

# A22 POB

**Tubeplate welding tools**

**Simplified service manual**

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# 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.

## **MALFUNCTION**

- Call for expert assistance in the event of malfunction.

**READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE  
INSTALLING OR OPERATING THE EQUIPMENT**

**PROTECT YOURSELF AND OTHERS!**

## **SAFETY**

### **SAFETY**

Users of ESAB welding equipment have ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions.

Safety precautions must meet the requirements that apply to this type of welding equipment.

The following recommendations should be observed in addition to the standard regulations that apply to the work place.

All work must be carried out by trained personnel who are familiar with the operation of the welding equipment.

Incorrect operation of the equipment may lead to a hazardous situation which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the welding equipment must be familiar with:

- its operation
- the location of emergency stops
- its function
- relevant safety precautions
- welding

To make this easier each switch, pushbutton or potentiometer is marked with a symbol or text that indicates its function when activated.

2. The operator must ensure that:

- no unauthorized person is stationed within the working area of the equipment when it is started up.
- that no-one is unprotected when the arc is struck

3. The work place must:

- be suitable for the purpose
- be free from draughts

4. Personal safety equipment

- Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves.
- Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns.

5. General precautions

- Make sure the return cable is connected securely.
- Work on high voltage equipment **may only be carried out by a qualified electrician.**
- Appropriate fire extinguishing equipment must be clearly marked and close at hand.
- Lubrication and maintenance must **not** be carried out on the equipment during its operation.

## TECHNICAL DESCRIPTION

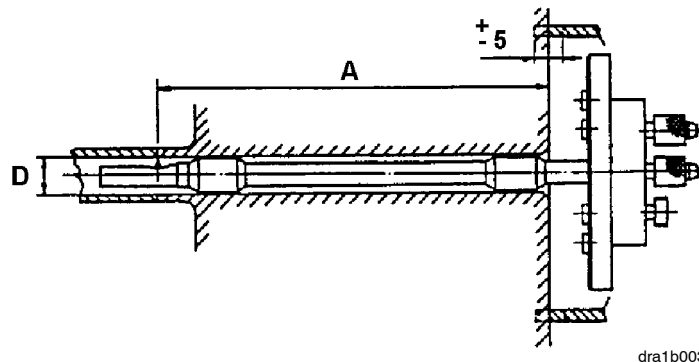
The POB tube plate welding tool is intended for TIG-welding of tubes into flat tube plates. It is suitable for all types of weld joints, in certain cases using extra equipment.

The POB 12-60 welding tool is intended for use together with a spindle and a centering mandrel according to the selection table on page 11.

POB 12-60 is intended for use with the power sources MECHTIG 315 INVERTER, PROTIG 315 INVERTER, PROTIG 250 and PROWELDER 250

TECHNICAL DATA	A22 POB
Max. continuous welding current	180 A/60 %
Max. pulsed welding current	200 A/60 %
Working range:	
base specification	12-60 mm
with titanium welding kit	12-60 mm
with external fillet welding kit	12-60 mm
with internal welding kit	according to designation
Electrode angle for:	(See page 15)
butt welding	parallel with tube axis
internal fillet welding	30° to tube axis
external fillet welding	15° to tube axis
internal welding	90° to tube axis
Electrode diameter	1.6 and 2.4 mm
Speed of rotation	0.3-4.5 r.p.m
Wire feed speed	0.15-1.5 m/min
Wire diameter	0.8 and 0.91 mm
Length of welding cable	8 m
Weight	
tool	4.5 kg
cable and hose bundle	4.5 kg

	Order no.
POB 12-60, base version with wire feed unit	333 893-881
Base version can be fitted with accessory kits for	
- external fillet welding	333 897-880
- titanium welding	441 000-880
- internal welding	
diameter:	
9.5-15 mm	441 131-880
15-20 mm	441 132-880
20-30 mm	441 133-880



When ordering an accessory set for internal welding, please indicate both the inner diameter (D) of the tube and the distance of the welding joint to the outside (A) of the plate.

