

**MODEL 2210/2410
SEMI-AUTOMATIC, SOLID STATE
CONTROLLED WIRE FEEDERS**

For the Following Specs:

- 6548D-2 2210 (2 Roll, 60 – 900 IPM)
- 6548D-3 2410 (4 Roll, 40 – 600 IPM)
- 6548D-4 2410 (4 Roll, 60 – 900 IPM)
- 6548D-5 2210 (2 Roll, 60 – 900 IPM)
- 6548D-6 2410 (4 Roll, 40 – 900 IPM)
- 6548D-7 2410 (4 Roll, 60 – 900 IPM)



OWNER'S MANUAL **Number 193111-021** (Rev - AB)
Revised May 24, 1999

IMPORTANT: Read these instructions before installing, operating, or servicing this system.

THERMAL ARC INC., TROY, OHIO 45373-1085, U.S.A.

INTRODUCTION

How To Use This Manual

This Owner's Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the words **WARNING**, **CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

CAUTION refers to possible equipment damage. Cautions will be shown in bold type.

NOTE offers helpful information concerning certain operating procedures. Notes will be shown in italics.

Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the control panel. In some cases, the nameplate may be attached to the rear panel. Equipment which does not have a control panel such as gun and cable assemblies is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to Thermal Arc, Order Department, 2200 Corporate Drive, Troy, Ohio 45373-1085. Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before uncrating the unit. Use care to avoid damaging the equipment when using bars, hammers, etc., to uncrate the unit.

Additional copies of this manual may be purchased by contacting Thermal Arc at the address given above. Include the Owner's Manual number and equipment identification numbers.

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DESCRIPTION OF EQUIPMENT

General

The Model 2210/2410 wire feeder is a modular unit consisting of a control box assembly, feedhead assembly, and wire spool support mounted on a common baseplate (see Figure 3-1). The components are covered by a sheet metal wrapper which provides protection for the control components and 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.

The 2210/2410 solid state control offers both load and line voltage compensation helping to maintain a constant wire feed speed even with changes in the input voltage and/or load.

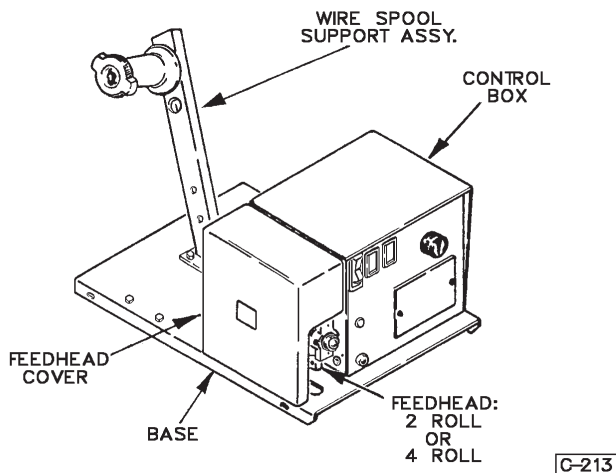


Figure 3-1 Wire Feeder Assembly

The 2210/2410 comes with an abundance of standard features which include: (1) an on/off rocker switch with 4 amp circuit breaker, (2) a wire feed speed control knob, (3) an inch/purge momentary switch, (4) a solid state electronic brake for dynamic braking, (5) a solid state circuit providing a current limit to the motor, (6) a thermal self-reset device for A/B contactor protection, (7) a low voltage gun trigger circuit for operator safety, (8) a fully insulated base for protection against weld current fault conditions, and (9) a ground fault circuit to protect the operator and equipment from welding current flowing through the ground system of the feeder.

Both the 2210 and 2410 have been designed to comply with CE, CSA NRTL/C, and NEMA EW 3 standards.










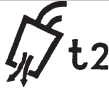





Product Specifications

Input Voltage	120 VAC
Input Frequency	50/60 Hz
Maximum Input Current.....	4 Amps
Input Voltage Tolerance	+/-10%
Motor Voltage Range	12 – 115 VDC
Motor Current Range	0.14 – 1.3 Amps
Motor Torque Range	0 - 46 In. Lbs. (40-600 IPM)
.....	0 - 31 In. Lbs. (60-900 IPM)
Motor Gear Ratio.....	20.4:1 (40-600 IPM)
.....	13.8:1 (60-900 IPM)
Wire Speed Range (For All Filler Wire Sizes)	
.....6548D-2.....	(60-900 IPM, 152-2286 CPM)
.....6548D-3.....	(40-600 IPM, 102-1524 CPM)
.....6548D-4.....	(60-900 IPM, 152-2286 CPM)
.....6548D-5.....	(60-900 IPM, 152-2286 CPM)
.....6548D-6.....	(60-900 IPM, 152-2286 CPM)
Wire Sizes	0.024 – 1/8" (0.61-3.2mm)
Feed Rolls	2 or 4 (All Rolls Driven)
Welding Current (I)	
.....2210	525A @ X=60%
.....	450A @ X=100%
..... 2410	550A @ X=60%
.....	475A @ X=100%
Welding Gun/Torch Size	5/8" Nominal (Standard)
.....	3/4" Nominal (Optional)
Maximum Shielding Gas Inlet Pressure	
.....	100 P.S.I.
Degree Of Protection	IP 22
Approvals	CE
.....	CSA NRTL/C
.....	NEMA EW 3
Dimensions (Includes Base)	
.....24-1/2" (62.2cm) X 14" (35.6cm) X 13" (33cm)	
Weight	52 Lbs. (23.6kg)

Features/Benefits

FEATURES	BENEFITS
1. Solid State Circuitry	A. Improved wire speed accuracy B. Line voltage compensation C. Load compensation D. Current limit to motor
2. Input Circuit Breaker	A. Provides total system protection
3. A/B Contactor Protection	A. Provides self-reset protection against overload conditions
4. 100% Duty Cycle	A. Eliminates nuisance shutdowns due to over temperature
5. Polarity Insensitive	A. Weld with straight or reverse polarity
6. Standard Inch/Purge	A. Allows cold inching of wire at set wire feed speed B. Allows purging of gas without running wire
7. Electronic Brake	A. Solid state control of an electronic brake offers precise stopping of the wire
8. Convenient Hinged Door	A. Permits quick and easy access to the feedhead and drive rolls
9. Gun Clamp Knob	A. Permits operator to secure welding gun to the feedhead without the need for tools
10. Welding Gun Quick Connects	A. Offers a quick and easy connection for welding guns
11. Fully Insulated Base	A. Isolates control box from base to insure safety from excessive ground currents due to a fault condition
12. Replaceable Motor Brushes	A. Extends motor life
13. Needle Bearing Construction On Motor Output Shaft	A. Reduces friction and extends bearing life over a sleeve bearing
14. Feed Roll Pressure Release	A. Allows operator to change feed rolls or wire while retaining preset feed roll pressure
15. Ground Fault Protection	A. Provides protection against welding current in the ground system
16. Made In USA	A. Local support for parts and technical assistance

Meanings Of Markings And Graphical Symbols

	Signifies an OFF position
	Signifies an ON position
	Signifies a wire feed function
	Signifies a voltage control
	Signifies amperage
	Signifies cycles per second
	Signifies a welding gun
	Signifies arc spot welding
	Signifies gas preflow time
	Signifies gas postflow time
	Signifies burnback time at the end of a weld
	Signifies the equipment connection point for the protective earth ground
	Signifies welding current
	Signifies duty cycle
	Signifies a percentage

