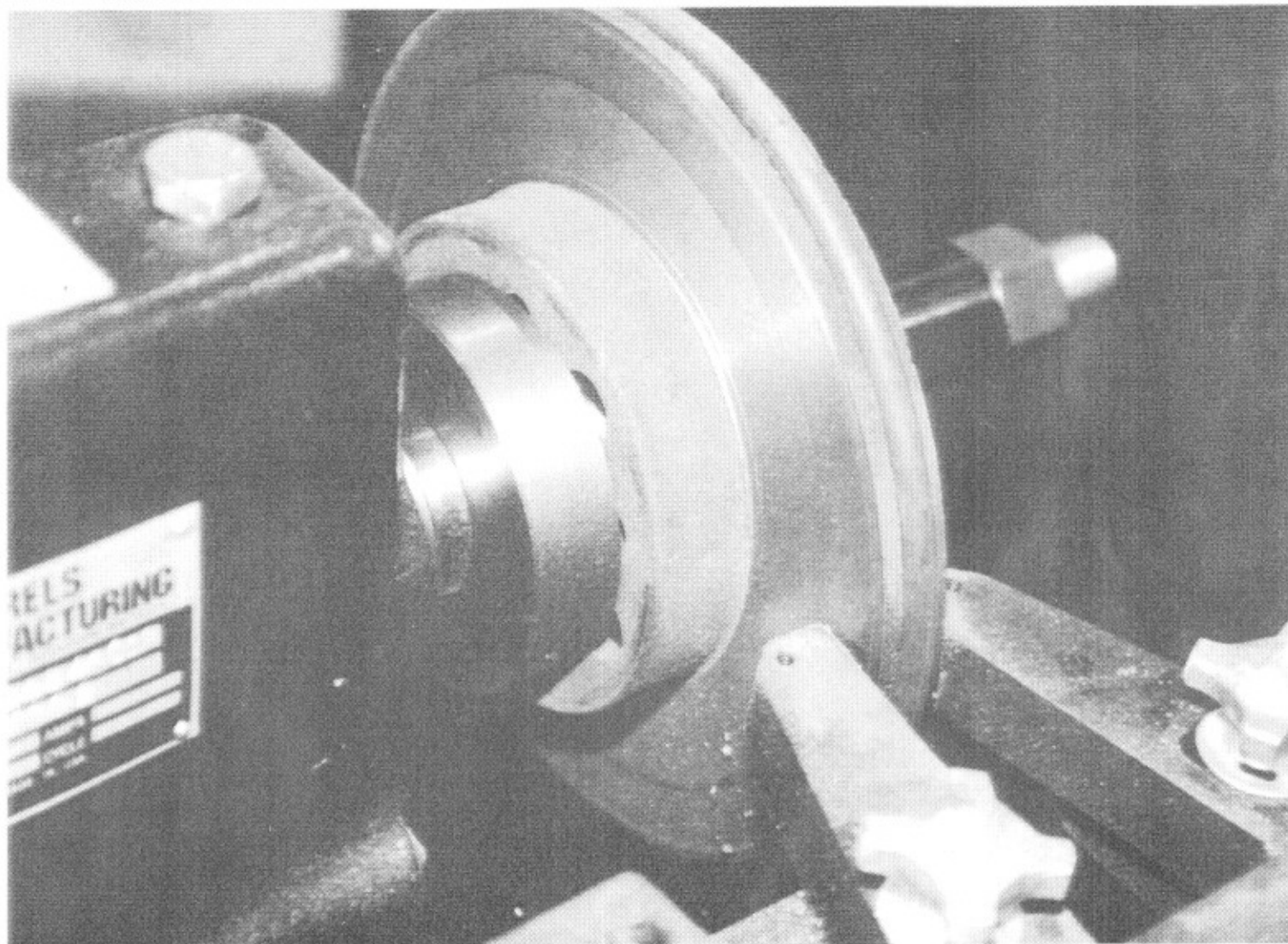


US GOVERNMENT 204 BRAKE LATHE

Instructions and Parts Manual



N.S.N. 4910-01-028-9849

Lathe, Brake Drum

DAAA09-91-C-0424

Cage #OA6J7

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SAFETY INSTRUCTIONS

1. Wear eye protection at all times.
2. Do not wear loose fitting clothing and cover long hair.
3. Keep work area clean.
4. Keep belt guards on machine at all times during operation.
5. Never stand on machine during operation.
6. Do not over-reach, keep proper footing and balance.
7. Do not leave machine running unattended. turn the power off.
8. Keep children and visitors a safe distance away from work area.
9. Make sure all drums or rotors are mounted securely before turning machine on.

TABLE OF CONTENTS

Safety Instructions	1
Table of Contents	2
Standard Equipment	3
Specifications	4
Features	4
Machine "Prep", Locate and Position	5
Lubrication	5
Speeds and Feeds	7
Chatter Control and Tool Bits	8
Reconditioning Drums	9
Disc Brake Turning	13
Storage	15
Disassemble and Repair	15
Foundation Plan	16
Vertical Shaft Assembly	17
Basic Machine	19
Spindle Clamp Assembly	21
Right and Rear of Machine	23
Power Feed Attachment (Disc Brakes)	25
Claw Assembly	27
Electrical Equipment	29
Electrical Assembly	31
Terms and Conditions	32

INTRODUCTION

RELS Manufacturing thanks you for purchasing a 204 Brake Lathe, these lathes have been built to the highest standards of the automotive machine industry.

If you have any questions regarding operation or service, contact RELS Manufacturing directly and our engineering staff will be glad to resolve your problem.

ORDERING PROCEDURE

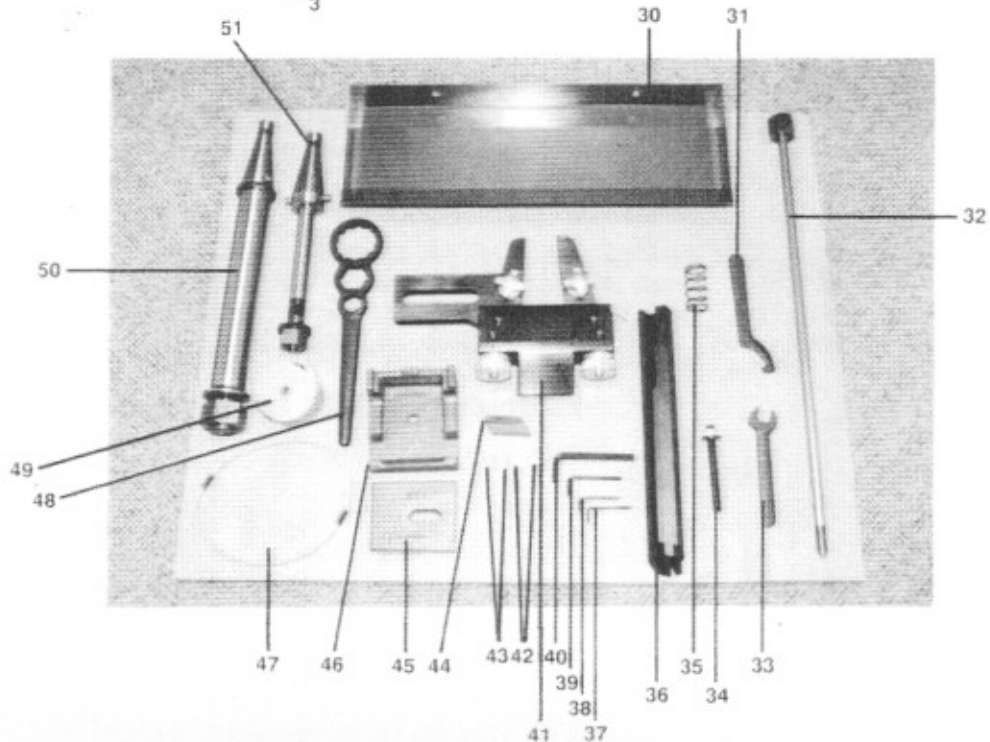
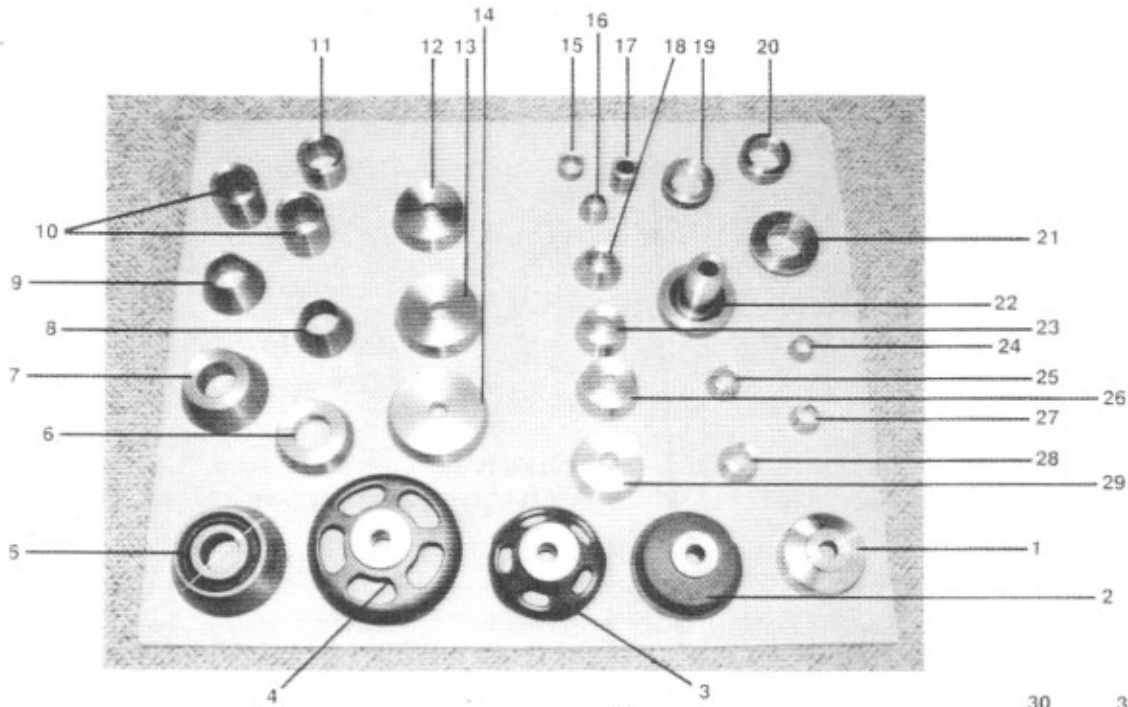
When ordering, refer to the exploded view showing the part needed. Locate the item number (of the part shown) in the accompanying parts list with all the information required for ordering.

Always furnish model and serial number of machine with the part information as there are many variations of the same lathe. When referring to motors, list manufacturer's name and type. This information will be found on the motor nameplate.

WEAR EYE PROTECTION AT ALL TIMES

GOVERNMENT PACK ITEMS

1	20400204	Bell Clamp	18	30000103	Cone	35	BD000075	Spring
2	30000108	Bell Clamp	19	20100022	Locking Nut	36	20400343	Tool Bar
3	20500301	Bell Clamp	20	41500186	Spacer	37	05378V	3/8" Allen Wrench
4	20500300	Bell Clamp	21	41500185	Centering Cone	38	25395V	1/4" Allen Wrench
5	BD000053	Cone	22	20100023	Locator	39	06813V	3/8" Allen Wrench
6	BD000055	Cone	23	30000104	Cone	40	05317V	3/8" Allen Wrench
7	BD000054	Cone	24	30000445	Collet	41	20473032	Claw Assembly
8	BD000057	Cone	25	30000443	Collet	42	29687V	Carbide Insert (2)
9	BD000056	Cone	26	30000105	Collet	43	24176V	Tool Bit (2)
10	BD000076	3" Spacer (2)	27	30000444	Collet	44	30207171	Tool Holder
11	BD000093	2" Spacer	28	30000442	Collet	45	20400030	Clamp
12	20500302	Cone	29	30000106	Cone	46	20400301	Tool Holder
13	20500303	Cone	30	20507056	Chip Tray	47	11485V	Vibration Dampener
14	30000088-1	Cone	31	25110V	Spanner Wrench	48	BD000515	Wrench
15	20400210	Collar	32	20400044	Draw Bar	49	11486V	Vibration Dampener
16	BD000060	Cone	33	11217V	3/4" Open End Wrench	50	20407090	2" Arbor
17	20400209	Spacer	34	20400303	Stud	51	20400042	1" Arbor



SPECIFICATIONS

Feed Range: Infinitely variable from 0 to .020" per revolution and from 0 to 3-3/8" per minute.
Spindle Speeds: 60, 100, 1709 RPM
Spindle Travel: 8-3/4"
Motor: 1 HP, 115V, 60HZ, 1PH (other voltages available)
Drum Size: 6" to 28" Diameter - 8" Wide
Rotor Size: Max. Diameter 24". 0 to 2-1/2" wide.
Net weight: Approximately 600 pounds.
Dimensions: 44" x 28" x 48"

FEATURES

<u>BODY</u>	Solid heavy duty, unitized for strength. Chatter-proof machining.
<u>SPINDLE</u>	2 7/8" diameter, hardened and ground.
<u>SPINDLE SUPPORT</u>	Rugged bronze bearing can support 500 lbs. load without outboard support.
<u>SPINDLE TRAVEL</u>	8 3/4"
<u>SPINDLE SPEED</u>	60, 100, and 170 RPM.
<u>BASE</u>	Welded, heavy gauge steel, unitized. (Shipped fully assembled with lathe.)
<u>MOTOR</u>	1 HP with reserve power for heavy duty use.
<u>DRUM MACHINING</u>	Drums from 6" to 28" diameter, 8" wide.
<u>STANDARD EQUIPMENT</u>	1 " diameter arbor and attachments for hubless and hub type disc rotors.
<u>CONTROLS</u>	All controls conveniently located for easy use.
<u>ZERO-MAX</u>	Provides instantaneous selection of feed by a flick of a lever and can be adjusted while cutting. (Assures maximum smooth stock removal.)

