

INSTRUCTION MANUAL

PT-27

PLASMA ARC CUTTING TORCH



This manual provides installation and operation instructions for the following PT-27 torches:

P/N 21620 - 25 ft (7.6 m), PT-27, w/PLUG Pilot Arc Connection
P/N 21621 - 50 ft (15.2 m), PT-27, w/PLUG Pilot Arc Connection
P/N 21661 - 25 ft (7.6 m), PT-27, w/RING Pilot Arc Connection
P/N 21662 - 50 ft (15.2 m), PT-27, w RING Pilot Arc Connection



CAUTION

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding equipment, we urge you to read our booklet, "Precautions and Safe Practices for Arc Welding, Cutting, and Gouging", Form 52-529. Do NOT permit untrained persons to install, operate, or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information. Be sure to read the Safety Precautions before installing or operating this equipment.

**Be sure this information reaches the operator.
You can get extra copies through your supplier.**

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Malfunctioning equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, the manufacturer recommends that a telephone or written request for service advice be made to the Authorized Distributor from whom purchased.

This equipment or any of its parts should not be altered without the prior written approval of the manufacturer. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than the manufacturer or a service facility designated by the manufacturer.

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1.1 GENERAL

The patented PT-27 (Figure 1-2) is a manual torch with a 75° head designed for use with several Plasma Arc Cutting Packages using clean, dry air as the plasma gas. The service line lengths available with the PT-27 torch are 25 feet (7.6 m) and 50 feet (15.2 m). The PT-27 torch is rated to operate at a maximum of 80 amperes at 100% duty cycle.

1.2 SCOPE

This manual is intended to provide the operator with all the information required to assemble, operate, and repair the PT-27 Plasma Arc Cutting Torch. For additional safety precautions, process instructions, and system troubleshooting; refer to the appropriate instruction manual for your Plasma Arc Cutting Package.

1.3 SPECIFICATIONS

Refer to Figure 1-1, Figure 1-2, and Figure 1-3 for specifications.



The plasma arc cutting process employs high voltages. Contact with "live" parts of the torch and machine must be avoided. Also, the improper use of any of the gases employed can present a safety hazard. Before beginning operation with the PT-27 torch, refer to the Safety Precautions and operating instructions in the appropriate power source instruction manual.

Using the torch on any unit not equipped with a mating safety interlock circuit may expose operator to unexpected high voltage.

Torch Assembly (Part No.)	Service Line Length	Weight	Pilot Arc Connection Type	Current Capacity (100% duty)
21620	25 ft (7.6 m)	5.2 lbs (2.4 kg)	PLUG (for service with older consoles equipped with pilot arc receptacles)	80 A DCSP
21621	50 ft (15.2 m)	9.6 lbs (4.4 kg)		
21661	25 ft (7.6 m)	5.2 lbs (2.4 kg)	RING (for service with current consoles equipped with pilot arc terminal studs)	
21662	50 ft (15.2 m)	9.6 lbs (4.4 kg)		

