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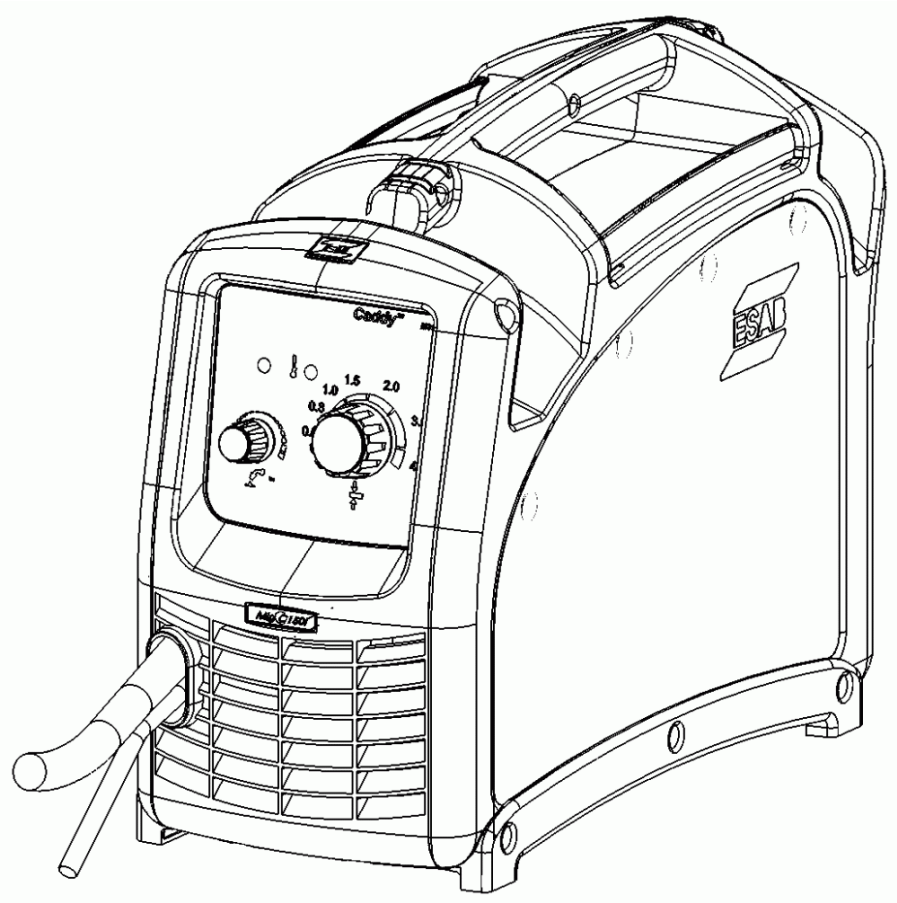
ESAB®

Caddy®

Mig C160i



Instruction manual

0440 000 001GB 20120604

Valid for serial no. 924-xxx-xxxx

DECLARATION OF CONFORMITY

In Accordance with

The Low Voltage Directive 2006/95/EC of 12 December 2006, entering into force 16 January 2007

The EMC Directive 2004/108/EC of 15 December 2004, entering into force 20 July 2007

Type of equipment

Welding power sources for MIG/MAG welding

Brand name or trade mark

ESAB

Type designation etc.

Caddy® Mig C160i Valid from serial number 924-xxx-xxxx (2009 w.24), 111-xxx-xxxx (2011 w.11)

Manufacturer or his authorised representative established within the EEA
Name, address, telephone No, telefax No:

OZAS-ESAB Sp. z o.o.
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The following harmonised standard in force within the EEA has been used in the design:

EN 60974-1, Arc welding equipment – Part 1: Welding power sources
EN 60974-5, Arc welding equipment – Part 5: Wire feeders
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.

Place and Date
Opole , 2011-03-23

Signature

Dariusz Brudkiewicz
Clarification

Position
Managing Director
OZAS-ESAB Sp. z o.o.

1 SAFETY

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
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
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 extinquishing equipment must be clearly marked and close at hand.
   - Lubrication and maintenance must **not** be carried out on the equipment during operation.

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WARNING

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting. Ask for your employer's safety practices which should be based on manufacturers' hazard data.

ELECTRIC SHOCK - Can kill

- Install and earth the 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 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.

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 earmuffs 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!

WARNING

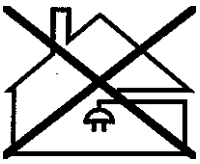
Do not use the power source for thawing frozen pipes.

CAUTION

This product is solely intended for arc welding.

