

RobustFeed AVS ECHO



Instruction manual



EU DECLARATION OF CONFORMITY

According to:

The Low Voltage Directive 2014/35/EU; The EMC Directive 2014/30/EU;
The RoHS Directive 2011/65/EU;

Type of equipment

Arc welding wire feeder

Type designation

RobustFeed AVS ECHO from serial number OP451 YY XX XXXX
X and Y represents digits, 0 to 9 in the serial number, where YY indicates year of production.

Brand name or trademark

ESAB

Manufacturer or his authorised representative established within the EEA

ESAB AB
Lindholmsallén 9, Box 8004, SE-402 77 Göteborg, Sweden
Phone: +46 31 50 90 00, www.esab.com

The following EN standards and regulations in force within the EEA has been used in the design:

EN IEC 60974-5:2015	Arc Welding Equipment – Part 5: Wire Feeders
IEC EN 60974-10:2020	Arc Welding Equipment - Part 10: Electromagnetic compatibility (EMC) requirements

Additional Information:

Restrictive use, Class A equipment, intended for use in locations other than residential.
Includes welding torch.

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 and environmental requirements stated above.

Place/Date

Göteborg
2025-01-27

Signature

Peter Burchfield
General Manager, Equipment Solutions

CE



UK DECLARATION OF CONFORMITY

According to:

- Electric Equipment (Safety) Regulations 2016;
- Electromagnetic Compatibility Regulations 2016;
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (as amended)

Type of equipment

Arc welding wire feeder

Type designation

RobustFeed AVS ECHO from serial number OP451 YY XX XXXX
X and Y represents digits, 0 to 9 in the serial number, where YY indicates year of production.

Brand name or trademark

ESAB

Manufacturer or his authorised representative established within United Kingdom

ESAB Group (UK) Ltd,
322 High Holborn, London, WC1V 7PB, United Kingdom
www.esab.co.uk

The following British Standards and Instruments in force within the United Kingdom has been used in the design:

- EN IEC 60974-5:2019	Arc welding equipment - Part 5: Wire feeders
- IEC EN 60974-10:2020	Arc welding equipment - Part 10: Electromagnetic compatibility (EMC)

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 UK, that the equipment in question complies with the safety and environmental requirements stated above.

Signatures

David Todd

Commercial Director,
ESAB Group UK & Ireland
London, 2025-01-28



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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

If equipped with ESAB cooler

Use ESAB approved coolant only. Non-approved coolant might damage the equipment and jeopardize product safety. In case of such damage, all warranty undertakings from ESAB cease to apply.

For ordering information, see the "ACCESSORIES" chapter in the instruction manual.

**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, guards and covers closed and securely in place.
- Have only qualified people remove covers for maintenance and troubleshooting as necessary.
- Keep hands, hair, loose clothing and tools away from moving parts.
- Reinstall panels or covers and close doors when service is finished and before starting the unit.



**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.

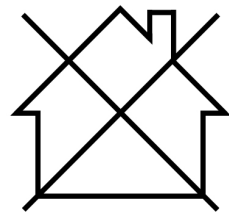
PROTECT YOURSELF AND OTHERS!

**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

The RobustFeed AVS ECHO (Arc Voltage Sensing) is a portable wire feeder. The unit is powered entirely on the arc voltage from a constant current (CC) or constant voltage (CV) welding power source with the output ON feature (AVS/Suitcase/Mobilefeed) feature. It operates with reverse polarity (Direct Current Electrode Positive - DCEP) or straight polarity (Direct Current Electrode Negative - DCEN).

The ECHO function enables communication through the weld cable between the power source and the feeder.

The RobustFeed AVS ECHO is also compatible with Warrior™ ECHO variants and Warrior™ Non-ECHO variants.

The RobustFeed AVS ECHO will operate as RobustFeed AVS with Warrior™ Non-ECHO variants.

The RobustFeed AVS ECHO comes in different variants (see the "ORDERING NUMBERS" appendix).

The RobustFeed AVS ECHO is sealed and contains four-wheel drive wire feed mechanisms as well as control electronics.

It can be used together with standard Ø 200 mm and Ø 300 mm wire bobbin or with ESAB's Marathon Pac™ with a wire adapter to feed the wire.

The RobustFeed AVS ECHO can be placed on a trolley, suspended above the workplace or on the floor (standing up or laying down and with or without a wheel set).

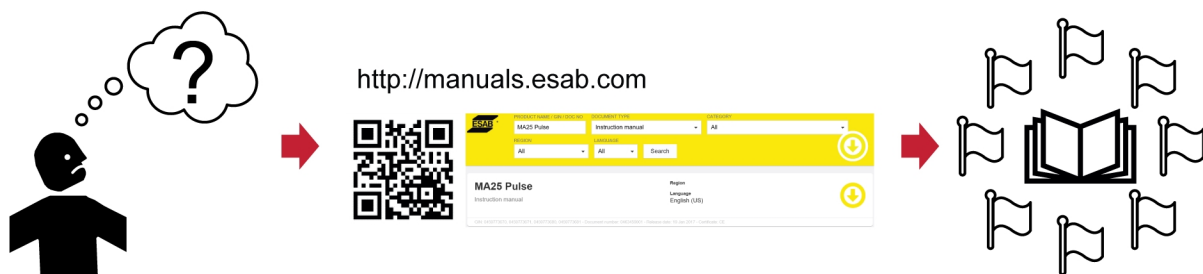
ESAB accessories for the product can be found in the "ACCESSORIES" chapter of this manual.

2.1 Equipment

The wire feed unit is supplied with:

- Drive rolls:
 - Steel, V groove, 0.9/1.0 mm (0.040 in.)
 - Steel, V groove, 1.2 mm (0.047 in.)
- Wire guides: 0.6–1.6 mm (0.023–1/16 in.)
- Interconnection strain relief kit
- Voltage sensing cable, OKC 25 with clamp
- Instruction manual (in English)
- Quick start guide
- Safety instruction

Instruction manuals in other languages can be downloaded from the Internet: manuals.esab.com



3 TECHNICAL DATA

RobustFeed AVS ECHO, Valid from serial no. OP431YY-XXXXXX	
Power Supply voltage	15-100 VDC
Maximum weld voltage	44 VDC
Power requirement	194 VA
Rated supply current I_1	4.3 A
Settings data:	
Wire feed speed	0.8–25.0 m/min (32–984 in./min)
Torch connection	EURO
Max. diameter wire bobbin	300 mm (12 in.)
Wire dimension:	
Fe	0.6 - 2 mm (0.023 - 0.078 in.)
SS wire	0.6 - 1.6 mm (0.023 - 0.062 in.)
Cored wire	0.9 - 2.4 mm (0.035 - 0.093 in.)
Weight	
RobustFeed AVS ECHO CE, with flowmeter with Euro connector	18.4 kg (40.5 lb)
Maximum weight wire spool	20.0 kg (44.1 lb.)
Dimensions (l×w×h)	595×250×430 mm (23.4×9.8×16.9 in.)
Operating temperature	-20 to +55 °C (-4 to +131 °F)
Transport and storage temperature	-40 to +80 °C (-40 to +176 °F)
Shielding gas	All types intended for MIG/MAG welding
Maximum gas pressure	0.5 Mpa (5 bar)
Permissible load at +40 °C:	
40% duty cycle	500 A / 39 V
60% duty cycle	450 A / 36 V
100% duty cycle	350 A / 31.5 V
Enclosure class	IP54

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.

Enclosure class

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

Equipment marked **IP54** is designed for indoor and outdoor use, can withstand dusty environments and splashing water from all directions.

4 INSTALLATION

The installation must be carried out by a professional.



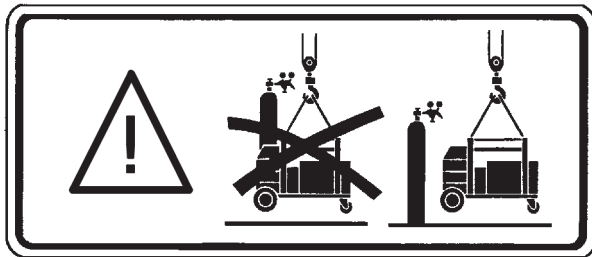
WARNING!

When welding in an environment with increased electrical danger, only power sources intended for this environment may be used. These power sources are marked with the symbol .



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.



4.1 Lifting instructions



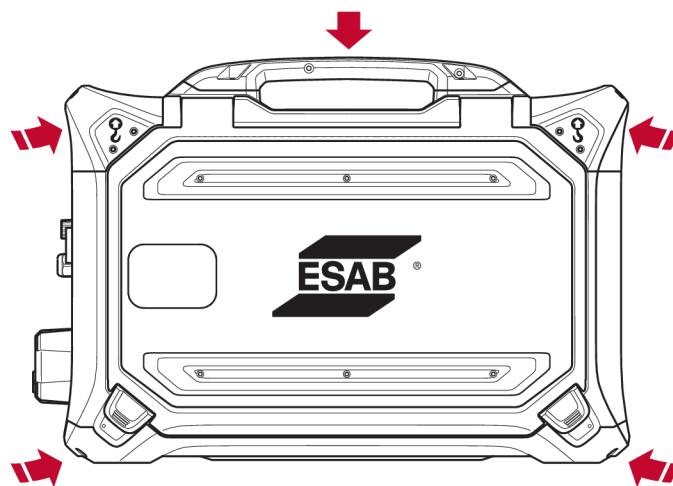
CAUTION!

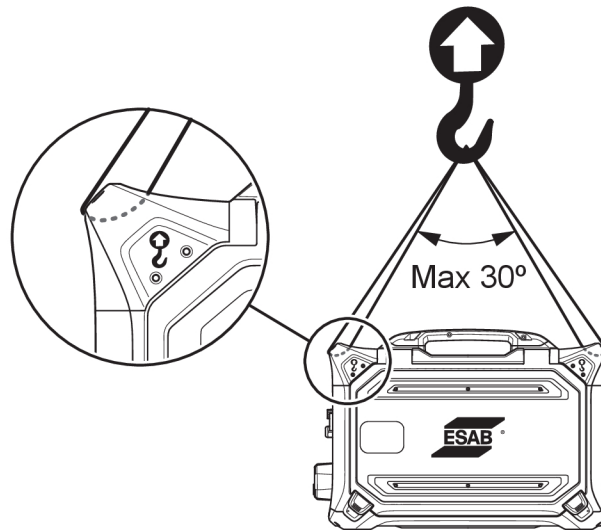
Risk of crushing when lifting the wire feeder. Protect yourself and warn bystanders of the risk.



CAUTION!

To avoid personal injury and damage of equipment, lift using methods and attachment points presented below.





CAUTION!

Do not place heavy objects on or attached to the wire feeder when lifting. The lifting points are rated for a **maximum total weight of 40 kg / 90 lb** when lifted in the two outer upper lifting handles according to the graphic above!

The 40 kg / 90 lb approved weight consists of wire feeder plus accessories (standard feeder weight is 18.4 kg / 40.5 lb, for all weights see the TECHNICAL DATA chapter).

5 OPERATION

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!

