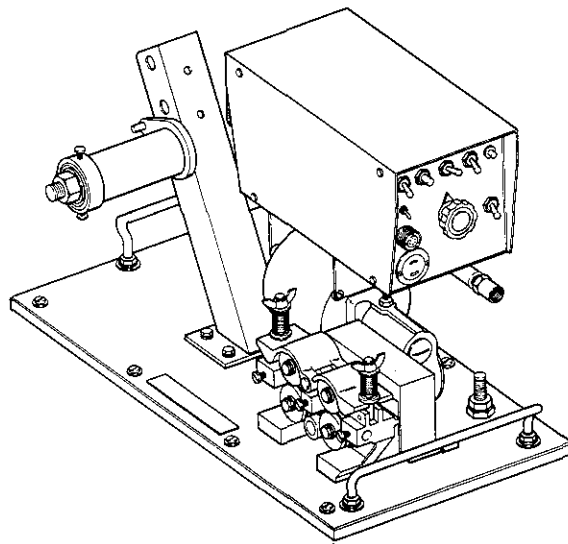


June 1979

FORM: OM-1039C

Effective With Serial No. HK253001

MODEL  
MILLERMATIC 30A  
CONTROL/FEEDER



# OWNER'S MANUAL



**MILLER ELECTRIC MFG. CO.**

718 S. BOUNDS ST. P.O. Box 1079  
APPLETON, WI 54912 USA

NWSA CODE NO. 4579  
PRINTED IN U.S.A.

# LIMITED WARRANTY

EFFECTIVE: JUNE 1, 1979

This warranty supersedes all previous MILLER warranties and is exclusive with no other guarantees or warranties expressed or implied.

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(labor - 1 year only)
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4. All other Millermatic Feeders . . . . . 1 year
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6. Batteries . . . . . 6 months

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EXCEPT AS EXPRESSLY PROVIDED BY MILLER IN WRITING, MILLER PRODUCTS ARE INTENDED FOR ULTIMATE PURCHASE BY COMMERCIAL/INDUSTRIAL USERS AND FOR OPERATION BY PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT AND NOT FOR CONSUMERS OR CONSUMER USE. MILLER' WARRANTIES DO NOT EXTEND TO, AND NO RESELLER IS AUTHORIZED TO EXTEND MILLER'S WARRANTIES TO, ANY CONSUMER.

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## SECTION 1 - INTRODUCTION

Electrode Wire Dia. Capability	Electrode Wire Feed Speed	Control Circuit Voltage At Gun	Overall Dimensions (Inches)	Weight (Pounds)	
				Net	Ship
.030" - 1/8"	15 to 850 ipm.	24 Volts	Height - 24-1/2 Width - 14-5/8 Depth - 34-1/4	66	71

Figure 1-1. Specifications

### 1 - 1. GENERAL

This manual has been prepared especially for use in familiarizing personnel with the design, installation, operation, maintenance, and troubleshooting of this equipment. All information presented herein should be given careful consideration to assure optimum performance of this equipment.

### 1 - 2. RECEIVING-HANDLING

Prior to installing this equipment, clean all packing material from around the unit and carefully inspect for any damage that may have occurred during shipment. Any claims for loss or damage that may have occurred in transit must be filed by the purchaser with the carrier. A copy of the bill of lading and freight bill will be furnished by the carrier on request if occasion to file claim arises.

When requesting information concerning this equipment, it is essential that Model Description and/or Stock Number and Serial (or Style) Numbers of the equipment be supplied.

### 1 - 3. DESCRIPTION

This control/feeder is of the constant wire feed speed type and is designed to be used in conjunction with a constant potential welding power source.

The control/feeder is a heavy duty wire feeding unit combining both the wire feeder and the control in a compact assembly. It contains all the controls and equipment needed to supply welding wire and shielding gas to the welding gun.

### 1 - 4. SAFETY

Before the equipment is put into operation, the safety section at the front of the welding power source or welding

generator manual should be read completely. This will help avoid possible injury due to misuse or improper welding applications.

The following definitions apply to CAUTION, IMPORTANT, and NOTE blocks found throughout this manual:

#### CAUTION

Under this heading, installation, operating, and maintenance procedures or practices will be found that if not carefully followed may create a hazard to personnel.

#### IMPORTANT

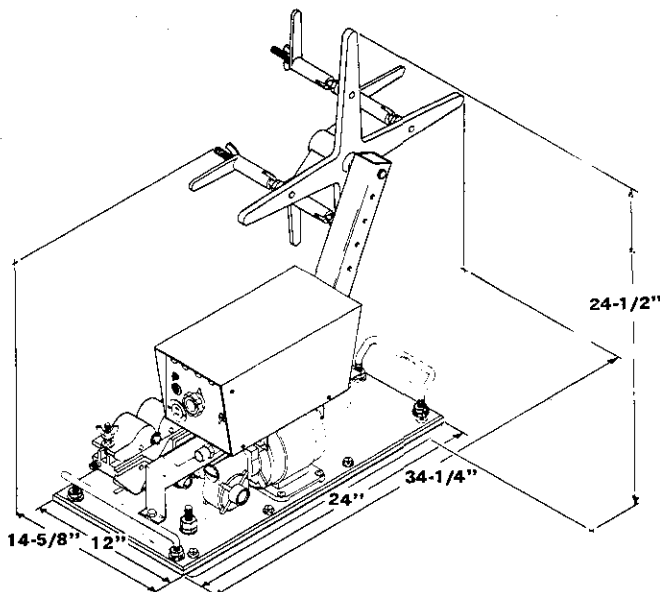
Under this heading, installation, operating, and maintenance procedures or practices will be found that if not carefully followed may result in damage to equipment.

#### NOTE

Under this heading, explanatory statements will be found that need special emphasis to obtain the most efficient operation of the equipment.

## SECTION 2 - INSTALLATION

### 2 - 1. LOCATION



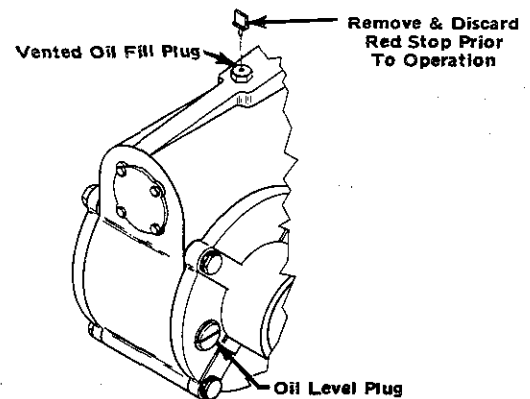
AC-056 132-2A

Figure 2-1. Control/Feeder Dimensions

Refer to Figure 2-1 for dimensional information on the control/feeder. Lead lengths must be considered when installing the control/feeder. If the welding power source can be located near the work area, the control/feeder can usually be installed on top of the welding power source. Suitable space should be allowed for making necessary connections.

### 2 - 2. DRIVE MOTOR (Figure 2-2)

The red stop, which is inserted into the hole in the vented oil fill plug, must be removed prior to operation of the control/feeder. See Figure 2-2 for the location of the red stop.



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Figure 2-2. Vented Oil Plug And Oil Level Plug

The oil level should be checked before the unit is put into operation and periodically thereafter. To check oil level in the gear housing, remove the oil level plug in the gear housing. Add SAE No. 90 oil, if necessary, until oil runs out the oil level hole.

### 2 - 3. 115 VOLTS AC CONNECTIONS (Figure 2-3 & 2-4)

Attach one end of the 115 volts power cable to the supplied 3 prong female plug as shown in Figure 2-3. It is recommended that a 16/3 conductor cable be used as the power cable. After attachment of the plug to the cable is complete, insert the plug fully into the 115 Volts AC receptacle on the rear panel of the control/feeder and rotate the plug as far as it will turn in a clockwise direction. This will lock the plug in the receptacle and prevent the plug from pulling out under tension. Connect the remaining end of the cable to a 115 volts ac 60 Hertz power supply.

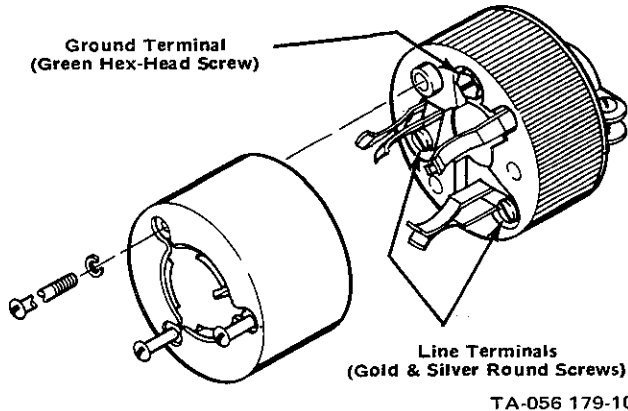
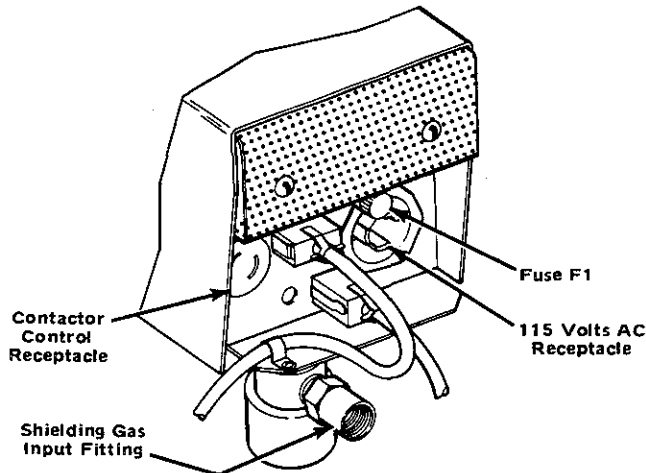


Figure 2-3. 115 Volts AC Plug Installation

### 2 - 4. CONTACTOR CONTROL CONNECTIONS (Figure 2-4)

Attach one end of the contactor control cable to the supplied 2 prong male plug. It is recommended that a 16/2 conductor cable be used for the contactor control cable. After attachment of the plug to the cable is complete, insert the plug fully into the Contactor Control receptacle on the rear panel of the control/feeder and rotate the plug as far as it will turn in a clockwise direction. This will lock the plug in the receptacle and prevent the plug from pulling out under tension. Attach the remaining end of the cable to the contactor control connection point on the welding power source.

### 2 - 5. SHIELDING GAS CONNECTIONS (Figure 2-4)



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Figure 2-4. Rear Panel Connections

Determine the distance the control/feeder is to be located from the shielding gas supply and then connect a hose from the shielding gas regulator-flowmeter on the shielding gas supply to the shielding gas input fitting on the rear of the control/feeder. This connection has a right hand thread.

