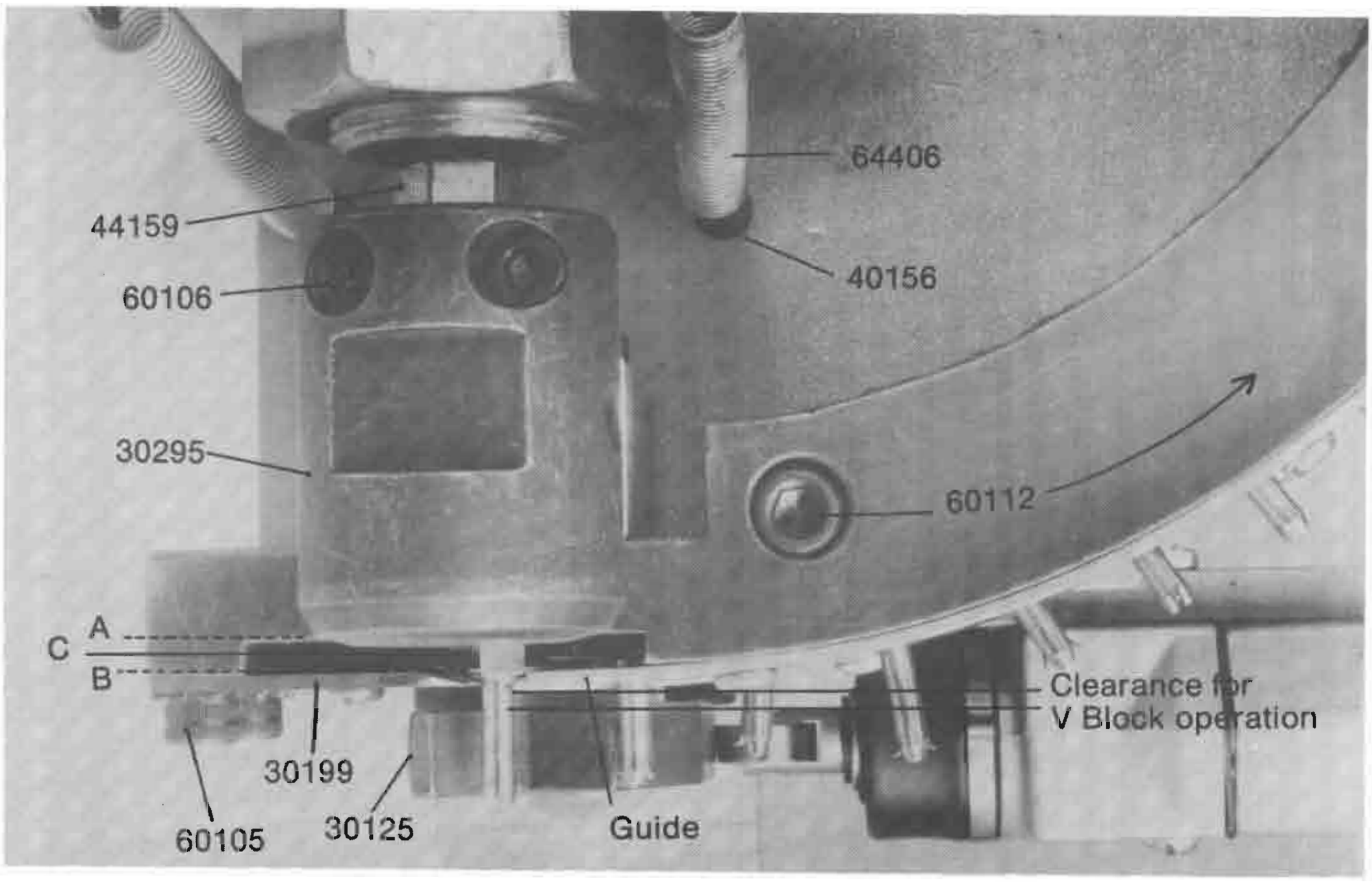
2. Driver should NEVER be adjusted below line C or above line A. An adjustment below line C will cause jamming. An adjustment above line A will cause Gripnail to load off-center on magnetic driver.

3. Alternately turn socket screws in small increments until tight.

TRACK/V-BLOCK CLEARANCE:

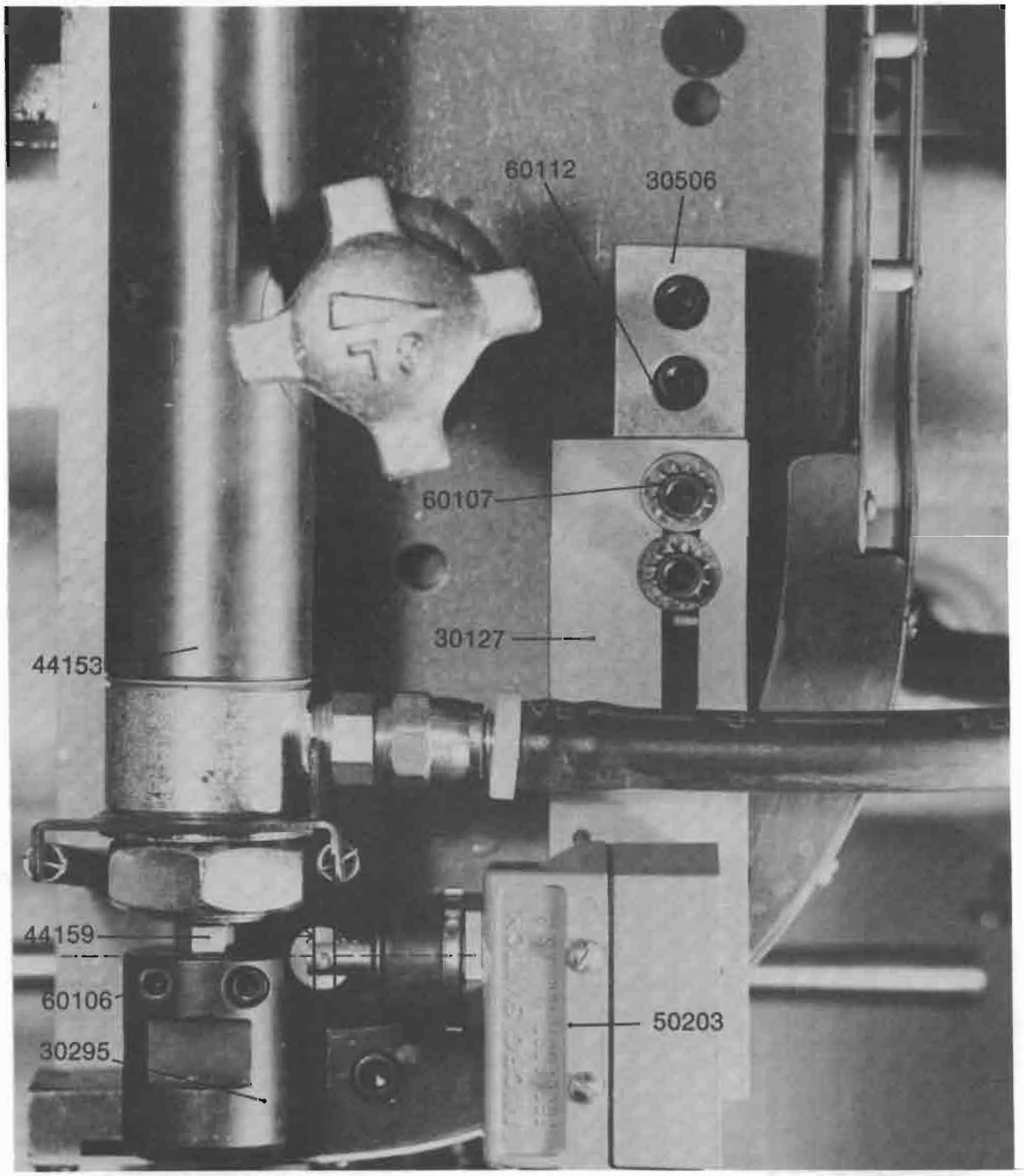
1. Check clearance between underside of track and V block (30125) on load cylinder.

2. A gap of 1/16" is acceptable. Check gap by manually extending load cylinder and releasing. Cylinder should operate freely in both directions. Tighten bolts (60112).



LOAD MICRO SWITCH: All Models, Serial #209 and up

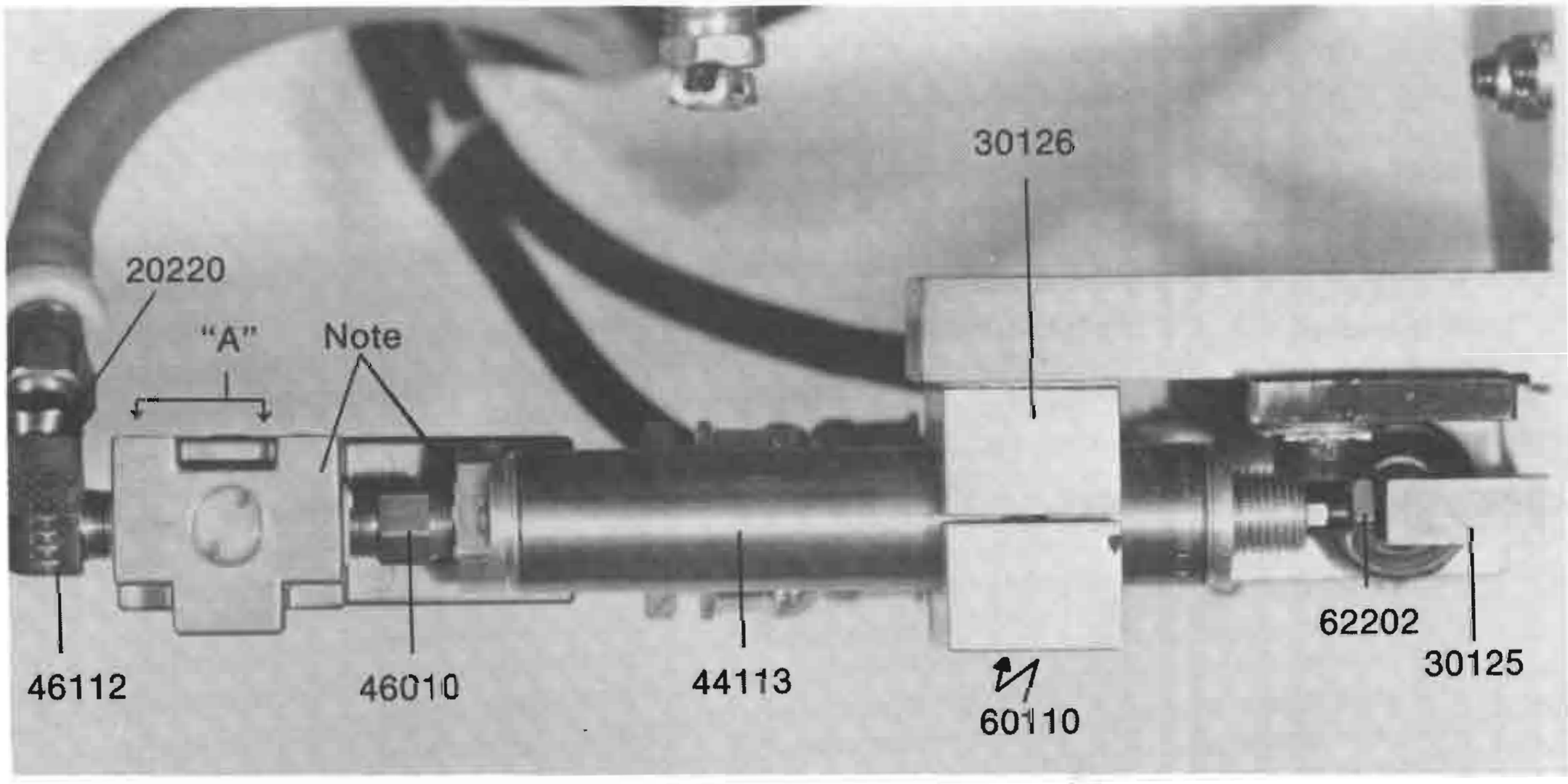
Load micro switch (50203) is mounted to right of drive cylinder and magnetic driver. It is activated by magnetic driver at completion of cylinder's return stroke. Driver depresses micro switch roller about 1/8". When properly adjusted by cap screws (60107), center of roller will align horizontally with top face of driver (dotted line).



