PowCon®

POWER DRIVE II

OWNER'S MANUAL

IMPORTANT READ THIS MANUAL BEFORE INSTALLING, OPERATING, OR SERVICING THIS PRODUCT

EQUIPMENT IDENTIFICATION - The unit's identification number (either a Specification number, or an Assembly number), model, and serial number usually appear on a nameplate attached to its control panel.

OWNER'S MANUAL NO. 201006-001A

Power Drive II Semiautomatic Solid-State Control Wire Feeder

This manual covers units displaying any one of the following specification numbers:

601104-001 2-Roll Drive, 60-600 IPM

Other documentation to cover components used in this model wire feeder:

Control Box	601104-005A
Feedhead Assembly	601104-006
Base	601104-007
Wire Spool Support Assembly	601106-001

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SAFETY INSTRUCTIONS AND WARNINGS

FOR OPERATION OF ARC WELDING EQUIPMENT

IMPORTANT - READ AND UNDERSTAND THESE INSTRUCTIONS. DO NOT LOSE THEM. ALSO READ OPERATING/INSTRUCTION MANUAL *BEFORE* INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT.

A. GENERAL

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed in Section J for your convenience in ordering them.

B. SHOCK PREVENTION

Bare conductors, or terminals in the output circuit, or ungrounded, electrically-live equipment can fatally shock a person. To protect against shock, have a competent electrician verify that the equipment is adequately grounded. Do not make contact with terminals and parts that are electrically HOT.

The body's electrical resistance is decreased when wet, permitting dangerous currents to flow through the body. Do not work in damp area without being extremely careful. Stand on dry rubber mat or dry wood and use insulating gloves when dampness or sweat cannot be avoided. Keep clothing dry.

1. Installation and Grounding of Electrically Powered Equipment - Electrical equipment must be installed and maintained in accordance with the National Electrical Code, NFPA 70, and local codes. A power disconnect switch must be located at the equipment. Check nameplate for voltage and phase requirements. 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 grounding conductor (lead) to the third live wire of the 3-phase line as this makes the equipment frame electrically HOT, which can cause a fatal shock.

If a grounding lead (conductor) is part of the power supply cable, be sure to connect it to a properly grounded switch box or building ground. If not part of the supply cable, use a separate grounding lead (conductor). Do not remove a ground prong from any plug. Use correct mating receptacles. Check ground for electrical continuity before using equipment.

2. Electrode Holders - Use only fully insulated electrode holder. Keep in good condition. Tighten screws so handle and other insulated parts stay in place. Never dip holder in water to cool it, or lay it down on ground or on work surface. Do not touch holders connected to two welding machines at the same time, or touch other people with the holder or electrode.

3. Welding Leads - Inspect leads often for damage to the insulation. Replace or repair cracked or worn leads immediately. Do not loop lead around your body. Do not use a welding current in excess of rated lead capacity, as the lead will overheat.

4. Output Terminals - Do not touch output terminals or make contact with machine while equipment is operating.

5. Electrode Wire - The electrode wire is electrically HOT when the equipment power switch is in ON position and the gun trigger is depressed. Do not touch electrode wire or "live" parts of wire feeder.

6. Service and Maintenance - Shut OFF all power at the disconnect switch or line breaker *before* inspecting or servicing the equipment. Lock switch OPEN (or remove line fuses) so that power cannot be turned ON accidentally. Disconnect power to equipment if it is to be left unattended or out of service.

7. Replace fuses with equivalent sizes.

C. BURN PREVENTION

The welding arc is very bright and hot. Sparks go everywhere, weldments are hot, and ultraviolet and infrared radiation is present. These arc rays penetrate lightweight clothing and are reflected from light-colored surfaces. The arc rays can injure the eyes *permanently* and burn the skin, just as in too much sunburn. Never look at an electric arc without eye protection. Be sure that there is sufficient distance between personnel welding so sparks will not strike other personnel in the area.

1. Protective Clothing - Wear dry gloves, jackets or sleeves, and aprons of chrome leather, safety shoes, welding helmet, and other articles needed to shield the skin and to prevent injury from arc burns. Wear ear plugs if welding overhead or in a confined space. Wear a hard hat if others are working above you.

2. Eye and Head Protection - Protect your eyes and head by wearing a welding helmet fitted with a double lens; use a clear lens outside and a colored, arc-ray lens inside as follows:

SUGGESTED LENS SHADE NUMBERS are 10, 11, 12. This recommendation may be varied to suit the individual's needs.

WARNING: THE USE OF GAS WELDING GOGGLES CAN CAUSE EYE DAMAGE WHEN ARC WELDING OR CUTTING. Use helmet with proper lens shade instead.

Always lower the helmet before striking the arc. Wear safety glasses with side shields under the helmet to protect the eyes from flying particles and side arc flashes when the helmet is up.

Protect the eyes of other people in the area by use of opaque, non-reflecting and non-flammable screens around your welding station. Allow good air circulation, especially at floor level. Do not permit anyone to view the arc unless he uses a correct handshield, or helmet.

A special hazard to eyes are flying particles caused by grinding, chipping and removing slag from welds. Wear safety goggles with side shields. Instruct others in the area to use them.

For eyeburn, see Section H. on page 3.

D. FIRE AND EXPLOSION PREVENTION

Fire and explosion are caused by combustible material being ignited by the welding arc or flame, flying sparks, hot weld slag, electrical short circuits, hot engine exhaust piping, and misuse of compressed gases, batteries, and gasoline. Sparks and molten metal can travel a considerable distance.

1. Welding Area - Do NOT weld or cut if combustible materials are in area or while servicing batteries (see Para. 5 below). Move the work or the combustibles. If combustibles cannot be moved, protect with fire-resistant cover. Do not weld in locations with a flammable atmosphere, such as produced by degreasing, cleaning, spray painting operations, or in atmospheres containing explosive vapors, gases, mists, or dusts.

2. Fire Watcher - If welding or cutting on combustible walls, ceilings and floors, or if combustibles cannot be moved, provide a fire watcher and fire extinguishers during and after the operation. Check that area is free of glowing or smoldering material before leaving the area.

3. Containers - Do not strike an arc on a compressed gas cylinder or other pressure vessel. This may create brittle areas which may rupture. Do not weld or cut containers in which flammable material have been stored. If absolutely necessary to do so, clean container thoroughly as described in AWS Standard A6.0. See Section J for ordering information for this Standard.

4. Engine Fuel - Use only approved fuel container or fueling system. Shut unit DOWN before removing fuel tank cap. Do not completely fill tank, because heat from the equipment may expand the fuel enough to cause it to overflow. If fuel spillage does occur, wipe up all fuel before starting the engine. If fuel penetrates the enclosure or canopy, remove enough parts to permit complete cleanup. Open canopy doors and blow compressed air over equipment to clear away the fumes.

5. Battery - Batteries give off flammable hydrogen gas. When servicing, do not smoke, cause sparking, or use open flame near the battery.

6. Disposable Butane Lighters - Do not carry since the leaking fumes can be ignited from sparks or molten slag.

7. Pipe Thawing, Battery Charging, And Other Non-welding Applications - Use of a welding machine to thaw frozen water pipes or to do other non-welding work can cause fire, explosion, personal injury and damage to buildings, other equipment, and the welding machine. Do not use any welding equipment for any purpose other than welding.

E. TOXIC FUME PREVENTION
Breathing the fumes created during welding or cutting can cause illness or death, if adequate ventilation is not provided. Provide ventilation in accordance with ANSI Standard Z49.1. See Section J for where to order. Also read warnings located on the containers of welding electrodes and wires and on welding equipment. Do NOT ventilate with oxygen.

Some FUME SOURCES are:

1. Weldments - Metals containing lead, cadmium, zinc, mercury, and beryllium can produce harmful toxic fumes when welded or cut. Adequate local exhaust ventilation must be used for the operator and persons in the area. Use both an air-supplied respirator and exhaust ventilation when welding or cutting beryllium.

2. Coated Weldments - Remove coatings that emit toxic fumes when heated or use exhaust ventilation and/or an air-supplied respirator.

3. Vessels That Have Contained Toxic Materials - Vapors from chlorinated solvents can be decomposed by the arc to form the highly toxic gas called PHOSGENE or other damaging products. The ultraviolet radiant energy of the arc can also decompose trichloroethylene and perchloroethylene vapors to form PHOSGENE. Do not weld or cut unless such containers have been thoroughly cleaned as per AWS Standard A6.0. See Section J for ordering information.

4. Welding Area - Do not weld or cut in locations close to chlorinated vapors coming from degreasing, cleaning or spraying operations. The heat and rays from the arc react with the vapors to form highly toxic PHOSGENE. Work in a confined space only if it is being adequately ventilated, and if ventilation is not adequate, wear an air-supplied respirator (see ANSI 2.37). Do not weld/cut in an area where gas leaks are suspected.

5. Carbon Monoxide - Engine exhaust fumes can kill. Carbon monoxide gas is odorless, colorless, and highly toxic. Pipe or vent the exhaust fumes to a suitable exhaust duct or to the outdoors. Never locate the engine exhaust near an intake duct or air conditioner.

F. BODILY INJURY PREVENTION
Serious injury can result from contact with fans, belts, pulleys, or hot surfaces inside the equipment. Shut DOWN equipment for inspection and routine maintenance. Use extreme care when equipment is in operation for necessary troubleshooting and adjustment. Be sure arc guards are in place and doors are secured before starting to weld.

G. COMPRESSED GAS EQUIPMENT
Follow precautions below and those outlined in CGA Standard P-1, Precautions For Safe Handling Of Compressed Gases In Cylinders. See Section J for ordering information.

1. Cylinders - Handle carefully to prevent damage. Keep away from welding cables or other electrical circuits. Use only cylinders with name of gas marked on them; DO NOT rely on color identification. Close valves on empties and return promptly. Secure cylinders so they cannot be knocked over. Keep temperature below 130°F. Do not refill any cylinder.

2. Hose - Use the type hose designed for the particular gas to be used. Color identification of hoses is: Green for oxygen, black for inert gases, red for fuel gas. Prevent damage to hoses. Replace or repair if worn or cracked. Use recommended fittings.

3. Pressure Regulators - Use the correct regulator for the gas and cylinder at hand. Remove any suspected faulty regulator and return to manufacturer's service center for repair.

4. Cylinder Valves - Open slowly so that regulator pressure increases slowly. When gage is pressurized, leave cylinder valve in these positions: For inert gases and oxygen, open fully; for fuel gas, open to less than one turn so valve can be quickly closed in an emergency.

H. MEDICAL AND FIRST AID TREATMENT
First aid facilities and a qualified first aid person should be available for each shift for immediate treatment of electrical shock victims. A medical facility should be close by for immediate treatment of flash burns of the eye and skin burns.

EMERGENCY FIRST AID

Call physician and ambulance immediately. Use First Aid techniques recommended by American Red Cross.

DANGER - ELECTRIC SHOCK CAN BE FATAL. If person is unconscious and electric shock is suspected, do not touch person if he or she is in contact with welding leads, welding equipment, or other live electrical parts. Disconnect (open) power at wall switch and then use First Aid. Dry wood, wooden broom, and other insulating material can be used to move cables, if necessary, away from person.

IF BREATHING IS DIFFICULT, give oxygen. IF NOT BREATHING, BEGIN ARTIFICIAL BREATHING, such as mouth-to-mouth. IF PULSE IS ABSENT, BEGIN ARTIFICIAL CIRCULATION, such as external heart massage.

IN CASE OF EYEBURN, obtain professional medical attention immediately.

I. EQUIPMENT WARNING LABELS

Inspect all precautionary labels on the equipment. Order and replace all labels that cannot be easily read. Also replace all warning and caution labels when replacing sheet metal parts.

J. ADDITIONAL SAFETY AND HEALTH INFORMATION

For more information, order the following standards or their latest revisions. Take action as applicable:

1. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING. Order from the American Welding Society, P.O. Box 351040, 550 N.W. LeJeune Rd., Miami, Fla. 33125.
2. ANSI Standard Z87.1, SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION. Order from American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.
3. ANSI Standard Z41.1, Standard for Men's Safety-Toe Footwear. Order from same as Item 2.
4. American Welding Society Standard F4.1-80, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES. Order same as for Item 1.
5. OSHA Standard 29 CFR, Part 1910, Subpart Q, WELDING, CUTTING AND BRAZING. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
6. NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING AND CUTTING. Order from the National Fire Protection Association, Batterymarch Park, Quincy, Mass. 02269.
7. NFPA Standard 51B, CUTTING AND WELDING PROCESSES. Order same as for Item 6.
8. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS. Order from the Compressed Gas Association, 1235 Jeff Davis Hwg., Arlington, Virginia 22202.
9. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING. Order from Canadian Standards Association, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Instruction 910081
Sept 10/79
Revised Oct 17/79 - V1509
Revised Jan 21/81 - X0056
Revised Jan 17/83 - Z0052
Revised May 30/84

Instructions

CHAPTER 1

RECEIPT OF EQUIPMENT

Check the equipment received against the invoice to make certain that the shipment is complete and undamaged. If the equipment has been damaged in transit, notify the carrier (railroad, trucking company, etc.) at once and file a claim for damages. If you require assistance with a damage claim, furnish PowCon Incorporated with full information about the claim. If the shipment is in error, contact: Shipping Department, at PowCon Incorporated 8123 Miralani Drive, San Diego, CA 92126.

Give the MODEL, SPECIFICATION, and SERIAL numbers of the equipment, and a full description of the parts in error.

Best results will be obtained with this equipment ONLY if the responsible operating and maintenance personnel have access to this manual, and are familiar with the instructions contained herein. Additional copies may be obtained at a small cost per copy by writing to: PowCon Incorporated 8123 Miralani Drive, San Diego, CA 92126. Be sure and give the SPECIFICATION, SERIAL, and MODEL numbers of your equipment, the number of this manual, and number of copies desired when ordering additional manuals.

Generally, it is good practice to move the equipment to the site of installation before uncrating. Use care in uncrating in order to avoid damage to the equipment when bars, hammers, etc., are used.

