

REMINGTON
MODEL 4100
AUTOLOADING TRAP

SUPPLEMENT TO
SERVICE MANUAL
REV. 376

Form RD 6707
Rev. 979

It is recommended that Trap Manual (Form RD6707) is marked in appropriate places to indicate revisions in this supplement.

NOTE: All Traps prior to serial number 488 were manufactured with front and rear speed reducer brackets. Since that time, a one (1) piece bracket (Part # 91590) has been in use.

SECTION II SAFETY

(Addition) Page 2, Item 8

ALWAYS SAFE RELEASE TRAP WHEN NOT IN OPERATION.

SECTION III INSTALLATION

(Revision) Page 2, Fig. 4

See new layout Fig. 92 page S-7 for recommended trap installation.

SECTION IV OPERATION

(Revision) Page 3, Fig. 5

Power cable is shown to wrong cable. Refer to Page 1, Fig. 1 Item 2.6 for correct terminal call-out.

(Addition) Page 5, Item 10

Remove nylon target stop when throwing single targets with magazine attached to prevent undo wear on throwing arm wiper.

SECTION V ADJUSTMENTS – TARGET FLIGHT

(Addition) Page 6, Item 2.2

See Fig. 93 page S-8 for installation of shim to obtain correct height.

(Revision) Page 7, Fig. 20

Hole No. 2 spread angle should be 55°.

(Revision) Page 7, Item 7.7

Initial set-up for doubles. Refer to Fig. 94 Page S-8. Install nylon target stop to rear of slot in platform, swing right tip up until bottom is 1-1/2 inches from edge of platform and tighten wing nut firmly.

Adjust throwing arm by turning curl adjusting knob counterclockwise approximately 3/8 inch (from singles setting). Target guide rail should line up with edge of throwing arm carrier.

Rotate elevation adjusting knob 1-1/2 turns (from singles setting) to increase platform elevation.

(Addition) Page 7, Item 7.11

Center spread of targets by rotating windage adjustment knob to suit. NOTE: flight path of right hand target will be an approximate straightaway from Sta. No. 1 curling slightly to the right as it reaches its maximum distance. Flight path of left hand target will be an approximate straightaway from Sta. No. 5 curling slightly to the left as it reaches its maximum distance.

SECTION VI TROUBLE SHOOTING (Additions and Revisions)

Page 9, Item 2 TRAP FAILS TO START

Cause	Solution
2.6 Motor damaged or stuck.	26. Examine motor. (See Pages 21, 22 & 23).
2.7 Loose wire on control panel or motor.	2.7 Reconnect wire and/or tighten terminal screw.
2.8 Foreign object jamming trap mechanism and blowing fuse.	2.8 Remove source of jamming and replace fuse.
2.9 Extreme cold causing overload on motor and blowing fuse.	2.9 Replace fuse and refer to cold start-up procedure page S-6.

Page 9 Item 3 MAGAZINE FAILS TO FEED – DOES NOT ROTATE

Cause	Solution
3.6 Magazine indexing clutch inoperative due to rust, defective solenoid, broken clutch spring or loose plunger cross-pin.	3.6 Lubricate clutch with penetrating oil or replace defective part (refer to Section VII-7 page -24 and S-14, S-15).
3.7 Loose wire on control panel or magazine indexing clutch solenoid.	3.7 Reconnect wire and/or tighten terminal screw.

Page 10 Item 6 SLOW RELEASE OR DELAYED RELEASE

Cause

- 6.2 Cocking Clutch needs cleaning and/or lubrication — identified by throwing arm firing thru and requiring complete cocking cycle before target is thrown.

Solution

- 6.2 Clean and/or lubricate cocking clutch (refer to Section VII-3 page 17. If this does not solve the problem, retard mainshaft gear (refer to Section VII-5 page 19).

Page 10 Item 8 TRAP FAILS TO ANGLE

Cause

- 8.3 Timing motor not running.
- 8.5 Defective timing cam switch or switch not being activated.
- 8.7 Pivot shaft cam incorrectly positioned.

Solution

- 8.3 Test for 120V to timing motor. If present, replace defective timing motor. Refer to Section VII-6.1.1 thru 6.1.5 page 20 for removing cover and magazine. Refer to Fig. 95 page S-9 for timing motor location.
- 8.5 Manually depress the roller on the timing cam micro-switch (see Fig. 95 page S-9). A slightly audible click should be heard. If not, replace timing cam switch. Switch may need adjusting closer to cam to activate switch.
- 8.7 See that flat edge of pivot shaft cam clears the micro-switch roller by 1/8" — 3/16" when trap is in cocked position. See Fig. 96 page S-9.

Page 11 Item 9 THROWING ARM FIRES THROUGH WITHOUT STOPPING AT COCKED POSITION

Cause

- 9.3 Cocking clutch needs cleaning and/or lubrication.

Solution

- 9.3 Clean and/or lubricate cocking clutch (refer to Section VII-3 page 17).

Page 11 Item 10 CHATTER NOISE IN COCKED POSITION

Cause

- 10.1 Cocking clutch needs lubrication or cleaning.
- 10.2 Sprag clutches need lubrication.
- 10.3 Chain too loose.
- 10.4 Sprag clutch spring retainer broken or mainshaft worn.

Solution

- 10.1 Lubricate with automatic transmission oil thru spring tang holes in side of cocking clutch. Clean if necessary.
- 10.2 Lubricate with automatic transmission oil. On traps after serial no. 320 this can be done thru oil hole in mainshaft housing (See Fig. 102 page S-13).
- 10.3 Tighten chain.
- 10.4 Replace defective part (refer to Section VII-1 page 11).

Page 11 Item 11 EXCESSIVE NOISE FROM REAR OF TRAP

Cause

- 11.1 Gearbox oil level low or worn bearings or gears.
- 11.2 Squeaking magazine drive shaft seal (in cover).

Solution

- 11.1 Inspect oil seal, bearings and gears. Replace defective part and refill with oil to correct level. For recommended lubricants refer to chart on page S-6.
- 11.2 Lubricate seal with light oil.

Cause	Solution
12.1 Worn rubber target guide rail.	12.1 Replace or reverse target guide rail if rubber is worn only at extreme end.
12.2 Brushes too high off platform.	12.2 Adjust brushes to within 1/8" – 1/4" off platform (refer to Fig. 97 page S-10).
12.3 Rim of target trapped under throwing arm guide rail because of high target shoulder or damaged (bent) throwing arm or platform. This can be identified by the following procedure: Safe release trap and remove Mainspring adjusting screw. Rotate throwing arm by hand from the cocked position in 3 increments of approx. 45 degrees, running a target under full length of rubber guide rail at each position. Note: Do not rotate throwing arm more than 360 degrees.	12.3 Add shim between throwing arm carrier and top of mainshaft assembly (See Fig. 93 page S-8) or replace or repair throwing arm or platform. For current guide rail height relative to target shoulder (See Fig. 16 page 5)
12.4 Height of platform drop pad incorrect.	12.4 Adjust drop pad to be level with or slightly above platform.
12.5 Targets not dropping into target nest brushes correctly due to bent or missing target guide.	12.5 Bend or replace target guide (Part 37 Plate 4 Page A-9) up or down as required to tip target into "V" formed by target nest brushes. Check alignment of target nest brushes to magazine hole (see Fig. 11 Page 4),

SECTION VII DISASSEMBLY AND REASSEMBLY PROCEDURES

(Revision)	Page 14, Item 1.2.16	External clutch flanges must be on the shiny milled side of the mainshaft clutch housing and must face up. For traps up to Serial no. 294 see Fig. 40 Page 14. For traps above Serial no. 294 see Fig. 98 page S-10.
(Addition)	Page 14, Item 1.2.18	When reassembling mainspring retaining pin, the finger loop must be installed on the mainshaft side of the crank pin (see Fig. 99 page S-11) and not as shown in Fig. 33 page 13 or exploded view plate 2 page A-5.
(Revision)	Page 22, Item 6.1.10	Loosen angling yoke by removing angling link bolt (see Fig. 95 page S-9). CAUTION , when reassembling angling link bolt it should be threaded into angling link until the head contacts the bearing in the angling yoke – it should then be backed off slightly in order to allow angling yoke to pivot easily – the locknut should then be assembled and tightened firmly.
(Revision)	Page 26, Item 8.1.1	Raise magazine shaft and gear. Rotate magazine drive gear counterclockwise until slight resistance is felt. (Magazine indexing clutch control collar engaging indexing finger). Insert magazine shaft and gear with keyway in line with bolt hole as shown in Fig. 100 page S-12.
(Revision)	Page 26, Item 9.1	When looking down on the empty magazine with trap in cocked position, the target holes in magazine and magazine floor plate assembly should line up as shown in Fig. 101 page S-12. (Note the position of the roller on the magazine cam) . If holes are not lined up in this manner the magazine gear and magazine drive gear are out of phase. The phase is correctly set by the following procedure. (refer to 9.1.1 thru 9.1.5 page 26).