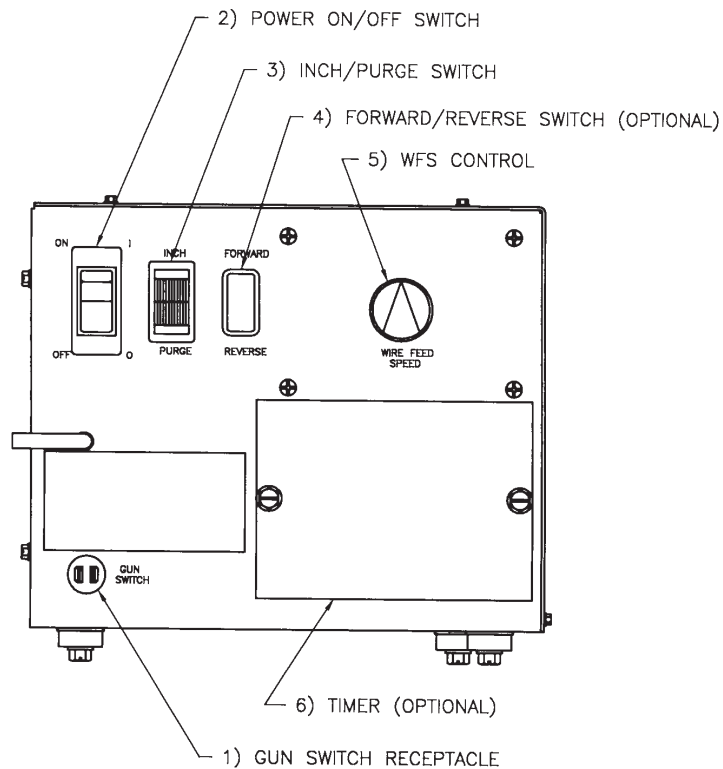


Figure 3-2 Front Panel Controls And Connections

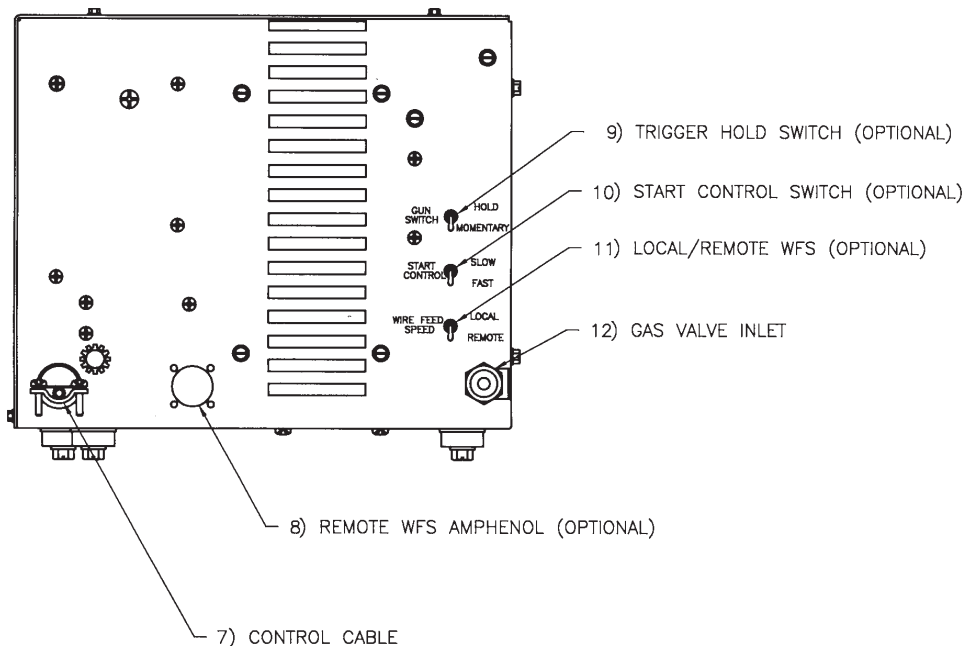


Figure 3-3 Rear Panel Control And Connections

Front Panel Controls And Connections

See Figure 3-2 for details.

1. GUN SWITCH RECEPTACLE — The gun switch receptacle accepts the welding gun control wires. The gun switch receptacle is where a gun switch closure is inputted to the wire feeder.

2. POWER ON/OFF SWITCH — This switch controls only the wire feeder and not the power source. It is used as an ON/OFF switch and also serves as a circuit breaker.

NOTE: If the circuit breaker trips, it turns the power switch to the OFF position. A short cooling period must be allowed before an attempt is made to reset the unit by placing the switch in the ON position.

3. INCH/PURGE SWITCH — Depressing the INCH portion of the switch will feed wire at a speed set by the WFS control. The wire will not be electrically hot when using the INCH switch. Depressing the PURGE portion of the switch will allow shielding gas to flow out of the welding gun without feeding wire.

4. FORWARD/REVERSE SWITCH (OPTIONAL) — When in the Forward position with the INCH switch depressed, the wire will feed out of the welding gun. When in the Reverse position with the INCH switch depressed, the wire will retract back into the welding gun.

5. WFS CONTROL — This knob controls wire feed speed. The wire feed speed can be adjusted during set-up or actual welding.

6. TIMER (OPTIONAL) — This area is reserved for optional timer kits.

Rear Panel Controls And Connections

See Figure 3-3 for details.

7. CONTROL CABLE — The control cable connects to the power source (welding machine) and provides a closure between pins A and B energizing the power source after a gun switch input. The control cable also provides 120 VAC input power between pins E and F and a protective earth ground on pin G. The protective earth ground on pin G of the control cable is established only when the power source is properly grounded. See the power source owner's manual for proper grounding methods.

Pin A	Contactors Hi	} Relay Closure
Pin B	Contactors Lo	
Pin E	120 VAC Hi	
Pin F	120 VAC Lo	
Pin G	Protective Earth Ground	

CAUTION: The relay contacts between pins A and B have a maximum rating of 3A, 125 VAC or 5A, 30 VDC.

If the power source only has a 5 pin amphenol and outlets, a 870000-1 adaptor cable will be required for proper hookup with the 2210/2410 wire feeder.

If the power source only has a 14 pin amphenol, a 870093-1 adaptor cable will be required for proper hookup with the 2210/2410 wire feeder.

8. REMOTE WFS AMPHENOL (OPTIONAL) — This amphenol serves as the connection point for the remote WFS option.

9. TRIGGER HOLD SWITCH (OPTIONAL) — 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.

10. START CONTROL SWITCH (OPTIONAL) — Determines the electrode acceleration time from stop to wire feed speed control setting (FAST position =0.25 second, SLOW position =0.4 second).

11. LOCAL/REMOTE WFS (OPTIONAL) — In LOCAL position, the wire feed speed will be regulated by the wire feed speed control on the front panel. In REMOTE position, it will be regulated by a control in a remote pendant.

12. GAS VALVE INLET — Connection point for supply of shielding gas to the solenoid gas valve located inside the control box.

Power Source Compatibility

The 2210/2410 wire feeder will work with any Thermal Arc CV or CC/CV power source. If the Thermal Arc power source only offers a 5 pin amphenol connector and outlets, a 870000-1 adaptor cable will be required to connect between the 19 pin control cable of the feeder and the 5 pin amphenol and outlets of the power source. If the Thermal Arc power source only offers a 14 pin amphenol connector, a 870093-1 adaptor cable will be required to connect between the 19 pin control cable of the feeder and the 14 pin amphenol of the power source.

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The 2210/2410 will also work with most competitive power sources that provide a 120 VAC and require a relay closure to become energized.

If the competitive power source requires 120 VAC to energize an internal contactor, the following modifications will have to be made to the wiring of the feeder (Refer to the Connection Diagram in this Owner's Manual):

1. Remove the red wire from TB2-14 and connect it to TB2-15.
2. Remove the 12 orange wire and 50 black wire from TB2-14 and connect them both to TB2-16.

Available Options

The following list of options is available for use with the 2210/2410 wire feeders. Some options are kits while others are individual items.

- | | |
|-------------------------------------|-----------|
| 1. Swivel Assembly for Base | 375606A-2 |
| 2. Wire Reel/Spool Support Assembly | 870060-1 |
| 3. Coil Adapter – 60# | 407142A |
| 4. Spool Adapter – 10# | 375585-1 |
| 5. Coil Adapter – 14# | 375942A |
| 6. Spool Adapter – 15# | 375864-1 |
| 7. Spool Cover – 30# | 375582A-4 |
| 8. Spool Cover – 60#Lifting Eye | 375733A-1 |
| 9. Lifting Eye | 375104A |

- | | |
|---|------------|
| 10. Preflow/Postflow/Burnback/Spot Timer | 375904A-3 |
| 11. Forward/Reverse Switch | 375991 |
| 12. Handle | 375994A |
| 13. Control Cable Extension 15 Ft. | 870073-15 |
| 14. Control Cable Extension 25 Ft. | 870073-25 |
| 15. Control Cable Extension 50 Ft. | 870073-50 |
| 16. Control Cable Extension 75 Ft. | 870073-75 |
| 17. Control Cable Extension 100 Ft. | 870073-100 |
| 18. Feed Roll Kits | 375980-X |
| 19. Control Pot Shaft Friction Lock | 402663 |
| 20. Feeder Cart Kit | 171438 |
| 21. Trigger Hold Kit | 376059A |
| 22. Start Control Kit | 171381 |
| 23. Adaptor Cable (For 5 Pin Amphenol Power Sources) | 870000-1 |
| 24. Adaptor Cable (For 14 Pin Amphenol Power Sources) | 870093-1 |
| 25. Wire Spool Kit Assembly | 870058 |
| 26. Wire Reel Kit Assembly | 870059 |

NOTE: For installation and operation instructions for the above options, see the drawings and instructions furnished with each kit.

INSTALLATION

Installation Of Wire Spool Support Assembly

The wire spool support assembly bolts into place at the rear of the base (See Figure 3-1). See section I-169 in this owner's manual for details on proper installation of the wire spool support assembly.

Connections

See the System Outline drawing (375963) in the Diagrams chapter of this manual for details.

1. Make the proper welding cable connections between the power source and wire feeder and between the power source and work connection.
2. Connect the control cable from the feeder to the power source. Control cable extensions are available; see Available Options.

NOTE: An optional 870000-1 adaptor cable will be required for connection to a power source with only a 5 pin amphenol connection. An optional 870093-1 adaptor cable will be required for connection to a power source with only a 14 pin amphenol connection.

3. Make the proper gas line connection from the gas supply to the wire feeder gas valve (if gas will be used).
4. Attach the welding gun to the wire feeder.
5. Connect the welding gun control leads to the wire feeder gun switch terminals located on the front of the feeder.

Grounding

To assure operator safety in the case of a fault condition, the frame of the power source (welding machine) must be grounded. The wire feeder sheet metal frame is grounded only through pin G of the control cable that connects to the power source. Therefore, if the power source frame is not grounded, then, the wire feeder sheet metal frame is not grounded, and a shock hazard could possibly develop. Follow the instructions found in the power source Owner's Manual for correct grounding methods.