100 MACHINE "PREP"

- 101 Carefully uncrate the lathe and wash off the anti-rust oil or any dirt accumulated during shipment. Kerosene or any approved commercial solvent may be used. DO NOT USE GASOLINE.
- 102 Check pack kit to be sure it is complete.

200 LOCATE AND POSITION

- 201 Select a location which provides a permanent LEVEL foundation-preferably a concrete floor. Ample space should be provided for the operator to move completely around the machine. We recommend 30" from the wall. Then permanently secure machine in place using the four mounting feet on each corner of the machine base.

300 ELECTRICAL/MOTORS

- 301 Additional electrical devices or special wiring that may be required in your area should be bought locally. Any Overload of Undervoltage protection devices are not furnished as standard equipment and may be purchased locally or by Special Quote from RELS Manufacturing. The main spindle is to revolve CLOCKWISE when facing the work light. Main spindle Motor draws 13.2 Amps on 120 Volt wiring and 6.6 Amps on 230 Volt wiring.

400 LUBRICATION/CLEANING/MAINTENANCE

401 LUBRICATION

- 401A Use regular 30 S.A.E. oil in all cups. "Zero Max" control box runs in bath of oil and is filled with the proper oil and amount at the factory (3/4 full).

IMPORTANT: Check this box and add oil into hole "B", figure 1.

USE Texaco Regal 0320, Mobil Vactra No. 1 or equivalent.

Keep main reservoir filled to hole "C", figure 2 with Mobil Vactra No. 1 oil or equivalent. Fill through hole "D".

Grease Timken Bearing at "A", figure 1a with a good bearing grease once every month.

- 401B Vertical Shaft assembly-Lubricate daily, for best performance, using 30 S.A.E. oil. 3-5 drops, figure 3 at "E" and figure 4 at "F".

402 CLEANING/MAINTENANCE

- 402A Do not use an air hose to clean machine. Use a brush to clear chips away. Clean daily after use.

- 402B Do not use Gasoline to clean machine, use Kerosene or any approved solvent.

- 402C If machine is not used on a regular basis wiping with No. 10 S.A.E. oil between uses is advisable.

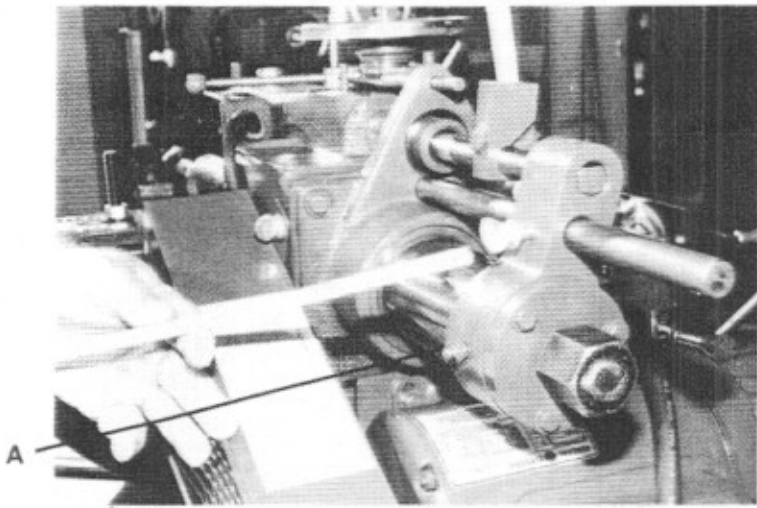


FIGURE 1A

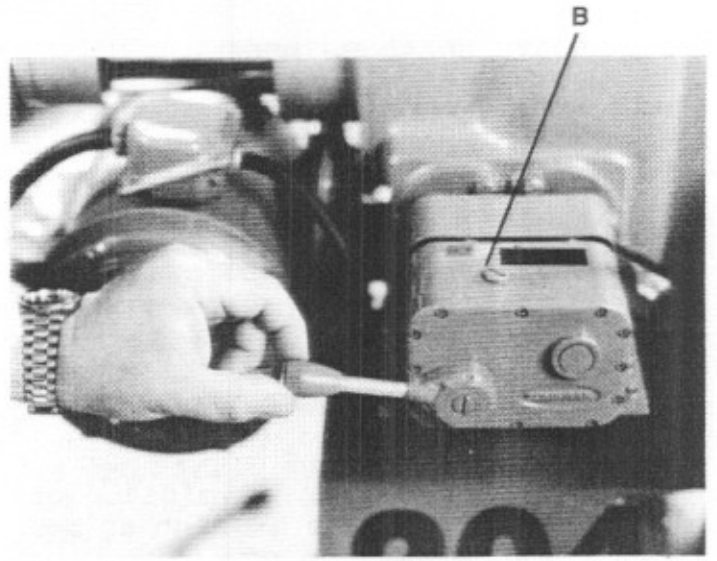


FIGURE 1

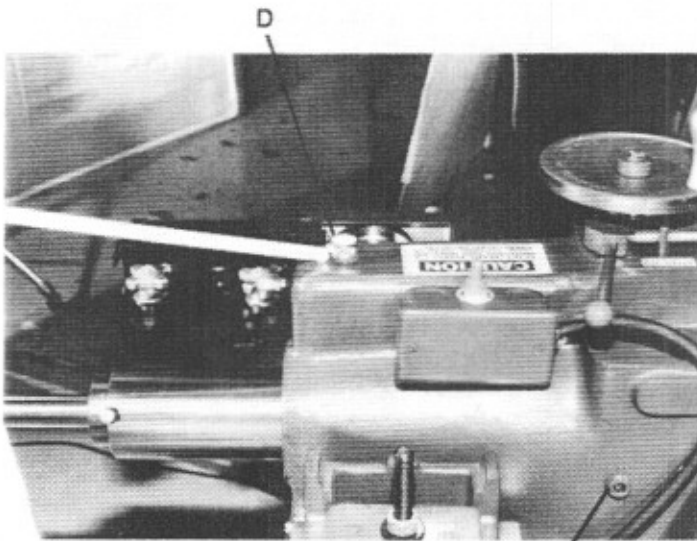


FIGURE 2

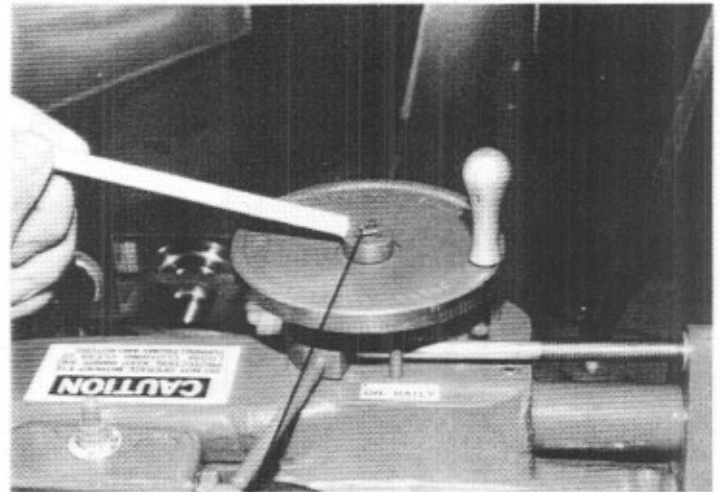


FIGURE 3

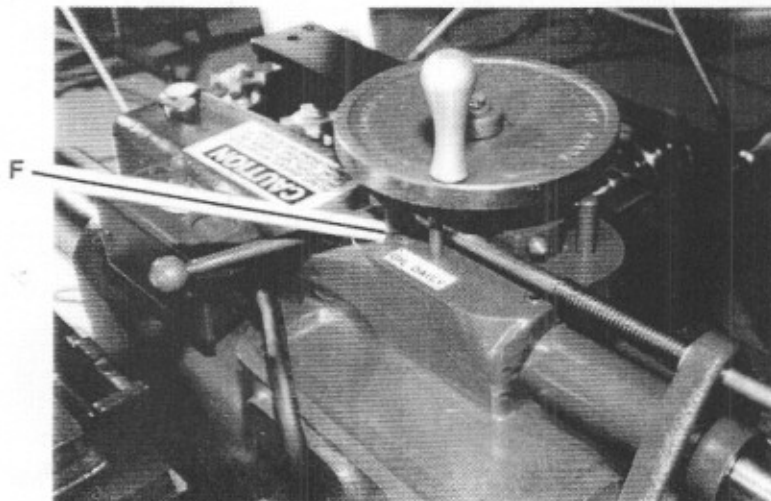


FIGURE 4

500
501

SPEED SPINDLE

Spindle Speeds are 60,100 and 170 RPM. To change RPM loosen thumb screws A and B figure 5. To remove belt guard (machine must be off) loosen bolt "C" figure 5, lift motor to free belt and put belt in proper groove. Replace motor and tighten with medium tension on belt, replace belt guard.

A larger diameter drum or rotor requires a lower R.P.M. For most applications, RELS recommends the middle pulley groove for passenger car and light truck brake drums and rotors. The outer pulley groove is for extremely small rotors and drums and the inner pulley groove for very large drums and rotors.

600
601

FEED SLIDE

Feeds per revolution are 0 to .020". Feed per revolution should be as high as possible for most profitable operation. A setting of .020" is used for rough cuts.

A larger diameter drum or rotor requires a higher feed.

To change speeds loosen knob "A", figure 6 and move handle "B" figure 6 to desired speed and lock knob.

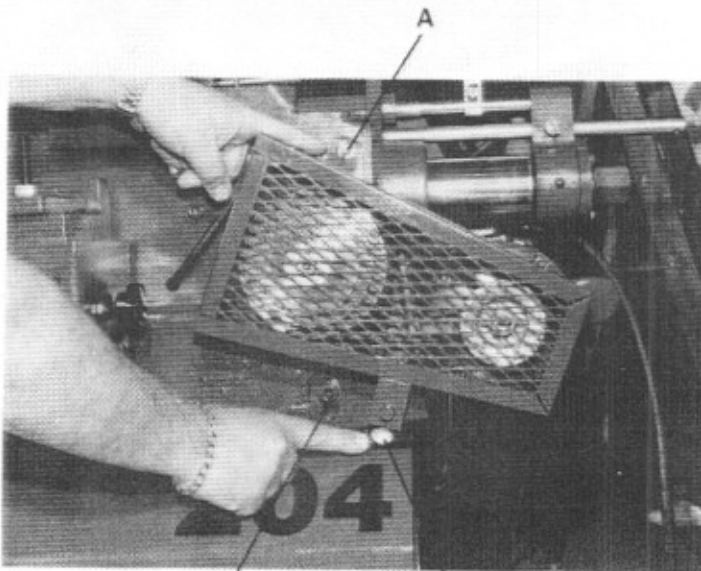


FIGURE 5

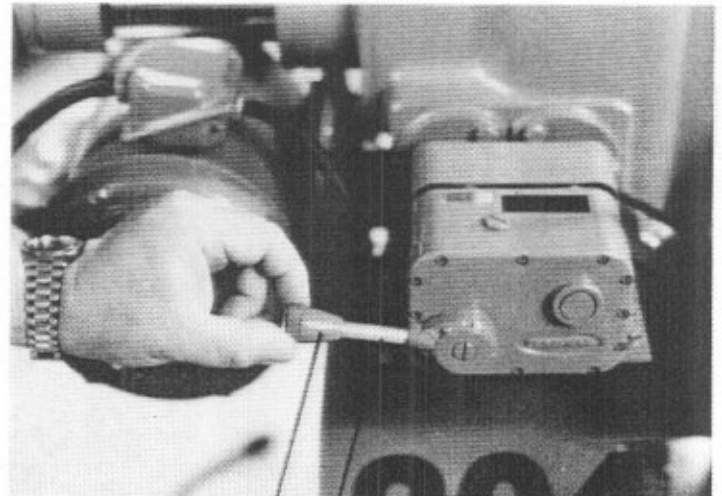


FIGURE 6

700 CHATTER CONTROL

701 Brake drums are dish or bell shaped and have a tendency to chatter. This can result in a wavy or chatter finish accompanied by excessive noise.