## INSTALLATION

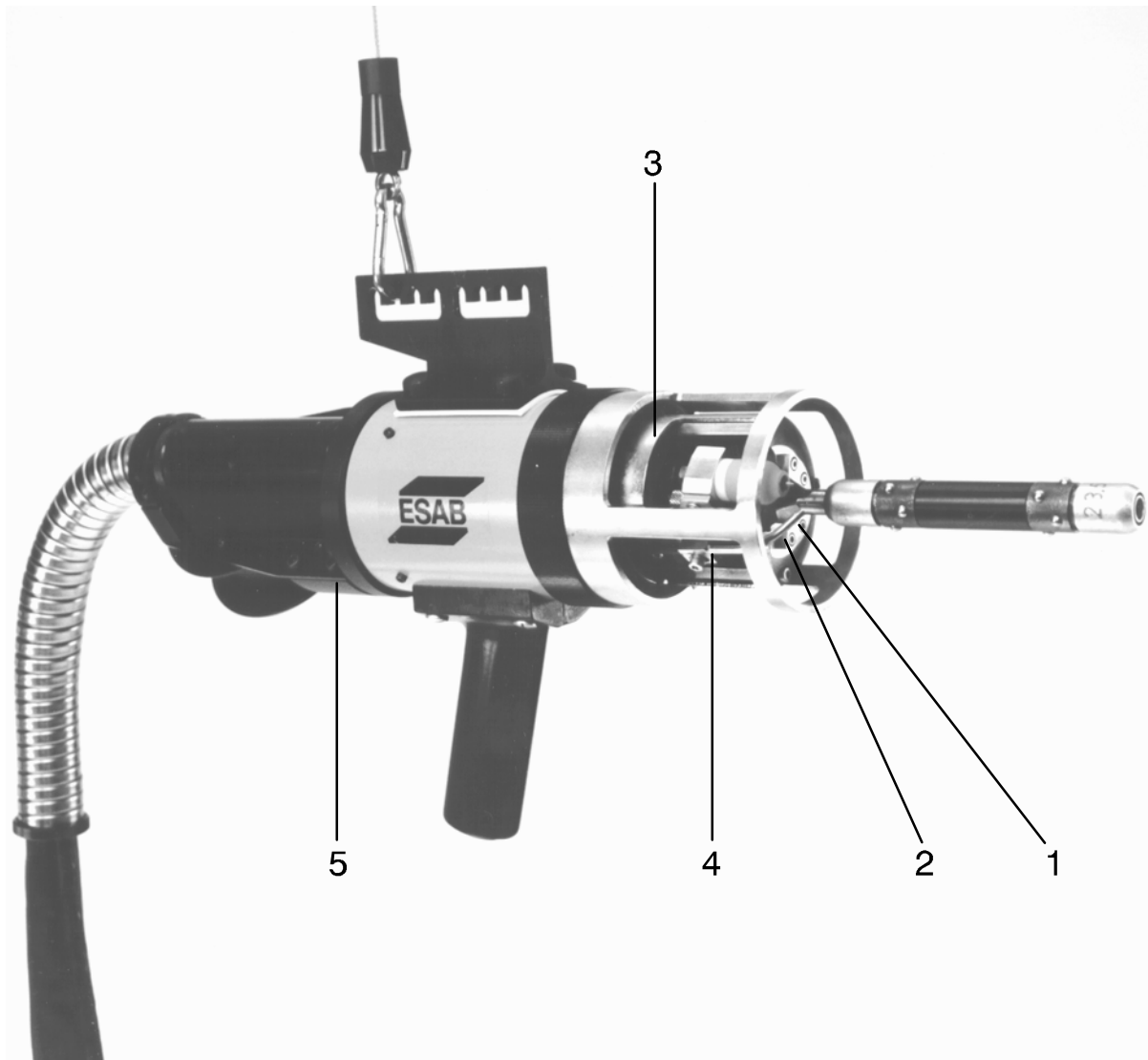
1. Welding power source, see separate instruction manual.
2. Dimension drawing, see page 16.
3. Diagram, see page 17.
4. Connection diagram, see page 18 and page 19.
5. Tool dismantling:

It is necessary to dismantle the tool.

