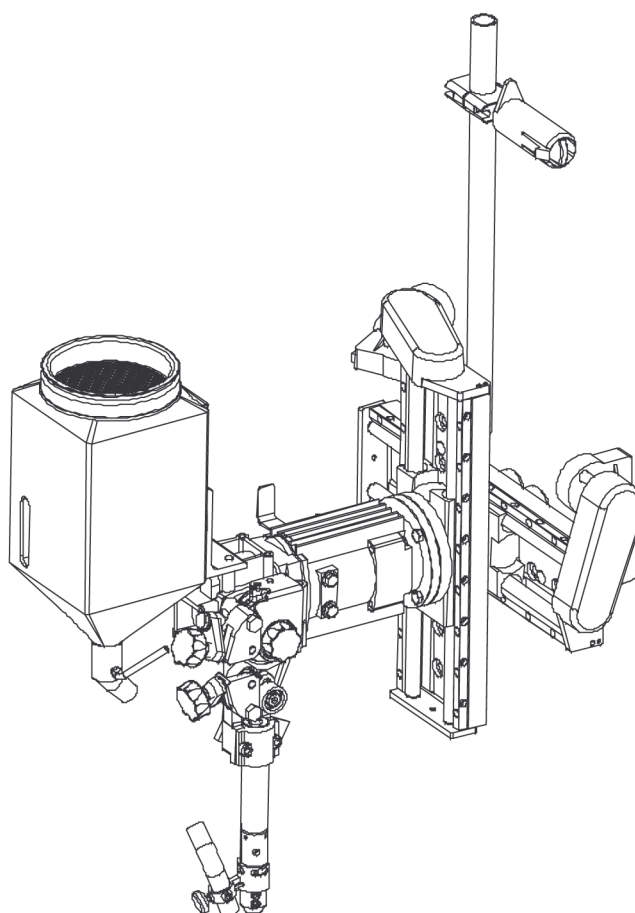


A6SF F1

A6 welding head SAW, Single



Instruction manual

Original instructions



DECLARATION OF CONFORMITY

In accordance with
the LV-Directive 2006/95/EC, the Machinery Directive 2006/42/EC, the EMC Directive 2004/108/EC

Type of equipment

Feeder of welding wire in combination with movable Welding Automats and stationary Welding heads, used with control box PEK

Brand name or trade mark Fabrikatnamn eller varumärke
ESAB

Type designation etc.

A2 Multitrac, A2 Tripletrac, A2 S-series, A6 Mastertrac, A6 Mastertrac Tandem, A6 S- series

Manufacturer or his authorised representative established within the EEA

Name, address, telephone No, telefax No:

ESAB AB, Welding Equipment
Esabvägen, SE-695 81 LAXÅ, Sweden
Phone: +46 584 81 000, Fax: +46 584 411 924

The following harmonised standards in force within the EEA have been used in the design:

EN 60974-5, Arc welding equipment – Part 5: Wire feeders
EN 12100-2, Safety of machinery – Part 2: Technical principles
EN 60974-10, Arc welding equipment – Part 10: Electromagnetic compatibility (EMC) requirements

Additional information: Restrictive use, Class A equipment, intended for use in locations other than residential

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.

Date / Datum
Laxå 2009-09-15

Signature / Underskrift

A handwritten signature in dark ink, appearing to read "Kent Eimbrodt", is written over a horizontal line.

Kent Eimbrodt
Clarification

Position / Befattning
Global Director
Equipment and Automation

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1 SAFETY

1.1 Meaning of symbols

As used throughout this manual: Means Attention! Be Alert!



DANGER!

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



WARNING!

Means potential hazards which could result in personal injury or loss of life.



CAUTION!

Means hazards which could result in minor personal injury.



WARNING!

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



1.2 Safety precautions

Users of ESAB equipment have the 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 equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the equipment must be familiar with:
 - its operation
 - location of emergency stops
 - its function
 - relevant safety precautions
 - welding and cutting or other applicable operation of the equipment
2. The operator must ensure that:
 - no unauthorised person is stationed within the working area of the equipment when it is started up
 - no-one is unprotected when the arc is struck or work is started with the equipment
3. The workplace must:
 - be suitable for the purpose
 - be free from drafts
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 operation

**WARNING!**

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting.

**ELECTRIC SHOCK - Can kill**

- Install and ground the unit in accordance with instruction manual.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing
- Insulate yourself from work and ground.
- Ensure your working position is safe

**ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health**

- Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
 - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep welding power source and cables as far away from your body as possible.
 - Connect the work cable to the workpiece as close as possible to the area being welded.

**FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes
- Use ventilation, extraction at the arc, or both, to take fumes and gases away 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

**NOISE - Excessive noise can damage hearing**

Protect your ears. Use earmuffs or other hearing protection.

**MOVING PARTS - Can cause injuries**

- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting engine.



- Stop engine before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.

**FIRE HAZARD**

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby
- Do not use on closed containers.

**HOT SURFACE - Parts can burn**

- Do not touch parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or insulated welding gloves to prevent burns.

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

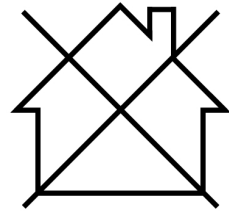
PROTECT YOURSELF AND OTHERS!

**CAUTION!**

This product is solely intended for arc welding.

**CAUTION!**

Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.

**NOTE!****Dispose of electronic equipment at the recycling facility!**

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.

As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.



ESAB has an assortment of welding accessories and personal protection equipment for purchase. For ordering information contact your local ESAB dealer or visit us on our website.

2 INTRODUCTION

2.1 Overview

The welding head is designed for SAW welding of butt and fillet joints.

It is intended for ESAB automation power sources and controllers.

SAW light duty permits welding with lower current load and thin wire.

SAW heavy duty permits welding with higher current load and thick wire.

This version can be equipped with feed rollers for single wire welding. A special knurled feed roller is available for flux-cored wire, which guarantees even wire feed without the risk of deformation due to high feed pressure.

2.2 Definitions

SAW welding	The weld bead is protected by a cover of flux during the welding.
SAW light duty	Submerged arc light duty with a Ø 20 mm connector, permits a load up to 800 A (100%).
SAW heavy duty	Submerged arc heavy duty, with a Ø 35 mm connector, permits a load of up to 1500 A (100%).

3 TECHNICAL DATA

	A6SF F1
Rated load 100%	1500 A
Wire dimensions	
Solid single wire	3.0–6.0 mm
Flux-cored wire	3.0–4.0 mm
Wire feed speed	0.2–4.0 m/min
Brake drum braking torque	1.5 Nm
Max weight, wire	30 kg
Flux hopper capacity (Not to be filled with preheated flux)	10 l
Weight (flux and wire excluded)	
with hand-operated linear slides	approximately 58 kg
with motor-driven linear slides	approximately 75 kg
Sideways tilt, maximum	25°
Setting length of the slide*	
hand-operated	210 mm
motor-driven	300 mm
Enclosure class	IP10

* Other lengths on request.

Enclosure class

The **IP** code indicates the enclosure class, i.e. the degree of protection against penetration by solid objects or water.

Equipment marked **IP10** is intended for indoor use.

4 INSTALLATION

4.1 General

The installation must be carried out by a professional.



CAUTION!

This product is intended for industrial use. In a domestic environment this product may cause radio interference. It is the user's responsibility to take adequate precautions.



WARNING!

Rotating parts can cause injury, take great care.



4.2 Mounting

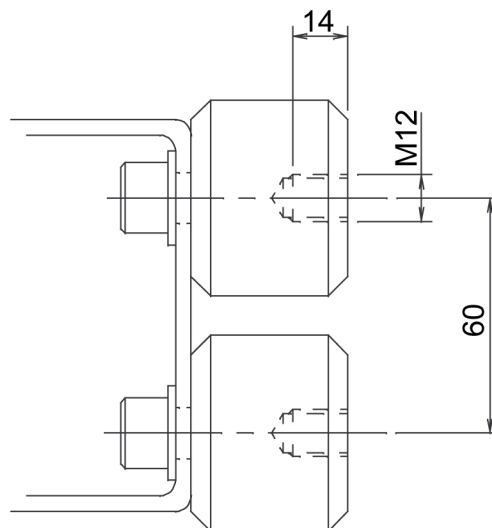
4.2.1 Welding head

The welding head can easily be mounted on a beam-travelling carriage or on a welding column and boom unit by way of four M12 screws.



NOTE!

Make sure the bolts do not touch the bottom of the insulator, which has a thread depth of 14 mm.



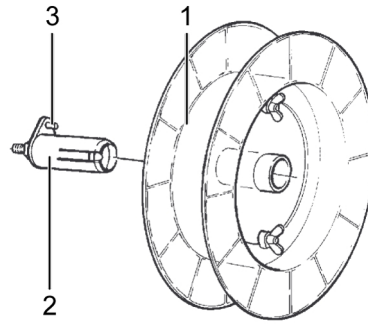
4.2.2 Slide

For mounting / dismounting of slides, see separate instruction manual.