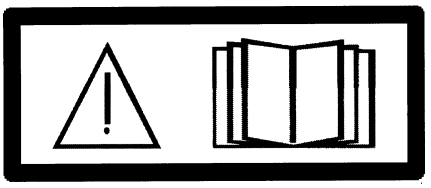
CAUTION

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.



CAUTION

Read and understand the instruction manual before installing or operating.



Dispose of electronic equipment at the recycling facility!

In observance of European Directive 2002/96/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 can provide you with all necessary welding protection and accessories.

2 INTRODUCTION

ESAB's accessories for the product can be found on page 19.

Mig C160i is a portable welding power source in a compact design, intended for MIG/MAG welding.

It is possible to switch between welding with solid wire/shielding gas and welding with selfshielded cored wire without gas.

The power source operates with wire diameters from ∅0.6 to ∅1.0 mm. Pure argon, mixed gas or pure CO_2 may be used as shielding gases.

ESAB's accessories for the product can be found on page 19.

2.1 Equipment

The power source is supplied with:

- Instruction manual
- Welding gun MXL 180 (3m, fixed)
- Return cable with clamp (3m, fixed)
- Mains cable (3m, fixed, with plug)
- Shoulder strap (see page 8)
- Gas hose with quick connection (4.5m)

3 TECHNICAL DATA

Power source	Mig C160i
Mains voltage	230 V, 1~ 50/60 Hz
Permissible load at 35 % duty cycle 60 % duty cycle 100 % duty cycle	 150 A / 21.5 V 120 A / 20 V 100 A / 19 V
Setting range	30A / 15.5 V-160A / 22 V
Open circuit voltage	60 V
Open circuit power	15 W
Efficiency at maximum current	82%
Power factor at maximum current	0.99
Wire feed speed	2.0 - 11.0 m/min
Wire diameter Fe Cored wire	 0.8 (0.6-1.0) 0.8-1.0
Max. diameter wire bobbin	∅ 200 mm
Continual sound pressure at no-load	< 70 dB
Dimensions lxwxh	449 x 198 x 347 mm
Weight	12 kg
Operating temperature	-10 to +40ºC
Transportation temperature	-20 to +55° C
Enclosure class	IP 23C
Application classification	S

Welding torch	MXL 180
Cooling	Air/shielding gas
Permitted load at 20 % duty cycle Carbon dioxide CO_2 Mixed gas Ar/CO_2 Self-shielded	 200 A 180 A 120 A
Permitted load at 35 % duty cycle Carbon dioxide CO_2 Mixed gas Ar/CO_2 Self-shielded	 180 A 150 A 100 A
Recommended gas flow	8–15 l/min
Wire diameter	0.6 - 1.0 mm
Weight	1.32 kg
Length cable assembly	3.0 m
Standard control cable	2- pole

Duty cycle

The duty cycle refers to the time as a percentage of a ten-minute period that you can weld or cut at a certain load without overloading. The duty cycle is valid for 40° C.

Enclosure class

The **IP** code indicates the enclosure class, i. e. the degree of protection against penetration by solid objects or water. Equipment marked **IP23C** is designed for indoor and outdoor use.

Application class

The symbol S indicates that the power source is designed for use in areas with increased electrical hazard.

4 INSTALLATION

The installation must be carried out by a professional.