- For adjustment of the "home" position.
- In the event of a fault.

Dismantling:

- Remove the three bolts (1) in the support ring (2).
- Remove the screw (4).
- Pull off the support tube (3).
- Carefully withdraw the entire inner assembly (5) backwards, being careful not to damage the microswitch.

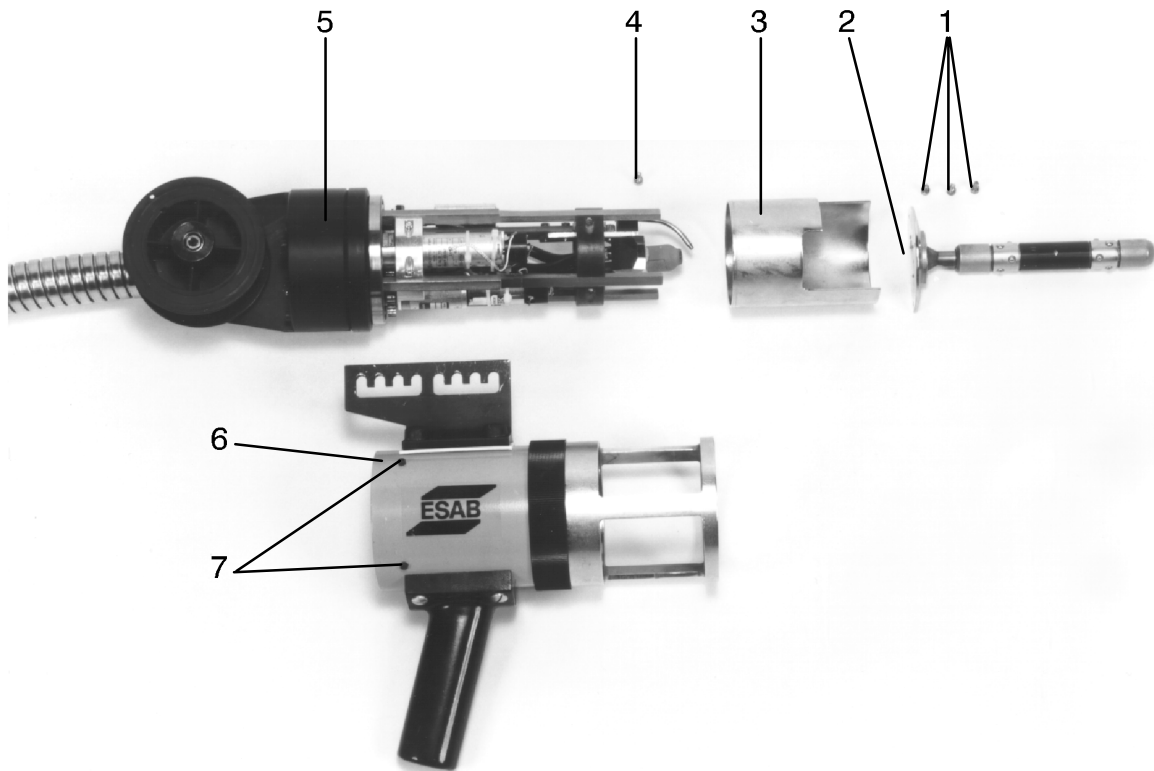


6. Adjusting the "home" position:

- Remove the four bolts (7).
- Withdraw the gear ring. The lifting cog influencing the microswitch can now be moved a full turn in  $22^\circ$ , 5 steps, starting at  $11^\circ$ , 25 counted from 12 o'clock.

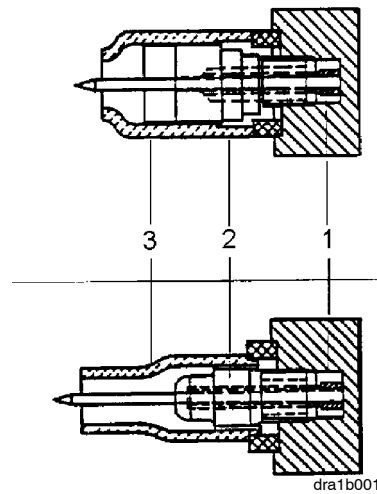
7. Tool reassembly:

- Insert the inner assembly (5) in the outer casing (6). Make sure that the microswitch is not located just opposite the lifting cog.
- Rotate the parts slightly relative to one another, so as to engage the motordrive gear and the gear ring.
- Fit the support tube (3), (lightly grease the contact surface of the sealing ring with a suitable grease, e.g. Barrierta). Fit the support plate (2) with the screws (1).
- Fit the screw (4).