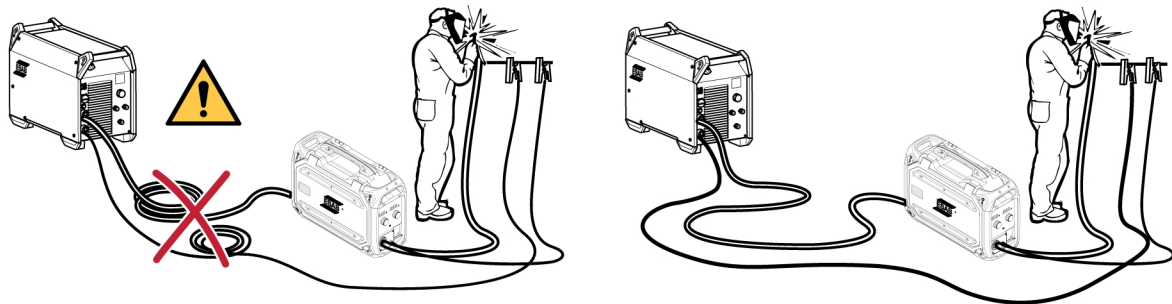
To avoid shock, do not touch electrode wire or parts in contact with it, or uninsulated cable or connections.


WARNING!

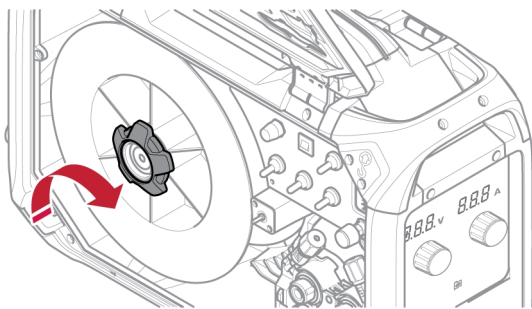
The weld cable between power source and the feeder should be maintained uncoiled for proper communication.


NOTE!

When moving the equipment, use handle intended for transportation. Never pull the equipment by the welding torch.


WARNING!

Assure that the side panels are closed during operation.


WARNING!

To prevent the reel from sliding off the brake hub, lock the reel by tightening the brake hub nut!


WARNING!

Rotating parts can cause injury, take great care.


WARNING!

Secure the equipment, especially if used on an uneven or sloping surface.

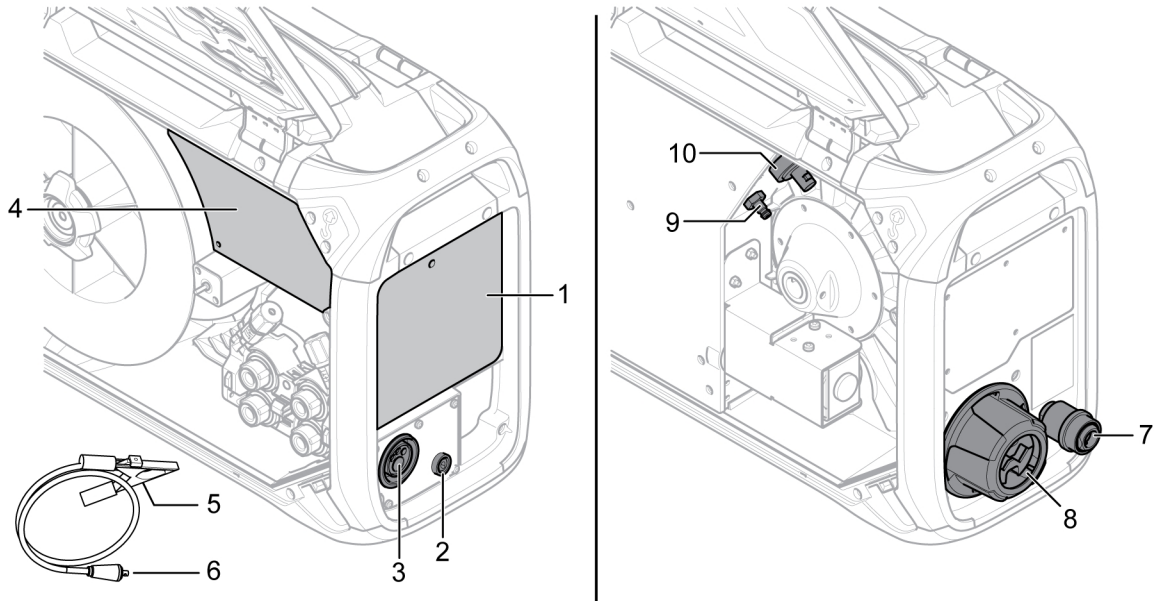

CAUTION!

Before threading welding wire, make sure the chisel point and burrs have been removed from the end of the wire to prevent the wire from jamming in the torch liner.

**NOTE!**

Replace the brake hub nut and the brake hub sleeve if they are worn out and don't lock properly.

5.1 Connections and control devices



- | | |
|---|---|
| 1. External control panel (see the "CONTROL PANEL" chapter) | 6. Connection for feeder (2) OKC 25 (male) |
| 2. Connection for Work lead / Voltage sensing OKC 25 (female) | 7. Wire inlet for use with Marathon Pac™ (optional) 16 mm (0.629 in.) Quick connect |
| 3. Connection for the welding torch (Euro type) | 8. Interconnection strain relief for cables from power source |
| 4. Internal control panel (see the "CONTROL PANEL" chapter) | 9. Connection for shielding gas 6 mm (0.236 in.) quick connect |
| 5. Connection for workpiece | 10. Connection for welding current from power source (OKC 50 male) |

**WARNING!**

The right and left side doors of the wire feed unit must be closed and locked when welding and/or wire feeding occurs. Never weld or feed the wire without having closed both doors!

5.2 Starting procedure

The AVS ECHO feeder is powered up from the weld voltage of the Welding power supply. So, the following starting procedure need to be followed.

With Warrior™ ECHO variants:

- Set the process selection as AVS (Mobile Feed) in the Warrior™ power source.
- Connect both AVS ECHO volt sense cable/clamp and the Warrior™ return clamp to the workpiece.
- Turn ON the power switch in the internal control panel to "I" position.
- Set to CV mode in the internal control panel of the AVS ECHO.
- RobustFeed AVS ECHO will be powered up and will start establishing handshake with the power source.
- Establishing handshake communication may take up to 30 seconds.
- Once the handshake is completed, the handshake indicator on the external control panel will be lit and "CAL---" will appear. If "CAL---" does not appear, restart the AVS ECHO feeder and try again.
- Perform the first weld to complete the calibration according to *"Cable voltage compensation (CAL---)"*, page 30.

- Set the required voltage and wire feed speed in the external control panel of the AVS ECHO to start the weld.

With Warrior™ Non-ECHO variants:

- Set the process selection as AVS (Mobile Feed) in the Warrior™ power source.
- Connect both AVS ECHO volt sense cable/clamp and the Warrior™ return clamp to the workpiece.
- Turn ON the power switch in the internal control panel to "I" position.
- Set to CV mode in the internal control panel of the AVS ECHO.
- Set the required voltage in the Warrior™ power source and wire feed speed in the external control panel of the AVS ECHO to start the weld.

With other Power Sources:

To power up the AVS ECHO feeder, an open circuit voltage (OCV) is needed from the power source. So, the selected welding power source should have the suitcase feeder (CV Process with OCV in place). If not available, the welding power source shall be set with CC Process setting (MMA) and the above shown procedure to be followed.

For CV mode (recommended if CV – output ON is available)

- Set the process selection as AVS (Mobile Feed) in the power source.
- Connect both AVS ECHO volt sense cable/clamp and the power source return clamp to the workpiece.
- Turn ON the power switch in the internal control panel to "I" position.
- Set to CV mode in the internal control panel of the AVS ECHO.
- Set the required voltage in the power source and wire feed speed in the external control panel of the AVS ECHO to start the weld.

For CC mode (only if CV – output ON is not available)

- Set the process selection as MMA in other power source.
- Connect both AVS ECHO volt sense cable/clamp and the power source return clamp to the workpiece.
- Turn ON the power switch in the internal control panel to "I" position.
- Set to CC mode in the internal control panel of the AVS ECHO.
- Set the required amperage in the power source and corresponding wire feed speed in the AVS ECHO to start the weld.
- It is recommended to set amperage and wire feed speed to correspond to spray arc welding mode for optimal performance. See "Weld data table" for recommended parameters.

5.3 Lighting inside the wire feed unit

The wire feed unit is equipped with lights inside the cabinet.

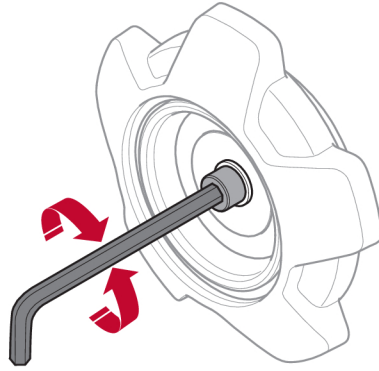
- The feeder mechanism light will turn on and off when the door is opened and closed respectively.
- The wire bobbin light turns on when the door is opened, and live welding is in progress. It will turn off when the welding has been stopped or the door has been closed.

5.4 Bobbin brake

The bobbin brake force should be increased just enough to prevent wire feed overrun. The actual brake force needed, is dependent of the wire feed speed and the size and weight of the bobbin spool.

Do not overload the bobbin brake! A too high brake force may overload the motor and reduce the welding result.

The bobbin brake force is adjusted using the 6 mm (0.236 in.) hexagon Allen screw in the middle of the brake hub nut.



5.5 Changing and loading wire

- 1) Open the left door of the wire feeder.
- 2) Untighten and remove the brake hub nut and remove the old wire spool.
- 3) Insert a new wire spool into the feeder unit and straighten out the new welding wire 10–20 cm (3.94–7.87 in.). File away burrs and sharp edges from the end of the wire before inserting it into the feeder mechanism.
- 4) Lock the wire spool onto the brake hub, by tightening the brake hub nut.
- 5) Thread the wire through the feeder mechanism (according to the illustration at the inside of the feeder unit).
- 6) Close and lock the left door of the wire feeder.



NOTE!

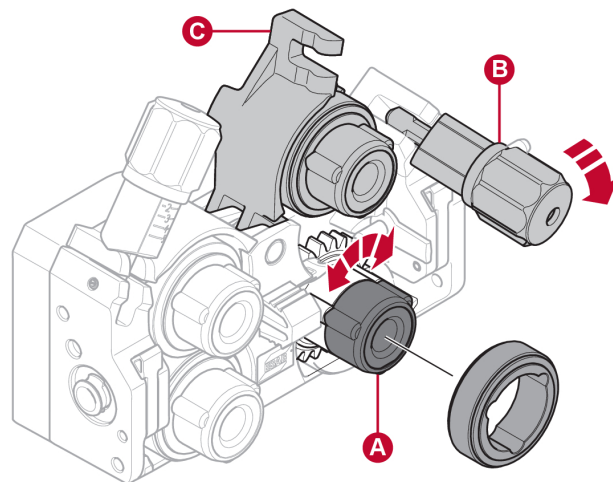
Replace the brake hub nut and the brake hub sleeve if they are worn out and do not lock properly.

5.6 Changing feed rollers

When changing to a different type of wire, the feed rollers should be changed to match the new type of wire. For information about correct feed roller depending on wire diameter and type, see the WEAR PARTS appendix. (For a tip about easy access to necessary wear parts, see the "Wear parts storage compartment" section in this manual.)

