

OWNER'S MANUAL

FOR

WIRE FEEDER

MODEL: CMUS-511 U3919

TRANSISTOR CONTROLLED WIRE FEEDER FOR MIG, PULSED MIG, AND
FLUX CORED, WELDING

DO NOT DESTROY

IMPORTANT: Read and understand the entire contents of this manual, with special emphasis on the safety material throughout the manual, before installing, operating, or maintaining this equipment. This equipment and this manual are for use only by persons trained and experienced in the safe operation of welding equipment. Do not allow untrained persons to install, operate or maintain this equipment. Contact your distributor if you do not fully understand this manual.

DAIHEN Corporation WELDING PRODUCTS DIVISION

RECEIPT OF EQUIPMENT

When you receive the equipment, check it against the invoice to make sure it is complete, and inspect the equipment for possible damage due to shipping.

If there is any damage, notify the carrier immediately to file a claim. While furnish complete information concerning damage claims or shipping errors to your dealer

ARC WELDING SAFETY PRECAUTIONS

W A R N I N G

ARC WELDING can be hazardous.

- PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. Especially:
 - Keep children away.
 - Pacemaker wearers keep away until consulting the doctor.
- Read and understand
 - the summarized safety informations given in below and
 - the original principal informations that will be found in the table SAFETY STANDARDS.
- Have trained and experienced person perform installation, operation, and maintenance of this equipment.
- Use only well-maintained equipment. Repair or replace damaged parts at once.

ARC WELDING is safe when precautions are taken.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and welding circuit is electrically live whenever the output of the welding power source is on. The power line and internal circuit of the welding power source are also live when line disconnect switch is on. In semiautomatic or automatic wire welding, wire reel, drive assembly, and all metal parts touching the welding wire are electrically live.

- 1 Do not touch live electrical parts.
- 2 Wear dry, hole-free insulating gloves and body protection.
- 3 Insulate yourself from work and ground using dry insulating mats or covers.
- 4 Disconnect line disconnect switch before installing or maintaining this equipment.
- 5 Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- 6 Ground the workpiece.
- 7 Keep all panels and covers of this equipment securely in place.
- 8 Do not use worn, damaged, undersized, or poorly spliced cables.
- 9 Do not touch electrode and any metal object if POWER switch is ON.
- 10 Do not wrap weld cables around your body.
- 11 Turn off POWER switch when not in use.



ARC RAYS can burn eyes and skin: FRYING SPARKS AND HOT METAL can injury. NOISE can damage hearing.

Arc rays from the welding produce intense heat and strong ultraviolet rays that can burn eyes and skin.

Noise from some arc welding can damage hearing.

- 1 Wear a welding helmet with a proper shade of filter (See ANSI Z49.1 listed in table SAFETY STANDARDS.) to protect your face and eyes when welding or watching.
- 2 Wear approved safety goggles.
- 3 Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- 4 Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
- 5 Use approved ear plugs or ear muffs if noise level is high.



WELDING can cause fire and explosion.

Sparks and spatter fly from the welding arc. The flying sparks and hot metal, spatter, hot workpiece, and hot equipment can cause fires and explosion.

- 1 Protect yourself and others from flying sparks and hot metal.
- 2 Do not weld where flying sparks can strike flammable material.
- 3 Remove all flammables within 35 ft. (10.7 m). If this is not possible, tightly cover them with approved covers.
 - Be alert that welding sparks and hot metals from welding can easily go through small cracks and openings to adjacent areas.
- 4 Watch for fire, and keep a fire extinguisher nearby
 - Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire hidden side.
- 5 Do not weld on closed containers such as tanks or drums.

Accidental contact of electrode or welding wire to metal object can cause sparks, overheating, or fire.

- 6 Connect work cable to workpiece as close to the welding area as practical
 - to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
- 7 Remove stick electrode from holder; cut off wire at contact tip when not in use.
- 8 Do not use the welding power source for other use than arc welding.
- 9 Wear oil-free protective garments such as leather gloves, heavy shirt, cuffles trousers, high shoes, and a cap.
 - Loose weld cable connection can cause undesired sparks and excessive heating.
- 10 Tighten all weld cable connections.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

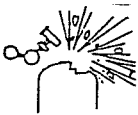
- 11 Wear approved face shield or safety goggles. Side shield recommended.
- 12 Wear proper body protection to protect skin.



FUMES AND GASES can be hazardous to your health.

Arc Welding may produce fumes and gases hazardous to health.

- 1 Keep your head out of the fumes; do not breath the fumes.
- 2 Ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
- 3 If ventilation is poor, use an approved air-supplied respirator.
- 4 Read the Material Safety Data Sheets (MSDSs) and the manufacture's instruction for metals, consumables, coatings, and cleaners.
- 5 Do not weld to avoid producing toxic and irritating gases by the heat and rays of the arc,
 - in location near degreasing, cleaning, or spraying operation.
 - on coated metal, such as galvanized, lead, or cadmium plated steel.



CYLINDER can explode if damaged.

Shielding gas cylinder contain high pressure gas. If damaged, a cylinder can explode.

- 1 Use only correct gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them in good condition.
- 2 Protect gas cylinder from excessive heat, mechanical shock, and arcs.
- 3 Keep cylinder in an upright position securely chained to stationary support or rack to prevent falling or tipping.
- 4 Keep cylinders away from any welding or other electrical circuit.
- 5 Never touch cylinder with welding electrode.
- 6 Read and follow instructions on compressed gas cylinders, associate equipment, and CGA publication listed in table SAFETY STANDARDS.

Since gas cylinder are normally parts of the welding process, be sure to treat carefully.

- 7 Turn face away from valve outlet when opening cylinder valve.
- 8 Keep protective cap in place over valve except when gas cylinder is in use or connected for use.

S A F E T Y S T A N D A R D S		
Publication Number	Title	Obtainable from
Article		
ANSI Standard Z49.1	SAFETY IN WELDING AND CUTTING	the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL33126
OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910		the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
ANSI Standard Z87.1	SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION	the American National Standards Institute, 1430 Broadway, New York, NY 10018
NFPA Standard 51B	CUTTING AND WELDING PROCESSES	the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
CGA Pamphlet P-1	SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS	the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
CSA Standard W117.2	CODE FOR SAFETY IN WELDING AND CUTTING	the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3
American Welding Society Standard AWS F4.1	RECOMMENDED SAFE PRACTICES FOR THE PREPARATION FOR WELDING AND CUTTING OF CONTAINERS AND PIPING THAT HAVE HELD HAZARDOUS SUBSTANCES	the American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126
National Electrical Code, NFPA 70		National Fire Protection Association, Batterymarch Park, Quincy, MA 02269

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CIRCUIT DIAGRAM FOR CMUS-511 (S-1) U3919

SECTION 1**SAFETY SIGNAL WORDS**

Throughout this manual WARNING, CAUTION, and IMPORTANT may appear. Pay particular attention to the information under the following signal words, and identify different level of hazard and special instruction.

▲ W A R N I N G

WARNING gives information regarding possible personal injury or loss of life.

▲ C A U T I O N

CAUTION gives minor personal injury or possible equipment damage.

■ **IMPORTANT:** IMPORTANT gives special instruction necessary for the most efficient operation of this equipment.

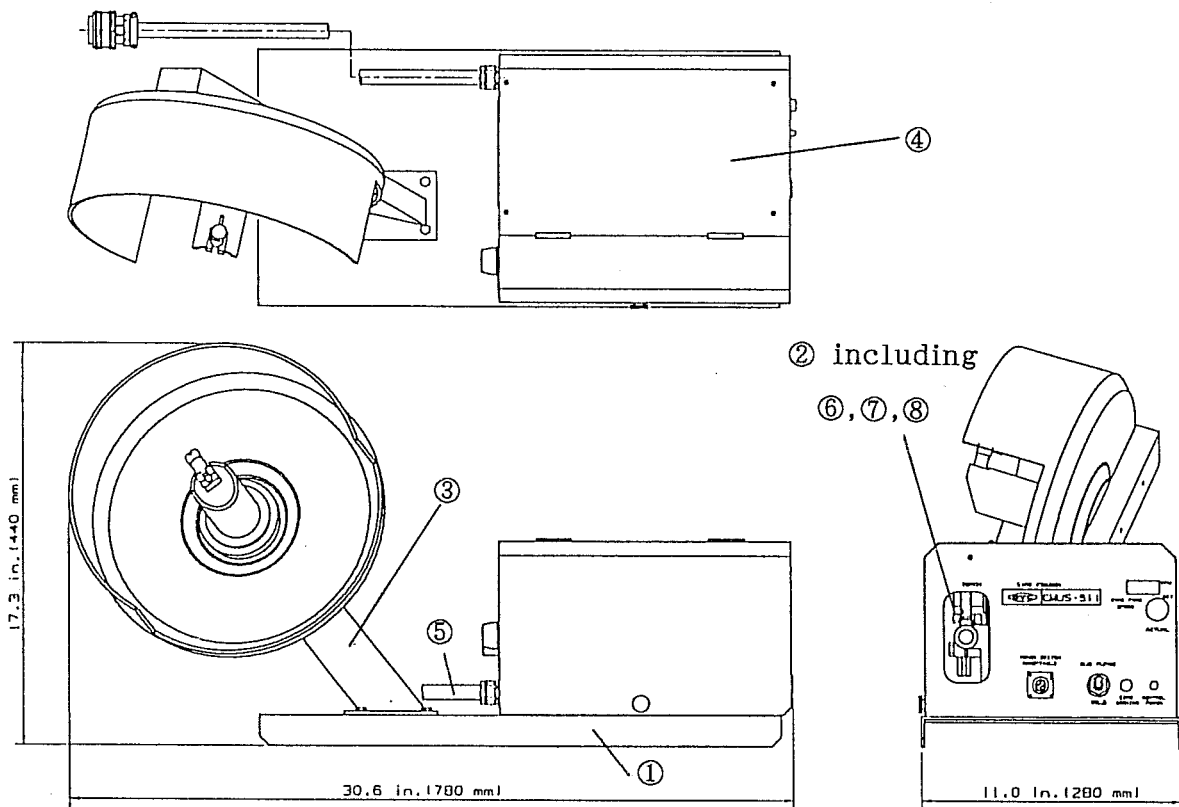
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SECTION 2
DESCRIPTION OF EQUIPMENT

2.1 Equipment Supplied.

TABLE 2-1. EQUIPMENT SUPPLIED

No.	Item	Description	Quantity
①	Base		1
②	Feedhead Assembly	These are combined.	1
③	Wire Support Assembly		1
④	Control Box	Metal case	1
⑤	Control Cable	10 ft. (3 m) with plug	1
⑥	Drive Roll	U3919H01 as initial standard part	2
⑦	Inlet Wire Guide	U3919E04 as initial standard part	1
⑧	Outlet Wire Guide	U3919B10 as initial standard part	1



2.2 Items Required but Not Supplied.

DAIHEN recommends the following items.

- a. Welding Power Source:
Inverter MIG DM-300(S-1) P6287
- b. MIG-GUN:
TWECO NO.4 MIG-GUN
- c. Drive Rolls and Wire Guides
See table 7-1.

