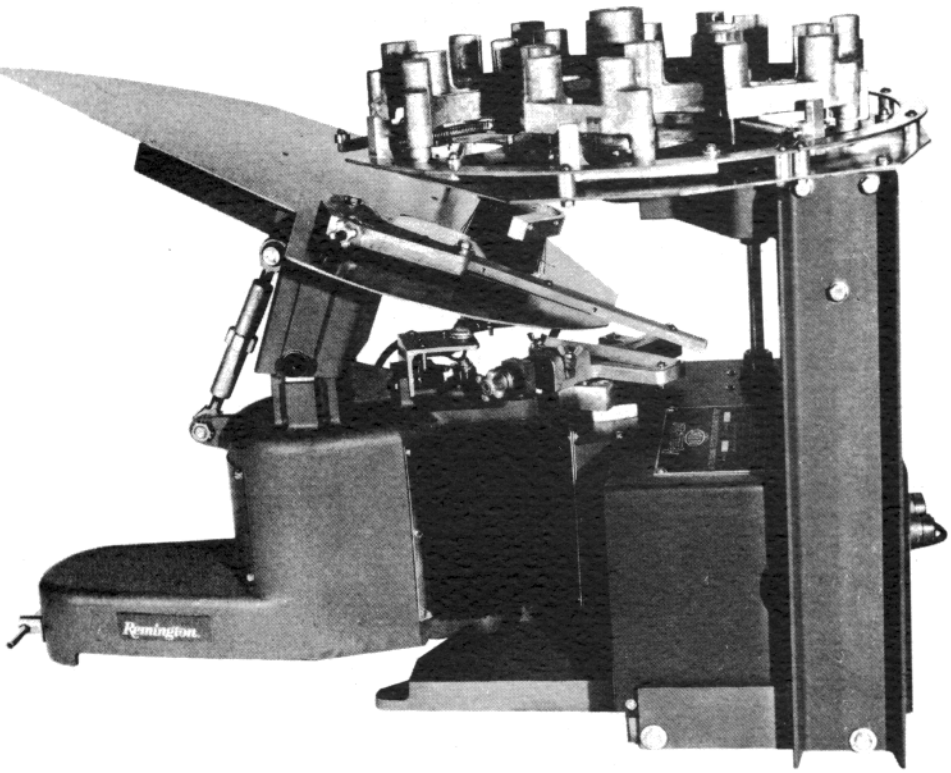
Model 4100
Autoloading Trap



Remington®

TABLE OF CONTENTS

I. INTRODUCTION

1. THE REMINGTON MODEL 4100 is an autoloading electric tournament trap designed for U.S. trapshooting and simulated international style shooting.

2. THE MODEL 4100 has been carefully designed to be versatile and to provide the sportsman with challenging and enjoyable trapshooting by incorporating the following features:

Nonreadable angle selections to give 8 spread angles.

Highly stable target flight to resist wind deflection.

Easy adjustment to compensate for prevailing wind condition.

Magazine capacity of 154 targets when filled to the recommended height.

Firing switch connected to an 101-foot cable to permit operation of the trap from a distant point.

Dependable feeding system to handle targets gently and avoid breakage.

No vertical guide rails to permit easy and quick filling of the magazine which remains level at all times.

Easily detached magazine to allow the trap to be used when shooting doubles.

The safety of a remote control switch to deactivate the trap from outside the traphouse.

Quiet smooth operation.

II. SAFETY

"IMPORTANT INFORMATION"

1. The Model 4100 Trap requires 110 VAC, 60 HZ, 15 AMP electric service for operation.

2. The safety switches and operating controls are on the rear of the trap (see Figure 1) and include:

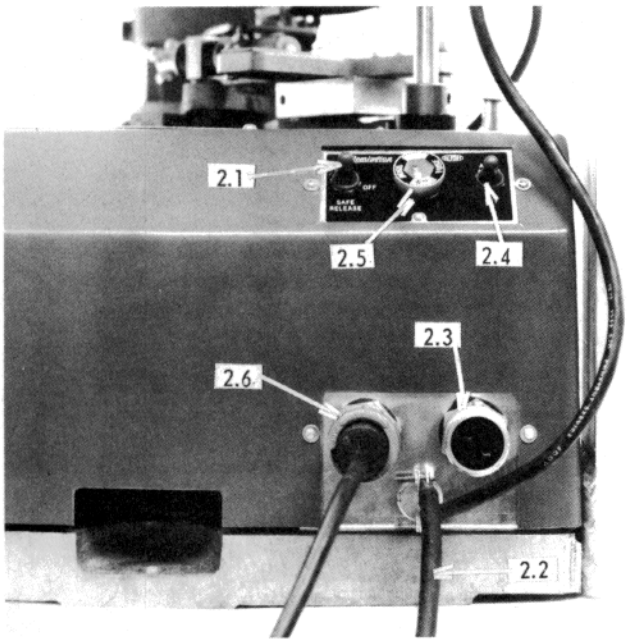


Figure 1 — Safety Switches and Operating Controls

2.1 "Off-On-Safe Release" switch.

2.2 Remote control "Safe Release" switch line.

2.3 Remote firing input terminal.

2.4 "Off-Auto Angle" switch for auto angling.

2.5 15-amp fuse.

2.6 Power input terminal.

3. The "On-Off-Safe Release" switch (see Figure 2) allows an individual to safely deactivate the trap from the rear. The trap is made inactive when the switch is placed in the "Off" position, pushed down to the "Safe Release" position until the trap fires, and immediately released to return to the "Off" position. While in the "Safe Release" position the trap will fire once. **DO NOT ALLOW ANYONE TO STAND IN FRONT OF THE TRAP WHEN USING THE SAFE RELEASE SWITCH.** Returning the switch immediately from "Safe Release" to "Off" leaves the throwing arm in an uncocked, safe position.

4. A remote control switch (see Figure 3) labeled "On-Off-Safe Release" is connected to the rear of the trap by a 10-foot line. The line allows the switch to be mounted on the wall inside the trap house in a position where it can be reached from the outside without exposing oneself to the cocked trap. The trap becomes inactive after the remote control switch is placed in the "Off" position, pushed down to the "Safe Release" position until the trap fires, and immediately released to return to the "Off" position. While in the "Safe Release" position the trap will fire once. **DO NOT STAND OR ALLOW ANYONE ELSE TO STAND IN FRONT OF THE TRAP WHEN USING THE REMOTE CONTROL SAFE RELEASE SWITCH.**

Figure 2 — Control Panel

Allowing the remote control switch to immediately return from "Safe Release" to "Off" leaves the throwing arm in an uncocked, safe position.

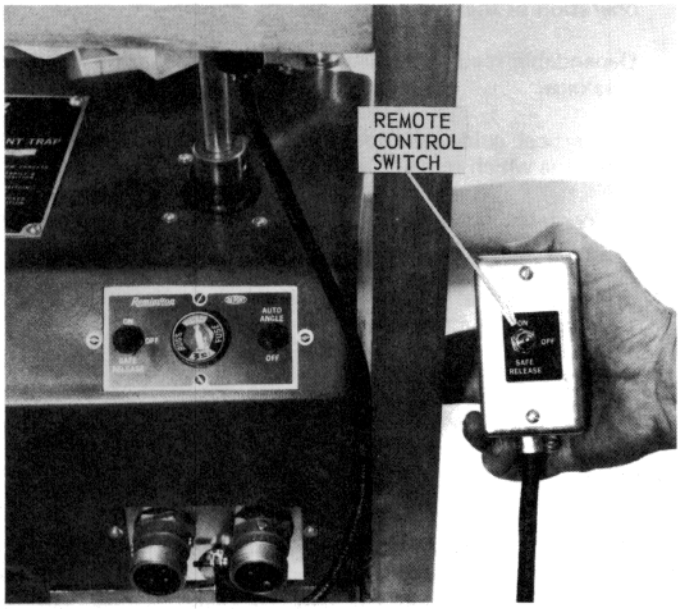


Figure 3 – Remote Control Switch

5. The on-off switch (refer to Figure 2) labeled "Auto Angle-Off" is switched to "Off" when shooting doubles or when setting the trap for wind conditions. It is switched "On" when auto angling is desired.

6. When working on internal repairs the power line should be completely disconnected from the trap except when required for certain repair procedures. **CAUTION: ALWAYS PUT THE TRAP IN "SAFE RELEASE" BEFORE DISCONNECTING THE POWER LINE AND PROCEEDING WITH REPAIRS. ALWAYS DISCONNECT POWER AT THE WALL SOCKET RATHER THAN AT THE TRAP CONTROL PANEL. THIS IS TO PREVENT DROPPING AN INADVERTENTLY ENERGIZED POWER CORD ONTO A WET TRAP HOUSE FLOOR.**

7. WHENEVER WORKING AROUND OR NEAR THE TRAP, DISARM THE REMOTE SWITCH BY UNPLUGGING THE CORD FROM THE TRAP. (see Figure 1, Page 1).

CAUTION: KEEP THE HANDS AND BODY AWAY FROM THE TRAP AND THE PERIPHERY OF THE THROWING ARM WHEN THE TRAP IS RUNNING.

III. INSTALLATION

1. Attach the trap to a solid base by 3 bolts or lag screws of at least 1/2" diameter (see Figure 4). **NOTE:** Care must be taken to insure that the two front mounting bolts extending above the mounting feet do not interfere with the free motion of the front of the trap – particularly the damper on the right side and the mainspring on the left side.

Mounting must be level to insure that right-hand and left-hand targets will have the same elevation. Adequate room must be left around the front of the trap to allow free travel of the lower housing as well as the platform at any elevation angle (refer to Figure 4). Keep in mind that loading the magazine and periodic servicing will be made easier if clearance for a man is left around the trap.

2. The trap weighs 225 lbs. with magazine attached and 165 lbs. without magazine. The following precautions should be observed when handling and moving the trap.

2.1 Make proper preparations and have assistance when handling or moving the trap. Consider the use of gloves to protect the hands.

2.2 Watch out for pinch points when moving or positioning the trap.

2.3 Do not lift by or lean on the platform or throwing arm.

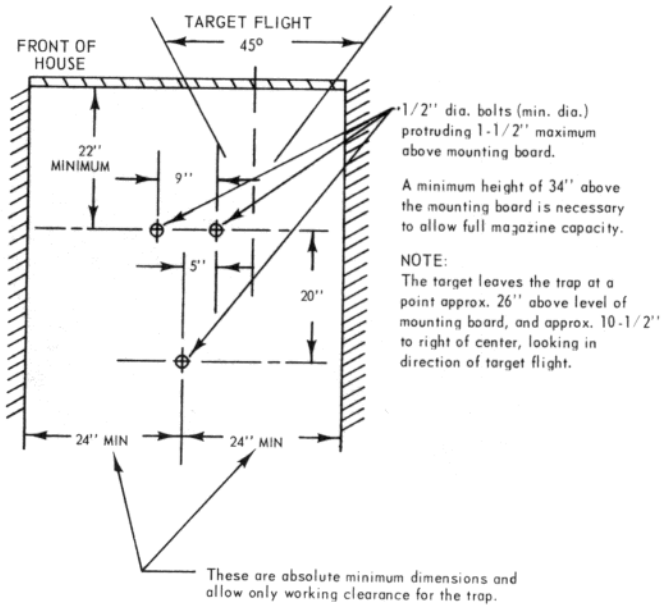


Figure 4 – Minimum layout

IV. OPERATION

1. Read Section II (page 1) on safety before operating the trap. Before plugging in the power cable check the following:

1.1 Make sure all switches (safe release, auto angle, and remote safe release switches) are in the off position.

1.2 Visually check to see if anything is in the path of the throwing arm or magazine rotation.

1.3 Plug in the magazine cord if necessary.

1.4 Connect the power cable to the trap (see Figure 5).

2. Properly ground the ground wire in the power cable at the trap house wall socket.

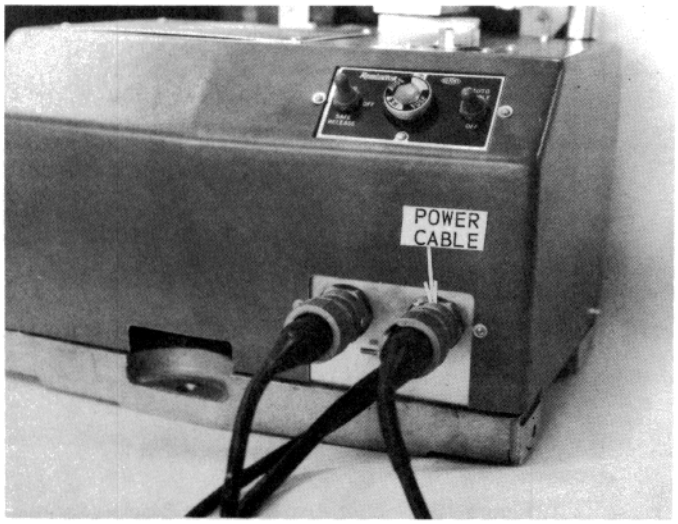


Figure 5 — Connecting Power Cable

3. The throwing arm should be in the uncocked position (see Figure 6). If the throwing arm is not in the uncocked position, "Safe Release" the trap as explained in section II. (page 1).

4. Loosen the angling yoke cover wing nut (see Figure 7) and check under the cover to see that the slide block pin is in the number 9 hole in the angling crank (see Figure 8 and 9). This centers and locks the trap to permit adjustments that might be needed to correct target flight. **CAUTION: DISCONNECT POWER CORD BEFORE MAKING ADJUSTMENT.**

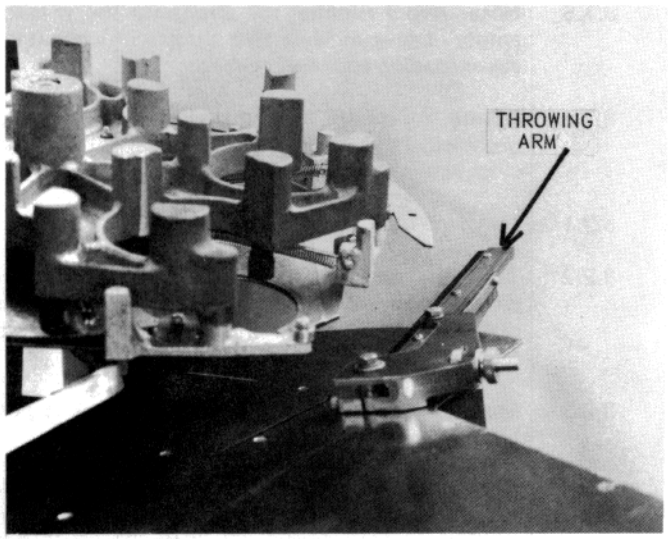


Figure 6 — Uncocked Throwing Arm Position

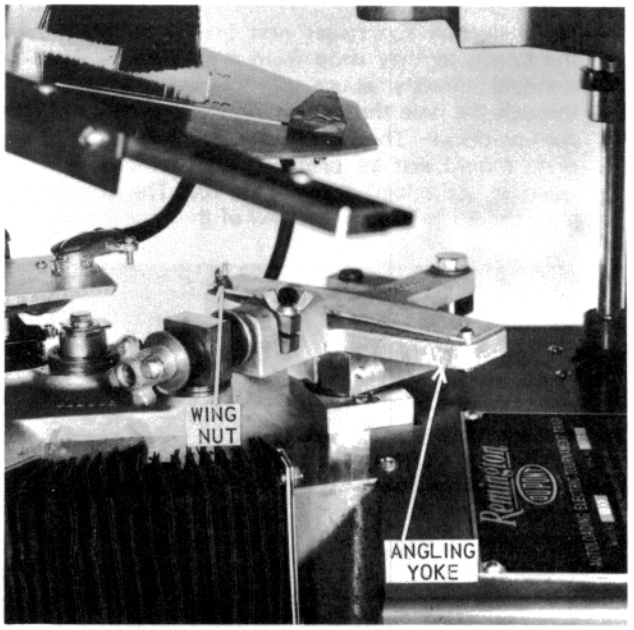


Figure 7 — Angling Yoke

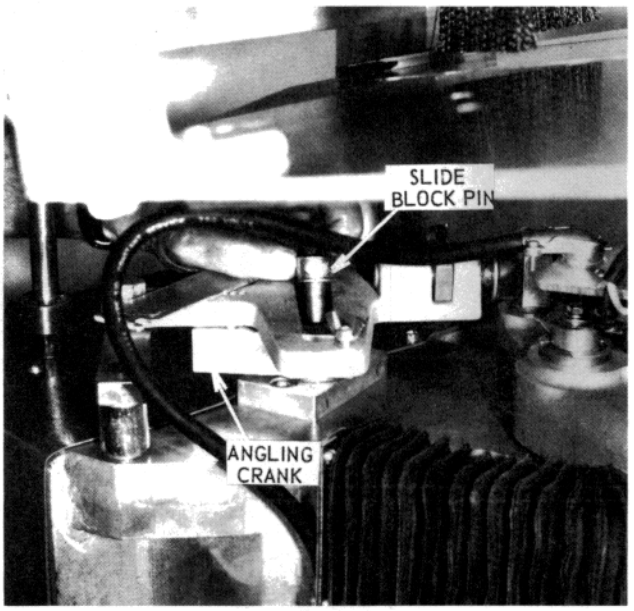


Figure 8 — Checking Slide Block Pin Position

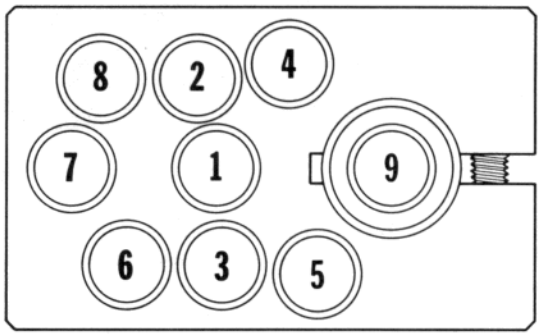


Figure 9 — Angling Crank

5. Check that the target nest brush will not interfere with the targets as they drop from the magazine. This is done by standing directly above the magazine and peering down through the hole through which the targets are dropped onto the platform. The target nest arm and brush mounting plate should not be protruding into the path of the target when it is dropped (see Figure 10). The arm and mounting plate should be just out of view of the observer (see Figure 11).

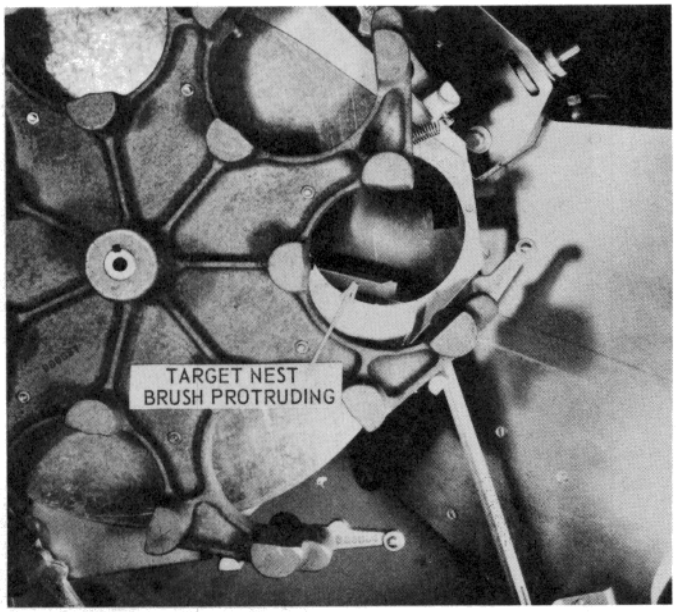


Figure 10 — Target Nest Mounted Incorrectly

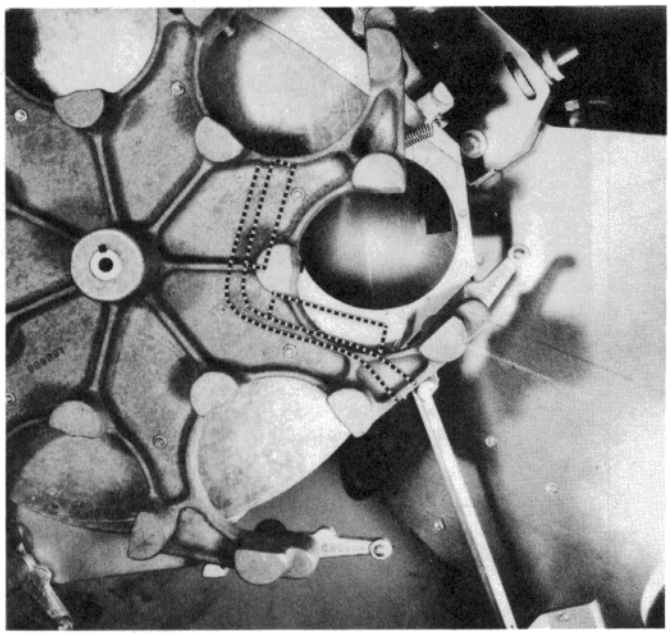


Figure 11 — Target Nest Mounted Correctly

6. Repositioning of the target nest arm is accomplished by loosening the two screws that hold the target nest bracket to the platform (see Figure 12) and pivoting the arm. Sideways positioning of the target nest arm is accomplished by loosening the two screws that hold the target nest arm to the target nest bracket (see Figure 12).

7. Load the magazine with targets to the height of the stack indicator. Depress magazine fingers to allow target to rest on magazine ramp.

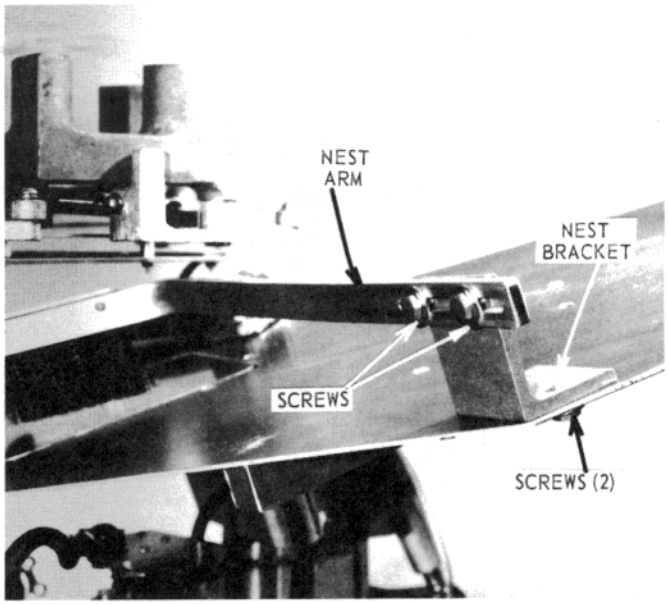


Figure 12 — Nest Arm and Nest Bracket Screws

8. Test fire the trap, observe the throwing sequence.

8.1 The normal throwing sequence is as follows:

8.1.1 Throwing arm fires from between the 6 and 6:30 o'clock cocked position (looking at the platform from behind the trap).

8.1.2 Throwing arm comes to rest approximately at the 9 o'clock position.

8.1.3 Magazine indexes and drops a target.

8.1.4 Throwing arm advances to between the 6 and 6:30 o'clock cocked position and waits for the release button or "Safe Release" switch to be used.

8.1.5 **Note:** Avoid running the trap until the magazine is empty. Leave at least two targets in each stack for easier loading and less breakage.