Figure 1-1. PT-27 Specifications

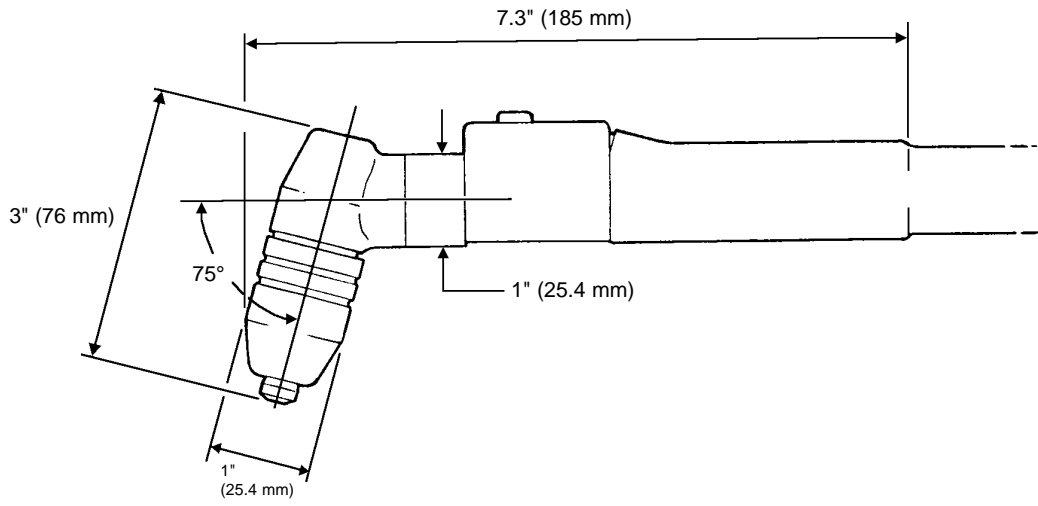


Figure 1-2. PT-27 Dimensions

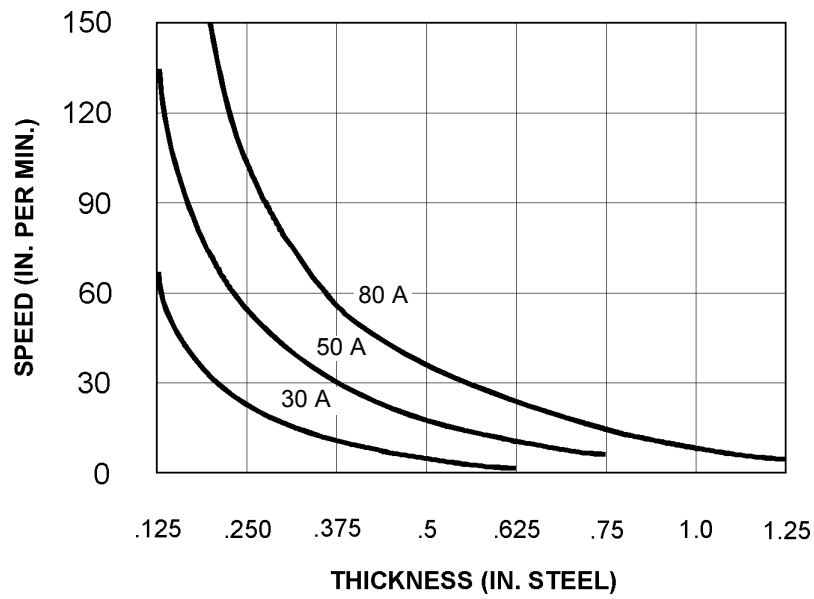


Figure 1-3. PT-27 Cutting Performance

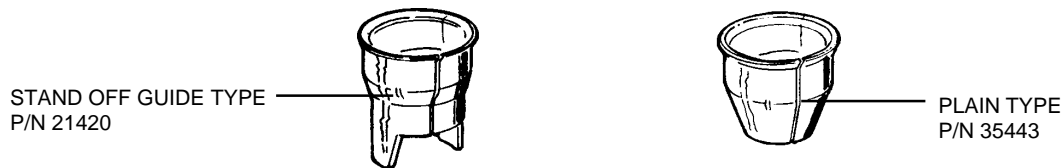
1.4 OPTIONAL EQUIPMENT (NOT SUPPLIED WITH TORCH)

A. Spare Parts Kits - The spare parts kits listed in figure 1-4 are recommended for maintaining the PT-27 torch with minimum downtime.

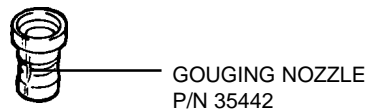
DESCRIPTION	PART NUMBER (50/70 A Kit - P/N 21623)	PART NUMBER (80 A Kit - P/N 21624)
Heat Shield	21616 (QTY 2)	21616 (QTY 2)
Stand Off Guide	21420 (QTY 1)	21420 (QTY 1)
Nozzle, 50-70 A	33369 (QTY 4)	--
Nozzle, 80 A	--	33418 (QTY 4)
Swirl Baffle	33367 (QTY 1)	33367 (QTY 1)
Electrode	33366XL (QTY 3)	33366XL (QTY 3)
Fuse, 600 Vdc, 15 A, Fast Acting	952137 (QTY 1)	952137 (QTY 1)

Figure 1-4. Contents of PT-27 Spare Parts Kits

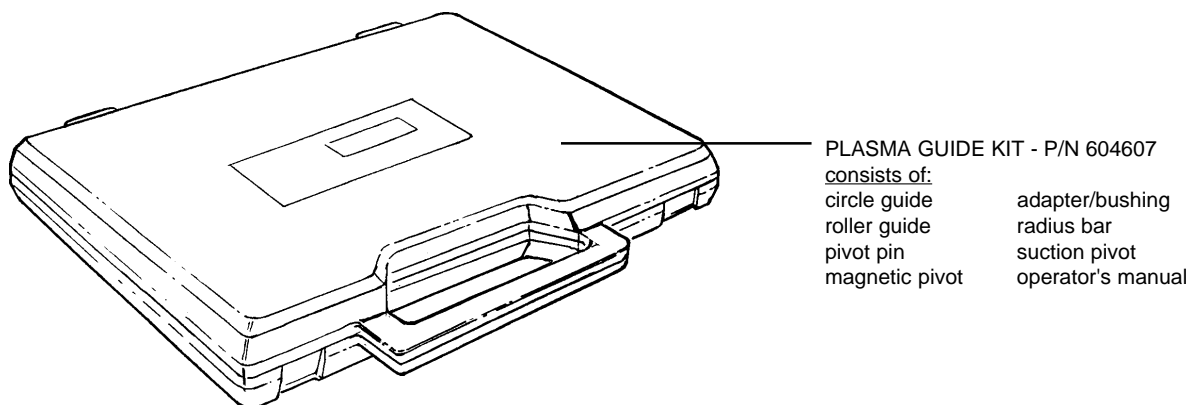
B. Steel Guards (for extending the life of the heat shield) - Refer to Figure 3-2 for installation and operation.



C. Gouging Nozzle



D. Plasma Guide Kit



2.1 GENERAL



WARNING

Make sure power switch on console is in the "OFF" position and primary input power is deenergized.

2.2 ASSEMBLY

Install PT-27 front end parts as shown in Figure 2-1.

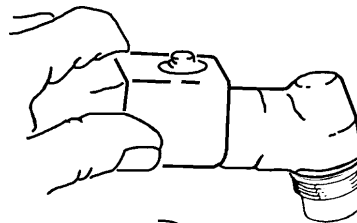


WARNING

The torch head contains a gas flow check valve that acts in conjunction with circuitry within the power source. This system prevents the torch from being energized with high voltage if the torch switch is accidentally closed when the shield is removed. **ALWAYS REPLACE TORCH WITH THE PROPER TORCH MANUFACTURED BY ESAB SINCE IT ALONE CONTAINS ESAB'S PATENTED SAFETY INTERLOCK.**

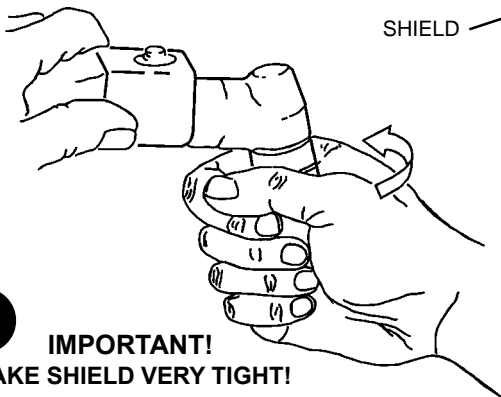
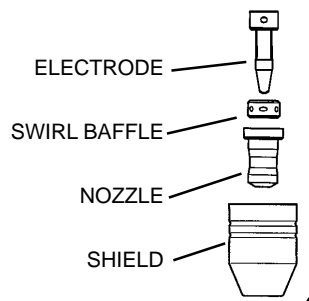
1

PLACE THE NOZZLE, SWIRL Baffle, AND ELECTRODE INTO THE SHIELD



2

THREAD THIS ASSEMBLY TO THE TORCH BODY AND HAND TIGHTEN.