2.3 Leading Particulars.

TABLE 2-2. LEADING PARTICULARS

Name	Wire Feeder
Model	CMUS-511(S-1)
File Number	U3919
Input Power for Control	Single-phase 24 volts 4.8 amperes
Applicable Wire Size	Steel: .035, .045 in. Aluminum: 3/64 , 1/16 in.
Wire Feeding Speed	60~600 in. /min.
Applicable Wire Reel	Maximum Outer Diameter 12 in.
Dimensions(in./mm)	11.0×30.6×17.3/280×780×440
Weight(lbs./kg)	44 / 20

2.4 Service Conditions.

TABLE 2-3. SERVICE CONDITIONS

Ambient temperature	0°C to 40°C
Elevation	between sea level and 3300 ft. (1000 m)
Gases and dust which the machine is exposed to	only the extent of those normally produced by arc welding
Input line voltage variation	within the range of ± 10 percent of rated input voltage
Base of the machine	within 15 degree of horizontal



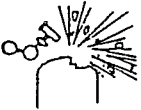


2.5 Options.

TABLE 2-4. OPTIONS


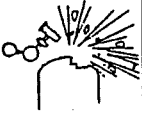

NO.	Name	Model	Description	Identifi- cation Number	Part Number
1	LED Digital Meter	E-1964	Mounded on the panel of model DT-300, DS-300, or CMUS-511.	...	E1964A00
2	ARC Spot Timer	E-1965	Used with model CMUS-511.	...	E1965A00
3	Burn-back Timer	K-2826	Used with model CMUS-511.	...	K2826A00
4	Handle	...	Installed on the base of wire feeder	...	Not decided.
5	Hook	...	Hooked at handle (NO.4 in this table) to install remote output control	...	Not decided.
6	Extension Cable	15 ft. /4.6 m	For model CMUS-511, cable 18-conductor, plugs 19-pin.	...	K2861M00
		30 ft. /9.2 m		...	K2861N00

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SECTION 3
INSTALLATION

⚠ WARNING	
	<p>FALLING WIRE FEEDER can cause serious personal injury and equipment damage.</p> <ul style="list-style-type: none"> - Do not put wire feeder on the welding power source CPVUS-300. - Do not put wire feeder where it will tip or fall. - Put wire feeder solidly on a flat surface.
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> - Do not touch live electrical parts. - Turn off welding power source and make sure that control POWER indicator of the wire feeder is not lit. - Disconnect power line before installing. <p>The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p> <p>ARCING can damage wire feeder.</p> <ul style="list-style-type: none"> - Loose metal tools in side wire feeder can short weld circuit to other metal parts causing electric shock and arcing. - Do not store metal tools inside wire feeder.
	<p>CYLINDER can explode if damaged.</p> <ul style="list-style-type: none"> - Keep cylinder away with welding electrode. - Keep cylinder in an upright position securely chained to stationary support or rack to prevent tipping or falling.
	<p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none"> - Keep away from moving parts. - Keep away from pinch points such as drive roll.
	<p>BUILDUP OF SHIELDING GAS can harm health or kill.</p> <ul style="list-style-type: none"> - Shut off shielding gas supply when not in use.

3.1 Site Selection.

⚠ W A R N I N G	
	<p>FALLING WIRE FEEDER can cause serious personal injury and equipment damage.</p> <ul style="list-style-type: none">- Do not put wire feeder on the welding power source CPVUS-300.- Do not put wire feeder where it will tip or fall.- Put wire feeder solidly on a flat surface.
	<p>CYLINDER can explode if damaged.</p> <ul style="list-style-type: none">- Keep cylinder away from welding circuit such as welding wire and other electric circuit.- Never touch cylinder with welding electrode.- Keep cylinder in an upright position securely chained to stationary support or rack to prevent tipping or falling.
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none">- Do not touch live electrical parts. <p>The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p>

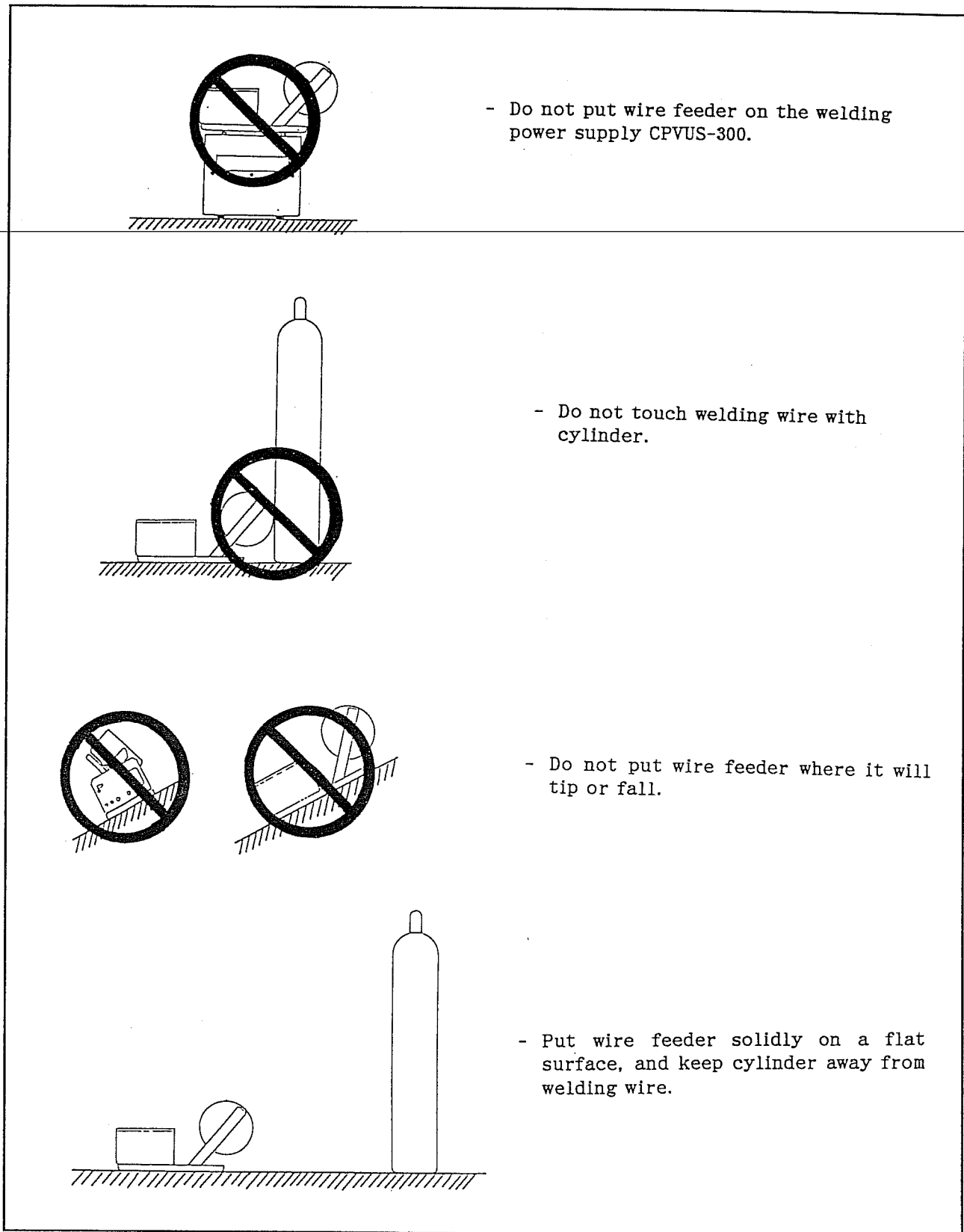





Figure 3-1. Installing Wire Feeder

3.2 Wire Guide and Drive Roll Installation.

 W A R N I N G	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none">- Do not touch live electrical parts.- Turn off welding power source and make sure that control POWER indicator of the wire feeder is not lit.- Disconnect power line before installing. <p>The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p> <p>ARCING can damage wire feeder.</p> <ul style="list-style-type: none">- Loose metal tools in side wire feeder can short welding circuit to other metal parts causing electric shock and arcing.- Do not store metal tools inside wire feeder.
	<p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none">- Keep away from moving parts.- Keep away from pinch points such as drive roll.

■ IMPORTANT:

Drive rolls, wire inlet guide, and wire output guide for .045 steel wire are installed at exfactory.

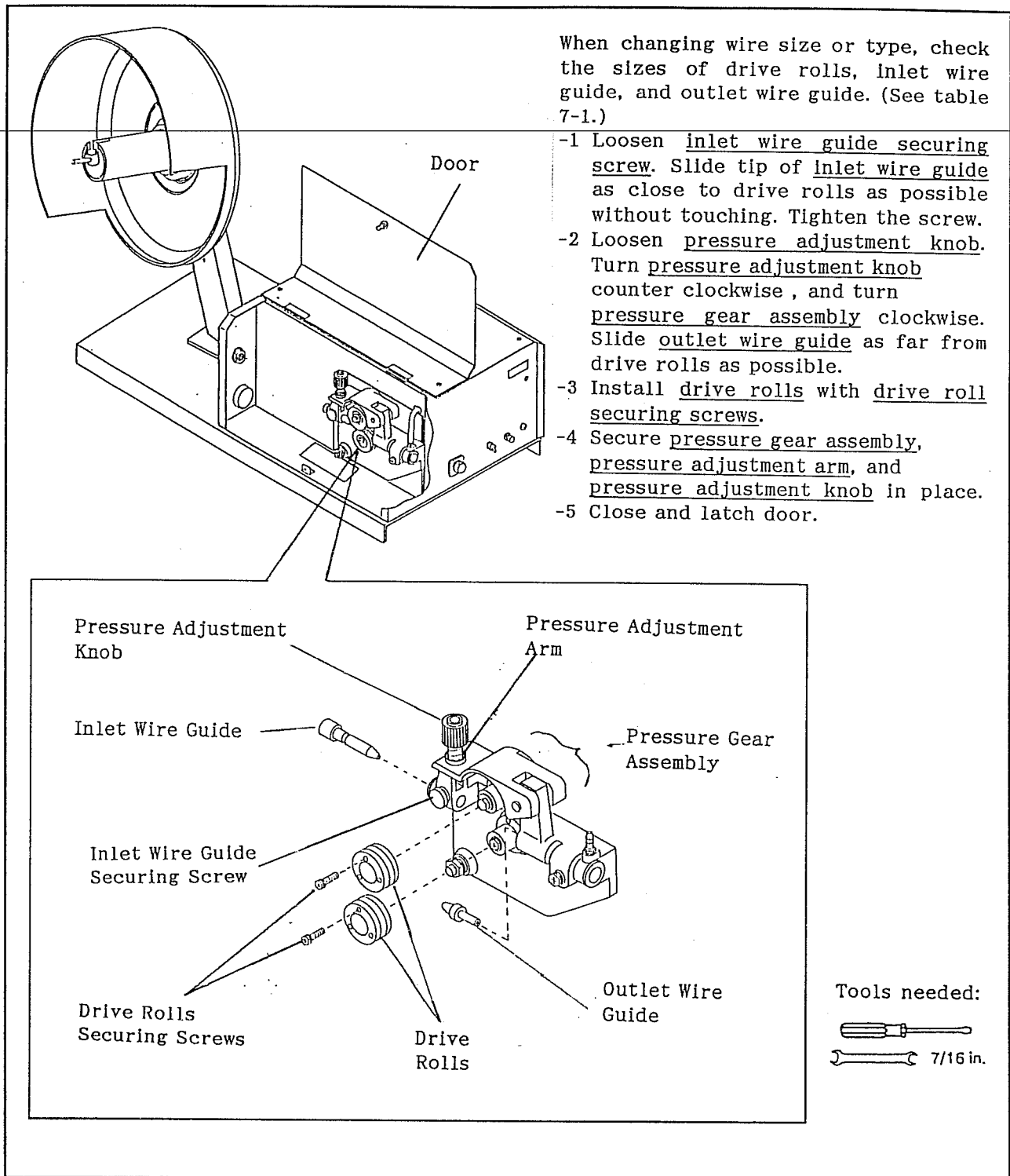




Figure 3-2. Drive Rolls and Wire Guides Installation

3.3 Welding Torch (Gun) Connection.

⚠ W A R N I N G	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none">- Do not touch live electrical parts.- Turn off welding power source and make sure that control POWER indicator of the wire feeder is not lit.- Disconnect power line before installing. <p>The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p>
	<p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none">- Keep away from moving parts.- Keep away from pinch points such as drive roll.

