



PT-32EH

PLASMA ARC CUTTING TORCHES



Instruction Manual (GB)

0558003746

BE SURE THIS INFORMATION REACHES THE OPERATOR.
YOU CAN GET EXTRA COPIES THROUGH YOUR SUPPLIER.

 **CAUTION**

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding and cutting 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.

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 or poorly maintained 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 it was 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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Full responsibility for safety of personnel working on or near system rests on user of ESAB Welding Equipment.

Wrong operation can lead to abnormal situation, injure operator and damage equipment.

All personnel working with welding equipment must be fully familiar with

- handling of equipment
- location of emergency stops
- functions of equipment
- applicable safety regulations
- cutting

Operator must make sure

- no one stays inside work area while machine starts
- no one is unprotected while arc is being struck

Work area must be

- free of machine parts, tools and other objects that can obstruct operator moving within area
- so arranged, that emergency stop buttons are easily accessible
- free from draughts

Personal safety equipment

- always use proper safety equipment such as goggles, non flammable clothing, protective gloves
- never wear loose clothing, belts, bracelets, rings etc., which may catch on equipment or cause burns

Miscellaneous

- **only authorised personnel** may operate electrical equipment
- check whether return cables are properly fitted and earthen
- requisite fire fighting equipment should be easily available in specially and clearly marked areas
- lubrication and maintenance of welding equipment **must not** be proceeded during operation.

! WARNING !
ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING OR CUTTING. ASK YOUR EMPLOYER FOR SAFETY PRACTICES THAT SHOULD BE BASED ON MANUFACTURER'S HAZARD DATA.

ELECTRIC SHOCK - Can kill

- Install and earth welding equipment in accordance with obligatory standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothes.
- Insulate yourself from earth and workpiece.
- Ensure your work position is safe.

FUMES AND GASES - Can be dangerous to your health

- Keep your head away from fumes.
- Use ventilation and/or extraction to keep fumes and gases away from your breathing zone and surroundings.

ARC RAYS - Can injure eyes and burn skin

- Protect your eyes and skin. Use correct welding screens, filter lens and wear protective clothes.
- Protect bystanders with suitable screens or curtains.

FIRE HAZARD

- Sparks (spatter) can cause fire. Make therefore sure there are no inflammable materials nearby.

NOISE - Excessive noise can damage your hearing.

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risk.

MALFUNCTION - Call expert assistance in event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING UNIT

PROTECT YOURSELF AND OTHERS !

PT-32EH Torch

Designed for superior cutting performance and ease of handling, the PT-32EH produces clean, exceptionally high quality cuts.

- Most compact 90 amp torch on the market
- Excellent cutting capacity - cuts up to 1-1/2 in. (38mm)
- Uses shop air, cylinder air or nitrogen for superior versatility
- Pilot arc starting - even starts through paint
- Choice of 25 ft (7.6m). or 50ft. (15.2m) line length
- Excellent consumable life
- Parts in place design
- Patented torch and safety circuit
- Exclusive 40 amp Drag Nozzle
- One-year warranty



Specifications

Cuts up to 1-1/2 in. (38mm)
 Current Capacity 90 amps @ 100% duty cycle
 Air Supply 350cfh @ 75-80psig (165 l/min @ 5.2-5.5bar)
 Length of Service Lines 25 (7.6m) or 50 ft.(15.2m)
 Dimensions
 Overall Length 8.2 in. (208 mm)
 Length of Head 3.0 in. (76 mm)

Compatible ESAB Consoles

**PowerCut-875, PowerCut-1125, PowerCut-1250
 PowerCut-1500**

Ordering Information

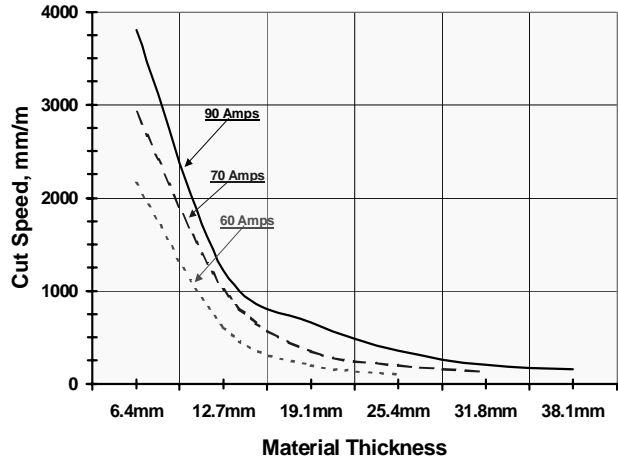
PT-32EH, 90°, 25 ft. (7.6m) line 0558003548
 PT-32EH, 90°, 50 ft. (15.2) line 0558003549

Torches and torch body assemblies are supplied without electrode, nozzle, heat shield and valve pin. Order complete spare parts kits or individual components shown with PT-32EH parts breakdown on next page.

