Revenge ET 230iP AC/DC

Instruction manual

0448547001 GB 20241212

Valid for: HA336YY-XXXXXX

DECLARATION OF CONFORMITY

According to
AS/NZS 3820:2020, Essential Safety Requirements for Electrical Equipment
Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2017

Type of equipment
Arc welding power source

Type designation
REVENGE ET230iP AC/DC with serial number from: HA336YY-XXXXXX

Brand name or trademark
ESAB

Manufacturer or his authorized representative established within the EEA
Name, address, and telephone No:
Cigweld Pty Ltd
71 Gower Street
Preston, Victoria, Australia, 3072
Phone: +61 3 9474 7400; www.esab.com

The following has been used in the design:

AS 60974.1:2020	Arc Welding Equipment, Part 1: Welding Power Sources
EN IEC 60974-3:2019	Arc Welding Equipment, Part 3: Arc Striking and Stabilizing Devices
EN IEC 60974-10:2021	Arc Welding Equipment, Part 10: EMC requirements

Additional information:
Restrictive use, Class A equipment, intended for use in location other than residential.
REVENGE ET230iP AC/DC is part of the ESAB REVENGE product family.

By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorized representative, that the equipment in question complies with the safety requirements stated above.

Place/Date **Signature**

Preston
2024-11-1

Jarrod Brennan
Managing Director – South Asia

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1 SAFETY

1.1 Meaning of symbols

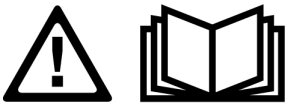
As used throughout this manual: Means Attention! Be Alert!

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

FIRE HAZARD

- Sparks (spatter) can cause fire. Make sure 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.

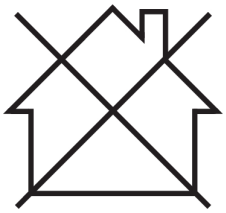
MALFUNCTION - Call for expert assistance in the event of malfunction.

PROTECT YOURSELF AND OTHERS!

CAUTION!
This product is solely intended for arc welding.

WARNING!
Do not use the power source for thawing frozen pipes.

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.

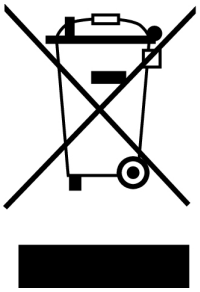


NOTE!
Dispose of electronic equipment at the recycling facility!

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 **Revenge ET 230iP AC/DC power source** offers a multi-process package supporting DC TIG, AC TIG, and MMA.

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

2.1 Equipment

The package includes:

- Power source
- TIG Torch 26F, 8m
- Work Return Lead, 3m, 25mm^2 lead
- Gas Hose, 4m Quick Connect
- Argon Regulator with Twin Flowmeters
- Quick start guide
- Instruction manual

3 TECHNICAL DATA

Revenge ET 230iP AC/DC	
Mains voltage	1ϕ 230V, 50/60Hz
Primary current I_1 max	
MMA	27A
TIG	25.5A
Idle state power (fan stop running)	40W (Max)
Setting range	
MMA	10A / 20.4V - 180A / 27.2V
TIG (AC)	15A / 10.6V - 230A / 19.2V
TIG (DC)	5A / 10.2V - 230A / 19.2V
Permissible load for MMA	
30% duty cycle	180A / 27.2V
60% duty cycle	127A / 25V
100% duty cycle	99A / 23.9V
Permissible load for TIG	
30% duty cycle	230A / 19.2V
60% duty cycle	163A / 16.5V
100% duty cycle	126A / 15V
Apparent power at maximum current	6.21kVA
Active power at maximum current	4.80kW
Power factor at maximum current	
MMA	0.99
TIG	0.99
Efficiency at maximum current MMA	83%
Open Circuit Voltage (VRD Off) MMA Mode	68V
Open Circuit Voltage (VRD On) MMA Mode	10.4V
Operating temperature	-10 to +40 °C
Transportation temperature	-20 to +55 °C
Constant sound pressure when idling	<70 db (A)
Dimensions l × w × h	460 × 210 × 380 mm
Weight	19 kg
Insulation class	F
Enclosure class	IP23S
Application class	S

Mains supply, $S_{sc\ min}$

Minimum short circuit power on the network in accordance with IEC 61000-3-12.

Duty cycle

The duty cycle refers to the time as a percentage of a ten-minute period that you can weld or cut at a certain load without overloading. The duty cycle is valid for 40 °C / 104 °F, 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 may be used outdoors if sheltered during precipitation.

Application class

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

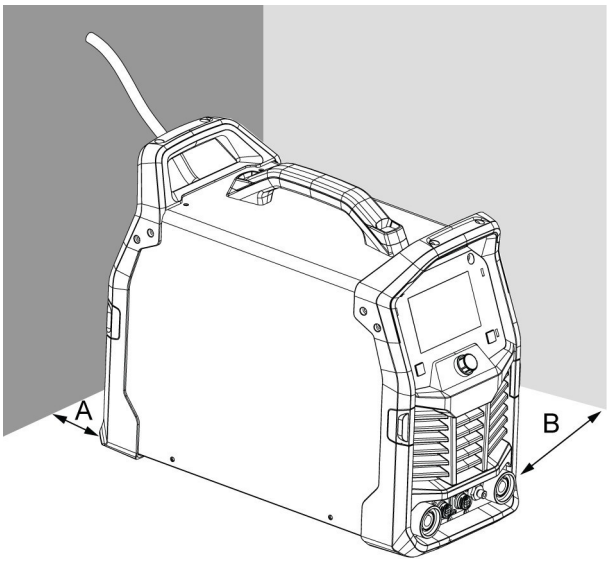
4 INSTALLATION

The installation must be carried out by a professional.

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 Location

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

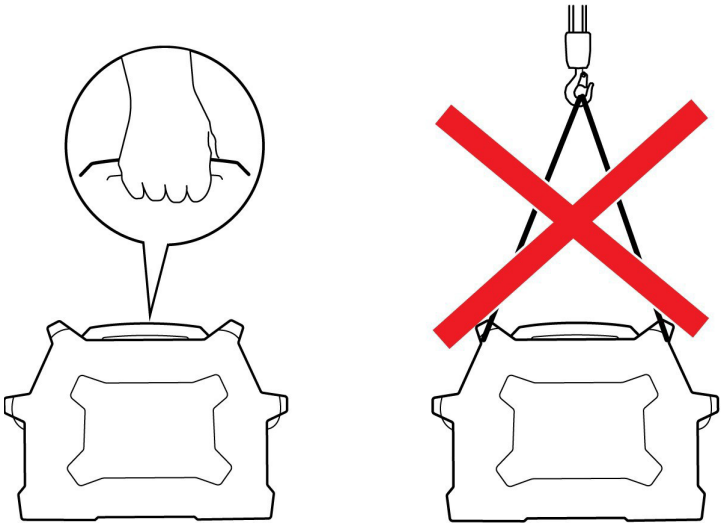


A. Minimum 200mm (8 in.)

B. Minimum 200mm (8 in.)

4.2 Lifting instructions

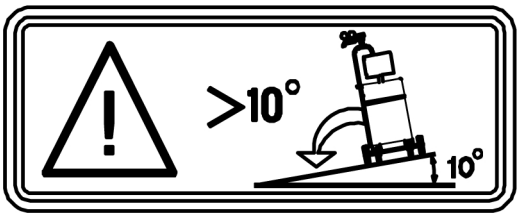
The power source can be hand lifted only using any of the handles.



WARNING!
The carry handle supplied with the welding power source is not designed as a lifting point used to hang or suspend the unit overhead on a crane, boom or lifting device. If the carry handle is used for non-approved lifting or suspending and the handle fails under load then serious personal injury or loss of life may occur.

NOTE!
Incase of carrying the machine for extended distances, we recommend using a suitable trolley.

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

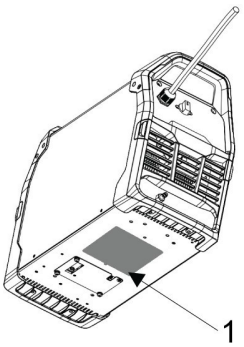


4.3 Mains supply

NOTE!
Mains supply requirements

This equipment complies with IEC 61000-3-12 provided that the short-circuit power is greater than or equal to S_{scmin} at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power greater than or equal to S_{scmin}. Refer to the technical data in the TECHNICAL DATA chapter.

1. Rating plate with supply connection data in the bottom of machine



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.