EMI Considerations

Electromagnetic interference (EMI) is common in today's complex industrial environment. At times, EMI levels can become great enough to affect the operation of machinery. To help reduce and safeguard against EMI levels in the welding area, follow these simple guidelines:

1. Firmly secure all sheet metal panels on the power source and wire feeder. Repair or replace heavily corroded or damaged panels and/or fasteners.
2. Keep the welding and control cables as short as possible.
3. Route the weld cables together.
4. Keep the welding cables as straight as possible; avoid coiling up the weld cables.

Installation Of Welding Wire Spool

See section I-169 of this manual.

NOTE: The Wire Spool Hub (13) supplied with the unit is provided for mounting a 30 or 60 pound spool of wire. Optional adapters are available allowing a 10 or 15 pound spool of wire or a 14 pound coil of wire to be used.

1. Remove Wire Spool Hub Nut (17) by turning counterclockwise.
2. Slide the spool of wire over the hub (13), making sure that the alignment pin on the hub enters the hole in the backside of the wire spool.
3. Replace the Hub Nut (17) and turn clockwise to a snug position.

NOTE: Install the welding wire spool so that the wire feeds from the bottom of the spool into the feedhead assembly.

Adjustment Of Spool Tension

Adjust the wire spool tension so that the wire will feed freely into the feedhead. However, the spool of welding wire must not "coast" when wire feeding stops. To adjust the wire spool tension, tighten or

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loosen the Hub Tension Screw (See Figure 4-2) accordingly.

NOTE: Excessive tightening of the Hub Tension Screw will result in a shorter motor life.

Input, Center, And Output Guide Installation

Refer to Figures 4-2 to 4-4.

NOTE: Before tightening the wire guide lockscrows, install the lower feed roll(s) to help in the alignment of the wire guides.

Input Guide

1. Loosen the input guide retaining screw and pull the input guide spring out of the hex nylon input guide.
2. Insert the steel or nylatron input guide into the hex nylon input guide.

*NOTE: The hex input guide, a holding device for input guide and spring, is in Kit 375980-**

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

3. Reinstall the input guide spring, pushing it against the input guide. Tighten the retaining screw.

Center Guide

1. Install center guide in place (if a 4 roll system) before installing both bottom feed rolls.

NOTE: The center guide may be installed if only one, but not both lower feed rolls are in place.

2. Loosen center guide retaining screw enough to allow the center guide to slide into the feedhead.
3. After proper orientation, tighten the center guide retaining screw.

Output Guide

1. Loosen the output guide retaining screw and turn it out far enough to allow the guide to slide in or out.
2. Use a piece of welding wire to support and insert the guide, or use a pair of long-nosed pliers.
3. Tighten the retaining screw, making sure that it seats in the groove in the guide.

Selection And Installation Of Feed Rolls

SELECTION:

NOTE: See feed roll drawing (supplied in the Diagrams chapter) and Figure 4-5 to order feed roll kits. Pay particular attention to this drawing when ordering feed roll kits as it is a common drawing between the 2 roll and 4 roll wire feeder and includes different feed rolls for specific wire sizes and types.

The 2210 wire feeder feed roll kit will include an upper and lower feed roll, an input guide, and an output guide for a specific wire size and type.

The 2410 wire feeder feed roll kit will include 2 sets of an upper and lower feed roll, an input guide, a center guide, and an output guide for a specific wire size and type.

INSTALLATION:

For graphical assistance, see Figure 4-2 for a 2210 and Figure 4-4 for a 2410.

1. Remove the #8-32x1" allen socket head feed roll screws from the bag furnished with the feeder. If using a 2210, there will be (6) of these screws. If using a 2410, there will be (12) of these screws.

NOTE: In the following instructions, the letter 'A' will designate the instruction for a 2210, and the letter 'B' will designate the instruction for a 2410.

- 2A. Loosen the pressure arm knob and lift the pressure arm to the full open position.
- 2B. Loosen the pressure arm knobs and lift the pressure arm off.
- 3A. Install proper feed roll onto the drive gear (bottom gear on the assembly). Insert three feed roll screws and tighten (See Figure 4-1).
- 3B. Install the two lower feed rolls onto the idler gears (see Figure 4-1). Insert three feed roll screws in each roll and tighten.

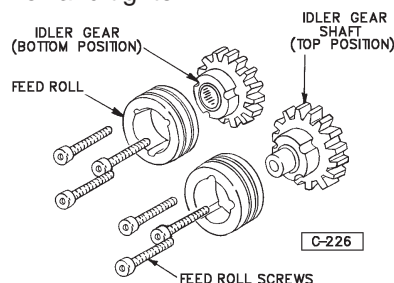


Figure 4-1

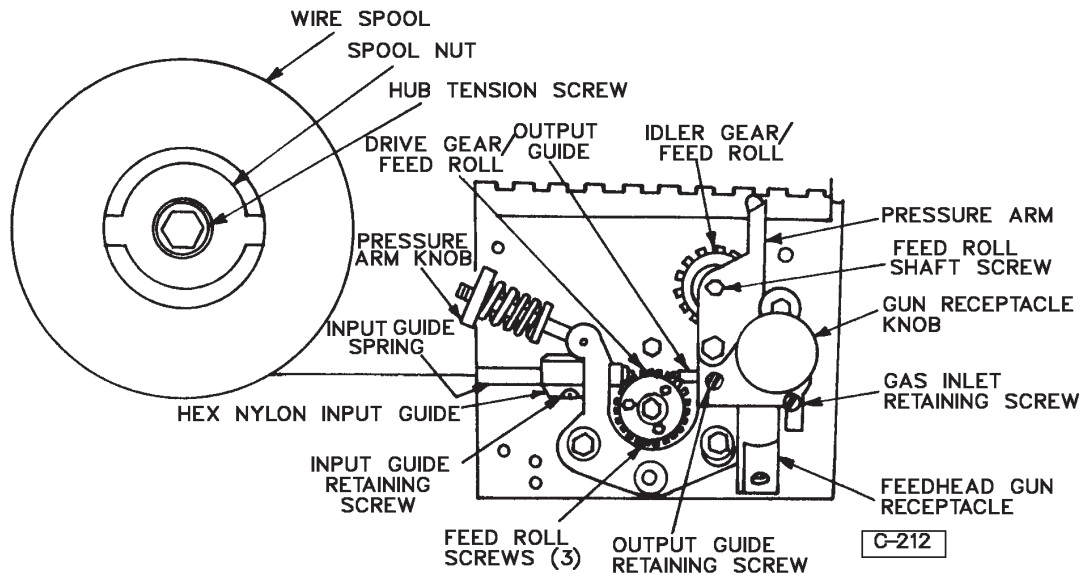


Figure 4-2 2210 Wire Drive System

4A. Remove the feed roll shaft screw allowing the idler gear (upper gear on the assembly) with bearing assembly to be removed.

4B. To install the upper two feed rolls, follow the procedure below:

- a. Remove shaft screws which secure the idler gear/shaft in place in the pressure arm (See Figure 4-3).
- b. Install the feed rolls onto the idler gears and secure in place with the feed roll screws.

NOTE: When installing a style 4 (see Figure 4-5) 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.

c. Reinstall the idler gears with feed rolls into the pressure arm. Fasten in place with the shaft screws.

d. Reassemble pressure arm onto the feedhead assembly by dropping it into place and adjusting the pressure arm knobs for proper tension. Adjust center guide so that clearance between guide and the first feed roll is approximately 1/32 inch (0.8 mm). Tighten center guide retaining screw.

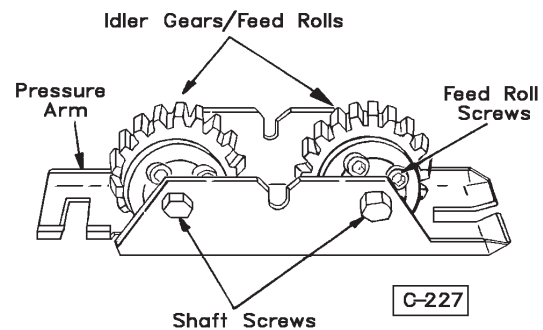


Figure 4-3

5A. Install proper feed roll onto the idler gear. Insert three feed roll screws and tighten.

NOTE: When installing a style 4 (see Figure 4-5) 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.

6A. Reinstall the idler gear with feed roll onto the pressure arm. Tighten the feed roll shaft screw.

Welding Gun Compatibility And Installation

Refer to Figure 4-2.

The 2210/2410 wire feeders are designed to be used with most welding guns. In some cases, a special adapter may be required.

To install the welding 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. Tighten gun receptacle knob.

Threading Wire Into Feedhead

Refer to Figures 4-2 and 4-4.

WARNING: ELECTRIC SHOCK CAN KILL! Make certain the power source and wire feeder are turned OFF. Do not turn the power ON until told to do so in these instructions.

CAUTION: Use care when handling the spooled wire as it tends to unravel when loosened from the spool. Grasp the end of the wire firmly; do not let it get away! Make sure the end of the wire is straight and free of burrs.

1. Loosen the pressure arm knob and lift the pressure arm up.
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 into the gun cable. See owner's manual for the gun and cable assembly.

4. Make sure that the wire is directly over the grooves in the feed roll and close the pressure arm. Lock it in place with the pressure arm knob.

5. To adjust the amount of force on the welding wire, turn the pressure arm knob(s) clockwise for increased force or counterclockwise for decreased force.

NOTE: If the force applied to the wire by the pressure arm knob(s) is too great, the welding wire will "bird nest" in the feedhead and not feed properly.

