



! IMPORTANT !
-FOR YOUR SAFETY-
READ THIS MANUAL BEFORE
INSTALLING OR USING EQUIPMENT

OPERATION MANUAL



PD20 Wire Feeder

THANK YOU!!!

. . . for purchasing **PowCon Incorporated** products. Our commitment to you is to provide an ever expanding family of quality welding and welding/cutting power sources, arc positioning equipment and accessories. Please take a moment to read the following pages as they contain important information regarding proper welding/cutting safety and procedures.

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SAFETY

! IMPORTANT !

THIS MANUAL HAS BEEN DESIGNED FOR EXPERIENCED WELDING AND CUTTING EQUIPMENT OPERATORS AND MUST BE READ COMPLETELY BEFORE USING THIS EQUIPMENT. IF YOU LACK EXPERIENCE OR ARE UNFAMILIAR WITH THE PRACTICES AND SAFE OPERATION OF WELDING AND CUTTING EQUIPMENT, PLEASE CONSULT YOUR FOREMAN. DO NOT ATTEMPT TO INSTALL, OPERATE, OR PERFORM MAINTENANCE ON THIS EQUIPMENT UNLESS YOU ARE QUALIFIED AND HAVE READ AND UNDERSTOOD THIS MANUAL. IF IN DOUBT ABOUT INSTALLING OR OPERATING THIS EQUIPMENT, CONTACT YOUR DISTRIBUTOR OR THE CUSTOMER SERVICE DEPARTMENT OF PowCon.

DEFINITIONS

Throughout this manual, NOTE, CAUTION, WARNING and DANGER are inserted to call attention to particular information. The methods used to identify these highlights and the purpose for which each is used, are as follows:

NOTE

Operational, procedural, and background information which aids the operator in the use of the machine, helps the service personnel in the performance of maintenance, and prevents damage to the equipment.

CAUTION

An operational procedure which, if not followed, may cause minor injury to the operator, service personnel and/or bystanders.

WARNING

An operational procedure which, if not followed, may cause severe injury to the operator, service personnel, or others in the operating area.

DANGER



An operational procedure which, if not followed, will cause severe injury or even death to the operator, service personnel or bystanders.

SAFETY INFORMATION

Safety is a combination of good judgement and proper training. Operation and maintenance of any arc welding and cutting equipment involves potential hazards. Individuals who are unfamiliar with cutting and welding equipment, use faulty judgement or lack proper training, may cause injury to themselves and others. Personnel should be alerted to the following potential hazards and the safeguards necessary to avoid possible injury. In addition, before operating this equipment, you should be aware of your employer's safety regulations.

BE SURE TO READ AND FOLLOW ALL AVAILABLE SAFETY REGULATIONS BEFORE USING THIS EQUIPMENT.

ELECTRIC SHOCK



THE VOLTAGES PRESENT IN THE WELDING AND CUTTING ENVIRONMENT CAN CAUSE SEVERE BURNS TO THE BODY OR FATAL SHOCK. THE SEVERITY OF ELECTRICAL SHOCK IS DETERMINED BY THE PATH AND THE AMOUNT OF CURRENT THROUGH THE BODY.

- A) Install and continue to maintain equipment according to USA Standard C1, National Electric Code.
- B) Never allow live metal parts to touch bare skin or any wet clothing. Use only dry gloves.
- C) When welding or cutting in a damp area, or when standing on metal, make sure you are well insulated by wearing dry gloves, rubber soled shoes, and by standing on a dry board or platform.
- D) Do not use worn or damaged welding or torch cables. Do not overload the cables. Use well maintained equipment.
- E) When not welding/cutting, turn equipment OFF. Accidental grounding can cause overheating and create a fire hazard. Do not coil or loop the cable around parts of the body.

SAFETY

F) The ground cable should be connected to the workpiece as close to the work area as possible. Grounds connected to building framework or other locations remote to the work area reduce efficiency and increase the potential hazard of electric shock. Avoid the possibility of the cutting current passing through lifting chains, crane cables or other electrical paths.

G) Keep everything dry you might touch, including clothing, the work area, welding gun, torch and welding or cutting machines. Fix water leaks immediately. Do not operate equipment standing in water.

H) Never use a cutting torch or welding gun which is damaged or contains cracks in its housing.

I) Refer to AWS-Z49.1 for grounding recommendations.

PERSONAL PROTECTION



SKIN AND EYE BURNS RESULTING FROM BODY EXPOSURE TO ELECTRIC-ARC WELDING AND CUTTING RAYS OR HOT METAL CAN BE MORE SEVERE THAN SUNBURN.

A) Use a proper face shield fitted with the correct filter (#10 or greater) and cover plates to protect your eyes, face, neck and ears from the sparks and rays of the cutting/welding arc when cutting/welding or observing cutting/welding. Warn bystanders not to watch the arc and not to expose themselves to the cutting/welding arc rays or to hot metal.

B) Wear flameproof gauntlet-type gloves, a heavy long-sleeve shirt, cuffless trousers, high-topped shoes, and a welding helmet or cap (for hair protection) to protect the skin from arc rays and hot sparks or hot metal.

C) Protect other nearby personnel from arc rays and hot sparks with a suitable non-flammable partition.

D) Always wear safety glasses or goggles when in a cutting or welding area. Use safety glasses with side shields or goggles when chipping slag or grinding. Chipped slag is hot and may travel a considerable distance. Bystanders should also wear safety glasses or goggles.

E) Compressed gas cylinders are potentially dangerous, refer to the suppliers for proper handling procedures.

F) Wear ear plugs or other ear protection devices when operating cutting or welding equipment.

FIRE SAFETY



HOT SLAG OR SPARKS CAN CAUSE A SERIOUS FIRE WHEN IN CONTACT WITH COMBUSTIBLE SOLIDS, LIQUIDS OR GASES.

A) Move all combustible materials well away from the cutting area or completely cover materials with a non-flammable covering. Combustible materials include but are not limited to wood, clothing, sawdust, gasoline, kerosene, paints, solvents, natural gases, acetylene, propane, and similar articles.

B) Do not weld, cut or perform other hot work on used barrels, drums, tanks or other containers until they have been completely cleaned. There must be no substances in the container which might produce flammable or toxic vapors.

C) For fire protection, have suitable extinguishing equipment handy for instant use.

SAFETY

VENTILATION



WELDING AND CUTTING FUMES AND GASES, PARTICULARLY IN CONFINED SPACES, CAN CAUSE DISCOMFORT AND PHYSICAL HARM IF INHALED OVER AN EXTENDED PERIOD OF TIME.

A) At all times, provide adequate ventilation in the welding and cutting area by either natural or mechanical means. Do not weld or cut on galvanized, zinc, lead, beryllium or cadmium materials unless positive mechanical ventilation is provided to prevent inhaling fumes and gases from these materials.

B) Do not weld or cut in locations close to chlorinated hydrocarbon vapors coming from degreasing or spraying operations. The heat of arc rays can react with solvent vapors to form phosgene, a highly toxic gas, and other irritant gases.

C) If you develop momentary eye, nose or throat irritation during welding or cutting, it is an indication that the ventilation is not adequate. Stop work and take the necessary steps to improve ventilation in the welding or cutting area. Do not continue to weld or cut if physical discomfort persists.

D) Use an air supplied respirator if ventilation is not adequate to remove all fumes and gases.

E) Beware of gas leaks. Welding or cutting gases containing argon are more dense than air and will replace air when used in confined spaces. Do not locate gas cylinders in confined spaces. When not in use, shut OFF the gas supply at its source.

F) Refer to AWS Standard Z49.1 for specific ventilation recommendations.

SAFETY REFERENCES

The following publications provide additional information on important welding safeguards.

A) ANSI/ASC Z49.1-1988, American National Standard "Safety in Welding and Cutting".

B) Bulletin No. F4-1, "Recommended Safe Practices for the Preparation for Welding and Cutting Containers and Piping that have held Hazardous Substances".

C) OSHA Safety and Health Standards, 29CFR 1910, available from the United States Department of Labor, Washington, DC 20210.

D) NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes", available from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 00210.

E) NEMA Standards Publication/No. EW1-1989, Electric Arc-Welding Apparatus, approved as ANSI C87.1-1989. Available from National Electrical Manufacturers Association, 155 E. 44th Street, New York, NY 10017.

GENERAL INFORMATION

DESCRIPTION OF EQUIPMENT

The **PowCon PD20** is a 2 roll, constant speed type wire feed unit. This unit is for GMAW or FCAW welding where a consumable wire electrode is used. The PD20 can feed wire up to 0.062 (1/16th) inch diameter at rates up to 708 inches (18 meters) per minute.

SPECIFICATIONS

(Subject to Change without notice)

SEE TABLE 1 - SPECIFICATIONS

- A) Power Input is 30 VAC 50/60 Hz, and can be supplied by the following units: 275SMC, 275SMC/3, 275SM, 400SM, 400SMT, 500SM, 500SM AC/DC and 630SMP. Power may also be supplied by a suitable transformer.
- B) Maximum Weld Current from the power source is 390 Amps @ 100% Duty Cycle or 500 Amps @ 60% Duty Cycle. See Table 1.
- C) Inch/Purge push buttons are provided to independently adjust the wire feed speed and the gas flow without welding.
- D) EURO-QUICK connector for GMAW Torch.
- E Fasteners:

All fasteners (Screws, Nuts, Washers) are metric.