LOAD CYLINDER ASSEMBLY: Serial #209 and up

Note: To understand this adjustment operation, please review the following information first.

The load cylinder (44113) is joined with a 3-way valve (see note). A restrictor fitting (20220) is attached to inlet port of valve to control air flow into valve and cylinder. This fitting is marked with a colored dye for identification. The valve has a white recessed button on the solenoid used as a manual override for load cylinder operation.



Note: PN #44162 — Model #492-4 with serial numbers *higher* than #209.
PN #44164 — Model #491-4 beginning serial #209.

LOAD CYLINDER — FASTENER CENTERING:

DISCONNECT ELECTRICITY AND AIR SUPPLY

Before proceding, be sure driver is adjusted as on page 5.

1. Loosen two cap screws (60110), leaving cylinder snug but moveable in mounting bracket (30126). If cylinder needs replacing, mark two halves of bracket for identification to facilitate reassembly (see pages 7 and 9).

2. Gently tap cylinder forward or back as adjustment requires for proper fastener placement on driver. Tighten cap screws equally and extend V block (30125) by hand, checking for proper fastener placement. Proper placement when loaded manually will be slightly short of center on driver.

IMPORTANT: While extending V block manually, check to be sure fastener travels on centerline (see photo) and does not rub along either edge of exit slot "A B". If it does, readjust cylinder to eliminate rubbing.

---

3. Recheck drive micro switch adjustment as outlined below. This check must be completed every time load cylinder is adjusted to ensure proper drive cylinder operation.

4. Reconnect air and electricity. Test load.

   a. If fastener placement is too far forward on driver, reduce load cylinder pressure by increments no greater than 5 PSI (see pages 4 and 12).

   b. If placement is too far back, increase pressure.

DRIVE MICRO SWITCH:

DISCONNECT ELECTRICITY AND AIR SUPPLY

1. Loosen two cap screws (60101) on bracket (30127).

2. Gently tap mounting bracket (30127), toward or away from V block as adjustment required for 1/8" travel distance on roller (see page 9). DO NOT TAP SWITCH HOUSING OR DAMAGE MAY RESULT. Tighten cap screws and test drive.

   a. If switch is positioned too closely to V block, the block will not retract fully and will interrupt the driving cycle. Reposition bracket.

3. Using ohmmeter, test switch for continuity as follows:

   a. Loosen two screws on switch access cover and remove.

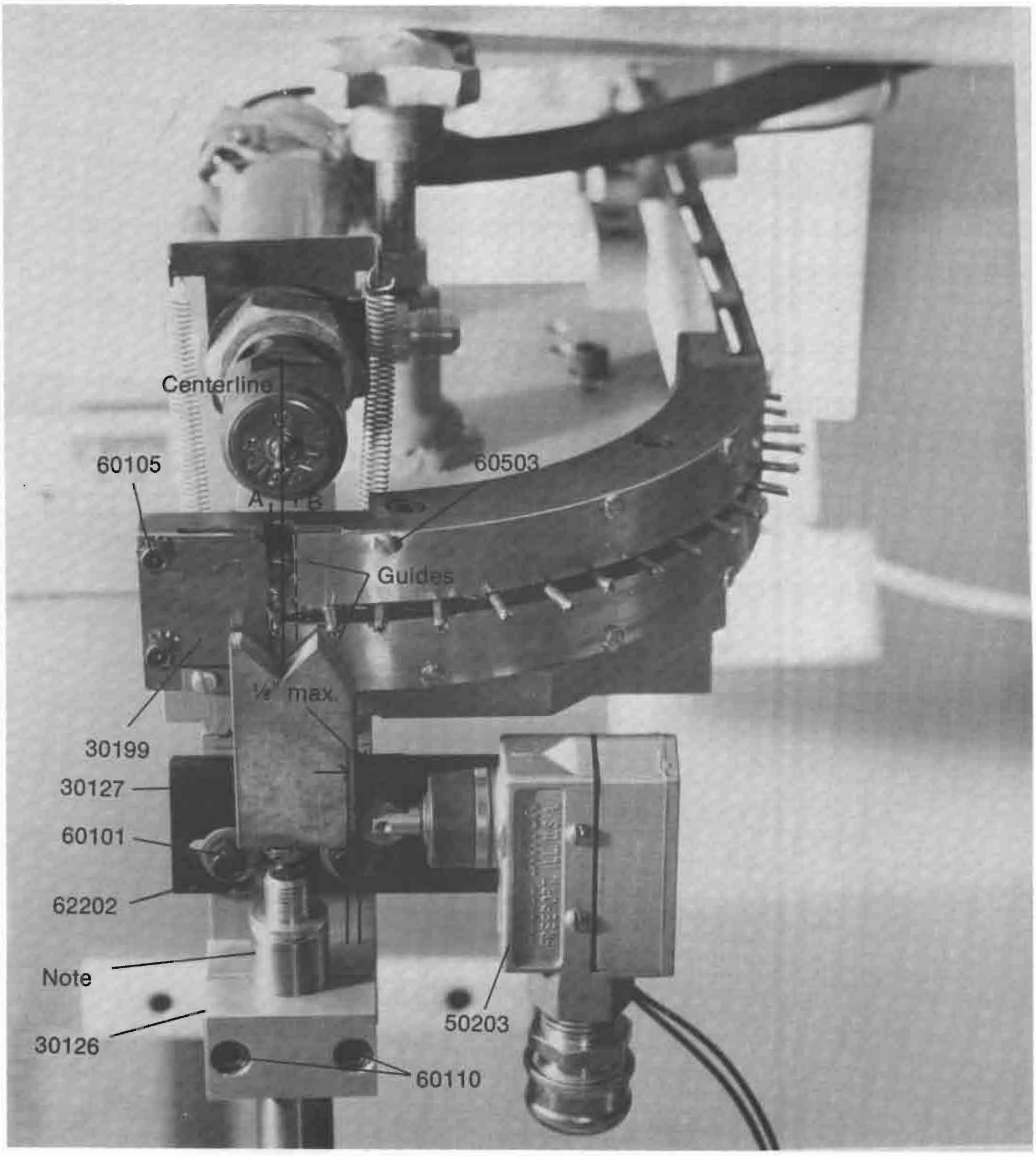
   b. Disconnect one lead from switch.

   c. Attach test leads to terminals marked "common" and "normally open."

   d. A meter reading will indicate switch is operating.

   e. To test switch function, manually extend V block; meter reading will cease. When block is retracted, reading will reappear.

   f. If no reading is obtained, return to step 2.



Note: Before ordering replacement, see pages 7 and 17.

MAGNETIC REED SWITCH (A)

DISCONNECT ELECTRICITY AND AIR SUPPLY

1. Drive cylinder must be in "up" or retracted position.

2. Locate terminals of switch wires in duct box.

3. Disconnect one (1) of these wires, noting terminal position.

4. With controller or portable test meter, attach one (1) test lead to disconnected wire in step 3 and other test lead to remaining switch wire.

CAUTION: Do not use *bulb-type* testers or permanent damage to reed switch will result.

5. Locate reed switch at position A. Lower switch until a meter reading is obtained (dotted line). Mark its position on cylinder, then continue 1/8" and tighten.

