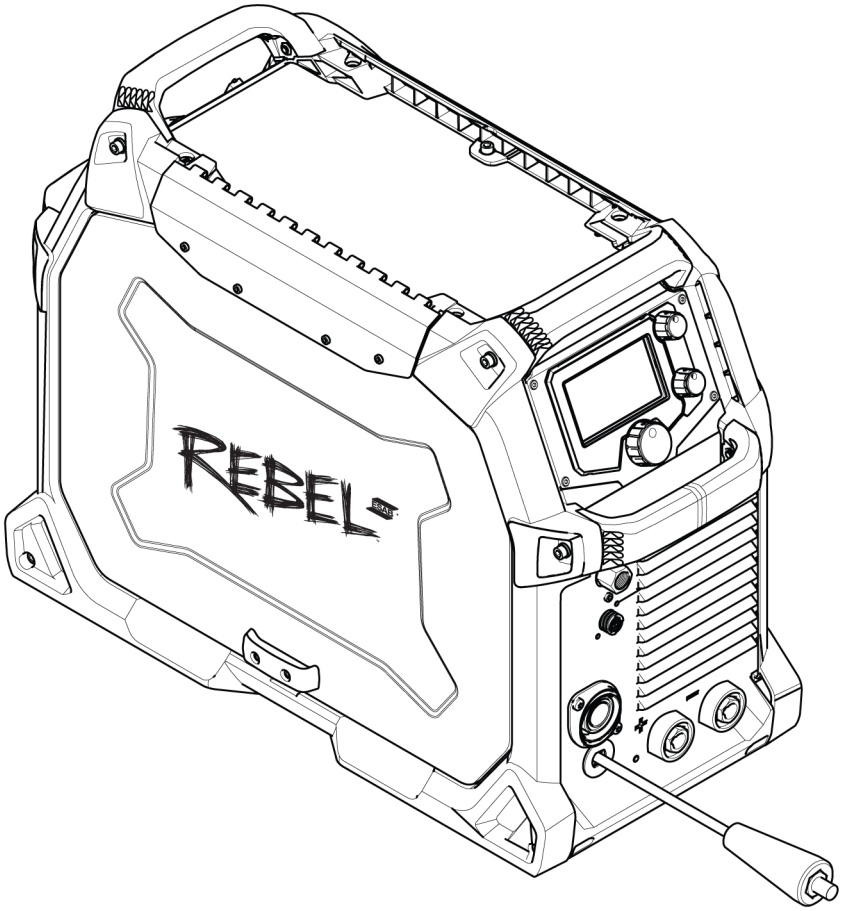
Rebel EMP 285ic 3 PH



Instruction manual

0448 562 001 US 20250310

Valid for: Serial number:
CD432YY-XXXXXX

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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

WARNING!
These Safety Precautions are for your protection. They summarize precautionary information from the references listed in the Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.



PROTECT YOURSELF AND OTHERS

Some welding, cutting and gouging processes are noisy and require ear protection. The arc, like the sun, emits ultraviolet (UV) and other radiation and can injure skin and eyes. Hot metal can cause burns. Training in the proper use of the processes and equipment is essential to prevent accidents. Therefore:

1. Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching.
2. Always wear safety glasses with side shields in any work area, even if welding helmets, face shields and goggles are also required.
3. Use a face shield fitted with the correct filter and cover plates to protect your eyes, face, neck and ears from sparks and rays of the arc when operating or observing operations. Warn bystanders not to watch the arc and not to expose themselves to the rays of the electric-arc or hot metal.
4. Wear flameproof gauntlet type gloves, heavy long-sleeve shirt, cuffless trousers, high-topped shoes and a welding helmet or cap for protection, to protect against arc rays and hot sparks or hot metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
5. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs, or pockets. Sleeves and collars should be kept buttoned and open pockets eliminated from the front of clothing.
6. Protect other personnel from arc rays and hot sparks with a suitable non-flammable partition or curtains.
7. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can fly far. Bystanders should also wear goggles over safety glasses.

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FIRES AND EXPLOSIONS

Heat from flames and arcs can start fires. Hot slag or sparks can also cause fires and explosions. Therefore:

1. Protect yourself and others from flying sparks and hot metal.
2. Remove all combustible materials well away from the work area or cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints and coatings paper, etc.
3. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal.
4. Do not weld, cut or perform other hot work until the work piece has been completely cleaned so that there are no substances on the work piece which might produce flammable or toxic vapors. Do not do hot work on closed containers, they may explode.
5. Have fire extinguishing equipment handy for instant use, such as a garden hose, water pail, sand bucket, or portable fire extinguisher. Be sure you are trained in its use.
6. Do not use equipment beyond its ratings. For example, an overloaded welding cable can overheat and create a fire hazard.
7. After completing operations, inspect the work area to make certain there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.



ELECTRICAL SHOCK

Contact with live electrical parts and ground can cause severe injury or death. DO NOT use AC welding current in damp areas, if movement is confined, or if there is danger of falling. Therefore:

1. Be sure the power source frame (chassis) is connected to the ground system of the input power.
2. Connect the workpiece to a good electrical ground.
3. Connect the work cable to the workpiece. A poor or missing connection can expose you or others to a fatal shock.
4. Use well-maintained equipment. Replace worn or damaged cables.
5. Keep everything dry, including clothing, work area, cables, torch/electrode holder and power source.
6. Make sure that all parts of your body are insulated from both the work piece and from the ground.
7. Do not stand directly on metal or the earth while working in tight quarters or a damp area; stand on dry boards or an insulating platform and wear rubber-soled shoes.
8. Put on dry, hole-free gloves before turning on the power.
9. Turn off the power before removing your gloves.
10. Refer to ANSI/ASC Standard Z49.1 for specific grounding recommendations. Do not mistake the work lead for a ground cable.



ELECTRIC AND MAGNETIC FIELDS

May be dangerous. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding and cutting current creates EMF around welding cables and welding machines. Therefore:

1. Welders with pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
2. Exposure to EMF may have other health effects which are unknown.

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3. Welders should use the following procedures to minimize exposure to EMF:
   a) Route the electrode and work cables together. Secure them with tape when possible.
   b) Never coil the torch or work cable around your body.
   c) Do not place your body between the torch and work cables. Route cables on the same side of your body.
   d) Connect the work cable to the workpiece as close as possible to the area being welded.
   e) Keep welding power source and cables as far away from your body as possible.



FUMES AND GASES

Fumes and gases can cause discomfort or harm, particularly in confined spaces. Shielding gases can cause asphyxiation. Therefore:

1. Keep your head out of the fumes. Do not breathe the fumes and gases.
2. Always provide adequate ventilation in the work area by natural or mechanical means. Do not weld, cut or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead, beryllium or cadmium unless positive mechanical ventilation is provided. Do not breathe fumes from these materials.
3. Do not operate near degreasing and spraying operations. The heat or arc can react with chlorinated hydrocarbon vapors to form phosgene, a highly toxic gas, and other irritant gases.
4. If you develop momentary eye, nose or throat irritation while operating, this is an indication that ventilation is not adequate. Stop work and take necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.
5. Refer to ANSI/ASC Standard Z49.1 for specific ventilation recommendations.



CYLINDER HANDLING

Cylinders, if mishandled, can rupture and violently release gas. A sudden rupture of cylinder valve or relief device can injure or kill. Therefore:

1. Locate cylinders away from heat, sparks and flames. Never strike an arc on a cylinder.
2. Use the proper gas for the process and use the proper pressure reducing regulator designed to operate from the compressed gas cylinder. Do not use adapters. Maintain hoses and fittings in good condition. Follow manufacturer's operating instructions for mounting regulator to a compressed gas cylinder.
3. Always secure cylinders in an upright position by chain or strap to suitable hand trucks, undercarriages, benches, wall, post or racks. Never secure cylinders to work tables or fixtures where they may become part of an electrical circuit.
4. When not in use, keep cylinder valves closed. Have valve protection cap in place if regulator is not connected. Secure and move cylinders by using suitable hand trucks.



MOVING PARTS

Moving parts, such as fans, rotors and belts can cause injury. Therefore:

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

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WARNING!
FALLING EQUIPMENT CAN INJURE

- Only use lifting eye to lift unit. Do NOT use running gear, gas cylinders or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Keep cables and cords away from moving vehicles when working from an aerial location.

WARNING!
EQUIPMENT MAINTENANCE

Faulty or improperly maintained equipment can cause injury or death. Therefore:

1. Always have qualified personnel perform the installation, troubleshooting and maintenance work. Do not perform any electrical work unless you are qualified to perform such work.
2. Before performing any maintenance work inside a power source, disconnect the power source from the incoming electrical power.
3. Maintain cables, earthing wire, connections, power cord and power supply in safe working order. Do not operate any equipment in faulty condition.
4. Do not abuse any equipment or accessories. Keep equipment away from heat sources such as furnaces, wet conditions such as water puddles, oil or grease, corrosive atmospheres and inclement weather.
5. Keep all safety devices and cabinet covers in position and in good repair.
6. Use equipment only for its intended purpose. Do not modify it in any manner.

CAUTION!
ADDITIONAL SAFETY INFORMATION

For more information on safe practices for electric arc welding and cutting equipment, ask your supplier for a copy of “Precautions and Safe Practices for Arc Welding, Cutting and Gouging”, Form 52-529.

The following publications are recommended:

- ANSI/ASC Z49.1 - “Safety in Welding and Cutting”
- AWS C5.5 - “Recommended Practices for Gas Tungsten Arc Welding”
- AWS C5.6 - “Recommended Practices for Gas Metal Arc welding”
- AWS SP - “Safe practices” - Reprint, Welding Handbook
- ANSI/AWS F4.1 - “Recommended Safe Practices for Welding and Cutting of Containers That Have Held Hazardous Substances”
- OSHA 29 CFR 1910 - "Safety and health standards"
- CSA W117.2 - "Code for safety in welding and cutting"
- NFPA Standard 51B, “Fire Prevention During Welding, Cutting, and Other Hot Work"
- CGA Standard P-1, “Precautions for Safe Handling of Compressed Gases in Cylinders”
- ANSI Z87.1, "Occupational and Educational Personal Eye and Face Protection Devices"

1.3 User responsibility

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.

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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 unauthorized 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 with 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.

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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 that there are no inflammable materials nearby.
- Do not use on closed containers.

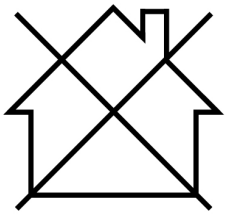


HOT SURFACE - Parts can burn

- 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.

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.

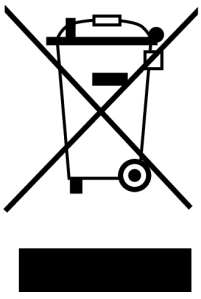


NOTE!
Dispose of electronic equipment at the recycling facility!

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.



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1.4 California proposition 65 warning

WARNING!
Welding or cutting equipment produces fumes or gases which contain chemicals known in the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

WARNING!
This product can expose you to chemicals including lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm. Wash hands after use.

For more information, go to **www.P65Warnings.ca.gov**.

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.

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2 INTRODUCTION

The Rebel EMP 285ic 3 PH is a multiprocess (MIG / MAG / GMAW & MMA / SMAW / Stick & TIG / GTAW) welding power source.

The Rebel family of power sources are designed to match the needs of the user. They are tough, durable, and portable, providing excellent arc performance across a variety of welding applications.

The Rebel EMP 285ic 3 PH features a 4.3 in (110 mm) color TFT (Thin Film Transistor) user interface (UI) display which provides quick and easy selection of weld process and parameters, suitable for both newly trained and intermediate-level users. For more advanced users, any number of functions could be introduced and customized to give maximum flexibility.

2.1 Equipment

The Rebel EMP 285ic 3 PH power source is supplied with:

- Tweco® Spray Master V350 MIG torch with 15.0 ft (4.6 m) cable, 0.030 in (0.8 mm), 0.035 in (0.9 mm), 0.045 in (1.2 mm) contact tips
- ESAB stick electrode holder, 12.0 ft (3.6 m), 300 A
- TWECO 300 A work lead with clamp, 12.0 ft (3.6 m)
- Victor® Flow Meter with 10.0 ft (3.0 m) gas hose
- ESAB OK Aristorod 12.50, ER70S-6, 0.035 in (0.9 mm), 2.2 lb (1 kg) of wire on 8.0 in (200 mm) spool
- Drive rolls:
  - 0.035/0.045 in (0.9/1.2 mm) V-Groove
  - 0.045/0.052 in (1.2/1.4 mm) V-Knurled
- 0.030/0.062 in (0.8/1.6 mm) inlet guide, intermediate guide and outlet guide for hard wire
- Thickness gage tool
- USB stick including instruction manual
- Quick Start Guide

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3 TECHNICAL DATA

	Rebel EMP 285ic 3 PH	
Voltage	460 V ± 10%, 3Φ 50/60 Hz	575 V ± 10%, 3Φ 50/60 Hz
Primary current		
I_{max} MIG / MAG / GMAW	18.0 A	15.0 A
I_{eff} MIG / MAG / GMAW	9.8 A	8.6 A
I_{max} TIG / GTAW	10.7 A	10.5 A
I_{eff} TIG / GTAW	7.4 A	7.0 A
I_{max} MMA / SMAW / Stick	15.6 A	13.7 A
I_{eff} MMA / SMAW / Stick	11.0 A	9.8 A
Setting range (DC)		
MIG / MAG / GMAW	15 A / 14.75 V - 320 A / 30 V	
TIG / GTAW	5 A / 10.2 V - 320 A / 22.8 V	
MMA / SMAW / Stick	16 A / 20.6 V - 300 A / 32 V	
Permissible load at MIG / MAG / GMAW		
100% duty cycle	200 A / 24 V	
60% duty cycle	265 A / 27.25 V	
50% duty cycle	285 A / 28.25 V	
25% duty cycle	320 A / 30 V	
Permissible load at TIG / GTAW		
100% duty cycle	220 A / 18.8 V	
60% duty cycle	265 A / 20.6 V	
50% duty cycle	285 A / 21.4 V	
25% duty cycle	320 A / 22.8 V	
Permissible load at MMA / SMAW / Stick		
100% duty cycle	180 A / 27.2 V	
60% duty cycle	255 A / 30.2 V	
50% duty cycle	285 A / 31.4 V	
25% duty cycle	300 A / 32 V	
Power factor	0.86	0.77
Efficiency	87%	
Open-circuit voltage (OCV)	68 V	
Wire diameter		
Mild steel solid wire	0.030 - 0.045 in (0.8 - 1.2 mm)	
Stainless steel solid wire	0.030 - 0.045 in (0.8 - 1.2 mm)	
Flux-cored wire	0.030 - 0.062 in (0.8 - 1.6 mm)	
Aluminum	0.030 - 0.045 in (0.8 - 1.2 mm)	
Wire feed speed	50 - 800 in/min (1.3 - 20.3 m/min)	
Maximum gas pressure	110 psi (7.6 bar)	

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	Rebel EMP 285ic 3 PH
Wire spool size	4 - 12 in (100 - 300 mm)
Maximum wire spool weight	45.2 lb (20.5 kg)
Dimensions l × w × h	27.0 × 11.5 × 19.5 in (686 × 292 × 495 mm)
Weight	70 lb (31.75 kg)
Operating temperature	+14 to +104 °F (-10 to +40 °C)
Enclosure class	IP23S
Application class	S

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 104 °F (40 °C), or below.

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

Equipment marked **IP23S** is intended for indoor and outdoor use; however, should not be operated in precipitation.

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

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4 INSTALLATION

The installation must be carried out by a professional.