PT-32EH CUTTING SPEEDS
 OUTPUT CURRENT 40AMPS w/AIR @ 75psi (5.2bar)

Material	Thickness mm (in.)	Cutting Speed mm/m (ipm)
Carbon Steel	1.6 (1/16)	5,080 (200)
	3.2 (1/8)	2,489 (98)
	6.4 (1/4)	914 (36)
	9.5 (3/8)	457 (18)
	12.7 (1/2)	279 (11)
Stainless Steel	1.6 (1/16)	3,505 (138)
	3.2 (1/8)	1,473 (58)
	6.4 (1/4)	457 (18)
	9.5 (3/8)	254 (10)
	12.7 (1/2)	152 (6)
Aluminum	1.6 (1/16)	5,080 (200)
	3.2 (1/8)	2,794 (110)
	6.4 (1/4)	1,219 (48)
	9.5 (3/8)	432 (17)
	12.7 (1/2)	356 (14)

PT-32EH CUTTING SPEEDS
 OUTPUT CURRENT 60, 70 & 90AMPS w/AIR @ 75psi (5.2bar)



Optional Accessories:

- 50/70 amp Spare Parts Kit (PC-875/1125)0558002822
- 70 amp Spare Parts Kit (PC-1500)0558003508
- 90 amp Spare Parts Kit (PC-1500)0558003062

Plasma Flow Measuring Kit:

This valuable troubleshooting tool allows measurement of the actual plasma gas flow through the torch0558000739

Torch Guide Kit:

This complete kit, in a rugged plastic carrying case, includes attachments for circle and straight line cutting on ferrous and non-ferrous metals.

- Deluxe, 1-3/4" - 42" (44.5mm-106cm) Radius,0558003258
- Basic, 1-3/4" - 28" (44.5mm-71cm) Radius0558002675

Stand-off Guide

For proper stand-off distance when drag cutting0558002393

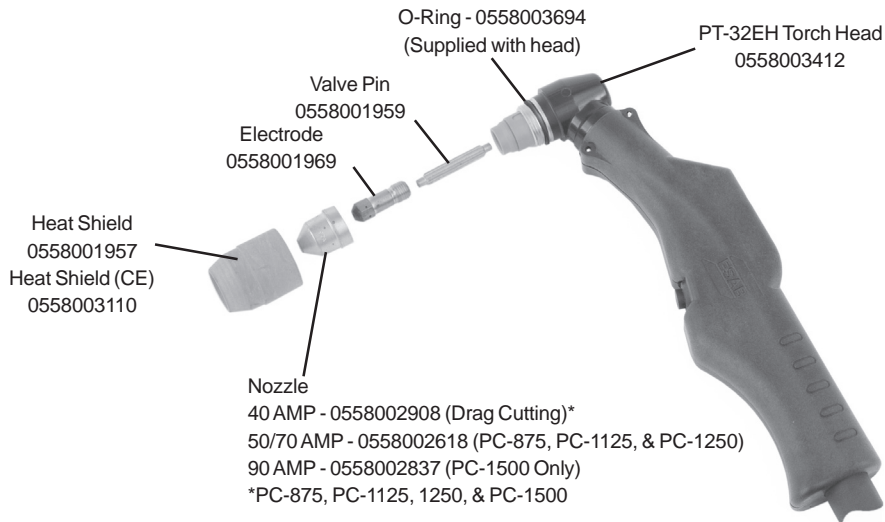
40 amp Drag Nozzle 0558002908

Gouging Nozzle0558003089

Heat Shield Gouging 0558003090

Heat Shield Long "CE"0558003110

Drag Heat Shield0558003374



Contents of PT-32EH Spare Parts Kits

Description	P/N	PC-875/1125	PC-1250	PC-1500	PC-1500 (CE)
		P/N 0558002822 50/70 Amp Quantity	P/N 0558003508 70 Amp Quantity	P/N 0558003062 90 Amp Quantity	P/N 0558003557 90 Amp Quantity
Heat Shield	0558001957	2	2	2	-
Heat Shield	0558003110	-	-	-	2
50/70 amp Nozzle	0558002618	4	4	2	-
90 amp Nozzle	0558002837	-	-	4	4
40 amp drag Nozzle	0558002908	1	1	1	1
Electrode	0558001969	3	3	3	3
Valve Pin	0558001959	1	1	1	1
Fuse 2amp, 600vdc	0558003075	-	1	1	1
Stand-off Guide	0558002393	1	1	1	1
Wrench	0558000808	1	1	1	1
Lubricant	0558000443	1	1	1	1

2.1 GENERAL

The patent pending PT-32EH is a manual torch with a 90° 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-32EH torch are 25 feet (7.6 m) and 50 feet (15.2 m). The PT-32EH torch is rated to operate at a maximum of 90 amperes at 100% duty cycle.

2.2 SCOPE

This manual is intended to provide the operator with all the information required to assemble, operate, and repair the PT-32EH 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.

**WARNING**

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-32EH 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.