The VIBRATION DAMPENER BELT must be used at all times to prevent chatter. Securely wrap belt around the outside of the drum or use proper "O" ring type on outside of a rotor.

702 Dull, broken, chipped or improper tool bits will cause chatter. Always use tool bits supplied by the original manufacturer as they are designed to do a specific job.

703 A loose carbide tip on the tool holder will cause chatter. Make sure screw holding carbide tip grips tip firmly.

704 A dirty, uneven surface will crack the carbide tip and/or chatter.

800 TOOL BITS

801 This lathe is supplied with replaceable type throw-away carbide tips, part # 24176V, figure 10, for the drum cutters and part # 29687V for the rotor cutters, figure 11.

No grinding or sharpening is necessary. When cutting edge becomes dull, simply loosen screw and clamp, rotate the insert to new cutting edge.

900 INSTALLATION OF ARBOR

901 Select correct size mandrel for the work to be done, either a 1" diameter for work that is 150 pounds or less or the heavy-duty 2" mandrel for work 150 to 200 pounds.

902 Slide mandrel into main spindle taper. Important: both mandrel and spindle tapers must be clean or the mandrel will run out and the taper may be damaged. Align pin in mandrel with slot in main spindle. Screw in draw bar, figure 12, and lock tightly. Do not tighten excessively. Drive pin will prevent arbor from slipping. Remove mandrel easily (mandrel has non-locking taper) by loosening nut and tapping lightly into draw bar.

CAUTION: Do not hammer upward or downward on draw bar as damage may occur to both mandrel and draw bar.

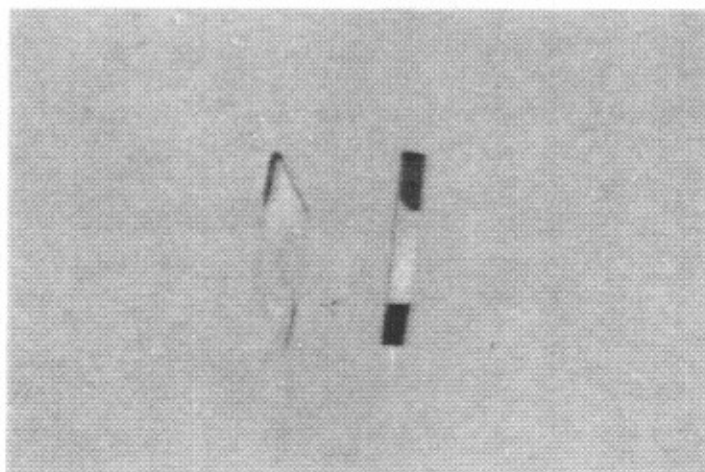


FIGURE 10

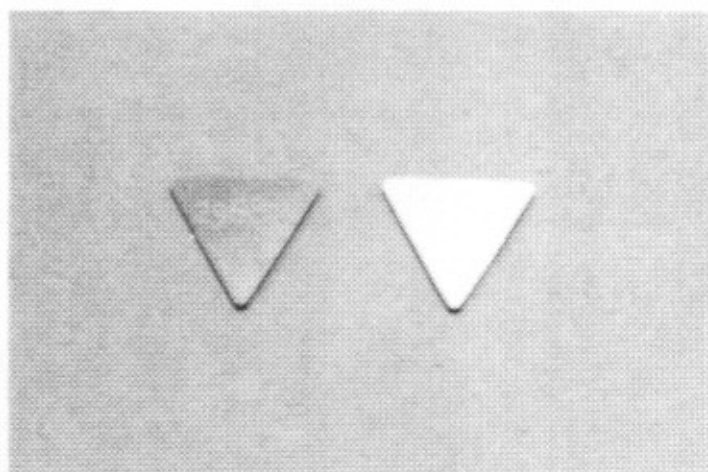


FIGURE 11

1000 RECONDITIONING DRUMS

1001 Figure 13, Item A, this thumb screw should be loosened when turning drums to insure spindle will move out during operation. This screw must be tightened when cutting rotors.

1002 Figure 14, Item A, knob should be tightened when doing drums and slide is in position. Loosen when cutting rotors.

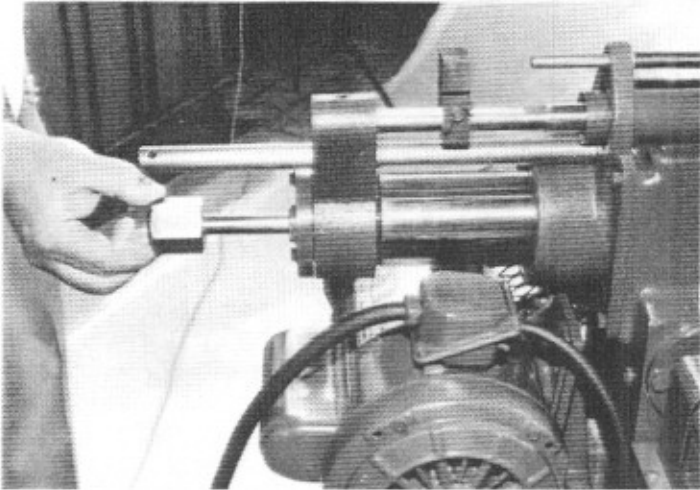
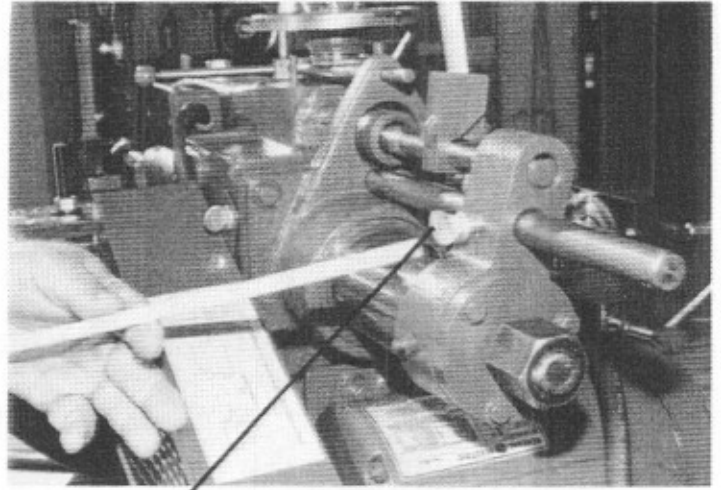


FIGURE 12



A

FIGURE 13

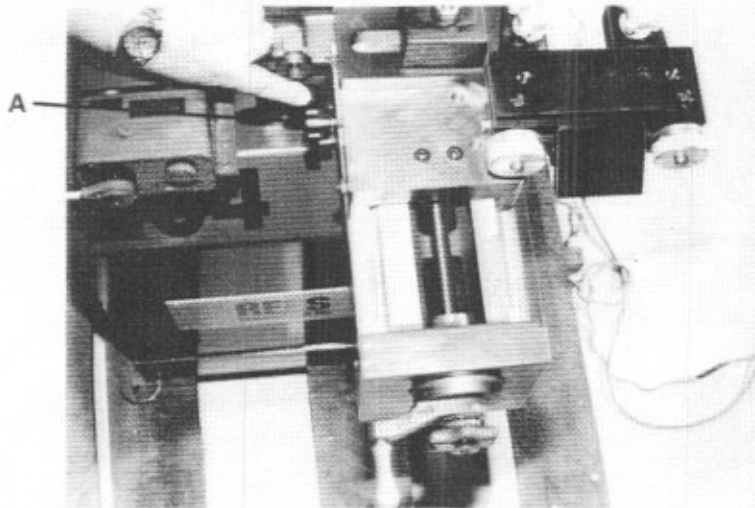


FIGURE 14

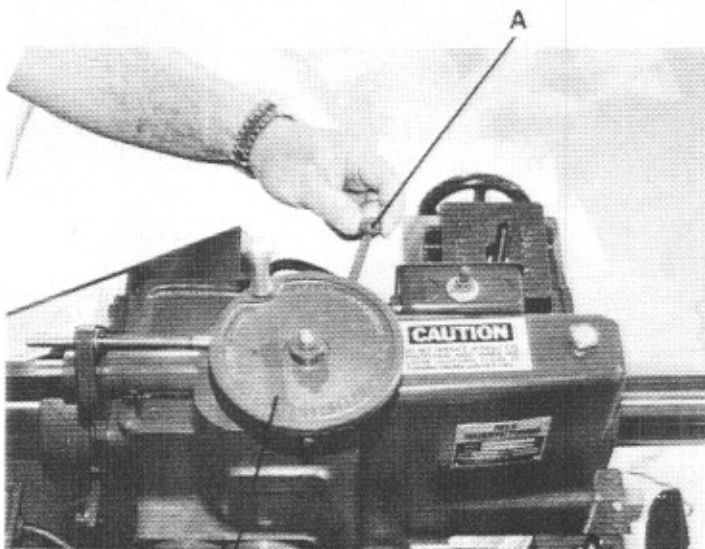
1003 To engage feed of main spindle push lever "A" figure 7, to the right of handwheel. "B" figure 7 is the manual control to move the main spindle "in" or "out".

WARNING: Do not move this handwheel while feed is engaged, "A" figure 8.

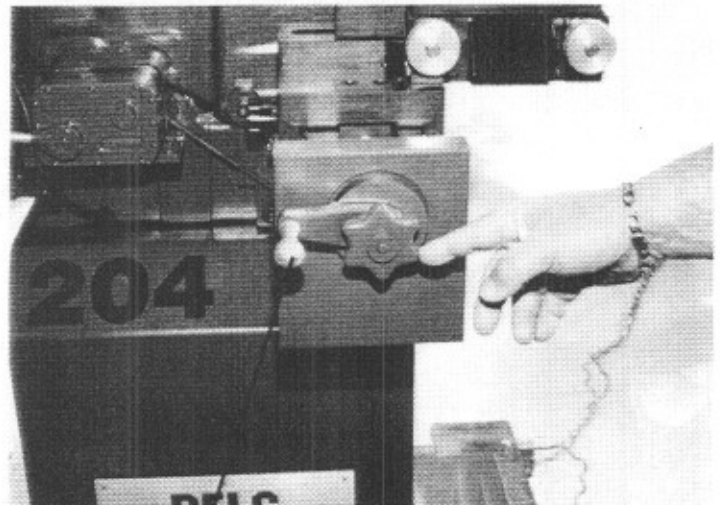
1004 Crank "A" figure 8 is used for moving the tool bit into the brake drum. This crank is graduated into thousands and is direct reading. Example: If crank is moved out .030" this will enlarge the ID of the brake drum .030".

1005 To Disengage Feed loosen wing nut "A" figure 9 and slide stop "B" figure 9 to desired position.

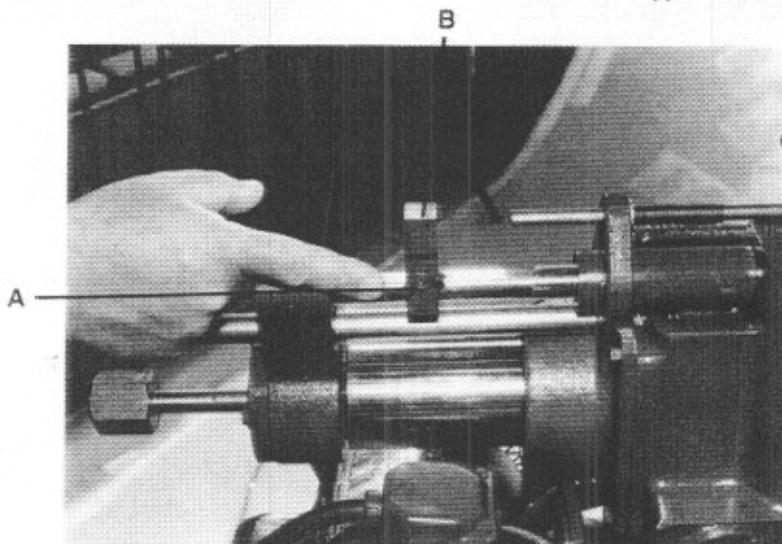
1006 Reset stop "B" figure 9 every time machine is used on a different width drum. If properly set the machine will disengage automatically when it reaches the stop.