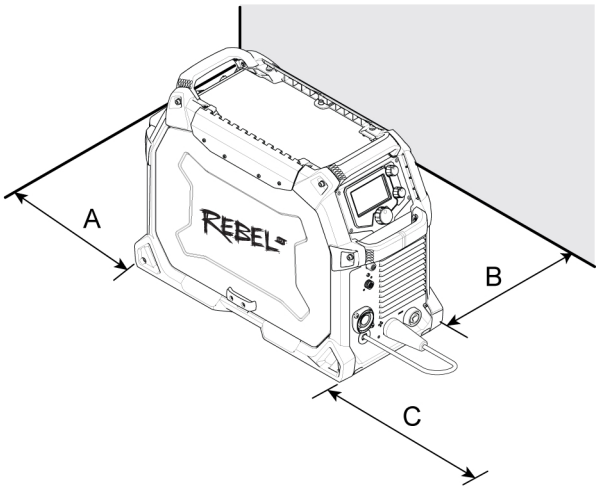
CAUTION!
This product is intended for industrial use. In a domestic environment this product may cause radio interference. It is the user's responsibility to take adequate precautions.

CAUTION!
Remove any packaging material prior to use. Do not block the air vents at the front or rear of the welding power source.

CAUTION!
Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal.

4.1 Location

Position the power source so that cooling air inlets and outlets are not obstructed.



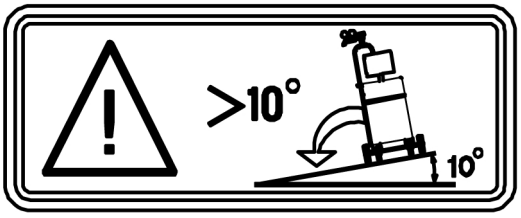
A. Minimum 8 in (200 mm)

B. Minimum 8 in (200 mm)

C. Minimum 8 in (200 mm)

If permanent installation leave enough room to open door and access spool side.

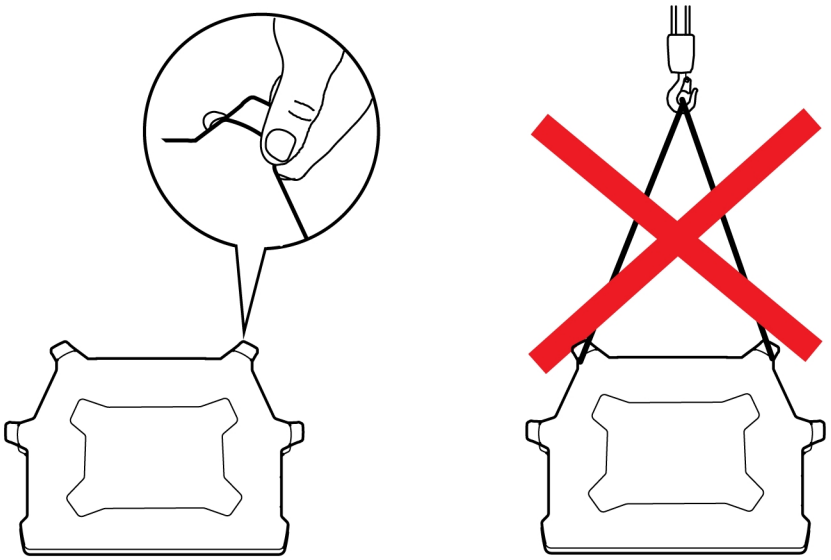
WARNING!
Secure the equipment - particularly if the ground is uneven or sloping.



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4.2 Lifting instructions

The power source can be lifted manually using any of the handles.



4.3 Mains supply

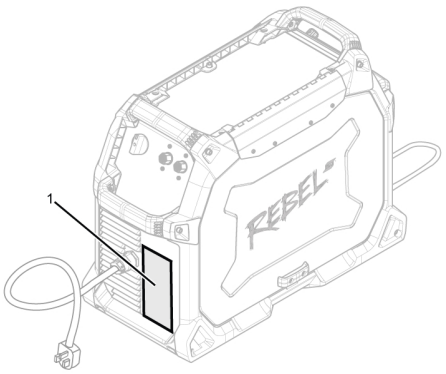
WARNING!
Contact the local electric utility for information about the type of electrical service available, how proper connections should be made, and inspection required.

The supply voltage should be 460 V ± 10%, 3Φ 50/60 Hz or 575 V ± 10%, 3Φ 50/60 Hz. Too low supply voltage may cause poor welding performance. Too high supply voltage will cause components to overheat and possibly fail.

The welding power source must be:

- Correctly installed, if necessary, by a qualified electrician.
- Correctly earthed (electrically) in accordance with local regulations.
- Connected to the correct size power point and fuse as tables below.

1. Rating plate with mains supply connection data.



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4.4 Recommended fuse sizes and minimum cable area

WARNING!
An electrical shock or fire hazard is probable if the following electrical service guide recommendations are not followed. These recommendations are for a dedicated branch circuit sized for the rated output and duty cycle of the welding power source.

CAUTION!
Disconnect input power and secure employing "Lock-out/Tagging" procedures. Ensure input power line disconnect switch is locked (Lock-out/Tagging) in the "Open" position **before** removing input power fuses. Connection/disconnection should be carried out by competent persons.

Rebel EMP 285ic 3 PH	
Supply voltage (3Φ 50/60 Hz)	460 V ± 10%, 575 V ± 10%
Maximum recommended fuse* or circuit breaking rating *Time delay fuse	16 A
Fuse anti-surge type D MCB	20 A
Mains cable area	14 AWG (2.5 mm^2)
Maximum recommended extension cord length	49.0 ft (15 m)
Minimum recommended extension cord size	14 AWG (2.5 mm^2)

4.5 Supply from power generators

The power source can be supplied from different types of generators. However, some generators may not provide sufficient power for the welding power source to operate correctly.

Generators with Automatic Voltage Regulation (AVR) or with equivalent or better type of regulation, with rated minimum power 15 KW, are recommended.

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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!

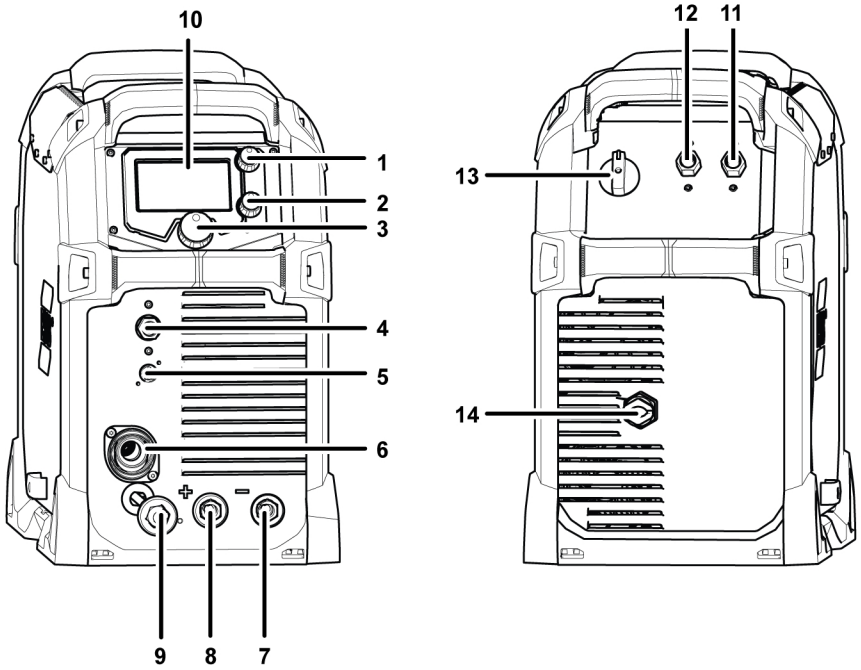
WARNING!
Electric shock! Do not touch the workpiece or the welding head during operation!

WARNING!
Assure that the side covers are closed during operation.

WARNING!
Rotating parts can cause injury, take great care.

NOTE!
When moving the equipment use intended handle. Never pull the cables.

5.1 Connections



1. Encoder (parameter adjust)
2. Encoder (parameter adjust)
3. Push button encoder (display navigation)
4. Gas outlet
5. Torch trigger/remote control connection
6. Torch and spool gun connection
7. Electrode negative terminal (-)
8. Electrode positive terminal (+)
9. Polarity changeover cable
10. Display
11. Gas inlet for MIG / MAG / GMAW
12. Gas inlet for TIG / GTAW
13. Mains supply switch, ON/OFF
14. Mains supply cable

5.2 Connecting welding and return cables

The power source has two outputs, a positive welding terminal (+) and a negative welding terminal (-), for connecting welding and return cables. The output to which the welding cable is connected depends on the welding method or type of electrode used.

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- For MIG / MAG / GMAW & MMA / SMAW / Stick welding, the welding cable can be connected to the positive welding terminal (+) or negative welding terminal (-), depending on the type of electrode used. The connection polarity is stated on the electrode packaging.
- For TIG / GTAW welding, the negative welding terminal (-) is used for the welding torch and the positive welding terminal (+) is used for the return cable.

1) Connect the return cable to the other output on the power source.

2) Secure the return cable's contact clamp to the workpiece, and make sure that there is a good contact between the workpiece and the output for the return cable on the power source.

5.3 Polarity change

The polarity changeover cable is used to select the correct polarity for the weld output. The correct polarity is determined by the wire that has been selected to complete the weld. To configure the power source to operate with electrode positive insert and secure the polarity changeover cable into the positive [+] terminal and the return lead into the negative [-] terminal. Be sure that the connections are tight. Secure the work clamp to the work piece in a clean, debris free location.

NOTE!
For some wires, it is recommended to use negative polarity such as self-shielded flux-core. See wire manufacturers recommendation

5.4 Installing spool

Rebel EMP 285ic 3 PH can be used with spool hub sizes of 4 in (100 mm), 8 in (200 mm), and 12 in (300 mm). See "TECHNICAL DATA" chapter for suitable wire dimensions for each wire type.

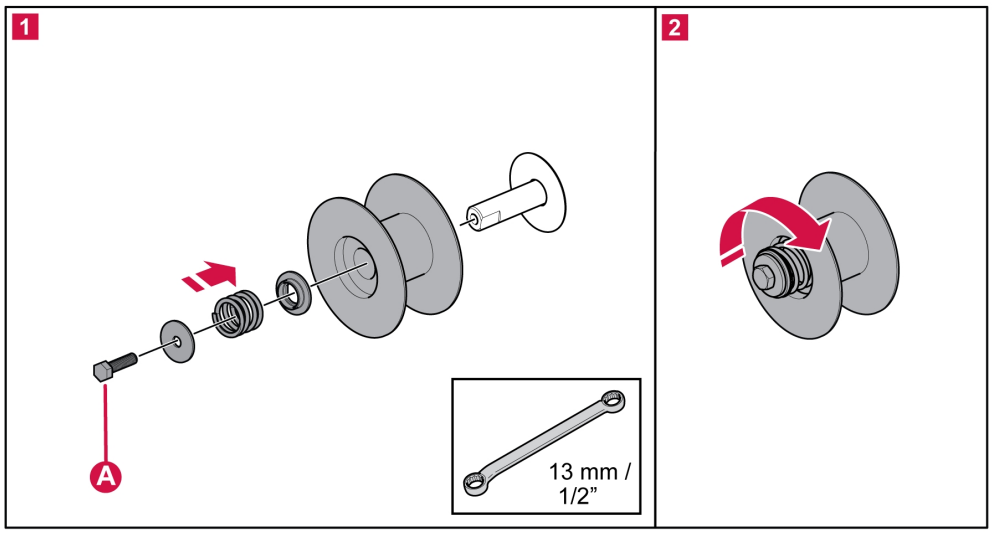
1) The spring sets the braking force working against the wire-feed motor and the pull of the feed rolls. Tighten bolt “A”, see following illustrations, hand tight.

2) Remove/install the spool.

3) Tighten the spool locking nut for:

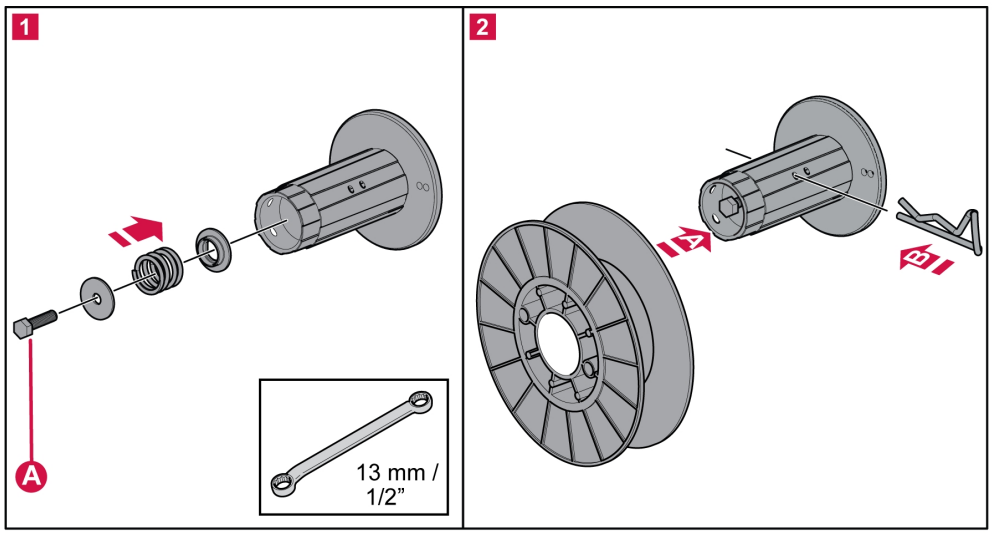
 © ESAB AB 2025

- 4 in (100 mm) spool



A. Spool hub retention and brake tension adjustment bolt.

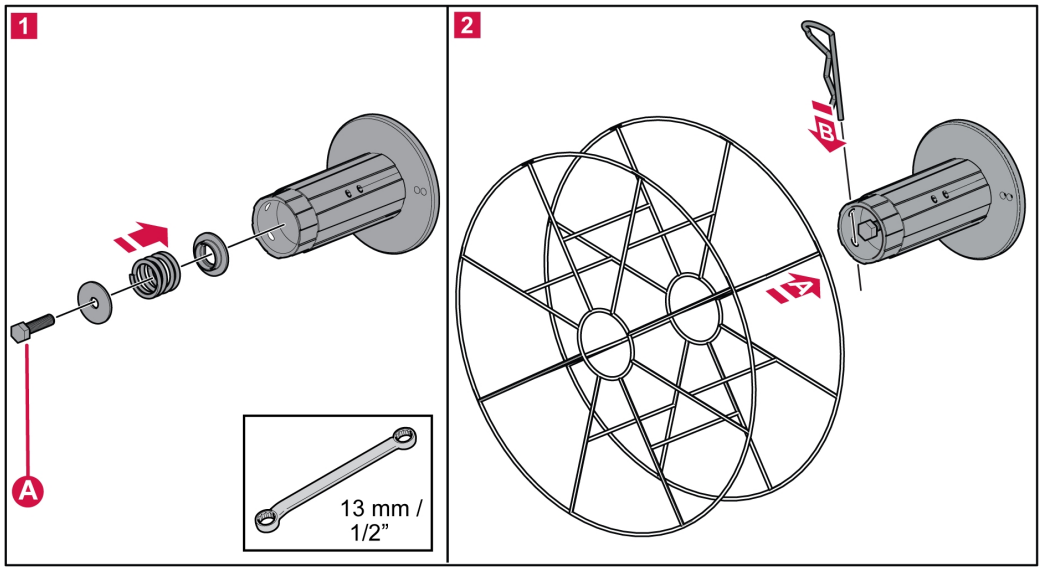
- 8 in (200 mm)



A. Spool hub retention and brake tension adjustment bolt.

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- 12 in (300 mm)



