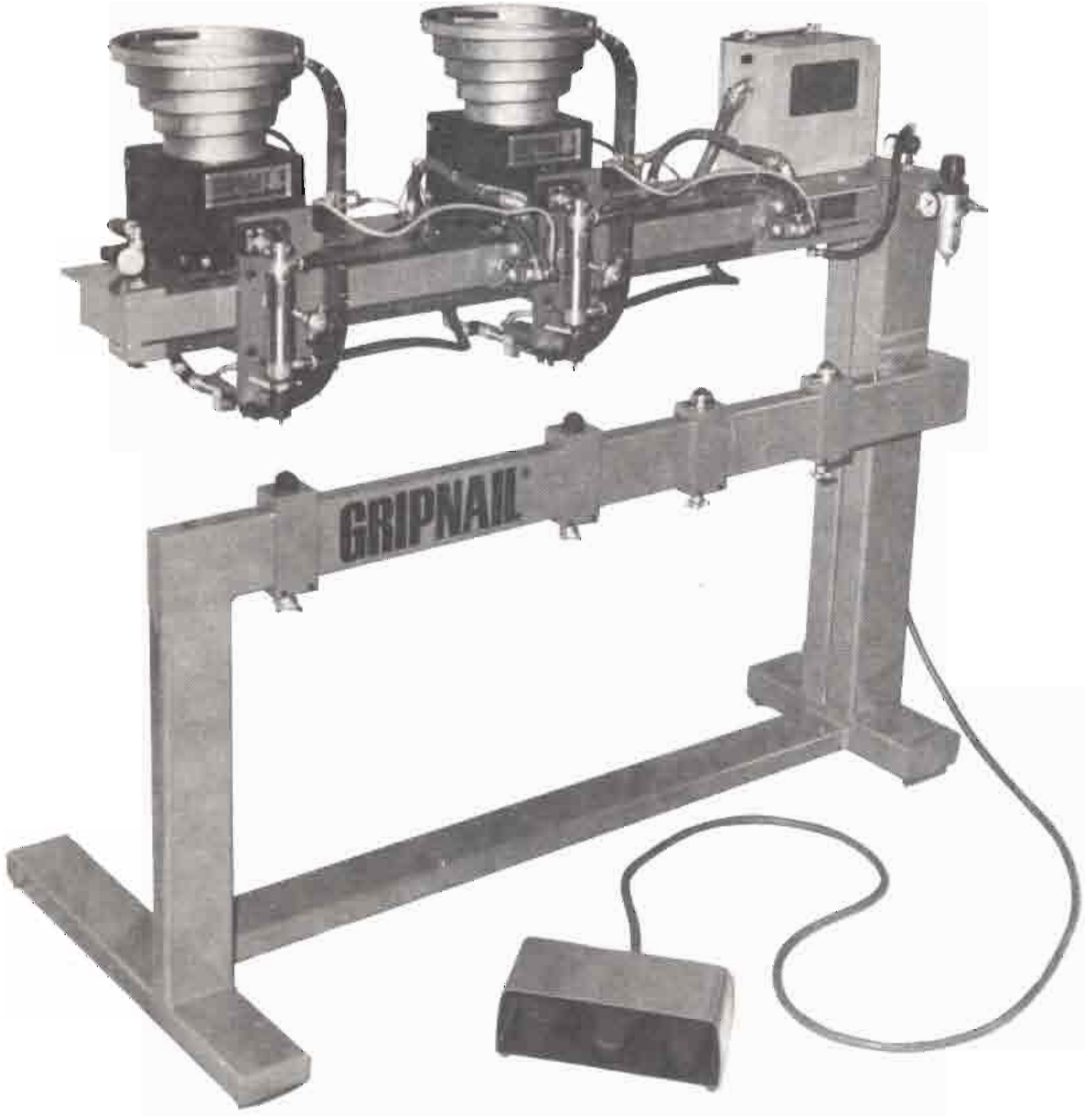
OPERATING INSTRUCTIONS

GRIPNAIL DUAL-HEAD FASTENING CENTER
Model #481



GRIPNAIL®
FASTENING SYSTEMS

OPERATING INSTRUCTIONS
FOR
GRIPNAIL DUAL-HEAD FASTENING CENTER

TABLE OF CONTENTS

GRIPNAIL
FASTENING SYSTEMS

Printed by Mailing Services, Inc., Providence, RI May, 1985

INSTALLATION

DO NOT ACTIVATE AIR OR ELECTRICITY UNTIL INSTRUCTED BELOW

1. Remove steel machine guard. Position feeder bowls with controls facing gray wire duct box and insert rubber mounts in spaces provided. Plug feeder bowl cord into proper outlet on underside of wire duct box. Note: feeder bowls are preadjusted and labled "F" for front, "R" for rear. Replace guard.

2. Remove 2 bolts (60112) from mounting block (30506) and 2 from drive plate. Remove 2 bolts (60101) from upper right corner of drive plate (see page 17).

3. Install tracks (20137) using bolts (60112 and 60101). Tracks are also labeled "F" and "R." Do not tighten bolts.

4. Check clearance between underside of track and V block (30125) on load cylinder (see page 5). 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 and 60101).

5. With two #10 bolts provided on drive head plate, install plastic guard (30461) around drive cylinder.

6. Attach mounting block (30506) with bolts (60112) and check adjustment as outlined on page 6.

7. Connect air lines to track sensors (see page 18A). Larger (1/4") line attaches to needle valve (44101); smaller (1/8") line attaches to output sensor (30111).

8. Open lower control box and check timer relays to ensure each is fully seated in socket. Remove green lens from "on" lamp and push bulb down to ensure full electrical contact.

9. Connect 100 PSI air supply to main regulator (44119). Regulators are preset by Gripnail, the main regulator at about 80 PSI. However, reset regulator to proper PSI as determined by gage of metal, liner density, etc. (see Pressure Regulators, page 4).

10. Connect cord to 120 VAC outlet and turn on power switch. Turn on feeder bowl switch and adjust feed rate. If feeder bowl is not immediately activated, open needle valve (44101) to start. When feeder track fills to sensor level, feeding will stop.

11. Install ball caster or shop tables beside Dual-Head to support sheet metal. Using straight edge, adjust table or Dual-Head height so anvil (30105) is either flush with or not more than ¼" higher than tables.

DO NOT "DRY FIRE" OR OPERATE DRIVE CYLINDERS WITHOUT FASTENER ON MAGNETIC DRIVER.

Notes:

GENERAL OPERATION

DRIVE CYCLE:

When foot pedal is depressed, timer is activated and drive valve will open and allow air to enter the cylinder. This extends cylinder downward, applying Gripnail to sheet metal. At end of cycle, timer automatically deactivates and 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 foot pedal.

