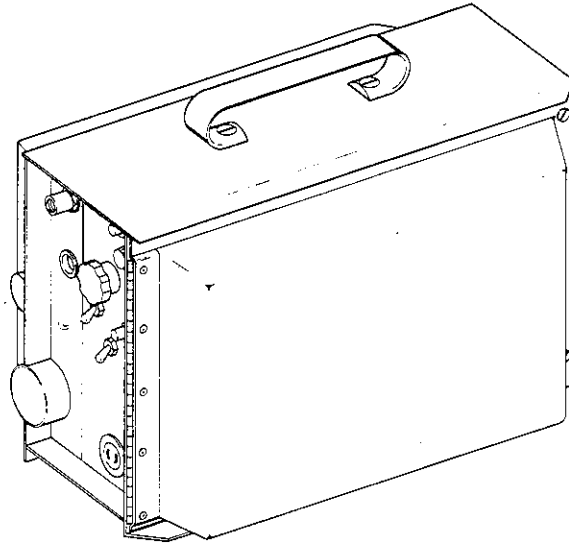


WARNING: Read and understand the entire contents of this manual and the power source manual this equipment is to be used with before installing, operating, or maintaining.

MODEL
MILLERMATIC 70A



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.

LIMITED WARRANTY-Subject to the terms and conditions hereof, Miller Electric Mfg. Co., Appleton, Wisconsin warrants to its Distributor/Dealer that all new and unused Equipment furnished by Miller is free from defect in workmanship and material as of the time and place of delivery by Miller. No warranty is made by Miller with respect to engines, trade accessories or other items manufactured by others. Such engines, trade accessories and other items are sold subject to the warranties of their respective manufacturers, if any. All engines are warranted by their manufacturer for one year from date of original purchase.

Except as specified below, Miller's warranty does not apply to components having normal useful life of less than one (1) year, such as spot welder tips, relay and contactor points, MILLERMATIC parts that come in contact with the welding wire including nozzles and nozzle insulators where failure does not result from defect in workmanship or material.

Miller shall be required to honor warranty claims on warranted Equipment in the event of failure resulting from a defect within the following periods from the date of delivery of Equipment to the original user:

1. Arc welders, power sources and components . . . 1 year
2. Original main power rectifiers 3 years
(labor - 1 year only)
3. All welding guns and feeder/guns 90 days
4. All other Millermatic Feeders 1 year
5. Replacement or repair parts, exclusive of labor . 60 days
6. Batteries 6 months

provided that Miller is notified in writing within thirty (30) days of the date of such failure.

As a matter of general policy only, Miller may honor claims submitted by the original user within the foregoing periods.

In the case of Miller's breach of warranty or any other duty with respect to the quality of any goods, the exclusive remedies therefore shall be, at Miller's option (1) repair or (2) replacement or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at Customer's risk and expense. Upon receipt of notice of apparent defect or failure, Miller shall instruct the claimant on the warranty claim procedures to be followed.

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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.

ERRATA SHEET

After this manual was printed, refinements in equipment design occurred. This sheet lists exceptions to data appearing later in this manual.

Effective With Serial No. JF897198

**	Dia. Mkgs.	Part No.	Replaced With	Description	Quantity
2-5	R8	010 191	010 191	WASHER (qty chg)	1
2-6		057 408	098 102	NUT, retaining - spool	1
2-7		057 405	098 103	HUB, spool	1
3-52		019 609	097 924	KNOB, pointer	1
4-	R8	030 944	110 429	POTENTIOMETER, cermet 1 turn 0.5 watt 5K ohm	1
			058 424	WASHER, fibre	1
			089 561	WASHER, anti turn	1

**First digit represents page no - digits following dash represent item no.

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

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SECTION 1 - SAFETY RULES FOR OPERATION OF ARC WELDING POWER SOURCE

1-1. INTRODUCTION - We learn by experience. Learning safety through personal experience, like a child touching a hot stove is harmful, wasteful, and unwise. Let the experience of others teach you.

Safe practices developed from experience in the use of welding and cutting are described in this manual. Research, development, and field experience have evolved reliable equipment and safe installation, operation, and servicing practices. Accidents occur when equipment is improperly used or maintained. The reason for the safe practices may not always be given. Some are based on common sense, others may require technical volumes to explain. It is wiser to follow the rules.

Read and understand these safe practices before attempting to install, operate, or service the equipment. Comply with these procedures as applicable to the particular equipment used and their instruction manuals, for personal safety and for the safety of others.

Failure to observe these safe practices may cause serious injury or death. When safety becomes a habit, the equipment can be used with confidence.

These safe practices are divided into two Sections: 1 - General Precautions, common to arc welding and cutting; and 2 - Arc Welding (and Cutting) (only).

Reference standards: Published Standards on safety are also available for additional and more complete procedures than those given in this manual. They are listed in the Standards Index in this manual. ANSI Z49.1 is the most complete.

The National Electrical Code, Occupational Safety and Health Administration, local industrial codes, and local inspection requirements also provide a basis for equipment installation, use, and service.

1-2. GENERAL PRECAUTIONS

Different arc welding processes, electrode alloys, and fluxes can produce different fumes, gases, and radiation levels. In addition to the information in this manual, be sure to consult flux and electrode manufacturers for specific technical data and precautionary measures concerning their material.

A. Burn Prevention

Wear protective clothing - gauntlet gloves designed for use in welding, hat, and high safety-toe shoes. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Wear helmet with safety goggles or glasses with side shields underneath, appropriate filter lenses or plates (protected by clear cover glass). This is a **MUST** for

welding or cutting, (and chipping) to protect the eyes from radiant energy and flying metal. Replace cover glass when broken, pitted, or spattered. See 1-3A.2.

Avoid oily or greasy clothing. A spark may ignite them.

Hot metal such as electrode stubs and workpieces should never be handled without gloves.

Medical first aid and eye treatment. First aid facilities and a qualified first aid person should be available for each shift unless medical facilities are close by for immediate treatment of flash burns of the eyes and skin burns.

Ear plugs should be worn when working on overhead or in a confined space. A hard hat should be worn when others work overhead.

Flammable hair preparations should not be used by persons intending to weld or cut.

B. Toxic Fume Prevention

Severe discomfort, illness or death can result from fumes, vapors, heat, or oxygen enrichment or depletion that welding (or cutting) may produce. Prevent them with adequate ventilation as described in ANSI Standard Z49.1 listed 1 in Standards index. **NEVER** ventilate with oxygen.

Lead -, cadmium -, zinc -, mercury -, and beryllium - bearing and similar materials, when welded (or cut) may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

Work in a confined space only while it is being ventilated and, if necessary, while wearing an air-supplied respirator.

Gas leaks in a confined space should be avoided. Leaked gas in large quantities can change oxygen concentration dangerously. Do not bring gas cylinders into a confined space.

Leaving confined space, shut OFF gas supply at source to prevent possible accumulation of gases in the space if downstream valves have been accidentally opened or left open. Check to be sure that the space is safe before re-entering it.

Vapors from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a

highly toxic gas, and other lung and eye irritating products. The ultraviolet (radiant) energy of the arc can also decompose trichloroethylene and perchloroethylene vapors to form phosgene. DO NOT WELD or cut where solvent vapors can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

C. Fire and Explosion Prevention

Causes of fire and explosion are: combustibles reached by the arc, flame, flying sparks, hot slag or heated material; misuse of compressed gases and cylinders; and short circuits.

BE AWARE THAT flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the goggled operator. Sparks and slag can fly 35 feet.

To prevent fires and explosion:

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are in area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work cannot be moved, move combustibles at least 35 feet away out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting, fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on (or cut). Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

Fire watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if:

- a. appreciable combustibles (including building construction) are within 35 feet
- b. appreciable combustibles are further than 35 feet but can be ignited by sparks
- c. openings (concealed or visible) in floors or walls within 35 feet may expose combustibles to sparks
- d. combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

Hot work permit should be obtained before operation to ensure supervisor's approval that adequate precautions have been taken.

After work is done, check that area is free of sparks, glowing embers, and flames.

An empty container that held combustibles, or that can produce flammable or toxic vapors when heated, must

never be welded on or cut, unless container has first been cleaned as described in AWS Standard A6.0, listed 3 in Standards index.

This includes: a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility) followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment as recommended in A6.0. Waterfilling just below working level may substitute for inerting.

A container with unknown contents should be cleaned (see paragraph above). Do NOT depend on sense of smell or sight to determine if it is safe to weld or cut.

Hollow castings or containers must be vented before welding or cutting. They can explode.

Explosive atmospheres. Never weld or cut where the air may contain flammable dust, gas, or liquid vapors (such as gasoline).