The shielding gas hose which comes from the gun is to be attached to the shielding gas connector on the front panel of the control/feeder. This connector has right-hand threading.

### 2 - 6. SWITCH CONTROL CONNECTIONS (Figure 3-1)

A two-pole, twistlock receptacle is provided on the front panel of the control/feeder for making switch control connections. When the switch connected across this receptacle is closed, the contactor in the welding power source will energize, shielding gas will flow, and wire will begin to feed.

### 2 - 7. WELD CABLE TERMINAL (Figure 3-1)

A terminal is provided on the base of the control/feeder to serve as a junction point for joining together the weld cables from the welding power source and the gun.

#### IMPORTANT

Ensure that the weld cable terminal is kept clean at all times. Also ensure that the nut on this terminal is secure. If either one of the above conditions is not met, erratic weld current could result.

### 2 - 8. SPEED CHANGE GEARS (Figure 2-5)

By varying the combinations of the supplied steel and nylon speed change gears, the minimum to maximum wire feed speed range of the control/feeder can be varied. The control/feeder is shipped with the 30 tooth nylon gear attached to the motor drive shaft and the 24 tooth steel gear attached to the drive assembly thereby supplying a wire feed speed range of from 50 to 550 ipm. Table 2-1 shows the various gear combinations which can be obtained and the wire feed speed range that these gear combinations will yield.

#### CAUTION

Do not use two steel gears together as this will cause weld current to be present on the motor and control assembly. Also, two nylon gears should not be used together as two nylon gears will wear rapidly.

Table 2-1. Gear Combinations For Various Wire Feed Speed Ranges

Motor Gear No. of Teeth	Drive Gear No. of Teeth	Min. Wire Speed Control Setting	Max. Wire Speed Control Setting
15 Steel	30 Nylon	15 ipm	200 ipm
15 Steel	24 Nylon	20 ipm	270 ipm
24 Steel	30 Nylon	30 ipm	370 ipm
24 Nylon	24 Steel	35 ipm	450 ipm
30 Nylon	24 Steel	50 ipm	550 ipm
24 Nylon	15 Steel	60 ipm	700 ipm
30 Nylon	15 Steel	70 ipm	850 ipm

To change the speed change gears, proceed as follows:

1. Remove the cover which is over the speed change gears.
2. Loosen the two bolts which secure the drive assembly to the base and slide the drive assembly out (away from the motor).
3. Using a 1/8 inch allen wrench, loosen the set screw in the gear on the drive assembly and remove the gear.

4. Loosen the set screw in the gear on the motor drive shaft and remove the gear.
5. Slide the desired gear onto the drive assembly and tighten the set screw in the gear.
6. Slide the desired gear onto the motor drive shaft and tighten the set screw in the gear.

### IMPORTANT

The control/feeder uses a nylon and a steel gear in the drive train between the drive motor and the wire drive rolls. Proper clearance between the nylon and steel gear is important. The proper clearance is .007 inch. This is approximately the same thickness as two sheets of standard writing paper. The easiest method to obtain the proper alignment is to be sure the motor is fastened securely to the base plate. Then insert a piece of .007 thick paper (or two thicknesses of standard writing paper) between the nylon and steel gear, check the alignment of the gears (the two gears must be running a straight line) and then tighten down the drive roll assembly. If this proper clearance is not maintained in the gears, they may wear severely, bind, and cause erratic wire feed, or break.

7. Install the cover over the speed change gears.

## 2-9. WIRE GUIDE & DRIVE ROLL INSTALLATION (Figure 2-5 & 2-6)

Upon initial installation, or as a result of wire size changes, it is necessary to install the required drive rolls and wire guides to accommodate the particular wire size. Having selected the desired wire size and related parts, proceed to the following installation instructions:

### A. One-Piece Drive Roll (Figure 2-5)

1. Loosen the pressure adjustment wing nuts, and pivot the pressure adjustments downward.
2. Remove the four drive roll securing bolts and associated washers from the drive shafts and pull off the drive rolls.
3. Loosen the inlet, intermediate, and outlet guide securing screws and slide out all three wire guides.
4. Install the desired size wire guides and temporarily tighten the wire guide securing screws.
5. Slide the desired size drive rolls (gear side first) onto the drive shafts.
6. Secure the drive rolls in place by installing the washers and bolts which were removed in Step 2.
7. Align all three wire guides so that the ends of the wire guides are 1/16 inch away from the drive rolls. Tighten the wire guide securing screws.
8. Ensure that the teeth of the upper drive rolls mesh with the teeth of the lower drive rolls and pivot the pressure adjustments upward until the washer on the pressure adjustments is seated on top of the drive roll cover. Tighten the pressure adjustment wing nuts just enough to hold the pressure adjustment assemblies in place.

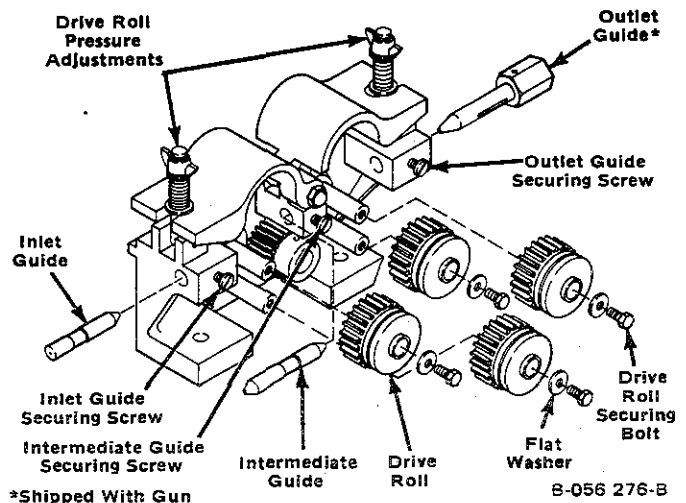


Figure 2-5. One-Piece Drive Roll Assembly

### B. Split Drive Roll (Figure 2-6)

1. Loosen the pressure adjustment wing nuts and pivot the pressure adjustments downward.
2. If converting from a one-piece drive roll to a split drive roll, it will be necessary to remove the four drive roll securing bolts and associated washers. If converting a split drive roll arrangement from one wire size to another wire size requiring split drive rolls, proceed to Step 4.
3. Pull off the one-piece drive rolls from the drive assembly.
4. Remove the three drive roll securing screws in each of the four gear/drive rolls and remove the drive rolls.
5. Loosen the inlet, intermediate, and outlet guide securing screws and slide out all three wire guides.
6. Install the desired size wire guides and temporarily tighten the wire guide securing screws.
7. After selecting the desired split drive rolls, align the holes in the split drive rolls with the holes in the gears and install the three drive roll securing screws in each of the four gears. (If converting from a one-piece drive roll to a split drive roll, the assembled split drive roll and gear may now be placed on the drive roll shafts and the drive roll securing bolts and washers installed.)

### NOTE

When the knurled groove of the drive rolls becomes worn, the split drive roll halves may be reversed so that the outside edges will now provide a new knurled groove.

8. Align all three wire guides so that the ends of the wire guides are 1/16 inch away from the drive rolls. Tighten the wire guide securing screws.
9. Ensure that the teeth of the upper drive rolls mesh with the teeth of the lower drive rolls and pivot the pressure adjustments upward until the washer on the pressure adjustments is seated on top of the drive roll cover.

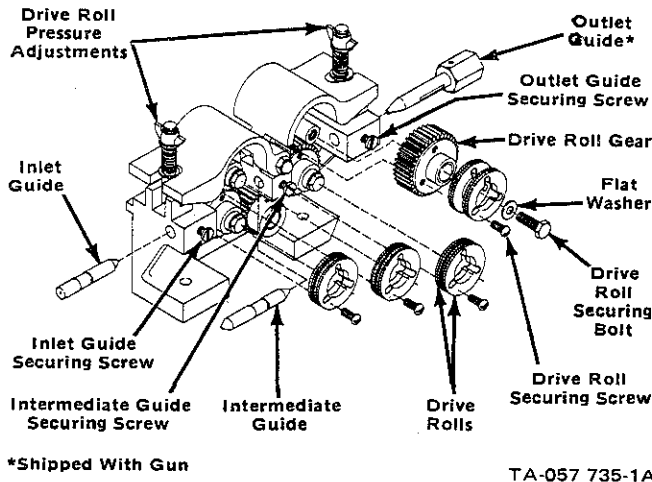


Figure 2-6. Split Drive Roll Assembly

### 2-10. SPINDLE ASSEMBLY INSTALLATION (Figure 2-7)

1. Insert spindle support shaft (item 15, Figure 2-7) into the desired hole in spindle support (16). The hole to be utilized in the spindle support (16) will depend on the size of the wire spool being used.
2. Secure spindle support shaft (15) with cotter pin (17).
3. Slide the following items onto the spindle support shaft (15) in order given:
  - A. Fiber Washer (14)
  - B. Flat Washer (13)
  - C. Hub (12)
  - D. Flat Washer (8)
  - E. Fiber Washer (7)
  - F. Keyed Washer (6)
  - G. Spring (5)
  - H. Flat Washer (4)
4. Rotate hex nut (3) onto support shaft (15). Hex nut (3) should be rotated only until a slight drag is felt while turning hub (12).
5. Proceed to install welding wire according to the applicable Section: 2-11 for spool-type wire; and 2-12, 2-13 for reel-type wire.

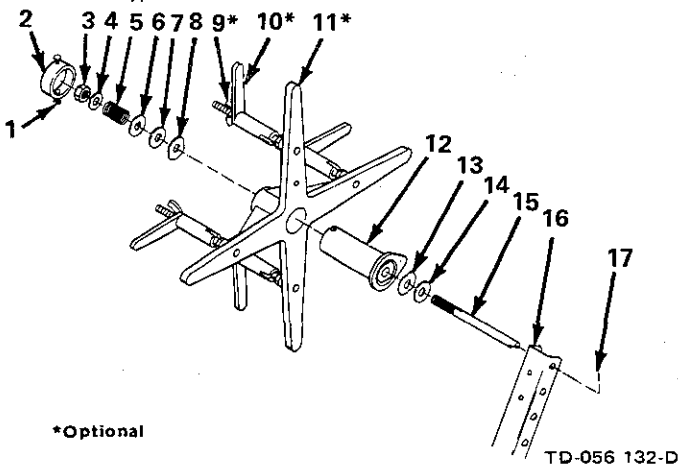


Figure 2-7. Hub And Reel Installation

### 2-11. INSTALLATION OF SPOOL-TYPE WIRE (Figure 2-7)

1. Slide the spool of wire onto the hub so that the wire feeds off the bottom of the spool. The spool turns in a counterclockwise direction.

