

INSTRUCTION AND SERVICE MANUAL

MODEL "2500"

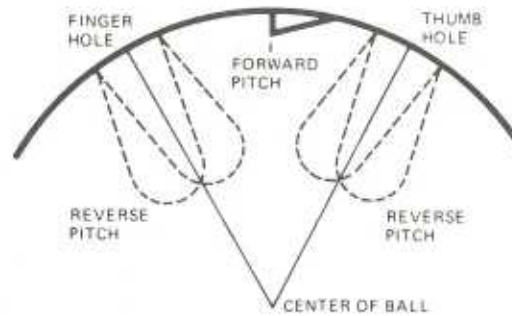
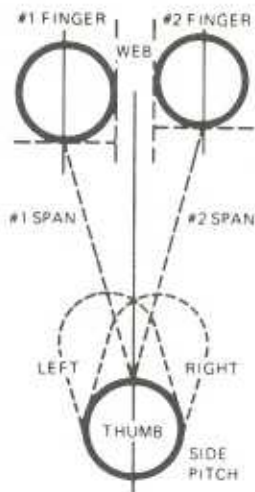


**BALL
DRILLING
MACHINE**

AMF INCORPORATED

BOWLING PRODUCTS GROUP

Westbury, L.I., N. Y. 11590



THE ABOVE DIAGRAMS INDICATE THE TERMINOLOGY USED IN THE PAGES OF ILLUSTRATIONS REGARDING THUMB HOLE AND FINGER HOLE LOCATIONS AND PITCH WHEN DRILLING A BALL WITH THE MODEL 2500 BALL DRILLING MACHINE.

IT IS NECESSARY TO FAMILIARIZE YOURSELF WITH THE ABOVE MENTIONED TERMS.

DRILLING INSTRUCTIONS

1. STANDARD DRILLING: Drilling procedure for standard pattern with zero side pitch and automatic forward and reverse pitch.

CAUTION:

1. Always set spans and finger sizes with shift handle in center position.
 2. Make sure side pitch is zero and automatic forward and reverse pitch is engaged (knob tightened in center position).
- a. Locate and clamp ball:
- STEP 1 - Place drilling machine shift handle in the finger position.
 - STEP 2 - Set the bowling ball on the "Post" so the point of the triangle is toward the driller and the hypotenuse (longest side) is vertical to the floor. Refer to Figures 1 and 2.
 - STEP 3 - The fine adjustment should be made so the horizontal hair on the plastic target aligns with the point of the triangle. Align vertical hair in center of engraved pattern per figures 1 and 2.



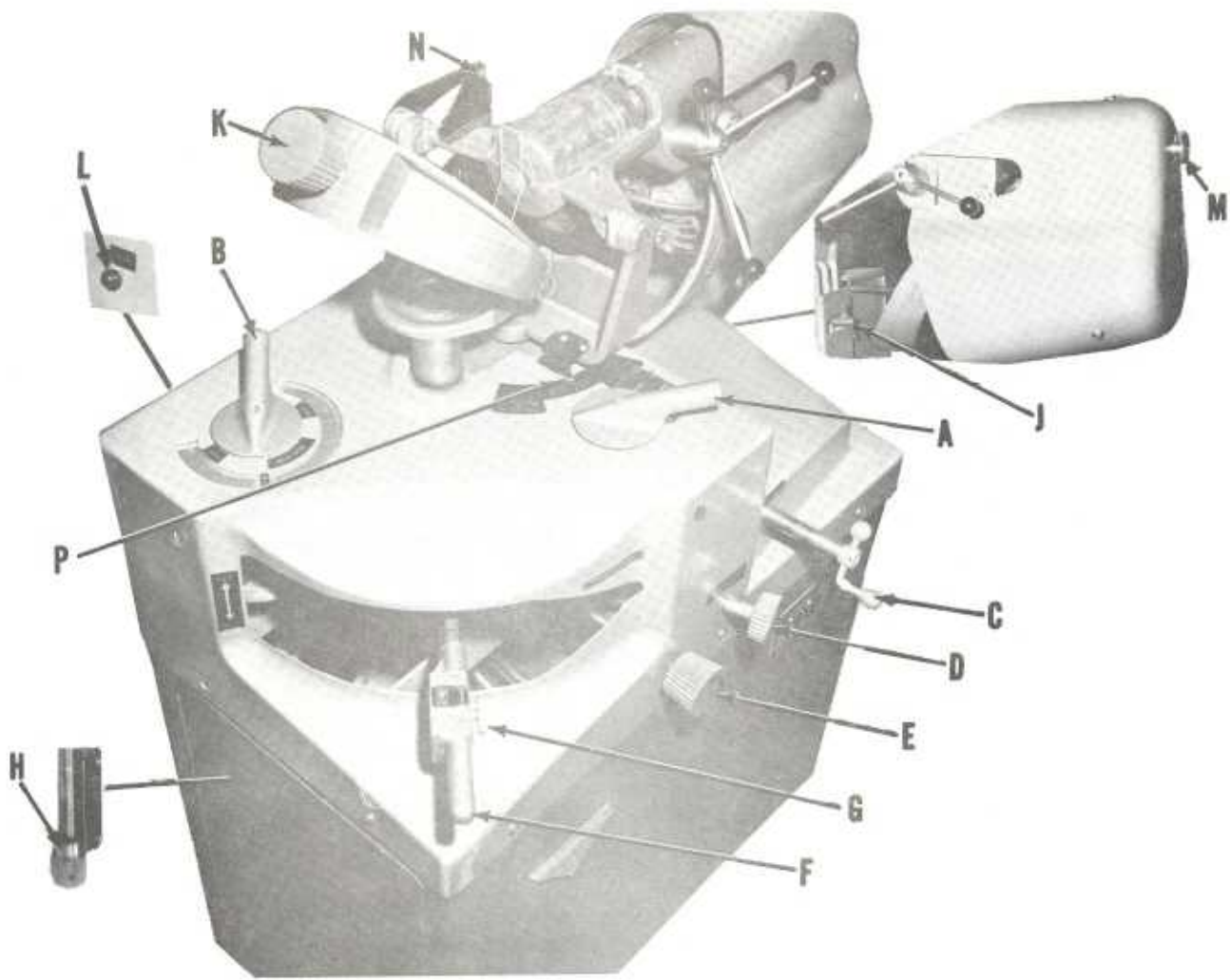
FIGURE 1



FIGURE 2

BALL DRILLING (CONT.)

- b. Dial #1 Span with shift handle in center position.
- c. Dial #2 Span with shift handle in center position.
- d. Set thumb hole size on shift handle dial.
- e. Insert appropriate size drill.
- f. Move shift handle to thumb position engage spindle lock and drill.
- g. Move shift handle to center position.
 1. Disengage spindle lock.
 2. Set #1 hole size in shift handle dial.
 3. Set #1 hole size on drill size dial.
 4. Move shift handle to #1 position, engage spindle lock and drill.
- h. Move shift handle to center position.
 1. Disengage spindle lock.
 2. Set #2 hole size on shift handle dial.
 3. Set #2 hole size on drill size dial.
 4. Move shift handle to #2 position engage spindle lock and drill.



LISTED ARE THE LETTERS GIVEN TO THE VARIOUS KNOBS FOR THE FOLLOWING INSTRUCTIONS.

- | | |
|-----|--|
| "A" | #1 SPAN ADJUSTMENT |
| "B" | #2 SPAN ADJUSTMENT |
| "C" | SIDE PITCH ADJUSTMENT |
| "D" | FORWARD AND REVERSE PITCH ADJUSTMENT |
| "E" | POST LOCK |
| "F" | SHAFT LEVER HANDLE (SHOWN IN NEUTRAL POSITION) |
| "G" | HOLE SIZE ADJUSTMENT |
| "H" | WEB ADJUSTMENT |
| "J" | FORWARD AND REVERSE PITCH "T-HANDLE" LOCK |
| "K" | BALL CLAMP KNOB |
| "L" | OFFSET RELEASE |
| "M" | DRILL KNOCKOUT |
| "N" | SIDE PITCH INDICATOR |
| "P" | FORWARD AND REVERSE PITCH INDICATOR |

DRILLING PROCEDURE

- STEP 1 Check web setting on vertical scale "H" at left side of cabinet base. $3/8$ of an inch is considered a standard web. The web scale is calibrated for actual dimensions of webs for $1/4$ ", $3/8$ " and $1/2$ " only, other web settings in excess of $1/2$ " are to be set at one half of the desired web. As an example, if 2" web is desired, set the scale at the one inch mark. Settings in excess of $1/2$ " are used for special drilling patterns when a 3rd and 4th finger hole is to be drilled in a ball.
- STEP 2 Loosen post clamp knob "E" and move shift lever handle "F" to neutral position, lock post knob "E".
CAUTION: Shift lever handle should be in the neutral position when setting span dials "A" and "B".
- STEP 3 Set span dials "A" and "B" for ball to be drilled. The No. 1 span "A" will be smaller than the No. 2 span "B" for a right hand bowler. Example, the dial setting for "A" the No. 1 span would read $3\ 1/2$ " and the setting for "B" the No. 2 span would read $3\ 5/8$ ". A ball being drilled for a left hand bowler would have dial "A" reading a larger dimension than dial "B". Example, $3\ 5/8$ " No. 1 span and $3\ 1/2$ " for the No. 2 span.
- NOTE: TO RELEASE APPROPRIATE SPAN DETENT, REACH FINGER THRU ACCESS HOLE AND PULL OUT ON DETENT ASSEMBLY; RELEASE DETENT WHEN CORRECT ADJUSTMENT IS MADE. ACCESS HOLES ARE $1\ 1/4$ " DIA. LOCATED IN SIDE OF COVER BELOW #1 AND #2 SPAN ADJUSTMENT.
- STEP 4 Push ball clamp back to a vertical position. Place ball in ball socket of post assembly and lower ball clamp.
- STEP 5 Loosen post clamp knob "E" and tee handle "J" moving shift lever handle "F" left and up to No. 2 finger position.
- STEP 6 Line up ball trade mark with cross hair sight of plastic target as shown on page 1.
- STEP 7 Clamp ball securely by tightening ball clamp knob "K".
- STEP 8 Move shift lever handle "F" to thumb position. If side pitch is required, engage the side pitch crank "C" by pushing the rear of the drill head housing away from you. The crank end will engage its mating part when scale "P" reads between $1/4$ " and $3/8$ " reverse pitch. Crank to the desired left or right side pitch on scale "N" and disengage crank "C".
- STEP 9 Adjust forward and reverse pitch for thumb at knob "D" as required. $3/8$ " forward pitch is conventional for the thumb. The pitch can be checked on the Forward and Reverse indicator scale "P". The drill head will shift automatically to forward pitch thumb when the shift lever handle is in the thumb position, provided that the machine is level.

- STEP 10 Dial hole size adjustment "G" for thumb drill, locking post clamp knob "E" and tee handle "J".
- STEP 11 Insert thumb drill in spindle seating drill securely. Close plastic depth gage cover.
- STEP 12 Turn on master switch, which operates both the drill motor and vacuum cleaner. Drill the thumb hole to desired depth, using forward edge of drill spindle in relation to markings on plastic cover. (2 3/4" is conventional depth for both thumb and finger holes).
- STEP 13 Back out drill bit and spindle to the extreme rear position and shut of master switch.
- STEP 14 Loosen tee handle "J" and post clamp knob "E".
- STEP 15 Remove drill bit by tapping drill knock out knob "M".
- STEP 16 Remove side pitch for thumb ,if any, or adjust side pitch for No. 1 finger hole as required. Disengage side pitch crank.
- STEP 17 Adjust hole size dial "G" for No. 1 finger drill. Move shift lever handle "F" left and down to No. 1 finger drilling position. Lock post clamp knob "E" also tightening tee handle. (In shifting the lever handle to the No. 1 position the drilling head will automatically move to forward pitch for the finger hole).
- STEP 18 Insert No. 1 finger drill, seating drill securely. Close plastic depth gage cover, turn on master switch and drill to conventional depth or as required.
- STEP 19 Back out drill bit and shut off master switch.
- STEP 20 Loosen tee handle "J" and post clamp knob "E".
- STEP 21 Remove No.1 finger drill by tapping drill knock out knob "M".
- STEP 22 Move shift lever handle to thumb position. Adjust hole size dial "G" for No. 2 finger drill. Adjust side pitch to zero or as required, disengaging side pitch crank. Move shift lever handle left and up to No. 2 finger drilling position.
- STEP 23 Lock tee handle "J" and post clamp knob "E".
- STEP 24 Insert No. 2 finger drill, seating drill securely. Close plastic cover, turn on master switch and drill to desired depth.

STEP 25 Back out drill bit and shut off master switch.

STEP 26 Remove No. 2 finger drill by tapping drill knock out knob

STEP 27 Loosen tee handle "J" and post clamp knob "E", shift lever handle to neutral position and lock post clamp knob "E".

Return side pitch indicator "N" to zero by engaging and turning crank "C", disengage side pitch crank. Set forward and reverse pitch manually to zero and lock tee handle "J".

STEP 28 Loosen ball clamp knob "K" and raise the ball clamp to a vertical position. Position the ball as required to bevel the thumb and finger holes.

BEVELING

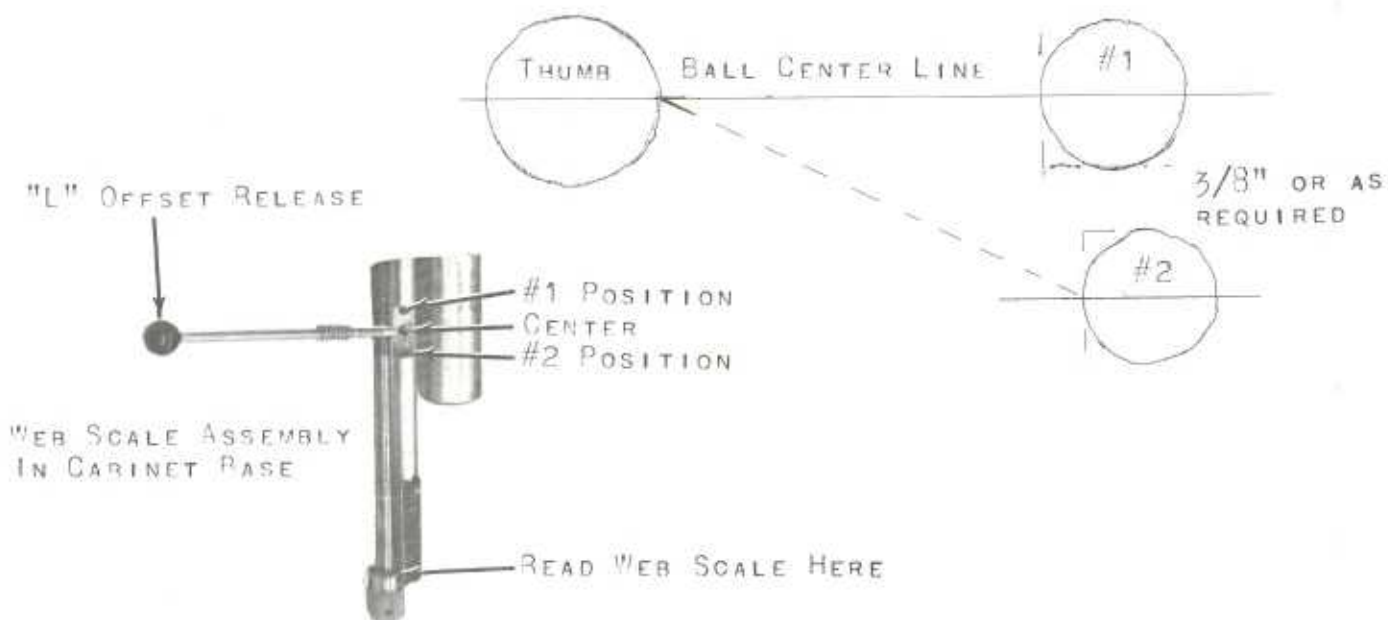
1. FOR HEAVY BEVEL - Keep sanding disc on the outside of hole and proceed to go inside of hole to eliminate sharp edges.
2. FOR MEDIUM BEVEL - Keep a small portion of the sanding disc on the outside of hole and proceed to go inside of hole to eliminate sharp edges.
3. FOR FINE BEVEL - Go in and out of holes several times with sanding disc.