	230V, 1 ϕ 50/60Hz
Supply voltage	**230VAC**
Effective Input current rating (I_{1eff}) MMA mode	14.5A
Maximum Input Current Rating (I_{1max}) MMA Mode	27A
Maximum recommended fuse or circuit breaker rating	20A
Minimum recommended cord size	2.5mm² (13AWG)
Maximum recommended extension cord length	15m (50 ft)
Minimum recommended grounding conductor size	2.5mm² (13AWG)

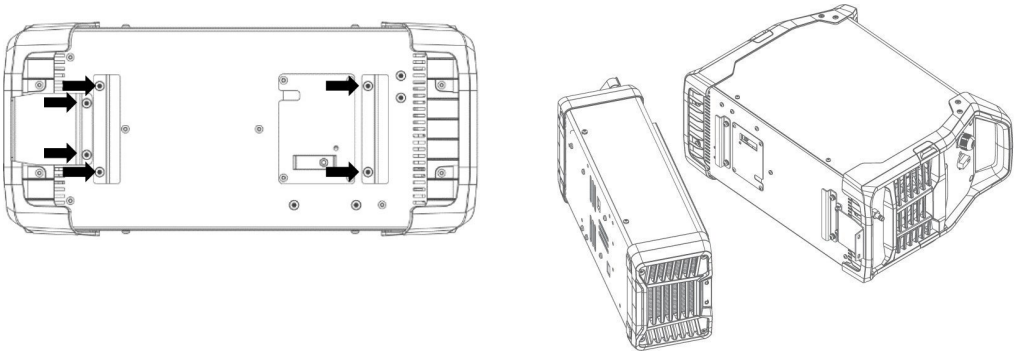
Supply from power generators
The power source can be supplied from different types of generators. However, some generators may not provide sufficient power for the welding power source to operate correctly. Generators with Automatic Voltage Regulation (AVR) or with equivalent or better type of regulation, with rated power 13 kW, are recommended.

4.5 Connecting the power source and cooling unit

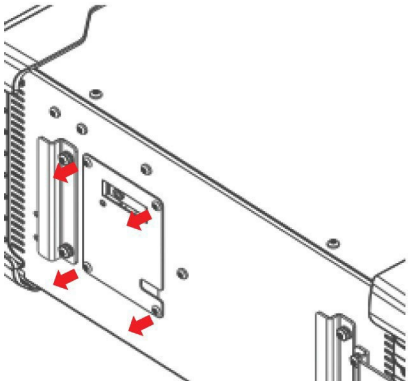
Only those persons who have appropriate electrical knowledge (authorized personnel) may remove the safety plates to connect or carry out service, maintenance or repair work on welding equipment.

1) Power off the welding power source.

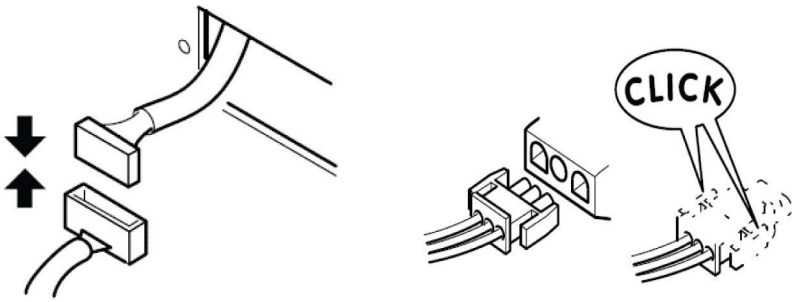
2) Install attachment on the bottom plate of power source.



3) Remove the four screws on the bottom plate of power source, and remove the small square shape sheet material.

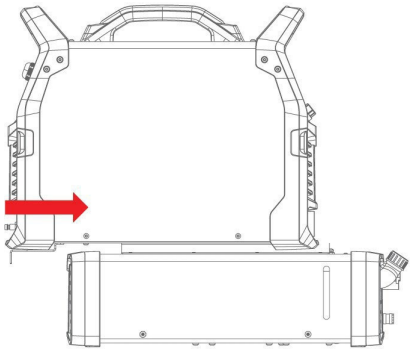


4) Connect the power cable and interconnection lead.

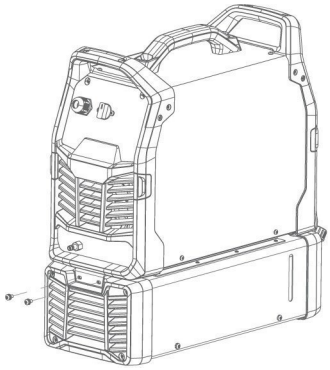


5) Put the square shape sheet material back and fix with screws to bottom plate of power source.

6) Put the power source on the top of cooler and push the power source from back of cooler.



7) Use screws to fix the power source with cooler at the rear panel of cooler.



NOTE!
Coolant must be topped up after connecting a welding torch or connection cables that are four meters in length or longer.

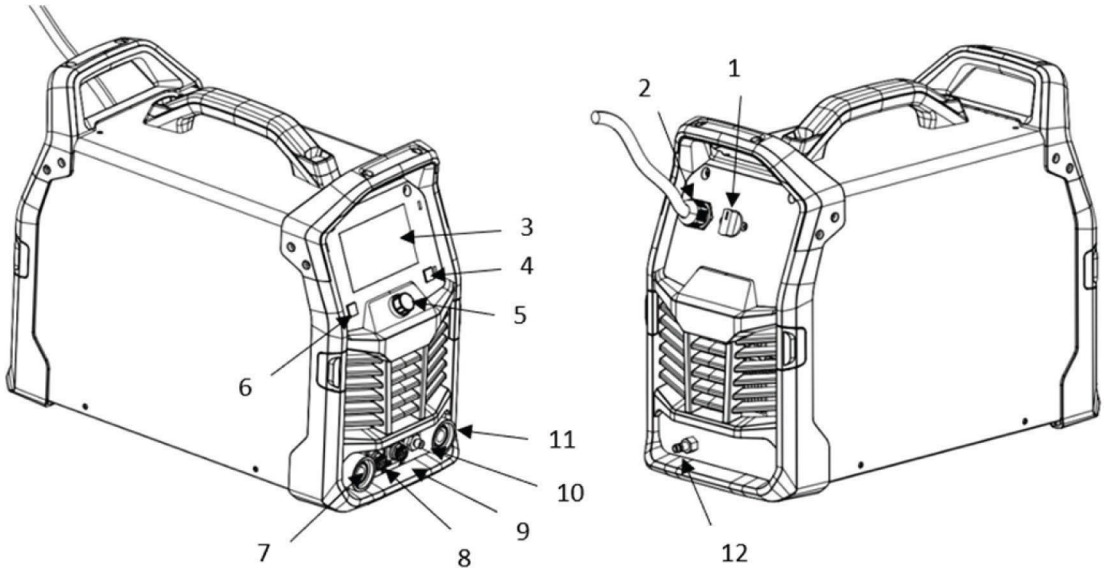
5 OPERATION

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!

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

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

5.1 Connections and control devices



1. Power Switch
2. Input Cable
3. TFT Display Screen
4. Process Selection
5. Control Knob
6. Back Button
7. Dinse Connector Positive (+)
8. 2Pin Connector
9. 8Pin Connector
10. Gas Outlet
11. Dinse Connector (-)
12. Gas Inlet

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.

- For TIG welding, the negative welding terminal (-) is used for the welding torch and the positive welding terminal (+) is used for the return cable.

- For MMA welding, the welding cable can be connected to the positive welding terminal (+) or negative welding terminal (-) depending on the type of electrode used. The connecting polarity is stated on the electrode packaging.

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

2) Secure the return cable's contact clamp to the work piece and ensure that there is good contact between the work piece and the output for the return cable on the power source.

5.3 Turning the mains power on/off

CAUTION!
Do not turn off the power source during welding (with load).

1) To turn on the mains power, turn the switch to the ”I” position.

2) To turn off the mains power, turn the switch to the ”O” position.

If the mains supply is interrupted abnormally, or the power source is switched off in the normal manner, the welding data will be stored, so it will be available next time the unit is turned on.

5.4 Fan control

The power source has an automatic thermal control. When turning on the machine, the fan will run for ten seconds and then stop. Once welding starts, the fan continues to run for a few minutes after welding has stopped while the power source switches to energy-saving mode. The fan starts again when welding restarts.

5.5 Thermal protection

The power source includes thermal protection against overheating. When temperature is up to 80% limitation, the overheating indicator on the panel will blink; once temperature exceeds the limitation, the welding is stopped and overheating indicator will be lit and an error message shows in the display. The protection is automatically reset when the temperature has been sufficiently reduced.