D. Compressed Gas Equipment

Standard precautions. Comply with precautions in this manual, and those detailed in CGA Standard P-1, PRECAUTIONS FOR SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, listed 6 in Standards index.

1. Pressure Regulators

Regulator relief valve is designed to protect only the regulator from overpressure; it is not intended to protect any downstream equipment. Provide such protection with one or more relief devices.

Never connect a regulator to a cylinder containing gas other than that for which the regulator was designed.

Remove faulty regulator from service immediately for repair (first close cylinder valve). The following symptoms indicate a faulty regulator:

Leaks - if gas leaks externally.

Excessive Creep - if delivery pressure continues to rise with downstream valve closed.

Faulty Gauge - if gauge pointer does not move off stop pin when pressurized, nor returns to stop pin after pressure release.

Repair. Do NOT attempt repair. Send faulty regulators for repair to manufacturer's designated repair center, where special techniques and tools are used by trained personnel.

2. Cylinders

Cylinders must be handled carefully to prevent leaks and damage to their walls, valves, or safety devices:

Avoid electrical circuit contact with cylinders including third rails, electrical wires, or welding circuits. They can produce short circuit arcs that may lead to a serious accident. (See 1-3C.)

ICC or DOT marking must be on each cylinder. It is an assurance of safety when the cylinder is properly handled.

Identifying gas content. Use only cylinders with name of gas marked on them; do not rely on color to identify gas content. Notify supplier if unmarked. NEVER DEFACE or alter name, number, or other markings on a cylinder. It is illegal and hazardous.

Empties: Keep valves closed, replace caps securely; mark MT; keep them separate from FULLS and return promptly.

Prohibited use. Never use a cylinder or its contents for other than its intended use, NEVER as a support or roller.

Locate or secure cylinders so they cannot be knocked over.

Passageways and work areas. Keep cylinders clear of areas where they may be struck.

Transporting cylinders. With a crane, use a secure support such as a platform or cradle. Do NOT lift cylinders off the ground by their valves or caps, or by chains, slings, or magnets.

Do NOT expose cylinders to excessive heat, sparks, slag, and flame, etc. that may cause rupture. Do not allow contents to exceed 130°F. Cool with water spray where such exposure exists.

Protect cylinders particularly valves from bumps, falls, falling objects, and weather. Replace caps securely when moving cylinders.

Stuck valve. Do NOT use a hammer or wrench to open a cylinder valve that can not be opened by hand. Notify your supplier.

Mixing gases. Never try to mix any gases in a cylinder.

Never refill any cylinder.

Cylinder fittings should never be modified or exchanged.

3. Hose

Prohibited use. Never use hose other than that designed for the specified gas. A general hose identification rule is: red for fuel gas, green for oxygen, and black for inert gases.

Use ferrules or clamps designed for the hose (not ordinary wire or other substitute) as a binding to connect hoses to fittings.

No copper tubing splices. Use only standard brass fittings to splice hose.

Avoid long runs to prevent kinks and abuse. Suspend hose off ground to keep it from being run over, stepped on, or otherwise damaged.

Coil excess hose to prevent kinks and tangles.

Protect hose from damage by sharp edges, and by sparks, slag, and open flame.

Examine hose regularly for leaks, wear, and loose connections. Immerse pressured hose in water; bubbles indicate leaks.

Repair leaky or worn hose by cutting area out and splicing (1-2D3). Do NOT use tape.

4. Proper Connections

Clean cylinder valve outlet of impurities that may clog orifices and damage seats before connecting regulator. Except for hydrogen, crack valve momentarily, pointing outlet away from people and sources of ignition. Wipe with a clean lintless cloth.

Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree, and that the regulator inlet and cylinder outlet match. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.

Tighten connections. When assembling threaded connections, clean and smooth seats where necessary. Tighten. If connection leaks, disassemble, clean, and retighten using properly fitting wrench.

Adapters. Use a CGA adapter (available from your supplier) between cylinder and regulator, if one is required. Use two wrenches to tighten adapter marked RIGHT and LEFT HAND threads.

Regulator outlet (or hose) connections may be identified by right hand threads for oxygen and left hand threads (with grooved hex on nut or shank) for fuel gas.

5. Pressurizing Steps:

Drain regulator of residual gas through suitable vent before opening cylinder (or manifold valve) by turning adjusting screw in (clockwise). Draining prevents excessive compression heat at high pressure seat by allowing seat to open on pressurization. Leave adjusting screw engaged slightly on single-stage regulators.

Stand to side of regulator while opening cylinder valve.

Open cylinder valve slowly so that regulator pressure increases slowly. When gauge is pressurized (gauge reaches regulator maximum) leave cylinder valve in following position: For oxygen, and inert gases, open fully to seal stem against possible leak. For fuel gas, open to less than one turn to permit quick emergency shutoff.

Use pressure charts (available from your supplier) for safe and efficient, recommended pressure settings on regulators.

Check for leaks on first pressurization and regularly there-after. Brush with soap solution (cupful of Ivory

Liquid* or equivalent per gallon of water). Bubbles indicate leak. Clean off soapy water after test; dried soap is combustible.

E. User Responsibilities

Remove leaky or defective equipment from service immediately for repair. See User Responsibility statement in equipment manual.

F. Leaving Equipment Unattended

Close gas supply at source and drain gas.

G. Rope Staging-Support

Rope staging-support should not be used for welding or cutting operation; rope may burn.

1-3. ARC WELDING - Comply with precautions in 1-1, 1-2, and this section. Arc Welding, properly done, is a safe process, but a careless operator invites trouble. The equipment carries high currents at significant voltages. The arc is very bright and hot. Sparks fly, fumes rise, ultraviolet and infrared energy radiates, weldments are hot, and compressed gases may be used. The wise operator avoids unnecessary risks and protects himself and others from accidents. Precautions are described here and in standards referenced in index.

A. Burn Protection

Comply with precautions in 1-2.

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate lightweight clothing, reflect from light-colored surfaces, and burn the skin and eyes. Skin burns resemble acute sunburn, those from gas-shielded arcs are more severe and painful. **DON'T GET BURNED; COMPLY WITH PRECAUTIONS.**

1. Protective Clothing

Wear long-sleeve clothing (particularly for gas-shielded arc) in addition to gloves, hat, and shoes (1-2A). As necessary, use additional protective clothing such as leather jacket or sleeves, flame-proof apron, and fire-resistant leggings. Avoid outergarments of untreated cotton.

Bare skin protection. Wear dark, substantial clothing. Button collar to protect chest and neck and button pockets to prevent entry of sparks.

2. Eye and Head Protection

Protect eyes from exposure to arc. NEVER look at an electric arc without protection.

Welding helmet or shield containing a filter plate shade no. 12 or denser must be used when welding. Place over face before striking arc.

*Trademark of Proctor & Gamble.

Protect filter plate with a clear cover plate.

Cracked or broken helmet or shield should NOT be worn; radiation can pass through to cause burns.

Cracked, broken, or loose filter plates must be replaced IMMEDIATELY. Replace clear cover plate when broken, pitted, or spattered.

Flash goggles with side shields MUST be worn under the helmet to give some protection to the eyes should the helmet not be lowered over the face before an arc is struck. Looking at an arc momentarily with unprotected eyes (particularly a high intensity gas-shielded arc) can cause a retinal burn that may leave a permanent dark area in the field of vision.

3. Protection of Nearby Personnel

Enclosed welding area. For production welding, a separate room or enclosed bay is best. In open areas, surround the operation with low-reflective, non-combustible screens or panels. Allow for free air circulation, particularly at floor level.

Viewing the weld. Provide face shields for all persons who will be looking directly at the weld.

Others working in area. See that all persons are wearing flash goggles.

Before starting to weld, make sure that screen flaps or bay doors are closed.

B. Toxic Fume Prevention

Comply with precautions in 1-2B.

Generator engine exhaust must be vented to the outside air. Carbon monoxide can kill.

C. Fire and Explosion Prevention

Comply with precautions in 1-2C.

Equipment's rated capacity. Do not overload arc welding equipment. It may overheat cables and cause a fire.

Loose cable connections may overheat or flash and cause a fire.

Never strike an arc on a cylinder or other pressure vessel. It creates a brittle area that can cause a violent rupture or lead to such a rupture later under rough handling.

D. Compressed Gas Equipment

Comply with precautions in 1-2D.

E. Shock Prevention

Exposed hot conductors or other bare metal in the welding circuit, or in ungrounded, electrically-HOT equipment can fatally shock a person whose body becomes a conductor. **DO NOT STAND, SIT, LIE, LEAN ON, OR TOUCH** a wet surface when welding, without suitable protection.

To protect against shock:

Keep body and clothing dry. Never work in damp area without adequate insulation against electrical shock. Stay on a dry duckboard, or rubber mat when dampness or sweat can not be avoided. Sweat, sea water, or moisture between body and an electrically HOT part - or grounded metal - reduces the body surface electrical resistance, enabling dangerous and possibly lethal currents to flow through the body.