NOTE

Do not attempt to use inch type fasteners as replacement parts because this will strip threads. If the fastener you require is not available locally it is stocked at the factory.

OPTIONS:

A) Wire Feed Rolls

Wire Feed Rolls are available for wire sizes from 0.023"(0.6 mm) to .062" (1.6mm). See TABLE 3 - WIRE FEED ROLLS - SELECTION GUIDE for wire size and drive roll part numbers.

B) Outlet Guide Tubes

Outlet Guide Tubes are available for Carbon Steel and Flux Cored wire from 0.023" (0.6mm) to 0.62" (1.6mm) and for Aluminum and Stainless Steel wire from 0.039" (1.0mm) to 0.062" (1.6mm). See TABLE 2 - WIRE GUIDES for sizes and Part Numbers. The Red Guide for 0.035" (0.9mm) to 0.052" (1.3mm) Carbon Steel or Flux Cored wire is shipped with the unit.

C) WDM1 Display, Inches per Minute

Inches per minute (IPM) display is mounted in the upper right hand corner of the front panel and gives a visual representation of the Wire feed Rate. P/N 123050-001

D) WP5, Spot/Crater/Fill Timer Option

This option allows crater filling, continuous welding with contact start, slow run-in, spot and stitch welding. P/N 123060-001

TABLE 1 - TECHNICAL DATA

Input Voltage AC 50/60Hz	Drive Motors	Weld Current MAX	Wire Capacity			Wire Spool Diameter	Wire Feed Speed	Dimensions	Weight
			Solid Wire Steel Stainless	Solid Wire Alum.	Flux Core Wire				
30 V	1	500A 60%	.023-.062" (.6mm - 1.6mm)	.035-.062" (.9mm- 1.6mm)	.039-.062" (1.0mm- 1.6mm)	12" (300mm)	0-708"/min (0-18m/min.)	Length 25.5" (650mm) Width 9.5" (240mm) Height 18.5" (470mm)	46.5lbs. (21 kg) Shipping 51 lbs. (23kg)
MAX LOAD 4 AMPS 120 VA		390A 100%							

GENERAL INFORMATION

ACCESSORIES:

A) MIG Torches

TE350 - MIG torch, 12 feet long for 0.035" (0.9mm) to 0.045" (1.1mm) Wire, with EURO-QUICK connector. P/N 601213-012.

TT350 - MIG torch, 12 feet long for 0.035"(0.9mm) to 0.045" (1.1mm) Wire, with TWECO connector. P/N 601203-001.

NOTE

Tweco Torch Adapter P/N 969011-001 required when using a Tweco Torch without the Euro-Quick Connector.

B) Remote Controls

RH110D - MIG Remote Hand Control. For in-process control of voltage and wire feed speed. P/N 121001-001

WARRANTY

PowCon warrants it's equipment to be free from defects in material and workmanship as of the time and place of delivery by PowCon. A Limited Warranty card is shipped with all equipment. This warranty is limited to the conditions listed on the warranty card, provided the equipment is installed and operated according to the instructions in this manual. For this warranty to become valid, you must fill out the card on the bottom of the Limited Warranty and send it to PowCon within 10 days of the purchase date. Do it now before you lose the card or forget.

Table 2 - Outlet Guide Tubes

Color	Size	Part Number
Carbon Steel or Flux Cored Wires		
White	0.023 - 0.031 (0.6 - 0.8 mm)	4264821
Red	0.035 - 0.052 (0.9 - 1.3 mm)	4264822
Yellow	0.055 - 0.062 (1.4 - 1.6 mm)	4220883
Aluminum and Stainless Steel Wire		
Teflon	0.039 - 0.062 (1.0 - 1.6 mm)	4245070

Note: The Red Wire Guide is supplied with the unit.

Table 3 - Wire Feed Rolls—Selection Guide

Color Code	For Wire Size	SMOOTH 'V' GROOVE HARD WIRE		SMOOTH 'U' GROOVE ALUMINUM WIRE		For Wire Size	*KNURLED 'V' GROOVE HARD & FLUX CORE WIRE	
		Drive Roll	Feed Roll	Drive Roll	Feed Roll		Drive Roll	Feed Roll
White	0.023 - 0.030 (0.6 - 0.8mm)	3106841	9592401	—	—	—	—	—
Red	0.035 - 0.040 (0.9 - 1.0mm)	3106842	9592402	3131240	2059200	0.039-0.047 (1.0-1.2mm)	3115852	9592422
Orange	0.045 - 0.052 (1.1 - 1.3mm)	3106846	9592406	3131220	2059180	—	—	—
Yellow	0.053 - 0.062 (1.4 - 1.6mm)	3106843	9592403	3131260	2059220	0.053-0.062 (1.4-1.6mm)	3115853	9592423

* The knurled drive rolls are recommended for both hard and tubular wire. These drive rolls are designed to provide high torque with little or no wire flaking and deformation

INSTALLATION

UNPACKING NEW EQUIPMENT (Receiving and Handling)

Remove your **PowCon PD20 Wire Feed Unit** from its shipping carton and inspect for any possible damage that might have occurred during shipping. Make sure that all items on the packing list are accounted for and identified. One copy of the **PowCon PD20 Wire Feed Operation Manual** is packed with each **PowCon PD20 Wire Feed**.

Any claims for loss or damage that may have occurred in transit must be filed by the **PURCHASER** with the **CARRIER**. Copies of the **Bill of Lading** and **Freight Bill** will be furnished by the carrier on request, if the need to file a claim arises. When requesting information concerning this equipment, it is essential that model description, serial number and/or part number of the equipment be supplied.

NOTE

To assure a valid warranty, you must complete and return the warranty card (enclosed with all products) within 10 days of the purchase date.

EQUIPMENT LOCATION

(Service Operating Conditions)

The **Powcon PD20 Wire Feed Unit** is intended to be mounted above the power source on a swivel base, so the feed wire can pass smoothly through the torch cable without developing kinks. The location selected to operate this equipment should be a safe welding environment:

A. The area should be free from all easily combustible materials, such as; rags, paper products and solvents. Hot slag and sparks can easily ignite these and other items. Wear protective clothing and always have a fire extinguisher close by.

B. The area should be well ventilated. Welding fumes and gases can be a real health hazard. Don't breath the fumes. Wear a mask if working around any heavy metals like cadmium, beryllium, lead, tin or zinc. Excessive drafts can reduce gas shielding of the weld.

If you must operate this equipment in a severe or unusual service condition, please consult with your local **SUPPLIER** for recommendations and assistance.

NOTE

Improper installation can void your Warranty.

EQUIPMENT INSTALLATION

The **PowCon PD20 Wire Feed Unit** usually derives its power from the welding power source it is used with. The **PD20** comes wired for operation with the **PowCon 400 SMT** power source. If operation with another **PowCon** power source is desired, you must change a connector inside the unit. See **Power Source Selection**, for details.

Power Source Selection

The left side panel must be removed to gain access to the **Power Source Selection** connector.

1. Remove the 4 screws that hold the left side panel on and remove panel.
2. The **Power Selection** board is located near the rear panel, between the power cables entrance through the rear panel and the large control board. There are three connectors on one side of the board and one on the other. The three connectors on the rear panel side are labeled **X1**, **X2** and **X3**.

X1 is for the **500SM** and **500SM AC/DC**.

X2 is for the **275SM**, **275SMC**, **275SMC/3**, **400SM** and the **630SMP**.

X3 is for the **400SMT**.

3. Unplug the connector from **X1**, **X2** or **X3** and plug it into the correct connector for the power source you are using. See **Figure 1 - Power Source Selection**.

The plug fits tightly into the connector. The best way to remove the connector is to grip the top and bottom of the connector with your fingers and rock it up and down, while you pull, until it comes off.

4. Replace the side panel using **ALL** the screws and washers.

Changing the Wire Feed Rolls and Outlet Tube

1. The wire feed rolls and the outlet guide tube must match the filler wire used. See **Tables 2 and 3** (in the **General Information** section) to select the correct wire feed rolls and outlet guide tube for your application.
2. To release tension on the wire feed rolls, slide the tension arm out from under the tension adjustment knob. **Figure 2-1B & 2-2**
3. Unscrew the orange thumbscrews from the **Feed** (upper) & **Drive** (lower) rolls and remove the rolls from their shafts. **Figure 2-5**

INSTALLATION

4. Locate the outlet guide tube, at the rear of the Euro-Quick connector and just below the tension assembly pivot shaft. Remove the retaining clip holding the guide tube in-place. (Figure 2-7) The guide tube can usually be removed without loosening the jacket nut (Figure 2-8b). Place a pencil into the large hole in the front of the Euro-Quick connector and push the guide tube out the back end. If you remove the jacket nut to get the guide tube out, make sure you don't lose the guide washer inside. (Figure 2-8a)
5. Insert the new outlet guide tube into the rear of the Euro-Quick connector, the tube should be located as close as possible to the wire feed rolls without touching, and reinstall the retaining clip. If you loosened or removed the jacket nut, replace it now (with the guide washer) and tighten the nut. Do not over-tighten. (Figure 2-8)