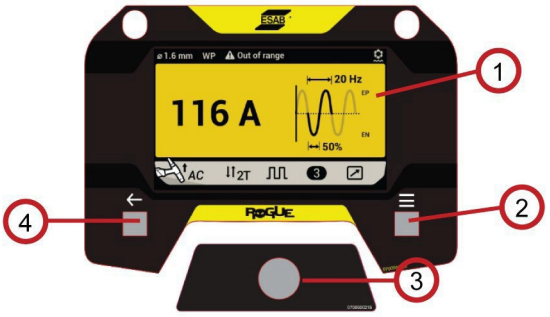
5.6 Voltage reduction device (VRD)

VRD

The VRD function ensures that the open-circuit voltage does not exceed 15 V when welding is not being carried out. This is indicated by a lit VRD indicator on the TFT Screen. Default setting for VRD is on.

5.7 User interface

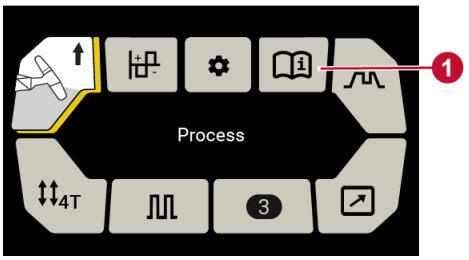
5.7.1 Control panel



1. TFT Display
2. Process selection button: Press the button to navigate to main menu.
3. Control knob: Turn right/left and press.
4. Back button: Return to previous menu.

5.7.2 Information screen

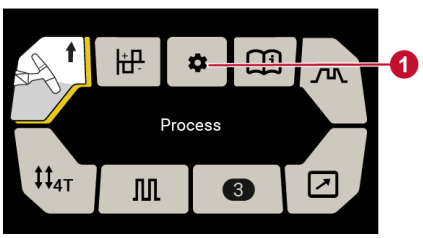
In this menu, user can find information about wears and spares, tips and hints, recommended filler metals, general maintenance, and user manual QR code.



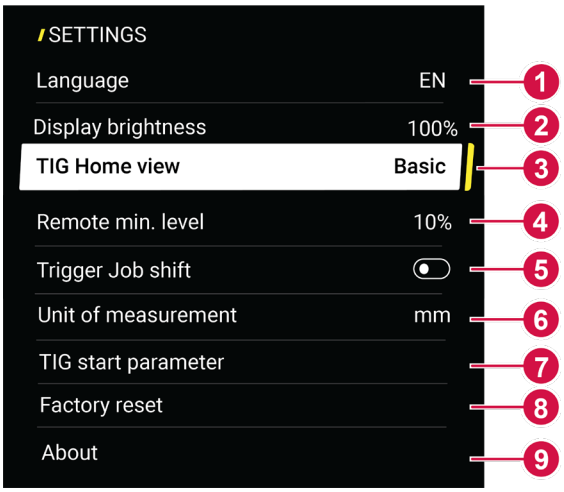
1. Information screen

5.7.3 Settings screen

In this menu, user can change settings. To access the settings, press menu button to enter menu screen, and then turn the main knob to settings icon and press main knob.



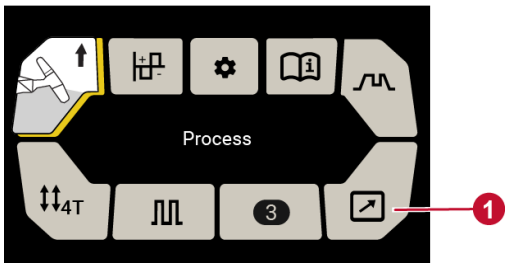
1. Settings screen



1. Language settings
2. Screen Display Brightness settings
3. TIG home view:
   Can be used to select different view of TIG welding in home screen. To enter selection screen, turn main knob and press it when TIG home view is highlighted. Seq/Pulse only can be selected when Pulse is activated.
   When AC settings is selected, pressing main knob on home screen will jump to AC setting page directly.
4. Remote min. level settings (the percentage of set amps)
   Used to set the minimum current for the foot pedal. It is set in % of the set current in the range from 0–99% in steps of 1%.
   For example: If the current is set to 100 A and the remote min current function is set to 20, the remote min current will be 20 A. If the current is set to 80 A and the remote min current function is set to 50, the remote min current will be 40 A.
   To enter adjustment screen, press main knob when remote min. level is highlighted and turn main knob to adjustment percentage value as displayed. Confirm settings by pressing main knob and display returns to menu screen.
5. Trigger job shift ON/OFF (TIG Function Only)
   Used to recall stored welding parameters when machine is on, but arc is not ignited. This function permits changing between different welding data memories by quickly pressing the TIG torch Trigger or Foot Control. User can select one of the first three jobs positions and to recall, the Trigger needs to be pressed the same number of times as job location. One short press, the TIG torch switches to job 1; two times to job 2, three times to job 3. Jump between 1-2-3-1... (only if the job is not empty). If job >3 is active when "Trigger Job shift" is activated, the job stays active until the user use the trigger to shift to a new job.

   NOTE!
   Trigger Job Shift is disabled in MMA process. While in TIG process mode, if MMA parameters are saved in any of first 3 jobs, the trigger job shift will work only for saved TIG jobs and a warning will show if MMA parameters are saved in location being selected.
6. Unit of measure
7. TIG start parameter
   Machine has default arc starting parameter when user selects different type/diameter of tungsten. This default setting helps to get good arc starting character. But user can adjust the starting parameters (Amperage and time). Select the “Overwrite parameters” to adjust the arc starting current and time.
8. Factory reset
   Reset settings to the factory parameters.
9. About
   Current software version.

5.7.4 Remote screen

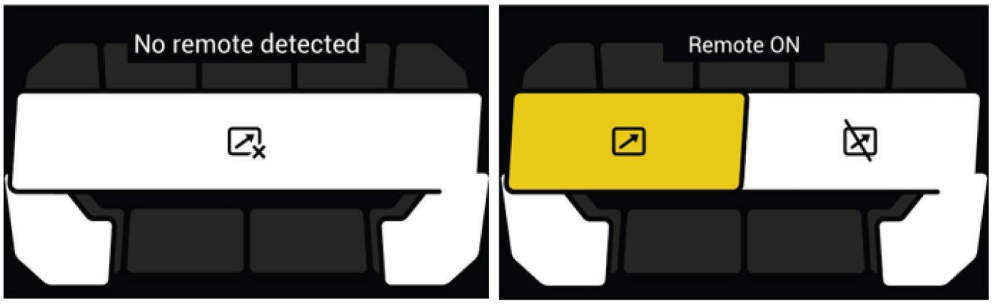


1. Remote screen

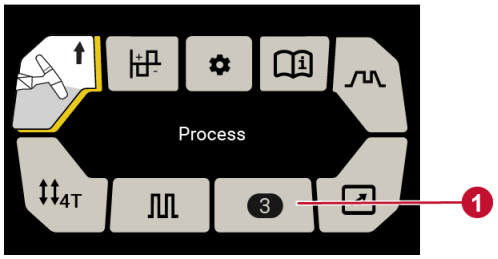
Connect the remote control into 8 Pin Connector in the front of the power source and activate the remote control on the menu screen. When the remote control is activated, the welding data will be displayed.

When a remote device is connected, the maximum output current of the power source will be determined by the front panel control knob, irrespective of the remote control device setting.

When no remote device is connected to the power source, display shows “No remote detected”. When a remote device (see options in Accessories screen under Information menu) is connected, turn it on or off by turning main knob. Confirm selection by press main knob and display returns to menu screen.



5.7.5 Jobs screen



1. Jobs screen

Revenge ET 230iP AC/DC power source enables the user to store 10 jobs. Critical welding data can be previewed in Jobs menu for easier selection.

To save current welding data, enter Jobs screen to find an available job position or a job position to be replaced, press main knob and hold for two seconds.

To recall a job, enter Jobs screen under corresponding welding process menu screen, scroll through jobs list by rotating main knob, and confirm selection by pressing main knob.

To remove a job, rotate main knob to scroll to the job position, press and hold back button until the screen displays “Clear this Job position”, and confirm by pressing main knob.

5.7.6 Welding screen

1. Momentary current value during welding, or average current of last weld after welding.
2. Momentary voltage value during welding, or average voltage of last weld after welding.
3. Arc-on time of last weld will be displayed after welding.

Parameters of last weld will be displayed for ten seconds after welding. When the ten seconds are ended and there is no interaction with the user interface, display returns to previous view before welding.

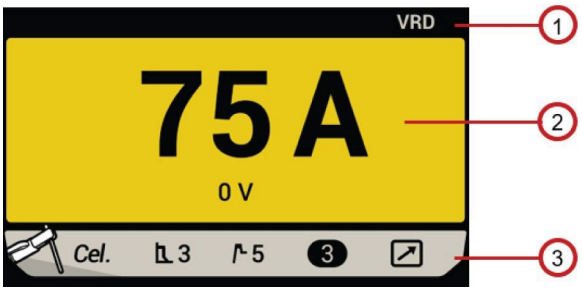
5.7.7 MMA welding

MMA welding may also be referred to as welding with covered electrodes. The arc melts the electrode as well as a local part of the workpiece. The coverage, when melting, forms a protective slag and creates a shielding gas to protect the weld pool from atmospheric contamination.