APPENDIX A PARTS LISTS AND EXPLODED VIEW DRAWINGS

- (Addition) Page A-2, Plate 1 Replacement parts (not shown in Plate 1, Page A-3) for repair of angling clutch Part No. 90803 (View No. 2) are as follows:
 Part No. 91463 — Angling Clutch Drive Spring
 Part No. 91463 — Angling Clutch Brake Spring
 Part No. 91464 — Angling Clutch Anti-Back Spring
- (Revision) Page A-2, Plate 1 View No. 34 Part No. should be 90746
 View No. 86 Part No. should be 90593
- (Revision) Page A-4, Plate 2 View No. 79 Part No. should be 90806
- (Addition) Page A-10, Plate 5 Replacement parts (not shown in Plate 5, page A-11) for repair of magazine indexing clutch assembly Part No. 90849 (View No. 22) are as follows:
 Part No. 90743 — Clutch Gear Retaining Screw (3)
 Part No. 90648 — Clutch Shaft Retaining Ring
 Part No. 90833 — Indexing Clutch Gear (48 tooth)
 Part No. 90838 — Indexing Clutch Shaft
 Part No. 90721 — Indexing Shaft Spacer
 Part No. 90731 — Indexing shaft Sprocket (14 tooth)
 Part No. 90734 — Magazine Indexing Clutch
 Part No. 91465 — Magazine Indexing Clutch Drive Spring

APPENDIX B WIRING DIAGRAMS

- (Addition) Page B-2 The following part names were omitted in the trap wiring diagram.
 Part No. 90652 — Power Cord Assembly
 Part No. 90608 — Power Cord Receptacle
 Part No. 90653 — Release Cord Assembly
 Part No. 90607 — Release Cord Receptacle
 Replacement part (not shown in Wiring Diagram) for repair of Release Cord Assembly Part No. 90653 is as follows:
 Part No. 91364 — Release Cord Micro Switch

APPENDIX C RECOMMENDED SPARE PARTS

- (Addition) Page C-2 1 — 91364 Release Cord Micro Switch
 1 — 91201 Target Guide

RECOMMENDED PERIODIC MAINTENANCE EVERY 60,000 CYCLES OR 6 MONTHS — WHICHEVER COMES FIRST

- A. **SPRAG CLUTCHES** — Lubricate with automatic transmission oil. On traps after Serial No. 320 this can be done thru oil hole in mainshaft housing (See Fig. 102 page S-13).
- B. **COCKING CLUTCH** — Lubricate with automatic transmission oil thru spring tang holes in side of clutch sleeve. (See Fig. 55 page 18). Remove left bellows (Fig. 41 page 14) for access.
- C. **UNIVERSAL JOINT** — Lubricate with general purpose grease thru fitting in universal joint pivot pin (See Fig. 102 page S-13). To line up pin with access hole in universal housing **SAFE RELEASE TRAP AND REMOVE MAINSPRING ADJUSTING SCREW**. Loosen oil cover screws and pivot oil cover out of the way. The throwing arm can then be rotated by hand until the grease fitting becomes accessible. **NOTE:** do not rotate throwing arm more than 360° without again safe releasing trap.
- D. **MAGAZINE DRIVE SHAFT SEAL (In Cover)** — Lubricate with light oil.
- E. **ANGLING YOKE** — Lubricate slot with light grease (See View No. 29, page A-3)

EVERY 120,000 CYCLES OR 1 YEAR — WHICHEVER COMES FIRST

- A. **SPEED REDUCER** — Check level of oil in gearbox by removing oil level plug (See Fig. 72, page 22). Add general purpose gear oil to the required level if necessary. For recommended lubricants refer to chart on page S-6).

FIRST 120,000 CYCLES OR 1 YEAR WHICHEVER COMES FIRST AND THEN EVERY 240,000 CYCLES OR 2 YEARS

- A. **COCKING CLUTCH** — Inspect, clean and lubricate. Refer to section VII-3, page 17, for detailed inspection procedure.
- B. **ANGLING CLUTCH** — Lubricate with automatic transmission oil thru spring tang holes in side of control collar (See Fig. 79 & 80, Page 23).
- C. **MAGAZINE INDEXING CLUTCH** — Lubricate with automatic transmission oil thru spring tang holes in side of control collar (See Fig. 87 & 88, page 25).
- D. **DAMPER** — Check hydraulic fluid level — refill if necessary (See Fig. 48, Page 16).

OPERATING PROCEDURES TO AVOID

- A. **Do not force throwing arm past cocked position by hand**—it will fire thru and damage to cocking clutch actuating lever assembly (Fig. 49, page 16) may occur. This does not apply if mainspring adjusting screw has first been removed, but in this case the arm must not be rotated more than 360°.
- B. **Do not leave trap cocked overnight** — the mainspring will be weakened and fail prematurely if left fully stretched for long periods.

SUGGESTED CUSTOMER MODIFICATIONS

Wherever rodent infestation is a problem, seal any small openings between cover and base with duct tape. The motor ventilation hole should be covered with screen or mesh.

COLD WEATHER START-UP PROCEDURE

Manually move throwing arm to approx. firing position. Turn trap on and let motor run at least 15 minutes before cycling trap, or replace speed reducer oil with one more suitable for temperature. See chart below for recommended lubricants.

ENGINEERING SERVICE BULLETIN
IL - 76

LUBRICANTS FOR SPEED REDUCERS

WORM GEAR REDUCERS

Ambient Temperature	-30 to 15°F	16 to 50°F	51 to 110°F	111 to 165°F
Max. Operating Temp.	150	185	225	225
Viscosity at 210°F, SUS	40 to 90	90 to 125	125 to 190	190 to 350
Compounded with	(Optional)	3 to 10% Acidless Tallow or E. P. Base	3 to 10% Acidless Tallow or E. P. Base	3 to 10% Acidless Tallow or E. P. Base
AGMA Lubricant		No. 7 Compound	No. 8 Compound	
Cities Service Oil Co.	Pacemaker Oil No. 1	Trojan Compound L-2	Trojan Compound L-4	Trojan Compound L-5
Fiske Bros. Refining Co.	Lubriplate No.3	Lubriplate No.8	Lubriplate No.8	Lubriplate APG No.250
Gulf Oil Corporation	Multi Purp. Gear. Lub. No.80	E.P. Lubricant No.115	E.P. Lubricant No.145	E.P.Lubricant No.250
Shell Oil Company	Macoma Oil No.33	Macoma Oil No.69	Valvata Oil No.J 78	Valvata Oil No.J 83
Sinclair Refining Co.	Duro Oil No.160	No.87 Heavy Duty Oil	Superheat Valve Oil	Pennant E P Oil No.7
Keystone Lub. Co.	78-6 EP Oil	WG-1X Oil	WG-B Oil	No.009 Oil
Sun Oil Company	Sunep No.1070	Sunep No.1110	Sunep No.1150	HV Cylinder Oil
Mobile Oil Co.	Vactra Oil No.2	Mobil Compound No.DD	Mobil Cyl. Oil No.600W	Mobil Cyl. Oil No.600
Texaco	Meropa Lub. No.1	Meropa Lub. No.3	Vanguard 620	Vanguard 620

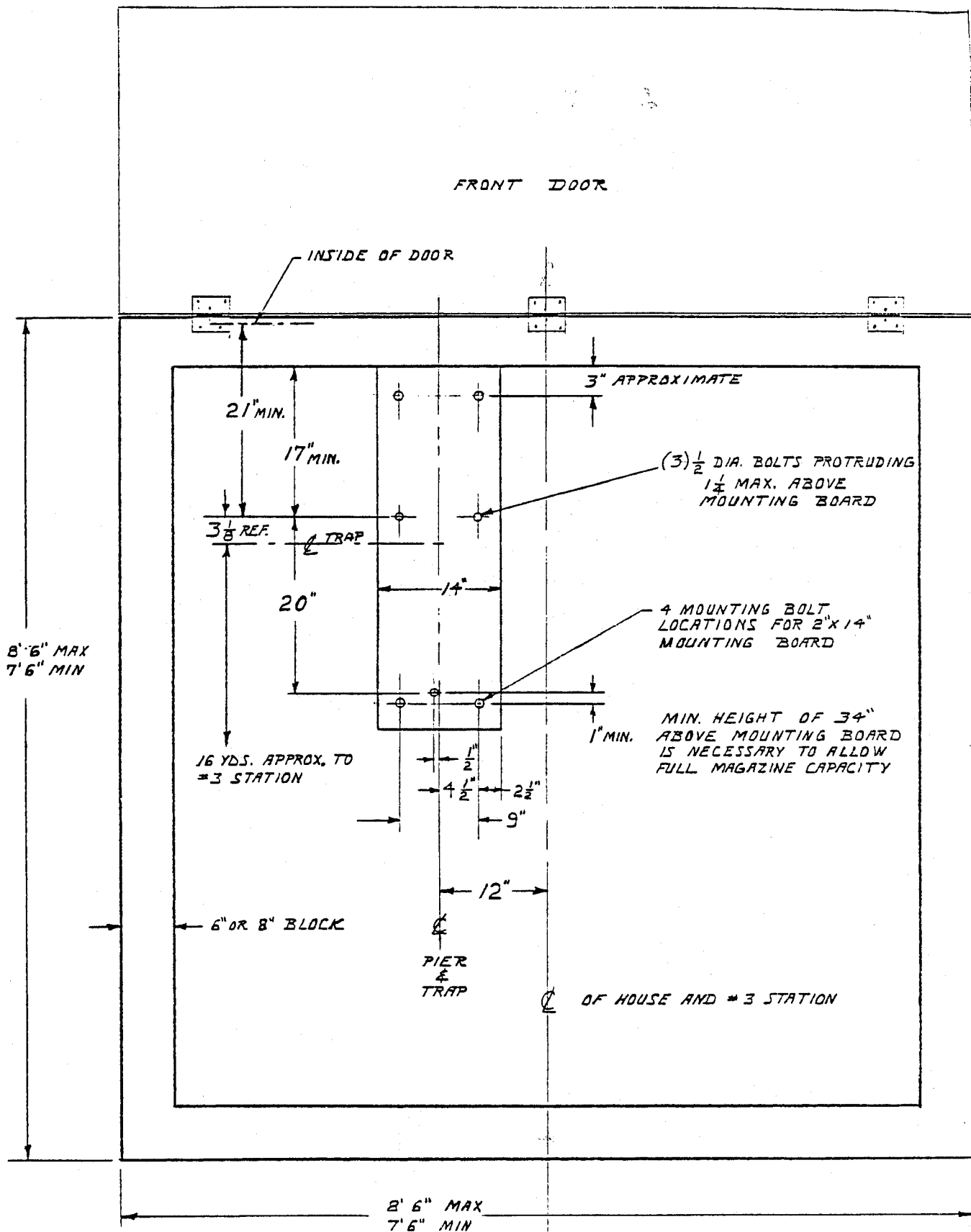


Fig. 92 — 4100 TRAP MOUNTING LAYOUT

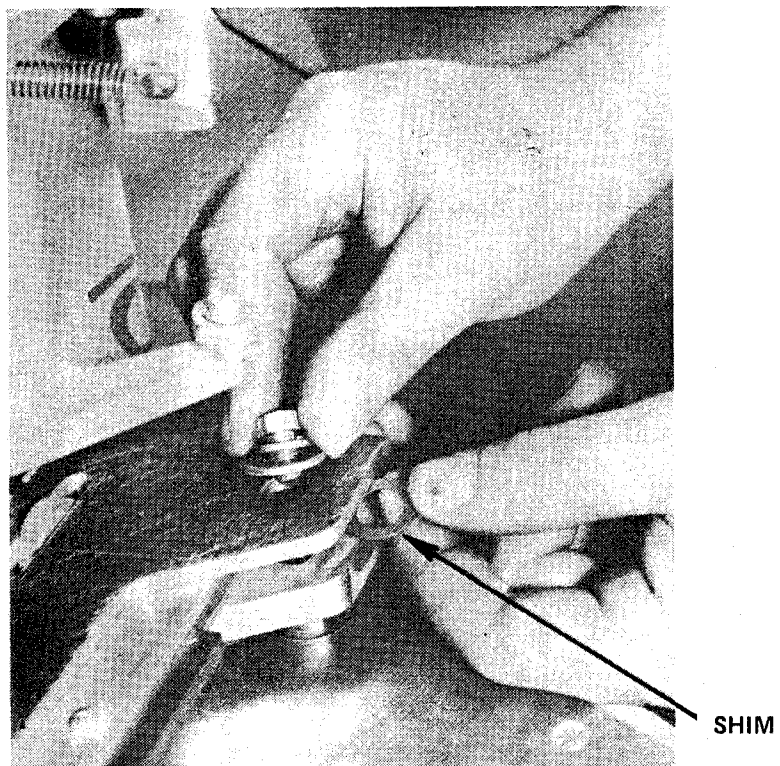


Fig. 93 — Shimming Between Throwing Arm Carrier and Top of Mainshaft Assembly.