A. Spool hub retention and brake tension adjustment bolt.

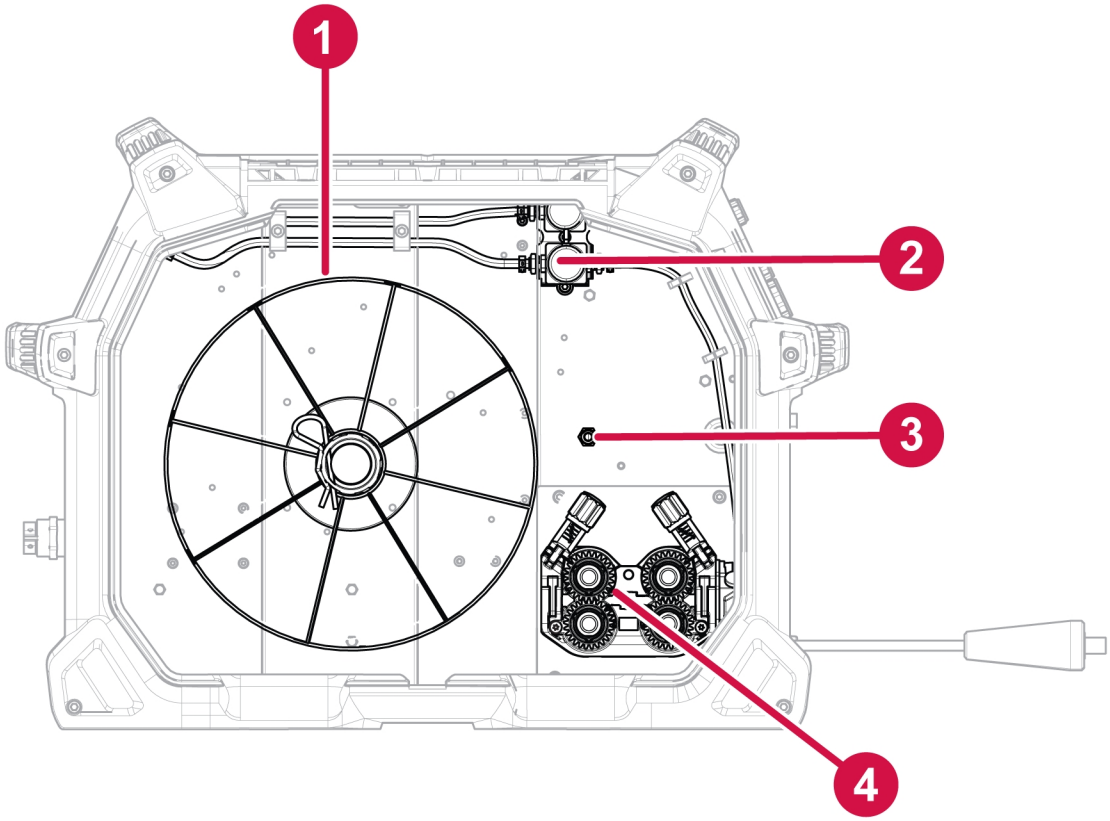
NOTE!
The larger spool may come in the wire form shown in the illustration or may be molded plastic form. Either mounts the same way as shown.

5.5 Installing and replacing wire

NOTE!
If installing aluminum wire, see "Welding with aluminum wire" chapter.

The Rebel EMP 285ic 3 PH handles spool sizes of 4 in (100 mm), 8 in (200 mm), and 12 in (300 mm). See "TECHNICAL DATA" chapter for suitable wire dimensions for each wire type.

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1. Wire spool
2. Gas valves
3. Jog/Purge switch
4. Wire drive assembly

WARNING!
Do not place or point the torch near the face, hand or body as this may result in injury.

WARNING!
Make sure that the power is turned off, before replacing or installing any parts.

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

NOTE!
Make sure the correct wire-feed rollers are selected.

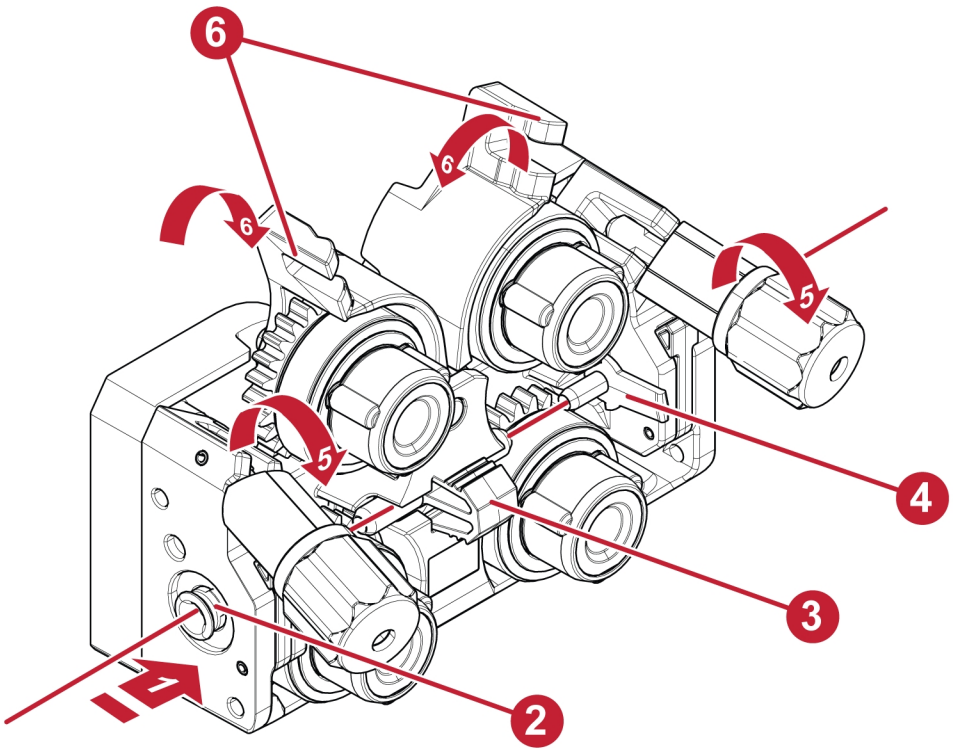
NOTE!
Use the correct contact tip in the welding torch for the wire diameter used.

5.5.1 Installing wire

CAUTION!
Too long a torch liner risks damage to the wire-feed assembly if forced to fit when attempting to connect the torch to the power unit.

Refer to the torch manual for instructions for torch liner replacement.

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1. Wire from spool
2. Wire inlet guide
3. Center wire guide
4. Wire outlet guide
5. Tensioner arm
6. Feed roll pressure arm

1) Open the wire spool side cover of the power source.

2) Install the new wire spool on to the spool hub.

3) Release the tensioner arm by pulling the tensioner arm up out of its detent and rotating it outward. The feed roll pressure arm will spring up.

4) Install rollers for selected wire size.

5) With a clean-cut wire, pull the wire from the wire spool and feed it into the wire inlet guide across the rear feed roll; through the center wire guide; across the front feed roll and into the wire outlet guide. Thread enough wire that it will extend past the front of the wire feed unit.

6) Close the drive roll pressure arms and secure the rear and front tensioner arms to secure wire in place.

7) Connect the torch assembly to the unit by inserting the end of the wire into torch connector and secure the torch in the drive assembly with the torch retention thumb screw.

8) Power up the power source.

9) With the torch cable laid out straight, feed the wire through the torch cable until the wire is visible at the end of the torch by pressing the jog switch or trigger switch on the torch.

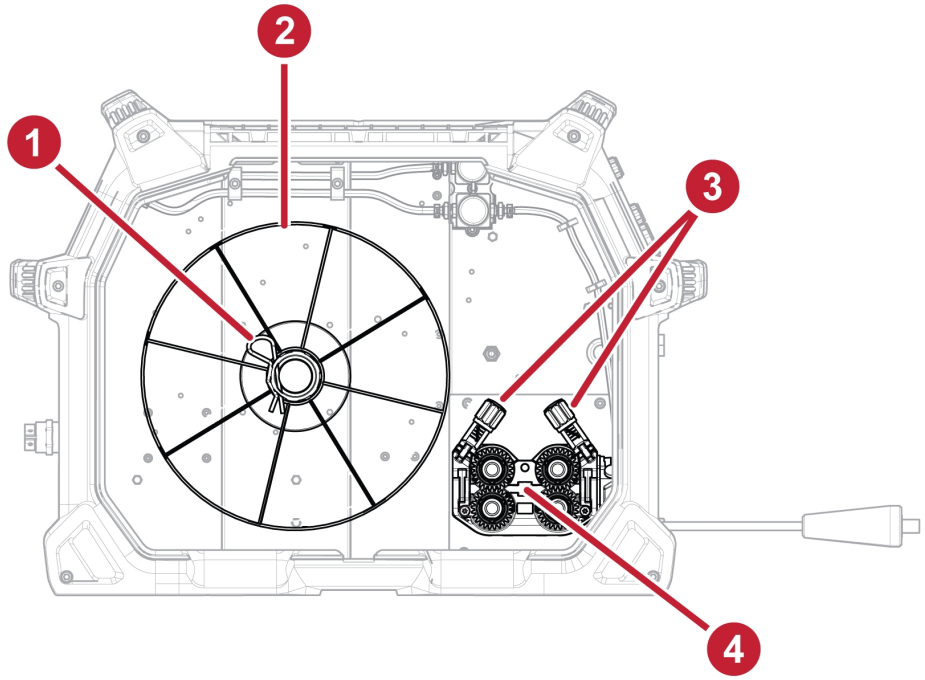
10) Set and verify the wire feed tension for correct wire feed pressure, see "Setting wire feed pressure" chapter.

After completion, close the wire spool side cover of the power source.

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5.5.2 Removing wire

1) Open the wire spool side cover of the power source.



1. Spool retention key
2. Wire spool
3. Tensioner arm
4. Wire drive assembly

2) Release the tensioner arms by pulling it up out of its detent and rotating it outward.

3) Cut the wire at the end of the torch near the contact tip.

4) Secure the wire by hand between the wire spool and the wire inlet guide.

5) Manually rewind the wire spool. Pay attention to not release the end of the wire and unwind the spool.

6) Secure the end of the wire to the wire spool basket or plastic spool.

7) Remove spool retention key.

8) Remove wire spool.

5.6 Welding with aluminum wire

NOTE!
Make sure to use the correct size contact tip, feed rolls, wire guides and torch liner specific to aluminum.

To weld aluminum using the standard supplied torch, refer to MIG / MAG / GMAW torch instruction manual for replacing standard steel torch conduit liner with a Teflon torch conduit liner.

To MIG / MAG / GMAW weld with aluminum wire, use optional spool gun or push-pull torch for the best results. Refer to the specific torch instruction manual for the correct set up.

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5.7 Setting feed roll pressure

NOTE!
Over tension of the brake will cause rapid wear of mechanical wire feeder parts, overheating of electrical components and possibly more incidences of contact tip burn back.

The feed roll pressures should be adjusted independently, determined by the wire type and diameter. The front feed roll pressure should be slightly higher than the rear feed roll pressure.

1) Make sure that the wire moves freely through the wire guides and set the feed roll pressure. Do not over tighten.

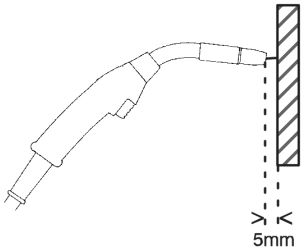


Figure A

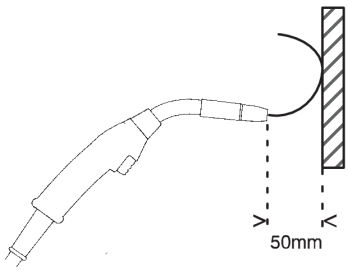


Figure B

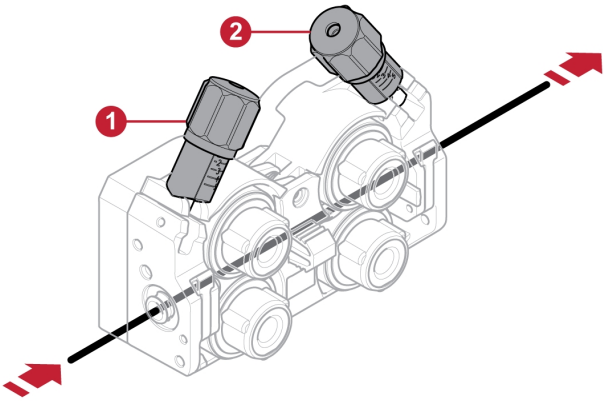
2) To check that the feed pressure is set correctly, feed the wire against a non-conductive surface. e.g. a piece of wood.

   While holding the welding torch approximately 3/16 in (5 mm) from the piece of wood (figure A) the feed rolls should slip.

   While holding the welding torch approximately 2.0 in (50 mm) from the piece of wood, the wire should feed out and bend (figure B).

   The table below is a guideline showing approximate feed roll tensioner settings for standard conditions with correct spool brake force. If the torch cables are long, dirty or worn, the pressure setting may need to be increased. Always check the feed roll pressure setting on a case-by-case basis by feeding out the wire against an non-conductive object as described above.

		Wire diameter (mm) (in.)	0.6 **.024**	0.8 **.030**	1.0 **.040**	1.2 **.045**	1.4 **.052**	1.6 **1/16**
			Pressure setting					
Wire material	Fe, Ss	Tensioner arm 1	2.5					
		Tensioner arm 2	3–3.5					
	Cored	Tensioner arm 1			2			
		Tensioner arm 2			2.5–3			



1. Tensioner arm 1
2. Tensioner arm 2

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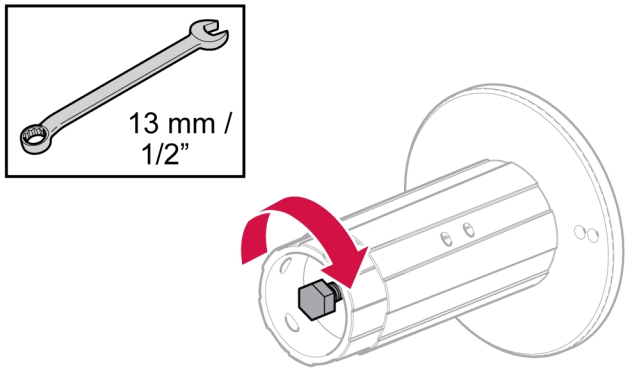
3) The wire spool hub incorporates a friction brake. If it is necessary, adjustment can be made by turning the spool locking nut inside the open end of the hub clockwise to tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 1/8-3/16 in (3-5 mm) after release of the trigger. The electrode wire should be slack without becoming dislodged from wire spool.

5.8 Spool hub brake

The spool 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 spool.

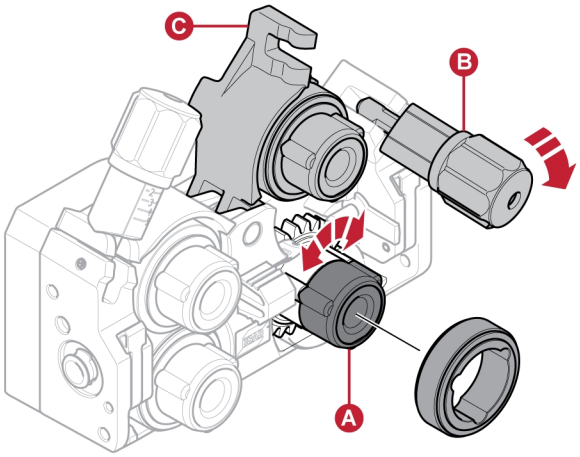
Do not overload the spool brake! A too high brake force may overload the motor and reduce the welding result.

The spool brake force is adjusted using the 1/2 in (13 mm) hexagon Allen screw in the middle of the spool locking bolt.