8. Replacement and fitting of the electrode:

- Cut off the electrode to some 45 mm and grind it to the desired angle.
- Remove the gas cup (3).
- Remove the electrode nozzle (2) and the electrode nozzle with gas lens.
- Replace the electrode. When changing to a different electrode diameter it is necessary also to change the electrode nozzle (2) and the collet (1).



The adjustment of the electrode is important to guarantee the repeatability for continued welding.

Use ready-ground electrodes of the same length and fit them in the same position.



9. Adjustment of the welding diameter:

- Slacken the locking screw (8).
- Use a screwdriver to turn the gear wheel (7), which is mounted on the link arm (3), so that the correct welding circle diameter is obtained.
- Slacken the screw (4).
- Adjust the electrode angle by rotating the electrode holder (6).
- Tighten the locking screws (4 and 8).

10. Adjusting the arc length:

- Adjust the length of the arc (i.e. the distance between the tip of the electrode and the workpiece) by screwing the spacing tube (9) in or out.
- Secure the setting by means of the locking nut (10).

11. Inserting the filler wire:

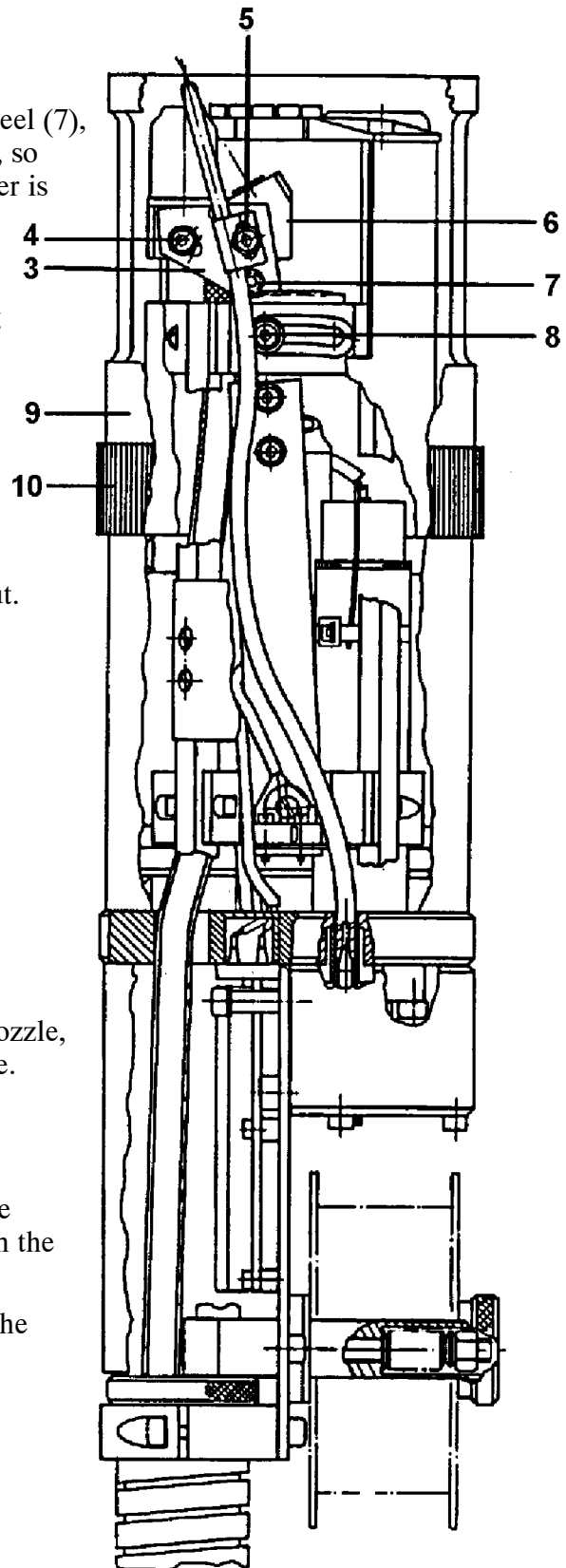
- Cut off any bent length of the wire and file off the end.
- Feed the wire into the nozzle.
- Advance the wire through the tool (by running the feed unit manually).