2. Rotate the spool until the hole in the spool aligns with the pin in the hub. Slide the spool onto the hub until it seats against the back flange of the hub.
3. Depress the two spring-loaded stops (item 1, Figure 2-7) on the retaining ring (2) and slide the retaining ring into proper position on the hub (12). Release the two stops (1).

### 2-12. INSTALLATION OF WIRE REEL (Optional) (Figure 2-7)

1. Slide the wire reel (item 11, Figure 2-7) onto the hub (12). Rotate the wire reel (11) until the hub guide pin is seated in the reel (11).
2. Depress the two spring-loaded stops (1) on the retaining ring (2) and slide the retaining ring (2) into proper position on the hub (12). Release the two stops (1).

### 2-13. INSTALLATION OF REEL-TYPE WIRE (Optional) (Figure 2-7)

1. Loosen the four wing nuts (item 9, Figure 2-7) on the fingers (10) of the wire reel (11).
2. Pull the four fingers (10) out until they can be rotated toward the center of the reel (11).
3. Install the wire onto the reel (11) over the four fingers (10). Ensure that the wire feeds off the bottom of the reel (11). The reel (11) turns in a counterclockwise direction.
4. Rotate the four fingers (10) back to their proper position. Tighten the four wing nuts (9).

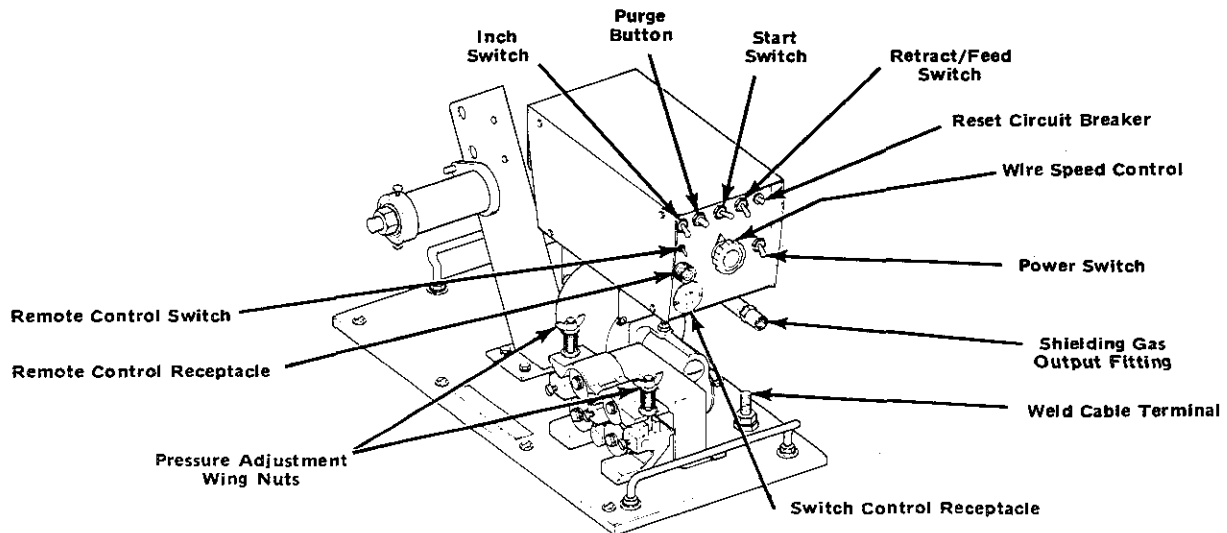
### 2-14. ADJUSTING HUB TENSION (Figure 2-7)

Check hub tension by slowly pulling wire toward the feed roll. The wire should unwind freely, but the hub tension should be sufficient to keep the wire taut and prevent backlash when the control/feeder is shut off. If adjustment is required, loosen or tighten the hex nut (item 3, Figure 2-7) on the end of the spindle support shaft (15) accordingly.

### 2-15. WELDING WIRE THREADING

1. Connect the gun to the control/feeder according to the instructions in the Gun Instruction Manual.
2. Loosen the wing nut on the drive roll pressure adjustments, pivot the drive roll pressure adjustments downward, and lift the pressure gear covers upward until in an upright position.
3. Cut off any portion of the free end of the welding wire which is not straight. Feed the welding wire through the inlet wire guide in the drive roll assembly.
4. Continue to feed the welding wire through the intermediate and outlet wire guides.
5. Pivot the pressure gear covers downward making sure the teeth on the upper gears mesh with lower drive gears. The welding wire must also be in the grooves of the upper and lower drive rolls.
6. Pivot the drive roll pressure adjustments upward into the slot on the pressure gear covers making sure the lower flat washer is above the pressure gear cover.
7. Turn the wing nut on the drive roll pressure cover in a clockwise direction until the drive rolls are tight against the welding wire. Do not overtighten. Further adjustment can be made after the welding power source and control/feeder are put into operation.
8. Energize the welding power source.
9. Place the control/feeder POWER switch in the ON position.
10. Depress the INCH switch. This will run the welding wire through the gun without placing weld current on the welding wire. Release the INCH switch after the end of the welding wire extends approximately one inch from the end of the gun tip.

## SECTION 3 - FUNCTION OF CONTROLS



**Figure 3-1. Control/Feeder Components**

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### 3 - 1. POWER SWITCH (Figure 3-1)

Placing the POWER switch on the control/feeder in the ON position will apply 115 volts ac to the unit and thereby place it in an operational condition, ready to feed wire and permit shielding gas to flow. Placing the POWER switch in the OFF position will shut the control/feeder down.

#### CAUTION

Placing the POWER switch in the OFF position does not remove power from all of the control/feeder's internal circuitry. Completely terminate all electrical power to the control/feeder by removing the 115 volts ac plug from its power supply, and ensure that "machinery lockout procedures" have been employed on the welding power source's input line (see Instruction Manual on welding power source) before attempting any inspection or work inside the unit.

### 3 - 2. WIRE SPEED CONTROL (Figure 3-1)

The WIRE SPEED control provides a means of determining the rate at which welding wire will be fed into the weld. Rotating the WIRE SPEED control in a clockwise direction will increase the rate of the wire feed. When the WIRE SPEED control is set at 0, wire will feed at the slowest speed; when set at 100, the wire will feed at the fastest speed.

The scale which surrounds the WIRE SPEED control is calibrated in increments of ten ranging from 0 to 100 percent. Due to this percentage calibration, it should be noted that if this scale is being used to select a wire feed speed setting, only a percentage of the range in use is being selected and not an actual wire feed speed rate.

### 3 - 3. REMOTE CONTROL RECEPTACLE & SWITCH (Figure 3-1)

The wire speed may also be adjusted by a remote control (optional). Connect the remote control plug into the remote control receptacle on the front panel of the control/feeder and position the REMOTE CONTROL switch on the control/feeder and on the remote control unit to the REMOTE position. If it is desired to return the control of the

wire speed to the control/feeder, place the REMOTE CONTROL switch on either the control/feeder or the remote control to the STANDARD position.

### 3 - 4. PURGE BUTTON (Figure 3-1)

The PURGE button, located on the front panel of the control/feeder, is a momentary contact switch. This switch will energize the gas solenoid and purge the shielding gas line of the gun. The PURGE button also allows the shielding gas regulator to be adjusted without energizing the welding circuit.

### 3 - 5. INCH SWITCH (Figure 3-1)

The INCH switch, located on the front panel of the control/feeder, is a spring loaded toggle switch. When actuated it completes the circuit to the motor without having to depress the gun trigger switch. This switch will permit inching of the wire at whatever setting the WIRE SPEED control is at, without energizing the welding circuit or the shielding gas valve.

### 3 - 6. START SWITCH (Figure 3-1)

The START switch provides the capability of being able to select either a slow wire feed speed for 1/2 second at the beginning of wire feed or the wire feed speed at the rate set on the WIRE SPEED control. The SLOW position of the START switch will provide the 1/2 second of slow wire feed and the FAST position will provide wire feed at the rate set on the WIRE SPEED control.

### 3 - 7. RETRACT/FEED SWITCH (Figure 3-1)

The RETRACT/FEED switch will determine whether the wire will feed out of the gun or back into the gun when the gun switch is closed. The RETRACT position will cause the wire to go back into the gun and the FEED position will cause the wire to feed out of the gun.

### 3 - 8. RESET CIRCUIT BREAKER (Figure 3-1)

A circuit breaker, located on the upper portion of the control/feeder front panel, provides protection to the control/feeder motor. In the event the motor should be placed in an overload condition, the breaker would trip and suspend all output. Should this breaker trip, the RESET button would have to be manually depressed in order to reset the circuit breaker.

## SECTION 4 - SEQUENCE OF OPERATION

### 4 - 1. GAS METAL-ARC WELDING (GMAW)

1. Make all connections as instructed in Section 2.
2. Place the RETRACT/FEED switch in the FEED position.
3. Place the START switch in the desired position.
4. Rotate the WIRE SPEED control to the desired setting.
5. If a Remote Wire Speed Control is not to be used, place the REMOTE CONTROL switch in the STANDARD position. If a Remote Wire Speed Control is to be used, place both the REMOTE CONTROL switch on the Remote Wire Speed Control and on the control/feeder in the REMOTE position.
6. Place the POWER switch on the control/feeder in the ON position.
7. Depress the PURGE button for one minute.
8. Energize the welding power source.

#### CAUTION

Prior to welding, it is imperative that proper protective clothing (welding coat and gloves) and eye protection (glasses and welding helmet) be put on. Failure to comply may result in serious or permanent bodily damage.

9. Hold the tip of the gun approximately 1/2 inch from the workpiece.

10. Depress the trigger on the gun handle. Gas will start to flow and wire will start to feed if drive roll pressure is properly adjusted to prevent slippage. If wire slippage is noticed, tighten the drive roll pressure adjustment wing nut 1/2 turn clockwise. Repeat until slippage stops. Do not tighten wing nuts too much.

#### CAUTION

The welding wire and all metal parts in contact with it are energized while welding. Do not touch the welding wire or any metal part making contact with it.

### 4 - 2. SHUTTING DOWN

1. Turn off the shielding gas at the source.
2. Place the POWER switch on the control/feeder in the OFF position and remove the 115 Volts AC plug from the source.
3. Turn off all associated equipment.

#### CAUTION

If welding is performed in a confined area, failure to turn off the shielding gas supply could result in a build-up of gas fumes, thereby endangering personnel reentering the welding area.