5.9 Changing the feed rolls

When changing to a different wire, the feed rolls should also be changed to match the new wire type or diameter. For more information about correct feed rolls see the WEAR PARTS appendix.



1) Open the wire spool side cover of the power source.
2) Unlock the feed rolls by rotating the feed roll quick lock (A) for each feed roll.
3) Remove the pressure from the feed roll pressure arms (C) by rotating the wire tensioner arms outward.
4) Remove the feed rolls and install the new ones.

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5) Reapply pressure to the feed rolls, by pushing the feed roll pressure arms (C) down and secure them with the tensioner arms (B).

6) Lock the feed rolls by rotating the feed roll quick locks (A).

7) Close the wire spool side cover of the power source.

NOTE!
When installing the feed rolls, ensure that the wire guides do not interfere with the feed roll. If this occurs, adjust the wire guide and continue installing the feed roll.

5.10 Removing/installing/adjusting wire feed guides

NOTE!
The wire outlet guides must be selected to match the wire diameter and wire type.

There are three wire guides: wire inlet guide, center wire guide, and wire outlet guide. The wire inlet guide and center wire guide are common for all wire types and diameters.

When changing to a different type of wire, the wire guides may need 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.

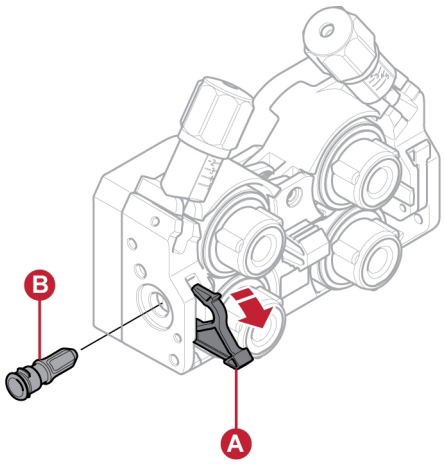
Wire inlet guide

1) Unlock the wire inlet guide quick lock (A) by folding it out.

2) Remove the wire inlet guide (B).

3) Fit the correct wire inlet guide (according to the WEAR PARTS appendix).

4) Lock the new wire inlet guide into place using the wire guide quick lock (A).

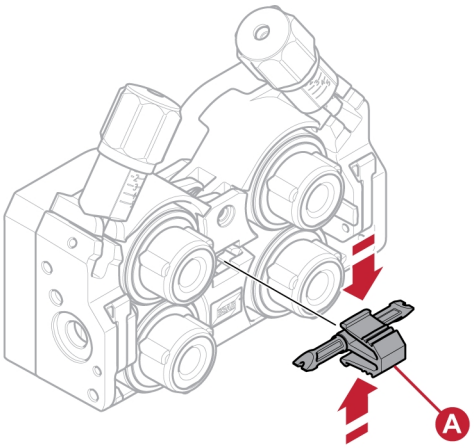


Center wire guide

1) To remover the center wire guide, pinch the center of the wire guide and pull out the guide (A).

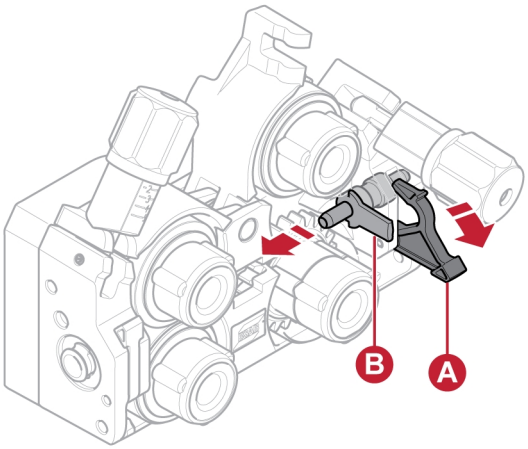
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2) To install the center wire guide, pinch the guide and push it into place. The clips will lock the guide into place.



Outlet wire guide

1) To remove the wire outlet guide, release the pressure on the front feed roll pressure arm by rotating the front tensioner arm outward.
2) Remove the lower front feed roll.
3) Remove the center wire guide.
4) Unlock the wire outlet guide quick lock (A) by folding it out.
5) Remove the wire outlet guide (B).
6) Install the new wire outlet guide.
7) Lock the new wire outlet guide into place using the wire guide quick lock (A).
8) Reinstall the center wire guide.
9) Reinstall the lower front feed roll.



5.11 Shielding gas

The choice of suitable shielding gas depends on the material. Typically, mild steel is welded with mixed gas (Ar + CO_2) or 100% carbon dioxide (CO_2). Stainless steel can be welded with mixed gas (Ar + CO_2) or trimix (He + Ar + CO_2). Aluminum and silicon bronze use pure argon gas (Ar). In the sMIG

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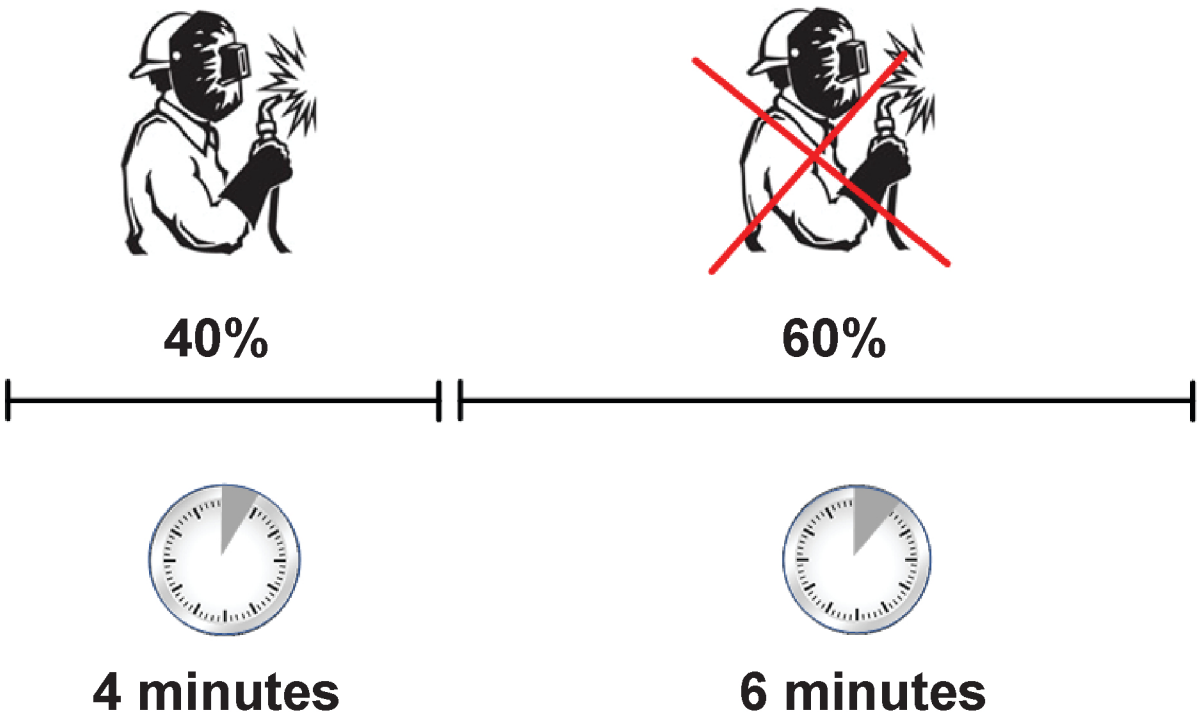
mode (see "sMIG mode" section in the "CONTROL PANEL" chapter), the optimal welding arc with the gas used will be automatically set.

5.12 Duty cycle

The duty cycle refers to the time as a percentage of a 10-minute period that you can weld or cut at a certain load without overloading. If this occurs, let the unit cool down for 10 minutes, lower amperage, voltage, or duty cycle before welding.

WARNING!
Exceeding duty cycle can damage power source or torch and void warranty.

Example: If the power source operates at a 40% duty cycle, it will provide the rated amperage for a maximum of 4 minutes out of every 10-minute period. The remaining time, 6 minutes, the power source must be allowed to cool down.



Example of 40% duty cycle

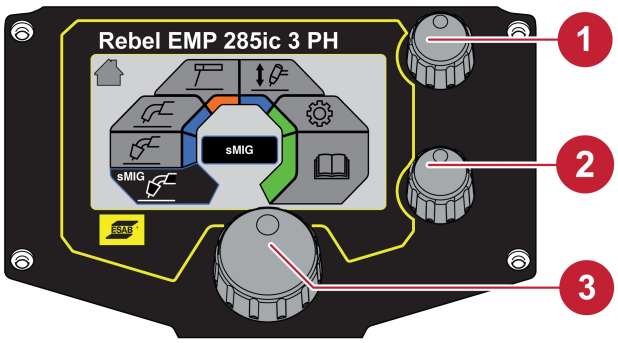
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6 USER INTERFACE

General safety regulations for handling the equipment can be found in the "Safety precautions" section in the "SAFETY" chapter of this manual. General information about operation can be found in the "OPERATION" chapter of this manual. Read both chapters thoroughly before you start using the equipment!

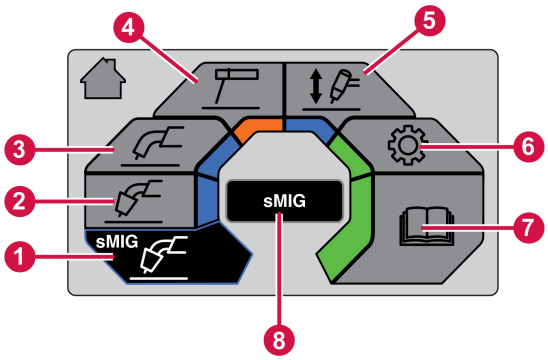
NOTE!
After power-on has completed the main menu appears on the control panel.

6.1 How to navigate



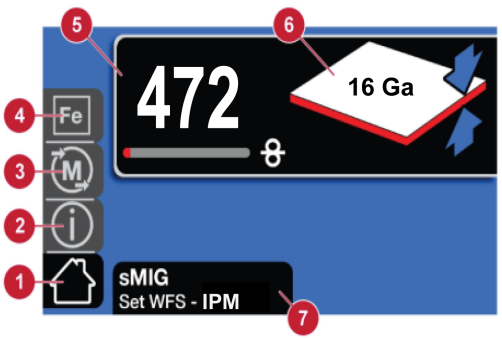
1. Upper encoder
   a) Set current output value
   b) Set wire-feed speed
2. Lower encoder
   a) MIG / MAG / GMAW Voltage Selection
   b) sMIG Voltage Trim
   c) MMA / SMAW / Stick Mode: Output ON/OFF
3. Menu navigation: Push button encoder

6.2 Main menu



1. sMIG mode
2. Manual MIG / MAG / GMAW mode
3. Flux-cored wire mode
4. MMA / SMAW / Stick mode
5. Lift-TIG mode & DC Pulse TIG mode
6. Settings
7. User manual
8. Dialog box

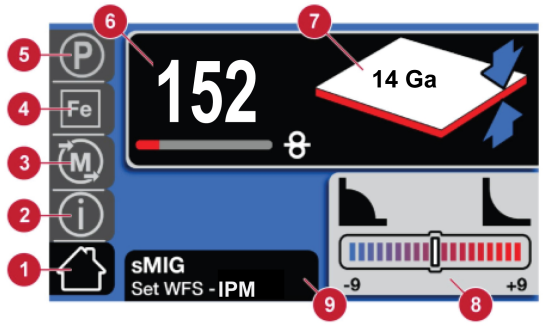
6.3 sMIG mode: Basic



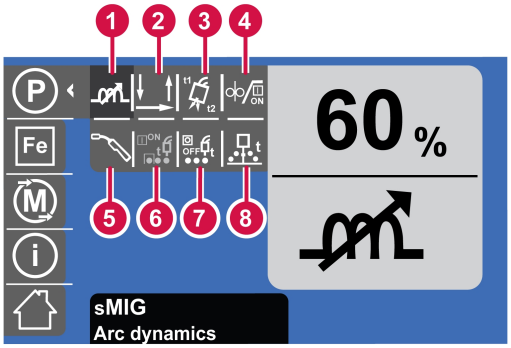
1. Home screen selection
2. Information
3. Memory
4. Material selection
5. Wire feed speed indication
6. Material thickness indication
7. Dialog box

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6.4 sMIG mode: Advanced

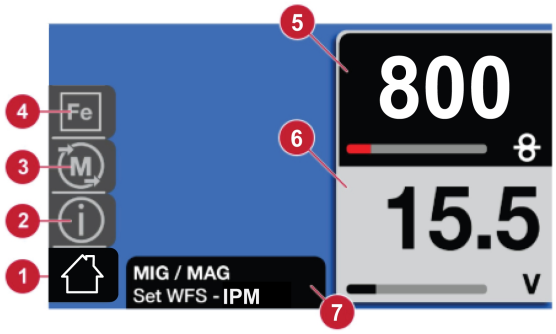


1. Home screen selection
2. Information
3. Memory
4. Material selection
5. Parameters
6. Wire feed speed indication
7. Material thickness indication
8. Voltage trim indication
9. Dialog box



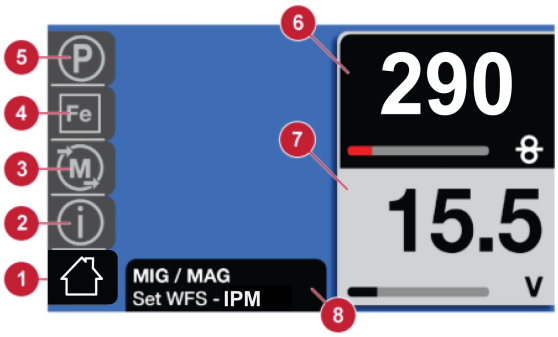
1. Arc dynamics
2. 2T / 4T
3. Pre / post flow
4. Creep start on / off
5. MIG / spool / pushpull torch
6. Spot time on adjustment
7. Spot on / off
8. Burn back

6.5 Manual MIG mode: Basic



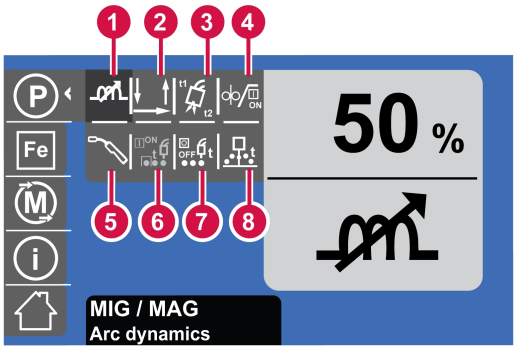
1. Home screen selection
2. Information
3. Memory
4. Material selection
5. Wire feed speed indication
6. Voltage indication
7. Dialog box

6.6 Manual MIG mode: Advanced



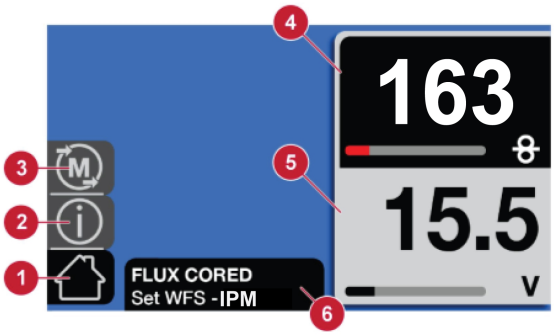
1. Home screen selection
2. Information
3. Memory
4. Material selection
5. Parameters
6. Wire feed speed indication
7. Voltage indication
8. Dialog box