12. Replacing the wire nozzle:

- Undo the screw (5) and remove the nozzle, which is threaded on to the wire guide.

13. Replacing the wire guide:

- Dismantle the tool.
- Remove the wire nozzle from the wire guide and remove the wire guide from the inner part of the tool.
- Screw the internally bevelled end of the new wire guide into the feed unit.
- Fit the wire nozzle.
- Mount the tool.



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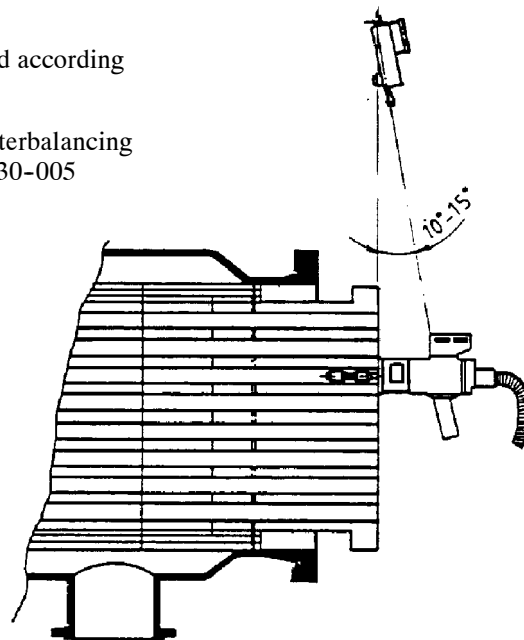
## OPERATION

The POB tube welding tool connected to the programmable welding power source PROTIG 250, PROWELDER 250, PROTIG 315 INVERTER or MECHTIG 315 INVERTER:

- Set all the welding parameters on the programmable PROTIG 250, PROWELDER 250, PROTIG 315 INVERTER or MECHTIG 315 INVERTER power source unit.
- Adjust the position and the angle of the electrode.
- Start the automatic welding sequence by pressing the "Start" button on the power source or directly on the POB tube welding tool.

It is important that the tool is suspended according to the adjoining figure.

For balancing to weightlessness a counterbalancing device is used. Ordering number 332 330-005



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## MAINTENANCE

- Clean the tool as necessary.
- Check wearing parts at regular intervals and replace as necessary.
- Check that all hoses and connections for gas, water, welding current and control current are undamaged and correctly connected.
- Check that the correct electrode is being used and that it is properly ground.

By separating the inner and outer parts from each other the equipment is easy to service.