- 1) Open the left door of the wire feeder.
- 2) Unlock the feed rollers to be exchanged, by rotating the roller quick lock (A) for each roller.
- 3) Relieve the pressure on the feed rollers, by folding the tensioner units (B) down and thereby releasing the swing arms (C).
- 4) Remove the feed rollers and install the correct ones (according to the WEAR PARTS appendix).
- 5) Reapply the pressure on the feed rollers, by pushing the swing arms (C) down and secure them using the tensioner units (B).
- 6) Lock the rollers by rotating the roller quick locks (A).

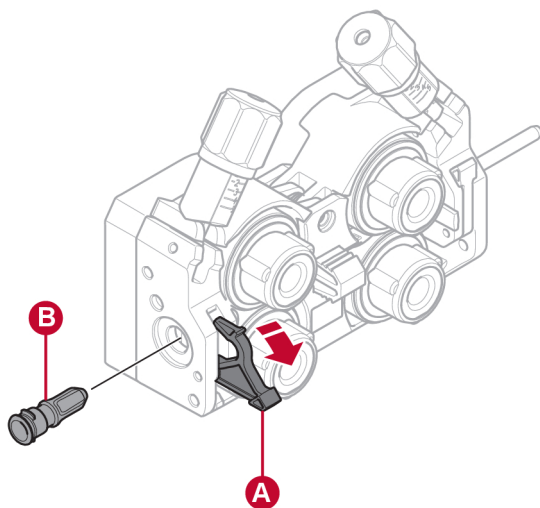
7) Close and lock the left door of the wire feeder.



5.7 Changing the wire guides

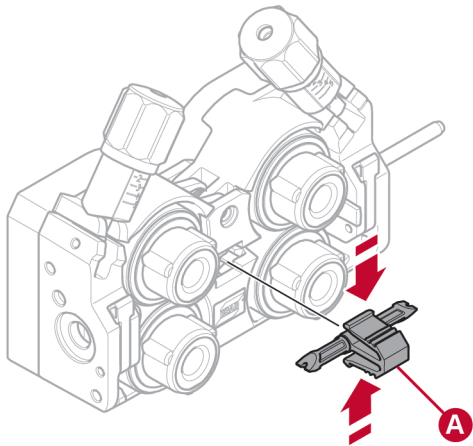
When changing to a different type of wire, the wire guides may have to be changed to match the new type of wire. For information about the correct wire guides depending on wire diameter and type, see the "WEAR PARTS" appendix. (For a tip to easy access to necessary wear parts, see the "Wear parts storage compartment" section in this manual.)

5.7.1 Inlet wire guide



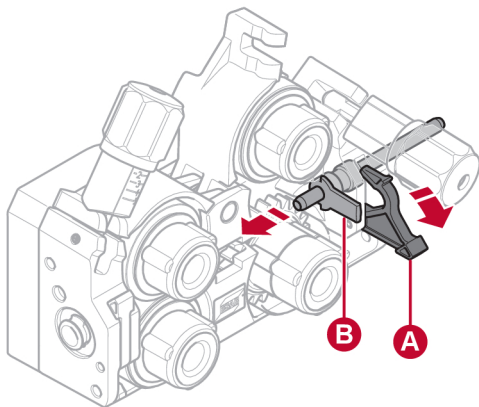
- 1) Unlock the inlet wire guide quick lock (A) by folding it out.
- 2) Remove the inlet wire guide (B).
- 3) Install the correct inlet wire guide (according to the WEAR PARTS appendix).
- 4) Lock the new inlet wire guide using the wire guide quick lock (A).

5.7.2 Middle wire guide



- 1) Apply a little pressure on the middle wire guide clip and pull out the middle wire guide (A).
- 2) Push in the correct type of wire guide (according to the WEAR PARTS appendix). The clip automatically locks the wire guide when in the correct position.

5.7.3 Outlet wire guide



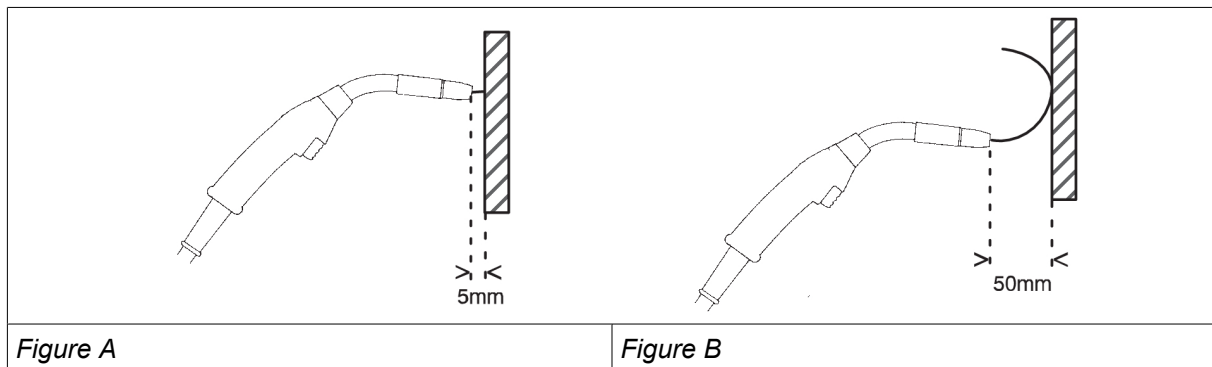
- 1) Remove the lower right feed roller (see the "Changing feed rollers" section).
- 2) Remove the middle wire guide (see the "Middle wire guide" section).
- 3) Unlock the outlet wire guide quick lock (A) by folding it out.
- 4) Remove the outlet wire guide (B).
- 5) Install the correct outlet wire guide (according to the WEAR PARTS appendix).
- 6) Lock the new outlet wire guide using the wire guide quick lock (A).

- 7) Reattach the second pair of feed rollers and reapply the roller pressure (see the "Changing feed rollers" section).

5.8 Roller pressure

The roller pressure should be adjusted separately on each tensioner unit, depending on used wire material and diameter.

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 high.



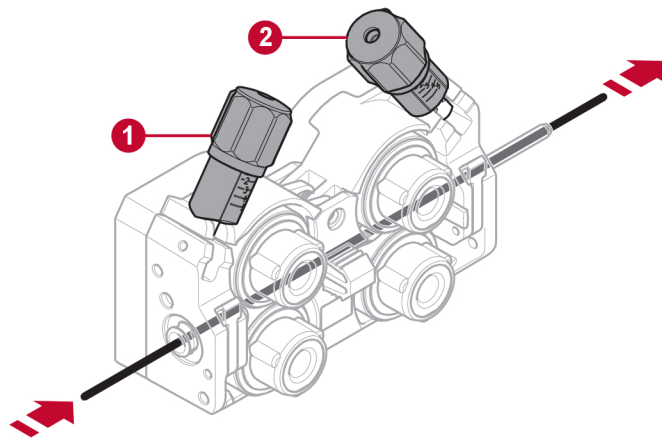
To check that the feed pressure is set correctly, you can feed out the wire against an insulated object, e.g. a piece of wood.

When you hold the welding torch approximately 5 mm (0.2 in.) from the piece of wood (figure A) the feed rollers should slip.

If you hold the welding torch approximately 50 mm (2 in.) from the piece of wood, the wire should be fed out and bend (figure B).

The table below serves as a guideline showing approximate roller pressure settings for standard conditions with correct bobbin brake force. In case of long, dirty or worn torch cables, the pressure setting may have to be increased. Always check the roller pressure setting in each specific case by feeding out the wire against an insulated object as described above. A table showing approximate settings can also be found on the inside of the left door of the wire feeder.

Wire diameter (mm) (in.)			0.6 .023	0.8 .030					1.8 .070	2.0 5/64	2.4 3/32
			Pressure setting								
Wire material	Fe, Ss	Tensioner unit 1	2.5								
		Tensioner unit 2	3–3.5								
	Cored	Tensioner unit 1			2						
		Tensioner unit 2			2.5–3						

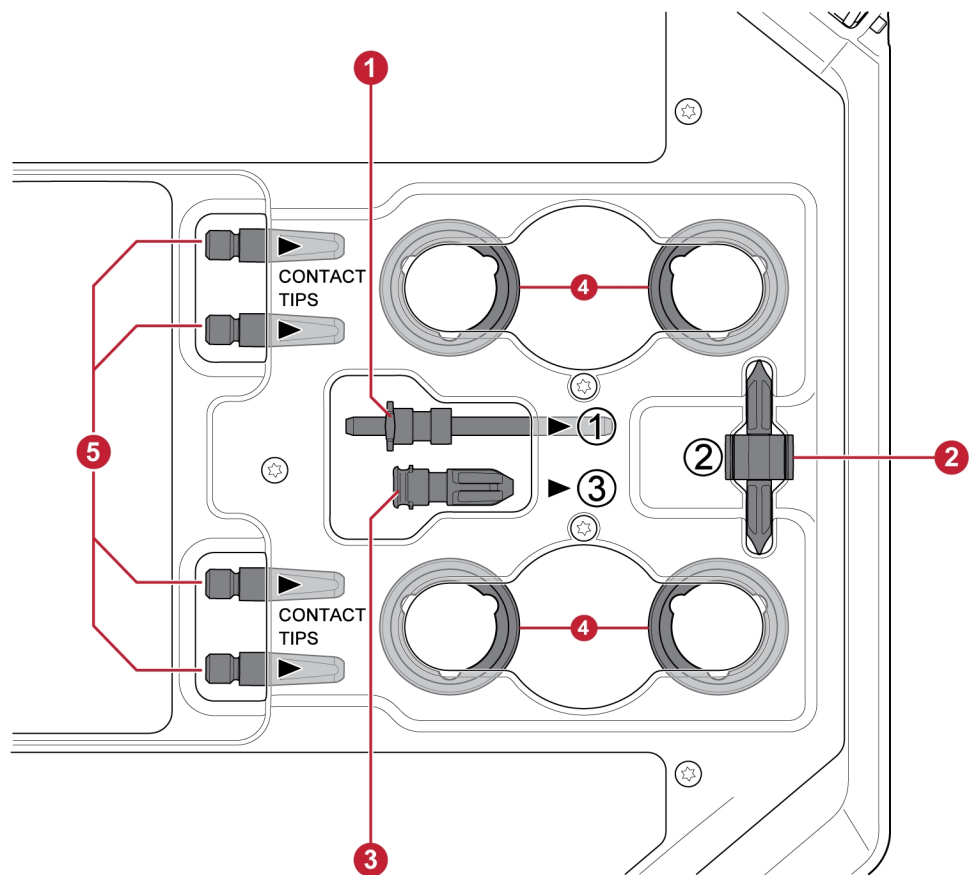


1. Tensioner unit 1

2. Tensioner unit 2

5.9 Wear parts storage compartment

A wear parts storage compartment can be found on the inside of the left door of the wire feeder, for easy access to an extra set of rollers and wire guides.