3

IMPORTANT!
MAKE SHIELD VERY TIGHT!

Figure 2-1. Assembly of PT-27 Torch Front End Parts

2.3 STEEL HEAT SHIELD GUARDS
(Refer to Figure 2-2)

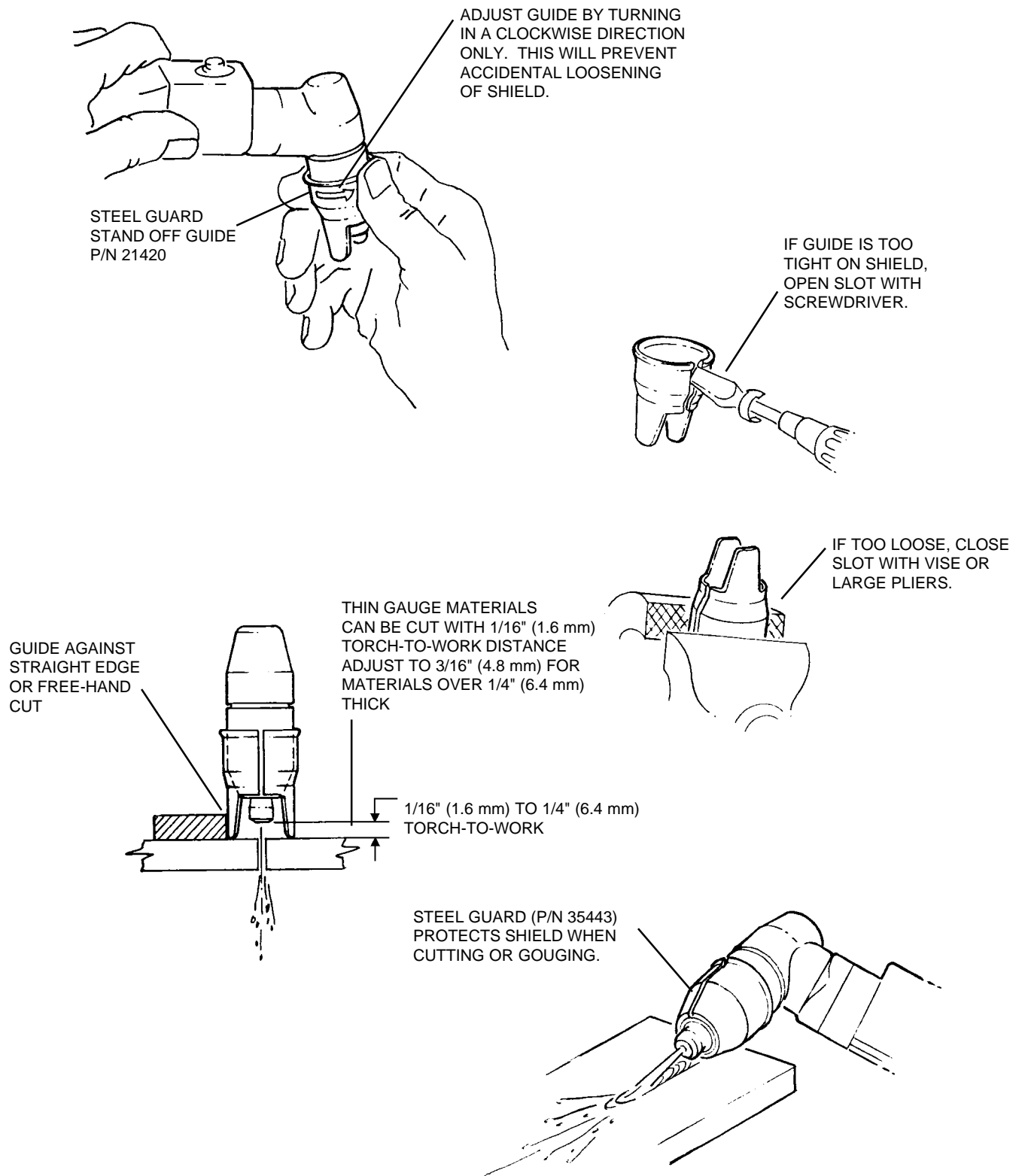


Figure 2-2. Installation and Operation of Steel Heat Shield Guards

3.1 GENERAL



Before any maintenance is attempted on this torch, make sure the power switch on the console is in the "OFF" position and the primary input is deenergized.

3.2 INSPECTION AND CLEANING OF CONSUMABLES

- A. Disassemble the front end of the PT-27 as follows:
 1. Position torch head in a downward direction (refer to Figure 2-1) and remove the shield. The nozzle, swirl baffle, and electrode will drop from the head and remain in the shield. Remove these components and inspect for wear. The nozzle and electrode will generally wear at the same rate. For best performance,

replace together.

2. Nozzle: Replace if the orifice is clogged, nicked, or out-of-round.
 3. Electrode: See Figure 3-1 for electrode maintenance.
 4. Shield: The face of the shield will gradually erode from the heat and molten metal spray. Replace the shield if more than 1/8 inch (3.2 mm) has eroded from the face. Refer to Figure 3-1.
 5. Swirl Baffle: This is a ceramic part and may crack or chip if dropped. Always replace if cracks or chips are present.
 6. O-ring: Lubricate as per Figure 3-1. Replace if cut or worn. Air leaking past this seal will reduce cutting performance.
- B. To replace the above front end components, refer to Figure 2-1.