1. Grounding the Equipment

When arc welding equipment is grounded according to the National Electrical Code, and the work is grounded according to ANSI Z49.1 "Safety In Welding And Cutting," a voltage may exist between the electrode and any conducting object. Examples of conducting objects include, but are not limited to, buildings, electrical tools, work benches, welding power source cases, workpieces, etc. **Never touch the electrode and any metal object unless the welding power source is off.**

When installing, connect the frames of each unit such as welding power source, control, work table, and water circulator to the building ground. Conductors must be adequate to carry ground currents safely. Equipment made electrically HOT by stray current may shock, possibly fatally. Do NOT GROUND to electrical conduit, or to a pipe carrying ANY gas or a flammable liquid such as oil or fuel.

Three-phase connection. Check phase requirements of equipment before installing. If only 3-phase power is available, connect single-phase equipment to only two wires of the 3-phase line. Do NOT connect the equipment ground lead to the third (live) wire, or the equipment will become electrically HOT - a dangerous condition that can shock, possibly fatally.

Before welding, check ground for continuity. Be sure conductors are touching bare metal of equipment frames at connections.

If a line cord with a ground lead is provided with the equipment for connection to a switchbox, connect the ground lead to the grounded switchbox. If a three-prong plug is added for connection to a grounded mating receptacle, the ground lead must be connected to the ground prong only. If the line cord comes with a three-prong plug, connect to a grounded mating receptacle. Never remove the ground prong from a plug, or use a plug with a broken off ground prong.

2. Electrode Holders

Fully insulated electrode holders should be used. Do NOT use holders with protruding screws.

3. Connectors

Fully insulated lock-type connectors should be used to join welding cable lengths.

4. Cables

Frequently inspect cables for wear, cracks and damage. **IMMEDIATELY REPLACE** those with excessively worn or damaged insulation to avoid possibly - lethal shock from bared cable. Cables with damaged areas may be taped to give resistance equivalent to original cable.

Keep cable dry, free of oil and grease, and protected from hot metal and sparks.

5. Terminals And Other Exposed Parts

Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

6. Electrode

- a. Equipment with output on/off control (contactor)

Welding power sources for use with the gas metal arc welding (GMAW), gas tungsten arc welding (GTAW) and similar processes normally are equipped with devices that permit on-off control of the welding power output. When so equipped the electrode wire becomes electrically HOT when the power source switch is ON and the welding gun switch is closed. Never touch the electrode wire or any conducting object in contact with the electrode circuit unless the welding power source is off.

- b. Equipment without output on/off control (no contactor)

Welding power sources used with shielded metal arc welding (SMAW) and similar processes may not be equipped with welding power output on-off control devices. With such equipment the electrode is electrically HOT when the power switch is turned ON. Never touch the electrode unless the welding power source is off.

7. Safety Devices

Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out.

Before installation, inspection, or service, of equipment, shut OFF all power and remove line fuses (or lock

or red-tag switches) to prevent accidental turning ON of power. Disconnect all cables from welding power source, and pull all 115 volts line-cord plugs.

Do not open power circuit or change polarity while welding. If, in an emergency, it must be disconnected, guard against shock burns, or flash from switch arcing.

Leaving equipment unattended. Always shut OFF and disconnect all power to equipment.

Power disconnect switch must be available near the welding power source.

F. Protection For Wearers Of Electronic Life Support Devices (Pacemakers)

Magnetic fields from high currents can affect pacemaker operation. Persons wearing electronic life support equipment (pacemaker) should consult with their doctor before going near arc welding, gouging, or spot welding operations.

1-4. STANDARDS BOOKLET INDEX

For more information, refer to the following standards or their latest revisions and comply as applicable:

1. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING obtainable from the American Welding Society, 550 Le Jeune Rd, P.O. Box 351040, Miami, FL 33135.
2. NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
3. OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the U.S. Government Printing Office, Washington, D.C. 20402.
4. ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
5. ANSI Standard Z41.1, STANDARD FOR MEN'S SAFETY-TOE FOOTWEAR obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
6. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
7. AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES obtainable from the American Welding Society, 550 Le Jeune Rd. P.O. Box 351040, Miami FL 33135.
8. NFPA Standard 51, OXYGEN - FUEL GAS SYSTEMS FOR WELDING AND CUTTING obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
9. NFPA Standard 70-1978, NATIONAL ELECTRICAL CODE obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
10. NFPA Standard 51B, CUTTING AND WELDING PROCESSES obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
11. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS obtainable from the Compressed Gas Association, 500 Fifth Avenue, New York, NY 10036.
12. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.
13. NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103.
14. American Welding Society Standard AWSF4.1 "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", obtainable from the American Welding Society, 550 Le Jeune Rd. P.O. Box 351040, Miami, FL 33135.
15. ANSI Standard Z88.2 "Practice for Respiratory Protection" obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

SECTION 2 - INTRODUCTION

Model	Electrode Wire Dia. Capability	Electrode Wire Feed Speed	Control Circuit Power At Gun	Dimensions	Weight	
					Net	Ship
70A	0.030-0.045 in. (0.8-1.1 mm)	50-675 ipm (1.3-17.1 meters per minute)	24 Volts AC	Height - 12-3/4 in. (324 mm) Width - 11 in. (279 mm) Depth - 17 in. (431 mm)	27 lb. (12.2 kg)	34 lb. (15.4 kg)

Figure 2-1. Specifications

2-1. GENERAL INFORMATION AND SAFETY

A. General

Information presented in this manual and on various labels, tags and plates on the unit pertains to equipment design, installation, operation, maintenance, and troubleshooting which should be read, understood, and followed for the safe and effective use of this equipment.

B. Safety

The installation, operation, maintenance, and troubleshooting of arc welding equipment requires practices and procedures which ensure personal safety and the safety of others. Therefore, this equipment is to be installed, operated, and maintained only by qualified persons in accordance with this manual and all applicable codes such as, but not limited to, those listed at the end of Section 1 - Safety Rules For Operation Of Arc Welding Power Source.

Safety instructions specifically pertaining to this unit appear throughout this manual highlighted by the signal words **WARNING** and **CAUTION** which identify different levels of hazard.

WARNING statements include installation, operating, and maintenance procedures or practices which if not carefully followed could result in serious personal injury or loss of life.

CAUTION statements include installation, operating, and maintenance procedures or practices which if not carefully followed could result in minor personal injury or damage to this equipment.

A third signal word, **IMPORTANT**, highlights instructions which need special emphasis to obtain the most efficient operation of this equipment.

2-2. 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 will be furnished by the manufacturer on request if occasion to file claim arises.

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

2-3. DESCRIPTION - This wire feeder is of the constant wire feed speed type and is designed to be used with a constant potential welding power source. The unit is compact and lightweight making it portable and for use in cramped areas.

SECTION 3 - INSTALLATION

3-1. LOCATION (Figure 3-1) - The unit may be located on or near the welding power source or, with suitable leads, the unit may be taken wherever required.

The location should allow room to make connections and change wire.

The service life and efficiency of the unit are reduced when the unit is subjected to high levels of dust, dirt, moisture, corrosive vapors, and extreme heat.

3-2. DRIVE MOTOR - The gear case of the drive motor has a vent plug installed at the time of manufacture. Remove and discard the vent plug before beginning operation.

CAUTION: PRESSURE IN WIRE DRIVE MOTOR GEAR BOX will damage motor.

- *Remove vent screw prior to operation.*

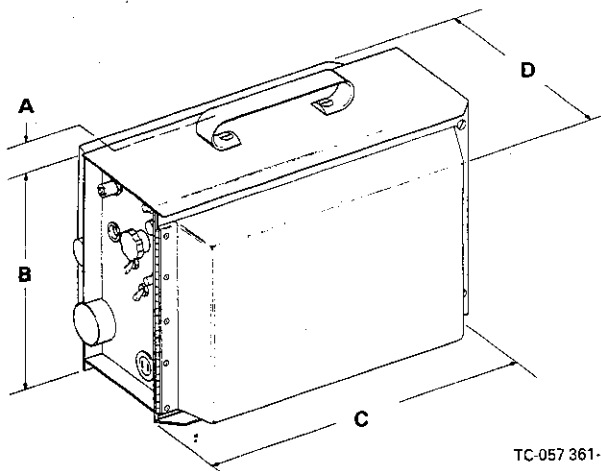
Warranty is void if the vent screw is not removed prior to operation.

WARNING: ELECTRIC SHOCK can kill.

- *Do not touch live electrical parts.*
- *Disconnect input power to the wire feeder or employ "lockout/tagging procedures" on the welding power source before internally inspecting or servicing.*

Lockout/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

Work on internal parts to be performed by qualified persons.