3.1 FITTING THE PT-32EH TORCH

! WARNING

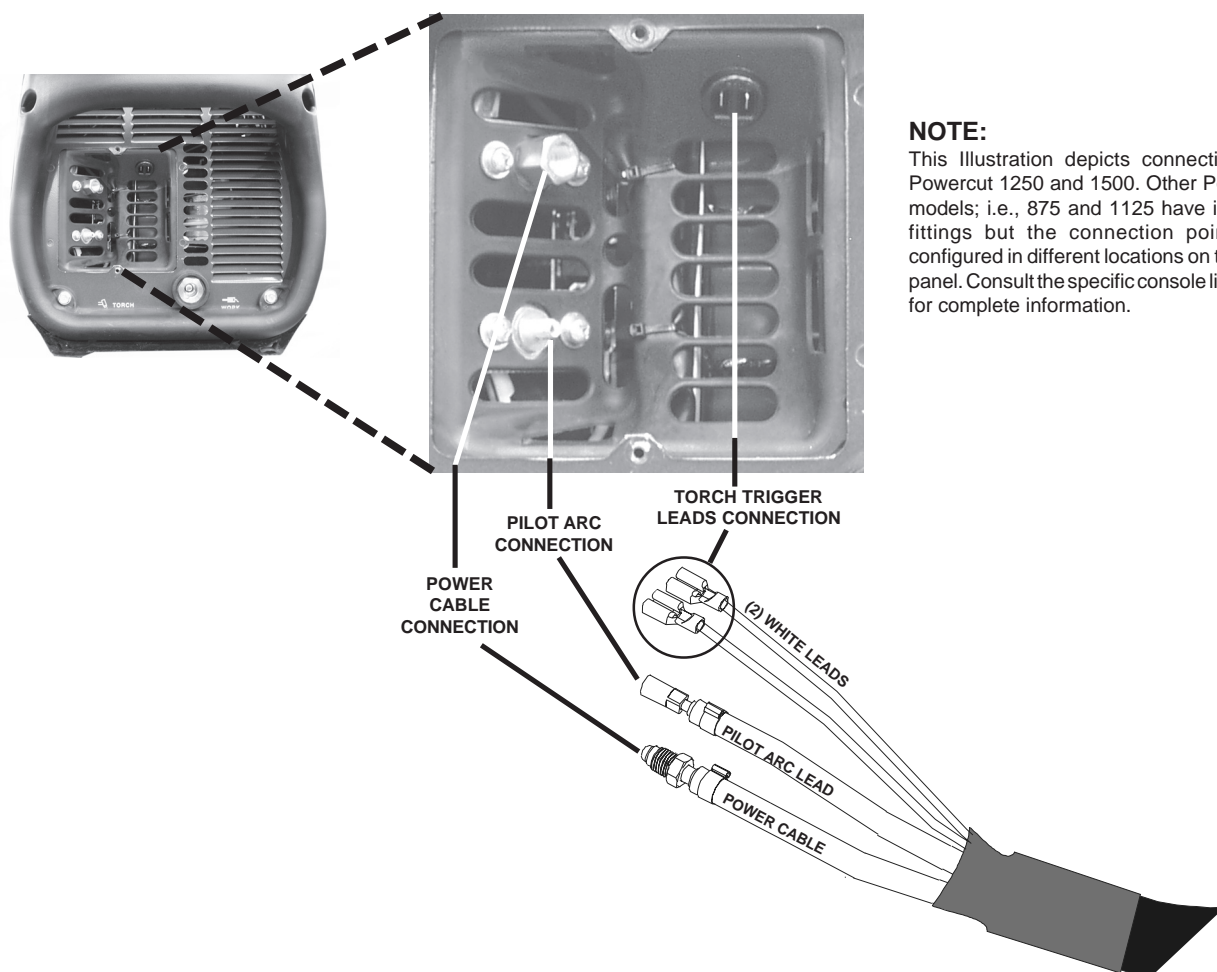
Before any maintenance is attempted on this torch, make sure the power switch on the console is in the "OFF" position and the primary input is deenergized.

1. For operator safety, the torch connections are located on the output terminal board behind the lower portion of the front panel.
2. Thread the power cable, pilot arc cable and switch leads of the PT-32EH through the Strain Relief on the Access Cover.
4. Connect power cable to the torch fitting (left-hand threads) and tighten securely.

5. Connect the Pilot Arc Leads. Make sure the power cable connection is wrench-tight.
6. Plug in the switch leads to the torch switch receptacle on the output terminal board.
7. Reassemble the access door to the power source. Retighten Strain Relief to secure power cable, but do not overtighten.

! WARNING

FOR COMPLETE SAFETY AND INSTALLATION PROCEDURES, CONSULT THE INSTRUCTION LITERATURE SPECIFIC TO THE CONSOLE BEING USED.

**NOTE:**

This Illustration depicts connections for Powercut 1250 and 1500. Other Powercut models; i.e., 875 and 1125 have identical fittings but the connection points are configured in different locations on the front panel. Consult the specific console literature for complete information.