6. Turn the welding machine and wire feeder ON, and set the wire feed speed control to midrange. Remove contact tube from welding gun. See gun manual. Press the gun switch or INCH switch until wire feeds out past the gun nozzle. Place contact tube over the wire and screw into place and tighten. Cut wire off at about 1/4 inch (6 mm) from the nozzle.

WARNING: The welding electrode is electrically "Hot" if wire is fed by depressing gun switch. Electrode contact to workpiece will cause an arc with gun switch depressed. Feed motor will run feeding "HOT" electrode

Figure 4-4 2410 Wire Drive System

4-5 Feed Roll Styles

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OPERATION

Prewelding Procedure

Follow all installation instructions for the wire feeder, the welding power source, and the welding gun before attempting to operate the Model 2210/2410 Feeder.

1. Make sure all necessary connections have been made (Refer to "Connections" in the Installation chapter of this manual).
2. Turn ON the power source and the wire feeder.
3. Push PURGE on the inch/purge switch of the feeder and adjust the flow of shielding gas.
4. Push INCH on the inch/purge switch of the feeder and adjust the wire feed speed to the desired value by means of the wire feed speed control.

WARNING: If 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) or skin (burn).

5. Adjust the voltage of the power source to the desired value. The gun switch must be triggered to close power source contactor.

NOTE: The open-circuit voltage may be slightly higher than the actual welding voltage. This is also dependent upon the type of welding power source being used. See the instruction manual for the power source to determine various connections and settings for the desired operation.

Welding Procedure

WARNING: In semiautomatic or automatic wire welding, the welding wire, wire reel (if used), input guide, center guide (if 4 roll system), feed rolls, output guide, feedhead, and welding gun metal parts are all ELECTRICALLY "HOT".

Refer to Figure 5-1.

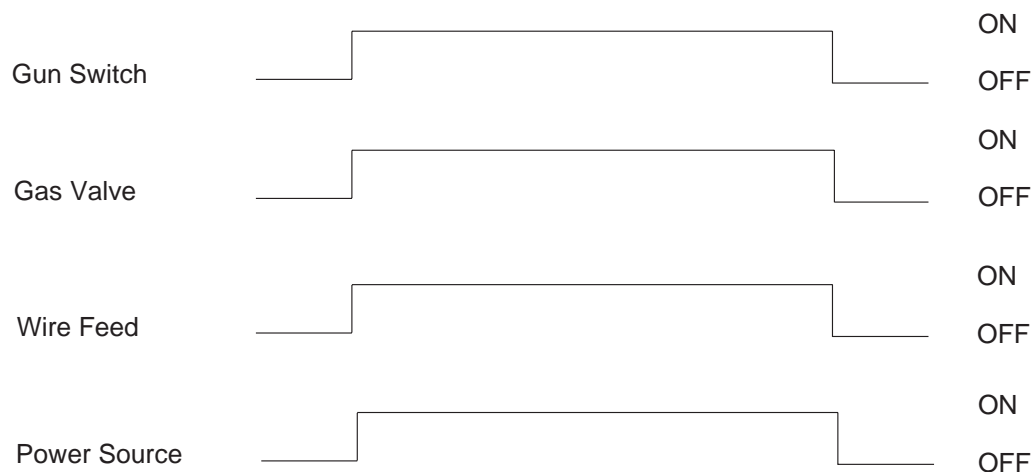


Figure 5-1 Functional Timing Diagram

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Position the welding gun above the workpiece and depress the gun switch trigger. The solid state control enables the gas valve, wire feed motor, and power source; the welding process begins. Release the gun switch trigger. The solid state control disables the gas valve, wire feed motor, and power source; the welding process ends.

NOTE: At the end of the work day or when welding has been completed, it is recommended that the gas be SHUTOFF at the cylinder, and the wire feeder and power source be turned OFF.

Theory Of Operation

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. A current limit circuit limits the maximum motor current to approximately 2.7 amperes.

With the wire feeder control cable connected to the power source, 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 PC board through CR1.

NOTE: If the circuit breaker trips, it turns the power switch S1 to the 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 (J3) is shorted, and 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 cable (P1). Another set of contacts on the relay enables the solid state control circuit to apply 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 J3) stops all functions.

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

PTC Protection Of A-B Circuit

The A-B contactor circuit on the Model 2210/2410 provides a relay closure to the power source through pins A and B of the control cable. This allows the welding wire to become electrically "hot" when the gun switch on the welding gun is pulled. If this relay closure is NOT provided for any reason, the welding wire WILL NOT be electrically "hot" — the wire will feed, but there will be NO arc when the wire touches the work.

The Model 2210/2410 has a thermal, self-reset protection device in the A-B contactor circuit to protect the circuitry against a fault or overload condition. This protection device will only allow a maximum steady state current in the range of 180 to 450 milliamps (dependent on ambient temperature) to flow through pins A and B of the control cable to the A-B contactor circuit on the Model 2210/2410.

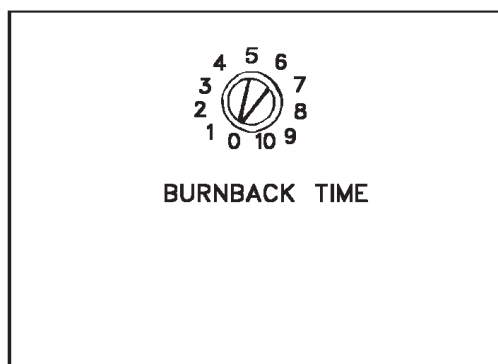
If this acceptable current range is exceeded for any reason, the self-reset protection circuit located on solder strip (TB4) will be activated effectively disabling the A-B contactor circuit. Once the fault or overload condition has been corrected and the current has re-entered the acceptable range, the protection device will AUTOMATICALLY reset and normal operation can resume.

NOTE: The protection circuit will remain activated (there will be NO arc when the wire touches the work) as long as the acceptable current range is being exceeded.

Ground Fault Operation

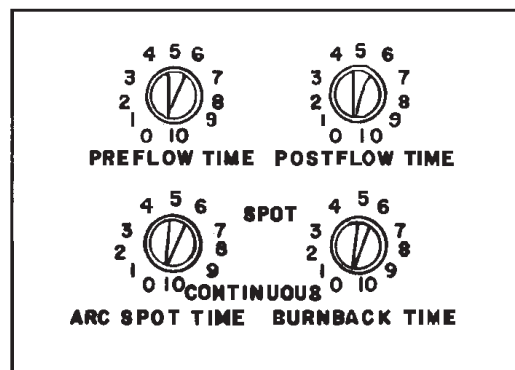
The Model 2210/2410 has been equipped with a ground fault protection circuit. This protection circuit is activated whenever excessive current flow in the frame ground wire is detected. If the ground fault protection circuit is activated, the control circuit will immediately deenergize the power source. Once the ground fault protection circuit has been enabled, the wire feeder WILL NOT respond to a gun switch closure until the power is reset by turning the power switch OFF and then ON.

NOTE: Before resetting power to the wire feeder after a ground fault occurrence, determine what caused the ground fault and correct the problem before attempting to weld again.



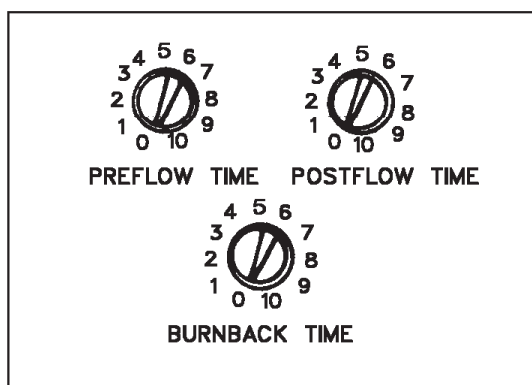
C-222

Figure 5-2



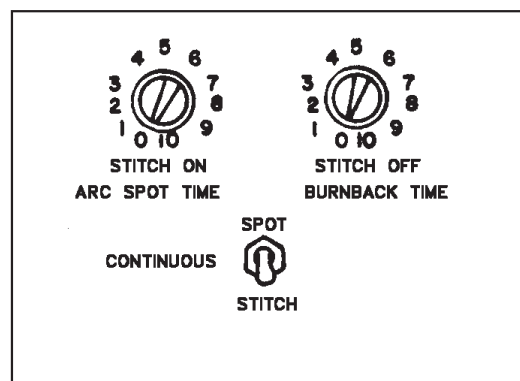
C-220

Figure 5-4



C-221

Figure 5-3



C-223

Figure 5-5

Timer Options

NOTE: Refer to the assembly instructions provided with the timer option package for proper installation of the kit.

The following timers (that can be factory or field installed) are optional items to the standard 2210/2410.

(1) BURNBACK TIMER (375904A -1) as shown in Figure 5-2.

(2) PREFLOW/POSTFLOW/BURNBACK TIMERS (375904A-2) as shown in Figure 5-3.

(3) PREFLOW/POSTFLOW/BURNBACK/SPOT TIMERS (375904A-3) as shown in Figure 5-4.

(4) STITCH ON-ARC SPOT TIME/STITCH OFF-BURNBACK TIME/SPOT-CONTINUOUS-STITCH (375904A-4) as shown in Figure 5-5.

NOTE: The numbers 0-10 around the control knobs are for reference only. Turning these knobs clockwise increases the time duration of each function.