DESCRIPTION OF EQUIPMENT

GENERAL

The Power Drive II Wire Feeder is a modular unit, consisting of a Control Box Assembly, Feedhead Assembly, and Wire Spool Support mounted on a common baseplate. The components are covered by a sheet metal wrapper, which provides protection for the control components, and the wire feedhead assembly. The control box is not complete in itself, but needs the feedhead mounting plate to close in the side of the box where the feedhead assembly attaches. (An optional side panel may be secured to close in this side for remote mounting.)

SPEC.	MODEL	FEED ROLLS	WIRE FEED RATE
601104-001	Power Drive II	2	60-600 IPM

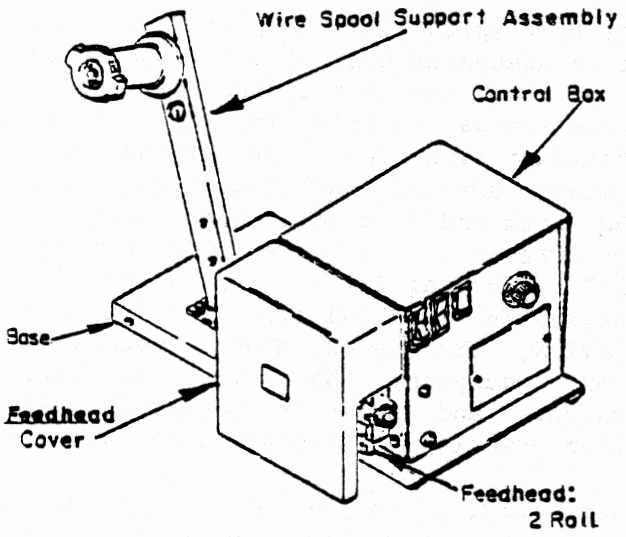
Table 1

FEEDHEAD ASSEMBLY

The feed roll drive motor is solid-state controlled on these units. One of either of two different motors (see Parts List for numbers of each) are used, depending upon which wire feed rate is desired. See Table 1 for correlation of numbers.

The assemblies consist of Feed Rolls (which are made up of a Gear and Feed Roll) for various wire types and/or sizes, Wire Input Guide, Output Guide, Feedhead Mounting Plate, and Pressure Arm assembly. The drive motor is 115 volt DC. See Feedhead Assembly section for details on the Feedhead Assembly. See Feed Roll Kit drawing 601102-X in Chapter 2 for selecting part numbers for the Feed Rolls, Wire Guides, Contact Tubes, etc.

FEEDHEAD ASSEMBLY (Continued)



Wire Feeder Assembly
Figure 1

CONTROL BOX ASSEMBLY

The Control Box contains control and connection for the operation and component hook-up with the particular welding system it is being used with.

WIRE REEL SUPPORT ASSEMBLY

The Support bolts in place at the rear of the baseplate. See Addendum in Chapter 2 for details on the installation and operation of the wire support assembly.

BASEPLATE

See Baseplate Assembly section for details on the baseplate used for this wire feeder when assembled to make the subject model configuration.

OPTIONS

The following list of options are available to be used with this wire feeder and control box assembly. Some options are kits, while others are individual items.

1.	Wire Feeder Base Assy	601104-007
2.	Caster Assembly for Base	601105-001
3.	Swivel Assembly for Base	601105-002
4.	Spool Support Assembly	601106-001
5.	Reel Support Assembly	601105-003
6.	Spool Kit	601107-001
7.	Reel Kit	601108-001
8.	Coil Adapter - 60#	601105-004
9.	Coil Adapter - 10#	601105-005
10.	Coil Adapter - 14#	601105-006
11.	Coil Adapter - 15#	601105-007
12.	Spool Cover - 30#	601105-008
13.	Spool Cover - 60#/ Lifting Eye	601105-009
14.	Lifting Eye	601105-010
15.	Burnback Timer	601105-011
16.	Preflow/Postflow/Burnback	601105-012
17.	Preflow/Postflow/Burnback/ Spot	601105-013
18.	Spot-Burnback/Stitch	601105-014
19.	Inch/Purge Switch (Variac)	601105-015
20.	Inch/Purge Switch (Solid-State)	601105-016
21.	Forward/Reverse Switch	601105-017
22.	Ground Fault Protection	601105-018
23.	Remote Speed Control 15'	601105-019
24.	Remote Speed Control 25'	601105-020
25.	Remote Speed Control 50'	601105-021
26.	Handle	601105-022
27.	Control Cable Ext. 15 Ft.	601105-023
28.	Control Cable Ext. 25 Ft.	601105-024
29.	Control Cable Ext. 50 Ft.	601105-025
30.	Control Cable Ext. 75 Ft.	601105-026
31.	Power Cable Ext. 15 Ft.	601105-027
32.	Power Cable Ext. 25 Ft.	601105-028
33.	Power Cable Ext. 50 Ft.	601105-029
34.	Power Cable Ext. 75 Ft.	601105-030
35.	Feed Roll Kits	601102-X
36.	Water Valve	601105-031
37.	Control Lock	601105-032
38.	MIG-KWIK 5 Gun Adapter Kit	601103-001

NOTE: For installation and operation instructions for the above options, see drawings and instructions furnished with each kit. The Welding Gun and Cable assembly used with the Feedhead in this manual will be covered by an Owner's Manual.

INSTALLATION

The components which comprise the Power Drive II Wire Feeder (see Figure 1) are documented separately in Chapter 2. Only the components which are utilized for this model Wire Feeder are located there.

OPERATION

PREWELDING CHECKS

Before attempting to operate the Power Drive II Wire Feeder, make certain that all installation instructions, including those for the welding machine (power source), and the welding gun and cable, have been carried out.

1. With the power source turned ON and the Wire Feeder connected to power supply (115 volts, 3 amp, 50/60 Hz), adjust the flow of shielding gas.

> WARNING: When the gun switch is depressed, the electrode (welding wire) is electrically "hot". Do not permit it to touch any metal or a welding arc may be established which may be injurious to someone's eyes (flash) to skin (burn).

2. Adjust the Weld Power setting on the power source to desired value. The gun switch must be triggered to close power source contactor.

> NOTE: The Weld Power setting is independent of the open circuit voltage. This is because of the converter technology used in the PowCon line of power supplies. See the instruction manual for the power source to determine various connections and settings for the desired operation.

3. Adjust the wire feed speed to the desired value by means of the Wire Feed Speed Control.

> NOTE: Maximum and minimum feed rates are established at the factory. For any change, consult a factory representative, or contact the PowCon Inc. Technical Service Department.

WELDING

1. Position the gun above the workpiece and pull the gun switch trigger.

2. Releasing the gun switch trigger will cause the wire to stop feeding. If Burnback feature is present, the welding contactor will open, and the gas will stop flowing, after a fixed time delay.

3. When the welding has been completed, or at the end of the work day, it is recommended that the gas be shut OFF at the cylinder, and the welding power source be turned OFF.

MAINTENANCE

Maintenance of this equipment is dealt with in the publication sheets for each component. See these sections in Chapter 2 of this manual.

Parts Lists for the composite assembly and the various components will be found in Chapter 3 of this manual.

CHAPTER 2

COMPONENTS SPECIFIC TO WIRE FEEDER POWER DRIVE II

This chapter contains various publication sheets or material specifically related to components comprising the wire feeder by the model number shown on the Front Sheet, and in the opening statement under DESCRIPTION OF EQUIPMENT in Chapter 1.

These sections will not have page number continuity, but are numbered in each separate section by assembly number. In some cases, a Parts List will accompany the publication, but usually the Parts List for these components will be found in Chapter 3 under PARTS LISTS.

Parts List

CONTROL BOX ASSEMBLY

601104-005A

DESCRIPTION
INSTALLATION
OPERATION
MAINTENANCE

CONTROL BOX ASSEMBLY NO. 601104-005A DESCRIPTION, INSTALLATION, OPERATION, MAINTENANCE

DESCRIPTION

The Control Box assembly is the control medium for the operation of the Feedhead. Wire Feed Speed rate (IPM Inches-per-minute) is selected and regulated by the knob (potentiometer) on the front panel. The box is designed to function as a component of the Power Drive II Wire Feeder composite assembly, or as remote-mounted control medium, not situated close to the Feedhead. A side panel is available to replace the Feedhead Mounting Plate (see Fig. 1) when used in a remote situation.

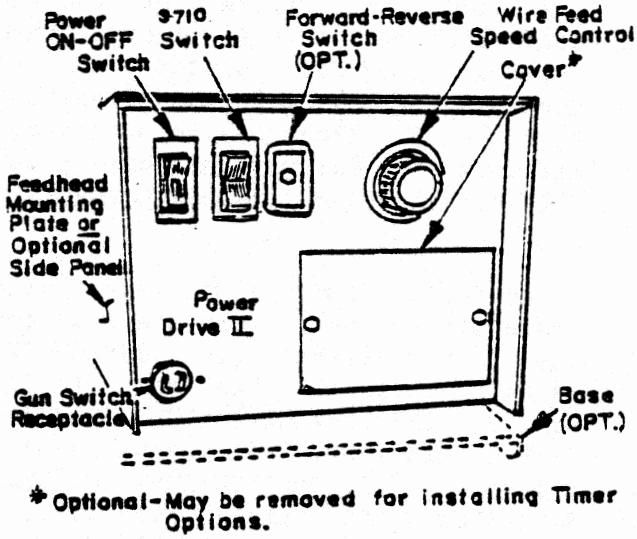


Figure 1

CONTROLS AND CONNECTIONS

WIRE FEED SPEED Control (On front panel) - Controls rate in IPM of the wire feeding through the feed rolls.

POWER ON-OFF Switch (On front panel) - This red transparent rocker switch/lamp controls only the wire feeder, and not the welding machine. It is used as an ON-OFF power switch, but also serves as a circuit breaker. To reset power to the wire feeder, allow for a several second time delay.

GUN SWITCH Receptacle - Connection point for the gun switch leads to control wire feeding function from the welding gun.

START CONTROL Switch (On rear panel) - Determines the acceleration time for wire speed (.25 second for 0 to Wire Feed Speed Control setting in FAST; .4 second in SLOW).

SHIELDING GAS INLET - Connection point for supply of shielding gas to the solenoid gas valve, located inside the control box. The solenoid valve then regulates the gas to the welding gun.

POWER AND CONTROL CABLES - One of the cables connects onto the Remote Control receptacle on the front panel of the welding machine, and the other one is the 115 volt power supply cable, to be plugged into the 115 volt supply receptacle on the welding machine front panel.

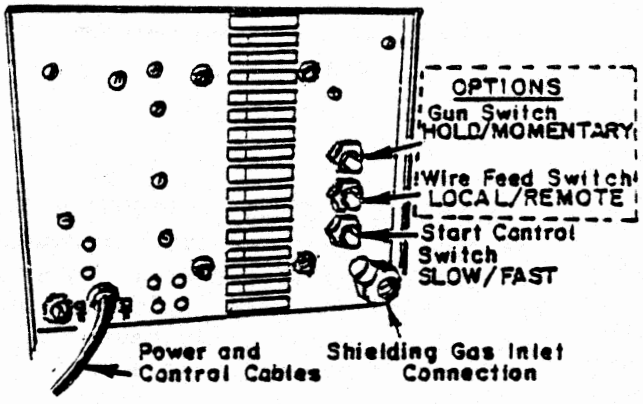
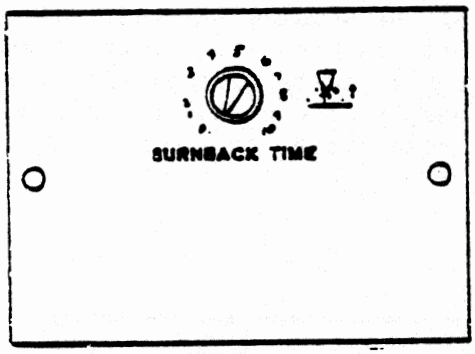


Figure 2

OPTIONS - There are a number of controls, switches, and a control panel cover (see Fig. 1) which can be replaced (either factory or field-installed) to provide for the installation of several timers. These optional timers, located on the panels, are shown below in Figures 3, 4, 5, and 6. These may be obtained in kit form (see Kit part numbers in text below), to replace the blank cover.

OPTIONAL TIMERS - On the solid-state Control Box, there are four combinations available. (1) BURNBACK TIMER (Kit #601105-011) as shown in Figure 3; (2) PREFLOW/POSTFLOW/BURNBACK TIMERS (Kit #601105-012), as shown in Figure 4; (3) PREFLOW/POSTFLOW/BURNBACK/SPOT TIMERS (Kit #601103-013), as shown in Figure 5, (4) STITCH ON-ARC SPOT TIME/STITCH OFF-BURNBACK TIME/SPOT-CONTINUOUS-STITCH Switch (Kit #601105-014), as shown in Figure 6.

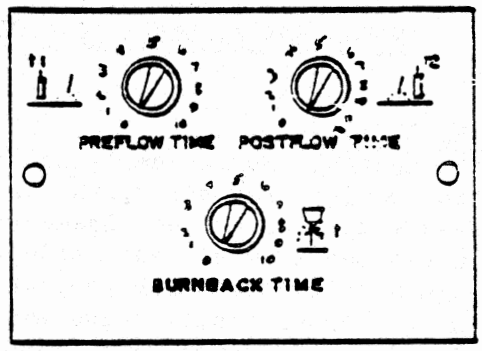


Kit 601105-011

Figure 3

BURNBACK TIMER (OPTION) - Select the time allowed for wire burnback at the conclusion of the arc. This helps to overcome the wire "sticking" at the end of a weld. Adjustment of the burnback time may be made from .1 to 1.0 seconds.

PREFLOW TIMER - Controls time duration (.2-2 seconds) of gas flow prior to establishment of the welding arc.



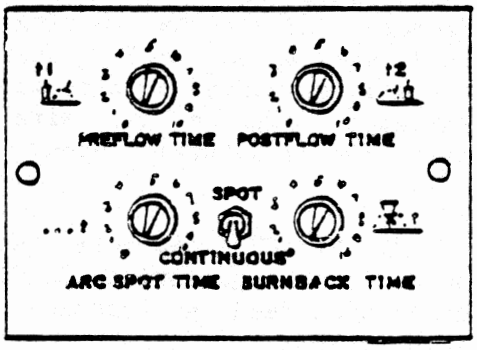
Kit 601105-012

Figure 4

POSTFLOW TIMER - Controls time duration (.2-2 seconds) of gas flow following the extinguishing of the welding arc.