8.2 If the following abnormal throwing sequence is observed, the mainshaft gear is turned counter-clockwise relative to the cocking clutch gear.

8.2.1 Magazine indexes and drops target.

8.2.2 Throwing arm advances from about the 8 or 9 o'clock position on the launch platform (looking at platform from behind the trap) slightly past the 6 o'clock "cocked" position.

8.2.3 Throwing arm does not stop in the cocked position but continues through and throws the target.

8.2.4 Throwing arm comes to rest in the 8 or 9 o'clock position and will not cock or repeat this operation until the release button or "Safe Release" switch is used.

8.2.5 This results in a very slow target release. Refer to section VII - 5 (page 19) for correction procedure.

9. The target flight should be observed so that any necessary corrections can be made. Test firing should be done with the "Safe Release" switch on the back of the trap by sequencing it from "On" to "Off" to "Safe Release" to "Off". This latter method will fire a target and may be repeated any number of times. When test firing, use of the "Safe Release" switch as opposed to the remote firing switch assures an uncocked throwing arm after firing so that any necessary flight corrections can be made safely.

V. ADJUSTMENTS – TARGET FLIGHT

1. **CURL** – Curl is the hooked path taken by a target when flying incorrectly. Use the following method to correct curl:

1.1 The target nest should be positioned so that the bottom of the "V" is even with the lower edge of the drop pad (see Figure 13).

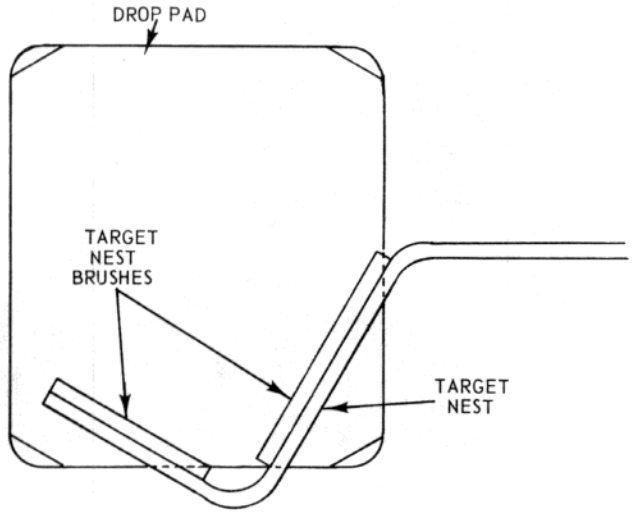


Figure 13 – Target Nest Position

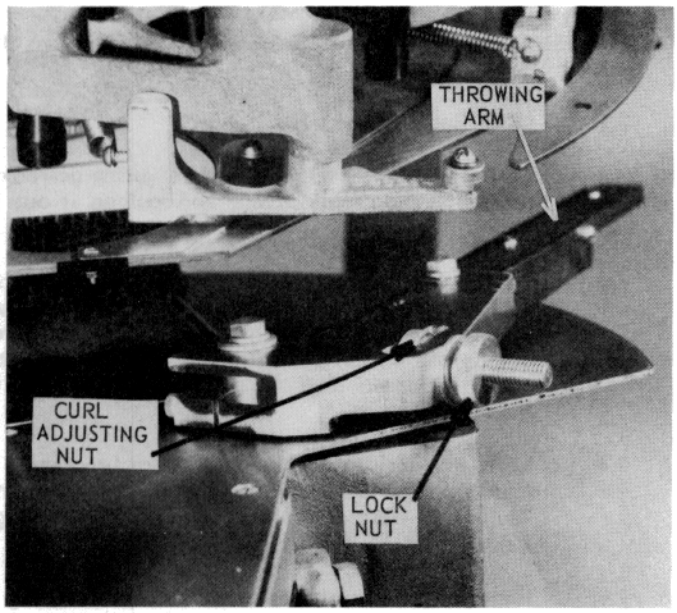


Figure 14 – Target Throwing Arm

1.2 Turn the curl adjusting nut (see Figure 14). Moving the throwing arm toward the target will correct curl to the right. Moving the arm away from the target will correct curl to the left.

2. **ATTITUDE** – A target is flying in the correct attitude when the plane of the target is parallel to its flight path (a flat flying target). An incorrect attitude occurs when the plane of the target is at an angle to the flight path (the target is flying in a nose up attitude). This is due to difference in manufacturing specifications among target vendors. A target flying in an incorrect attitude will be more affected by wind conditions and will drop more quickly than a target in a correct attitude. An incorrect attitude will also give the target a larger shooting profile.

2.1 Incorrect attitude is caused by the target shoulder being higher than the target guide rail (see Figure 15). Target shoulder height can vary among manufacturers and even among production facilities of the same manufacturer.

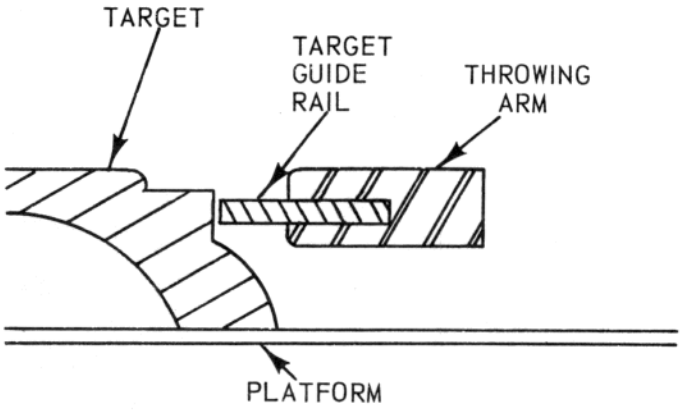


Figure 15 – Incorrect Guide Rail Height

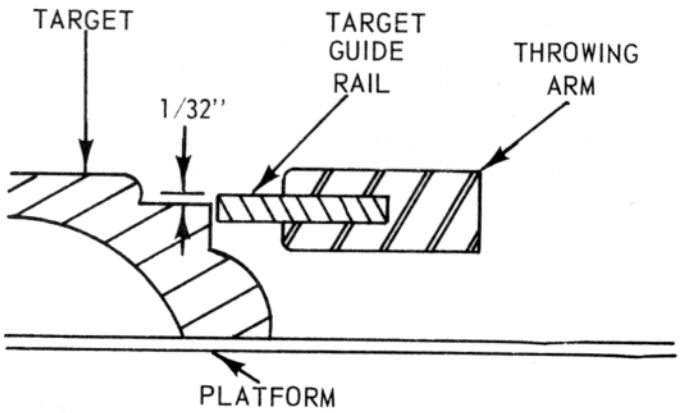


Figure 16 – Correct Guide Rail Height

2.2 Correct attitude is obtained by shimming between the throwing arm carrier and the top of the mainshaft assembly. The distance between the upper edge of the guide rail and the target shoulder should be approximately 1/32" (see Figure 16).

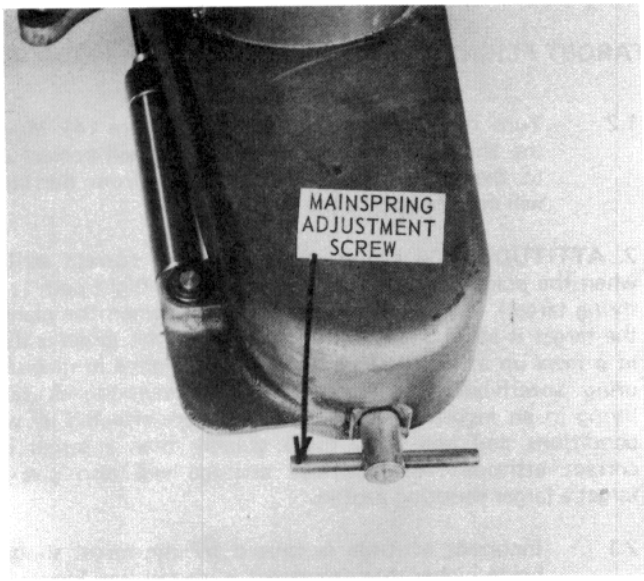


Figure 17 — Mainspring Adjustment Screw

3. **DISTANCE** — Length of the target flight is determined by the mainspring tension. **BEFORE ADJUSTING THE MAINSPRING TENSION,** the trap should always be "Safe Released", as discussed in Section II, and the power cord unplugged from the wall. This will prevent possible injury and will decrease the spring tension and make adjustment easier. The mainspring adjustment screw is located at the front of the trap (see Figure 17) and should be turned clockwise to increase tension and consequently the length of target flight.

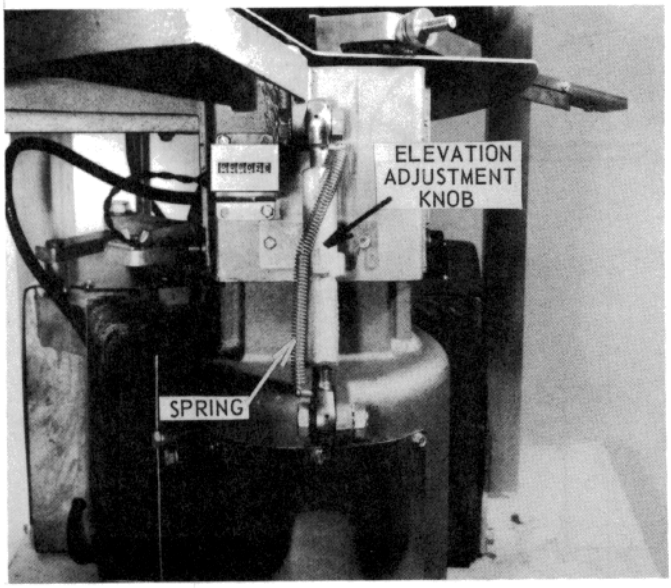


Figure 18 — Elevation Knob

4. **ELEVATION** — The target elevation is controlled by the elevation adjustment knob below the platform at the front of the trap (see Figure 18). This causes the platform along with the throwing arm to tilt fore and aft. It is easier to disconnect the spring to turn the elevation adjustment knob. **CAUTION: FOR SAFETY SAFE RELEASE THE TRAP AND UNPLUG THE POWER CABLE.**

5. **WINDAGE** — To adjust for windage, proceed as follows:

5.1 Lock the angling yoke in its center position by inserting the slide block pin, located beneath the angling yoke cover, into the number 9 hole in the angling crank. This insures that the angling assembly is mechanically centered.

5.2 Loosen the clamp wing nut so that the windage adjustment knob and the buffer assembly can be turned (see Figure 19).

5.3 After adjustment, tighten clamp wing nut.

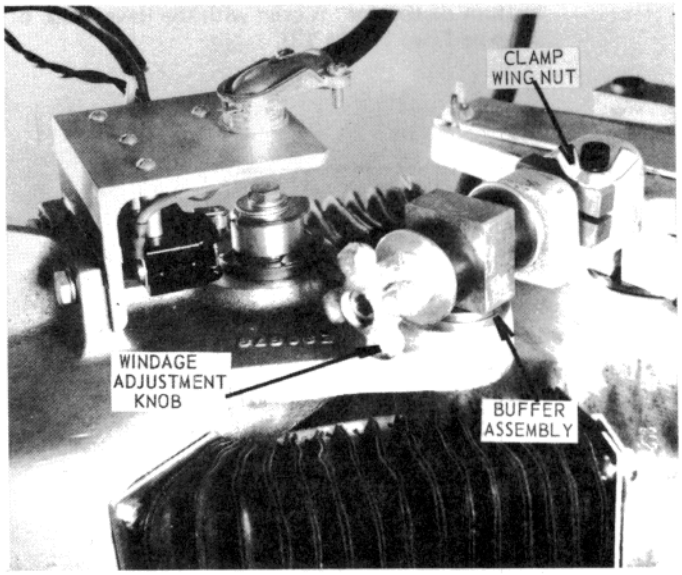


Figure 19 — Windage Adjustment Parts

6. **TARGET SPREAD** — The angle of target spread from extreme left to extreme right is controlled by selecting the appropriate hole in the angling crank and inserting the slide block pin. The hole pattern with approximate spreads are shown in Figure 20.

7. **DOUBLES** — The trap must be set up as follows to allow the throwing of doubles:

7.1 "Safe Release" the trap.

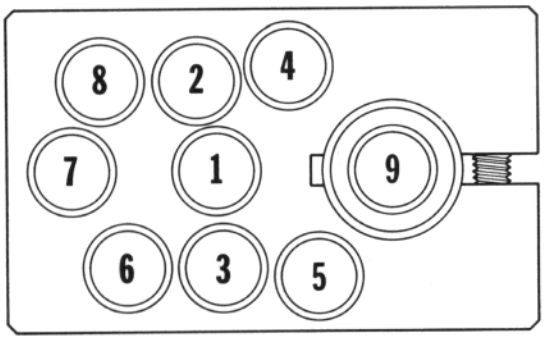
7.2 Detach the power cord at the magazine gearbox by turning it counterclockwise and pulling it out (see Figure 21).

7.3 Loosen the four screws that hold the magazine support legs to the base (see Figure 21). Pull up on both legs and remove the magazine assembly. Be careful not to lose the drive shaft or the two molded rubber coupling spacers that fit in the coupling ends (see Figure 22).

7.4 Mark the position of the target nest bracket on the platform with a pencil so it can be reinstalled in its "adjusted" position for throwing singles. (see Figure 23).

7.5 Remove the target nest bracket by removing the screws that fasten it to the platform (see Figure 23).

7.6 Tighten the mainspring 12 or more full turns to handle the extra target weight.



HOLE NUMBER	SPREAD ANGLE	WHEN USED
1	45°	Normal operation.
2	50°	Wind from behind the trap tending to close in target spread extreme.
3	49°	Conditions less severe than # 2.
4	37°	Incoming wind tending to spread target extremes.
5	32°	Severe incoming wind.
6	75°	International style practice with incoming wind.
7	90°	Simulated international style.
8	80°	Simulated international style.
9	0°	Centers and locks trap to allow adjustment for centering target.

Figure 20 — Angling Crank Hole Pattern and Uses

7.7 Position the nylon target stop so that with the two targets against the throwing arm rail, there is approximately 1/4" clearance between the top target and the throwing arm carrier where it attaches to the shaft (see Figure 24).

7.8 The auto angle switch should be "Off" and the slide block pin should be in the number 9 hole in the end of the angling shaft (see Figure 25).

7.9 If the left target throws higher than the right, move the nylon target stop towards the targets. If the left target throws low, move the stop away from the targets until even height is obtained (see Figure 26). However, if the trap is not mounted level, one of the targets will always be thrown high and no adjustment will correct this.

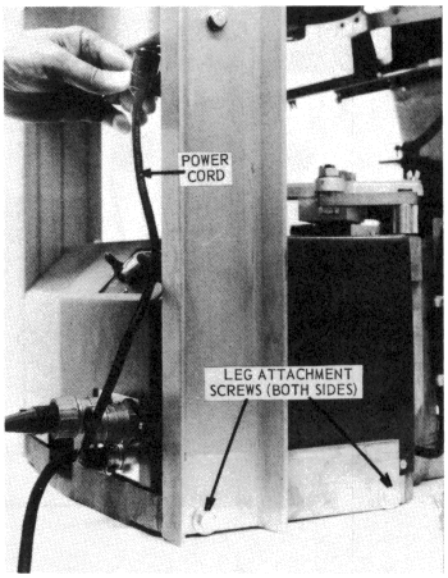


Figure 21 — Power Cord and Leg Attachment Screws

7.10 If the left target throws higher than the right target move the throwing arm counterclockwise by turning the curl adjusting nut (see Figure 26). This will raise the right target and lower the left target at the same time. Continue to adjust until the targets are thrown at the same height.

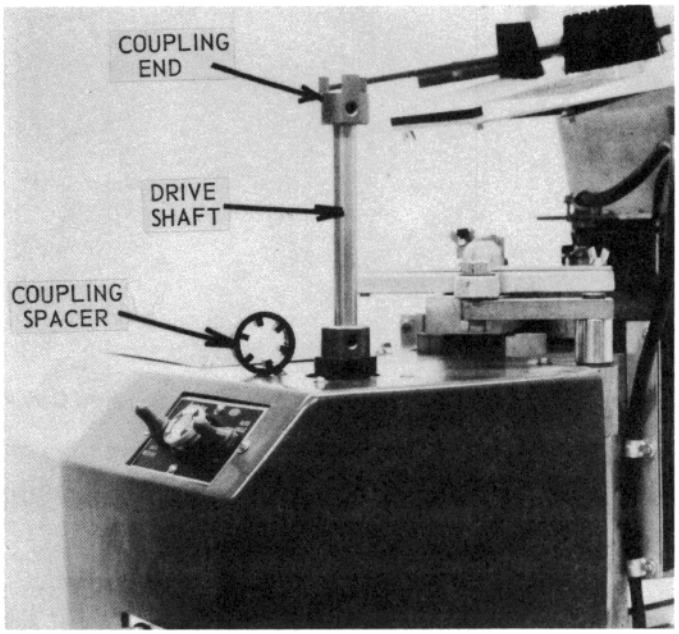


Figure 22 — Drive Shaft and Coupling Spacers

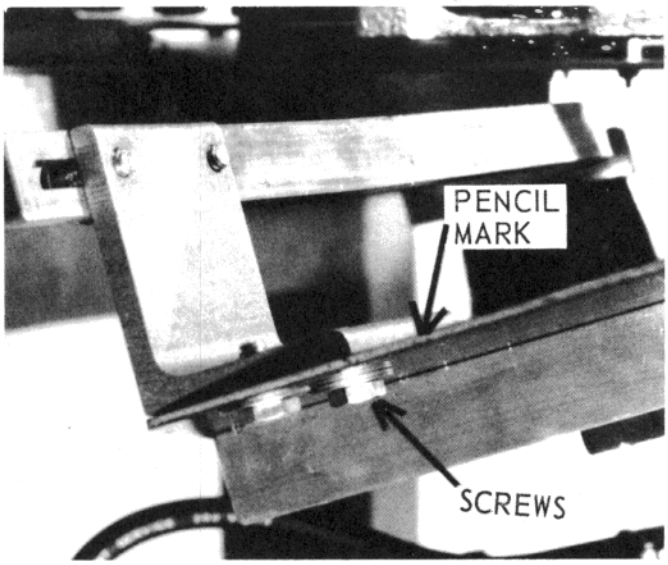


Figure 23 — Target Nest Bracket

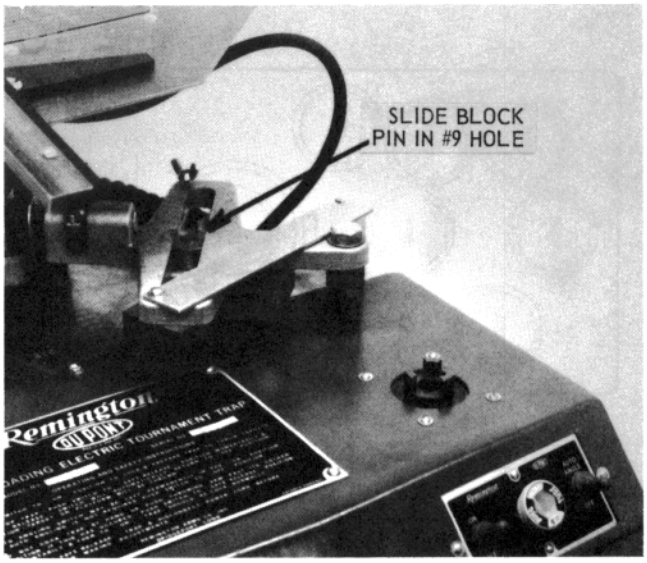


Figure 25 — Slide Block in Number 9 Hole

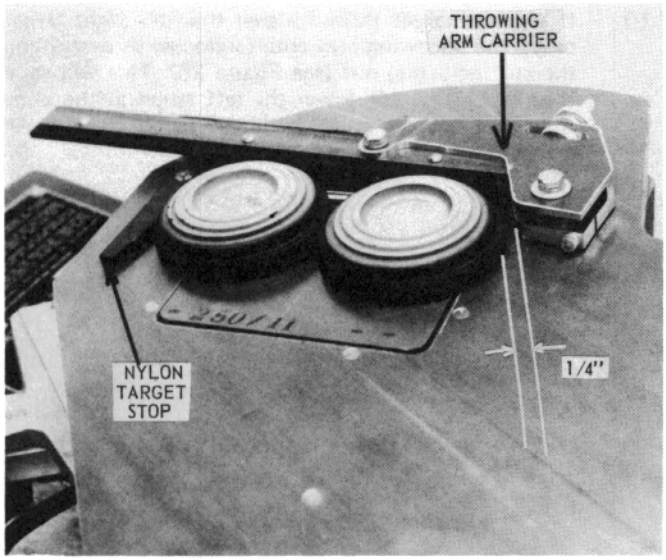


Figure 24 — Target Position Relative to Throwing Arm Carrier

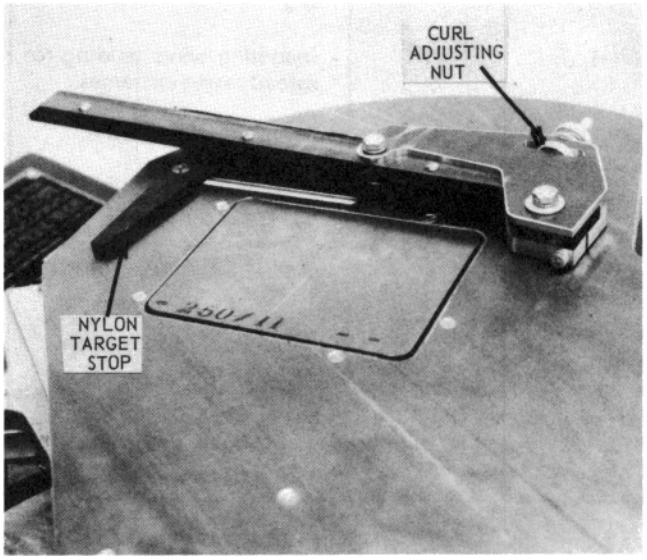


Figure 26 — Target Stop Adjustment

VI. TROUBLESHOOTING

1. TOOLS

1.1 The following is a list of tools recommended for servicing the Model 4100 Trap:

1.1.1 one (1) 3/4" box or open end wrench.

1.1.2 one (1) 3/4" socket wrench.

1.1.3 one (1) 11/16" box or open end wrench.

1.1.4 one (1) 9/16" box or open end wrench.

1.1.5 one (1) 9/16" socket wrench.

1.1.6 one (1) 1/2" box or open end wrench.

1.1.7 one (1) 7/16" box or open end wrench.

1.1.8 one (1) Allen wrench set.

1.1.9 one (1) large and one (1) small screwdriver.

1.1.10 one (1) lead or plastic hammer (soft hammer head).

1.1.11 File (optional)

2. TRAP FAILS TO START

Cause		Solution *	
2.1	Blown fuse.	2.1	Replace fuse (15 amp fuse)
2.2	Loose fuse.	2.2	Tighten fuse.
2.3	Power cord disconnected (either end).	2.3	Connect power cord.
2.4	Main power off.	2.4	Turn main power on.
2.5	Defective On-Off switch.	2.5	Replace On-Off switch.
2.6	Motor damaged or stuck.	2.6	Examine motor. Follow paragraphs VII-5.1.1 through VII-5.1.4 (page 19) to inspect or remove motor.