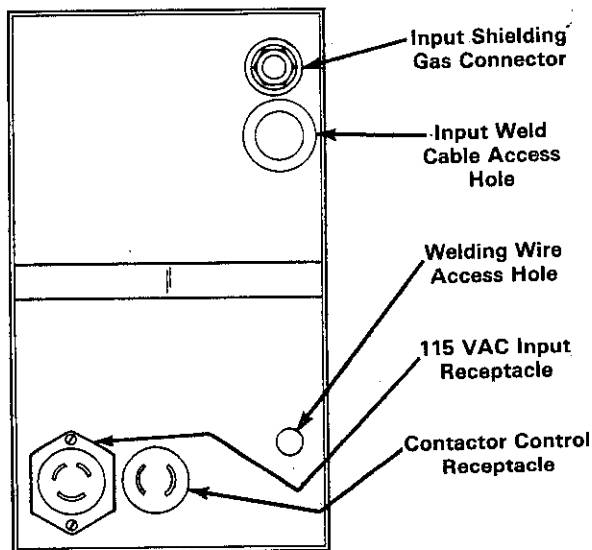


TC-057 361-2C

Dimensions		
	Inches	Millimeters
A	1-1/2	38
B	11-1/4	285.7
C	16-1/2	419
D	11	279.4

Figure 3-1. Wire Feeder Dimensions

3-3. CONTACTOR CONTROL CONNECTIONS (Figure 3-2) - Install supplied 2 prong plug to end of contactor control cord. Insert plug into contactor control receptacle and rotate clockwise to secure. Secure remaining end of cord to contactor control receptacle on the welding power source.



TB-004 526-B

Figure 3-2. Rear Panel View

3-4. SHIELDING GAS & WELD CABLE INSTALLATION (Figure 3-2)

A. Shielding Gas Connection

Determine the distance the wire feeder is to be located from the welding power source and then connect a hose from the shielding gas regulator-flowmeter on the shielding gas supply to the gas input connection on the rear of the wire feeder. This connection has 5/8-18 right-hand threads.

B. Welding Cable Connection

A terminal is provided behind the left access door of the wire feeder. Insert the weld cable from the welding power source through the access hole and connect the weld cable to the terminal.

CAUTION: ARCING can damage weld cable terminal.

- Ensure that the weld cable terminal is clean before attaching weld cable.
- Ensure that nut is secure.

In addition to arcing at the weld cable terminal, erratic weld current can result if connection is loose or dirty.

3-4. WELDING GUN CONNECTIONS (Figure 4-1)

A. Shielding Gas Connection

The shielding gas hose from the gun attaches to the Gas connector on the wire feeder. This connector has 5/8-18 right hand threads.

B. Welding Cable Connection

Insert the weld cable from the gun through the access hole and connect weld cable to terminal.

CAUTION: ARCING can damage weld cable terminal.

- Ensure that the weld cable terminal is clean before attaching weld cable.
- Ensure that nut is secure.

In addition to arcing at the weld cable terminal, erratic weld current can result if connection is loose or dirty.

C. Trigger Control Connection

Insert the two pin plug from the gun into the Trigger Control receptacle and rotate plug clockwise to secure.

When the trigger 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.

3-5. WIRE GUIDE & DRIVE ROLL GEAR INSTALLATION (Figure 3-3) - 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:

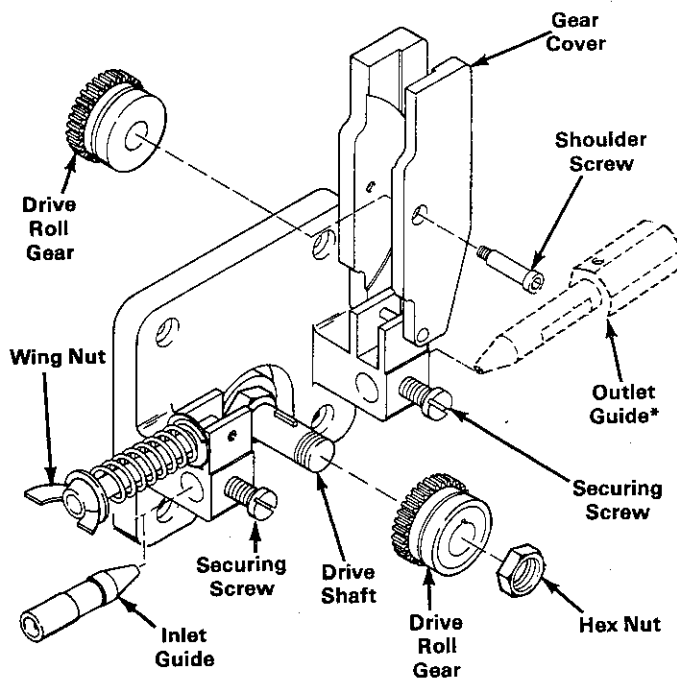
1. Loosen pressure adjustment wing nut and pull downward. Lift gear cover up until it is in an upright position.
2. Using a 1/8 inch allen wrench, remove shoulder screw and then pull out drive roll gear.
3. Insert replacement drive roll gear into gear cover and secure in place with shoulder screw.
4. Remove nylon hex nut and drive roll gear from drive shaft.

5. Install replacement drive roll gear onto drive shaft and secure in place with nylon hex nut.
6. Loosen securing screw and pull out inlet guide.
7. Install replacement inlet guide in drive roll assembly and secure with securing screw.

IMPORTANT: Ensure that the inlet guide is given approximately 1/16 in. (1.5 mm) of clearance from the drive roll gears.

8. Loosen securing screw and pull out outlet guide. Insert proper size outlet guide into drive roll assembly and secure with securing screw.

IMPORTANT: Ensure that outlet guide clears the drive roll gears by 1/16 in. (1.5 mm) and that the flat side of the outlet guide is facing screw.



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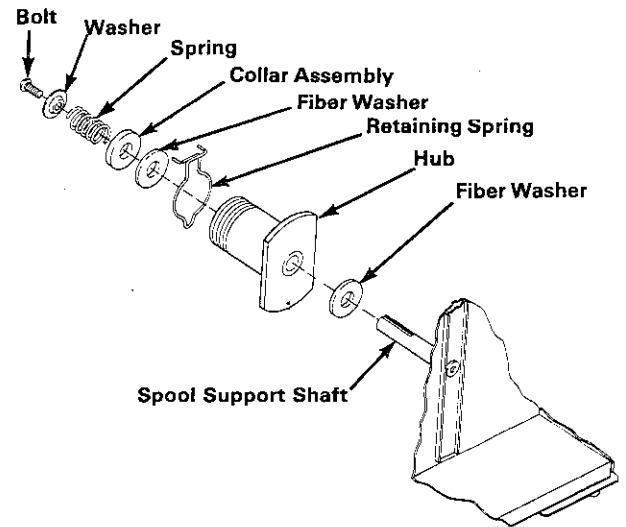
Figure 3 - 3. Wire Guide & Drive Roll Installation

3-6. EIGHT INCH SPOOL TYPE WELDING WIRE INSTALLATION (Figure 3-4)

1. Remove the spool retaining spring.
2. Slide the spool of wire onto the hub so that the wire feeds from the bottom of the spool in a counterclockwise direction.
3. Rotate the spool until the guide hole in it aligns with the guide pin on the hub. Slide the spool onto the hub until it seats against the back side of the hub.
4. Place the spool retaining spring on the hub making sure it seats tightly against the wire spool.

3-7. FOUR INCH SPOOL TYPE WELDING WIRE INSTALLATION (Figure 3-4)

1. Remove bolt from spool support shaft.



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Figure 3 - 4. Installation Of Welding Wire Spool

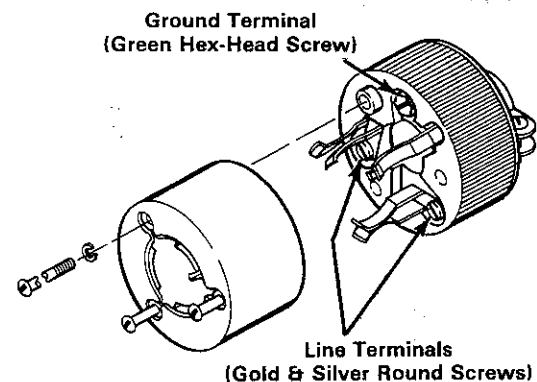
2. Pull off washer, spring, collar assembly, fiber washer and hub from the spool support shaft.

IMPORTANT: Ensure that the fiber washer is left on the spool support shaft.

