

**SP-2001
SPOOL GUN ASSEMBLY**

For the Following Specs:

- 407838B-1 — SP-2001 Spool Gun
with 50 Ft. Cable Assembly
- 407838B-2 — SP-2001 Spool Gun
with 25 Ft. Cable Assembly



OWNER'S MANUAL Number **430429-287**
Revised April 6, 1998

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

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

INTRODUCTION **1**
 How To Use This Manual 1-1
 Equipment Identification 1-1
 Receipt Of Equipment 1-1

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS **2**

DESCRIPTION OF EQUIPMENT **3**
 General 3-1
 Product Specifications 3-1
 Spool Gun Components 3-1
 Power Source Compatibility 3-2

INSTALLATION **4**
 Overview 4-1
 Connections 4-1

OPERATION **5**
 Prewelding Procedure 5-1
 Welding Procedure 5-1

PARTS LIST **6**
 Equipment Identification 6-1
 How To Use This Parts List 6-1
 How To Select Recommended Spares 6-1

DIAGRAMS **7**

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 machine. Equipment which does not have a nameplate attached to the machine 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.

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.

This page intentionally left blank.

DESCRIPTION OF EQUIPMENT

General:

The SP-2001 Spool Gun is a state-of-the-art welding gun for use in aluminum welding. The lightweight and portable SP-2001 Spool Gun comes complete with a wire feed speed control built into the handle and either a 25 ft. or 50 ft. long cable assembly.

The SP-2001 Spool Gun must be used in conjunction with a control box (not included with the SP-2001 Spool Gun package) and a DC type power source. The DC type power source can have a CC or CV output; however, best results are obtained with a CV output.

Product Specifications:

Wire Type	Aluminum
Wire Size	0.030", 0.035", 3/64"
Wire Package	1 Lb.
Wire Feed Speed Range	50 - 650 IPM
Welding Current	250 A/X =60%
.....	200 A/X =100%
Motor Voltage Rating.....	24 VDC
Weight of Spool Gun	3 Lbs.
Weight of Spool Gun	
with 25' Cable Assembly	14 Lbs.
Weight of Spool Gun	
with 50' Cable Assemblv.....	22 Lbs.

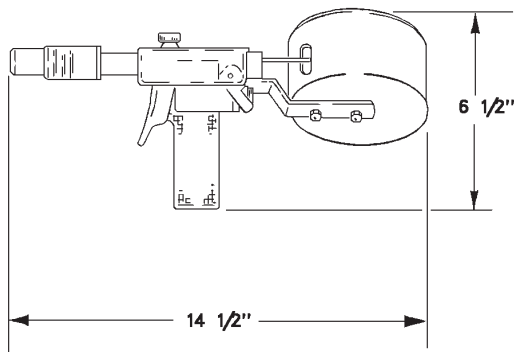


Figure 3-1 SP-2001 Spool Gun Dimensions

Spool Gun Components:

The following figures describe and show the various components of the SP-2001 Spool Gun.

