Aristo®

U6

Instruction manual

0459 287 487 US 20160127

Valid for: from program version 2.12A

1 INTRODUCTION

This manual describes the operation of the **U6** control panel.

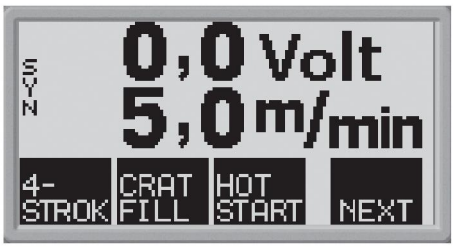
For general information on operation, see the wire feed unit and power source operating instructions.

If this warning is shown in the display, it means the power source don't support this function.

Contact an authorized ESAB service engineer to obtain updated software.

1.1 Do this first

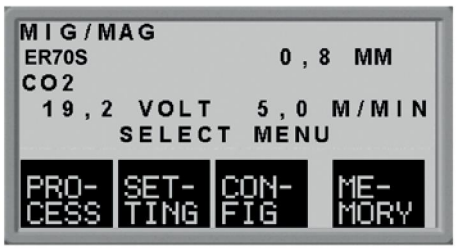
This menu appears on the display the first time you start the power unit.



When delivered, the control panel and display are set to English. There are 14 languages stored in the control panel: to change to the one you want, do as follows.

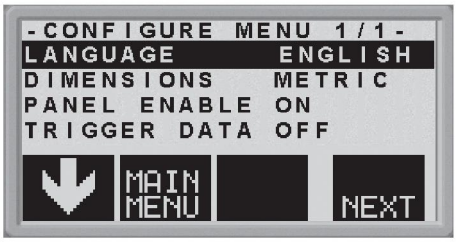
Press 

to reach the first selection menu.



Press 

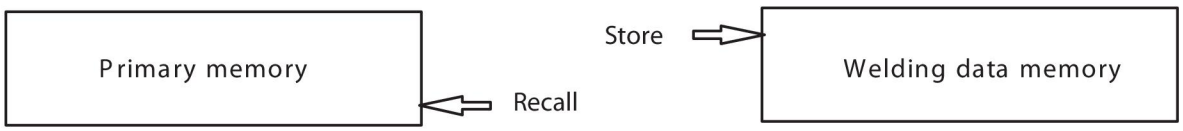
to reach the configuration menu.



Press NEXT (i.e. the soft button on the right beneath the display) until the correct language is shown in the display.

1.2 The control panel's working method

The control panel can be said to comprise two units: the primary memory and the welding data memory.



In the primary memory, a complete set of welding data settings are created, which can be stored in the welding data memory.

When welding, the process is always controlled by the content of the primary memory. For this reason, it is also possible to recall welding data settings from the welding data memory to the primary memory.

Note, the primary memory always contains the most recently set of welding data settings. These can be recalled from the welding data memory or individually altered settings. In other words, the primary memory is never empty or “reset”.

1.3 Control panel

1. Display
2. Knob for setting the voltage
3. Knob for setting the wire feed speed and current
4. Soft pushbuttons (function keys)
5. MENU button

Soft pushbuttons 

The functions of these buttons (i.e. what each one does) changes, depending on the sub-menu shown on the display. The particular function for each button is shown by the text, in the bottom line of the display, corresponding to the buttons. (A white dot beside the text indicates that the button is active.)

MENU pushbutton 

This pushbutton brings you to the selection menu (see item <>), if you are in the main menu. If you are in some other menu, it moves you back up one menu.

1.4 Symbols in the display

Back to the main menu.

Move the cursor down to a new setting parameter.

Change the function in the selected line.

Increase the value.

Decrease the value.

2 MENUS

The control panel uses several different menus: the main menu, the measurements menu, the selection menu, the process menu, the settings menu, the configuration menu and the memory menu. A startup display is also shown on startup, with information on the type of panel and the software version in use.

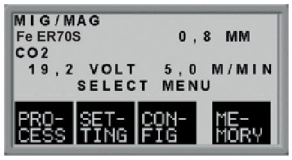
2.1 The main menu and the measurements menu

The main menu always appears immediately after startup, showing the current set values. If you are in the main menu when you start to weld, the menu changes automatically to show the measured values (the measurements menu). The measured values remain on the display even after welding stops.

Other menus can be accessed without losing the measured values.

The set values are only displayed, instead of the measured values, when a knob is turned, or the welding method changed.

2.2 The selection menu

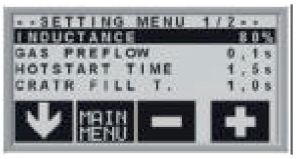


Use the selection menu to select the next menu level you want to go to: process, settings, configuration, or memory.

The process menu

Use this menu to change the welding process, material type, etc.

The settings menu



Use this menu to set welding parameters, such as gas preflow, hot start time, crater fill time, etc.

The configuration menu

Use this menu to change the language, measurements units, etc.

The memory menu

Use this menu to store, recall and/or erase various stored welding data settings. There are ten storage positions for welding data.

3 MIG/MAG WELDING

The arc in MIG/MAG welding melts a filler wire (the electrode), which is continuously fed into the weld, with the molten zone being protected by a shielding gas.

Pulsing the current affects the transfer of molten droplets from the wire , to produce a stable, spatter-free arc even at low welding data.

3.1 Settings

MIG/MAG welding without pulsing

Settings	Setting range	In steps of	Default setting
2/4-stroke [1)]	2-stroke or 4-stroke	-	2-stroke
Crater filling	OFF or ON	-	OFF
Crater fill time	0 - 5 s	0.1 s	1.0 s
Hot start	OFF or ON	-	OFF
Hot start time	0 - 10 s	0.1 s	1.5 s
Creep start	OFF or ON	-	ON
Gas purging [1)]	-	-	-
Cold wire feed	-	-	-
QSet	OFF or ON	-	OFF
Synergy	OFF or ON	-	ON [2)]
Inductance	0 - 100	1	70
Gas preflow	0.1 - 25 s	0.1 s	0.1 s
Burnback time	0 - 0.35 s	0.01 s	0.08 s
SCT	OFF or ON	-	OFF
Gas postflow	0.1 - 20 s	1 s	1 s
Spot welding	OFF or ON	-	OFF
Spot welding time	0.1 - 25 s	0.1 s	0.1 s
Voltage	8 - 60	0.25 (displayed to one decimal)	synergy deviation ±0
Wire feed speed	2.62 - 82 ft./min (0.8 - 25.0 m/min)	0.32 ft./min (0.1 m/min)	16.4 ft./min (5 m/min)
Trigger data	OFF, ON or ARC OFF	-	OFF
Dimensions	METRIC or INCH	-	METRIC
Panel enable	OFF or ON	-	ON
Automatic save	OFF or ON	-	OFF
AVC feeder	OFF or ON	-	OFF
Limits	OFF or ON	-	OFF
Lock code	OFF or ON	-	OFF

[1)] These functions cannot be changed while welding is in progress.

[2)] The synergy line on delivery: solid wire (ER70S), shielding gas CO2 with wire 0.8 mm.