Figure 3-1. Typical Connection Assembly

3.2 GENERAL



WARNING

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

3.3 ASSEMBLY

Install PT-32EH front end parts as shown in Figure 3-2.

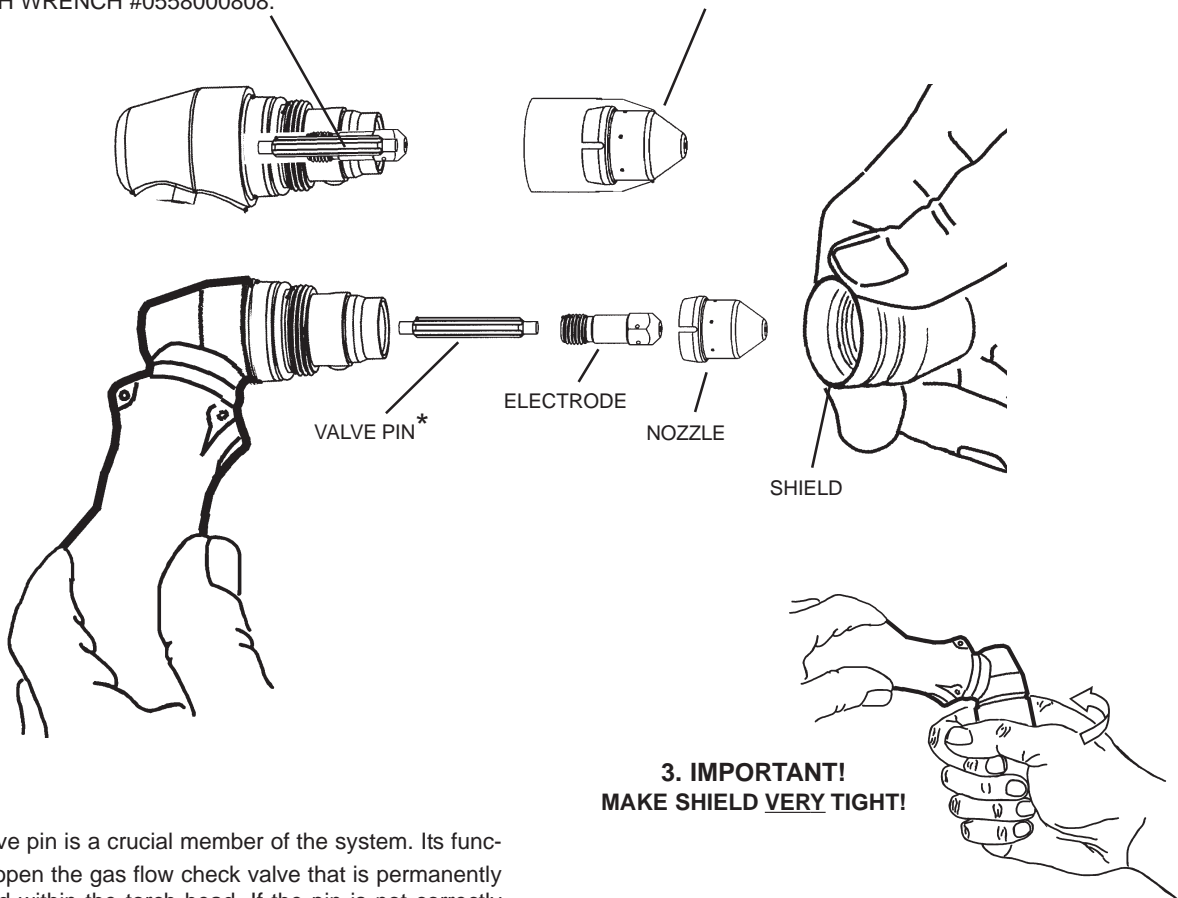


WARNING

The torch head contains a gas flow check valve and a nozzle back pressure tap that act 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 VALVE PIN INTO THE ELECTRODE AND SCREW THE ELECTRODE INTO THE TORCH HEAD AND TIGHTEN SECURELY WITH WRENCH #0558000808.

2. PLACE NOZZLE INTO HEAT SHIELD AND THREAD THIS ASSEMBLY TO THE TORCH BODY AND HAND TIGHTEN.



* The valve pin is a crucial member of the system. Its function is to open the gas flow check valve that is permanently assembled within the torch head. If the pin is not correctly placed in the electrode, the valve will not open and the system will not function. The valve pin also improves electrode cooling by increasing the velocity of air over the inner surface of the electrode.

Figure 3-2. Assembly of PT-32EH Torch Front End Parts

4.1 STEEL HEAT SHIELD GUARDS

(Refer to Figure 4-1)

Drag Cutting with the PT-32EH Torch

If drag cutting is desired, attach ESAB's standoff guide (P/N 0558002393). For thin material, under 3/8" (9mm), remove 50-70 amp or 90 amp nozzle from torch head, insert ESAB's 40 amp nozzle (P/N 0558002908). Lower current level to 40 amps or lower.