## SELECTION TABLE

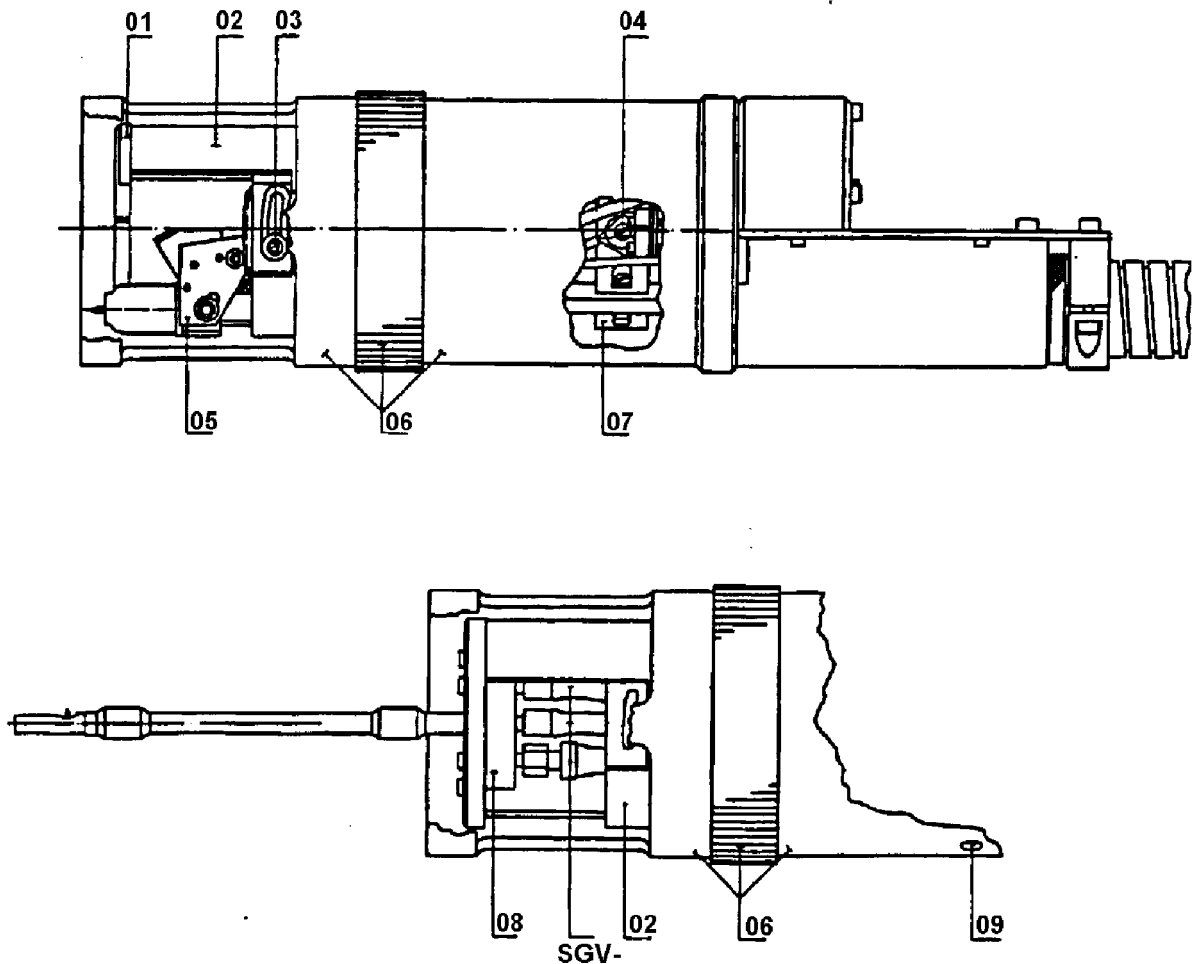
Tube diameter		Centering mandrel	Spindle
Min. mm	Max. mm	Ordering no.	Ordering no.
9,9 10,3 10,7 11,1 11,5 11,9 12,5	10,5 10,9 11,3 11,7 12,1 12,7 13,3	442 634-880 442 634-881 442 634-882 442 634-883 442 634-884 442 634-885 442 634-886	442 714-880
13,1 13,7 14,3 15,2 16,1 17,4 18,8 19,9	13,9 14,5 15,4 16,3 17,6 19,0 20,2 21,7	442 635-880 442 635-881 442 635-882 442 635-883 442 635-884 442 635-885 442 635-886 442 635-887	332 208-880
21,4 22,9 24,4 26,3 28,1 30,3 32,7 36,2	23,2 24,7 26,6 28,5 30,7 33,1 36,7 40,1	442 636-880 442 636-881 442 636-882 442 636-883 442 636-884 442 636-885 442 636-886 442 636-887	332 209-880
39,6 43,2 46,7 51,2 56,6 63,0 70,6 78,2	43,7 47,3 51,8 57,2 63,7 71,4 79,0 86,6	442 637-880 442 637-881 442 637-882 442 637-883 442 637-884 442 637-885 442 637-886 442 637-887	332 210-880

## ACCESSORY SET FOR INTERNAL WELDING

Order number, see on page 5.