6. Installation of additional clamp as shown, is optional.

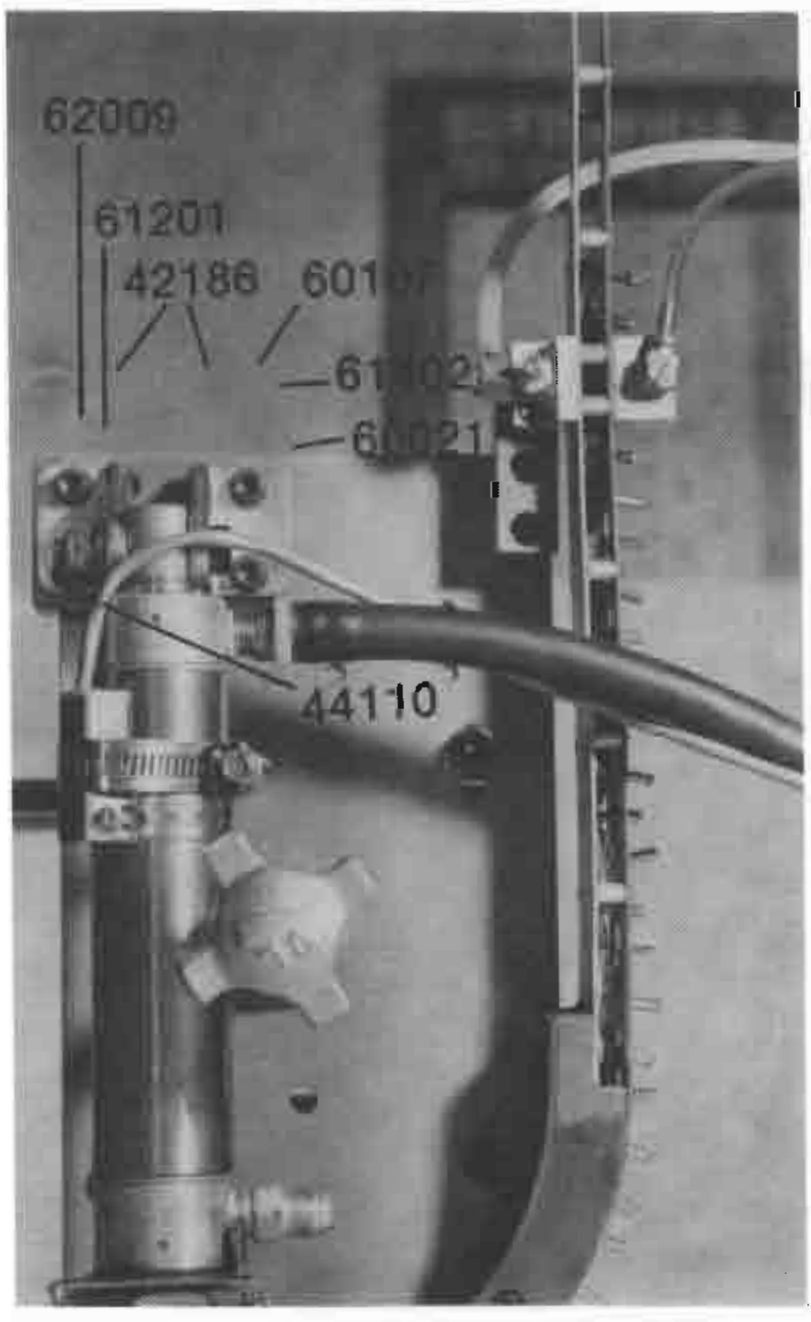
TRAVEL CLEARANCE (B)

1. Set 1/8" clearance between magnetic driver and track frame.

2. Loosen jam nut #62204 and turn bolt #60112 to set clearance. Cylinder body must be against bolt head.

3. Hold bolt firmly while tightening jam nut.

A



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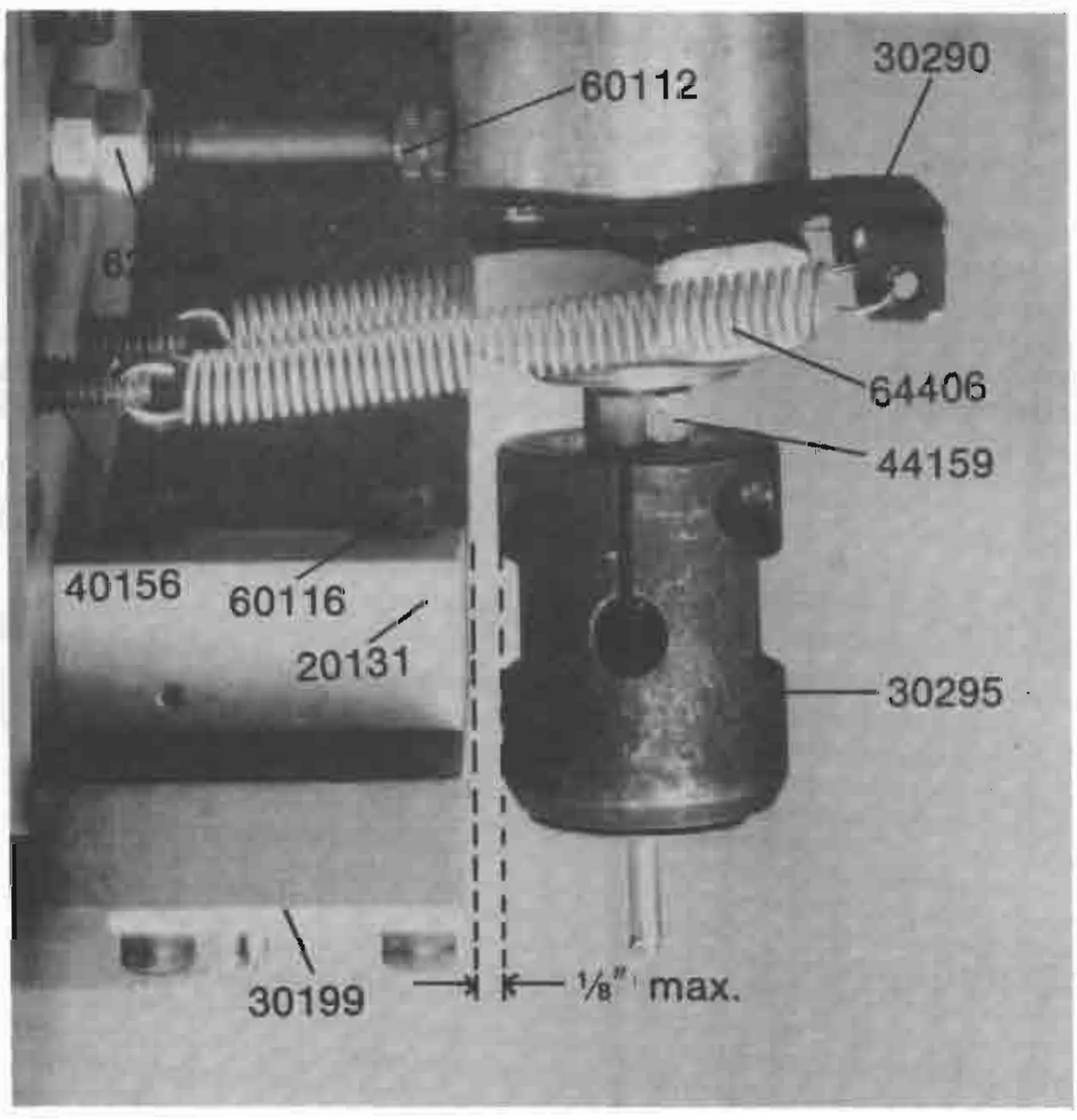


TROUBLESHOOTING

DRIVE CYLINDER — INOPERATIVE: All Models

1. Check air pressure for proper settings (see page 4).

CAUTION: Before proceeding, disconnect electricity and air aupply.

2. Check fuse in controller and/or terminal box.

3. Examine track assembly and remove any objects preventing free load cylinder operation (see page 9).

4. The steel roller on micro switch #50203 (page 9), should be depressed about 1/8" by V block #30125, when the load cylinder is fully retracted.

5. Inspect drive valve and micro switch connections in wire duct box and terminal box.

All Models Except #12492-4

6. Controller in "on" position (operator's console).

7. "Drive" switch in "on" position.

8. Head select switches "on" and operating in appropriate program bank.

Model #12492-4, Beginning Serial #196

9. Timer Relays in lower controller box must be fully seated in sockets.

10. Controller in "on" position (operator's console).

11. All operating head switches in "auto" position (terminal box) see page 19A.

12. Both 'duct size' and 'insulation' must be programmed.

LOAD CYLINDER — INOPERATIVE

1. Check load pressure for proper setting (see page 4).

CAUTION: Before attempting any further repairs, disconnect electricity and air supply.

2. Check track clearance to see if adjustments are needed (see page 5).

3. Check for foreign objects in feeder track and remove carefully *through top of track*. Damage may result to track if removal is forced or if performed at nail exit slot.

4. **Serial #209 and up** Check drive micro switch (50203) to see it is properly adjusted (see page 9).

5. Check tightness and adjustment of magnetic driver (see page 5).

6. **Model #12492-4 (492-4) Only** Check to see load timer (50045) is fully seated in its socket (see page 19A).

7. Check to see wiring connections of load cylinder valve and load micro switch are properly secured.

8. Check cylinder shaft to see if it is bent or otherwise damaged. If shaft is bent, cylinder must be replaced.

LOAD CYLINDER — FASTENER MISFEEDING

1. Remove any burrs or adhesive buildup from face of magnetic driver (30295).

2. Check for loose or improperly adjusted magnetic driver (see page 5).

3. Check for loose or improperly adjusted load cylinder (see page 9).

4. Check for bent or loose track guide (see pages 5 and 9).

5. Check for worn or damaged nail stop blade (30199) and escapement assembly (20131).

6. Check for proper load micro switch adjustment (see page 6).

7. Check for proper load cylinder pressure (see page 4).

FEEDER BOWL — INOPERATIVE

1. Check electrical cords for feeder bowl and machine to see both are plugged in. Check to see electrical toggle switch and air supply are both ON. Check fuse.

2. Needle valve (44101) on track assembly must be sufficiently opened to allow air to hit output sensor (30111) and activate pressure switch (50210) in wire duct box.

3. Check setting on rotary speed control switch. Fasteners will not feed if switch is set too low; they will fall off bowl ramps if set too high.

4. Closely check tubing and fittings from output sensor (30111) to pressure switch for cracks or leaks.

5. Check to be sure center bolt in feeder bowl is tightened.

6. Remove any foreign material from track and sensors. Refer to page 3.

FEEDER BOWL — OPERATES CONTINUOUSLY

1. Check to see output sensor (30111) is clear of foreign material which would prevent pressure switch from releasing by trapping air in signal line (48014).

2. Loosen universal elbow (46103) on output sensor which should release any trapped air and, in turn, stop feeder bowl.

   a. If bowl stops, clean sensors (see page 3).

   b. If bowl still runs, replace air switch (50210, see page 18B).

FEEDER BOWL — OPERATES TOO SLOWLY

1. Check setting of rotary speed control switch.

2. Check to be sure center bolt of feeder bowl is tightened.

3. If slow operation persists, it is generally an indication that either a spring mounting bolt has loosened or a spring has fatigued and broken. Springs can easily be replaced (see page 15).

PARTS REPLACEMENT

DRIVE CYLINDER REMOVAL

DISCONNECT ELECTRICITY AND AIR SUPPLY

REMOVE THE FOLLOWING FROM DRIVE CYLINDER:

1. Magnetic driver #30295.
2. Upper and lower hoses.
3. Mounting nut #62112 and lockwasher #61304.
4. Spring return bracket #30290. *Do not* disconnect springs!
5. Reed Switch #44110.
6. Elastic stop nut #62009 and lockwasher #61201.
7. Pull out shoulder bolt #60021 to remove cylinder.