BURNBACK TIMER - See BURNBACK TIMER above (.1 to .9 seconds).

NOTE: Turning these knobs clockwise will increase the time duration of each function.



Kit 601105-013

Figure 5

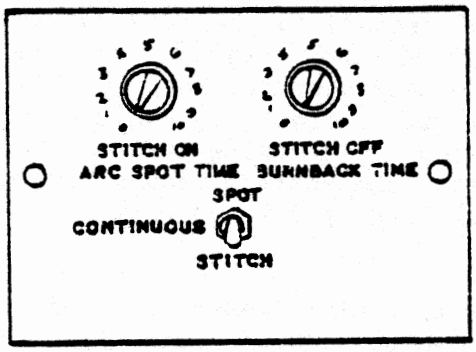
PREFLOW TIMER - See above.

POSTFLOW TIMER - See above.

BURNBACK TIMER - See above.

ARC SPOT TIME - This control regulates time duration of a spot weld cycle to .2-2 seconds. Make sure that the SPOT-CONTINUOUS Switch is in the SPOT position for spot welding.

SPOT-CONTINUOUS Switch - Place this switch in SPOT position for spot welding, and in CONTINUOUS position for regular or FCAW welding.



Kit 601105-014

Figure 6

SPOT-CONTINUOUS-STITCH Switch - This switch selects one of the three modes of operation made possible by this option. Switch position determines which of the two timers (below) will function. Note the switch positions, and the related timing functions.

SPOT position - In this mode of operation, the STITCH ON/ARC TIME Control (upper left on panel) is used to control the Spot time with a range of .2 to 2.0 seconds. The STITCH OFF/BURNBACK Control (upper right on panel) is used to control Burnback time, with a range of .03 to .3 seconds.

CONTINUOUS position - In this mode of operation, the above controls are inoperative. However, a fixed Burnback time of approximately .2 seconds is designed into the unit.

STITCH position - In this mode of operation, the STITCH ON/ARC SPOT TIME Control is used to control the ON time of the wire feeder with a range of .2 to 2.0 seconds. The STITCH OFF/BURNBACK TIME Control is used to control the OFF time of the wire feeder with a range of .2 to 2.0 seconds. The unit will cycle OFF and ON *as long as* the gun switch is kept *energized*. When the gun switch is *deenergized*, a fixed Burnback time of .2 seconds results. Since the power source is always turned ON during the OFF time (of the cycle), this mode of operation is *not* recommended for welding processes and/or power sources where the open-circuit voltage exceeds 30 volts.

INCH-PURGE Switch (Optional) - See Fig. 1. When held in the INCH position, wire will feed at the rate determined by the WIRE FEED SPEED Control. When it is in the PURGE position, shielding gas will flow through the welding gun.

FORWARD-REVERSE Switch (Optional) - See Fig. 1. When in the FORWARD position, the wire will feed out of the welding gun, when INCH Switch is actuated. In REVERSE, the wire will retract from the gun and cable, and back through the feed rolls, when INCH Switch is actuated.

OPTIONS ON THE REAR PANEL

GUN SWITCH (HOLD/MOMENTARY) - See Figure 2 - In HOLD position, wire electrode will feed continuously after pressing gun switch (on the welding gun) momentarily, then releasing it. To stop wire feeding, and break the arc, press gun switch again momentarily, and release. In MOMENTARY position, the wire electrode will feed only when gun switch is depressed.

WIRE FEED Switch - (LOCAL-REMOTE) - In LOCAL position, the wire feed speed will be regulated by the WIRE FEED SPEED Control on the front panel of the Control Box. In REMOTE position, it will be regulated by a control in a remote pendant, foot switch, or other control medium.

INSTALLATION

LOCATION - For best operating characteristics and longest unit life, take care in selecting an installation site. Avoid locations exposed to high humidity, dust, high ambient temperatures, or corrosive fumes. Moisture can condense on electrical components, causing corrosion or shorting of circuits. Dirt on components helps retain this moisture and also increases wear on moving parts.

CONNECTION TO POWER SOURCE - Two cables are hard-wired into the control box, and exit from the rear panel. Both are tied into one housing, which plugs into the REMOTE connector on the front or rear panel (depending on the model you have purchased) of the power supply. This cable provides 115 V power to the wire feeder, and also provides contactor control via the gun switch.

AS A REMOTE CONTROL BOX

This Control Box may be remotely located (away from the Feedhead and Spool Support assembly) at some distance from the weld site. In this case, the side of the Control Box which accommodates the Feedhead Mounting Plate (when used as a composite wire feeder) has an optional side panel supplied, which closes the box in. Extension cables must then be used to connect the Control Box to the Wire Feedhead and the Power Source.

OPERATION

This Control Box is not an entity component in itself, but must be used with other components in the above situation or as part of the composite wire feeder. See the Owner's Manual supplied for the particular application where the Control Box is used.

THEORY OF OPERATION - See Connection Diagram 601104-011 - These units use a solid-state control circuit. Armature voltage feedback and IR compensation furnish a very constant wire feed speed independent of line voltage variation or load. Selectable ramp rates are provided to control the run-in speed of the motor. (See START CONTROL Switch under DESCRIPTION.) In the FAST position (see switch location on Fig. 2) it requires approximately 0.25 seconds to go from *no speed* to *selected speed* (as set by the Wire Feed Speed Control), and in SLOW position it takes approximately 0.4 seconds. A current limit circuit limits the maximum motor current to approximately 2.7 amperes.

With the wire feeder plugged into a 120 volt power supply (P2), depress the upper part of the Power ON-OFF Switch (Circuit Breaker, S1) to turn the unit ON. Power is supplied to the control transformer (T1) and to the solid-state control module through CR1.

> NOTE: If Circuit Breaker trips, it turns the Power Switch S1 to OFF position. A short cooling period must be allowed before an attempt is made to reset the unit.

When the gun switch is depressed, receptacle (J1) is shorted, the gas valve (L1), and a relay on the PC Board are energized by power supplied from the transformer (T1). The relay provides a closure to turn ON the power source (welding machine) through pins A and B on the control plug (P1). Another set of contacts on the relay enables the solid-state control circuit, and applies power to the motor terminals via TB3-2 and TB3-4 through the current feedback resistor (R4). R2 and C1 provide current filtering for the motor. Current feedback is provided by R4, and voltage feedback is provided by R3. Releasing the gun switch (removing the short across J1) stops all functions.

THEORY OF OPERATION (Continued)

When the gun switch is deenergized, the solid-state power supply is disabled and a solid-state switch is turned ON and shorts the armature through the braking resistor (R1) and current feedback resistor (R4) to provide dynamic braking.

Provision for changing the wire feeder from operating on a standard PowCon power source to a power source which requires 120 volts AC power to be supplied to the contactor is made by use of terminal strip (TB2) terminals 14, 15, and 16. For standard PowCon power source, connect unit per Connection Diagram. This is the way it is wired at the factory. *To change to 120 volt AC contactor in a welding machine (power source), remove white wire from TB2-14 and connect it to TB2-15; remove red and orange wires from TB2-14 and move them to TB2-16.*

MAINTENANCE

CLEANING - Periodically blow out the Control Box with clean, dry, compressed air with no more than 25 psi (172 kPa) pressure. Use care not to strike any of the parts (switches, controls, etc.) with the air hose nozzle.

See Troubleshooting Chart which follows for details on problems in that area.

TROUBLESHOOTING

The following chart contains information which can be used to diagnose and correct unsatisfactory operation or failure of various components of the unit. Each malfunction is followed by a suggested checking or inspection procedure.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. Wire feed motor does not operate; pilot light is lit.	Step 1: Check for tripped circuit breaker.	Reset ON-OFF switch.
	Step 2: Check for power to wire feeder.	Check 115 V input power cable connections at power source.
		Must measure 115 V AC from TB2-16 to TB2-15 in feeder.
2. Wire feed motor does not operate and pilot light is lit.	Step 1: Check to see if control relay on motor control board is operating.	Check control cable connection from gun to feeder. Check gun switch.
	Step 2: Check to see why feedrolls are mechanically restricted and control is operating at current limit.	Check feedrolls and related items for restrictions and correct condition.
	Step 3: Check for faulty 24 volt transformer or loose connections.	Check output of 24 volt transformer. Must have 24 V AC from TB2-12 to TB1-6. Check connections between transformer, terminal strip, gun switch receptacle and motor control board.
	Step 4: Check for defective motor control board or wiring.	With control at max. and with gun switch energized, check the following:

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. Wire feed motor does not operate and pilot light is lit. (Continued)

Step 4: (Continued)

1. Must measure approximately 108 V DC from J3-1 to J3-5.

2. Must measure approximately 115 V DC from TB2-9 to TB1-5.

3. Must measure approximately 10 V DC from J4-5 to J4-9.

Step 5: Check for defective bridge rectifier.

Must measure approximately 115 V DC from CR1 (+) to CR1 (-).

Step 6: Check for defective timer module (optional) or incorrect timer module installation.

Check instructions for proper installation. Replace module if defective.

Step 7: Check for defective forward-reverse switch (optional) or incorrect installation.

Check for proper installation. Replace if required.

Step 8: Check for defective inch-purge switch (optional) or incorrect installation.

Check installation instructions. Replace switch if defective.

3. No speed control

Step 1: Check for defective control potentiometer.

With gun switch energized, voltage from J4-5 to J4-9 must vary from 0 to approximately 9.5 V DC as control is turned from min. to max. Voltage from J4-3 to J4-9 must be approximately 9.5 V DC continuously.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. No speed control. (Continued)

Step 2: Check for loose knob on control potentiometer.

Tighten knob.

Step 3: Check for defective Slow/Fast run in switch.

With gun switch energized, must measure approximately 2 volts from J4-6 to J4-8.

Step 4: Check defective motor control board.

Replace.

Step 5: Check for no feedback from R3.

With unit running, measure voltage from TB3-3 to TB2-10. Must vary from approximately 0.32 to 5.86 V DC as control is varied from min. to max.

4. Wire feed motor operates but wire does not feed.

Step 1: Check for too little pressure on wire feed rolls.

Increase the pressure adjustment on the wire feed roll pressure plate.

Step 2: Check for incorrect wire feed rolls.

Check size stamped on wire feed rolls.

Step 3: Check to see if wire spool brake pressure is too great.

Decrease the drag on the wire spool.

Step 4: Check for restriction in gun and assembly.

Examine cable, gun and contact tip for damage and correct size contact tip and cable liner if used. Clean liner by blowing air through it.

Step 5: Check for failed insulator on feedroll. Shaft turning inside insulator.

Replace insulator gear assembly.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. Wire wraps around the wire drive rolls.

Step 1: Check for too much feed roll pressure.

Decrease the pressure adjustment on the wire feed roll pressure plate.

Step 2: Check alignment on center guide or output guide - not correctly aligned.

Realign center guide and output guide.

Step 3: Check to see if correct cable liner or current contact tip.

See table in Gun Manual for correct size.

6. Wire feeds but no gas flows.

Step 1: Check for loose or broken wires to gas valve solenoid.

Gas valve terminals must measure 24 V AC across them when gun switch is energized. Check wiring to gas valve if no voltage is obtained.

Step 2: Check to see if gas cylinder valve open or flow meter adjusted.

Open gas valve at cylinder and adjust flow meter.

Step 3: Check to see if gas cylinder is empty.

Replace.

Step 4: Check for restriction in gas line.

Check gas hose between flow meter and wire feeder, and gas hose in gun and cable assembly.

Step 5: Check to see if gun nozzle is plugged.

Clean gun nozzle.

Step 6: Check for failure of gas valve solenoid.

Replace.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. Wire feeds but no gas flows. (Continued)

Step 7: Check for defective timer module (optional) or option not installed correctly. (For Option Panels with Preflow and Postflow only.)

Check installation instructions. Replace module if defective.

Step 8: Check for defective inch-purge switch (optional) or incorrect installation.

Check installation instructions. Replace switch if defective.

7. Erratic weld output.

Step 1: Check to see if ground clamp is loose at work connection.

Check ground clamp for secure attachment.

Step 2: Check to see if gun liner is dirty.

Replace if necessary.

Step 3: Check to see if voltage and wire feed speed settings are correct.

Readjust as necessary.

FFEDHEAD ASSEMBLY

601104-006

DESCRIPTION
INSTALLATION
OPERATION
MAINTENANCE

FEEDHEAD ASSEMBLY NO. 601104-006 DESCRIPTION, INSTALLATION, OPERATION, MAINTENANCE

DESCRIPTION

The two-roll (Drive Gear/Feed Roll and Idler Gear/Feed Roll) feedhead assembly consists of two gear/feed rolls (items 2 and 3, Fig. 1) for various types and sizes of wire. See Feed Roll Kit (601102-X), wire input guide (item 1), output guide (item 4), Feedhead Plate (item 5) and pressure arm assembly (item 6). The drive motor is 115 volt DC, controlled either by solid-state or variac speed control. See the data on the particular model which will be found in Chapter 1 of the manual of which this sheet is a part.

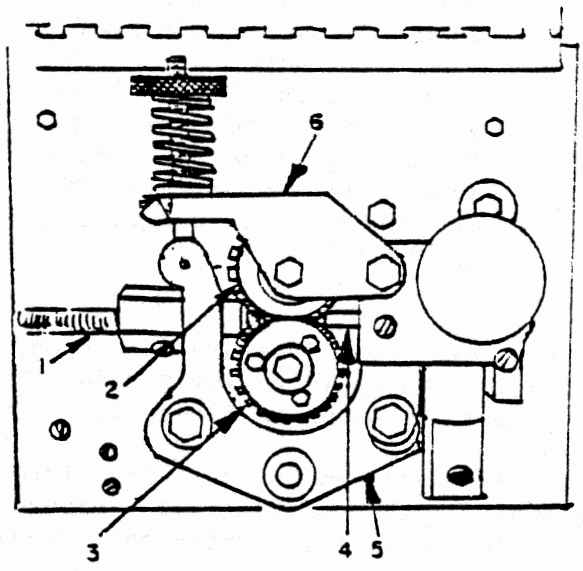
Wire sizes from 0.030-inch (0.76 mm) diameter to 1/8 inch (3.18 mm) may be fed with selection of proper feed rolls. See Feed Roll Kit (Drawing 601102-X, furnished directly following this publication) for feed roll configuration and proper feed rolls for given sizes and types of wire.