B
FIGURE 7



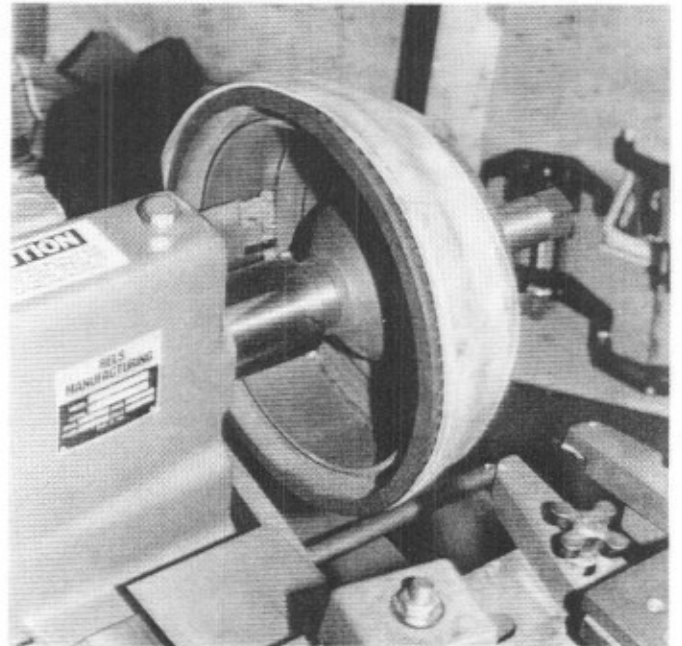
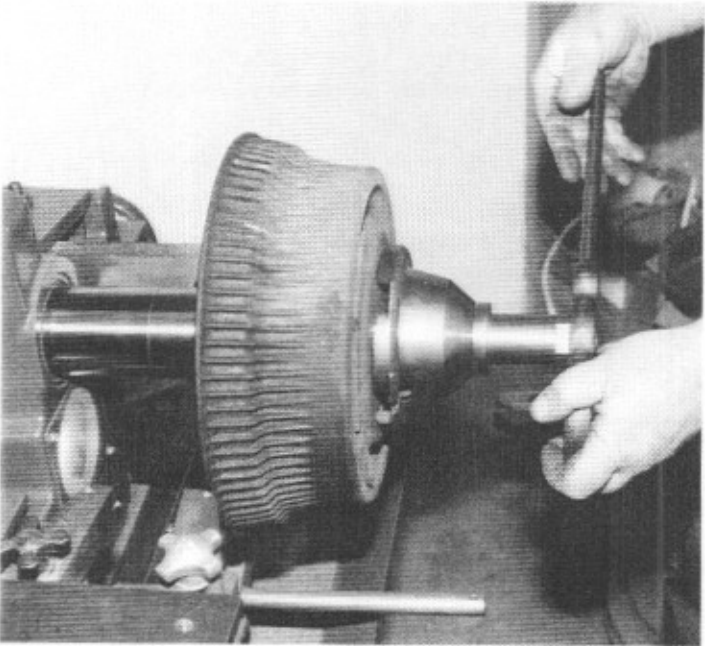
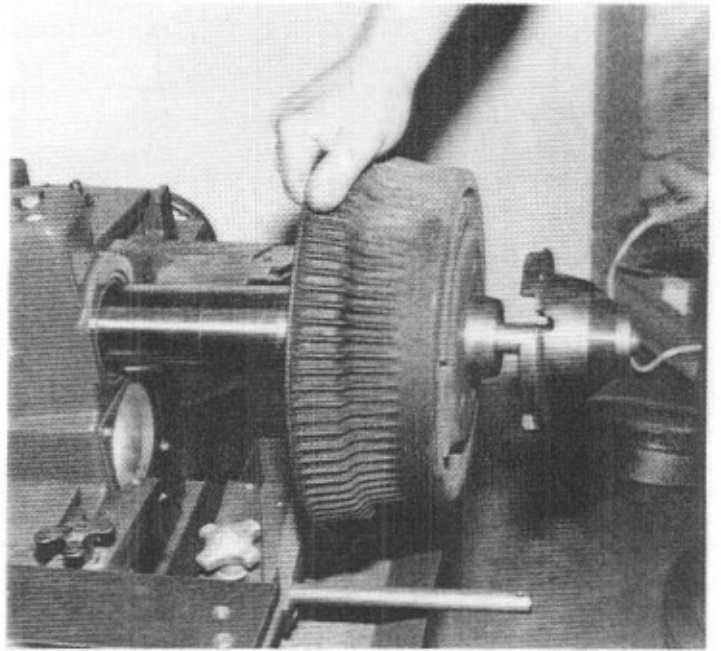
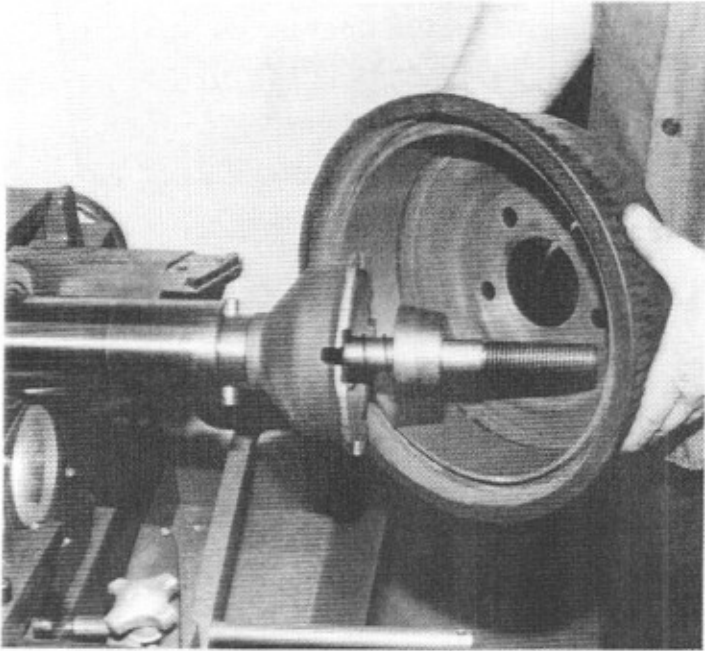
A
FIGURE 8



A
B
FIGURE 9

- 1007 Measure the diameter of the drum with a micrometer to determine that the drum will be within maximum reboring limits after reconditioning. It should also be in good general condition. Note; the maximum reboring limit dimension is cast into the drum by the manufacturer.
- 1008 Set the spindle speed to match the drum size (see section 500, speed spindle). Move the V-belt on the pulley to the correct groove.
- 1009 Mount the drum on the arbor using the proper adaptors, cones and spacers.
- 1010 Wrap and secure the drum silencer band tightly around the drum.
- 1011 Turn the cross feed handwheel and the spindle feed handwheel to their maximum clockwise position. Then back off the cross feed handwheel 2 turns and the spindle feed handwheel 4 turns.
- 1012 Position the Tool Bar by loosening the Tool Bar Clamp nut and sliding the tool bar inward toward the drum until the tool bit is close to the surface that is going to be machined. The entire tool bar may also be swiveled to achieve the best cutting position. CAUTION; be sure the set screw is tight before cutting.
- 1013 Turn the drum by hand to be sure that it runs true. Turn the lathe on and advance the tool bit manually until it just contacts the drum surface and makes a scratch cut. Back the tool bit off, stop the lathe. Loosen the arbor nut and rotate the drum one-half turn. Retighten the nut, turn the lathe on and make a second scratch cut, stop the lathe. If the first and second scratch cuts are opposite one another (180° apart) remove the drum from the arbor. Check the mounting adaptors and the arbor for nicks, burrs or chips. Clean if necessary. If the scratches are side by side, proceed turning the drum.
- 1014 Turn the spindle feed handwheel until the deepest worn groove of the drum is opposite the point of the tool bit. Advance the tool bit into the bottom of the groove by rotating the cross feed handwheel counter-clockwise.
- 1015 The depth of cut dial will show the approximate reconditioned diameter of the drum. Make sure that the resurfaced drum will be within the limits cast into the drum.
- 1016 Roughing cuts should be no deeper than .010" (.25mm); finish cuts no shallower than .002" (.05mm). Usually no more than 2 cuts are required to resurface a drum. With the lathe running set the depth of cut dial to the desired depth and lock the cross slide by tightening the cross slide locking knob.

Mounting Hubless Drums



2000 TURNING DISC BRAKES

- 2001 Tighten thumb screw, figure 13 item A, (Page 10).
- 2002 Loosen knob, figure 14 item A, (Page 10).
- 2003 Each brake disc should be carefully inspected for scoring, rust, ridges (at the inner and outer circumference of the rotor) and hard spots. Any excessive wear or deformity should be noted and, if not within acceptable limits, the rotor should be replaced. Using a micrometer check the thickness of the rotor in at least three points around the circumference about 1" (2.54cm) in from the outer diameter. If the rotor thickness varies between readings it should be machined. However, if the thickness is less than the minimum established by the manufacturer or it it will be after resurfacing, the rotor should be replace. Note: the minimum refinished thickness dimension is cast into the rotor.
- 2004 Mount the rotor on the arbor as shown in figure 15 or figure 16. Figure 15 shows a rotor with hub attached, note that the rotor is centered from hub with two split collet adaptors on the Timken bearings. Figure 16 shows a disc set up with the RELS hubless adaptor. Install the silencer band, this is easily done by stretching the band around the outside of the rotor.
- 2005 Adjust pulley drive belts for the desired speed. See section 500.
- 2006 Feed in the slide assembly with crank, figure 17 item A. Item B locking nut is turned in to engage slide power. (Must be loose to turn slide in or out manually).
- 2007 Feed in the moveable claw with graduated dial, figure 18, item A, until there is slight contact with disc brake pad surface. Tightly lock the moveable claw with binder, figure 18 item B. Turn the cross feed handle to move the tool bits all the way in and off the disc pad surface. Determine amount of stock to be removed to clean up both disc brake pad surfaces.

Note: Maximum cut per side is .015". Engage feed by tightening knob, figure 17, item B.

Use a slow cross feed of approximately .004" per revolution (Zero Max control).

- 2008 After facing the surface a non-directional finish should be applied.

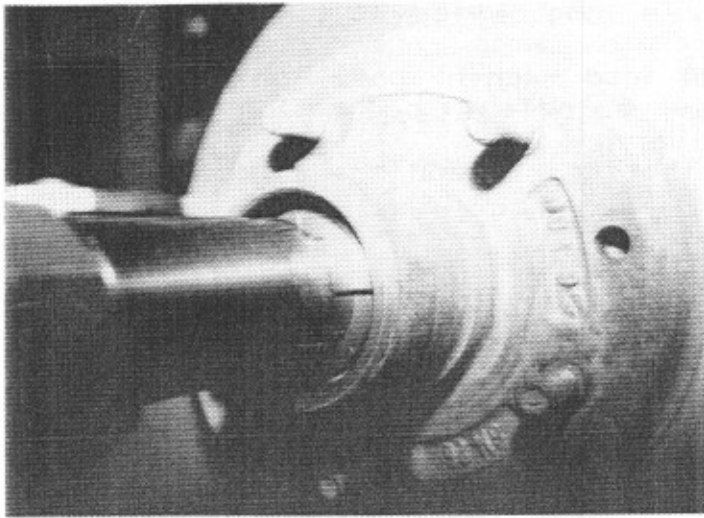


FIGURE 15

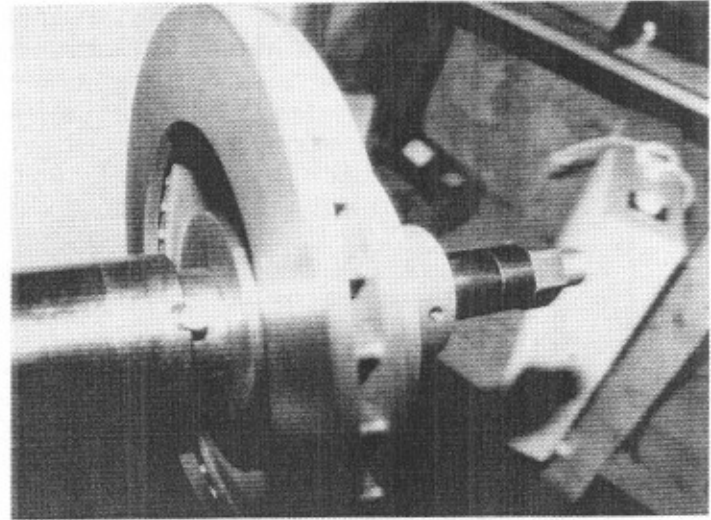
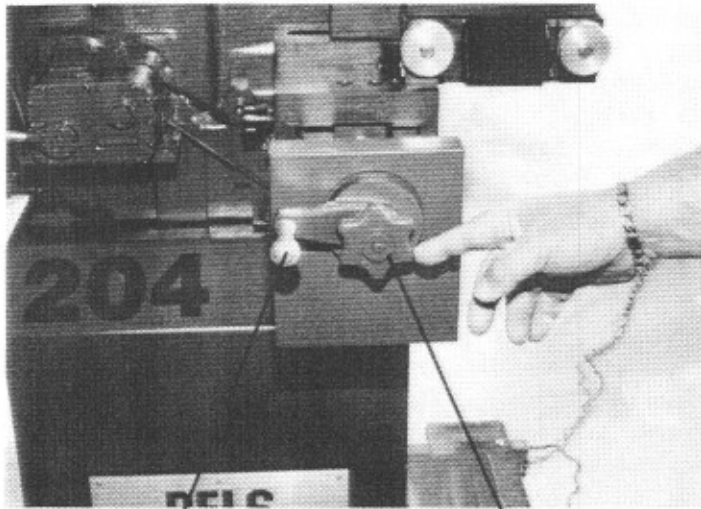


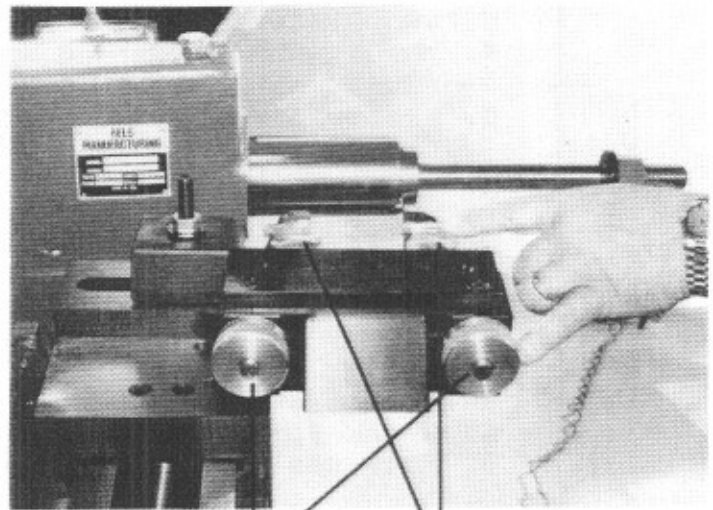
FIGURE 16



A

FIGURE 17

B



A

FIGURE 18

B

3000 STORAGE

If machine is to be stored for a long period of time the following should be done:

- 3001 Unplug machine, turn the slide into machine base and lock back spindle thumb screw to keep spindle in position.
- 3002 Take tension off all drive belts.
- 3003 Spray machine with a rust inhibiting oil and cover machine to protect it from dust and dirt.