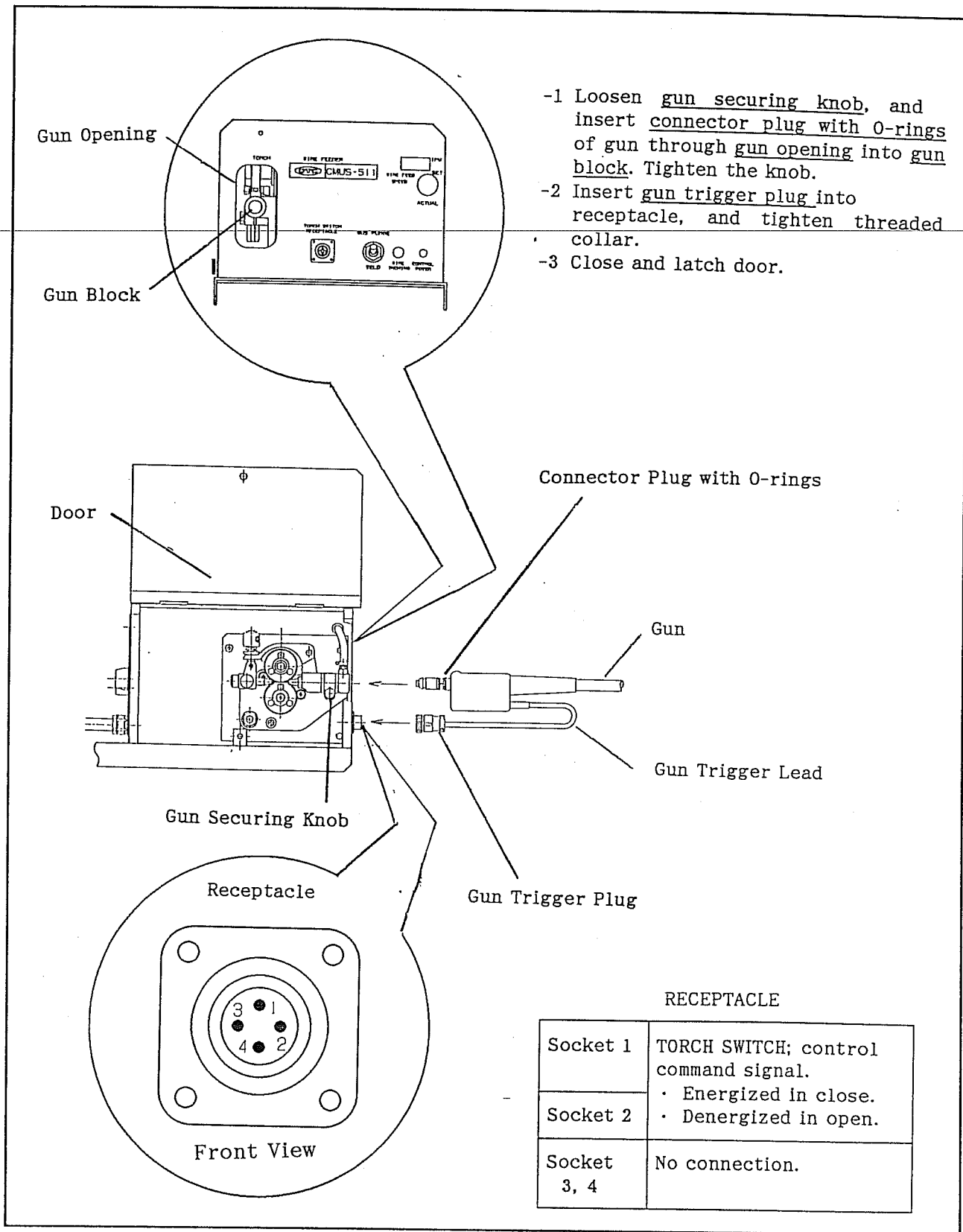


Figure 3-3. Gun and Trigger Lead Connection

3.4 Control Cable Connection.

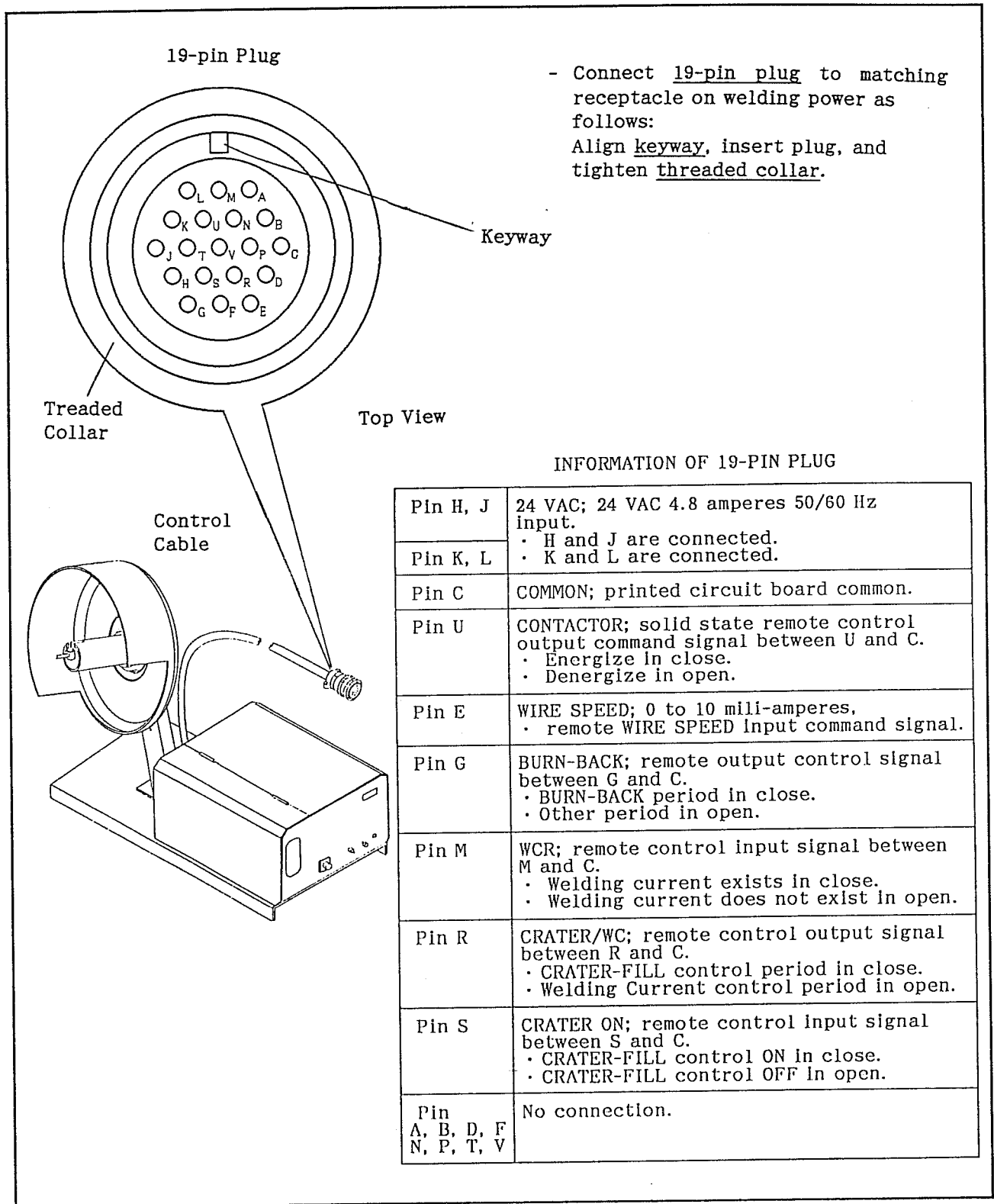
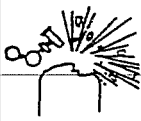




Figure 3-4. Control Cable Connection

3.5 Shielding Gas Connection.

⚠ WARNING	
	<p>CYLINDER can explode if damaged.</p> <ul style="list-style-type: none"> - Never touch cylinder with welding electrode. - Keep cylinder in an upright position securely chained to stationary support or rack to prevent tipping or falling.
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> - Do not touch live electrical parts. - Turn off welding power source and make sure that control POWER indicator of the wire feeder is not lit. - Disconnect power line before installing. <p>The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p>
	<p>BUILDUP OF SHIELDING GAS can harm health or kill.</p> <ul style="list-style-type: none"> - Shut off shielding gas supply when not in use.

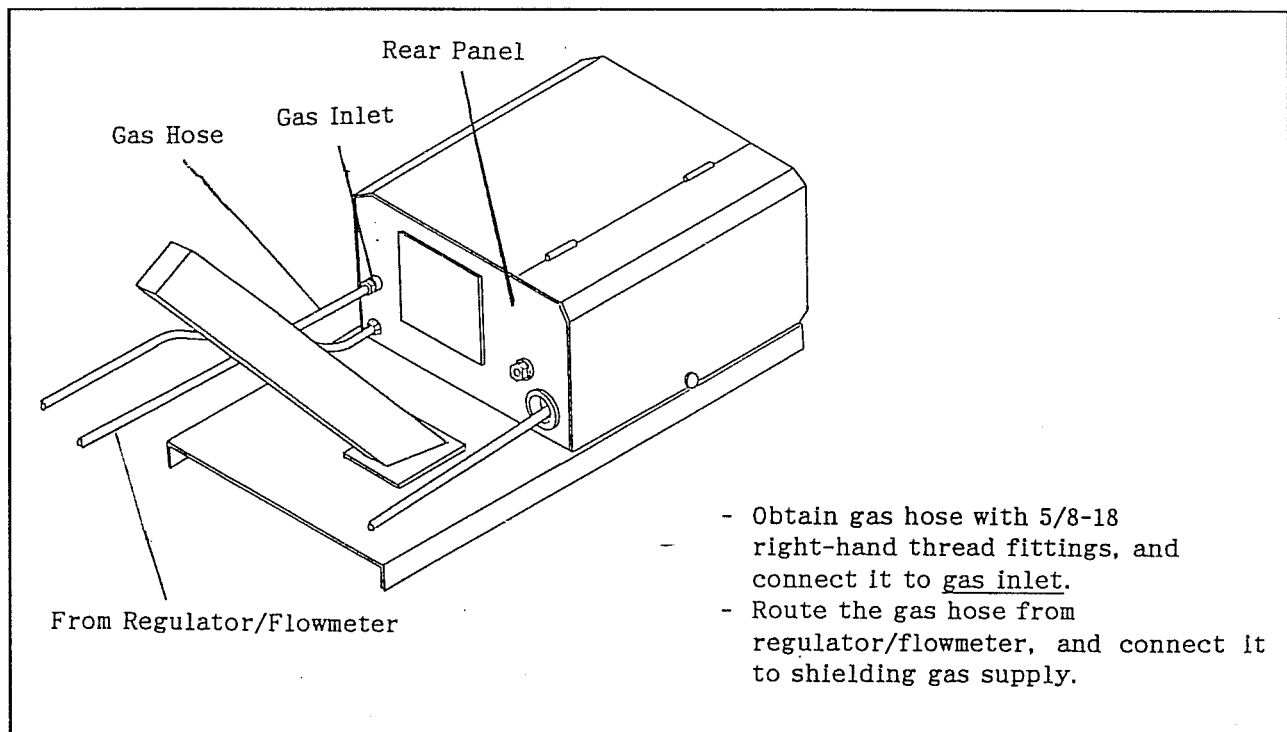
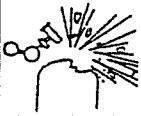



Figure 3-5. Shielding Gas Connection

3.6 Weld Cable Connection.

⚠ W A R N I N G	
	<p>CYLINDER can explode if damaged.</p> <ul style="list-style-type: none"> - Never touch cylinder with welding electrode. - Keep cylinder in an upright position securely chained to stationary support or rack to prevent tipping or falling.
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> - Do not touch live electrical parts. - Turn off welding power source and make sure that control POWER indicator of the wire feeder is not lit. - Disconnect power line before installing. <p>The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p> <p>ARCING can damage wire feeder.</p> <ul style="list-style-type: none"> - Loose metal tools in side wire feeder can short welding circuit to other metal parts causing electric shock and arcing. - Do not store metal tools inside wire feeder.