LOAD CYCLE:

When micro switch (50203) located to right side of drive cylinder is closed, cycle begins by extending load cylinder (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:

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 micro switch, resetting load cycle timer. Drive cylinder return to "UP" position activates micro switch and load cycle timer. 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 and track level sensor operation.

LOW PRESSURE TANK:

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

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 senors.
   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:

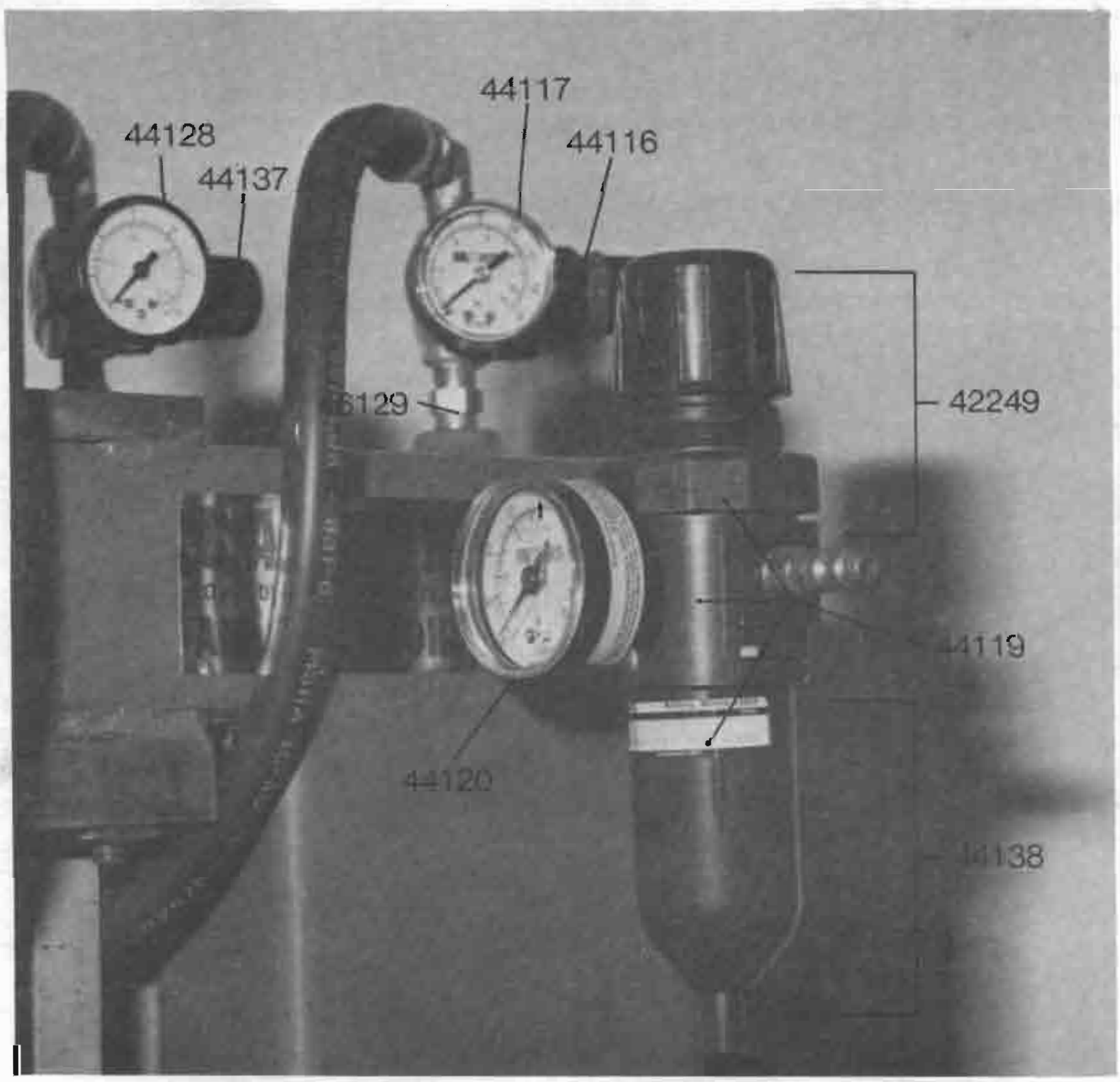
1. Shop supply pressure should be between 90 and 125 PSI.

2. **Main pressure regulator** (44119) 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