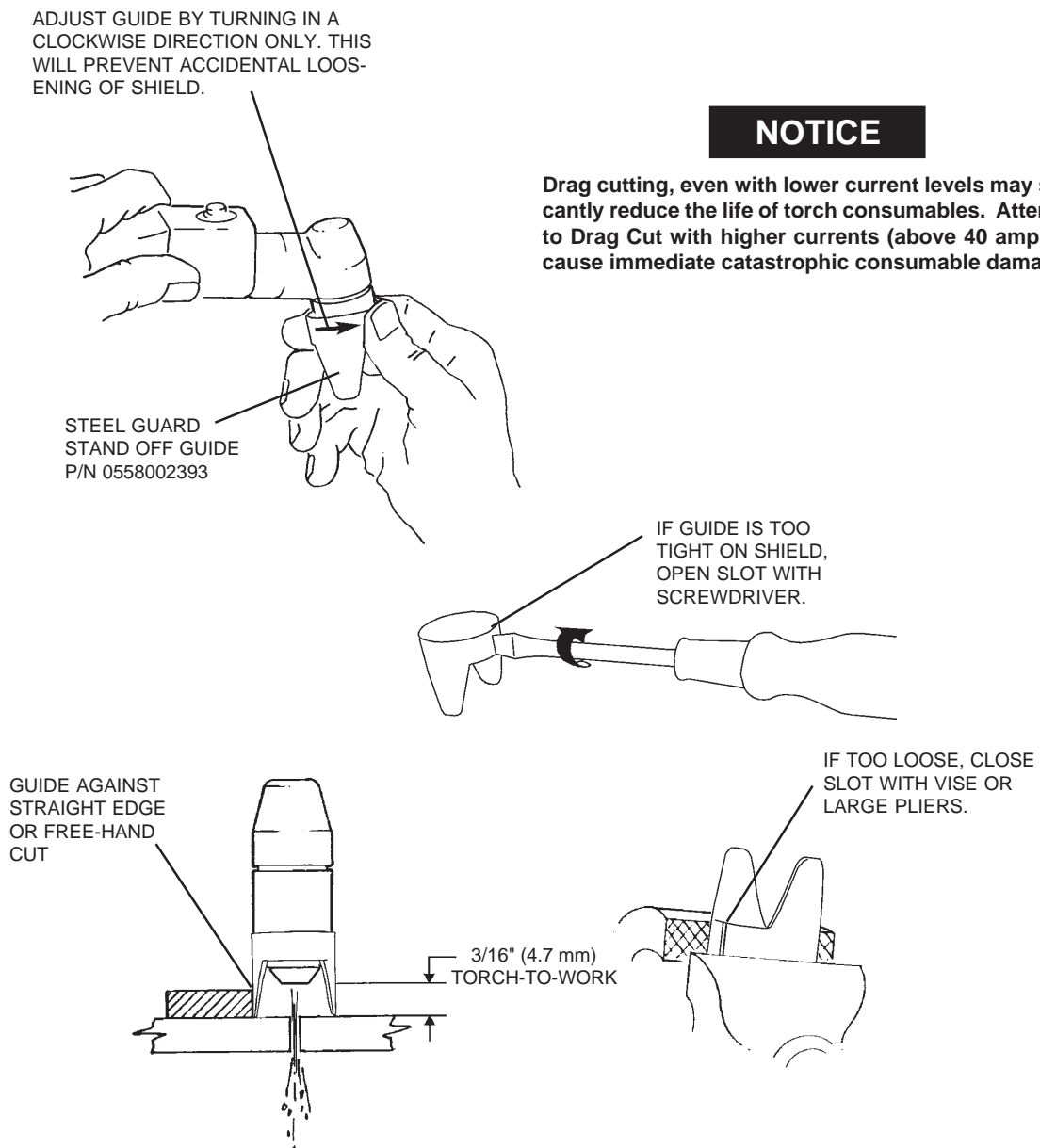


Figure 4-1. Installation and Operation of Steel Heat Shield Guards



ELECTRIC SHOCK can kill.

- Do NOT operate the unit with the cover removed.
- Do NOT apply power to the unit while holding or carrying the unit.
- Do NOT touch any torch parts forward of the torch handle (nozzle, heat shield, electrode, etc.) with power switch on.



**ARC RAYS can burn eyes and skin;
NOISE can damage hearing.**

- Wear welding helmet with No. 6 or 7 lens shade.
- Wear eye, ear, and body protection.

4.2 CUTTING WITH THE PT-32EH

Use the following procedures to cut with the PT-32EH torch (Figure 4-4).