BALL-O-GRAMMING

Loosen post clamp knob and shift handle to neutral position. Lock post clamp knob. Push ball holder back in an upright position. Place ball in holder to be engraved.

Place engraver attachment with slotted end under the knob on the ball holder. Position ball so that engraving will be in proper place (usually one-half (1/2) inch or more above finger holes). Place name or initials in holder, centering initials on ball. Tighten letter thumb screw clamps. Set engraver motor tool into opening with cutter blade extending out the depth desired to be engraved. Lock thumb screw in to hold engraver motor firmly. Tighten knob on ball holder to lock in engraver. Check to make sure engraving attachment is secure to allow no ball slippage. Check to make sure engraving cutter is over the intended area.

Follow letters with stylus and press down to engrave. After engraving is completed, remove engraver attachment. Fill in engraving with white paint stick, and rub off excess paint with a paper towel in one brushing sweep. Then rub over engraving lightly with a clean piece of paper towel. Ball is finished.



"COLLIER-GRIP" OR COMMONLY KNOWN AS "2 x 3"

No. 2 FINGER HOLE OFFSET DRILLING

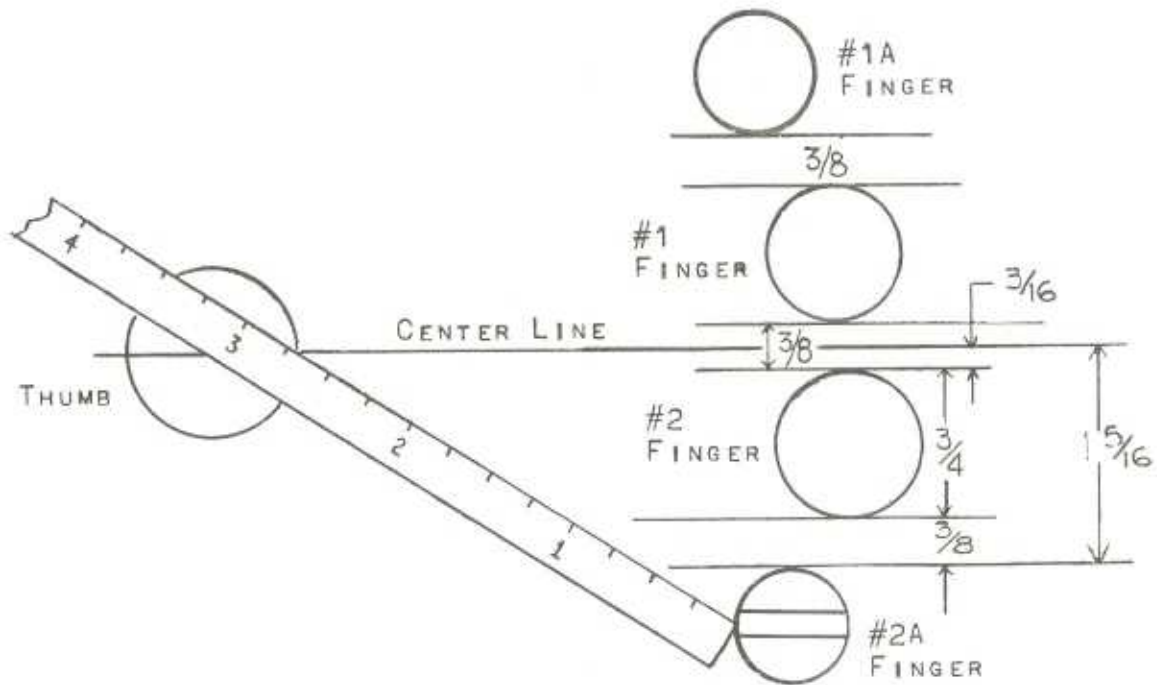
- STEP 1 PLACE BALL IN BALL CLAMP AS FOR CONVENTIONAL DRILLING.
- STEP 2 PULL OUT "L", OFFSET RELEASE, AND RAISE WEB SCALE ASSEMBLY FROM CENTER POSITION TO #2 POSITION IN ORDER TO DRILL ABOVE PATTERN.
- STEP 3 SET #1 AND #2 SPAN DIALS TO DESIRED SPANS.
- STEP 4 DRILL THUMB AND #1 HOLES WITH CONVENTIONAL PROCEDURE, THEN RETURN SHIFT LEVER HANDLE TO THUMB POSITION.
- STEP 5 DECREASE #2 SPAN DIAL BY *THREE DETENTS OR CLICKS (SEE NOTE BELOW), MOVE SHIFT LEVER HANDLE TO #2 FINGER POSITION AND DRILL #2 FINGER HOLE.

CAUTION RETURN "L" OFFSET RELEASE LEVER TO CENTER POSITION BEFORE ATTEMPTING TO DRILL ADDITIONAL BALLS.

No. 1 FINGER HOLE OFFSET DRILLING

USE SAME PROCEDURE FOR #1 OFFSET DRILLING AS #2, EXCEPT LOWER WEB SCALE ASSEMBLY FROM CENTER POSITION TO #1 POSITION. DRILL THE THUMB AND #2 FINGER HOLES BEFORE REDUCING #1 SPAN DIAL *THREE DETENTS.

NOTE:* EACH CLICK OR DETENT REPRESENTS $1/64$ " - THIS IS ESSENTIAL TO MAINTAIN THE CORRECT SPAN TO THE OFFSET HOLE.



SPECIAL DRILLING INSTRUCTIONS

IN ORDER TO DRILL ADDITIONAL FINGER HOLE #2A, FIRST USE NORMAL DRILLING INSTRUCTIONS FOR THUMB, #1 FINGER AND #2 FINGER, THEN PROCEED AS FOLLOWS.

- STEP 1 TOTAL THE FOLLOWING MEASUREMENTS, #2 FINGER HOLE PLUS $\frac{1}{2}$ OF WEB BETWEEN #1 AND #2 FINGERS PLUS WEB BETWEEN #2 AND #2A FINGER HOLES AS SHOWN ABOVE.
- STEP 2 WITH DRILL HANDLE IN THUMB POSITION USING ABOVE TOTAL, SET $\frac{1}{2}$ WEB SCALE TO READ THE SAME AS DISTANCE FROM CENTER LINE OF BALL TO EDGE OF #2A FINGER HOLE.
- STEP 3 POSITION "F" HANDLE SAME AS FOR DRILLING #2 FINGER HOLE TIGHTEN "E" LIGHTLY.
- STEP 4 INSERT DESIRED DRILL FOR #2A HOLE, TURN DRILL SO THAT TIP IS HORIZONTAL.
- STEP 5 USING 6" STEEL RULE AS SHOWN, BRING DRILL POINT TO JUST CLEAR THE BOWLING BALL, MOVE "F" HANDLE HORIZONTALLY UNTIL SCALE READS CORRECT SPAN, LOCK "E" AND DRILL HOLE.

NOTE: THE SAME PROCEDURE IS USED WHEN DRILLING #1A FINGER HOLE WITH EXCEPTION, PLACE "F" IN POSITION TO DRILL #1 FINGER HOLE.

LUBRICATION - MAINTENANCE

A SILICONE SPRAY LUBRICANT PROCURABLE AT A LOCAL HARDWARE STORE IS TO BE USED MONTHLY ON THE FOLLOWING:

1. TO THE OUTER SURFACES OF THE SPINDLE CASE AND TEETH AT THE BOTTOM OF THE SPINDLE CASE, ITEM 3 PAGE 11.
2. TO THE UPPER PORTION OF THE SHAFT ITEM 11 PAGE 14. THIS MAY BE DONE BY POSITIONING THE OFFSET RELEASE TO THE UPPER SETTING AND SPRAYING THE SHAFT END PROTRUDING THROUGH THE FELT TO THE LEFT OF THE BALL POST AT THE TOP OF THE MACHINE. BE SURE THE OFFSET RELEASE IS RETURNED TO ITS NORMAL POSITION.
3. TO THE OUTER SURFACES OF THE POST OF THE SOCKET AND POST ASSEMBLY ITEM 22 PAGE 14.

APPLY A FEW DROPS OF LIGHT WEIGHT OIL ONCE EVERY SIX MONTHS, OR AS REQUIRED, TO THE THREADED PORTION OF THE FOLLOWING:

1. ITEMS 5, 6 AND 21 ON PAGE 12.
2. ITEMS 9 AND 10 ON PAGE 14.

APPLY A THIN FILM OF GREASE ONCE EVERY SIX MONTHS TO THE SURFACES OR TEETH OF THE FOLLOWING:

1. TO THE SURFACES OF THE FINGER CAMS, ITEMS 10 AND 11 PAGE 12.
2. TO THE SURFACES OF THE FINGER STOPS, ITEMS 1 AND 4 PAGE 14 THAT CONTACT THE DRILL SIZE CAM (ITEM 9 PAGE 15).
3. TO THE TEETH OF THE GEARS, ITEMS 6 AND 10 PAGE 13, AND RACKS, ITEMS 8 AND 9 PAGE 12.

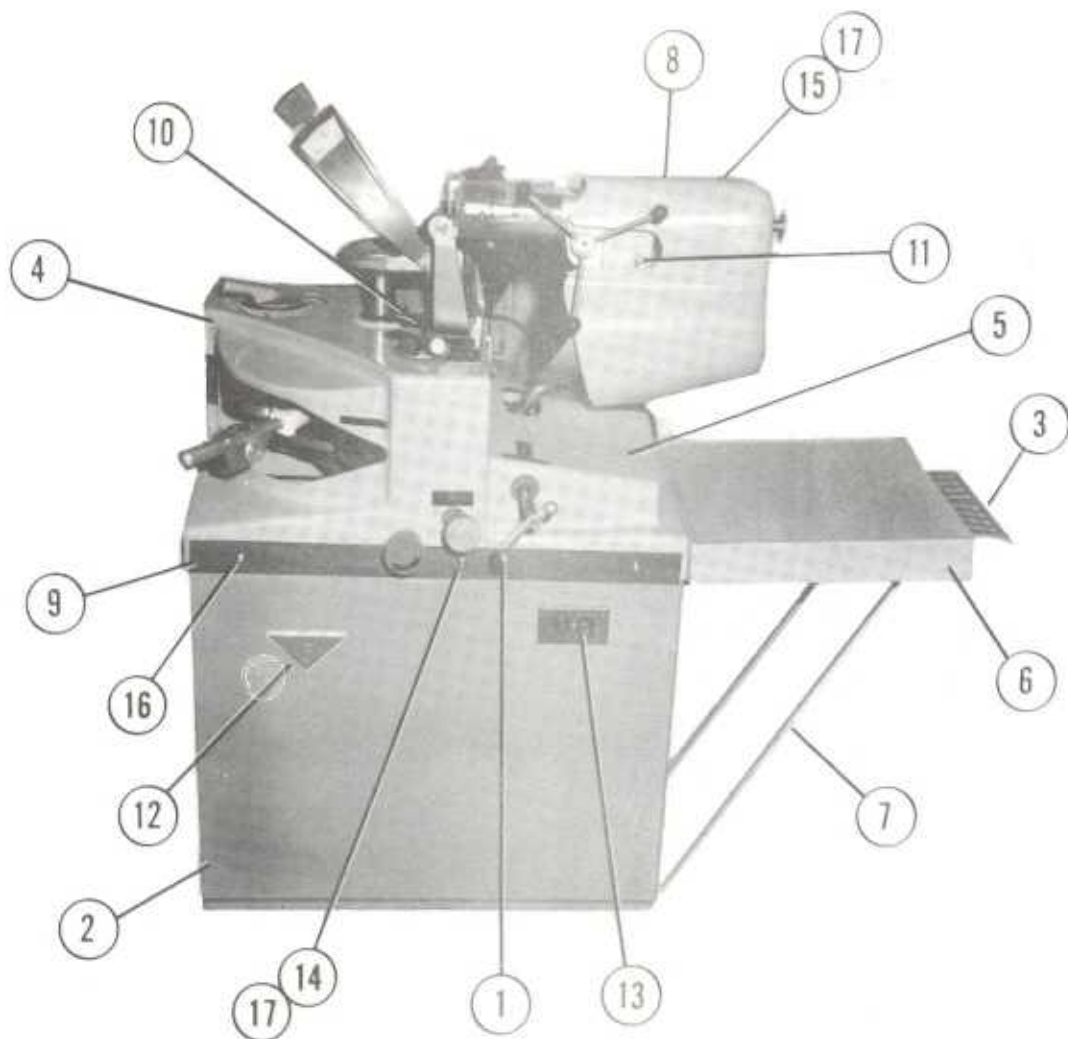
MAINTENANCE

IT IS ESSENTIAL THAT THE DISPOSABLE PAPER DUST BAG OVER THE CLOTH BAG OF THE VACUUM CLEANER, BE TAPPED GENTLY AFTER DRILLING FIVE OR SIX BALLS. THIS IS NECESSARY TO DISLodge SMALL DUST PARTICLES THAT CLOG THE PORES OF THE BAG, WHICH COULD CAUSE MOTOR OVERHEATING AND INADEQUATE VACUUM.