4000 DISASSEMBLY, REPAIR, REPLACEMENT AND REASSEMBLY

4001 ALL MAJOR REPAIRS

- A. Unplug machine
- B. Remove tooling from machine
- C. Remove arbor by loosening Draw Bar (Fig. 12)
- D. Drain Oil (Plate 7 Item 17)

YOU ARE NOW READY TO START REPAIR

4002 SPINDLE BEARING (Plate 4) NOTE: it is rare for the Spindle Bearing to need replacement.

- A. Check that all items in 4001 have been complete.
- B. Remove Belt Guard.
- C. Remove bolt 18 Plate 6 to allow motor to lift up to remove belt 12.
- D. Plate 3 Punch out #2 Pin, remove #4 oiler, then lift out Handwheel Assy.
- E. On Plate #5 loosen #12 Screw, Plate 3 Screw #34.
- F. Pull back on Bearing Housing #11 Plate 5, turn side ways, pull Shaft #28 Plate 5 removing numbers 29, 30, and 31.
- G. Plate 5 remove #4 and #23 bolts, hold #11 Bearing Housing and Spindle, and remove from machine.
- H. Now remove and replace Spindle Bearing Plate 4 #3.
- I. Reverse above for assembly.
- J. Always replace front and rear Seals, Part# 41569.

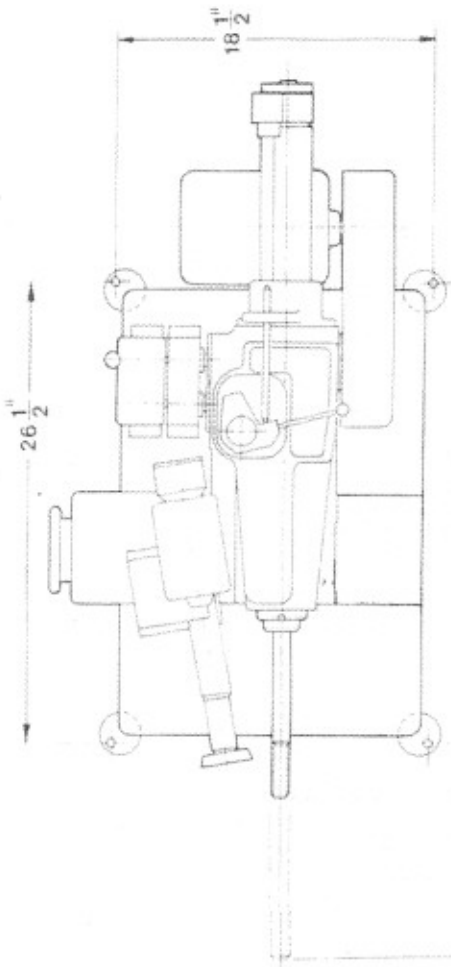
4003 Replace Zero Max side seals ,(Plate 4 Item 18).

- A. Remove the two screws #23 and lift Zero Max off machine.
- B. Remove #19 and #33 Couplings, remove seals and replace them. Reassemble.

4004 Replace front Seal (Plate 4 Item 4)

- A. Crank Spindle back to farthest position.
- B. Pull seal out and press new seal in.

FOUNDATION PLAN



RUN
 $9''$

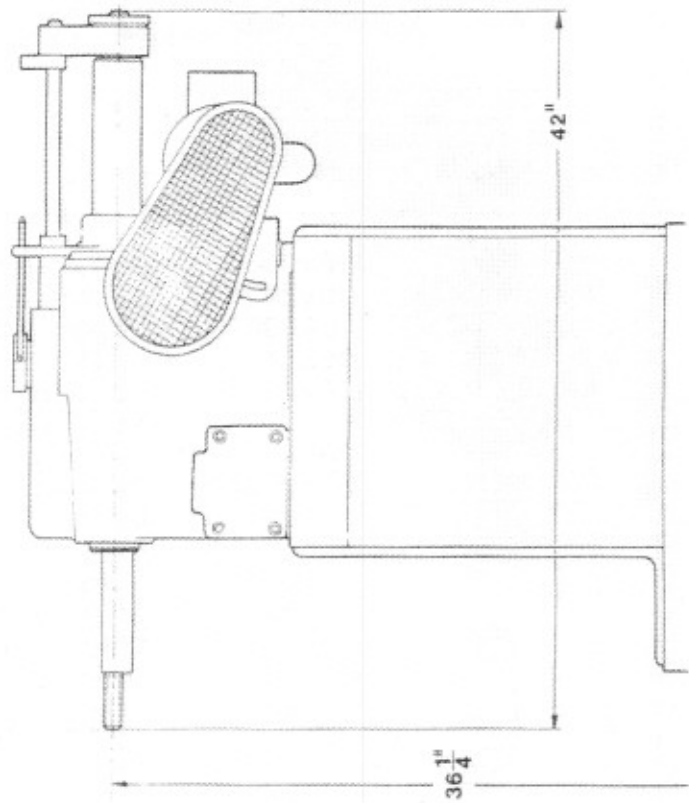
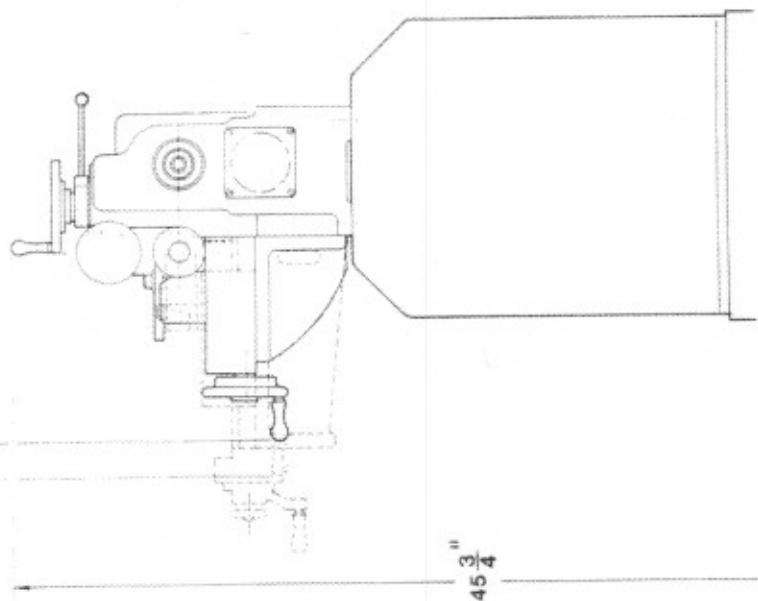


Plate 1

RUN
 $2''$



VERTICAL SHAFT ASSEMBLY

PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1	1	20400300	Body (Ref.)
2	1	09424	Groove Pin (5/32 x 1")
3	1	20400019	Upper Collar
4	1	06254	Oiler
5	1	08447	Handwheel Handle
6	1	20407314	Vertical Shaft Assembly
7	1	20400075	Vertical Shaft Handwheel
8	1	20400018	Handwheel Spring
9	1	20408010	Gear
10	1	20400076	Vertical Shaft Handwheel Hub Assy.
11	1	20400019	Lower Collar
12	1	09424	Groove Pin (5/32 x 1")
13	1	20400014	Shaft Gear
14	1	07180	Pilot Key
15	1	20408011	Shaft
16	1	23550	Adjusting Screw (1/2-20 x 1")
17	1	20400016	Ball Bearing Housing
18	1	24348	O-Ring (.125 x 1.625)
19	1	07884	Hex Nut (1/2-20)
20	1	24351	Ball Bearing (SKF #RLS4)
21	1	24352	Retaining Ring (5008-131)
22	1	09424	Groove Pin (5/32 x 1")
23	1	20400015	Vertical Shaft Helical Gear
24	1	16074	Retaining Ring (5108-75)
25	1	20408012	Feed Clutch Hub Assy. (Upper)
26	1	20400020	Vertical Shaft Clutch
27	1	17510	Spiral Pin (.078 x .625)
28	1	24394	Compression Spring
29	1	20400040	Hub Detent
30	1	20400022	Clutch Lever
31	1	24353	Lever Ball 3/4" Diameter
32	1	20400021	Feed Clutch Hub
33	1	09978	Dowel Pin 3/8" x 2
34	1	24025	Set Screw (3/8-24 x 1/2")
35	1	24354	Button Soc. Head Screw 3/8-24 x 1"
36	1	16747	Dowel Pin (1/4 x 1 1/4)
37	1	16625	Oiler 7/16" Drive