DRIVE CYLINDER INSTALLATION

REVERSE PROCEDURE TO INSTALL A NEW CYLINDER

IMPORTANT — With spring return bracket #30290 in place, readjust elastic stop nut and shoulder bolt tension as follows:

1. Tighten elastic stop nut enough to hold cylinder from returning when pivoted out manually, about 1" from travel stop bolt #60112 (see page 10B).
2. Loosen stop nut slowly, only enough to permit cylinder to return smoothly to travel stop bolt. Check by pivoting cylinder out and releasing.

ADJUST TRAVEL STOP, REED SWITCH, LOAD MICRO SWITCH AND MAGNETIC DRIVER — As outlined on pages 10, 6 and 5

DRIVE CYLINDER HEX STUD (44159) REPLACEMENT

DISCONNECT ELECTRICITY AND AIR SUPPLY

1. With *fresh* solvent clean all oil and grease from mating threads on cylinder rod and hex stud.

2. Carefully apply Loctite #271 or similar high strength grade anerobic adhesive to clean and dry male threads on cylinder rod end of hex stud.

3. Tighten stud securely and *immediately* wipe excess adhesive off cylinder rod. Oil rod lightly. DO NOT ALLOW ANY ADHESIVE TO COME INTO CONTACT WITH CYLINDER ROD BUSHING.

4. Minimum curing time of one hour for adhesive is necessary before resuming use of machine. Installation at end of work day, with overnight curing, is recommended.

FEEDER BASE SPRING (42110) REPLACEMENT

1. Disconnect feeder base electrical cord and remove entire parts feeder assembly from machine.

2. Remove center bolt, bowl and spacer plate.

3. Remove control panel leaving both wires connected to transformer coil. Remove remaining three-sided panel.

4. Tighten all spring mounting bolts. Loose mounting bolts can seriously affect feeder base performance.

5. Check to be sure transformer coil mounting bolts have been tightened.

6. An air gap of approximately .030"—.035" should exist between transformer coil and armature bar located directly above. Note: A strip of 22 gage galvanized stock can be used to check air gap.

7. **IMPORTANT:** When replacing springs, replace one at a time to avoid losing gap adjustment. Two aluminum spacer washers should "sandwich" the spring at each mounting location. Tighten bolts securely.

8. Reinstall panels, spacer plate and bowl, leaving center bolt snug but not tight.

9. Return unit to machine, position rubber feet in locator plate and rotate bowl to establish a 1/8" bowl-to-track clearance. TIGHTEN CENTER BOLT SECURELY.

LOAD CYLINDER REPLACEMENT #44113: Serial #209 and higher

REMOVAL:

DISCONNECT ELECTRICITY AND AIR SUPPLY

1. Mark two halves of mounting bracket (30126) to facilitate reassembly. Do not reverse halves of bracket or *permanent damage to cylinder may result* (see pages 7, 9).

2. Disconnect air hose from adapter (20220).

3. Remove two screws (see A, page 7) from valve (Note). Screws are located diagonally across from each other and are separated by white plastic disc. Separate coil from valve body.

4. Remove valve body and hex nipple (46010) from inlet port of load cylinder (44113).

5. Remove cap screws (60110) from bracket (30126).

6. Remove V block 30125 and jam nut (62202).

INSTALLATION:

1. **IMPORTANT:** Remove and discard large mounting nut on replacement cylinder.

2. Place jam nut (62202) by hand onto threaded cylinder rod until nut reaches end of threads. Attach V block.

3. While holding V block securely, tighten jam nut to V block. DO NOT HOLD OR PLACE WRENCHES ON CYLINDER BODY when tightening nut. IMPORTANT — If corner of jam nut protrudes above top face of V block, it must be ground flush to avoid striking track during load cylinder operation.

4. Reverse steps 1 — 5 under Load Cylinder Removal (see above).

5. When installation is completed, refer to Load Cylinder Adjustment (page 8) followed by Drive Micro Switch Adjustment (page 8).

LOAD CYLINDER REPLACEMENT #44114

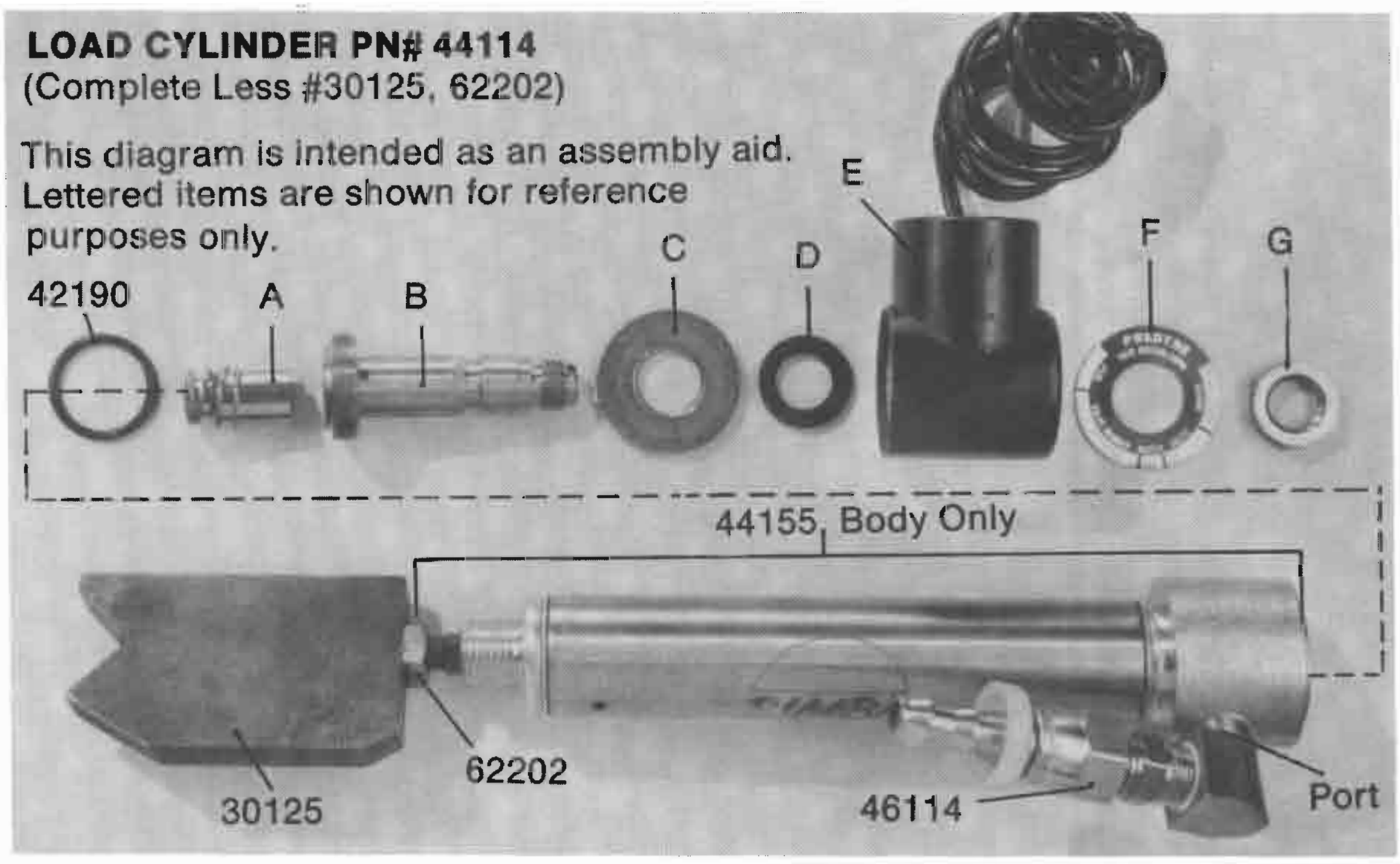
REMOVAL: **CAUTION — DISCONNECT ELECTRICITY AND AIR SUPPLY**

1. Scribe both halves of bracket #30126, to aid realignment during new cylinder installation. DO NOT REVERSE the halves or permanent damage to cylinder may result.
2. Disconnect air supply fitting.
3. If solenoid coil (item "E") replacement is not necessary, do not remove electrical connections.
   a. Insert a screwdriver in item "B" to prevent rotation.
   b. Loosen and remove item "F" and "G".
   c. Slide off coil "E" and remove "B" and "A".
4. Remove two (2) #60110 screws from bracket and remove cylinder.
5. After noting alignment of V block #30125 with air inlet port, remove it with nut #62202.

INSTALLATION:

1. Discard large mounting nut from replacement cylinder.
2. Assemble nut #62202, by hand, on threaded cylinder rod until it reaches end of threads, then attach V block.
3. Align V block to air inlet port as noted in step 5 above.
4. Hold V block securely and tighten nut. DO NOT HOLD CYLINDER BODY IN ANY MANNER WHEN TIGHTENING V BLOCK OR JAM NUT.
5. If corner of nut protrudes above top surface of V block, grind flush to avoid striking track during load cycle.
6. a. Exercise care when assembling item "B". Threads must engage properly for several turns *before* tightening.
   b. Items "C" and "G" have shoulders that face solenoid coil.
   c. After installing coil, hold "B" firmly with a screwdriver while tightening "G".

After completing installation, refer to cylinder and drive micro switch adjustments on page 8.