BALL TARGET ALIGNMENT AND REPLACEMENT

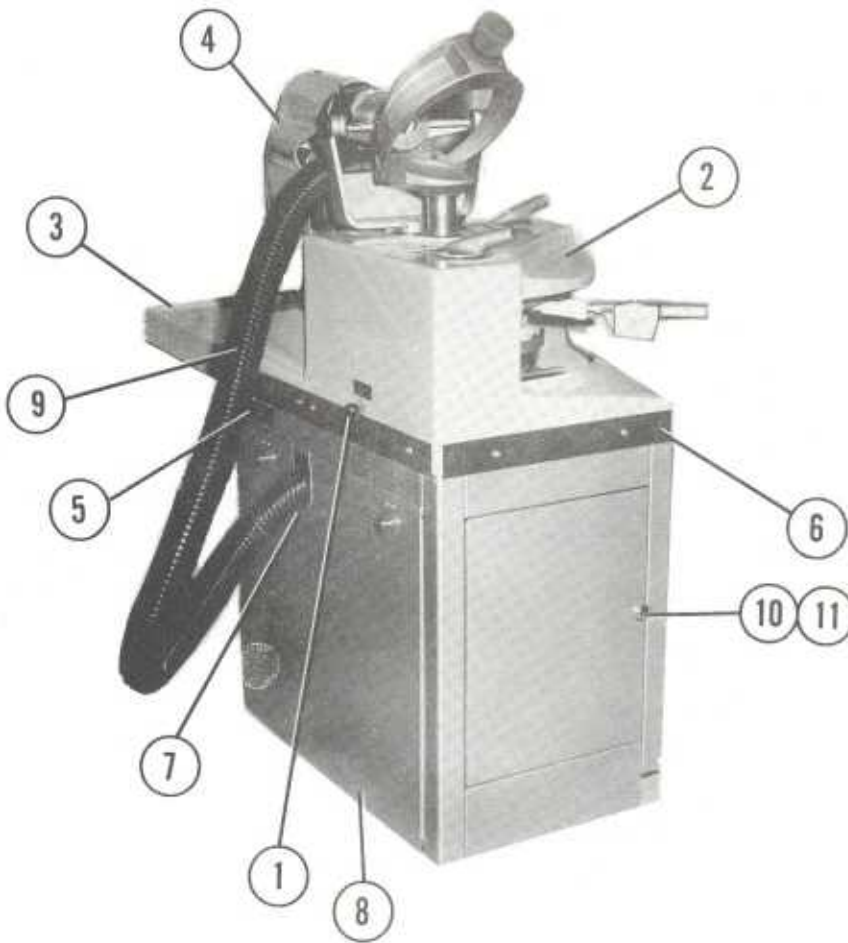
THE ALIGNMENT OF THE BALL TARGET IS VERY IMPORTANT FOR PROPER MACHINE OPERATION. ALIGNMENT IS ACCOMPLISHED BY INSERTING A DRILL INTO THE SPINDLE, WITH THE DRILL TIP IN A HORIZONTAL POSITION. PLACE A BALL IN THE BALL CLAMP POST FOR TARGET POSITIONING. REACHING THROUGH THE HANDLE OPENING OF THE COVER, MOVE THE DRILL SIZE HANDLE AND THUMB STOP CAM TO THE NEUTRAL POSITION AND HOLD. EXTEND DRILL POINT TO TOUCH THE TARGET. ALIGN THE TARGET HORIZONTAL CROSS HAIR TO THE DRILL TIP. ROTATE THE DRILL TIP 90° AND ALIGN TARGET VERTICAL CROSS HAIR WITH TIP OF DRILL. TIGHTEN SCREWS SECURING TARGET.

NOTE: ADDITIONAL INFORMATION ON SPECIAL DRILLING INSTRUCTIONS NOT COVERED HEREIN WILL BE FURNISHED ON REQUEST TO AMF INCORPORATED, BOWLING PRODUCTS GROUP, JERICHO TURNPIKE, WESTBURY, NEW YORK 11590.

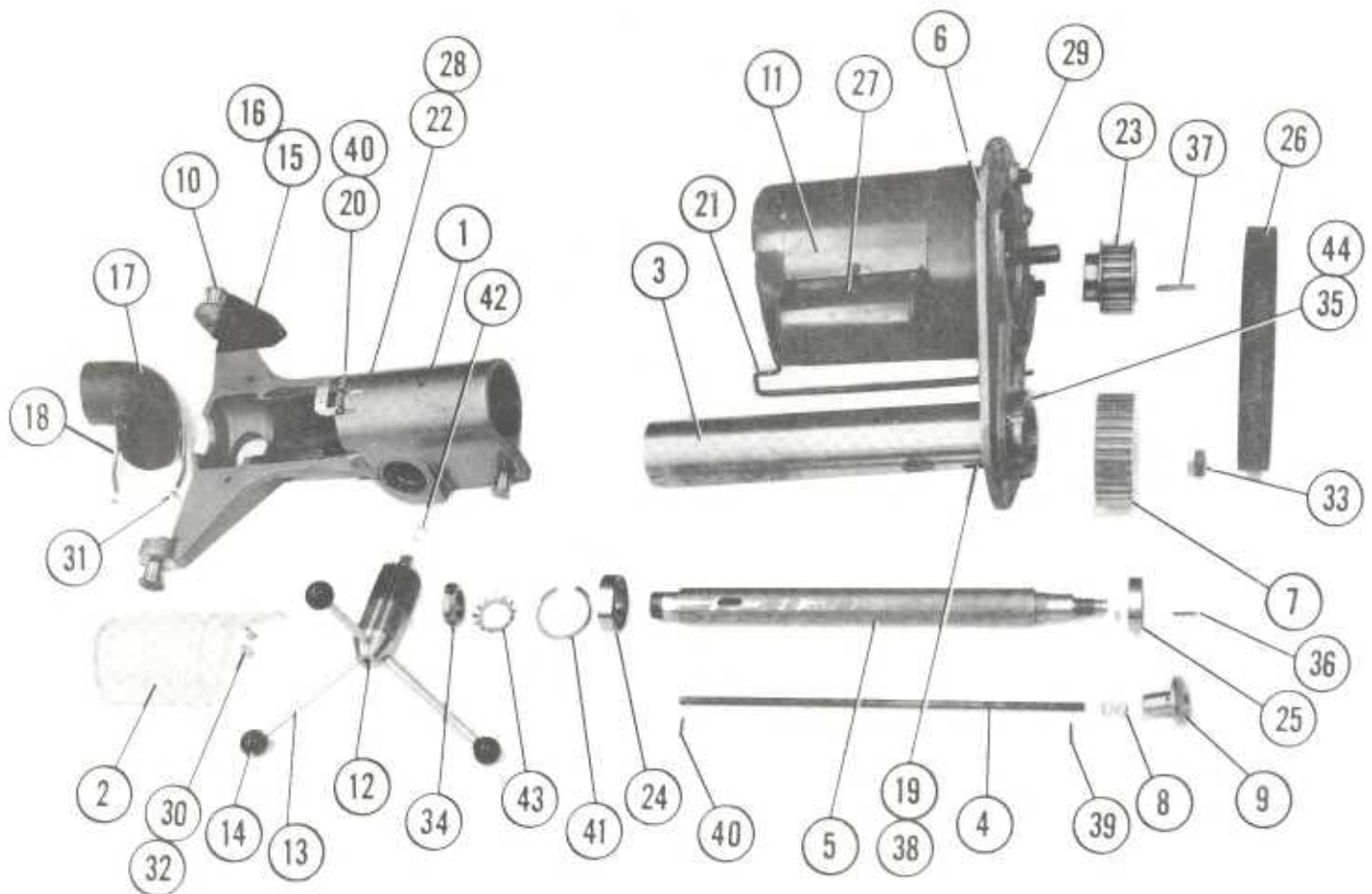


ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	045 750 504	CRANK	10	045 750 803	FORWARD & REVERSE PITCH INDICATOR
2	045 750 601	CABINET BASE	11	045 750 809	SHOULDER SCREW
3	045 750 602	DRILL RACK	12	000 021 002	"SEE DEEP" ESCUTCHEON
4	045 750 603	FRONT HOUSING	13	759 504 004	SWITCH RECEPTACLE
5	045 750 604	REAR HOUSING	14 b	812 349 243	SCREW, OVAL HD. MACH 1/4-20 X 1 3/4
6	045 750 605	SHELF	15 b	812 419 083	SCREW, OVAL HD. MACH. 1/4-20 X 1/2
7	045 750 606	SHELF SUPPORT ROD	16	822 338 122	SCREW, SELF TAPPING #10 X 3/4
8	045 750 607	COVER, MOTOR	17	944 553 843	FINISH WASHER
9	045 750 615	TRIM (3 PC. SET)			

b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.

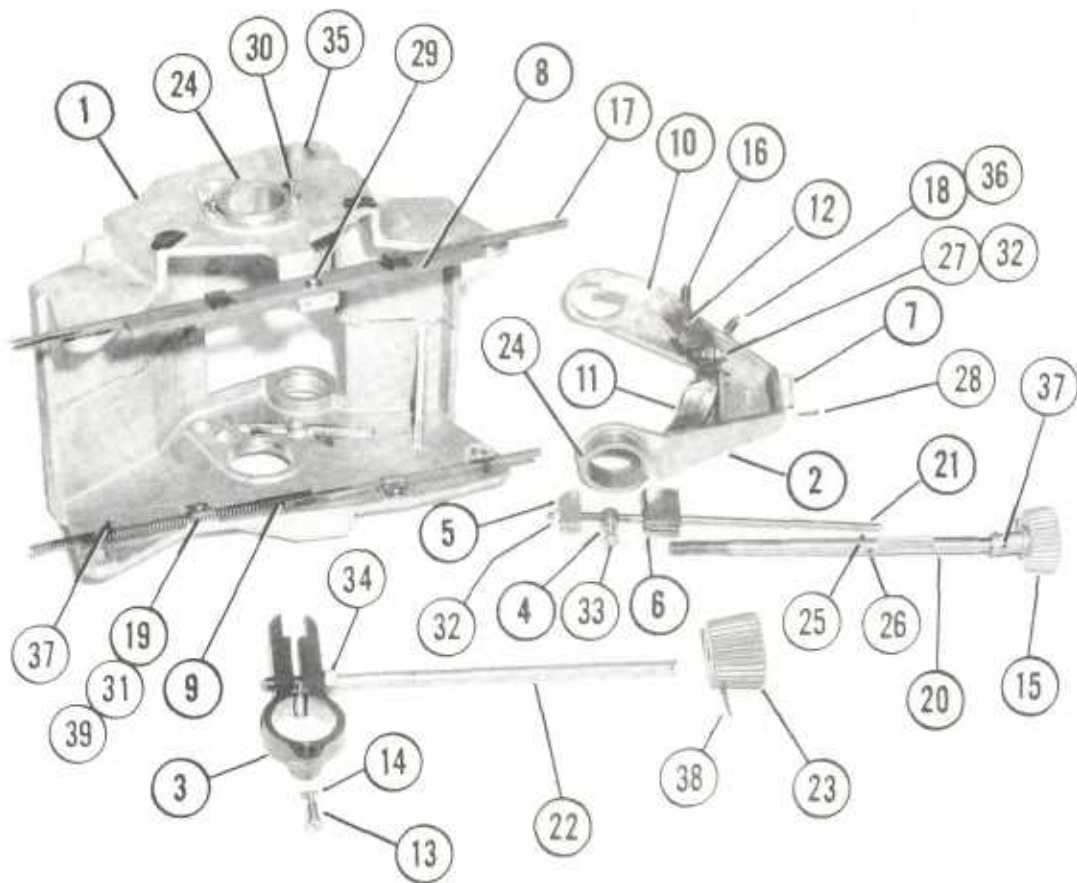


<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	045 750 251	BALL, OFFSET RELEASE
2	045 750 603	FRONT HOUSING
3	045 750 605	SHELF
4	045 750 607	COVER, MOTOR
5	045 750 613	SERIAL NUMBER DECAL
6	045 750 615	TRIM
7	045 750 616	HOSE GASKET
8	045 750 617	SIDE PANEL
9	045 750 910	VACUUM HOSE
10	705 000 001	DOOR CATCH
11	713 505 002	KNOB



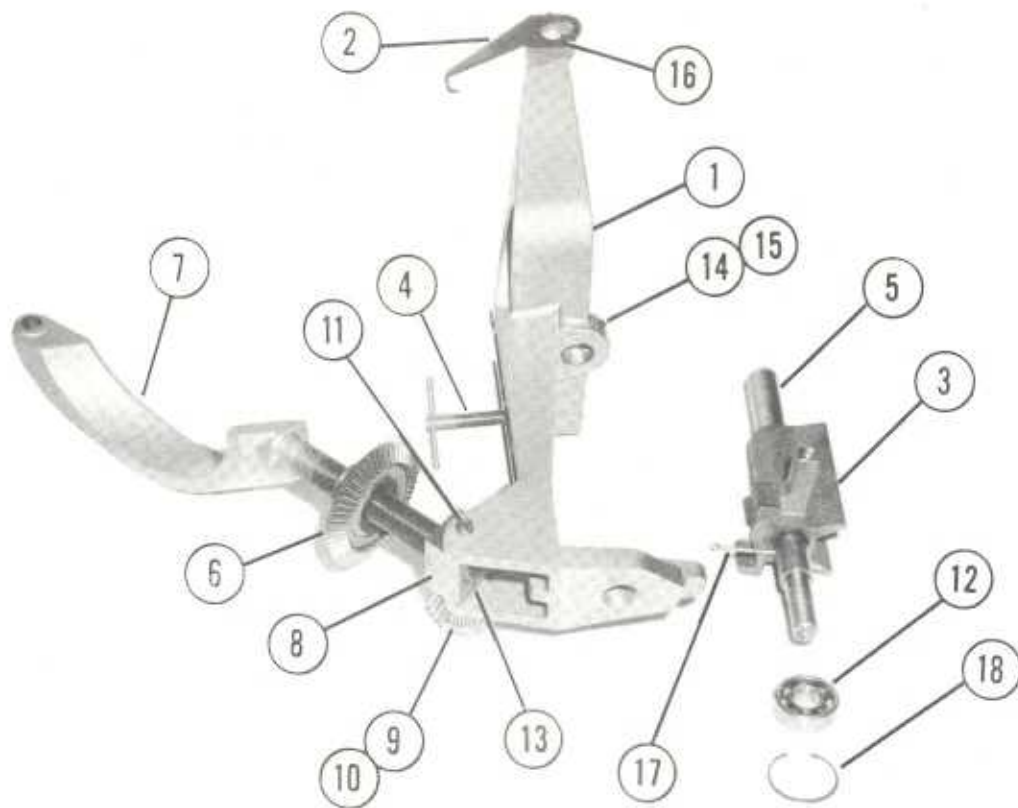
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1	045 750 101	SPINDLE HOUSING	23	045 750 123	19 TOOTH PULLEY
2	045 750 102	COVER	24	701 031 012	BEARING
3	045 750 103	SPINDLE CASE	25	701 031 018	BEARING
4	045 750 104	KNOCK-OUT ROD	26	702 501 001	BELT
5	045 750 105	SPINDLE	27	743 000 018	CAPACITOR
6	045 750 106	MOTOR MOUNT	28	759 501 009	SWITCH, COVER (NOT SHOWN)
7	045 750 107	PULLEY, 32 TOOTH	29	b 810 265 120	SCREW, SOC.HO. 3/8-16 x 3/4
8	045 750 108	SPRING	30	b 812 827 062	SCREW, RD.HO. 6-32 x 3/8
9	045 750 109	KNOB	31	830 139 002	CAP NUT 10-24
10	045 750 110	SHOULDER SCREW	32	b 834 527 002	HEX NUT 6-32
11	045 750 111	MOTOR	33	b 835 582 002	HEX NUT 5/8-18
12	045 750 112	PINION	34	845 000 000	LOCKNUT
13	045 750 113	ARM	35	845 200 000	LOCKNUT
14	b 045 750 114	BALL	36	907 200 500	KEY
15	045 750 115	SIDE PITCH DECAL	37	907 201 100	KEY
16	045 750 116	BRACKET	38	b 907 201 800	KEY
17	045 750 117	ELBOW	39	b 913 423 120	ROLL PIN .125 x 3/4
18	045 750 118	SPECIAL BOLT	40	b 913 423 240	ROLL PIN .125 x 1 1/2
19	045 750 119	WASHER (NOT SHOWN)	41	b 919 004 100	RETAINER RING
20	045 750 120	HINGE	42	b 919 005 500	RETAINER RING
21	045 750 121	TORQUE ROD	43	b 941 500 000	LOCK WASHER
22	045 750 122	SWITCH GUARD (NOT SHOWN)	44	941 600 000	LOCK WASHER

b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.