1. Make sure that the wall disconnect switch is on. Turn on the Power Switch to the cutting power source console.
2. Set Pressure Regulator to 75-80 psig (5.2-5.5 bar).
3. Hold the torch nozzle approximately 1/8 in. to 3/16 in. (3.2mm-4.7mm) above the work and tilted at about 15 - 30°. This reduces the chance of spatter entering the nozzle. If the PT-32EH's standoff guide P/N 0558002393 is being used, the distance between Electrode and Work Piece will be approx. 3/16in. (.47mm).
4. Depress the torch switch. Air should flow from the torch nozzle.
5. Two seconds after depressing the torch switch, the pilot arc should start. The main arc should immediately follow, allowing the cut to begin. (If using the trigger LOCK mode, torch switch may be released after establishing the cutting arc.)
6. After starting the cut, the torch should be maintained at a 5-15° forward angle (Figure 4-2). This angle is especially useful in helping to create a "drop" cut. When not using the standoff guide, the nozzle should be held approximately 1/4 in. (6.4mm) from the work.

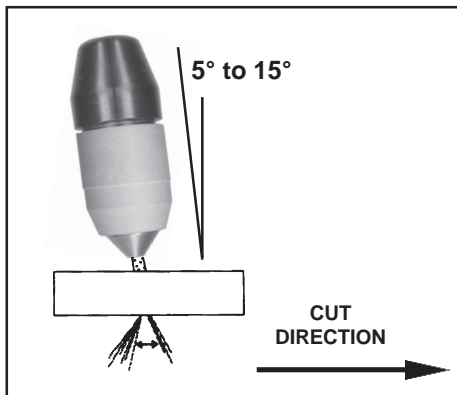


Figure 4-2. Proper Torch Angle

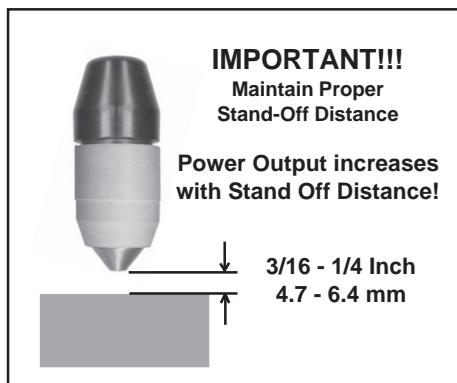


Figure 4-3. Standoff vs. Power Output

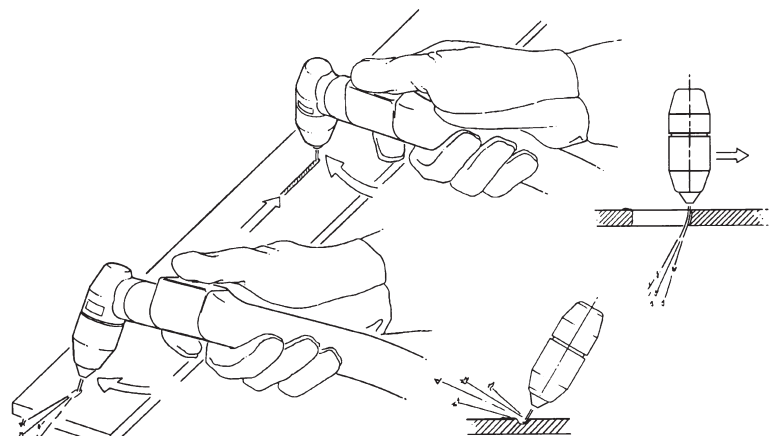


Figure 4-4. Piercing & Cutting Techniques using the PT-32EH

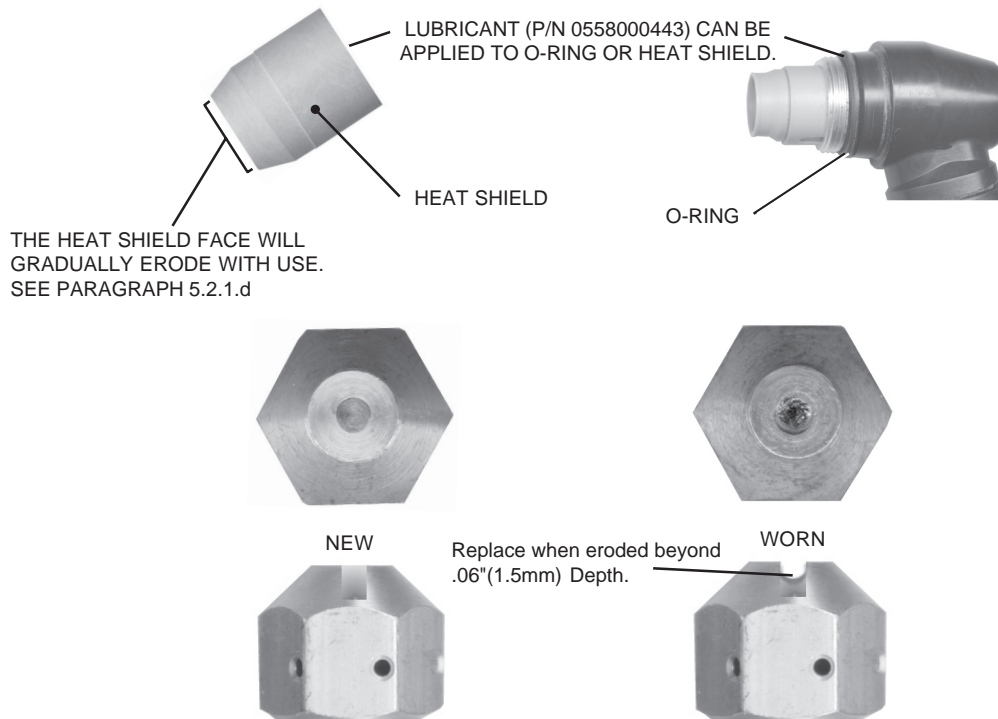
5.1 GENERAL

**WARNING**

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.