For MMA welding, the welding power source shall be supplemented with:

- welding cable with electrode holder
- return cable with clamp

MMA/Stick home screen



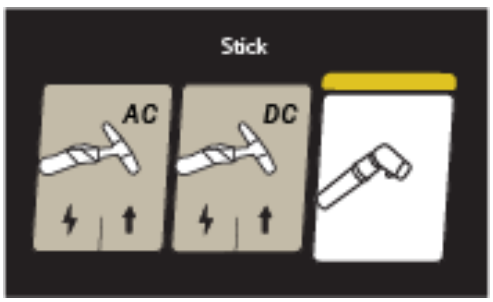
1. VRD
   The VRD function ensures that the open-circuit voltage does not exceed 35 V when welding is not being carried out. When VRD is on, “VRD” is displayed in status bar of home screen.
2. Preset welding current
   Rotate main knob clockwise to increase preset welding current or anti-clockwise to decrease preset welding current.
3. Bottom bar of home screen
   Displays status of welding process, arc force level, hot start level, job selection. To make any change or adjustment, press menu button to enter menu screen and navigate by turning main knob.

MMA/Stick menu screen

1. MMA/Stick menu screen

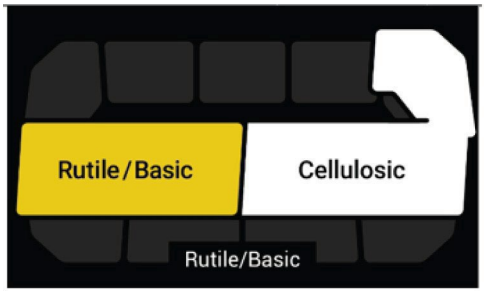
2. **Process selection**

Press main knob to enter process selection screen and select Stick (MMA) function by press main knob again.

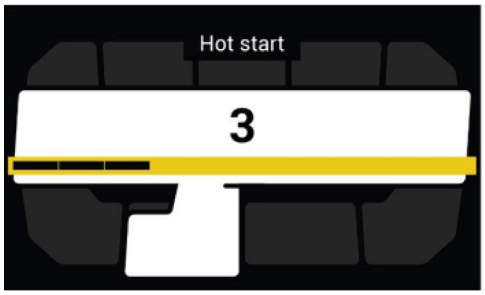


Electrode type

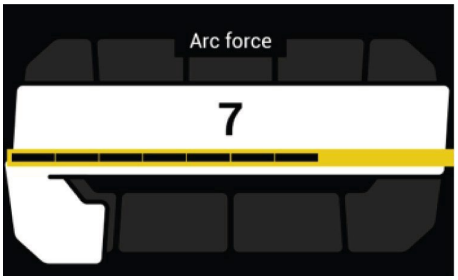
Select between rutile/basic electrode and cellulosic electrode by turning main knob and confirm selection by pressing main knob.



Hot start
The hot start function temporarily increases the current in the beginning of the weld, thus reducing the risk of lack of fusion in the starting point. Turn main knob to adjust hot start level on a scale of 0 to 10 in hot start screen. Confirm adjustment by pressing main knob and adjusted hot start level will be displayed in menu screen.



Arc force
The arc force function determines how the current changes in response to variations in arc length during welding. Use a low value of arc force to get a calm arc with little spatter and use a high value to get a hot and digging arc. Turn main knob to adjust arc force level on a scale of 0 to 10 in arc force screen. Confirm adjustment by pressing main knob and adjusted arc force level will be displayed in menu screen.



5.7.8 TIG welding

TIG welding melts the metal of the workpiece, using an arc initiated from a non-consuming tungsten electrode. The weld pool and electrode are protected by a shielding gas that usually consists of an inert gas.

For TIG welding, the welding power source shall be supplemented with:

- a TIG torch
- a gas hose connected to the gas supply input
- an argon gas cylinder
- an argon gas regulator
- a tungsten electrode
- a return cable (with clamp)

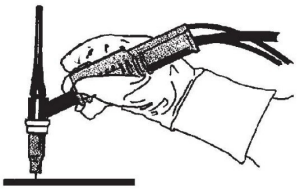
Lift Arc TIG start and TIG HF start

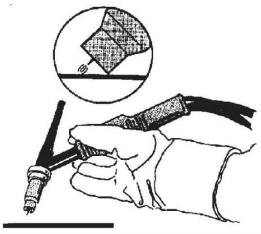
This power source performs **Lift Arc TIG start** and **TIG HF start**.

Lift Arc TIG start

The LiftArc™ function initiates the arc when the tungsten electrode is brought into contact with the workpiece, the trigger switch is pressed, and the tungsten electrode is lifted away from the workpiece. In order to minimize the risk of tungsten contaminations the start current is very low and will slope up to the set current (controlled by the slope up function).

The tungsten electrode is placed against the workpiece and press the torch trigger. When lifted away from workpiece the arc is struck at a limited current level.



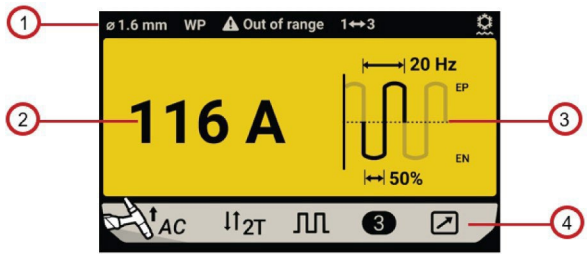


TIG HF start

The HF (High Frequency) start function initiates the arc by using a high frequency voltage pilot arc. This will reduce the risk of tungsten contamination in the starts. The high frequency voltage might disturb other electrical equipment in the surrounding area.

The HF start function strikes the arc by means of a spark from the tungsten electrode to the workpiece as the electrode is brought closer to the workpiece and the trigger on the TIG torch is pressed.

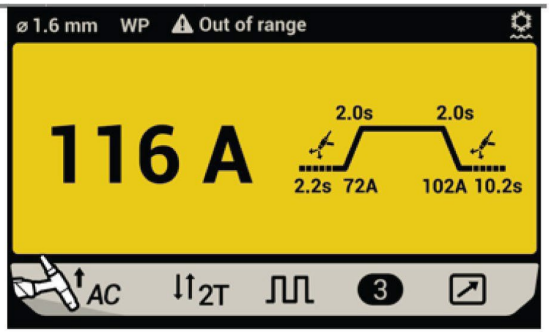
TIG home screen



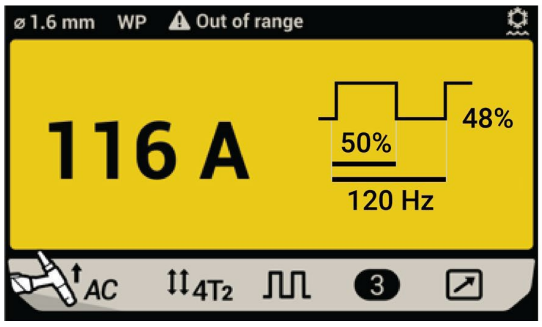
1. Top bar of TIG home screen
   - Diameter of tungsten
     Only available in AC TIG mode.
   - Type of tungsten
     Only available in AC TIG mode.
   - Out of range
     When the welding current is out of the tungsten limitation.
   - Trigger job shift
     Only available when this function is activated.
   - Water cooler connection
     Water cooling symbol is display in status bar when water cooler is connected.
2. Preset welding current
   Rotate main knob clockwise to increase preset welding current or anti-clockwise to decrease preset welding current.
3. TIG welding
   To change among basic view, sequencer view, Seq./ pulse view or AC settings view, press menu button and enter Settings menu. When AC setting view is selected, pressing main knob on home screen will jump to AC setting page directly.