3. Place a four inch spool of welding wire onto the spool support shaft so that the wire feeds from the bottom of the spool in a counterclockwise direction.
4. Install fiber washer, collar assembly, and spring onto the spool support shaft.
5. Place washer onto bolt and turn bolt into spool support shaft until a significant pressure is felt.
6. Place the hub and spool retaining spring in a convenient place.

3-8. HUB TENSION ADJUSTMENT - Rotate the adjustment screw (Figure 3-4) until a slight drag is felt while turning spindle.

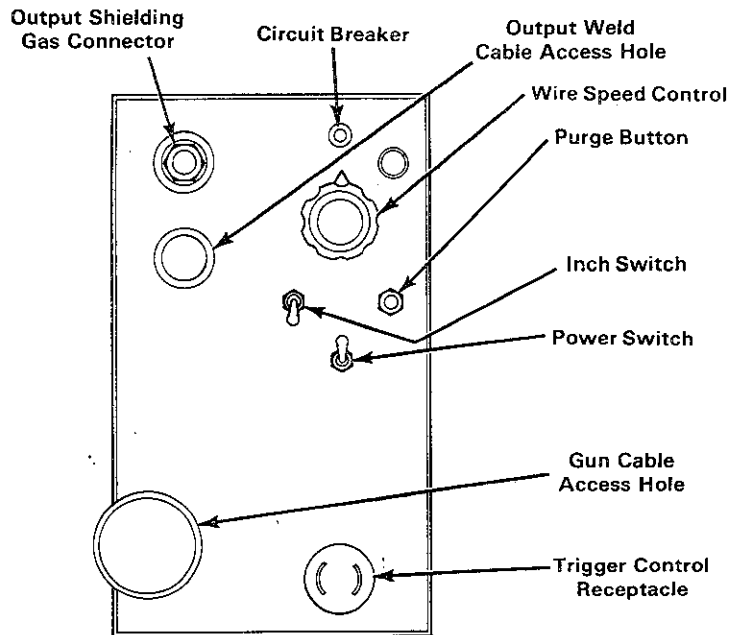
3-9. 115 VOLTS AC CONNECTION (Figures 3-2 & 3-5) - Install supplied 3 pole plug to end of 115 volts power cord. Insert plug into 115 Volts AC receptacle and rotate clockwise to secure. Secure remaining end of cord to a 115 volts ac, 60 hertz power supply.



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Figure 3-5. 115 Volts AC Plug Installation

SECTION 4 - FUNCTION OF CONTROLS



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Figure 4-1. Front Panel Views

4 - 1. POWER SWITCH (Figure 4-1) - Placing the POWER switch on the wire 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 wire feeder down.

4 - 2. WIRE SPEED CONTROL (Figure 4-1) - 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.

4 - 3. PURGE BUTTON (Figure 4-1) - The PURGE button 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.

4 - 4. INCH SWITCH (Figure 4-1) - The INCH switch 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 permits inching of the wire at whatever setting the WIRE SPEED control is at, without energizing the welding circuit or the shielding gas valve.

4 - 5. CIRCUIT BREAKER (Figure 4-1) - A circuit breaker provides protection to the wire 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 5 - SEQUENCE OF OPERATION

5-1. WELDING WIRE THREADING

WARNING: ELECTRIC SHOCK can kill; MOVING PARTS can cause injury.

- Do not touch live electrical parts.
- Keep clear of pinch points.

The welding wire and all metal parts in contact with it are energized while welding.

CAUTION: WELDING WIRE can cause puncture wounds; HOT SURFACES can burn skin.

- Do not activate gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other personnel, or any conductive surface when threading welding wire.
- Allow gun to cool before touching.

IMPORTANT: If an external welding wire supply is used, remove the welding wire access hole plug and insert the welding wire through the welding wire access hole. Refer to Figure 3-2 for welding wire access hole location.

1. Connect the gun to the wire feeder according to the instructions in the Gun Instruction Manual.
2. Loosen the wing nut on the drive roll pressure adjustment, pivot the drive roll pressure adjustment downward, and lift the pressure gear assembly upward until it is 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.

IMPORTANT: Spooled wire has a tendency to unravel when loosened from the spool. Maintain a firm grip on the wire during the threading operation.

4. Continue to feed the welding wire through the outlet wire guide.
5. Pivot the pressure gear assembly downward making sure the teeth on the upper gear mesh with lower drive gear. The welding wire must also be in the grooves of the upper and lower drive rolls.

IMPORTANT: Whenever the upper portion of the drive assembly is closed, ensure that the gears are properly meshed and the wire is placed in the groove of the drive rolls. Failure to comply will result in erratic wire feed and damage to the drive rolls.

IMPORTANT: Ensure that the gun is properly equipped to utilize the selected wire size. See gun instruction manual for specific information.

6. Pivot the drive roll pressure adjustment upward into the slot on the pressure gear assembly making sure the lower flat washer is above the pressure gear casing.
7. Turn the wing nut on the drive roll pressure adjustment 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 wire feeder are put into operation.
8. Energize the welding power source.
9. Place the wire 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 1 in. (25.4 mm) beyond the end of the gun tip.

If excess wire feeds out, cut off to 1/4 in. (6.4 mm) length with side cutters.

5-2. GAS METAL-ARC WELDING

WARNING: ARC RAYS, SPARKS, AND HOT SURFACES can burn eyes and skin; NOISE can damage hearing.

- Wear correct eye, ear, and body protection.

FUMES AND GASES can seriously harm your health.

- Use enough ventilation to keep fumes and gases from the breathing zone.

See Section 1 - Safety Rules For Operation Of Arc Welding Power Sources for basic welding safety information.

1. Make all necessary connections as instructed in Section 3.
2. Rotate the WIRE SPEED control to the desired setting.
3. Turn on the shielding gas at the source.
4. Energize the welding power source.
5. Place the POWER switch on the wire feeder in the ON position.
6. Hold the tip of the gun approximately 1/2 inch (13 mm) from the workpiece.
7. 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 overtighten wing nut.

WARNING: ELECTRIC SHOCK can kill; MOVING PARTS can cause injury.

- Do not touch live electrical parts.
- Keep clear of pinch points.

The welding wire and all metal parts in contact with it are energized while welding.

5-3. SHUTTING DOWN

1. Turn off the shielding gas at the source.
2. Place the POWER switch on the wire feeder in the OFF position.
3. Turn off all associated equipment.

WARNING: HIGH CONCENTRATION OF SHIELDING GASES can harm health or kill.

- Shut off gas supply when not in use.

SECTION 6 - MAINTENANCE

IMPORTANT: Periodically inspect the labels on this unit for legibility. All precautionary labels must be maintained in a clearly readable state and replaced when necessary. See the Parts List for part number of labels.

6-1. INSPECTION AND UPKEEP - Usage and shop conditions will determine the frequency and type of maintenance. Inspect equipment as follows:

WARNING: ELECTRIC SHOCK can kill; WELDING WIRE can cause puncture wounds; HOT SURFACES can burn skin.

- Disconnect unit from input power before internally inspecting or servicing.
- Allow gun and unit to cool before touching.
- Do not activate gun trigger while performing maintenance on gun.

1. Make sure welding power source is shut down.
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.

6-2. CLEANING OF DRIVE ROLLS - Occasionally it will become necessary to clean the wire groove on the drive rolls. This cleaning operation can be performed with a wire brush.

WARNING: HIGH ROTATIONAL SPEED may cause damage to drive rolls.

- Do not allow drive rolls to rotate at high speed if compressed air is used for cleaning the drive roll assembly.

To clean the wire grooves it will be necessary to disconnect input power from unit before removing the drive roll(s) (see Section 3-5 for removal and installation instructions).

IMPORTANT: Failure to properly maintain the drive rolls can result in a buildup of wire particles which will decrease the efficiency of the wire feeding operation.

SECTION 7 - TROUBLESHOOTING

7-1. GENERAL - It is assumed that proper installation has been made, according to Section 3 of this manual, and that the unit was functioning properly until this trouble developed.

7-2. TROUBLESHOOTING CHART

WARNING: ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Disconnect unit from input power before internally inspecting or servicing.

MOVING PARTS can cause serious injury.

- Keep clear of moving parts.

HOT SURFACES can cause severe burns.

- Allow cooling period before servicing.

Troubleshooting of internal parts to be performed only by qualified persons.