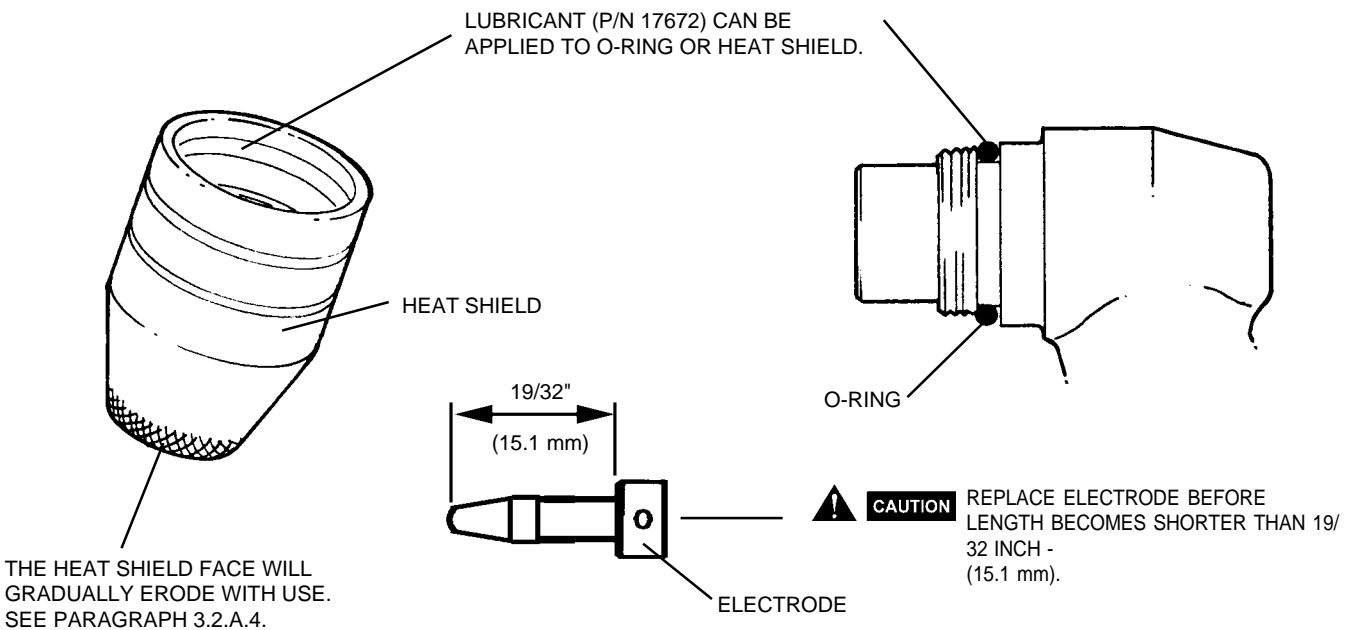


Figure 3-1. O-ring, Electrode, and Shield Maintenance

3.3 SEAT MAINTENANCE, REMOVAL, AND REPLACEMENT

The seat should be inspected when the electrode is replaced. Replace the seat whenever surfaces in contact with the electrode show signs of arcing. Keeping the shield tight will prevent arc damage to the seat.

NOTE

It is not necessary to remove the seat in order to inspect.



CAUTION

Do not attempt to use any tool other than the ESAB Seat Tool, P/N 0558003027 to remove or replace the seat. If the seat is distorted or damaged, the electrode will not fit properly.

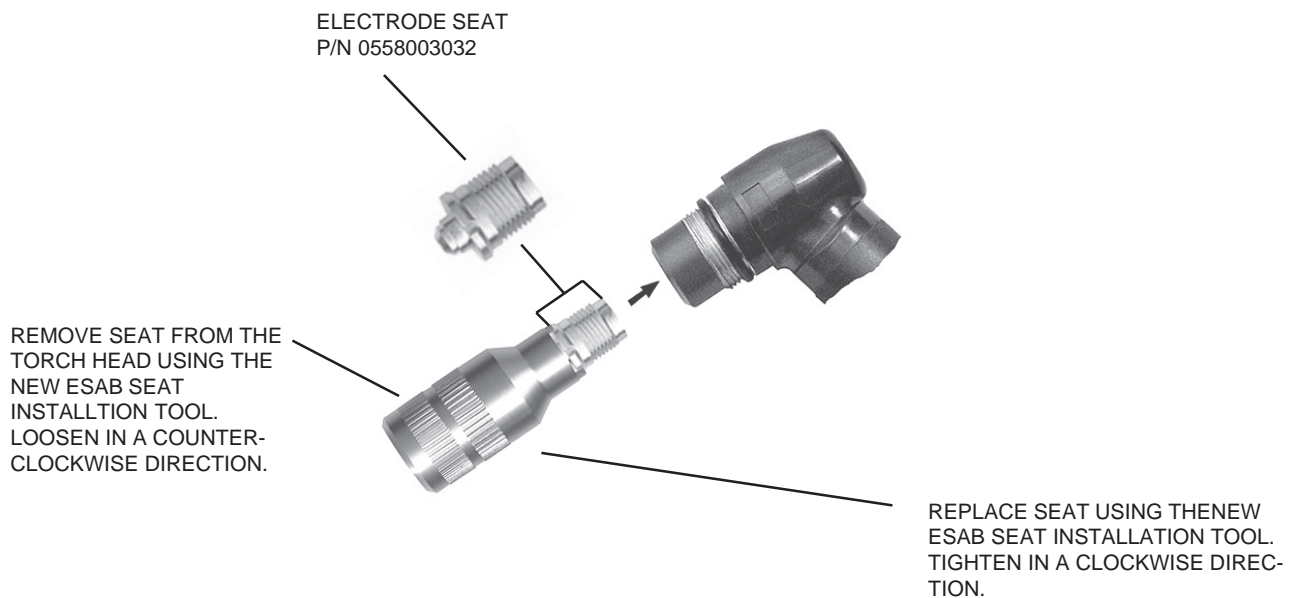
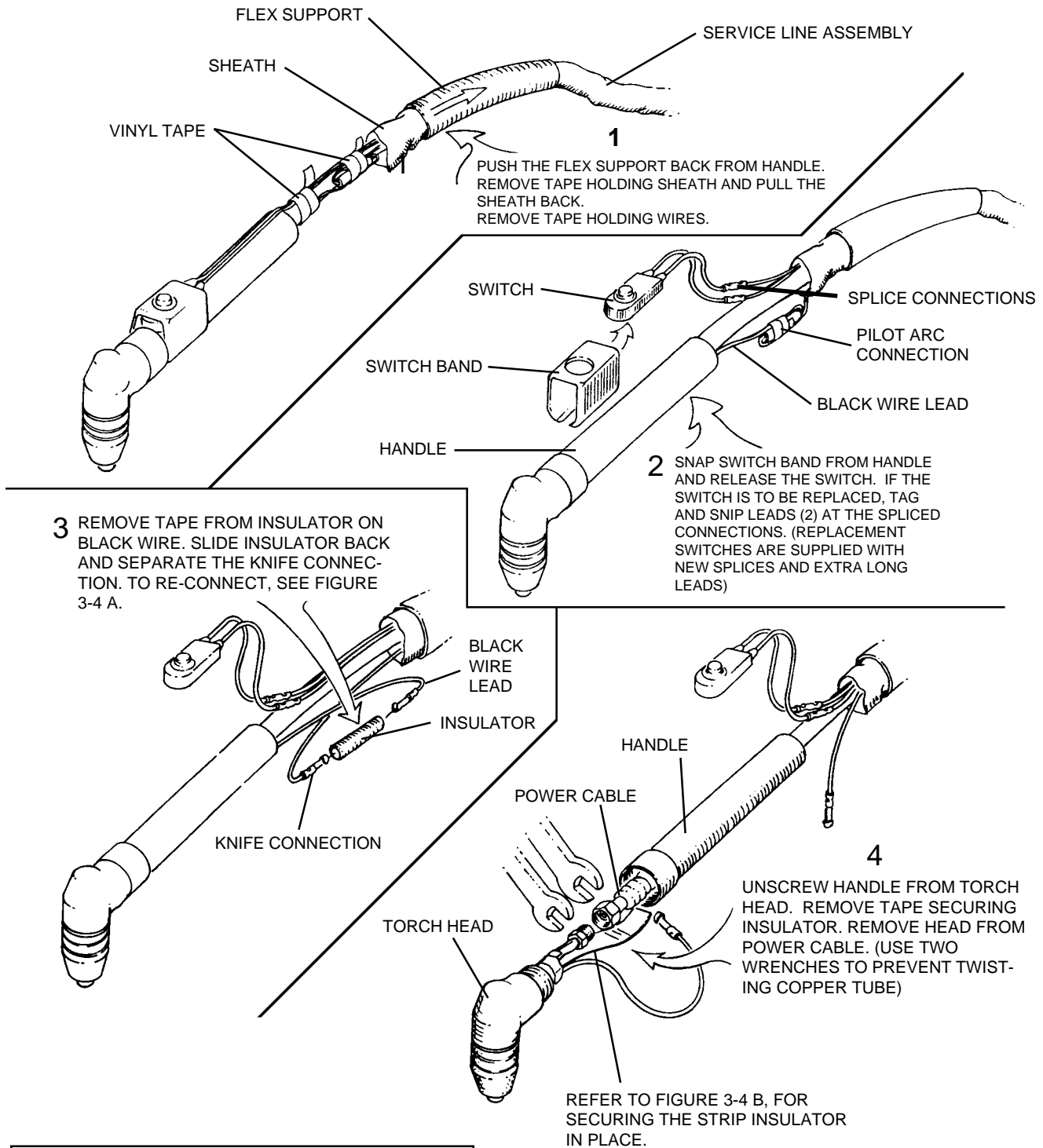