3. MAGAZINE FAILS TO FEED – DOES NOT ROTATE

Cause		Solution *	
3.1	Cord from control panel to magazine not plugged in.	3.1	Plug cord in.
3.2	Cord from control panel to magazine damaged.	3.2	Inspect for disconnected or damaged wires.
3.3	Drive shaft not connected.	3.3	Connect drive shaft.
3.4	Key missing between magazine and shaft.	3.4	Insert key.
3.5	Clutch jammed from rotating.	3.5	Rotate magazine counterclockwise by hand until slack is taken up. Clutch should engage when trap is released.

4. MAGAZINE FAILS TO FEED – ROTATES BUT DOES NOT DROP TARGET OR BREAKS TARGET

Cause		Solution *	
4.1	Targets placed in magazine were cracked.	4.1	Examine targets for cracks when loading magazine.
4.2	Targets sticking together and unable to drop.	4.2.1	Wet targets. Suction between targets causes them to stick together. Replace with dry targets.
		4.2.2	Targets out of round or paint sticking targets together. Replace with good targets.
4.3	Targets jamming or breaking when level in magazine gets below two targets.	4.3	Add more targets when this level is reached.
4.4	Target nest arm interfering with fall of targets from magazine.	4.4	Readjust target nest arm. Refer to section IV-5 (page 4).
4.5	Magazine fingers not contacting cam ring correctly.	4.5	Check cam alignment and straighten if bent.
4.6	Worn rubber parts not holding targets securely.	4.6	Replace or rotate magazine sleeve and target bumpers.
4.7	Wrong timing sequence magazine does not stop at correct point.	4.7	Disassemble magazine assembly (refer to section VII-7, page 24). Replace any broken parts. Reassemble and check timing sequence. If sequence is still wrong, magazine gears are probably out of phase. Rephase gears according to section VII-9, page 26).

* "Safe Release" trap and disconnect power unless otherwise noted.

5. TRAP FAILS TO FIRE

Cause		Solution *	
5.1	Release cable broken, switch defective.	5.1	Try "Safe Release" position on main switch. If trap fires, trouble is not in the trap. Repair or replace release cable switch and / or cable assembly.
5.2	Wires leading to clutch actuating solenoid assembly in front of trap (see Figure 47 and paragraph VII-2.1.8, page 16) may be loose or broken.	5.2	Connect wires properly or replace.
5.3	Solenoid or actuating lever stuck or broken.	5.3	Remove the front cover and examine the solenoid and actuating lever (refer to Figure 62 and paragraph VII-4.4, page 19). Activating the release button or Safe Release switch should cause the solenoid and actuating lever to snap instantly when the top of the clutch actuating lever clears the pawl on the cocking clutch sleeve. **(BE CAREFUL TO STAY AWAY FROM THROWING ARM).**
5.4	Cocking clutch dirty or malfunctioning due to wear or breakage.	5.4	Remove clutch, clean or replace. Refer to sections VII-2 page 14, VII-3 page 17 and VII-4 page 18.
5.5	Key not in mainshaft drive arm or key not in mainshaft crank assembly.	5.5	Install key.
5.6	Clutch actuating lever out of adjustment.	5.6	Adjust clutch actuating lever to clear pawl on cocking clutch with 1/16" (refer to section VII-4.4 page 19).

6. SLOW RELEASE OR DELAYED RELEASE

Cause		Solution *	
6.1	Mainshaft gear turned clockwise relative to cocking clutch gear.	6.1	Rephase gears (refer to section VII-5, page 19).

7. THROWING ARM FAILS TO RECOCK

Cause		Solution *	
7.1	Broken mainspring jamming trap.	7.1	Replace mainspring assembly. Safe release trap (refer to paragraph VII-1.2.10, page 13).
7.2	Mainshaft gear advanced relative to cocking clutch gear	7.2	Rephase gears (refer to section VII-5, page 19).
7.3	Speed reducer defective.	7.3	Replace reducer (refer to section VII-6, page 20).

8. TRAP FAILS TO ANGLE

Cause		Solution *	
8.1	Angle switch "Off".	8.1	Turn on angle switch "On".
8.2	Angling yoke slide block pin in angling shaft center hole allowing no change of angle even though crank is turning.	8.2	Insert pin in hole that will give desired amount of angling (refer to section V-6, page 6).
8.3	Timing motor not running.	8.3	Replace defective timing motor. Refer to section VII-2.1.2, page 14, for removing cover. Refer to section VII-6, page 20, for replacing timing motor.

* "Safe Release" trap and disconnect power unless otherwise noted.

8.4	Defective pivot shaft cam switch. Also one on timing motor cam microswitch.	8.4 Turn trap "On" and allow to idle in the cocked position. Place angling switch on "Auto-Angle". Manually depress the roller follower of the pivot shaft cam microswitch (refer to Figure 47, page 16). While holding it down a series of intermittent clicks should be heard from inside the trap. This sound is the angling solenoid coil being energized each time the cam on the timing motor inside the cover closes its microswitch. If no sound is heard, replace the pivot shaft cam microswitch referred to in section VII-2.1.7, page 16.
8.5	Defective timing cam switch.	8.5 Manually depress the roller on the timing cam microswitch (see Figure 84, page 24). A slightly audible click should be heard. If not replace timing cam switch.
8.6	Angling solenoid coil improperly attached.	8.6 Tighten the two angling solenoid coil mounting screws. Reorient the solenoid if it does not disengage the angling clutch when retracted (simulate the energized position to observe this).
8.7	Pivot shaft cam incorrectly positioned.	8.7 See that the flat edge of the pivot shaft cam (see Figure 47, page 16) clears the microswitch roller by 1/8" – 3/16" when the trap in in the cocked position.
8.8	Pivot shaft cam not depressing roller on pivot shaft cam switch enough to actuate switch.	8.8 "Safe Release" the trap. Position the switch so that manually depressing the roller further fails to cause the small click to be heard when this microswitch closes.
8.9	Timing cam switch and pivot switch wired in "normally closed" position.	8.9 Reconnect to "normally open" contacts.

9. THROWING ARM FIRES THROUGH WITHOUT STOPPING AT COCKED POSITION

Cause		Solution *	
9.1	Mainshaft gear to cocking clutch gear out of phase.	9.1	Retard mainshaft gear (refer to section VII-5, page 19).
9.2	Clutch actuating lever fails to connect on cocking clutch cam stop.	9.2	Adjust or repair clutch actuating lever assembly (refer to section VII-2.1.10, page 16.

* "Safe Release" trap and disconnect power unless otherwise noted.

VII DISASSEMBLY AND REASSEMBLY PROCEDURES

1. MAINSHAFT AREA PROCEDURES – Mainshaft Clutch, Mainshaft Assembly, Mainshaft Gear, and Associated Parts.

1.1 The mainshaft clutch, mainshaft assembly, mainshaft gear, and associated parts are located in the mainshaft housing (see Figure 27).

1.2 The following procedure should be followed:

1.2.1 "Safe Release" the trap and disconnect the power.

1.2.2 Remove front cover (see Figure 27). Detach the power cord at the magazine gearbox by turning it counterclockwise and pulling it out (see Figure 28).

1.2.3 Loosen the four screws that hold the magazine support legs to the base (see Figure 28). Pull up on both legs and remove the magazine assembly. Be careful not to lose the drive shaft or the two molded rubber coupling spacers that fit in the coupling ends (see Figure 29).

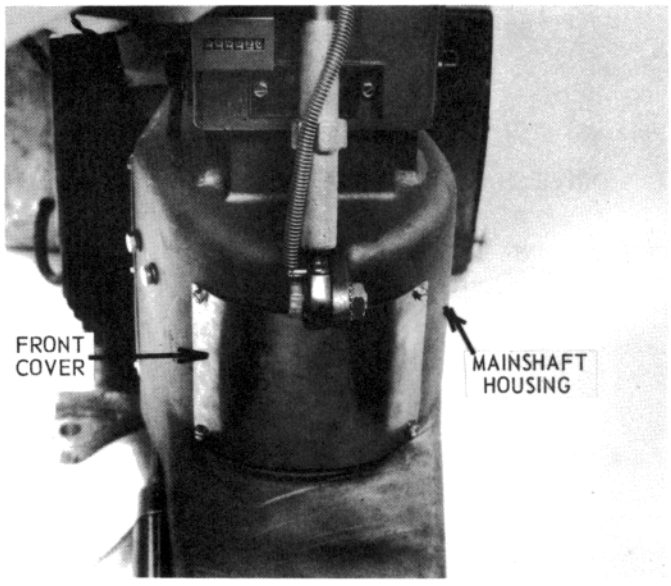


Figure 27 – Mainshaft Housing

1.2.4 Remove front cover (see Figure 27).

1.2.5 Remove the throwing arm assembly by removing the carrier screw, loosening the carrier clamp screw, and lifting or prying the carrier off the shaft (see Figure 30).

1.2.6 Remove the two counter screws, but leave the connecting wires attached (see Figure 31).

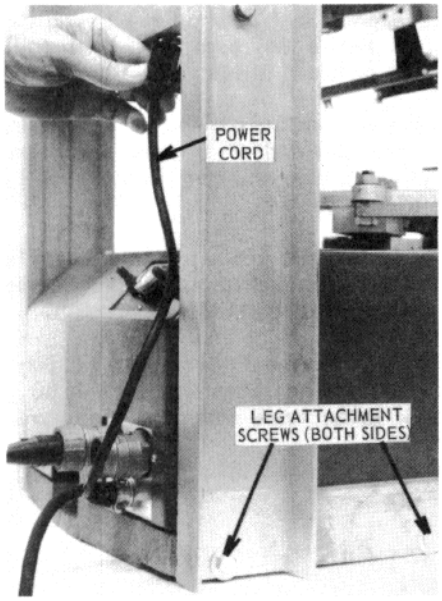


Figure 28 – Magazine Attachment

1.2.7 Remove the upper elevation adjusting assembly bolt (see Figure 31).

1.2.8 Remove both elevation pivot screws (see Figure 31).

1.2.9 Lift and remove the platform and universal housing (see Figure 32).

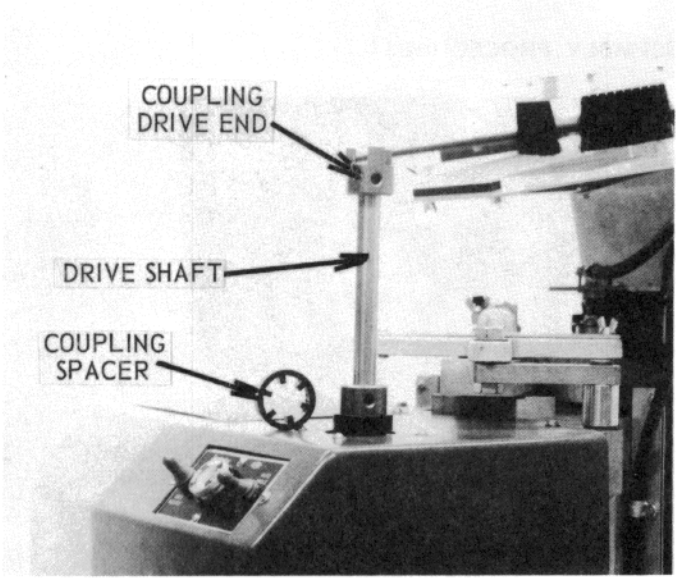


Figure 29 – Drive Shaft and Couplings

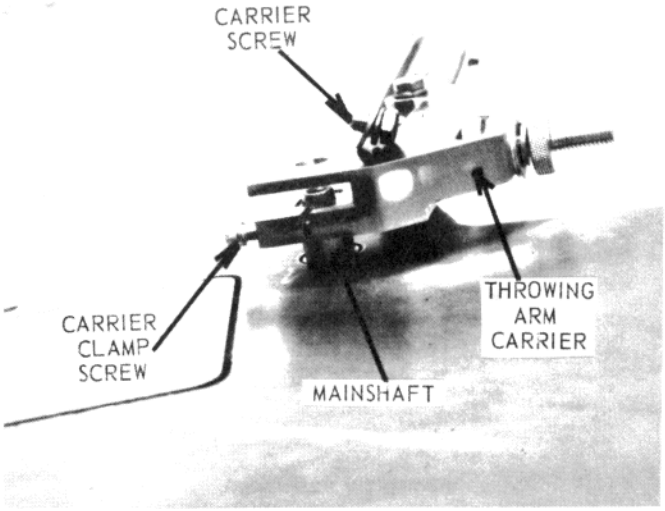


Figure 30 – Throwing Arm Assembly

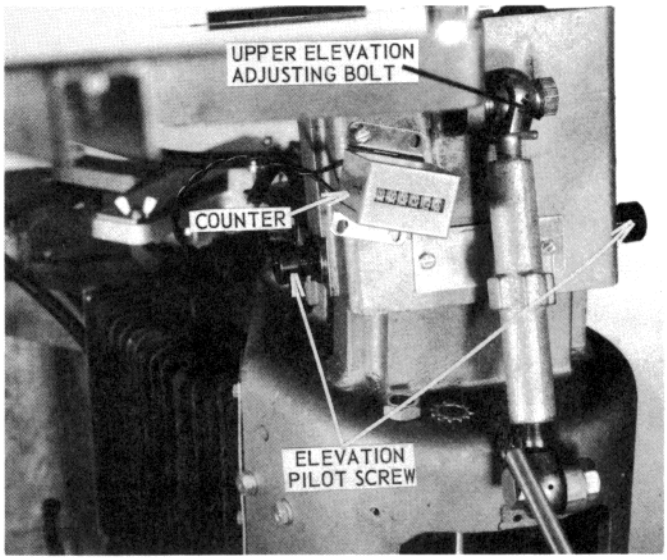


Figure 31 – Counter, Elevation Adjusting Assembly Bolts, and Elevation Pivot Screws

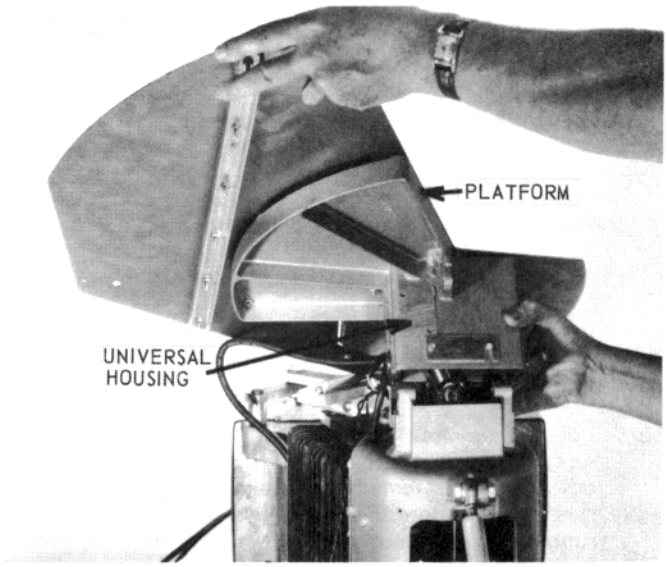


Figure 32 – Platform and Universal Housing

1.2.10 Release all tension from the mainspring by turning the adjusting screw counterclockwise until it has disengaged the mainspring assembly (see Figure 33). Remove the adjusting screw assembly, the retaining pin, and the mainspring assembly.

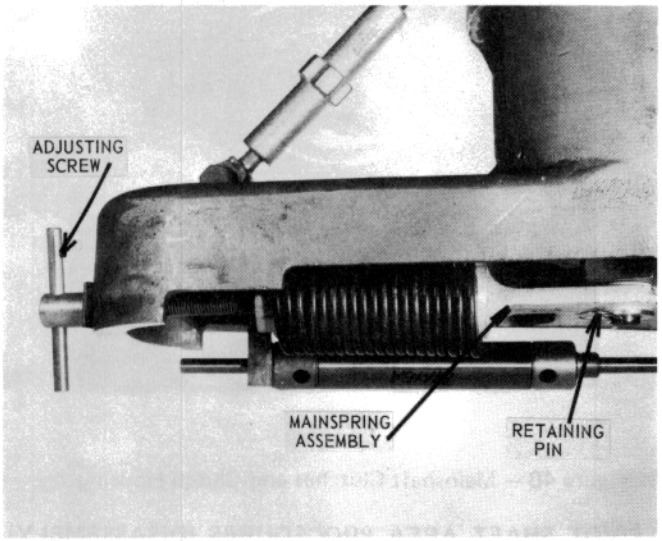


Figure 33 – Mainspring Assembly and Adjusting Screw

1.2.11 Loosen the mainshaft crank lock screw and remove the crank assembly and key (see Figure 34).

1.2.12 Paint match mark on mainshaft gear and housing to retain orientation (see Figure 35).

1.2.13 Loosen the mainshaft drive arm lock screw (see Figure 35), slide the drive arm upward (see Figure 36), and remove the drive arm key (see Figure 37).

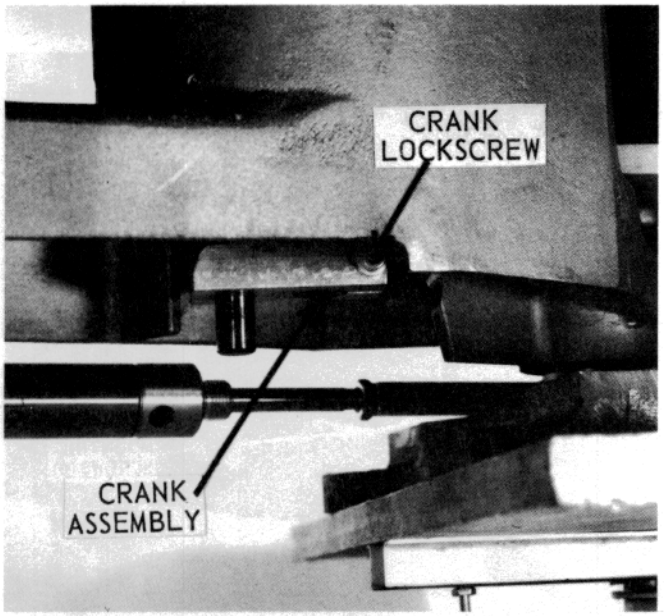


Figure 34 – Mainshaft Crank

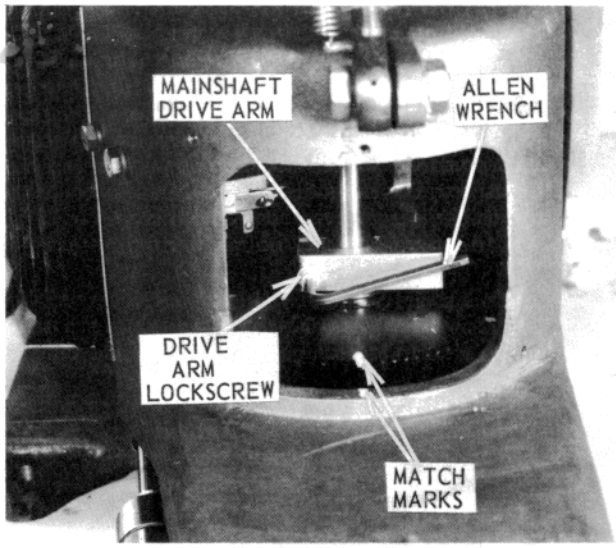


Figure 35 – Mainshaft Drive Arm and Lock Screw

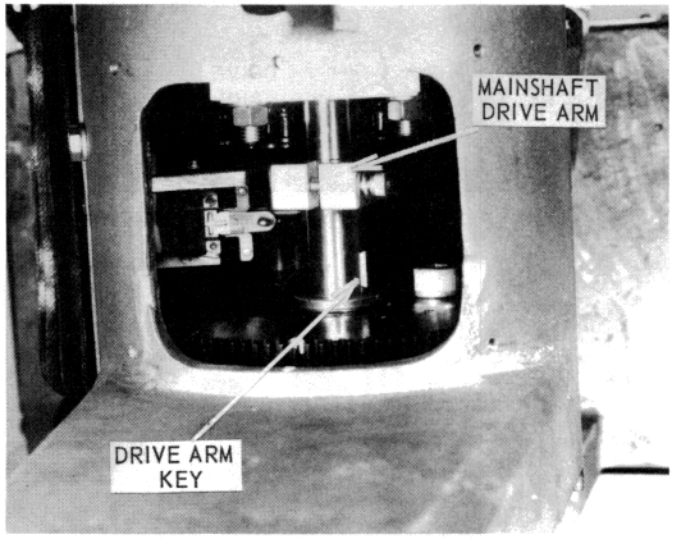


Figure 36 – Mainshaft Drive Arm and Key

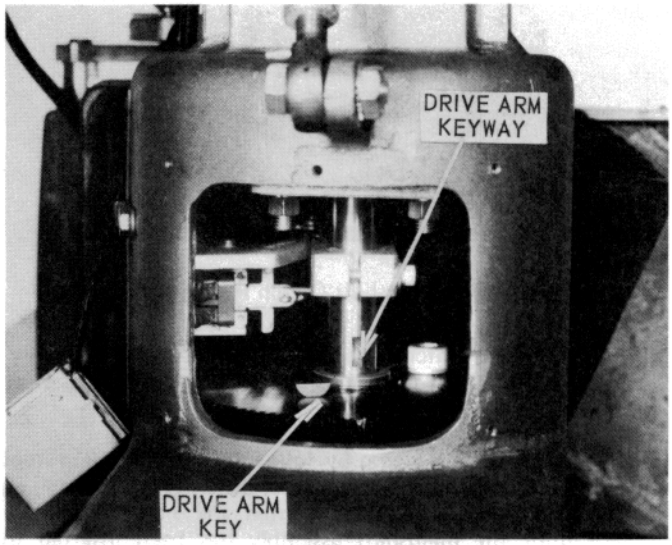


Figure 37 – Mainshaft Drive Arm and Key

1.2.14 Pull the mainshaft assembly up out of its housing to facilitate removal of the drive arm (see Figure 38).

1.2.15 Mainshaft sprag clutches may be examined by removing the two mainshaft clutch housing nuts (see Figure 39) to allow removal of the clutch housing.