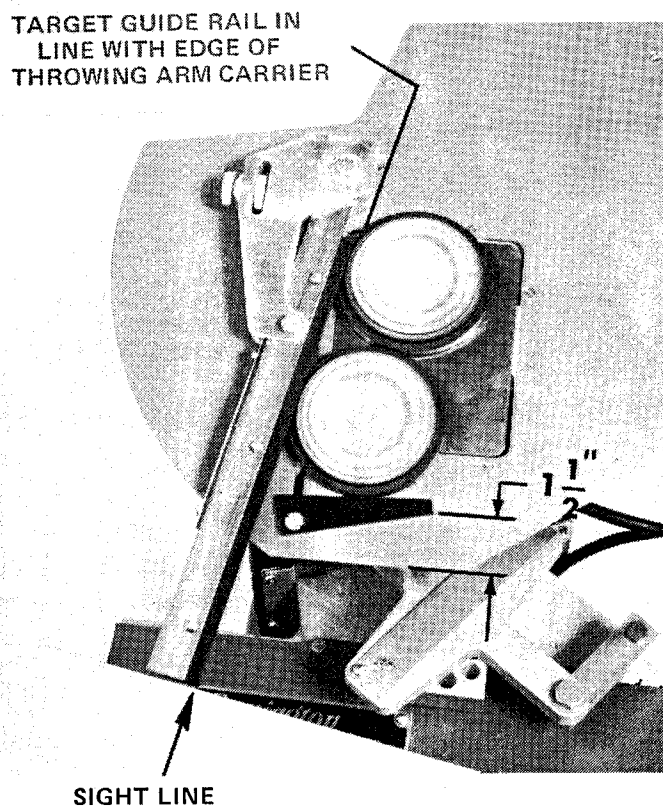


Fig. 94 — Initial set-up for Doubles

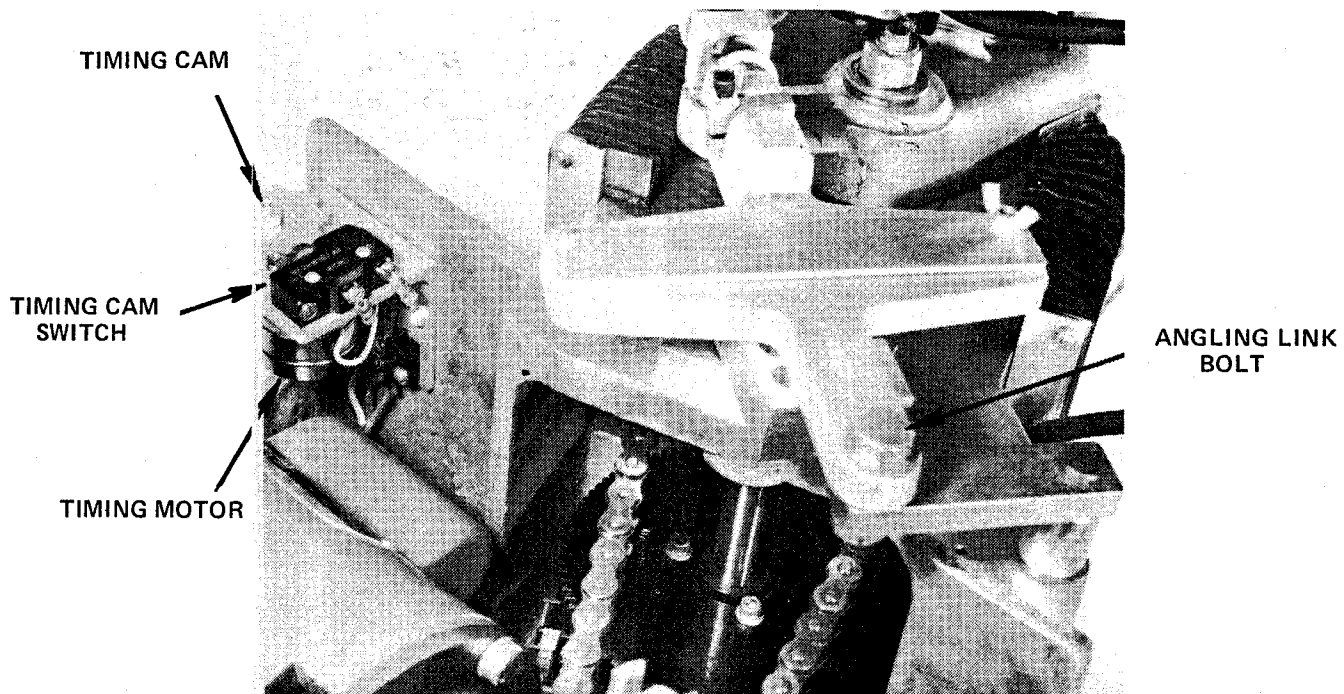


Fig. 95 — Timing Motor Location

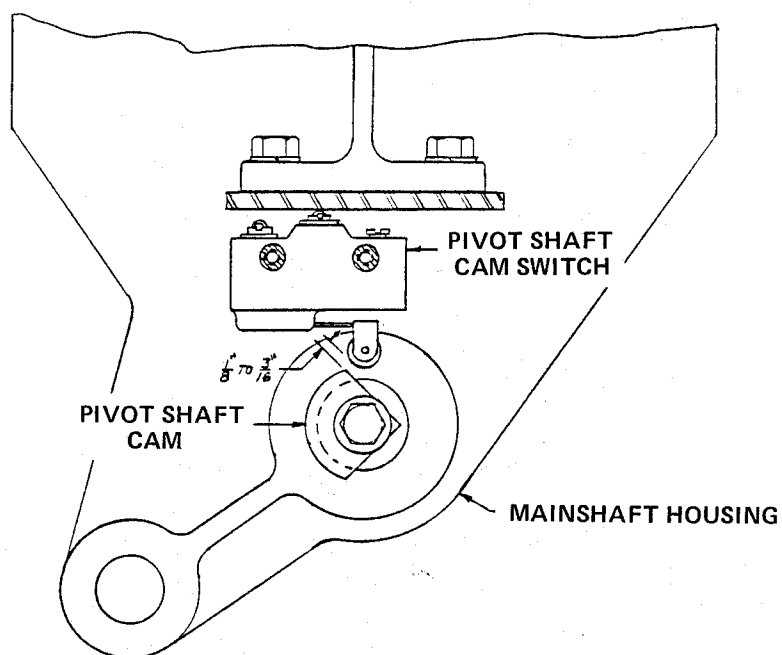


Fig. 96 — Pivot Shaft Cam Adjustment With Trap in Cocked Position.

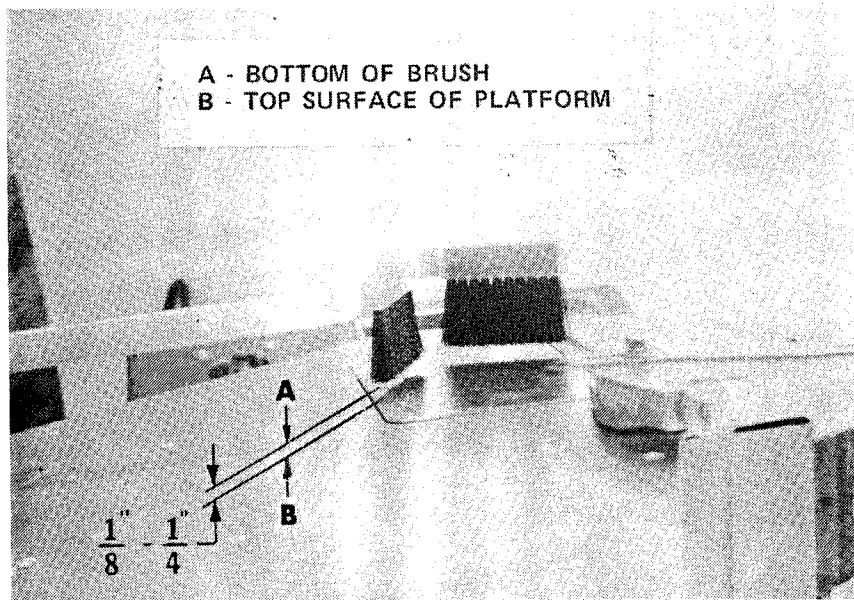


Fig. 97 — Brush Clearance

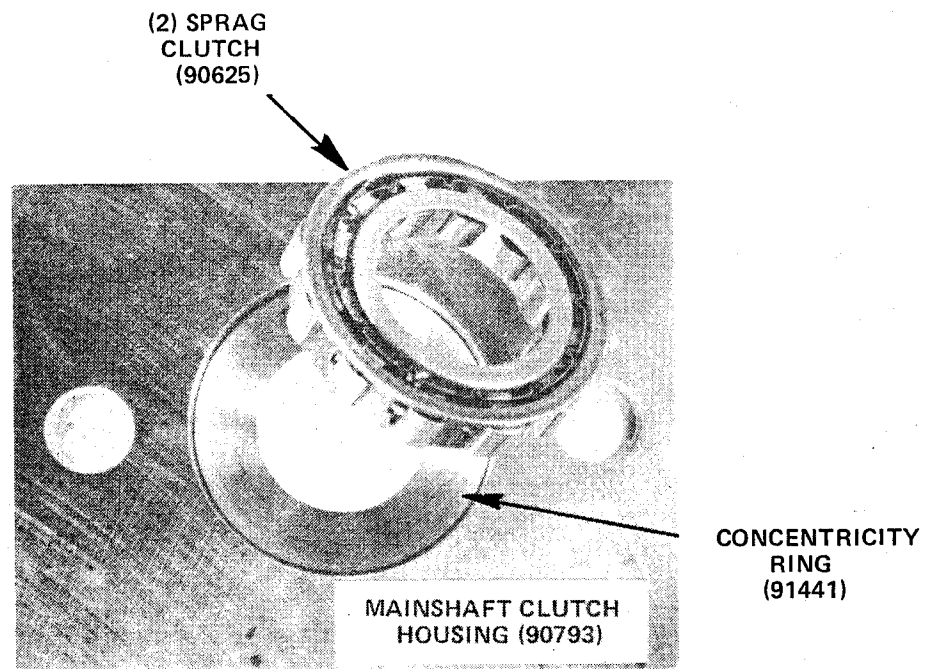


Fig. 98 — Mainshaft Clutch Housing with Concentricity Ring and Sprag Clutches used on Trap above serial No. 294.