Figure 3-2. Seat Maintenance, Removal, and Replacement

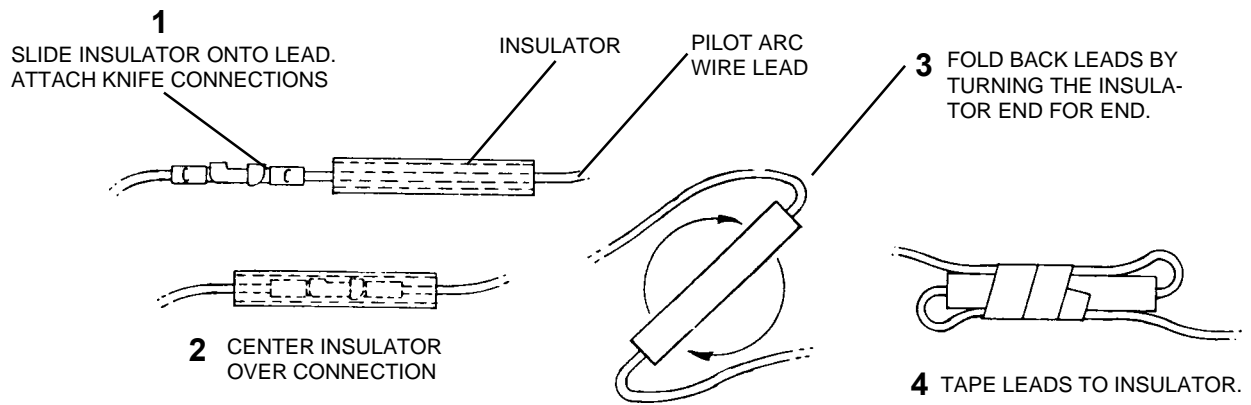
3.4 REMOVING / REPLACING TORCH HEAD AND SWITCH FROM SERVICE LINE
(Refer to Figure 3-3)