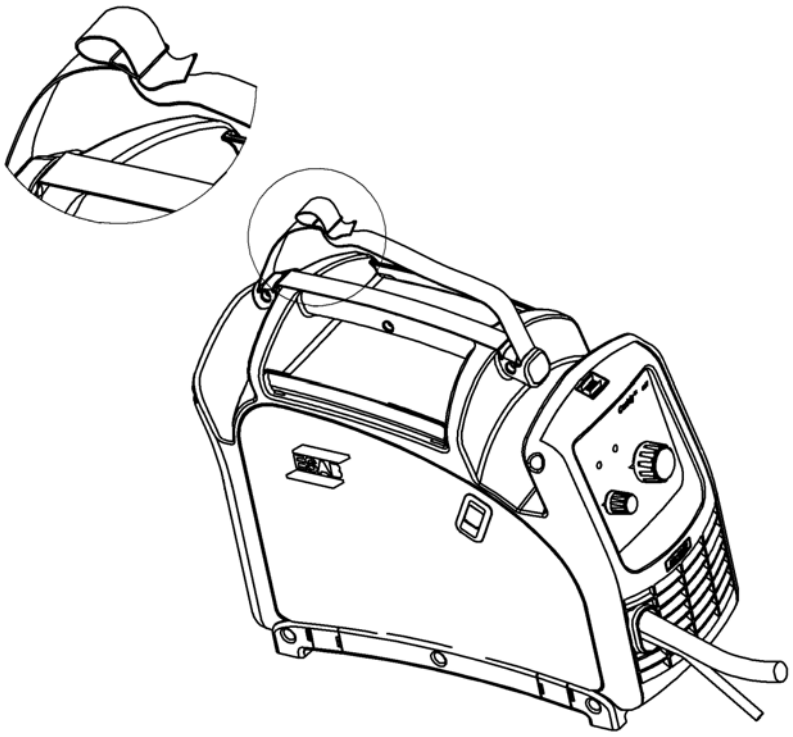
Note

Mains supply requirements

High power equipment may, due to the primary current drawn from the mains supply, influence the power quality of the grid. Therefore connection restrictions or requirements regarding the maximum permissible mains impedance or the required minimum supply capacity at the interface point to the public grid may apply for some types of equipment (see technical data). In this case it is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment may be connected.

4.1 Lifting instruction

The power source is lifted by the handle or by the shoulder strap, supplied with the power source. The strap is fastened as shown in the picture below.



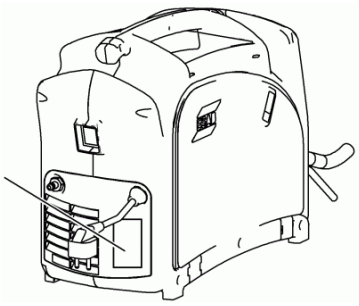
4.2 Location

Position the welding power source in such a way that its cooling air inlets and outlets are not obstructed.

4.3 Mains power supply

Check that the unit is connected to the correct mains power supply voltage, and that it is protected by the correct fuse size. A protective earth connection must be made, in accordance with regulations.

Rating plate with supply connection data



Recommended fuse sizes and minimum cable area

Mig C160i	
Mains voltage	230 V ±15% 1~ 50/60 Hz
Mains cable area	3G1.5 mm^2
Phase current, I_{eff}	10 A
Fuse anti-surge	16 A

NOTE! *The mains cable areas and fuse sizes as shown above are in accordance with Swedish regulations. Use the power source in accordance with the relevant national regulations.*

Extension cable

If needed, it is recommended to use an extension cable, 3x2.5 mm^2, of a maximum length of 50m.

Supply from power generators

The power source can be supplied from different types of generators. However, some generators may not provide sufficient power for welding. The generators with AVR, equivalent or better type of regulation with rated power 5.5...6.5 kW are recommended to supply the power source within it's full capacity.

It is also possible to use generators with lower rated power, starting from 3.0kW, but in that case the setting must be proportionally limited. The power source is protected against undervoltage. If the power supplied by the generator is not sufficient, the welding is interrupted. Especially the welding start could be disturbed. In case of disturbed welding process, either adjust the welding parameters or change to a more powerful generator.

5 OPERATION

General safety regulations for handling the equipment can be found on page 4. Read through before you start using the equipment!

NOTE: *When moving the equipment use intended handle. Never pull on the gun.*

WARNING

Rotating parts can cause injury, take great care.

WARNING

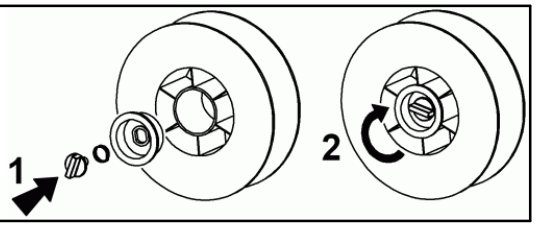
Assure that the side panels are closed during operation.

WARNING

Risk of crushing when replacing the wire bobbin!
Do not use safety gloves when inserting the welding wire between the feed rollers.