The Solenoid (Gas Control) Valve is located on the back side of the Feedhead Plate. A fitting for gas supply extends through the back panel of the Control Box (see publication in Chapter 2 for the particular Control Box being used).

INSTALLATION

The feedhead assembly becomes a part of the modular assembly which includes a control box assembly, and a wire support assembly which may be mounted on a common baseplate, or remotely mounted, as on a boom unit. See Chapter 1 of the Wire Feeder Owner's Manual for details on the entire assembly. The Base Assembly section may be referred to for information on the base (601104-007) if it is used.

LOCATION - For best operating characteristics and longest unit life, take care in selecting an installation site. Avoid locations exposed to high humidity, dust, high ambient temperature, or corrosive fumes. See Chapter 1 under INSTALLATION.



1. Input Guide
2. Idler Gear/Feed Roll
3. Drive Gear/Feed Roll
4. Output Guide
5. Feedhead Plate
6. Pressure Arm Assembly

Figure 1

CONNECTIONS - The electrical connections for the wire feeder are made inside the Control Box. Refer to the Connection Diagram for the Control Box for connection points.

INSTALLATION OF WELDING WIRE SPOOL - See Addendum Instruction Sheet for details.

ADJUSTMENT OF SPOOL TENSION - Adjust the tension on the Wire Spool so that the wire will feed freely into the feedhead (feed rolls), but will not "coast" when wire feeding stops. Tighten or loosen the Hub Tension Screw accordingly.

THREADING WIRE INTO FEEDHEAD - Refer to Figure 2.

INSTALLATION (Continued)

CAUTION: Use care in handling the spooled wire as it tends to "unravel" when loosened from the spool. Grasp end of the wire firmly, and don't let it get away from you. Make sure that the end of the wire is free of burrs, and is straight.

1. Loosen the Pressure Arm Knob, and raise the Pressure Arm to its UP position, as shown in Figure 2.

2. Place the end of the wire into the Input Guide, feeding it through the guide and over the drive roll groove.

3. Pass the wire into the Output Guide and on into the Gun Cable. See Owner's Manual for the Gun and Cable Assembly.

4. Make sure that the wire is directly over the groove in the feed roll and close the Pressure Arm. Lock it in place with the Pressure Arm Knob.

NOTE: See ADJUSTING FEED ROLL PRESSURE and Chart 1 for tension adjustment information.

INSTALLING GUN AND CABLE ASSEMBLY - Refer to Figure 3. The Feedhead is designed for use with a Tweco #4 MIG KWIK Gun and Cable. To install this gun, simply loosen the Gun Receptacle Knob and insert the gun Quick Connect Receptacle into the feedhead until it "bottoms out" against the Output Guide, and tighten Gun Receptacle Knob. See "A" and "B" assemblies on Figure 3.

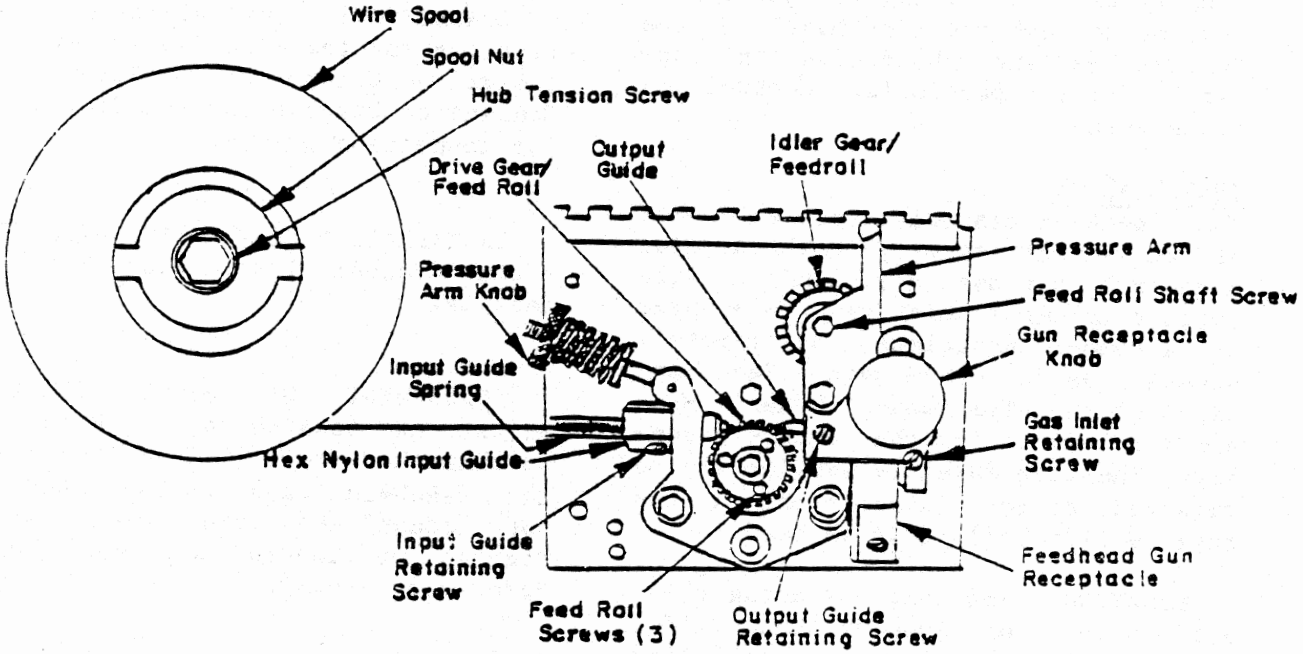


Figure 2

INSTALLATION (Continued)

If a MIG-KWIK 5 Gun and Cable is to be installed, the Gun Sleeve must be removed, the Gas Inlet must be removed and replaced with another one. See "B" on Figure 3. The Gas Inlet comes in a kit (601103-001). To install the MIG-KWIK 5 Gun and Cable, proceed as follows:

1. Remove the Gun Receptacle Knob.

2. Remove the two retaining screws which secure the Gas Inlet into the Feedhead Plate. This allows the Gas Inlet to pull straight out.

3. Hold the Gas Tube (with hose attached) and turn the Gas Inlet counterclockwise to unscrew and remove it. Screw the Gas Tube into the Gas Inlet provided in kit 601103-001, but do not yet install the Gas Inlet into Feedhead.

4. Hold the Gun Receptacle and remove the Gun Sleeve (used only on the TWECO #4 MIG-KWIK). Lower the Gun Receptacle.

> NOTE: If the Gun Sleeve does not come out easily, insert a screwdriver into the slot (see Fig. 3) and gently but firmly pry the sleeve out.

5. Slide the new Gas Inlet (with Gas Tube installed) into place, making sure that the wire groove goes in first (wide groove toward feed rolls).

6. Replace the Retaining Screws to secure the Gas Inlet into place.

> NOTE: When the MIG-KWIK 5 Gun and Cable is installed, it may be necessary to change the Output Guide, depending upon new wire size. See instructions for changing Output Guide in INSTALLATION FEED ROLLS AND GUIDES.

7. Raise the Gun Receptacle and reinstall the Gun Receptacle Knob. Do not tighten yet.

8. Insert the quick-connect receptacle on the Gun Cable into the Gas Inlet, and tighten the Gun Receptacle Knob to a "snug" position. See Gun and Cable Manual for details on these parts.

9. Attach ELECTRODE lead to the Gun Receptacle by use of a bolt in the threaded hole at the lower end of the receptacle.

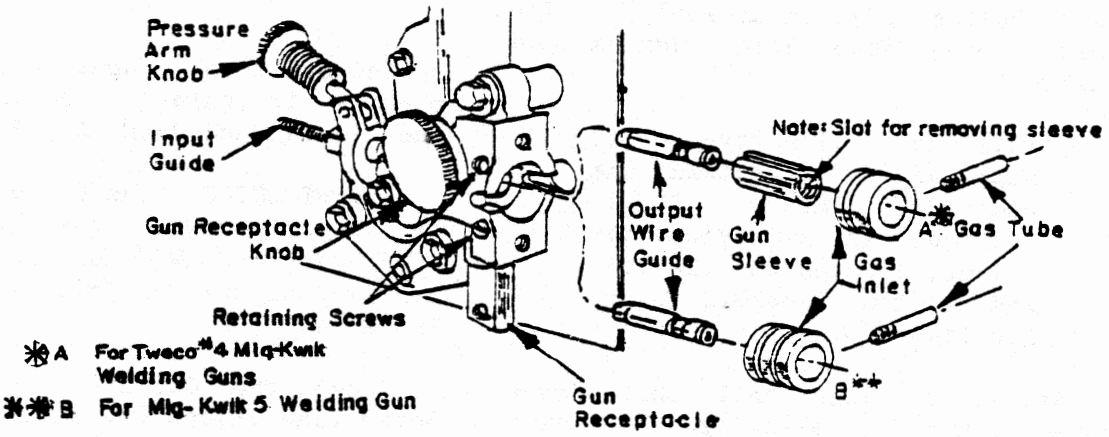


Figure 3

INSTALLATION (Continued)

INSTALLING FEED ROLLS AND GUIDES - Feed Rolls, Input Guides, and Output Guides are supplied in Feed Roll Kit 601102-X depending upon wire size, wire type, and Feed Roll style. Follow the procedure below for initial installation or changing Feed Rolls and/or guides for different wire size or type. See Figure 2 for reference to components below.

NOTE: When Feedhead assembly is shipped from factory, the Feed Roll Screws (quantity of 6) are placed separately in a cloth bag and furnished with the Feedhead assembly.

FEED ROLLS

1. Locate and open the cloth bag with the six Feedhead Screws (#8-32 x 1" allen socket-head screws).

2. Select proper Feed Rolls and Guides. See 601102-X and determine the proper dash (-) number for wire type, Feed Roll style, Feed Roll part number, Output Guide, and Input Guide part numbers.

3. Loosen the Pressure Arm Knob and lift the Pressure Arm to full open position.

4. Install proper Feed Roll on Drive Gear (bottom gear on assembly). Insert three Feed Roll Screws and tighten.

NOTE: An allen wrench is supplied for tightening the Feed Roll Screws. It is "stored" in a nylon retainer, located on the rear end of the Feedhead Cover. See Figure 4.

5. Remove the Feed Roll Shaft Screw (see Figure 2), allowing the Idler Gear (upper gear) with bearing assembly, to be removed.

6. Install proper Feed Roll onto the Idler Gear (top gear on the assembly). Insert three Feed Roll Screws, and tighten to "snug" position.

NOTE: When installing a Style 4 (see Fig. 7) Feed Roll, which is made up of two pieces, be sure and place the narrow piece on the Gear first. This makes the groove line up with the Guides.

7. Reinstall the Idler Gear/Feed Roll onto the Pressure Arm. Tighten the Feed Roll Shaft Screw.

INPUT GUIDES

1. Loosen the Input Guide Retaining Screw and pull the Input Guide Spring (item 1, Fig. 1) out of the hex nylon Input Guide.

2. Insert the steel or nylatron Input Guide into the hex nylon Input Guide.

NOTE: The hex nylon Input Guide is a holding device for the Input Guide Spring and the Input Guide which is supplied in the FEED ROLL AND GUIDES KIT (601102-*).

*The dash number denotes which Feed Rolls and Guides are furnished.

3. Reinstall the Input Guide Spring, pushing it against the Input Guide, and tighten the Retaining Screw.

OUTPUT GUIDE - The Output Guide may be installed with the Gun Sleeve (TWECO #4 MIG-KWIK Gun and Cable Assembly) and the Gas Inlet (all models) in place.

1. Loosen the Output Guide Retaining Screw (see Figure 2), and turn it out far enough to allow the Guide to slide in or out.

INSTALLATION (Continued)

2. Use a piece of welding wire to support and insert the Guide, or use a pair of long-nosed pliers and insert the Guide into place.

3. Tighten the Retaining Screw, making sure that it seats in the groove in the Guide.

4. Proceed to install the Gun and Cable assembly as detailed above under INSTALLING GUN AND CABLE ASSEMBLY.

OPERATION

The operation of this feedhead is a function of the wire feeder assembly of which it becomes a part. See Chapter 1 of the Wire Feeder Manual for details which affect this operation.

MAINTENANCE

CLEANING - Periodically blow off the feedhead assembly with clean, dry, compressed air of not more than 25 psi (172 kPa) pressure. Use care to not strike component parts of the feedhead with the air hose nozzle.

CLEANING OF THE FEED ROLLS AND GEARS - Clean the grooves on the feed rolls and teeth on the gears at frequent intervals. This operation can be done by using a small wire brush. To clean the wire groove, loosen the Pressure Arm Knob and raise the Pressure Arm. Remove the wire from the feed rolls. Clean the gear teeth and check the screws which hold the feed rolls on the gears.

FEEDHEAD MAINTENANCE - The only point of maintenance in the feedhead assembly is the motor brushes. To inspect and/or change the brushes, the feedhead assembly must be removed from the Control Box (in the Power Drive II composite assembly). See Figure 4 and instructions for removing feedhead and motor from Control Box.