## SECTION 5 - MAINTENANCE

### 5 - 1. INSPECTION AND UPKEEP

Usage and shop conditions will determine the frequency and type of maintenance. Inspect equipment as follows:

1. Make sure welding power source is shutdown.
2. Inspect gun for broken areas, cracks and loose parts: tighten, repair, and replace as required.
3. Carefully remove any weld spatter or foreign matter which may accumulate around the nozzle orifice. Use a hardwood stick never a metal tool.
4. Repair or replace, as required, all hose and cable; give particular attention to frayed and cracked insulation and areas where it enters equipment.
5. Remove grease and grime from components; moisture from electrical parts and cable.
6. Blow out the gun wire guide liner with compressed air when changing wire. This will remove any metal chips and dirt that may have accumulated.
7. Remove drive rolls (see Section 2-9) and use a wire brush to remove any build-up of particles from the welding wire which may accumulate in the groove in the drive rolls.

### 5 - 2. CLEANING OF DRIVE ROLL BEARING

Occasionally it will become necessary to clean and oil the bearings which are pressed into the four drive rolls. This cleaning operation should be performed whenever the visual appearance of the bearings becomes dirty and grimy.

To clean and oil these bearings it will be necessary to first remove the four drive roll gears (see Section 2-9 for removal and installation instructions). Once removed, use a clean rag to wipe the bearings clean. After this is done, apply a light coat of oil to the bearings and install the bearings back onto the drive roll shafts.

### 5 - 3. FUSE (Figure 2-4)

The control/feeder is protected from damage due to an internal short or excessive overload by fuse F1. F1 is located on the rear panel of the control. If F1 should open, the control/feeder would be completely inoperative.



## SECTION 6 - TROUBLESHOOTING

### CAUTION

Hazardous voltages are present on the internal circuitry of this unit as long as power is connected. Disconnect power before attempting any inspection or work on the inside of the unit. Troubleshooting of internal circuitry should be performed by qualified personnel only.

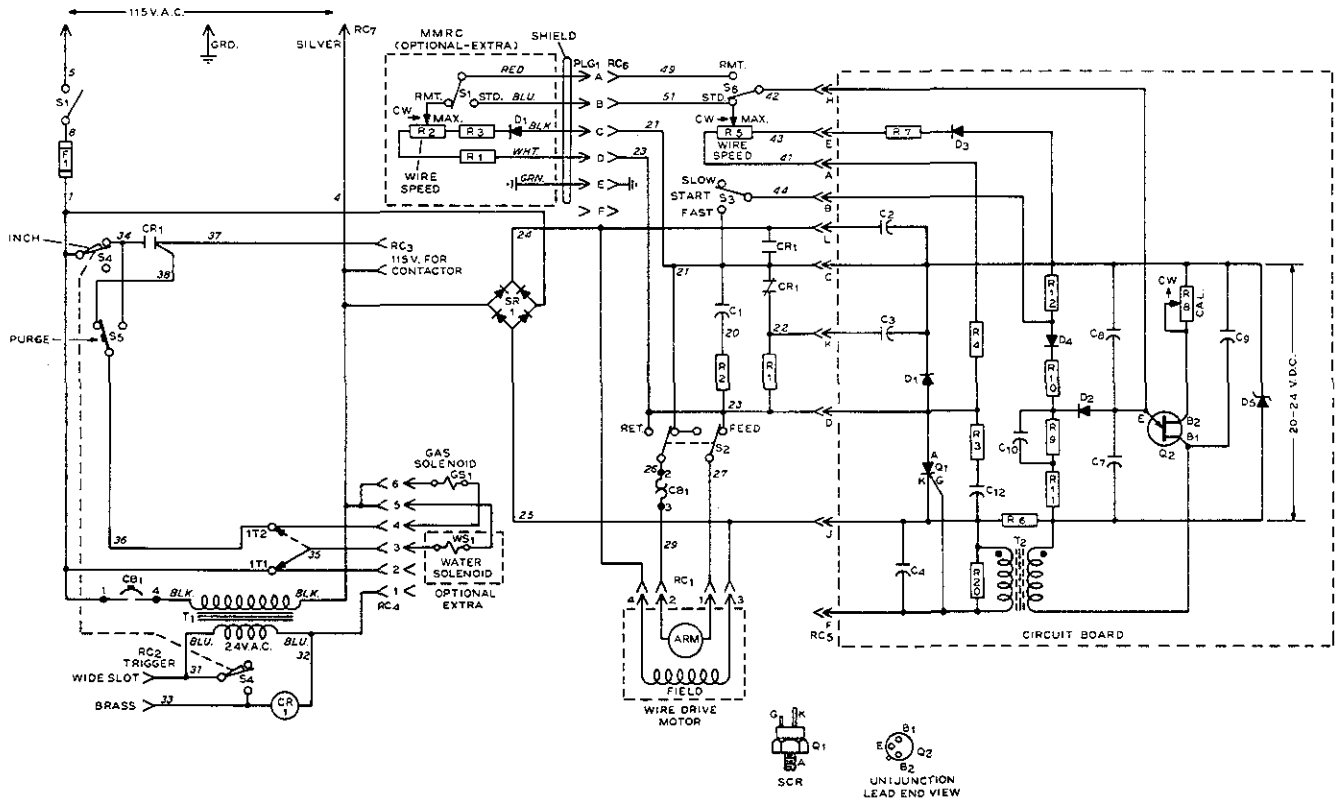
The following chart is designed to diagnose and provide remedies for some of the troubles that may develop in this unit.

It is assumed that proper installation has been made, according to Section 3 of this manual, and that the unit has been functioning properly until this trouble developed.

Use this chart in conjunction with the circuit diagram while performing troubleshooting procedures. If the trouble is not remedied after performing these procedures, the nearest Factory Authorized Service Station should be contacted. In all cases of equipment malfunction, the manufacturer's recommendations should be strictly followed.

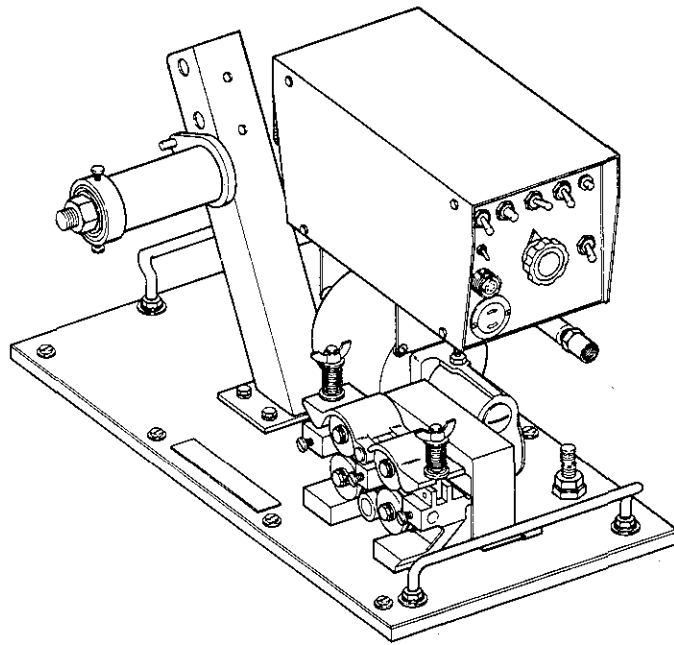
TROUBLE	PROBABLE CAUSE	REMEDY
Depressing gun switch will not energize control/feeder. Electrode wire is not energized and shielding gas does not flow.	POWER switch in wrong position or defective.	Place switch to ON position. Replace defective POWER switch.
	Circuit breaker (CB1) tripped.	Manually reset circuit breaker by depressing the button on the front panel of the control/feeder labeled RESET.
	Plug from gun switch is not secure in Switch Control receptacle on control/feeder.	Insert plug fully into Switch Control receptacle and rotate plug 1/2 turn clockwise.
	115 volts ac input plug is not secure in receptacle.	Insert plug fully into 115 vac receptacle and rotate plug 1/2 turn clockwise.
	115 volts input fuse F1 open.	*Replace fuse F1.
	Lead(s) 31 or 33 on the rear of the Switch Control receptacle is loose.	Remove control/feeder cover and check lead 31 & 33 connections on the rear of the receptacle.
	Coil of plug-in relay (CR1) defective.	Replace relay (CR1).
Wire feeds, shielding gas flows, but electrode wire is not energized.	115 vac Contactor Control plug is not secure in contactor receptacle on welding power source.	Insert plug fully into receptacle and rotate plug 1/2 turn clockwise.
	Contactor Control cable leads not secure on contactor plug terminals.	Secure leads to plug terminals.
	Defect in welding power source.	See troubleshooting section in welding power source instruction manual.
Wire feeds erratically.	Pressure on drive rolls is insufficient.	Rotate pressure adjustment wing nuts clockwise in 1/4 turn increments until wire slippage stops.
	Drive roll is too large for wire size being used.	Change to proper size drive roll. See Section 2-9.
	Worn drive roll.	Replace drive roll. See Section 2-9.
	Dirt in drive roll.	Clean drive roll as instructed in Section 5-2.

\*If it becomes necessary to replace any fuse in the control/feeder, ensure that a fuse of the proper rating, type, and size is used.