4.2.3 Wire drum

Wire drum (1) is mounted on the brake hub (2).

- Check that the carrier (3) is pointing upwards.



NOTE!

The maximum angle for the wire bobbin is 25°. At extreme angles, wear will occur on the brake hub locking mechanism and the wire bobbin will slide off the brake hub.

4.2.4 Adjusting the brake hub

The brake hub

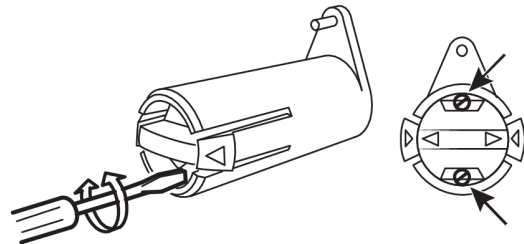
The hub is adjusted when delivered, if readjustment is required, follow the instructions below. Adjust the brake hub so that wire is slightly slack when wire feed stops.

- **Adjusting the braking torque:**
 - Turn the red handle to the locked position.
 - Insert a screwdriver into the springs in the hub.

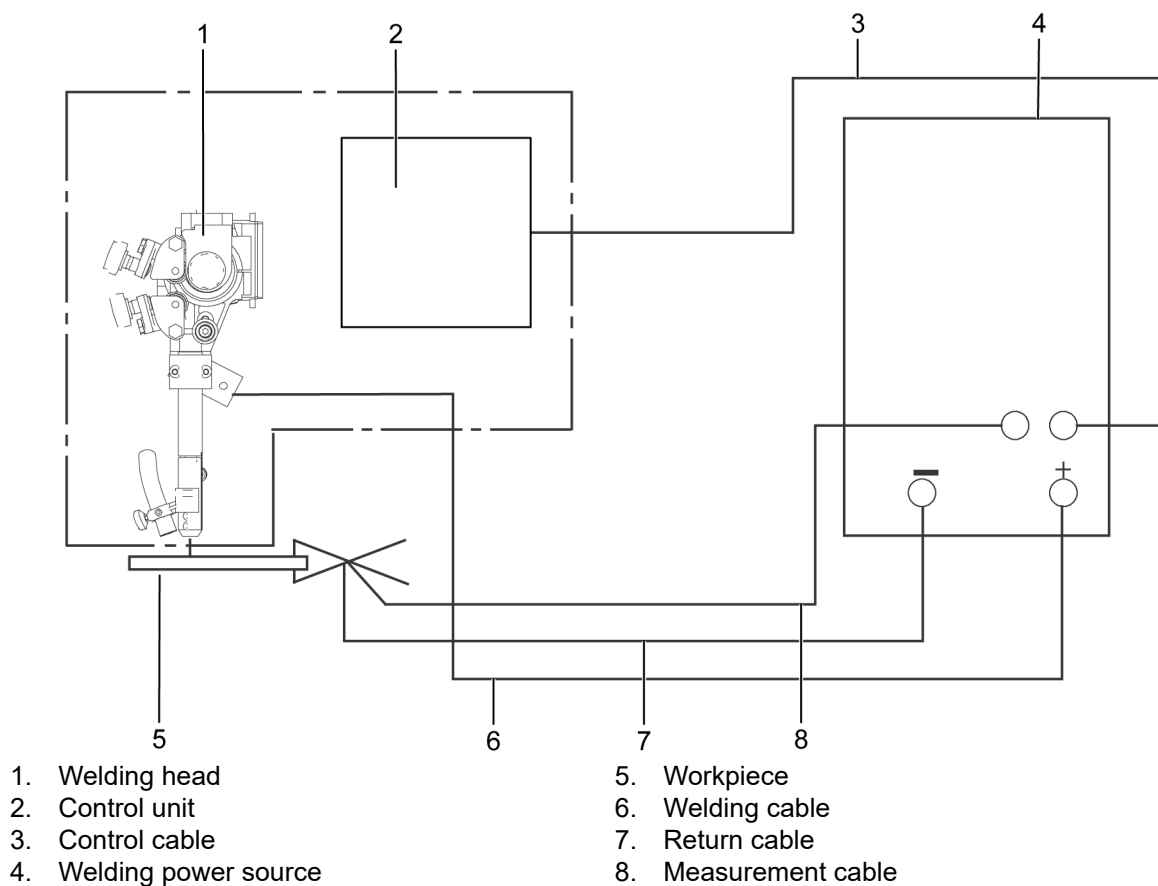
Turn the springs clockwise to reduce the braking torque.