5.2 INSPECTION AND CLEANING OF CONSUMABLES

1. Disassemble the front end of the PT-32EH as follows:
 - a. Position torch head in a downward direction (refer to Figure 3-2) and remove the shield. The nozzle will drop from the head and remain in the shield. Unscrew the electrode to remove it and the valve pin. Remove these components and inspect for wear. The nozzle and electrode will generally wear at the same rate. For best performance, replace together.
 - b. Nozzle: Replace if the orifice is clogged, nicked, or out-of-round.
 - c. Electrode: When replacing the nozzle, always inspect the electrode for wear. If more than .06" (1.5mm) of electrode Hafnium has eroded, replace the electrode. If the electrode is used beyond this recommended wear limit, damage to the torch and power source may occur. Nozzle life is also greatly reduced when using the electrode below the recommended limit. Refer to Figure 5-1.
 - d. 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 3-2.
 - e. O-ring: Lubricate as per Figure 5-1. Replace if cut or worn. Air leaking past this seal will reduce cutting performance.
2. To replace the above front end components, refer to Figure 3-2.



CAUTION REPLACE ELECTRODE BEFORE PITTING BECOMES DEEPER THAN .06 INCH (1.5 MM)

Figure 5-1. O-ring, Electrode, and Shield Maintenance

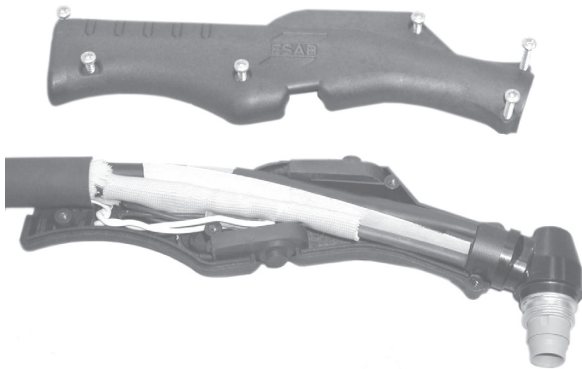
5.3 REMOVING / REPLACING TORCH HEAD AND SWITCHES FROM SERVICE LINE



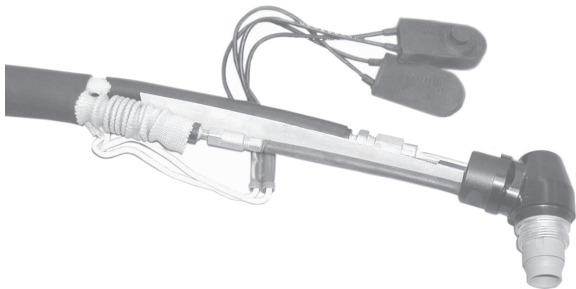
WARNING

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.

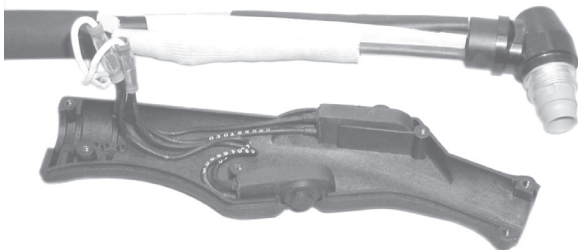
1. Remove six screws from handle. Separate the two halves of the handle



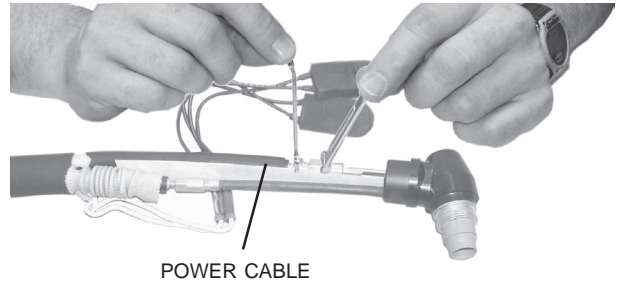
2. Carefully remove the torch body and switches from the assembly. Pull the insulating sleeves back to expose the hose and cable connections. If the switch is to be replaced, remove switch and snip leads (2) at the spliced connections. (Replacement switches are supplied with new splices and extra long leads)



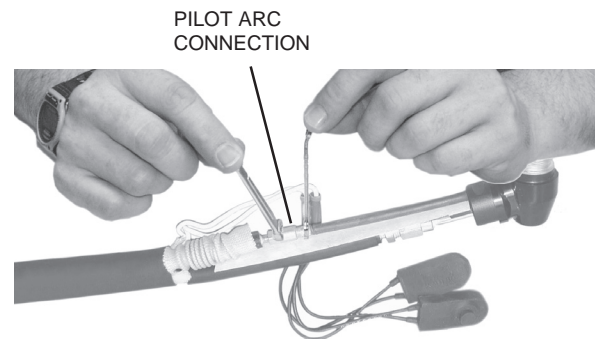
3. Replace insulation as shown. Replace switches in assembly. Proceed to step 6.