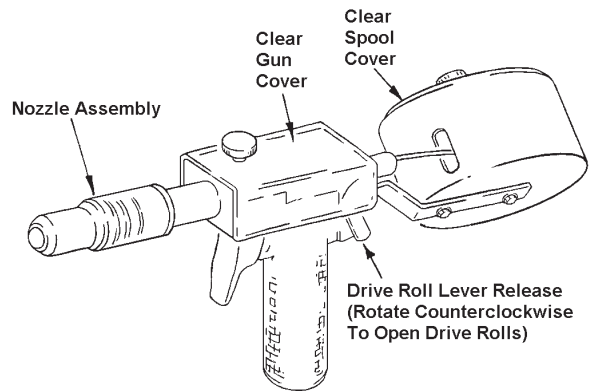


Figure 3-2 SP-2001 Spool Gun Assembly

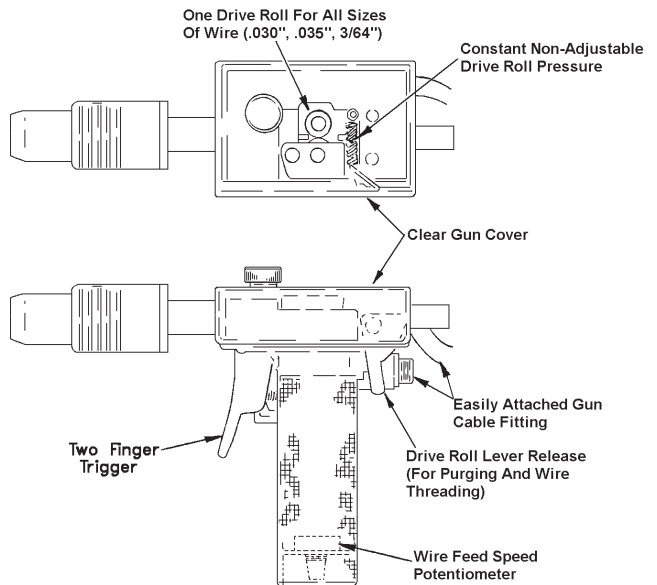


Figure 3-3 Special Features of SP-2001 Spool Gun

Power Source Compatibility:

The SP-2001 Spool Gun must be used with a DC type power source. The DC type power source can have a CC or CV output; however, best results are obtained with a CV output.

WARNING: When using the SP-2001 Spool Gun with a CC output power source, the filler metal will be at welding voltage any time the power source is turned ON. Filler metal contact to the workpiece will cause a welding arc.

The SP-2001 Spool Gun must be used in conjunction with a control box (not included with the SP-2001 Spool Gun package). This control box which connects to the power source may require an adapter cable. Consult the control box owner's manual for details.

INSTALLATION

Overview:

The SP-2001 Spool Gun operates in conjunction with a SPC-2001 control box, a power source, and a cable assembly. The SP-2001 Spool Gun will also operate with older control boxes by using a 171312 adapter cable (see Figure 4-1).

Connections:

See the System Outline drawing (870106) in the Diagrams chapter of this manual for details.

1. Connect a weld cable from the power source to the work connection.
2. Connect the weld cable from the SPC-2001 to the power source.
3. Connect the control cable from the SPC-2001 to the power source.

NOTE: Adapter cables may be required; see the "Available Options" section of the SPC-2001 manual for part numbers.

4. Make the proper gas line connection from the gas supply to the SPC-2001 gas valve inlet.

5. Attach the 25' or 50' cable assembly to both the SP-2001 Spool Gun and the SPC-2001 front panel connections.

NOTE: When using an older style control box (376908-1 or 170406-1), a 171312 adapter cable will be required to adapt the cable assembly to the control box front panel connections.