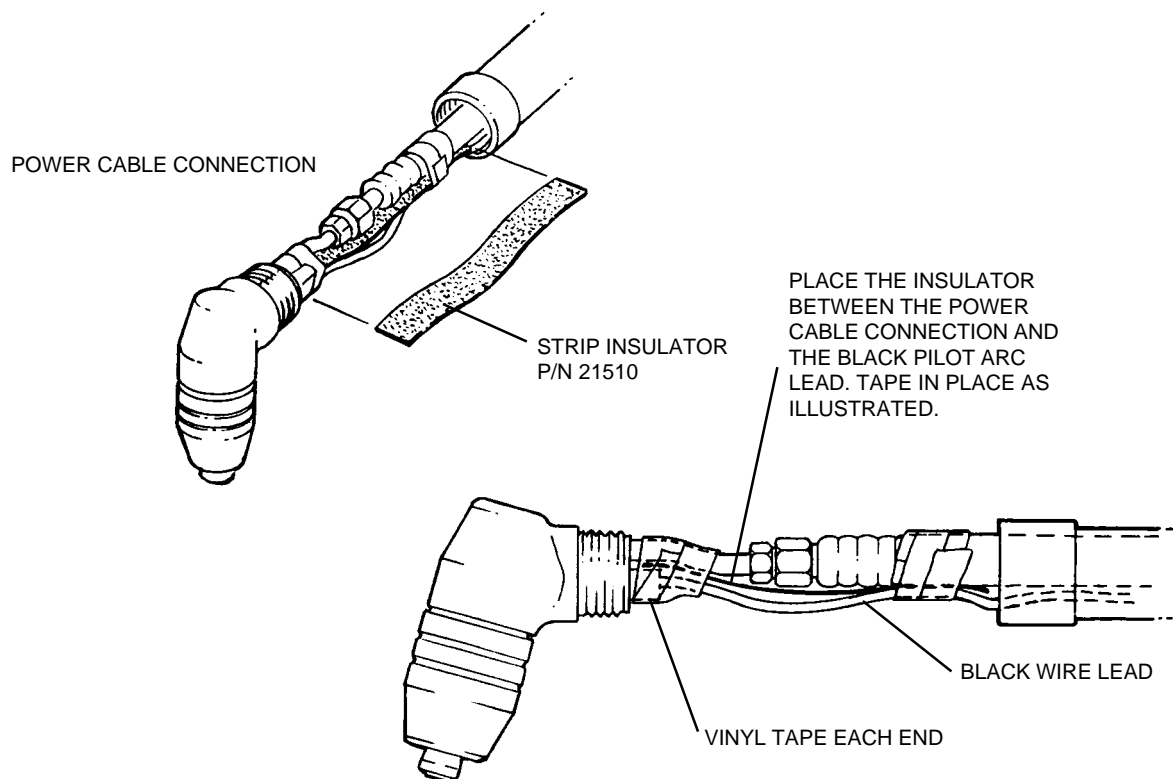
Replace Torch Head in Reverse Order

Figure 3-3. Removal of Torch Head and Switch from Service Line

3.5 PILOT ARC LEAD CONNECTION AND STRIP INSULATION
 (Refer to Figure 3-4)



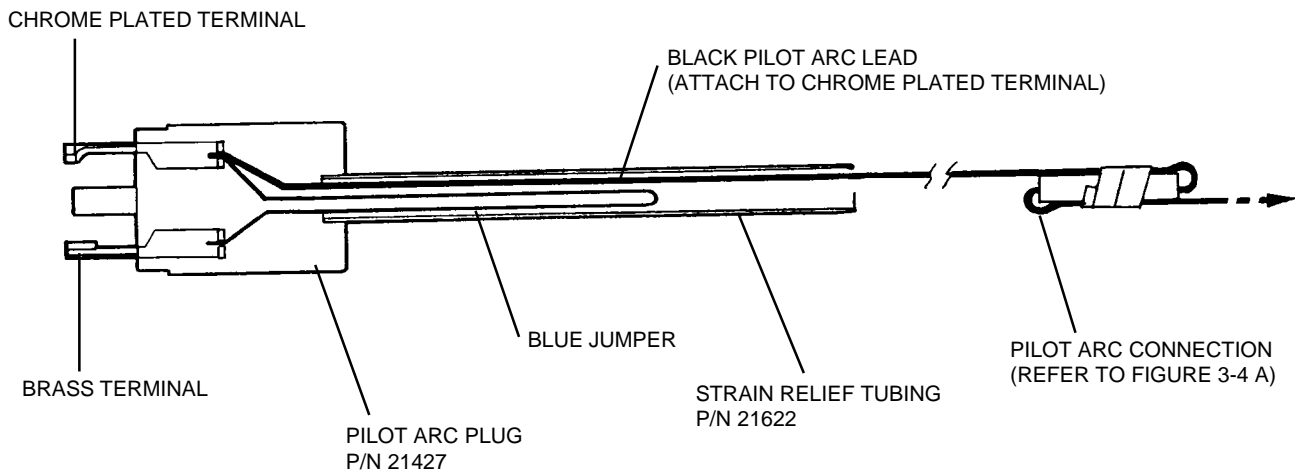
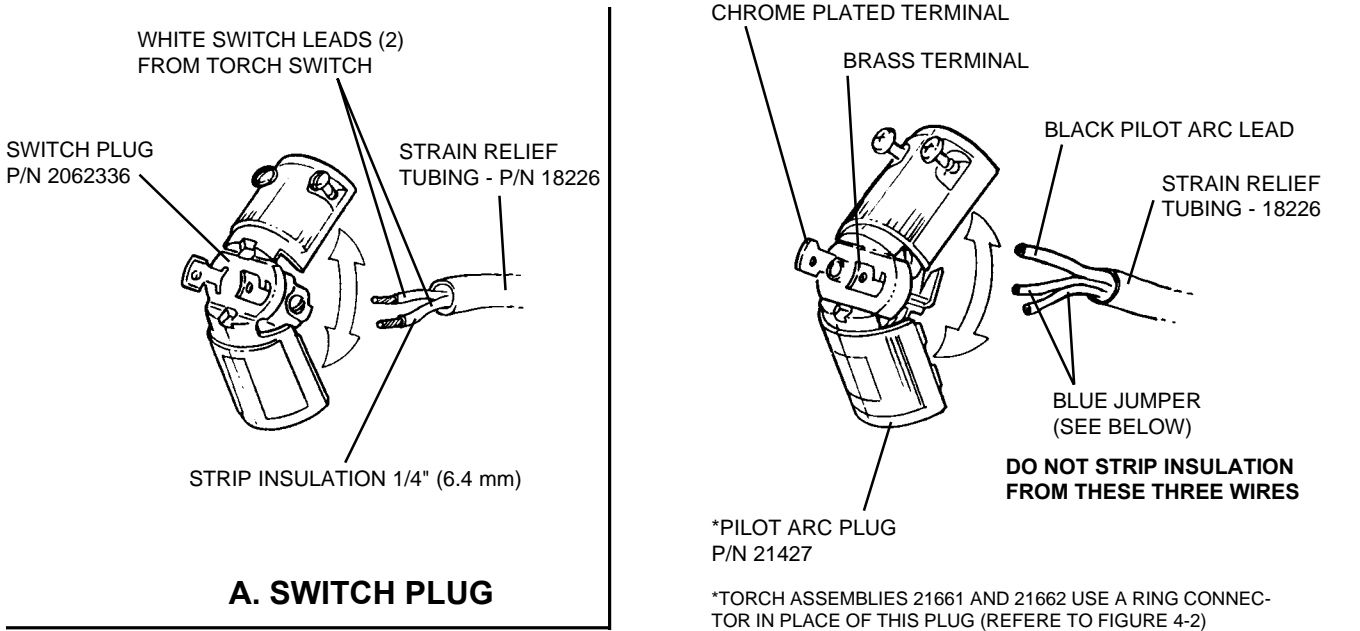
A. PILOT ARC LEAD CONNECTION DETAIL