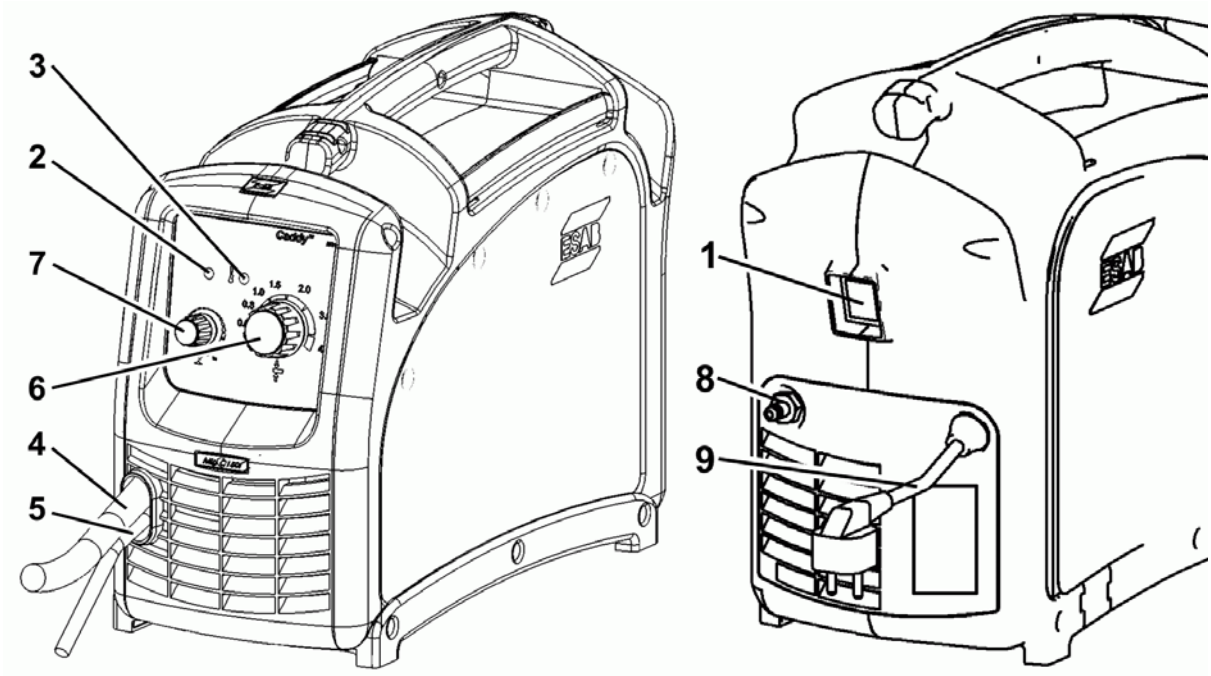
WARNING!

Lock the bobbin in order to prevent it from sliding off the hub.



5.1 Connection and control devices

1 Mains supply switch
2 Green indicating lamp, power supply ON
3 Orange indicating lamp, overheating
4 Welding gun
5 Return cable
6 Knob for setting of material thickness
7 Knob for arc correction
8 Connection for shielding gas
9 Mains cable



5.2 Operation

The power source is not powered instantly when the mains switch (1) is turned on. After approximately 2 seconds the green lamp (2) indicates that the power source is ready.

If the welding gun trigger is pressed while the power source is being turned on, the operation is disabled, until the trigger is released. This is also indicated by the orange lamp (3).

The main knob (6) is scaled in mm and ga. The numbers point out recommended thicknesses of the mild steel workpiece to be welded with 0.8 mm wire. This knob simultaneously adjusts both the wire feed speed and the average output voltage.

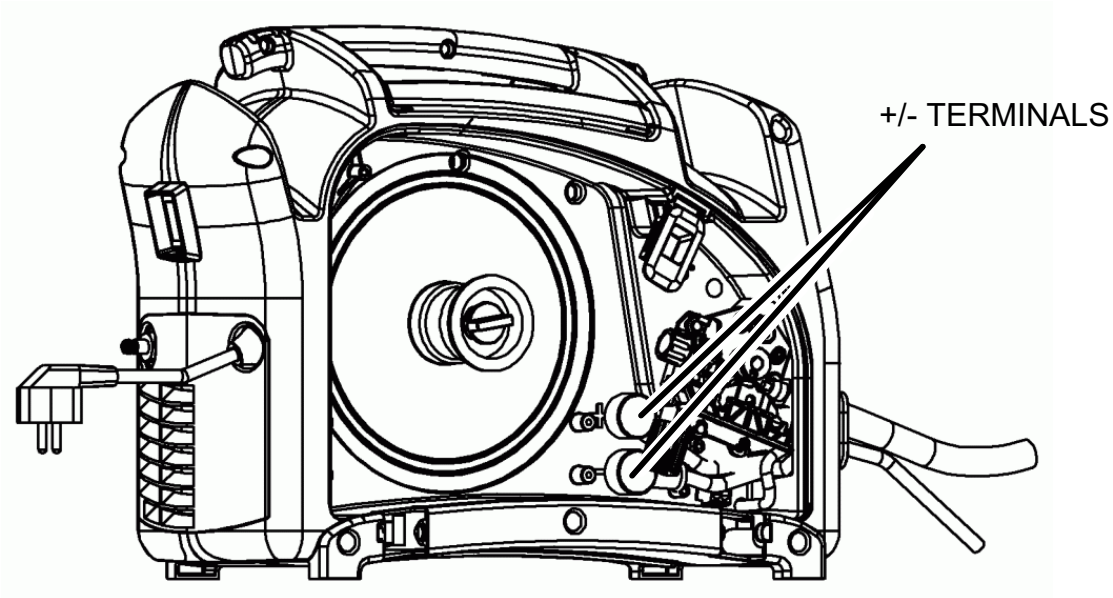
The knob (7) sets the arc length correction or i.e. the voltage correction.