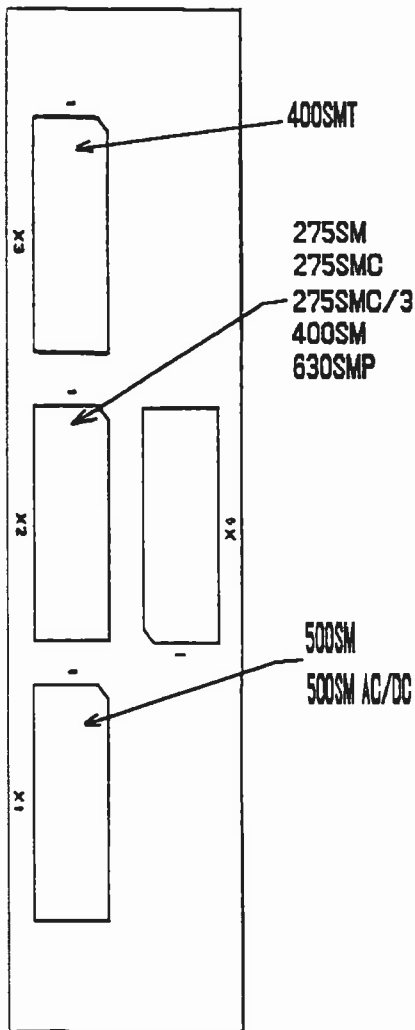


Figure 1 - Power Source Selection

6. Place the drive roll back on the drive motor shaft. Turn the roll so the squared end fits into the hole in the drive plate. Reinstall the orange thumbscrew to hold the roll in place.
7. Slide the feed roll onto the shaft of the tension assembly and reinstall its orange thumbscrew. Do not reapply tension to the drive roll until the wirepool has been installed.
8. The installation of the new rolls and guide tube is now complete.

Installing a spool of wire

1. Release tension on wire feed rolls.
2. Make sure that the wire feed rolls and the guide tube match the wire type and size that you will be using.
3. Before placing the spool of wire onto the hub, make sure the wire is held in place so it doesn't accidentally spill off the spool.
4. Before placing the wire spool on the hub, check the hub brake tension. The hub should not free-wheel. Adjust the brake so some resistance is felt when you attempt to turn the hub. Later you may have to re-adjust this brake if the wire continues to feed from the spool after the Feed Rolls stop.
5. Place the wire spool on the hub so that the locking pin on the hub fits into a matching hole on the spool. See Figure 2-6.
6. The wire on the spool must feed off the bottom of the spool to the left as the spool turns clock-wise. See Figure 2-1.
7. Lock the spool in place with the orange slide retainer at the front of the hub.

Feeding the Wire

1. Attach the Euro-Quick torch to its front panel connector. Make sure that the torch cable doesn't have any tight bends in it.
2. Release the end of the wire from the reel and cut off any bent wire using end cutters or diagonal cutters that leave a blunt end. Sharp ends can jam, damage the torch cable liner or damage the contact tip of the torch.
3. Hand feed a little wire off the spool and through the wire inlet guide. See Figure 2-5. Guide the wire over the groove in the roll and into the guide tube. Do not advance the wire any further at this time.

INSTALLATION

4. If the wire does NOT lay directly over the groove in the roll, check the following:

a) Is the drive roll properly seated on the motor shaft?

b) Does the wire inlet guide line-up with the groove on the drive roll?

Consult with your SUPPLIER if the solution is not obvious.

5. Feed about a foot of wire by hand.

6. Apply tension to the feed roll by moving the tension arm under the tension adjust knob. Make sure that the wire settles in the groove of the Feed Rolls. See Figure 2-5.

7. Adjust the WIRE SPEED control to 10 inches per minute. While you watch the rolls, feed some wire by pushing the INCH push-button on the front panel.

8. If the Feed Rolls turn but the wire does NOT feed, add more pressure to the tension arm by tightening the tension adjust screw. See Figure 2-1B. If the wire still doesn't feed, release the brake completely. If the wire still doesn't feed, check to see if the wire diameter is too small for the feed rolls selected.

NOTE

Excessive feed roll pressure causes flattening of the filler wire and damage to the coating. It also causes increased wear of the feed rolls.

9. When the wire feeds correctly, watch the wire spool to see if it stops turning when the feed rolls stop. If the wire spool turns after the rolls stop, apply more brake pressure until they both stop at the same time. See Figure 2-3.

10. Continue to feed wire until it comes out the torch end.

11. You're ready to weld!

INSTALLATION

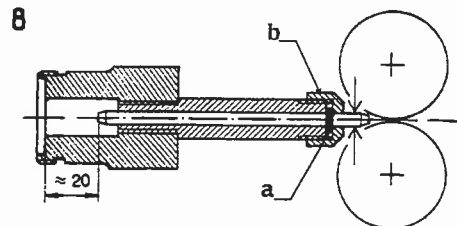
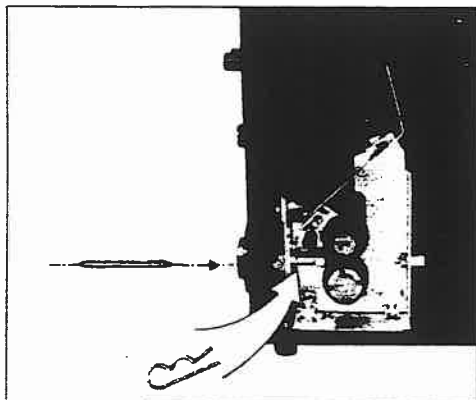
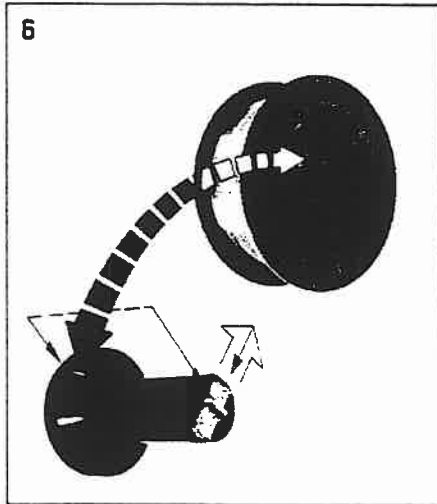
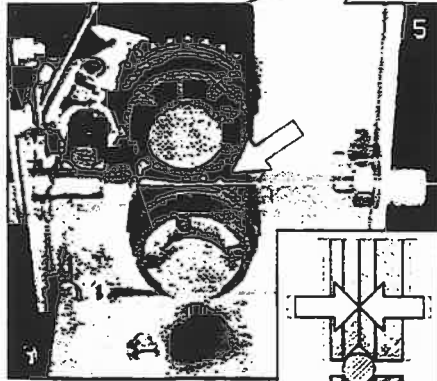
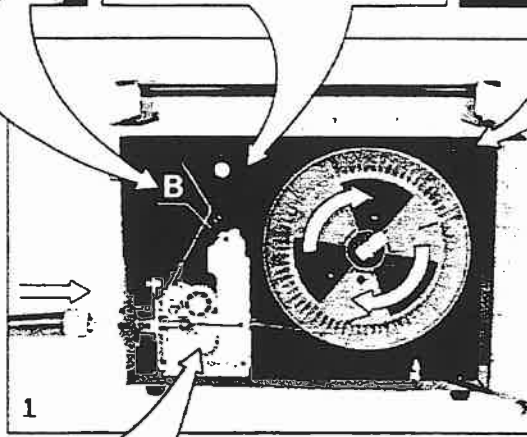
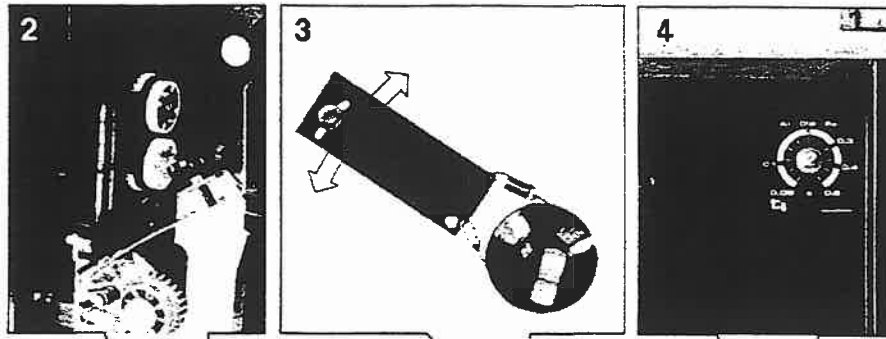


Figure 2 - Wire Feed Cabinet

OPERATION

OPERATOR CONTROLS

PD20 - Front Panel

See Figure 3

1) WIRE FEED SPEED CONTROL

The WIRE FEED Speed is continuously adjustable from 0 to 700 inches per minute . See Table 1 for the wire sizes that can be used.