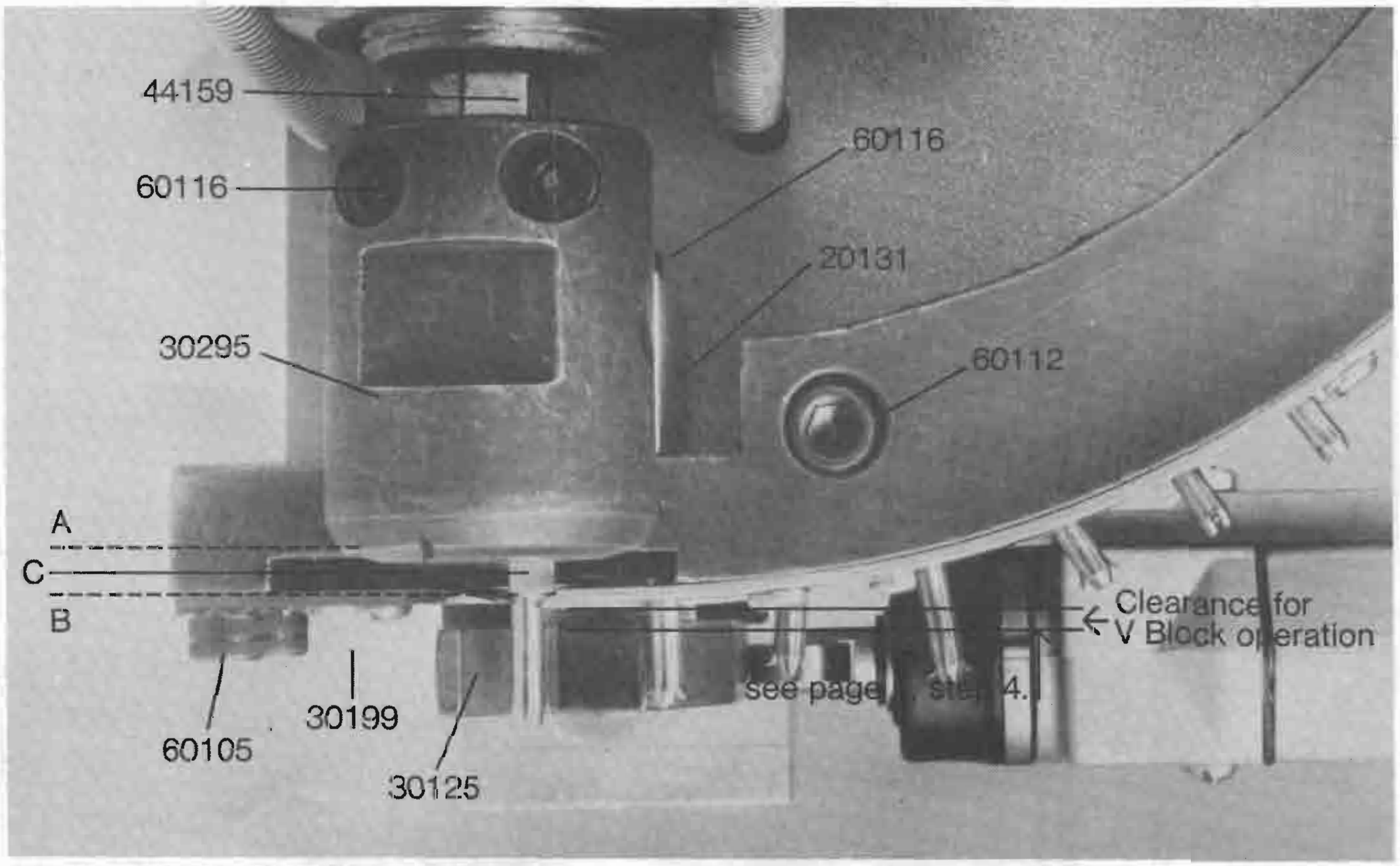


MAGNETIC DRIVER:

1. Slightly loosen socket cap screws (60116). With drive cylinder in full "UP" position, rotate driver until face of driver aligns with line A.

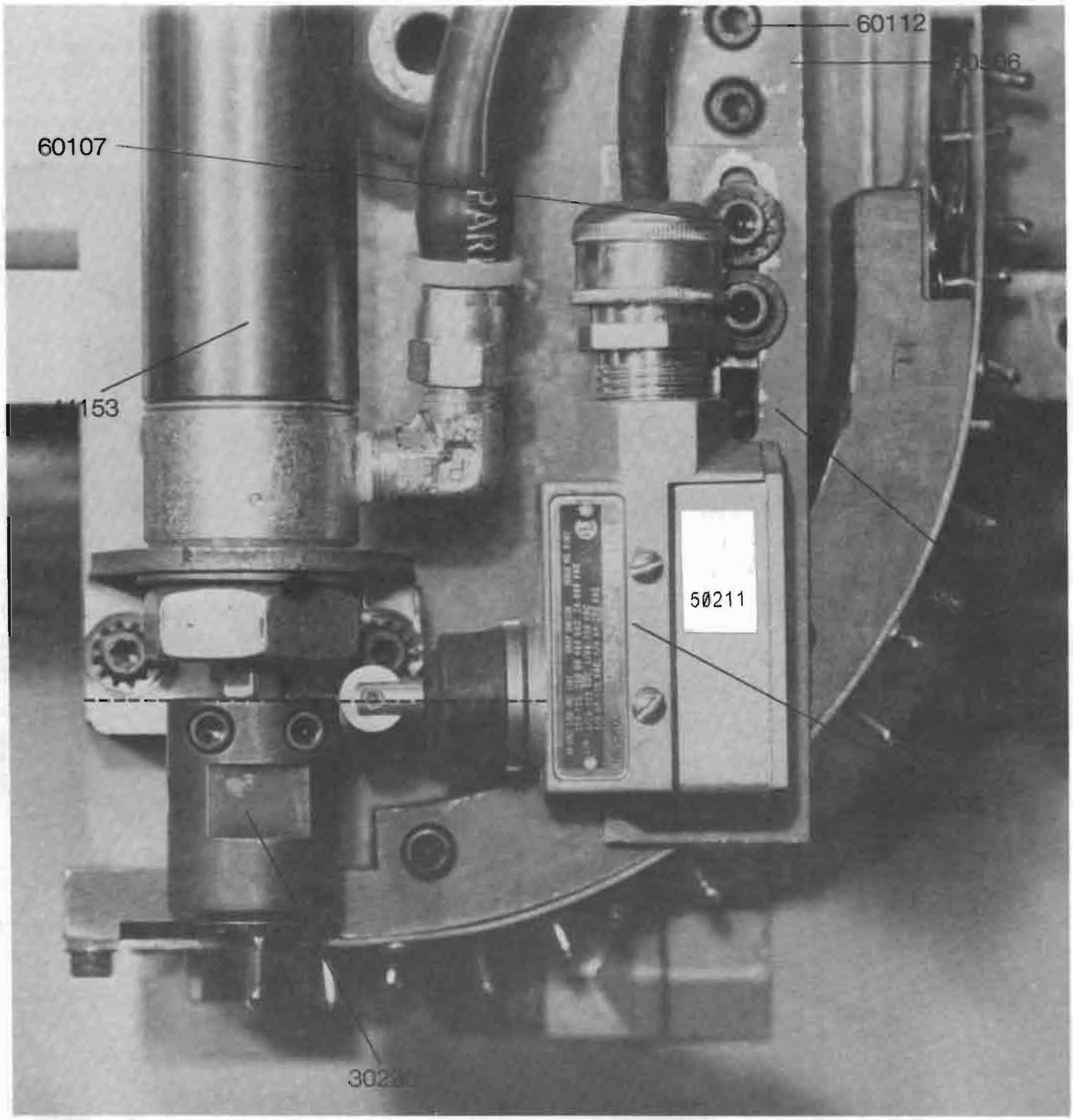
2. Driver should NEVER be adjusted below line C or above line A. An adjustment below line C will cause jamming. An adjustment above line A will cause Gripnail to load off-center on magnetic driver.