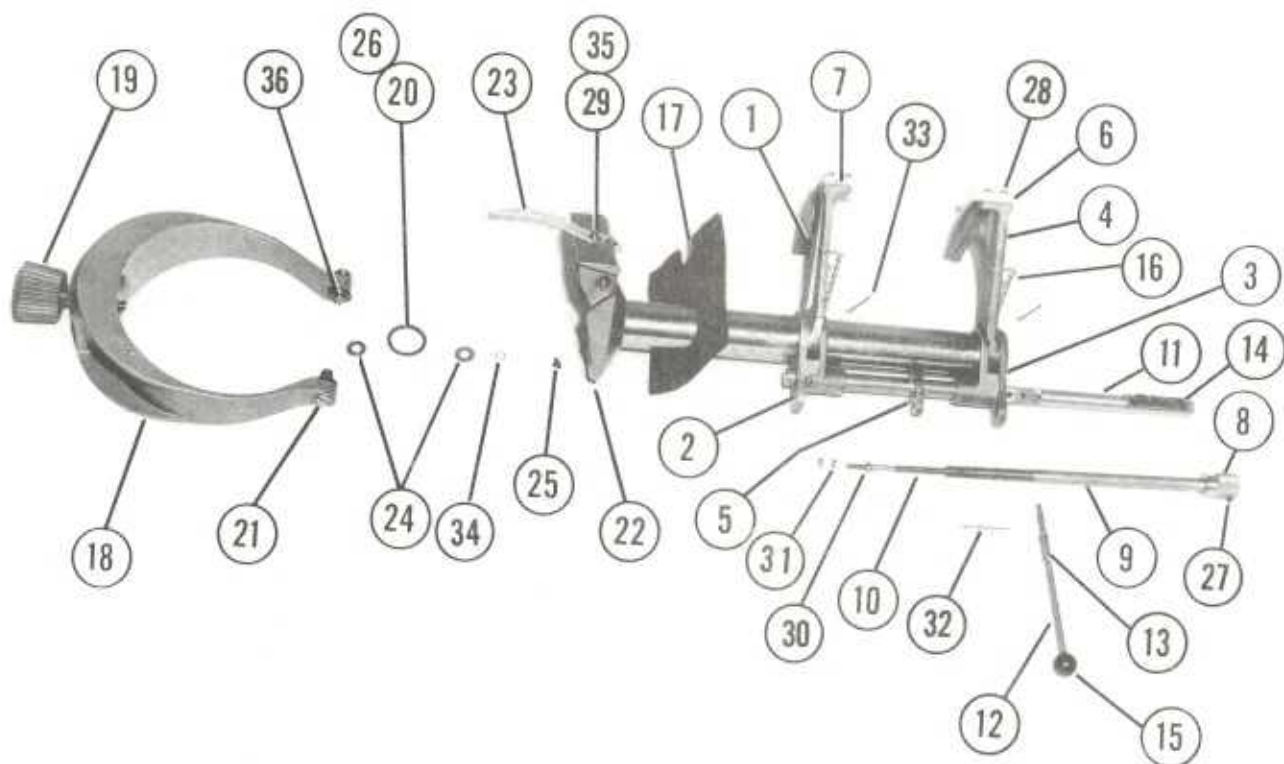
ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	045 750 201	HOUSING	21	045 750 264	SHAFT
2	045 750 202	BRACKET, THUMB STOP	22	045 750 505	SHAFT
3	045 750 204	CLAMP	23	045 750 506	KNOB
4	045 750 208	STUD	24	701 464 066	BUSHING
5	045 750 211	BLOCK, PITCH ADJ.	25	b 807 340 040	SET SCREW, GUP PT. 10-32 X 1/4
6	045 750 212	BLOCK, PITCH ADJ.	26	b 807 640 060	SET SCREW, DOG PT. 10-32 X 3/8
7	045 750 219	CAM FOLLOWER	27	b 810 249 160	SCREW, SOC. HD. 1/4-20 X 1
8	045 750 231	RACK SUPPORT, TOP	28	b 812 833 102	SCREW, RD. HD. 8-32 X 1/2
9	045 750 232	RACK, BOTTOM	29	b 812 840 082	SCREW, RD. HD. 10-32 X 1/2
10	045 750 234	FINGER CAM, TOP	30	b 813 333 102	SCREW, PAN HD. 8-32 X 5/8
11	045 750 235	FINGER CAM, BOTTOM	31	818 240 082	SCREW, RD. HD.
12	045 750 243	RIVET	32	b 835 549 002	HEX NUT 1/4-20
13	045 750 246	SHOULDER SCREW	33	b 835 558 002	HEX NUT 5/16-24
14	045 750 247	SPACER	34	b 835 573 002	HEX NUT 1/2-13
15	045 750 248	KNOB	35	900 116 121	BUSHING
16	045 750 250	CAM SPRING	36	b 911 015 282	COTTER PIN 3/32 X 1 3/4
17	045 750 252	RACK, TOP	37	b 913 423 120	ROLL PIN .125 X 3/4
18	045 750 255	SPRING	38	b 913 423 240	ROLL PIN .125 X 1 1/2
19	045 750 262	RACK SUPPORT, BOTTOM	39	b 948 745 082	WASHER, PLAIN 7/32 X 1/2 X 1/16
20	045 750 263	CASE			

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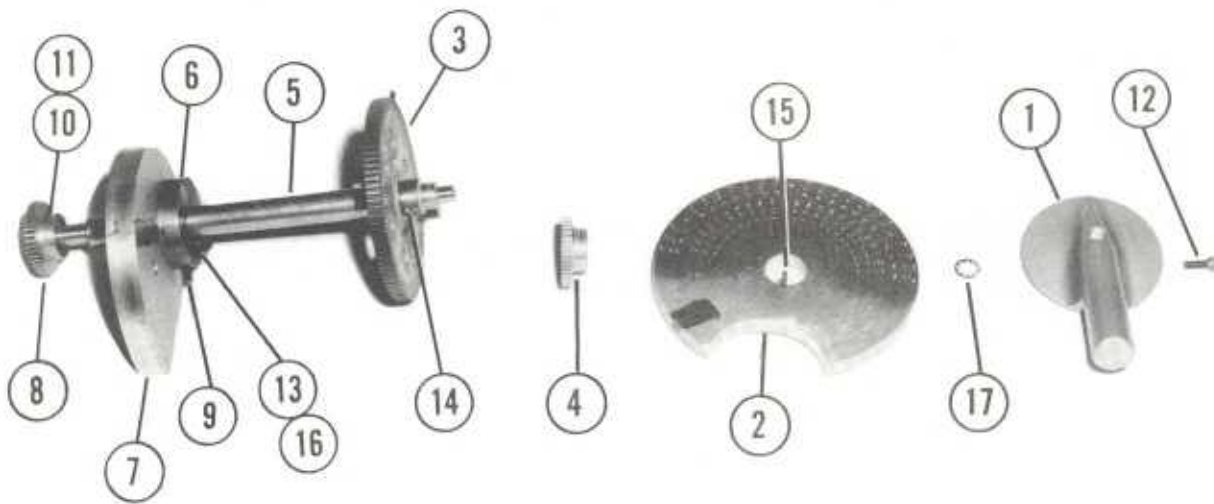
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	045 750 801	YOKE
2	045 750 802	SIDE PITCH INDICATOR
3	045 750 804	PITCH TOGGLE
4	045 750 805	PITCH CLAMP
5	045 750 806	SHAFT
6	045 750 807	GEAR
7	045 750 808	SIDE PITCH ARM
8	045 750 810	BLOCK BEARING
9	045 750 811	SHOULDER SCREW (NOT SHOWN)
10	045 750 812	GEAR
11	045 750 813	SHOULDER SCREW
12	701 025 029	BEARING
13	b 807 340 040	SET SCREW, CUP PT. 10-32 X 1/4
14	b 807 349 060	SET SCREW, CUP PT. 1/4-20 X 3/8
15	b 807 549 060	SET SCREW, DOG. PT. 1/4-20 X 3/8
16	b 810 224 060	SCREW, Soc. Hd. CAP 5-40 X 3/8
17	b 911 023 202	COTTER PIN 1/8 X 1 1/4
18	b 919 001 100	RETAINER RING

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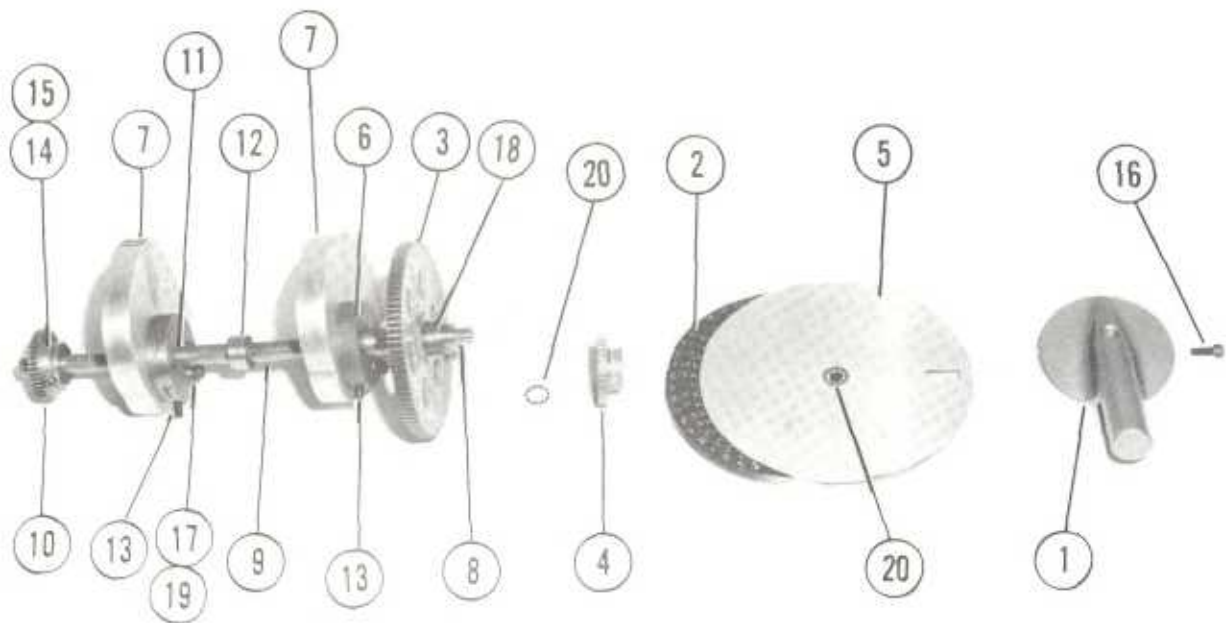
ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	045 750 203	FINGER STOP, TOP	19	045 750 402	CLAMP KNOB
2	045 750 205	WEB SHIFT YOKE, TOP	20	045 750 403	CLAMP PAD
3	045 750 206	WEB SHIFT YOKE, BOTTOM	21	045 750 404	SHOULDER SCREW
4	045 750 207	FINGER STOP, BOTTOM	22	045 750 405	BALL SOCKET & POST ASSY.
5	045 750 209	BLOCK OUT	23	045 750 406	BALL TARGET
6	045 750 217	CAM FOLLOWER	24	045 750 407	SPACER WASHER
7	045 750 218	CAM FOLLOWER	25 b	045 750 514	RUBBER PAD
8	045 750 224	KNOB, WEB ADJ.	26	045 750 515	RUBBER INSERT
9	045 750 225	CASE, WEB ADJ.	27 b	807 340 060	SET SCREW 10-32 x 3/8
10	045 750 226	SHAFT, WEB ADJ.	28 b	810 240 120	SCREW, SOC. HD. CAP 10-32 x 3/4
11	045 750 227	SHAFT, WEB OFFSET	29 b	812 840 062	SCREW, RD. HD. MACH. 10-32 x 3/8
12	045 750 228	DETENT PLUNGER	30 b	831 558 002	HEX NUT 5/16-24
13	045 750 229	SPRING	31 b	834 549 002	HEX NUT 1/4-20
14	045 750 230	WEB SCALE DECAL	32 b	911 015 202	COTTER PIN 3/32 x 1 1/4
15	045 750 251	BALL	33 b	911 023 202	COTTER PIN 1/8 x 1 1/4
16	045 750 253	CHAIN ASSY.	34 b	919 010 400	RETAINER RING
17	045 750 265	FELT PAD	35 b	948 745 082	WASHER, PLAIN 7/32 I.D. x 1/2 O.D.
18	045 750 401	BALL CLAMP	36 b	948 975 172	WASHER, PLAIN 17/32 I.D. x 1 1/16 OD

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ITEM	PART NO.	DESCRIPTION
1	045 750 210	KNOB, SPAN DIAL
2	045 750 214	DIAL, No. 1 SPAN
3	045 750 216	DETENT GEAR
4	045 750 222	GEAR
5	045 750 223	SHAFT
6	045 750 237	CAM HUB
7	045 750 239	CAM, SPAN
8	045 750 242	GEAR
9	807 249 120	SET SCREW, CUP PT. 1/4-20 x 3/4
10 b	807 340 040	SET SCREW, CUP PT. 10-32 x 1/4
11 b	807 640 060	SET SCREW, DOG PT. 10-32 x 3/8
12 b	810 249 100	SCREW, SOC. HD. CAP 1/4-20 x 5/8
13 b	810 249 160	SCREW, SOC. HD. CAP 1/4-20 x 1
14	913 423 140	ROLL PIN 1/8 x 7/8
15 b	913 423 160	ROLL PIN 1/8 x 1
16 b	951 148 002	LOCK WASHER 1/4
17 b	960 000 002	STAR WASHER 3/8 I.D.