Turn the springs counter-clockwise to increase the braking torque.

Note: Make sure to turn both springs the same amount.



4.3 Connections



- 1) Connect the control cable between the welding power source and the control unit.
- 2) Connect the return cable between the welding power source and workpiece.
- 3) Connect the welding cable between the welding power source and the welding head.
- 4) Connect the measurement cable between the welding power source and the workpiece.

5 OPERATION

5.1 Overview

General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!



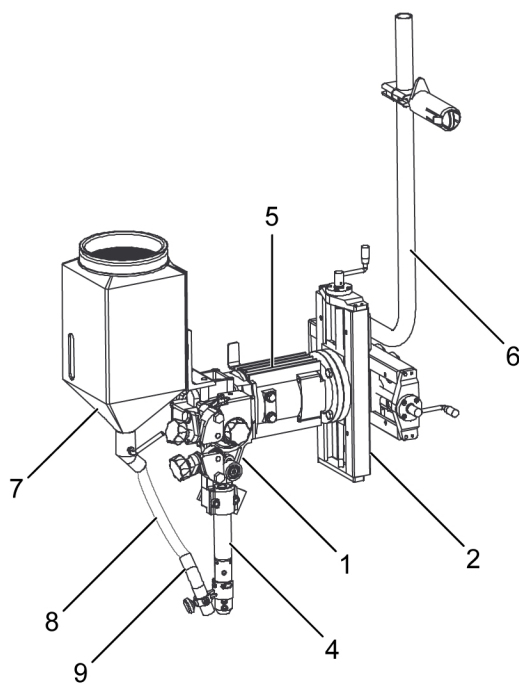
WARNING!

Electric shock! Do not touch the workpiece or the welding head during operation!

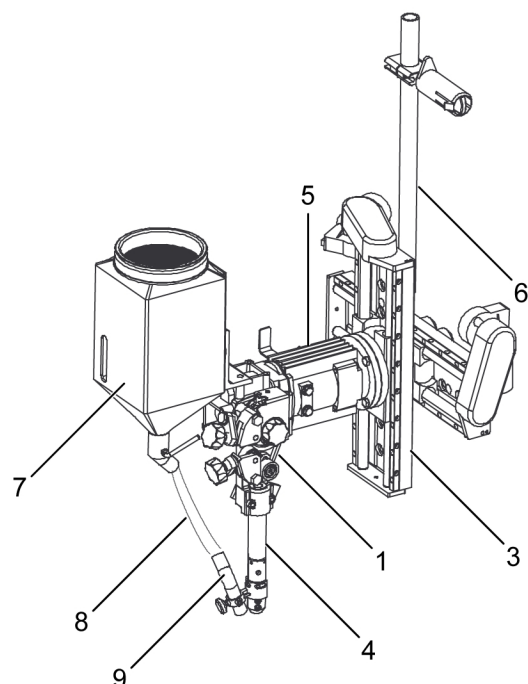
Return cable

Before starting up, check that the return cable is connected.

5.2 Main components



1. Wire feed unit
2. Slide kit, manual
3. Slide kit, motorised
4. Contact tube
5. Motor with gear



6. Carrier for wire drum
7. Flux hopper
8. Flux tube
9. Flux nozzle

5.3 Wire feed unit

The unit is used for guiding and feeding the welding wire down into the contact tube/connector.

5.4 Manual and motorised slides

The horizontal and vertical position of the welding head is adjusted by way of linear slides. The angular motion can be freely adjusted using the rotary slide.

For the motorised slides, see separate instruction manual.

5.5 Contact tube, connector

Transfers welding current to the wire during welding.

5.6 Motor with gear

The motor is used for feeding the welding wire.

For more information regarding the motor, see separate instruction manual.

5.7 Wire drum holder

The wire drum holder is provided with a brake hub on which one the wire drum is to be fitted.