The return cable (5) must be reliably connected to the workpiece or to the welding table.

The side panel covering the wire feeder must be closed prior to welding.

The power source is instantly switched with the mains switch (1).

5.3 Polarity change



The power source is delivered with the welding wire connected to the plus pole. Some wires, e.g. shelfshielded cored wires, are recommended to be welded with negative polarity. Negative polarity means that the wire is connected to the minus pole and the return cable to the plus pole. Check the recommended polarity for the welding wire you want to use.

The polarity can be changed as follows:

1. Switch off the power source and disconnect the mains cable.
2. Open the side panel.
3. Bend the rubber covers back to give access to the +/- terminals.
4. Remove the nuts and washers. Note the correct order of the washers.
5. Change the position of the cables to the desired polarity (see marking).
6. Install the washers in correct order and tighten the nuts to spanner tightness.
7. Make sure the rubber covers are covering the +/- terminals.

5.4 Wire feed pressure

Start by making sure that the wire moves smoothly through the wire guide. Then set the pressure of the wire feeder's pressure rollers. It is important that the pressure is not too great.

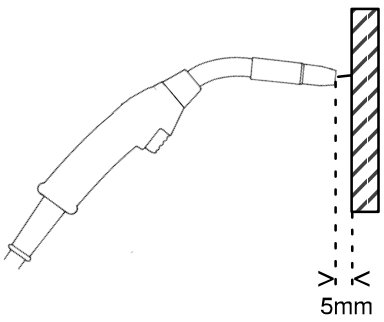


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Fig 1

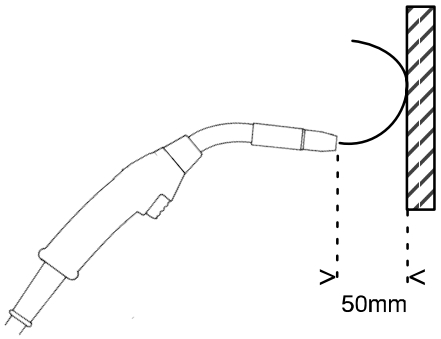


Fig 2

To check that the feed pressure is set correctly, you can feed out the wire against an insulated object, e.g. a piece of wood.

When you hold the gun approx. 5 mm from the piece of wood (fig. 1) the feed rollers should slip.

If you hold the gun approx. 50 mm from the piece of wood, the wire should be fed out and bend (fig. 2).

5.5 Replacing and inserting wire

- Open the side panel.
- Place the spool on the hub and secure it with the lock.
- Disconnect the pressure arm by folding it sidewards, the pressure roller slides away.
- Straighten out the new wire 10-20 cm. File away burrs and sharp edges from the end of the wire before inserting it into the wire feeder.
- Make sure that the wire goes properly into the feed roller groove and into the outlet nozzle and the wire liner.
- Secure the pressure arm.
- Close the side panel.

Feed the wire through the welding gun until it comes out through the nozzle. This operation should be carried out carefully, as the wire is ready for welding and an unintentional arc may occur. Keep the gun off conducting parts during feeding the wire through and terminate wire feeding instantly when the wire comes out.

See Technical Data, chapter **3,** for suitable wire dimensions for each wire type.

Use only ∅200mm spools. *Note! ∅100mm/1kg spools are not applicable.*

WARNING!
Do not keep the welding gun near the ears or the face during the wire feeding, as this may result in personal injury.

5.5.1 Changing the feed roller groove

The power source is delivered with the feed roller set for ∅0.8/1.0mm welding wire. If you want to use it for ∅0.6mm wire you must change groove in the feed roller.

1. Fold back the pressure arm to release the pressure roller.
2. Switch on the power source and press the gun trigger to position the feed roller so that the locking screw is visible.
3. Switch off the power source.
4. Use a 2mm Allen key to open the locking screw about half a turn.
5. Pull the feed roller off the shaft and turn it around. See marking on the side of the feed roller for suitable wire diameters.
6. Put the roller back on the shaft and make sure it goes all the way in. You may need to turn the roller to position the locking screw over the flat surface of the shaft.
7. Tighten the locking screw.

5.6 Shielding gas

A mixture of carbon dioxide and argon or pure carbon dioxide can be used as shielding gases.

5.7 Overheating protection

Overheating is indicated by lamp (3). A thermal overload fuse protects the unit against overheating by disabling the welding if overheating occurs. The fuse resets automatically when the unit has cooled.

6 MAINTENANCE

Regular maintenance is important for safe, reliable operation.

CAUTION

All guarantee undertakings from the supplier cease to apply if the customer attempts any work to rectify any faults in the product during the guarantee period.