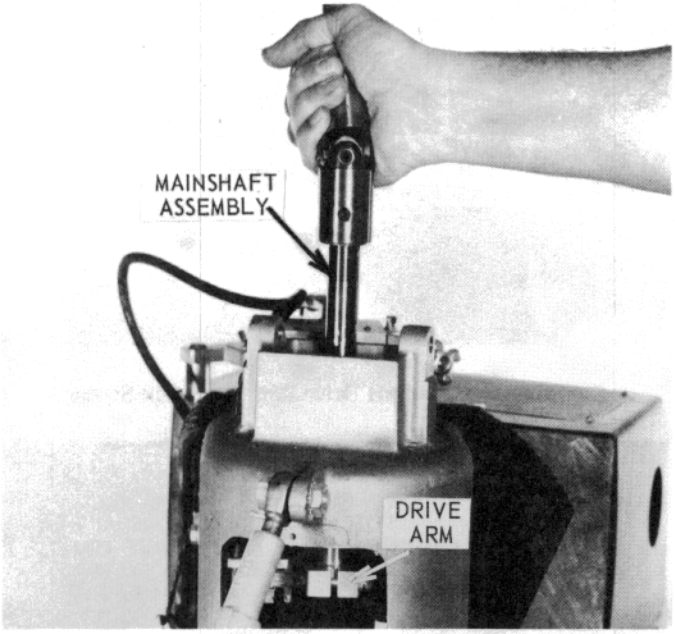


Figure 38 – Mainshaft Assembly and Drive Arm

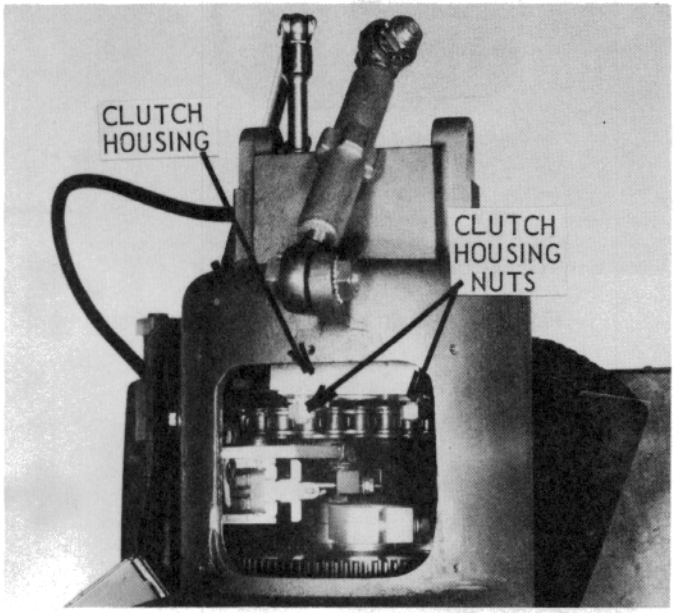


Figure 39 – Mainshaft Clutch Housing Nuts

1.2.16 External clutch flanges must be on the shiny milled side of the mainshaft clutch housing and must face up (see Figure 40).

1.2.17 Reassemble housing by following the preceding steps 1.2.1 – 1.2.16 in the reverse order. When reinstalling the clutches, do not tighten the nuts completely until the mainshaft assembly has been inserted to prevent binding and off-center assembly.

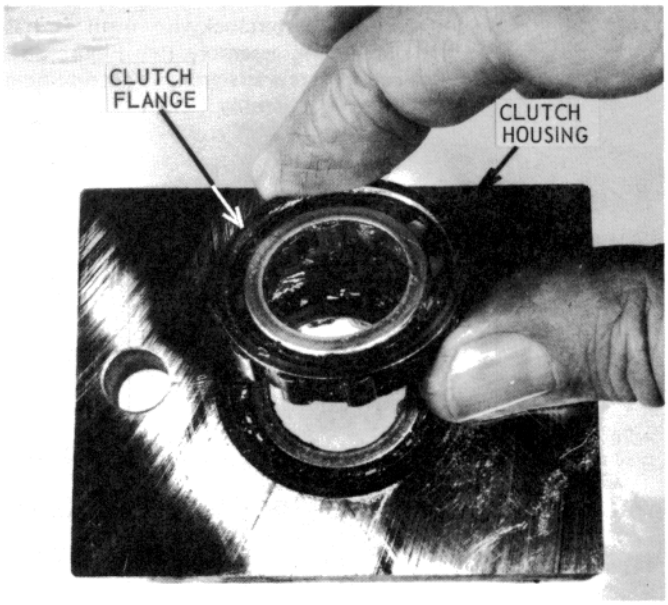


Figure 40 – Mainshaft Clutches and Clutch Housing

2. PIVOT SHAFT AREA PROCEDURES (DISASSEMBLY) Clutch Actuating Lever Assembly, Pivot Shaft, Cocking Clutch, and Associated Parts.

2.1 Servicing or examining the clutch actuating lever assembly, pivot shaft, cocking clutch, or associated parts may require their removal. This is performed after removing the platform and universal shaft housing as described in paragraphs VII-1.2.1 through VII-1.2.9, (pages 11 & 12). After their removal the following procedures should be followed:

2.1.1 Disconnect both bellows (see Figure 41).

2.1.2 Remove the cover by taking out the eight cover screws (see Figure 42).

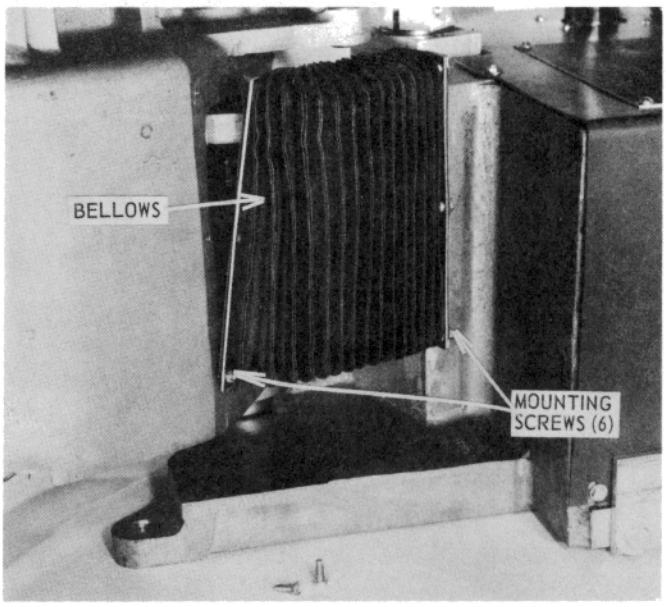


Figure 41 – Bellows

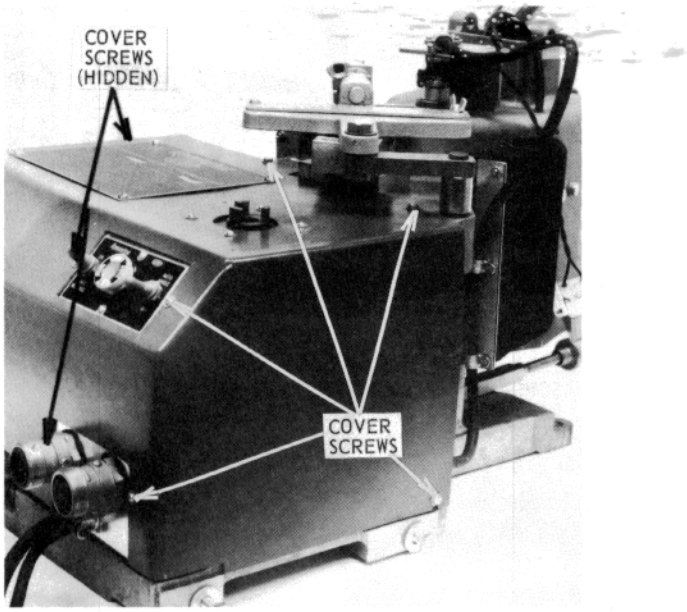


Figure 42 – Cover

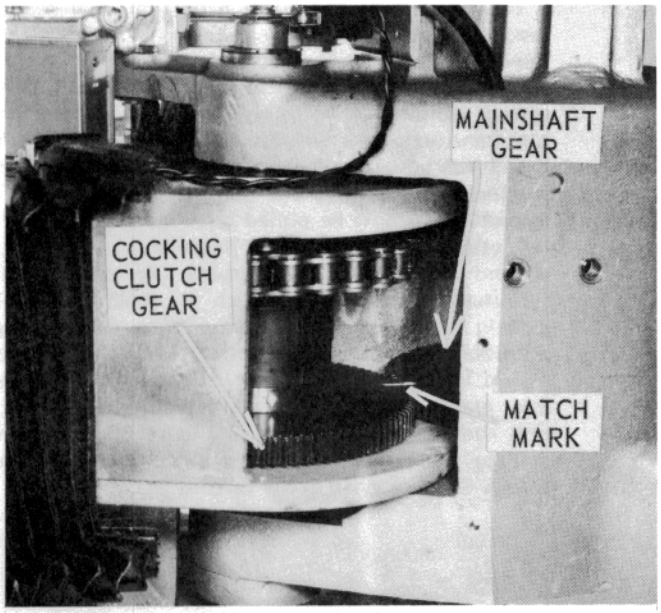


Figure 43 – Match Mark on Cocking Clutch Gear and Mainshaft Gear

2.1.3 Match mark the cocking clutch gear and the mainshaft gear (see Figure 43). This permits the gears to be correctly phased when reassembling.

2.1.4 Slacken the chain by loosening the four motor mounting base bolts and the chain tension bolt (see Figure 44).

2.1.5 Remove the disconnecting link (see Figure 45 and 46). If the disconnecting link is not in an accessible position, plug in the trap and rapidly turn the trap "On" and "Off" to slowly jog the chain to a position where the disconnecting link can be reached.

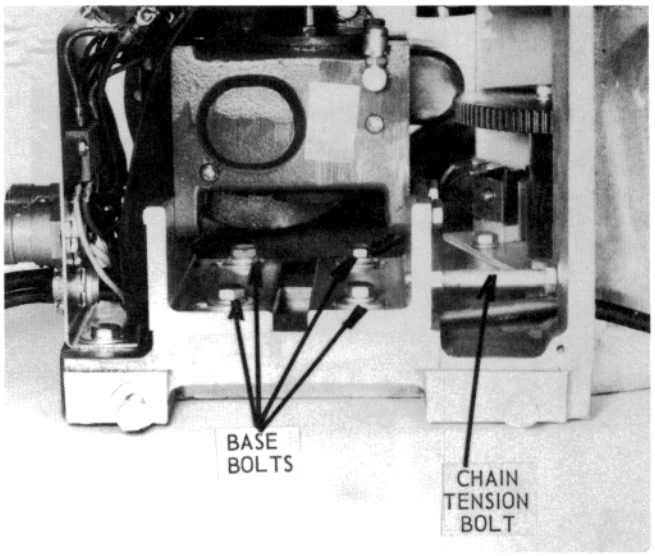


Figure 44 – Chain, Chain Tension Bolt, and Motor Mounting Base Bolts

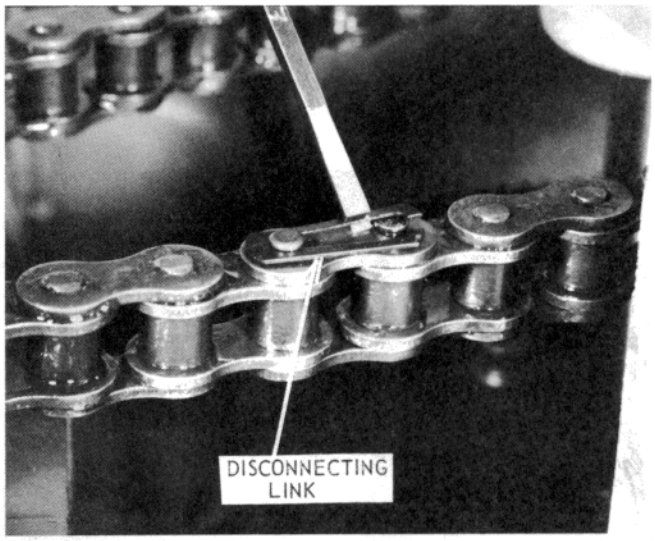


Figure 45 – Chain Disconnecting Link

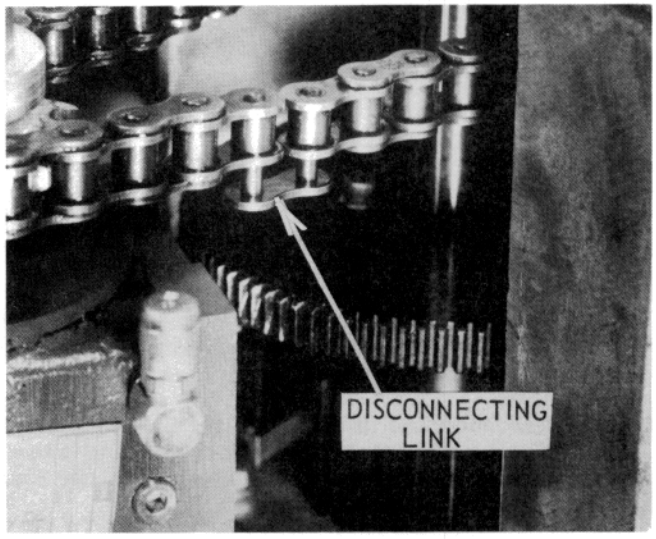


Figure 46 – Chain Link

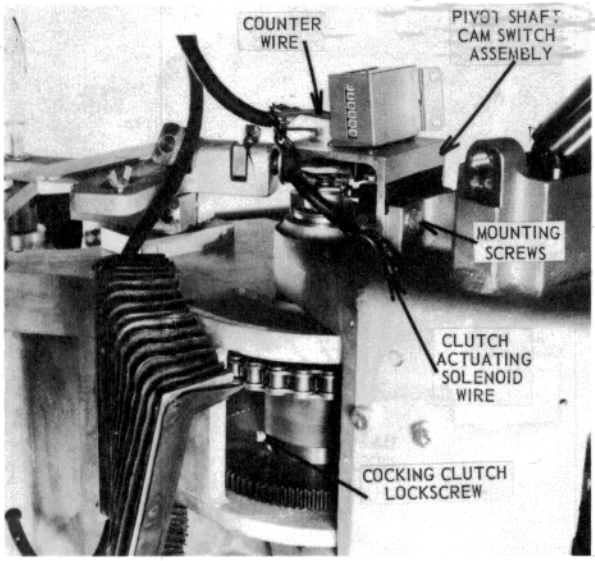


Figure 47 – Pivot Shaft Cam Switch and Counter

2.1.6 Rotate the clutch until the cocking clutch lock screw can be backed out about 1/4" with an allen wrench. This screw is the larger of two screws through the side of the cocking clutch, just above the gear (see Figure 47).

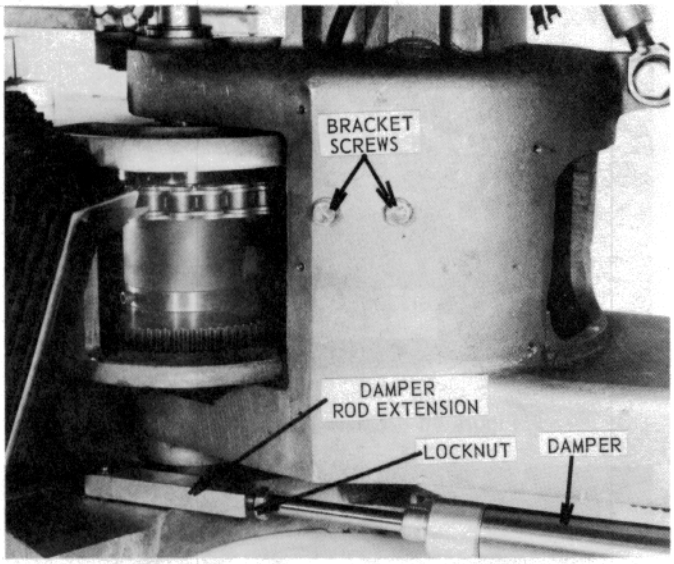


Figure 48 – Damper

2.1.7 Remove the pivot shaft cam switch assembly by removing the switch bracket mounting screws. (see Figure 47).

2.1.8 Disconnect the wires to the counter and clutch actuating solenoid from the terminal block (see Figure 47).

2.1.9 Disconnect the damper from the base by loosening the damper rod extension lock nut and screwing the rod out of the damper rod extension (see Figure 48).

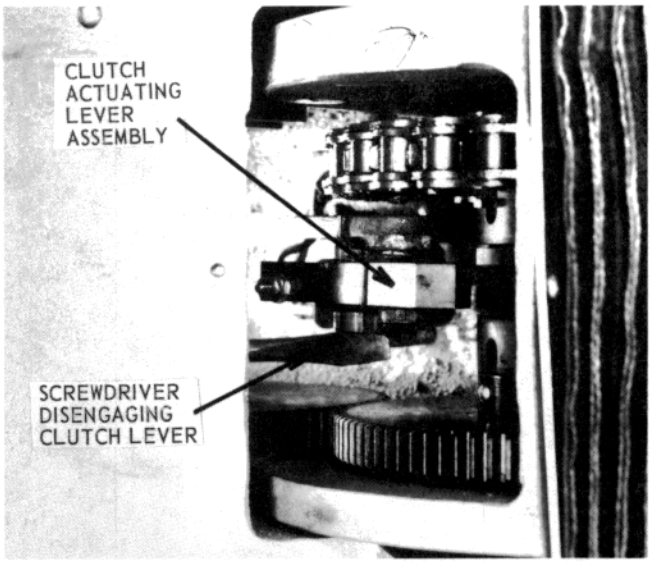


Figure 49 – Clutch Actuating Lever Assembly

2.1.10 The clutch actuating lever assembly (see Figure 49) is separated from the housing by removing the two bracket screws (see Figure 48). Assembly removal is much easier if the solenoid armature is not allowed to be pulled out of the solenoid coil by the spring. Holding on to the nylon actuating lever with one hand will ease withdrawal of the assembly. Pull the clutch actuating lever assembly forward and turn it clockwise so that the solenoid is on top. The assembly can now be pulled out the front of the trap by letting the bend of the assembly's profile wrap around the mainshaft assembly. As soon as the terminals are accessible, detach the solenoid wires by pulling the slip-on connectors off the solenoid lugs. A rubber band may be used to keep the armature seated in the coil to prevent damage when being set aside and to ease reassembly. If replaced, the actuating link should be oriented as in Figure 50. When reinstalling the bracket do not overtighten the bracket screws which may strip the threads.

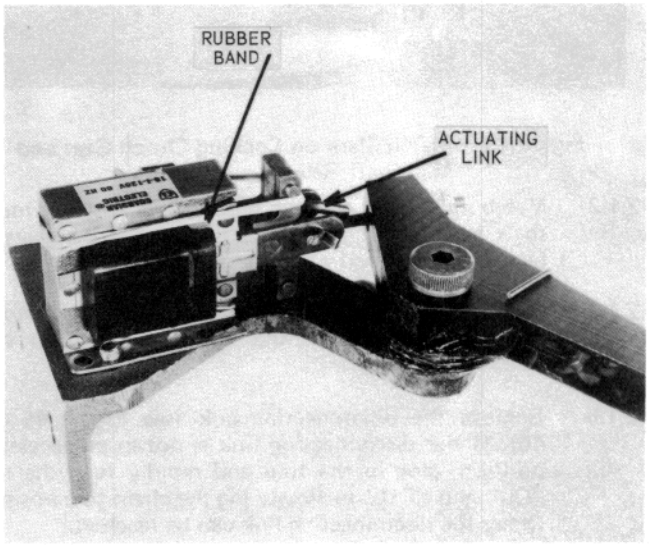


Figure 50 – Clutch Actuating Lever Assembly

2.1.11 Pull the pivot shaft up to separate the two castings (see Figure 51). Do not loosen the pivot shaft cam screw at the top of the pivot shaft. It may be necessary to drive the shaft out from the bottom if it cannot be pulled free from the top. When the pivot shaft is withdrawn, do not lose or damage the pivot shaft thrust bearing which supports the mainshaft housing. (see Figure 51 and 52).

2.1.12 Remove the cocking clutch assembly (see Figure 52).

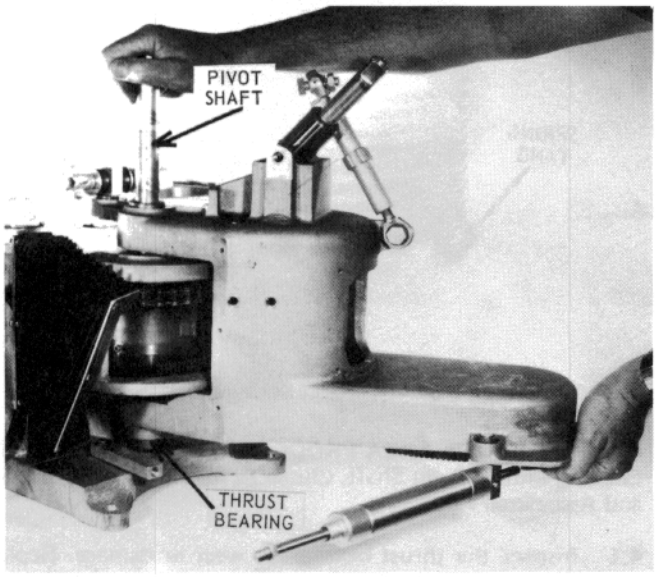


Figure 51 – Pivot Shaft Removal

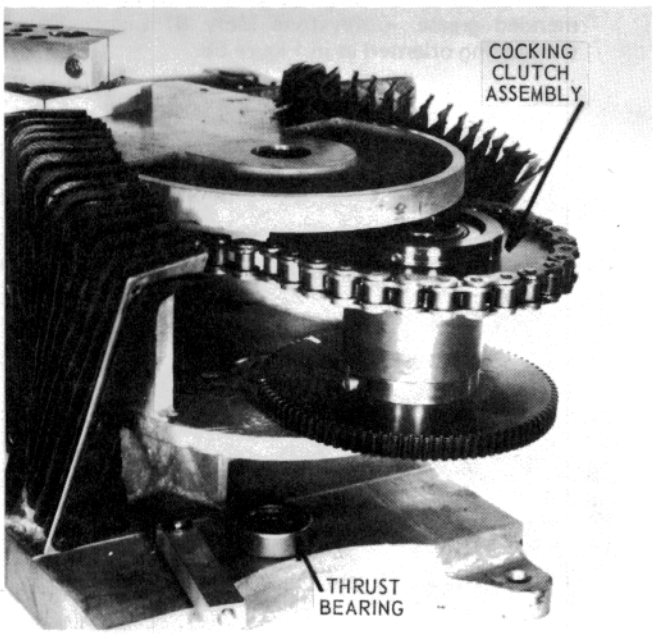


Figure 52 – Cocking Clutch Assembly

3. COCKING CLUTCH DETAILED INSPECTION PROCEDURES.

3.1 Remove the cocking clutch assembly by following paragraphs VII-2.1 through VII-2.1.12 (pages 14 - 17). Inspect the cocking clutch according to the following steps:

3.1.1 Remove the Truarc snap ring located just above the cocking clutch sprocket (see Figure 53).

3.1.2 To remove the sprocket, set gear down on a flat surface and grasp the clutch sleeve and sprocket as in Figure 54. Now with the left hand rotating counterclockwise and downward, use the right hand on the sprocket to pull up with a slight clockwise motion. **Note:** A burr may be left from removing the snap ring. It may help to remove the burr before disassembly.

