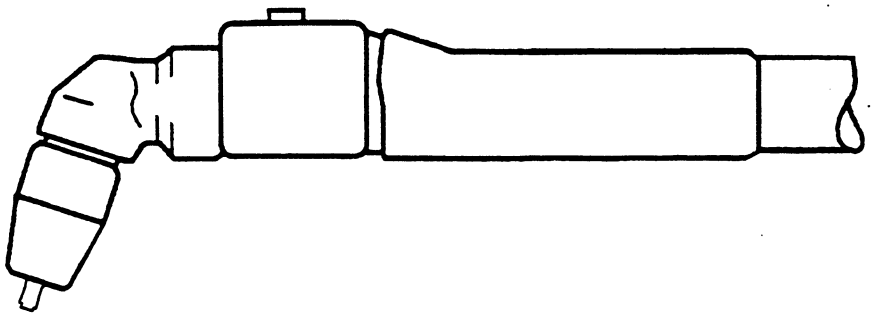
ESAB

PT-31XL



Plasmaskärbrännare
Plasmaskærebrænder
Plasmaskjærebrenner
Plasmaleikkauspoltin
Plasma Cutting Torch
Plasma-Schneidbrenner

Chalumeau à couper au plasma
Plasmabrander
Soplete de Corte con Plasma
Cannello per Taglio ad Arcoplasma
Maçarico de Corte a Plasma
Καυστήρας Κοπής Πλάσματος

Bruksanvisning
Brugsanvisning
Bruksanvisning
Käyttöohjeet
Instruction Manual
Bedienungsanleitung

Manuel d'instructions
Handleiding
Manual de Instrucciones
Manuale di Istruzioni
Manual de Instruções
Εγχειρίδιο Οδηγιών

558000-882 9712

DECLARATION OF CONFORMITY
according to the EC Low Voltage Directive 73/23/EEC
FÖRSÄKRAN OM ÖVERENSSTÄMMELSE
enligt lågspänningsdirektivet 73/23/EEG

Fill in and put a cross in appropriate boxes Fyll i och kryssa tillämpliga rutor

Type of equipment Materialslag

Plasma Cutting Torch

Brand name or trade mark Fabrikatnamn eller varumärke

ESAB

Type designation etc. Typbeteckning etc.

PT-31XL 36285 (558 000 690)

Manufacturer's name, address, telephone No, telefax No: Tillverkarens namn, adress, telefon, telefax:

ESAB Welding & Cutting Products

411 South Ebenezer Road, Florence, South Carolina 29501

Phone: +1 803 669 4411, Fax: +1 803 664 4258

Manufacturer's authorised representative established within the EEA; Name, address, telephone No, telefax No: Tillverkarens representant inom EES; Namn, adress, telefon, telefax:

Esab Welding Equipment AB

Walter Edströms väg, 695 81 LAXÅ, SWEDEN

Phone: +46 584 81 000, Fax: +46 584 411 924

The following harmonised standards or technical specifications (designations) which comply with good engineering practice in safety matters in force within the EEA have been used in the design:
Följande harmoniserande standarder eller tekniska specifikationer (beteckningar) som uppfyller god säkerhetsteknisk praxis inom EES har använts i konstruktionen:

EN 50 078	Torches and Guns for Arc Welding
EN 50 192	Arc Welding Equipment - Plasma Cutting Systems

☒ **1. The equipment conforms completely with the above stated harmonised standards or technical specifications.**
Materielen överensstämmer helt med ovan angivna harmoniserade standarder eller tekniska specifikationer.

OR ELLER

☐ **2. The equipment conforms only partially with the above stated harmonised standards or technical specifications but complies with good engineering practice in safety matters in force within the EEA.**
Materielen överensstämmer endast delvis med ovan angivna harmoniserade standarder eller tekniska specifikationer men uppfyller god säkerhetsteknisk praxis inom EES.

Additional information Övriga uppgifter

By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.
Genom att underteckna detta dokument försäkrar undertecknad såsom tillverkare, eller tillverkarens representant inom EES, att angiven materiel uppfyller säkerhetskraven angivna ovan.