6.1 Inspection and cleaning

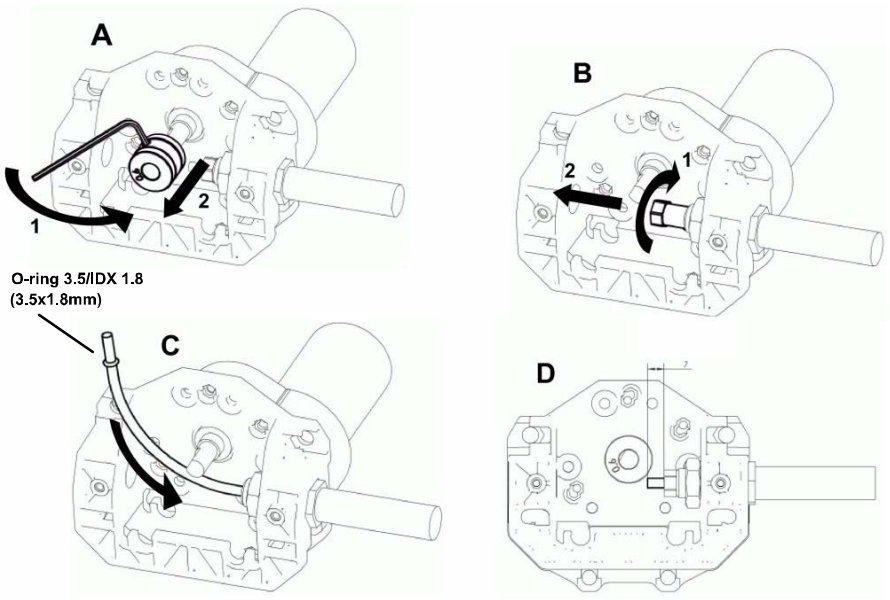
Power source

- Check regularly that the power source is free from dirt.
- How often and which cleaning methods apply depend on: the welding process, arc times, placement, and the surrounding environment. It is normally sufficient to blow the dust out of the power source with dry compressed air (reduced pressure) once a year.
- Clogged or blocked air inlets and outlets otherwise result in overheating.

Welding gun

- The welding gun's wear parts should be cleaned and replaced at regular intervals in order to achieve trouble-free wire feed. Blow the wire guide clean regularly and clean the contact tip.

6.2 Changing the wire liner



A. Loosen the fixing screw and take the roller off the axle.

B. Loosen the adaptor nut, straighten the gun cable and remove the liner.

C. Insert the replacement liner into the straightened cable until it touches the contact tip.

D. Lock the liner with adaptor nut. Cut excess of liner so it sticks 7mm out of the tip adaptor.

7 FAULT TRACING

Try these recommended checks and inspections before sending for an authorised service technican.

Type of fault	Actions
No arc	• Check that the mains power supply switch is turned on. • Check that the welding current supply and return cables are correctly connected. • Check that correct current value is set.
Welding current is interrupted during welding	• Check whether the overheating protection has tripped. (indicated by the orange lamp on the front). • Check the main power supply fuses.
The overheating protection trips frequently	• Check to see whether the air inlet or outlet are clogged. • Make sure that you are not exceeding the rated data for the power source (i.e. that the unit is not being overloaded).
Poor welding performance	• Check that the welding current supply and return cables are correctly connected. • Check that the correct current value is set. • Check that the correct welding wires are being used. • Check the main power supply fuses. • Check if proper rollers are applied and if the pressure of the wire feeder's pressure rollers is properly set.