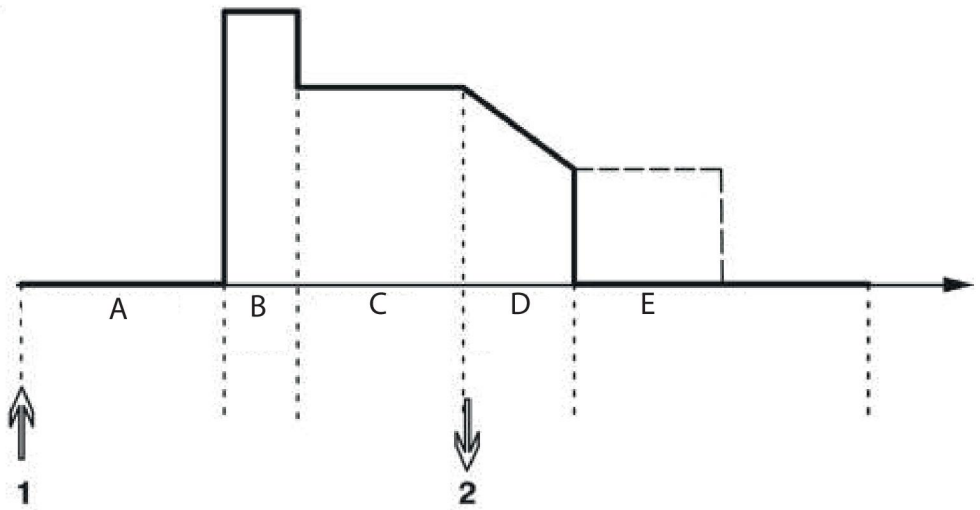
MIG/MAG welding with pulsing

Settings	Setting range	In steps of	Default setting
2/4-stroke [1]	2-stroke or 4-stroke	-	2-stroke
Crater filling	OFF or ON	-	OFF
Crater fill time	0 - 5 s	0.1 s	1.0 s
Hot start	OFF or ON	-	OFF
Hot start time	0 - 10 s	0.1 s	1.5 s
Creep start	OFF or ON	-	ON
Gas purging [1]	-	-	-
Cold wire feed	-	-	-
Gas preflow	0.1 - 25 s	0.1 s	0.1 s
Burnback time	0 - 0.35 s	0.01 s	0.08 s
SCT	OFF or ON	-	OFF
Gas postflow	0 - 20 s	1 s	1 s
Spot welding	OFF or ON	-	OFF
Spot welding time	0.1 - 25 s	0.1 s	0.1 s
Voltage	8 - 60	0.25 (displayed to one decimal)	synergy deviation ±0
Wire feed speed	2.62 - 82 ft./min (0.8 - 25.0 m/min)	0.32 ft./min (0.1 m/min)	16.4 ft./min (5 m/min)
Trigger data	OFF, ON or ARC OFF	-	DISABLE
Dimensions	METRIC or INCH	-	METRIC
Panel enable	OFF or ON	-	ON
Automatic save	OFF or ON	-	OFF
AVC feeder	OFF or ON	-	OFF
Limits	OFF or ON	-	OFF
Lock code	OFF or ON	-	OFF

[1] These functions cannot be changed while welding is in progress.

3.2 Explanation of functions

2 - Stroke



2-stroke operation of the welding torch switch button.

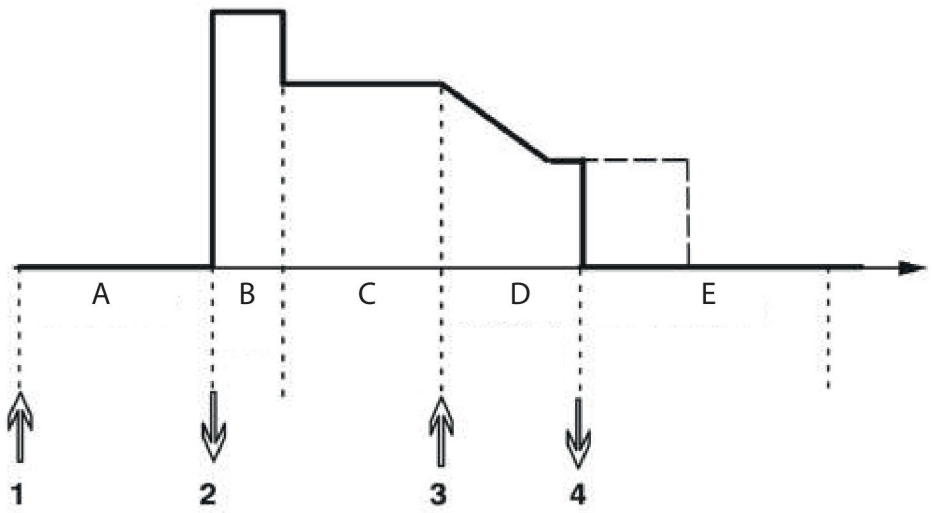
A = Gas preflow B = Hot start C = Welding D = Crater fill E = Gas postflow

In the **2-stroke** control mode, pressing the welding torch trigger switch starts the gas preflow (if used) (1) and strikes the arc. Releasing the trigger switch (2), starts crater filling (if in operation), extinguishes the arc and starts the gas postflow (if in operation).

TIP: If the welding torch trigger switch is pressed again during the crater fill time, welding can be continued for as long as required (shown by the dotted line) using the crater fill data. Crater filling can also be interrupted by quickly pressing and releasing the trigger switch while crater filling is in progress.

- Activating 2-stroke from the *main menu*.

4 - Stroke



Function when using 4-stroke control of the welding torch.

A = Gas preflow B = Hot start C = Welding D = Crater fill E = Gas postflow

In the **4-stroke** control mode, pressing the welding torch trigger switch starts the gas preflow (1). Releasing the trigger switch (2) starts the welding process. At the end of welding, the welder presses the trigger switch again (3), which starts crater filling (if in operation) and reduces the welding data to a lower value. Releasing the trigger switch again (4) extinguishes the arc and starts the gas postflow (if used).

TIP: Crater filling stops when the trigger switch is released. Keeping the button pressed continues the welding at the lower data of the crater filling function (dotted line).

- Activating 4-stroke from the *main menu*.

Crater filling

Crater filling helps to avoid pores, thermal cracking, and crater formation in the workpiece at the end of the weld.

- Setting the crater filling time from the *settings menu*.

Hot start

The hot start function increases the welding current for an adjustable time at the start of welding, which reduces the risk of poor fusion at the start of the weld.

- Setting the hot start time from the *settings menu*.

Creep start

The creep start function reduces the initial feed speed of the wire to 50% of the set speed, until the wire contacts the workpiece.

- Activating creep start from the *main menu*.

Gas purging

The gas purging function is used when measuring the gas flow rate, or to purge the gas hoses of any air or moisture before starting to weld. It continues for as long as the button is kept pressed down, and prevents a voltage from being applied and the wire feed from starting.

- Activating gas purging from the *main menu*.

Cold wire feed (Wire inching)

Cold wire feed is used to feed out wire without energizing the arc. The wire is fed out for as long as the button is kept pressed in.

- Activating cold wire feed from the *main menu*.

QSet™

QSet™ is used to make it easier to set the welding parameters.

- Turning the knob clockwise increases (+) the arc length.
- Turning the knob counterclockwise reduces (-) the arc length.

SHORT ARC

Initially, when starting to weld with a wire type / gas type, QSet™ automatically sets all of the necessary welding parameters. Once this is done, QSet™ stores all the data to produce a good weld. The voltage then automatically conforms to changes in the wire feed speed.

SPRAY ARC

When approaching the spray arc area, the value for QSet™ must be increased. Disengage the QSet™ function, when welding with pure spray arc. All the settings are inherited from QSet™, with the exception of the voltage, which must be set.

Recommendation: First, make a weld (6 seconds) with QSet™ on a test piece, to obtain all the correct data.

NOTE!
The QSet function and the synergy function cannot be activated at the same time.

- Activating QSet from the *process menu*.