Basic view

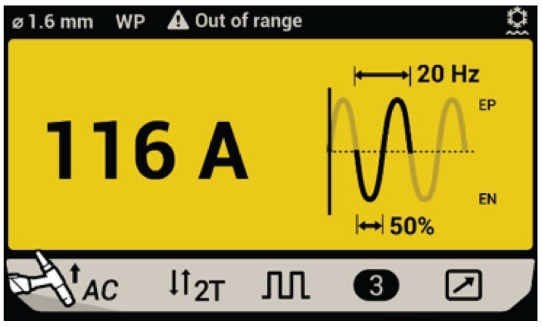
Sequencer view



Seq./Pulse view

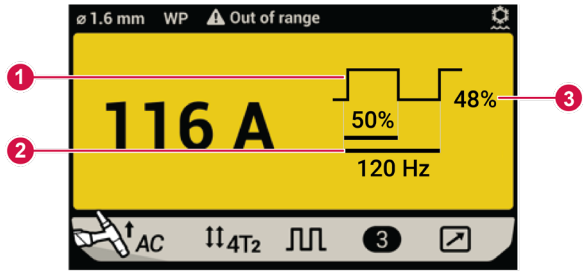


AC settings view



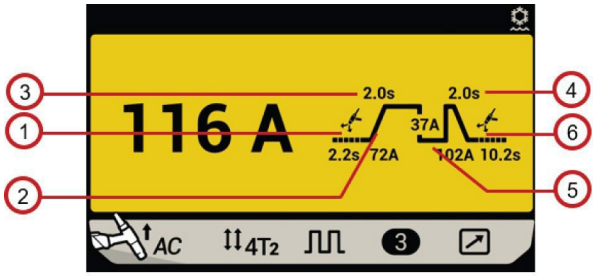
4. Bottom bar
   Status of welding process selection, trigger mode, pulse, job selection, and remote connection. To make any change or adjustment, press menu button and navigate through each function by rotating main knob.

Sequencer/Pulse TIG home view



1. Peak time
2. Frequency
3. Background current

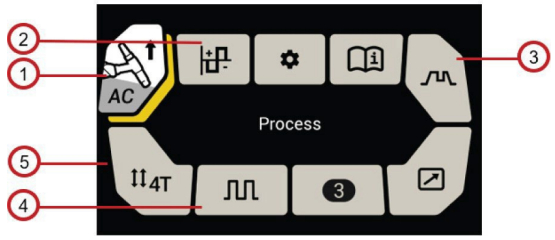
Sequencer TIG home view



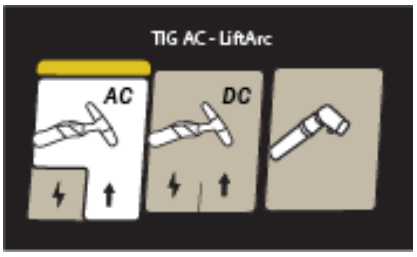
1. Gas pre-flow time
2. Start current time
3. Slope up time
4. Slope down time
5. Final current time
6. Gas post-flow time

TIG menu screen

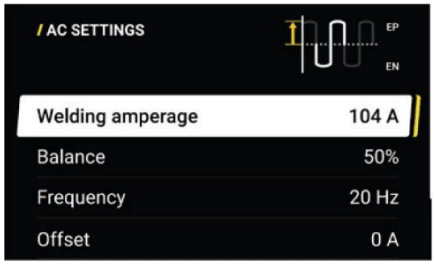
When Lift TIG or TIG HF is selected, press menu button to enter TIG menu screen.



1. Process selection
Press main knob to enter process selection screen and select between Lift TIG or TIG HF when this icon is highlighted.



2. AC settings
Press main knob to enter AC settings screen and set different AC welding parameter, such as Balance/Frequency/Offset/Waveshape.



Balance

Used to adjust the balance (%) in AC TIG advanced mode, it is the ratio between Electrode Positive (EP) and Electrode Negative (EN) in a waveform. Balance lets you control the arc width, heat, and cleaning action etc.
Benefits of increasing the balance (i.e., increasing the EN portion of the AC TIG waveform):

- Achieve greater penetration
- Helps in increasing travel speeds
- Helps in narrowing the weld bead
- Helps in increasing the tungsten electrode life and reduces balling action
- Reduces the size of etched zone for improved cosmetics

Benefits of decreasing the balance (i.e., increasing the EP portion of the AC TIG waveform):

- Better cleaning action to remove heavier oxidation on the work plate
- Minimizes penetration which help prevent burn-through on thin materials
- Widens the bead profile and helps in catching both sides of the joint

NOTE!
Adjust the balance with care. Decreasing the balance to a lower value at a particular weld current will have more balling action on the tungsten, which will reduce the tungsten electrode life and may lose arc stability.

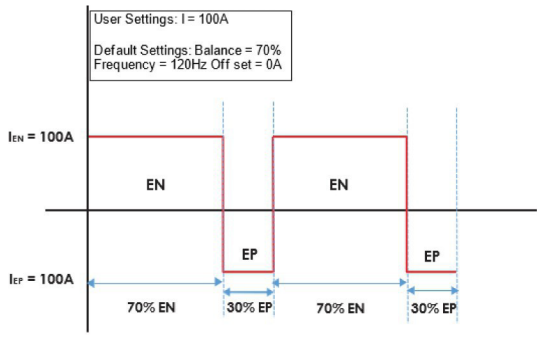
Offset

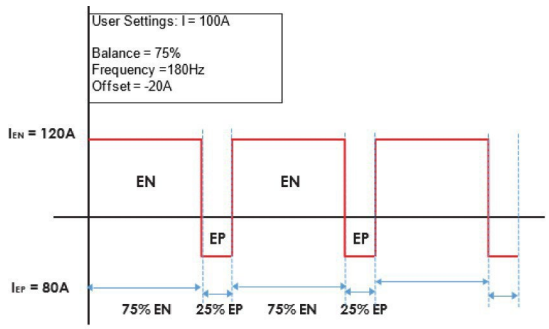
Offset feature in AC TIG is used to vary the EP or EN currents to have better cleaning or better penetration respectively without adjusting the balance (duty) and/or user set current. Offset gives the user ability to have a narrower bead with deeper penetration and no visible cleaning action or wider bead with less penetration and clear visible cleaning action based on which direction the offset is adjusted.

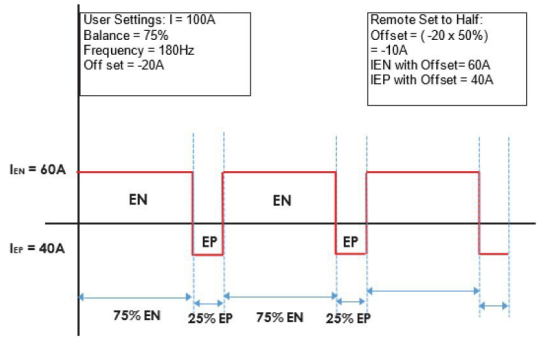
In AC TIG mode, the user can adjust the offset parameter which will range from - (user set current – MIN) to + (user set current – MIN). When using a foot petal, the set value of MIN current affects the usable offset range. Example, if user set current is set to 104 A then the offset adjustable range is from -99 A to +99 A, because MIN current is 5 A and adding 5 A to 99 A results in 104. Another example: in the case of offset set to +15 A with a user set current of 104 A, the weld current drives to EP = 119 A and EN = 89 A.

NOTE!
Offset is not available when Pulse Feature is turned on.

See the following images for an example of AC TIG output current at different balance and/or offset settings.

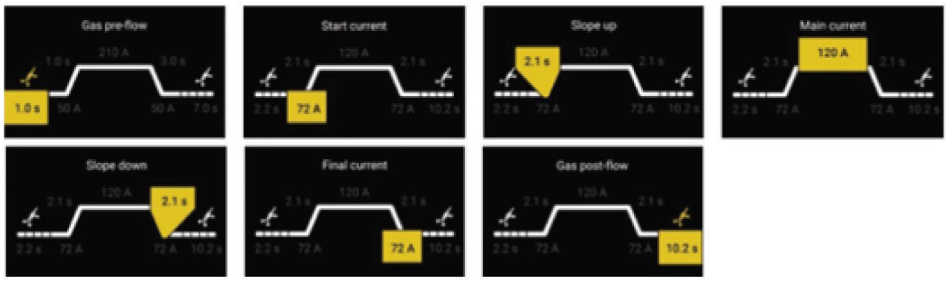






3. Sequencer settings

Enter sequencer settings screen by pressing main knob when sequencer icon is highlighted, and navigate through the sequencer by rotating main knob. To make adjustment of any process, press main knob when the process to adjust is displayed in yellow and rotate main knob to adjust value as displayed. Press main knob again to confirm value and exit adjustment mode.



Gas pre flow

The gas pre flow function controls the time during which shielding gas flows before the arc is initiated. Setting range is 0.0-99.0 seconds. Factory default is 0.2 second.

Slope up

The slope up function is used to control the time of the current increase in the weld initiation process to avoid any possible damage to the tungsten electrode. Setting range is 0.0-20.0 seconds. Factory default is 2 seconds.

Slope down

The slope down function is used to control the time of the current decrease in the weld termination process to avoid any pipes and/or cracks. Setting range is 0.0-20.0 seconds. Factory default is 2 seconds.

Gas post flow

The gas post flow function controls the time during which shielding gas flows after the arc is terminated. Setting range is 0.0-99.0 seconds. Factory default is 3.0 seconds.

4. Pulse settings

In order to set a pulsed current, four parameters are required: pulse current, background current, pulse balance and pulse frequency.