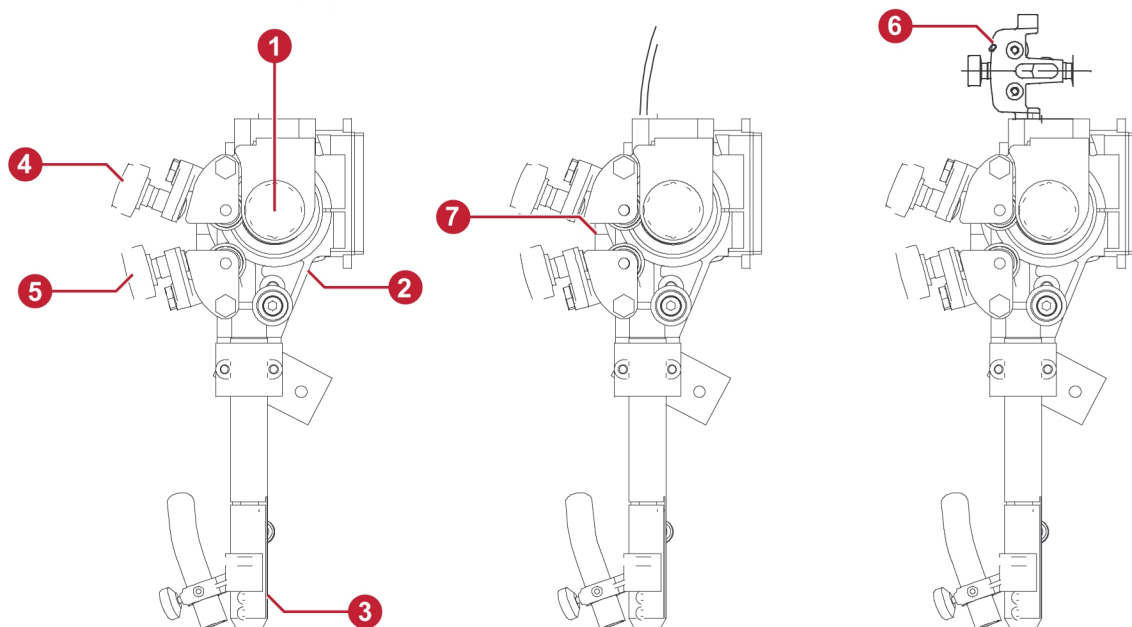
5.8 Flux hopper, flux tube, flux nozzle

The flux is filled into the flux hopper and is then transferred to the workpiece through the flux tube and the flux nozzle.

The amount of flux to be dropped down is controlled by way of the flux valve fitted to the flux hopper.

See section Refilling with flux.

5.9 Loading the welding wire



- 1) Mount the wire drum, see section Wire drum.
- 2) Check that feed roller (1) and contact jaw (3) or contact tip (6) are of the correct dimension for the selected wire size.
- 3) When welding with fine wire:
Feed the wire through the fine wire feed unit (6).

Ensure that the straightener is correctly adjusted so that the wire emerges straight out through the contact jaws or contact tip (3).

- 4) Pull the end of the wire through the straightener (2).
 - For a wire diameter greater than 2 mm; straighten out 0.5 m of the wire and feed it by hand down through the straightener.
- 5) Locate the end of the wire in the feed roller (1) groove.
- 6) Set the wire tension on the feed roller (1) with the knob (4).

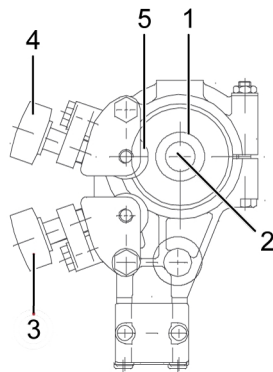
**NOTE!**

Do not tension more than is required to achieve an even feed.

The pressure screw (8) must not be dismantled. (Applies to Submerged-arc Heavy duty).

- 7) Feed the wire forward 30 mm, using the control box.
 - 8) Straighten the wire by adjusting the knob (5).
- When the wire straightener is correctly adjusted the wire should be straight when it leaves the contact jaws (3).
- Always use a guide tube (7) to ensure even feed of fine wire (1.6–2.5 mm).

5.10 Changing the feed roller



- | | |
|----------------------|--------------------|
| 1. Feed roller | 4. Pressure knob |
| 2. Hand wheel | 5. Pressure roller |
| 3. Straightener knob | |

To change the feed roller, follow instructions:

- 1) Release the knobs
- 2) Release the hand wheel.
- 3) Change the feed roller. The rollers are marked with their respective wire size.