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



LOAD MICRO SWITCH:

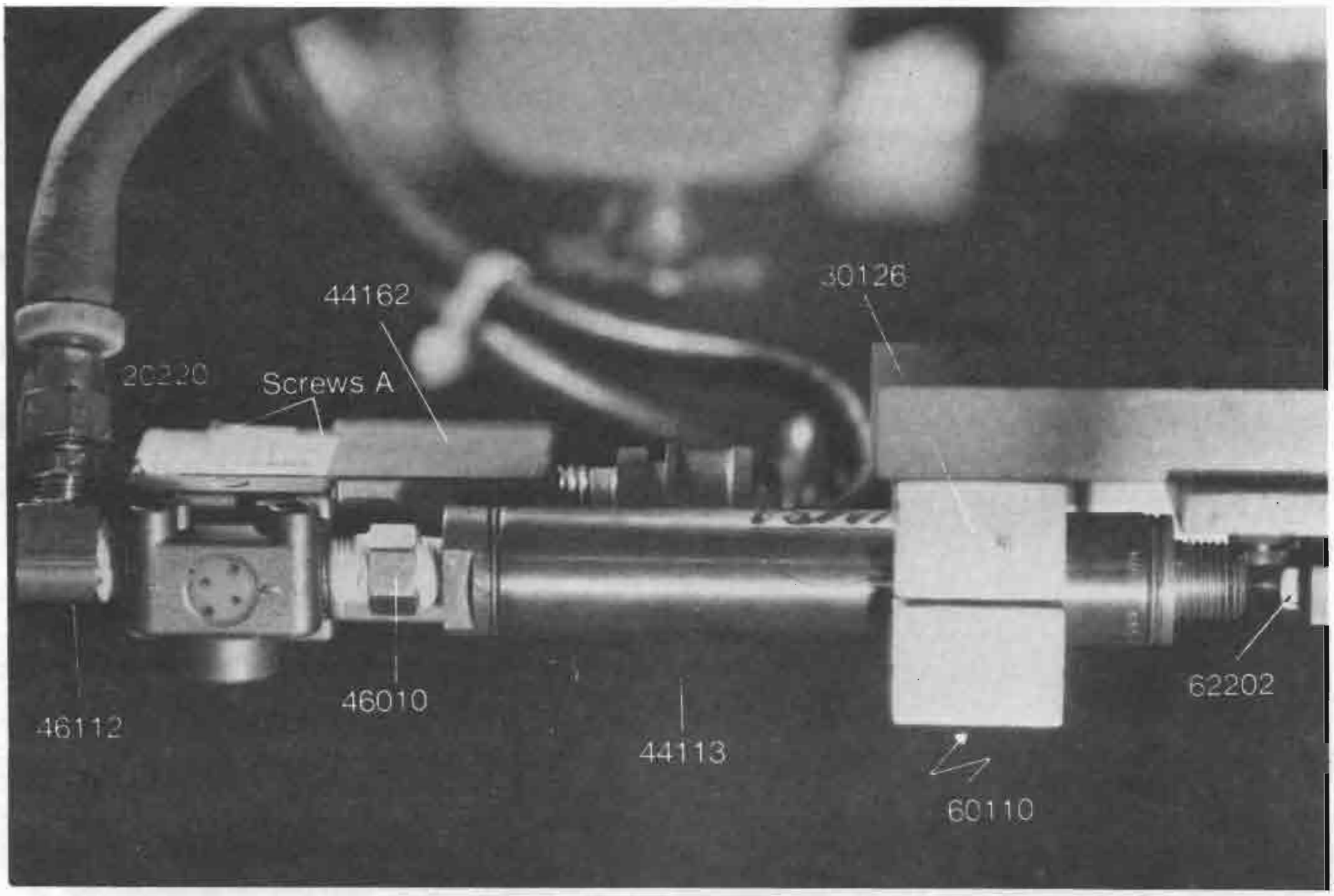
Load micro switch (50203) is mounted to right of drive cylinder. It is activiated by magnetic driver at completion of cylinder's return stroke. Driver depresses micro switch roller about 1/8", enough to activate load timer. When properly adjusted by cap screws (60107), center of roller will align horizontally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



LOAD CYLINDER ASSEMBLY 20119

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

The load cylinder (44113) is joined with a 3-way valve (44162). 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



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.

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.

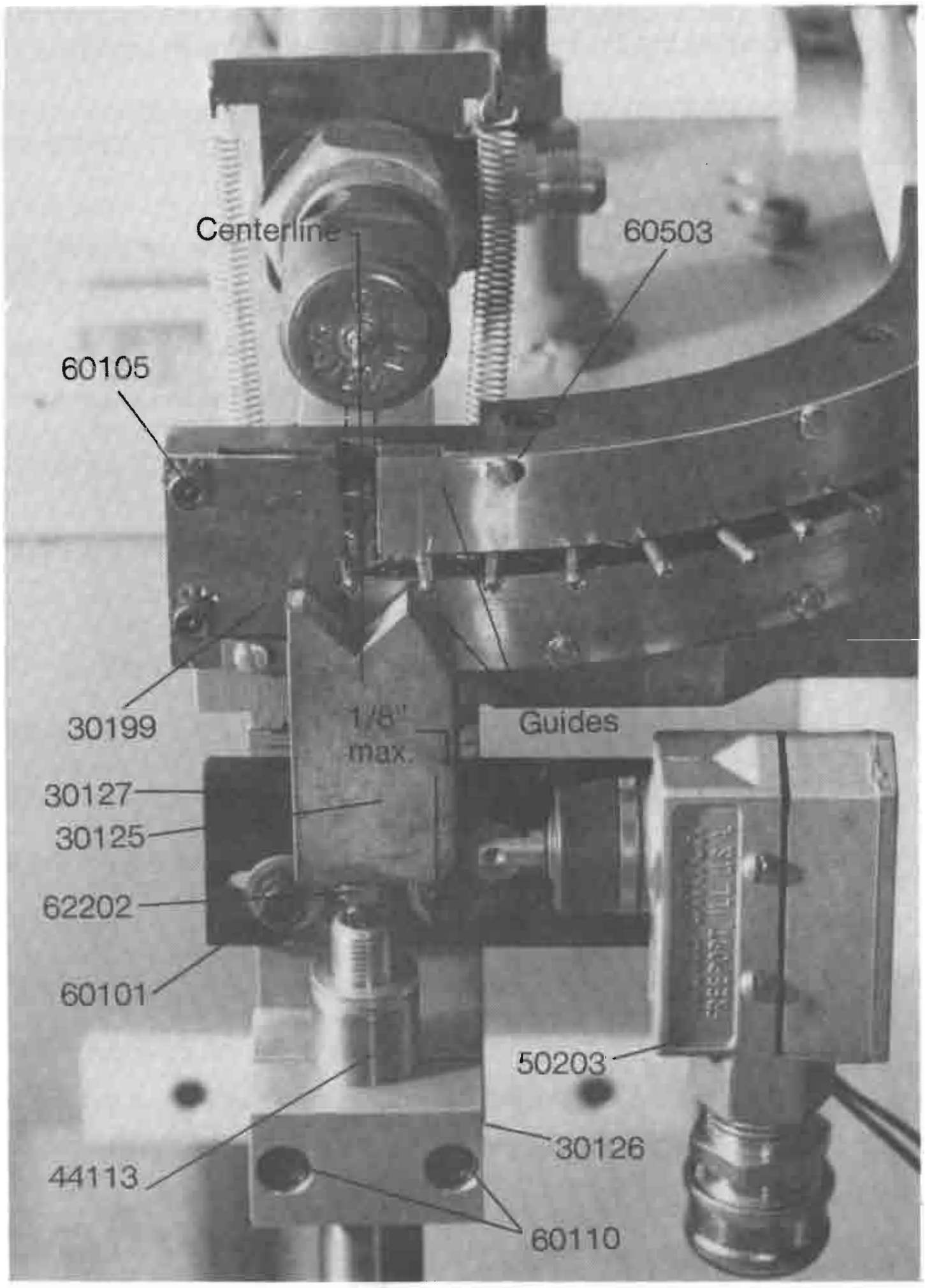
IMPORTANT: While extending V block, check to be sure fastener travels on centerline (see photo) and does not rub along either edge of exit slot. If it does, readjust cylinder to eliminate rubbing.