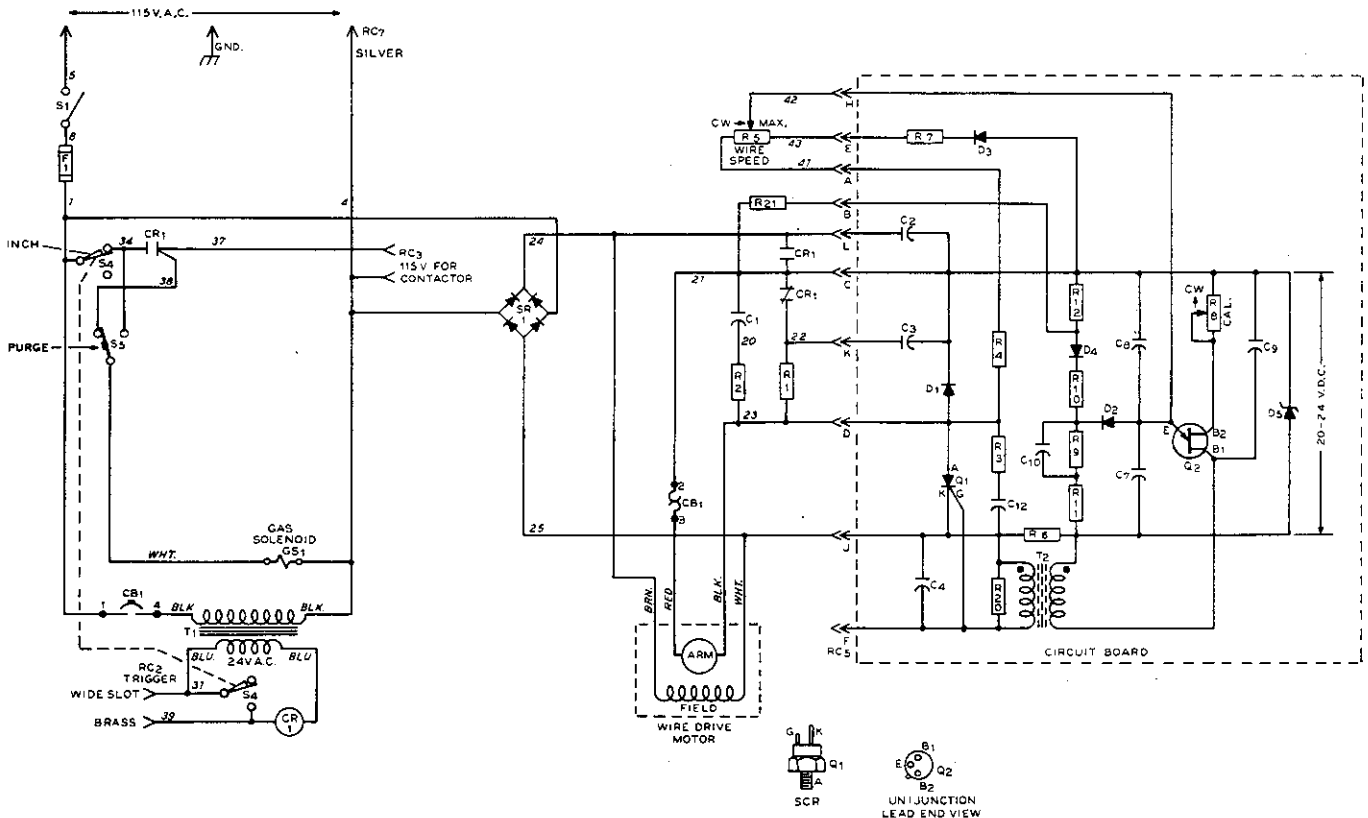
The following chart is designed to diagnose and provide remedies for some of the troubles that may develop in this unit.

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	SUGGESTED CHECK AND/OR REMEDY
Depressing gun switch will not energize control/feeder. Electrode wire is not energized and shielding gas does not flow.	POWER switch.	Place switch to ON position.
		Replace POWER switch.
	Circuit breaker CB1 tripped.	Manually reset circuit breaker by depressing the button on the front panel of the wire feeder labeled RESET.
	Plug from gun switch is not secure in Trigger Control receptacle on wire feeder.	Insert plug fully into Trigger 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.

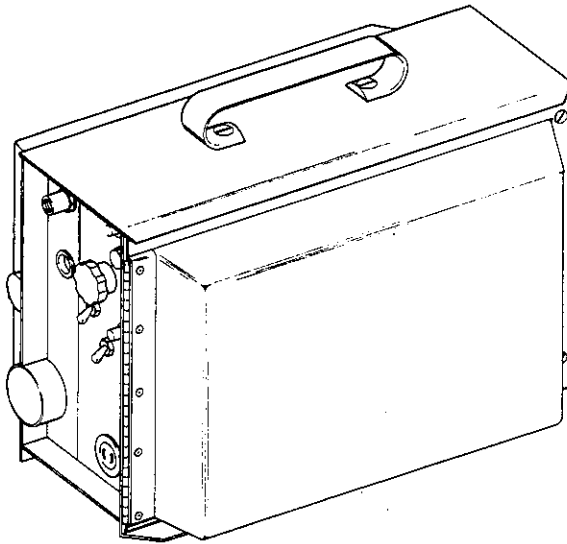
TROUBLE	PROBABLE CAUSE	SUGGESTED CHECK AND/OR REMEDY
Wire feeds, shielding gas flows, but electrode wire is not energized.	Contactor Control plug is not secure in contactor receptacle on welding power source.	Insert plug fully into receptacle and rotate plug 1/2 turn clockwise.
	Contactor Control cable leads not secure on contactor plug terminals.	Secure leads to plug terminals.
	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 nut clockwise in 1/2 turn increments until wire slippage stops.
	Drive roll is too large for wire size being used.	Change to proper size drive roll.
	Worn drive roll.	Replace drive roll.

Be sure replacement fuse is same size, type and rating.