Burnback Time — Selects 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 0.1 to 1.0 seconds.

Preflow Time — Controls time duration (0.2-2.0 seconds) of gas flow prior to establishment of the welding arc.

Postflow Time — Controls time duration (0.2-2.0 seconds) of gas flow following the extinguishing of the welding arc.

Arc Spot Time — This control regulates time duration of a spot weld cycle to 0.2 to 2.0 seconds. SPOT-CONTINUOUS switch must be in SPOT position for spot welding.

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OPERATION

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

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 will function. Note the switch positions, and the related timing functions.

Spot position — The STITCH ON/ARC TIME control (upper left on panel) is used to control the spot time with a range of 0.2 to 2.0 seconds. The STITCH OFF/BURNBACK control (upper right on panel) is used to control burnback time, with a range of 0.03 to 0.3 seconds.

Continuous position — The above controls are inoperative. However, a fixed burnback time of approximately 0.2 seconds is designed into the unit.

Stitch position — The STITCH ON/ARC SPOT TIME control is used to control the ON time of the wire feeder with a range of 0.2 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 0.2 to 2.0 seconds. The unit will cycle OFF and ON as long as the gun switch is *energized*. When the gun switch is *deenergized*, a fixed Burnback time of 0.2 seconds results. Since the power source is always turned ON during the OFF time (of the cycle), this operation is *not* recommended for welding processes and/or power sources where the open-circuit voltage exceeds 30 volts.

MAINTENANCE

Cleaning Of The Unit

Periodically clean the inside of the feeder and feedhead assembly by using a vacuum cleaner or clean, dry compressed air with no more than 25 psi (172kPa) pressure.

Cleaning Of The Drive Rolls

Clean the groove on the drive roll(s) frequently. This cleaning operation can be done by using a small wire brush. Also, wipe off the top bearing roll(s). While cleaning the rolls, check the tightness of the screws that secure the 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. See Figures 6-1 and 6-2 and the following instructions for removing the feedhead and motor from control box to inspect and/or replace brushes.

1. Remove the four screws which hold the control box cover in place. Loosen the screws (2) at the

bottom of the cover to allow the cover to slip up off the screws in the slots provided.

2. Remove the four screws securing 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 where the motor brushes may be serviced.

3. Remove brush cap from the end cap using a screwdriver. As the cap is removed, the spring on the brush/spring assembly will pop up out of the hole.

NOTE: For best fit to the commutator, reinstall the brush in the same position by observing the direction in which the spring bends.

4. Lift the brush/spring assembly out of the brush box.

5. Inspect brush, check dimensions, and blow out the brush box with compressed air.

6. Install a new brush/spring assembly, if necessary, and screw the brush cap into the threaded hole.

7. Install the feedhead assembly into the control box by reversing steps 1 and 2 above

Figure 6-1

Figure 6-2

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TROUBLESHOOTING

Scope

The troubleshooting guide is intended to be used by qualified service technicians. The troubleshooting guide contains information which can be used to diagnose and correct unsatisfactory operation or failure of the various components of the wire feeder. Each symptom of trouble is followed by a list of probable causes and the procedure necessary to correct the problem.

Safety

To ensure safe operation and service, read this entire manual before attempting to service or repair this machine. The service technician may be asked to check voltage levels while the machine is turned ON; to assure safety, use care and follow all instructions accordingly!

Troubleshooting Hints

Examine connections for proper assembly and contact before replacing a PC board. Wire lugs should be in tight contact with the lead's conductor and should be crimped to the lead's insulation. The mating surfaces of the connection should be clean and free of oxidation.

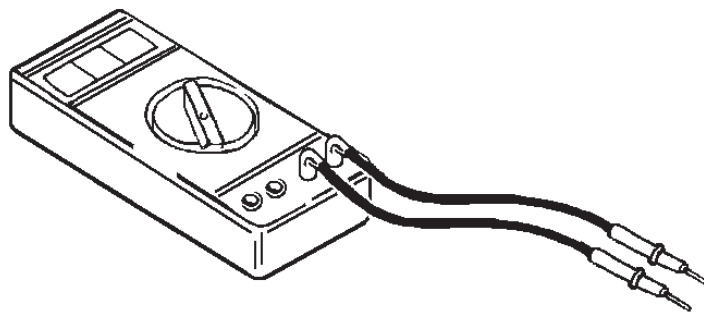
Before replacing a suspect PC board, disconnect all wire plugs from the PC board. Then, firmly reconnect all wire plugs to the PC board and retest the machine to see if the problem persists. Faulty connections or wiring problems are often the cause of an equipment malfunction!

Do not pull on wires to disassemble connections. Firmly grasp each lug or connector when disconnecting. Pulling on wires for disassembly can damage the integrity of the connection and cause future malfunctions.



Prior to disassembly or servicing of the machine, note the wiring and connections in the machine. Reassembling should place the wires in the same location and routing as received from the factory. Keep wires and leads away from hot parts and sharp objects.



Most of the PC boards in the machine contain static sensitive devices. Use a grounding strap or other suitable grounding means before attempting to service or make measurements on PC boards.

All signals referenced in the following troubleshooting guide can be measured with a Volt-Ohm-Meter (VOM).



Troubleshooting Guide

 WARNING	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none">• Follow all safety precautions.• Do not touch live electrical parts.• Turn OFF input power before servicing the machine unless otherwise noted.• Only qualified technicians are to service the machine.

 WARNING	
	<p>CAUTION: Static sensitive devices.</p> <ul style="list-style-type: none">• Use static proof bags.• Use grounded wrist strap.• Use qualified personnel when testing or handling device.

Unit is completely inoperative.

Check for tripped circuit breaker.

Reset ON-OFF switch.

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.

Wire feed motor does not operate.

Check to see if control relay on motor control board is operating.

Check control cable connection from gun to feeder. Check gun switch.

Check to see why feed rolls are mechanically restricted and control is operating at current limit.

Check feed rolls and related items for restrictions and correct condition.

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.

Check for defective motor control board or wiring.

With control at max. and with gun switch energized, check the following:

Must measure approximately 108 V DC from J1-2 to J1-5.

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

Must measure approximately 10 V DC From J2-5 to J2-9.

Check for defective bridge rectifier.

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

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

Check instructions for proper installation. Replace module if defective.

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

Check for proper installation. Replace if required.

Check for defective inch-purge switch.

Replace switch if defective.

Check to see why the ground fault circuit has activated.

See the section in the owner's manual on Ground Fault Operation.

No speed control.

Check for defective control potentiometer.

With gun switch energized, voltage from J2-5 to J2-9 must vary from 0 to approximately 9.5 V DC as control is turned from min. to max. Voltage from J2-3 to J2-9 must be approximately 9.5 V DC continuously.

Check for loose knob on control potentiometer.

Tighten knob.

Check for defective Slow/Fast run in switch.

With gun switch energized, must measure approximately 2 volts from J2-6 to J2-8.

Check defective motor control board.

Replace.

Wire feed motor operates but wire does not feed.

Check for too little pressure on wire feed rolls.

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

Check for incorrect wire feed rolls.

Check size stamped on wire feed rolls.

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

Decrease the drag on the wire spool.

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.

Check for failed insulator on feed roll. Shaft turning inside insulator.

Replace insulator gear assembly.

Wire wraps around the wire drive rolls.

Check for too much feed roll pressure.

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TROUBLESHOOTING

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

Check alignment on center guide or output guide — not correctly aligned.

Realign center guide and output guide.

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

See table in Gun Manual for correct size.

Wire feeds but no gas flows.

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.

Check to see if gas cylinder valve is open or flow meter adjusted.

Open gas valve at cylinder and adjust flow meter.

Check to see if gas cylinder is empty.

Replace.

Check for restriction in gas line.

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

Check to see if gun nozzle is plugged.

Clean gun nozzle.

Check for failure of gas valve solenoid.

Replace.

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.

Check for defective inch-purge switch.

Replace switch if defective.

Erratic weld output.

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

Check ground clamp for secure attachment.

Check to see if gun liner is dirty.

Replace if necessary.

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

Readjust as necessary.

Wire feeds but no Arc.

Check the A-B power source contactor control cable for loose connections.

Check that the connection is secure at power source and the cable is not damaged.

Check for tripped PTC device.

Release the gun switch. Check control (A-B) cable for shorts. Allow cool down period for PTC to reset.

NOTE: Releasing the gun trigger or removing the cause of the overload will allow the PTC to reset.

Control board defective.

Replace.

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PARTS LIST

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An "Application Code" is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the right-most column of the Parts List. If an item in the Parts

List applies to all Specifications or Assemblies, the word "ALL" will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.

How To Select Recommended Spares

The first two columns of the Parts List are used to show the recommended quantity of parts which are typically required for spares or replacement purposes. The quantities under Class 1 are for parts that are consumed or that may need replacement in two years or less depending on operating hours. Class 2 quantities are for parts that may need replacement under unusual service conditions or additional operating hours. These are suggested quantities based on expected usage or the minimum package quantity. Class 1 spares are repeated under Class 2 but the quantities may be larger to allow for additional operating hours. Contact your equipment dealer for assistance in establishing the spare parts program best suited for your needs.