3. Recheck drive micro switch adjustment as outlined on page 10. This check must be completed every time load cylinder is adjusted to ensure proper drive cylinder operation

4. Reconnect air and electricity. Test load by depressing and releasing appropriate push button switch on inside panel of control box cover (see page 19A).

   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.


Centerline
60503
60105
30199
1/8"
max.
Guides
30127
30125
62202
60101
50203
30126
44113
60110

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 requires 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.

TROUBLESHOOTING

DRIVE CYLINDER – INOPERATIVE

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

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

2. Check fuse in control box; see power switch is on.

3. Inspect lower end of track assembly (20137) and fastener exit slot to be sure there is no blockage and to allow free movement of load cylinder (see pages 5 and 9).

4. Steel roller on drive micro switch (50203) should be depressed by V block (30125) when load cylinder is fully retracted (see page 9).

5. Check drive valve and micro switch electrical connections for tightness in wire duct box and lower control box.

6. Check beneath foot pedal for obstructions.

7. Timer relays in lower control box must be fully seated in sockets.

DRIVE CYLINDER – LOW IMPACT FORCE

1. Be sure that Gripnail fastener is the correct size and type for insulation and sheet metal used.

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

3. Check for loose fittings and cuts in air hoses.

4. Clean anvils and magnetic drivers of adhesive build-up.

5. Drain regulator and air tank of any condensation build-up.

6. Drain air tanks and check to see that drive cylinder shaft drops freely.
   a. If shaft sticks, lubricate with light machine oil (see MAINTENANCE, page 3).
   b. Check for burrs on shaft, remove with fine emery cloth, wipe clean and oil lightly.

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 step 4, page 1).

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. 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. 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, it 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

1. Remove two 1/4" cap screws (60112) from bracket (30506) on right side of drive cylinder (see page 17).

2. Remove plastic guard.

3. Disconnect upper and lower hoses and remove adapter fittings from cylinder.

4. Loosen two cap screws on side of magnetic driver and remove driver from cylinder rod.

5. Remove large cylinder mounting nut (62112) and washer.

6. Loosen two elastic stop nuts and mounting bolts (60142) about 2 or 3 turns each. Do not remove.

7. Remove shoulder bolt (60021), nut (62009) and lock washer (61201) from mounting brackets.

DRIVE CYLINDER INSTALLATION

1. Remove and discard rail and two screws from new cylinder.

2. Place cylinder in lower bracket (40189) with ports facing right.

3. Install upper shoulder bolt, lock washer and elastic stop nut to upper brackets. Be sure to properly align lock washer on shoulder bolt before tightening stop nut.

4. Install washer and large mounting nut to rod end of cylinder and *hand tighten only.*

5. Tighten mounting bolts (60142), then elastic stop nuts.

6. Tighten large mounting nut installed in step 4.

7. Reverse steps 1 through 4 under Drive Cylinder Removal.

8. Adjust magnetic driver (see page 5) and then load micro switch (see page 6).

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

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 (44162). 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:

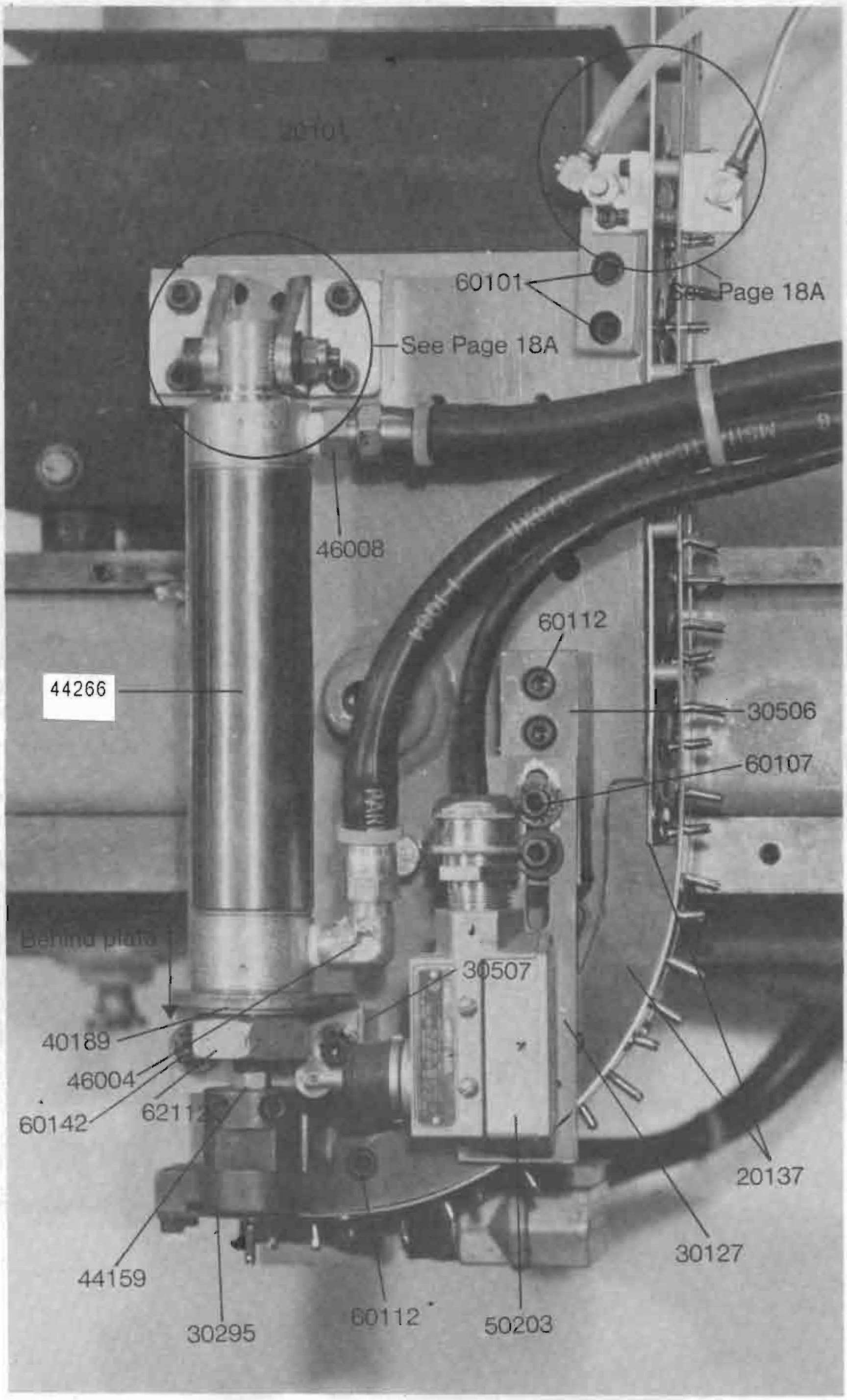
1. **IMPORTANT:** Remove and discard large mounting nut on replacement cylinder.