Circuit Diagram No. CB-056 132-1F

Figure 6-1. Circuit Diagram



# PARTS LIST

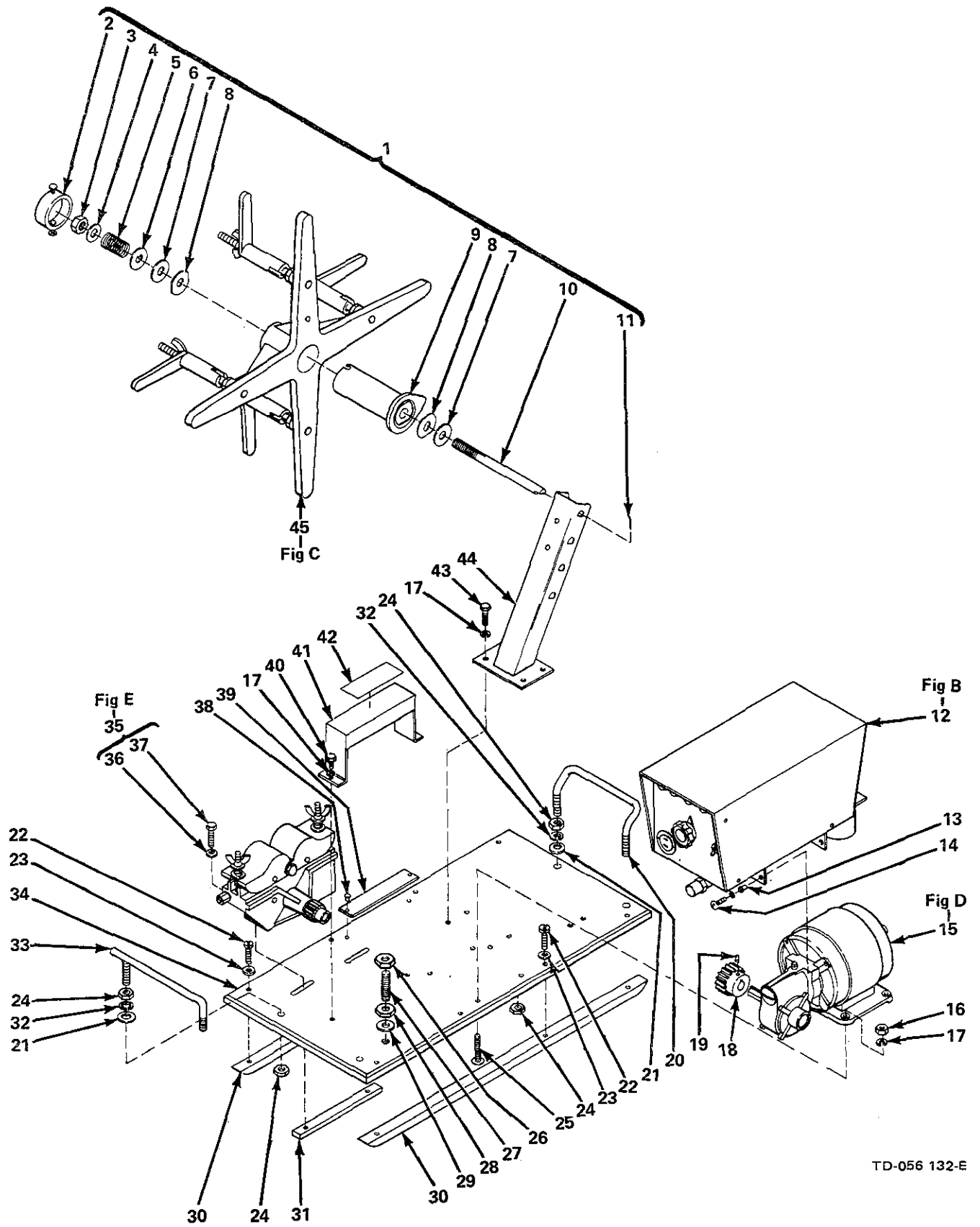


Figure A - Main Assembly

TD-056 132-E

Item No.	Factory Part No.	Description	Quantity
Figure A	Main Assembly		
1	058 432	HUB & SPINDLE ASSEMBLY (consisting of)	1
2	058 427	. RING, retaining - spool	1
3	601 884	. NUT, steel - hex jam 5/8-11	1
4	605 941	. WASHER, flat - steel 41/64 ID x 1 OD	1
5	010 233	. SPRING, compression	1
6	057 971	. WASHER, flat - steel keyed 1-1/2 dia	1
7	010 191	. WASHER, fiber 5/8 ID x 1-1/2 OD x 1/8	2
8	058 628	. WASHER, steel - brake	2
9	058 428	. HUB, spool - plastic	1
10	058 434	. SPINDLE, support - hub	1
11	605 946	. PIN, cotter 1/8 x 1	1
12	057 334	CONTROL BOX ASSEMBLY (See Fig. B Page 4)	1
13	034 098	EYELET, brass	4
14	004 880	SCREW, machine - steel hex hd 10-32 x 1-1/2	4
15	004 881	MOTOR, gear (See Fig. D Page 8)	1
16	601 865	NUT, steel - hex 1/4-20	4
17	602 207	WASHER, lock - steel split 1/4	10
18	058 877	GEAR, spur - nylon 30 tooth	1
18	058 878	GEAR, spur - nylon 24 tooth	1
18	056 094	GEAR, steel 15 tooth	1
19	604 799	SCREW, set - steel socket hd 1/4-20 x 3/4	1
20	056 717	HANDLE, carrying	1
21	010 910	WASHER, flat - steel SAE 3/8	4
22	601 956	SCREW, cap - steel hex hd 1/4-20 x 1-1/4	8
23	602 241	WASHER, flat - steel SAE 1/4	8
24	601 871	NUT, steel - hex jam 3/8-16	8
25	602 128	SCREW, machine - steel flat hd 1/4-20 x 1-1/2	4
26	601 839	NUT, brass - hex full 1/2-13	1
27	038 825	STUD, brass 1/2-13 x 2	1
28	601 840	NUT, brass - hex jam 1/2-13	1
29	602 247	WASHER, flat - steel SAE 1/2	1
30	056 330	SKID, base	2
31	056 327	BAR, anchor	1
32	602 213	WASHER, lock - steel split 3/8	4
33	028 944	HANDLE, carrying	1
34	028 939	BASE	1
35	057 735	DRIVE ASSEMBLY, wire (See Fig. E Page 10) (consisting of)	1
36	604 538	. WASHER, flat - steel SAE 5/16	2
37	601 959	. SCREW, cap - steel hex hd 5/16-18 x 1-1/2	2
38	602 024	SCREW, drive U type No. 2 x 3/16	2
39		NAMEPLATE (order by model & serial numbers)	1
40	601 926	SCREW, cap - steel hex hd 1/4-20 x 5/8	2
41	056 331	GUARD, drive roll	1
42	012 236	LABEL, important do not use 2 steel gears	1
43	604 631	SCREW, cap - steel hex hd 1/4-20 x 1	4
44	058 429	SUPPORT, spindle	1
45	†056 416	REEL, wire (See Fig. C Page 6)	1

†Optional Equipment

BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.