SPEC NUMBER

APPLICATION CODE

6548D-2

A

6548D-3

B

6548D-4

C

6548D-5

D

6548D-6

E

6548D-7

F

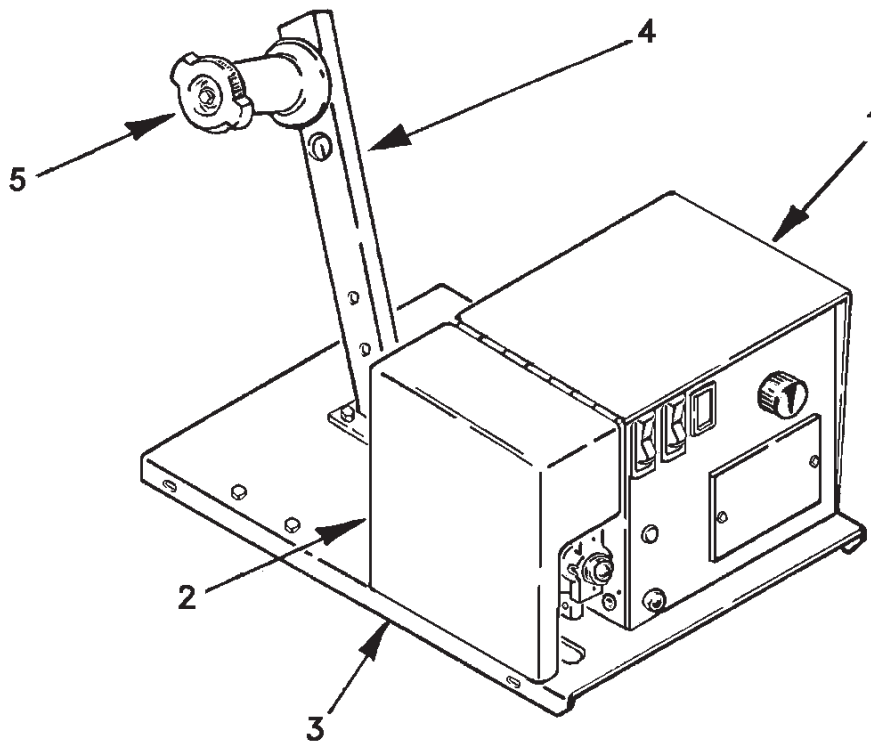


Figure 8-1 Wire Feeder Group

Parts List for Figure 8-1

Quantity Recomm. Spares Class 1	Item No Class 2	Part Number	Description	Qty per Assy	Application Code
		6548D-2	Wire Feeder, Solid State Control 2-Roll Drive, 60-900 IPM	1	A
		6548D-3	Wire Feeder, Solid State Control 4-Roll Drive, 40-600 IPM	1	B
		6548D-4	Wire Feeder, Solid State Control 4-Roll Drive, 60-900 IPM	1	C
		6548D-5	Wire Feeder, Solid State Control 2-Roll Drive, 60-900 IPM	1	D
		6548D-6	Wire Feeder, Solid State Control 4-Roll Drive, 60-900 IPM	1	E
		6548D-7	Wire Feeder, Solid State Control 4-Roll Drive, 60-900 IPM	1	F
	1	870038-1	. Box - Control (For Details See Figure 8-2)	1	ABC
		870038-2	. Box - Control (For Details See Figure 8-2)	1	DE
		870038-3	. Box - Control (For Details See Figure 8-2)	1	F
	2	870051-1	. Feedhead Assembly, (2) Roll (For Details See Figure 8-3)	1	A
		870051-2	. Feedhead Assembly, (2) Roll (For Details See Figure 8-3)	1	D
		870050-1	. Feedhead Assembly, (4) Roll (For Details See Figure 8-4)	1	B
		870050-2	. Feedhead Assembly, (4) Roll (For Details See Figure 8-4)	1	C
		870050-3	. Feedhead Assembly, (4) Roll (For Details See Figure 8-4)	1	E
		870050-4	. Feedhead Assembly, (4) Roll (For Details See Figure 8-4)	1	F
	3	375769-4	. Base	1	All
	4	870060-1	. Support - Wire Spool Assembly (For Details see I-169)	1	All
	5	870058	. Kit - Wire Spool (For Details see I-169)	1	All

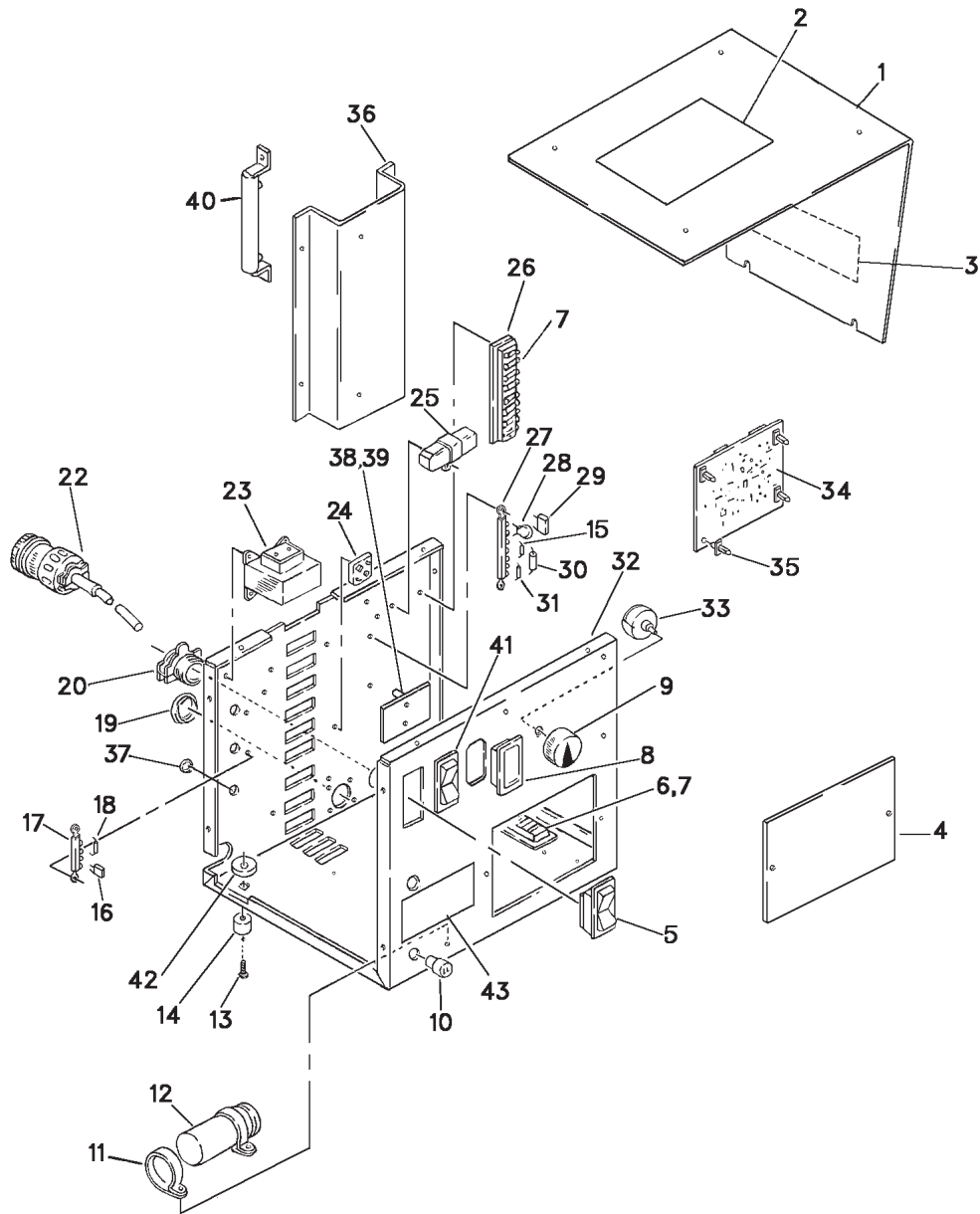


Figure 8-2 Control Box Group

Parts List for Figure 8-2

Quantity		Item	Part	Description	Qty	Application
Recomm.	Spares					
Class 1	Class 2	No	Number		per	Code
					Assy	
			870038-1	Box - Control Assembly	1	ABC
			870038-2	Box - Control Assembly	1	DE
			870038-3	Box - Control Assembly	1	F
		1	375761-4	. Cover - Control Box	1	ABC
			375761-5	. Cover - Control Box	1	DEF
		2	204036	. Label - Precautionary	1	All
		3	870087-1	. Label - Company	1	ABCDE
		4	369958	. Cover - Hole, Front Panel	1	All
		5	870032-3	. Switch - Rocker, Circuit Breaker	1	All
		6	407146	. Label - Terminal Block	1	All
		7	401937-2	. Block - Terminal, 20 Amp	2	All
		8	407118-1	. Plug - Hole, Rectangular	1	All
		9	406806-3	. Knob - Control	1	All
		10	405576-1	. Bushing - Terminal	1	All
		11	W-10051-22	. Clamp - Plastic	2	All
	1	12	406772-2	. Capacitor - Elect. Alum.	1	All
		13	W-11236-3	. Screw - 1/4-20 X 1-1/4, HWH, SF-Tap, Type F	4	All
		14	409838	. Grommet - Mtg.	4	All
		15	405148-9	. Resistor - 1/4 Watt	1	All
		16	192000-6	. Thermistor - PTC Resettable	1	All
		17	8TRY-63-3	. Strip - Terminal, Solder	1	All
		18	408726	. Resistor - 22 Ohm, 5 Watt	1	All
		19	403091-6	. Plug - Hole, Plastic	1	All
		20	W-10080-1	. Connector - Straight	1	All
		21		. Deleted		
		22	870072-1	. Cable - Control	1	All
	1	23	16DA-3134	. Transformer - Step Down	1	All
		24	404065-2	. Rectifier - Silicon	1	All
		25	405627-2	. Resistor - Power, 50 Watt	1	All
		26	407147	. Label - Terminal Block	1	All
		27	8TRY-63-7	. Strip - Terminal Solder	1	All
		28	403955-16	. Suppressor	1	All
		29	401943-1	. Capacitor - Radial Leads	1	All
		30	407107-1	. Resistor - Wire Wound, 2 W	1	All
		31	406290-12	. Resistor - 1/4 Watt	1	All
		32	870044-1	. Wrapper - Control Box	1	All
		33	401428-8	. Potentiometer - 5K, 2 Watt	1	All
		34	376657	. Board - Motor Control	1	All