LOOP ON SIDE
TOWARD MAINSHAFT

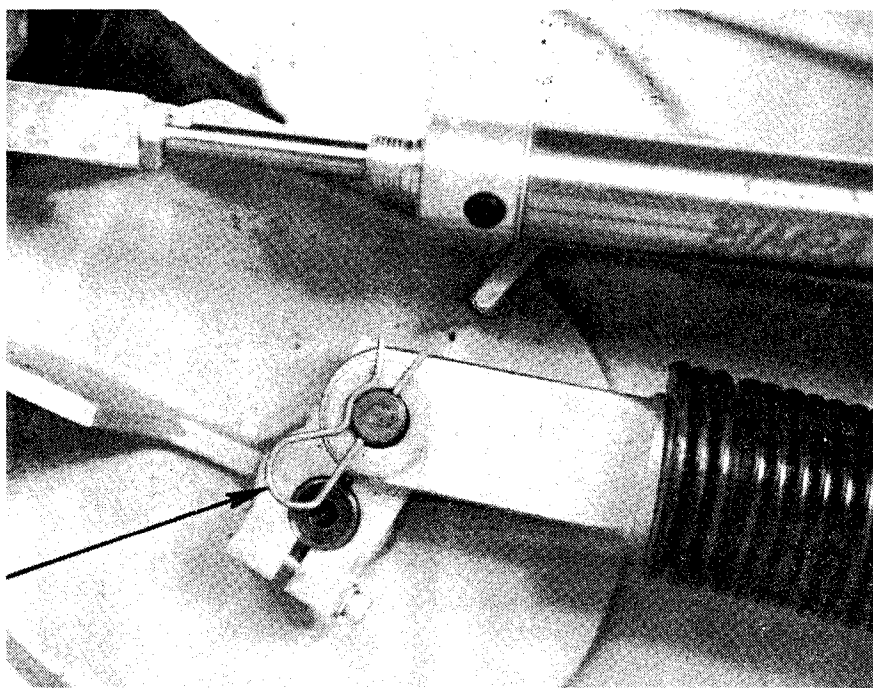


Fig. 99 — Correct Installation of Mainspring Retaining Pin.

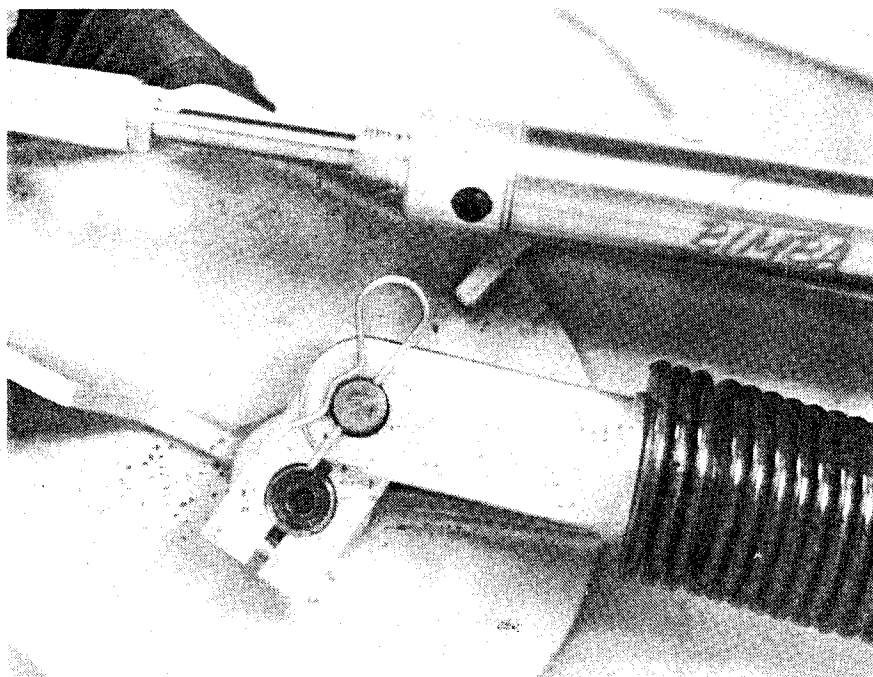


Fig. 99 — Incorrect Installation of Mainspring Retaining Pin.

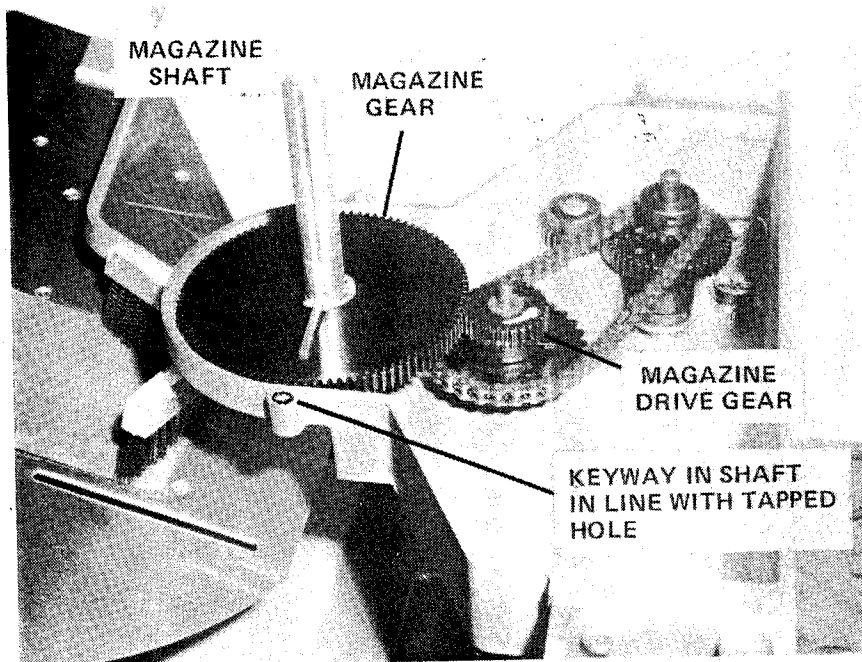


Fig. 100 — Correct Magazine Timing Lining up Keyway With Bolt Hole.