Circuit Diagram No. B-091 931

Figure 7-1. Circuit Diagram For 70A Model



PARTS LIST

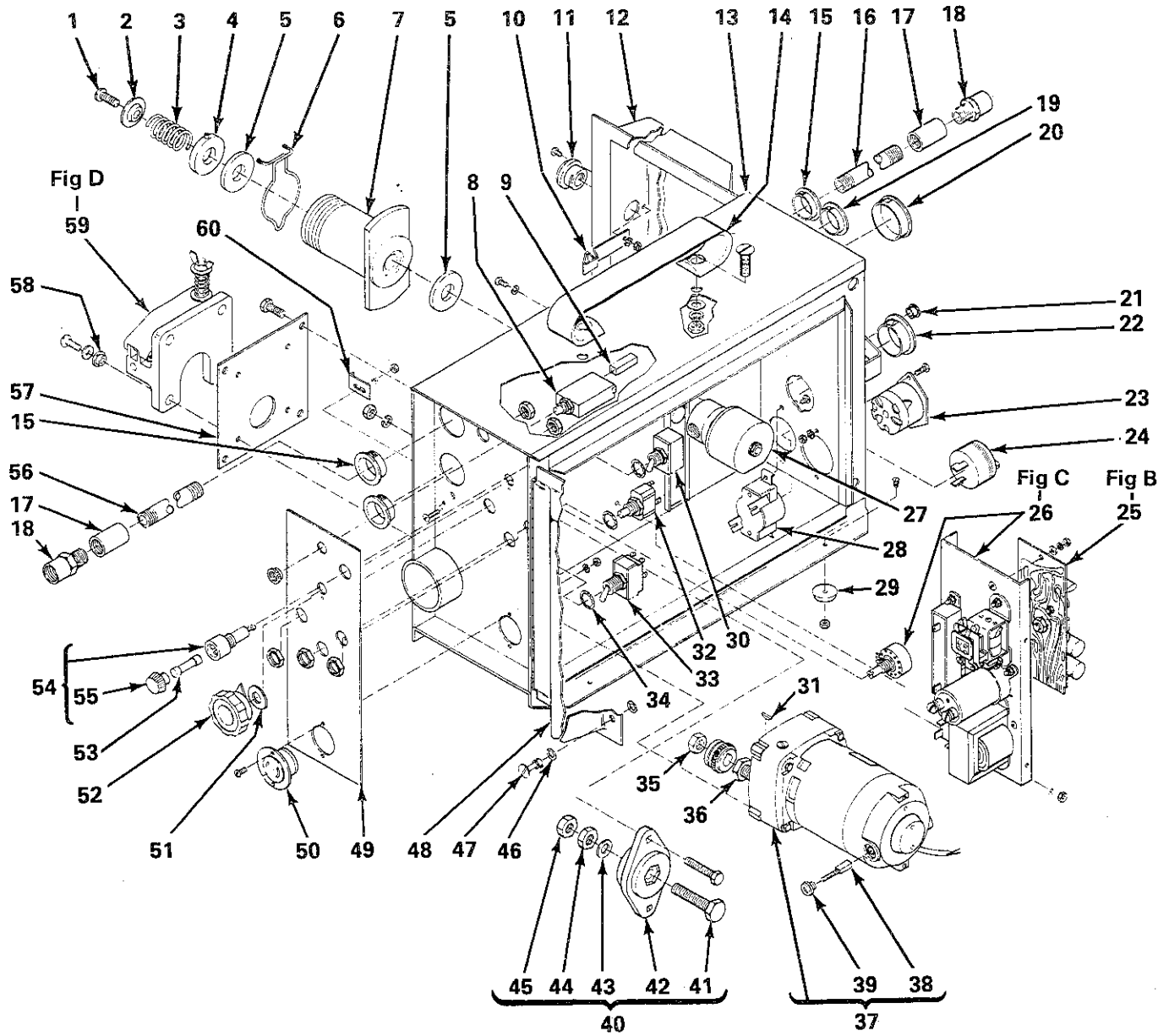


Figure A - Main Assembly

TD-057 361-F

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure A Main Assembly				
1		032 389	SCREW, round hd 1/4-20 x 1	1
2		057 430	WASHER, centering No. 18	1
3		010 233	SPRING, compression	1
4		057 971	WASHER, flat - keyed 1-1/2 dia	1
5		010 191	WASHER, 5/8 ID x 1-1/2 OD x 1/8	2
6		057 408	SPRING, retaining	1
7		057 405	HUB, spool	1
8	CB1	*011 002	CIRCUIT BREAKER, manual reset 0.7 amp	1
		035 629	O-RING, 3/8 x 1/2 (circuit breaker)	1
9		026 837	INSULATOR, terminal	5
10		057 401	CATCH, door	1
11		057 402	BUTTON, door	1
12		057 399	DOOR, side - left hand	1
13		+006 199	CHASSIS	1
		047 497	LABEL, general precautionary	1
14		003 795	HANDLE	1
15		057 357	BUSHING, snap 15/16 ID x 1.12 mtg hole	3
16		004 213	FITTING, pipe - nipple 1/4 NPT x 8	1
17		602 934	FITTING, pipe - coupling 1/4 NPT	2
18		010 604	FITTING, hose - bushing 1/4-18 NPT 5/8-18 RH	2
19		057 358	BUSHING, snap 1 inch ID x 1-3/8 mtg hole	1
20		006 086	BLANK, snap-in 1-1/2 mtg hole	1
21		057 359	BLANK, snap-in 3/8 mtg hole	1
22		057 360	BLANK, snap-in 1-3/8 mtg hole	1
23	RC7	056 665	RECEPTACLE, male - flanged grounded twistlock 2P3W 15 amp	1
24		039 618	CAP, twistlock 2P2W 20 amp 250 volts (RC3)	1
25		057 314	CIRCUIT CARD (Fig B Pg 4)	1
26			Figure C PANEL, control - w/components (Pg 5)	1
27	GS1	035 601	VALVE, 2 way 115 volts ac 1/4 IPS port 1/8 orifice	1
28	RC3	039 602	RECEPTACLE, twistlock 2P2W 20 amp 250 volts	1
29		025 590	MOUNT, resilient	4
30	S4	*011 043	SWITCH, toggle DPDT 6 amp 125 volts	1
31		605 136	KEY, woodruff 3/32 x 1/2	1
32	S5	*011 232	SWITCH, push button SPDT	1
33	S1	011 233	SWITCH, toggle SPDT 10 amp 250 volts ac	1
34		602 222	WASHER, lock - internal tooth 7/16	3
35		057 412	NUT, nylon 7/16-20	1
36		057 413	NUT, nylon 1/2-20	1
37		026 587	MOTOR, gear 1/20 hp (consisting of)	1
38		*057 431	. BRUSH & SPRING	2
39		057 432	. SCREW, cap - brush holder	2
40		039 041	TERMINAL, power output - red (consisting of)	1
41		601 976	. SCREW, cap - hex hd 1/2-13 x 1-1/2	1
42		039 049	. TERMINAL BOARD	1
43		602 247	. WASHER, flat - SAE 1/2	1
44		601 880	. NUT, hex jam 1/2-13	1
45		601 879	. NUT, hex full 1/2-13	1
46		602 344	RETAINER, screw	4
47		602 341	FASTENER, screw - oval hd No. 5	2
		602 347	RECEPTACLE, rivet type - screw 1/4 turn	2
48		057 403	DOOR, side - RH	1
49			NAMEPLATE (order by model and serial numbers)	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
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Figure A Main Assembly (Cont'd.)

50	RC2	039 759	RECEPTACLE, flanged midget - twistlock 2P2W 10 amp	1
51		010 929	WASHER, flat - spring 3/8	1
52		019 609	KNOB, pointer	1
53	F1	*012 618	FUSE, miniature - glass 5 amp	1
54		012 617	HOLDER, fuse (consisting of)	1
55		059 139	. CAP	1
56		605 127	FITTING, pipe - nipple L 1/4 NPT x 4-1/2	1
56		004 213	FITTING, pipe - nipple L 1/4 NPT x 8	1
57		057 410	INSULATOR, motor mount	1
58		057 411	BUSHING, nylon - flanged	4
59		057 892	WIRE DRIVE ASSEMBLY (Fig D Pg 6)	1
60		004 313	BRACKET, catch - door	1

Optional Parts

		057 459	QUICK DISCONNECT (consisting of)	1
		056 271	. RECEPTACLE, twistlock - male 3/8-16	1
		039 044	. BUS BAR	1
		010 907	. NUT, locking 1 inch	1
		057 468	. CABLE, welding	1
		601 838	. NUT, hex - jam 3/8-16	1
		010 910	. WASHER, flat - SAE 3/8	1

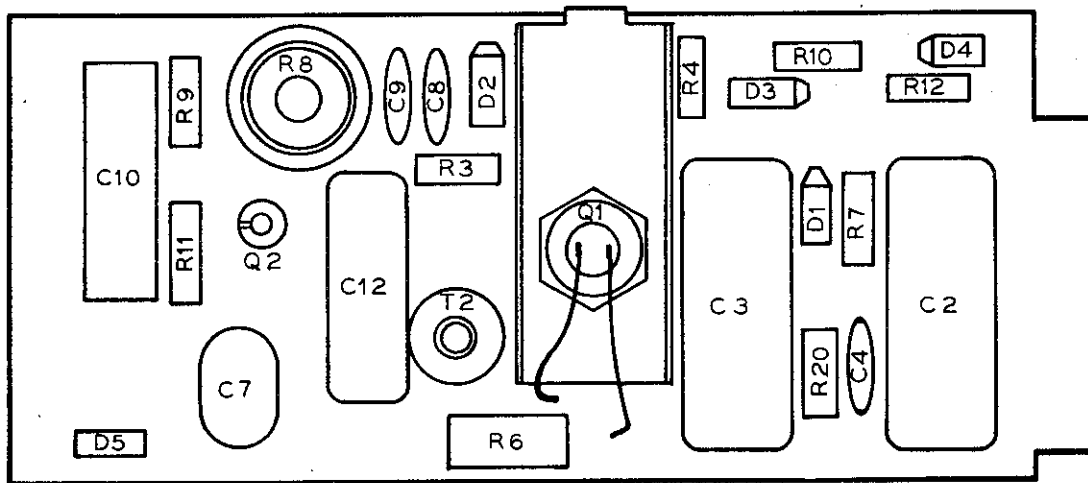
*Recommended Spare Parts.

+ When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.

Dia. Mkgs.	Part No.	Description	Quantity
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Figure B 057 314 Circuit Card (Fig A Pg 2 Item 25)

C2,3	044 602	CAPACITOR, poly film 0.47 uf 400 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 0.2 uf 200 volts dc	1
D1-4	026 202	DIODE, 1 amp 400 volts SP	4
D5	037 250	DIODE, zener 24 volts 1 watt	1
Q1	037 824	THYRISTOR, 7.4 amp 200 volts	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
R7,10	028 276	RESISTOR, carbon 0.5 watt 2200 ohm	2
R8	030 944	POTENTIOMETER, WW 1 turn 2 watt 5000 ohm	1
R9	030 936	RESISTOR, carbon 0.5 watt 33K 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	085 399	TRANSFORMER, pulse	1