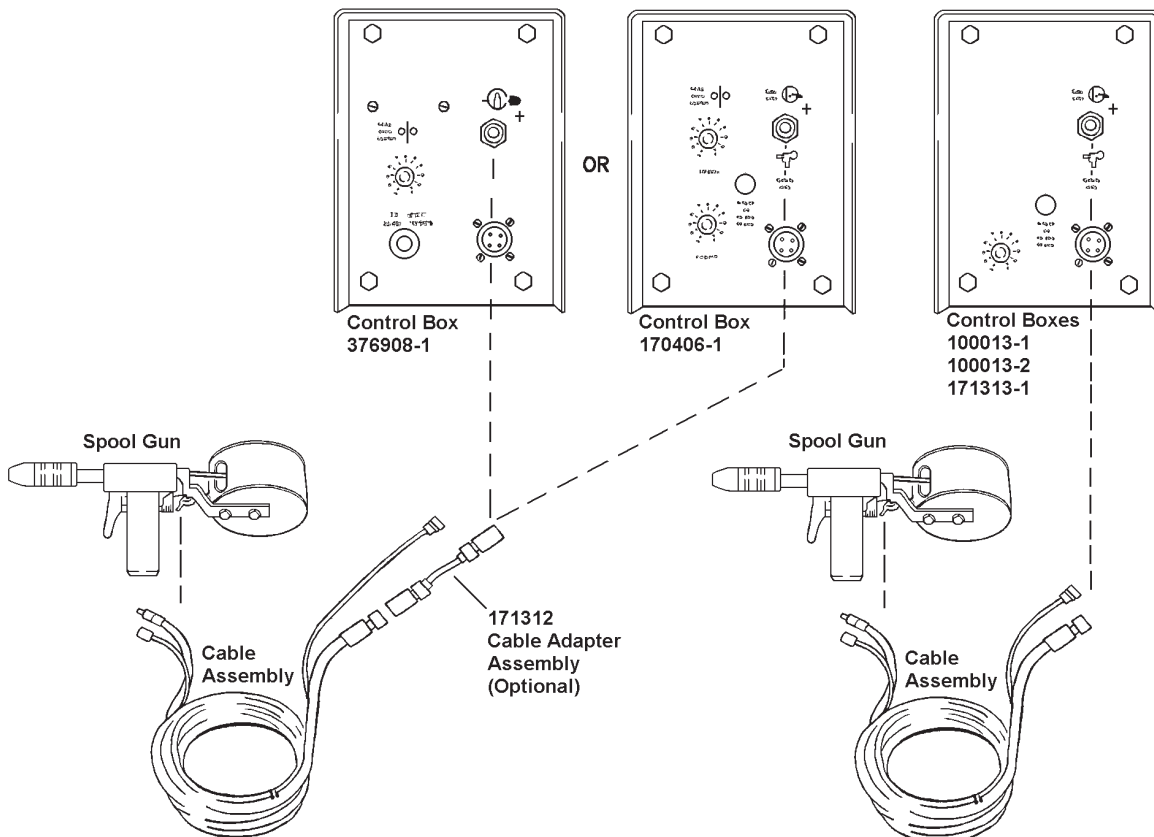


Figure 4-1 Control Box/Spool Gun Connections

This page intentionally left blank.

OPERATION

Prewelding Procedure:

Follow all installation instructions for the control box and welding power source before attempting to operate the SP-2001 Spool Gun Assembly.

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.
3. Depress the gun switch trigger and adjust the flow of shielding gas.
4. Remove the gun cover, spool cover, nozzle assembly, and contact tip. Disengage the drive roll lever release.
5. Install the spool of wire into the Spool Gun Assembly. Thread the wire through the input guide, between the drive rolls, and into the output guide.
6. Engage the drive roll lever release and depress the gun switch trigger. Adjust the wire feed speed to the desired value by means of the wire feed control in the Spool Gun Assembly handle.
7. Allow approximately 6 inches wire to run out. Reinstall contact tip, nozzle assembly, gun cover, and spool cover.
8. Cut off wire even with the end of the nozzle assembly.

Welding Procedure:

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

Refer to Figure 5-1.

Position the Spool Gun Assembly above the workpiece and depress the gun switch trigger. Depressing the gun switch trigger enables the gas valve, wire feed motor, and power source; the welding process begins. To end the weld, release the gun switch trigger which disables the gas valve, wire feed motor, and power source.

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 power source be turned OFF.