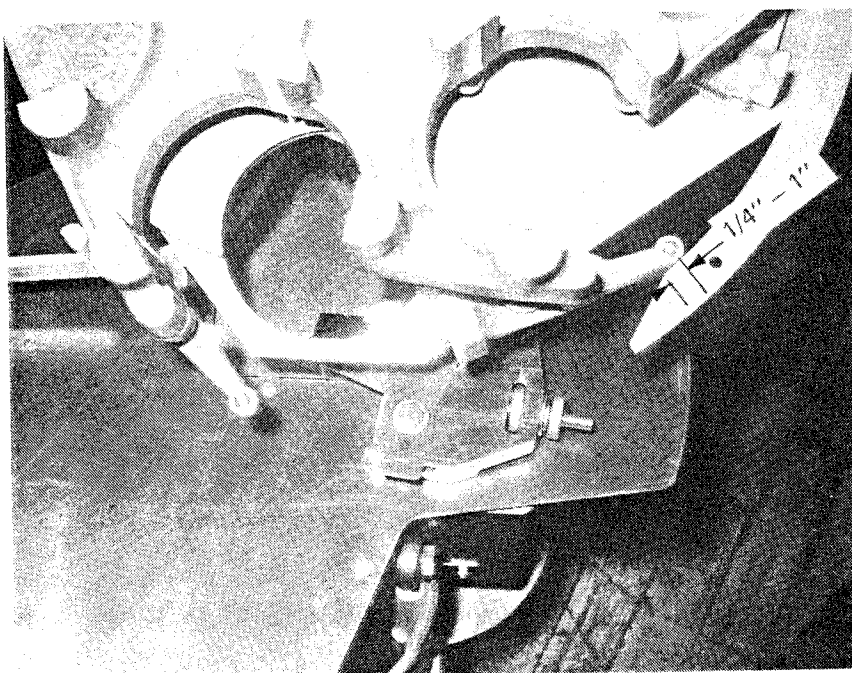


Fig. 101 — Correct Magazine Position with Trap Cocked

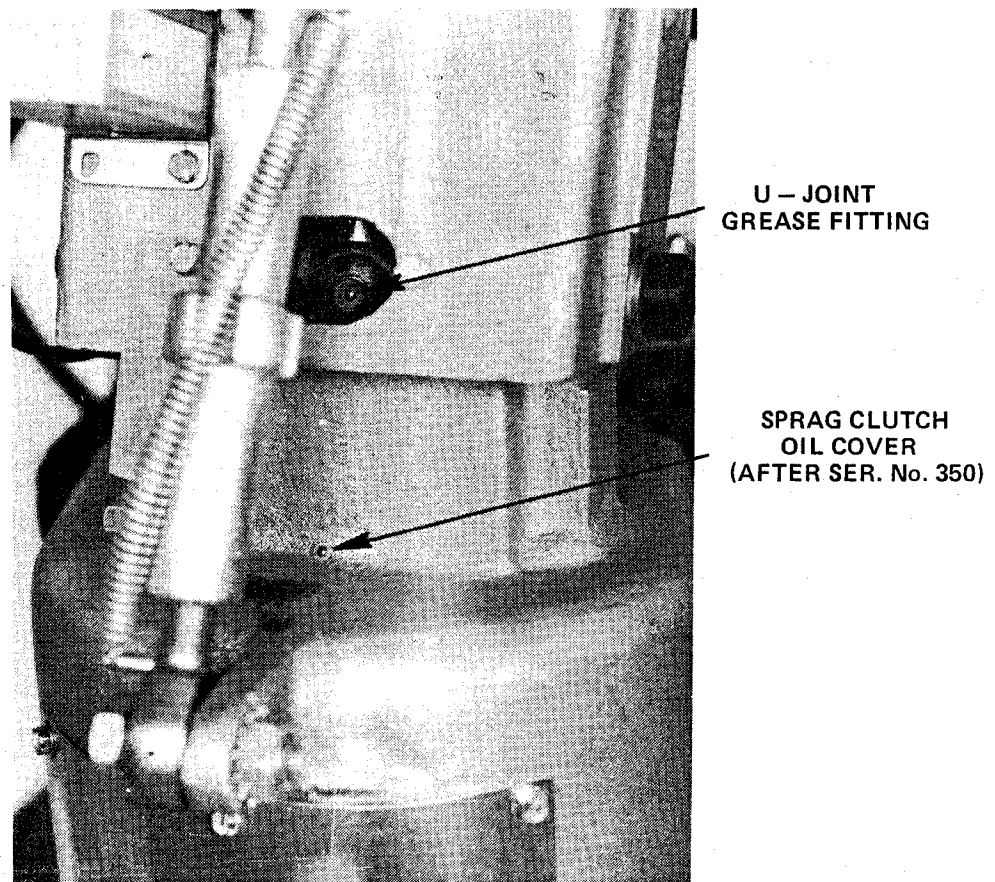


Fig. 102 — Lubrication Points

A GUIDE FOR SERVICING PSI INCREMENTAL ROTATION CONTROL PACKAGES

PSI wrap spring clutches are simple, dependable devices that seldom need service, but on occasion may have a mechanical malfunction. This manual will serve as a service and trouble shooting guide for maintenance of these units.

LUBRICATION

All PSI standard clutches and clutch brakes are designed with sintered metal components, which have been impregnated with Shell Bearing Infusion Oil #33 for permanent lubrication. In cases where there is severe duty, or the environment is such that it may "wick-out" oil, wash out oil, or fill the clutch with foreign matter, the unit may be re-oiled or flushed out with minimal or no disassembly by using a light bearing oil as used in manufacture. If disassembly of the unit is necessary, follow the detailed disassembly instructions to the point needed, flush and wipe parts in the oil to be used for re-lubrication. **DO NOT USE SOLVENT** to clean sintered metal parts. To get more cleaning action from the oil, it may be heated while cleaning the components, but bring the parts back to ambient temperature submerged in cool oil.

ACTUATOR

The actuator is a simple straight-forward mechanical linkage. When the actuator does not trip, the following checks should be made:

Problem	Cause and remedy
1. No power to the coil.	1. If no power to the coil, check all wiring and switching in the system that actuates the clutch.
2. Lack of continuity of the coil windings.	2. If no continuity, replace the coil.
3. Mechanical binding of the plunger.	3. A binding plunger may be caused by the shifting of the coil, or where there is no actuator limit stop used, the plunger may "mushroom" from striking the backstop. In the latter case the plunger may be turned to its true diameter and a limit stop installed to prevent re-occurrence. Note: Actuator limit stops should be set to prevent the plunger from hitting the backstop (by .010" to .020") in DC coils only. AC coils should have the setting to strike the backstop and limit stop at the same time to prevent burning up the coil.
4. Insufficient clearance of the actuator over the stop collar.	4. No clearance over the stop collar detent would be caused by lack of continuity of the linkage or misadjustment of the coil or actuator limit stop. Repair or adjust as needed.
5. Actuator loaded by the stop collar, in which case the collar pushes so hard on the actuator that it cannot be pulled by the coil.	5. Actuator loading can be caused by the braking force exceeding the limits of the brake or the differential setting of the unit being too close, i.e., CLUTCH ON, BRAKE ON. (See instructions of setting on Assembly and Disassembly Instructions.)

CLUTCH-BRAKE UNIT

With the brake engaged (full limit of output), the input hub should be free to rotate by hand. With the clutch engaged, the input and output should rotate freely by hand. If the unit does not rotate in either of these modes, the clearance between the hubs of the unit on the shaft may have been disturbed by dropping or hammering the unit on the shaft at assembly. A disassembly of the unit will be necessary to readjust.

Note: When disassembling these units, always mark the spring tang locations with reference to which slots they go in if the same springs are to be used in reassembly.

Listed below are some problems, causes and remedies:

Problem	Cause and remedy
1. Clutch-Brake does not drive but input turns.	A. Drive spring may be broken at crossover point from an overload caused by a jam. Replace spring and check hubs for damage. B. Collar may not snap forward because of foreign matter restricting movement. Clean unit. C. Actuator does not pull in. (See "Actuator.")
2. Clutch-Brake jams and stalls input motor.	A. Spring tang broken off drive spring, not allowing clutch to disengage while brake is engaged. Replace drive spring. B. Clutch output bound up. Check clearance between output hub and brake hub. C. Completely out of adjustment caused by losing an internal spring tang. Replace spring.

CAUTION

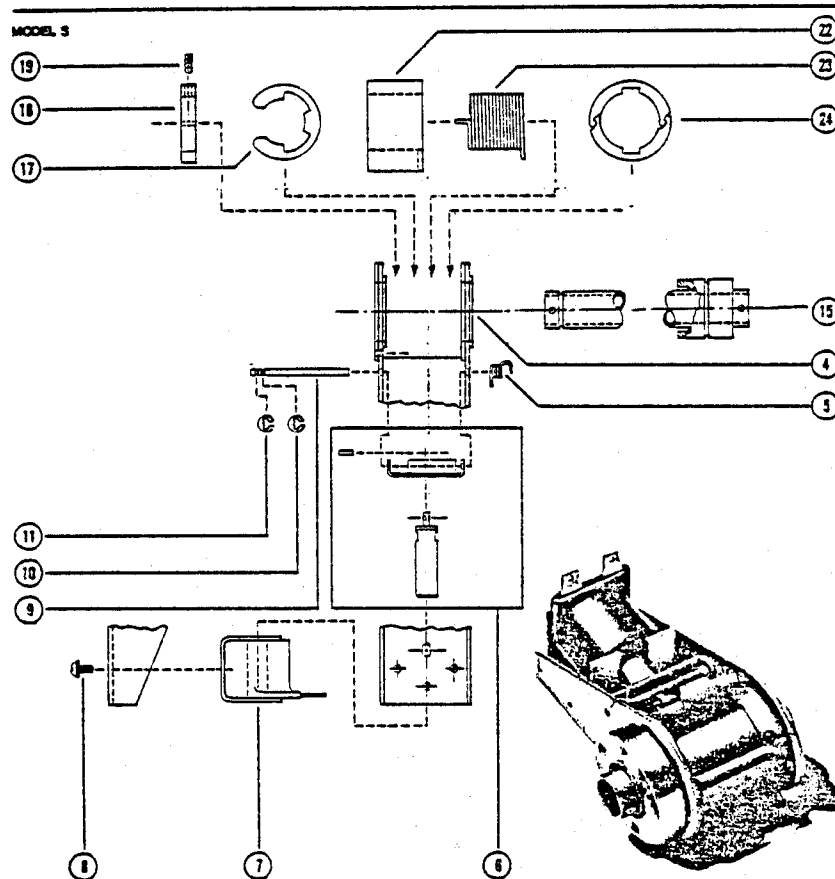
3. Output does not repeat stopping point.	A. Not enough inertia to actuate brake. B. Tang broken off brake spring. Replace spring. C. If unit has an adjustable collar, locking screw may be loose allowing adjusting screw to rotate. D. Binding of the unit due to improper mounting.
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MOUNTING

The shaft the unit is mounted on should support it and the plate should be anchored to hold all rotational braking force. If the plate is clamped out of perpendicularity with the shaft enough to cause binding, the probability of a malfunction will increase.

When attaching to the input hub, make sure the mounting screws **DO NOT** extend through the hub and interfere with the stop or control collar.

Item	Description	Rot.	PSI Mod. 11	Rem. No.
1	Retaining Ring		5108-62	
2	Flanged Hub		500646-1	
4	Frame Assembly		301463-1	
5	Actuator Return Spring		301449-4	
6	Actuator Assembly	CCW	301765-2	
7	Coil(Specify Voltage) 110 V.A.C.		C-8	91035
8	Pan Head Mach. Screw (Sems)		6-32x25 (2)	
9	Pivot Pin		301447	
10	Retaining Ring		5133-12	
11	Retaining Ring		5131-12	
13	Shaft Assembly		303437-1	
17	Retaining Ring		5133-98	
18	Adjusting Collar		302017	
19	Headless Soc. Set Screw		18-32x.19 (2)	
22	Control Collar	CCW	500420-1	
23	Drive Spring	CCW	300279-1	91465
24	Retaining Ring		5107-98	