B. STRIP INSULATION DETAIL

Figure 3-4. Assembling Pilot Arc Connection and Strip Insulator

3.6 SWITCH AND PILOT ARC PLUGS
(Refer to Figure 3-5)



B. PILOT ARC LEAD AND PLUG
(ON TORCH ASSEMBLIES 21620 AND 21621 ONLY)

! WARNING

Do not interchange the torch switch plug and the pilot arc plug. If it becomes necessary to remove these plugs, make sure the switch plug (P/N 2062336) is attached to the two white switch leads and the pilot arc plug (P/N 21427) is attached to the black lead with the blue jumper wire.

Interchanging these plugs may create an unsafe condition that could cause electric shock and burns.

Figure3-5. Switch and Pilot Arc Removal/Replacement

4.1 General

Replacement parts are illustrated on the following figures. When ordering replacement parts, order by part number and part name, as listed. Always provide the series or serial number of the unit on which the parts will be used. The serial number is stamped on the unit nameplate.

Replacement parts may be ordered from your ESAB distributor or from:

ESAB Welding & Cutting Products
Attn.: Customer Service Dept.
PO Box 100545, Ebenezer Road
Florence, SC, 29501-0545

Refer to the Communication Guide located on the last page of this manual for a list of customer service phone numbers.

FOR SERVICE WITH CONSOLES WITH PILOT ARC RECEPTACLES

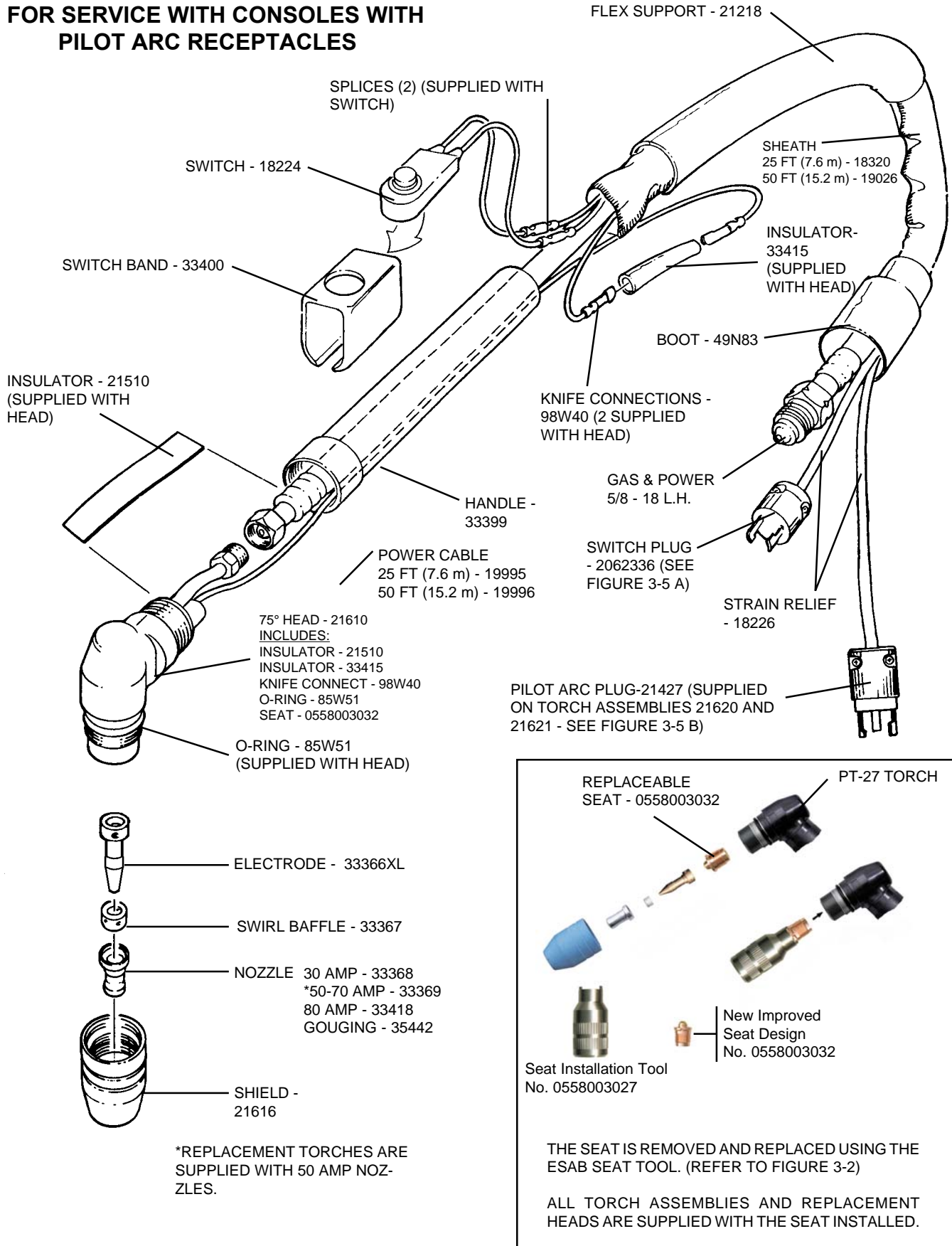


Figure 4-1. PT-27 Torch Assembly Replacement Parts

FOR SERVICE WITH CONSOLES WITH PILOT ARC TERMINAL STUDS

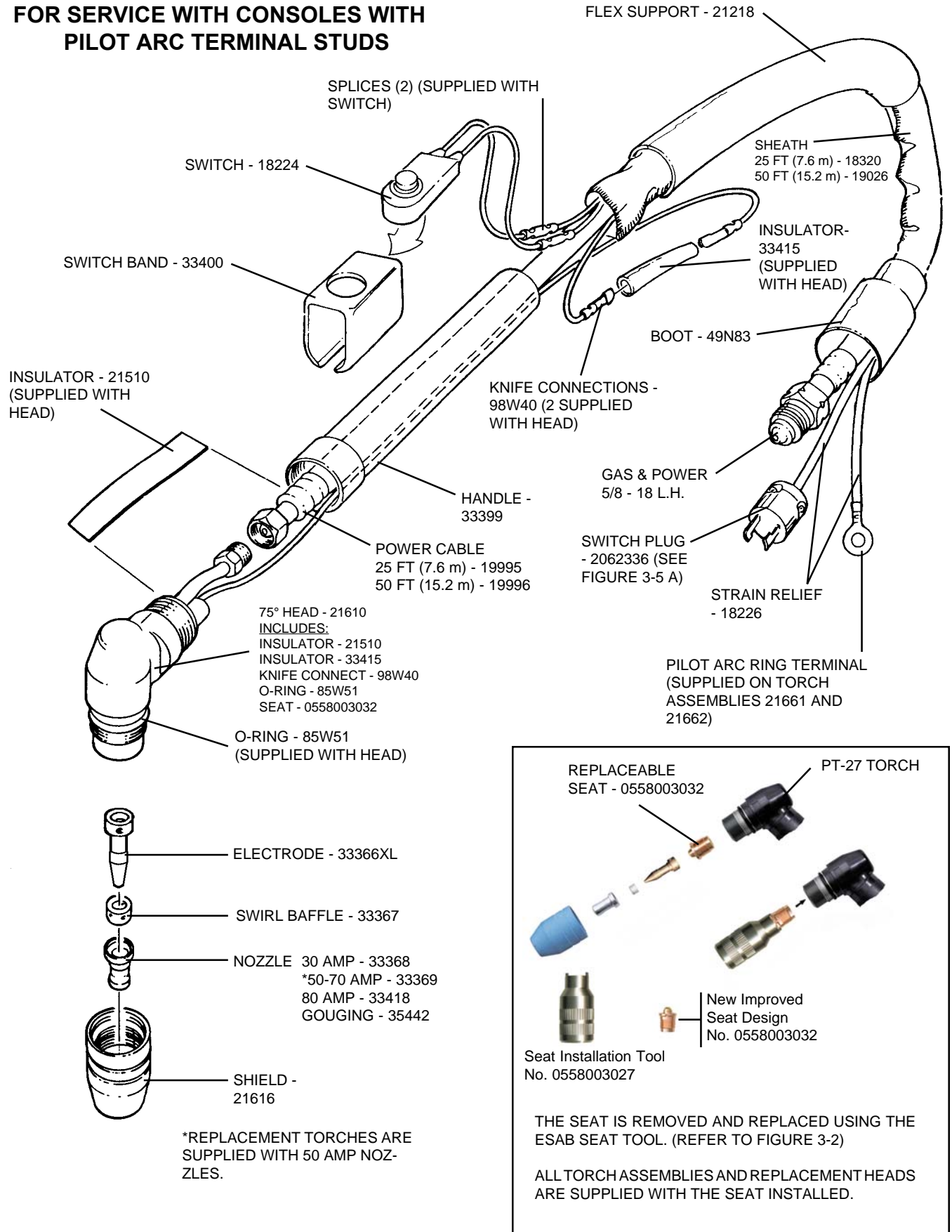


Figure 4-2. PT-27 Torch Assembly Replacement Parts



**ESAB Welding & Cutting Products, Florence, SC Welding Equipment
COMMUNICATION GUIDE - CUSTOMER SERVICES**