2) START SELECT SWITCH

This switch selects the starting procedure that is controlled by the torch trigger switch. The 2 STEP procedure is weld start and weld stop. The 4 STEP procedure is gas start, weld start, weld stop, gas stop. 2 STEP procedure (torch trigger depressed for ON and released for OFF):

1. Switch ON - welding starts (Current ON)
2. Switch OFF - welding stops (Currents OFF)

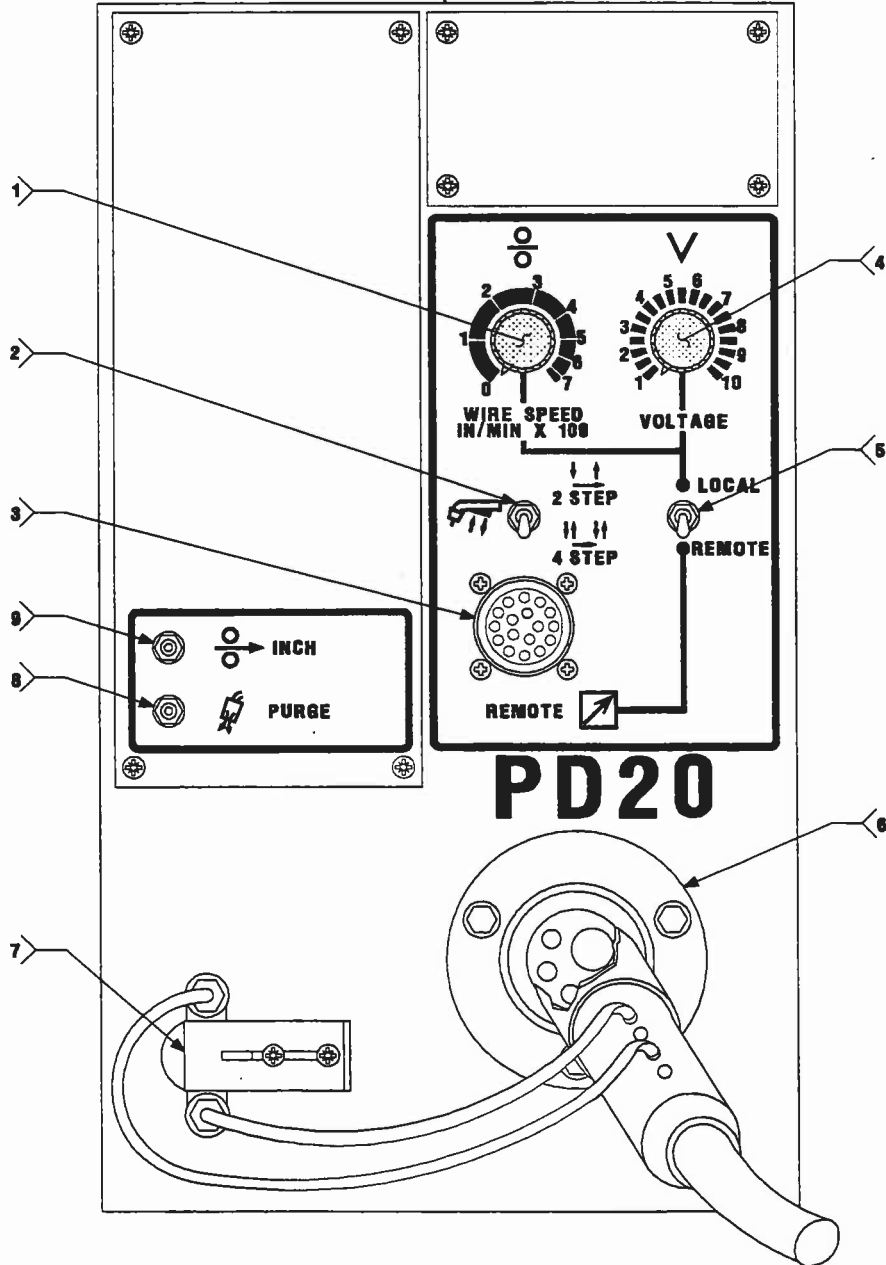


Figure 3 - PD20 Front Panel

OPERATION

4 STEP procedure (torch trigger depressed for ON and released for OFF):

1. Switch ON - shield gas starts
2. Switch OFF - welding starts (Current ON)
3. Switch ON - welding stops (Current OFF)
4. Switch OFF - shield gas stops

The **4 STEP** procedure is primarily for long welds so the operator doesn't have to keep the torch trigger depressed while welding. This procedure is also useful for welding parent metals that oxidize easily where operator control of shielding gas post flow time is very important.

3) REMOTE CONNECTOR

This 17 pin remote control connector is used with a number of accessories. See Accessories in the General Information section of this manual.

4) VOLTAGE CONTROL

Controls the welding voltage from the power source, if switch 5 is in the LOCAL position.

5) LOCAL/REMOTE SWITCH

The LOCAL/REMOTE switch selects the front panel controls or input from the REMOTE connector.

6) EURO-QUICK TORCH CONNECTOR

Shown with liquid cooled torch attached.

7) COOLANT CONNECTOR LATCH

The cooling water connectors are held in-place, in the front panel cut-out by this sliding latch.

8) PURGE SWITCH

This momentary push button switch allows you to test the gas solenoid and purge the gas line before welding. Holding the switch down allows the gas solenoid to operate without the motor running. Releasing the switch returns it to the off position automatically.

9) INCH SWITCH

This momentary push button switch allows you to test the wire feed. Holding the switch down allows the motor to run without any solenoid action. The motor runs at a rate dependent on the position of the wire feed speed control. Releasing the switch returns it to the off position automatically.

BURN BACK TIME ADJUSTMENT

The Burn Back time is controlled from inside the wire feeder cabinet on the right side of the unit. Open the right side door. The control is located near the rear panel. See Figure 7, Item 8. This potentiometer controls the amount of time the power supply remains on after the trigger has

been released. The burnback available is continuously variable between 0 and .25 seconds. With the potentiometer in the fully CW position, maximum time will result. With the potentiometer in the fully CCW position, minimum time will result, and the burnback will be essentially disabled.

The Burn Back time is correctly adjusted when the wire makes a clean separation from the work and the torch, when the weld current stops.

PD20 - Rear Panel

See Figure 4

1) POWER CABLE

Connect Power Cable to one of the following power sources: 275SM, 275SMC, 275SMC/3, 400SM, 400SMT, 500SM, 500SM AC/DC, 630SMP.

2) GAS IN

Shield gas input 5/8" - 18 RH thread female connector. Gas pressure at this input must not exceed 70 PSI.

3) WELD CURRENT IN

This is a panel mount male plug Tweco connector. Maximum current is 390 Amps @ 100% duty cycle or 500 Amps @ 60% duty cycle.

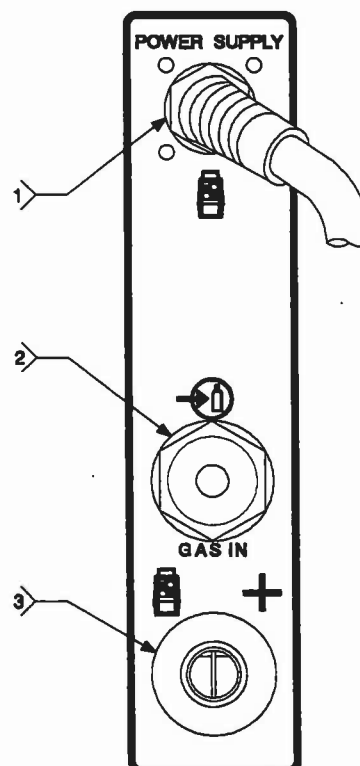


Figure 4 - PD20 Rear Panel Connections

OPERATION

WP5 SPOT/CRATER FILL TIMER OPTION

A) PROCESS Selector Switch

1. CRATER FILL

Continuous welding including crater fill. Crater Fill time is the amount of time it takes the weld voltage and wirefeed speed to drop to 0 after the torch trigger switch is released. Crater Fill time is adjusted at the FILL TIME potentiometer (control C of Figure 5) from 0 to 3 seconds.

Weld Voltage and wire feed are started with the torch trigger switch and continue until the torch trigger switch is released. Weld current starts when the wire contacts the workpiece. When the torch trigger switch is released weld voltage and wirefeed speed drop at a preset rate for the time set on the FILL TIME control. This is followed by BURNBACK. BURNBACK time is set on the BURNBACK control located inside the wirefeeder toward the rear panel. See Figure 2-4.

The gas solenoid is controlled by the torch trigger switch.

2. SLOW RUN IN/CRATER FILL MODE

Continuous welding with SLOW RUN IN and CRATER FILL. See 1 for Crater Fill information.

Weld Voltage and Wirefeed are started with the torch trigger switch. Weld Voltage and wirefeed start at a reduced rate. When the arc is established Weld Voltage and Wirefeed increase until they reach their set values. Welding continues until the trigger switch is released. When the torch Trigger switch is released Crater Fill begins as explained in 1.

3. CONTACT START MODE

Continuous welding with contact ignition.

The filler wire has weld voltage on it continuously. Contact with the work starts welding current and wirefeed. Wirefeed continues as long as welding current is flowing. The operator must break the arc manually by pulling the torch from the work piece, this stops weld current and wirefeed.

4. STITCH WELDING MODE

Cycle Arc Welding.

The length of the weld time is determined by the ON TIME control (see B, Figure 5). The pause time between welds is factory set at 0.35 seconds. Welding will continue, cycling on and off, for the set times until the torch trigger switch is released.

5. SPOT WELDING MODE

The spot weld time is set by the ON TIME control (see B, Figure 5) from 0.1 to 3.0 seconds. Crater fill can be used in the Spot Welding Mode. Set the FILL TIME control (see C, Figure 5) from 0 to 3 seconds.