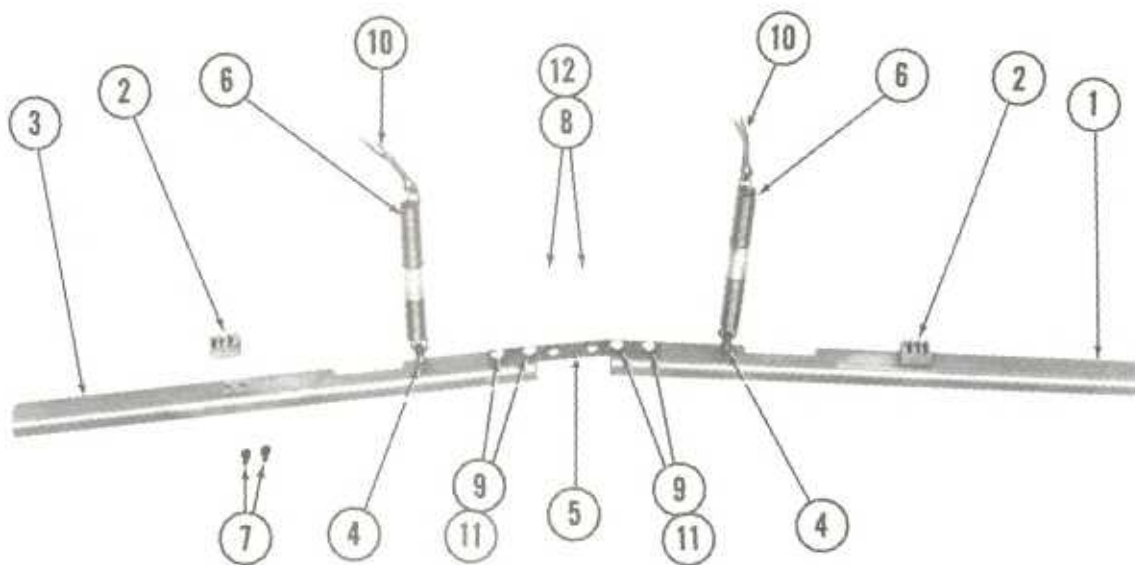
b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.



FINGER CAM ASSEMBLY

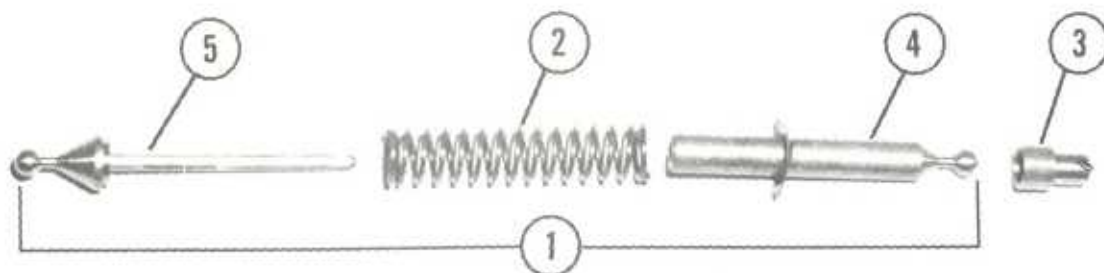
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	045 750 210	KNOB, SPAN DIAL
2	045 750 215	DIAL, No. 2 SPAN
3	045 750 216	DETENT GEAR
4	045 750 222	GEAR
5	045 750 233	PLATE
6	045 750 237	CAM HUB
7	045 750 239	CAM, SPAN
8	045 750 240	SHAFT
9	045 750 241	SHAFT
10	045 750 242	GEAR
11	045 750 249	BUSHING
12	000 028 732	COLLAR
13	807 249 120	SET SCREW, CUP PT. 1/4-20 x 3/4
14 _b	807 340 040	SET SCREW, CUP PT. 10-32 x 1/4
15 _b	807 640 060	SET SCREW, DOG PT. 10-32 x 3/8
16 _b	810 249 100	SCREW, Soc. Hd. CAP 1/4-20 x 5/8
17 _b	810 249 160	SCREW, Soc. Hd. CAP 1/4-20 x 1
18	913 423 140	ROLL PIN 1/8 x 7/8
19 _b	951 148 002	LOCK WASHER 1/4
20 _b	960 000 002	STAR WASHER 3/8 I.D.

b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.



SPAN DETENT ASSY.

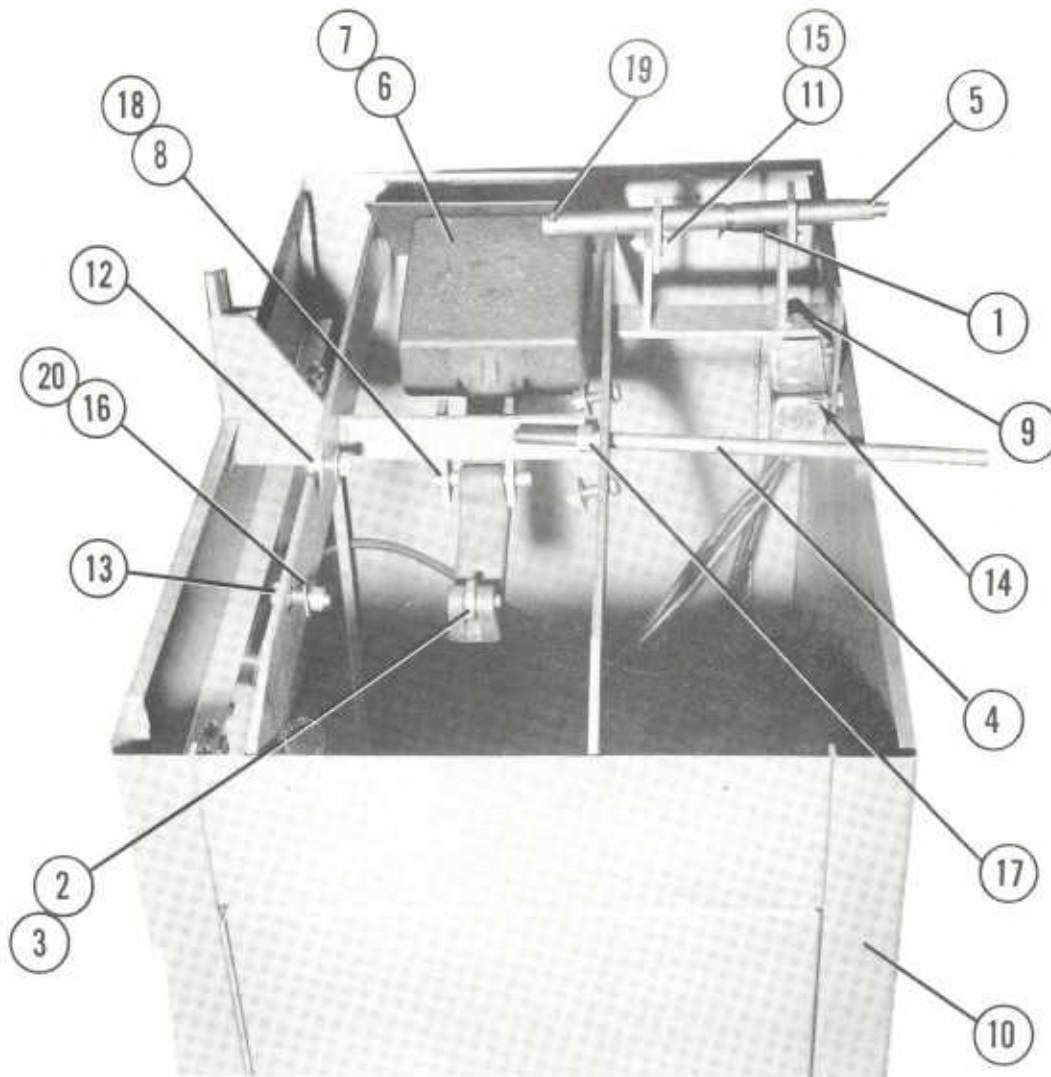
ITEM	AMF PART NO.	DESCRIPTION
1	045 150 177	Arm #2 span detent
2	045 150 178	Rack-span detent
3	045 150 179	Arm #1 span detent
4	045 750 243	Rivet-special span detent
5	045 750 245	Spring-leaf, span detent
6	045 750 254	Spring-tension, span detent
7	810 224 060	Screw-cap, socket, 5-40 x 3/8
8	812 639 062	Screw-machine, R.H. 10-24 x 3/8
9	812 827 042	Screw-machine, R.H. 6-32 x 1/4
10	911 023 320	Pin-cotter 1/8 x 2
11	951 026 002	Washer-lock, split #6
12	951 138 000	Washer-lock, split #10



SPRING TOGGLE ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1	045 750 220	Spring Toggle Assy.
2	045 750 221	Spring
3	045 750 238	Socket
4	045 750 256	Shaft, Toggle, Female
5	045 750 257	Shaft, Toggle, Male

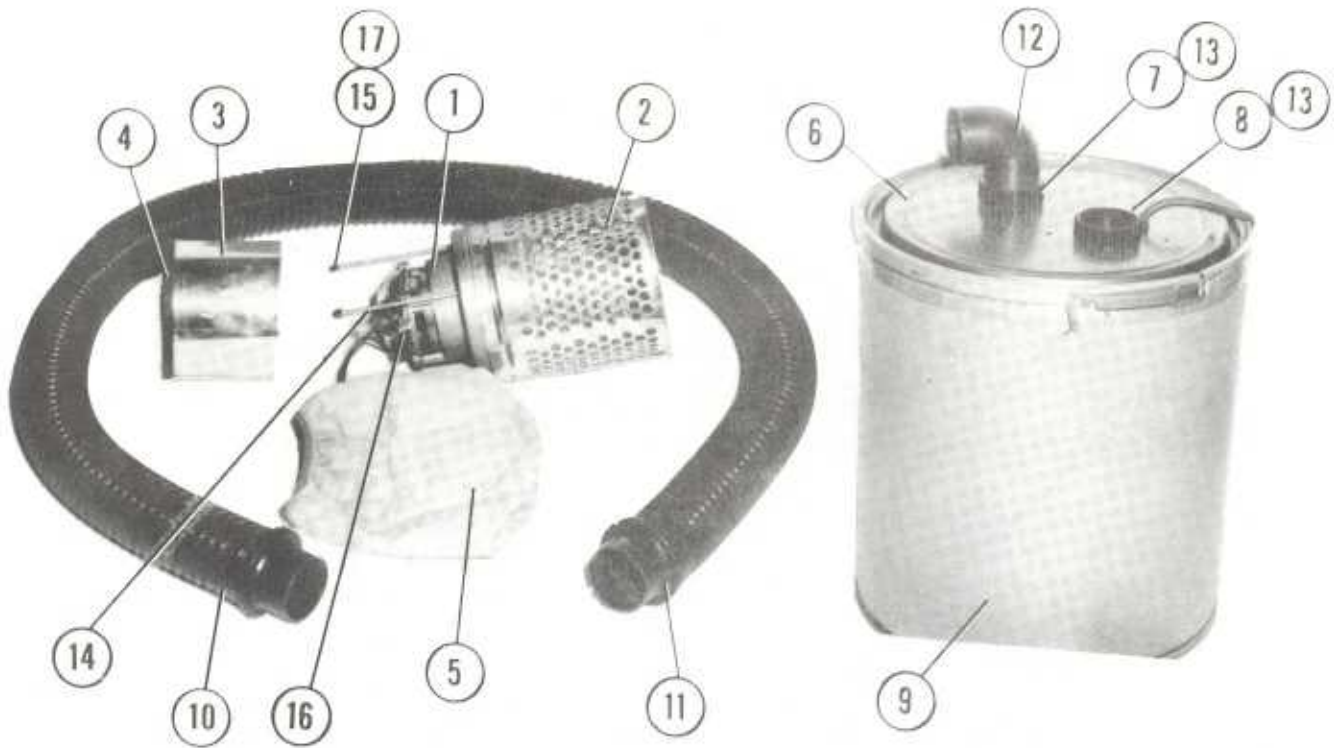
b Refer to Price list for minimum order quantity and price.



CABINET AND FRAME

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	045 750 303	SPRING	11b	809 849 165	SCREW, HEX HD. CAP 1/4-20 x 1
2	045 750 502	ROLLER	12b	809 865 165	SCREW, HEX HD. CAP 3/8-16 x 1
3	045 750 503	PIN	13b	809 865 205	SCREW, HEX HD. CAP 3/8-16 x 1 1/4
4	045 750 505	SHAFT	14b	812 349 243	SCREW, OVAL HD. 1/4-20 x 1 1/4
5	045 750 507	SHAFT	15b	835 549 002	HEX NUT 1/4-20
6	045 750 508	COUNTERWEIGHT (ADDITIONAL)	16b	835 565 002	HEX NUT 3/8-16
7	045 750 509	COUNTERWEIGHT	17b	835 573 002	HEX NUT 1/2-13
8	045 750 510	SHAFT (SER. #201 AND UP)	18b	911 023 202	COTTER PIN 1/8 x 1 1/4
8A	881 073 000	SHAFT (SER. #101 TO 200)	19b	913 448 240	PIN, ROLL 1/4 x 1 1/2
9	045 750 513	SPRING	20	955 064 800	FIBRE WASHER
10	045 750 601	BASE CABINET & FRAME ASSY.			

b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.