A. CUSTOMER SERVICE QUESTIONS:

Order Entry	Product Availability	Pricing	Delivery
Order Changes	Saleable Goods Returns	Shipping Information	

Eastern Distribution Center

Telephone: (800)362-7080 / Fax: (800) 634-7548

Central Distribution Center

Telephone: (800)783-5360 / Fax: (800) 783-5362

Western Distribution Center

Telephone: (800) 235-4012/ Fax: (888) 586-4670

B. ENGINEERING SERVICE: Telephone: (843) 664-4416 / Fax : (800) 446-5693

Welding Equipment Troubleshooting	Hours: 7:30 AM to 5:00 PM EST
Warranty Returns	Authorized Repair Stations

C. TECHNICAL SERVICE: Telephone: (800) ESAB-123/ Fax: (843) 664-4452

Part Numbers	Technical Applications	Hours: 8:00 AM to 5:00 PM EST
Performance Features	Technical Specifications	Equipment Recommendations

D. LITERATURE REQUESTS: Telephone: (843) 664-5562 / Fax: (843) 664-5548

Hours: 7:30 AM to 4:00 PM EST

E. WELDING EQUIPMENT REPAIRS: Telephone: (843) 664-4487 / Fax: (843) 664-5557

Repair Estimates	Repair Status	Hours: 7:30 AM to 3:30 PM EST
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F. WELDING EQUIPMENT TRAINING:

Telephone: (843)664-4428 / Fax: (843) 679-5864	
Training School Information and Registrations	Hours: 7:30 AM to 4:00 PM EST

G. WELDING PROCESS ASSISTANCE:

Telephone: (800) ESAB-123	Hours: 7:30 AM to 4:00 PM EST
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H. TECHNICAL ASST. CONSUMABLES:

Telephone : (800) 933-7070	Hours: 7:30 AM to 5:00 PM EST
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IF YOU DO NOT KNOW WHOM TO CALL

Telephone: (800) ESAB-123/ Fax: (843) 664-4452/ Web:<http://www.esab.com>

Hours: 7:30 AM to 5:00 PM EST