5.11 Flux-cored wire for knurled rollers (Accessories)

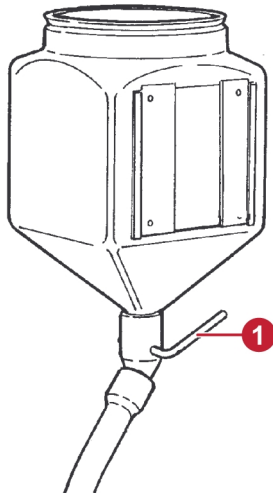
- 1) Change the feed roller (1) and pressure roller (5) as a pair for the wire size to be used.

**NOTE!**

A special stub shaft is required for the pressure roller, see section Accessories.

- 2) Tighten the pressure screw (4) with moderate pressure to ensure that the flux-cored wire does not deform.

5.12 Refilling with flux



- 1) Close the flux valve (1) on the flux hopper.
- 2) Remove the cyclone on the flux recovery unit, if fitted.
- 3) Fill with flux.



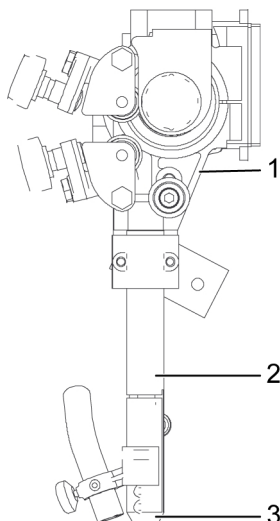
NOTE!

The flux must be dry.

- 4) Position the flux tube so that it does not become kinked.
- 5) Adjust the height of the flux nozzle above the weld so that the correct amount of flux is delivered.

Flux coverage should be sufficient so that penetration of the arc does not occur.

5.13 Contact equipment for Submerged Arc Welding



Use automatic welding head A6SF F1 where the following units are included:

- Wire feed unit (1)
- Connector D35 (2)
- Contact jaw (3)

**NOTE!**

Ensure that good contact is achieved between the contact jaws and the wire.

Fine wire straightener (5) to be fitted on top of the clamp of the wire feed unit (1).

**NOTE!**

When mounting the fine wire straightener, remove the existing plate (7).

**NOTE!**

The protection plate (8) shall not be removed.

5.14 Conversion to MIG/MAG welding

For the conversion kit see separate instruction manual.

5.15 Conversion to Twin-arc

For the conversion kit see separate instruction manual.

6 MAINTENANCE

6.1 General

**WARNING!**

The mains supply must be disconnected during cleaning and maintenance.

**CAUTION!**

Only persons with the appropriate electrical knowledge (authorised personnel) may remove the safety plates.

**CAUTION!**

The product is covered by manufacturer's warranty. Any attempt to carry out repair work by non-authorised service centers or personnel will invalidate the warranty.

**NOTE!**

Regular maintenance is important for safe and reliable operation.

**NOTE!**

Perform maintenance more often during severe dusty conditions.

For the maintenance of the control box, see separate instruction manual.

6.2 Daily

- Keep the moving parts of the welding head clean.
- Make sure contact nozzles, hoses and electric cables are intact and properly connected.
- Make sure all bolted joints are tightened.
- Check that the conduit and the feed rollers are not worn or damaged.
- Check the brake hub braking torque. It should not be so low, that the wire reel continues to rotate when the wire feed is stopped and it should not be so great that the feed rollers slip. As a guide, the braking torque for a 30 kg wire reel should be 1.5 Nm.
To adjust the braking torque, see section "Adjusting the brake hub".

6.3 Regularly

- Check the wire feed motor brushes once every three months. Replace when they are worn down to 6 mm.
- Examine the slides and lubricate if they bind.
- Inspect the wire guides, drive rollers and contact jaw on the wire feed unit. Replace any worn or damaged components, see section "SPARE PARTS".
- For trouble-free wire feed the wear parts of the feed mechanism should be cleaned and replaced at regular intervals.

**NOTE!**

Too hard pre-tensioning can lead to abnormal wear of the pressure roller, feed roller and wire conduit.

7 TROUBLESHOOTING

7.1 General

Equipment

- See separate instruction manual for the control box.

Check

- Check that the power supply is connected for the correct mains supply.
- Check that all three phases are supplying the correct voltage (phase sequence is not important).
- Check that welding cables and connections are not damaged.
- Check that the controls are correctly set.
- Check that the mains supply is disconnected before starting repairs.

7.2 Troubleshooting

Perform these checks and inspections before sending for an authorised service technician.

Check that the mains voltage is disconnected before starting any type of repair action.