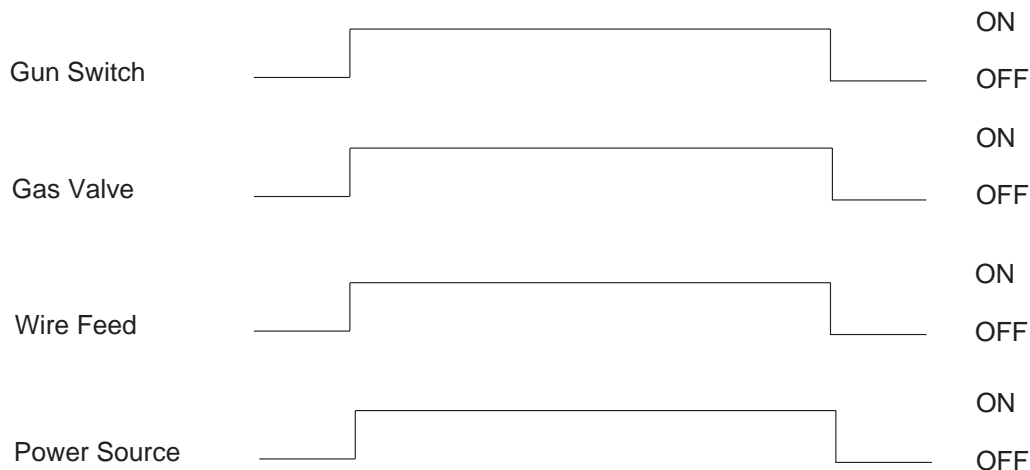


Figure 5-1 Functional Timing Diagram

This page intentionally left blank.

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 rightmost 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.