Synergy

Every combination of wire type, wire diameter, and gas mixture requires a unique relationship between the wire feed speed and voltage (arc length) to ensure a stable arc. The arc voltage (arc length) is automatically controlled in accordance with the preprogramed synergy line that has been selected by the welder, which makes it much easier to find the optimum welding parameters quickly. The relationship between the wire feed speed and the other parameters is referred to as the synergy characteristic or synergy line.

Synergy ON: the main menu shows the set wire feed, as well as positive and negative deviations from the synergy line's voltage.

Positive deviations are displayed with a bar above SYN, negative ones are displayed below.

Synergy OFF: the main menu shows the set value for voltage and wire feed.

- Activating synergy from the *process menu*.

Synergy line package

The synergy line package supplied with the machine is called “**Standard** synergic lines” and contains the 33 most frequently used synergy lines.

It is also possible to order other synergy line packages, but these must be installed by an authorized ESAB service engineer.

Inductance

Higher inductance produces a more flowing weld and less spatter. Lower inductance produces a harsher sound and a stable, concentrated arc.

- Setting the inductance from the *settings menu*.

Gas preflow

The gas preflow time is the time during which the shielding gas flows before the arc is struck.

- Setting the gas preflow time from the *settings menu*.

Burnback time

The burnback time is a delay between when the wire feed unit starts to brake the wire until the power unit shuts off the welding current. Too short of a burnback time leaves a long piece of filler wire projecting after welding has stopped, with the resulting risk of the wire freezing into the solidifying weld pool. On the other hand, too long of a burnback time reduces the stickout to such an extent that there is a risk of the arc striking from the welding torch contact tip when welding is started the next time.

- Setting the burnback time from the *settings menu*.

SCT

SCT is a function that gives small repeated short circuits at the end of the welding until the wire feeding has totally stopped and the contact with the workpiece has been broken.

Gas postflow

The gas postflow function controls the time during which shielding gas continues to flow after the arc has been extinguished.

- Setting the gas postflow time from the *settings menu*.

Changing trigger data

Using this function, it is possible to toggle between different pre-set welding data alternatives by double-clicking on the welding blowpipe's trigger.

Toggling takes place between the memory positions 1, 2 and 3, see the “MEMORY MANAGEMENT”. If there is no data in memory position 2, toggling takes place between positions 1 and 3 instead.

ON - Toggling between memory positions can take place **before**, **after**, or **during** welding.

ARC OFF - Toggling between memory positions can only take place **before** or **after** welding.

- Activating trigger data toggling from the *configuration menu*.

AVC feeder

When this function is activated, it is possible to use an Arc Voltage Controlled or Off-The-Arc feeder, where the arc voltage from the power source is used to power the feed unit.

- Activating AVC feeder from the *process menu*.

Spot welding

Select Spot welding when you want to “spot-weld” thin sheet metal.

- Activation and setting of Spot welding is performed in the *settings menu*.

Voltage

A higher voltage gives a longer arc, with a hotter and wider weld pool.

Irrespective of which menu is displayed, the set value for the voltage can always be changed. The value is displayed in the main menu or selection menu.

Wire feed speed

The wire feed speed is the speed at which the filler wire is supplied, measured in m/min.

Irrespective of which menu is displayed, the set value for the wire feed speed can always be changed. The value is displayed in the main menu or selection menu.

4 TIG WELDING

4.1 Overview

TIG welding uses a non-melting tungsten electrode from which the arc is struck that melts the workpiece. The molten weld pool and the tungsten electrode are protected by a shielding gas.

Pulsing is used, to give better control of the weld pool and solidification. The pulse frequency is sufficiently low to allow some of the weld pool to start to solidify between each pulse. Pulsing has four controllable parameters: pulse duration, background current time, pulse current, and background current.

4.2 Settings

TIG welding without pulsing

Settings	Setting range	In steps of	Default setting
2/4-stroke [1)]	2-stroke or 4-stroke	-	2-stroke
HF / Liftarc	HF or Liftarc	-	HF
Live TIG-start [2)]	-	-	-
Gas purging [1)]	-	-	-
Gas pre-flow	0 - 5 s	0,1 s	0,5 s
“Slope up” time	0 - 5 s	0,1 s	0,0 s
”Slope down” time	0 - 10 s	0,1 s	2,0 s
Gas post-flow	0 - 25 s	0,1 s	5,0 s
Current [2)]	4 - 500 A	1 A	100 A
Trigger data	OFF, ON or ARC OFF	-	DISABLE
Dimensions	METRIC or INCH	-	METRIC
Panel enable	OFF or ON	-	ON
Automatic save	OFF or ON	-	OFF
Limits	OFF or ON	-	OFF
Lock code	OFF or ON	-	OFF
Min. current	0 - 99%	1%	0%
VRD	-	-	-

[1)] These functions cannot be changed while welding is in progress.

[2)] Live TIG-start/Maximal current depends on the machine type is used.

TIG welding with pulsing

Settings	Setting range	In steps of	Default setting
2/4-stroke [1)]	2-stroke or 4-stroke	-	2-stroke
HF / Liftarc	HF or Liftarc	-	HF
Gas purging [1)]	0 - 5 s	0,1 s	0,5 s
Gas pre-flow	0 - 5 s	0,1 s	0,5 s
“Slope up” time	0 - 5 s	0,1 s	0,0 s
”Slope down” time	0 - 5 s	0,1 s	2,0 s

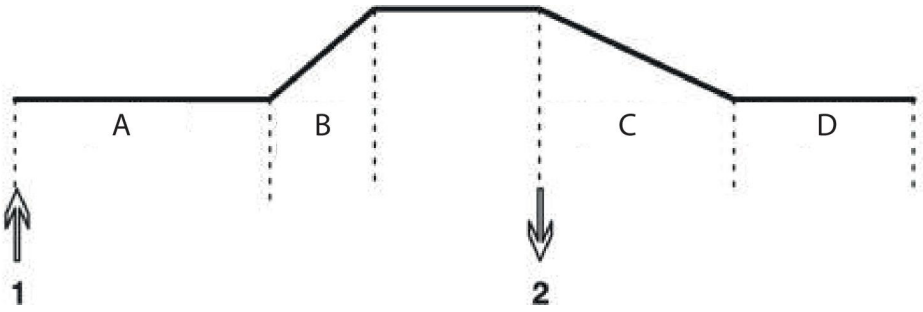
Settings	Setting range	In steps of	Default setting
Gas post-flow	0 - 25 s	0,1 s	5,0 s
Pulse duration	0.001 - 0.1 s 0.1 - 5 s	0.001 s 0.1 s	0,100 s
Background duration	0.001 - 0.1 s 0.1 -1 s	0.001 s 0.1 s	0,200 s
Pulse current [2)]	4 - 500 A	1 A	100 A
Background current [2)]	4 - 500 A	1 A	25 A
Trigger data	OFF, ON or ARC OFF	-	DISABLE
Dimensions	METRIC or INCH	-	METRIC
Panel enable	OFF or ON	-	ON
Automatic save	OFF or ON	-	OFF
Limits	OFF or ON	-	OFF
Lock code	OFF or ON	-	OFF
Min. current	0 - 99%	1%	0%

[1)] These functions cannot be changed while welding is in progress.

[2)] The maximum current depends on the machine type used.