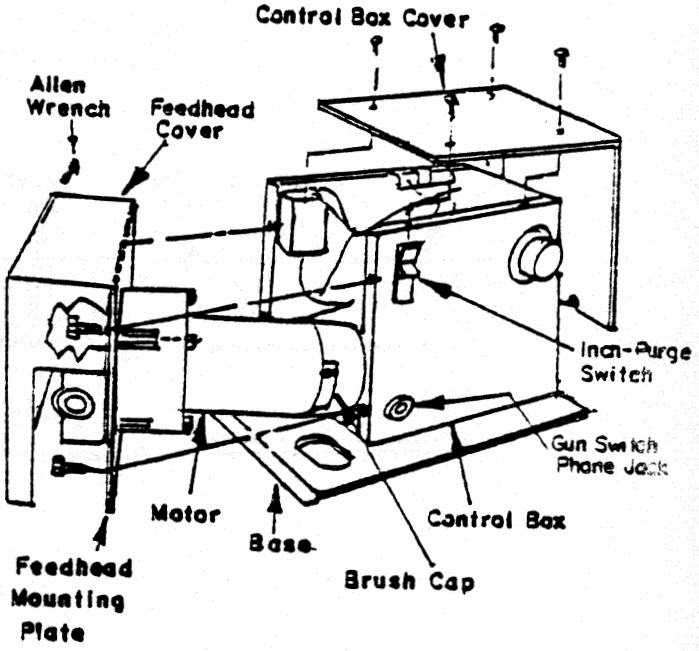


Figure 4

NOTE: There are two possibilities for wire feed motors, depending upon which manufacturer's stock was used for the particular assembly. The removal from the Control Box is the same for both motors, but the procedure for changing brushes is different.

1. Remove four screws from the top of the Control Box which holds the Control Box Cover in place. Loosen the screws (2) at the bottom of the Cover, to allow the Cover to slip up off from the screws in the slots provided.

2. Remove the four screws and lockwashers which secure the Feedhead Mounting Plate to the side of the Control Box. This will allow the Feedhead assembly (including the motor) to pull straight out of the Control Box, to a position (see Fig. 4) where the motor brushes may be serviced.

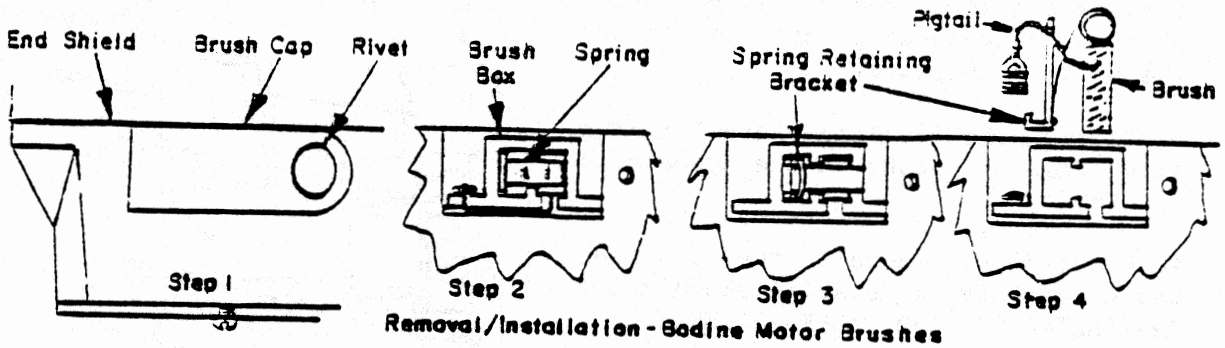


Figure 5

MAINTENANCE (Continued)

BODINE MOTOR BRUSH INSPECTION AND INSTALLATION - See Figure 5 - Inspection of the brushes should be done about every 300 hours of operation. When brushes are worn to about 3/8 inch (9.5 mm) in length, new brushes should be installed. (Refer to Parts List for brush part numbers.) See Figure 5 for following procedure.

> CAUTION: Neglect in brush maintenance may cause damage to commutator in the motor if allowed to wear away completely.

1. See Step 1 on Figure 5. Lift and remove the Brush Cap by prying the Rivet out of the hole in the End Shield. This will reveal the brush assembly in place as in Step 2.

2. See Step 3. Grasp the Spring Retaining Bracket with long-nosed pliers. Push the Retaining Spring *down* and toward the brush slightly. When the Bracket is felt to unhook from the Brush Box, lift the Retainer/Spring out.

3. See Step 4. Using the long-nosed pliers, grasp the connector on the end of the brush pigtail and pull it straight *up*, disconnecting it from the clip on the side of the Brush Box. The Brush may be removed at this time.

> NOTE: Blow dirt and any foreign matter out of the Brush Box with compressed air of not more than 25 psi (172 kPa) pressure.

4. Install new brushes, if necessary, and reassemble the unit in reverse order of the dismantling procedure.

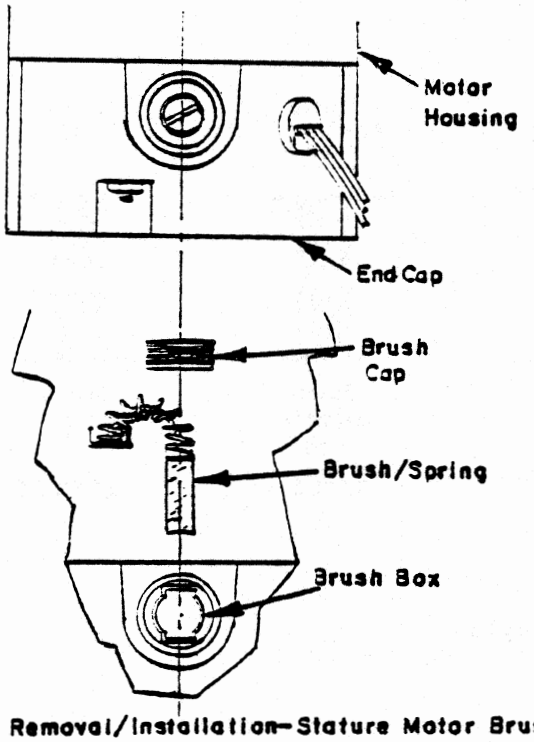
STATURE MOTOR BRUSH INSPECTION AND INSTALLATION - See Figure 6.

1. Remove Brush Cap from the End Cap using a screwdriver. As the cap is removed, the spring on the Brush Pigtail will "pop" up out of the hole.

> NOTE: Observe the direction which the spring bends so that in reinstallation the brush may be located in the same position as before, for best fit to the motor commutator.

2. Lift the Brush/Spring out of the Brush Box.

MAINTENANCE (Continued)



Removal/Installation-Stature Motor Brushes

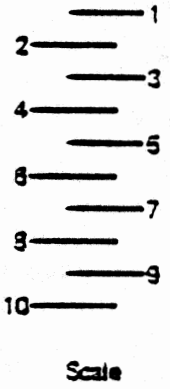
Figure 6

3. Inspect Brush, check dimensions, blow out the Brush Box with compressed air (see NOTE above).

4. Install new Brush/Spring, if necessary, and screw the Brush Cap into the threaded hole.

5. Install the feedhead assembly into the Control Box in reverse order to that in FEEDHEAD MAINTENANCE, paragraph 1. and 2., above.

ADJUSTING FEED ROLL PRESSURE - See Chart 1 for details - A scale, calibrated to adjust *approximately* feed roll tension, is located on the Feedhead Mounting Plate adjacent to the Pressure Arm Knob. Note the relationship of Feed Roll style (1-5) to indicated pressure setting for various wire sizes. See Figure 7 for five styles of feed rolls.



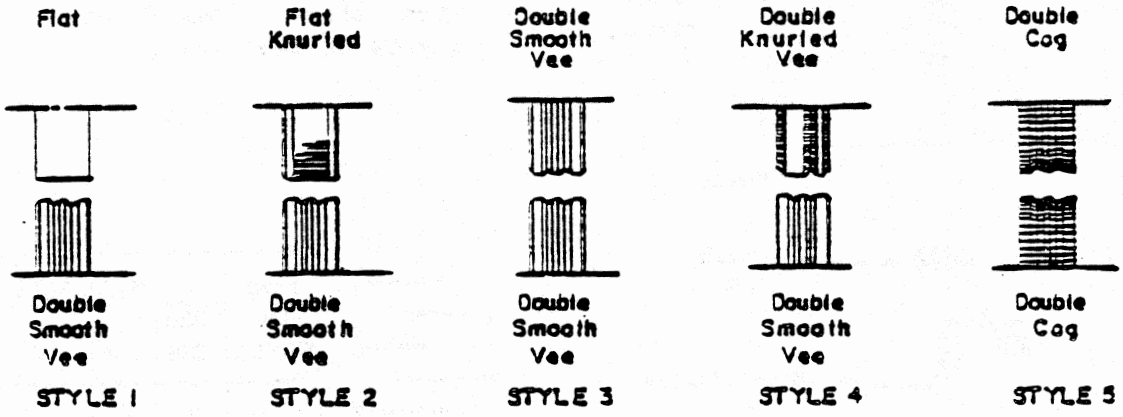
Feed Roll STYLE	WIRE SIZE .030 .035	.045	1/16	5/64	3/32
1 -	3	4	-	-	-
2	2	3	-	-	-
3	2	3	5	7	8
4	-	-	3	4	5
5	-	3	4	5	6

Chart 1

To read the scale, look (sight) across the top of the Pressure Arm Knob to the scale. The figures in the chart are only a reference for a starting place. Adjustments will have to be made depending upon gun cable length, gun and feed roll condition, and wire type.

PARTS LIST

See Feedhead Assembly Parts List furnished in Chapter 3 for part numbers in this feedhead assembly.



Feed Roll Styles
Figure 7

BASE ASSEMBLY

601104-007

DESCRIPTION
INSTALLATION

BASE ASSEMBLY NO. 601104-007 DESCRIPTION AND INSTALLATION INSTRUCTIONS

DESCRIPTION

This base is designed for use in assembling a composite Power Drive II Wire Feeder. It is a component which makes it possible to bring together a Control Box and Feedhead Assembly (which have their own PowCon Inc. Instruction Sheets), and a Wire Spool Support Assembly.

INSTALLATION

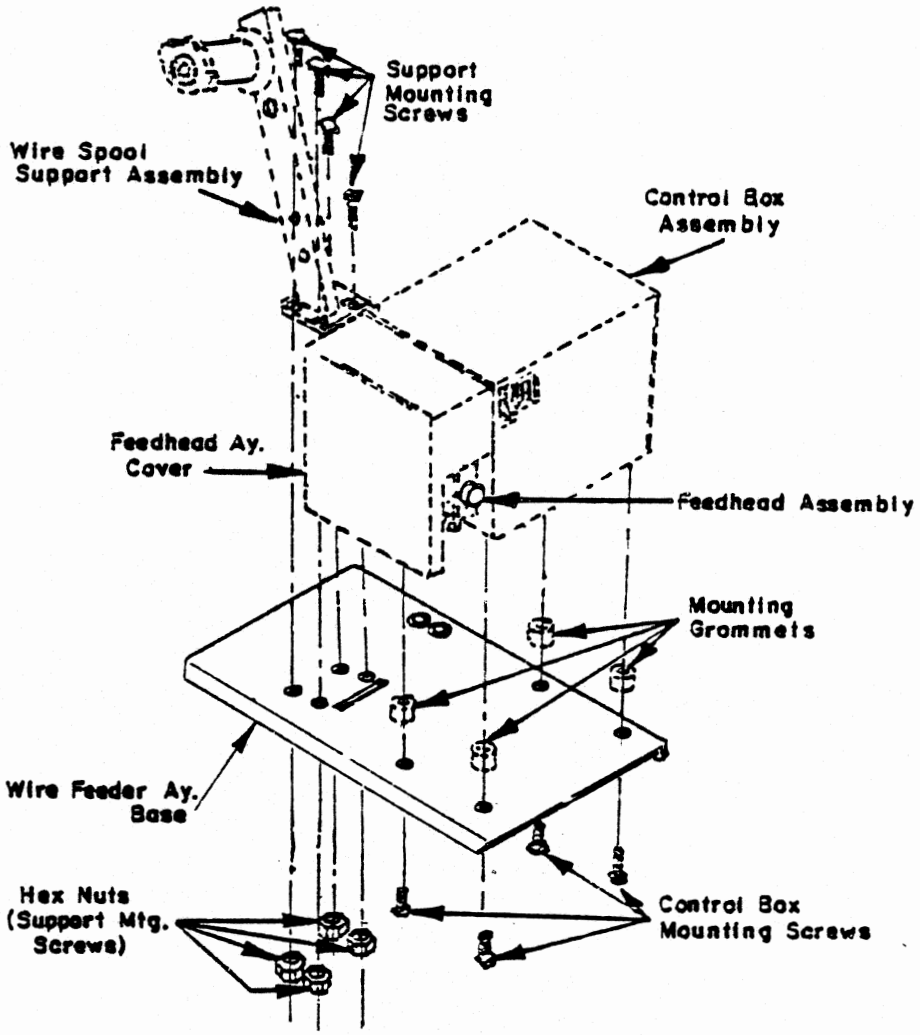
The illustration on this sheet shows the mounting of the Control Box, Feedhead Assembly, and the Wire Spool Support Assembly.

1. To mount the Control Box Assembly, align holes in the base with the grommets (in the Control Box bottom panel), insert the self-tapping mounting screws through the holes in the base, into the nylon grommets.

2. Tighten the screws in place, which will expand the nylon grommets in the holes in the Control Box bottom.

> NOTE: The Feedhead Assembly is secured to the Control Box, and does not bolt directly to the base.

3. Align four holes in the bottom flange on the Wire Spool Support, with four holes in the base (as shown in illustration) and insert four capscrews through the holes in the base and stiffener (underneath the base) and secure in place with the four hex nuts.



INSTRUCTION SHEET - INSTALLATION OF WIRE REEL OR WIRE SPOOL ON WIRE REEL SUPPORT

The wire feeder will be shipped from with either a Wire Spool Kit 601107-001 or a Wire Reel Kit 601108-001 as specified on the purchase order. The support arm is the same for either wire supply kit. See Parts List on Page 2.

1. TO INSTALL THE SUPPORT ONTO THE BASEPLATE:

a. Use four 1/4-20 x 7/8 inch screws (13) and hex nuts (14) to fasten the base of the support to the wire feeder baseplate.

2. TO INSTALL THE WIRE SPOOL KIT (601107-001):

a. Mount the spindle shaft (9) in the lower of the two holes. Make sure that 1/2-13 hex nut is securely tightened on the end of the spindle shaft.

b. Mount the Wire Spool Hub (1) on the spindle shaft.

c. Install the friction washer (2), spring (3), spacer (5), and the drag adjusting screw (6).

d. Place a wire spool onto the hub (align positioning pin on the spool hub with the hole in the spool), so that the wire feeds from the bottom of the coil.

e. Install the spool hub nut (4) and tighten.

f. Adjust the spring (3) tension by use of the adjusting screw (6) until proper reel drag is achieved.