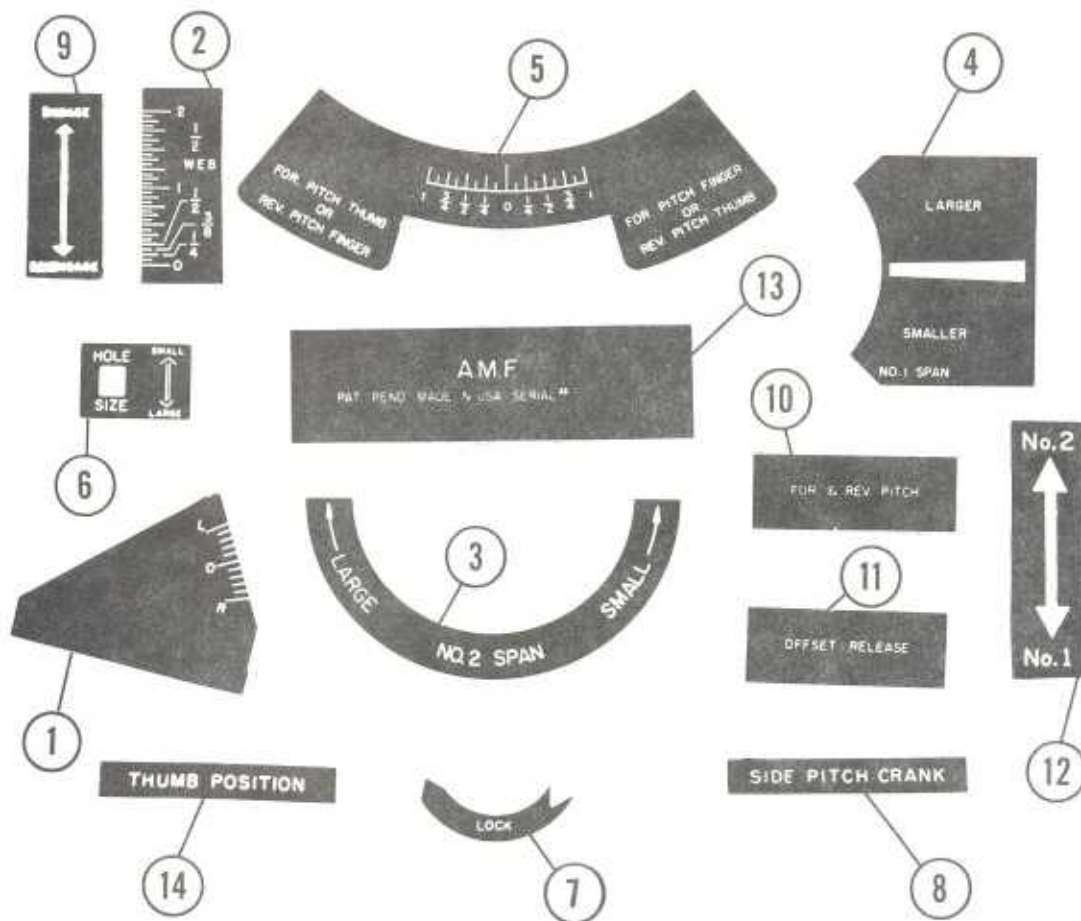


VACUUM UNIT

<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	045 750 901	VACUUM MOTOR
2	045 750 902	PERFORATED CAN
3	045 750 903	SPACER, CAN
4	045 750 904	SPACER CAN GASKET
5	045 750 905	DUST BAG, CLOTH
5A	045 006 243	DUST BAG, PAPER, DISPOSABLE (NOT SHOWN)
6	045 750 906	COVER
7	045 750 907	INTAKE FERRULE
8	045 750 908	EXHAUST FERRULE
9	045 750 909	CONTAINER (MAIN CAN)
10	045 750 910	HOSE
11	045 750 911	HOSE ADAPTER
12	045 750 912	ELBOW
13	045 750 913	LOCK RING, FERRULE
14	b 701 010 001	BEARING
15	730 026 018	MOTOR MOUNTING STUD
16	b 785 501 453	MOTOR BRUSH & HOLDER
17	830 139 002	CAP NUT 10-24

b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.

NOTE: ITEM 5A MUST BE USED OVER ITEM 5. AFTER DRILLING EVERY 5TH OR 6TH BALL ITEM 5A SHOULD BE TAPPED GENTLY TO DISLODGE FINE DUST PARTICLES. THIS IS ESSENTIAL TO PREVENT MOTOR OVERHEATING AND PROVIDE ADEQUATE VACUUM.



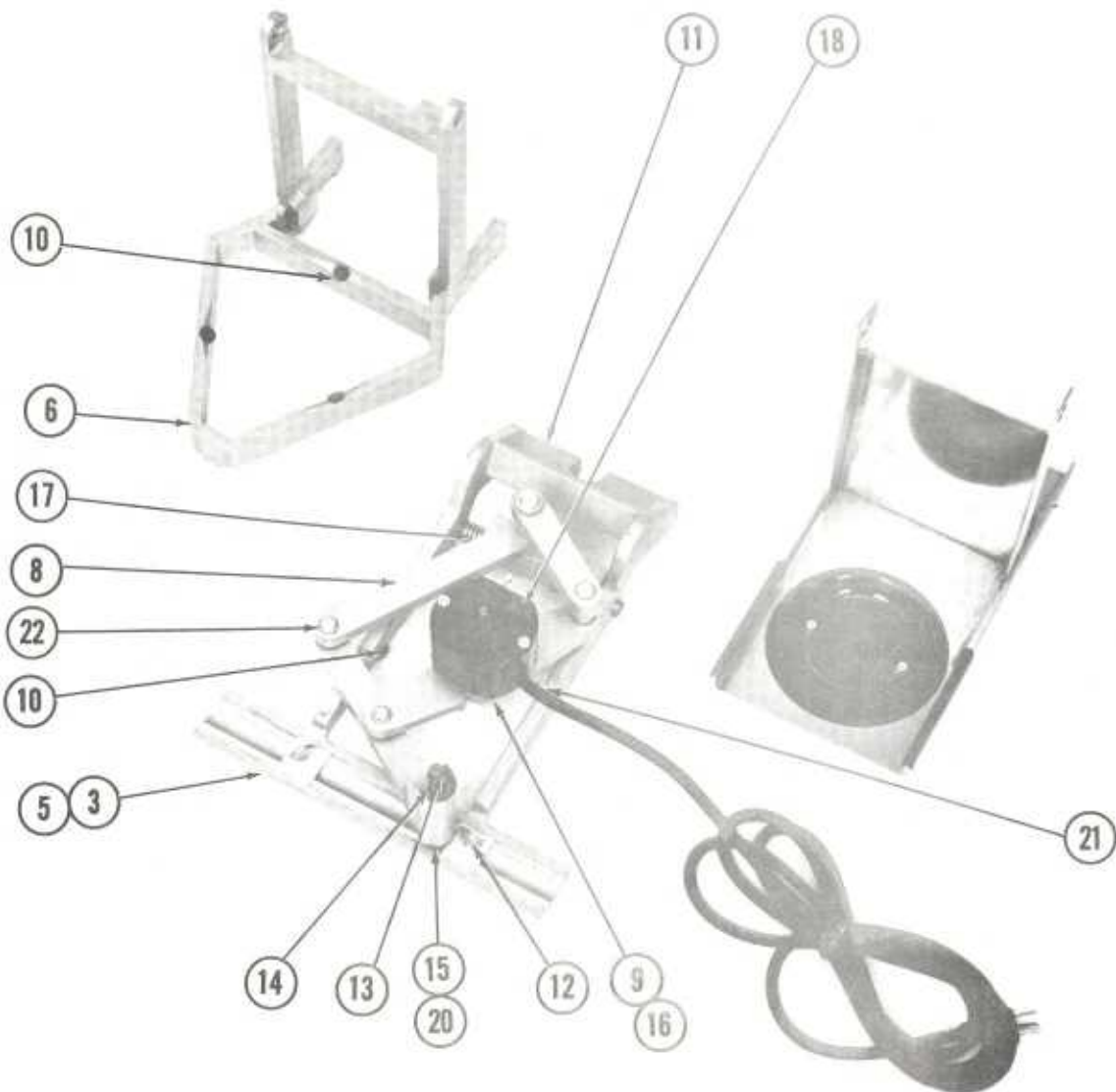
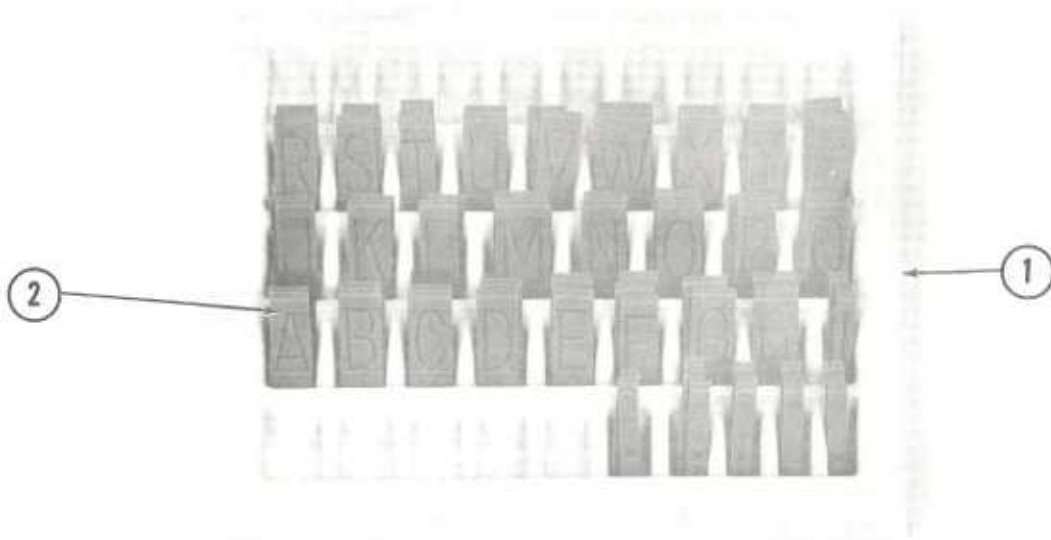
DECALS

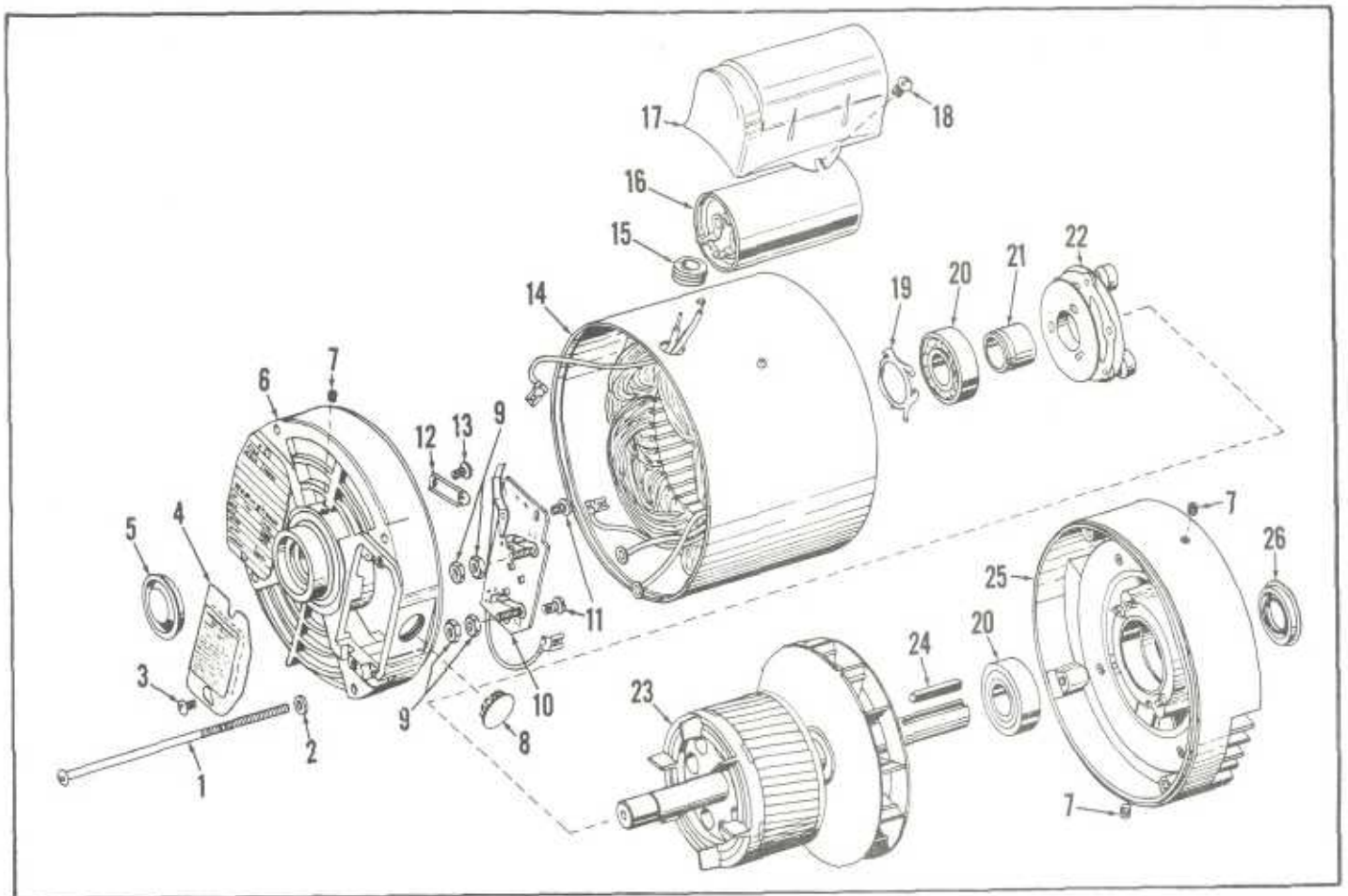
ITEM	PART NO.	DESCRIPTION
1	045 750 115	SIDE PITCH DECAL
2	045 750 230	WEB SCALE DECAL
3	045 750 258	#2 SPAN DECAL
4	045 750 259	#1 SPAN DECAL
5	045 750 260	FORWARD AND REVERSE DIRECTIONAL DECAL
6	045 750 313	HOLE SIZE DECAL
7	045 750 511	LOCK INDICATING DECAL
8	045 750 608	SIDE PITCH CRANK DECAL
9	045 750 609	CRANK ENGAGING DECAL
10	045 750 610	FORWARD AND REVERSE PITCH NAMEPLATE DECAL
11	045 750 611	OFFSET RELEASE DECAL
12	045 750 612	#1 AND #2 POSITION DECAL
13	045 750 613	SERIAL NUMBER DECAL
14	045 750 614	THUMB POSITION DECAL

ENGRAVING ASSEMBLY

ITEM	AMF PART NO.	DESCRIPTION
1	045 007 303	Tray-Letters
2	045 750 721	Letters 3 each Alphabet,- 9 Periods w/Tray
3	045 007 300	Engraver (Machine Mounting No Base)
4		
5	045 007 302	Engraver (Bench Mount-Cast Aluminum Base)
6	045 007 310	Base-Cast Aluminum
7	045 007 311	Base-Sheet Steel
8	045 007 313	Pantograph Assembly
9	045 007 314	Stop-Depth Control
10	045 750 514	Pad-Rubber #11F Stem Bumper
11	045 750 701	Frame-Engraver (Includes Item #10)
12	045 750 709	Lock-Nylon Letter
13	045 750 711	Shaft-Tracer Stylus
14	045 750 712	Spring-Stylus
15	045 750 714	Stylus-Tracer
16	045 750 715	Cutter 1/32 Carbide #CU22
17	045 750 716	Spring-Hinge Shaft
18	045 750 724	Motor and Cord Assembly
19	793 502 005	Allen Wrench 1/16 (Not Shown)
20	806 227 000	Screw-Hollowsocket Lock 6-32 x 3/32
21	816 049 082	Thumb Screw 1/4-20 x 1/2 Type P
22	919 010 600	Retaining Ring Tru Arc 5133-50