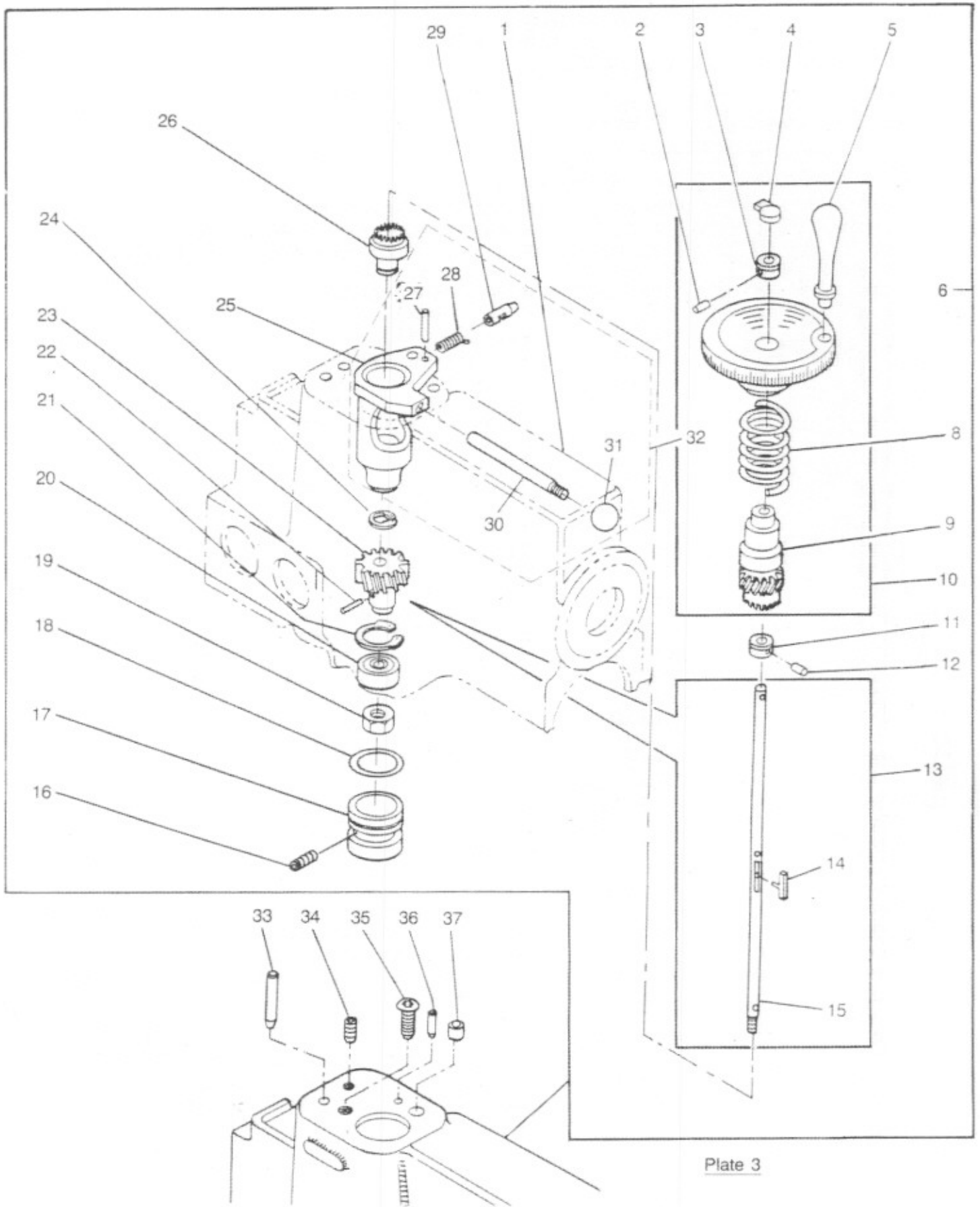
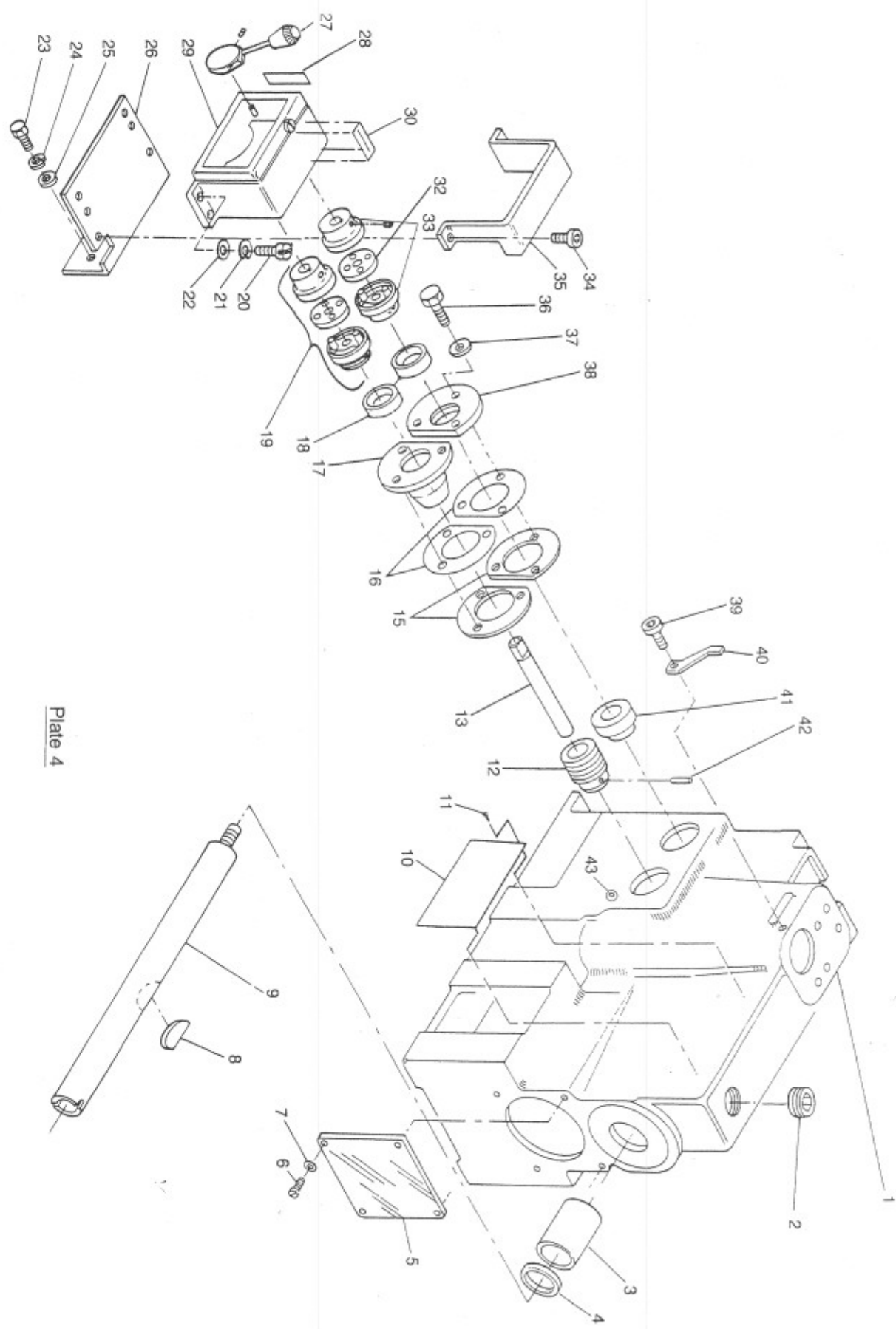


Plate 3

BASIC MACHINE - ALL MODELS
PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1		20400300	Body (Ref.)
2	1	18428	Breather (#MV004A)
3	1	14363	Spindle Bearing (1984 & On)
		30200006	Bearing (Prior to 1984) (Not Shown)
4	1	41569	Front Brg. Oil Seal (Nat'l# 415303)
5	1	30400065	Work Light Window
6	4	05021	Screw (10-32 x 3/8)
7	4	14160	Washer (#10)
8	1	16897	Spindle Key (HP2212B)
9	1	20400003	Spindle
10	1	20400038	Serial No. Plate
11	4	05353	Screw (1/4 x 2 type U)
12	1	20400013	Output Shaft Spiral Gear
13	1	20408018	Shaft
14	1	20400012	Output Shaft Assembly
15	2	20400097	Plastic Shim
16	2	20400010	Paper Shim
17	1	20400039	Cap
18	2	07711	Seal (CR 7512)
19	1	20400120	Pulley for Belt
20	4	08004	Hex Head Cap Screw .25-20 x .625
21	4	18100	Internal Lockwasher (1/4")
22	4	05577	Washer SAE 1/4"
23	2	05144	Hex Head Screw (5/16-18 x 3/4)
24	2	05888	Lockwasher (5/16)
25	2	05489	Washer (.312 flat SAE)
26	1	20400821	Zero Max Support Bracket
27	1	26790	Handle with Screw
28	1	20400094	Decal
29	1	20407317	Zero Max Assembly
30	1	20400093	Decal
31	4	05624	Screw comes with 24349 - 20400120
32	2	25206	Disc Coupling
33	1	24349	Coupling
34	2	19910	Button Soc. Head Screw(1/4-20x.375)
35	1	20400061	Zero Max Coupling Guard
36	6	05144	Hex Head Cap Screw (5/16-18 x 3/4)
37	6	05489	Washer (.312 flat SAE)
38	1	20400009	Worm Bearing Cap
39	1	05021	Screw (10-31 x 3/8)
40	1	20400163	Pointer
41	1	24347	Roller Bearing (Timken 09067/09195)
42	1	11558	Groove Pin (3/16 x 1 1/4")
43	1	23550	Adjusting Screw (Ref.) (1/2-20 x 1)



SPINDLE CLAMP ASSEMBLY

PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1	1	20400026	Push Rod
2	1	18712	Retaining Ring (5130-37)
3	1	24355	Compression Spring (.500x6.00x.047)
4	1	05287	Washer SAE 3/8"
5	1	20400063	Sleeve
6	3	05888	Lockwasher (5/16)
7	3	08480	Socket Head Cap Screw (5/16-18x1/2)
8	1	24755	Retaining Ring (5000-112)
9	1	06122	Wing Nut (5/16-18)
10	1	20408019	Release Dog Assembly
11	1	20400297	Bearing Housing
12	1	05256	Cup Point Socket Screw (3/8-16x1/2)
13	1	20400151	Shaft
14	3	05577	Lockwasher (.250 flat SAE)
15	3	06691	Hex Head Cap Screw (1/4-20x1)
16	1	20400298	Cover
17	1	09733	Bearing Locknut (N-06)
18	1	40572	Thrust Washer (TRB-2031)
19	1	24345	Roller Bearing (Timken 08118/0823)
20	1	40851	Thumb Screw (3/8-16x3/4)
21	1	07334	Grease Fitting (1/8" ex short)
22	1	41569	Oil Seal (Nat'l 415303)
23	4	05144	Hex Head Cap Screw (5/16-18x3/4)
24	4	05489	Washer (SAE 5/16")
25	1	20400072	Rear Bearing
26	1	20400070	Spindle Worm Gear
27	1	20400069	Work Spindle Sleeve
28	1	20400023	Feed Screw
29	1	20400062	Guard
30	1	16207	O-Ring (2-128)
31	1	20400024	Feed Screw Nut & Gear

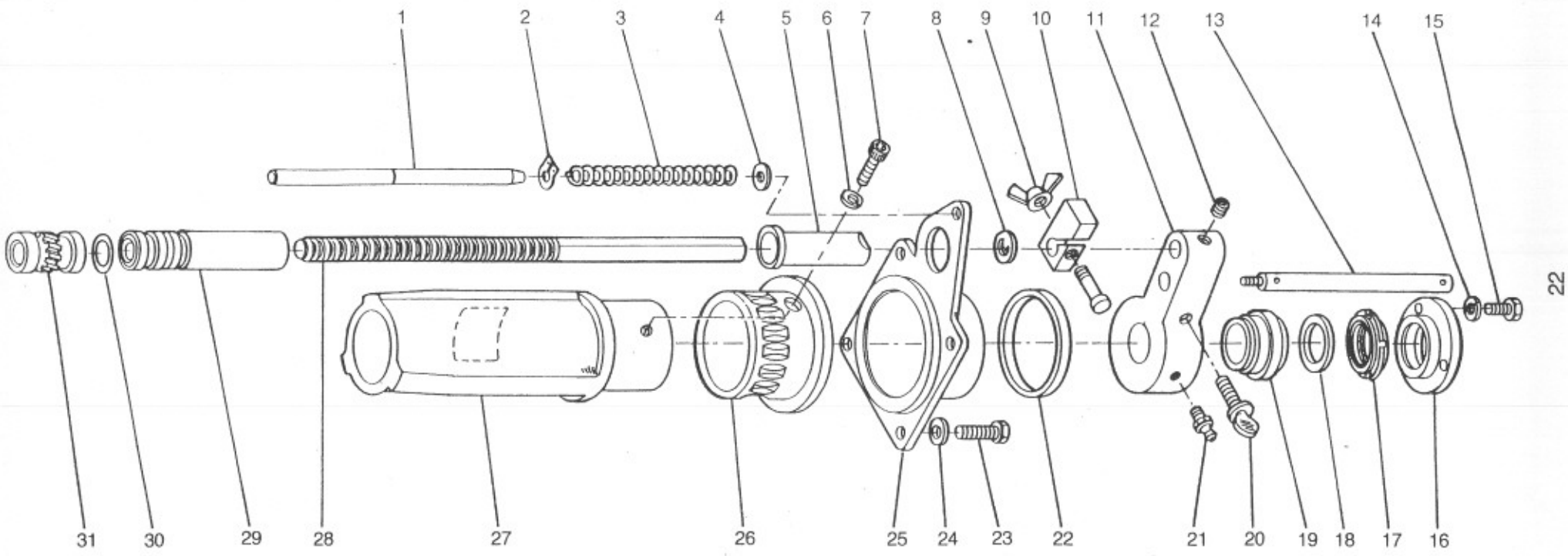


Plate 5

RIGHT REAR OF MACHINE

PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1	35"	413525	110 Volt Motor Cord
		413526	220 Volt Motor Cord
2	1	413594	Cord Bushing (Heyco SR-7K-2)
3	1	413592	Bushing (Heyco SR-8P-2)
4	6 ft.	413525	Motor Cord
5	4	05489	Washer (SAE 5/16")
6	4	05888	Lockwasher (5/16")
7	4	05144	Hex Head Cap Screw (5/16-18x3/4)
8	1	40524	Motor (GE 5KC47UG1125)
9	1		Set Screw (Comes with Item 10)
10	1	24397	3-Step Pulley
11	1	11200505	Key
12	1	08246	Belt (4L290)
13	1	05489	Washer (SAE 5/16")
14	1	40956	Thumb Screw (5/16-18x1/2)
15	1	20400324	Motor Belt Guard
16	1	40956	Thumb Screw (5/16-18x1/2)
17	1	20400037	Pin
18	1	08369	Flat Point Soc. Set Screw (1/2-13 x 1 1/4)
19	1	05268	Washer (1/2" Flat SAE)
20	1	20400036	Motor Bracket
21	1	05268	Washer (1/2" Flat SAE)
22	1	06977	Screw (5/16-18x1)
23	3	05489	Washer (SAE 5/16")
24	3	05144	Hex Head Cap Screw (5/16-18x3/4)
25	1		Set Screw (Comes with Item 27)
26	1	11200505	Key
27	1	40634	Pulley
28	1	07711	Seal (CR 75120)
29	1	20400009	Worm Bearing Cap
30	1	20400010	Shim
31	1	24347	Roller Bearing (Timken 09067/09195)
32	1	20400071	Shaft