- 1. Inlet wire guide
- 2. Middle wire guide
- 3. Outlet wire guide

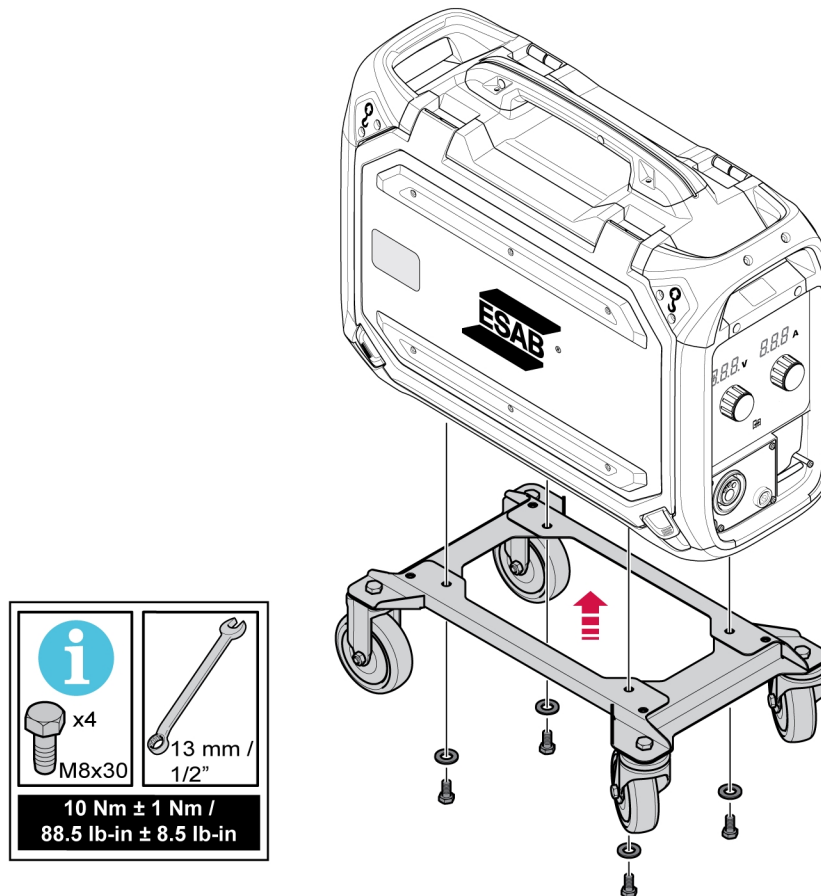
- 4. Feed rollers (×4 pcs)
- 5. Contact tips for the welding torch (×4 pcs)

5.10 Attachment of wheel kit

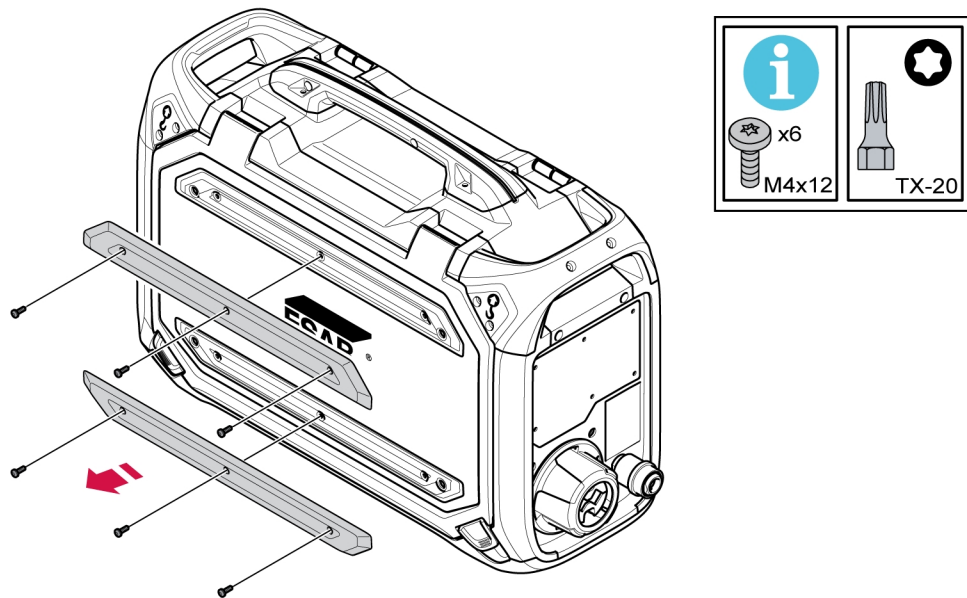
5.10.1 Attachment of the wheels to the wheel kit frame

Before the wire feed unit is attached to the wheel kit, fasten the wheels to the frame by means of the M12 screws, washers and nuts, using a tightening torque of 40 ± 4 Nm (354 ± 35.4 in. lb). The fixed wheels at the rear end should be positioned parallel to the frame.

5.10.2 Wire feed unit in vertical position

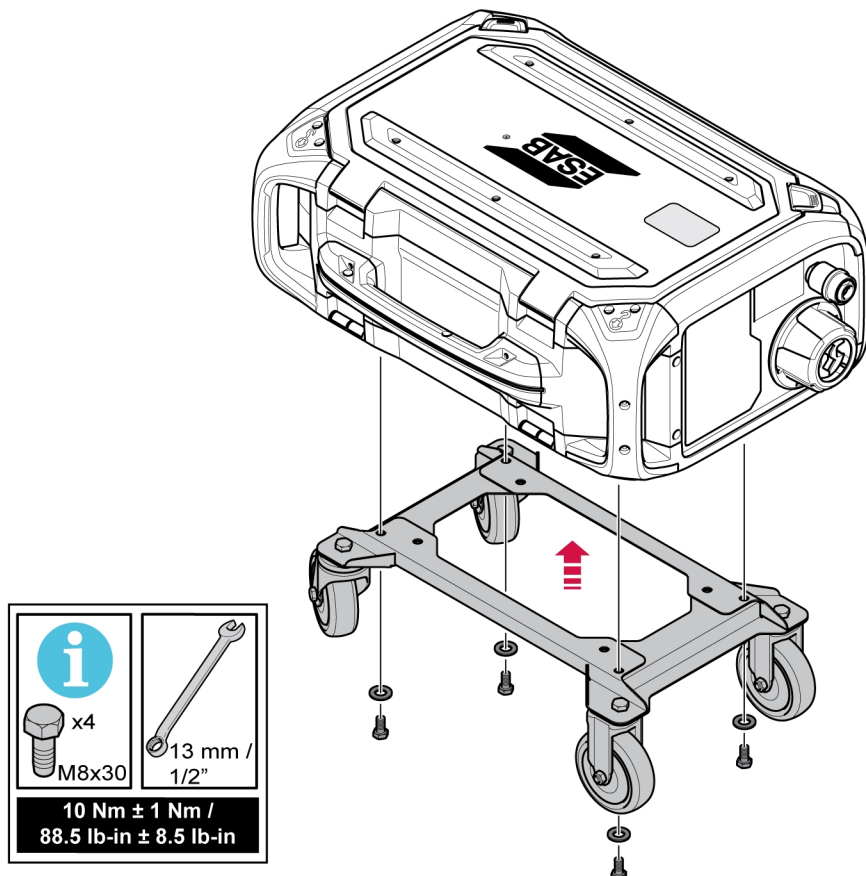


5.10.3 Wire feed unit in horizontal position



NOTE!

To be able to attach the wire feeder in horizontal position on the wheel kit, the two bumpers on the wire feeder door must be removed!



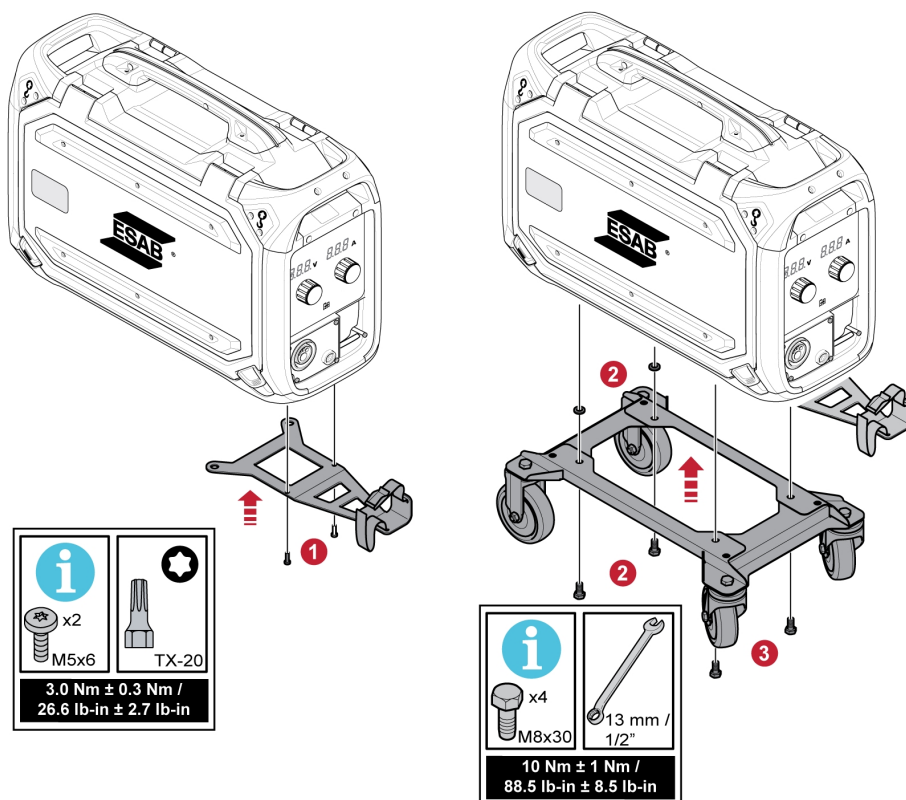
5.11 Attachment of both wheel kit and the torch strain relief accessory

- 1) If the torch strain relief accessory are to be used in connection to the wheel kit being attached in vertical position, the assembly has to be made in the following order:

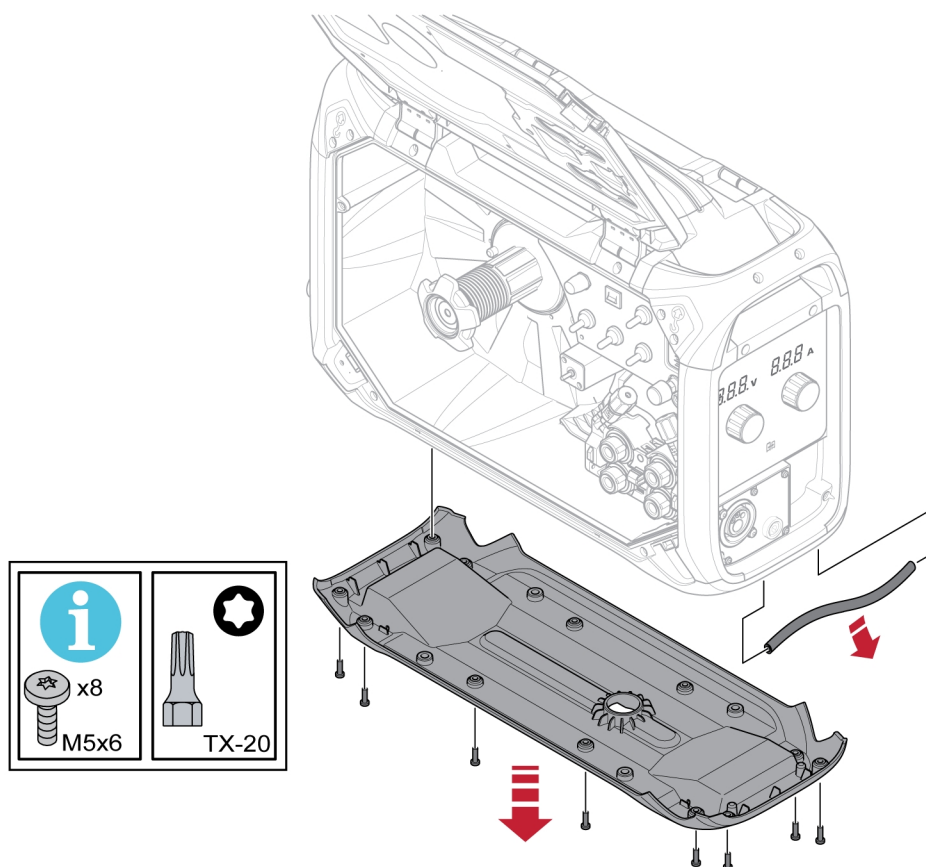
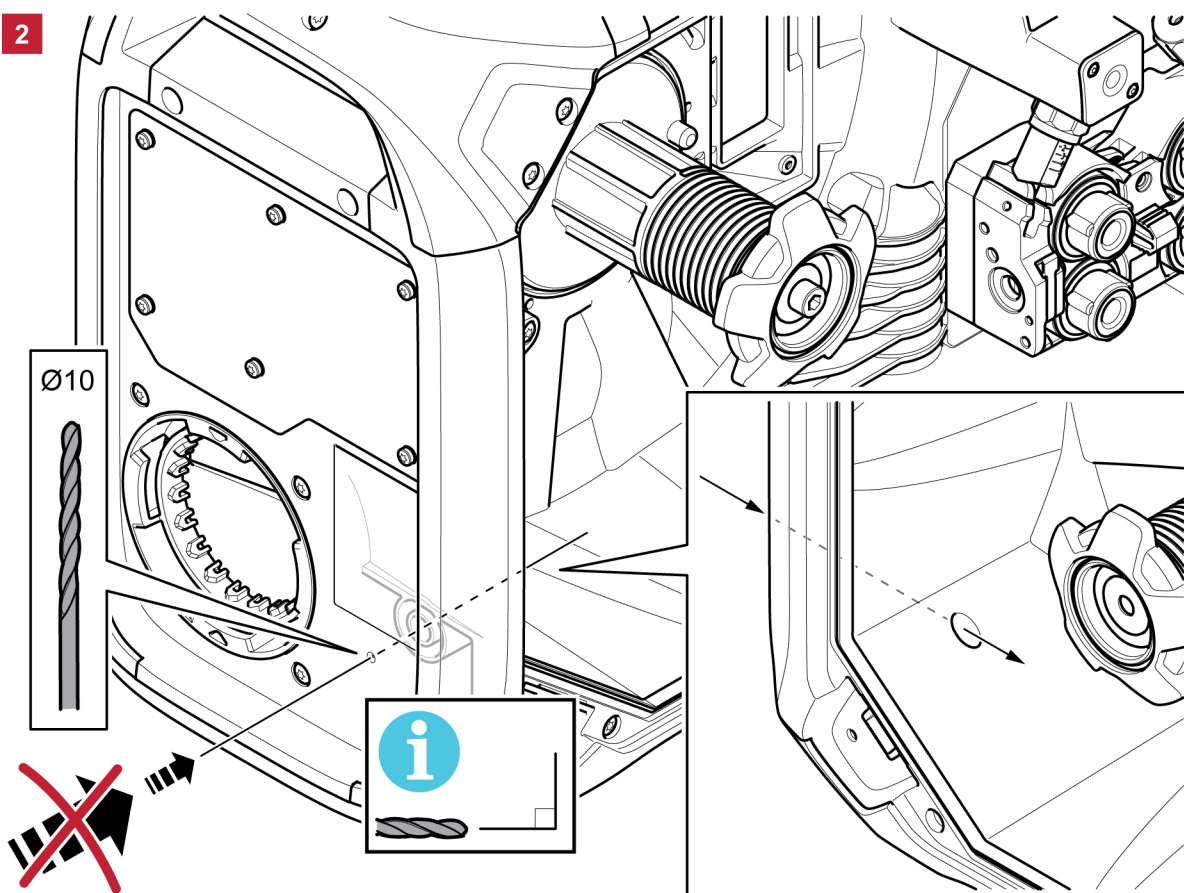
Attach the torch strain relief to the wire feed unit, using the two Torx 5 screws.

Attach the wheel kit to the wire feeder, using the two screw joints near the rear end of the wire feeder. Make sure the two distance washers are inserted between the wheel kit and the wire feeder!

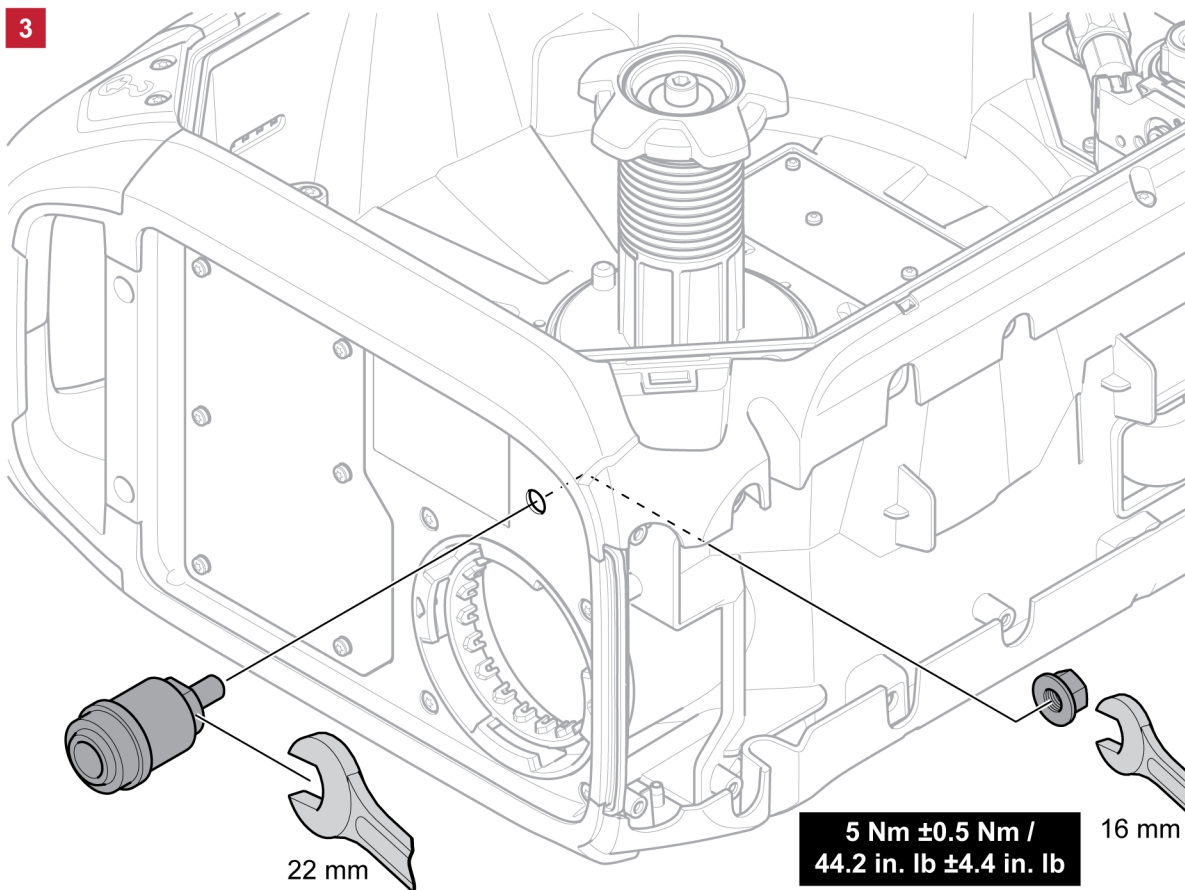
Fasten the wheel kit and the torch strain relief to the wire feeder, using the two screw joints closer to the front end of the wire feeder.