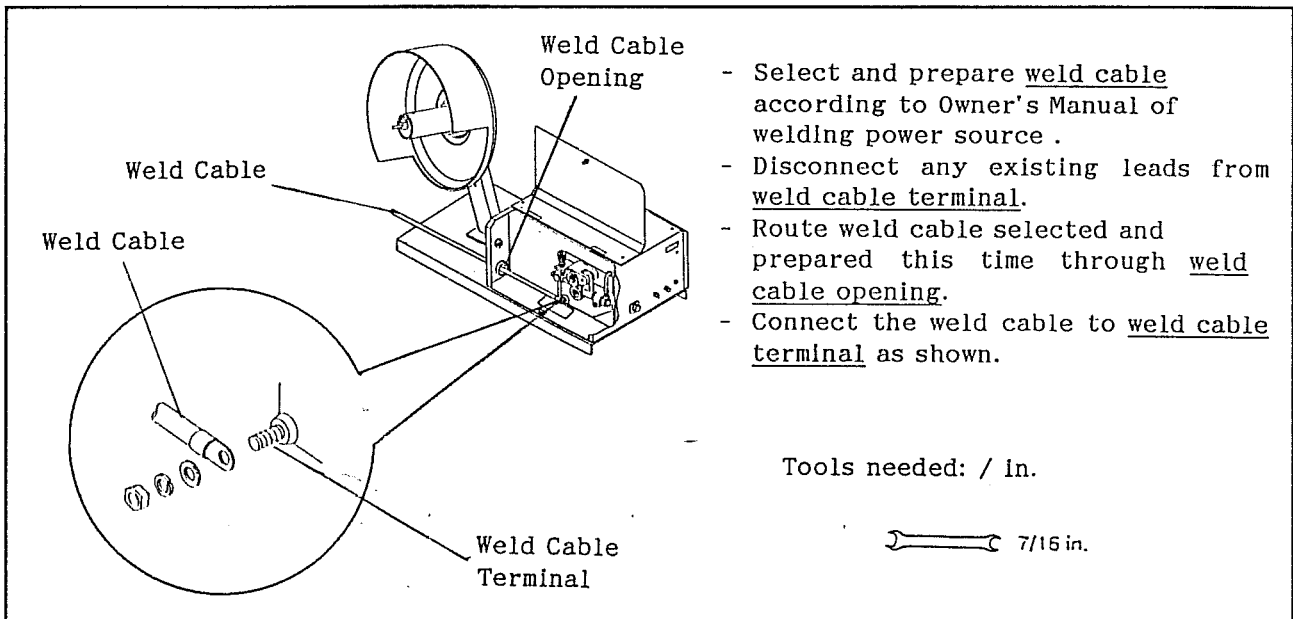


Figure 3-6. Weld Cable Connection

3.7 Welding Wire Installation.

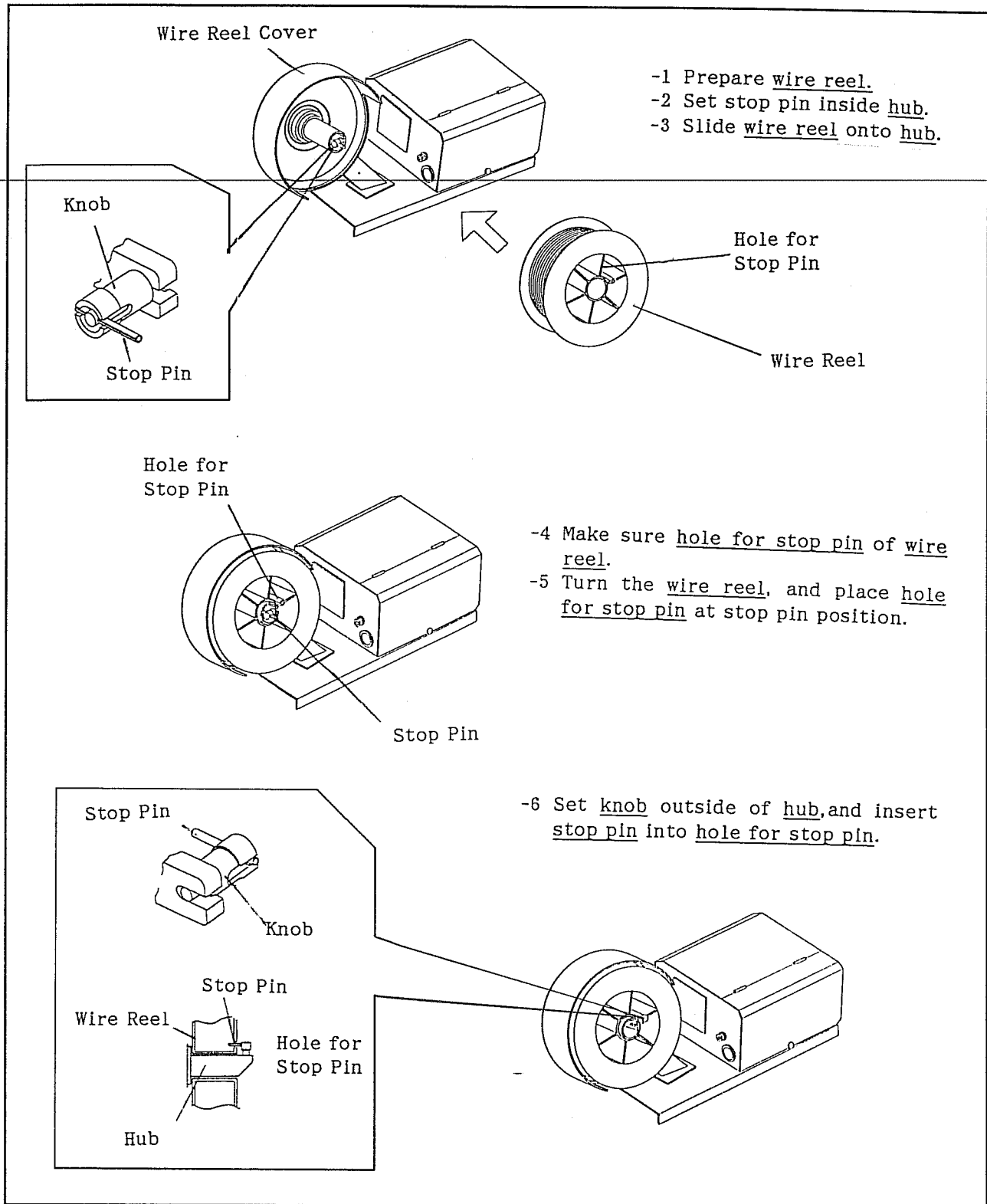


Figure 3-7. Welding Wire Installation

3.8 Example of Completely Installed External Connection.

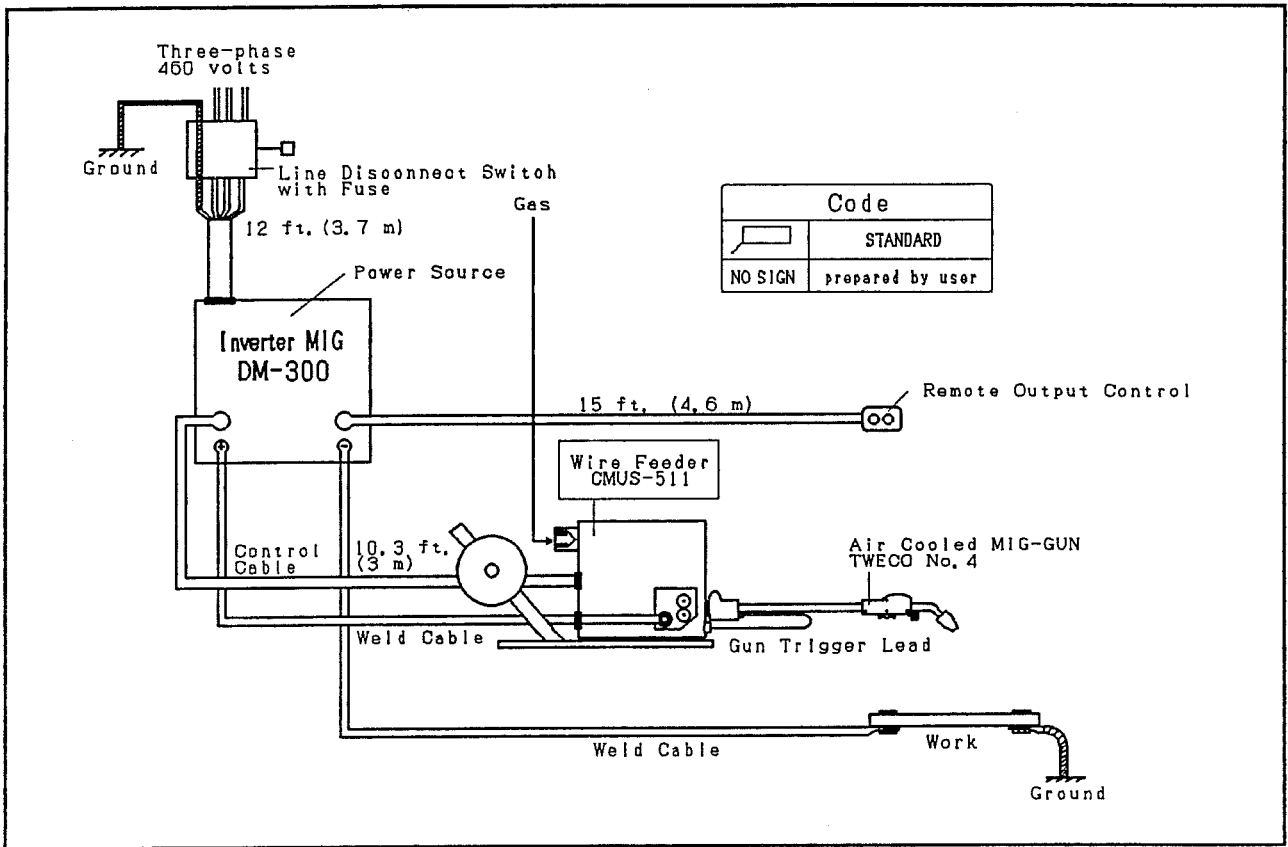









Figure 3-8. External Connection for MIG Welding with Wire Feeder CMUS-511

SECTION 4

OPERATION

⚠ WARNING	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> - Do not touch live electrical parts. - Wear dry, holefree insulating gloves and body protection.
	<p>FUMES AND GASES can be hazardous to your health.</p> <ul style="list-style-type: none"> - Keep your head out of fumes. - Ventilate area, and use exhaust to remove welding fumes and gases. - Read the Material Safety Data Sheets (MSDSs) and the manufacture's instruction for materials.
	<p>WELDING can cause fire and explosion.</p> <ul style="list-style-type: none"> - Do not weld near flammable material. - Watch for wire, and keep extinguisher nearby. - Do not locate equipment over combustible surface. - Do not weld on closed containers. - Allow work and equipment to cool before handling.
	<p>ARC RAYS can burn eyes and skin; NOISE can damage hearing</p> <ul style="list-style-type: none"> - Wear a welding helmet with a proper shade of filter. - Use a approved ear plug.
	<p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none"> - Keep away from pinch points such as drive rolls. - Keep all doors, panels, covers, and guards closed and securely in place.
	<p>MAGNETIC FIELDS FROM HIGH CURRENT can affect pacemaker operation.</p> <ul style="list-style-type: none"> - Pacemaker wearer keep away. - Wearers should consult their doctor before going near any welding operations.
	<p>WELDING WIRE can cause puncture wounds.</p> <ul style="list-style-type: none"> - Do not point gun toward any part of the body, other people, or any metal when setting controls. <p>The welding wire is electrically live and moves out of the gun whenever the POWER switch ON and the gun trigger is pressed.</p>