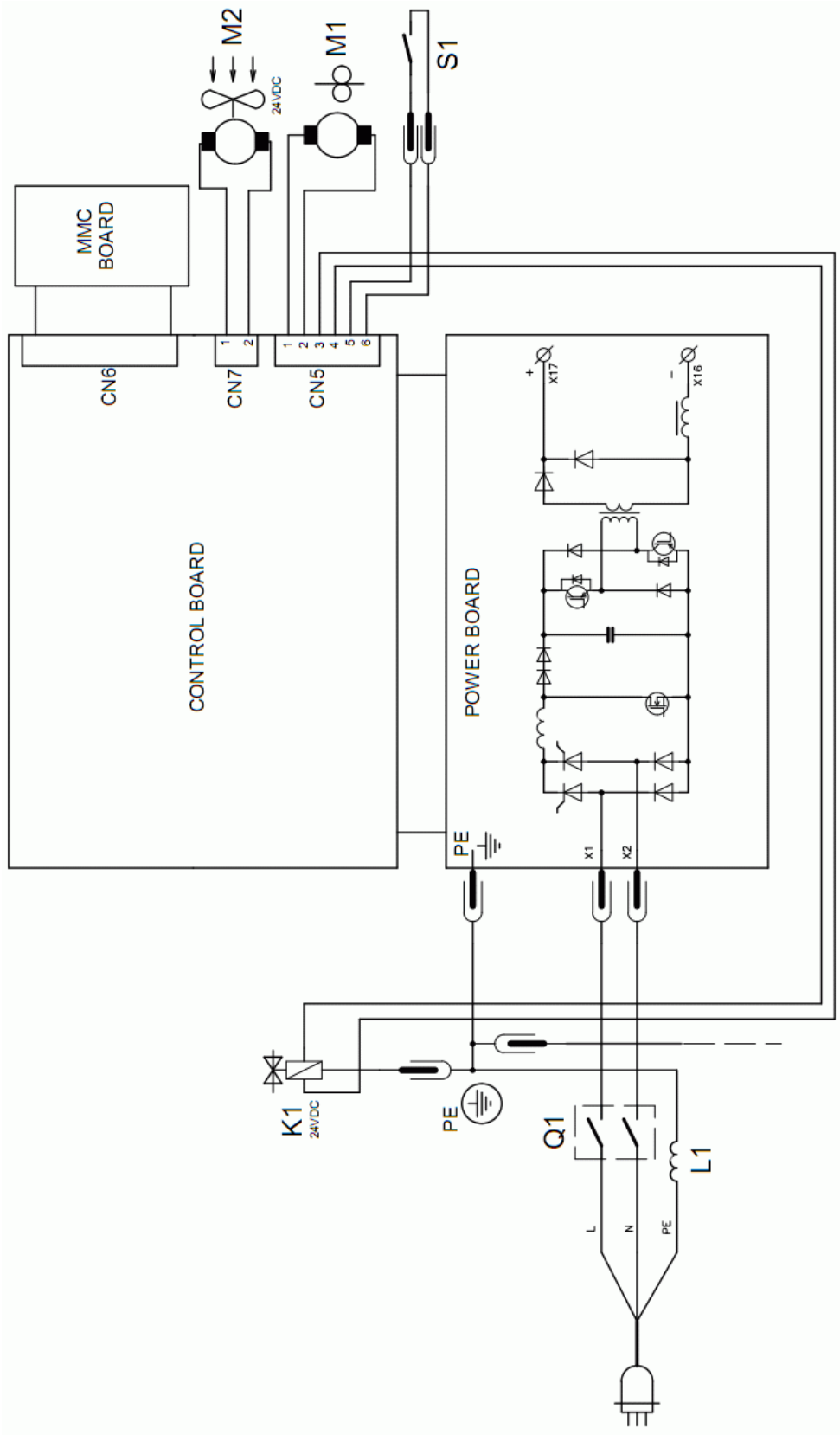
8 ORDERING OF SPARE PARTS

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

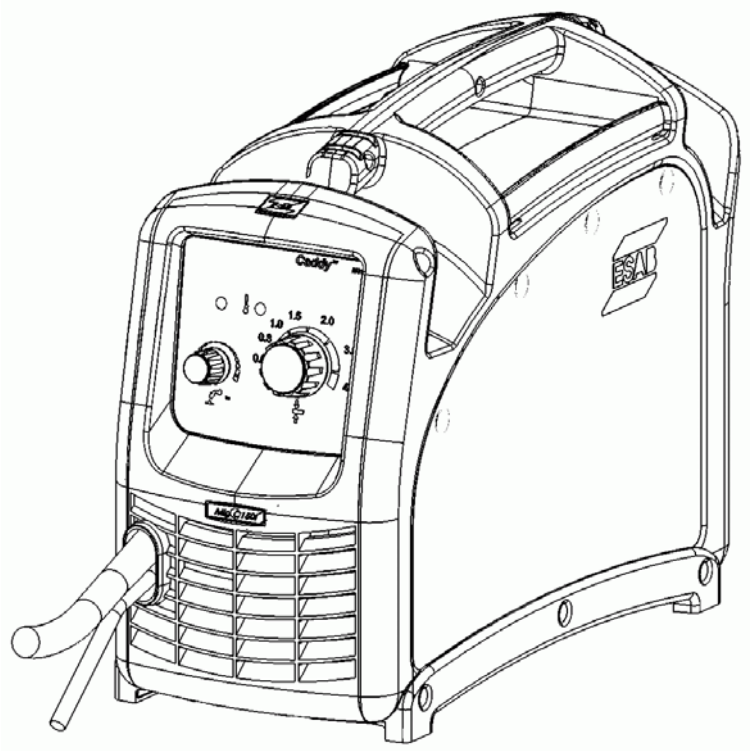
Mig C160i is designed and tested in accordance with the international and European standards 60974-1, 60974-5 and 60974-10. It is the obligation of the service unit which has carried out the service or repair work to make sure that the product still conforms to the said standard.