Weld Voltage and Wirefeed are started when the torch trigger switch is depressed. At this time one complete SPOT WELD with Crater Fill and Burnback will occur, unless the trigger is released thereby stopping the Spot Weld Cycle. The trigger switch must be released and depressed every time you wish to make a weld. This is not an automatically repeated sequence like the STITCH MODE.

B) ON TIME

Controls the weld time in both the SPOT and the STITCH process. Adjustable from 0.1 to 3.0 Seconds.

C) FILL TIME

Controls Crater filling time in the CRATER FILL, the SLOW RUN IN CRATER FILL and the SPOT process. Adjustable from 0 to 3.0 seconds.

D) INCH SWITCH

This momentary push button switch allows you to test the wire feed. Holding the switch down allows the motor to run without any solenoid action. The motor runs at a rate dependent on the position of the wire feed speed control. Releasing the switch returns it to the off position automatically.

E) PURGE SWITCH

This momentary push button switch allows you to test the gas solenoid and purge the gas line before welding. Holding the switch down allows the gas solenoid to operate without the motor running. Releasing the switch returns it to the off position automatically.

OPERATION

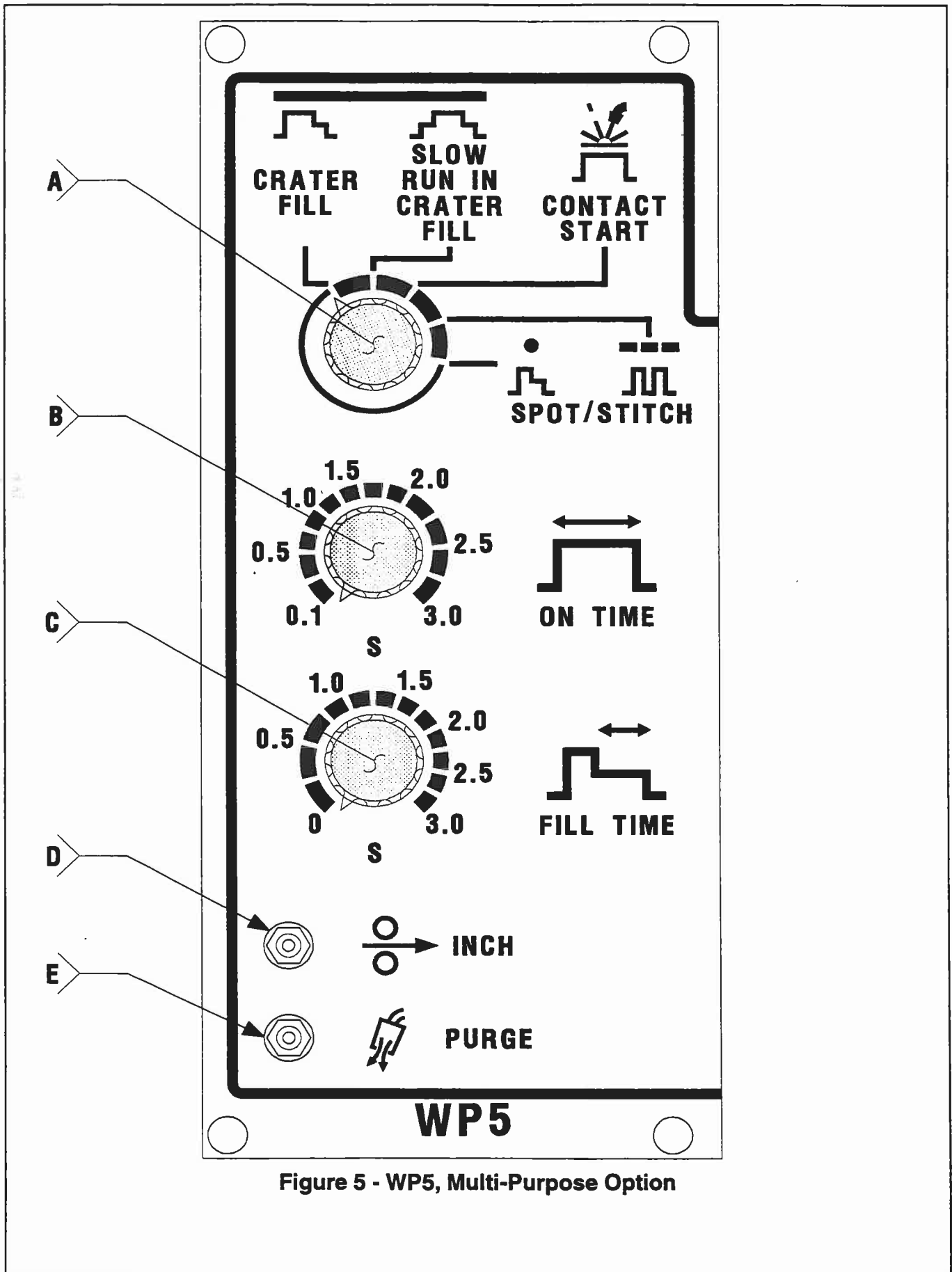
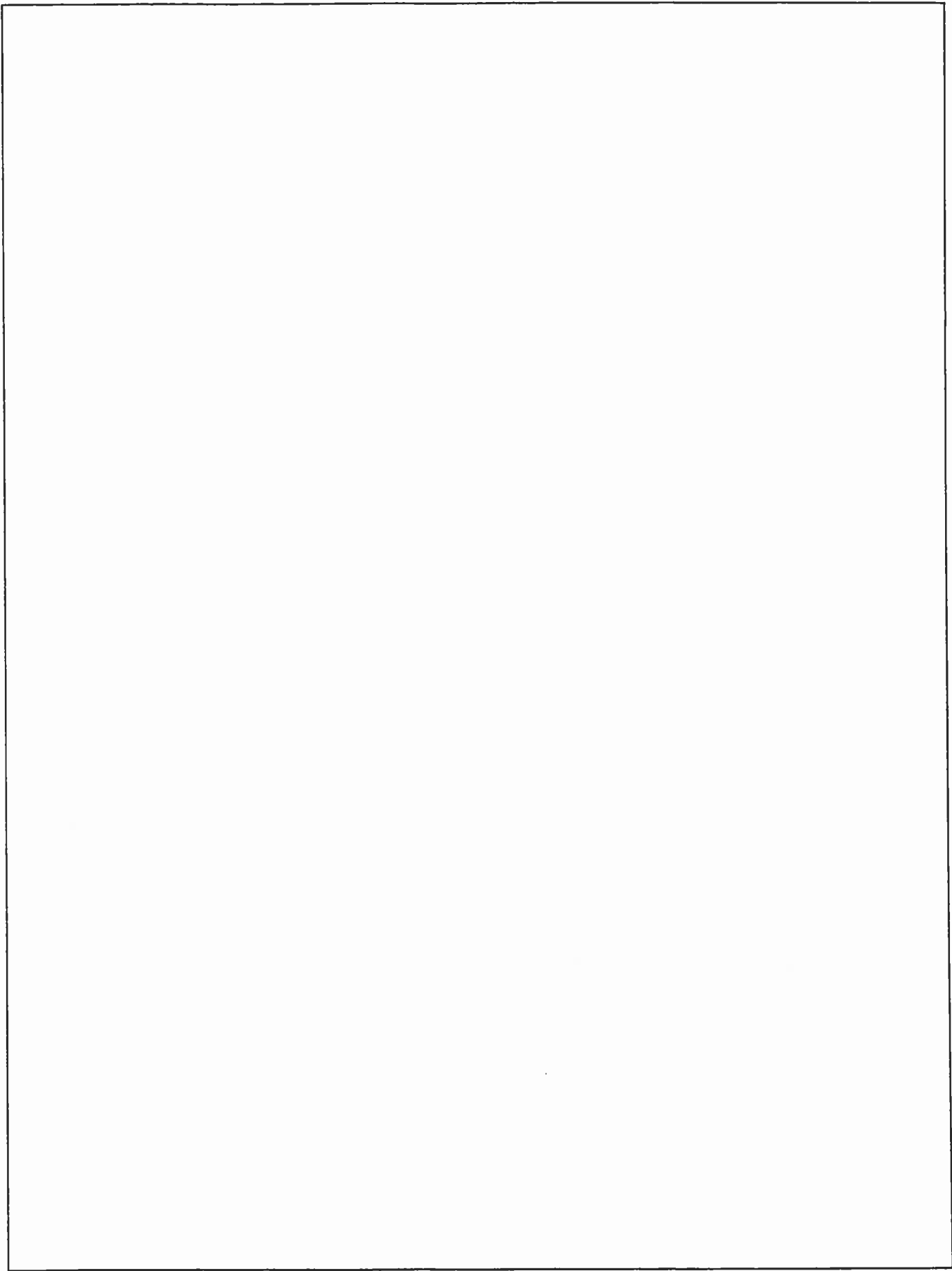