SPECIFICATION NUMBER

407838B-1
407838B-2

APPLICATION CODE

A
B

430429-287
PARTS LIST

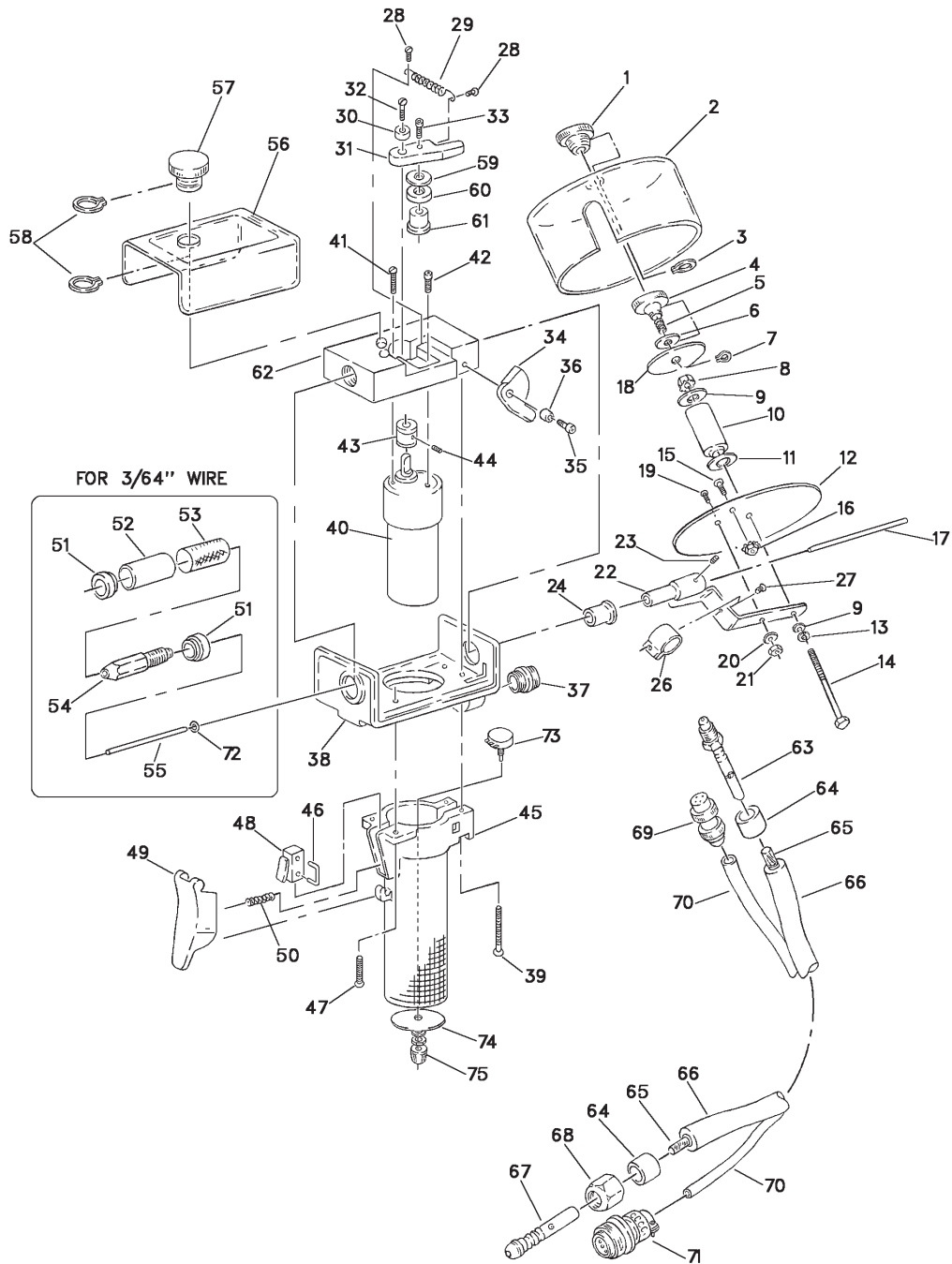


Figure 6-1 Gun and Cable Assembly

Parts List For Figure 6-1

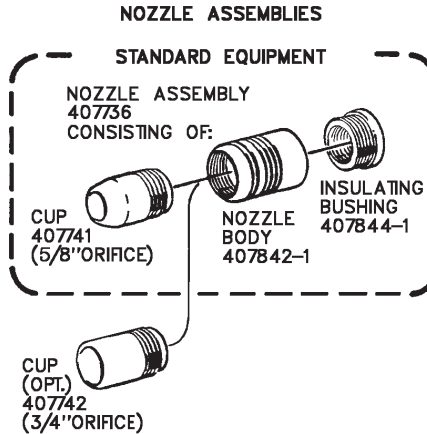
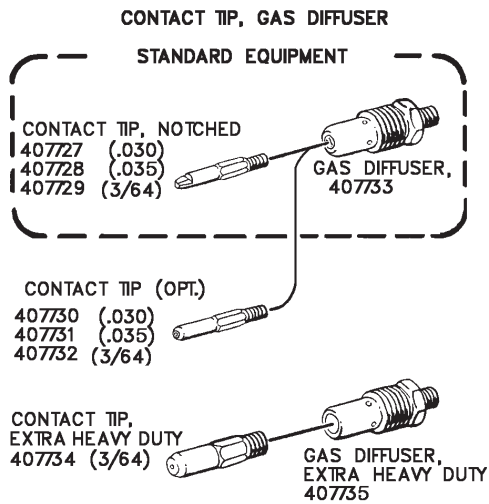
Quantity	Recomm.	Item	Part	Description	Qty	Application
Spares	Class 1	Class 2	No	Number	per	Code
					Assy	
			407838B-1	SP-2001 Spool Gun with 50 Ft. Cable Assy		A
			407838B-2	SP-2001 Spool Gun with 25 Ft. Cable Assy		B
			171309	. Gun - SP-2001	1	All
1		1	407873	. . Hand Nut - Spool Cover	1	All
1		2	407875	. . Cover - Spool	1	All
		3	No Number	. . Ring - Snap 5/8	1	All
		4	407902	. . Hand Nut - Spool	1	All
		5	407872	. . Spring - Brake, Spool	1	All
		6	No Number	. . Washer - 3/8	1	All
		7	No Number	. . Ring - Snap, 3/8	1	All
		8	No Number	. . Nut - Lock, 1/4-20	1	All
		9	No Number	. . Washer - Flat	2	All
		10	407871	. . Spindle - Spool	1	All
		11	No Number	. . Washer - 7-16 Steel	1	All
		12	407874	. . Disc - Spool	1	All
		13	No Number	. . Washer - Star	1	All
		14	No Number	. . Bolt - 1/4-20 x 2-7/8, Hex Hd.	1	All
		15	407896	. . Rotation Stop - Spool Cover	1	All
		16	No Number	. . Lock Nut - 1/4-20	1	All
1		17	170490	. . Guide - Spool	1	All
		18	407876	. . Washer - Spool	1	All
		19	No Number	. . Screw - 10-32 x 1/2 Rd. Hd	1	All
		20	No Number	. . Washer - #10 Star	1	All
		21	No Number	. . Nut - 10-32	1	All
		22	170491	. . Support - Reel	1	All
		23	No Number	. . Set Screw - 5/16-18 x 3/8	1	All
		24	407898	. . Bushing - Insulator, Spool	1	All
		25		Delete		
		26	407945	. . Clip - Cable	1	All
		27	No Number	. . Screw - 8-32 x 1/4 Rd. Hd.	1	All
		28	No Number	. . Screw - 4-40 x 1/4 Rd. Hd.	2	All
1		29	407888	. . Spring - Roll Pressure	1	All
		30	407869	. . Bushing - Roll Block	1	All
		31	409325	. . Block - Roll	1	All
		32	No Number	. . Screw - 8-32 x 1/2 FL. Hd.	1	All
		33	No Number	. . Screw - 8-32 x 3/8 FL. Hd.	1	All
1		34	407904	. . Lever - Roll Release	1	All
		35	No Number	. . Screw - 8-32 x 3/8 FL. Hd.	1	All
		36	407870	. . Bushing - Roll Lever	1	All
		37	171408	. . Receptacle - 6 Pin	1	All
		38	171407	. . Base - Molded, Gun	1	All
		39	No Number	. . Screw - 8-32 x 1-1/4 Rd. Hd.	3	All