3. TO INSTALL THE WIRE REEL ASSEMBLY (601108-001):

a. Mount the spindle shaft (9) in the upper hole.

b. Mount the wire reel on the spindle (9).

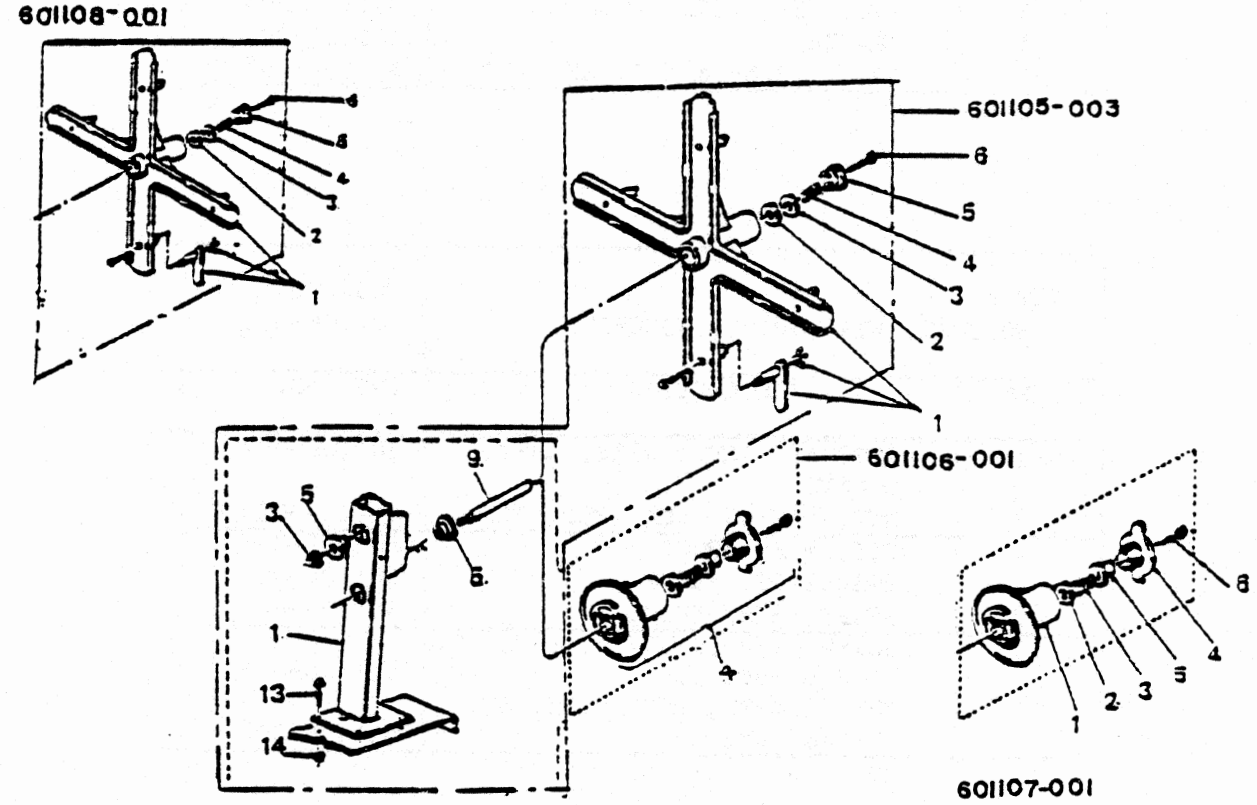
c. Install the bakelite washer (2) and the steel washer (3), spring (4), "T" washer (5), and drag adjusting screw (6).

d. Loosen the wing nuts holding the movable arms. Rotate the arms inward towards the inside of the reel.

e. Place the coiled wire on the reel so that the wire feeds from the bottom of the coil to the wire feeder.

f. Position the movable arms and tighten the wing nuts.

g. Tighten the drag adjusting screw (6) until desired reel drag is achieved.



TITLE KIT, WIRE REEL		DWG. NO. 601108-001	
ITEM	DESCRIPTION	DWG. NO.	R
1	WIRE REEL	601108-002	1
2	WASHER, WIRE REEL	601108-003	1
3	WASHER, STEEL, WIRE REEL	601108-004	1
4	SPRING, COMPRESSION	601108-005	1
5	WASHER, "T" WIRE REEL	601108-006	1
6	SCREW, 3/8-16 X 2, HHC	601108-007	1

TITLE KIT, WIRE SPOOL		DWG. NO. 601107-001	
ITEM	DESCRIPTION	DWG. NO.	R
1	HUB, WIRE SPOOL	601107-002	1
2	WASHER, FRICTION	601107-003	1
3	SPRING, COMPRESSION	601107-004	1
4	NUT, HUB, WIRE SPOOL	601107-005	1
5	SPACER	601107-006	1
6	SCREW, 3/8-16 X 1, HHC, ST.	601107-007	1

TITLE SUPPORT, WIRE SPOOL, ASSEMBLY		DWG. NO. 601106-001	
ITEM	DESCRIPTION	DWG. NO.	R
1	SUPPORT, REEL, WIRE, ASSY.	601106-002	1
2	DELETE		
3	NUT, 1/2-13, HEX, FLT. ST.	601106-003	1
4	KIT, WIRE SPOOL	601107-001	1
5	INSULATOR, FRONT	601106-004	2
9	SHAFT, WIRE SPOOL	601106-005	1
13	SCREW, 1/4-20 X 7/8, HHC, ST. (See Note 1)	601106-006	4
14	NUT, 1/4-20, KEPS, HEX, ST. (See Note 1)	601106-007	4

Parts List

EQUIPMENT IDENTIFICATION - An identification plate on the unit's control panel shows its model number, serial number, and assembly number. Whenever ordering parts or making inquiries, furnish all these numbers.

> NOTE: An "assembly number" must have a "dash number" suffix (-001) in order to be a complete number.

HOW TO USE THIS PARTS LIST - The part name listings may be indented to show part relationships as indicated in the following example.

Recomm. Spares Class 1	Recomm. Spares Class 2	Fig. No.	Item No.	Part No.	Description	Quantity per Assembly	Application Code
		1-		123456	Assembly (Not Shown)	1	
			1	234567	. A detail of assembly	1	
			2	345678	. A sub-assembly	1	
			3	456789	. . A detail of sub-assy (item 2)	1	
			4	567891	. . A sub-assembly of item 2	1	
			5	678910	. . . A detail of sub-assy (item 4)	1	

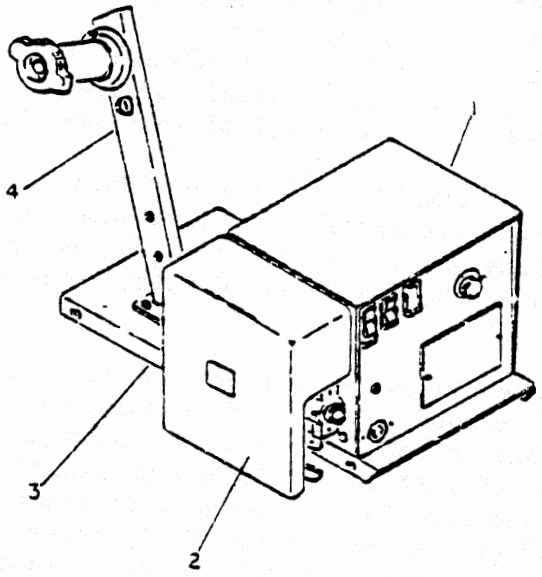
The parts list contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except standard hardware items, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached parts which lose their identity by being welded, soldered, riveted, etc.

Locate the assembly number below that appears on your unit, and note the "APPLICATION CODE" letter adjacent to it. (If no application code appears below, the parts list is applicable to only the one assembly number that appears below.) After locating the desired part in the following figures and parts lists, if the "Application Code" column says "All", proceed to order the part. If there are several part numbers after the same "Item No.", order only the part number corresponding to the "Application Code" letter that you selected above.

ASSEMBLY NUMBER

601104-001

HOW TO SELECT RECOMMENDED SPARES - The parts list has a column heading entitled "Recomm. Spares, Class 1 and Class 2". Class 1 recommended spare parts are parts that are consumed or may need replacement in two years or less, depending on operating hours. Class 2 spares are parts that may need replacement under unusual service conditions or because of additional operating hours. The quantities listed are suggested quantities based on expected usage or the minimum quantity package. Class 1 spares are repeated under Class 2 but the quantities may be larger to allow for the additional operating hours. Contact your PowCon Inc. equipment dealer for assistance in establishing a spare parts program based on your needs.



Wire Feeder Group
Figure 1

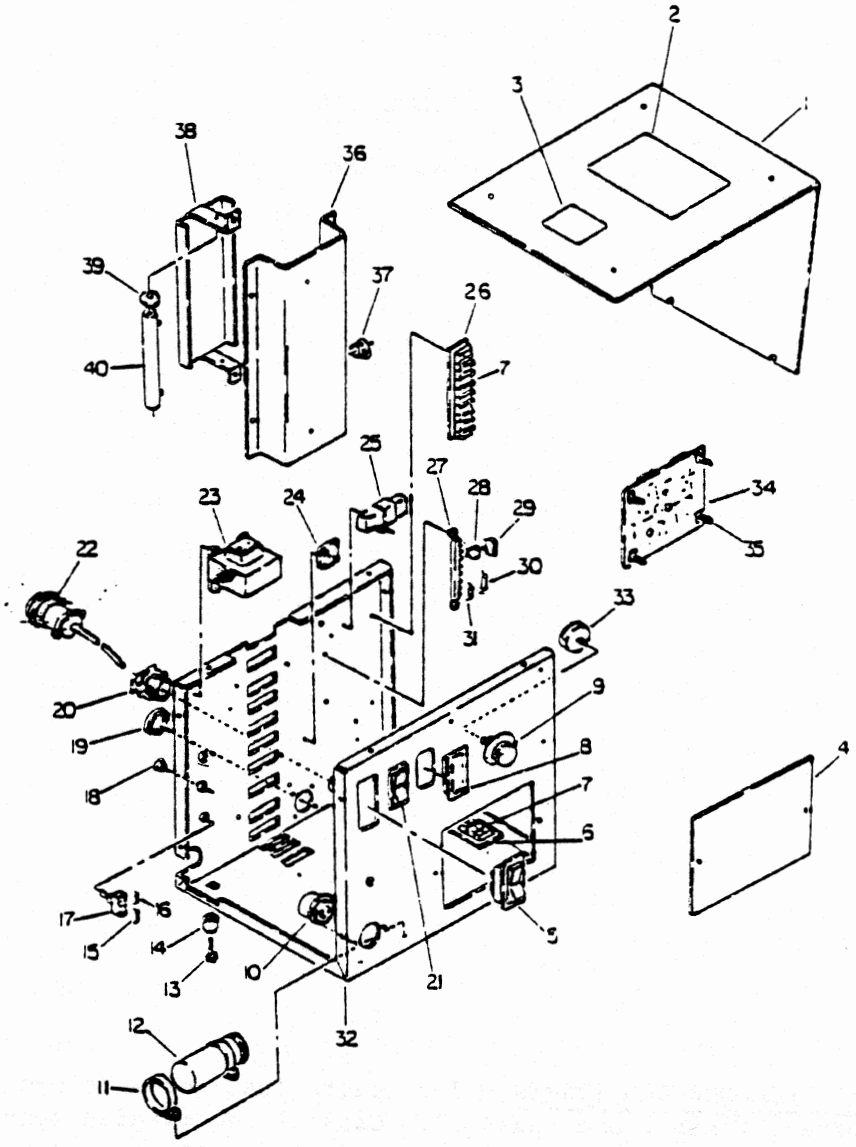
Quantity Recomm. Spares Class 1	2	Fig. No.	Item No.	Part No.	Description	Quantity per Assembly
		1-		601104-001	Wire Feeder, Solid State Control, 2-Roll Drive, 60-600 IPM	1
			1	601104-005A	. Box - Control (For Details see 601104-005A)	1
			2	601104-006	. Feedhead Assembly 60-600 IPM, 2-roll (For Details See 601104-006)	1
			3	601104-007	. Base	1
			4	601106-001	. Support - Wire Spool Assembly (For Details See 601106-001)	1

Parts List

CONTROL BOX

601104-005A

HOW TO SELECT RECOMMENDED SPARES - The parts list has a column heading entitled "Recomm. Spares, Class 1 and Class 2". Class 1 recommended spare parts are parts that are consumed or may need replacement in two years or less, depending on operating hours. Class 2 spares are parts that may need replacement under unusual service conditions or because of additional operating hours. The quantities listed are suggested quantities based on expected usage or the minimum quantity package. Class 1 spares are repeated under Class 2 but the quantities may be larger to allow for the additional operating hours. Contact your PowCon Inc. equipment dealer for assistance in establishing a spare parts program based on your needs.