Frequency

The amount of pulse cycles in a time period. The higher the frequency, the more pulse cycles per time period. When the pulse frequency is set low, the weld pool will have time to partially solidify between each pulse. If the frequency is set high, a more focused arc can be obtained.

Setting range is 0.5-200 Hz. Factory default setting is 1.0 Hz.

0.1 (0.5 to 20 Hz)

1 (20-200Hz)

Peak current

The higher of the two current values when using a pulsed current. Setting range is 5 to 230 A(DC)/15 to 230(AC).

NOTE!
In AC TIG welding Peak Current is dependant on waveform chosen.
Square Wave 15A - 230A
Soft Square Wave 15A - 230A
Sinusoid Wave 15A - 175A
Triangular Wave 15A - 140A

Peak time

Peak time is the ratio between pulse current and background current in a pulse cycle. In order to control the energy of the arc and the size of the weld pool, peak time is adjustable by setting the percentage of the pulse current in a pulse cycle. Setting range is 10-90%, and increment value of each rotation of main knob is 1%. Factory default is 50%.

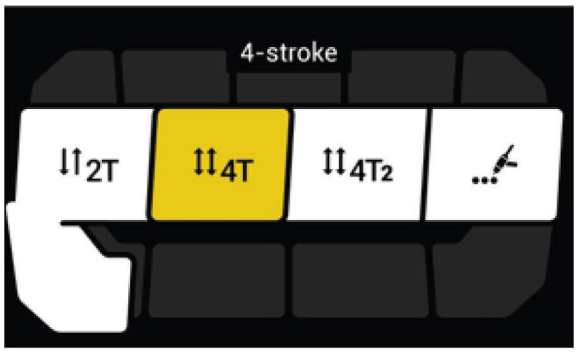
For example: If the peak time is set to 50%, the time of the peak current and the background current will be distributed equally in the pulse cycle. If the peak time is set to 90%, the time of the peak current will be 90% of the pulse cycle and the background current will only be 10%.

Background current

The lower of the two current values when using a pulsed current and is set as a percentage (%) of Peak Current

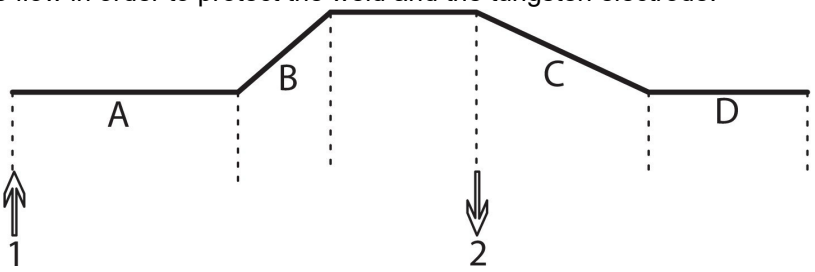
Setting range is between 10% and 99% of the Peak Current.

5. Trigger mode



2-stroke

In 2-stroke mode, press the TIG torch trigger (1) to start the shielding gas flow and iniate the arc. The current slopes up to the set current value. Release the trigger (2) to start to slope down the current and terminate the arc. The shielding gas will continue to flow in order to protect the weld and the tungsten electrode.



A = Gas pre flow

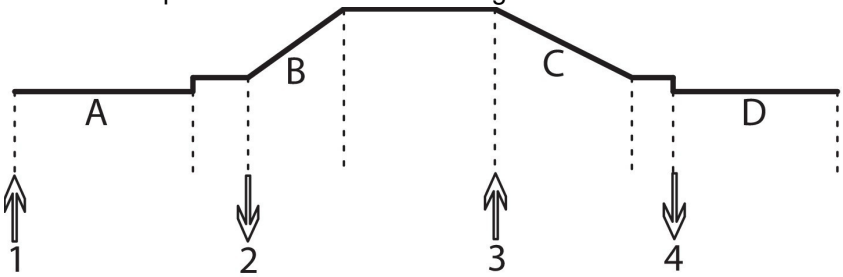
B = Slope up

C = Slope down

D = Gas post flow

4-stroke

In 4-stroke mode, press the TIG torch trigger (1) to start shielding gas flow and initiate the arc at a pilot level. Release the trigger (2) to slope up the current to the set current value. To stop the welding, press the trigger again (3). The current will slope down to the pilot level again. Release the trigger switch (4) to terminate the arc. The shielding gas will continue to flow in order to protect the weld and the tungsten electrode.



A = Gas pre flow

B = Slope up

C = Slope down

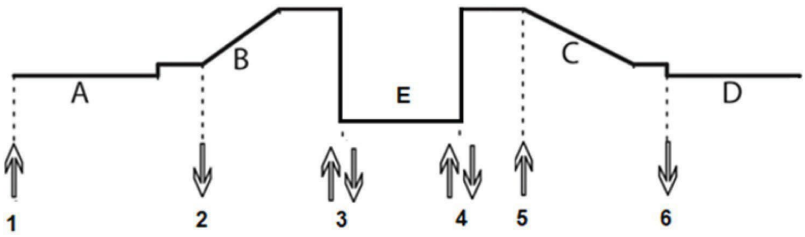
D = Gas post flow

4T2

4T2 changes the value of secondary current that needs to be adjusted in sequencer after 4T2 activation. 4T2 current feature lets the user to switch to higher or lower current while welding, for example corners or edges without stopping the weld.

4T2 operation is available only in trigger mode when 4T2 is enabled.

When 4T2 mode is enabled, it can be activated by quick trigger tap action during welding. One quick tap on trigger (push and release) will switch the output weld current from "Main current" to "Secondary Current"; another quick tap on trigger will switch the current from "Secondary Current" to "Main Current", refer to following image.



A = Gas pre flow

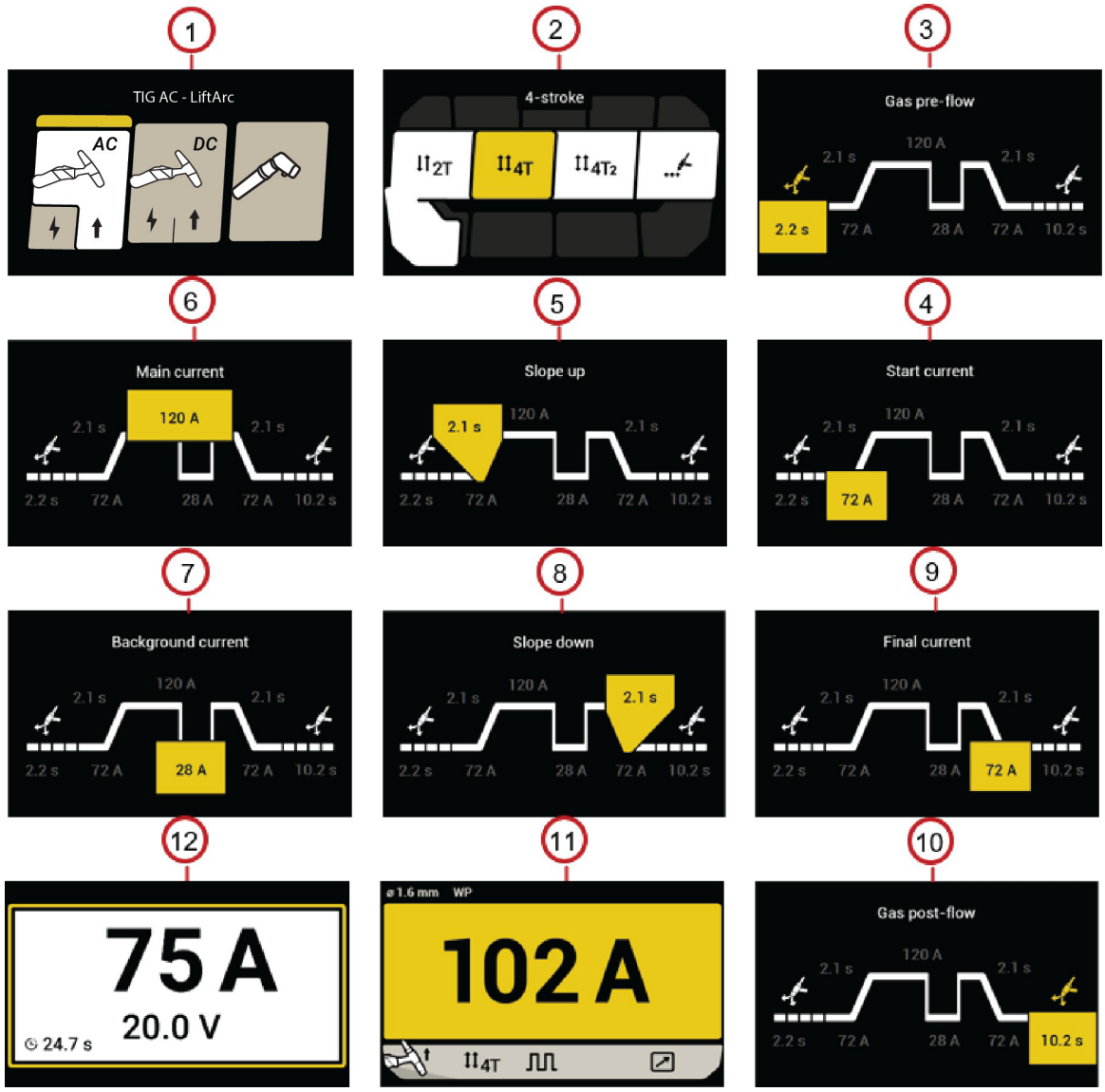
B = Slope up

C = Slope down

D = Gas post flow

E = Secondary current

Refer to the following image for the navigation or setup of 4T2 Pulse in the Pulse screen.