4.3 Explanation of functions

2-Stroke



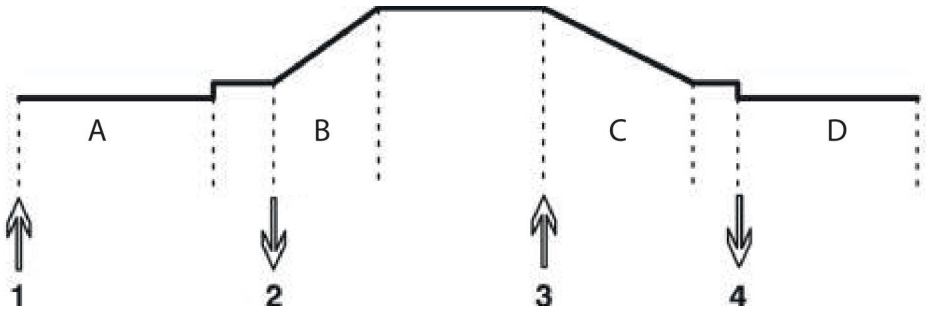
2-stroke operation of the welding torch switch button.

A = Gas pre-flow B = Slope up C = Slope down D = Gas post-flow

In the **2-stroke** control mode, pressing the welding torch switch button starts the gas preflow (if used) and strikes the arc (1). The current rises to the set value (as controlled by the “slope up” function, if in operation). Releasing the switch button (2) reduces the current (or starts “slope down” if in operation) and extinguishes the arc. Gas postflow follows, if it is in operation.

- Activating 2-stroke from the *main menu*.

4-Stroke



4-stroke operation of the welding torch switch button.

A = Gas pre-flow B = Slope up C = Slope down D = Gas post-flow

4-stroke operation of the welding torch switch button.

In the **4-stroke** control mode, pressing the switch button starts the gas preflow (if used) (1). At the end of the gas preflow time, the current rises to the pilot level (a few ampere), and the arc is struck. Releasing the switch button (2) increases the current to the set value (with “slope up”, if in use). At the end of welding, the welder presses the switch button again (3), which reduces the current to the pilot level again (with “slope down”, if in use). Releasing the switch button again (4) extinguishes the arc and starts the gas postflow (if used).

- Activating 4-stroke from the *main menu*.

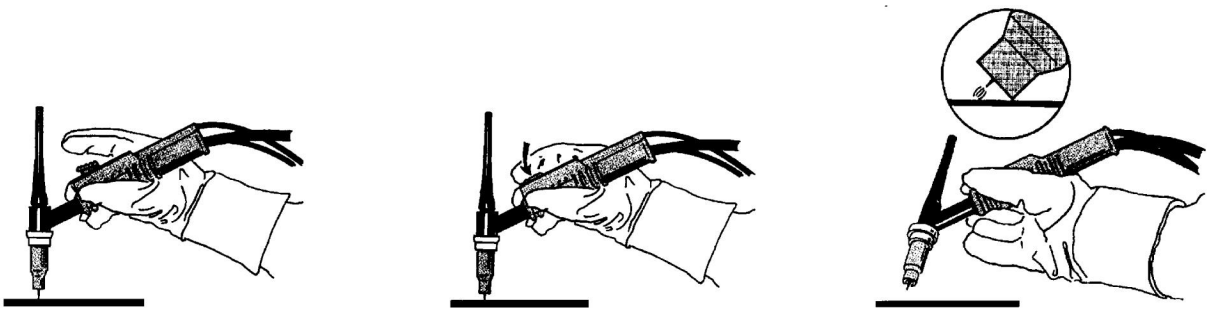
HF

The HF function strikes the arc, by a spark produced when the tungsten electrode is brought to within a given distance from the workpiece.

- Activating HF from the *process menu*.

LiftArc

The LiftArc function strikes the arc when the electrode is brought into contact with the workpiece and then lifted away from it.

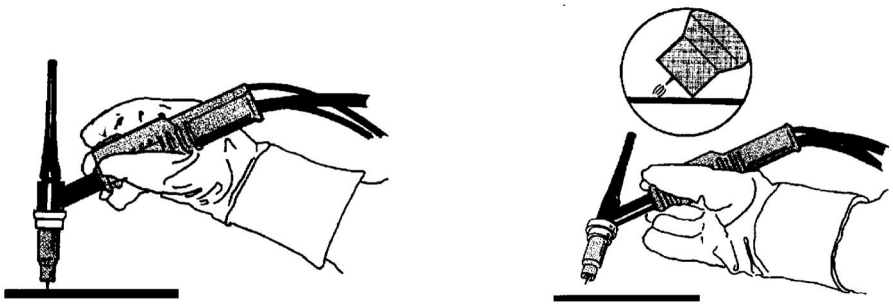


Striking the arc with the LiftArc™ function:

1. The electrode is touched on to the workpiece.
2. The trigger switch is pressed, and a low current starts to flow.
3. The welder lifts the electrode from the workpiece: the arc strikes, and the current rises automatically to the set value.

”Live TIG-start”

With “Live TIG start”, the arc strikes when the tungsten electrode is brought into contact with the workpiece and then lifted away from it.



- Activating “Live TIG-start” from the *process menu*.

Gas purging

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

- Gas purging from the *main menu*.

Gas pre-flow

This controls the time during which the shielding gas flows before the arc is struck.

- Setting the gas preflow time from the *settings menu*.

Slope up

The slope up function means that, when the TIG arc strikes, the current rises slowly to the set value. This provides a gentler heating of the electrode, and gives the welder a chance to position the electrode properly before the set welding current is reached.

- The setting of slope up time performed in the *settings menu*.

Slope down

The slope down function in TIG welding is used to avoid the formation of crate cracking at the end of welding. It reduces the current slowly over an adjustable period of time.

- The setting of slope down time performed in the *settings menu*.

Gas post-flow

This controls the time during which the shielding gas flows after the arc is extinguished.

- Setting the gas postflow time from the *settings menu*.

Pulse duration

This is the length of time during which the pulse current is *on* during a pulse cycle.

- Setting the pulse duration time from the *settings menu*.

Background time

This is the length of time during which the background current flows. Together with the pulse duration time, it gives the total pulse cycle time.

- Setting the background time from the *settings menu*.

Background current

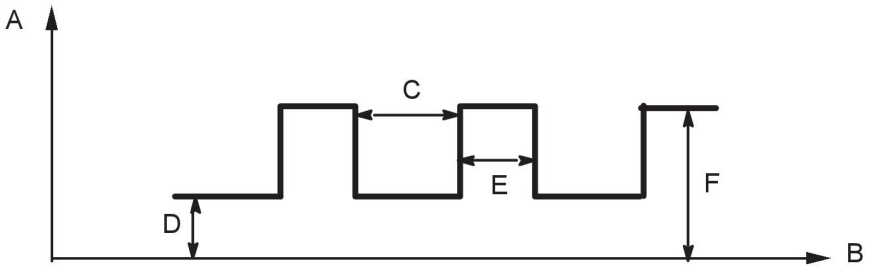
This is the lower current value of the two currents used in pulsed current welding.

- Setting the background current from the *settings menu*.

Pulse current

This is the higher current value of the two currents used in pulsed current welding.

Irrespective of which menu is displayed, the set value for the pulse current can always be changed. The value is displayed in the *main menu*, the *selection menu* or the *settings menu*.



TIG welding with pulsing.

A = Current	B = Time	C = Background time
D = Background	E = Pulse time	F = Pulse current

Current

Higher currents produce wider and deeper penetration into the workpiece.

Irrespective of which menu is displayed, the set value for the current can always be changed. The value is displayed in the *main menu* or *selection menu*.

Change of trigger data

Using this function, it is possible to toggle between different pre-set welding data alternatives by double-clicking on the welding blowpipe's trigger.

Toggling takes place between the memory positions 1, 2 and 3, see the “MEMORY MANAGEMENT” chapter. If there is no data in memory position 2, toggling takes place between positions 1 and 3 instead.

ON - Toggling between memory positions can take place **before**, **after**, or **during** welding.