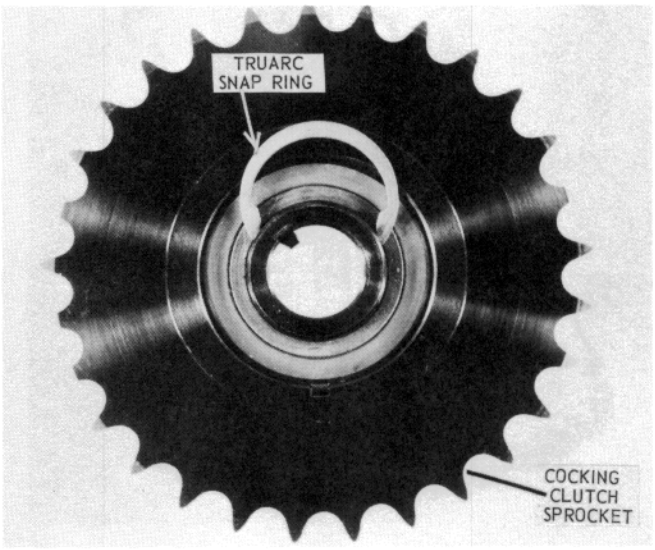


Figure 53 – Cocking Clutch Sprocket and Snap Ring

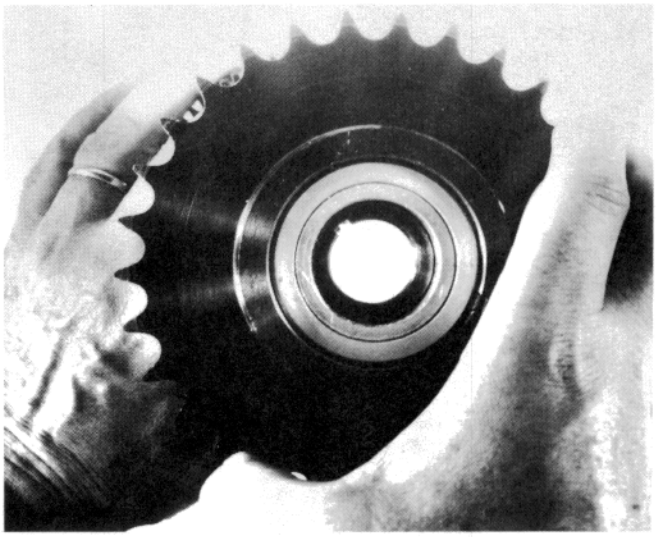


Figure 54 – Cocking Clutch Sprocket and Cocking Clutch Gear Separation

3.1.3 Match mark cocking clutch and cocking clutch gear if the gear is removed from the cocking clutch (see Figure 55).

3.1.4 Remove the sleeve from the gear to expose the cocking clutch torsion spring (see Figure 56). First pull the sleeve over the spring.

3.1.5 Expand the spring and thoroughly clean it with solvent (see Figure 57). If spring is broken replace entire clutch. Reassemble the spring and gear with the sleeve (see Figure 55). Tilt sleeve over tab side of spring. Reach in and grasp spring tab with a pair of pliers, pull to extend the spring, push sleeve down over the spring and line up sleeve notch with spring tab.

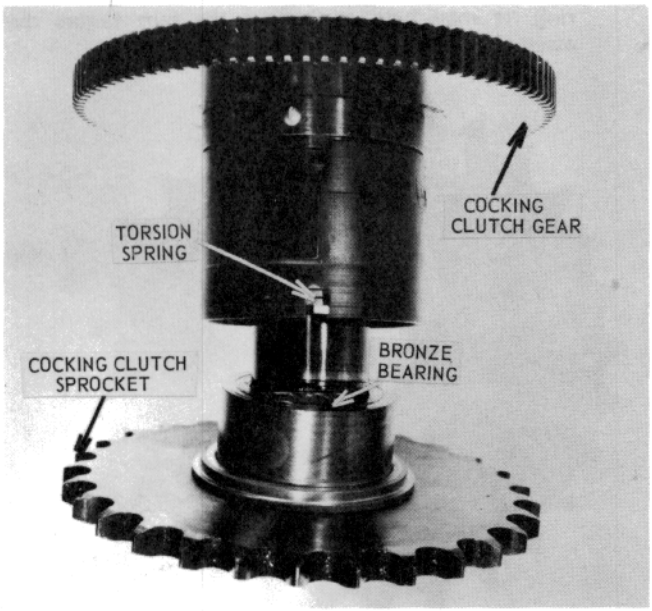


Figure 55 – Cocking Clutch Sprocket and Cocking Clutch Gear Separation

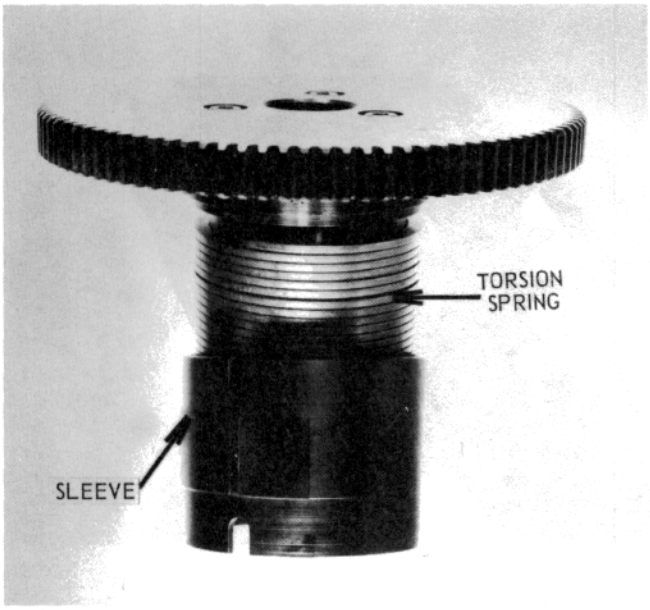


Figure 56 – Cocking Clutch Gear, Sleeve, and Torsion Spring

3.1.6 Lubricate bronze bearing in the cocking clutch sprocket before reassembly (see Figure 55).

3.1.7 Reassemble the sprocket with the spring, sleeve, and gear. Use the same type of twisting motion on sleeve and sprocket with pressure pushing parts together. Refasten the Truarc snap ring.

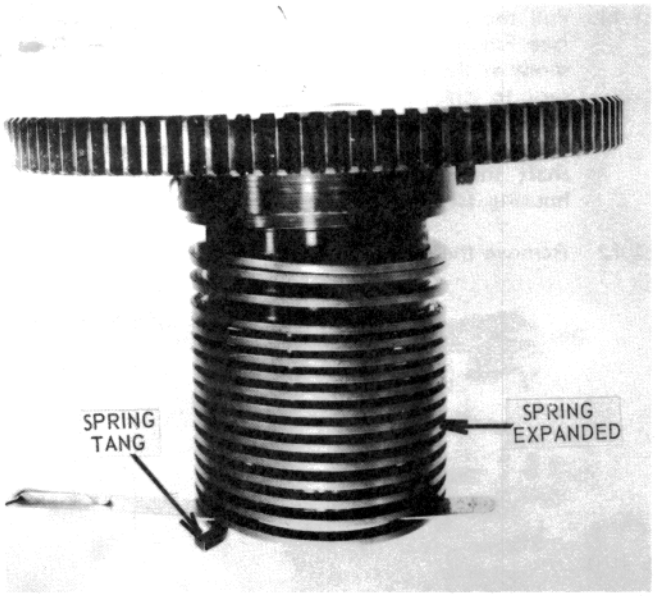


Figure 57 – Torsion Spring Expanded

4. PIVOT SHAFT AREA PROCEDURES (REASSEMBLY) – Cocking Clutch, Pivot Shaft, Clutch Actuating Lever Assembly, and Associated Parts.

4.1 Inspect the thrust bearing for wear or damage. Replace if necessary. If thrust bearing is contaminated, wash in clean solvent to remove old grease and contaminants. Dry with a clean lint free cloth and regrease (recommended grease – Keystone Moly 81 Light). Reinstall the bearing oriented as in Figure 58.

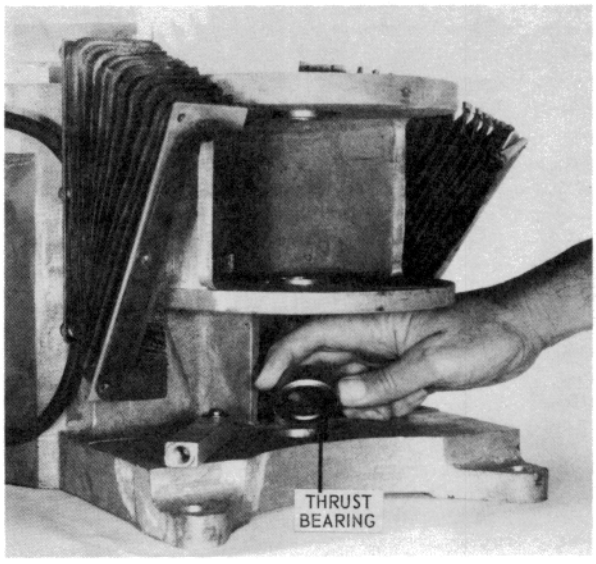


Figure 58 – Thrust Bearing Orientation when Reinstalling

4.2 Reinstall the cocking clutch and be sure the match marks on the cocking clutch gear and the mainshaft gear are in alignment (see Figure 59). Reassemble the mainshaft housing by installing the pivot shaft. If the match marks become misaligned during the assembly, they can be realigned by following the procedures in section VII-5, page 19.

4.3 Tighten the cocking clutch lock screw. Reconnect the damper to base (see Figure 60).

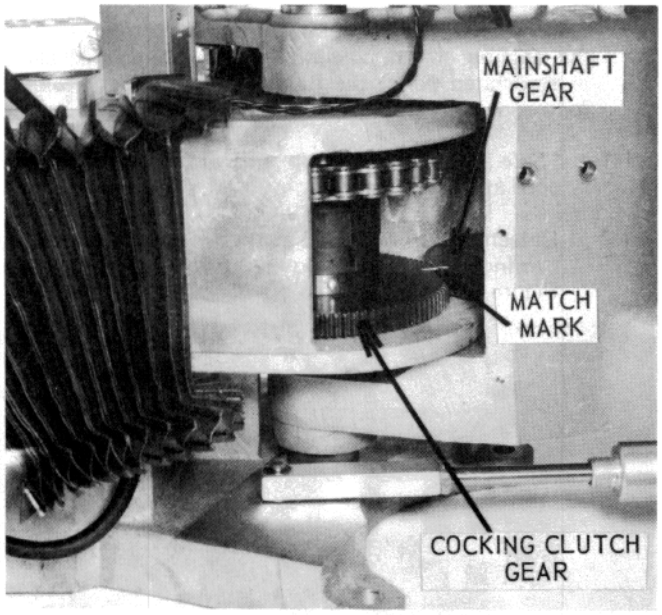


Figure 59 – Correct Meshing of Cocking Clutch Gear and Mainshaft Gear

4.4 When reinstalling the cocking clutch actuating lever assembly (see Figure 61), use a rubber band to keep the armature seated in the coil until the screws have been reinstalled in the bracket. Do not overtighten bracket screws. Then remove the rubber band and allow the lever to engage the sleeve. The clutch actuating lever assembly should have a clearance of 1/16" between the clutch actuating lever and the cocking clutch pawl when the solenoid is depressed. (see Figure 62).

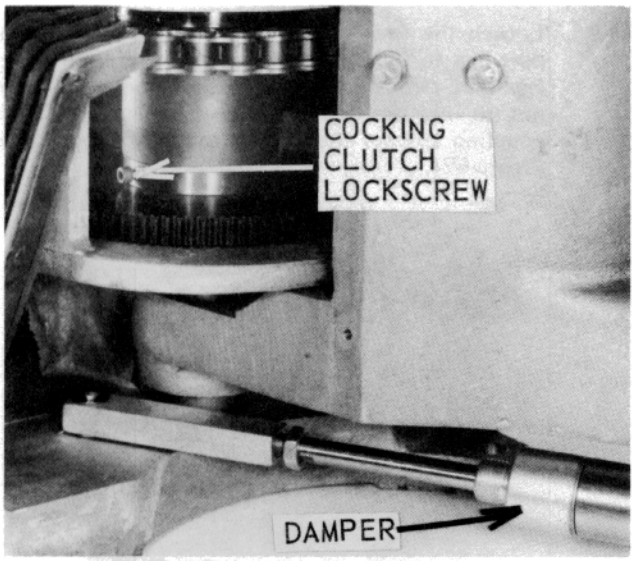


Figure 60 – Cocking Clutch Lock Screw and Damper

5. MAINSHAFT ASSEMBLY REPHASING PROCEDURES – Cocking Clutch Gear and Mainshaft Gear.

5.1 The phase between the cocking clutch gear and mainshaft gear is correctly reset by the following procedure:

5.1.1 Turn the trap "On" and let the throwing arm cock.

5.1.2 Remove both bellows and the cover (refer to paragraphs VII-2.1.1 and VII-2.1.2, page 14).

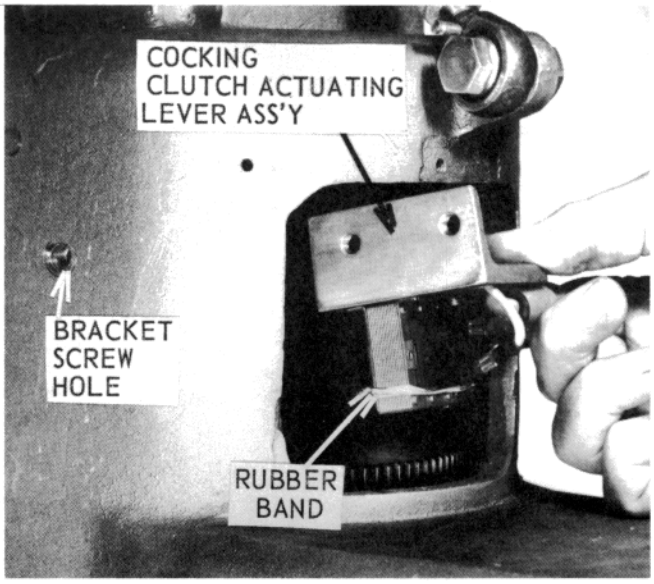


Figure 61 – Reinstalling Cocking Clutch Actuating Lever Assembly

5.1.3 Loosen the mainspring tension to minimum level without disengaging the adjusting screw from the mainspring assembly.

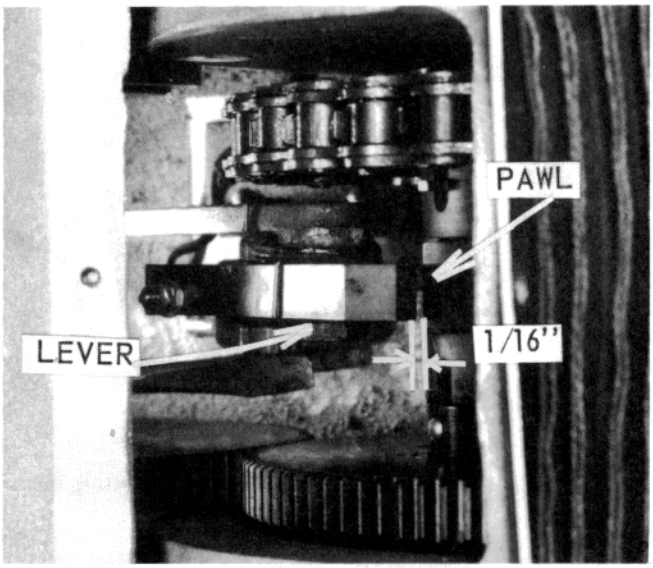


Figure 62 – Clutch Actuating Lever Clearance

5.1.4 Pull the throwing arm to the correct cocked position. (The correct cocked position is where the rubber rail is parallel with the long slot in the platform shown in Figure 63).

5.1.5 Observe the amount of mainshaft gear rotation necessary to make the mainshaft gear stud screw contact the right side of the mainshaft drive arm (see Figure 64). The mainshaft gear stud should touch or nearly touch the mainshaft drive arm. The mainshaft drive gear is then in proper position when the trap is cocked.

5.1.6 If the stud screw and drive arm do not mate properly as in 5.1.5 then continue with the following steps.

5.1.7 Loosen the mainshaft drive arm lock screw and slide the mainshaft drive arm up so the key can be removed (see Figure 65).

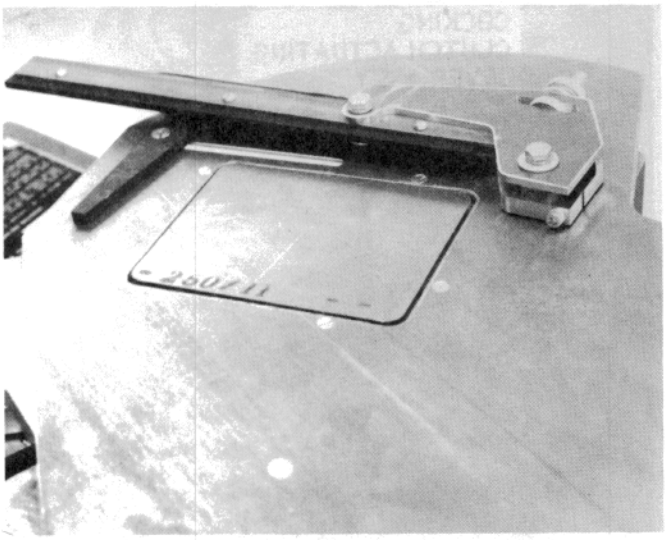


Figure 63 – Throwing Arm Cocked Position

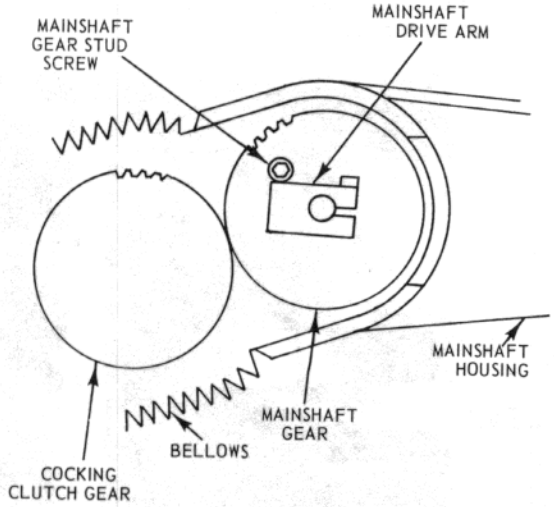


Figure 64 – Mainshaft Gear Stud Screw Contacting Mainshaft Drive Arm

5.1.8 The mainshaft gear can now be lifted out of mesh with the cocking clutch gear and rotated to the approximate position required (see Figure 64). It may be necessary to loosen the two clutch actuating bracket screws so the clutch actuating lever assembly can be tilted up to gain more vertical travel for the mainshaft gear (see Figure 65).

5.1.9 Reinstall drive arm key and drive arm without tightening drive arm lock screw until testing cycle.

5.1.10 Increase the mainspring tension

5.1.11 Turn the trap "On" and try cycling. If the trap stops in the correct position when cocked, the mainshaft drive arm lock screw should be tightened. If not, the gear should be advanced or retarded the appropriate amount by repeating paragraphs VII-5.1.3 through VII-5.1.11. **NOTE: TRAP MUST BE SAFE RELEASED BEFORE TIGHTENING DRIVE ARM LOCK SCREW.**

6. ANGLING CRANKSHAFT AREA PROCEDURES – Angling Clutch, Angling Shaft, Angling Shaft Clutch, and Associated Parts.

6.1 When disassembly is required for servicing or inspecting the angling clutch, angling shaft, angling shaft clutch, or associated parts, the following procedures should be followed:

6.1.1 "Safe Release" the trap and disconnect the power cord at the wall socket.

6.1.2 Detach the power cord at the magazine gear box by turning it counterclockwise and pulling it out (see Figure 66).

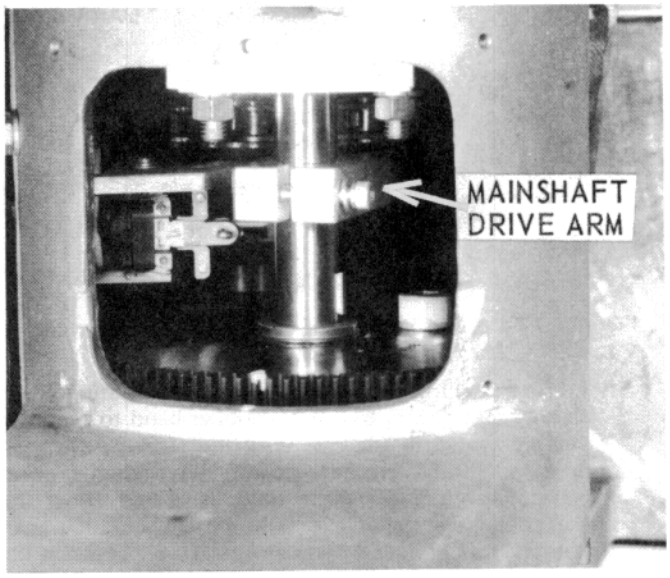


Figure 65 – Mainshaft Drive Arm

6.1.3 Loosen the four screws that hold the magazine support legs to the base (see Figure 66). Pull up on both legs and remove the magazine assembly. Be careful not to lose the drive shaft and two molded rubber coupling spacers that fit in the coupling ends (see Figure 67).

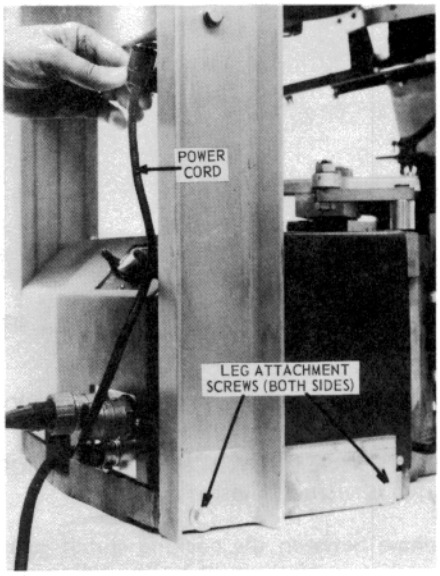


Figure 66 – Power Cord and Leg Attachment Screws

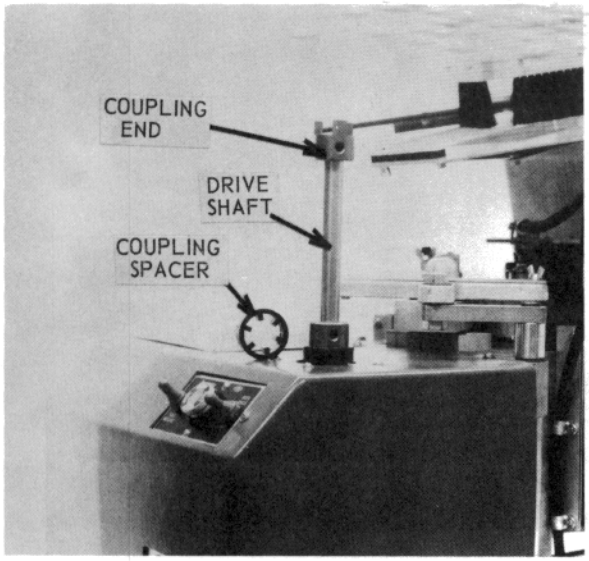


Figure 67 – Drive Shaft and Coupling Spacers

6.1.4 Disconnect the elevation adjusting knob assembly (see Figure 68).

6.1.5 Remove cover by taking out the eight cover screws (see Figure 69).

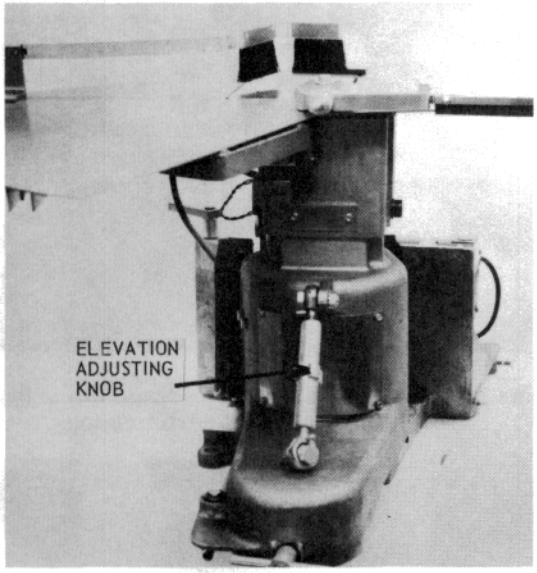


Figure 68 – Elevation Adjusting Knob Assembly Disconnected

6.1.6 Match mark the cocking clutch gear and mainshaft gear (see Figure 70). This permits gear to be correctly phased when reassembling.