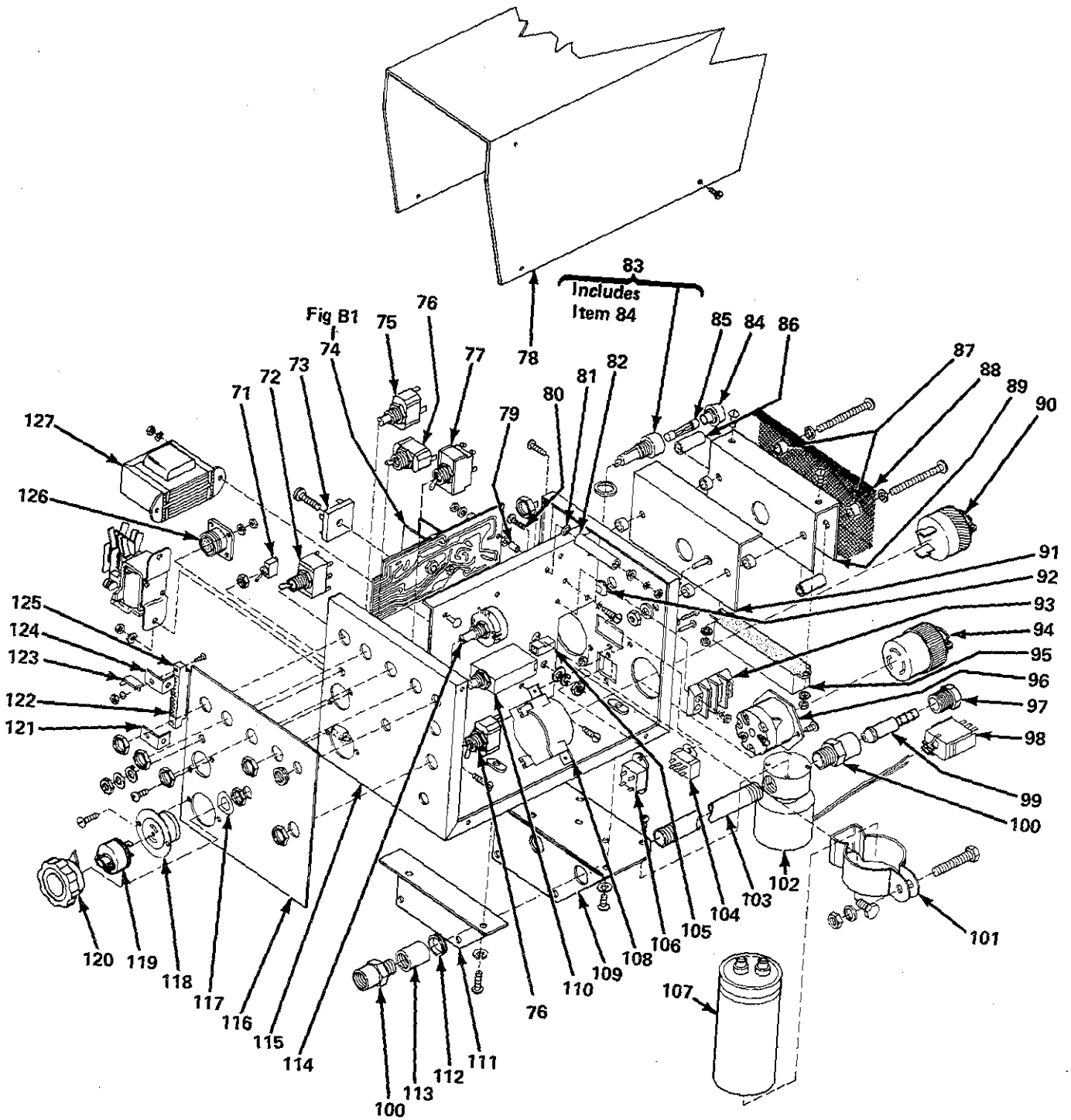


Figure B - Control Box Assembly

TD-056 882-E

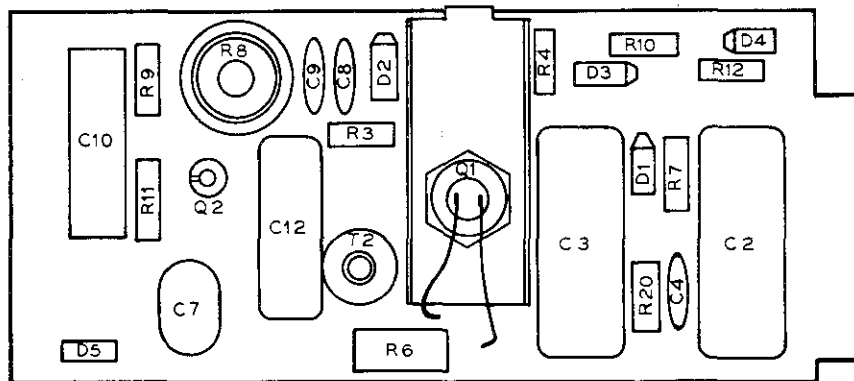
Item No.	Dia. Mkgs.	Factory Part No.	Description	Quantity
<b>Figure B 057 334 Control Box Assembly (See Fig. A Page 2 Item 12)</b>				
71	S6	*011 770	SWITCH, toggle SPDT 5 amp 125 volts	1
72	S4	011 043	SWITCH, toggle DPDT 6 amp 125 volts	1
73	SR1	*035 914	RECTIFIER, integrated 30 amp 400 volts	1
74		057 314	CIRCUIT CARD ASSEMBLY (See Fig. B1 Page 5)	1
75	S5	011 232	SWITCH, push button SPDT	1
76	S1,3	011 233	SWITCH, toggle SPDT 10 amp 250 volts	2
77	S2	011 059	SWITCH, toggle DPDT 15 amp 125 volts	1
78		056 328	WRAPPER	1
79		010 301	BUSHING, brass 9/64 ID x 1/4 OD x 5/16	1
80		602 078	SCREW, machine - steel round hd 6-32 x 2-1/2	1
81		073 914	WASHER, centering 7/16	2
82	R1	030 651	RESISTOR, WW fixed 25 watt 10 ohm	1
83		012 617	HOLDER, fuse - miniature (consisting of)	1
84		059 139	. CAP, fuse - holder	1
85	F1	*012 655	FUSE, miniature - glass 10 amp	1
86		010 199	TUBING, steel .275 ID x .048 wall x 1	2
87		010 193	TUBING, steel 3/8 OD x 18 ga x 1/4	6
88		056 170	SHIELD	1
89		030 949	HEAT SINK	1
90		+039 618	CAP, twistlock 2P2W	1
91		056 169	BRACKET, mounting - heat sink	1
92		057 084	BUSHING, snap 1/4 ID x 3/8 mounting hole	1
93	1T	038 855	BLOCK, terminal 20 amp 2 pole	1
94		+056 442	BODY, connector - grounded twistlock 2P2W	1
95	R2	*030 941	RESISTOR, WW fixed 100 watt 5 ohm	1
96	RC7	056 665	RECEPTACLE, male - flanged grounded twistlock 2P3W	1
97		010 606	FITTING, hose - brass nut 5/18-18	1
98		056 265	CONNECTOR, male 6 contact 10 amp	1
99		010 603	FITTING, hose - brass barbed nipple 1/4 TBG	1
100		010 604	FITTING, hose - brass bushing 1/4 NPT x 5/8	2
101		010 927	HANGER, minerallic No. 4	1
102	GS1	035 601	VALVE, 115 volts ac 2 way 1/4 IPS port 1/8 orifice (consisting of)	1
		033 050	. COIL	1
103		010 190	FITTING, pipe - galvanized nipple L 1/4 NPT x 10	1
104	RC4	056 266	CONNECTOR, female 6 contact	1
105		026 837	INSULATOR, terminal - nylon	2
106	RC1	054 116	CONNECTOR, female 4 contact	1
107	C1	*031 692	CAPACITOR, electrolytic 750 uf 200 volts dc	1
108	RC3	039 855	RECEPTACLE, twistlock 2P2W	1
109		056 165	BRACKET, mounting - rear	1
110	CB1	*011 991	CIRCUIT BREAKER, 1.5 amp 250 volts	1
111		056 166	BRACKET, mounting - front	1
112		010 378	GROMMET, rubber 9/16 ID x 3/4 hole 1/16 groove	1
113		602 934	FITTING, pipe - galvanized coupling 1/4 NPT	1
114	R5	*030 943	POTENTIOMETER, carbon - single turn 2 watt 15K ohm	1
115		053 881	CHASSIS	1
116			NAMEPLATE (Order by model & style numbers)	1
117		010 929	WASHER, flat - steel spring 3/8	1
118	RC2	039 759	RECEPTACLE, female - flanged midget twistlock 2P2W	1
119		604 523	CAP, twistlock - midget 2P2W	1
120		019 609	KNOB, pointer	1
121		031 251	BRACKET, mounting - connector	2
122	RC5	039 756	CONNECTOR, amphenol	1
123		038 784	STRIP, terminal 1 pole	1
124	CR1	*034 841	RELAY, 24 volts ac DPDT	1
125	RC6	039 825	RECEPTACLE, 6 socket MS-3102A-14S-6S	1
126	T1	*036 135	TRANSFORMER, SNC 115/24 volts ac	1
		004 948	LABEL, important do not use 2 steel gears	1

\*Recommended Spare Parts.

+These items are not included when ordering Control Box Assembly.

BE SURE TO PROVIDE MODEL AND STYLE NUMBERS WHEN ORDERING REPLACEMENT PARTS.

Dia. Mkgs.	Factory Part No.	Description	Quantity
Figure B1	057 314	Circuit Card Assembly (See Fig. B Page 4 Item 74)	
C2,3	031 694	CAPACITOR, mylar 0.47 uf 200 volts dc	2
C4,8,9	031 643	CAPACITOR, ceramic 0.01 uf 500 volts dc	3
C7	031 693	CAPACITOR, mylar 0.33 uf 75 volts dc	1
C10	031 633	CAPACITOR, electrolytic 80 uf 25 volts dc	1
C12	031 721	CAPACITOR, mylar 0.22 uf 200 volts dc.	1
D1-4	026 202	DIODE, rectifier 1 amp 400 volts straight polarity.	4
D5	037 250	DIODE, zener 24 volts 1 watt straight polarity	1
Q1	037 824	THYRISTOR, 7.4 amp 200 volts straight polarity	1
	010 915	WASHER, flat - brass 1/4 ID x 5/8 OD (mounting Q1)	2
	006 324	WASHER, lock - steel split 1/4 (mounting Q1)	1
	006 323	NUT, stainless steel - machine screw 1/4-28 (mounting Q1)	1
	037 261	HEAT SINK.	1
Q2	037 289	TRANSISTOR, unijunction 50MA 35 volts	1
R3	030 937	RESISTOR, carbon 0.5 watt 10 ohm	1
R4	030 854	RESISTOR, carbon 0.5 watt 18K ohm	1
R6	030 945	RESISTOR, carbon 2 watt 4700 ohm	1
R7	028 276	RESISTOR, carbon 0.5 watt 2200 ohm	1
R8	030 944	POTENTIOMETER, WW 1 turn 2 watt 5000 ohm	1
R9	030 936	RESISTOR, carbon 0.5 watt 33K ohm	1
R10	030 853	RESISTOR, carbon 0.5 watt 2200 ohm	1
R11	030 938	RESISTOR, carbon 0.5 watt 1200 ohm	1
R12	030 934	RESISTOR, carbon 0.5 watt 6800 ohm	1
R20	030 090	RESISTOR, carbon 0.5 watt 47 ohm	1
T2	036 143	TRANSFORMER, pulse	1
	602 196	WASHER, lock - steel internal tooth No. 4 (mounting T2)	1
	601 858	NUT, steel - hex 4-40 (mounting T2)	1



TA-057 314

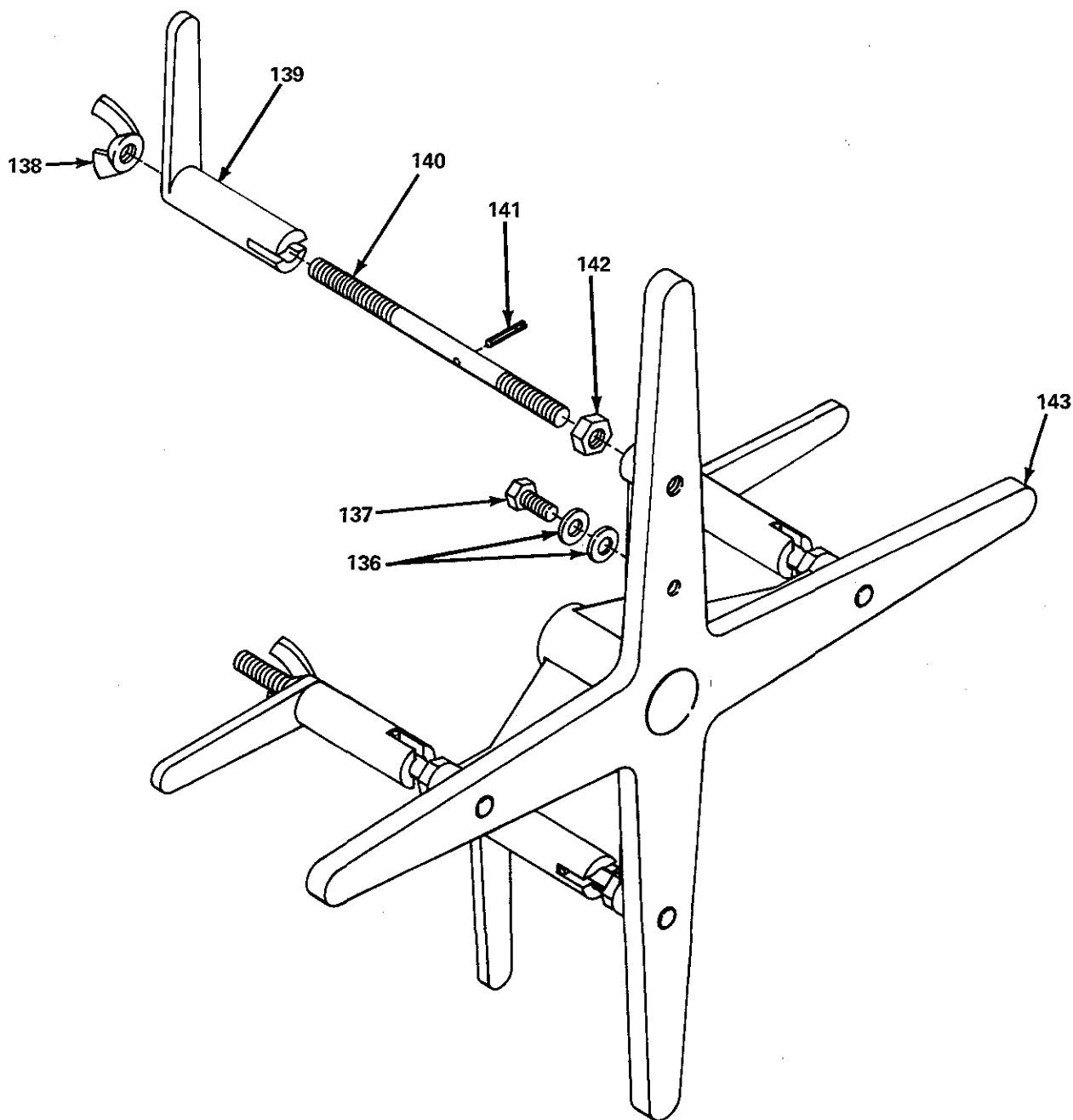
Figure B1 - Circuit Card Assembly

**COMPONENTS TO BE  
REPLACED BY QUALIFIED  
PERSONNEL ONLY**

BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.