DISASSEMBLY AND ASSEMBLY OF THE UNITS

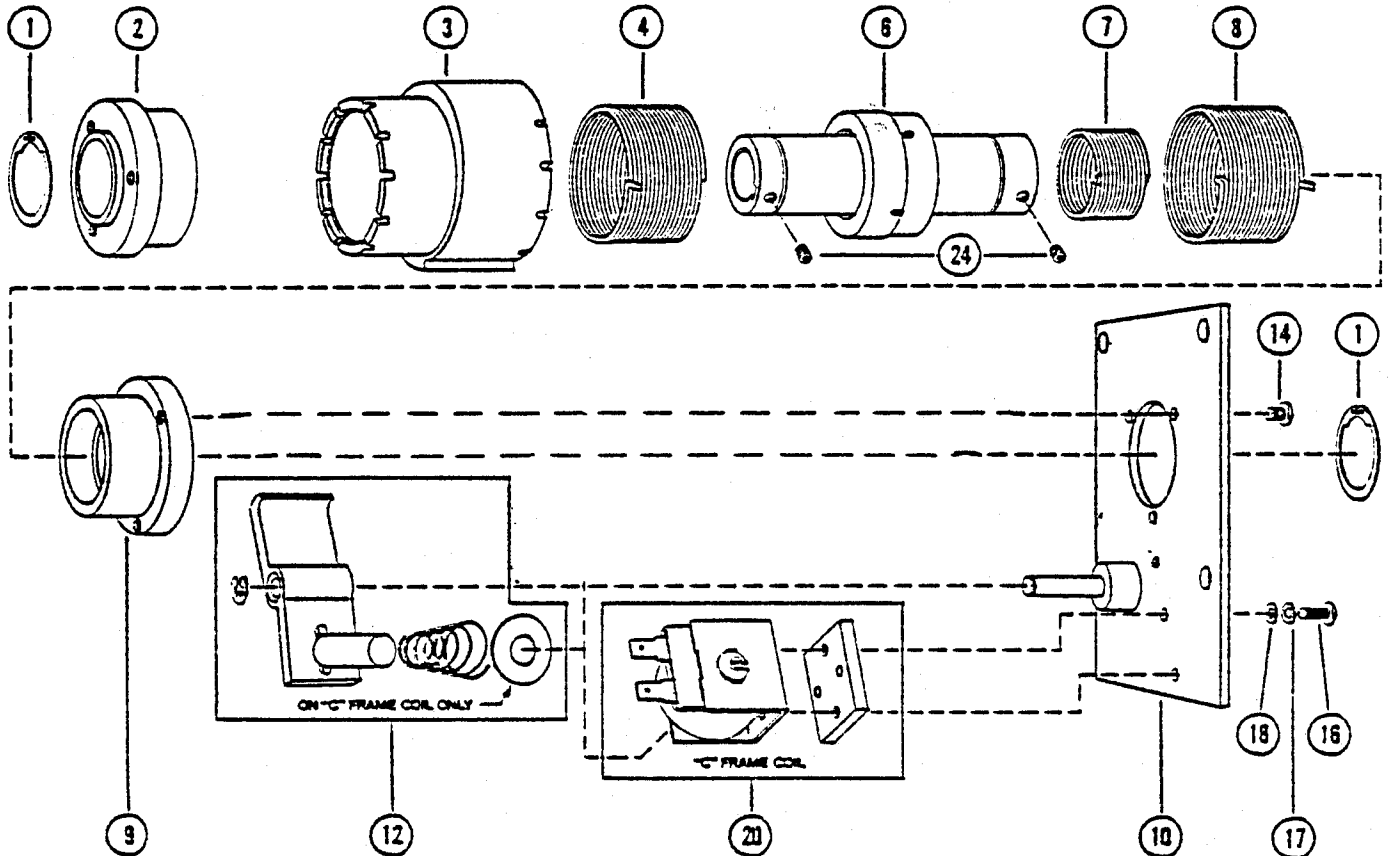
DISASSEMBLY

1. Remove the two piece snap ring located inside the frame closest to the bronze hub, between the control collar and the frame.
2. Remove the "E" ring located on the opposite side of the control collar, between the adjustable collar and the control collar.
3. Loosen the two set screws located in the adjusting collar (Model S only) nylon spacer on Model SS.
4. Holding the adjusting collar and control collar in one hand, rotate the entire shaft and input hub, in the direction of drive, pulling it outboard in order to remove the input/output assembly.
5. Remove the spring from the control and adjusting collars.
6. To disassemble the bronze hub from the shaft assembly, remove the retaining ring from the shaft and slide the bronze hub off.

ASSEMBLY

1. Replace bronze hub on shaft assembly and install the retaining ring.
2. Assemble the spring back into the control collar making sure the vertical tang is engaged in the slot provided in the collar. Install the axial tang (Model S) in the slot provided in the adjusting collar, with boss on face of collar facing frame flange bearing.
3. Hold sub assembly in frame and slide input output assembly through frame (bronze hub on sintered iron flange bearing side). Rotate in direction opposite to drive while sliding assemblies together.
4. Check manually by rotating the input to see if spring was installed correctly. If unit will not drive output, spring is installed backwards. Disassemble and correct.
5. Install "E" ring between adjustable collar and control collar (on Model S), between spacer and control collar on Model SS. Be sure it is in the groove provided for it.
6. Assemble two piece snap ring between the control collar and the frame. Be sure rings snap together and are located in their respective groove.
7. Cycle the unit manually to check actuator clearance. If there is insufficient clearance refer to actuator cause and remedy section.

PSI #CB-6 Model-S Incremental Rotation Control Package
Remington #90803 Angling Clutch (Item 2 Page A-2)



Item	Description	Rotation	PSI Part No. CB-6	Rem. No.
1	Retaining Ring		5108-125 (2)	
2	Input Hub		301881	
3	Control Collar (24 Stops)	CCW	500376-2	
4	Drive Spring	CCW	302229-1	91463
6	Output Assembly (3/4 Bore)		301952	
7	Anti-Back Spring	CCW	302478-1	91464
8	Brake Spring	CCW	302229-1	91463
9	Brake Hub		301896	
10	Plate Assembly	CCW	303903-2	
12	Actuator Assembly "C" Frame Coil		303802	91035
14	Button Head Cap Screw		*.250-20x.50 lg. (3)	
16	Socket Head Cap Screw		*6-32x.88 lg. (2)	
17	Lockwasher-Split		*6 (2)	
18	Flatwasher		*6 (2)	
20	Coil Assembly "C" Frame Coil 110 V.A.C.		303805	
24	Headless Soc. Set Screw		*10-32x.19 lg. (2)	

DISASSEMBLY

1. Release Actuator Lever so that clutch is engaged and brake released.
2. Remove Retaining Ring from the Input Hub end.
3. Remove Input Hub, by rotating opposite to the drive direction.
4. Remove Retaining Ring from the Mounting Plate end.
5. Remove Output Shaft, Springs, and Control Collar assembly, by rotating Output Shaft in the drive direction. (DO NOT DISASSEMBLE BRAKE HUB FROM MOUNTING PLATE.)
6. Remove Control Collar from the Output Shaft and Spring assembly, by extracting towards the Brake Spring end.

ASSEMBLY

1. Replace Clutch, Brake, and Anti-Backup Springs as required. (Assemble springs concentric and square to the Output Shaft.)
2. Assemble Control Collar over the Output Shaft and Spring assembly, by inserting from the Brake Spring end. (It will be necessary to extend Brake Spring using long nose pliers.)
3. Place the Brake Spring tang in any one of the nine (9) Control Collar slots at random.
4. Assemble Output Shaft, Springs, and Control Collar assembly

bly to the Mounting Plate assembly by rotating Output Shaft in the drive direction.

5. Assemble Retaining Ring to Output Shaft at the Mounting Plate end (smooth surface facing Brake Hub).
6. Rotate Output Shaft in the drive direction, until it reaches a full brake position.
7. With the Clutch Spring Tang not in slot, insert the Input Hub by rotating opposite to the drive direction.
8. Select the one of ten (10) Control Collar slots for the Clutch Spring Tang that will provide a .38" to .50" circumferential overtravel of the Control Collar when released.

Note: At this point it may be necessary to re-select one (1) of the nine (9) Control Collar slots for the Brake Spring tang (release Actuator Lever, remove Clutch Spring Tang from slot, then move Control Collar axially towards Input Hub end and rotate it opposite to the drive direction to pick up next slot).

9. Repeat Step 3 until the .38" to .50" specification for CB-6 is achieved.
10. Assemble Retaining Ring to Output Shaft at the Input Hub end (smooth surface facing Input Hub).