This page intentionally left blank.

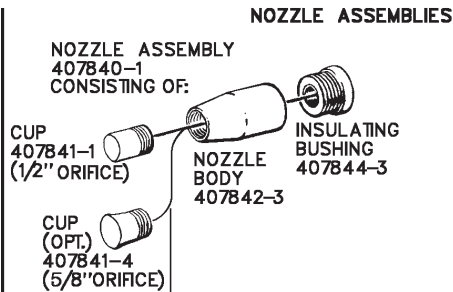
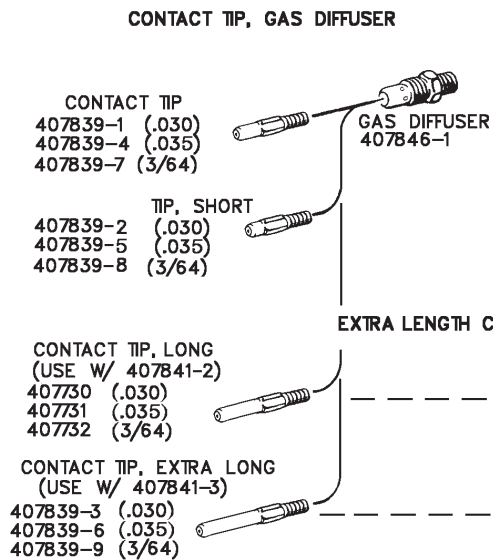
Parts List For Figure 6-1

Quantity	Recomm.	Item	Part	Description	Qty	Application
Spares	Class 1	Class 2	No	Number	per	Code
					Assy	
1			40	407885	1	All
			41	No Number	2	All
			42	No Number	1	All
			43	407890	1	All
			44	No Number	1	All
			45	171405	1	All
			46	409315	1	All
			47	No Number	2	All
1			48	409301	1	All
			49	409308	1	All
1			50	409319	1	All
			51	409317	2	All
			52	409316	1	All
1			53	409318	1	All
			54	409313	1	All
			55	409305	1	All
1			56	409310	1	All
1			57	409304	1	All
			58	409314	2	All
			59	407887	1	All
			60	407889	1	All
			61	407899	1	All
			62	170493	1	All
				171310-1	1	A
				171310-2	1	B
			63	407930	1	All
			64	407928	2	All
			65	407925-1	1	All
			66	407932-1	1	All
			67	407926	1	All
			68	407927	1	All
				171406-2	1	A
				171406-1	1	B
			69	171409	1	All
			70	171413-2	1	A
				171413-1	1	B
			71	171411	1	All
			72	407865	1	All
			73	171414	1	All
			74	171412	1	All
			75	171410	1	All