Spare parts may be ordered through your nearest ESAB dealer, see the last page of this publication.

Diagram



Order number

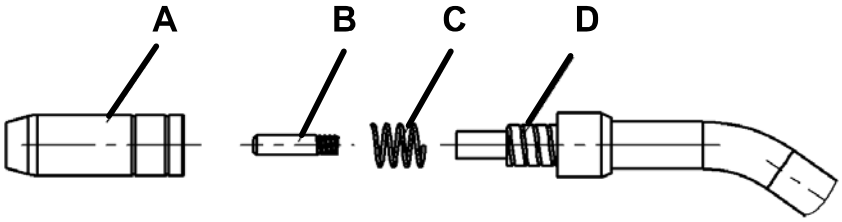


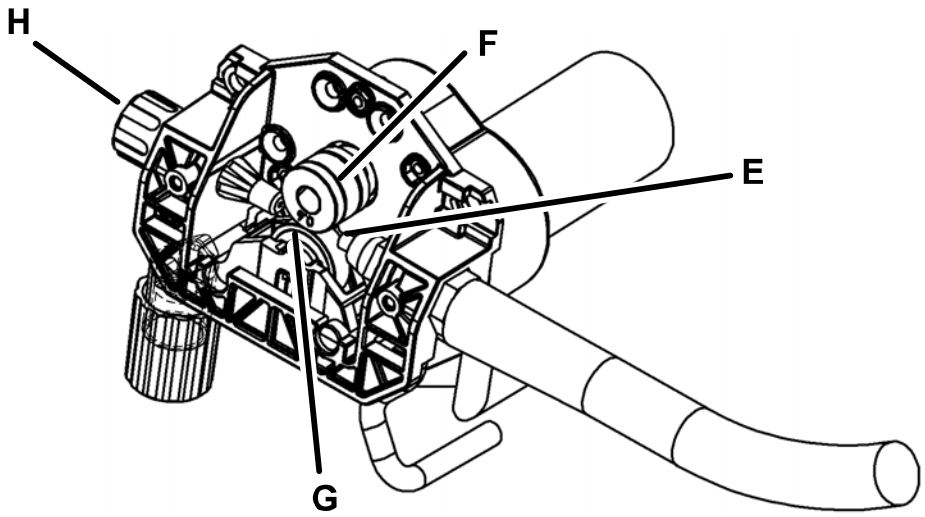
Ordering no.	Denomination	Type	Notes
0349 310 850	Welding power source	Caddy® Mig C160i, CE (Europe)	230 V, 1~ 50/60 Hz
0349 300 556	Spare parts list		

Wear parts

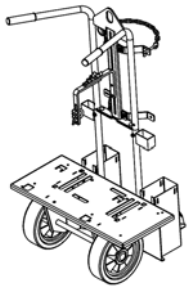
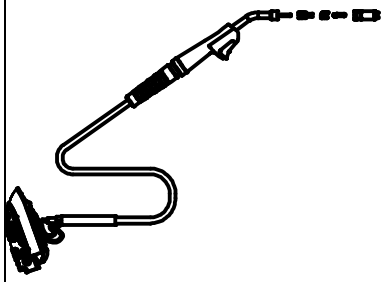
Item	Denomination	Ordering no.	Notes
A	Gas nozzle Gas nozzle/Tip insulator MXL	**0700 200 054** 0700 200 105	
B	Contact tip	0700 200 063 **0700 200 064** 0700 200 065 0700 200 066	W 0.6 M6x25 W 0.8 M6x25 W 0.9 M6x25 W 1.0 M6x25
C	Nozzle spring	0700 200 078	
D	Tip adaptor	0700 200 072	
E	Wire liner O-ring	**0700 200 085** 0700 200 087 0700 200 091	W 0.6-0.8 Steel for Fe and Ss wire W 0.9-1.2 Steel for Fe and Ss wire W 0.9-1.2 PTFE for Al and CuSi wire O-ring 3.5/IDX 1.8 (3.5x1.8mm) Black nitrile rubber
F	Feed roller	**0349 311 890**	W 0.6/0.8-1.0 V-groove
G	Pressure roller	0349 312 062	
H	Inlet nozzle	0455 049 002	W 0.6-1.0

The feed rollers are marked with wire dimension in mm and inch.





Accessories

	**Trolley with gas shelf** ..... 0459 366 887 (incl. fixing kit for machine)
	**Welding gun MXL 180** ..... 0349 483 070 (incl. in Mig C160i)

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