ARC OFF - Toggling between memory positions can only take place **before** or **after** welding.

- Activating trigger data toggling from the *configuration* menu.

Min current (Remote min)

Used to set the minimum current for the remote control. If the max current is 100 A and the min current is to be 50 A, set the min current to 50%. If the max. current is 100 A and the min. current is 90 A, set the min. current to 90%.

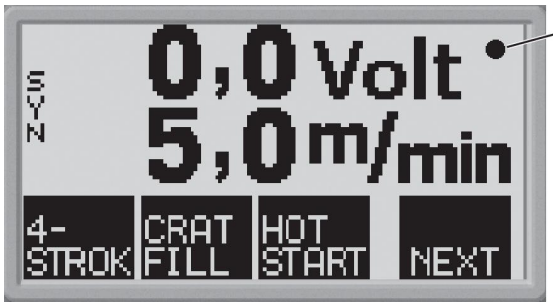
- Activating min current from the *settings menu*.

VRD (Voltage Reduction Device)

The VRD function ensures that the open-circuit voltage does not exceed 35 V when welding is not being carried out. This is indicated when the VRD icon is visible displayed, see picture.

The VRD function is blocked when the system senses that welding has started.

If the VRD function is activated and the open-circuit voltage exceeds the 35 V limit, this is indicated by an error message (16) appearing in the display and welding cannot be started while the error message is displayed.



The VRD icon

NOTE!
The VRD function works for power sources where it is implemented.

5 MMA WELDING

MMA welding is welding with the use of coated electrodes. Striking the arc melts the electrode and the coating, and the coating then forms a protective slag.

5.1 Settings

Settings	Setting range	In steps of	Default setting
Hot start [1)]	ON or OFF	-	OFF
Hot start time	1 - 30	1	10
Arc force	0 - 10	0,5	3
Current [2)]	16 - 500 A	1A	164 A
Dimensions	METRIC or INCH	-	METRIC
Panel enable	OFF or ON	-	ON
Automatic save	OFF or ON	-	OFF
Limits	OFF or ON	-	OFF
Lock code	OFF or ON		OFF
Min. current	0 - 99%	1%	0%
VRD	-	-	-

[1)] These functions cannot be changed while welding is in progress.

[2)]The maximum current depends on the machine type used.

The synergy line on delivery: rutile electrode 4.0 mm.

Hot start

The hot start function increases the welding current for an adjustable time at the start of welding. This reduces the risk of defects arising from poor fusion at the start of the weld.

Setting the hot start time from the settings menu.

Arc force

The arc force function controls how the current changes when the arc length changes. A lower value gives a calmer arc with less spatter.

Setting the arc force from the settings menu.

Current

Higher currents produce wider and deeper penetration into the workpiece.

Irrespective of which menu is displayed, the set value for the current can always be changed. The value is displayed in the main menu or selection menu.

Min current (Remote min)

Used to set the minimum current for the remote control. If the max current is 100 A and the min current is to be 50 A, set the min current to 50%.

If the max. current is 100 A and the min. current is 90 A, set the min. current to 90%.

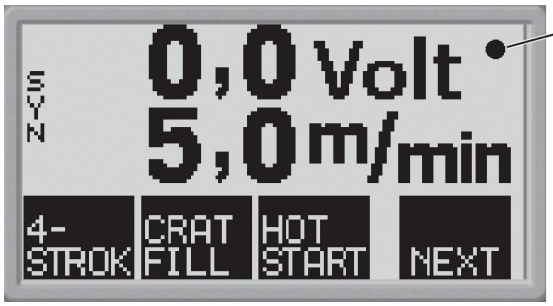
- Activating min current from the *settings menu*.

VRD (Voltage Reduction Device)

The VRD function ensures that the open-circuit voltage does not exceed 35 V when welding is not being carried out. This is indicated when the VRD icon is visible displayed, see picture.

The VRD function is blocked when the system senses that welding has started.

If the VRD function is activated and the open-circuit voltage exceeds the 35 V limit, this is indicated by an error message (16) appearing in the display and welding cannot be started while the error message is displayed.



The VRD icon

NOTE!
The VRD function works for power sources where it is implemented.

6 ARC-AIR GOUGING

Arc-air gouging involves the use of a special electrode consisting of a carbon bar with a copper case. An arc is formed between the carbon bar and the workpiece, air is supplied to blow away the melted material, and a seam is formed.

6.1 Settings

Settings	Setting range	In steps of	Default setting
Electrode diameter	4.0-8.0 mm	1 mm	4.0 mm
Voltage	8-60 V	0.25 V (Displayed to one decimal.)	37.0 V

Electrode diameter

Larger electrode diameters produce wider and deeper penetration into the workpiece.

Voltage

Higher voltages produce wider and deeper penetration into the workpiece.

7 GENERAL FUNCTIONS

7.1 Remote control unit

Machines with integral control panels should have program version 1.21 or higher, in order for the remote control to function correctly.

Control panel's behavior on connection of the remote control unit

- The menu in the display freezes, indicating that the remote control unit is connected.
  Measurement and set values are updated, but only displayed in those menus in which the values can be shown.
- If a fault code symbol is displayed, it cannot be removed until the remote control has been disconnected.
- With 10-program remote control units, it is possible to toggle between memory positions 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10. If memory position 2 is empty, the values from position 1 are retained. For further information, see the “MEMORY MANAGEMENT” chapter.

7.2 Settings

Panel enable

When a remote control unit is connected it is possible to set the current or voltage and wire feed speed by using the control panel or the remote control unit.

NOTE!
This function must be activated before the remote control unit is connected.

- Activating panel enable from the *configuration menu*.

Auto save

If a welding data setting is recalled from the welding data memory, and the settings are adjusted, the changed settings will be saved automatically when a new welding data set is recalled from the memory.

- Activating auto save from the *configuration menu*.

Limits

This function facilitates the assurance of a good welding quality by setting the max. and min. values for wire feed / current or voltage. The limits can be saved in the first 5 memory positions of the welding data memory.

- Activating limits from the *configuration menu*.

Lock code

By using this function, the settings menu can be locked, it is then only possible to select the main menu, the memory menu and the measurements menu, see the “LOCK CODE” chapter.

- Activating lock code from the *configuration menu*.

8 MEMORY MANAGEMENT

Various welding data sets created in the primary memory can be stored in the memory menu. Up to 10 different welding data sets can be stored.

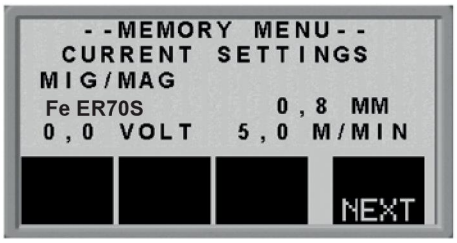
8.1 Store welding data

Place a welding data set in the primary memory.

Press 

to access the “selection menu” and then on 

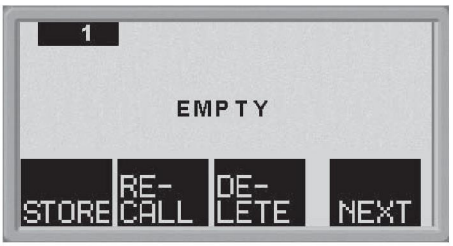
to access the relevant settings.



Check that the welding data settings are correct.

Press 

to access the memory menu.



Press 

until you come to the memory position in which you want to store the welding data setting, e.g. position 2.