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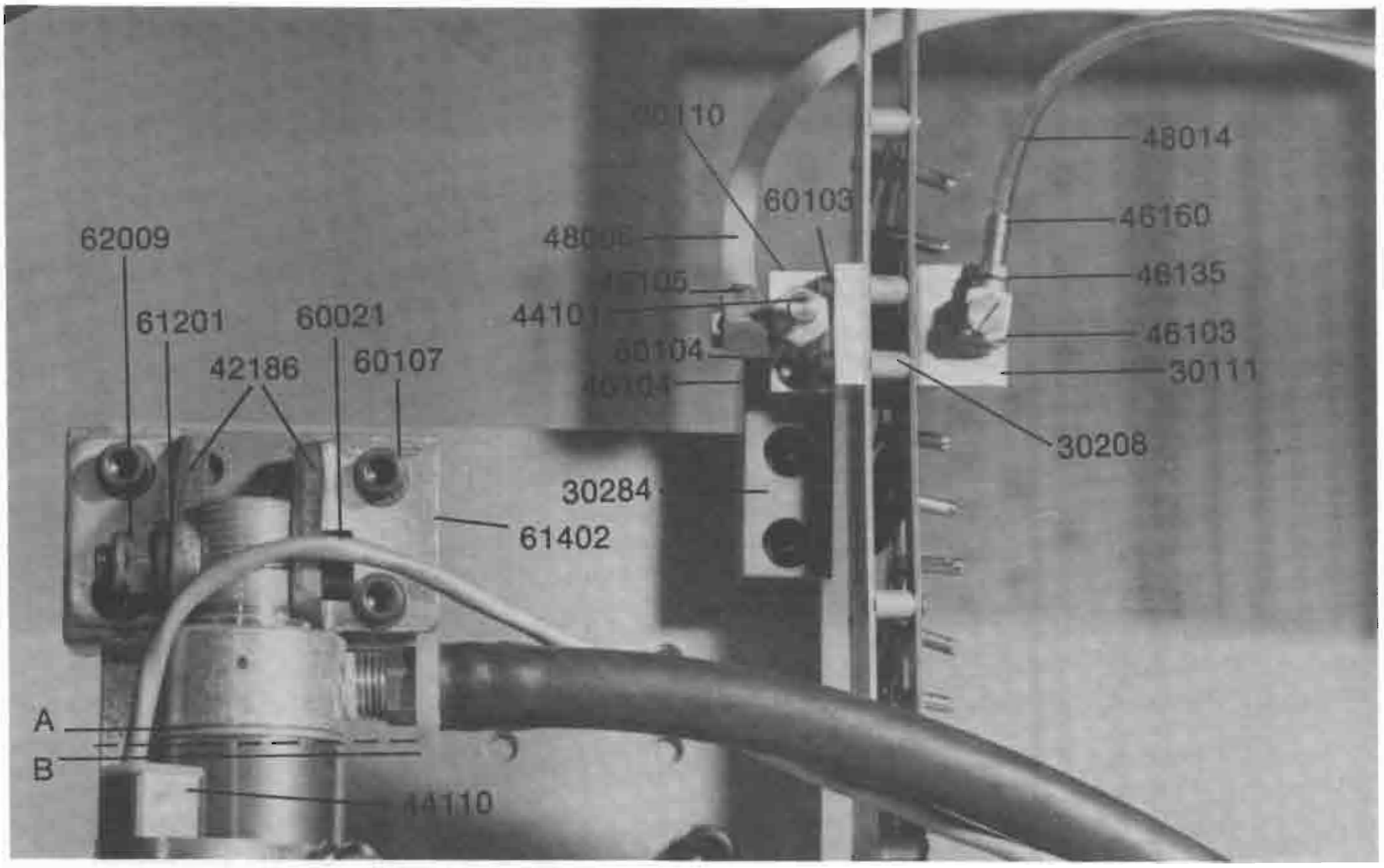
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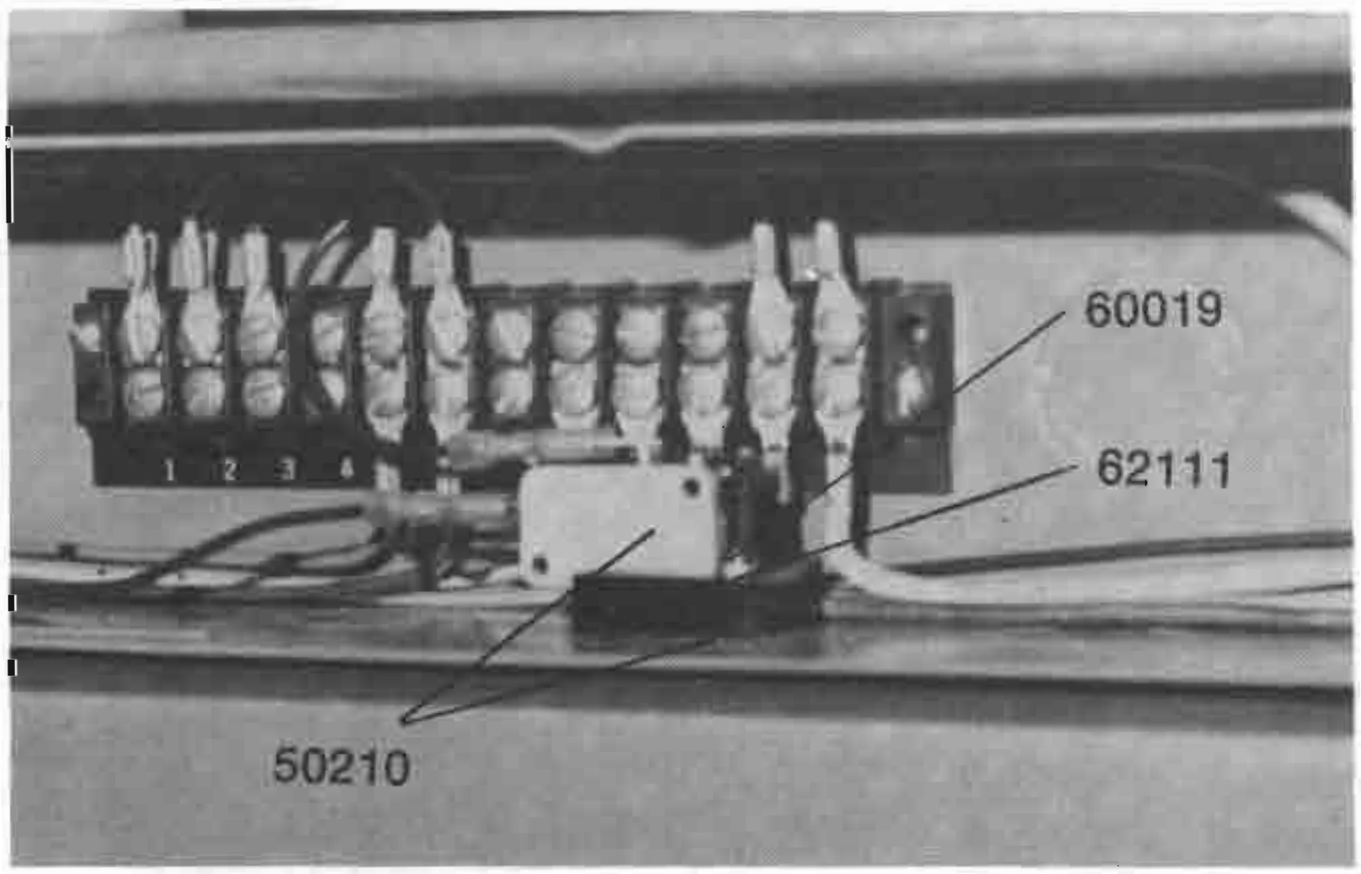
B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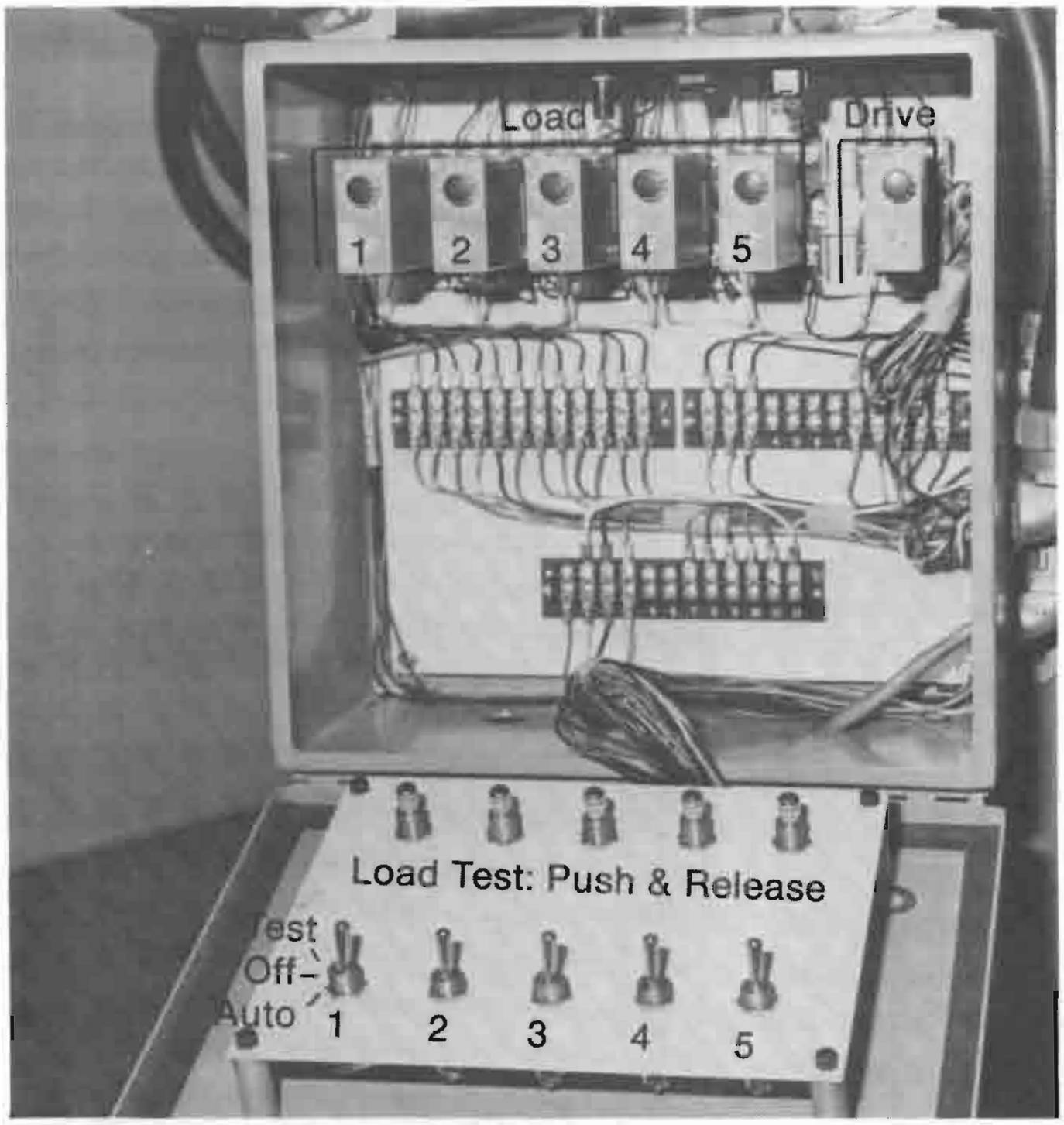
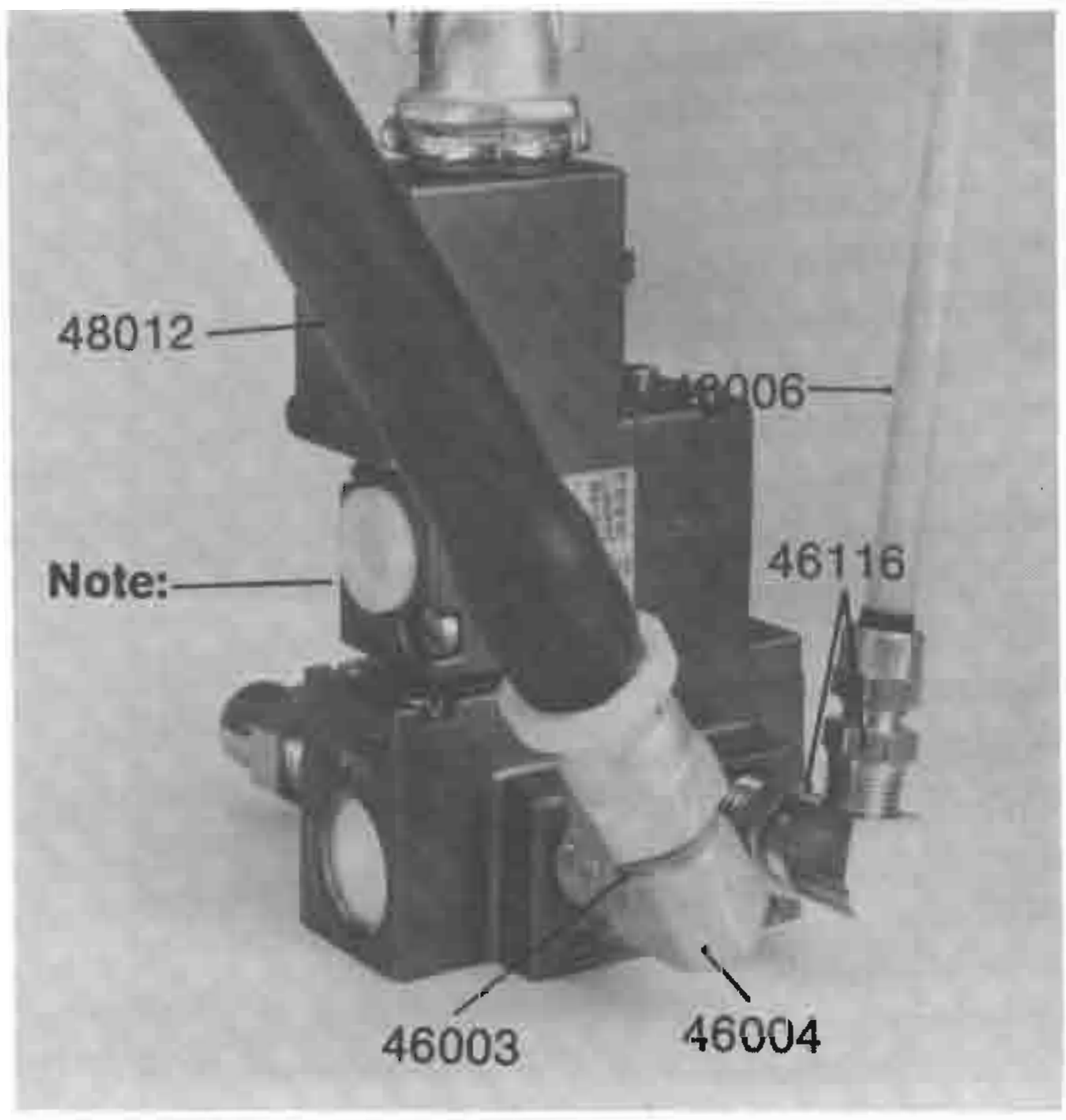