Type of fault	Cause	Corrective action
Current and voltage readings show large fluctuations.	Contact jaws or nozzle are worn or wrong size.	Replace contact jaws or nozzle.
	The feed roller pressure is inadequate.	Increase pressure on the feed rollers.
Wire feed is irregular.	Pressure on the feed rollers incorrectly set.	Adjust the pressure.
	The feed rollers are wrong size.	Replace the feed rollers.
	Grooves in the feed rollers are worn.	Replace the feed rollers.
Welding cables overheating.	Poor electrical connection.	Clean and tighten all electrical connections.
	Cross-sectional area of welding cables too small.	Use cables with a larger cross-section or use parallel cables.

8 ORDERING SPARE PARTS



CAUTION!

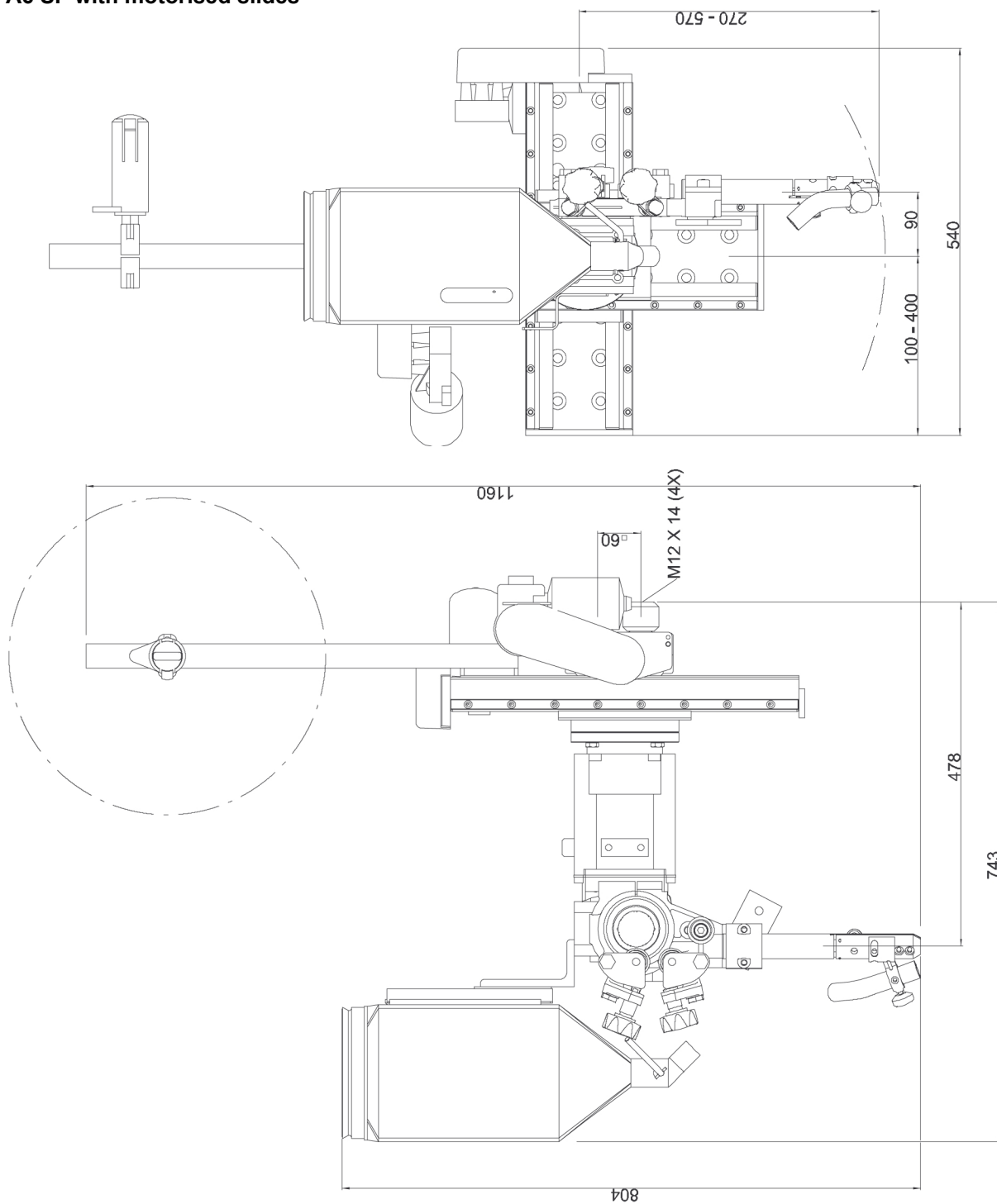
Repair and electrical work should be performed by an authorised ESAB service technician.
Use only ESAB original spare and wear parts.