### Fitting:

1. Dismount the support plate 01 and the support tube 02.
2. Pull of the envelope of the tool 06.
3. Slacken the welding cable clamp 07 (approx. 6 turns) and remove the screws 03 och 04.
4. Pull out the electrode holder and link arm 05 far enough to allow the welding cable to be disconnected from the electrode holder.
5. Push back the envelope 06 and the support tube 02.
6. Connect the accessory set for internal welding 08 to the welding cable.
7. Pull the accessory set into the correct position by means of the welding cable and secure it.
8. **TIGHTEN THE WELDING CABLE CLAMP 07 THROUGH HOLE 09 IN THE OUTER CASING 06, OTHERWISE THE ROTATION MOTOR WILL BE DAMAGED!**



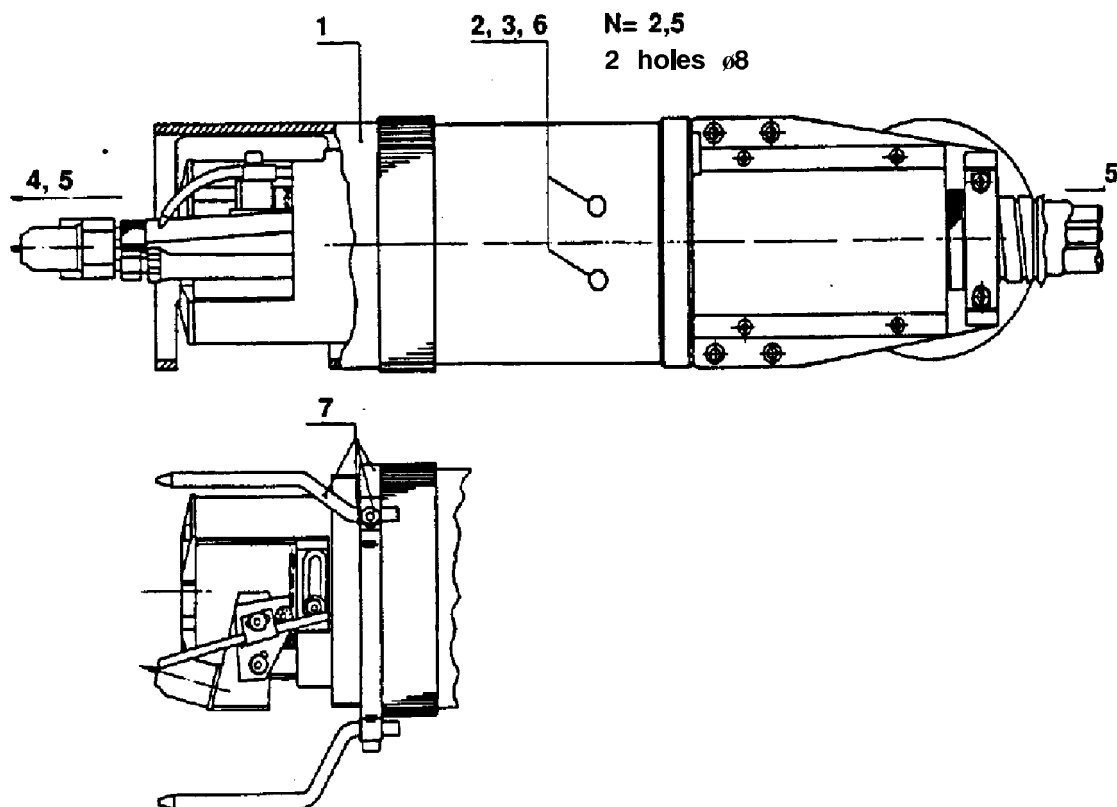
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## ACCESSORY SET FOR EXTERNAL FILLET WELDING

Order number, see on page 5.