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

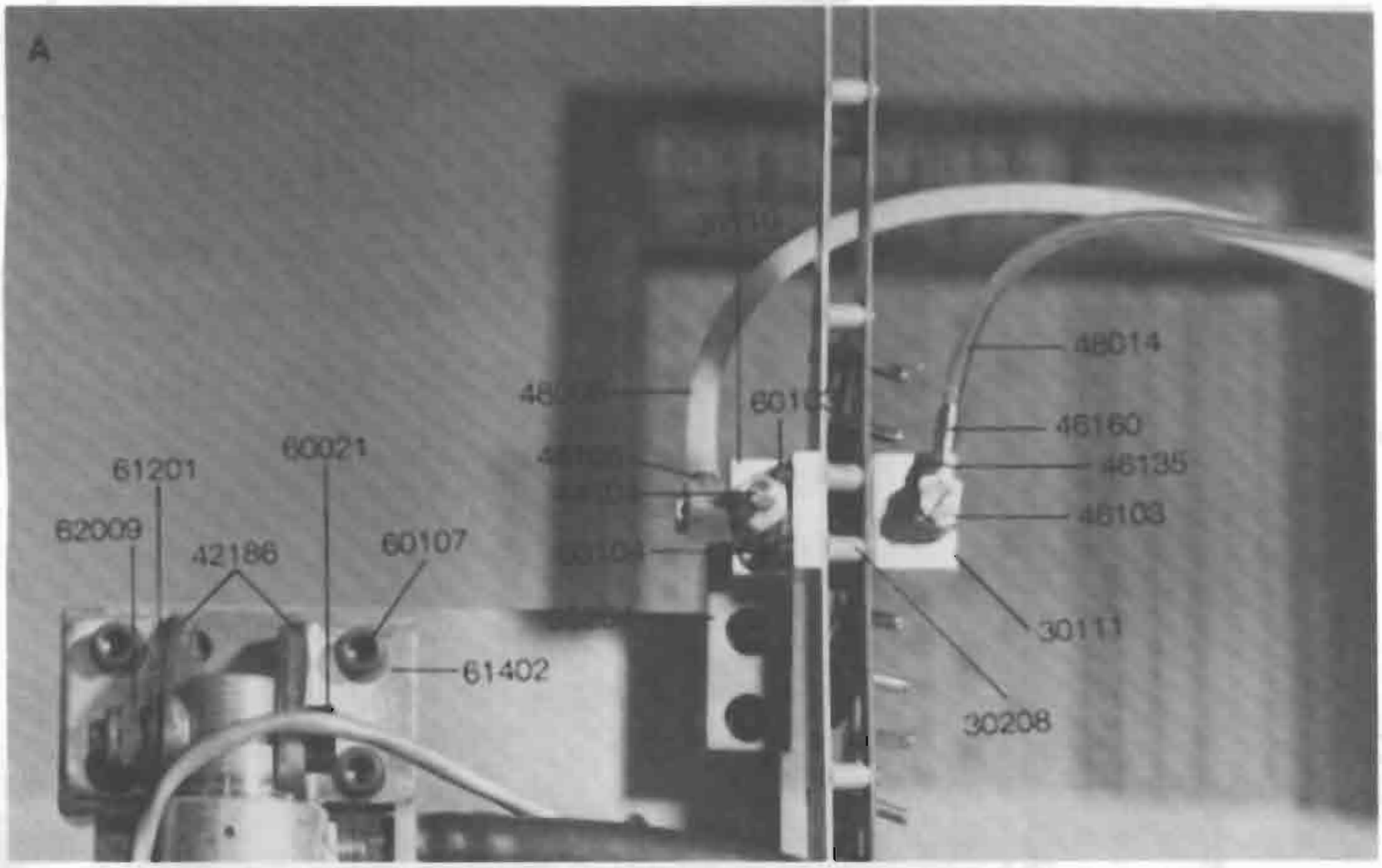
3. While holding V block securely, tighten jam nut to V block. DO NOT HOLD OR PLACE WRENCHES ON CYLNDER BODY when tightening nut. IMPORTANT – If corner of jam nut protrudes above top face of V block, it must be ground flush to avoid striking track during load cylinder operation.