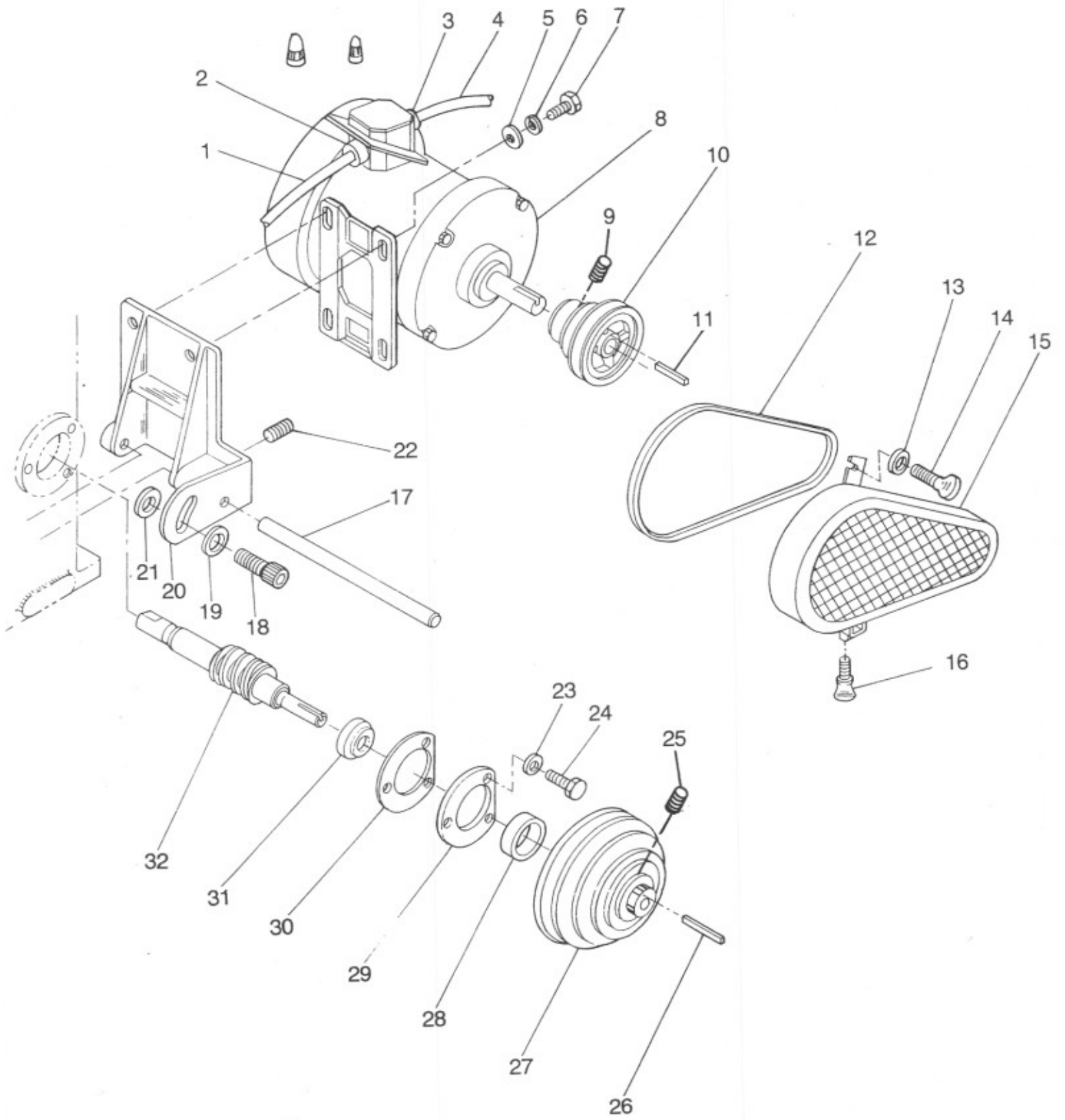


Plate 6

POWER FEED ATTACHMENT FOR FACING DISC BRAKES

PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1	1	20400142	Gib
2	2	24357	Set Screw (3/8-16 x 1 3/4)
3	1	40531	Knob (Reid DK-29)
4	1	11100633	Screw Plug
5	2	05208	Jam Nut
6	2	06905	Screw (3/8-16 x 1 1/2)
7	1	20400118	Power Facing Feed Slide
8	1	08158	Socket Head Cap Screw (3/8-16 x 3/4)
9	2	05508	Socket Head Cap Screw (3/12-18 x 1)
10	1	20400162	Belt Idler
11	1	08711	Bushing (Oilite AA-507-10)
12	1	20400165	Idler Bracket
13	1	25836	Bushing (Oilite FF-620-02)
14	1	20400126	Pulley
15	1	09697	Cup Point Socket Screw (10-32 x 1/2)
16	1	40583	Belt (280-J4)
17	1	14597	Drain Plug
18	4	10027	Socket Head Cap Screw (1/2-13 x 1)
19	1	20400117	Power Facing Feed Knee
20	1	20400122	Slide Feed Screw Nut
21	1	20408023	Collar
22	1	11139	Bushing (Oilite AA-838-16)
23	1	20400131	Plate Assembly
24	1	20408022	Plate
25	4	08158	Socket Head Cap Screw (3/8-16 x 3/4)
26	1	20400123	Shaft
27	1	20408021	Feed Screw Assembly
28	1	09925	Pin (1/4 x 2)
29	1	05134	Woodruff Key (#7)
30	1	20400132	Collar
31	1	20400166	Pulley
32	1	25052	Belt (190J4)
33	1	20400167	Pulley Guard
34	1	19343	Screw (10-32 x 3/8)
35	1	20400144	Stop Nut
36	1	20400159	Power Feed Screw Drive Nut
37	1	20408024	Crank
37 1/2	1	08447	Handle
38	4	19343	Button Socket Head Screw (10-32 x 3/8)
39	1	20400129	Pulley
40	1	11539	Cup Point Socket Screw (10-32 x 1/4)
41	1	05133	Woodruff Key (#3)
42	1	20400128	Drive Shaft
43	1	05133	Woodruff Key (#3)
44	1	25836	Bushing (Oilite FF-620-02)
45	1	20400246	Idler Arm
46	1	05287	Washer (.375 Flat SAE)
47	1	08711	Bushing (Oilite AA-507-10)
48	1	07283	Socket Head Cap Screw (3/8-16 x 1)
49	1	20400162	Belt Idler
50	1	05287	Washer (.375 Flat SAE)
51	1	07283	Socket Head Cap Screw (3/8-16 x 1)

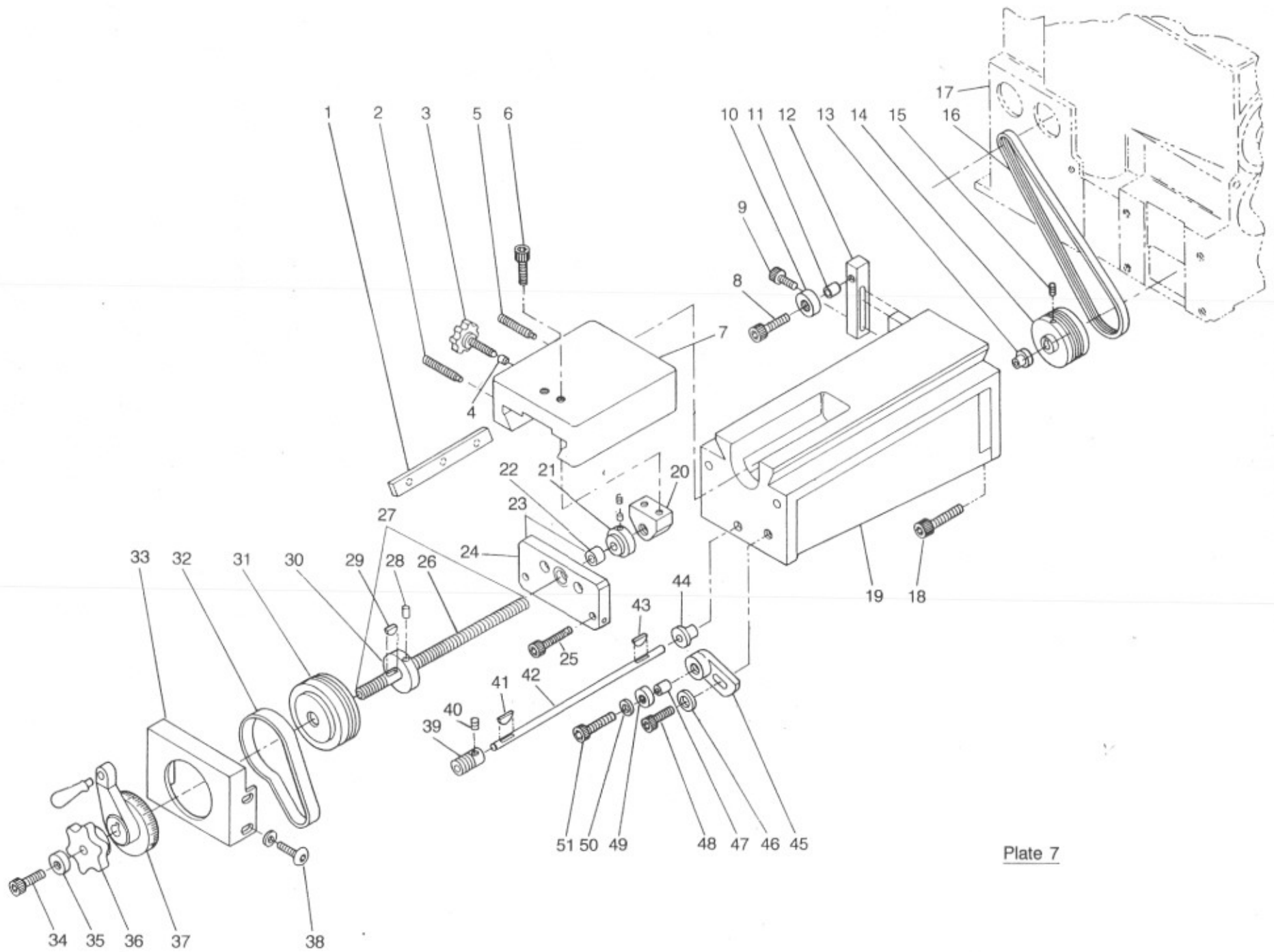


Plate 7

CLAW ASSEMBLY

PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1	2	40753	Knob
2	2	40350	Washer (.312 Flat Fender)
3	1	25812	Pin (.75 x 2)
4	1	20500854	R.H. Tool Holder
5	1	20500855	L.H. Tool Holder
6	1	40535	Spring
7	1	20400311	Mounting Plate
8	1	20500858	Block
9	2	20400270	Feed Screw
10	2	08057	Key (#5)
11	2	20400269	Dial
12	1	19934	Pin (3/16 x 1 1/2)
13	2	10307	Screw (1/4-20 x 2)
14	2	10307	Screw (1/4-20 x 2)
15	1	19934	Pin (3/16 x 1 1/2)
16	1	20500858	Block
17	2	30084V	Screw (Sandvik #174-1-832)
18	2	29279	Clamp (Sandvik #430-2-821)
19	2	29687V	Insert
20	2	08792	Screw (1/4-20 x 1/2)
21	1	20500066	Plate
22	1	20400320	Guard
23	1	20400303	Stud
24	1	05199	Nut (1/2-13)
25	1	40695	Washer (CL-2-FW)
26	1	20500849	Clamp Plate