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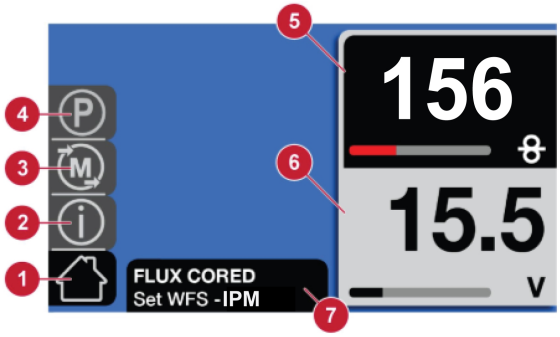
1. Arc dynamics
2. 2T / 4T
3. Pre / post flow
4. Creep start on / off
5. MIG / spool / pushpull torch
6. Spot time on adjustment
7. Spot on / off
8. Burn back

6.7 Flux cored wire mode: Basic

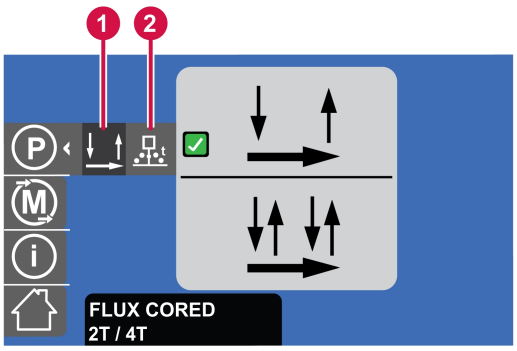


1. Home screen selection
2. Information
3. Memory
4. Wire feed speed indication
5. Voltage indication
6. Dialog box

6.8 Flux cored wire mode: Advanced



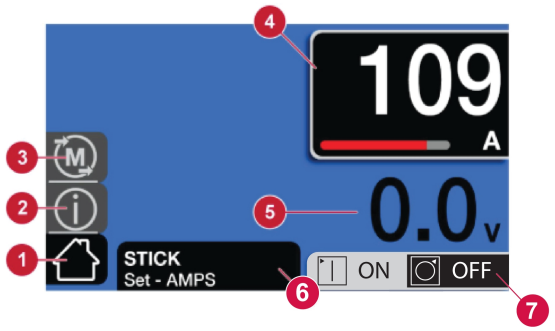
1. Home screen selection
2. Information
3. Memory
4. Parameters
5. Wire feed speed indication
6. Voltage indication
7. Dialog box



1. 2T / 4T
2. Burn back

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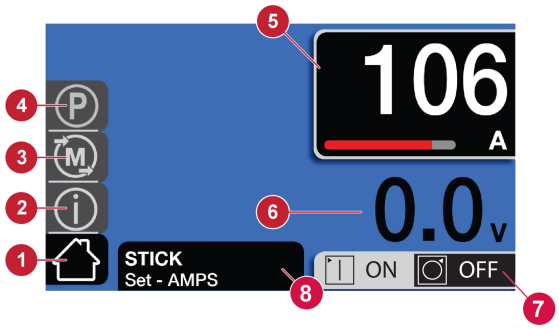
6.9 MMA / SMAW / Stick mode: Basic



1. Home screen selection
2. Information
3. Memory
4. Amperage indication
5. Output voltage indication
6. Dialog box
7. Output ON/OFF indication

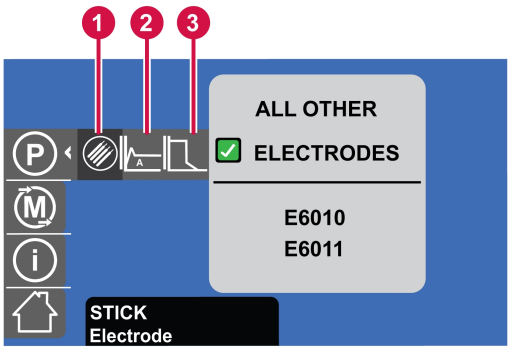
Blue user interface background changes to orange when the output is "ON" (enabled).

6.10 MMA / SMAW / Stick mode: Advanced



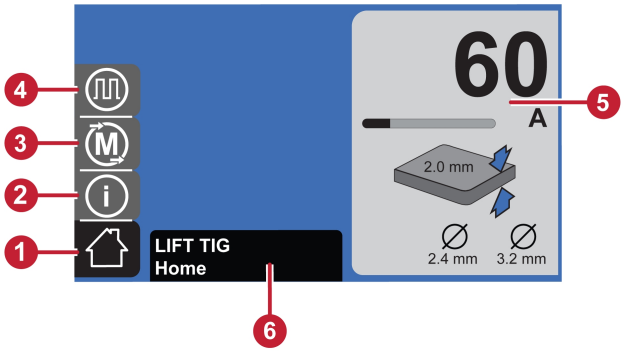
1. Home screen selection
2. Information
3. Memory
4. Parameters
5. Amperage indication
6. Output voltage indication
7. Output ON/OFF indication
8. Dialog box

Blue user interface background changes to orange when the output is "ON" (enabled).



1. Stick electrode selection
2. Hot start
3. Arc force

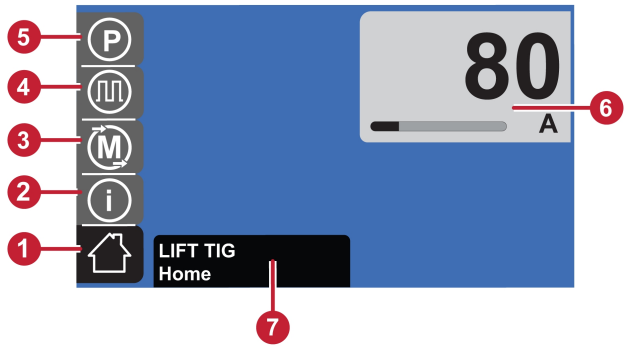
6.11 Lift-TIG mode: Basic



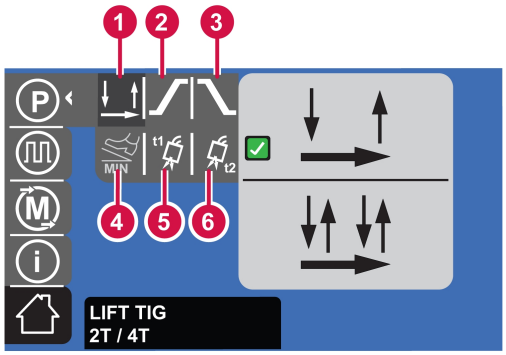
1. Home screen selection
2. Information
3. Memory
4. Pulse selection
5. Amperage indication
6. Dialog box

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6.12 Lift-TIG mode: Advanced

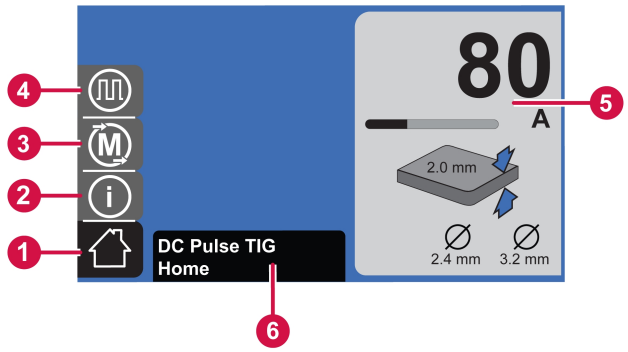


1. Home screen selection
2. Information
3. Memory
4. Pulse selection
5. Parameters
6. Amperage indication
7. Dialog box



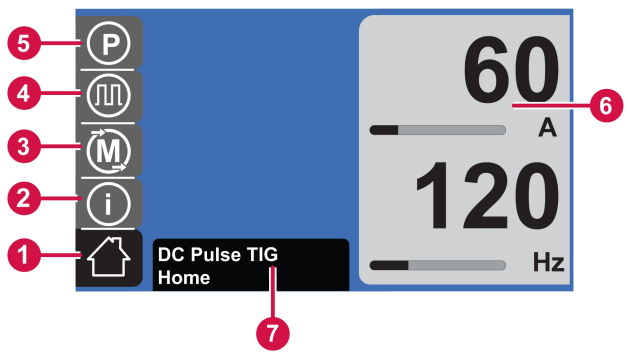
1. 2T / 4T
2. Upslope
3. Downslope
4. Remote minimum setting (disabled, will be enabled once the foot pedal is connected)
5. Pre-flow
6. Post-flow

6.13 DC Pulse TIG mode: Basic



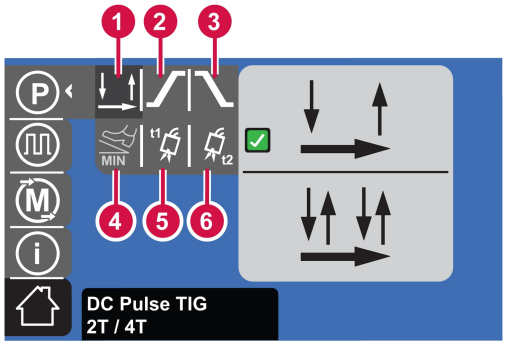
1. Home screen selection
2. Information
3. Memory
4. Pulse selection
5. Amperage indication
6. Dialog box

6.14 DC Pulse TIG mode: Advanced



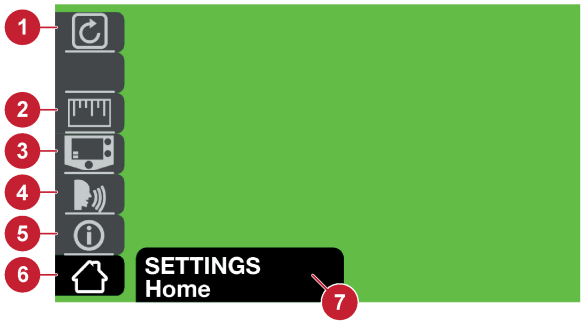
1. Home screen selection
2. Information
3. Memory
4. Pulse selection
5. Parameters
6. Amperage indication
7. Dialog box

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1. 2T / 4T
2. Upslope
3. Downslope
4. Remote minimum setting (disabled, will be enabled once the foot pedal is connected)
5. Pre-flow
6. Post-flow

6.15 Settings



1. Reset mode selection
2. Unit of measure selection
3. Basic or advanced selection
4. Language selection
5. Information
6. Home screen selection
7. Dialog box

6.16 User manual information

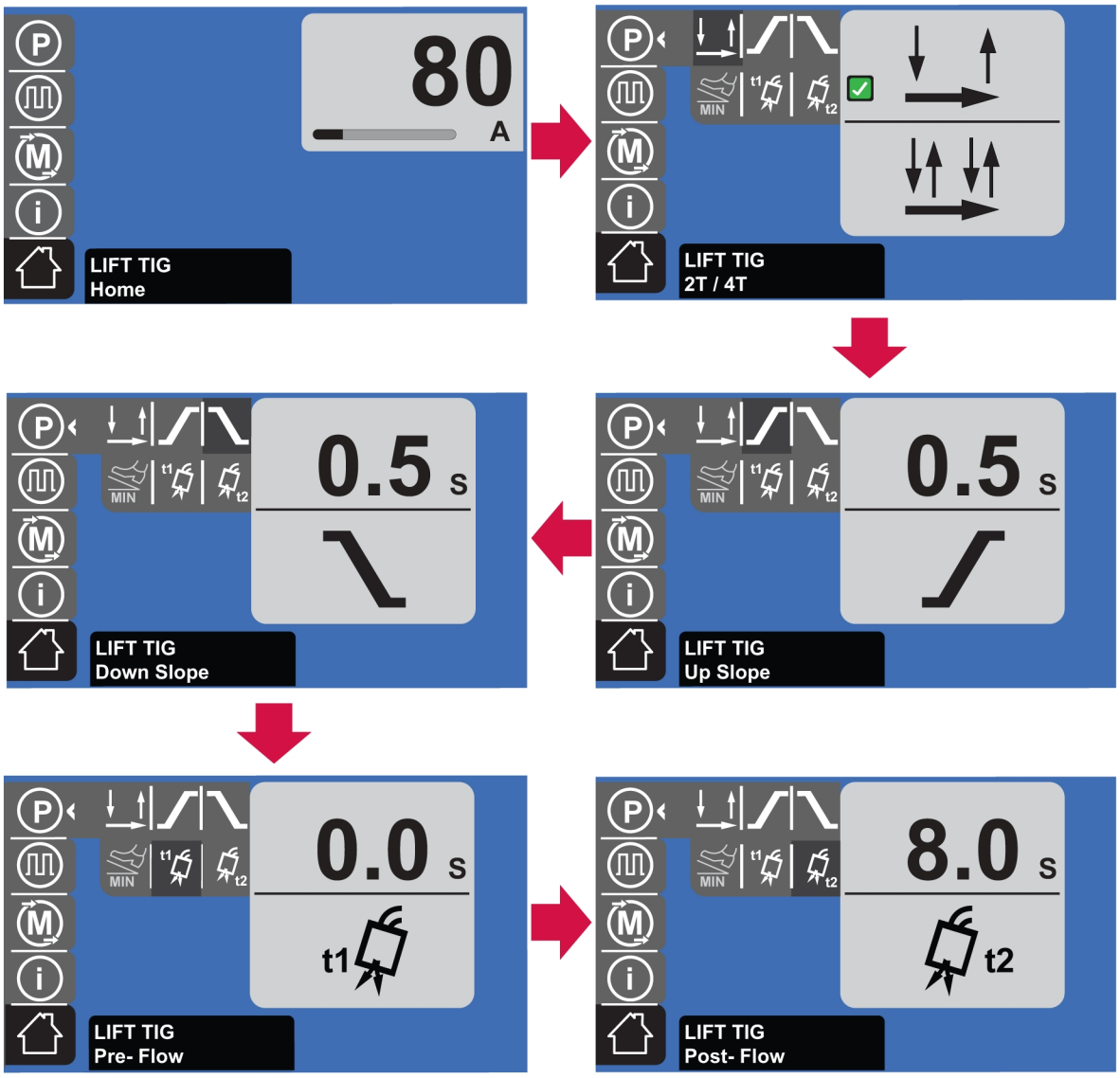


1. Maintenance information
2. Wear part information
3. Operation information
4. Home screen selection
5. Dialog box

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6.17 LIFT GTAW welding

Below illustration shows the navigation/setup of LIFT TIG Welding in advanced mode.