ENGRAVING ASSEMBLY





REPLACEMENT PARTS
045 750 111 BALL DRILLING MOTOR

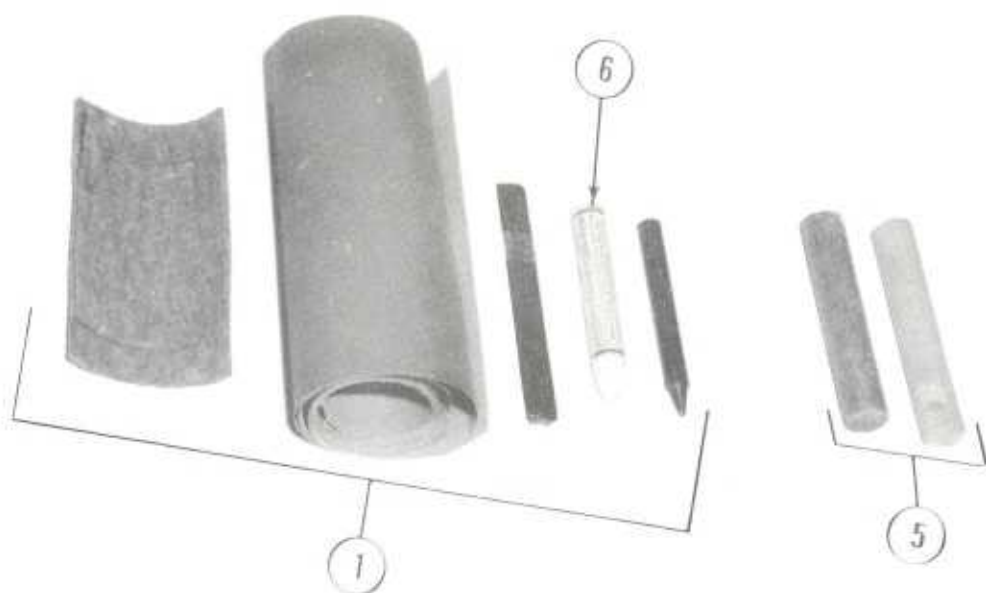
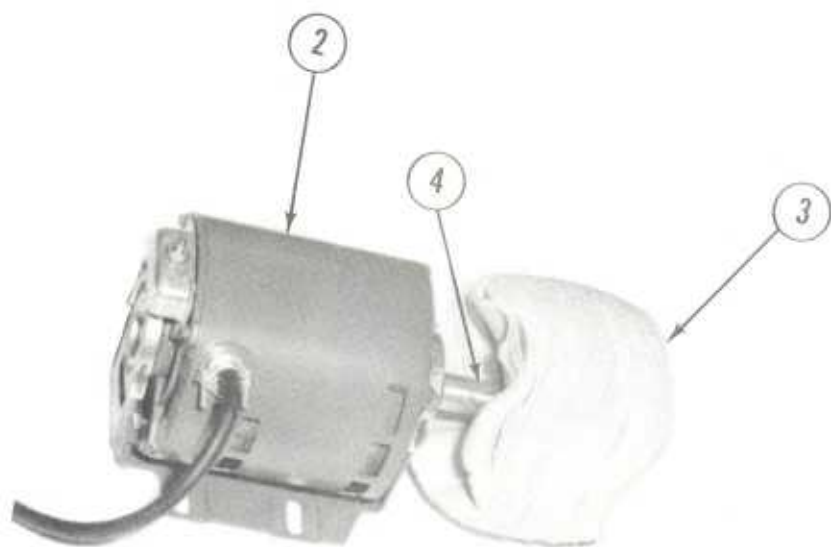
ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	785 501 021	THROUGH BOLT	14	785 501 077	WOUND PRIMARY
2 b	785 501 400	FIBER WASHER	15	785 501 151	GROMMET
3 b	823 732 062	SCREW, RD. HD. #8 x 3/8	16	743 000 018	CAPACITOR
4	785 501 445	CONDUIT BOX COVER	17	785 501 446	HOUSING, CAPACITOR
5	785 501 061	DUST CAP	18	828 540 052	SCREW, RD. HD. #10 x 5/16
6	785 501 032	END BRACKET, FRONT	19	785 501 447	FINGER SPRING
7	805 250 040	PLUG, GREASE	20 b	701 021 009	BEARING, BALL
8 b	785 501 222	PLUG BUTTON	21	785 501 078	COLLAR, SHAFT
9 b	834 533 002	HEX NUT 8-32	22	785 501 379	ROTATING SWITCH
10	785 501 385	TERMINAL BOARD & SWITCH	23	785 501 244	ROTOR ASSEMBLY
11 b	785 501 268	SCREW, RD. HD. 6-32 x 3/8	24	907 201 100	KEY
12	785 501 382	SWITCH SUPPORT	25	785 501 033	END BRACKET, REAR
13	828 527 062	SCREW, RD. HD. 6-32 x 3/8	26	785 501 063	DUST CAP

b REFER TO PRICE LIST FOR MINIMUM ORDER QUANTITY AND PRICE.



ACCESSORY EQUIPMENT

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	045 005 820	Ball Plug Shaper
2	033 007 500	Deluxe Measuring Ball
3	045 752 000	Carbide Drills (set of 17 in 1/32" from 5/8" to 1 1/8")
3A		Refer to price list for part numbers and sizes available for individual drills.



610 457 505 BUFFING KIT

<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	045 006 212	POLISHING KIT
2	045 007 506	MOTOR & CORD ASSY.
3	045 075 062	BUFFING WHEEL
4	045 075 063	ARBOR - THREADED
5	045 075 064	BUFFING COMPOUND
6	047 002 411	PAINT STICK, WHITE

ELECTRICAL SYSTEM 2500 BALL DRILLER 115V-60HZ, ITEMS 1 THRU 45

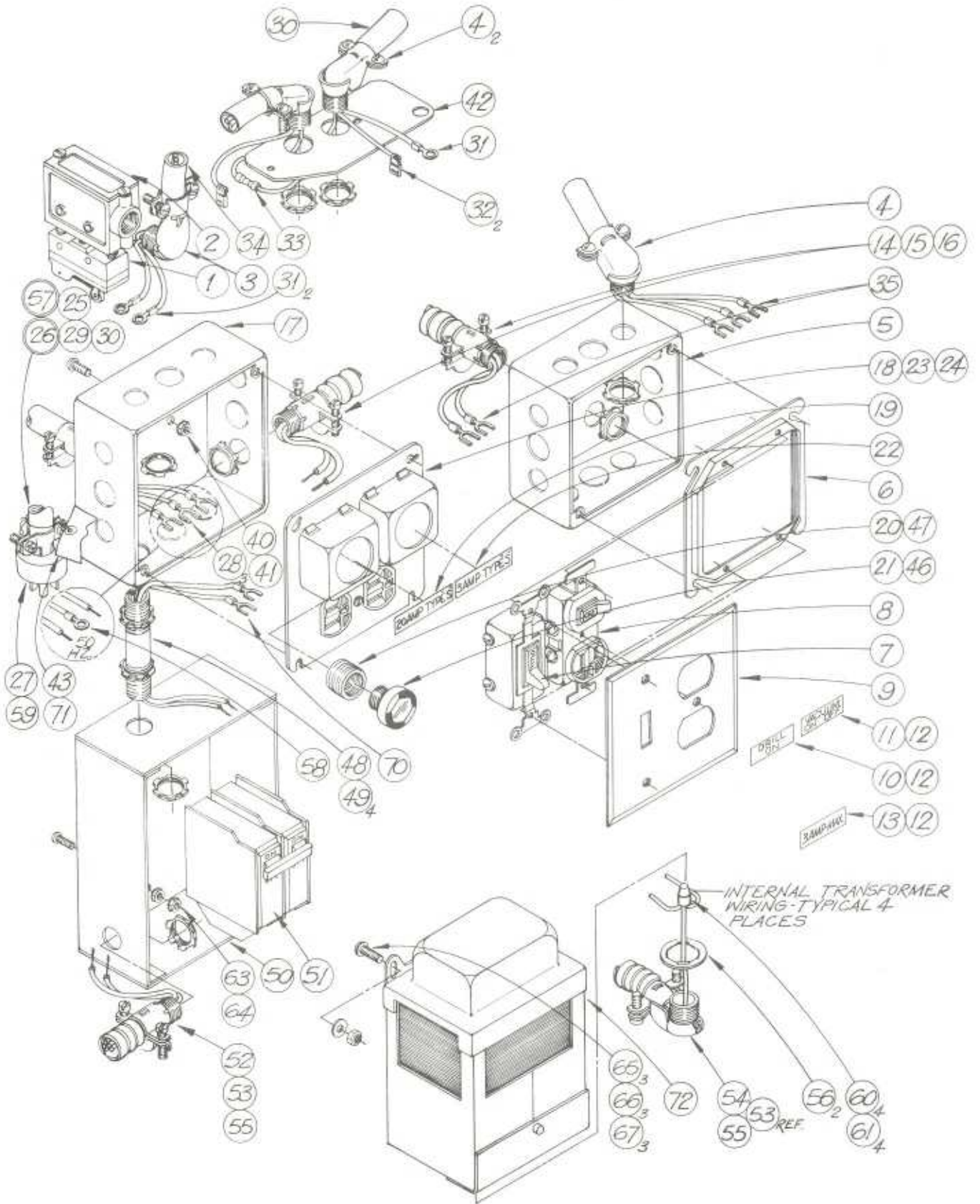
ELECTRICAL SYSTEM 2500 BALL DRILLER 230V/115V-50HZ
ITEM 1 THRU 72 (LESS ITEMS 19, 20, 21, 26, 27 & 28)

EFFECTIVE SERIAL #3000

ITEM	PART NUMBER	DESCRIPTION	ITEM	PART NUMBER	DESCRIPTION
1	759 501 035	Switch-Micro (BA2RV22A2)	37	010 100 009	Wire White 600V #14 (State Length) NS
2	759 513 034	Housing-Switch 3-PA1	38	010 100 005	Wire Green 600V #14 (State Length) NS
3	746 003 008	Connector 90° T & B #266	39	045 003 644	Label-Danger 120V NS
4	746 002 007	Connector 45° T & B #265	40	812 840 062	Screw RD HD 10-32 x 3/8
5	741 015 015	Box Steel City #52171 1/2 & 3/4	41	843 140 002	Nut Ket 10-32
6	770 035 072	Adapter-Box Rayco #777	42	045 003 636	Plate-Monitor
7	759 508 033	Switch DPST 20 Amp Circle F #3422	43	045 003 641	Tag-Caution
8	759 504 004	Switch & Outlet	44		
9	741 112 012	Cover-Hubbell #97532	45		
10	045 003 643	Label-Drill on	46	000 022 093	Fusetat 10 Amp
11	045 003 642	Label-Vacuum on	47	000 022 121	Fusestat Adapter 10 Amp
12	700 112 290	Adhesive GE #RTV102 3oz. Tube. (Not Shown)	48		Nipple-Rigid Conduit 1/2 x 3 Lg.
13	045 003 637	Label-3 Amp Max.	49	846 100 000	Locknut-1/2 Conduit
14	746 001 034	Connector Str. T & B 3312	50	741 020 021	Box-Circuit Breaker
15	741 510 302	Anti-Short Bushing-1/2 NS	51	743 504 009	Circuit Breaker 20A
16	905 072 000	Conduit-Flex 1/2 - 1.5' Lg.	52	746 001 034	Connector Str. T&B 3312
17		Box Appleton #4SJD-1/2	53	905 072 000	Conduit Flex 1/2 1.67' Lg.
18	741 119 020	Cover-Box-Receptacle	54	746 003 010	Connector 90° T&B #268-90
19	045 003 646	Label 20A Fuse	55	741 510 302	Anti-Short Bushing 1/2
20	748 621 816	Fusestat Adapter 20A	56	955 600 000	Washer reducing 3/4 x 1/2
21	748 521 815	Fusestat 20A Buss S-20	57	045 003 657	Power Cord
22	045 003 645	Label-3A Fuse	58	760 014 021	Terminal-Ring #33457
23	000 026 711	Fusestat Adapter 3A NS	59	754 020 306	Plug 230V-15 A
24	000 026 710	Fusestat 3A NS	60	742 503 004	Cap-splice Buchanan
25	746 001 017	Connector Str. T&B 3303	61	742 502 002	Cap-nylon
26	045 003 656	Pwr. Cord Comp.	62	045 003 644	Label-Danger 120V NS
27	754 020 327	Plug 120V - 20A	63	812 840 062	Screw RD HD 10-32 x 3/8
28	760 015 107	Terminal Spade #42113-2	64	843 140 002	Nut Kep #10-32
29	010 105 910	Cord "SO" 600V - 12 GA 3 Cond. 9 Ft. Long	65	808 549 080	Screw Soc. But. HD 1/4-20 x 1/2
30	010 102 610	Cord "SJO" #14-2 300 V 1.6 Ft. Long	66	844 049 002	Nnut Stover 1/4-20
31	760 014 116	Term. Ring Amp #32442	67	948 753 102	Washer plain 9/32 x 5/8 x 1/16
32	760 006 042	Term. Flag 14 GA	68	010 100 000	Wire Black 600V #14 (State Length) NS
33	746 007 062	Butt splice T&B 2RB14X	69	010 100 009	Wire White 600V #14 (State Length) NS
34	010 103 510	Cord "SO" #14-3 2.5' Lg.	70	760 015 055	Terminal Spade Spring
35	760 015 055	Terminal Spring Spade	71	045 003 658	Tag Instruction
36	010 100 000	Wire Black 600V #14 (State Length) NS	72	762 008 008	Transformer

NS indicates item is not shown.