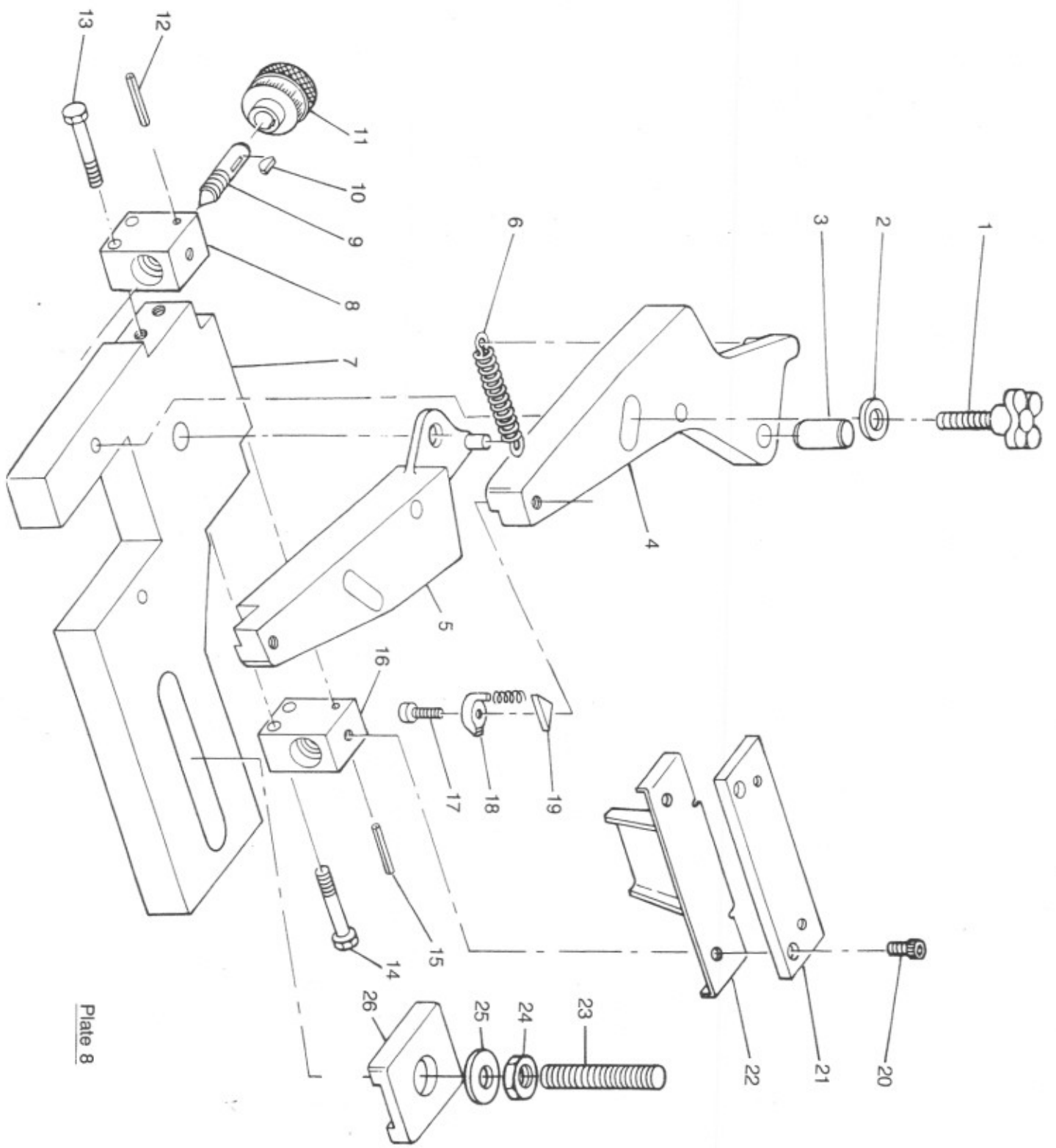


Plate 8

ELECTRICAL EQUIPMENT

PARTS LIST

ITEM NUMBER	QUANTITY	PART NUMBER	DESCRIPTION
1		20400300	Body (Ref.)
2	1	413571	Elec. Cover (Raco 860)
3	5	413594	Small Coupler (Heyco SR-7K-2)
4	1	41526	Wire Clip (P-H 3121-1-6)
5	1	05021	Screw (#10-32 x 3/8)
6	2	413561	Switch (McGill 90-0001)
7	2	11666	Elec. Box (Raco 660)
8	2	05021	Screw (#10-32 x 3/8)
9	1	29282	Boot (N1030)
10	1		Nut (Comes with Switch)
11	1	413642	Motor and Light Decal
12	1	41207	Washer
13	1	413571	Elec. Cover (Raco 860)
14	1	41171	Step Washer
15	1	40524	Motor (GE 5KC47UG1125)
16	1		On Motor
17	1	40999	Socket and Bulb Holder Assy.
18	1	40586	Bulb (120V 60W 60A/52WM)
19	1	10606	Pipe Nipple (3/8 std close)
20	1	20400290	Bracket
21	1	05950	Nut (1/4-20)
22	1	07959	Nipple Check Nut (3/8 Gedney 1-38)
23	1	19641	Hex Cap Screw (1/4-20 x 3/4)
24	1	413592	Large Coupler (Heyco SR-8P-2)

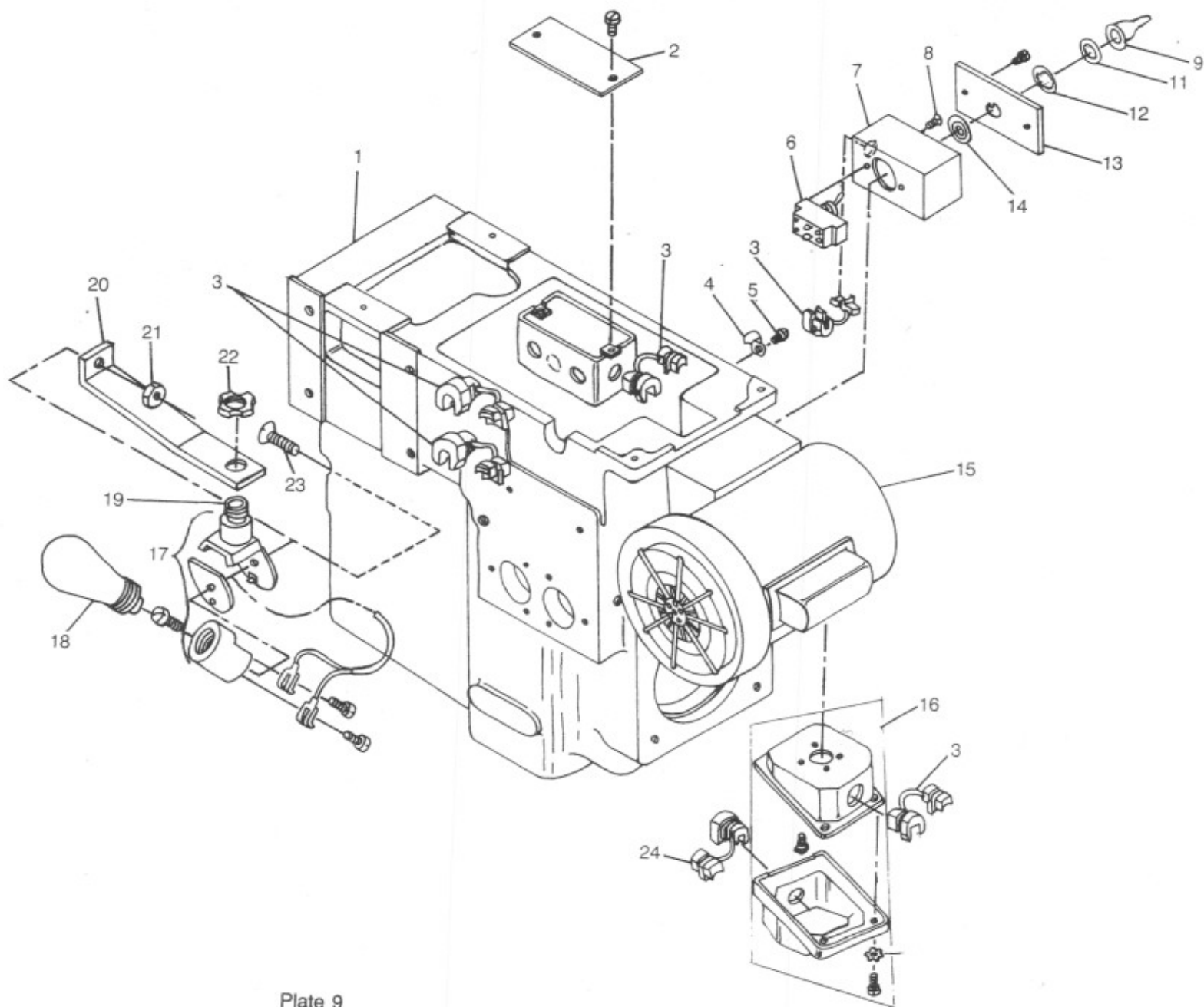
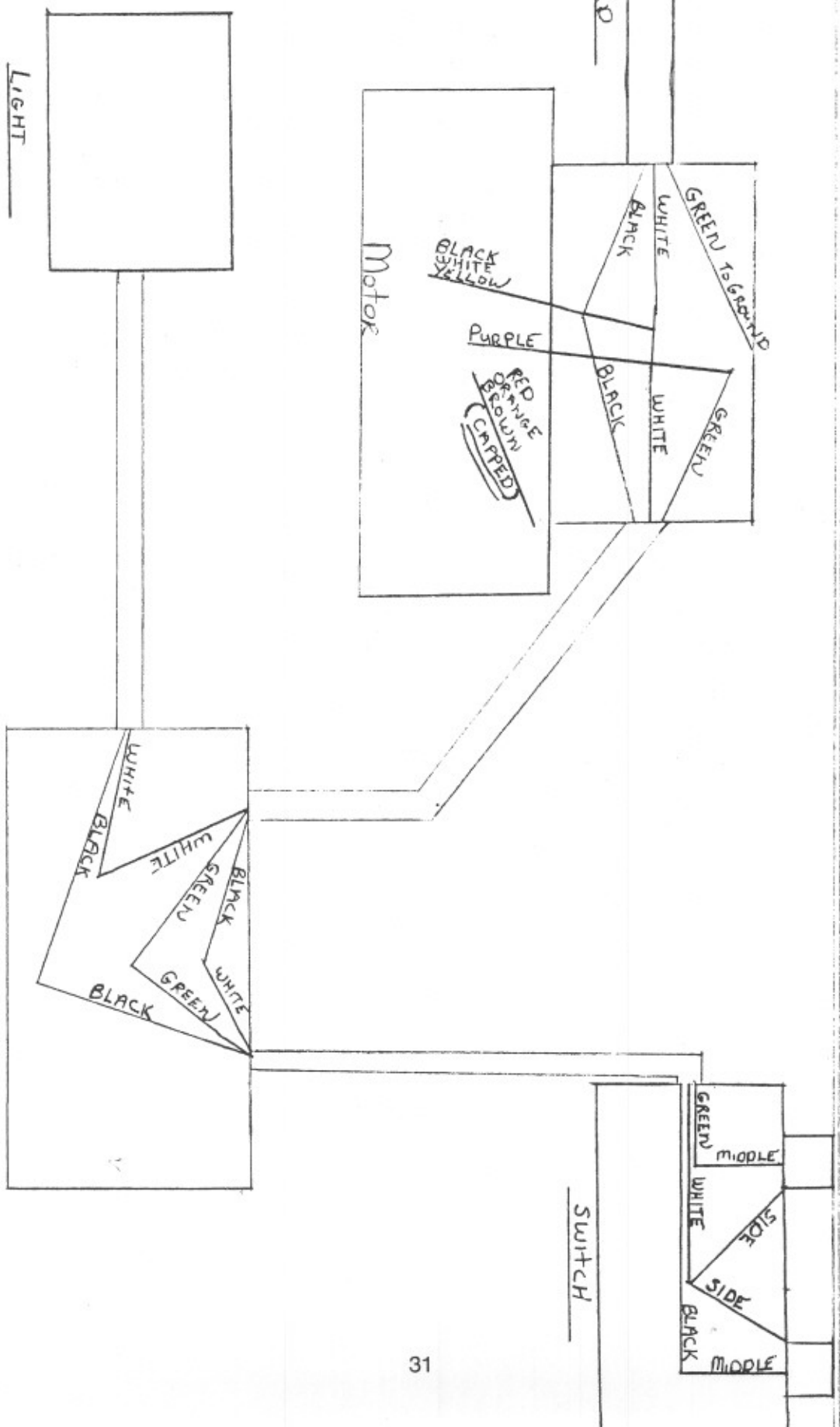


Plate 9

ELECTRICAL SCHEMATICS

204S for Government



TERMS

Terms on all equipment, accessories and service parts are 2% - 10 days, net 30 days. The minimum billing per customer purchase order of equipment, accessories and service parts is \$35.00 plus transportation charges.

FREIGHT POLICY

All product is shipped F.O.B. origin. RELS will make all attempts to use customer requested carriers, but in interest of best possible service. RELS reserves the right to select all freight carriers. Minimum acceptable value is based on an invoice amount of \$35.00 excluding freight. The sales department can provide details about current stock.

SALES REPRESENTATIVES

The company sales representatives are independent manufacturer's representatives and as such are not authorized to change in any way the discounts, sales policies, warranty or conditions outlined herein. No RELS Distributor or Salesman is authorized to affect transfer of material or accept payment of same without written authorization from RELS Manufacturing.

LIMITED WARRANTY

The manufacturer warrants this equipment to the original user against defective material or workmanship for a period of one (1) year from date of purchase on parts, and 180 days from date of purchase on repair labor. The manufacturer's responsibility under this warranty is limited to the repair or replacement of defective part or parts.

The manufacturer reserves the right to determine whether the part or parts failed because of defective material, workmanship or other causes. Failure caused by accident, alteration, misuse or improper packaging of returned units is not covered by this warranty.

All warranty repairs must be done at a RELS Authorized Service Depot or by the RELS Factory. Any repair to the equipment other than by these authorized facilities voids this warranty. The rights under this warranty are limited to the original user and may not be transferred to subsequent owners.

This warranty is in lieu of all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.