Item No.	Factory Part No.	Description	Quantity
Figure C	056 416	Reel, Wire (See Fig. A Page 2 Item 45)	
136	010 910	WASHER, flat - steel SAE 3/8	2
137	601 964	SCREW, cap - steel hex hd 3/8-16 x 3/4	1
138	604 051	NUT, steel - wing 1/2-13	4
139	056 312	FINGER, reel	4
140	056 313	STUD, steel 1/2-13 x 7 inches	4
141	010 224	PIN, spring 3/16 x 1 inch	4
142	601 880	NUT, steel - hex jam 1/2-13	4
143	056 314	REEL	1



TC-056 416

Figure C - Reel, Wire

BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.

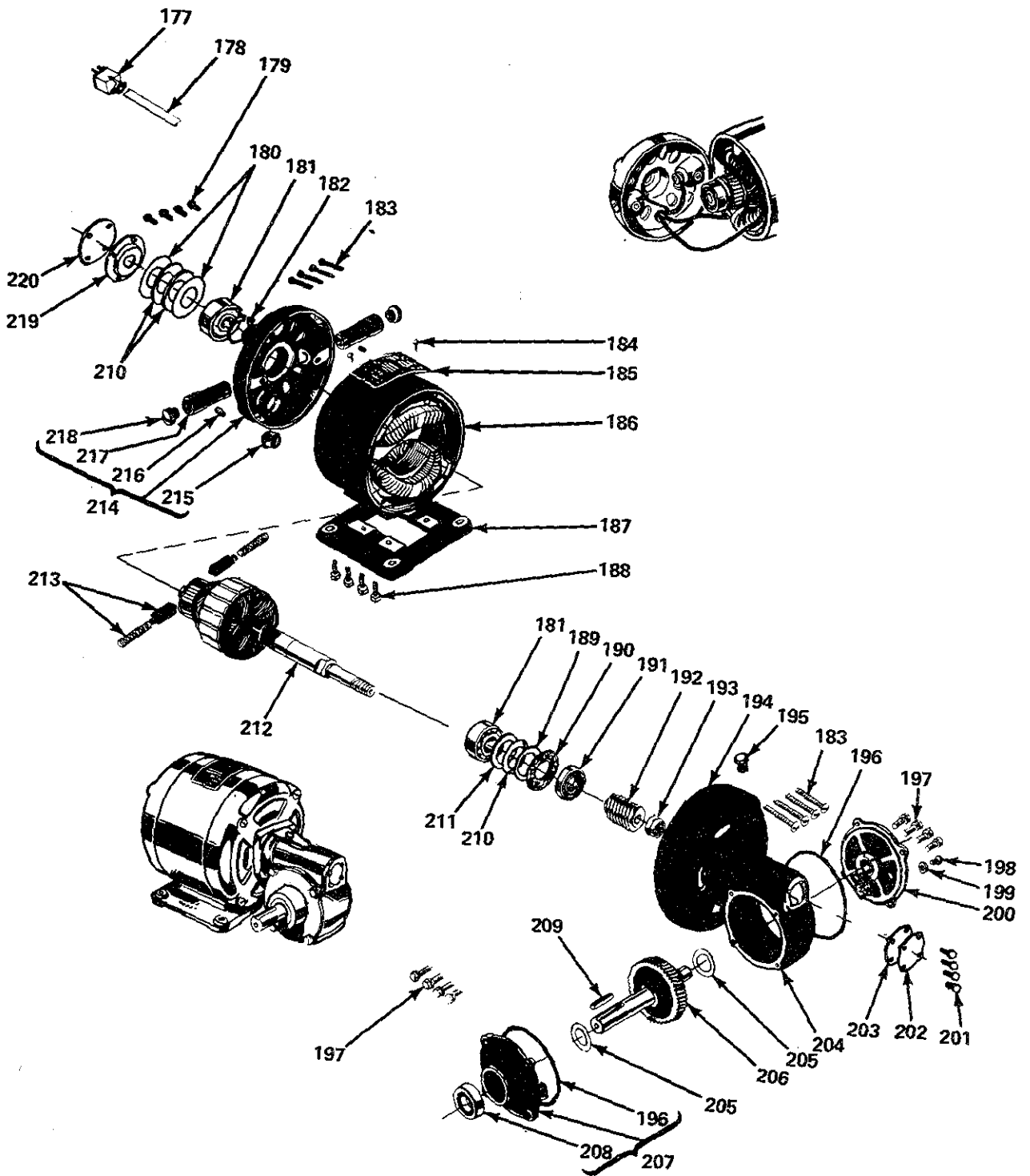


Figure D - Motor, Gear

Item No.	Factory Part No.	Description	Quantity
<b>Figure D 004 881 Motor, Gear (See Fig. A Page 2 Item 15)</b>			
177	056 264	CONNECTOR, male 4 contact	1
178	604 571	CORD, portable No. 18/4 conductor (order by foot)	2 ft.
179	602 080	SCREW, ball - bearing plate	4
180	054 396	WASHER, spacer	As Req'd
181	052 182	BEARING, ball	2
182	009 411	RING, retaining - external	2
183	602 099	SCREW, shield	8
184	056 373	PIN, nameplate	2
185	054 404	NAMEPLATE	1
186	054 406	FIELD ASSEMBLY	1
187	054 407	BASE	1
188	054 408	SCREW, base	4
189	054 413	WASHER, spacing	As Req'd
190	054 414	GASKET, grease	1
191	054 415	SEAL, oil	1
192	054 417	GEAR, worm	1
193	054 418	NUT, lock - worm	1
194	009 407	BACK SHIELD	1
195	054 433	PLUG, oil fill & air vent	1
196	009 416	SEAL, O ring	2
197	009 409	SCREW, gear housing end shield	8
198	054 432	SCREW, oil level	1
199	054 431	GASKET, oil screw	1
200	009 405	END SHIELD ASSEMBLY, gear housing	1
201	009 414	SCREWS, end cap	4
202	009 413	END CAP, gear housing	1
203	009 412	GASKET, end cap	1
204	009 408	HOUSING, gear	1
205	009 417	WASHER, spacer	2
206	056 377	GEAR & SHAFT, drive	1
207	009 404	END SHIELD ASSEMBLY (consisting of)	1
208	054 222	SEAL	1
209	054 426	KEY	1
210	054 434	WASHER, spring	3
211	009 410	WASHER, spring	2
212	052 181	ARMATURE	1
213	*056 378	BRUSH & SPRING	2
214	052 183	FRONT SHIELD ASSEMBLY (enclosed) (consisting of)	1
215	009 406	BUSHING, terminal	1
216	054 401	SCREW, set	2
217	054 400	HOLDER, brush	2
218	054 398	SCREW, brush holder cap	2
219	054 394	WASHER, felt retainer	1
220	054 393	PLATE, ball bearing (closed)	1

\*Recommended Spare Parts.

BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.

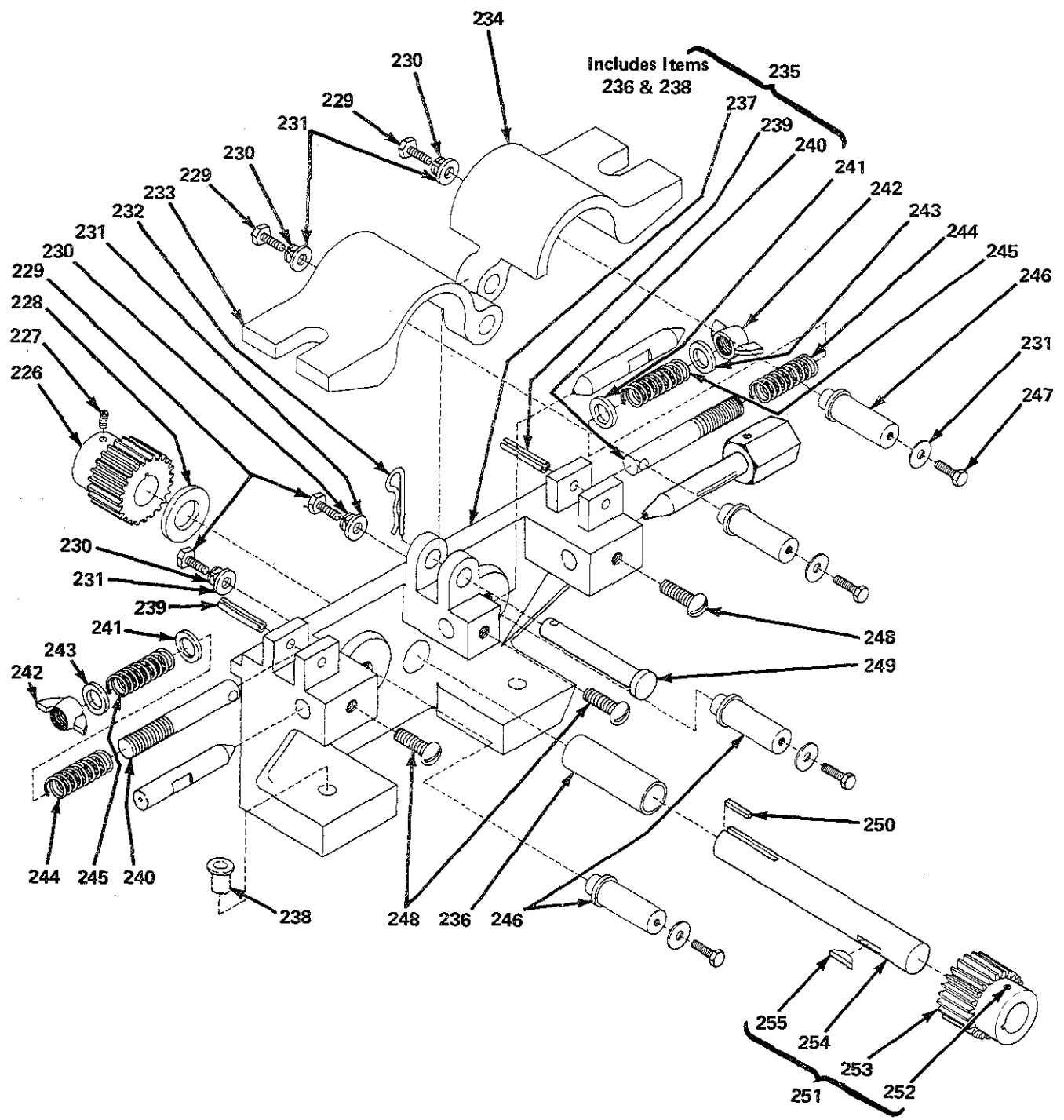
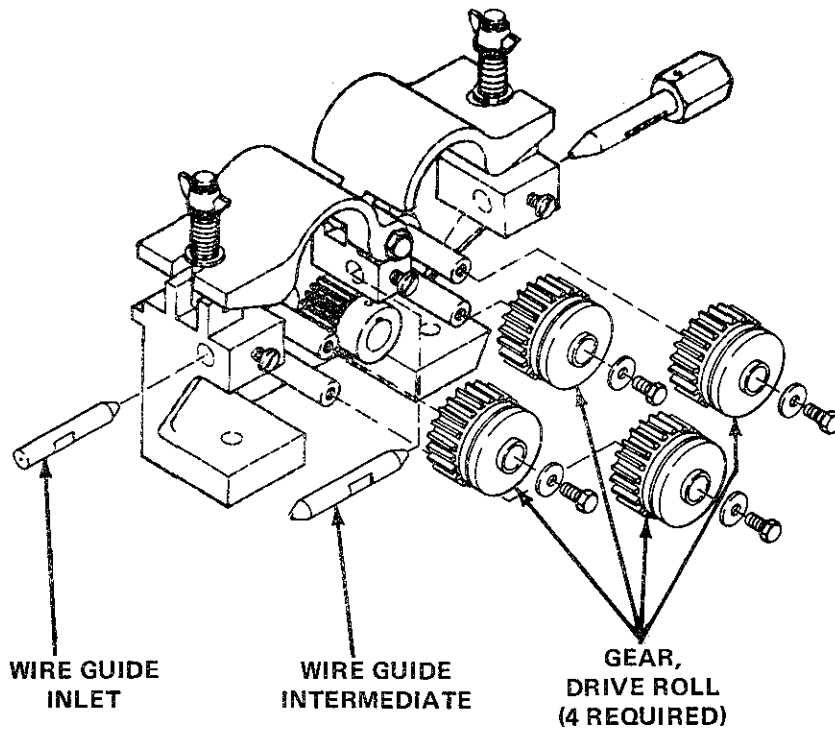