☐ **Manufacturer** Tillverkare — **or** eller — ☒ **Manufacturer's authorised representative** Tillverkarens representant

Date Datum
Laxå 97.10.15

Signature Underskrift

Position Befattning
Managing Director

Clarification namnförtydligande
Paul Karlsson

GB

1. INTRODUCTION

NOTE!

This manual is intended for personnel with experience of plasma cutting. The operator using the cutting equipment must always be aware of the risks and safety regulations that this process entails.

National safety regulations for plasma cutting are generally recommended.

Unauthorized personnel are not permitted to install, use or service the equipment. It is important that the following instructions are read and properly understood before the equipment is installed and used.

In the event of uncertainty please contact ESAB AB or your nearest agent.

WARNING

ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK - Can kill
- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

FUMES AND GASES - Can be dangerous to health
- Keep your head out of the fumes
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

ARC RAYS - Can injure eyes and burn skin.
- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

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

NOISE - Excessive noise can damage hearing
- Protect your ears. Use ear defenders or other hearing protection
- Warn bystanders of the risk.

MALFUNCTION - Call for expert assistance in the event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

PROTECT YOURSELF AND OTHERS!

GB

2. TECHNICAL DESCRIPTION

WARNING

ELECTRIC SHOCK CAN KILL

- **Plasma cutting uses high voltage. Skin contact with the torch, the power source, the workpiece or any grounded object MUST BE AVOIDED whenever the power source is ON.**
- **Using the torch on any power source not equipped with a flow switch safety interlock may expose operator to unexpected high voltage.**
- **Before beginning operation with the PT-31XL torch, refer to the safety precautions and operating instructions in the PCM-500i Plasma Cutting Package instruction manual.**

2.1 DESCRIPTION

The PT-31XL is a manual torch with a 75° head designed for use with PCM-500i Plasma Arc Cutting Package using clean, dry air as the plasma gas. The service lines are 7.6m long and the torch is rated to operate up to 50 amperes at 100% duty cycle for cutting most metals.

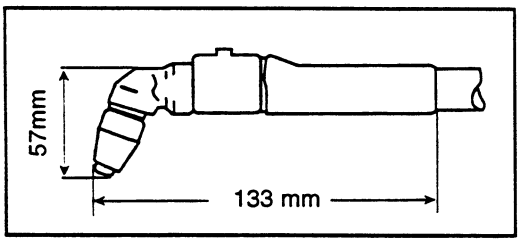


Figure 2-1. PT-31XL Dimensions

2.2 ACCESSORIES

1. **Spare Parts Kit, PT-31XL, 558000505**
   Recommended for maintaining PT-31XL with minimum downtime. The kit is supplied with each PCM-500i package. The kit includes the following parts in a convenient case:

   1 - Heat Shield (long), 558000509
   3 - Nozzle, 35/40 A, 558000508
   2 - Electrode, 558000507
   1 - Swirl Baffle, 558000506

2. **TORCH GUIDE KIT, 558000582**
   Permits cutting accurate circles from 125mm to 685mm in diameter with a manual torch. The attachment includes a head and radius bar assembly, center-point/adaptor, and dual swivel castor assembly. Cuts can be made inside or outside the circle. The torch head is always held vertical during the cutting operation. The attachment is also handy for maintaining a constant standoff in other types of cutting.

3. TECHNICAL DATA

The **PT-31XL Torch** meets the requirements of instructions for Use of **EN 50192** as follows:

a. **Process:** Manual torch used for plasma arc cutting.
b. **Method of guidance:** Manual.
c. **Voltage Class:** M (113v peak to 400v peak).
   Striking Voltage: 8000 VAC.
   Stabilizing Voltage: 200 VDC.