PARTS LIST

MODEL 4100

PLATE 1

View No.	Part No.	NAME OF PART	View No.	Part No.	NAME OF PART
2	90803	Angling Clutch -----	47	90877	Cover -----
3	90765	Angling Clutch Gear -----	48	90662	Cover Screw (4) -----
4	90690	Angling Clutch Gear Lock Washer (3) -----	49	90663	Cover Washer (4) -----
5	90691	Angling Clutch Gear Screw (3) -----	50	90645	Damper Pivot Pin -----
6	90651	Angling Clutch Key -----	51	91037	Damper Pivot Pin Retaining Ring -----
7	90704	Angling Clutch Mounting Screw (2) -----	52	90627	Chain -----
8	91030	Angling Clutch Set Screw -----	53	91038	Drive Chain Link -----
9	90682	Angling Clutch Washer (2) -----	54	90701	Motor -----
10	90774	Angling Crank -----	55	90664	Motor Key -----
11	90651	Angling Crank Key -----	56	90820	Motor Control Cable Assembly -----
12	90694	Angling Crank Lock Screw -----	57	90704	Motor Mounting Screw (3) -----
13	90758	Angling Crank Shaft -----	58	90858	Name Plate -----
14	90770	Angling Link -----	59	90702	Name Plate Nut (4) -----
15	90686	Angling Link Bolt -----	60	90679	Name Plate Screw (4) -----
16	90687	Angling Link Nut -----	61	90630	Pivot Shaft Bearing (2) -----
17	90629	Angling Link Pivot Bearing -----	62	90636	Pivot Shaft Bearing Lower -----
18	90646	Angling Link Pivot Pin -----	63	90828	Seal -----
19	90648	Angling Link Pivot Pin Retaining Ring -----	64	90593	Seal Nut (8) -----
20	90959	Angling Link Spacer -----	65	90827	Seal Retaining Plate -----
21	90632	Angling Shaft Bearing — Top -----	66	90602	Seal Screw (4) -----
22	90639	Angling Shaft Bearing — Lower -----	67	90601	Seal Washer (4) -----
23	90625	Angling Shaft Clutch (Sprag) -----	68	90816	Slide Block Assembly -----
24	90795	Angling Shaft Clutch Housing -----	69	91589	Speed Reducer -----
25	90680	Angling Shaft Clutch Housing Screw (2) -----	70	91590	Speed Reducer Bracket -----
26	90641	Angling Shaft Thrust Bearing -----	72	90704	Speed Reducer Bracket Screw (3) -----
27	91035	Angling Clutch Coil -----	73	90682	Speed Reducer Bracket Lock Washer (3) -----
28	90822	Angling Solenoid Control Cable Assembly -----	74	90693	Speed Reducer Bracket Washer (4) -----
29	90855	Angling Yoke -----		90671	Speed Reducer Mounting Screw (4) -----
30	90637	Angling Yoke Bearing -----		90690	Speed Reducer Mounting Lock Washer (4) -----
31	90783	Angling Yoke Cover -----	75	90626	Speed Reducer Sprocket -----
32	90656	Angling Yoke Cover Lock Screw -----	76	90664	Speed Reducer Sprocket Key -----
33	90702	Angling Yoke Cover Nut -----	77	91029	Speed Reducer Sprocket Set Screw -----
34	90657	Angling Yoke Cover Screw -----	78	90813	Timing Motor Assembly -----
35	90663	Angling Yoke Cover Washer -----	79	91039	Cam Switch Wire Assembly (2) -----
36	90673	Angling Yoke Cover Wing Nut -----	80	90612	Switch Mounting Screw (2) -----
37	90642	Angling Yoke Thrust Bearing -----	81	90602	Terminal Block Mounting Screw (2) -----
38	90875	Base -----	82	90601	Terminal Block Washer (2) -----
39	90669	Chain Tension Bolt -----	83	91040	Timing Cam Assembly (Cam & Hub) -----
40	90683	Chain Tensioning Lock Nut -----	84	90716	Timing Cam Set Screw -----
41	90861	Control Panel Assembly -----	85	90609	Timing Cam Switch -----
	91319	Auto Angle Switch Assembly -----	86	90593	Timing Cam Switch Lock Nut (2) -----
	90605	Control Panel Terminal (22) -----	87	90610	Timing Motor -----
	90852	Control Panel -----	88	90782	Timing Motor Bracket -----
	90595	Control Panel Fuse Receptacle -----	89	90611	Timing Motor Bracket Terminal Block -----
	90602	Fuse Receptacle Mounting Screw (2) -----	90	90613	Timing Motor Mounting Screw (2) -----
	90805	Control Panel Guard -----	91	90662	Timing Motor Assembly Mounting Screw (2) -----
	90599	Control Panel Marker Strip -----		90823	Timing Motor Control Cable Assembly -----
	90598	Control Panel Terminal Block -----	92	90799	Windage Adjusting Screw Clamp -----
	90606	Terminal Block Mounting Screw -----	93	90658	Windage Adjusting Clamp Screw -----
	90600	Control Panel Terminal Jumper -----	94	90815	Windage Adjusting Screw Assembly -----
	90800	Control Instruction Plate -----		91328	Angling Pivot Pin Assembly -----
	90878	Magazine Power Cable Connector -----		90802	Buffer Ring (2) -----
	90608	Power Cable Receptacle -----		90771	Thrust Washer (2) -----
	90607	Release Cable Receptacle -----		90784	Windage Adjusting Knob -----
	91320	Safe Release Switch Assembly -----		90672	Windage Adjusting Knob Lock Screw -----
	90968	Toggle Switch Boot -----		90775	Windage Adjusting Screw -----
	90846	Magazine Power Cable Assembly -----	95	90648	Windage Adjusting Screw Assembly Retaining Ring -----
42	90667	Control Panel Cover Screw (4) -----	96	90673	Windage Clamp Nut -----
43	90601	Control Panel Cover Washer (4) -----			
44	90596	Control Panel Fuse (15 amp) -----			
45	90713	Control Panel Mounting Screw (2) -----			
46	90693	Control Panel Mounting Washer (2) -----			

PARTS LIST

MODEL 4100

PLATE 2

View No.	Part No.	NAME OF PART	View No.	Part No.	NAME OF PART
1	90633	Angling Yoke Pivot Bearing -----	44	90705	Elevation Screw Spring Mount Pin (2) -----
2	90857	Bellows (2) -----	45	33335	Mainshaft Assembly -----
3	90702	Bellows Bracket Nut (6) -----		90762	Mainshaft -----
4	90791	Bellows Mounting Bracket (2) -----		90649	Mainshaft Retaining Ring (2) -----
5	90789	Bellows Mounting Plate, Front (2) -----		90624	Mainshaft Universal Joint -----
6	90790	Bellows Mounting Plate, Rear (2) -----		90651	Mainshaft Universal Joint Key (2) -----
7	90662	Bellows Mounting Screw (10) -----		91209	Mainshaft Universal Joint Set Screw (2) -----
8	90679	Bellows Screw (6) -----		90788	Universal Housing Shaft -----
9	90710	Cable Clip (2) -----	46	90712	Mainshaft Bearing (3) -----
10	90685	Clutch Actuating Bracket Lock Washer (2) -----	47	90794	Mainshaft Clutch Backing Plate -----
11	90684	Clutch Actuating Bracket Screw (2) -----	48	90793	Mainshaft Clutch Housing -----
12	90818	Clutch Actuating Lever Assembly -----	49	90683	Mainshaft Clutch Housing Nut (2) -----
	90764	Actuating Lever Bracket -----	50	90681	Mainshaft Clutch Housing Screw (2) -----
	90865	Actuating Lever Link -----	51	90682	Mainshaft Clutch Lock Washer (2) -----
	90604	Actuating Link Nut (2) -----	52	33330	Mainshaft Crank Assembly -----
	90601	Actuating Link Washer -----	53	90651	Mainshaft Crank Key -----
	90763	Clutch Actuating Lever -----	54	90689	Mainshaft Crank Lock Screw -----
	90697	Clutch Actuating Lever Pin -----	55	90760	Mainshaft Drive Arm -----
	90698	Clutch Actuating Lever Screw -----	56	90651	Mainshaft Drive Arm Key -----
	90945	Clutch Actuating Lever Spring -----	57	90689	Mainshaft Drive Arm Lock Screw -----
	90991	Clutch Solenoid Buffer -----	58	90766	Mainshaft Gear -----
	90695	Clutch Solenoid Screw (2) -----	59	90665	Mainshaft Gear Stud Screw -----
	90663	Clutch Solenoid Washer (2) -----	61	90873	Mainshaft Housing -----
	90700	Clutch Solenoid Lock Washer (2) -----	62	90625	Mainshaft Sprag Clutch (2) -----
	90804	Cocking Clutch Solenoid -----	63	90643	Mainshaft Thrust Bearing -----
13	90859	Cocking Clutch -----	64	90817	Mainspring Adjusting Screw Assembly -----
14	90811	Cocking Clutch Gear -----	65	33325	Mainspring Assembly -----
15	90880	Cocking Clutch Gear Screw (3) -----		90584	Mainspring -----
16	90690	Cocking Clutch Gear Washer (3) -----		90777	Mainspring Front Plug -----
17	90588	Cocking Clutch Key -----		91325	Mainspring Rear Plug Assembly -----
18	90661	Cocking Clutch Key Screw -----	66	90659	Mainspring Retaining Pin -----
19	90657	Cocking Clutch Lock Screw -----	67	90583	Mainspring Swivel Washer -----
20	90767	Cocking Clutch Sprocket -----	68	90631	Pivot Bearing (2) -----
21	90651	Cocking Clutch Sprocket Key -----	69	90761	Pivot Shaft -----
22	90660	Cocking Clutch Sprocket Screw -----	70	90781	Pivot Shaft Cam -----
23	90808	Cover, Front -----	71	90690	Pivot Shaft Cam Lock Washer -----
24	90662	Cover Screw (5) -----	72	90671	Pivot Shaft Cam Screw -----
26	90856	Damper -----	72a	90670	Pivot Shaft Cam Washer -----
27	90699	Damper Fill Plug (2) -----	73	90814	Pivot Shaft Cam Switch Assembly -----
28	90660	Damper Lock Screw -----		90821	Cam Switch Control Cable Assembly -----
29	90792	Damper Pivot -----		90707	Switch Connector -----
30	90633	Damper Pivot Bearing -----		90609	Pivot Shaft Cam Switch -----
31	90648	Damper Pivot Retaining Ring -----		90708	Pivot Shaft Cam Switch Spacer Post (2) -----
32	90778	Damper Rod Extension -----		90709	Pivot Shaft Cam Terminal Block -----
33	90634	Damper Rod Extension Bearing -----		90780	Pivot Shaft Switch Bracket -----
34	90666	Damper Rod Extension Lock Nut -----		90612	Switch Mounting Screw (2) -----
35	90640	Damper Rod Extension Thrust Bearing -----		90602	Switch Spacer Post Mounting Screw (2) -----
36	90627	Chain (ref. Plate 1) -----		90706	Terminal Block Mounting Screw (2) -----
37	90787	Elevation Adjusting Knob -----		90593	Terminal Block Lock Nut (2) -----
38	90687	Elevation Adjusting Knob Nut (2) -----	74	90647	Pivot Shaft Retaining Ring -----
39	90654	Elevation Adjusting Knob Spring -----	75	90644	Pivot Shaft Thrust Bearing -----
40	90590	Elevation Adjusting Screw R.H. (1) -----	76	90812	Release Solenoid Control Cable Assembly -----
41	90591	Elevation Adjusting Screw L.H. (1) -----	77	90690	Switch Bracket Lock Washer (2) -----
42	90686	Elevation Knob Bolt (2) -----	78	90747	Switch Bracket Mounting Screw (2) -----
43	90688	Elevation Knob Lock Washer (2) -----	79	90717	Thrust Washer -----

PARTS LIST

MODEL 4100

PLATE 3

View No.	Part No.	NAME OF PART	View No.	Part No.	NAME OF PART
1	90735	Brush Mounting Plate (2) -----	24a	90671	Target Nest Bracket Screw (2) -----
2	90754	Brush Mounting Plate Nut (4) -----	25	90670	Target Nest Bracket Washer (4) -----
3	90750	Brush Mounting Plate Screw (4) -----	26	90841	Target Nest Brush (2) -----
4	90999	Counter -----	27	90798	Target Stop -----
5	90662	Counter Mounting Screw (2) -----	28	90674	Target Stop Screw (1) -----
6	90768	Curl Adjusting Screw -----	29	90673	Target Stop Lock Nut -----
8	90586	Curl Adjusting Nut (2) -----	29a	91126	Target Stop Roll Pin -----
9	90693	Curl Adjustment Washer -----	30	90854	Throwing Arm -----
10	90682	Curl Adjustment Lock Washer -----	31	90853	Throwing Arm Carrier -----
11	90703	Drop Pad Nut (12) -----	32	90676	Throwing Arm Carrier Screw -----
12	90752	Drop Pad Support Screw (4) -----	33	90678	Throwing Arm Carrier Clamp Screw -----
13	90628	Universal Housing Pivot Bearing (2) -----	34	90675	Throwing Arm Carrier Washer -----
14	90655	Universal Housing Pivot Screw (2) -----	35	90685	Throwing Arm Carrier Lock Washer (2) -----
15	90587	Oiling Cover -----	36	90592	Throwing Arm Pivot -----
16	90662	Oiling Cover Screw (2) -----	37	90585	Throwing Arm Pivot Pin -----
17	90869	Platform -----	38	90702	Throwing Arm Rail Nut (3) -----
17a	91107	Platform Reinforcement -----	39	90695	Throwing Arm Rail Screw (3) -----
18	90752	Platform Screw (12) -----	40	90874	Universal Housing -----
18a	90670	Platform Washer (Spacer) (6) -----	41	90635	Universal Shaft Bearing -----
19	90703	Platform Nut (12) -----	42	90810	Wiper -----
20	33415	Target Drop Pad Assembly -----	43	90809	Wiper Retaining Plate -----
21	90785	Target Guide Rail -----	44	90695	Wiper Retaining Plate Screw (2) -----
22	90863	Target Nest Arm -----	45	90700	Wiper Retaining Plate Washer (2) -----
23	90839	Target Nest Bracket -----	46	91331	Throwing Arm Carrier Shim -----
24	90747	Target Nest Bracket Screw (2) -----			