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

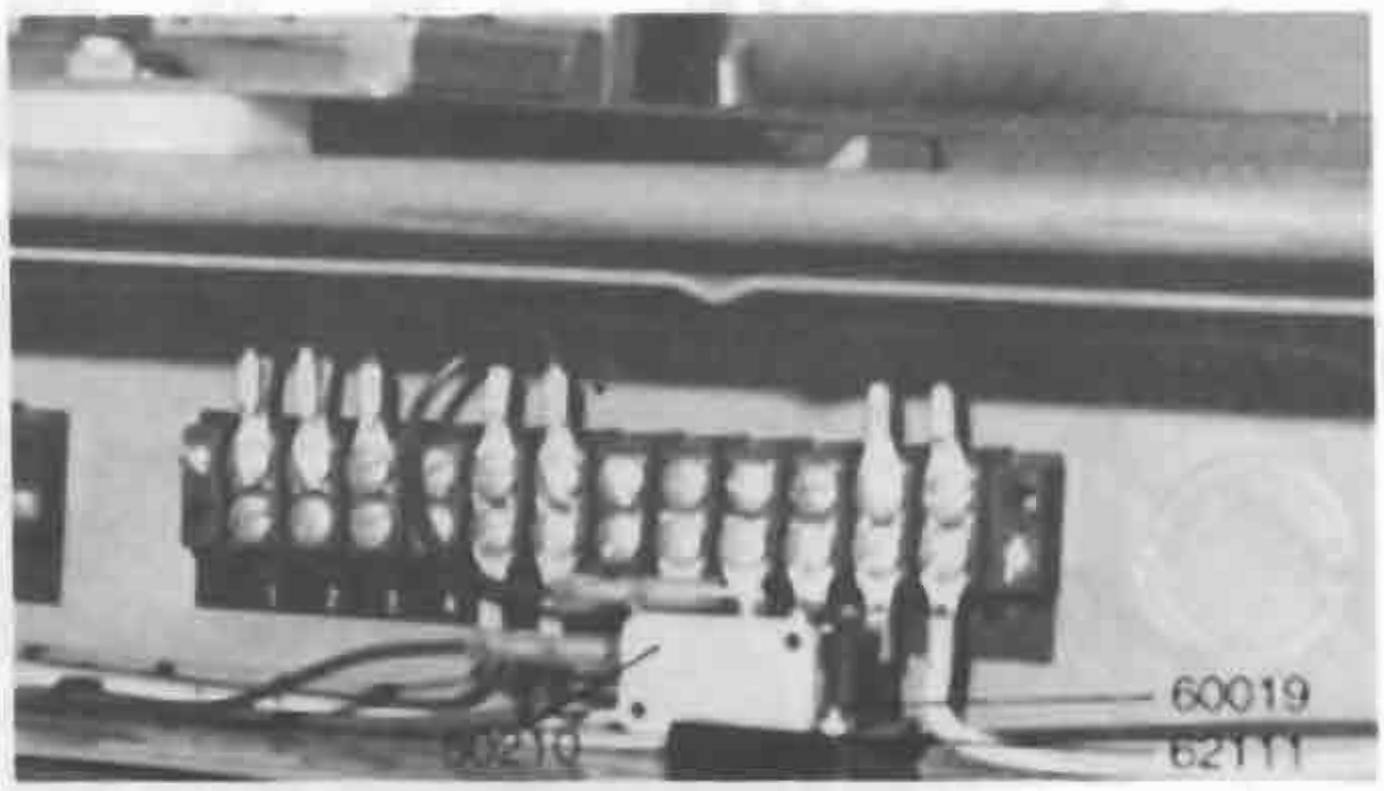
5. When installation is completed, refer to Load Cylinder Adjustment (page 8) followed by Drive Micro Switch Adjustment (page 10).


20101
60101
See Page 18A
See Page 18A
46008
60112
44266
30506
60107
Behind plate
30507
40189
46004
60142
62112
44159
30295
60112
50203
30127
20137