6.1.7 Slacken drive chain by loosening the four speed reducer mounting base bolts and chain tension bolt (see Figure 71). Disconnect chain by removing master link.

6.1.8 Remove the motor and speed reducer by removing the four supporting screws (see Figure 72). **BE CAREFUL** – the motor and speed reducer can drop onto the speed reducer brackets.

6.1.9 Remove the angling solenoid cable and speed reducer brackets to get to the angling clutch (see Figure 73).

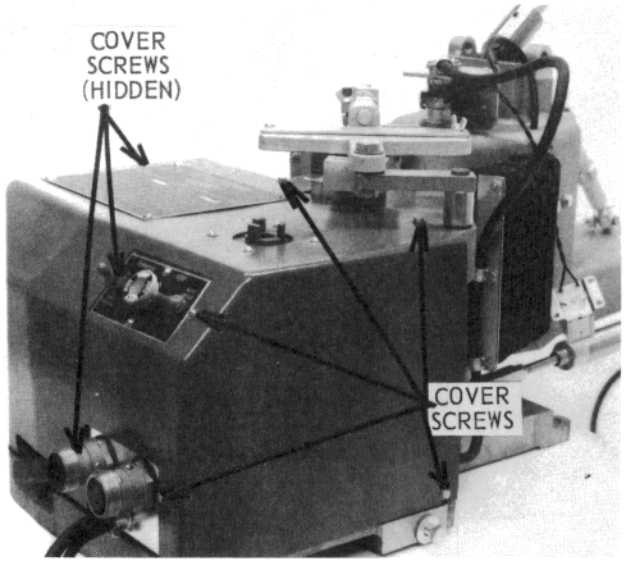


Figure 69 – Cover

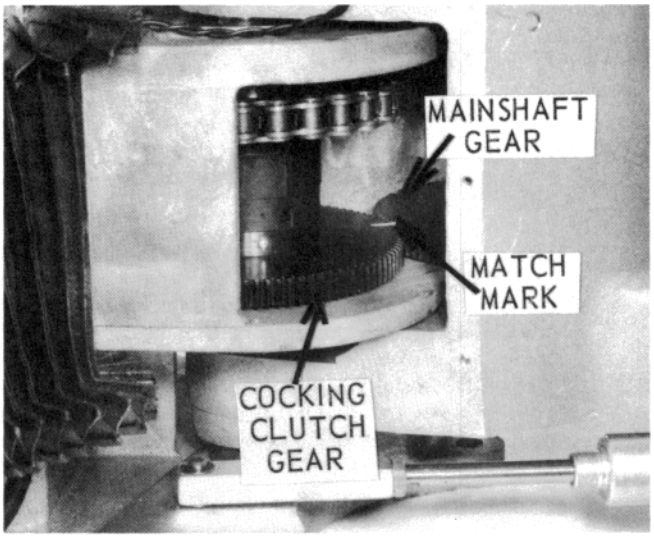


Figure 70 – Match Mark

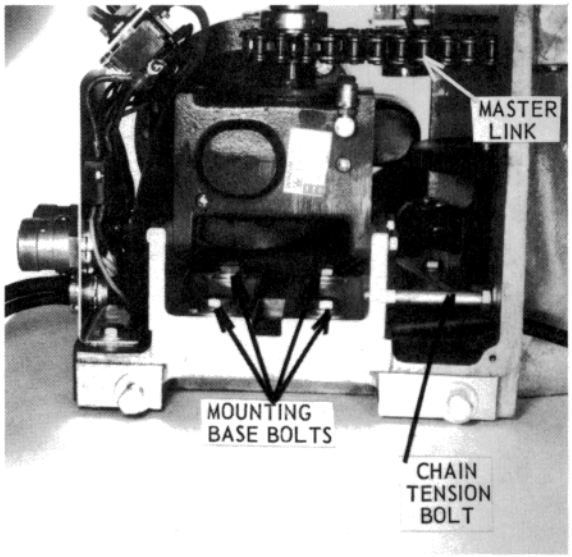


Figure 71 – Drive Chain

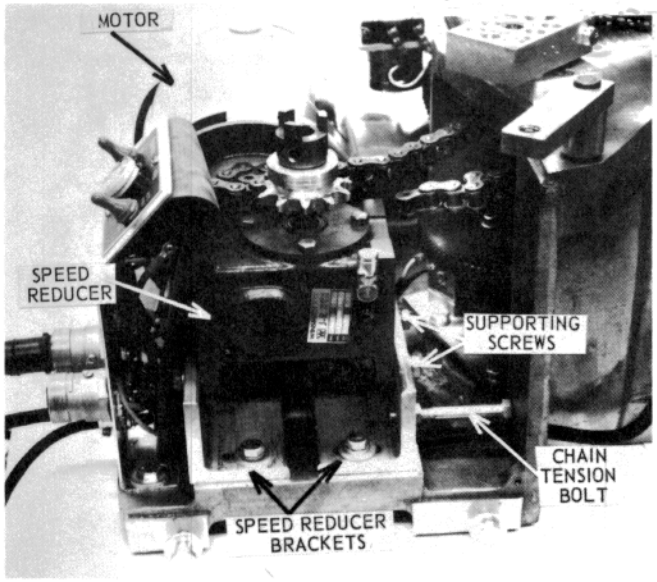


Figure 72 – Motor, Speed Reducer, and Supporting Screws

6.1.10 Loosen angling yoke by removing the angling yoke cover screw (see Figure 74).

6.1.11 Remove the angling crank, angling shaft thrust bearing, and angling shaft clutch housing (see Figure 75).

6.1.12 The angling shaft clutch can be removed from its housing for examination or replacement. Replacement is required if the actuating spring has any cracks, if any of the fingers that press against the sprags are broken, or if any of the sprags are broken. The clutch should be lightly oiled and replaced in its housing with the flange up and on the same side of the countersunk housing bore (see Figure 76).

6.1.13 Loosen the one angling clutch set screw (see Figure 77).

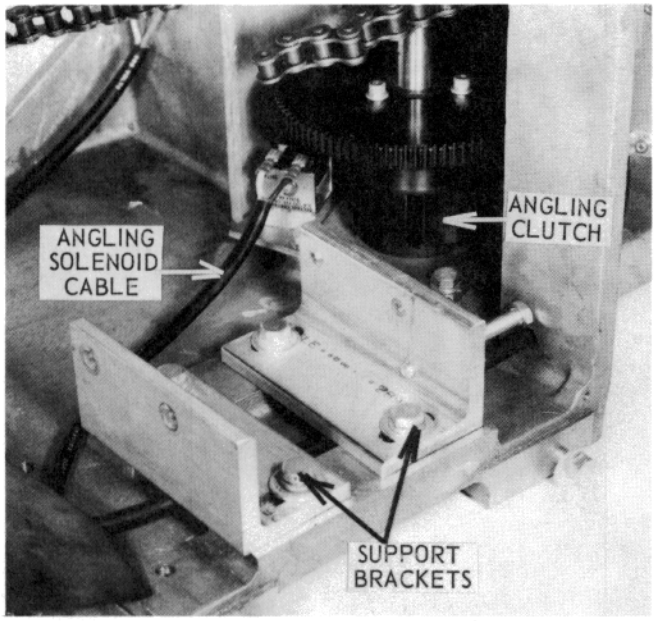


Figure 73 – Angling Solenoid Cable, Angling Clutch, and Speed Reducer Brackets

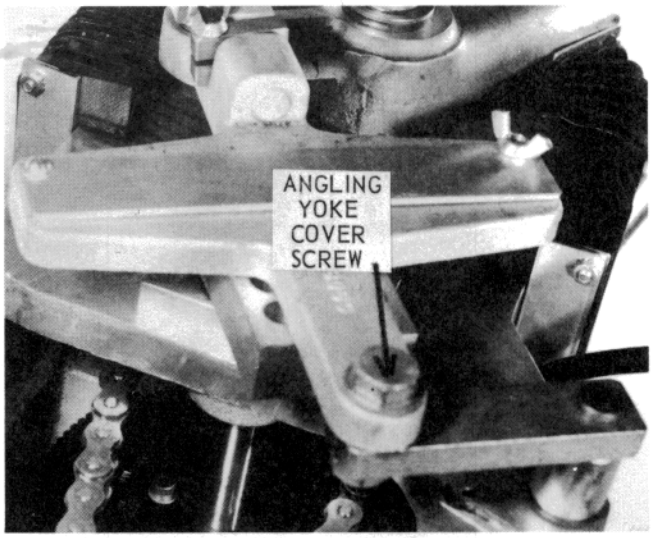


Figure 74 – Angling Yoke

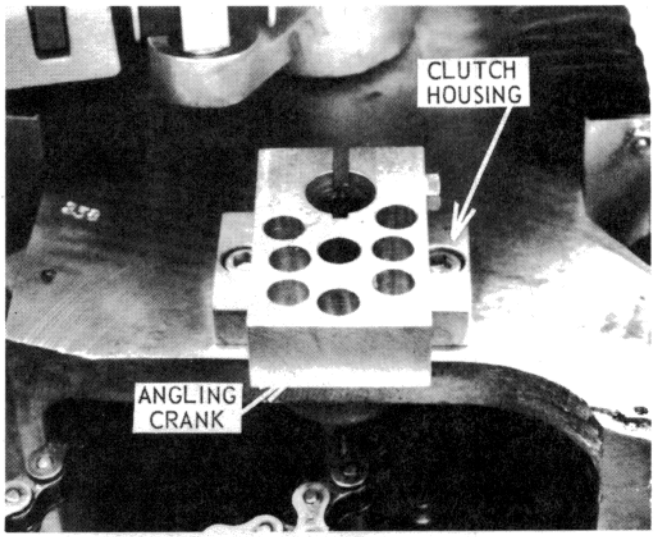


Figure 75 – Angling Crank, Angling Shaft Thrust Bearing, and Angling Shaft Clutch Housing

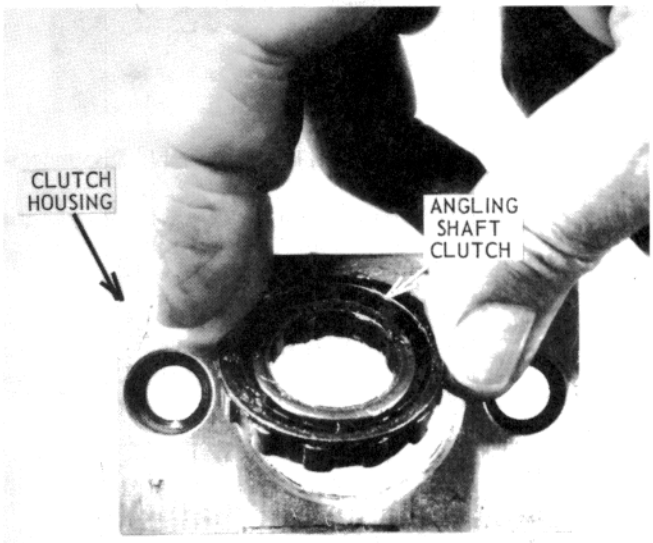


Figure 76 – Angling Shaft Clutch

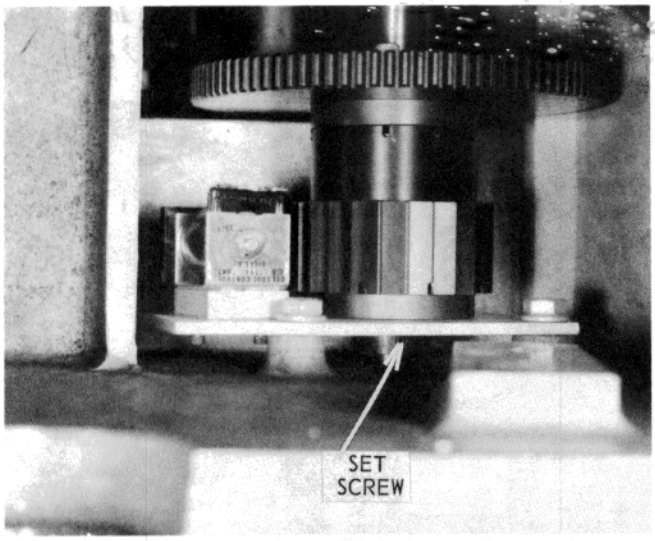


Figure 77 – Angling Clutch

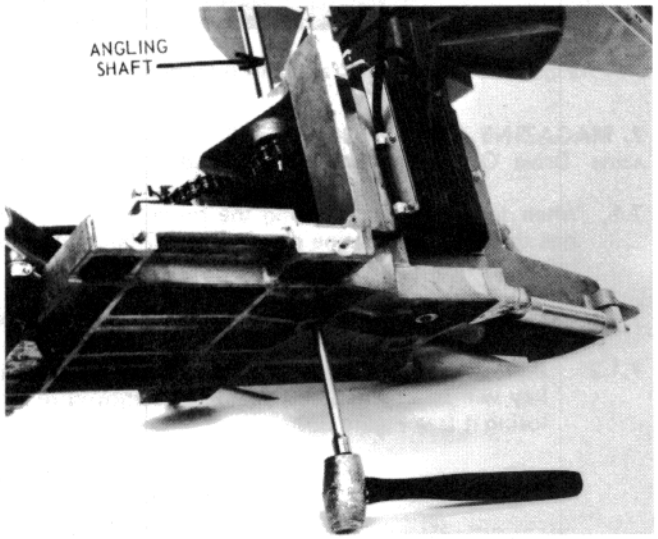


Figure 78 – Driving Out Angling Shaft

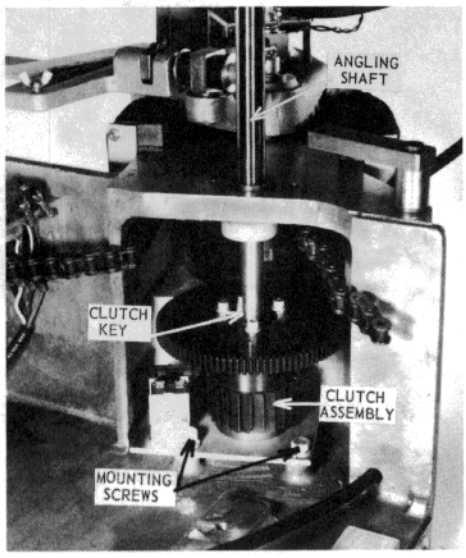


Figure 79 – Angling Clutch Assembly, Key, and Mounting Screws and Angling Shaft

6.1.14 The angling shaft can be pulled from the top of the trap if the platform is tilted for clearance. If the shaft still cannot be removed it will be necessary to turn the trap over and drive the shaft out from underneath (see Figure 78) using a brass rod. Be careful not to lose the angling clutch key which fits into the lower end of the angling shaft (see Figure 79).

6.1.15 Remove the angling clutch assembly by unbolting the angling clutch mounting screws (refer to Figure 79).

6.1.16 Inspect the angling clutch, angling clutch gear, and angling clutch solenoid. The angling clutch solenoid is removed from its mounting plate by removing the two mounting screws (see Figure 80). Mark the position of the angling clutch support on the plate so it can be replaced in the correct position. When replacing the solenoid check for clearance between the angling clutch lever and the ratchet teeth on the clutch. Use "Duco" cement between the angling clutch support and plate before tightening screws.

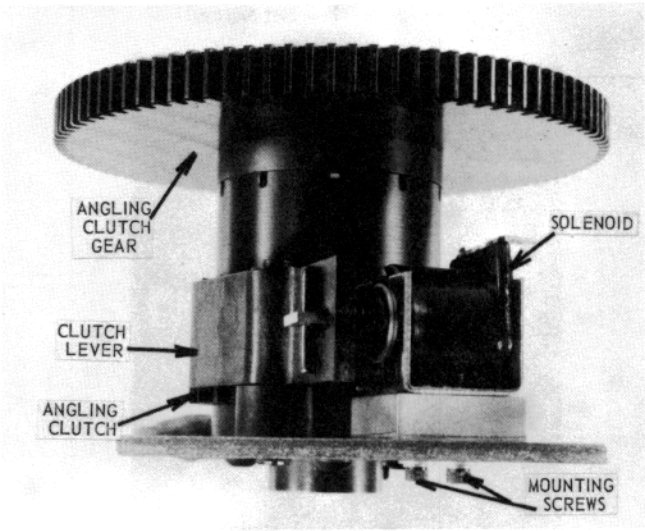


Figure 80 – Angling Clutch, Angling Clutch Gear and Angling Clutch Solenoid

6.1.17 Reassemble by installing the angling clutch and fastening it in place with the two angling clutch mounting screws (see Figure 79). Do not tighten mounting screws until shaft is in proper place.

6.1.18 Reconnect the angling solenoid cable.

6.1.19 Reinstall the angling drive shaft being certain the angling clutch key is correctly reinstalled (see Figure 79).

6.1.20 Tighten set screw (see Figure 81). Tighten mounting screws.

6.1.21 Reinstall the angling shaft clutch housing with the countersunk side of the screw holes facing up

6.1.22 Reinstall the angling shaft thrust bearing and the angling crank key. Reassemble the drive chain (see Figure 82). Tension in the chain is adjusted by the chain tension bolt (see Figure 83). Allow approximately 1/4" deflection of the chain. **DO NOT PUT FINGERS NEAR MOVING PARTS.**

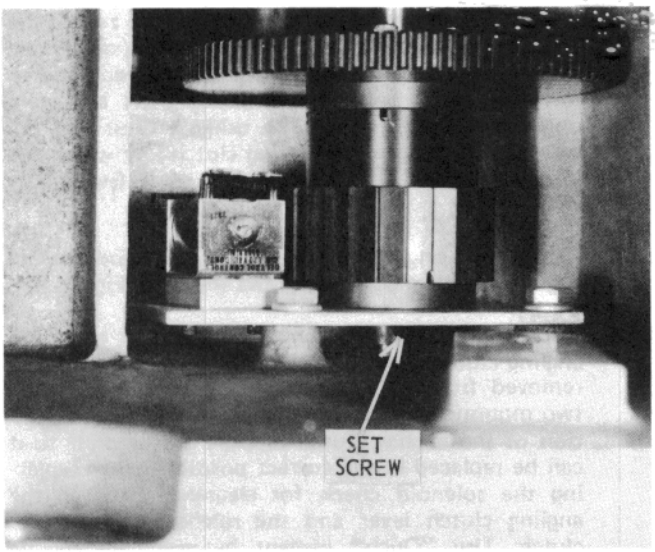


Figure 81 – Set Screw

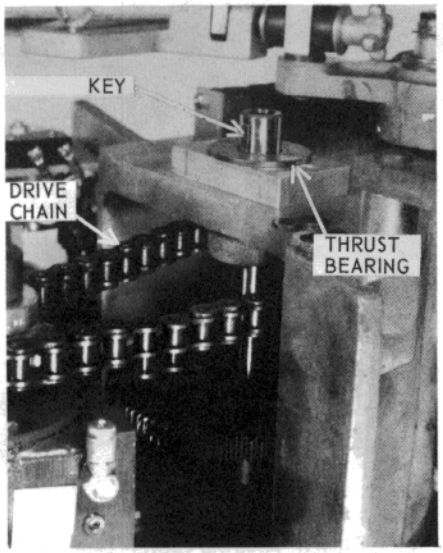


Figure 82 – Angling Shaft Thrust Bearing, Angling Crank Key, and Drive Chain

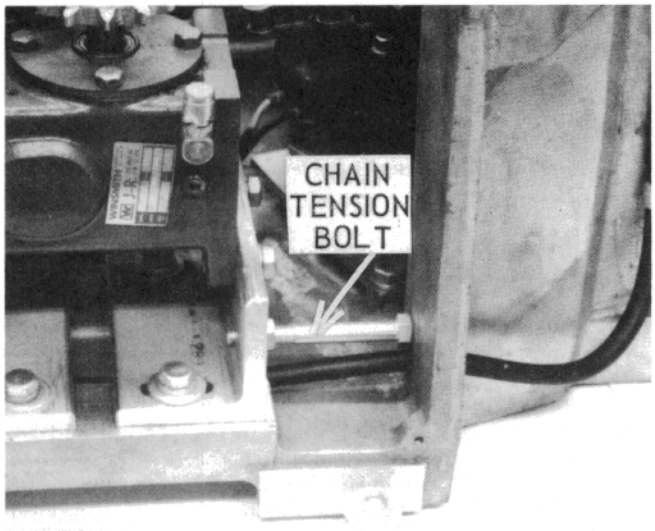


Figure 83 – Tension Adjustment

6.1.23 Reinstall the angling crank and angling yoke (see Figure 84).

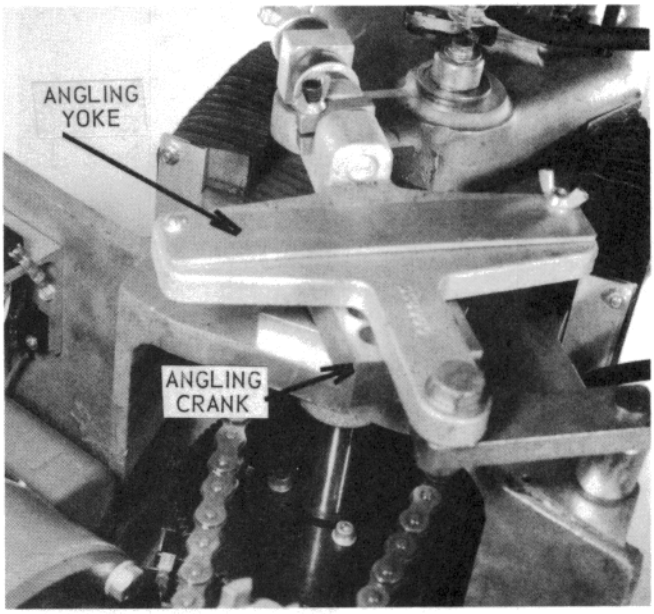


Figure 84 – Angling Crank and Angling Yoke

7. MAGAZINE AREA PROCEDURES – Magazine Gear, Magazine Drive Gear, Magazine Clutch, and Associated Parts.

7.1 When inspecting or servicing the magazine gear, magazine drive gear, magazine clutch, or associated parts, the following procedure should be followed:

7.1.1 "Safe Release" trap and disconnect the power.

7.1.2 Pull up on the magazine and remove it. The magazine key will be exposed and should be removed to avoid losing it (see Figure 85).