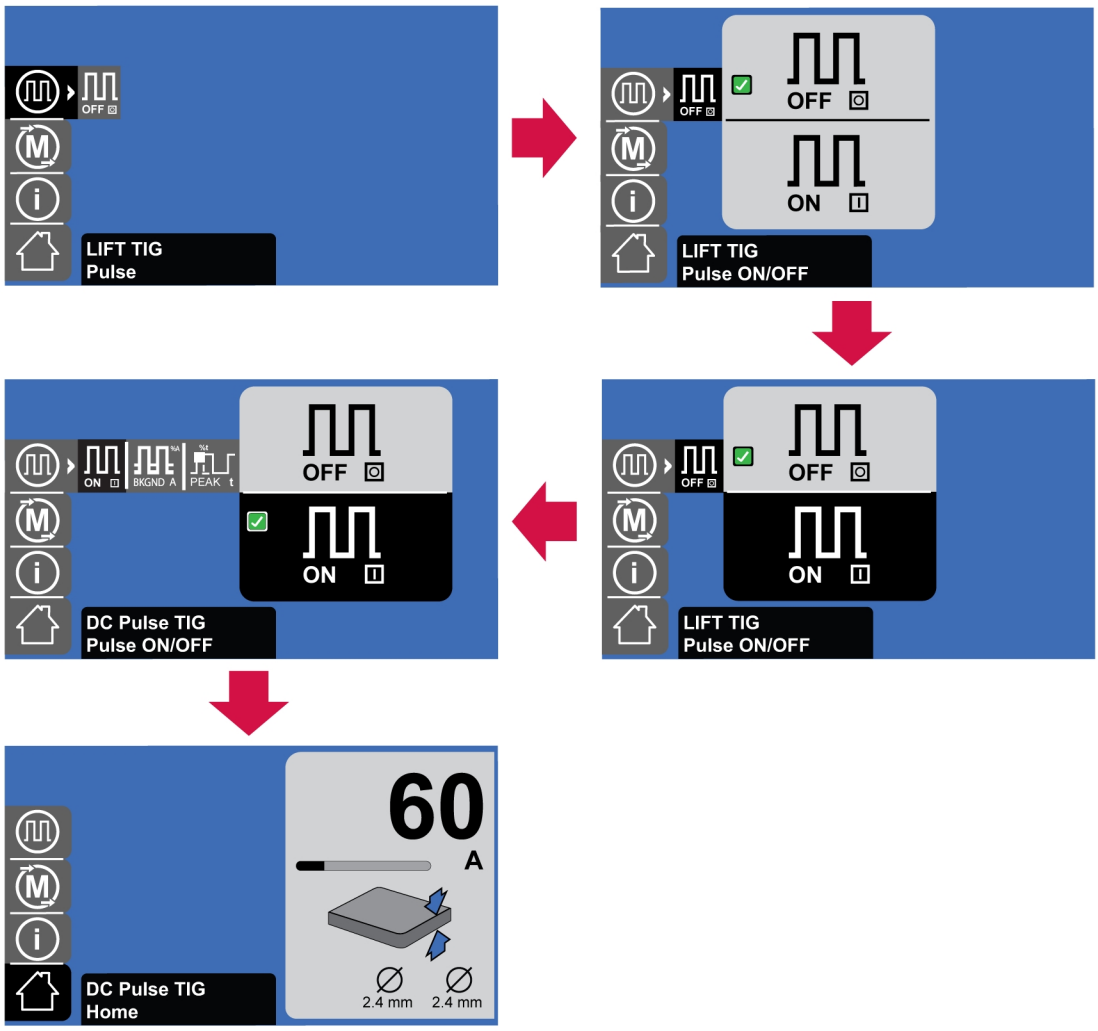


6.18 DC PULSE GTAW

DC Pulse TIG welding is used mainly on thin metals but can also be used on thicker material based on the application. Pulsing allows the user to control the amount of heat input that the work piece is subjected to. Pulse setting gives user more control over the weld puddle and weld process.

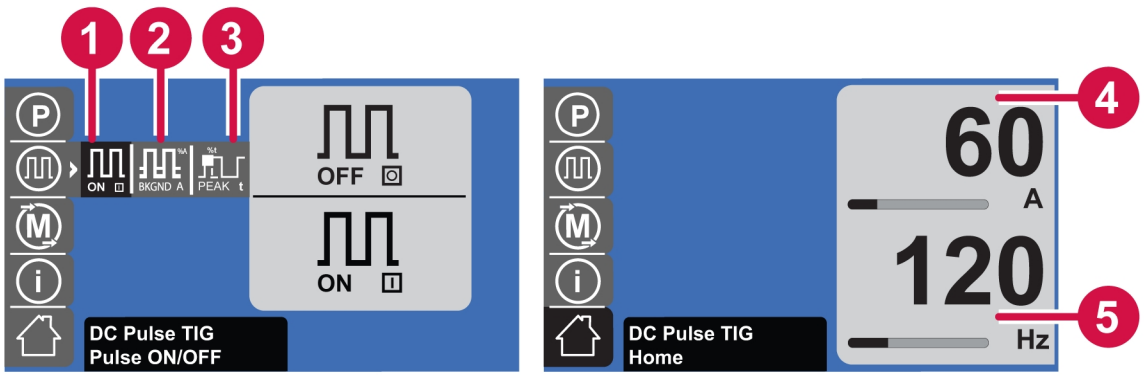
Basic mode
In basic mode DC Pulse TIG has default settings as Background current = 50%, Peak Time = 50%, PPS = 2. User must be in advance mode to adjust these parameters. Below illustration shows the navigation/setup of DC Pulse TIG in basic mode.

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Advanced mode

In advanced mode, the user has the ability to adjust the DC Pulse TIG parameters as explained below.



1. Pulse ON/OFF
2. Background Current (%)
3. Peak Time (%)
4. Peak Current (A)
5. Frequency (Hz)

Background Current (%): Background current is the amount of the current at which the DC Pulse TIG waveform achieves as a percentage (%) of the peak current value. The background current is adjusted in the pulse menu. Range can be adjusted between 1 and 99%.

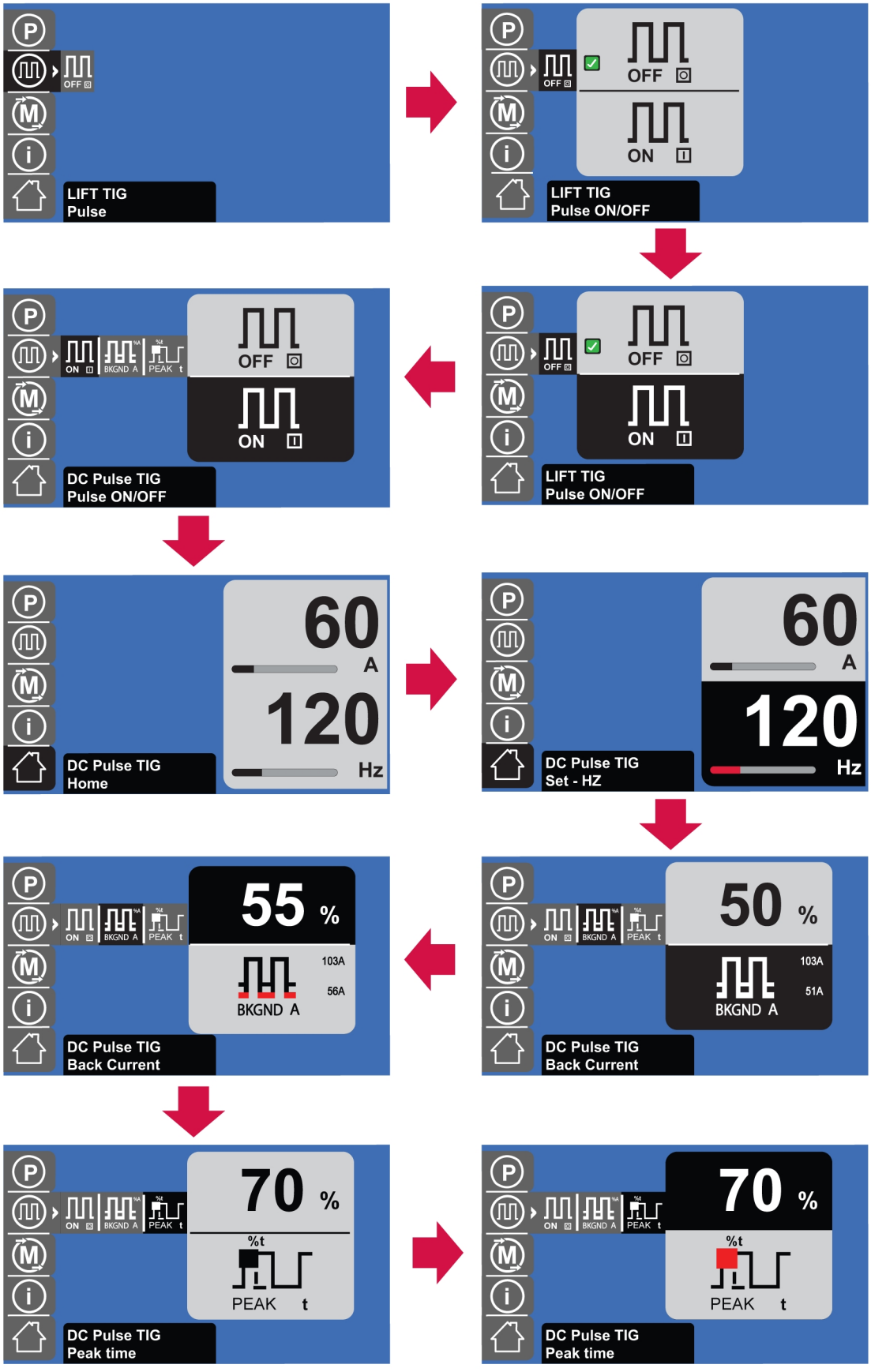
Peak Time (%): The peak time % is the time at which the DC Pulse TIG waveform is at peak current level. Range can be adjusted between 1 and 99%.

Peak Current (A): Peak current is set by using the Upper control knob. Range can be adjusted between 5 and 200 A.

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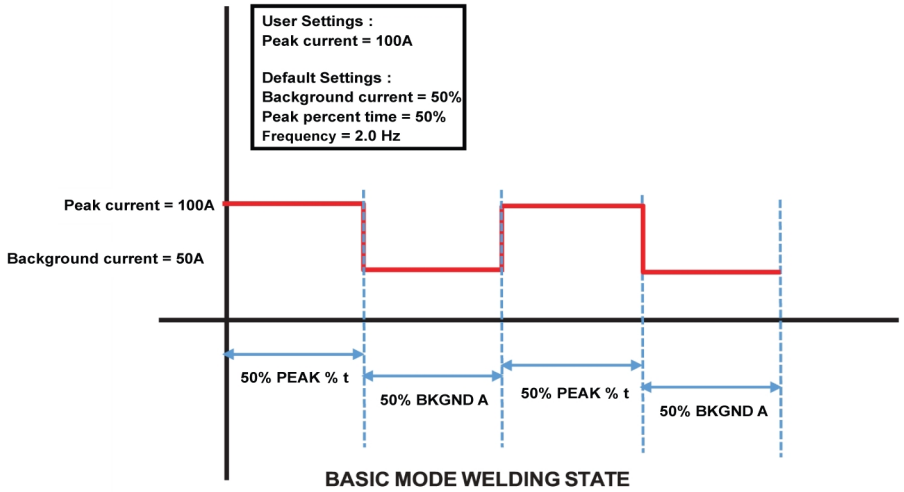
Frequency (Hz): The rate at which output current toggles between peak current and background current. Frequency can be adjusted by the Lower control knob. Range can be adjusted between 0.1 and 500.

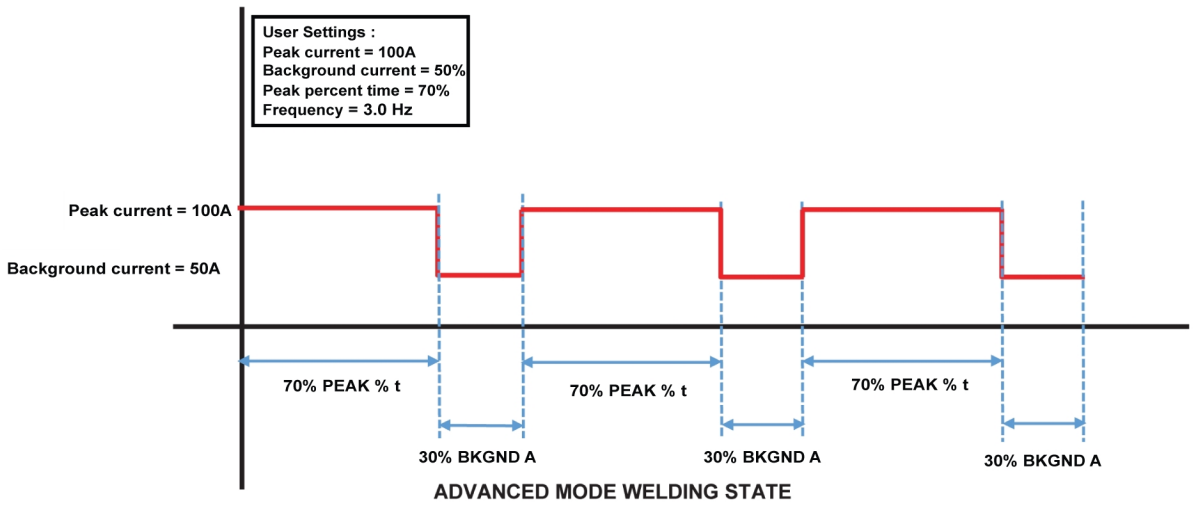
Below illustration shows the navigation/setup of DC Pulse TIG in advanced mode.



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Below illustration shows an example of DC Pulse TIG output current default waveforms in basic and recommended waveform in advanced modes.





DC Pulse TIG operation with remote current control connected
This power source supports following different Remote Current Controllers supplied by ESAB.

- Foot pedal
- Remote hand pendant
- Remote thumb controller (separate or as part of GTAW torch assembly)

When remote control is connected to the power source using 8-pin receptacle on the front panel, the background current calculations are different than with regular TIG torch with On/Off trigger. Without remote control the background current value is the set percentage of the user set current but with remote control it is the set percentage of the remote control set current. Example:

Basic mode: If user sets current as

I_{peak} (A) = 100

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The default settings for other parameters in basic mode are:

Background (%) = 50, Peak Time (%) = 50

Frequency (Hz) = 2.0, Background current (A) = 5

The calculated value of

Background current (A) = 50 A, (Peak current * 50% = 100 * 0.5)

For example, if remote control set to maximum then,

Peak current = 100 A, Background current = 50 A

but if user sets the remote control to 50% then,

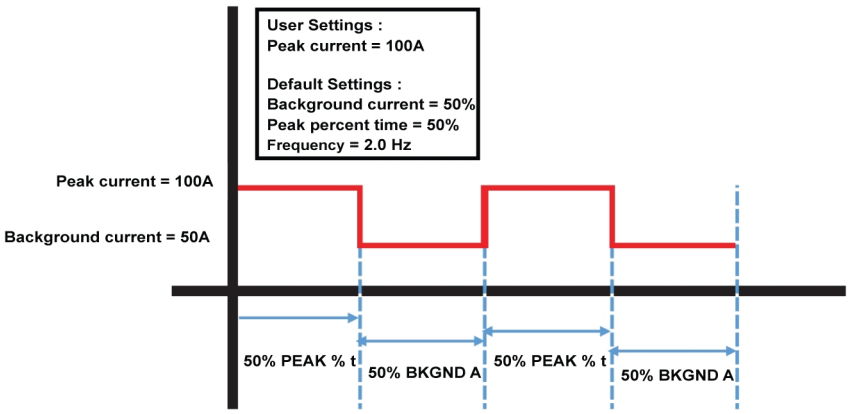
Peak current = 50 A, Background current = 25 A

and if user sets the remote control to 75% then,

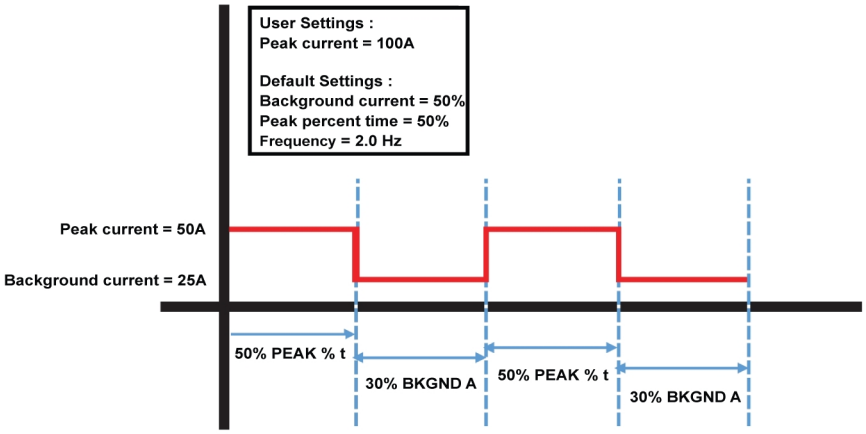
Peak current = 75 A, Background current = 37 A

Below illustration shows the above example in terms of output current waveforms in basic mode.