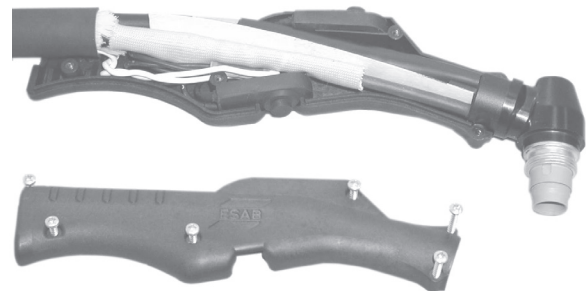
4. If the torch head is to be replaced, remove the power cable from the Torch Head by using two wrenches to prevent twisting brass tube.



5. Next, remove the Pilot Arc connection from the Torch Head using two wrenches to prevent twisting stainless steel tube.



6. Place the torch head into the assembly and guide the cables and tubes into the housing. Fold the wiring into the cavity, being careful not to overlap any mating surfaces of the housing. Replace the other half of the housing and tighten the six screws. Tighten screws until there is no gap between the two halves



6.1 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.

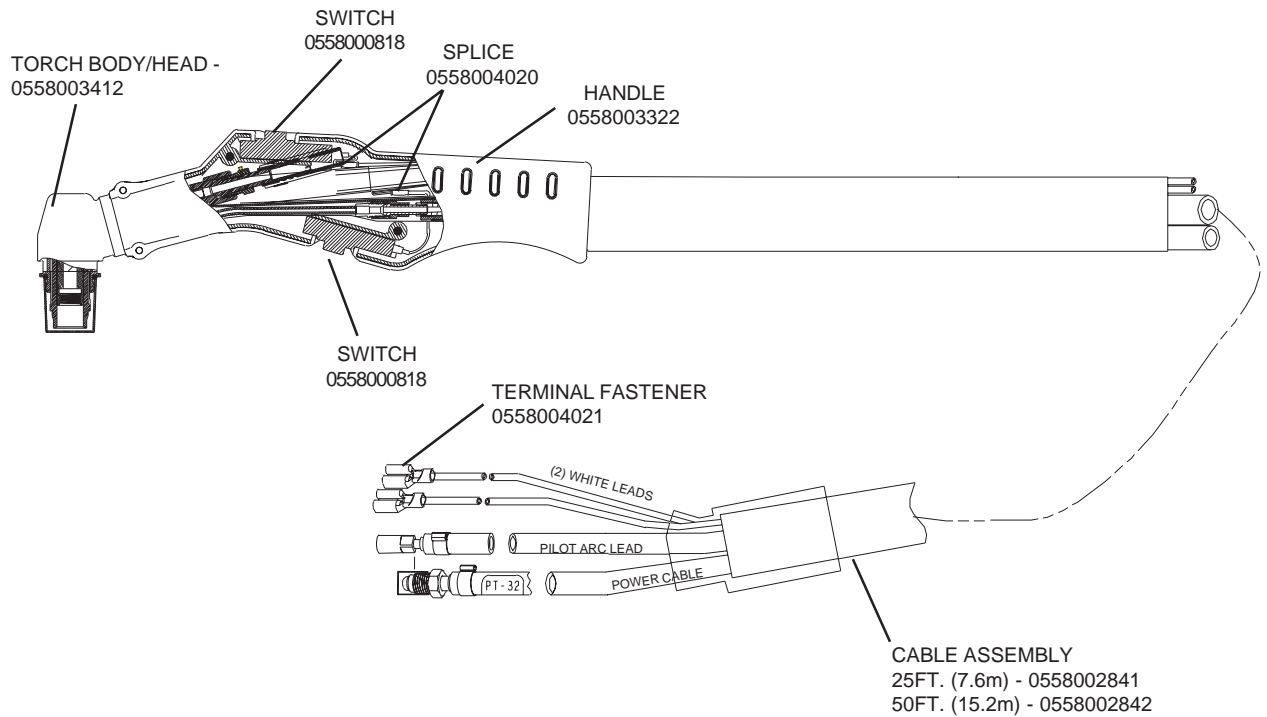
Torches and torch body assemblies purchased individually are supplied without electrode, nozzle, heat shield and valve pin. Order complete spare parts kits or individual components as required (see Section 2).

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.

6.2 Parts



Notes

Revision History

Original Release on February 13, 2003

05/2003 - revised fuse part number from 0558001379 to 0558003075.

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