PARTS LIST

MODEL 4100

PLATE 4

View No.	Part No.	NAME OF PART	View No.	Part No.	NAME OF PART
1	90743	Boss Retaining Screw (2) -----	19	90718	Magazine Cam Spacer (5) -----
2	90738	Bushing Bearing (14) -----	21	90864	Magazine Finger (7) -----
3	90700	Bushing Lock Washer (14) -----	22	13300	Magazine Finger Spring (7) -----
4	90744	Bushing Retaining Screw (14) -----	23	13249	Magazine Finger Spring Drive Screw (7) -----
5	90663	Bushing Washer (14) -----	24	90871	Magazine Floor Plate -----
6	90737	Finger Retaining Screw (7) -----	25	90747	Magazine Floor Plate Screw (4) -----
7	90742	Finger Spring Lock Nut (14) -----	26	90690	Magazine Floor Plate Washer (4) -----
8	90746	Finger Spring Screw (7) -----	27	90868	Magazine Ramp -----
9	90831	Floor Plate Boss -----	28	90754	Magazine Ramp Mounting Nut (10) -----
10	90712	Floor Plate Boss Bearing -----	29	90750	Magazine Ramp Screw (Long) (6) -----
11	90717	Magazine Drive Gear Shaft Lock Nut -----	30	90751	Magazine Ramp Screw (Short) (4) -----
12	90685	Magazine Drive Gear Shaft Lock Washer -----	31	90722	Magazine Ramp Spacer (2) -----
13	90727	Indexing Clutch Shaft Bearing -----	32	90842	Magazine Sleeve (14) -----
14	90867	Magazine -----	33	90737	Magazine Sleeve Screw (14) -----
15	90862	Magazine Cam (2) -----	34	90830	Magazine Ramp Spacer (Lower) -----
16	90749	Magazine Cam Nut (5) -----	35	90840	Magazine Ramp Spacer (Upper) (2) -----
17	90736	Magazine Cam Roller (7) -----	36	90843	Target Bumper (7) -----
18	90748	Magazine Cam Screw (5) -----	37	91201	Target Guide -----

PARTS LIST

MODEL 4100

PLATE 5

View No.	Part No.	NAME OF PART	View No.	Part No.	NAME OF PART
1	90757	Clutch Clamp Screw -----	22	90849	Magazine Indexing Clutch Assembly -----
2	90640	Magazine Drive Gear Thrust Bearing (2) -----	23	91035	Magazine Indexing Clutch Coil (only) -----
3	90727	Indexing Clutch Shaft Bearing -----	24	91036	Magazine Indexing Clutch Coil Screw (2) -----
4	90726	Input Shaft Bearing -----	25	90832	Magazine Shaft Gear -----
5	90730	Magazine Input Shaft Gear -----	26	90836	Magazine Input Shaft -----
6	91031	Input Shaft Gear Set Screw -----	27	90651	Magazine Input Shaft Key (2) -----
7	90704	Magazine Leg Screw (10) -----	28	90724	Magazine Key -----
8	90632	Lower Magazine Shaft Bearing -----	29	90682	Magazine Leg Lock Washer (6) -----
9	90829	Magazine Connecting Shaft -----	30	90693	Magazine Mounting Washer (4) -----
10	90732	Magazine Drive Chain -----	31	90837	Magazine Shaft -----
11	90743	Drive Sprocket Retaining Screw (3) -----	32	32960	Magazine Support Leg (Right) -----
12	90835	Magazine Drive Gear -----	33	32961	Magazine Support Leg (Left) -----
13	90725	Magazine Drive Gear Bearing -----	34	90649	Magazine Shaft Retaining Ring -----
14	90834	Magazine Drive Sprocket -----	35	90847	Power Receptacle Assembly -----
15	90756	Magazine Shaft Gear Key -----	36	90602	Receptacle Screw (2) -----
16	90723	Magazine Drive Gear Shaft -----	37	90593	Receptacle Nut (2) -----
17	91032	Magazine Drive Shaft Coupling End (4) -----	38	90844	Stack Height Disc. -----
18	90651	Magazine Connecting Shaft Coupling Key (2) -----	39	90700	Stack Height Disc. Lock Washer -----
19	91033	Magazine Drive Shaft Coupling Set Screw (4) -----	40	90679	Stack Height Disc. Screw -----
20	91034	Magazine Drive Shaft Coupling Spacer (2) -----	41	90845	Stack Height Rod -----
21	90872	Magazine Gear Box -----	42	90648	Clutch Shaft Retaining Ring -----

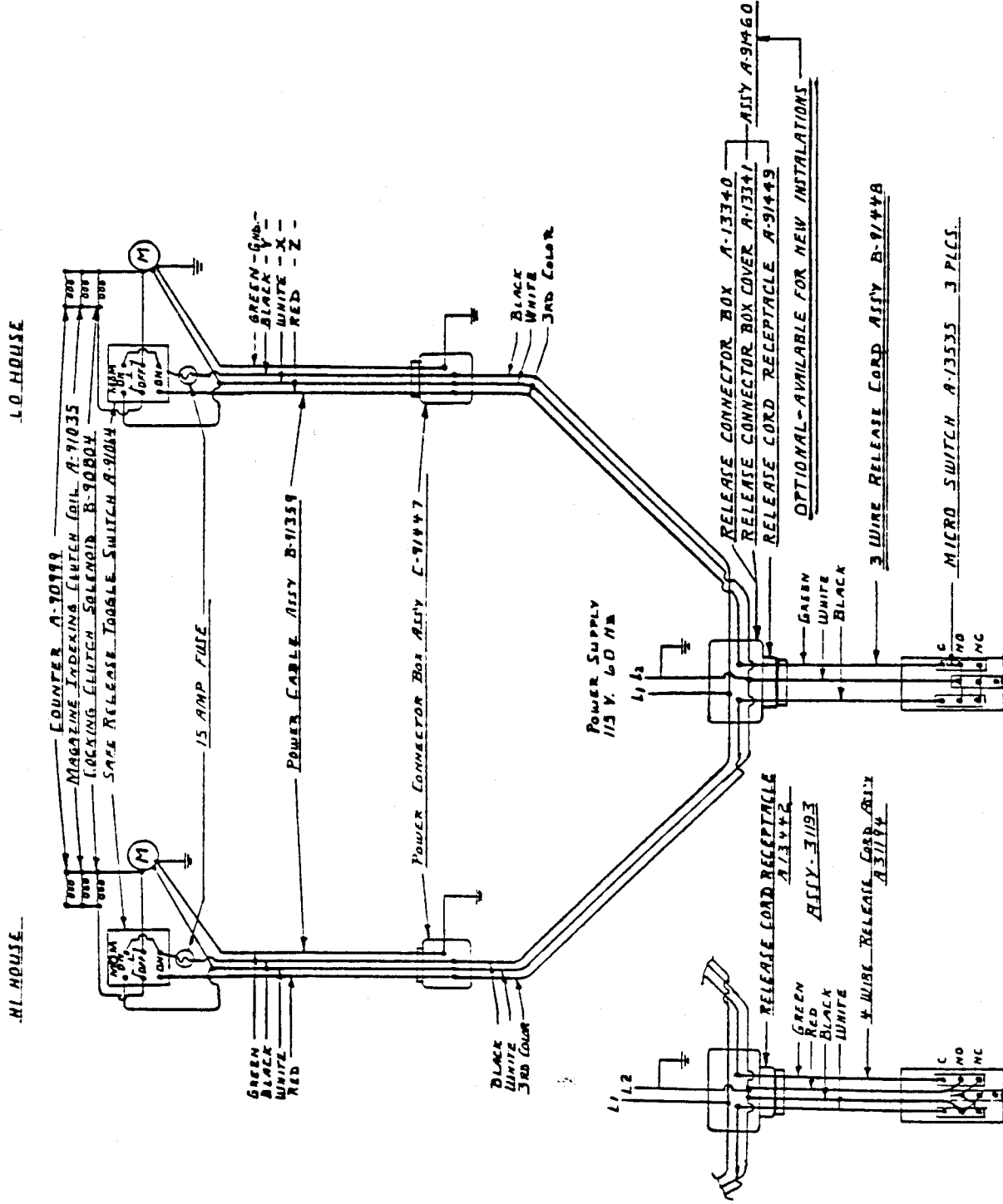
4100 TRAP WIRING DIAGRAM PG. B-2 STANDARD PARTS

90652	Power Cord-----
90653	Release Cord-----
91364	Micro Switch (Release Cord)-----
32540	Remote Control Assembly-----
91061	Remote Control Box-----
91066	Remote Control Cable-----
91064	Remote Control Switch-----

SPARE PARTS

91035	Coil (Magazine and Angling Clutch)-----
91463	Drive or Brake Spring (Angling Clutch)-----
91464	Anti Back Spring-----
91465	Drive Spring (Magazine Clutch)-----

TRAP WIRING DIAGRAM



ALTERNATE HOOKUP FOR 4 WIRE RELEASE CORD

NOTE: 4 WIRE CORD MAY BE MODIFIED TO ADAPT TO A 3 WIRE RECEPTACLE

NOTE: LOWER SUPPLY AT CENTER POST
2. Grounds To Center To Material
Wiring Code Standards