Basic mode welding state with remote set to maximum

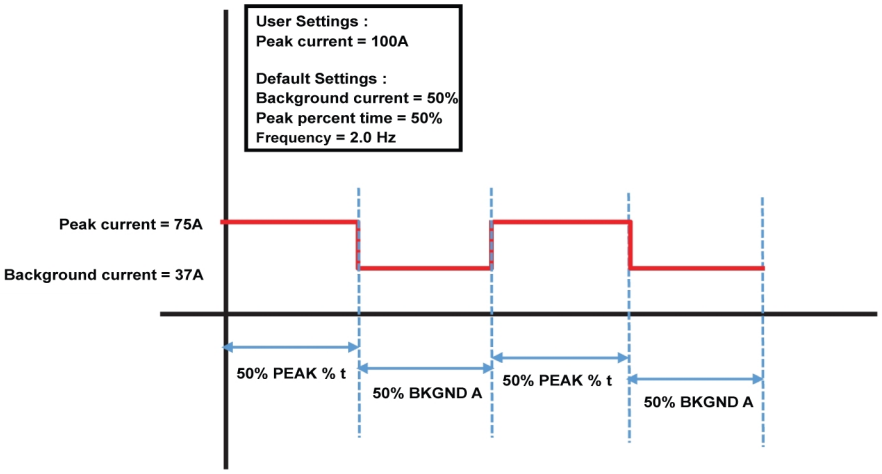


Basic mode welding state with remote set to 50%



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Basic mode welding state with remote set to 75%



Advanced mode - If user sets parameters as:
Peak current (A) = 100

The default settings for other parameters in basic mode are:

Background current (%) = 80 Peak Time (%) = 70

Frequency (Hz) = 3.0 I_{min} (A) = 5

The calculated value of

Background current (A) = 80 A (Peak current * 80% = 100 * 0.8)

This means if the remote controller set to all the way then,

Peak current = 100 A, Background current = 80 A

but if user sets the remote controller to half way then,

Peak current = 50 A, Background current = 40 A

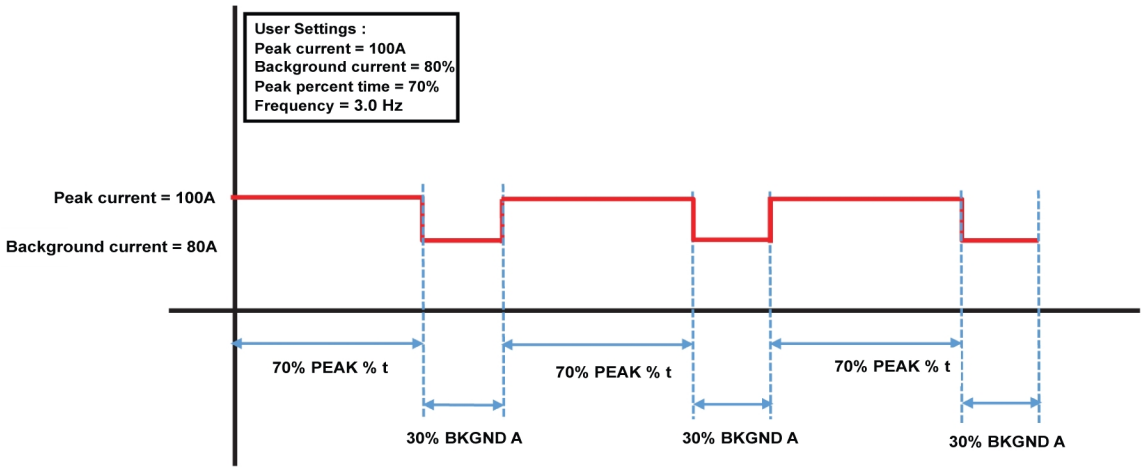
and if user sets the remote controller to three-fourth way then,

Peak current = 75 A, Background current = 60 A

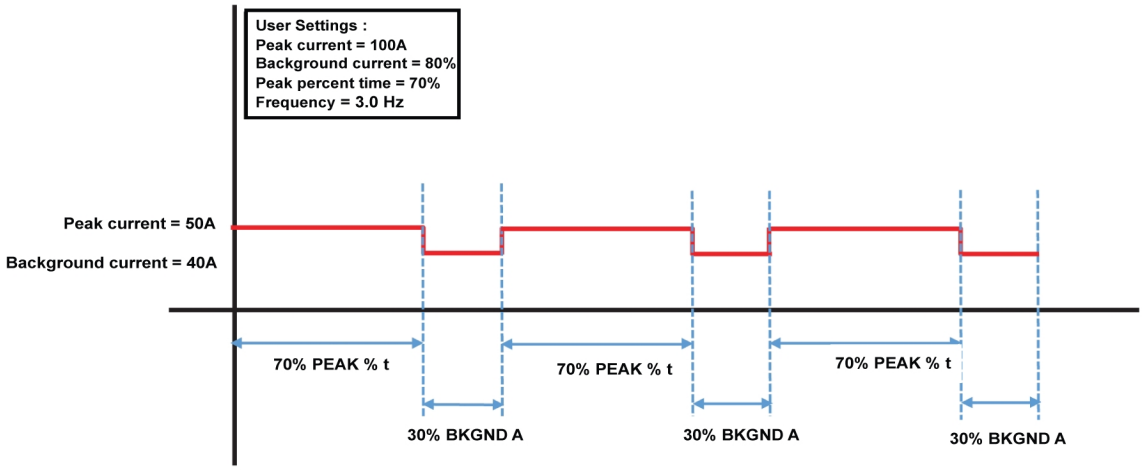
Below illustration shows the above example in terms of output current waveforms in advanced mode.

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Advanced mode welding state with remote set to maximum

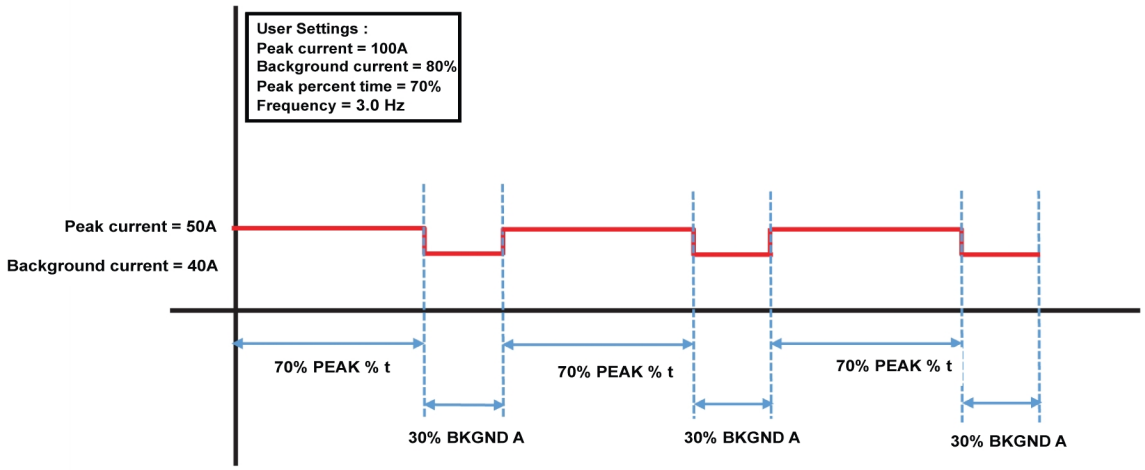


Advanced mode welding state with remote set to 50%



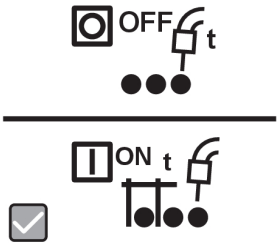
 © ESAB AB 2025

Advanced mode welding state with remote set to 75%

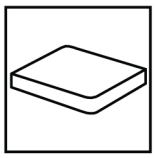


6.19 Icon reference guide

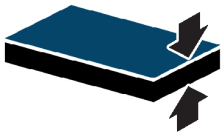
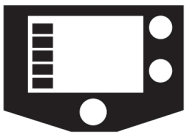
NOTE!
SCT – Short Circuit Termination is a method of automatic burn back at the end of the weld to electrically cut the wire by pulsing high current in a controlled process. The result is a nice clean wire end with no balling or sticking to the weld pool or tip. This allows exceptional restarting of subsequent welds. This feature is primarily for Mild and Stainless steel short-arc welding. For spray and flux core welding, traditional burn back is recommended. When burn back time is set to zero, SCT automatically is enabled. A non-zero burn back setting will disable SCT.

ICON	MEANING	ICON	MEANING
	**Home**		**Spot time on/off selection**
	**Burn back**	**SCT Selection on display**	**Short Circuit Termination**
	**Information**		**Wire feed speed**

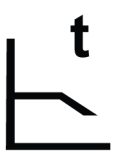
 © ESAB AB 2025

ICON	MEANING	ICON	MEANING
	MIG / MAG / GMAW Torch		Spot time on adjustment
	Push pull torch		Manual FCAW
	Parameters		Manual MIG / MAG / GMAW
	Percent		MMA / SMAW / Stick
	Pre-flow		Smart MIG / MAG / GMAW
	Post-flow		Lift TIG / GTAW
	Seconds		Saving
	Material selection		Cancel
	Spool gun		Remote
	Settings		Remote minimum setting
	2T, Trigger On/OFF		Volts

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ICON	MEANING	ICON	MEANING
	4T, Trigger Hold/Lock		User manual
A	Amps		Material thickness indication
	Arc force		Voltage trim indication
	Downslope		Advanced Settings
	Hot start		Basic Settings
	Arc dynamics		Language selection
	Memory		Stick electrode selection
	Upslope		Unit of Measure
	Wire diameter		Bead profile, concave
	Bead profile, convex		Gas selection
	Hot start time		Creep start

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ICON	MEANING	ICON	MEANING
	**Mild steel**		**Hotstart WFS**
	**Crater WFS**		**Crater time**
	**Output ON / OFF indication**		**Aluminum**
	**Stainless steel**		**DC Pulse TIG**

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7 MAINTENANCE

WARNING!
The mains supply must be disconnected during cleaning and maintenance.

CAUTION!
Only authorized persons may remove the cover of this product or carry out service, maintenance or repair.

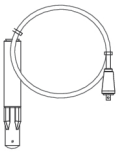
CAUTION!
The product is covered by manufacturer's warranty. Any attempt to carry out repair work by non-authorized service centers or personnel will invalidate the warranty.

NOTE!
Perform maintenance more often during severe dusty conditions.

NOTE!
There are no user serviceable parts inside of the power supply side of the Rebel EMP units. Any need for service on the electronics/electrical-power side should be referred to the nearest ESAB service center.

7.1 Routine maintenance

Maintenance schedule during normal conditions. Check equipment prior to every use.

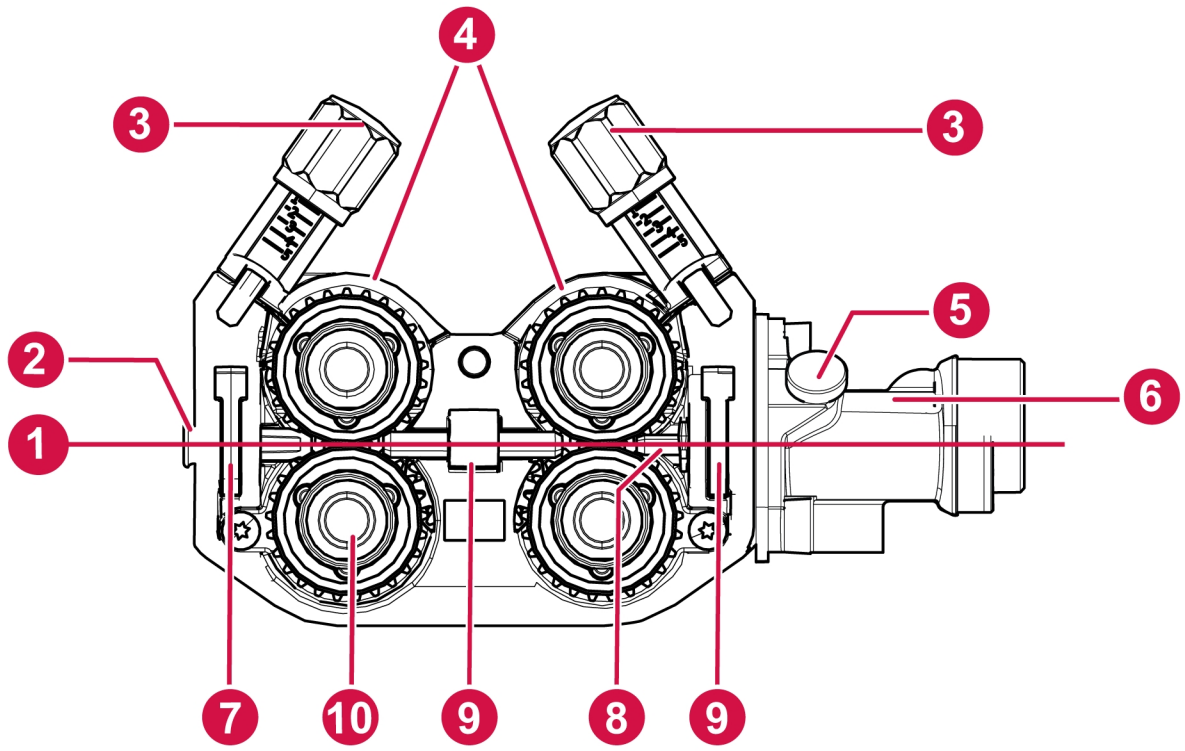
Interval	Area to maintain		
Every 3 months	 Clean or replace unreadable labels.	 Clean weld terminals.	 Check or replace weld cables.
Every 6 months	 Clean inside equipment. Use dry compressed air with reduced pressure.		

7.2 Cleaning the wire drive assembly

Best practice is to clean the wire drive assembly each time the wire spool is replaced.

WARNING!
Always use hand and eye protection when cleaning.

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1. Wire from spool
2. Wire inlet guide
3. Tensioner arm
4. Feed roll pressure arm
5. Thumb screw
6. TWECO torch adapter
7. Quick lock lever
8. Wire outlet guide
9. Center wire guide
10. Feed roll

1) Disconnect the electrical power source from the unit.

2) Open wire feed compartment door.

3) Release the tensioner arm by rotating them outward. The feed roll pressure arm opens automatically.

4) Use either a soft-bristle brush or a forced air source (max. 73 psi [5 bar]) to remove all debris.

5) Inspect all wire guides and the feed rolls for wear and replace as needed.

6) Remove the feed rolls and clean all feed rolls and drive gears with a soft brush or compressed air (max. 73 psi [5 bar]).

7) Inspect all wire guides and clean with compressed air (max. 73 psi [5 bar]). Replace if guides are worn.

8) Reinstall feed rolls and thread the wire through the wire drive assembly. Make sure the wire is in the grooves of the feed rolls.

9) Close the feed roll pressure arm and secure them with the tensioner arms.

10) Feed the wire through the torch until the wire exits the contact tip.

11) Close wire feed compartment door.

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7.3 Rebel EMP 285ic 3 PH power side maintenance

There are no user-serviceable parts on the power-side. In dusty environments, the power-side should be checked periodically for any dust/debris accumulation because of the fan forced-air cooling used on this side.

NOTE!
Because of the electro-static sensitive components and exposed circuit boards, any maintenance on this side should be done by an authorized ESAB service technician.

7.4 Torch liner maintenance

Refer to the torch instruction manual for replacement of the conduit liner.