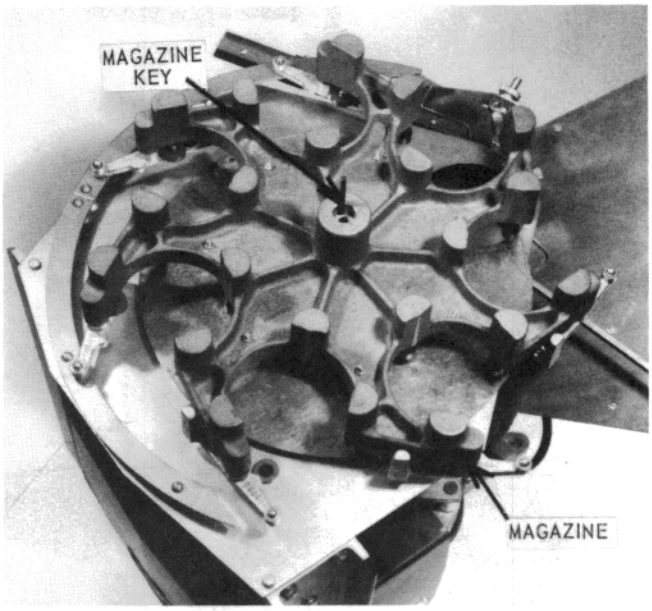


Figure 85 – Magazine and Magazine Key

7.1.3 Remove the four floor plate screws holding the magazine floor plate to the magazine gearbox (see Figure 86). The magazine drive gear shaft lock nut must be removed: however, the magazine drive gear shaft, which is held by this nut, must be held from below when the floor plate is removed to prevent the magazine drive gear from moving (see Figure 87). If the magazine drive gear moves without first being match marked with the magazine gear, incorrect timing will result.

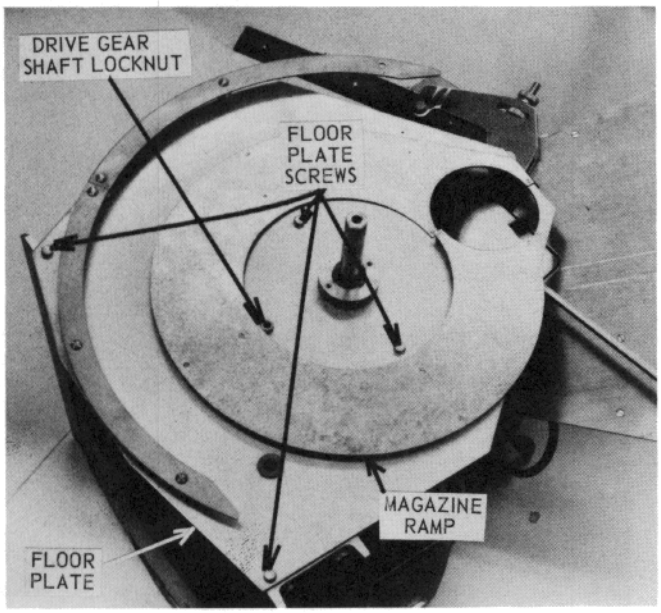


Figure 86 – Magazine Ramp, Floor Plate, Floor Plate Screws, and Magazine Drive Gear

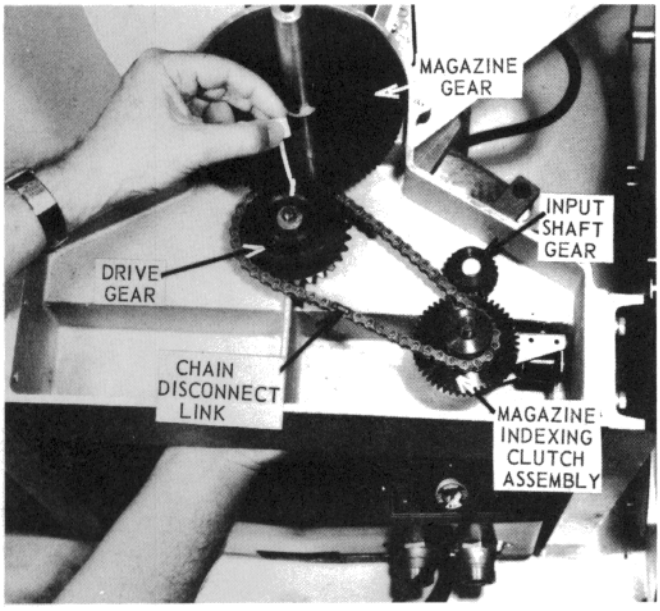


Figure 87 – Match Marking Magazine Gear and Magazine Drive Gear

7.1.4 Match mark the magazine gear with the magazine drive gear (see Figure 87).

7.1.5 Hold the magazine gear to keep it from turning, pull the magazine drive gear shaft out from beneath the gearbox, and reinsert the shaft into the magazine shaft bearing and magazine drive gear from above. This will hold the gears in place.

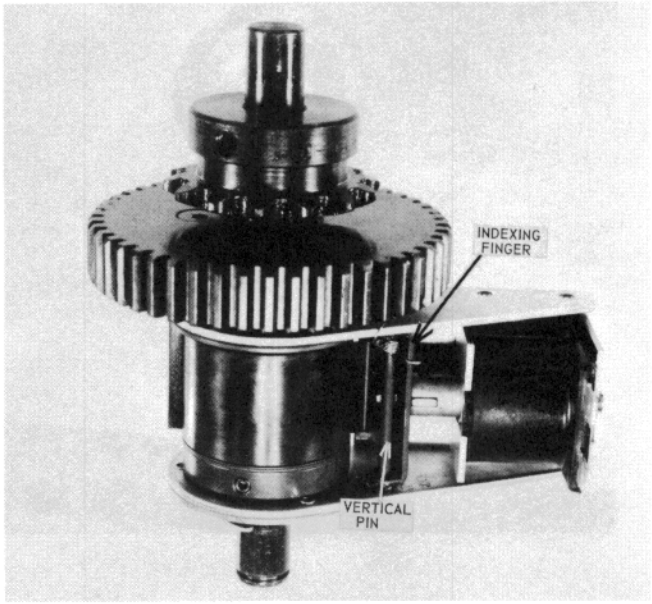


Figure 88 – Magazine Indexing Clutch Assembly

7.1.6 The chain disconnect link is positioned for unsnapping by disengaging the magazine indexing clutch to allow free movement of the chain (see Figure 87). The magazine indexing clutch is disengaged by pressing on the end of the metal indexing finger and rotating it slightly on the vertical pin (see Figure 88). The chain may also be removed by removing the magazine drive gear and not disconnecting the chain link.

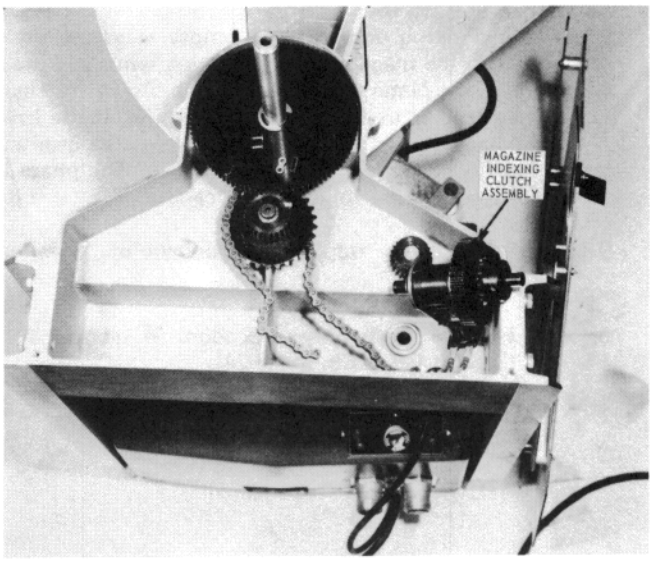


Figure 89 – Removing Indexing Clutch Assembly

7.1.7 The magazine indexing clutch (see Figure 89(is removed by disengaging the clutch shaft retaining ring (see Figure 90) located beneath the magazine gearbox.

7.1.8 Reassemble by following steps VII-7.1.1 through VII-7.1.8 in reverse order.

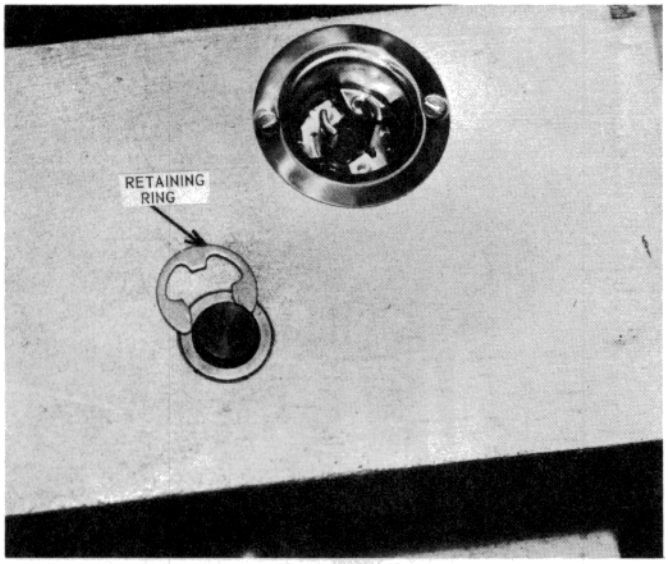


Figure 90 – Magazine Clutch Retaining Ring

8. INITIAL TIMING OF MAGAZINE ASSEMBLY

8.1 Follow steps 7.1.1, 7.1.2, 7.1.3.

8.1.1 Pull the magazine gear, make sure the chain will rotate freely then reinsert the magazine shaft with the keyway in line with the left lower corner of the magazine box looking at it from the rear of the trap.

9. MAGAZINE REPHASING PROCEDURE – Magazine Gear and Magazine Drive Gear.

9.1 When looking down on the empty magazine the target holes in the magazine the magazine ramp and the magazine floor plate should line up as shown in Figure 91 when trap is in the uncocked position. If the holes are not lined up in this manner the magazine gear and the magazine drive gear are out of phase. The phase is correctly set by the following procedure:

9.1.1 Safe Release trap and disconnect the power at the wall socket.

9.1.2 Follow disassembly procedure in section VII-7.1.2 through VII-7.1.5, (page 24).

9.1.3 Lift the magazine gear to disengage it from the magazine drive gear. Rotate the magazine gear one or two teeth in the direction required to line up the target holes.

9.1.4 Remesh the magazine gear and drive gear.

9.1.5 Reassemble the magazine. If the target holes are still not in the proper orientation, repeat this procedure until the holes are in the proper orientation.

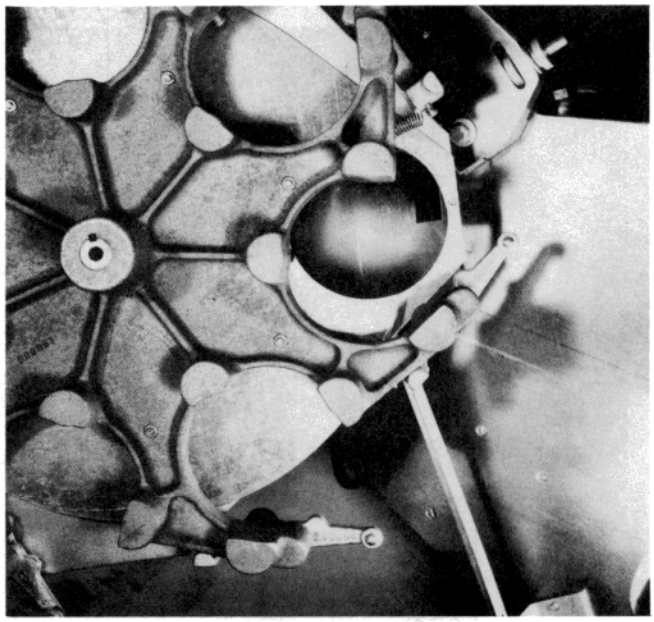


Figure 91 – Magazine

APPENDIX A

PARTS LISTS AND EXPLODED VIEW DRAWINGS

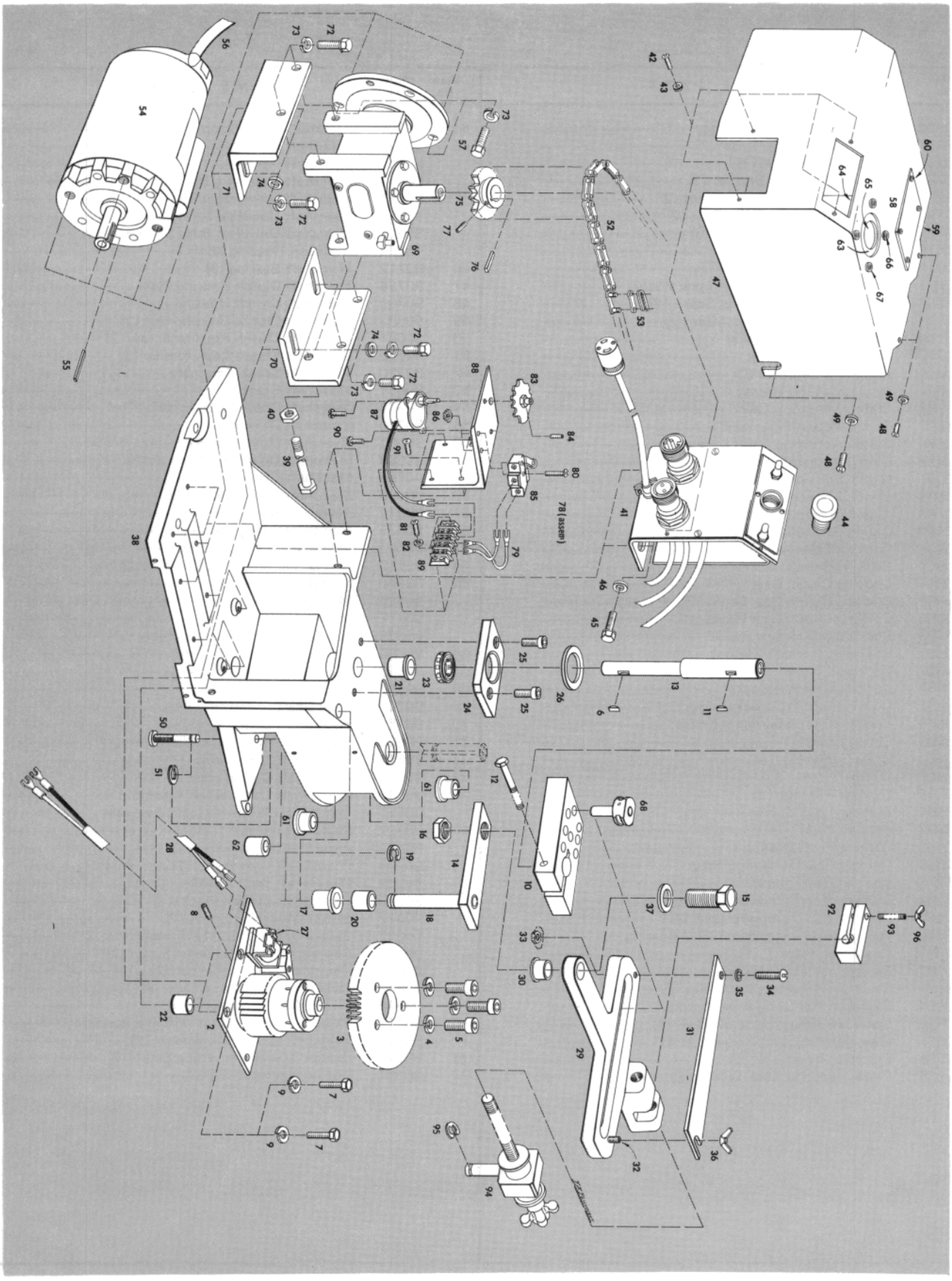
MODEL 4100

PLATE 1

View No.	Part No.	NAME OF PART
2	90803	Angling Clutch
3	90765	Angling Clutch Gear
4	90690	Angling Clutch Gear Lock Washer (3)
5	90691	Angling Clutch Gear Screw (3)
6	90651	Angling Clutch Key
7	90704	Angling Clutch Mounting Screw (2)
8	91030	Angling Clutch Set Screw
9	90682	Angling Clutch Washer (2)
10	90774	Angling Crank
11	90651	Angling Crank Key
12	90694	Angling Crank Lock Screw
13	90758	Angling Crank Shaft
14	90770	Angling Link
15	90686	Angling Link Bolt
16	90687	Angling Link Nut
17	90629	Angling Link Pivot Bearing
18	90646	Angling Link Pivot Pin
19	90648	Angling Link Pivot Pin Retaining Ring
20	90959	Angling Link Spacer
21	90632	Angling Shaft Bearing – Top
22	90639	Angling Shaft Bearing – Lower
23	90625	Angling Shaft Clutch (Sprag)
24	90795	Angling Shaft Clutch Housing
25	90680	Angling Shaft Clutch Housing Screw (2)
26	90641	Angling Shaft Thrust Bearing
27	91035	Angling Clutch Coil
28	90822	Angling Solenoid Control Cable Assembly
29	90855	Angling Yoke
30	90637	Angling Yoke Bearing
31	90783	Angling Yoke Cover
32	90656	Angling Yoke Cover Lock Screw
33	90702	Angling Yoke Cover Nut
34	90657	Angling Yoke Cover Screw
35	90663	Angling Yoke Cover Washer
36	90673	Angling Yoke Cover Wing Nut
37	90642	Angling Yoke Thrust Bearing
38	90875	Base
39	90669	Chain Tension Bolt
40	90683	Chain Tensioning Lock Nut
41	90861	Control Panel Assembly
	91319	Auto Angle Switch Assembly
	90605	Control Panel Terminal (22)
	90852	Control Panel
	90595	Control Panel Fuse Receptacle
	90602	Fuse Receptacle Mounting Screw (2)
	90805	Control Panel Guard
	90599	Control Panel Marker Strip
	90598	Control Panel Terminal Block
	90606	Terminal Block Mounting Screw
	90600	Control Panel Terminal Jumper
	90800	Control Instruction Plate
	90878	Magazine Power Cable Connector
	90608	Power Cable Receptacle
	90607	Release Cable Receptacle
	91320	Safe Release Switch Assembly
	90868	Toggle Switch Boot
	90846	Magazine Power Cable Assembly
42	90667	Control Panel Cover Screw (4)
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)

View No.	Part No.	NAME OF PART
47	90877	Cover
48	90662	Cover Screw (4)
49	90663	Cover Washer (4)
50	90645	Damper Pivot Pin
51	91037	Damper Pivot Pin Retaining Ring
52	90627	Chain
53	91038	Drive Chain Link
54	90701	Motor
55	90664	Motor Key
56	90820	Motor Control Cable Assembly
57	90704	Motor Mounting Screw (3)
58	90858	Name Plate
59	90702	Name Plate Nut (4)
60	90679	Name Plate Screw (4)
61	90630	Pivot Shaft Bearing (2)
62	90636	Pivot Shaft Bearing Lower
63	90828	Seal
64	90593	Seal Nut (8)
65	90827	Seal Retaining Plate
66	90602	Seal Screw (4)
67	90601	Seal Washer (4)
68	90816	Slide Block Assembly
69	90851	Speed Reducer
70	90796	Speed Reducer Bracket, Front
71	90797	Speed Reducer Bracket, Rear
72	90704	Speed Reducer Bracket Screw (8)
73	90682	Speed Reducer Bracket Lock Washer (11)
74	90693	Speed Reducer Bracket Washer (4)
75	90626	Speed Reducer Sprocket
76	90664	Speed Reducer Sprocket Key
77	91029	Speed Reducer Sprocket Set Screw
78	90813	Timing Motor Assembly
79	91039	Cam Switch Wire Assembly (2)
80	90612	Switch Mounting Screw (2)
81	90602	Terminal Block Mounting Screw (2)
82	90601	Terminal Block Washer (2)
83	91040	Timing Cam Assembly (Cam & Hub
84	90716	Timing Cam Set Screw
85	90609	Timing Cam Switch
86	90714	Timing Cam Switch Lock Nut (2)
87	90610	Timing Motor
88	90782	Timing Motor Bracket
89	90611	Timing Motor Bracket Terminal Block
90	90613	Timing Motor Mounting Screw (2)
91	90662	Timing Motor Assembly Mounting Screw (2)
	90823	Timing Motor Control Cable Assembly
92	90799	Windage Adjusting Screw Clamp
93	90658	Windage Adjusting Clamp Screw
94	90815	Windage Adjusting Screw Assembly
	91328	Angling Pivot Pin Assembly
	90802	Buffer Ring (2)
	90771	Thrust Washer (2)
	90784	Windage Adjusting Knob
	90672	Windage Adjusting Knob Lock Screw
	90775	Windage Adjusting Screw
95	90648	Windage Adjusting Screw Assembly Retaining Ring
96	90673	Windage Clamp Nut