### Fitting:

1. Dismount the spacer tube.
2. Rotate the inner portion, so that the cable is just opposite the group of holes  $2 \times \varnothing 8$  in the envelope.
3. Insert a 2.5 mm Allen key through the holes  $\varnothing 8$  and slacken the welding cable clamp (approx. 6 turns).
4. Dismount the electrode holder and pull it out.
5. Replace the electrode holder and pull into correct position by means of the welding cable.
6. **TIGHTEN THE WELDING CABLE CLAMP THROUGH THE HOLES  $\varnothing 8$ . OTHERWISE THE ROTATION MOTOR WILL BE DAMAGED!**
7. Fit the guide finger mount, the guide fingers, then Allen screw and the locking washer.
8. Replace the electrode nozzle.



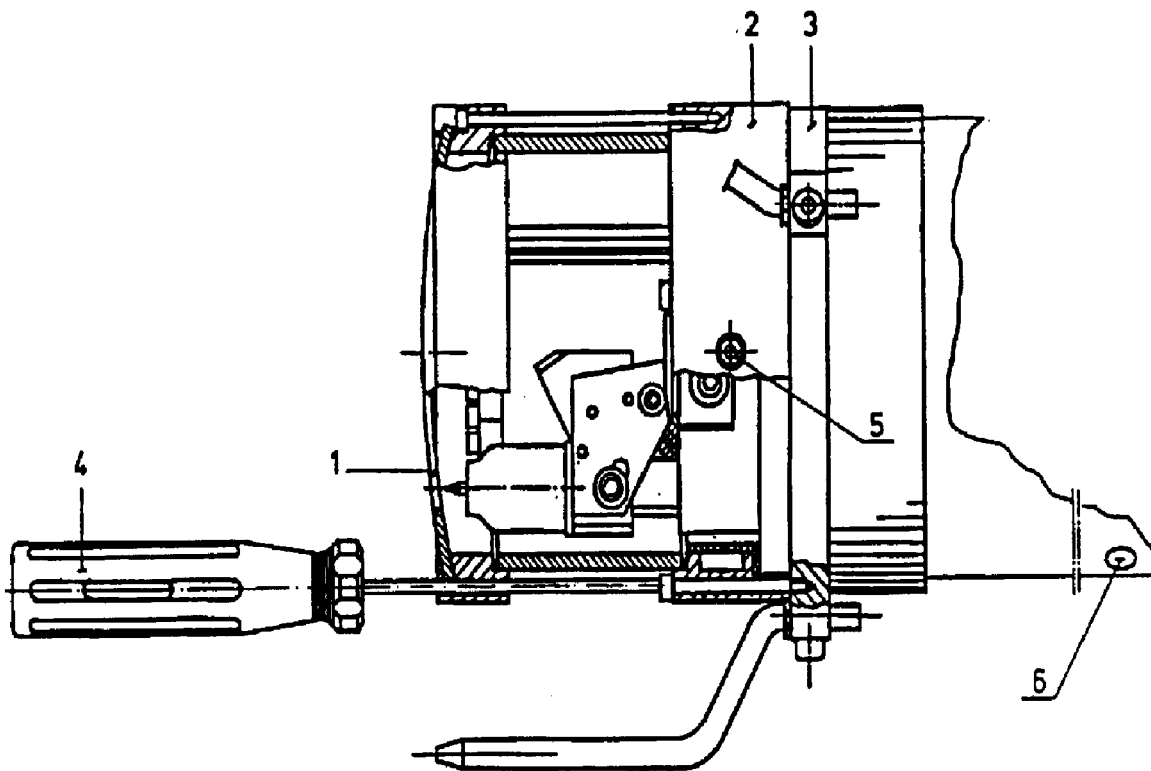
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## ACCESSORY SET FOR WELDING TITANIUM

Order number, see on page 5.

### Welding with the accessory kit for titanium.

1. Cut a hole in the rubber disk (1) so that the rubber rests against the plate at a safe distance from the arc.
2. Dismount the complete gas shield (2) from the three-point support (3) by means of an Allen key (4).
3. Adjust the weld diameter and arc length in the normal way (preferably while the tool is attached to the work piece).
4. Fit the gas shield (2) with the gas connection pointing downwards.
5. Purge the tool with gas to drive out all the air.
6. Tape over the  $\varnothing 8$  holes in the outer casing of the tool (6).



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