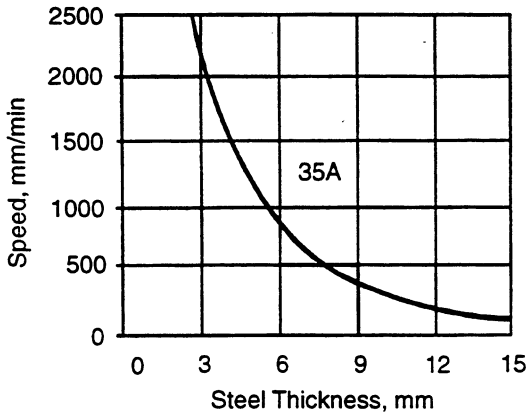
d. **Maximum Rated Current:** 50 amps.
   Maximum Current at 100% Duty Cycle: 50 amps.
   Type Gas: 120 l/min. at 5.5 bar.

e. **Maximum and Minimum Gas Pressure at Inlet:** 4.8 to 5.9 bar.
f. **Type of Cooling:** Air.
g. **Rating of Auxiliary Electrical Control in Torch:** N/A.
h. **Requirements for Connection of Torch:** Wrenches and screwdriver.
i. **Essential Information about Safe Operation of Torch:** Refer to all safety precautions in manual.
j. **Essential information about Safe Operation of the Plasma Cutting Torch and the Functioning of Interlocking and Safety Devices:** Meets requirements by means of pneumatic interlock safety system. The interlocking device deenergizes the torch when parts, particularly protective cone, are removed to expose electrode connection. For the interlocking device to function properly, the torch electrode must remain in the protective cone. Do not attempt to install the electrode into the torch without first placing it in proper position (with the other parts) within the protective cone.

GB

k. **Type of Plasma Cutting Power Source that can form a Safe System with the Plasma Cutting Torch:** PCM-500i.

l. **Plasma Cutting Ability:** See chart below:



m. **Conditions under which Extra Precautions are to be observed during Plasma cutting:**

1. Refer to General Warning in Manual.
2. Do not cut closed containers. An explosion may result.

4. INSTALLATION & OPERATION

WARNING

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

The seat and plunger come assembled to the front end of the torch. Make sure seat is tightened firmly with a wrench but do NOT overtighten.

With the torch front end facing up, assemble electrode, swirl baffle, nozzle and heat shield in that order as shown in Fig. 4.1. Tighten heat shield snugly to hold the parts in firm contact with each other and the torch head. Do not overtighten the heat shield.

WARNING

BE SURE to install the swirl baffle in the torch. Failure to do so would allow the nozzle to contact the electrode. This contact would permit high voltage to be applied to the nozzle. Your contact with the nozzle or workpiece could then result in serious injury or death by electric shock.

Follow all instructions in the appropriate booklet packed with your PCM package. DO NOT install or attempt to operate this torch without following these instructions.

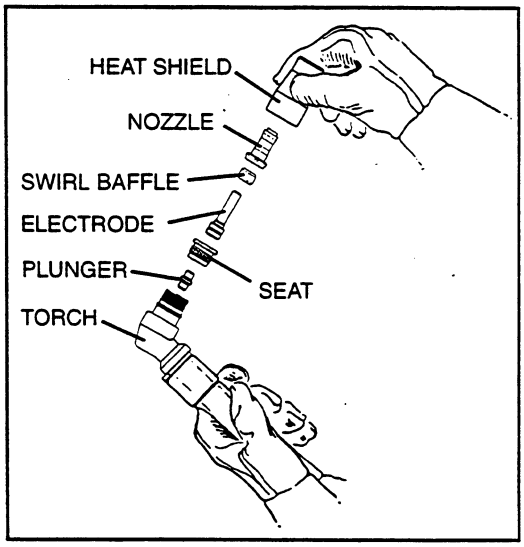


Fig. 4.1 - Front End Assembly

WARNING

The PT-31XL torch head contains a gas flow check valve that acts in conjunction with the flow switch and 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.

5. MAINTENANCE

Before any maintenance is attempted on this torch, make sure the POWER SWITCH on the power source is in the OFF position and the PRIMARY INPUT POWER is DEENERGIZED.

1. To disassemble the front end, hold the torch with the shield in an upright position. This will prevent the nozzle, electrode, and swirl baffle from falling free when the shield is removed. To replace any of these parts, assemble as directed in Section 4.

   The gas flow check valve is part of the safety interlock and is permanently assembled in the torch head. The head must be replaced if this valve malfunctions. The light spring force used to close the ball check can be

felt by pushing on the electrode when assembling the front end components.