Model 12492-4
Serial #196 up

"L" denotes load position.
"D" denotes drive position.

B



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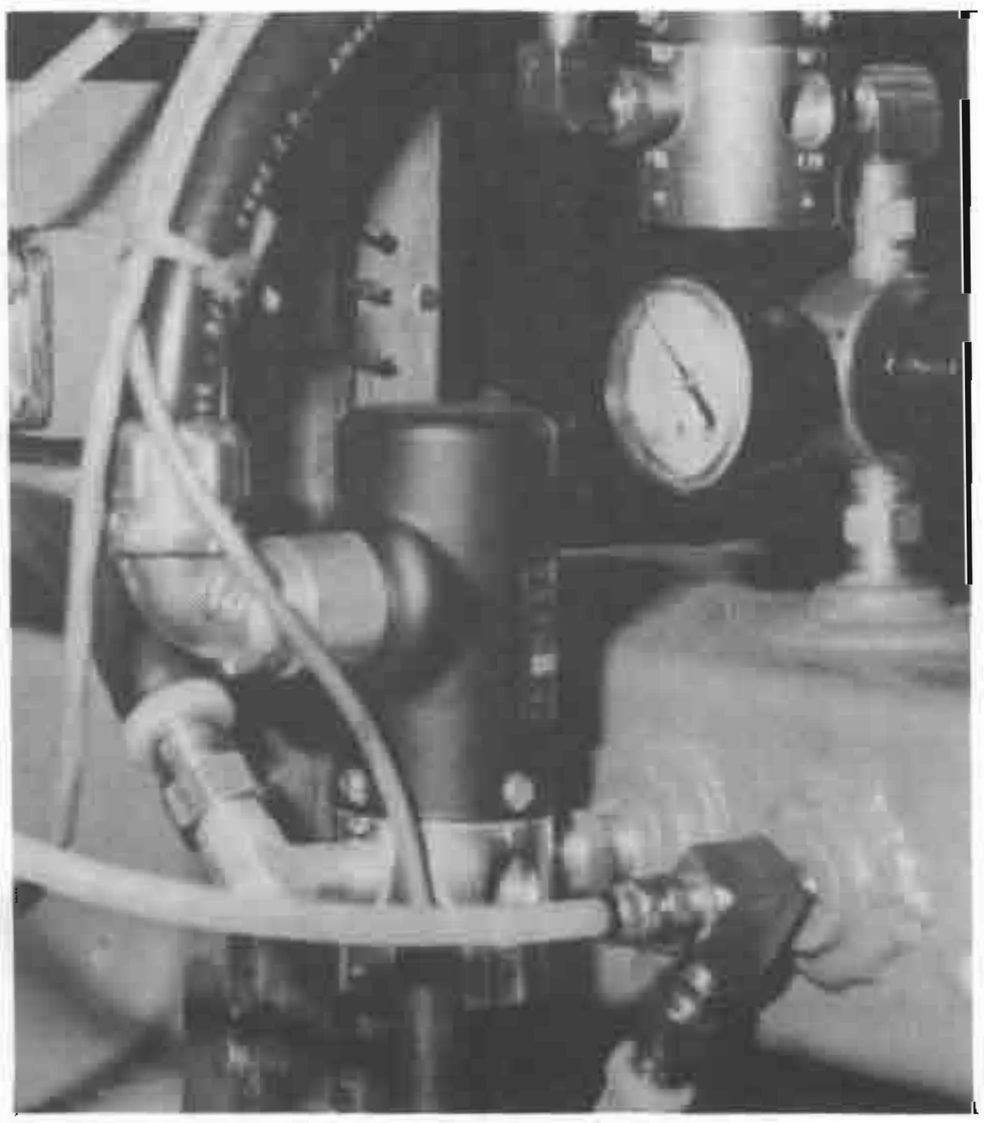
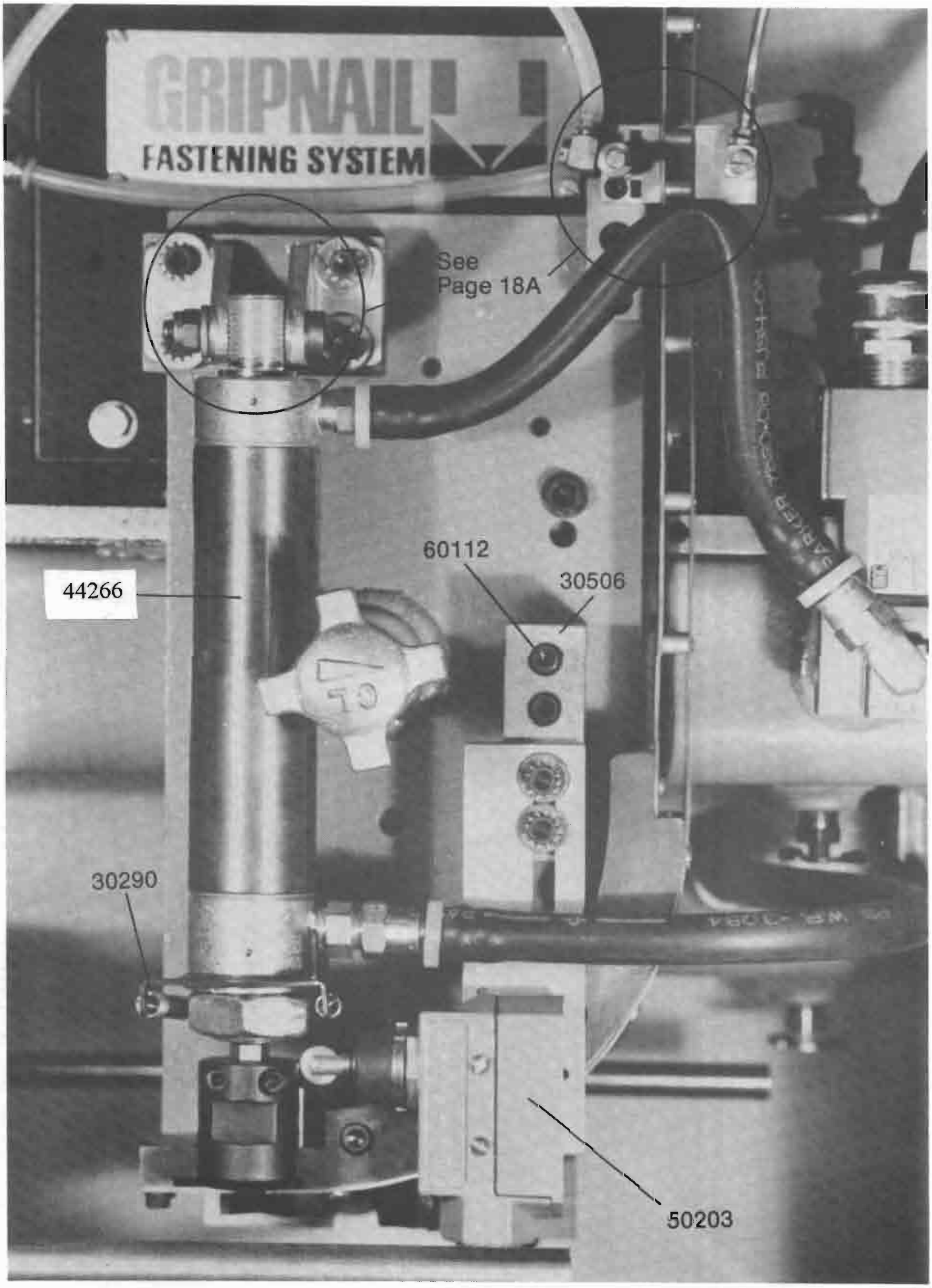
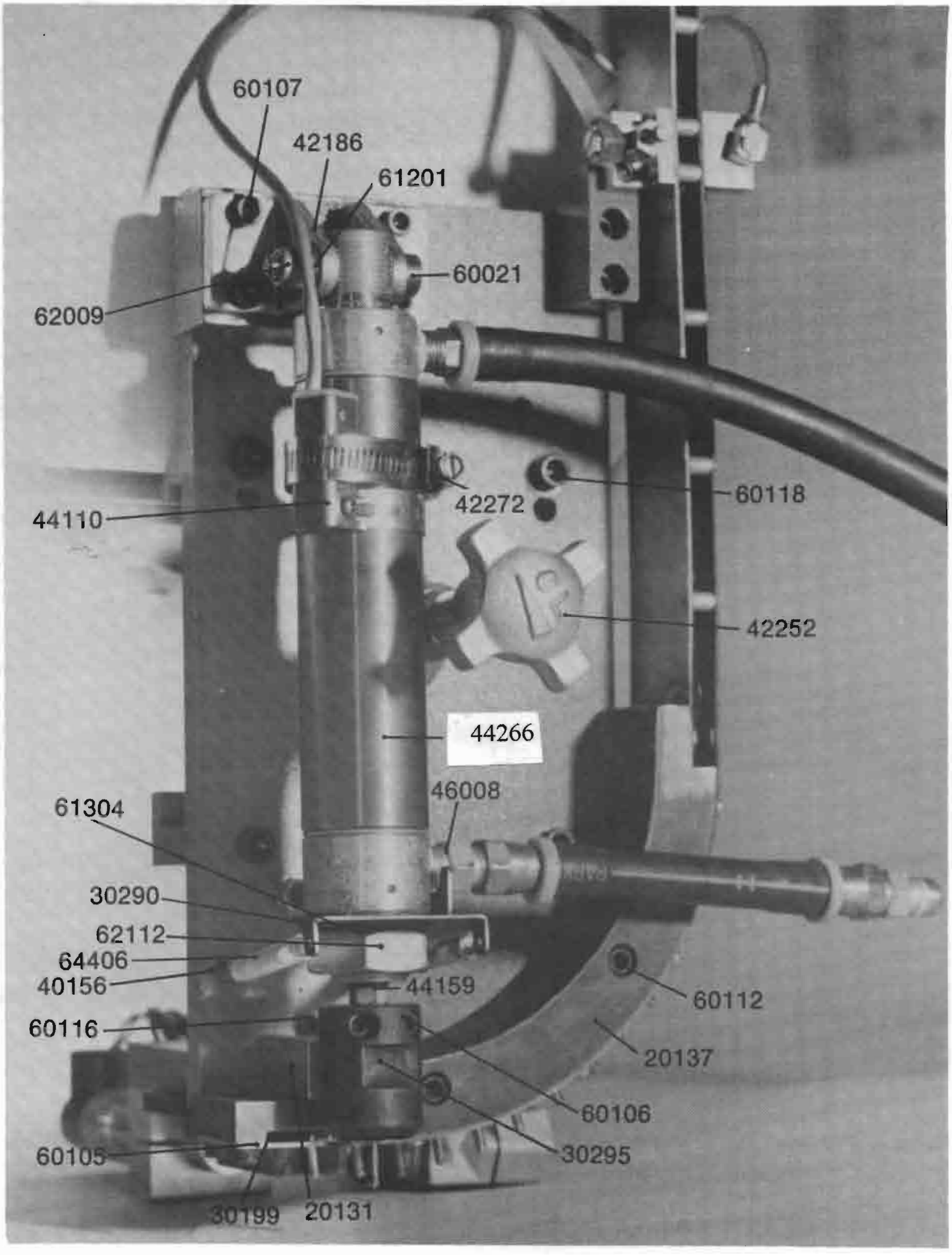