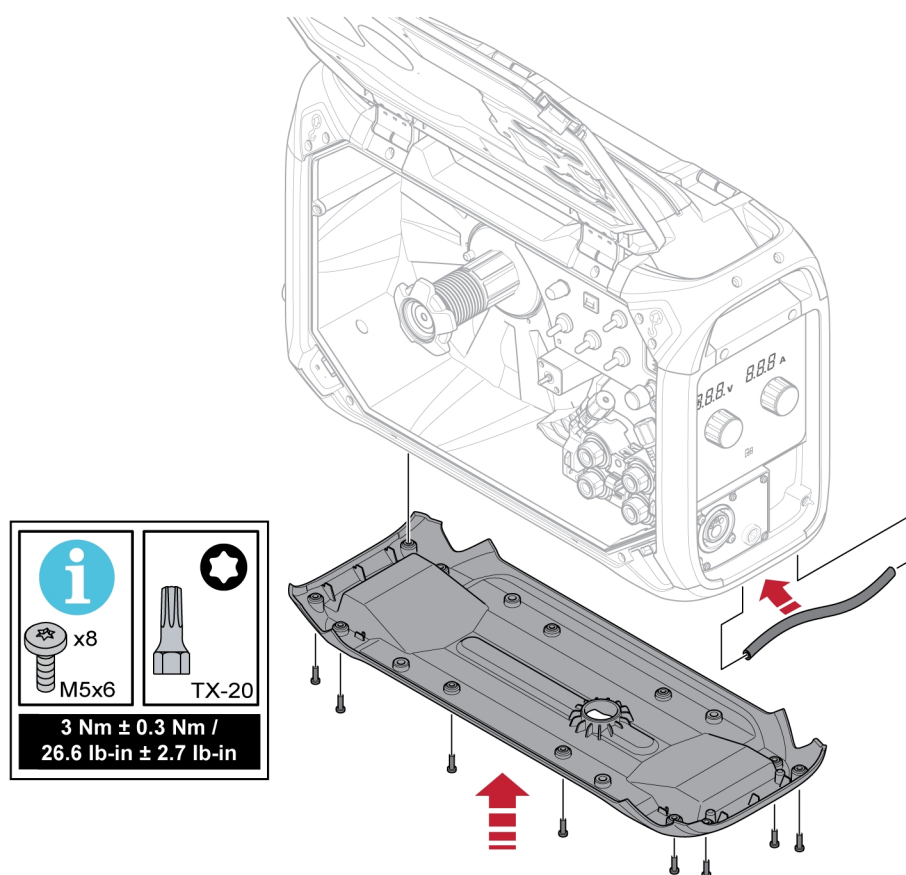
5.12 Marathon Pac™ installation

1**2**

3



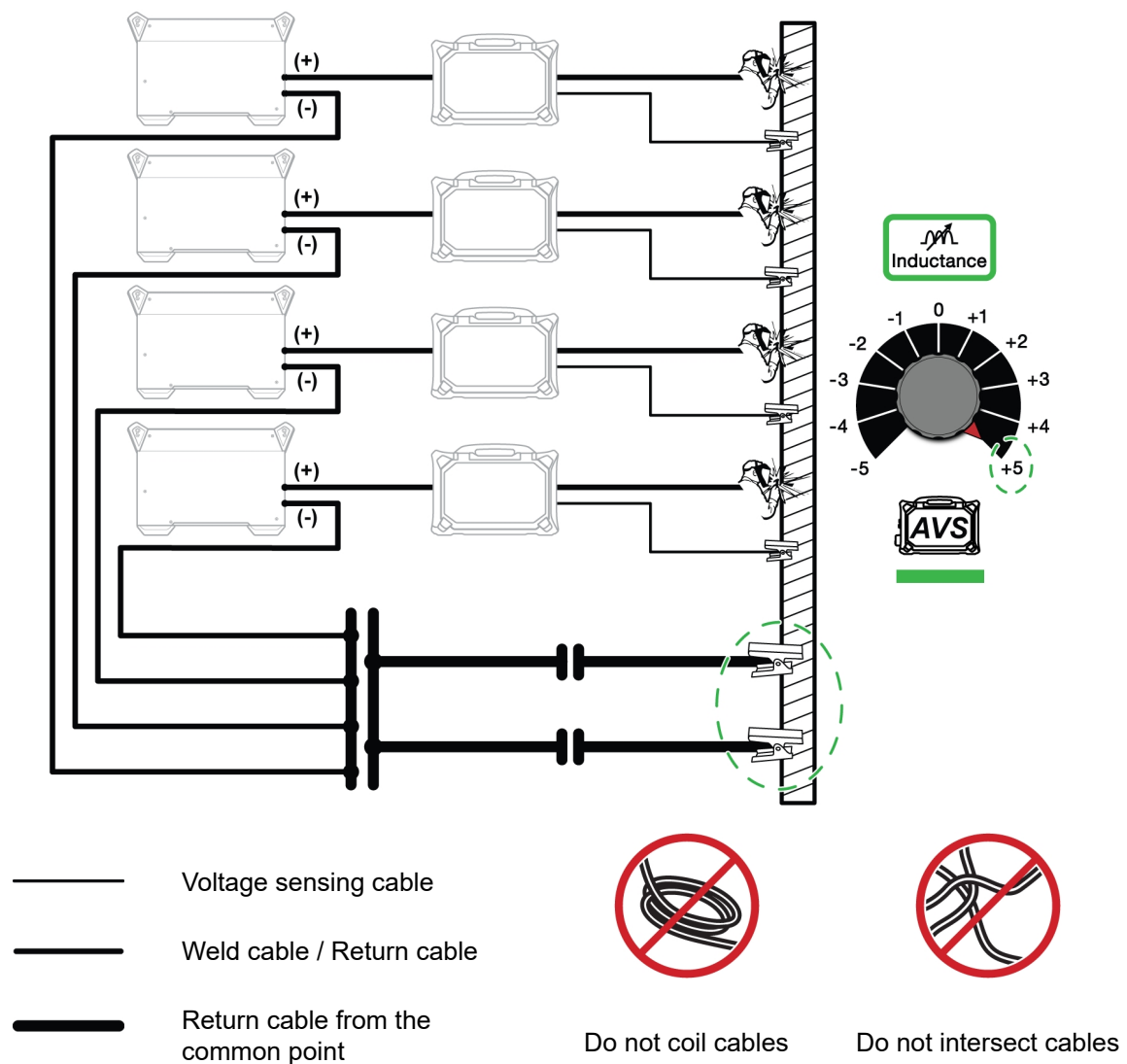
4



5.13 Multiple Warrior™ power source welding setups

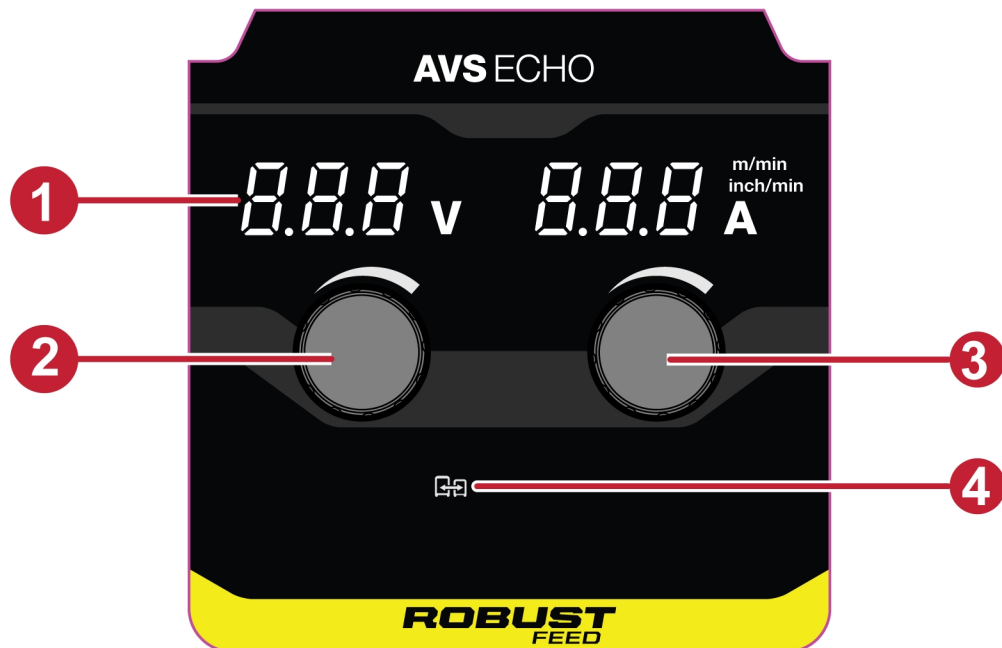
When welding with multiple power source setups, follow the instructions below to ensure optimal performance:

- Ensure that the voltage sensing cable is connected from each feeder to the workpiece.
- In some setups, multiple return cables (four or six smaller cables) may be connected to a common connection point, and from this point, a single or multiple larger return cables are connected to the workpiece. In such cases, ensure that the larger return cables are sized for the total combined amperage of all power sources (refer to the table below).
- If any cable in the welding circuit is undersized, it can overheat, and the power sources may produce a harsh hissing sound that indicates excessive cable loading.
- In AVS mode, setting the inductance to the maximum value (+5) may help improve welding performance when using long weld cables.



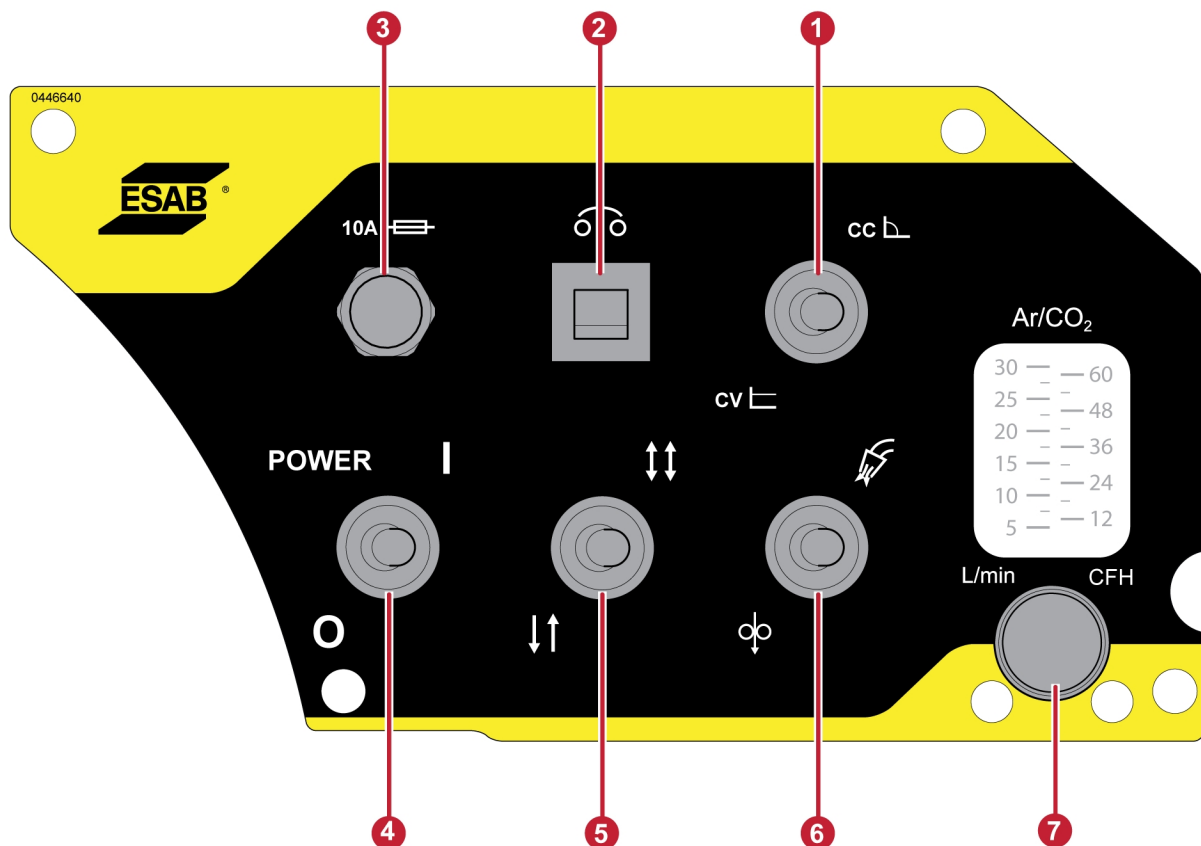
6 USER INTERFACE

6.1 External control panel



1. Display shows set or measured value.
2. Knob for setting the voltage (V).
3. Knob for setting the wire feed speed (m/min or in./min).
4. ECHO communication handshake indicator, illuminates in "GREEN" when the handshake between the power source and the feeder is detected and illuminates in "RED" when it is not detected.

6.2 Internal control panel



- | | |
|--------------------|--|
| 1. CC/CV switch | 5. 2-stroke or 4-stroke selection switch |
| 2. Circuit breaker | 6. Gas purging / Wire inching switch |
| 3. Main fuse, 10 A | 7. Knob for setting the gas flow rate (optional) |
| 4. Power switch | |

6.3 Function explanation

ECHO communication handshake indicator

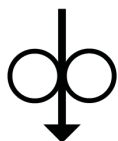


ECHO communication handshake indicator is used to identify whether there is an ECHO communication between the power source and the feeder. It illuminates in "GREEN" when the communication between the power source and the feeder is detected and illuminates in "RED" when it is not detected.



Gas purging

Gas purging is used when measuring the gas flow or to flush any air or moisture from the gas hoses before welding starts. Gas purging occurs for as long as the button is held depressed and occurs without voltage or wire feed starting.



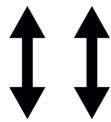
Wire inching

Wire inching is used when one needs to feed wire without welding voltage being applied. The wire is fed as long as the button is depressed.