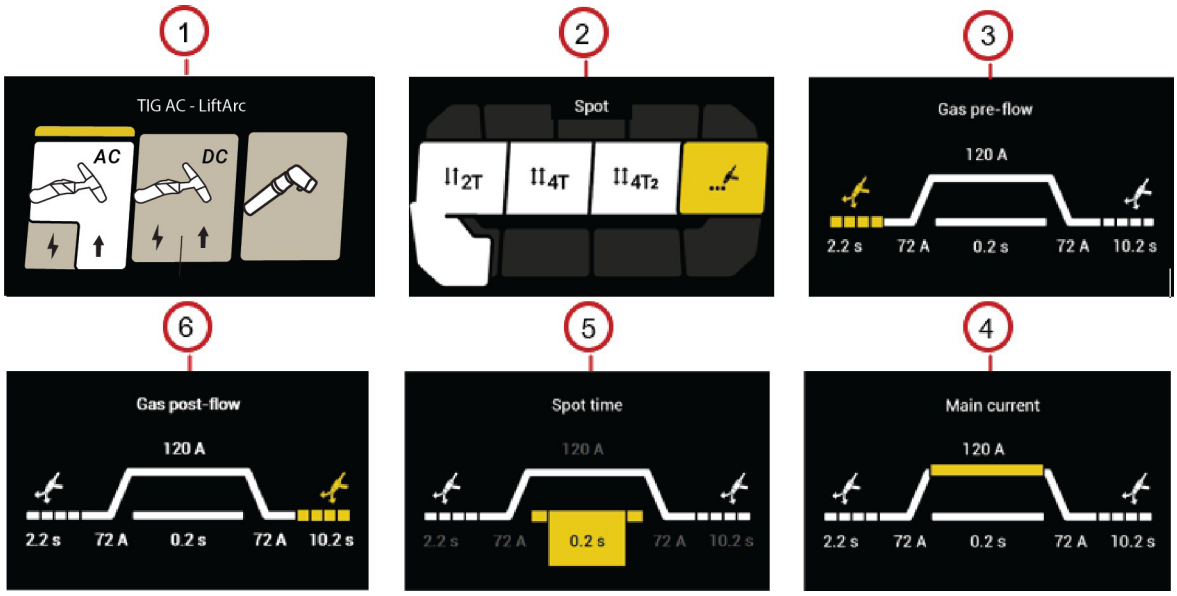


1. Weld mode selection (AC TIG/DC TIG)
2. Select 4T2 mode
3. Pre-flow gas setting
4. Start current setting
5. Slope up setting
6. Main current setting (Current A)
7. Background current setting (Current B)
8. Slope down setting
9. Final current setting
10. Post-flow gas setting
11. Current setting and review
12. Welding screen

Spot mode

Spot welding is used to weld two thin plates together at a desired location by melting the top and bottom plates together to form a nugget between them. The spot time can be adjusted in the sequencer menu once spot mode active.

Refer to the following image for the the spot operation.

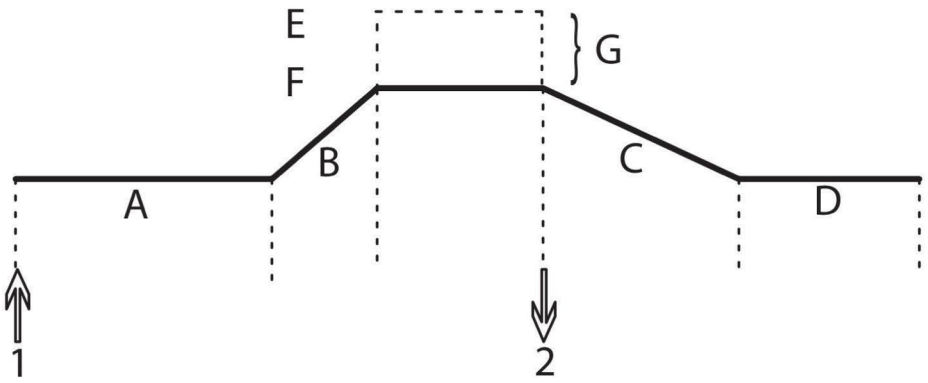


1. Weld mode selection (AC TIG/DC TIG)
2. Select spot mode
3. Pre-flow gas setting
4. Welding current setting
5. Spot time setting
6. Post-flow gas setting

5.8 Foot pedal functions explanation

Press down the foot pedal (1) to start the shielding gas flow and initiate the arc. The current slopes up to the set remote min current. Use the foot pedal to adjust the current between the remote min current and the set current value. Release the foot pedal to start to slope down the current and to terminate the arc. The shielding gas will continue to flow in order to protect the weld and the tungsten electrode.

NOTE!
Foot pedal control is only applicable in 2-stroke mode, not 4-stroke mode.



A = Gas pre flow

B = Slope up

C = Slope down

D = Gas post flow

E = Set current

F = Remote min current

G = Current range adjustable by the foot pedal

6 MAINTENANCE

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

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

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

NOTE!
Regular maintenance is important for safe and reliable operation.

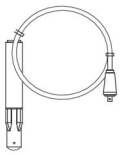
NOTE!
Perform maintenance more often during severe dusty conditions.

Before each use - make sure that:

- Product and cables are not damaged,
- The torch is clean and not damaged.

6.1 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.		

6.2 Cleaning instructions

To maintain the performance and increase the lifetime of the power source it is mandatory to clean it regularly. How often depends on:

- the welding process
- the arc time

- the working environment

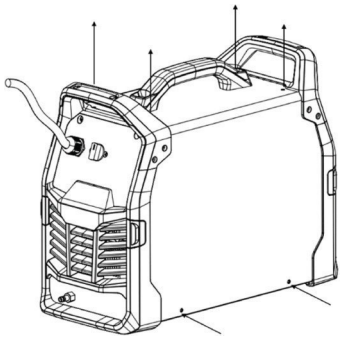
CAUTION!
Make sure that the cleaning procedure is done in a suitable prepared workspace.

CAUTION!
During cleaning, always wear recommended personal safety equipment, such as ear plugs, safety glasses, masks, gloves and safety shoes.

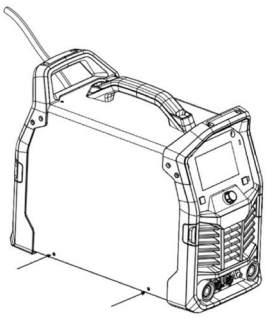
1) Turn off the machine and disconnect the power source from the mains supply.

WARNING!
Wait at least 5 minutes for the capacitors to discharge before continuing.

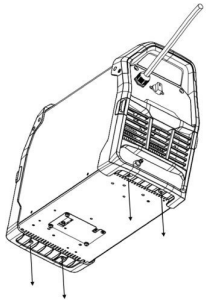
2) Remove the two screws in the right side and four screws in the top.



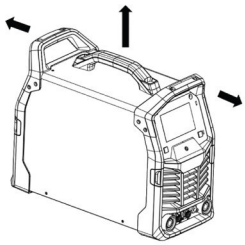
3) Remove the two screws in the left side panel.

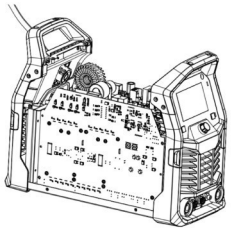


4) Remove the four screws in the bottom plate.



5) Bend the front and real panel and lift the handle to remove the housing.





6) Clean the power source, using dry compressed air with reduced pressure.

> **NOTE!**
> Since the power source contains one "dirty side" (the right side) and one "clean side" (the left side), it is important that you do **not** remove the **left** side panel before cleaning the right side of the power source.

7) Make sure that there is no dust left on any part of the power source.

8) After having finished cleaning the power source, reattach the power source panels in the reverse order.

> **NOTE!**
> When reattaching the right side panel, make sure the IP shield on the inside of the panel is in the correct position. The IP shield should be angled approximately 90° into the power source, so that it is positioned between the welding outlet connector and the transformer outlets.