Cleaning the torch liner

1) Remove the wire from the torch by pulling the wire out from the torch liner.
2) Disconnect the torch assembly from the unit.
3) Remove the liner from the torch and inspect it for damage or kinks. Clean the liner by blowing compressed air (max. 73 psi [5 bar]) through the end of the liner that was mounted closest to the unit.
4) Re-install the liner.
5) Reinstall the torch assembly from the unit.
6) Feed the wire through the torch until the wire exits the contact tip.

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8 TROUBLESHOOTING

8.1 Preliminary checks

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

Before attempting to troubleshoot, it is recommended to first perform a WELD DATA RESET (navigate to HOME/SETTING/RESET/WELD DATA RESET). A WELD DATA RESET of the system will restore the unit to its default welding condition. Performing this Reset will not lose any user stored memory values but will establish a baseline from which all troubleshooting should start. If the WELD DATA RESET is not successful it is recommended to perform a factory reset and repeat testing.

CAUTION!
A factory reset also erases all user stored memory locations. If this does not correct the problem, follow the table where possible.

Type of fault	Corrective action
Porosity within the weld metal	• Check gas bottle is not empty. • Check gas regulator is not closed. • Check gas inlet hose for leaks or blockage. • Check that the correct gas is connected and the correct gas flow is used. • Keep the distance between the MIG / MAG / GMAW torch nozzle and the work piece to a minimum. • Do not work in areas where drafts, which would disburse the shielding gas, are common. • Make sure the work piece is clean, with no oil or grease on the surface, before welding.
Wire feeding problems	• Make sure the wire spool brake is adjusted correctly. • Make sure the feed roller is correct size and not worn. • Make sure the correct pressure is set on the feed rollers. • Make sure the proper direction of motion is set based on the wire type (into the weld pool for aluminum, away from the weld pool for steel). • Make sure the correct contact tip is used and it is not worn. • Make sure liner is the right size and type for wire. • Make sure the liner is not bent so that friction is caused between the liner and the wire.
MIG / MAG / GMAW/ FCAW welding problems	• Make sure the MIG torch is connected to the correct polarity. Refer to the electrode wire manufacturer for the correct polarity. • Replace contact tip if it has arc marks in the bore causing excessive drag on the wire. • Make sure the correct shielding gas, gas flow, voltage, welding current, travel speed and MIG torch angle is used. • Make sure the work lead has proper contact with the work piece.
MMA / SMAW / Stick basic welding problems	• Make sure you are using the correct polarity. The electrode holder is usually connected to the positive polarity and the work lead to the negative polarity. Consult the electrode data sheet.

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Type of fault	Corrective action
TIG / GTAW welding problems	• Make sure the TIG / GTAW torch is connected to the power source: Connect the TIG / GTAW torch to the negative [-] welding terminal. Connect the welding ground cable to the positive [+] welding terminal. • Use only 100% Argon gas for TIG / GTAW welding. • Make sure the regulator/flow meter is connected to the gas bottle. • Make sure the gas pipe for the TIG / GTAW torch is connected to the gas outlet connector on the front of the power source. • Make sure the work clamp has proper contact with the work piece. • Make sure the gas bottle is opened and check the gas flow rate on the regulator/flow meter. The flow rate should be between 10 - 25 CFH (4.7 – 11.8 l/min). • Make sure the power source is turned on and TIG / GTAW welding process is selected. • Make sure all connections are tight and leak-free.
No power/No arc	• Check that the input power supply switch is turned on. • Check if a temperature fault is shown on display. • Check if system breaker is tripped. • Check that the input power, welding and return cables are correctly connected. • Check that the correct current value is set. • Check the input power supply fuses/breakers.
The overheating protection trips frequently.	• Make sure that you are not exceeding the recommended duty cycle for the weld current you are using. • Make sure the air inlets or outlets are not clogged. • Make sure fans are operating when welding.

8.2 User interface (UI) software displayed error codes

The following table exhibits fault codes that may appear to assist in troubleshooting.

Severity level meaning:

- **(C)** Critical service required - Unit not functional or locked, not recoverable
- **(NC)** Non-Critical - Service may be desired, unit functional with limited performance
- **(W)** Warning - Unit functional and will recover on its own

Error code	Severity level	Functional circuit failure explanation
001	**W**	PFC heatsink, IGBT heatsink or main transformer has overheated > 185 °F (85 °C).
002	**W**	Output diode temperature fault, analog temperature sensor.
003	**W/C**	**Warning** - If occurred during load/arc-start, cause is due to low input AC volts - Err009 **Critical** - If occurred at power-up under no-load condition. DC Bus (400 V) fault droop under load, PFC not supplying 400 V to inverter.
004	**C**	Output voltage is above VRD levels when VRD switch is active.

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Error code	Severity level	Functional circuit failure explanation
005 – 007		(reserved)
008	**C**	OCV error, output voltage not sensed at control board CN1 as expected
009	**W**	Low voltage error, AC mains voltage is less than 108 V AC, this could trip Err 003
010		(reserved)
011	**C**	User has attempted a parameter or factory reset, and this was not confirmed by the system.
012	**C**	Communication link down, no communication between UI and Ctrl PCB at CN6
013	**C**	Low internal power supply (IPS) voltage error, +24 V IPS is less than 22 V DC
014	**C**	Secondary current sensor output not detected at Control PCB CN18
015 – 019		(reserved)
020	**C**	No image found in flash
021	**C**	The image read from the flash is corrupted
022	NC	Failed two attempts of saving user memory to permanent memory in SPI flash.
023	NC	Failed two attempts of recovering user memory permanent memory from SPI flash.

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9 ORDERING SPARE PARTS

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

Rebel EMP 285ic 3 PH is designed and tested in accordance with the international standards **ANSI/NEMA/IEC 60974-1 & CSA C22.2 No. 60974-1**. Upon completion of service or repair work, it is the responsibility of the person(s) performing the work to ensure that the product still complies with the requirements of the above 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.

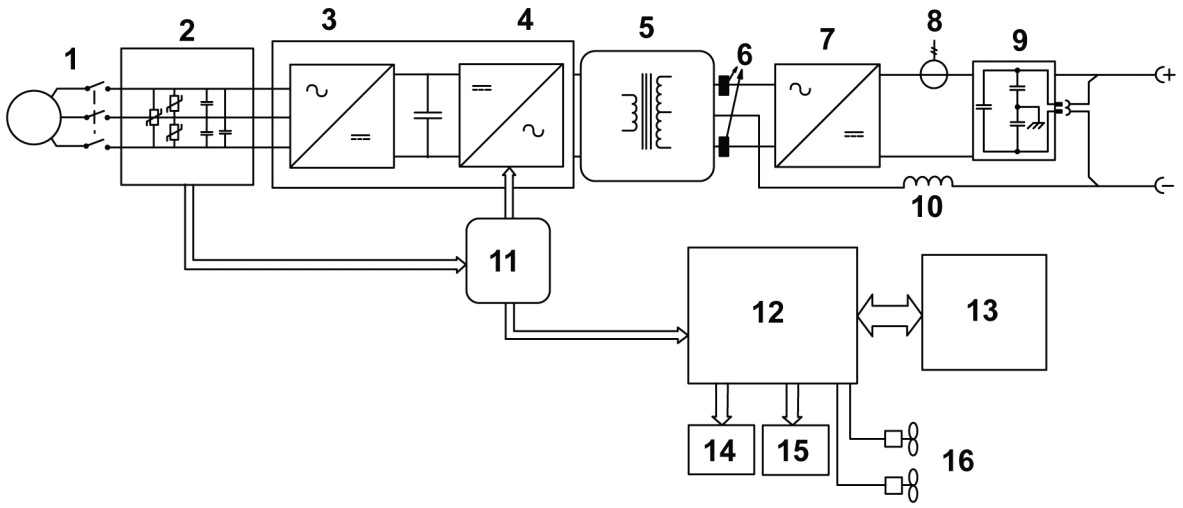
The spare parts list is published in a separate document that can be downloaded from the Internet: **www.esab.com**

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APPENDIX

DIAGRAM

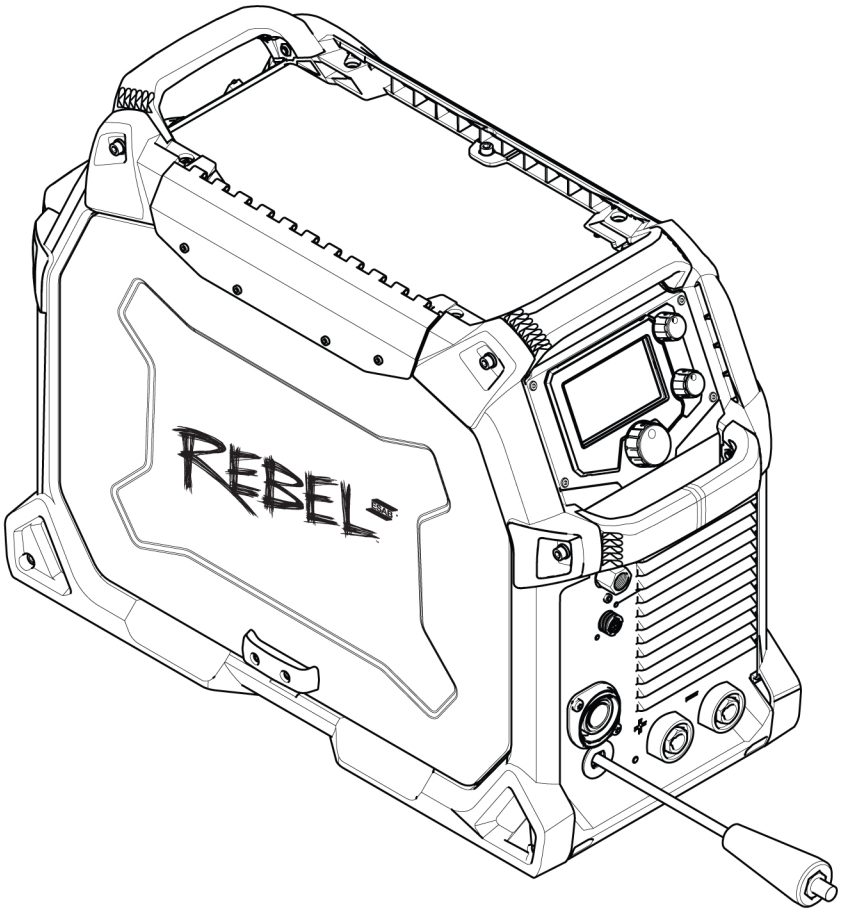
Functional block diagram



1. Main power switch
2. EMI filter board
3. Primary rectifier on power board
4. Primary inverter on power board
5. Main transformer
6. Ferrite cores
7. Output diode assembly
8. Current sensor
9. Filter cap board
10. Output inductor
11. Internal power supply power board
12. Control board
13. User interface (UI)
14. Wire feeder
15. Gas valves
16. Fans

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ORDERING NUMBERS



Ordering number	Description	Notes
0558 102 556	Rebel EMP 285ic 3 PH	CSA
0448 344 001	Spare parts list	

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WEAR PARTS

Spray Master™ 350V

Contact tip	
Part no.	**Size in. (mm)**
1160-1760	0.030 (0.8)
1160-1761	0.035 (0.9)
1160-1763	0.045 (1.2)
1160-1765	0.052 (1.4)
1160-1766	0.062 (1.6)
1160-1764	0.045 (1.2), Al



Nozzle	
Part no.	**Size in. (mm)**
1240-1877	0.62 (15.9), Recess
1240-1878	0.62 (15.9), Flush
1240-1875	0.75 (19.1), Recess
1240-1876	0.75 (19.1), Flush



Conduit / liner	
Part no.	**Size in. (mm)**
1440-1103	0.035 (0.9), Fe
1440-1113	0.052 (1.4), Fe
1440-1003	0.030 (0.8), Al
1440-1012	0.062 (1.6), Al



Feed rolls

V-groove		
Part no.	**Size in. (mm)**	
0445850001	0.024 (0.6)	0.030 (0.8)
0445850003	0.035 (0.9)	0.035 (0.9)
0445850004	0.035 (0.9)	0.045 (1.2)
0445850005	0.045 (1.2)	0.045 (1.2)
0445850006	0.052 (1.4)	0.062 (1.6)



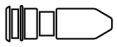
V-K-knurled		
Part no.	**Size in. (mm)**	
0445850030	0.035 (0.9)	0.045 (1.2)
0445850032	0.045 (1.2)	0.052 (1.4)
0445850033	0.062 (1.6)	0.062 (1.6)

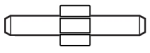


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U-groove			
Part no.	**Size in. (mm)**		
0445850050	0.030 (0.8)	0.035 (0.9)	
0445850051	0.035 (0.9)	0.045 (1.2)	

Wire guide

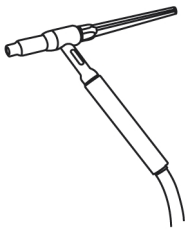
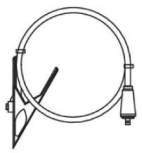
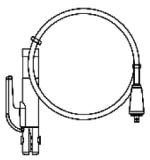
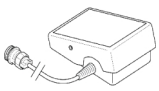
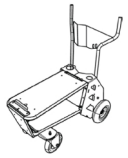
Wire inlet guide				
Part no.	**Wire**	**Size in. (mm)**		
0445822001	Fe/SS/C	0.024 (0.6)	0.062 (1.6)	
0445080882	Al	0.030 (0.8)	0.062 (1.6)	

Wire intermediate guide				
Part no.	**Wire**	**Size in. (mm)**		
0446080882	Fe/SS/C	0.024 (0.6)	0.062 (1.6)	
0446080881	Al	0.030 (0.8)	0.062 (1.6)	

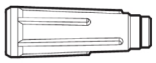
Wire outlet guide				
Part no.	**Wire**	**Size in. (mm)**		
0445830881	Fe/SS/C	0.024 (0.6)	0.062 (1.6)	
0445830885	Al	0.030 (0.8)	0.062 (1.6)	

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ACCESSORIES

0700026610	**ESAB Heliarc SR-17 gas cooled** 12.5 ft. (3.8 m), 5/8” gas, OKC 50	
0700026611	**ESAB Heliarc SR-17 gas cooled** 25 ft. (7.6 m), 5/8” gas, OKC 50	
0700026620	**ESAB Heliarc SR-26 gas cooled** 12.5 ft. (3.8 m), 5/8” gas, OKC 50	
0700026621	**ESAB Heliarc SR-26 gas cooled** 25 ft. (7.6 m), 5/8” gas, OKC 50	
0700025534	**ESAB Heliarc SR-B 20 water cooled** 12.5 ft. (3.8 m), OKC 50	
0700025535	**ESAB Heliarc SR-B 20 water cooled** 25 ft. (7.6 m), OKC 50	
WS200G10	**Tweco ground clamp w/lead** 10 ft. (3 m), OKC, 50	
WS200E13	**Electrode holder 200A w/lead** 13 ft. (4 m), OKC, 50	
0700500084	**MMA 4 hand remote current control** 33 ft. (10 m) cable, 8-pin	
W4014450	**TWECO TIG foot control** 16 ft. (5 m), 8-pin connector	
1036-1756	**Spray Master Velocity 350V MIG torch** 15 ft. (4.5 m)	
1023-1277	**Spray Master Velocity 250V MIG torch** 15 ft. (4.5 m)	
0558 102 491	**Rebel single cylinder cart**	
0558 102 492	**Rebel dual cylinder cart**	
1027-1398	**Tweco spool torch** 200 A, 11 ft. (3.5 m)	

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9425-1431	**OKC 50** cable connector, male (2 ea.)	
9425-1432	**OKC 50** cable connector, female (2 ea.)	
W4013900	**Gas hose** 5/8 in 18 RH fittings, 10 ft. (3 m)	
0781-2703	**Victor GRF400-320** flow gauge regulator for CO2	
0781-9411	**Victor GF-250-50-580** flow gauge regulator for Ar/CO2	

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