4.1 Control Panels of the Wire Feeder.

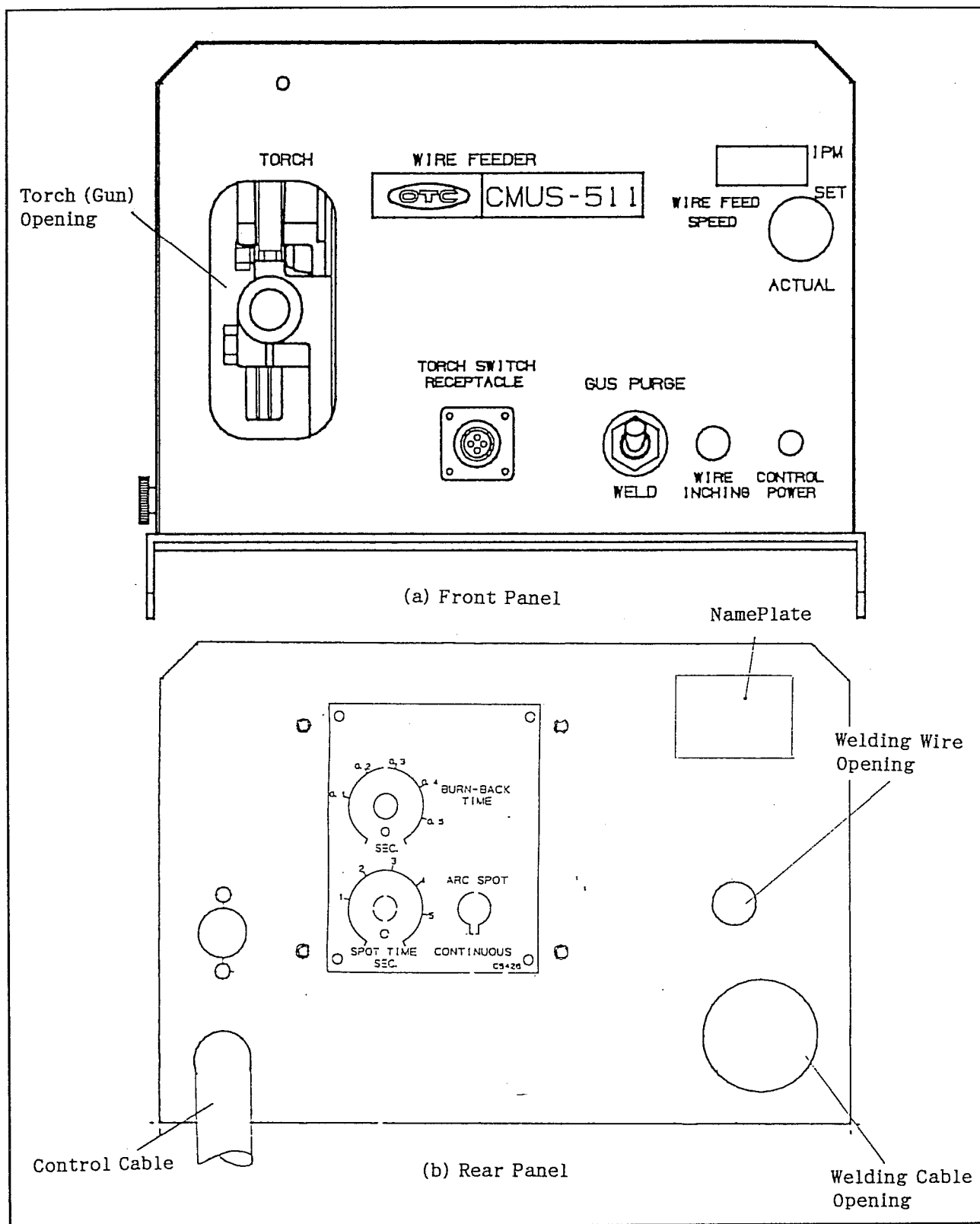


Figure 4-1. Control Panels of the Wire Feeder

(a) Front Panel



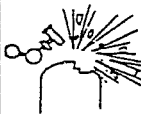
- 1 CONTROL POWER indicator:
CONTROL POWER indicator is lit when the control power of the wire feeder is fed to the wire feeder.
- 2 WIRE INCHING push button:
 - Press : Feeding wire without energizing welding circuit and shielding gas valve.
 - Release : No feeding wire.
- 3 WELD/GAS PURGE switch:
 - WELD position:
Gas flows corresponding to torch switch (gun trigger) operation.
 - GAS PURGE position:
Use for gas purge.
- 4 Digital Meter and ACTUAL/SET switch:
This feature is optional. The LED meter is provide to monitor the welding operation and serve as an indicator of the welding process.
The meter displays
 - the actual wire speed when the switch is placed in ACTUAL position, and
 - the preset wire speed when the switch is placed in SET position.

(b) Rear Panel

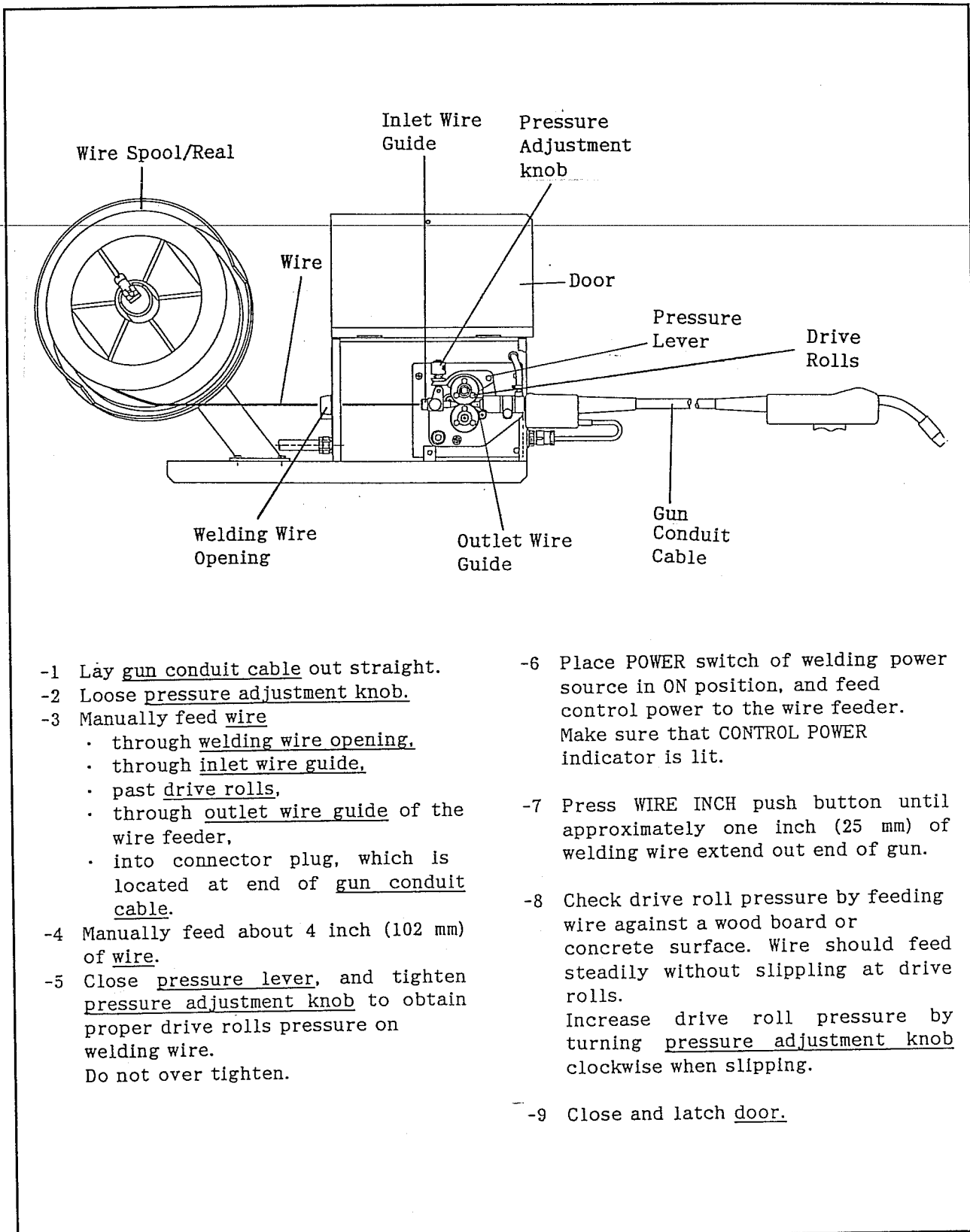
- 5 BURN-BACK TIME control:
This feature is optional. This helps to overcome the wire sticking at the end of welding.
- 6 CONTINUOUS/ARC SPOT switch and SPOT TIME control:
This feature is optional.
 - CONTINUOUS position:
Use for regular welding.
 - ARC SPOT position:
Use for arc spot welding. SPOT TIME control will work and adjust time duration of arc spot welding.

Figure 4-1. Control Panels of the Wire Feeder-Continued

4.2 Welding Wire Threading.

⚠ W A R N I N G	
	<p>ELECTRIC SHOCK can kill; ARCING can damage equipment; TANGLED WELDING WIRE can touch case causing welding power source open-circuit voltage to be present on case if gun trigger is pressed.</p> <ul style="list-style-type: none"> - Do not touch wire feeder case, if gun trigger is pressed and wire does not feed. - Turn off welding power source, and determine the cause, if wire stop feeding. - Correct any hub tension tangled wire, or gun conduit damage problems before trying to weld. <p>Loose metal tools and tangled welding wire inside equipment can short weld circuit to other metal parts causing electric shock and arcing.</p> <ul style="list-style-type: none"> - Do not store metal tools inside equipment. The wire drive assembly is electrically live when welding. <p>The welding wire, drive rolls, drive assembly, and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger.</p> <ul style="list-style-type: none"> - Do not touch electrical parts.
	<p>WELDING WIRE can cause puncture wounds.</p> <ul style="list-style-type: none"> - Do not press gun trigger until instructed to do so. - Do not point gun toward any part of the body, other people, or any metal when threading welding wire.
	<p>CYLINDER can explode if damaged.</p> <ul style="list-style-type: none"> - Keep cylinder away from welding and other electrical circuits. - Never touch cylinder with welding wire. - Always secure cylinder to running gear, wall, or other stationery support.

⚠ C A U T I O N	
<p>Gas metal arc welding (MIG) is very sensitive to the conditions of MIG gun and wire feeder especially for aluminum wire or mild steel .035 wire. When gas metal arc is unstable,</p> <ul style="list-style-type: none"> - check <ul style="list-style-type: none"> • contact tip, • conduit of MIG gun, and • drive roll pressure, farther more - use <ul style="list-style-type: none"> • as short conduit MIG gun as possible, and • laying the gun conduit cable out as straight as possible. 	



- 1 Lay gun conduit cable out straight.
- 2 Loose pressure adjustment knob.
- 3 Manually feed wire
 - through welding wire opening,
 - through inlet wire guide,
 - past drive rolls,
 - through outlet wire guide of the wire feeder,
 - into connector plug, which is located at end of gun conduit cable.
- 4 Manually feed about 4 inch (102 mm) of wire.
- 5 Close pressure lever, and tighten pressure adjustment knob to obtain proper drive rolls pressure on welding wire.
Do not over tighten.
- 6 Place POWER switch of welding power source in ON position, and feed control power to the wire feeder. Make sure that CONTROL POWER indicator is lit.
- 7 Press WIRE INCH push button until approximately one inch (25 mm) of welding wire extend out end of gun.
- 8 Check drive roll pressure by feeding wire against a wood board or concrete surface. Wire should feed steadily without slipping at drive rolls.
Increase drive roll pressure by turning pressure adjustment knob clockwise when slipping.
- 9 Close and latch door.

Figure 4-2. Welding Wire Threading

4.3 Sequence of Gas Metal Arc Welding (MIG).

⚠ WARNING

- Shut off gas supply when not in use.

■ IMPORTANT:

Wire feeder CMUS-511 does not have control for wire feeder speed. When welding power source is CPVUS-300, remote output control of CPVUS-300 has control for wire speed named AMPERAGE.

■ IMPORTANT:

Preflow time is set to about 0.08 seconds at exfactory. This is minimum time duration. Readjustment of the preflow time may be made from 0.08 to 0.16 seconds by potentiometer R53 on circuit card PC1. (See figure 4-4.)

- Increase : Clockwise.
- Decrease : Counter clockwise.

■ IMPORTANT:

Postflow time is set to about 0.4 seconds at exfactory. This is minimum time duration. Readjustment of the postflow time may be made from 0.4 to 3 seconds by potentiometer R71 on circuit card PC1. (See figure 4-4.)

- Increase : Clockwise.
- Decrease : Counter clockwise.

■ IMPORTANT:

Wire slowdown speed is set to 47 in./minute at exfactory. Wire slowdown speed may be readjusted by potentiometer R23 on circuit card PC1. (See figure 4-4.)

- Increase : Clockwise.
- Decrease : Counter clockwise.

⚠ CAUTION

- Do not readjust any other potentiometers than R53, R71 and R23 deccribed above.