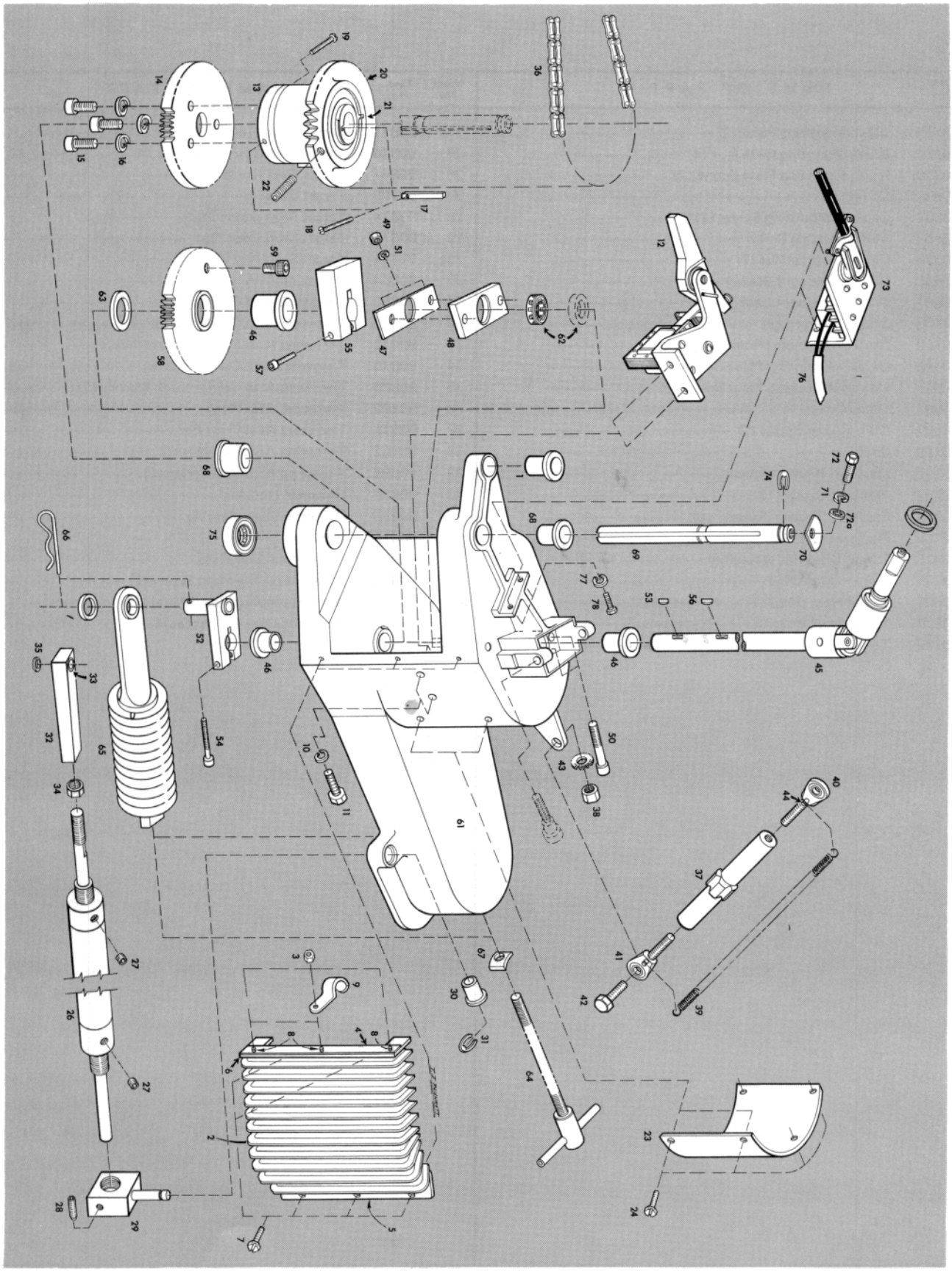
Remington MODEL 4100



MODEL 4100
PLATE 2

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

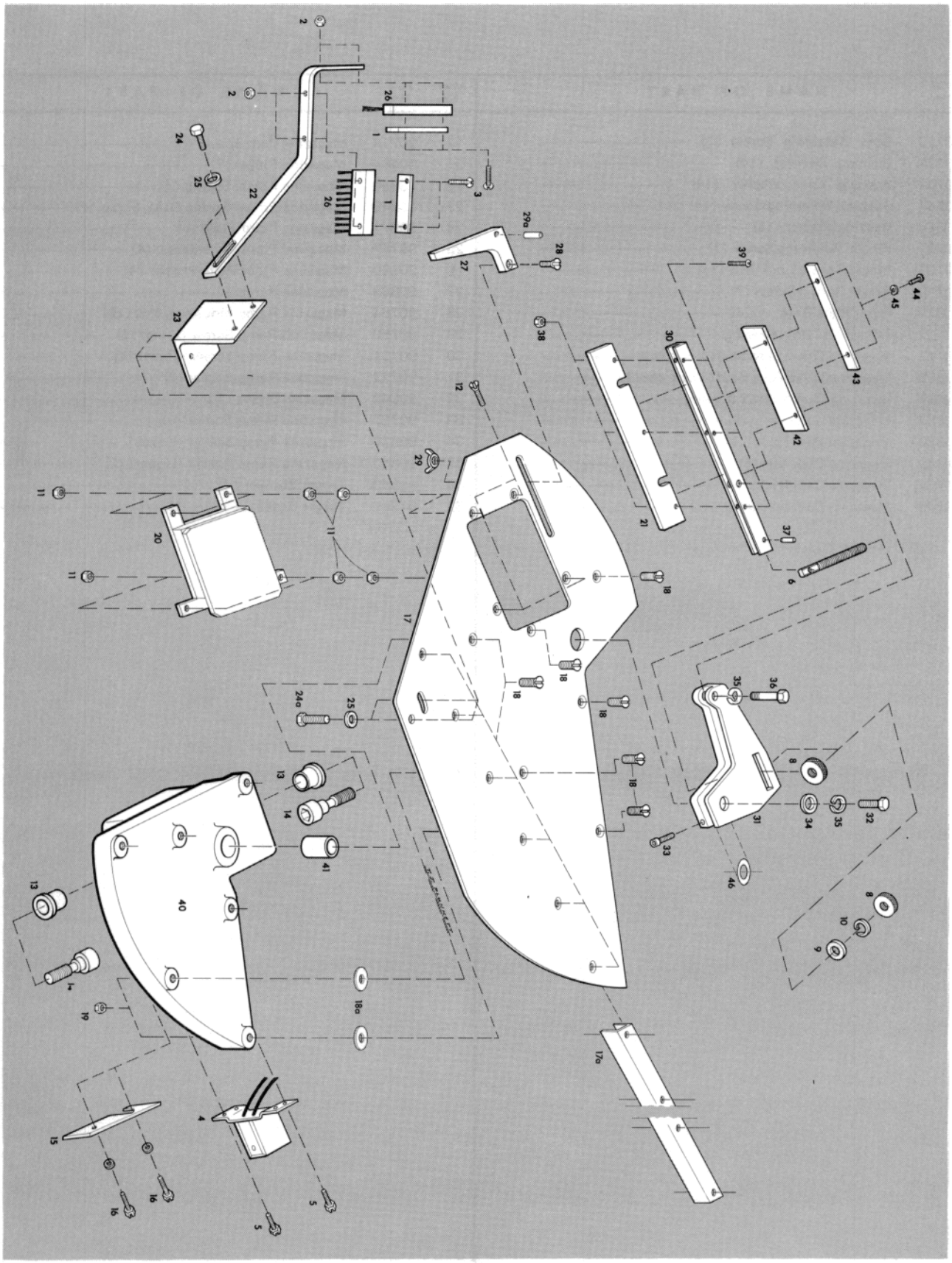
Remington MODEL 4100



MODEL 4100
PLATE 3

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

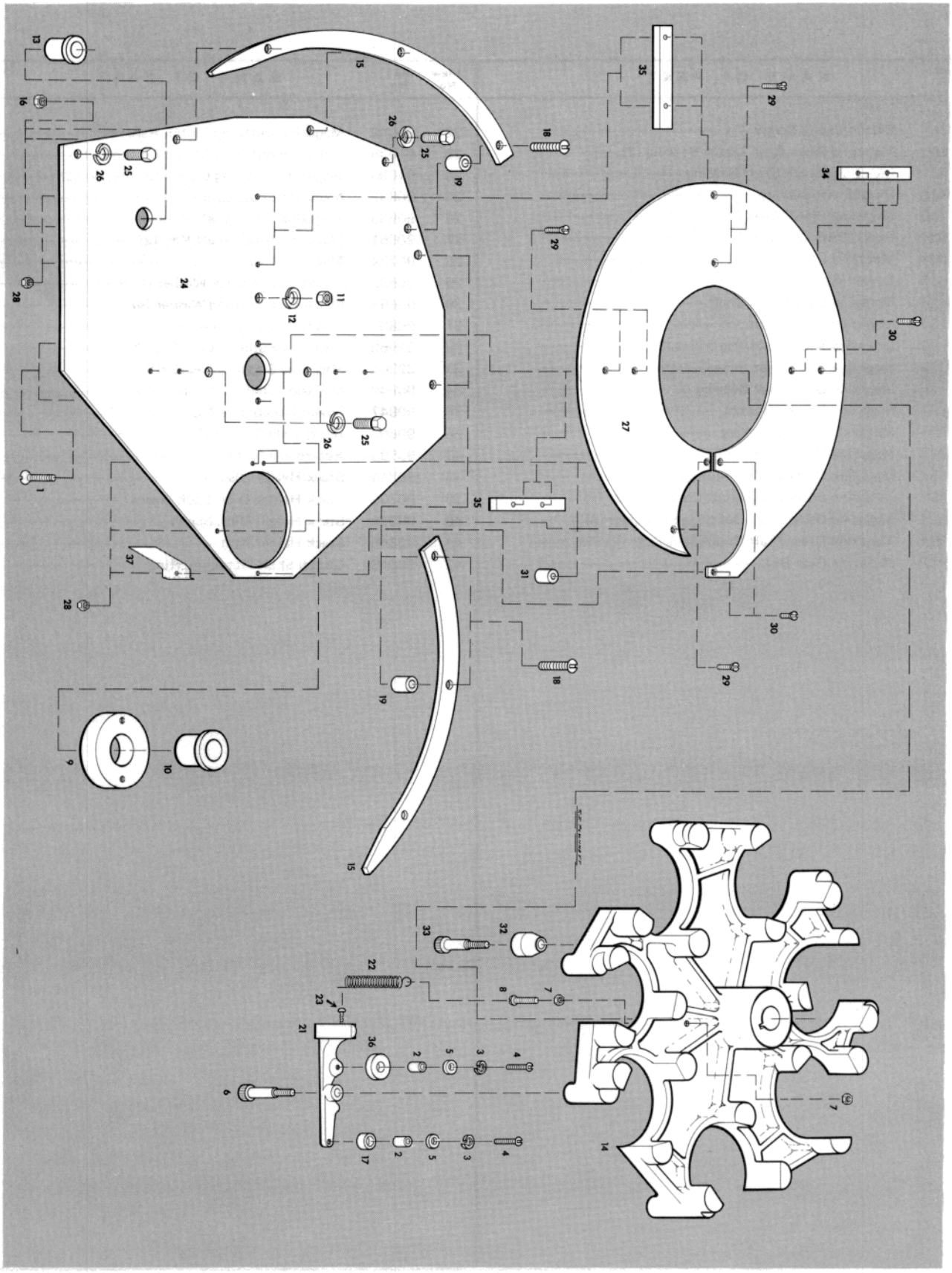
Remington MODEL 4100



MODEL 4100
PLATE 4

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

Remington MODEL 4100



MODEL 4100
PLATE 5

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

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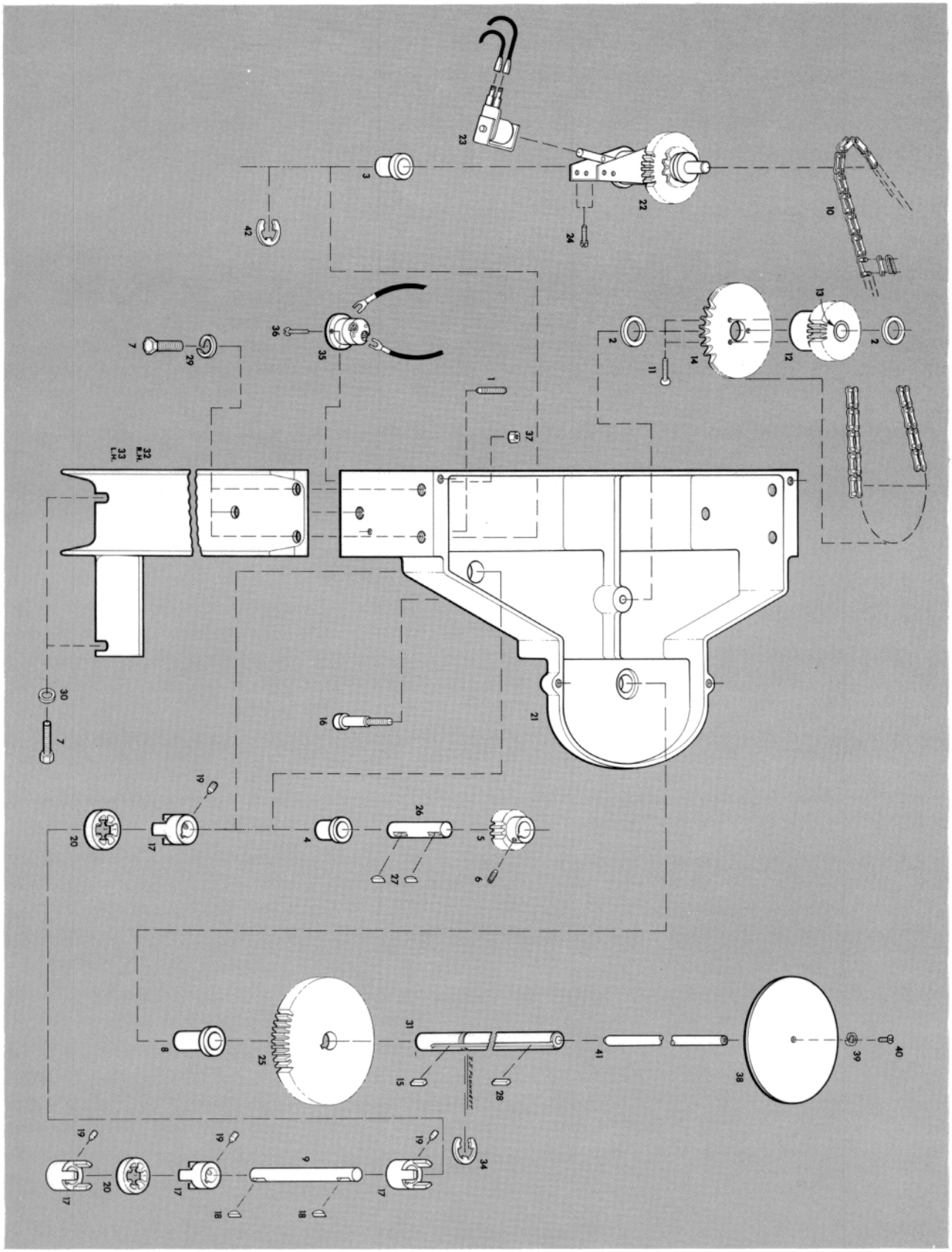
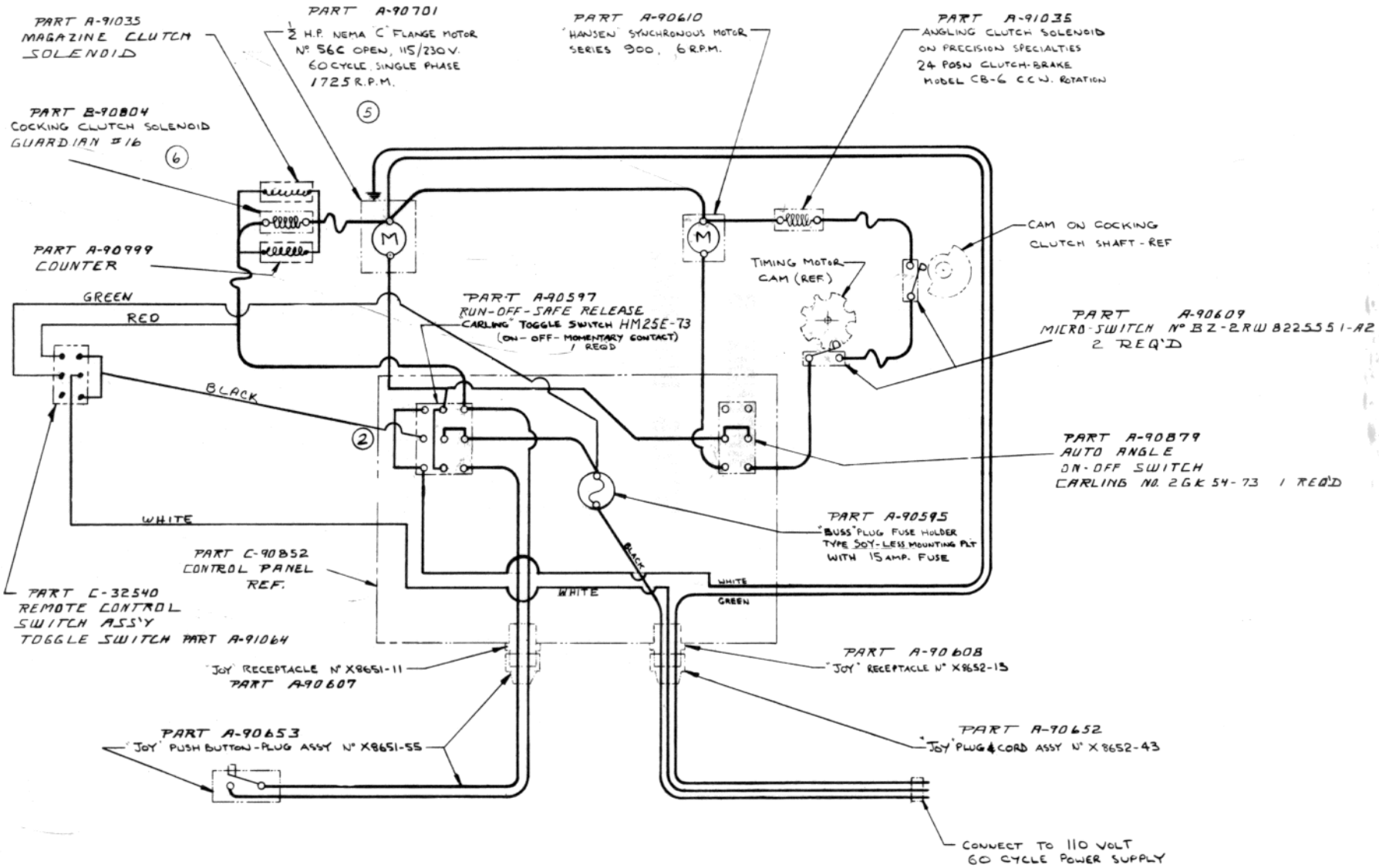
MODEL 4100



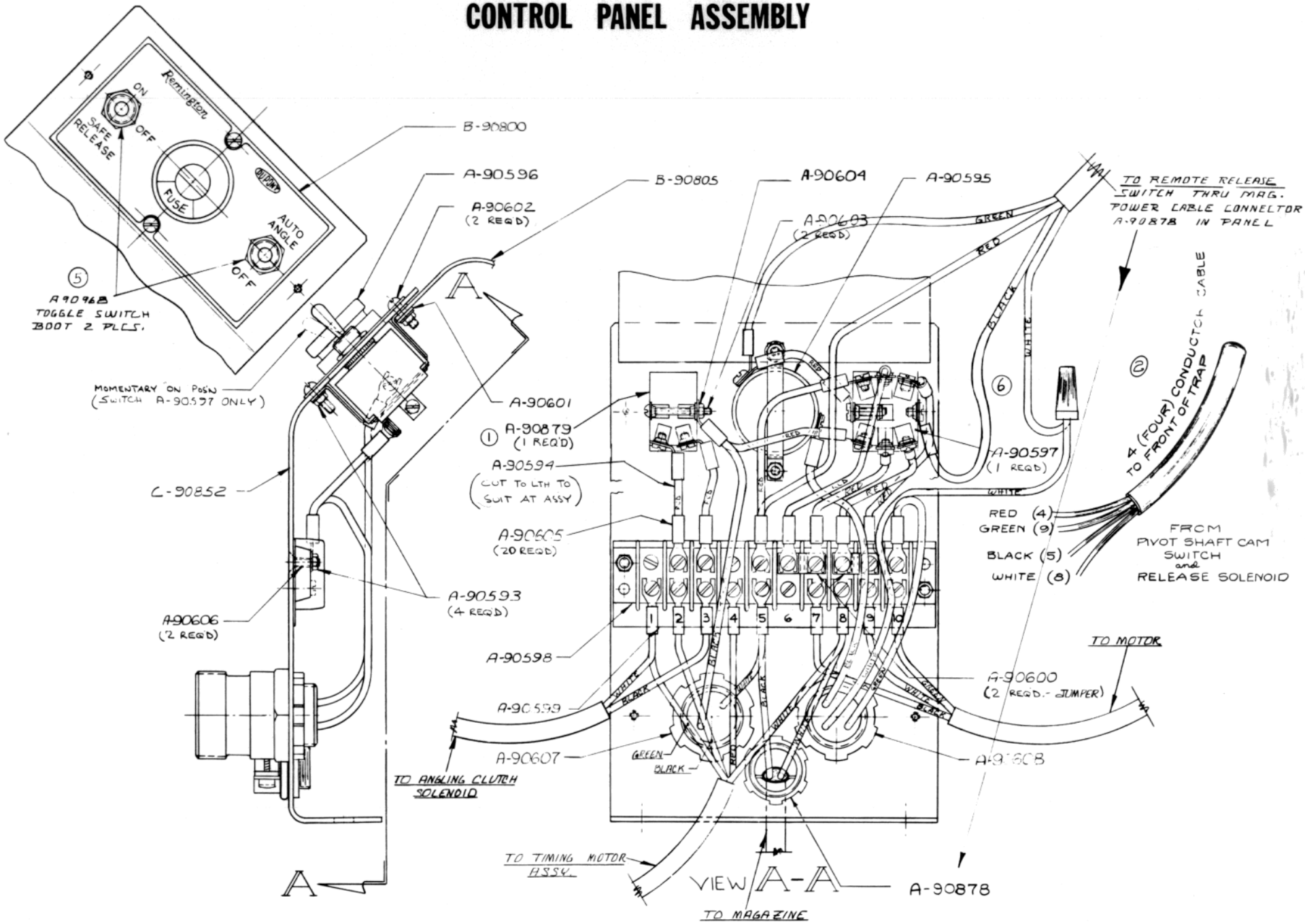
APPENDIX B

WIRING DIAGRAMS

TRAP WIRING DIAGRAM



CONTROL PANEL ASSEMBLY



APPENDIX C

RECOMMENDED SPARE PARTS AND ORDERING INFORMATION

RECOMMENDED SPARE PARTS

MODEL 4100 TRAP REPAIR PARTS

1	90785	TARGET GUIDE RAIL
1	90810	WIPER
2	90841	TARGET NEST BRUSH
1	91035	MAGAZINE INDEXING CLUTCH COIL–ALSO USED ON ANGLING CLUTCH
2	90609	PIVOT SHAFT CAM SWITCH OR TIMING CAM SWITCH
1	33325	MAINSPRING ASSEMBLY
1	91064	REMOTE CONTROL SWITCH
1	90879	AUTO ANGLE SWITCH
1	90597	SAFE RELEASE TOGGLE SWITCH
1	90804	COCKING CLUTCH SOLENOID

WE RECOMMEND THAT THE ABOVE PARTS BE KEPT ON HAND FOR REPAIR PURPOSES.

REMINGTON ARMS CO., INC.
520 E. EDGAR AVE.
P.O. BOX 390
FINDLAY, OH 45840

INSTRUCTIONS FOR ORDERING PARTS

(Please read carefully)

When ordering parts, model number, part number and part name must be given. Parts may be identified from exploded view and parts list.

Please do not ship sample parts to factory unless it is impossible to identify from parts list or exploded view. See shipping instructions concerning FACTORY SERVICE. Parts will be furnished as long as supply is available.

All parts will be shipped as ordered. The particular part may require slight adjustment or fitting to assure proper function.

Please send part orders direct to:

REMINGTON ARMS CO., INC.
520 E. EDGAR AVE.
P.O. BOX 390
FINDLAY, OH 45840

INSTRUCTIONS FOR FACTORY SERVICE

(Please read carefully)

Please package carefully when shipping to factory. Use plenty of cushioning material to prevent movement in package during transit.

All shipments should have return and forwarding address clearly marked on package as well as on attached letter.

To further improve service, please attach complete letter of information securely on outside of each package returned to factory for repairs. Give full details of contents of shipment. List model name and number. Give full condition of contents – damage, parts missing, etc. A full description will enable us to more accurately list the needed repairs.

Cover only one subject in letter or order. Do not order spare parts and give instructions on repair in the same letter – this delays service.

To avoid all possible delay in starting work, please include in first order or letter the trouble to be corrected, any changes desired or parts to be replaced. If an estimate is required before work is started, please advise. Otherwise, we will proceed with necessary work and send a statement of the cost. Unless otherwise specified shipments will be made by way of Parcel Post on small packages, Express on larger packages. Remington parts are not interchangeable with those of any other make. For this reason Remington Arms Company, Inc. cannot service any product not of its manufacture. Repairs will be made as long as supply of parts is available.

IMPORTANT: Before packaging trap for return to factory, make sure trap is uncocked. Carrier should be removed and carefully packaged. All shipments may be made by insured mail, Express, Motor Transport or Freight.

Please send repairs direct to:

REMINGTON ARMS CO., INC.
520 E. EDGAR AVE.
P.O. BOX 390
FINDLAY, OH 45840

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Form RD 6707
Rev. 376