Control Box
Figure 1

Quantity Recomm. Spares Class 1	2	Fig. No.	Item No.	Part No.	Description	Quantity per Assembly
		1-		601104-005A	Box - Control Assembly	1
			1	601110-001	. Cover - Control Box	1
			2	601110-002	. Label - Warning	1
			3	601110-003	. Label - Arc Welding	1
			4	601110-004	. Cover - Hole, Front Panel	1
	1		5	601110-005	. Switch - Rocker, Cir. Breaker	1
			6	601110-006	. Label - Terminal Block	1
			7	601110-007	. Block - Terminal, 20 Ampere	2
			8	601110-008	. Plug - Hole, Rectangular	2
			9	601110-009	. Knob - Control	1
			10	601110-010	. Receptacle - Twist-Lok	1
			11	601110-011	. Clamp - Plastic	2
	1		12	601110-012	. Capacitor - Elect. Alum.	1
			13	601110-013	. Screw - 1/4-20 x 3/4, HWH, SF-Tap, Type F	4
			14	601110-014	. Grommet - Mtg.	4
			15	601110-015	. Resistor - 1/4 Watt	1
			16	601110-016	. Resistor - 1/4 Watt	1
			17	601110-017	. Switch - Toggle, SPDT	1
			18	601110-018	. Plug - Hole, Plastic	2
			19	601110-019	. Plug - Hole, Plastic	1
			20	601110-020	. Connector - Straight	1
			21	601110-021	. Switch - Inch	1
			22	601110-022	. Cable - Assembly	1
	1		23	601110-023	. Transformer - Step Down	1
	1		24	601110-024	. Rectifier - Silicon	1
	1		25	601110-025	. Resistor - Power, 50 Watt	1
			26	601110-026	. Label - Terminal Block	1
			27	601110-027	. Strip - Terminal Solder	1
	1		28	601110-028	. Suppressor	1
	1		29	601110-029	. Capacitor - Radial Lead	1
	1		30	601110-030	. Resistor - Wire Wound, 2 Watt	1
			31	601110-031	. Resistor - 1/4 Watt	1
			32	601110-032	. Wrapper - Control Box	1
			33	601110-033	. Potentiometer - 5K, 2 Watt	1
1			34	601110-051	. Board - Motor Control	1
			35	601110-035	. Support - Circuit Board	4
		-		601110-036	. Label - Remote Control	1
		-		601110-037	. Receptacle - Single Row	1
		-		601110-038	. Key - Receptacle	1
				601110-039	. Resistor - Assembly	1
			36	601110-040	. . Shield - Resistor	1
			37	601110-041	. . Grommet - Rubber	1
			38	601110-042	. . Bracket - Mtg. Resistor	1
			39	601110-043	. . Insulator - Washer	2
	1		40	601110-044	. . Resistor - Assembly	1
		-		601110-045	. Housing - Receptacle	1

\- Not Illustrated

Quantity Recomm. Spares Class 1	2	Fig. No.	Item No.	Part No.	Description	Quantity per Assembly
		-1-		601110-046	. Key	1
		-		601109-052	. Receptacle - Crimp Locking	1
		-		601109-048	. Tubing - Insulation	1-1/2"
		-		601109-049	. Terminal - Receptacle	2

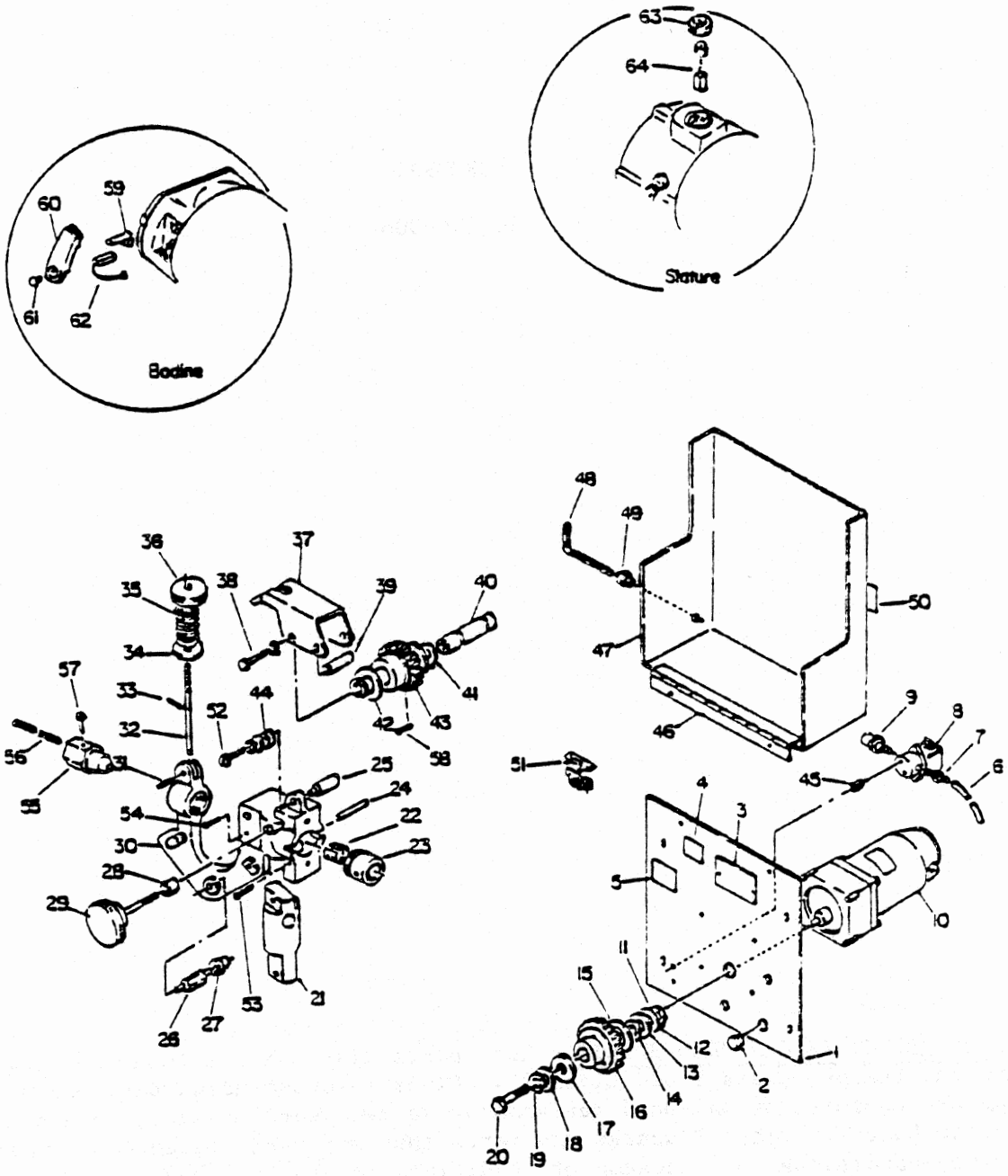
Not Illustrated

Parts List

FEEDHEAD

601104-006

HOW TO SELECT RECOMMENDED SPARES - The parts list has a column heading entitled "Recomm. Spares, Class 1 and Class 2". Class 1 recommended spare parts are parts that are consumed or may need replacement in two years or less, depending on operating hours. Class 2 spares are parts that may need replacement under unusual service conditions or because of additional operating hours. The quantities listed are suggested quantities based on expected usage or the minimum quantity package. Class 1 spares are repeated under Class 2 but the quantities may be larger to allow for the additional operating hours. Contact your PowCon Inc. equipment dealer for assistance in establishing a spare parts program based on your needs.



Feedhead Group
Figure 1

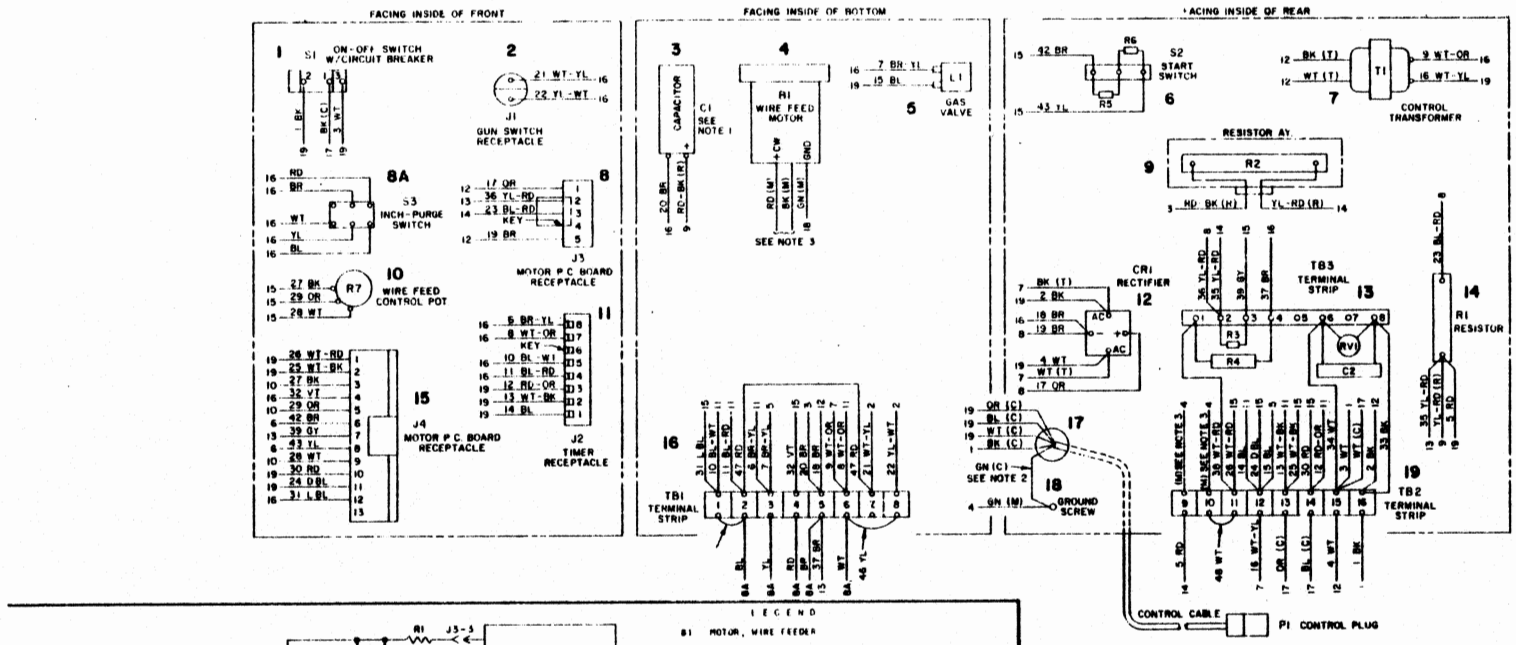
Quantity Recomm. Spares Class 1	2	Fig. No.	Item No.	Part No.	Description	Quantity per Assembly
		1-		601104-006	Head - Feed, 2 Roll Assembly	1
			1	601109-001	. Plate - Mtg. Feed Head	1
			2	601109-002	. Plug - Hole, Plastic	1
			3	601109-003	. Nameplate - Specification	1
			4	601109-004	. Label - Tension Indicator	1
			5	601109-005	. Label - Electric Shock	1
	1		6	601109-006	. Tube - Water or Gas	1
			7	601109-007	. Connector - Male	1
	1		8	601109-008	. Valve - Solenoid	1
	1		9	601109-009	. Adapter - Gas, Right Hand	1
	1		10	601109-010	. Motor - Gear, Feedhead, Assembly	1
			11	601109-012	. Ring - Snap, External	1
			12	601109-013	. Shim - .015 Thickness	3
			13	601109-014	. Shim - .005 Thickness	1
			14	601109-015	. Ring - External, Retaining	1
			15	601109-016	. Spacer - Insulating	1
	1		16	601109-017	. Gear - Insulated Drive	1
			17	601109-018	. Washer - Insulating	1
			18	601109-019	. Washer - Flat Steel, 1/4	4
			19	601109-020	. Washer - Lock, Standard, 1/4	8
			20	601109-021	. Screw - 1/4-20 x 3/4, HHC, Steel	1
	1		21	601109-022	. Receptacle - Gun, Feedhead	1
	1		22	601109-023	. Sleeve - Gun	1
	1		23	601109-024	. Inlet - Gas	1
			24	601109-025	. Tube - Gas	1
			25	601109-026	. Spacer - Feedhead	3
			26	601109-027	. Pin - Locating	1
			27	601109-028	. Insulator - Locating Pin	1
	1		28	601109-029	. Spacer - Gun Receptacle	1
	1		29	601109-030	. Knob - Gun Receptacle	1
			30	601109-031	. Plate - Feedhead, 2 Roll	1
			31	601109-032	. Pin - Spring	1
			32	601109-033	. Rod - Pressure Arm	1
			33	601109-034	. Pin - Spring	1
			34	601109-035	. Washer - Pressure Arm	1
	1		35	601109-036	. Spring - Compression, Tension & Torsion	1
			36	601109-037	. Knob - Pressure Arm	1
			37	601109-038	. Arm - Pressure	1
	1		38	601109-039	. Screw - 1/4-20 x 2, HH, MH, ST.	2
			39	601109-040	. Spacer - Pressure Arm	1
	1		40	601109-041	. Shaft - Feed Roll	1
	1		41	601109-042	. Ring - Snap, External	2
	1		42	601109-043	. Washer - Flat	2
	1		43	601109-044	. Gear - Idler	1
			44	601109-045	. Spacer - Feedhead	3
			45	601109-046	. Spacer - Bus Bar	2
				601109-047	. Cover - Feedhead Assembly	1
			46	601109-048	. . Hinge - Cover	1
			47	601109-049	. . Cover - Feedhead	1