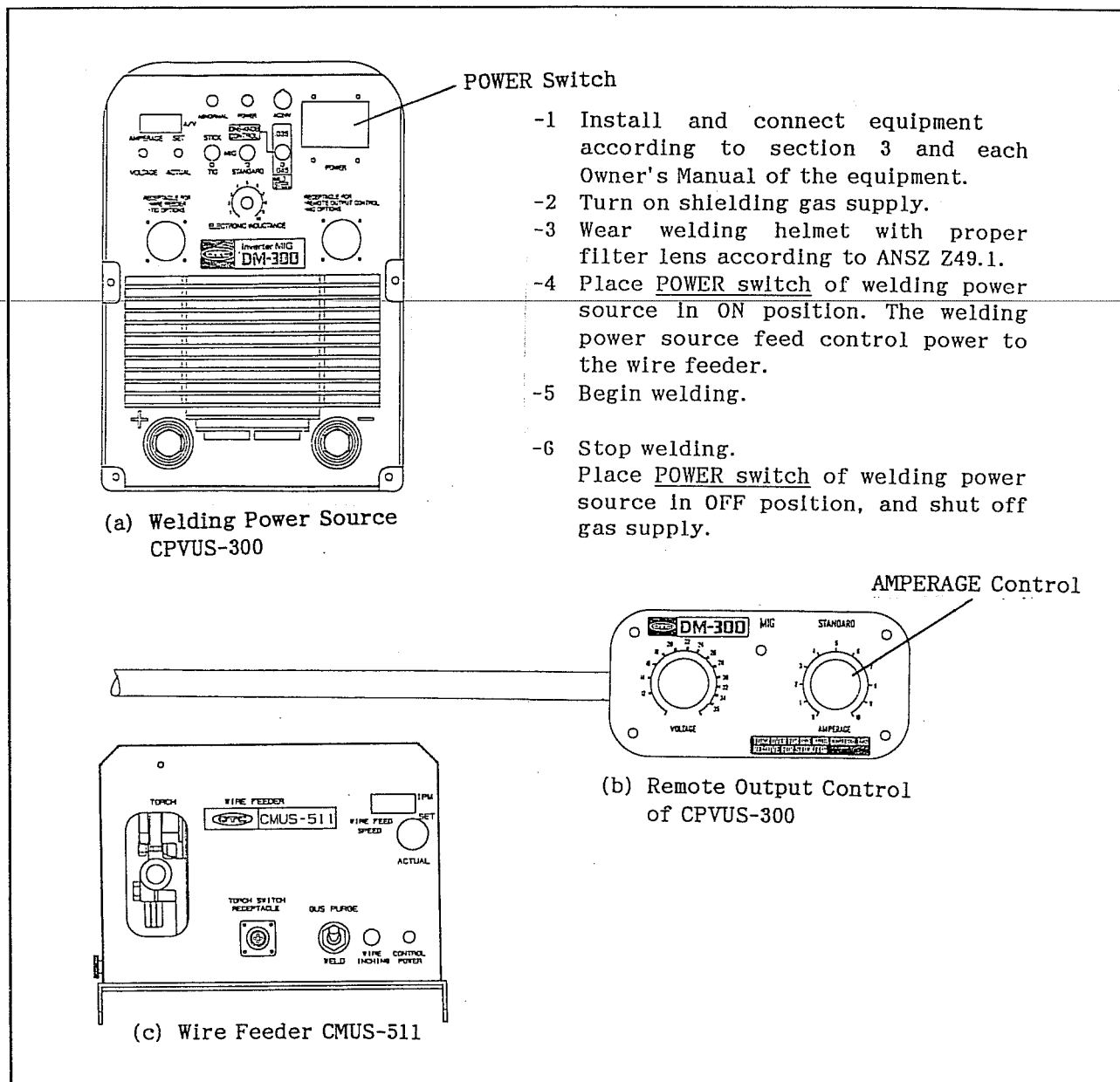


Figure 4-3. Sequence of Gas Metal Arc Welding (MIG) when welding power source is CPVUS-300

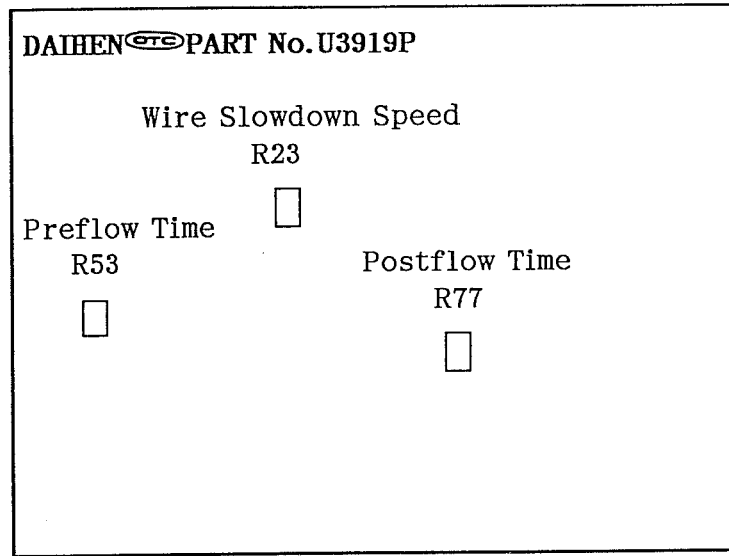





Figure 4-4. Potentiometers for Preflow Time, Postflow Time, and Wire Slowdown Speed on circuit card PC1

SECTION 5
MAINTENANCE

⚠ WARNING	
Maintenance shall be performed only by trained and experienced persons.	
	<p>ELECTRICAL SHOCK can kill.</p> <ul style="list-style-type: none"> - Do not touch live electrical parts. - Turn off welding power source, and disconnect power line before maintenance.
	<p>HOT PARTS can cause severe burns.</p> <ul style="list-style-type: none"> - Allow cooling period before maintenance.
	<p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none"> - Keep away from moving parts such as fun and drive rolls.

5.1 Routine Maintenance.

TABLE 5-1. MAINTENANCE SCHEDULE

Frequency ⁺ of Service	Maintenance
Every Day	<ul style="list-style-type: none"> - Check abnormal vibration, buzzing and smell. - Check abnormal heating of cable connections.
Every month	<p>In heavy service conditions:</p> <ul style="list-style-type: none"> - Check labels and weld cable. - Clean internal parts. <ul style="list-style-type: none"> · Remove the covers. · Use a clean, dry airstream or vacuum suction for cleaning operation.
Every 6 months	<ul style="list-style-type: none"> - Check all labels. - Clean internal parts.

+: Frequency of service is based on the welding power source operated 40 hours per week. Increase frequency of service if usage exceed 40 hours per week.

5.2 Aligning Drive Rolls and Wire Guides.

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn off welding power source and make sure that control POWER indicator of the wire feeder is not lit.
- Disconnect power line before installing.

The welding wire, drive rolls, drive assembly and all metal parts touching the welding wire are electrically live when welding feeding wire using gun trigger.

ARCING can damage wire feeder.

- Loose metal tools in side wire feeder can short welding circuit to other metal parts causing electric shock and arcing.
- Do not store metal tools inside wire feeder.

MOVING PARTS can cause injury.

- Keep away from moving parts.
- Keep away from pinch points such as drive roll.

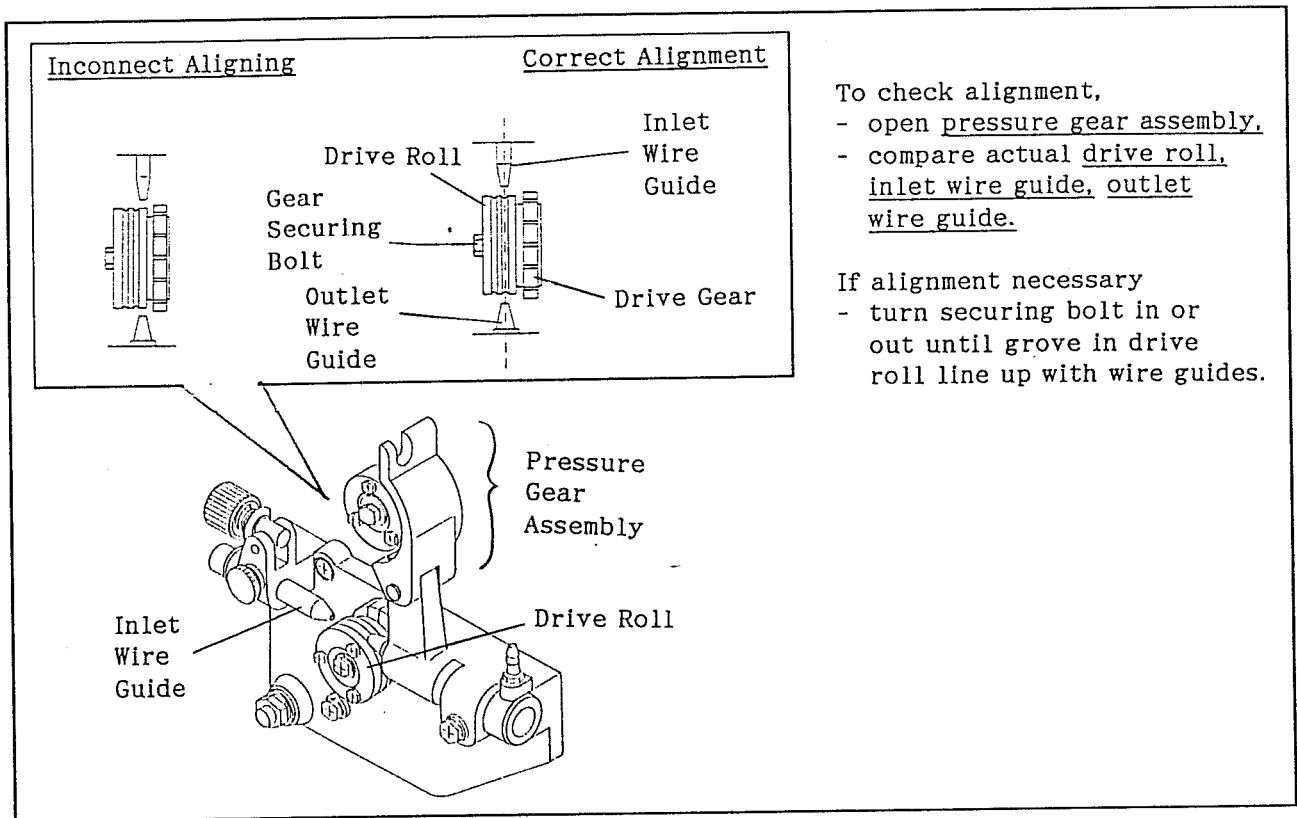



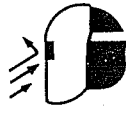



Figure 5-1. Aligning Drive Rolls and Wire Guides

5.3 Precautionary Labeling.

 WARNING	
<p>ARC WELDING can be hazardous</p> <ul style="list-style-type: none"> • READ this label and Owner's Manual carefully. • Only qualified persons are to install, operate, or service this equipment according to all codes and employer's safety practices. • Welding wire, drive parts, and any metal parts in contact with the welding wire may be electrically hot. • Moving parts can cause serious injury. • Keep clear of moving parts, including drive parts. 	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> • Do not touch electrically live parts. • Do not operate with panels and covers removed. • Insulate yourself from works and ground. • Disconnect all power before installing and servicing. • Turn off POWER switch of welding power source before touching electrode, wire feeder, welding wire, or any metal parts in contact with the welding wire.
	<p>HOT METAL, SPATTER and SLAG can cause fire and explosion.</p> <ul style="list-style-type: none"> • Keep flammable material away. • Wear correct eye, face, and body protection.
	<p>ARC RAYS can burn eyes and skin; NOISE can damage hearing.</p> <ul style="list-style-type: none"> • Use welding helmet with correct filter. • Wear correct eye, ear and body protection.
	<p>FUMES and GASES can be dangerous.</p> <ul style="list-style-type: none"> • Keep your head out of the fumes. • Use ventilation or exhaust to remove fumes from the breathing zone.
<p>See American National Standard Z49.1 "Safety in Welding and Cutting," published by the American Welding Society, Miami, Florida 33126; OSHA Safety and Health Standard, 29 CFR 1910 available from U.S. Government Printing Office, Washington, D.C. 20402.</p>	
<p>DO NOT REMOVE OR OBSCURE THIS LABEL <small>K3388A</small></p>	

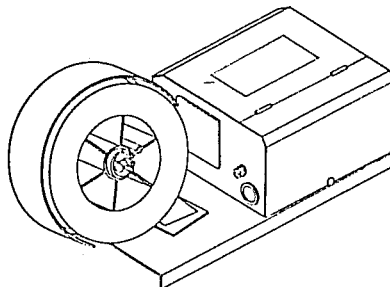


Figure 5-2. Precautionary labeling outside the Case

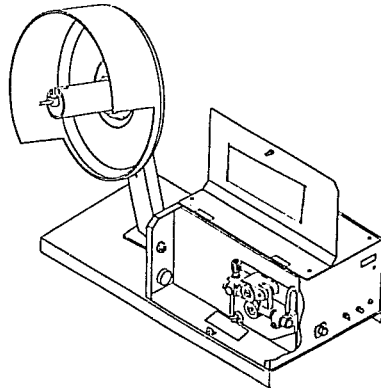
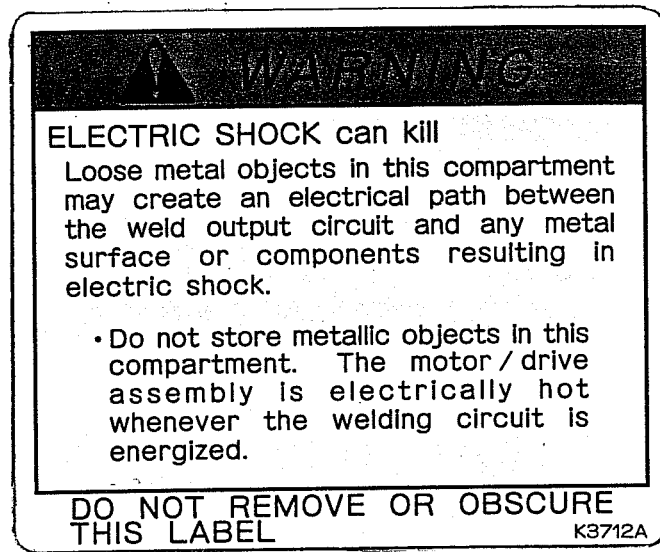





Figure 5-3. Precautionary labeling inside the case

SECTION 6

TROUBLESHOOTING

⚠ WARNING	
Troubleshooting shall be performed only by trained and experienced person.	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> - Do not touch live electrical parts. - Turn off welding power source, and disconnect power line before troubleshooting.
	<p>HOT PARTS can cause severe burns.</p> <ul style="list-style-type: none"> - Allow cooling period before troubleshooting.
	<p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none"> - Keep away from moving parts such as fun and drive rolls.