2. Periodically check the heat shield, electrode, nozzle, and swirl baffle. Replace if worn or damaged.

   Do not continue to use electrode when it erodes to length shorter than 16mm as shown in Fig.3. The electrode opens the gas flow check valve. If one end is continually used, it will be too short to open the valve when reversed.

4. Apply a small amount of lubricant (558000443) to the heat shield as shown in figure 5.1 or to the O-ring. Check O-ring (558000514) for damage whenever the shield is removed. Replace if necessary.

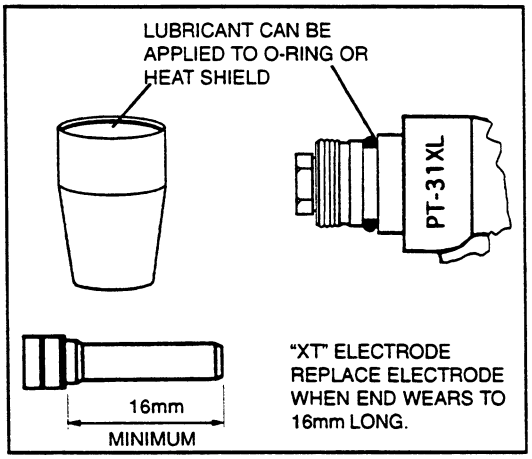


Fig. 5.1 - O-ring and Electrode Maintenance

5. The power cable and switch leads in the service line should be inspected periodically. If there are any cuts through the protective sheath or if gas leaks are noted, replace the damaged component.

By following steps 1, 2, and 3 in figure 5.2 the service line can be removed from the torch. To disassemble the service line, lay the line out straight, remove the tape from around the switch lead splices, and free the switch by cutting the leads close to the splices. (Replacement switches have extra long leads to make up for any loss due to cutting.) Remove the rubber boot from the inlet end of the cable and remove the tape that secures the sheath at each end. Pull the sheath off the cable (over small fitting at torch end). Note that the switch leads wrapped around the power cable are secured with tape several places along the cable. The leads, switch cord plug, and strain relief can now be removed. DO NOT remove the white tape that forms a band around the power cable at each end. The sheath is taped to the cable in front of the band which acts as a shoulder to prevent the sheath from sliding back on the cable. (Replacement cables have this tape in place.) If the switch leads are to be replaced, replace with 1.5mm² STRANDED COPPER, 600-VOLT, 90°C INSULATED WIRE. Reassemble in reverse order.

6. To reposition the switch on the torch, slide the flex support back, remove the tape securing the spliced leads to the power cable, reposition switch, retape the leads, and pull the flex support back in place.

NOTE: A thin film of silicone lubricant (558000443) applied inside of the flex support will ease the assembly of this part.