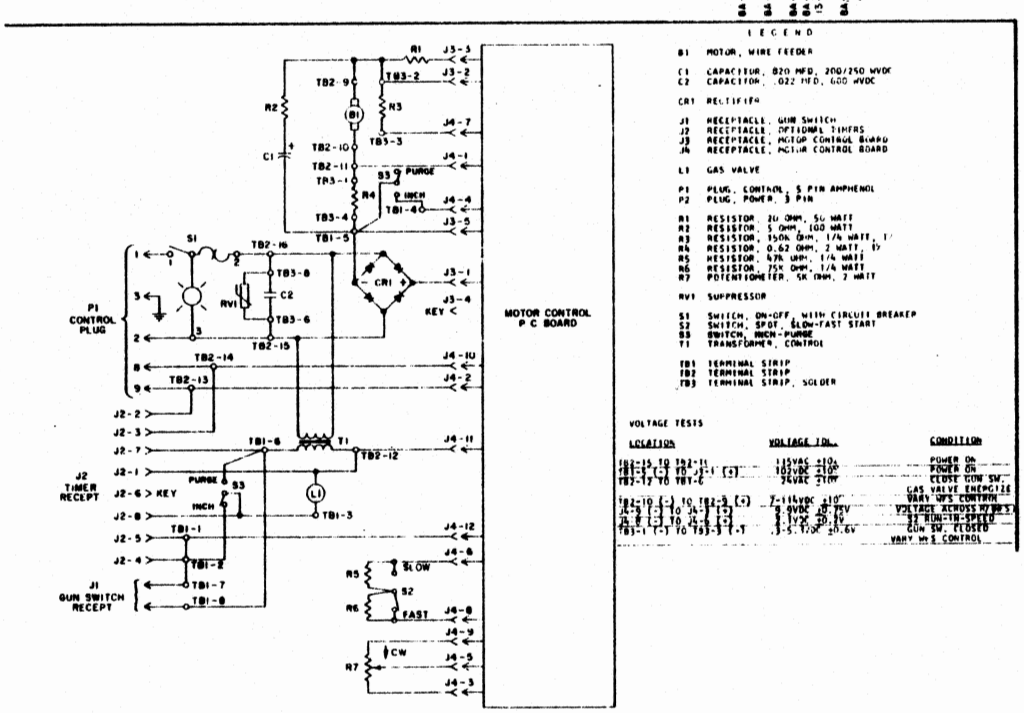
Quantity Recomm. Spares Class 1	2	Fig. No.	Item No.	Part No.	Description	Quantity per Assembly
	1	1-	48	601109-050	. . Wrench - Allen	1
	1		49	601109-051	. . Rivet - Blind Plastic	1
			50	601109-052	. . Label - Warning	1
			51	601109-053	. . Spring - Door, Retaining	1
			52	601109-054	. Screw - 1/4-28 x 2-1/2, HHC, Steel	3
	2		53	601109-055	. Screw - Retaining	2
			54	601109-056	. Screw - #10-32 x 3/4, Rd. Hd. MH. ST.	1
	1		55	601109-057	. Guide - Input	1
	1		56	601109-058	. Spring - Input Guide	1
	1		57	601109-059	. Screw - #10-24 x 3/8 HH, MH, ST.	1
	3		58	601109-060	. Screw - #8-32 x 1, Cap Skt. Hd.	6
	2		59	601109-061	Spring - Brush, Bodine	2
	1		60	601109-062	Cap - Brush, Bodine	2
	1		61	601109-063	Rivet - Bodine	2
2			62	601109-064	Brush - Bodine	2
	2		63	601109-065	Cap - Brush Stature	2
2			64	601109-066	Brush & Spring Assembly - Stature	2

Diagrams

1. Note the specification or assembly number shown on the equipment nameplate.
2. Locate these numbers in the specification or assembly number columns below.
3. Use only those diagrams and instructions that are applicable.

MODEL NUMBER	ASSEMBLY NUMBER	CONNECTION DIAGRAM	OUTLINE DIAGRAM
Power Drive II #601104-001	601104-001	601104-011	601104-012





LEGEND

B1 MOTOR, WIRE FEEDER

C1 CAPACITOR, 820 MFD, 200/250 WVDC
C2 CAPACITOR, .022 MFD, 600 WVDC

CR1 RECTIFIER

J1 RECEPTACLE, GUN SWITCH
J2 RECEPTACLE, OPTIONAL TIMERS
J3 RECEPTACLE, MOTOR CONTROL BOARD
J4 RECEPTACLE, MOTOR CONTROL BOARD

L1 GAS VALVE

P1 PLUG, CONTROL, 5 PIN AMPHENOL
P2 PLUG, POWER, 3 PIN

R1 RESISTOR, 20 OHM, 50 WATT
R2 RESISTOR, 5 OHM, 100 WATT
R3 RESISTOR, 150K OHM, 1/4 WATT, 1%
R4 RESISTOR, 0.62 OHM, 2 WATT, 1%
R5 RESISTOR, 47K OHM, 1/4 WATT
R6 RESISTOR, 75K OHM, 1/4 WATT
R7 POTENTIOMETER, 5K OHM, 2 WATT

RV1 SUPPRESSOR

S1 SWITCH, ON-OFF, WITH CIRCUIT BREAKER
S2 SWITCH, SPDT, SLOW-FAST START
S3 SWITCH, INCH-PURGE
T1 TRANSFORMER, CONTROL

TB1 TERMINAL STRIP
TB2 TERMINAL STRIP
TB3 TERMINAL STRIP, SOLDER

(M) MOTOR LEAD
(T) TRANSFORMER LEAD
(C) CONTROL CORD LEAD - P1

(R) RESISTOR LEAD

VOLTAGE TESTS

LOCATION	VOLTAGE (DL.	CONDITION
TB2-15 TO TB2-11	115VAC ±10%	POWER ON
TB1-5 (-) TO J3-1 (+)	103VDC ±10%	POWER ON
TB2-12 TO TB1-6	24VAC 21W	CLOSE GUN SW.
		GAS VALVE ENERGIZE
TB2-10 (-) TO TB2-9 (+)	7-114VDC ±10%	VARY WFS CONTRL
J4-9 (-) TO J4-7 (+)	9.9VDC ±0.75V	VOLTAGE ACROSS M OR S
J4-8 (-) TO J4-1 (+)	3.1VDC ±0.15V	S2 RUN-IN-SPEED
TB3-1 (-) TO TB3-4 (+)	3.5-7.0VDC ±0.6V	GUN SW. CLOSED
		VARY WFS CONTROL

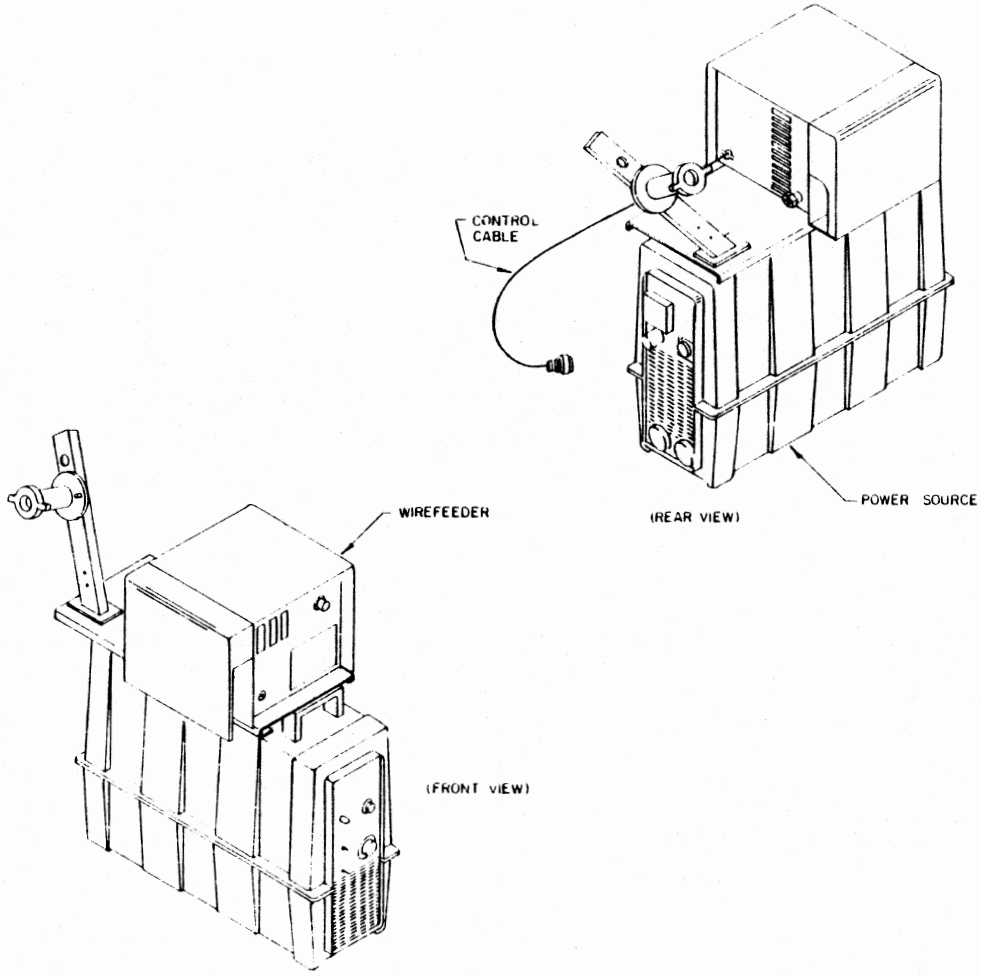
NOTES:
1 CAPACITOR (C1) MUST BE MOUNTED WITH VENT PLUG AT TOP
2 LOOP GROUND WIRE AND TIE WITH WIRE TIE
3 WHEN 2 ROLL FEED HEAD IS USED, CONNECT BLACK MOTOR LEAD TO TERM 10 ON TB2 AND RED MOTOR LEAD TO TERM 9 ON TB2 WHEN 4 ROLL FEED HEAD IS USED, CONNECT BLACK MOTOR LEAD TO TERM 9 ON TB2 AND RED MOTOR LEAD TO TERM 10 ON TB2

COLOR CODE			
BK	BLACK	RD	RED
BL	BLUE	TN	TAN
BR	BROWN	VT	VIOLET (PURPLE)
GN	GREEN	WT	WHITE
GY	GRAY (SLATE)	YL	YELLOW
OR	ORANGE	D	DARK (PREFIX)
PK	PINK	L	LIGHT (PREFIX)

601104-011

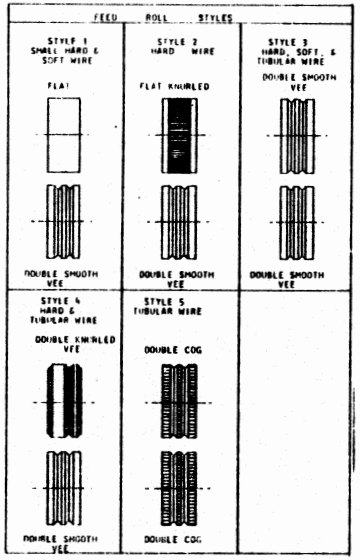
DIAGRAM, CONNECTION

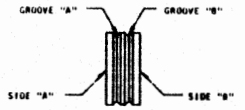
601104-011



OUTLINE , SYSTEM
601104-012

DWG. NO.	WIRE SIZE	WIRE TYPE	FEED ROLL STYLE	FEED ROLL DWG. NO.	R	OUTPUT GUIDE DWG. NO.	R	INPUT GUIDE DWG. NO.	R			NO. OF HEAD	REMARKS
601102-005	.030-.035	HARD	1	601113-001 601113-002	1 1	601114-001	1	601115-001	1			2	
601102-006	.045	HARD & TUBULAR	1	601113-001 601113-003	1 1	601114-001	1	601115-001	1			2	
601102-007	.030-.035	HARD	2	601113-010 601113-002	1 1	601114-001	1	601115-001	1			2	
601102-008	.045	HARD & TUBULAR	2	601113-010 601113-002	1 1	601114-001	1	601115-001	1			2	
601102-009	.052-1/16	HARD & TUBULAR	3	601113-004	2	601114-002	1	601115-001	1			2	
601102-010	5/64	HARD & TUBULAR	3	601113-005	2	601114-003	1	601115-003	1			2	
601102-011	3/32	HARD & TUBULAR	3	601113-006	2	601114-003	1	601115-002	1			2	
601102-012	7/64	HARD & TUBULAR	3	601113-007	2	601114-004	1	601115-002	1			2	
601102-013	1/8	HARD & TUBULAR	3	601113-008	2	601114-004	1	601115-002	1			2	
601102-014	.035	SOFT	3	601113-007	2	601114-005	1	601115-003	1			2	
601102-015	3/64	SOFT	3	601113-003	2	601114-005	1	601115-003	1			2	
601102-016	.052-1/16	SOFT	3	601113-004	2	601114-006	1	601115-003	1			2	
601102-017	5/64	SOFT	3	601113-005	2	601114-007	1	601115-003	1			2	
601102-018	3/32	SOFT	3	601113-006	2	601114-007	1	601115-003	1			2	
601102-019	7/64	SOFT	3	601113-007	2	601114-008	1	601115-002	1			2	
601102-020	1/8	SOFT	3	601113-008	2	601114-008	1	601115-002	1			2	
601102-003	.052-1/16	HARD & TUBULAR	4	601113-011 601113-016 601113-004 601113-017	1 1 1 1	601114-002	1	601115-001	1			2	
601102-021	5/64	HARD & TUBULAR	4	601113-017 601113-005 601113-011	1 1 1	601114-003	1	601115-002	1			2	
601102-022	3/32	HARD & TUBULAR	4	601113-018 601113-006 601113-016	1 1 1	601114-003	1	601115-002	1			2	
601102-023	7/64	HARD & TUBULAR	4	601113-019 601113-007 601113-015	1 1 1	601114-004	1	601115-002	1			2	
601102-024	1/8	HARD &	4	601113-020 601113-008	1 1	601114-004	1	601115-002	1			2	
601102-025	.045	TUBULAR	5	601113-021	2	601114-001	1	601115-001	1			2	
601102-026	.052-1/16	TUBULAR	5	601113-022	2	601114-002	1	601115-001	1			2	
601102-027	5/64	TUBULAR	5	601113-023	2	601114-003	1	601115-002	1			2	
601102-004	3/32	TUBULAR	5	601113-024	2	601114-003	1	601115-002	1			2	
601102-028	7/64	TUBULAR	5	601113-025	2	601114-004	1	601115-004	1			2	
601102-029	1/8	TUBULAR	5	601113-026	2	601114-004	1	601115-002	1			2	
601102-001	.030-.035	HARD	1	601113-002 601113-009	1 1	601114-001	1	601115-001	1			2	.030-.035 "A" GROOVE .045 "B" GROOVE
601102-030	.030-.035	HARD	2	601113-010 601113-009	1 1	601114-001	1	601115-001	1			2	.030-.035 "A" GROOVE .045 "B" GROOVE
601102-002	.035 3/64	SOFT	3	601113-009	2	601114-005	1	601115-003	1			2	.035 "A" GROOVE 3/64 "B" GROOVE





NOTES 1. NUMBERS STAMPED ON SIDE "A" INDICATE THE WIRE SIZE OF GROOVE "B" AND VICE VERSA.

2. BOTH FEED ROLL GROOVE "A" AND "B" ARE THE SAME SIZE UNLESS STATED OTHERWISE UNDER "REMARKS".

KIT, FEEDROLL ASSY.

601102-X

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