2-stroke

With 2-stroke, gas pre-flow starts when the welding torch trigger switch is pressed. The welding process then starts. Releasing the trigger switch stops welding entirely and starts gas post-flow.

**4-stroke**

With 4-stroke, the torch trigger can be released once the arc is established, the power source/feeder will continue to weld until the trigger is pressed and released again, or the arc established signal is lost by manually breaking the arc. The trigger will not be locked unless the arc is established before the trigger is released.

**Power switch**

The power switch (O/I) on the internal panel starts the wire feeder when the feeder is connected to the power source and the work piece. The power source must be turned on with the contactor closed.

**CC/CV switch**

The CC/CV switch is used to set CC or CV mode. CC mode is used for constant current power sources. CV mode for constant voltage power sources. The selected mode also has impact on the functions of the wire feeder as shown below:

Mode	Display	Knob for setting the voltage	Knob for setting the wire feed speed / amperage
CC	Wire feed speed shown. While welding, current and voltage shown.	Could not vary the voltage.	Controls the wire feed speed.
CV	Wire feed and voltage speed shown (with Warrior™ ECHO variants). While welding, current and voltage shown.	Controls the arc voltage (with Warrior™ ECHO variants).	Controls the wire feed speed.

Circuit breaker, 5 A

This resettable 5 ampere circuit breaker, in series with motor armature, protects the control board from damage if the motor is stalled.

**Setting the gas flow**

The gas flow is adjusted using the knob on the internal control panel. The present gas flow rate is presented on the gas flow meter above the knob.

**NOTE!**

The reading on the flow meter scale will only be correct if the wire feeder is in upright position!

Units switch feature (Imperial/Metric)

- Set the voltage on the AVS ECHO wire feeder to 44 V (the maximum value).
- Rotate the voltage setting knob clockwise until the units change.

Wire feed speed (Arc voltage control)

The wire feed speed is controlled by the knob for wire feed speed on the front of the wire feeder.

When the wire feeder is connected to a constant voltage (CV) type of power source, the welding voltage is set at the power source and is proportional to the arc length. The welding amperage provided by the power source will be proportional to the wire feed speed set on the wire feeder. Turning the knob clockwise increases the wire feed speed and proportionally the amperage, turning it counterclockwise decreases the wire feed speed and proportionally the amperage.

When the wire feeder is connected to a constant current (CC) type of power source, the amperage is set on the power source and the wire feed speed on the wire feeder needs to be set to match the set amperage proportionally. Setting a wire feed speed higher than the proportional amperage set on the

power source, will result in short arc and proportional low arc voltage. Setting a WFS lower than the proportional amperage set on the power source, will result in a long arc and proportional high arc voltage.

When the CV/CC switch inside the RobustFeed AVS ECHO, is set to "CV", the "Preset" wire feed speed will be shown on the display. The wire feed speed will be kept constant, as set and it will not vary with any changes made to the voltage on the power source.

When RobustFeed AVS ECHO is connected with the Warrior™ ECHO variants

The Warrior™ has to be set on AVS. On power-up both the Warrior™ power source and the RobustFeed AVS ECHO wire feeder will blink "----" until the communication handshake is established. Then the Warrior™ will display stable "----", while the feeder will display and be able to set voltage and WFS. During welding the display will show measured voltage and amperage.

Cable voltage compensation (CAL---)

After each power-up of the Warrior™ power source, the first weld will be considered for the voltage compensation. The AVS ECHO wire feeder will display "CAL---".

- In "CAL---" mode, the voltage can only be set to 25 V or higher.
 - If the previously set voltage was below 25 V, the AVS ECHO feeder automatically sets the voltage to 25 V and displays the previously set wire feed speed.
 - If the previously set voltage was above 25 V, the AVS ECHO feeder displays the previously set voltage and wire feed speed.
- Strike the first arc and weld continuously for at least 10 seconds.
- After welding, without pressing the torch trigger, check whether "CAL---" is still displayed on the feeder.
 - If "CAL---" reappears, the calibration weld was shorter than 10 seconds. Perform the calibration weld again for at least 10 seconds.
 - If "CAL---" does not reappear, the voltage compensation procedure has been successfully completed.

After successful calibration, the minimum adjustable voltage is 15 V.

To re-initiate the calibration weld, follow one of the methods below:

- Restart the Warrior™ power source, or
- Turn OFF the AVS ECHO wire feeder, wait at least 20 seconds, and then turn it ON again.

6.4 Operating procedures

6.4.1 Weld data table

The voltage (V) and current (A) values presented in the tables below are the arc voltage and the weld current. Values of current (A) that may flow through the wire feeder may not be higher than rated values of the unit.

Flux Core E70T-1 and 2

Diameter	Wire Feed Speed (inch/min) / (m/min)								
	150 / 3.8	200 / 5.1	250 / 6.35	300 / 7.6	350 / 8.9	400 / 10.2	450 / 11.4	500 / 12.7	600 / 15.2
.045"		29 V 150 A		29 V 210 A		30 V 250 A		33 V 290 A	34 V 330 A
.052"	25 V 155 A		30 V 300 A						
1/16"	27 V 190 A		30 V 300 A	33 V 365 A	33 V 410 A				

Metal Core

Diameter	Wire Feed Speed (inch/min) / (m/min)						
	200 / 5.1	250 / 6.35	300 / 7.6	350 / 8.9	400 / 10.2	450 / 11.4	500 / 12.7
.045"			28 V 250 A	29 V 260 A	30 V 270 A	32 V 300 A	32 V 350 A
.052"		29 V 275 A	29 V 300 A	30 V 325 A			
1/16"	30 V 300 V	30 V 350 A	32 V 400 A				

Steel Solid Wire

Diameter	Wire Feed Speed (inch/min) / (m/min)								
	200 / 5.1	250 / 6.35	300 / 7.6	350 / 8.9	400 / 10.2	450 / 11.4	500 / 12.7	550 / 14.0	600 / 15.2
.035"					25 V 180 A	25 V 200 A	26 V 215 A	27 V 230 A	28 V 245 A
.045"			25 V 260 A	26 V 280 A	27 V 300 A	28 V 320 A	30 V 340 A		
1/16"	26 V 290 A	27 V 340 A	30 V 400 A						

6.4.2 RobustFeed AVS ECHO with CC Power Sources

- 1) Select the weld current/arc voltage needed for the wire type and diameter to be welded, see section "Weld data table" in this chapter.
- 2) Set the power supply current with the knob for setting the current on the front panel of the power source / feeder.
- 3) Set the wire feed speed, value taken from the weld data table, with the knob for setting the wire feed speed on the wire feeder.
- 4) Strike an arc and adjust it to the desired wire speed with the knob for setting the wire feed speed.

6.4.3 RobustFeed AVS ECHO with CV power sources

- 1) Select the arc voltage/weld current needed for the wire type and diameter to be welded, see section "Weld data table" in this chapter.
- 2) Set the power supply voltage with the knob for setting the voltage on the power source / feeder or use the optional remote voltage control in the wire feeder.
- 3) Read the wire feed speed at the top of the column in the "Weld data table" for the chosen wire type, diameter and arc voltage/weld current.
- 4) Use the "Weld data table" to find the correct value and set the wire feed speed on the wire feeder.

- 5) Strike an arc and adjust the wire feed speed as needed.

**NOTE!**

It is NOT RECOMMENDED to use the CV switch setting when using a CC power source. Extreme wire feed speed sensitivity exists that makes it difficult to set stable welding condition. The arc stability is very dependent on maintaining constant "Tip To Work" (TTW) distance which is almost impossible to control when welding manually. CV setting is only recommended for use with CV power sources.

**NOTE!**

On many CV power sources, the actual welding arc voltage is less than the "Open Circuit Voltage" (OCV) set on the power source front panel. Therefore, an extra 3 to 6 volts may be added to the power source front panel setting to achieve the actual arc voltage needed or shown in the tables.

6.4.4 RobustFeed AVS ECHO with Warrior™ ECHO variants

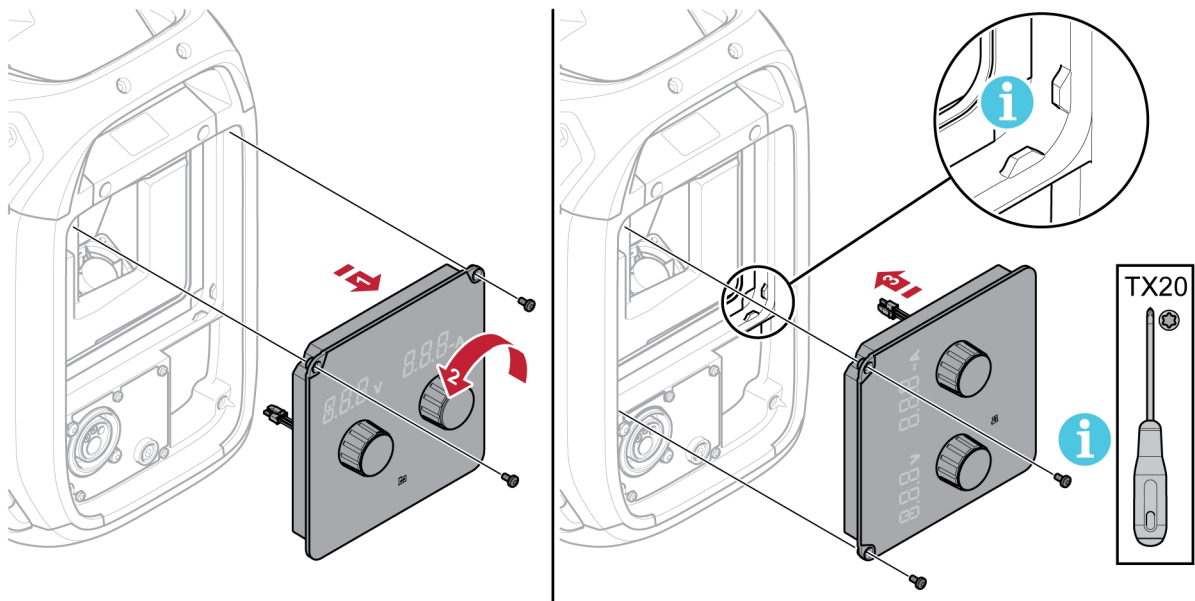
- 1) Select a voltage higher than 25 V and the corresponding wire feed speed for the wire type and diameter to be welded to perform the calibration weld, see section "Weld data table" in this chapter for recommended parameters.
- 2) Strike the first arc and perform a weld of at least 10 s. This will allow the feeder to measure the voltage losses and set the appropriate compensation. All following welds will automatically receive the voltage compensation.
- 3) Read the wire feed speed at the top of the column in the "Weld data table" for the chosen wire type, diameter and arc voltage.
- 4) Use the "Weld data table" to determine the settings for the wire feed speed and voltage on the wire feeder.
- 5) Adjust the wire feed speed and arc voltage as needed from the wire feeder and weld.

6.4.5 Shutdown

- 1) Release the torch trigger switch to break the arc.
- 2) When leaving the equipment unattended, always turn off and disconnect all power to the equipment and turn off the shielding gas supply at source.

6.5 Rotating the control panel

For use of the wire feeder in horizontal position there is a possibility to rotate the external control panel 90°.