Figure 5 - WP5, Multi-Purpose Option



PARTS LIST

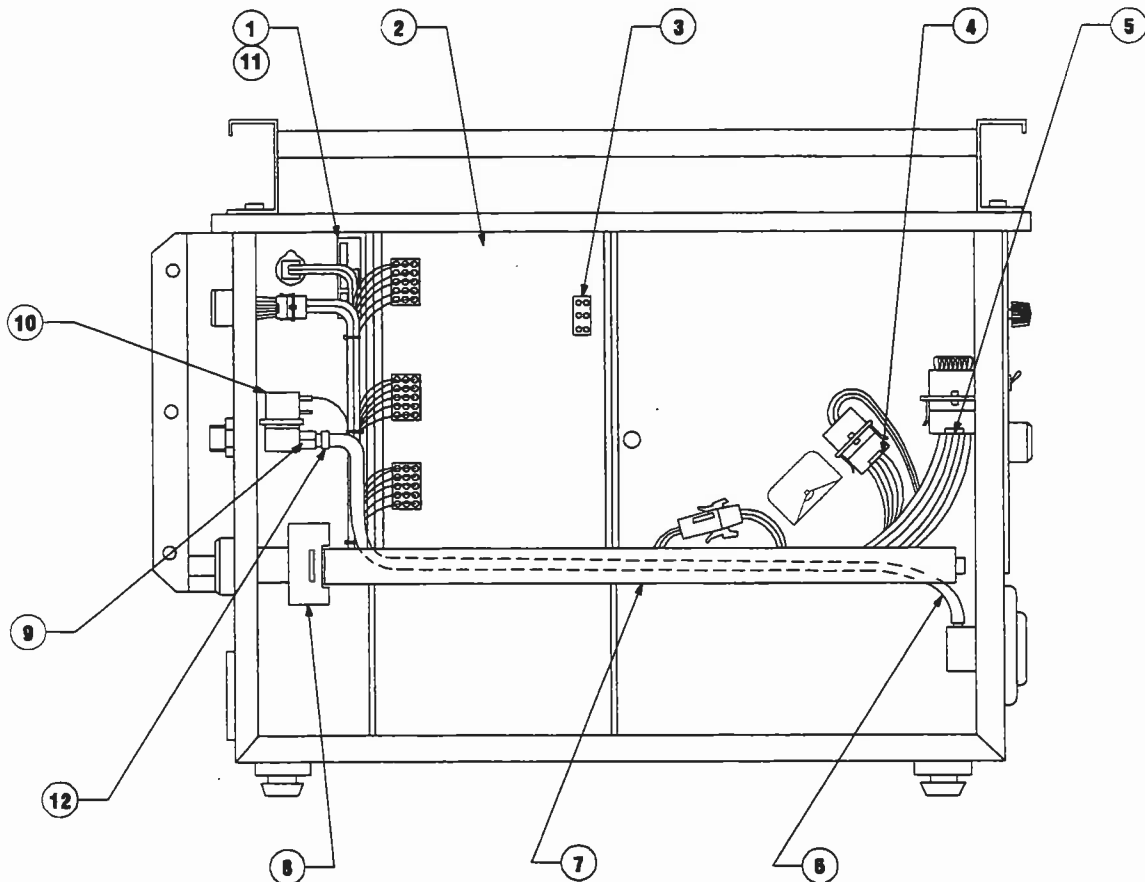


Figure 6 - PD20 Left Side Parts List

Item	Quantity	Part Number	Description	Ref. Des.
1	1	P04263750	Power Selection Board	A002
2	1	P04263790	Control Board, PD20/30	A001
3	1	4238210	Coding Connector, PD20	W004
4	1	P04235100	Cable Harness	
5	1	4222140	Cable Harness	
6	.62M	9370157	Plastic Hose	
7	1	3099431	Current Bar	
8	1	4222150	Reed Relay Card	K001
9	1	9568911	Hose Connector 1/8	
10	1	9563003	Solenoid Valve	Y001
11	4	9591030	Spacer, Nylon	
12	2	9377205	Hose Clamp	

PARTS LIST

Parts List for Figure 7, PD20 Right Side, Wire Spool Cabinet

Item	Quantity	Part Number	Description	Ref. Des.
1	1	4219620	Protective Plate	
2	1	4228070	Brake Lever Assembly	
3	1	9592121	Wire Spool Hub	
	1	9592120	Slide Lock, Spool Hub	
	1	9476514	Retaining Ring	
4	1	P02044470	Door for wire spool cabinet	
5	1	9549061	Lock Assembly	
6	1	P04222111	Wire Feed Assembly	
	4	9592127	Insulating Bushing	
	4	9592139	Insulating Ring	
7	1	4203790	Insulated mounting feet, Set of four	
8	1	9754141	Potentiometer 10K	RW101
9	1	3116880	Brace, Open Door	
	2	9592139	Insulating Ring	
	1	974030-004	Washer, Wave Spring	
	1	972019-004	Nut, M6 - Locking	
	1	970016-161	Screw, Hex, M6 X 35	
10	1	*4220470	Brake Band	
11	1	*9484099	Brake Spring	
12	1	*9484101	Brake Hook	