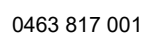
Spare parts and wear parts can be ordered through your nearest ESAB dealer, see esab.com. When ordering, please state product type, serial number, designation and spare part number in accordance with the spare parts list. This facilitates dispatch and ensures correct delivery.

APPENDIX

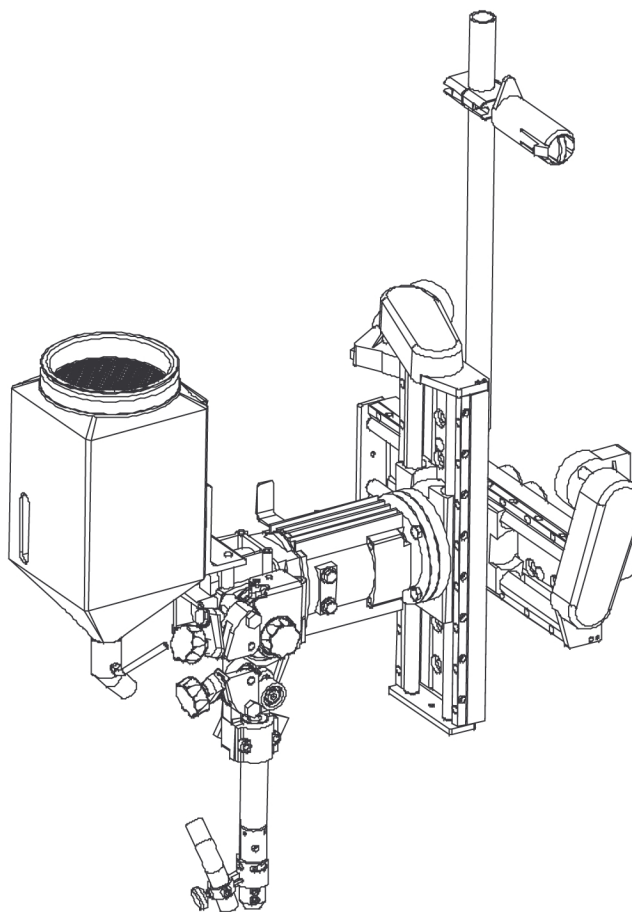
DIMENSION DRAWING

A6 SF with motorised slides





ORDERING NUMBERS



Ordering number	Denomination	Type
0449 270 900	Welding head	A6 SF F1 SAW (156:1), manual slide, PEK
0449 270 901	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK and A6 PAV
0449 270 902	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK and A6 GMH
0449 270 903	Welding head	A6 SF F1 SAW (156:1), motorised slide
0449 270 904	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK and A6 PAV
0449 270 905	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK and A6 GMH
0449 270 906	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK
0449 270 910	Welding head	A6 SF F1 SAW (74:1), manual slide, PEK
0449 270 911	Welding head	A6 SF F1 SAW (74:1), motorised slide, PEK and A6 PAV
0449 270 912	Welding head	A6 SF F1 SAW (74:1), motorised slide, PEK and A6 GMH
0449 270 913	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK
0449 270 914	Welding head	A6 SF F1 SAW (74:1), motorised slide, PEK and A6 PAV
0449 270 915	Welding head	A6 SF F1 SAW (74:1), motorised slide, PEK and A6 GMH
0449 270 916	Welding head	A6 SF F1 SAW (156:1), motorised slide, PEK
0449 270 950	Welding head	A6 SF F1 SAW (115:1), motorised slide

Technical documentation is available on the Internet at: www.esab.com

ACCESSORIES

Ordering no.	Denomination	Notes
0461 246 880	Conversion kit A6SF F1 / A6SF F1 Twin to MIG/MAG welding	
0334 291 888	Conversion kit A6SF F1 to Twin with fine wire straightener (LD)	
0334 291 889	Conversion kit A6SF F1 to Twin (HD)	
0153 143 885	Pilot lamp	
0147 333 001	Adapter M6/M10	
0212 901 101	Special stub shaft (for pressure roller)	



A WORLD OF PRODUCTS AND SOLUTIONS.



For contact information visit [esab.com](https://www.esab.com)

ESAB AB, Lindholmsallén 9, Box 8004, 402 77 Gothenburg, Sweden, Phone +46 (0) 31 50 90 00

manuals.esab.com