Not Illustrated

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PARTS LIST**

Parts List for Figure 8-2

Quantity Recomm. Spares	Item No	Part Number	Description	Qty per Assy	Application Code
Class 1	Class 2				
	35	405535-4	. Support - Circuit Board	4	All
	36	375828-2	. Shield - Resistor	1	All
	37	403091-12	. Plug - Hole, Plastic	3	All
	38	405535-1	. Support - Circuit Board	2	All
	39	375581	. Board - Ground Circuit Fault	1	All
	40	403765-11	. Resistor - 100 W	1	All
	41	403704-5	. Switch - Rocker, Inch/Purge	1	All
	42	409837	. Spacer - Nylon	4	All
	43	870085-1	. Label - Product	1	AD
		870085-2	. Label - Product	1	BCEF
	—	830116	. Label - Ground	1	All

— Not Illustrated

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Parts List for Figure 8-3

Quantity	Recomm.	Item	Part	Description	Qty	Application
Spares		No.	Number		per	Code
Class 1	Class 2				Assy	
			870051-1	Feedhead - 2 Roll 900 IN/MIN	1	A
			870051-2	Feedhead - 2 Roll 900 IN/MIN	1	D
		1	870045	. . Plate - Mtg. Feedhead	1	A
			870045-1	. . Plate - Mtg. Feedhead	1	D
		2	407138	. . Label - Tension Indicator	1	All
		3	407099'	. . Label - Electric Shock	1	All
		4	494742	. . Label - CE Mark	1	All
		5	205272	. . Label - CSA	1	All
		6	407175-1	. . Spring - Retaining, Door	1	All
		7	406636	. . Label - Warning, Moving Parts	1	All
		8	870047	. . Cover - Feedhead Assembly	1	ABC
			870047-1	. . Cover - Feedhead Assembly	1	DE
		9	375913-2	. Motor - Gear, Feedhead Assembly	1	ACDE
		10	407217-1	. Form - Product Information	1	All
	1	11	404162-2	. Valve - Solenoid	1	All
		12	202258-4	. Suppressor - Assembly	1	All
		13	200548-1	. Adapter - Gas R.H	1	All
		14	203846-2	. Fitting - Barbed, Poly	1	All
		15	16DA-3304-22	. Tube - Water or Gas	1	AD
		16	400828-1	. Tie - Plastic	2	All
		17	406639-2	. Ring - Snap, External	1	All
		18	407075-2	. Shim - .015 Thickness	3	All
		19	407075-1	. Shim - .005 Thickness	1	All
		20	405836-3	.Ring - External Retaining	1	All
		21	375836	. Spacer - Insulator	1	All
	1	22	406985	. Gear - Insulated Drive Assembly	1	All
		23	375793A	. Washer - Insulating	2	All
		24	W-11242-5	. Washer - FL. ST. 1/4	4	All
		25	870087-1	Label - Company	1	All
		26	8BW-824-0	. Screw - 1/4-20 x 3/4 Rd. Hd. MH.	1	All
		27	375781-2	. Receptacle - Gun	1	All
	1	28	375962	. Sleeve - Gun	1	All
	1	29	375981	. Inlet - Gas	1	All
		30	375298	. Tube - Gas	1	All
		31	375788	. Spacer - Feedhead	3	All
		32	375791	. Pin - Locating	1	AD
		33	375786	. Insulator - Locating Pin	1	AD
		34	407133-1	. Knob - Gun Receptacle	1	All
		35	375787	. Spacer - Gun Receptacle	1	All
		36	407044	. Screw - Retaining	2	All
		37	W-11113-3	. Screw - #10-32 x 1/2 Rd. Hd. MH. ST.	1	All
		38	375702	. Plate - Feedhead, 2 Roll	1	AD

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PARTS LIST**

Parts List for Figure 8-3

Quantity	Recomm.	Item	Part	Description	Qty	Application
Spares		No	Number		per	Code
Class 1	Class 2				Assy	
		39	16DA-1202-11	. Pin - Spring	1	All
		40	375789	. Rod - Pressure Arm	1	All
		41	16DA-1202-13	. Pin - Spring	1	All
		42	375784A	. Washer - Pressure Arm	1	All
		43	400562-38	. Spring - Compression	1	All
		44	376001A	. Knob - Pressure Arm	1	All
		45	402119-16	. Screw - 1/4-20 x 2-1/2 HHC ST.	3	All
		46	375792	. Spacer - Feedhead	3	All
		47	402119-10	. Screw - 1/4-20 x 2 HH, MH, ST.	2	All
		48	406827	. Arm - Pressure	1	AD
		49	375785	. Spacer - Pressure Arm	1	AD
		50	375790	. Shaft - Feed Roll	1	All
		51	16DA-4249-5	. Ring - Snap, External	2	All
		52	407108	. Washer - Flat	2	All
	1	53	375921	. Gear - Idler Assembly	1	All
	3	54	W-11144-3	. Screw - #8-32 x 1 Cap Skt. Hd.	6	All
		55	5CW-3884-2	. Screw - #10-24 x 1/2 HHC. MH. ST.	1	All
		56	406397	. Guide - Input	1	All
		57	376037	. Spring - Input Guide Assy	1	All
		58	407605	. Label - Instruction	1	AD
	2	59	407190	Cap - Brush (Stature)	2	
2	4	60	407191	Brush & Spring Assy (Stature)	2	

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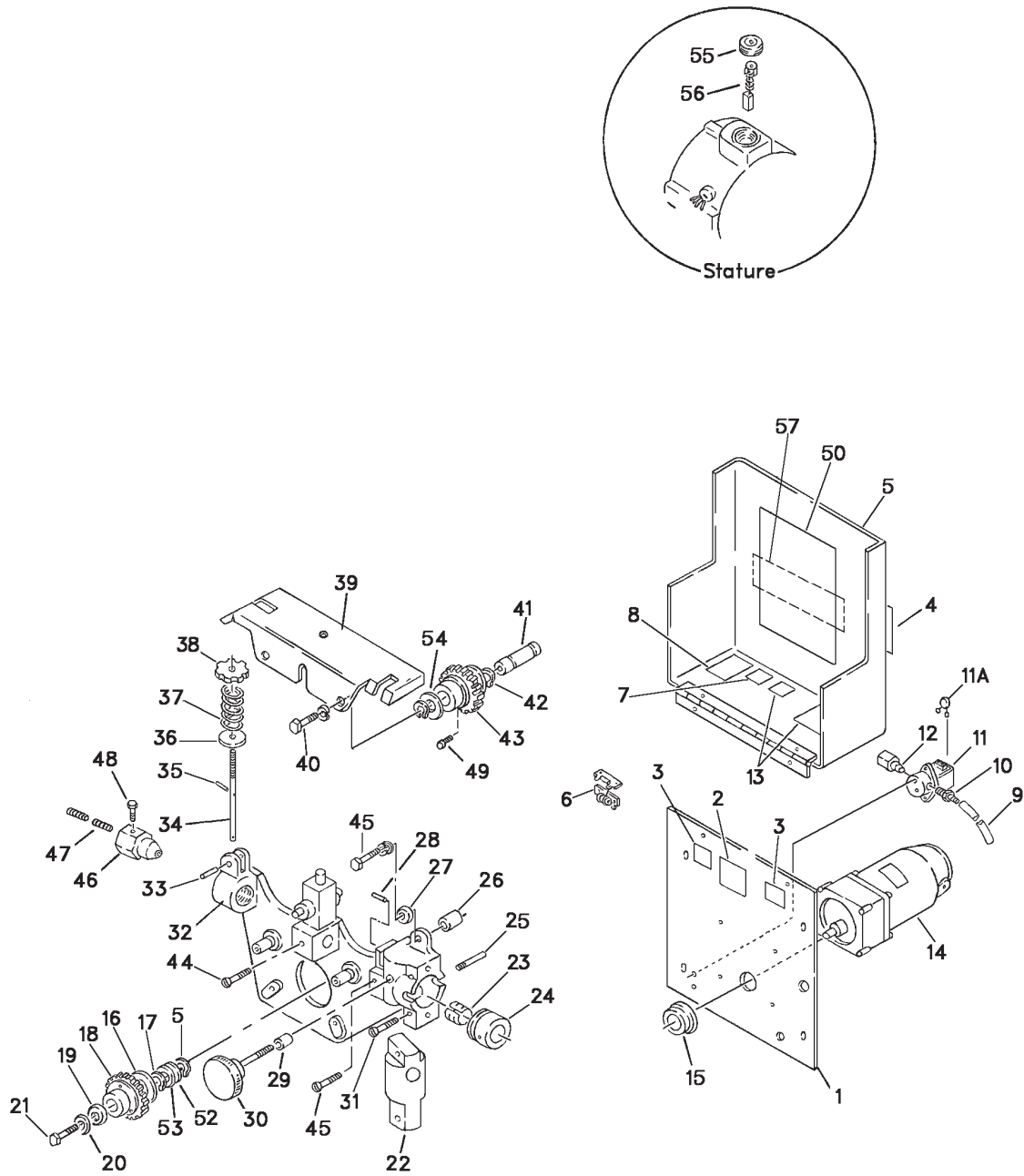