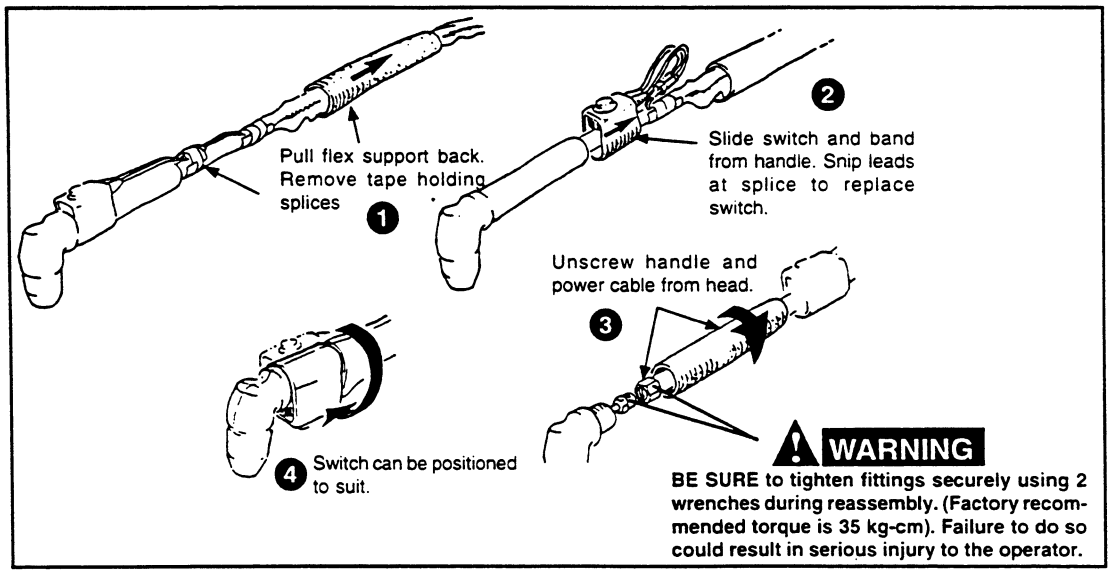
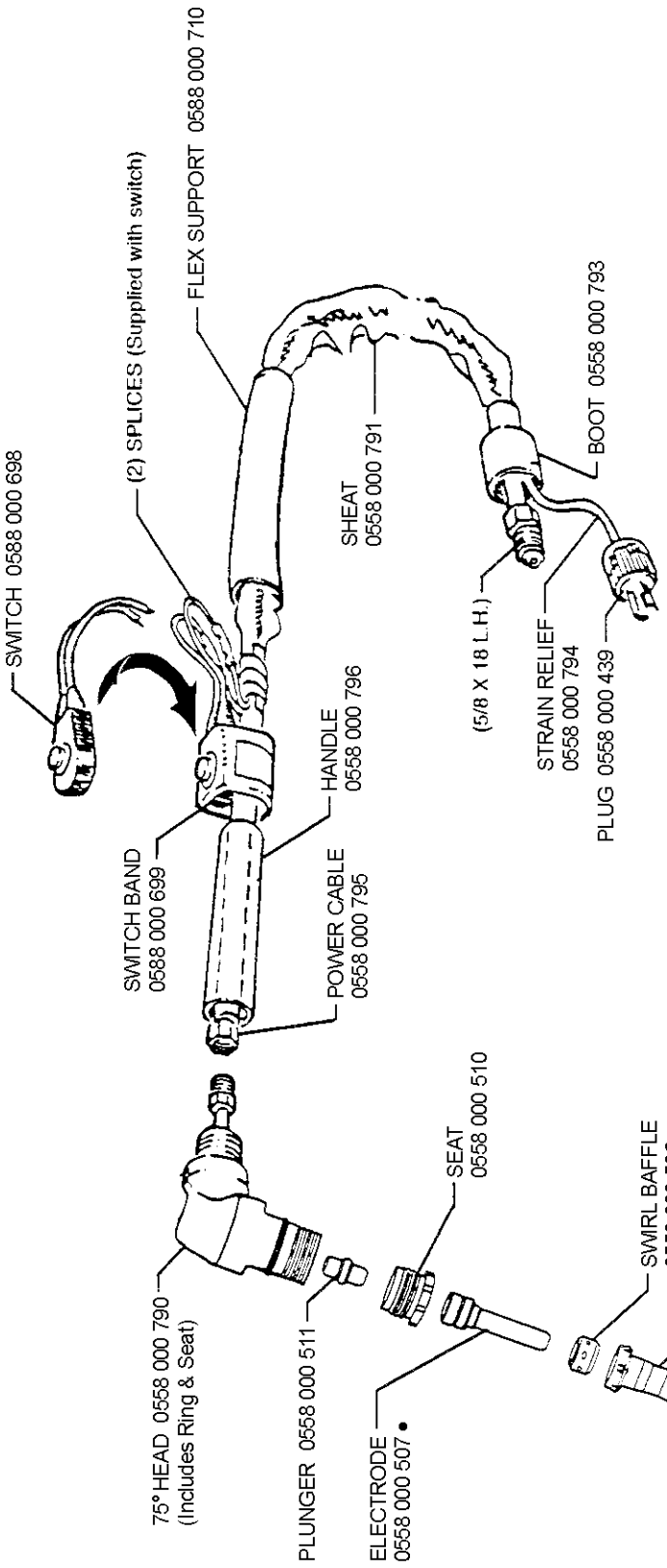


Figure 5.2 - Power Cable and Switch Disassembly Sequence

6. REPLACEMENT PARTS



Updated October 2003