* These are included in Item 2 Brake Lever Assembly

PARTS LIST

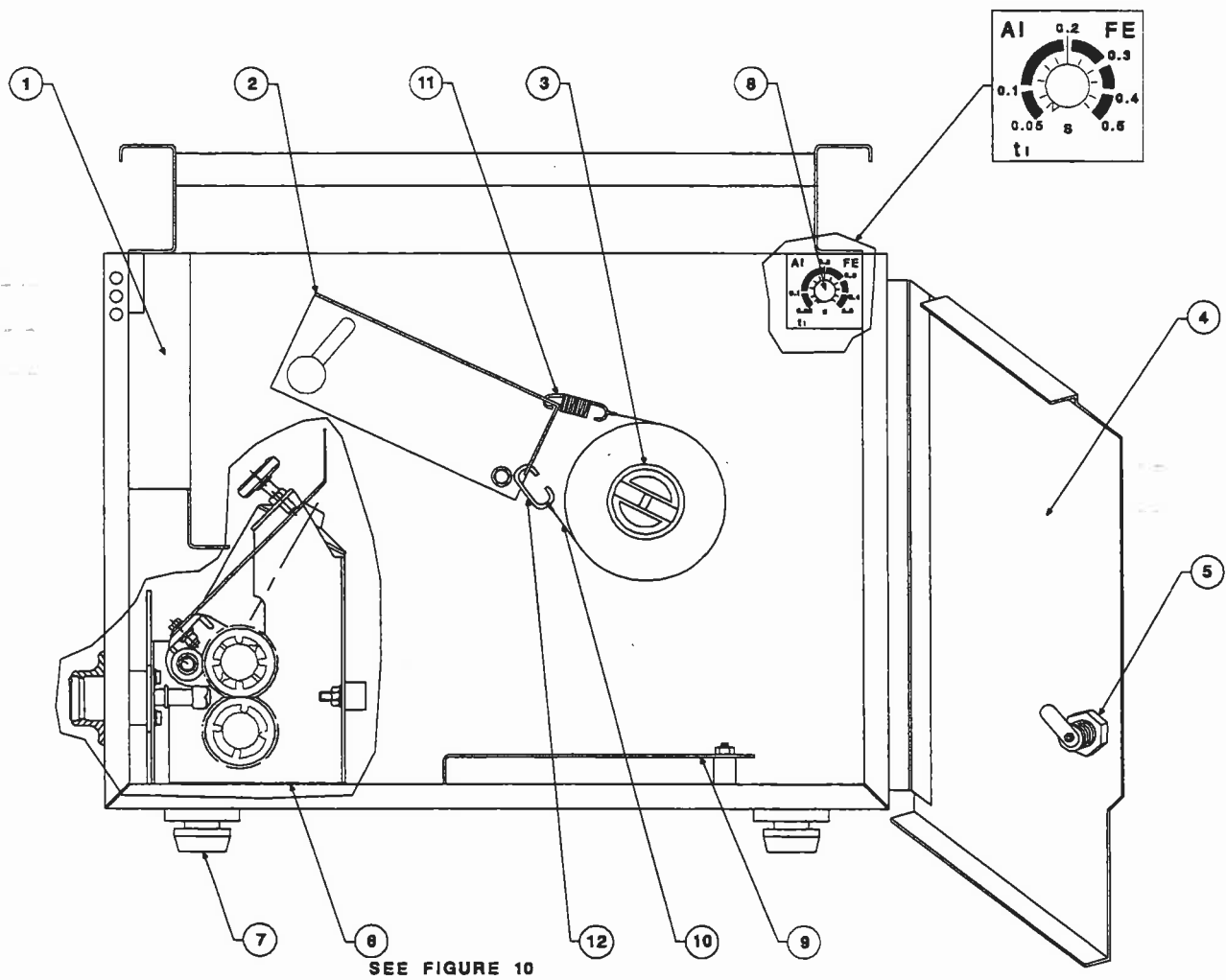


Figure 7 - PD20 Right Side, Wire Spool Cabinet

PARTS LIST

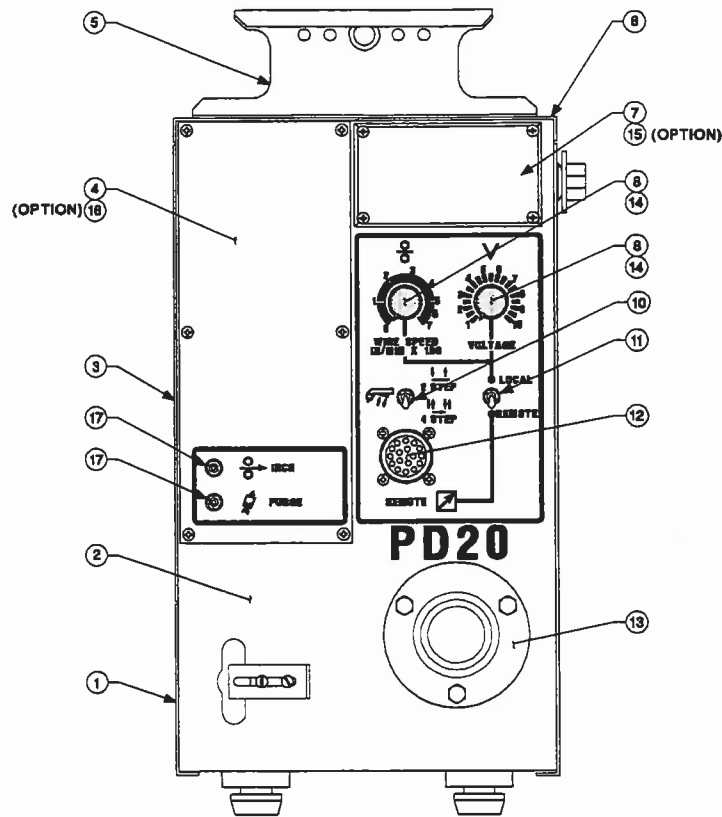


Figure 8 - PD20 Front Panel Parts List

Item	Quantity	Part Number	Description	Ref. Des.
1	1	P03099320	Water Hose Cover	
2	1	2060370	Main Chassis, PD20	
3	1	P03099310	Side Plate	
4	1	P03099440	Inch/Purge Plate	
5	1	3095781	Handle	
6	1	P03099300	Cover Plate	
7	1	4263530	Plate, Meter Opening	
8	2	9754142	Potentiometer	RW102, RW103
10	1	9761320	Switch, Toggle	SW101
11	1	9761341	Switch, Toggle	SW102
12	1	930014-004	Remote Connector	XW109
13	1	9592119	Insulating Flange, Euro-Quick Connector	
14	2	4158813	Knob, Control	
15	OPT	123050-001	WDM1 Digital Wire Feed Speed Meter	
16	OPT	123060-001	WP5, Spot/Crater Fill Timer (Option)	
17	2	9761627	Switch, Pushbutton	

PARTS LIST

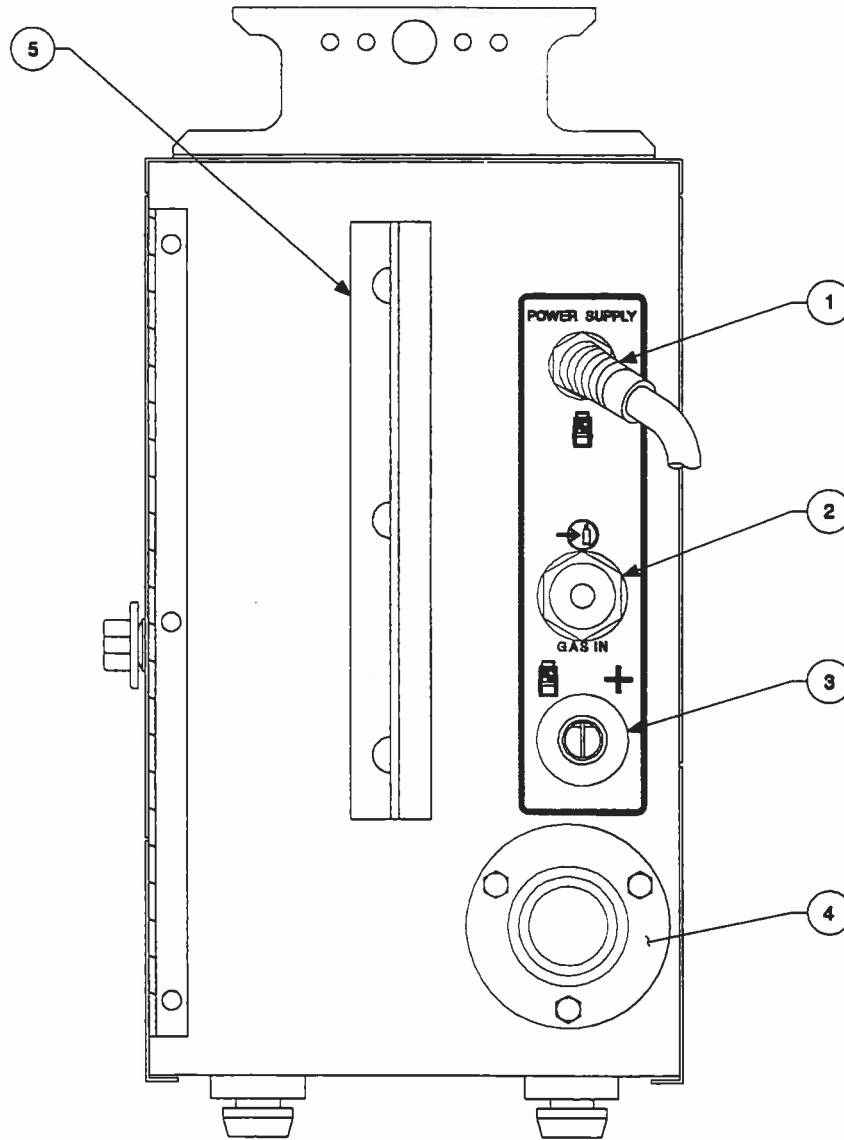


Figure 9 - PD20 Rear Panel Parts List

Item	Quantity	Part Number	Description	Ref. Des.
1	1	123010-005	Control Cable Assembly	W005
2	1	PO3132000	Gas Connector 5/8" - 18RH Female	
	2	9771975	Washer	
	1	9771976	Nut, Hex, M20	
3	1	930022-002	Tweco Cable Connector, Male	X001
4	1	9591088	Water Hose Inlet Ring	
5	1	3099420	Mounting Bracket	
	3	9315013	Insulating Bushing	
	3	9315011	Insulating Plate	

PARTS LIST

Parts List for Figure 10 - Wire Feed Assembly

Item	Quantity	Part Number	Description	Ref. Des.
1	1	9541076	Motor	M001
2	1	9580218	Euro Torch Connector	X000
3	2	4220010	Control Connector, Female	
4	1	9770456	Plug, 2 Pole	
5	1	3099990	Mount Plate, Motor	
6	1	9583031	Pivot Pin	
7	1	974003-007	Washer	
8	1	972018-007	Nut, Hex	
9	1	3102200	Pressure Lever	
10	1	9476513	Retaining Ring	
11	1	9484102	Pressure Spring	
12	1	*	Wire Feed Roll	
13	1	*	Drive Roll	
14	2	9592112	Thumbscrew, Drive Rolls	
15	1	4178802	Tension Adjust Screw	
16	1	**	Outlet Guide Tube	
17	1	9484103	Spring Pin	
18	1	4232920	Wire Inlet Guide	
19	1	972018-008	Nut, Hex M10	
20	1	974003-008	Washer, Flat	
21	1	4232650	Guide Washer	
22	1	4232640	Jacket Nut	

* See Table 3 (page 5) to select correct size for your application. ** See Table 2 (page 5) to select correct size for your application.