It is assumed that the wire feeder was properly installed according to section 3 of this manual, the operator is familiar with the function of controls, the wire feeder was working properly, and the trouble is not related to the welding process.

The following table (table 6-1) is designed to diagnose and provide remedies for some of the troubles that may develop in this wire feeder.

- Use this table in conjunction with the electrical diagrams.
- Contact the nearest Factory Authorized Service Station or DAIHEN INC. in the case that the trouble is not remedied after performing these procedure.
- Follow strictly the manufacture's procedures and instructions.

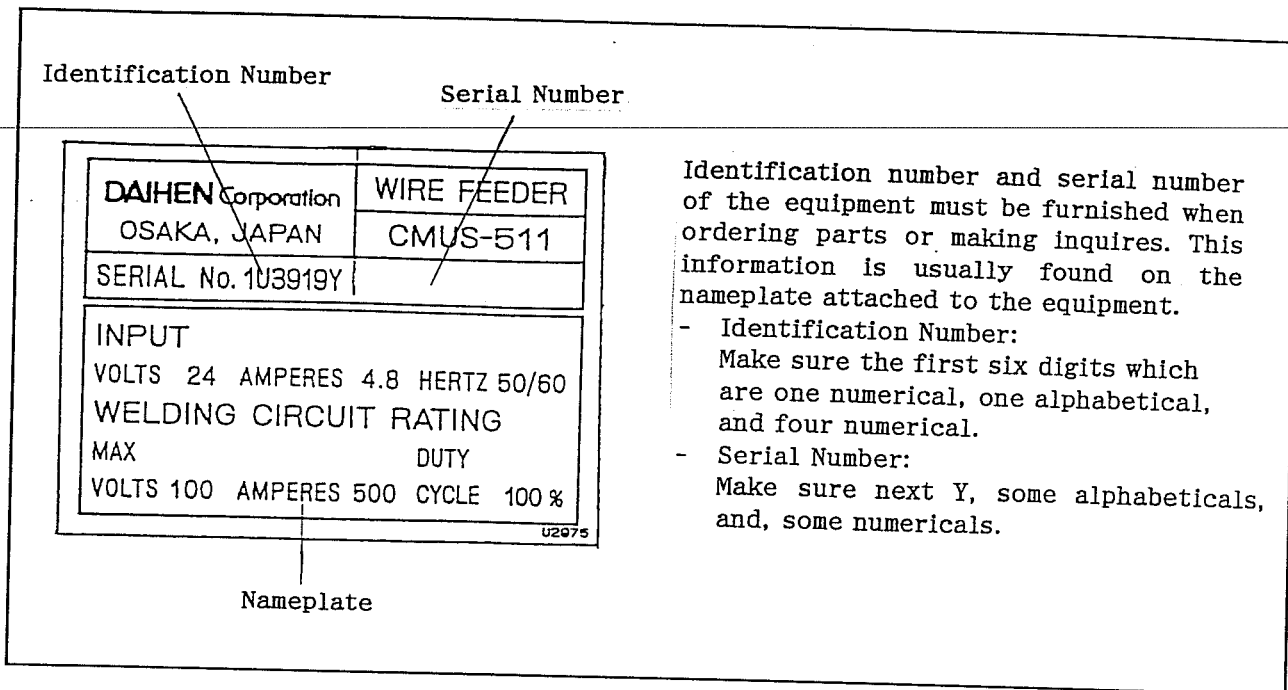
TABLE 6-1. TROUBLESHOOTING

Trouble	Cause	Remedy
Wire feeder is completely inoperative. CONTROL POWER indicator is not lit.	Loose plug connector CON1.	Check and connect plug connector CON1 to CPVUS-300.
	POWER switch of CPVUS-300 is OFF.	Place POWER switch of CPVUS-300 in ON position.
	Input power of CPVUS-300 is not connected.	Connect power line to CPVUS-300 in accordance with Owner's Manual of CPVUS-300.
	Fuse on front panel of CPVUS-300 blows.	Replace the fuse.
Electrode wire does not feed. Control POWER is lit.	Loose gun trigger (torch switch) circuit or WIRE INCHING circuit.	Check gun trigger (torch switch) circuit or WIRE INCHING circuit <ul style="list-style-type: none"> • inside wire feeder, • in control cable, or • welding power source.
	Printed circuit board PC1.	Replace printed circuit board PC1.
Wire feeding is unstable.	Drive roll pressure is weak.	Readjust drive roll pressure.
	Liner and/or contact tube of gun.	Replace liner and/or contact tube of gun.

SECTION 7

PARTS LIST

7.1 Equipment Identification.



Identification number and serial number of the equipment must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment.

- Identification Number:
Make sure the first six digits which are one numerical, one alphabetical, and four numerical.
- Serial Number:
Make sure next Y, some alphabeticals, and, some numericals.

Figure 7-1. Identification Number of the Equipment

7.2 How to Use This Parts List.

The parts list is a combination of an illustration (figure) and a corresponding list of parts (table), which is an illustrated parts breakdown. All parts of the equipment are listed except for

- commercially available hardware bulk items such as wire, cable sleeving, tubing, etc, and
 - permanently attached items which are soldered, riveted, or welded to another part.
- Locate the item in question from the illustration (figure).
 - Refer to that item number in the corresponding parts list (table).
 - Determine the parts number, description, and quantity.

7.3 Recommended Spare Parts.

Parts number marked by * or ** shows the recommended spare part.

- The one marked by * shows the part that is consumed or that may need replacement in two years or less depending on operating hours.
- The one marked by ** shows the part that may need replacement under unusual service condition or additional operating hours.

- Contact your equipment dealer for assistance in establishing the spare parts program best suited for your needs.

7.4 Drive rolls and Wire guides.

TABLE 7-1. DRIVE ROLLS AND WIRE GUIDES

Wire		Kit NO.	Drive Roll			Inlet Wire Guide		Outlet Wire Guide	
Material	Diameter (In.)		Part NO.	Type	Quantity	Part NO.	Quantity	Part NO.	Quantity
Steel	.035	Not decided	U3191H02	V-Grooved	2	U3919E04	1	U3919B10	1
Steel	.045	Not decided	U3191H01	V-Grooved	2	U3919E04	1	U3919B10	1
Aluminum	3/64	Not decided	U3191H03	U-Grooved	2	U3919E06	1	U3919B11	1
Aluminum	1/16	Not decided	Not decided						
Flux Cored	.045	Not decided							
Flux Cored	1/16	Not decided							

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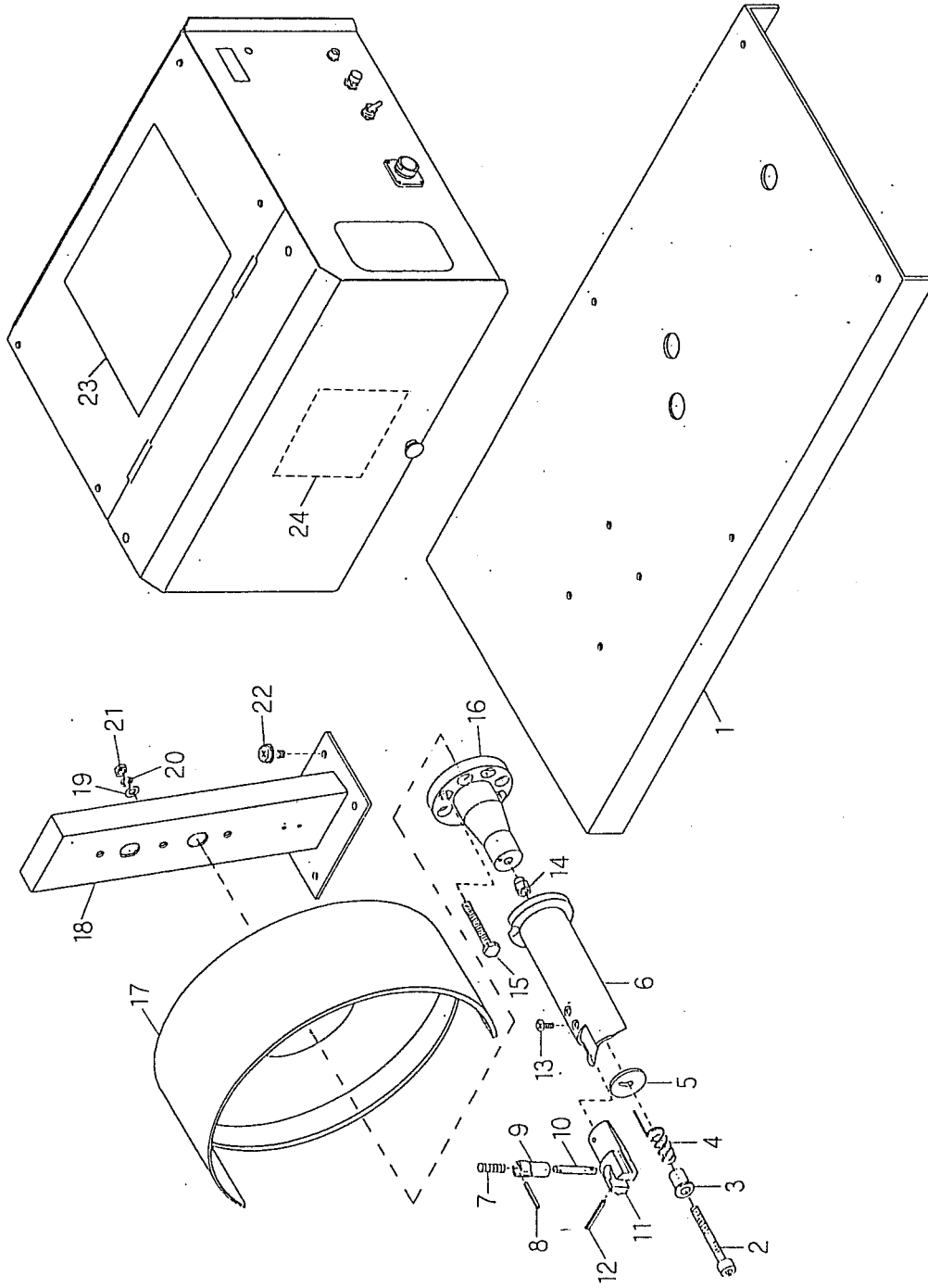


Figure 7-2. Control Box, Base, and Wire Support Assembly

Figure 7-2. Control Box, Base, and Wire Support Assembly

Item Number	Dia. Mks.	Part Number	Description	Quantity
1		U3919C03	BASE.....	1
2		3361-633	BOLT.....	1
3		K536B06	SPACER.....	1
4		K536B08	SPRING.....	1
5		K536B07	WASHER.....	1
6		K536B01	HUB, spool.....	1
7		K536B04	SPRING.....	1
8		4739-252	PIN, spring roll.....	1
9		K536B03	KNOB.....	1
10		K536B05	PIN.....	1
11		K536B02	SUPPORT BLOCK.....	1
12		4739-253	PIN, spring roll.....	1
13		3361-638	SCREW.....	2
14		3361-806	NUT, U type.....	1
15		3361-632	BOLT.....	2
16		K536C00	SPINDLE SHAFT.....	1
17		K536D01	COVER, spool.....	1
18		U3919F01	ARM, spool support.....	1
19		3361-707	WASHER, flat.....	1
20		3361-708	WASHER, lock.....	1
21		3361-804	NUT.....	2
22		3361-634	BOLT, with washers.....	4
23		NK3388	LABEL, ARC WELDING can be hazardous.....	1
24		NK3712	LABEL, ELECTRIC SHOCK can kill... 1	1