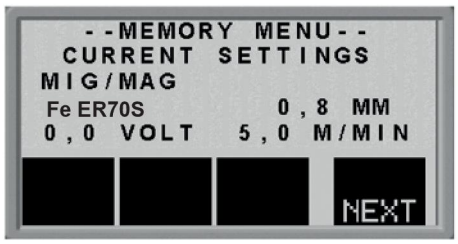
Press 

a welding data setting is now stored in memory position 2. The other memory positions are empty.

8.2 Recall welding data

NOTE!
An error message (error 44) may appear when welding data is recalled if the U6 panel has detected a mismatch between method data read from memory and current data. This can occur if welding data is recalled when connected to a power source that has a different software version than the power source that was used to save the weld data.

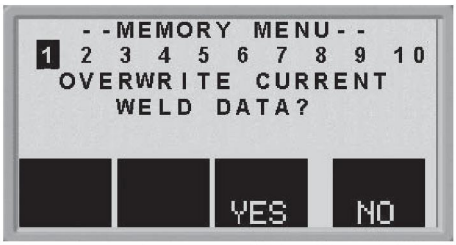
Press MENU to access the selection menu and then on MEM-ORY to access the relevant settings.



Press NEXT to access the memory menu.

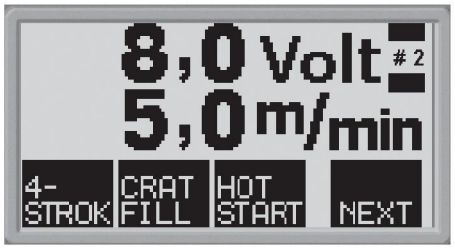
Choose which memory position you want to recall, e.g. position 2. Press NEXT until you come to position 2.

Press RE-CALL to recall memory position 2. The following question appears:



Press “YES”, if you want to recall welding data from memory position 2 and change the settings that are currently in the primary memory. (If you change your mind, press “NO”).

This icon # 2 in the main menu shows which memory position is recalled.

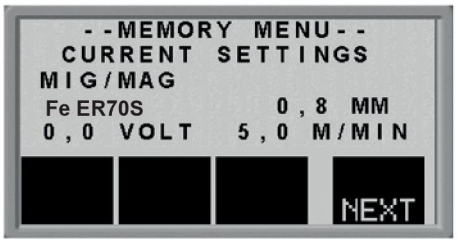


8.3 Delete welding data

Press 

to access the selection menu and then on 

to access the relevant settings.



Press 

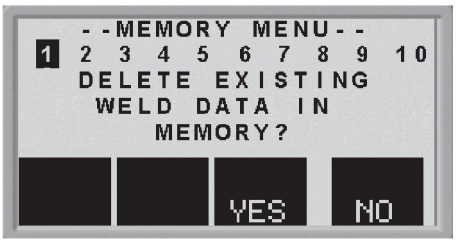
to access the memory menu.

Choose which memory position you want to delete, e.g. position 2. Press 

until you come to position 2.

Press 

to delete memory position 2. The following question appears:

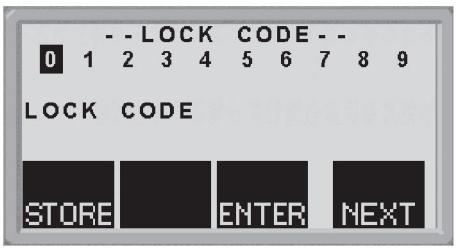


Press “YES”, if you want to delete welding data from memory position 2, (if you change your mind, press “NO”). Memory position 2 is now empty.

9 LOCK CODE

Press 

to access the lock code menu.



Press NEXT until the first digit of the PIN code is selected.

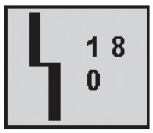
Press STORE, to store the first digit of the code. Repeat the procedure for the remaining digits.

Press ENTER to unlock the control panel.

10 FAULT CODES

10.1 General

Fault codes are used to indicate that a fault has occurred in the equipment. They are shown in the display in the form of a symbol as follows:



Fault codes are updated every three seconds. The upper numeral in the symbol is the number of the particular fault code. The lower figure indicates where the fault is.

The above symbol shows that the control panel (0) has lost contact with the power unit.

If several faults have been detected, only the code for the latest fault to occur will be displayed.

Press any of the function keys to clear the symbol from the display.

Symbols may be steady or flashing, depending on the type of fault.

Flashing symbols are highlighted with “o” in the list of fault codes.

10.2 List of fault codes

0 = control panel

1 = cooling unit

2 = power source

3 = wire feed unit

4 = remote control

Fault code	Description	0	1	2	3	4
1	Memory error, EPROM	x	x	x	x	x
2	Memory error, RAM	x	x	x	x	
3	Memory error, external RAM	x	x			
4	5 V power supply	x		x		
5	Intermediate DC voltage outside limits			x		
6	High temperature		x	x		
8	Power supply 1*	x	x	x	x	x
9	Power supply 2*			x	x	x
10	Power supply 3*			x		
11	Wire feed servo				x	
12	Communication error (warning)	x	x	x	x	x
14	Communication error (bus off)	x	x			
15	Messages lost	x		x	x	x
16	High open-circuit voltage			x		
17	Lost contact with the wire feed unit	o				
18	Lost contact with the power unit	o				
19	Incorrect settings values in external RAM	x				
20	Memory allocation error	x				

Fault code	Description	0	1	2	3	4
22	Transmitter buffer overflow	x	x			
23	Receiver buffer overflow	x	x			
26	Watchdog	x		x	x	
27	Out of wire	x		x	o	
28	Stack overflow	x	x	x	x	
29	No cooling water flow			o		
30	Regulator time error level exceeded	x		x		
31	No reply from the display unit	x				
32	No gas flow				o	
40	Incompatible units	x				
43	The connected power source does not have the latest software	x				
44	Memory management error	x				

Unit	Power supply 1*	Power supply 2*	Power supply 3*
Cooling unit	+24 V		
Control panel	+3 V		
Power unit	+15 V	-15 V	+24 V
Wire feed unit	+15 V	+20 V	
Wire feed unit L	+15 V	+60 V	
Remote control	+12 V	+10 V	

10.3 Fault code descriptions

Below are described the event codes for which the user can take corrective action. If any other code is shown, contact a service technician.

Fault code	Description
1	**Program memory error (EPROM)** There is a fault in the program memory. This fault does not disable any functions. **Action:** Restart the machine. If the fault persists, contact a service technician.
2	**Microprocessor RAM error** The microprocessor is unable to read/write to/from a certain memory position in its internal memory. This fault does not disable any functions. **Action:**Restart the machine. If the fault persists, contact a service technician.

Fault code	Description
3	**External RAM error** The microprocessor is unable to read/write to/from a certain memory position in its external memory. This fault does not disable any functions. **Action:** Restart the machine. If the fault persists, contact a service technician.
4	**5 V power supply low** The power supply voltage is too low. The current welding process is stopped, and cannot be restarted. **Action:** Turn off the power supply to reset the unit. If the fault persists, contact a service technician.
5	**Intermediate DC voltage outside limits** The voltage is too low or too high. Too high of a voltage can be due to severe transients on the main power supply or to a weak power supply (high inductance of the supply or loss of a phase). The power unit is stopped, and cannot be restarted. **Action:** Turn off the power supply to reset the unit. If the fault persists, contact a service technician.
6	**High temperature** The thermal overload cutout has tripped. The current welding process is stopped, and cannot be restarted until the cutout has been reset. **Action:** Check that the cooling air inlets or outlets are not obstructed or clogged with dirt. Check the duty cycle being used to make sure that the equipment is not overloaded.
8	**+24 V power supply (cooling unit)** The voltage is too low or too high. **Action:** Contact a service technician.
8	**Low battery voltage +3 V (in the control panel)** The voltage of the memory backup battery is too low. If the battery is not replaced, the contents of the welding data memory in the control panel will be lost. This fault does not disable any functions. **Action:** Contact a service technician to replace the battery.
8	**+15 V power supply (wire feed unit and power unit)** The voltage is too low or too high. **Action:** Contact a service technician.
8	**+13 V power supply, (remote control unit)** The voltage is too low or too high. **Action:** Contact a service technician.
9	**-15 V power supply (power unit)** The voltage is too low or too high. **Action:** Contact a service technician.