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

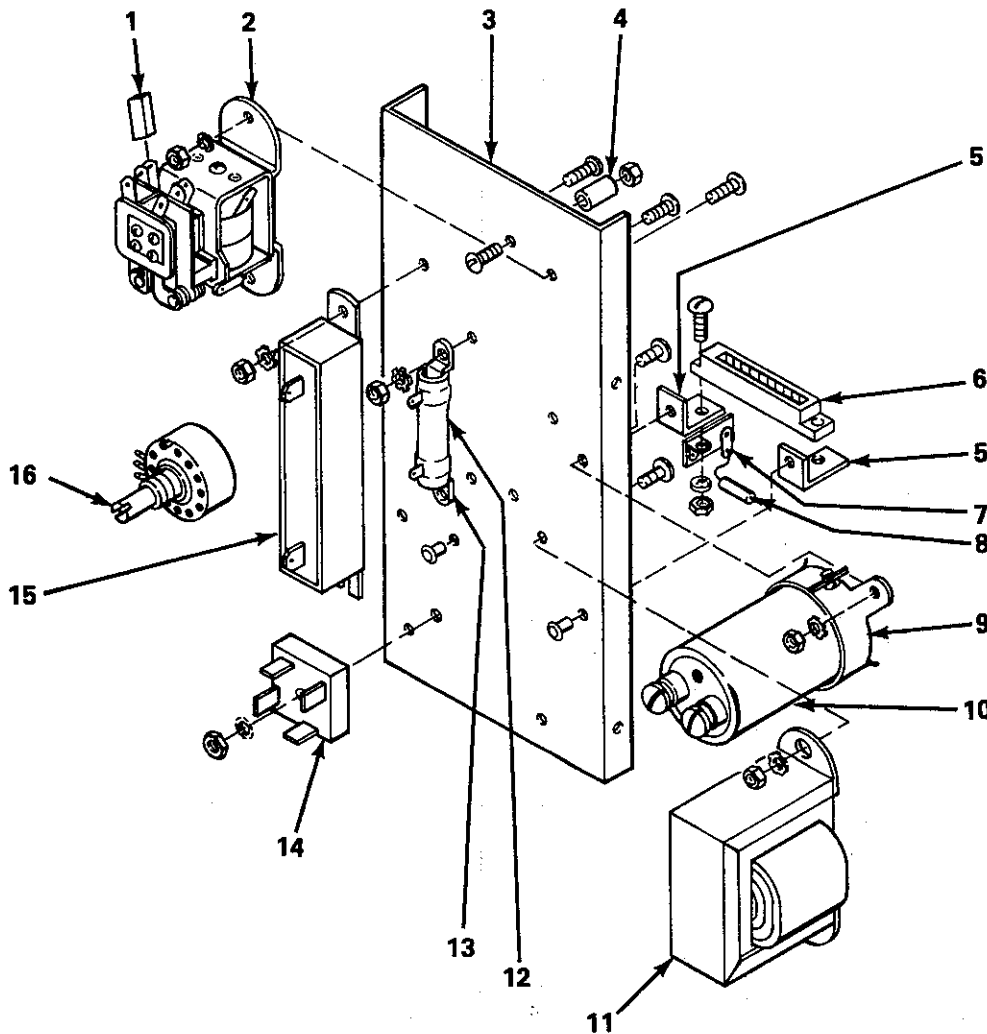
Figure B - Circuit Card

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

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
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Figure C Panel, Control - W/Components (Fig A Pg 2 Item 26)

1		026 837	INSULATOR, terminal - nylon	3
2	CR1	*034 841	RELAY, 24 volts ac DPDT	1
3		004 255	PANEL, mtg - components	1
4		010 301	BUSHING, brass 0.106 ID x 1/4 OD x 5/16	1
5		031 251	BRACKET, mounting - RC5	1
6	RC5	039 756	TERMINAL, header 10 pin	1
7		038 784	STRIP, terminal 1 pole	1
8	R21	030 940	RESISTOR, carbon 0.5 watt 2000 ohm	1
9		601 375	RING, mtg - capacitor	1
10	C1	*031 698	CAPACITOR, electrolytic 250 uf 175 volts dc	1
11	T1	*036 135	TRANSFORMER, control 115/24 volts ac	1
12	R1	*030 942	RESISTOR, WW fixed 12 watt 10 ohm	1
13		052 704	CLIP, spring - mtg resistor	2
14	SR1	035 914	RECTIFIER, integrated 25 amp 400 volts	1
15	R2	*030 941	RESISTOR, WW fixed 100 watt 5 ohm	1
16	R5	*030 943	POTENTIOMETER, carbon 1 turn 2 watt 15K ohm	1



TA-057 364-C

Figure C - Panel, Control - W/Components

*Recommended Spare Parts.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.

Item No.	Part No.	Description	Quantity
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Figure D 057 892 Wire Drive Assembly, (Fig A Pg 3 Item 59)

1	056 663	PIN	1
2	010 285	BOLT, shield - socket hd 10-24 x 1/4 x 3/4	1
3	056 164	COVER, gear	1
4	601 888	NUT, wing 5/16-18	1
5	602 242	WASHER, flat - 5/16	1
6	010 231	SPRING, compression	1
7	010 910	WASHER, flat - SAE 3/8	1
8	056 350	FASTENER, pinned	1
9	057 409	HOUSING, drive roll	1
10	604 741	PIN, cotter - hair 0.042 x 15/16	1
11	604 624	SCREW, fillister hd 1/4-20 x 1/2	2
12	010 661	PIN, spring 1/8 x 5/8	1

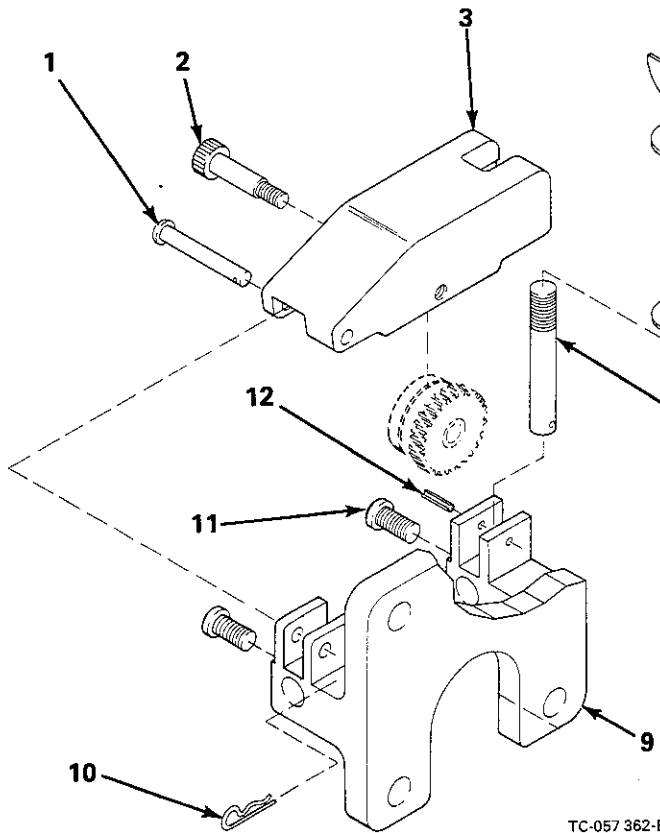


Figure D - Wire Drive Assembly

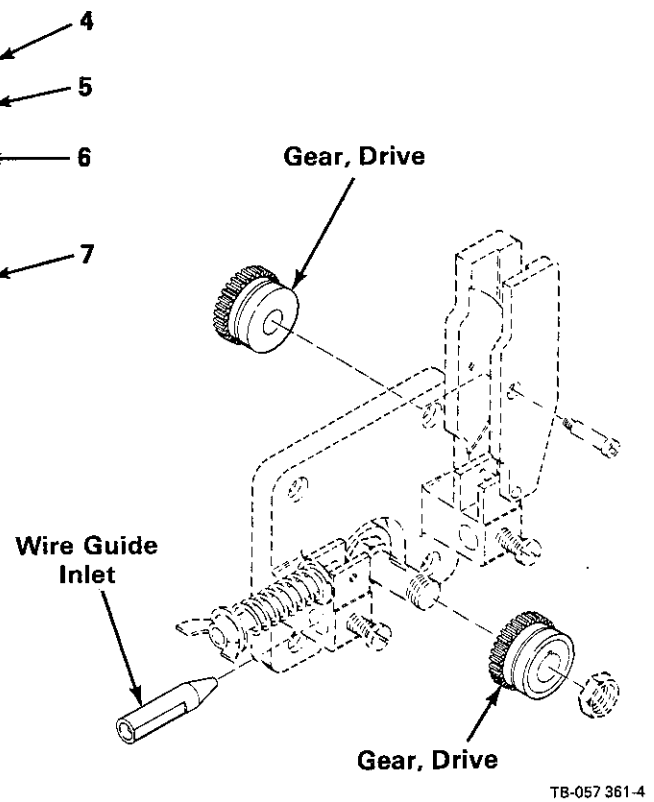


Figure E - Wire Guide And Drive Gear Assembly

Wire Diameter & Type			Kit No.	Gear, Drive		Wire Guide Nos.
Fraction	Decimal	Metric		Part No.	Type	Inlet
.030" hard	.030	.8MM	057 908	057 775 (Upper) 057 772 (Lower)	V-groove	056 182
.035" hard	.035	.9MM	057 909	057 759 (Upper) 057 762 (Lower)	V-groove	056 182
.045" hard	.045	1.2MM	057 910	057 776 (Upper) 057 771 (Lower)	V-groove	056 184

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