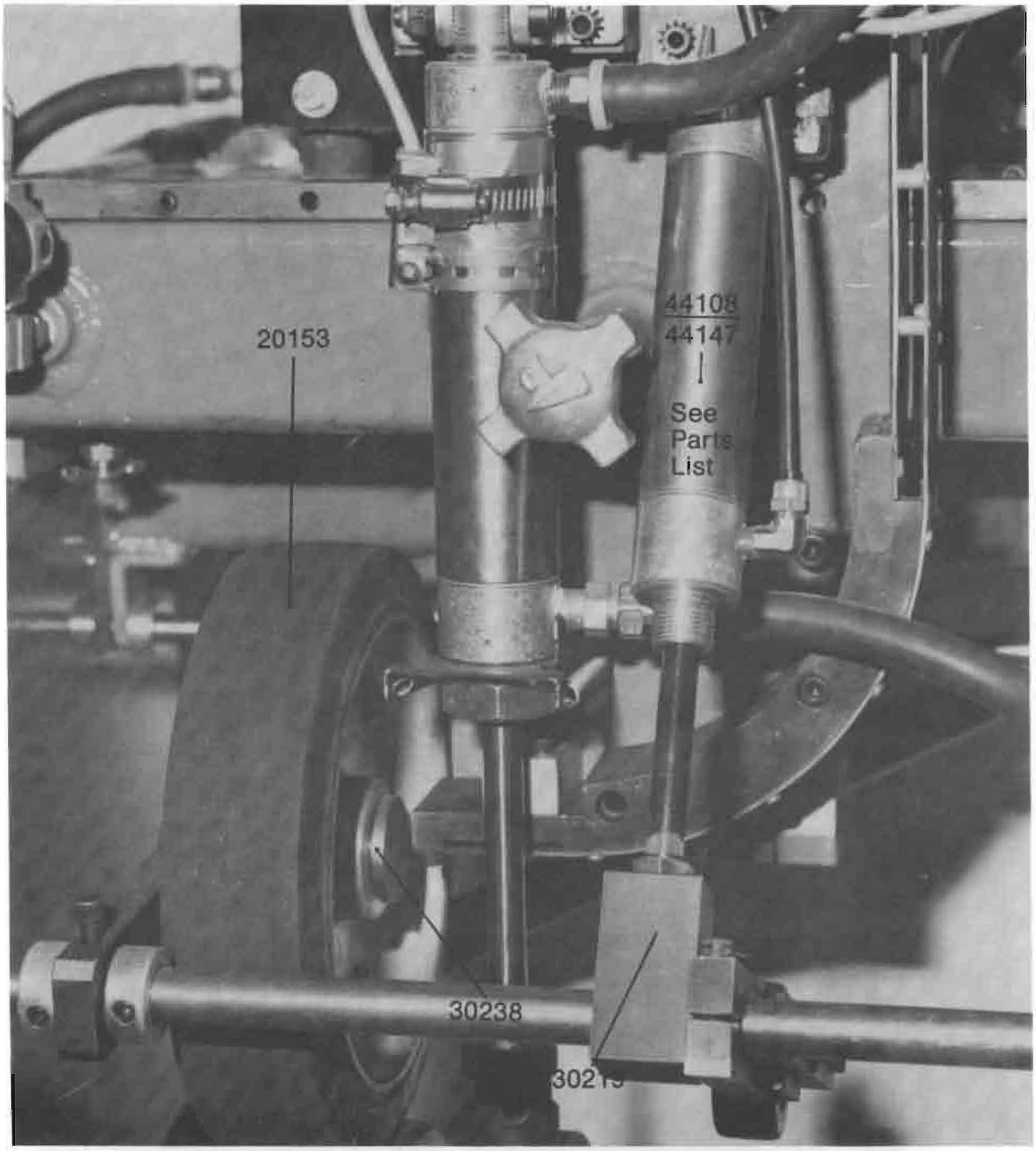
PN #44160 — Model 12492
PN #44161 — Model 12491