9) Tighten the screws on the side panels with 4 Nm ± 0.3 Nm (22.9 in lb. ± 2.6).

7 TROUBLESHOOTING

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

Type of fault	Corrective action
MMA welding basic problems	Check that the welding and return cables are correctly connected on the power source.
	Make sure the return clamp has proper contact with the work piece.
	Check that the correct electrodes and polarity are being used. For polarity, check electrode packaging.
	Check that the correct current value is set.
	Adjust Arc Force and Hot start.
TIG welding problems	Check that the welding and return cables are correctly connected on power source.
	Make sure the return clamp has proper contact with the work piece.
	Make sure the TIG torch lead is connected to negative welding terminal.
	Make sure the correct shielding gas, gas flow, welding current, filler rod placement, electrode diameter, and welding mode on power source is used.
	Make sure the gas valve on the cylinder is on.
No arc	Check that display is on to verify that the power source has power.
	Check setting panel display correct values.
	Check that the mains power supply switch is turned on.
	Check that the mains, welding and return cables are correctly connected.
	Check the mains power supply fuses.
Welding current is interrupted during welding	Check whether the overheating light (thermal protection) at setting panel is on.
	Continue with fault type "No Arc".
The thermal protection trips frequently	Make sure the recommended duty cycle for the weld current has not been exceeded (see section "Duty cycle" in the TECHNICHAL DATA chapter).
	Make sure the air inlets or outlets are not clogged.
	Clean inside machine according to routine maintenance.

Type of fault	Corrective action
Porosity within the weld metal	Check that the gas bottle is not empty.
	Check that the 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 TIG torch nozzle and the work piece to a minimum.
	Do not work in areas where draughts, 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.

Fault symptom	Action
Cooling	
Leakage from the hoses.	Check that the hose clamps are properly tightened and that the hoses are not damaged.
Leakage at the weld tool.	Check that an O-ring is correctly located at the back end of the tool and that the O-ring is not damaged.

8 ERROR CODES

The error code is used to indicate that a fault has occurred in the equipment. Errors are indicated by the text "Error" followed by the error code number and description shown in the display.

Error log
The equipment displays the number of times each error has occurred.

8.1 Error code descriptions

Error codes that the user can handle are listed below. If any other error code appears, contact an authorized ESAB service technician.

Error code	Title	Display information	Description	Action
209:01	Mains Power Over Voltage	Error 20901 Mains power over voltage	The product has detected that the incoming mains power is outside of the product specifications.	Make sure that the mains power is within the product specification.
209:02	Mains Power Under Voltage	Error 20902 Mains power under voltage	The product has detected that the incoming mains power is outside of the product specifications.	Make sure that the mains power is within the product specification.
206:02	Over Temperature	Error 20602 Over Temperature	The product has overheated and shutdown to allow the fan to cool it down. Welding can resume once the unit has cooled.	Wait until the temperature cools down.
114:01	Communication fault	Error 11401 Internal communication error	Communication error between PC CTRL and HMI.	Check the connection between HMI to main control PCB board.

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.

The Revenge ET 230iP AC/DC is designed and tested in accordance with international standards **AS 60974.1**, **EN IEC 60974-3** and **EN IEC 60974-10**. It is the obligation of the authorized service center carrying out the service or repair work to ensure that the product still conforms to the aforementioned standards.

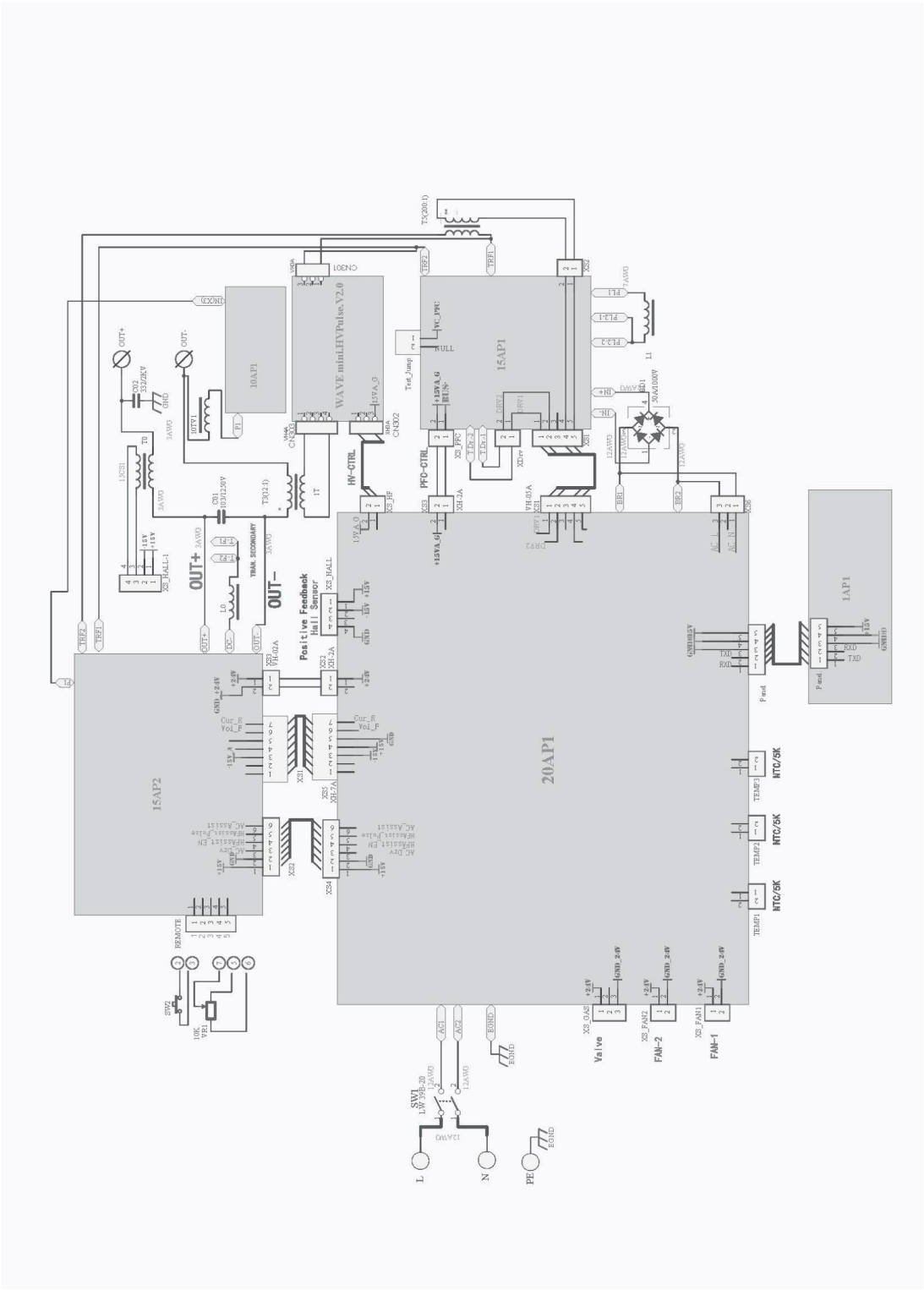
Spare parts and wear parts can be ordered through your nearest ESAB dealer, see **esab.com**. When ordering, please state product type, serial number, designation and spare part number in accordance with the spare parts list. This facilitates dispatch and ensures correct delivery.

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

APPENDIX

BLOCK DIAGRAM

From serial number HA336YY-XXXXXX



ORDERING NUMBERS

Ordering number	Denomination	Type	Notes
E479700230	Power Source	Revenge ET 230iP AC/DC	AUS
0448547001	Instruction manual	Revenge ET 230iP AC/DC	AUS
0448548001	Spare parts list	Revenge ET 230iP AC/DC	AUS

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

ACCESSORIES

0448040880	Coolmini3
0464691002 0464691003 0700026234 0700026235 0700026294 0700026295	TIG Torch 4m 26 Flex Head with remote TIG Torch 8m 26 Flex Head with remote (supplied with package) Exeor TIG SR 17-R torch, Air , 4 m Exeor TIG SR 17-R torch, Air , 8 m Exeor TIG SR 21-R torch, Water, 4 m Exeor TIG SR 21-R torch, Water, 8 m
WS42550 WS53550	Lead Set 250A, 4m Cable 25mm2, 50mm Plug, Twist Lock Holder Lead Set 400A, 5m Cable 35mm2, 50mm Plug, Twist Lock Holder
0700500084	MMA 4, Remote control, 10m
W4015825	TIG foot control, 7m, 8-pin connector
W4011504	ARC TROLLEY-L
W4001400 W4001401	MIG/TIG TORCH COOLANT 5L MIG/TIG TORCH COOLANT 20L

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