Fault code	Description
9	**+20 V, +60 V power supply, (wire feed unit)** The voltage is too low or too high. **Action:** Contact a service technician.
9	**+10 V power supply (remote control unit)** The voltage is too low or too high. **Action:** Contact a service technician.
10	**+24 V power supply** The voltage is too low or too high. **Action:** Contact a service technician.
11	**Wire feed speed** The wire feed speed differs from the set value. Wire feed stops if this fault occurs. **Action:** Contact a service technician.
12	**Communication error (warning)** The load on the system CAN bus is temporarily too high. The power unit or wire feed unit may have lost contact with the control panel. **Action:** Check the equipment to ensure that only one wire feed unit or remote control unit is connected. If the fault persists, contact a service technician.
14	**Communication error** The system's CAN bus has temporarily ceased to work due to excessive load. The current welding process is stopped. **Action:** Check the equipment to ensure that only one wire feed unit or remote control unit is connected. Turn off the power supply to reset the unit. If the fault persists, contact a service technician.
15	**Messages lost** The microprocessor is unable to sufficiently process incoming messages quickly, resulting in lost information. **Action:** Turn off the power supply to reset the unit. If the fault persists, contact a service technician.
16	**High open-circuit voltage** The open-circuit voltage has been too high. **Action:** Turn off the power supply to reset the unit. If the fault persists, contact a service technician.
17	**Lost contact** The control panel has lost contact with the wire feed unit. The current welding process is stopped. **Action:** Check the cables. If the fault persists, contact a service technician.
18	**Lost contact** The control panel has lost contact with the power unit. The current welding process is stopped. **Action:** Check the cables. If the fault persists, contact a service technician.

Fault code	Description
19	**Incorrect settings values in external RAM** This fault will be detected if the information in the battery-backed memory has become corrupted. **Action:** The fault will correct itself, but the data stored in the current memory position will be lost.
20	**Memory allocation error** The microprocessor is unable to reserve sufficient memory space. This fault will generate fault code 26. **Action:** Contact a service technician.
22	**Transmitter buffer overflow** The control panel is unable to transmit information to the other units at a sufficiently high speed. **Action:** Turn off the power supply to reset the unit.
23	**Receiver buffer overflow** The control panel is unable to process information from the other units at a sufficiently high speed. **Action:** Turn off the power supply to reset the unit.
26	**Watchdog** Something has prevented the processor from performing its normal program duties. The program restarts automatically. The current welding process is stopped. This fault does not disable any functions. **Action:** If the fault recurs, contact a service technician.
27	**Out of wire (wire feed unit)** The wire feed unit is not feeding any wire. The current welding process will be stopped, and cannot be restarted. Error code from external source. **Action:** Load new wire. Check manual for connected units.
28	**Stack overflow** Program execution is not working. **Action:** Turn off the power supply to reset the unit. If the fault persists, contact a service technician.
29	**No cooling water flow** The flow monitor switch has tripped. The current welding process is stopped, and cannot be restarted. **Action:** Check the cooling water circuit and the pump.
30	**Regulator time error level exceeded** Too long of a regulator time has occurred (only in MIG/MAG).
31	**No reply from the display unit** The microprocessor is not in contact with the display board. **Action:** Contact a service technician.

Fault code	Description
32	**No gas flow** Gas flow is less than 1.59 gal/min (6 L/min). Welding cannot be started. **Action:** Check the gas valve, hoses and connectors.
40	**Incompatible units** Incorrect wire feed unit is connected. Start is prevented **Action:** Connect the correct wire feed unit.
43	**The connected power source does not have the latest software** U6 panel is connected to a power source that does not support regulator type 17. **Action:** Update power source software.
44	**Memory management error** U6 panel has detected a mismatch between method data read from memory and current data. Applicable to MIG/MAG welding in synergy mode. **Action:** Edit settings and store new values. Old values are obsolete.

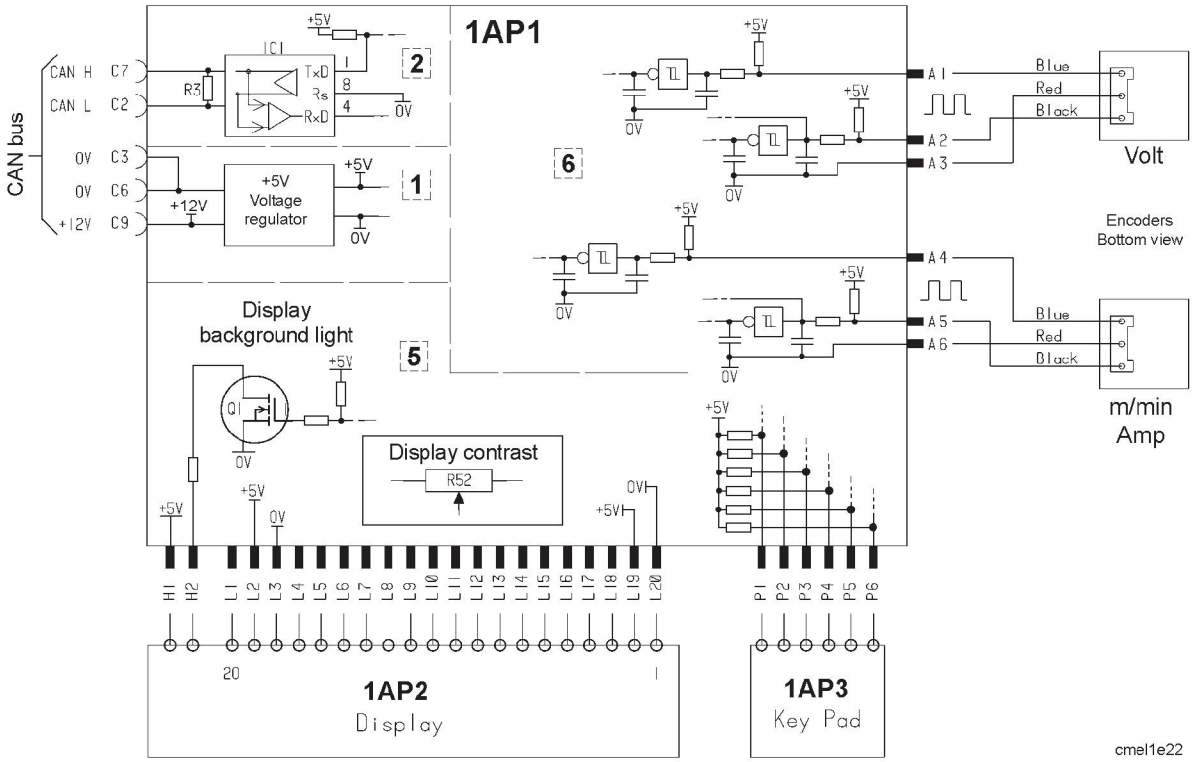
11 ORDERING SPARE PARTS

CAUTION!

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

Spare parts may be ordered through your nearest ESAB dealer, see the back cover of this document. 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.