2500 BALL DRILLER ELECTRICAL SYSTEM



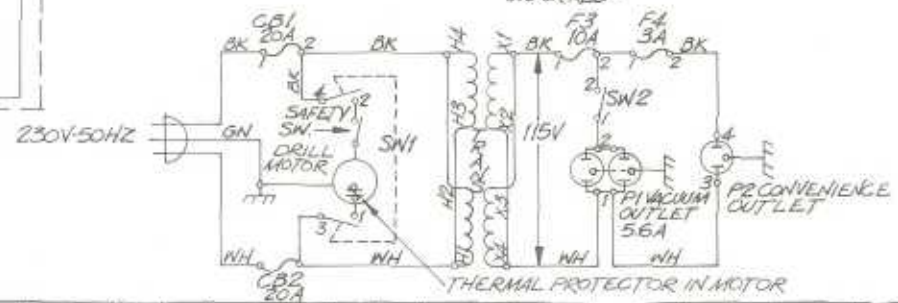
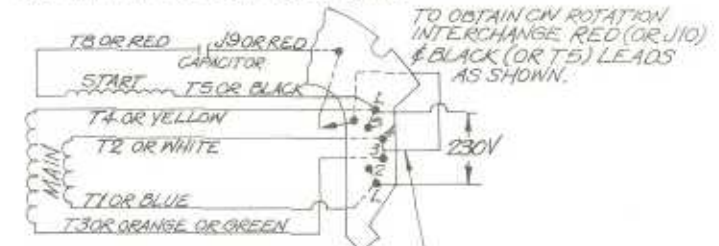
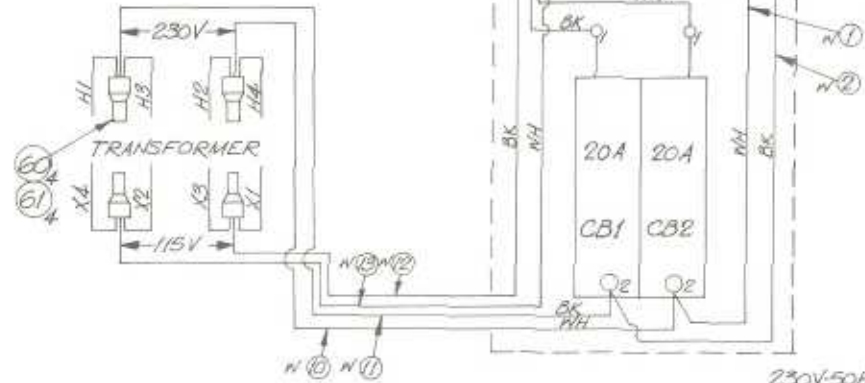
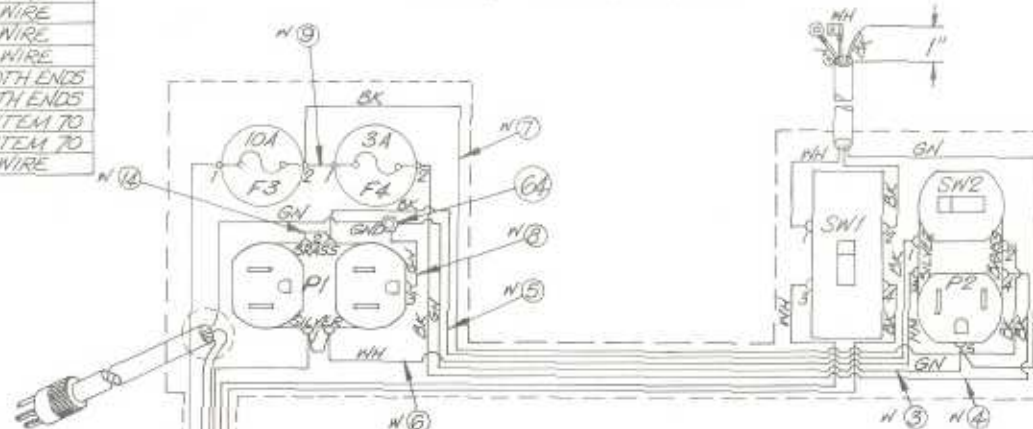
WIRING DIAGRAM - 230V-50HZ BALL DRILLING MACHINE (ALL 50HZ UNITS FACTORY WIRED FOR 230 VOLT SERVICE)

DIAGRAM - CONN. FOR WESTINGHOUSE 312 P442 MOTOR - 3/4 H.P.
MOTOR ROTATION TO GO CW AS SHOWN.

BLUE — 05
BLACK — 04 L10 — LINE
WHITE — 03 230V CIRCUIT
RED — 02 L20 — LINE
01

TO OBTAIN CW ROTATION INTERCHANGE RED AND BLACK LEADS AS SHOWN.

WIRE #	FROM	TO	ITEM	COLOR	LENGTH	NOTES
1	CB2-2	SW1-3	69	NH	375'	STRIP 1/2" 1-ITEM TO
2	CB1-2	SW1-4	69	BK	375'	STRIP 1/2" 1-ITEM TO
3	GND	P2-5	—	GN	225'	EXISTING WIRE
4	F4-2	P2-4	—	BK	225'	EXISTING WIRE
5	P1-2	SW2-1	—	BK	225'	EXISTING WIRE
6	P1-1	P2-3	—	NH	225'	EXISTING WIRE
7	F3-2	SW2-2	—	BK	225'	EXISTING WIRE
8	GND	P1-3	—	GN	5'	EXISTING WIRE
9	F3-2	F4-1	—	BK	33'	EXISTING WIRE
10	CB2-2	H2/H4	69	NH	225'	STRIP 1/2" BOTH ENDS
11	CB1-2	H1/H3	69	BK	225'	STRIP 1/2" BOTH ENDS
12	X1/X3	F3-1	69	BK	388'	STRIP 1/2" 1-ITEM TO
13	X2/X4	P1-1	69	NH	388'	STRIP 1/2" 1-ITEM TO
14	P1-2	P1-2	—	BK	33'	EXISTING WIRE



MILLIMETERS	INCHES
21	
20	
19	
18	
17	
16	
15	
14	
13	
12	
11	
10	
9	
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7	
6	
5	
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3	
2	
1	

THIRD ANGLE PROJECTION

WIRING DIAGRAM - 115V-50HZ
BALL DRILLING MACHINE
(ALL 50HZ. UNITS FACTORY WIRED FOR 230 VOLT SERVICE.)

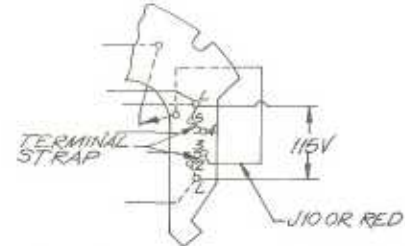
ENG. CHANGE NO.	REV.	DATE	ZONE	BY

DIAGRAM-CONN. FOR WESTINGHOUSE 312 P442 MOTOR-
3/4 HP. - MOTOR ROTATION TO GO CW AS SHOWN.

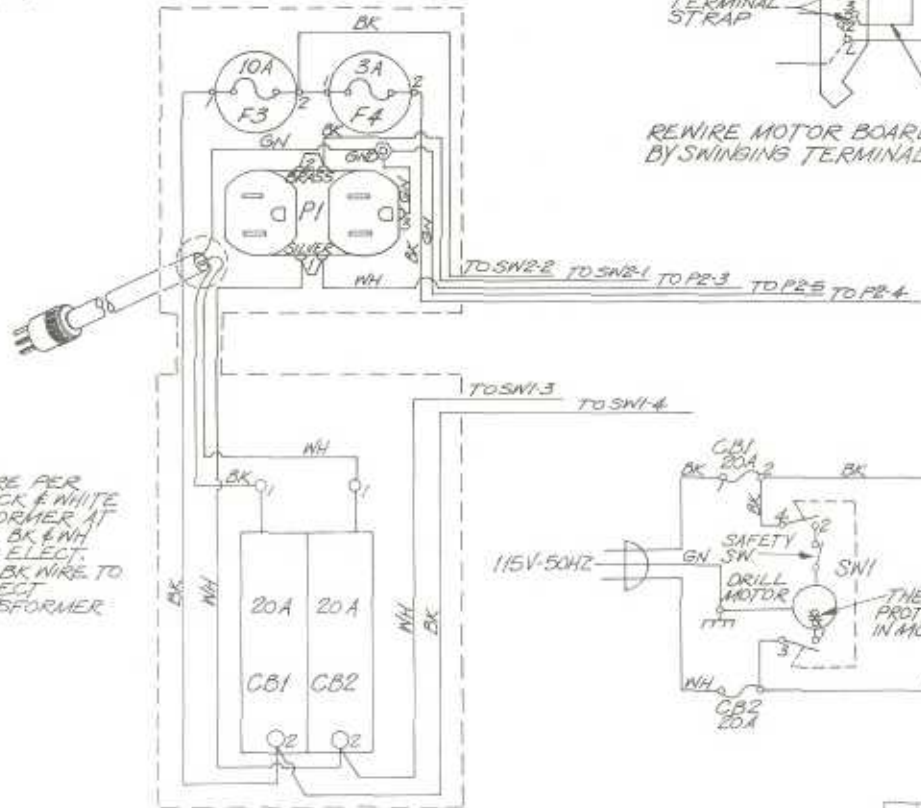
- 05
- BLACK — 04 ○ LINE
- BLUE — 03 ○ 115V CIRCUIT
- RED — 02 ○ GROUNDED LINE
- WHITE — 01

REWIRE MOTOR BOARD PER DIAGRAM
ABOVE BY CONNECTING BLUE WIRE TO
#3 & WHITE WIRE TO #1.

DIAGRAM- CONNECTION FOR G.E. 5KC45PG1137 MOTOR- 3/4 HP
MOTOR ROTATION TO GO CW AS SHOWN.



REWIRE MOTOR BOARD PER DIAGRAM ABOVE
BY SWINGING TERMINAL STRAPS IN POSITION SHOWN.



FOR USE WITH 115V SERVICE REWIRE PER
DIAGRAM (RIGHT) BY CUTTING BLACK & WHITE
WIRES FREE FROM INSIDE TRANSFORMER AT
H1, H3 & H2, H4 CONNECTIONS. PULL BK & WH
WIRES THRU 1/2" CONDUIT INTO TOP ELECT.
BOX & CONNECT WIRES AS SHOWN. BK WIRE TO
F3-1 & WH WIRE TO P1-1. DISCONNECT
REMAINING TWO LEADS FROM TRANSFORMER
AT F3-1 & P1-1.

21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

DO NOT SCALE DRAWING		UNLESS OTHERWISE SPECIFIED		ITEM NUMBER		PART NO.		DESCRIPTION	
SCALE	DATE	DR. & WORK	INCHES	PROJECTIONS	MATERIAL SPEC.		MAT. SIZE OR PATTERN NO.		
DRAWN	CHECKED	MILLIMETERS		SHEET		CLASS		NUMBER	
NEXT ASSEMBLY APPROVED		PART NAME		SIZE		CLASS		NUMBER	
						82			

REV. 5-70

37

THIRD ANGLE PROJECTION
 WIRING DIAGRAM-115V-60HZ
 BALL DRILLING MACHINE

REV.	CHANGE NO.	REVISION	CHANGE	ZONE	BY	DATE

WIRE #	FROM	TO	ITEM	COLOR	LGTH	NOTES
1	F2-2	P2-4	36	BK	225'	2-ITEM 35
2	F2-1	F1-2	36	BK	33'	2-ITEM 35
3	PI-3(GND)	GND	38	GN	5'	2-ITEM 35
4	PI-1	P2-3	37	NH	225'	2-ITEM 35
5	PI-2	SN2-1	36	BK	225'	2-ITEM 35
6						
7	P2-5	GND	38	GN	225'	2-ITEM 35
8	P2-3	SW1-3	37	NH	33'	2-ITEM 35
9	SN2-2	SW1-4	36	BK	33'	2-ITEM 35
10	SN2-2	F1-2	36	BK	225'	2-ITEM 35
11	PI-1	JUMPER		BK	33'	EXISTING WIRE
12	SW1-2	SPLICE	34	BK	25'	1-ITEM 35
12	SW1-1	MOTOR	34	NH	2.5'	1-ITEM 35-1-ITEM 30
12	P2-5	GND	34	GN	2.5'	1-ITEM 35-1-ITEM 31
13	SN3-COM	MOTOR	30	BK	1.6'	1-ITEM 32-1-ITEM 31
13	SN3-NO.	12	30	NH	1.6'	1-ITEM 33-1-ITEM 31

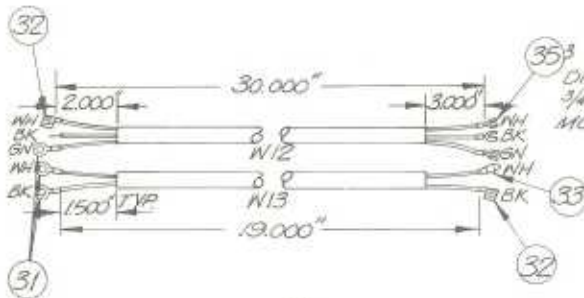
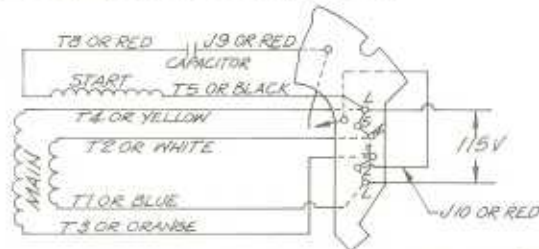


DIAGRAM-CONN. FOR G.E. 5KC 45 PG 1137 MOTOR-
 3/4 HP-115/230V-60HZ
 MOTOR ROTATION TO GO CW AS SHOWN.



TO OBTAIN CW ROTATION INTERCHANGE RED (OR J10) AND BLACK (OR T5) LEADS AS SHOWN.

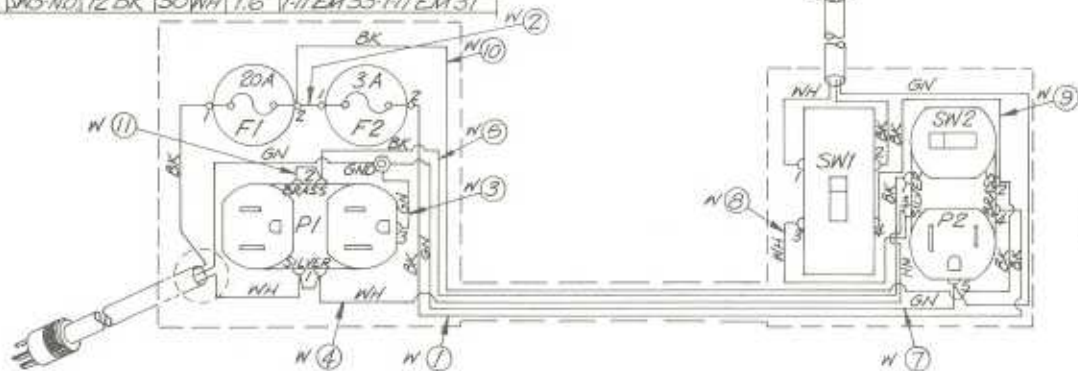
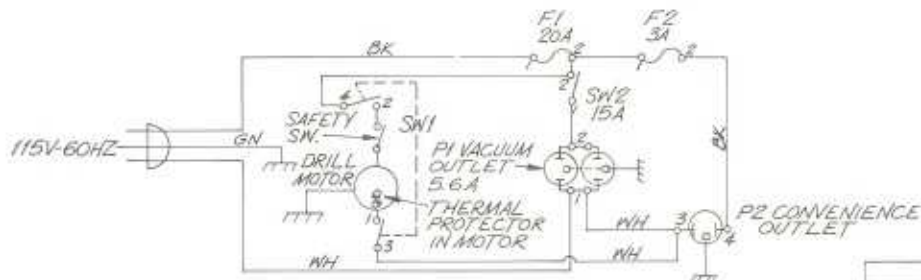


DIAGRAM-CONN. FOR WESTINGHOUSE 312P442 MOTOR-
 3/4 HP-115/230V-60HZ
 MOTOR ROTATION TO GO CW AS SHOWN.

- 06 BLACK — 04 — LINE
- 05 BLUE — 03 — 115V CIRCUIT
- 04 RED — 02 — GROUNDED LINE
- 01 WHITE — 01

TO OBTAIN CW ROTATION INTERCHANGE RED AND BLACK LEADS AS SHOWN.



DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED	ITEM	REQD SIZE	PART NO.	DESCRIPTION
SCALE	DATE	TRADE MARK	FRAC	TRADE MARK	TRADE MARK
DRAWN	BY	AMF Incorporated			
CHECKED	DATE				
NEXT ASSEMBLY APPROVED	DATE	CLASS	SIZE	NUMBER	MODEL
		C	82		

MILLIMETERS	INCHES