- 1) Remove the two screws for the control panel and remove the panel.
- 2) Rotate the control panel 90° counter-clockwise.
- 3) Attach the control panel making sure the small tabs are in the correct position.
- 4) Fasten the screws.

7 MAINTENANCE

**CAUTION!**

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

**NOTE!**

Regular maintenance is important for safe and reliable operation.

7.1 Inspection, cleaning and replacement

Wire feed mechanism

Check regularly that the wire feed unit is not clogged with dirt.

- Cleaning and replacement of the wire feed unit mechanism's worn parts should take place at regular intervals in order to achieve trouble-free wire feed. Note that if pre-tensioning is set too hard, this can result in abnormal wear on the pressure roller, feed roller and wire guide.
- Clean the liners and other mechanical parts of the wire feed mechanism, using compressed air, at regular intervals or if the wire feed seems slow.
- Changing nozzles
- Checking driving-wheel
- Changing the cog-wheel package

Bobbin holder

- Inspect at regular intervals that the brake hub sleeve and the brake hub nut are not worn out and that they lock properly, replace if necessary.

Welding torch

- The wear parts of the welding torch 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.

8 TROUBLESHOOTING

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

Fault symptom	Corrective actions
The feeder doesn't turn on	Check if the voltage sense is connected to the same workpiece as the ground cable of the power source.
The welding equipment is not working properly	Check that the mains power supply switch is turned ON.
	Check that the operating controls are at required settings.
	Check all power cables and connections for evidence of overheating or sparking.
Gas leakage	Check all gas hoses, connections, flowmeters and regulators for possible sources of breakdown or intermittent failure.
The trigger lock does not lock ON	Check that the trigger lock is ON and then release the trigger after the arc is established.
The wire feed is slow/stiff through the wire feed mechanism.	Clean the liners and other mechanical parts of the wire feeding mechanism with pressurized air.
No voltage adjustment at the feeder	• Voltage adjustments are possible only when connected to a Warrior™ ECHO variant power source. • If connected to a Warrior™ ECHO variant power source, check the weld cable connections and avoid coiling. Then, restart the Robustfeed AVS ECHO and/or the Warrior™ ECHO variant power source. • If the voltage adjustments are still not possible, please contact authorized ESAB service technician.
The weld voltage does not match with the set voltage	Re-initialize the voltage compensation procedure.
While connecting multiple feeders and power sources, any of the AVS ECHO feeder may not enter into "CAL---" mode.	Restart the Robustfeed AVS ECHO and/or the Warrior™ ECHO variant power source. If the connection and "CAL---" mode is still not established, please contact authorized ESAB service technician.
While connecting the feeder and the power source, the AVS ECHO feeder may not enter "CAL---" mode and displays "---".	Check the weld cable connections and avoid coiling. Then, restart the Robustfeed AVS ECHO and/or the Warrior™ ECHO variant power source. If the connection and "CAL---" mode is still not established, please contact authorized ESAB service technician.

9 ORDERING SPARE PARTS



CAUTION!

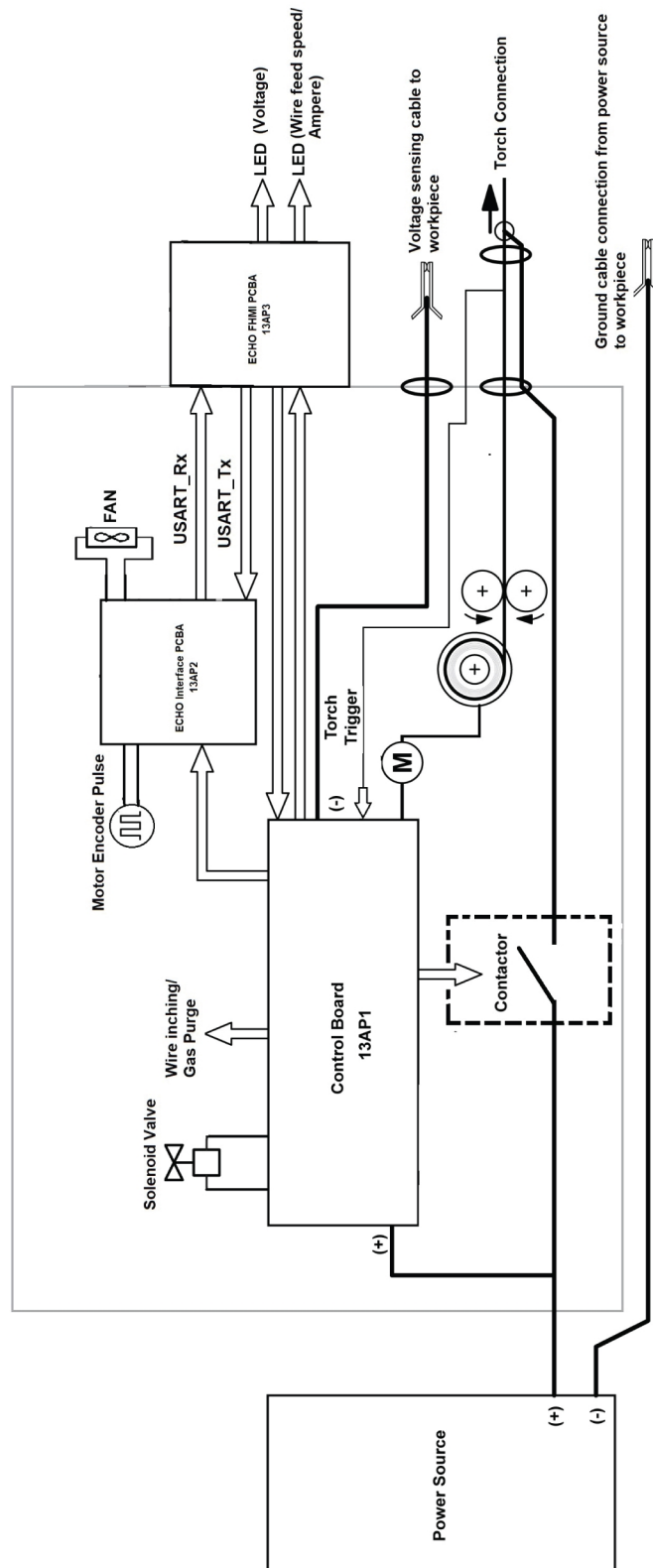
Repair and electrical work should be performed by an authorised ESAB service technician.
Use only ESAB original spare and wear parts.

RobustFeed AVS ECHO is designed and tested in accordance with the international and European standards **EN IEC 60974-5** and **EN IEC 60974-10 Class A**, Canadian standard **CAN/CSA-E60974-5** and US standard **ANSI/IEC 60974-5**. 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 mentioned standards..

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

BLOCK DIAGRAM



ORDERING NUMBERS



Ordering number	Denomination	Notes
0448 700 880	RobustFeed AVS ECHO with Rotameter	with EURO connector
0448 227 *	Instruction manual	CE

The three last digits in the document number of the manual show the version of the manual. Therefore they are replaced with * here. Make sure to use a manual with a serial number or software version that corresponds with the product, see the front page of the manual.

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

WEAR PARTS

Fe, Ss and cored wire

Wire diameter (in.) (mm)	.023 0.6	.030 0.8	.040 0.9/1. 0	.045 1.2	.052 1.4	1/16 1.6	.070 1.8	5/64 2.0	 Feed roller
V-groove 	X	X							0445 850 001
		X	X						0445 850 002
			X						0445 850 003
			X	X					0445 850 004
				X					0445 850 005
					X	X			0445 850 006
								X	0445 850 007

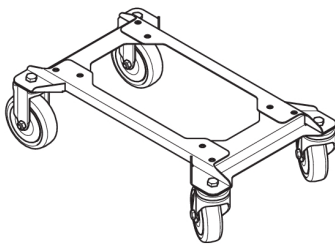
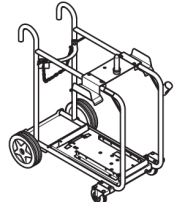
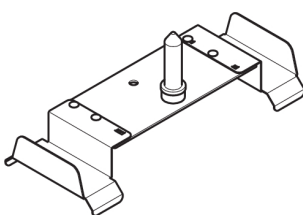
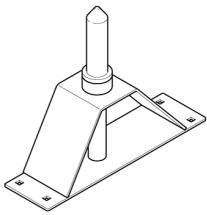
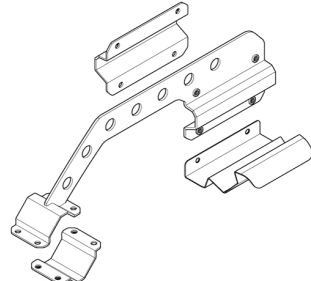
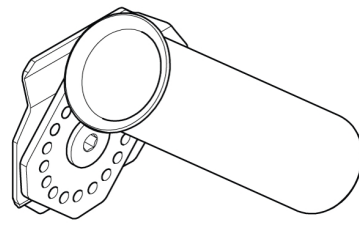
Inlet wire guide 	Middle wire guide 	Outlet wire guide 
0445 822 001 (2 mm)	0446 080 882	0445 830 883 (Tweco)
		0445 830 881 (Euro)

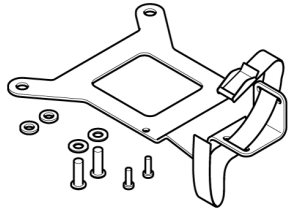
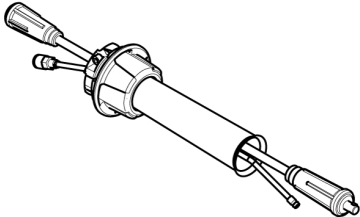
Cored wire – Different wire guides dependent on wire diameter!

Wire diameter (in.) (mm)	.040 0.9/1. 0	.045 1.2	.052 1.4	1/16 1.6	.070 1.8	5/64 2.0	3/32 2.4	 Feed roller
V-K-knurled 	X	X						0445 850 030
		X						0445 850 031
		X	X					0445 850 032
				X				0445 850 033
					X			0445 850 034
						X		0445 850 035
							X	0445 850 036

	Inlet wire guide 	Middle wire guide 	Outlet wire guide 
Wire diameter 0.040–1/16 in. 0.9–1.6 mm	0445 822 001 (2 mm)	0446 080 882	0445 830 883 (Tweco)
			0445 830 881 (Euro)
Wire diameter 0.070–3/32 in. 1.8–2.4 mm	0445 822 002 (3 mm)	0446 080 883	0445 830 884 (Tweco)
			0445 830 882 (Euro)

ACCESSORIES

0446 081 880	Wheel kit	
0349 313 450	Trolley (compatible with RobustFeed and Warrior™ Feed 304)	
0349 313 100	RF retrofit kit (for use with existing Warrior™ trolley with ordering no. 0465 510 880)	
F102 440 880	Quick connector Marathon Pac™	
0465 508 880	Guide pin extension kit For the feeder assembled with the wheel kit	
0446 956 880	Boom adaptor kit including a stopper for RobustFeed door For assembly instructions, refer to the Boom adaptor assembly instruction manual	
0446 958 880	Torch holder For assembly on the RobustFeed For assembly instructions, refer to the Torch holder assembly instruction manual	

0446 082 880	Torch strain relief	
0446 675 880	Interconnection cable SR CE 0.6 m (24 in.)	



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