Figure 8-4 Feedhead Group - 4 Roll

Parts List for Figure 8-4

Quantity	Recomm.	Item	Part	Description	Qty	Application
Spares		No	Number		per	Code
Class 1	Class 2				Assy	
			870050-1	Feedhead - 4 Roll Assembly 600 IPM	1	B
			870050-2	Feedhead - 4 Roll Assembly 900 IPM	1	C
			870050-3	Feedhead - 4 Roll Assembly 900 IPM	1	E
			870050-4	Feedhead - 4 Roll Assembly 900 IPM	1	F
		1	870046	. . Plate - Mounting Feedhead	1	BC
			870046-1	. . Plate - Mounting Feedhead	1	EF
		2	406636	. . Label - Moving Parts	1	All
		3	407138	. . Label - Tension	2	All
		4	407099	. . Label - Electric Shock	1	All
		5	870047	. . Cover - Feedhead Assembly	1	ABC
			870047-1	. . Cover - Feedhead Assembly	1	DEF
		6	407175-1	. . Spring - Retaining Door	1	All
		7	494742	. . Label - CE Mark	1	All
		8	205272	. . Label - CSA	1	All
		9	16DA-3304-23	. Tube - Water or Gas	1	BCEF
		10	203846-2	. Fitting - Barbed, Poly	1	All
1		11	404162-2	. Valve - Solenoid	1	All
		11A	202258-4	. Suppressor - Assembly	1	All
		12	200548-1	. Adapter - Gas, R.H.	1	All
		13	407217-1	. Form - Product Information	1	All
		14	375913-1	. Motor - Gear, Feedhead Assembly	1	B
			375913-2	. Motor - Gear, Feedhead Assembly	1	ACDEF
		15	375825	. Spacer - Feedhead, Locating	1	BCEF
		16	375836	. Spacer - Feed Roll Insulator	1	All
		17	405836-3	. Ring - External Retaining	1	All
1		18	406985	. Gear - Feed Roll Assembly	1	All
		19	375793A	. Washer - Insulating	2	All
		20	W-11242-5	. Washer - FL. ST. 1/4	6	All
		21	8BW-824-0	. Screw - 1/4-20 x 3/4 Pan Hd. Sems	1	All
		22	375781-2	. Receptacle - Gun Feed Head	1	All
1		23	375962	. Sleeve - Gun	1	All
1		24	375981	. Inlet - Gas	1	All
		25	375298	. Tube - Gas	1	All
		26	375840	. Spacer - Feedhead	3	BCEF
		27	375792	. Spacer - Feedhead	3	BCEF
		28	16DA-1202-3	. Pin - Spring	1	All
		29	375787	. Spacer - Gun Receptacle	1	BCEF
		30	407133-1	. Knob - Gun Receptacle	1	All
		31	407044	. Screw - Retaining	1	All
		32	375920	. Plate - Feedhead, 4 Roll, Assembly	1	BCEF
		33	16DA-1202-11	. Pin - Spring	1	All
		34	375789	. Rod - Pressure Arm	2	All

**193111-021
PARTS LIST**

Parts List for Figure 8-4

Quantity	Recomm.	Item	Part	Description	Qty	Application
Spares		No	Number		per	Code
Class 1	Class 2				Assy	
		35	16DA-1202-13	. Pin - Spring	2	All
		36	375784A	. Washer - Pressure Arm	2	All
		37	400562-38	. Spring - Compression, Tension and Torsion	2	All
		38	376001A	. Knob - Pressure Arm	2	All
		39	406846	. Arm - Pressure	1	BCEF
		40	402119-10	. Screw - 1/4-20 x 2, HHC, ST.	2	All
		41	375790	. Shaft - Feed Roll	2	All
		42	16DA-4249-5	. Ring - Snap, External	4	All
	1	43	375921	. Gear - Idler	4	All
		44	W-11113-3	. Screw - 10-32 x 1/2, Pan Hd.	2	All
		45	402119-7	. Screw - 1/4-20 x 1-1/4, HHC ST.	1	All
		46	406397	. Guide - Input	1	All
		47	376037	. Spring - Input Guide	1	All
		48	5CW-3884-2	. Screw - #10-24 x 1/2, HH, MH, ST.	1	All
	3	49	W-11144-3	. Screw - #8-32 x 1, Cap Skt. Hd.	12	All
		50	407567	. Label - Inst.	1	BCEF
		51	406639-2	. Ring - Snap, External	1	All
		52	407075-2	. Shim - .015 Thickness	3	All
		53	407075-1	. Shim - .005 Thickness	1	All
		54	407108	. Washer - Flat	4	All
	2	55	407190	Cap - Brush (Stature)	2	All
2	4	56	407191	Brush & Spring - Assy (Stature)	2	All
		57	870087-1	Label - Company	1	All

INSTRUCTION SHEET - Installation of Wire “Reel” or “Spool” on the Support

The wire feeder will be shipped from the factory with a wire spool kit 870058 and a wire reel/spool support assembly 870060-X. An “optional” wire reel kit 870059 is also available.

WARNING: Mount spool with hub nut angled upward (see Figure 1). Hub nut may detach causing personal injury from falling wire coil spool if improperly mounted.

Figure 1

1. To install the Wire Reel/Spool Support Assembly (870060-X) onto the Baseplate:

a. Use the four 1/4-20 x 7/8" screws, the four hex keps nuts, and the two flat washers to fasten the support (1) to the wire feeder base.

2. To install the Wire Spool Kit (870058):

a. Mount the shaft (6) in the lower hole (if using a 30-45 lb. spool) or in the upper hole (if using a 60 lb. spool) of the support (1). Make sure the 1/2-13 hex nut (2) is securely tightened on the shaft (6). See Figure 2.

b. Mount the Wire Spool Hub (13) on the Shaft (6).

Figure 2

c. Install the spool tension spacer, compression spring, spacer, and the hub tension screw.

d. Place a wire spool on the hub (13). Align the positioning pin on the hub with the hole in the wire spool so that the wire feeds from the bottom of the coil. See Figure 3.

Figure 3

e. Install the wire spool hub nut (17) and tighten until the spring ball plunger falls into the dimple on the wire spool hub.

f. Adjust the compression spring tension by use of the hub tension screw until the proper reel drag is achieved.

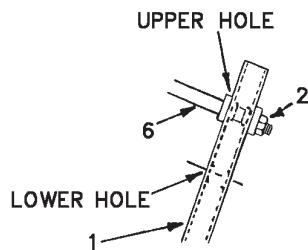


Figure 4

3. To install the Wire Reel Kit (870059):

a. Mount the shaft (6) in the upper hole of the support (1) to assure proper clearance for the wire reel (7). See Figure 4.

b. Mount the wire reel (7) on the shaft (6).

c. Install the wire reel washer, the steel wire reel washer, compression spring, "T" wire reel washer, and the drag adjusting screw.

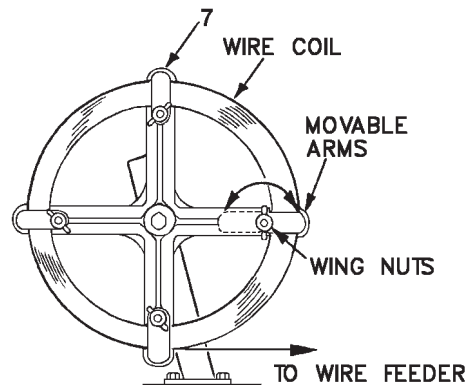


Figure 5

d. Loosen the wing nuts holding the movable arms. Rotate the arms inward towards the center of the reel (7). Place the coiled wire on the reel so the wire feeds from the bottom of the coil to the wire feeder. See Figure 5.

e. Reposition the movable arms outward and tighten the wing nuts.

f. Tighten the drag adjusting screw until the desired reel drag is achieved.

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DIAGRAMS

- Note the model and assembly numbers shown on the equipment nameplate.
- Locate these numbers in the table below.
- Use only those diagrams and instructions that are applicable.

MODEL NUMBER	SPECIFICATION NUMBER	CONNECTION & SCHEMATIC DIAGRAM	SYSTEM OUTLINE	FEED ROLL CHART
2210	6548D-2	870034	375963	375980
2410	6548D-3	870034	375963	375980
2410	6548D-4	870034	375963	375980
2210	6548D-5	870034	375963	375980
2410	6548D-6	870034	375963	375980
2410	6548D-7	870034	375963	375980

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INSTALLATION OF WIRE SPOOL SUPPORT ASSEMBLY

DIAGRAMS