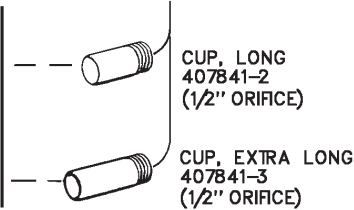
CONSUMABLE PARTS
HEAVY DUTY FRONT END



OPTIONAL FRONT END - FIXED NOZZLE



EXTRA LENGTH CONTACT TIPS, CUPS



OPTIONAL FRONT END - ADJUSTABLE NOZZLE

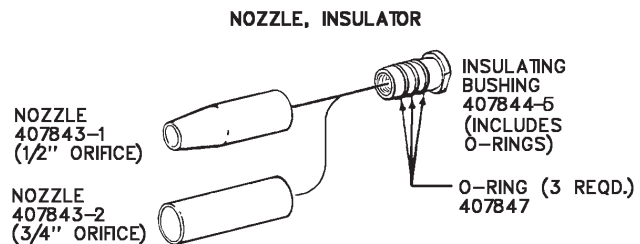
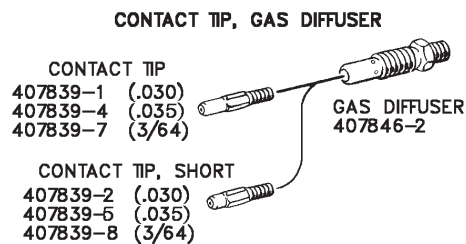


Figure 6-2

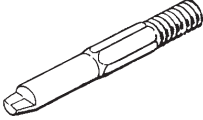
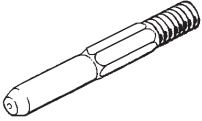
407727	.030" notched tip, contact tip		
407728	.035" notched tip, contact tip	—————	
407729	3/64" notched tip, contact tip		
407730	.030" standard contact tip		
407731	.035" standard contact tip	—————	
407732	.045"-3/64" standard contact tip		

Figure 6-3

This page intentionally left blank.

DIAGRAMS

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

MODEL	SPECIFICATION NUMBER	CONNECTION & SCHEMATIC DIAGRAM	SYSTEM OUTLINE
SP-2001	407838B-1	FIGURE 7-1	870106
SP-2001	407838B-2	FIGURE 7-1	870106

SP-2001 Spool Gun Schematic and Connection Diagram

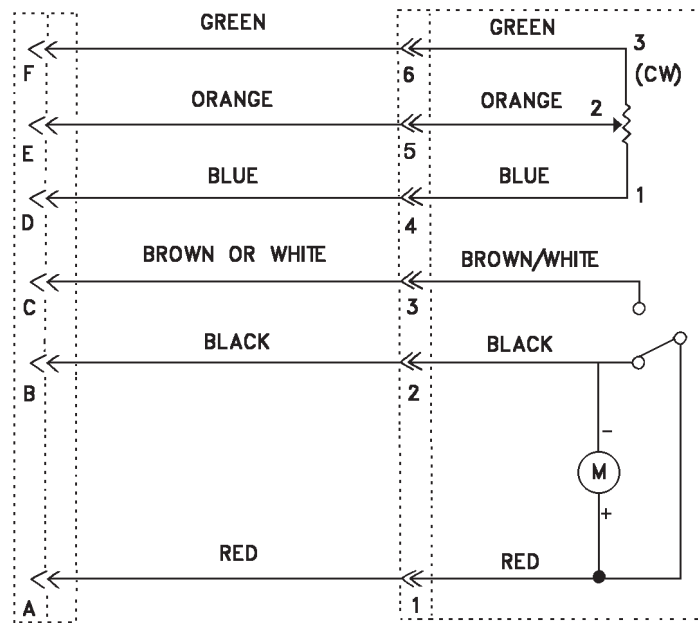


Figure 7-1