Figure E — Drive Assembly, Wire

TD-056 150-B

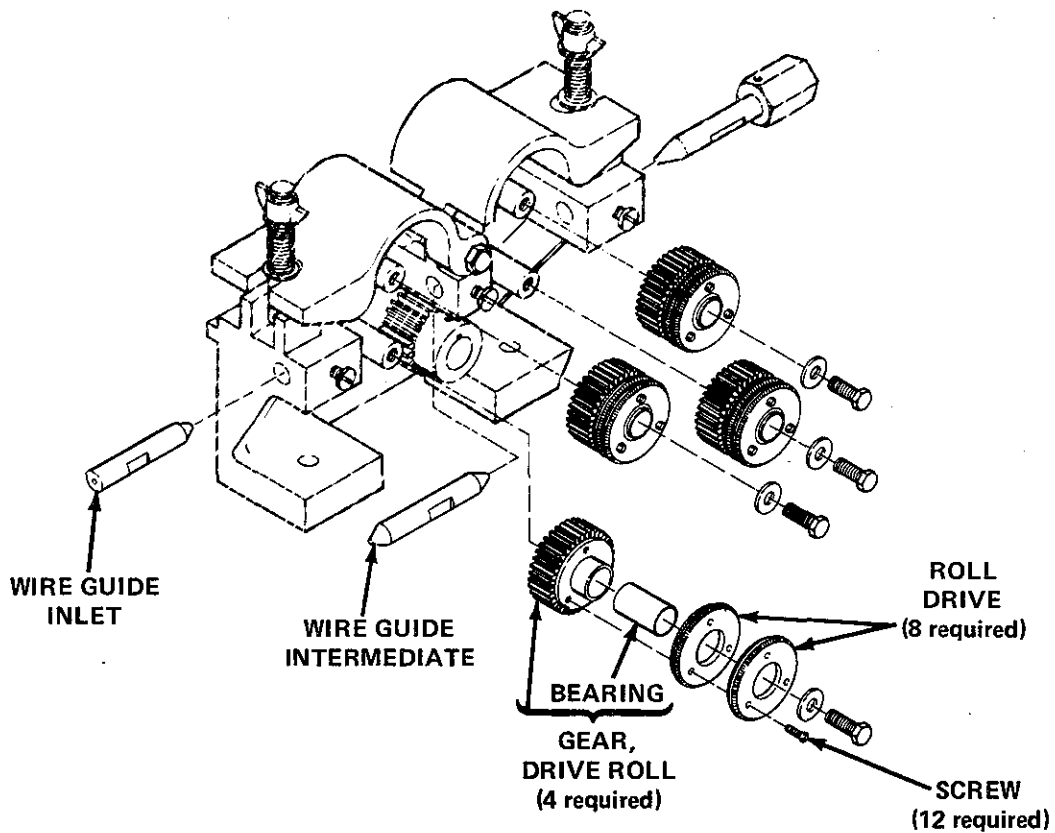
Item No.	Factory Part No.	Description	Quantity
<b>Figure E</b>	<b>057 735</b>	<b>Drive Assembly, Wire (See Fig. A Page 2 Item 35)</b>	
226	056 095	GEAR, spur - steel 24 tooth	1
227	602 179	SCREW, set - steel socket hd 1/4-20 x 1/2	1
228	010 658	BEARING, thrust - oil impregnate 5/8 ID x 1-1/4 OD x 1/8	1
229	601 927	SCREW, cap - steel hex hd 1/4-20 x 3/4	4
230	602 207	WASHER, lock - steel split 1/4	4
231	602 241	WASHER, flat - steel SAE 1/4	8
232	010 313	PIN, cotter - hair .072 x 1-7/16	1
233	056 152	COVER, rear	1
234	056 151	COVER, front	1
235	057 300	HOUSING ASSEMBLY (consisting of)	1
236	056 051	. BEARING, sleeve - cylinder oil impregnate 5/8 x 7/8 x 2	1
237	058 168	. HOUSING, drive - wire with bushing (consisting of)	1
238	058 112	. . BUSHING, flanged - nylon 5/16 ID x 7/16 OD x 3/4	2
239	010 224	. PIN, spring 3/16 x 1	2
240	056 306	. FASTENER, pinned	2
241	602 243	WASHER, flat - steel std 3/8	2
242	604 590	NUT, steel - wing 3/8-16	2
243	010 910	WASHER, flat - steel SAE 3/8	2
244	010 232	SPRING, compression - bottom	2
245	010 231	SPRING, compression - top	2
246	056 308	SHAFT, drive	4
247	601 925	SCREW, cap - steel hex hd 1/4-20 x 1/2	4
248	604 624	SCREW, machine - steel fillister hd 1/4-20 x 1/2	3
249	010 312	PIN, machine 3/8 x 2-1/4	1
250	056 045	KEY, 3/16 x 3/16 x 1	1
251	058 881	DRIVE SHAFT & GEAR (consisting of)	1
252	605 789	. SCREW, set - steel socket hd 10-24 x 1/4	1
253	058 876	. GEAR, spur - nylon 15 tooth	1
254	056 256	. SHAFT, drive	1
255	028 996	. KEY, woodruff 3/16 x 5/8	1

BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.



TB-056 276-A

Figure F – Kit, Drive Gear & Guide Tube For Single Piece V & U Groove Gear/Drive Rolls.



TB-058 785

Figure G – Kit, Drive Gear & Guide Tube For Split V-Knurled Drive Rolls And Gear.

Wire Diameter And Type			Kit No.	*Gear Drive Roll		Guide Part Nos.	
Fraction	Decimal	Metric		Part No.	Type	Inlet	Intermediate
.030" hard	.030	.8MM	057 707	057 685	V-Groove	056 192	056 206
.035" hard	.035	.9MM	057 708	057 686	V-Groove	056 192	056 206
.045" hard	.045	1.2MM	057 709	057 688	V-Groove	056 193	056 207
.052" hard	.052	1.3MM	057 710	057 689	V-Groove	056 193	056 207
1/16" hard	.062	1.6MM	057 711	057 690	V-Groove	056 195	056 209
.045" hard & cored	.045	1.2MM	057 712	057 696	U-Groove	056 193	056 207
1/16" hard & cored	.062	1.6MM	057 713	057 697	U-Groove	056 195	056 209
5/64" hard & cored	.078	2.0MM	057 714	057 698	U-Groove	056 195	056 209
3/32" hard & cored	.093	2.4MM	057 715	057 699	U-Groove	056 196	056 210
7/64" hard & cored	.109	2.8MM	057 716	057 700	U-Groove	056 196	056 210
1/8" hard & cored	.125	3.2MM	057 717	057 701	U-Groove	056 197	056 211

\*Four (4) gear drive rolls required.

Figure F – Kits, Drive Gear & Guide Tube To Change From One Wire Size To Another For Use With Single-Piece V Or U Groove Gear/Drive Roll.

Wire Diameter & Type			Kit No.	Gear W/Bearing	Bearing	*Roll, Drive		Screw, Fillister Hd. 10-32 x 3/4	Guide Part Nos.	
Fraction	Decimal	Metric				Part No.	Type		Inlet	Intermediate
1/16" cored	.062	1.6MM	058 785	056 305	056 050	056 771	V-Knurled	604 607	056 195	056 209
5/64" cored	.078	2.0MM	058 786	056 305	056 050	056 773	V-Knurled	604 607	056 195	056 209
3/32" cored	.093	2.4MM	058 787	056 305	056 050	056 774	V-Knurled	604 607	056 196	056 210
7/64" cored	.109	2.8MM	058 788	056 305	056 050	056 775	V-Knurled	604 607	056 196	056 210
1/8" cored	.125	3.2MM	058 789	056 305	056 050	056 776	V-Knurled	604 607	056 197	056 211

\*Eight (8) drive rolls required.

Figure G – Kits, Drive Gear & Guide Tube To Change From Single Piece V Or U Groove Gear/Drive Rolls To Split V-Knurled Drive Rolls & Gear.

Wire Diameter & Type			Kit No.	*Roll, Drive		Guide Part Nos.	
Fraction	Decimal	Metric		Part No.	Type	Inlet	Intermediate
1/16" cored	.062	1.6MM	058 756	056 771	V-Knurled	056 195	056 209
5/64" cored	.078	2.0MM	058 758	056 773	V-Knurled	056 195	056 209
3/32" cored	.093	2.4MM	058 760	056 774	V-Knurled	056 196	056 210
7/64" cored	.109	2.8MM	058 759	056 775	V-Knurled	056 196	056 210
1/8" cored	.125	3.2MM	058 757	056 776	V-Knurled	056 197	056 211

\*Eight (8) drive rolls required.

Kits, Drive Roll & Guide Tube To Change From One Wire Size To Another For Use With Split V-Knurled Drive Rolls.