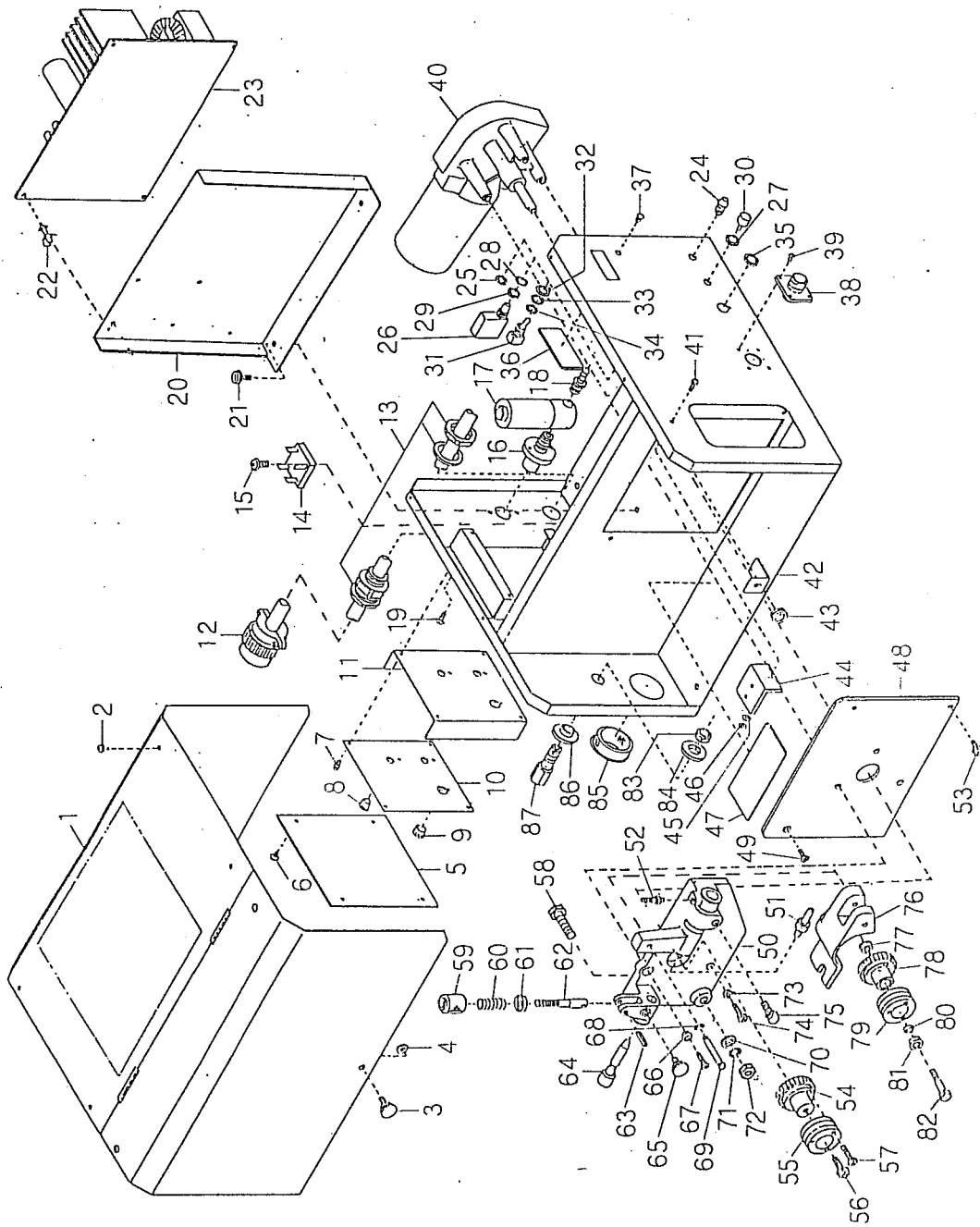


Figure 7-3. Control Box and Feedhead Assembly

Figure 7-3. Control Box and Feedhead Assembly

Item Number	Dia. Mks.	Part Number	Description	Quantity
1		U3919C02	COVER.....	1
2		3361-631	SCREW, with washer.....	9
3		3361-637	SCREW, catch.....	1
4		U2817F07	LOCK.....	1
5		U3919C04	COVER.....	1
6		3361-631	SCREW, with washers.....	4
7		3361-626	SCREW, with washers.....	4
8		4739-245	DOME PLUG.....	2
9		4739-246	DOME PLUG.....	1
10		NC5426	PLATE, control panel.....	1
11		U3919C06	REAR PANEL.....	1
12		4731-506	PLUG, MS3106B22-14P.....	1
13		4739-248	BUSHING.....	1
14	DR1	4531-602	DIODE, 15A 600V.....	1
15		3361-645	SCREW, with washers.....	1
16		U3919D01	FITTING, for gas inlet.....	1
17	SOL	4813-001	VALVE, 25VDC.....	1
18		4739-249	FITTING.....	1
19		3361-627	SCREW.....	2
20		U3919C05	BRACKET, circuit card.....	1
21		3361-619	BOLT, with washers.....	2
22		4739-242	LOCKING CARD SPACER.....	4
23	PC1	U3919P01	CIRCUIT CARD.....	1
24	PL1	4600-302	LAMP, LED red.....	1
25			• NUT.....	1
26		4250-003	SWITCH, press.....	1
27			• NUT.....	1
28			• WASHER.....	1
29			• NUT.....	1
30			• KNOB.....	1

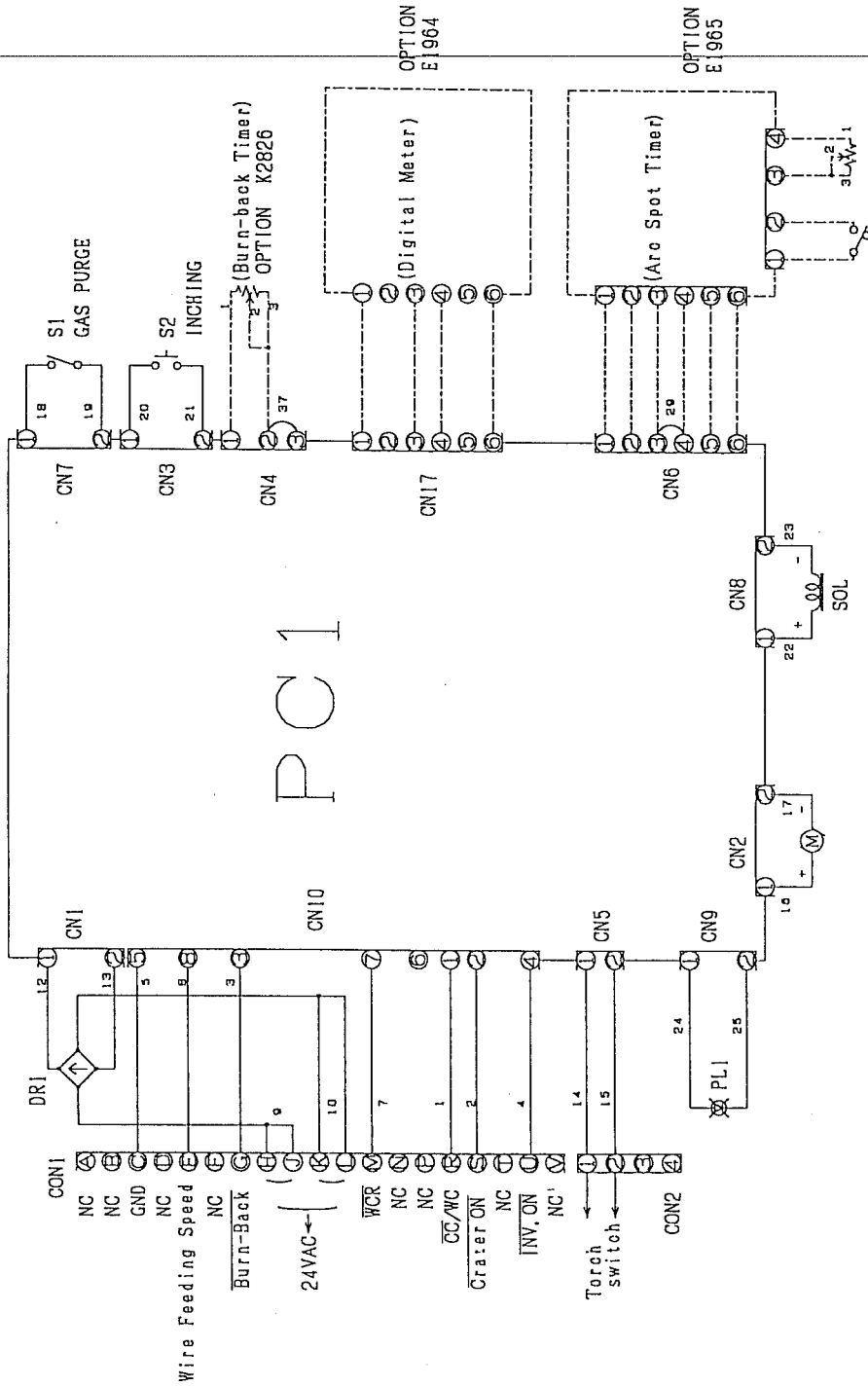
Figure 7-3. Control Box and Feddhead Assembly-Continued

Item Number	Dia. Mks.	Part Number	Description	Quantity
31		4251-064	SWITCH, tgl 6A 125VAC.....	1
32			• RING.....	1
33			• WASHER.....	1
34			• NUT.....	1
35			• NUT.....	1
36		U3919C08	COVER, meter.....	1
37		4739-247	DOME PLUG.....	1
38	CON2	4730-161	RECEPTACLE, 4skt.....	1
39		3361-628	SCREW.....	4
40	M	4802-201	MOTOR, gear 24VDC 110RPM.....	1
41		3361-607	SCREW, with washers.....	1
42		U3919C01	CASE.....	1
43		4739-250	GROMMET, rubber.....	1
44		U3919E05	INSULATOR.....	1
45		3361-711	WASHER.....	1
46		3361-808	NUT.....	1
47		U3919C09	INSULATOR.....	1
48		U3919B07	INSULATOR.....	1
49		3361-638	SCREW.....	1
50		U3919B01	HOUSING, adapter gun/feeder.....	1
51		U3919B10	OUTLET WIRE GUIDE.....	1
52		U3459B08	FITTING.....	1
53		3361-642	BOLT, with washers.....	2
54		U3919J00	GEAR, drive.....	1
55		U3919H01	ROLL, drive.....	1
56		3361-652	BOLT, with washers.....	1
57		3361-635	BOLT, drive roll securing.....	6
58		3361-636	BOLT.....	1
59		U3459B05	KNOB, adjustment tension.....	1
60		U3919B05	SPRING.....	1

Figure 7-3. Control Box and Feddhead Assembly-Continued

Item Number	Dia. Mks.	Part Number	Description	Quantity
61		U3919B08	WASHER, cupped.....	1
62		U3919B04	FASTENER, pinned.....	1
63		4739-254	PIN, spring.....	1
64		U3919E04	INLET WIRE GUIDE.....	1
65		3361-637	SCREW, inlet wire guide securing.	1
66		U3919B08	TUBING.....	2
67		3361-630	SCREW.....	2
68		3361-404	WASHER.....	1
69		U3919B03	PIN, hinge.....	1
70		3361-709	WASHER, flat.....	1
71		3361-710	WASHER, lock.....	1
72		3361-805	NUT.....	1
73		K355D01	TUBING.....	1
74		3361-639	BOLT, with washers.....	1
75		3361-640	BOLT.....	1
76		U3919B02	LEVER.....	1
77		3311-063	BEARING.....	1
78		U3919L00	GEAR, spur insulated.....	1
79		U3919H01	ROLL, drive.....	1
80		U3919K01	COLLAR.....	1
81		3311-063	BEARING.....	1
82		U3919B06	BOLT, pressure roll axis.....	1
83		3361-807	NUT.....	1
84		U3919E03	INSULATOR.....	1
85		4739-251	BUSHING.....	1
86		U3919E02	BUSHING, insulating.....	1
87		U3919E01	GUIDE, wire.....	1

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Circuit Diagram for CMUS-511(S-1)U3919



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At your contact, tell MODEL and MANUAL NO.