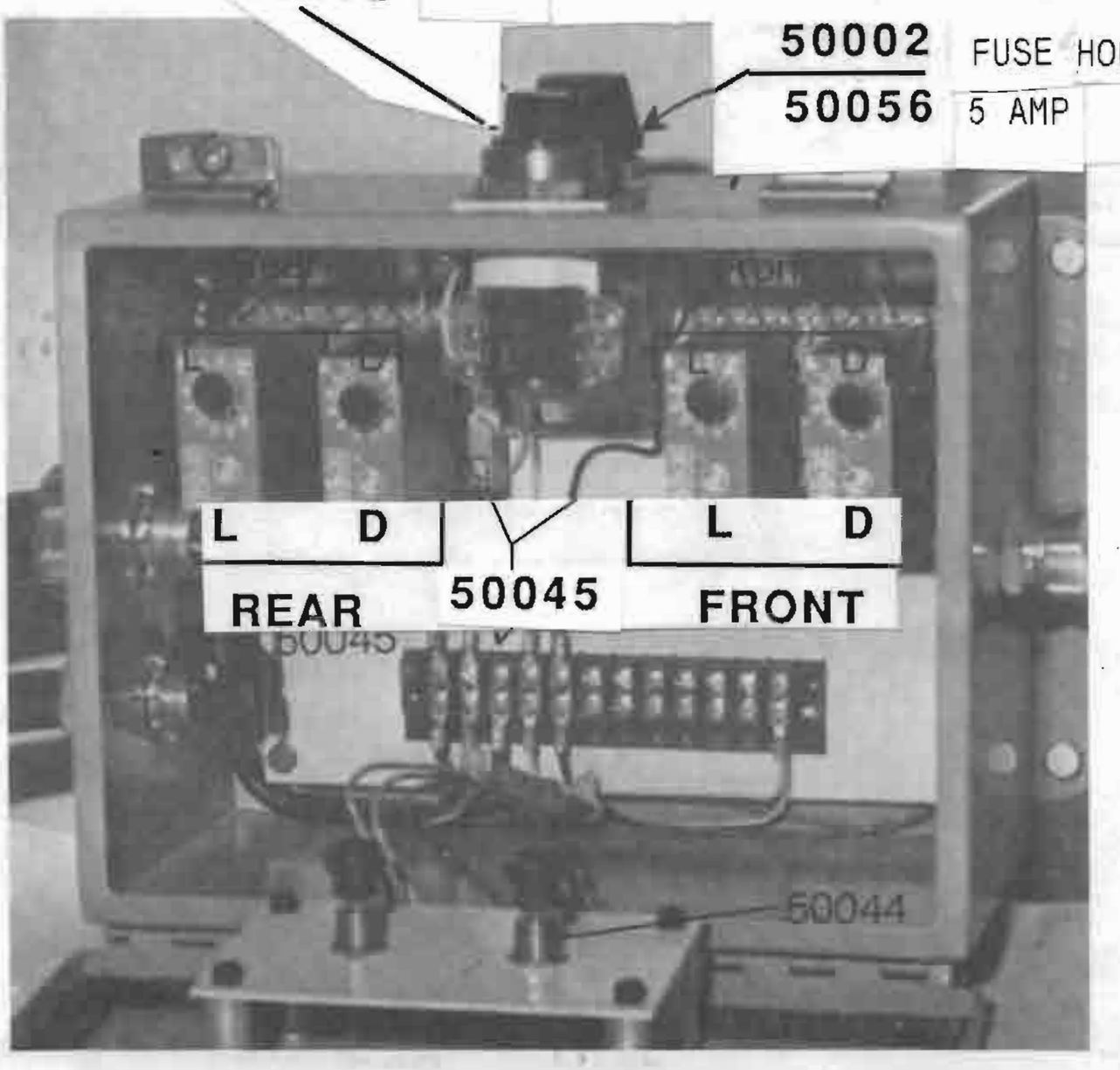
A


61201
60021
62009
42186
60107
61402
46014
46160
46135
46103
30111
30208

B

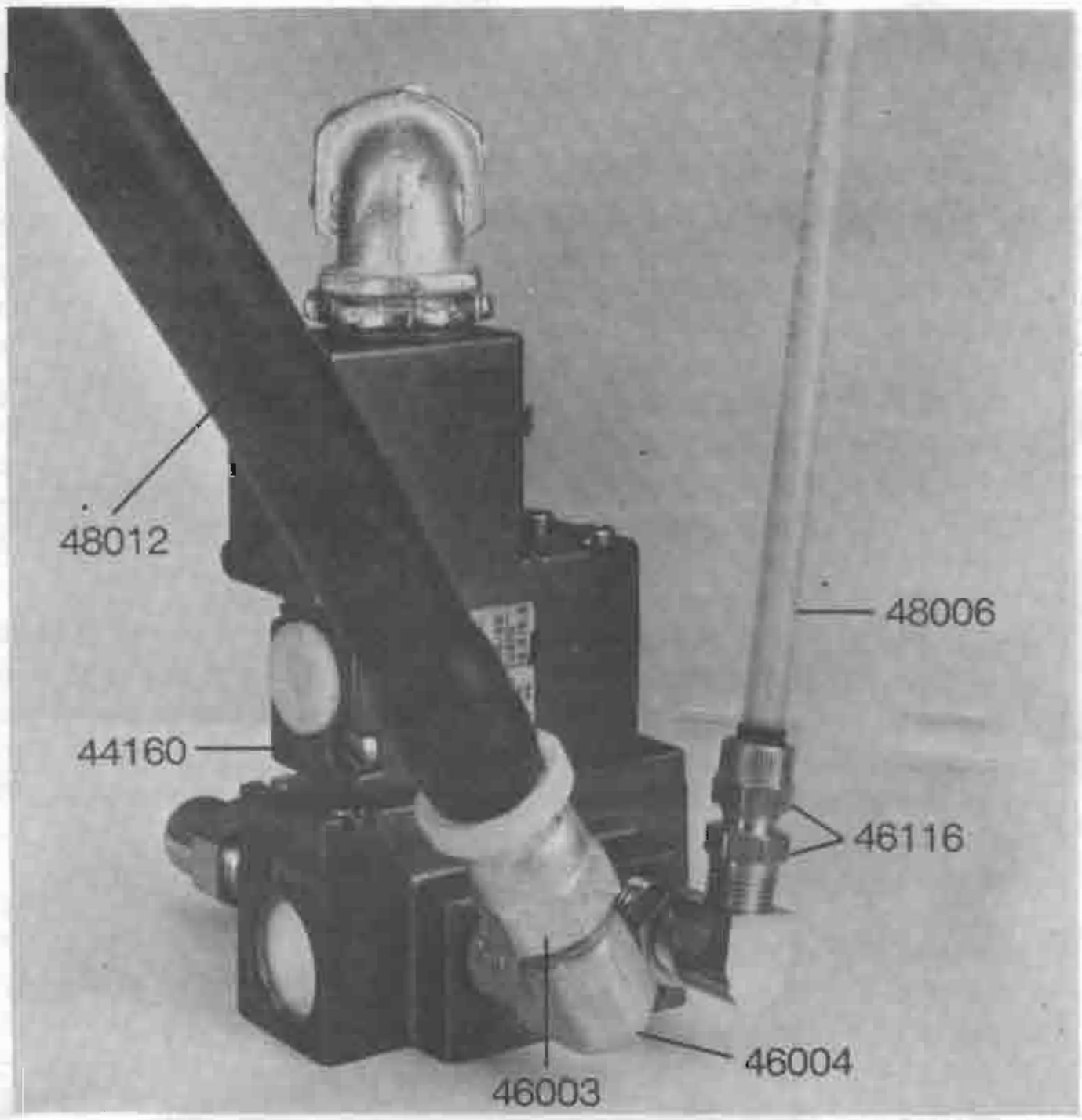

60019
62111

A



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

B



PARTS LIST

PART#	DESCRIPTION
20131	ESCAPEMENT ASSEMBLY
20137	TRACK FRAME
20212 *	ANVIL SLIDE ASSEMBLY
20213 *	BALL CASTER ASSEMBLY
20220	RESTRICTER FITTING
30110	INPUT SENSOR
30111	OUTPUT SENSOR
30125	V-BLOCK
30126	LOAD CYLINDER BRACKET
30127	SWITCH BRACKET
30199	NAIL BLADE
30208	TRACK SPACER
30295	MAGNETIC DRIVER
30461 *	PLASTIC GUARD
30588 *	ANVIL
30651	TRACK SPACER, RED
30652	TRACK SPACER, BLUE
30666	TRACK SPACER, YELLOW
40189	CYLINDER BRACKET
42117 *	BALL CASTER
42186	HINGE BRACKET SET
42253 *	RUBBER FOOT MOUNT
44101	NEEDLE VALVE
44113	LOAD CYLINDER
44116 *	MINI REGULATOR
44117 *	MINI GAGE
44119 *	MAIN REGULATOR
44120 *	MAIN GAGE
44128 *	LOW PRESSURE GAGE
44137 *	LOW PRESSURE REGULATOR
44153	(USE P/N 44192)
44160 *	DRIVE VALVE
44162	LOAD VALVE
44266	DRIVE CYLINDER
46003	HOSE SWIVEL
46004	ELBOW ADAPTER
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	GASKET #10
46160	BARB FITTING, PVC TUBE

PART#	DESCRIPTION
50002	FUSE HOLDER
50044	PUSH BUTTON SWITCH
50045	TIMER
50049 *	FOOT PEDAL
50056	FUSE
50203	LOWER MICRO SWITCH
50210 *	AIR SWITCH
50211	FRONT MICRO SWITCH
50212	LENS CAP
50213	ROLLER ASSEMBLY
50407	CORD CONNECTOR
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
60152	SOCKET CAP SCREW
60504	PAN HEAD SCREW
60511	PAN HEAD SCREW
61102	FLAT WASHER 1/4
61104	FLAT WASHER #10
61109	FLAT WASHER 5/16
61201	LOCK WASHER 3/8
61202	LOCK WASHER 1/4
61304	SHAKEPROOF WASHER
61402	SHAKEPROOF WASHER
62008	ELASTIC NUT 1/4
62009	ELASTIC NUT 5/16
62011	ELASTIC NUT #5
62104	HEX NUT #6
62111	AIR SWITCH NUT
62112	HEX NUT 1"
62202	JAM NUT
48006	TUBE, 1/4" POLY
48012	HOSE, 3/8" ID
48014	TUBE, 1/8" PVC

*** NOT SHOWN**

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

97 Dexter Road

East Providence, Rhode Island 02914

(401) 431-1791 Fax (401) 438-8520

WARRANTY

All Gripnail Fastening Equipment is thoroughly inspected and tested before leaving the factory. Gripnail Corporation warranties it's 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 authorizations 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 delay caused by defective materials or any other means beyond our control.

Gripnail Corporation East Providence, RI 02914

® GRIPNAIL Corporation's ™ for Mechanical Surface Fasteners