PARTS LIST

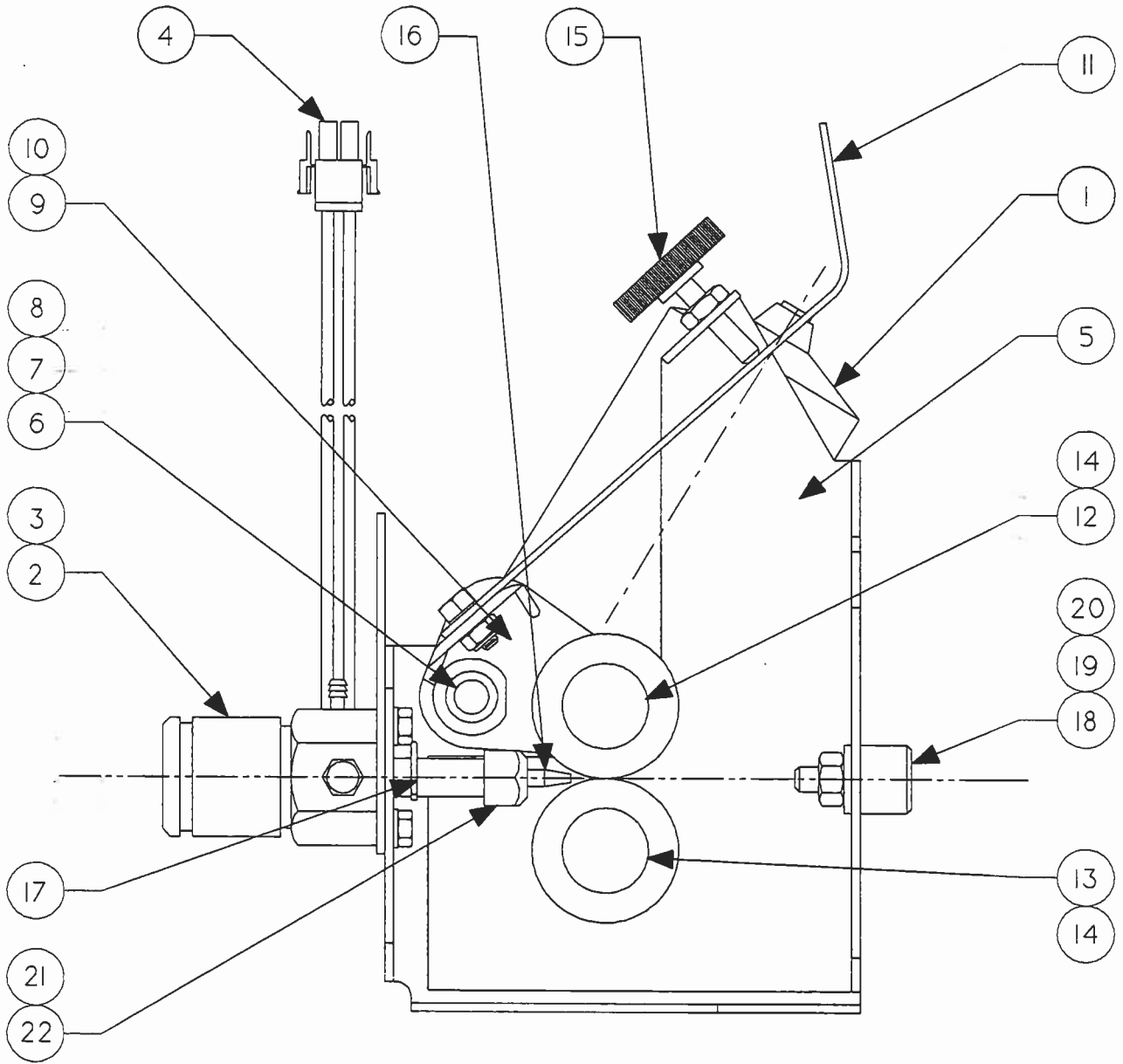


Figure 10 - Wire Feed Assembly

PARTS LIST

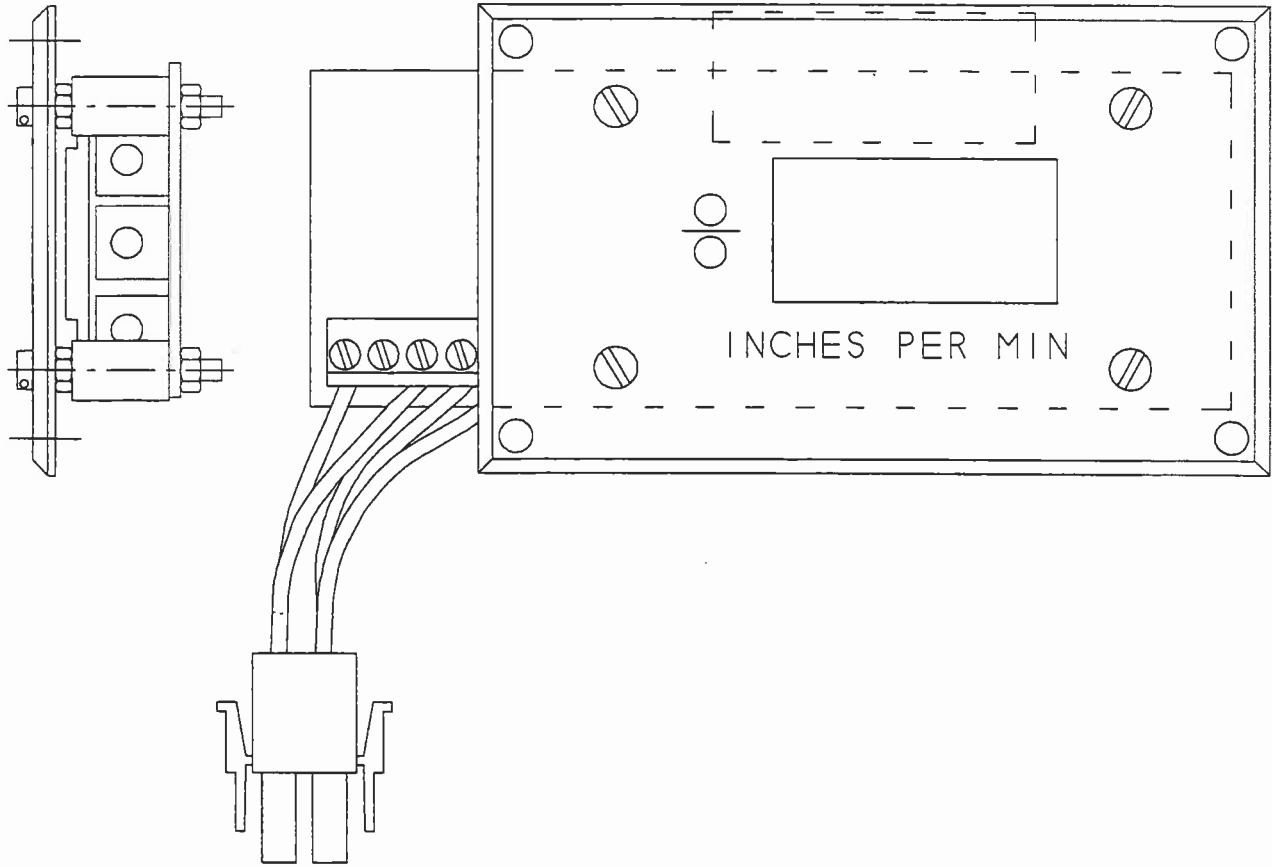
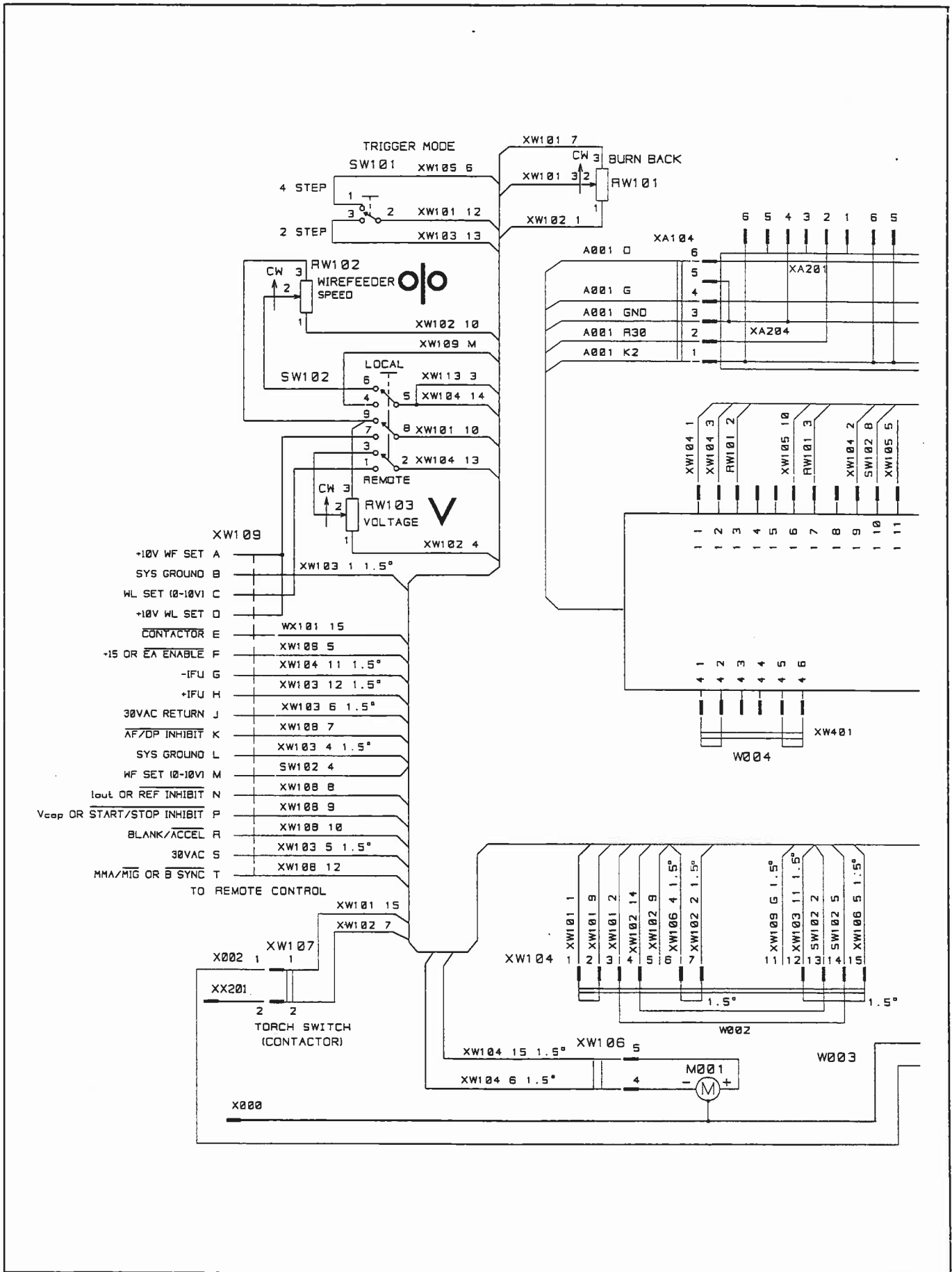


Figure 11 - WDM1 Digital Wire Feed Speed Meter

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