All Models, Serial #209 and Up



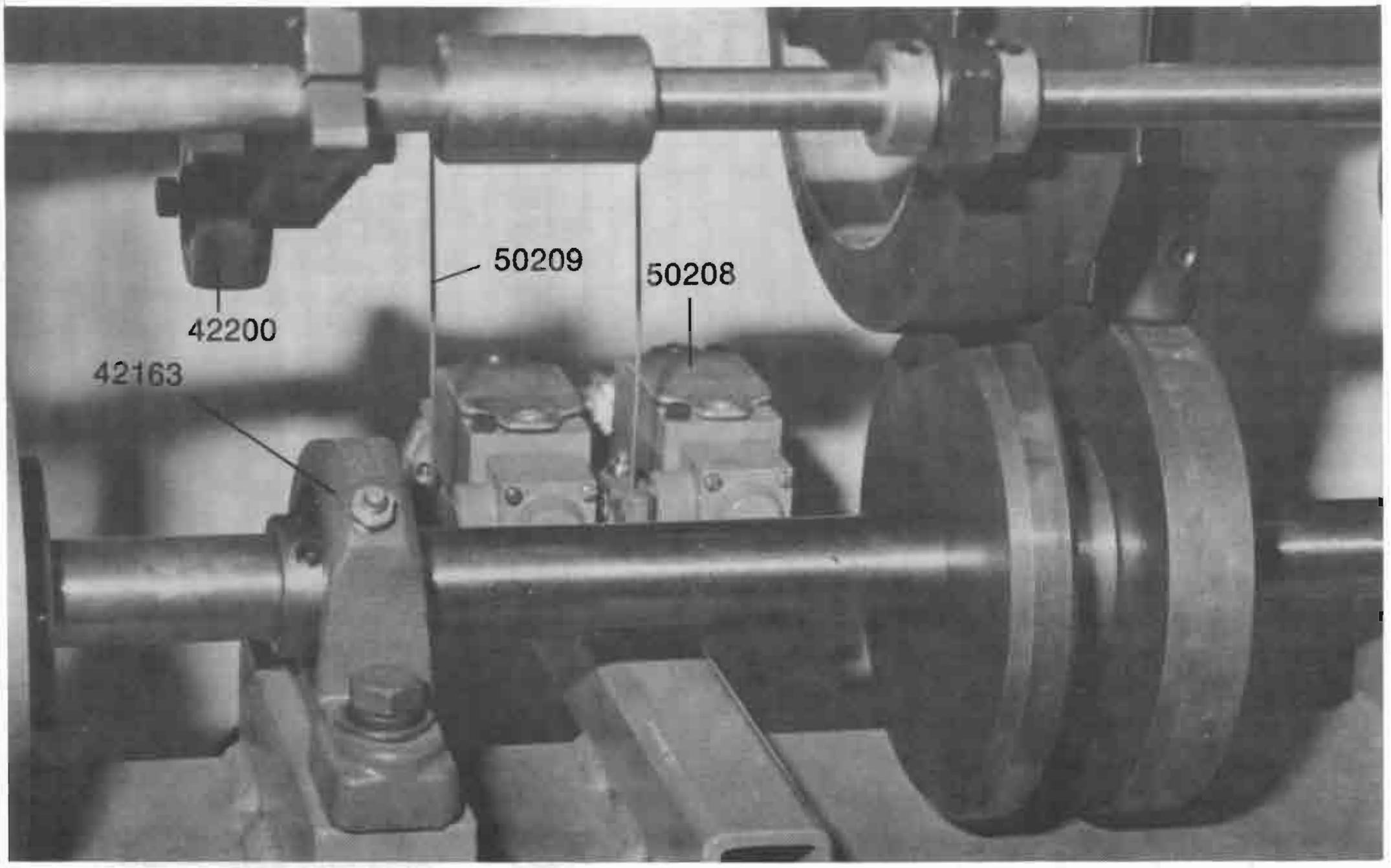


***Note:** All "-2" Models #44146.



Note — PN #44108 — Model #12491, -3, -4
Model #12492, -3, -4

PN #44147 — All "-2" Models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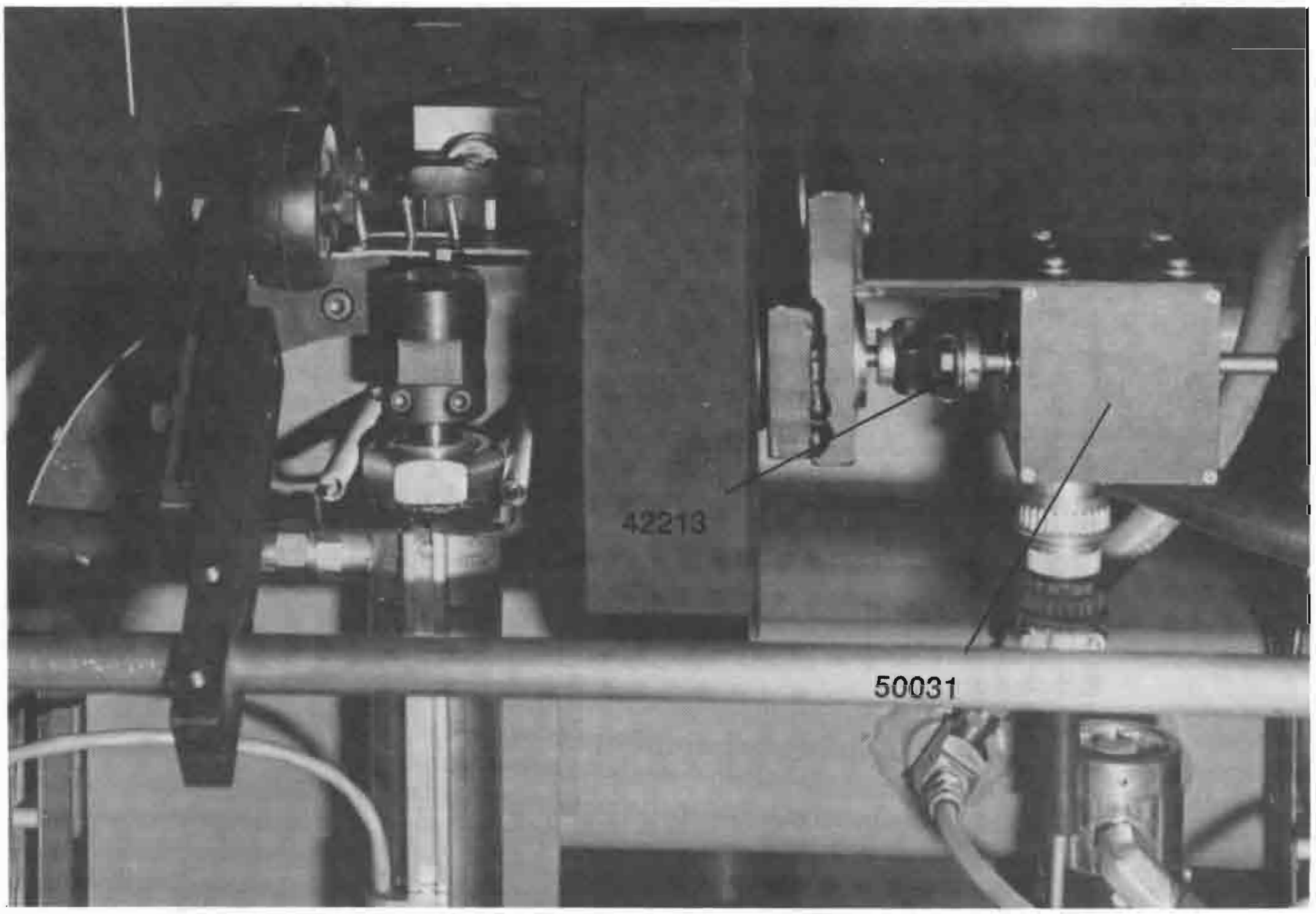
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PARTS LIST

PART #	DESCRIPTION
20101	Feeder base assembly
20131	Escapement assembly
20137	Track frame
20220	Restrictor fitting
30110	Input sensor
30111	Output sensor
30125	V block
30126	Load cylinder bracket
30127	Switch bracket
30199	Nail stop blade
30208	Track spacer
30284	Track bracket
30290	Spring return bracket
30295	Magnetic driver
30428	Upper clamp
30431	Lower clamp
30506	Switch mount block
42110	Feeder base spring
42186	Hinge bracket
42213	Flexible coupling
42249	Knob kit
42253	Rubber foot mount
44101	Needle valve
44108	Cylinder
44113	Load cylinder
44114	Load cylinder
44116	Mini regulator
44117	Mini gage
44120	Main gage
44128	Low pressure gage
44137	Low pressure regulator
44138	Bowl kit
44141	Drive valve
44143	Main regulator
44147	Power roller cylinder (-2 models)
44266	Drive cylinder
44159	Hex stud
44160	Drive valve
44161	Drive valve
44162	Load valve
44164	Load valve
46003	Hose swivel
46004	Elbow adaptor
46008	Adapter
46010	Hex nipple
46103	Universal elbow
46104	Hex plug
46105	Barb fitting
46112	Elbow
46114	Adapter
46116	Tube connector
46129	Hex nipple
46135	#10 Gasket
46160	PVC barb fitting
48006	1/4" poly tube
48012	3/8" hose
48014	1/8" PVC tube
50002	Fuse holder
50031	Shaft encoder
50044	Push button switch
50045	Timer
50056	Fuse, 5 amp
50057	Bulb
50202	Air switch (early models)
50203	Micro switch
50208	Limit switch
50209	Rod lever
50210	Air switch (-4 models)
60016	Flathead screw
60019	Air switch screw
60021	Shoulder bolt
60101	Socket cap screw
60103	Socket cap screw
60104	Socket cap screw
60105	Socket cap screw
60106	Socket cap screw
60107	Socket cap screw
60110	Socket cap screw
60112	Socket cap screw
60116	Socket cap screw
60142	Socket cap screw
60305	Button head screw
60401	Hex head screw
60411	Hex bolt
60503	Pan head screw
60504	Pan head screw
61102	Flat washer
61104	Flat washer
61109	Flat washer
61201	Lock washer
61304	Shakeproof washer
61402	Shakeproof washer
62002	Elastic stop nut
62008	Elastic stop nut
62009	Hex nut
62101	Hex nut
62104	Hex nut
62111	Air switch nut
62112	Hex nut
62202	Hex nut
62204	Hex nut
64406	Extension spring

SERVICE POLICY AND WARRANTIES

Proper operation of your machine is a top priority with Gripnail Corporation. We will assist you to the best of our abilities to see it is kept in peak operating condition.

In many cases, service needs can be met simply by calling Gripnail Customer Service Dept. If it becomes necessary for a service technician to visit your plant, we can make the arrangements.

All Gripnail machines are covered under a one year New Machine Warranty (see below). Replacement parts covered by the warranty are supplied free of charge, provided the original parts are returned to Gripnail.

At the end of one year the buyer has the option to purchase a Limited Extended Parts Warranty. This warranty covers specified machine parts only. See your distributor for full details.

All warranties on Gripnail machines are good only if Gripnail fasteners are used. If it is determined that fasteners other than those manufactured by Gripnail have been used, the warranty is voided.

At Gripnail, we believe in servicing what we sell for the lifetime of the equipment. If you are having difficulty with your machine or if you have any questions regarding service and warranty policy, please call or write:

Gripnail Customer Service Dept.
Gripnail Corporation
280 Franklin Street
Bristol, Rhode Island 02809

(401)-253-2200

WARRANTY

All Gripnail Fastening Equipment is thoroughly inspected and tested before leaving the factory. Gripnail Corporation warranties its equipment to be free from defects in workmanship and materials under normal and proper use for a period of 1 year from date of sale to original end purchaser.

The warranty does not apply where repairs or attempted repairs have been made by persons other than Gripnail Corporation's authorized service personnel, or where it is determined by our service personnel that the equipment has been subjected to misuse, negligence or accident. If it is determined that any fasteners other than those manufactured by Gripnail have been used in this machine or tool, the warranty is terminated.

This warranty is not effective unless equipment is properly registered with the factory through the use of our warranty information card prior to use. Gripnail Corporation shall not be liable for contingent damages or delays caused by defective materials or any other means beyond our control.

Gripnail Corporation • Bristol, Rhode Island 02809