DIAGRAM



WIRE AND GAS DIMENSIONS

MIG/MAG synergy welding

Wire type	Shielding gas	Wire diameter
Low-alloy or non-alloy solid wire (Fe ER70S)	CO_2	0.8 1.0 1.2
	Ar + 8% CO_2	0.8 1.0 1.2
	Ar + 18% CO_2	0.8 1.0 1.2
Stainless solid wire (Ss ER316LSi)	Ar + 2% CO_2	0.8 1.0 1.2
	Ar + 2% O_2	0.8 1.0 1.2
Stainless solid wire (Ss ER307Si)	Ar + 2% O_2	1.0 1.2
	Ar + 2% CO_2	0.8 1.0 1.2
Magnesium-alloyed aluminium wire (AlMg ER5356)	Ar	1.0 1.2 1.6
Silicon-alloyed aluminium wire (AlSi ER4043)	Ar	1.0 1.2 1.6
Metal powder-filled cored wire (Fe E70 MCW)	Ar + 18% CO_2	1.2 1.4 1.6
Rutile flux-filled cored wire (Fe E70 RFCW)	Ar + 18% CO_2	1.2 1.4 1.6
Basic flux-filled cored wire (Fe E70 BFCW)	Ar + 18% CO_2	1.2 1.4 1.6
Silicon bronze (ERCuSi-A)	Ar	1.0 1.2
	Ar + 1% CO_2	1.0 1.2

Pulsed MIG/MAG synergy welding

Wire type	Shielding gas	Wire diameter
Low-alloy or non-alloy solid wire (Fe ER70S)	Ar + 8% CO_2	0.8 1.0 1.2
	Ar + 18% CO_2	0.8 1.0 1.2
Stainless solid wire (Ss ER316LSi)	Ar + 2% CO_2	0.8 1.0 1.2
	Ar + 2% O_2	0.8 1.0L 1.0H 1.2
Stainless solid wire (Ss ER308LSi)	Ar + 2% CO_2	0.9 1.0 1.2
Stainless solid wire (Ss ER309LSi)	Ar + 2% CO_2	0.9 1.0 1.2
Stainless solid wire (Ss ER307Si)	Ar + 2% O_2	1.0 1.2
	Ar + 2% CO_2	1.0 1.2
Stainless solid wire (Ss 309 MoL)	Ar + 2% CO_2	1.0 1.2
Stainless duplex wire (Duplex ER2209)	Ar + 30% He + 1% O_2	1.0 1.2
Magnesium-alloyed aluminium wire (AlMg ER5356)	Ar	1.0 1.2 1.6
Magnesium-alloyed al wire (AlMg ER5356)	Ar + 30% He	1.2
Magnesium-alloyed al wire (AlMg ER5183)	Ar	1.6
Silicon-alloyed aluminium wire (AlSi ER4043)	Ar	1.0 1.2 1.6
Silicon-alloyed al wire (AlSi ER4043)	Ar + 30% He	0.9 1.0 1.2
Silicon-alloyed al wire (AlSi ER4047)	Ar	1.2 1.6

Wire type	Shielding gas	Wire diameter
Silicon bronze (ERCuSi-A)	Ar	1.0 1.2
	Ar + 1% CO_2	1.0 1.2
Aluminium solid wire (Al99,5 ER1100)	Ar	1.2
Copper and aluminium wire (ERCuAl-A1)	Ar	1.0 1.2
Metal powder-filled cored wire (Fe E70 MCW)	Ar + 18% CO_2	1.2 1.4 1.6

MMA welding

Electrode type	Electrode diameter
Basic	1.6 2.0 2.5 3.2 4.0 4.5 5.0 5.6 6.0 7.0
Rutile	1.6 2.0 2.5 3.2 4.0 4.5 5.0 5.6 6.0 7.0
Cellulose	2.0 2.5 3.2 4.0 4.5 5.0 5.6 6.0

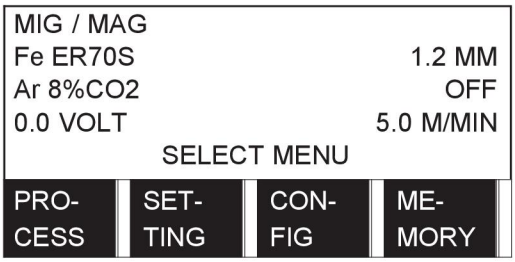
Air arc gouging

Electrode type: 4.0 5.0 6.0 8.0

The text on the display panel is available in the following languages: Swedish, Danish, Norwegian, Finnish, English, German, Dutch, French, Spanish (Castilian), Italian, Portuguese, Polish, Czech, Hungarian, Turkish and US English.

MENU STRUCTURE

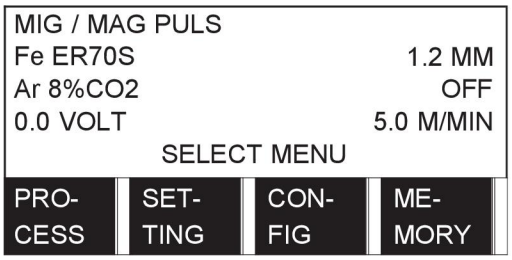
MIG / MAG welding



PRO-CESS	SET-TING	CON-FIG	ME-MORY
Qset ON / OFF	Inductance	Language	Store
Synergic ON / OFF	Gas pre-flow time	Dimensions	Recall
AVC feeder ON / OFF	Hot start time	Panel enable ON / OFF	Delete
Wire	Crater filling time	Auto save ON / OFF	
Gas	Burnback time	Limits ON / OFF	
Wire diameter	Gas post-flow time	Code lock ON / OFF	
	Spot welding time	VRD	
	Spot welding ON / OFF		
	Trigger data ON / OFF		

2 / 4 Stroke	Crater filling	Hot start	Creep start	Gas purging	Wire inching

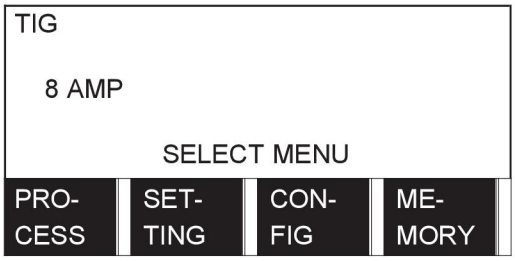
MIG / MAG welding with pulsing



PRO-CESS	SET-TING	CON-FIG	ME-MORY
Wire	Gas pre-flow time	Language	Store
Gas	Hot start time	Dimensions	Recall
Wire diameter	Crater filling time	Panel enable ON / OFF	Delete
	Burn back time	Auto save ON / OFF	
	Gas post-flow time	Limits ON / OFF	
	Spot welding time	Code lock ON / OFF	
	Spot welding ON / OFF	VRD	
	Trigger data ON / OFF		

2 / 4 Stroke	Crater filling	Hot start	Creep start	Gas purging	Wire inching

TIG welding

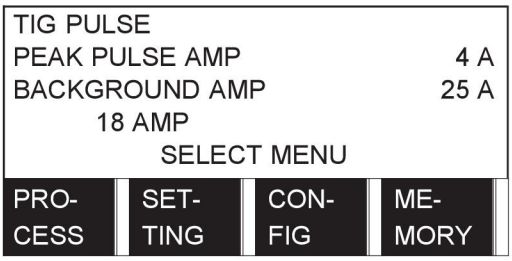


PRO-CESS	SET-TING	CON-FIG	ME-MORY
HF / Lift-Arc	Gas pre-flow time Slope up time Slope down time Gas post-flow time Remote min Trigger data ON / OFF	Language Dimensions Panel enable ON / OFF Auto save ON / OFF Limits ON / OFF Code lock ON / OFF VRD	Store Recall Delete

2 / 4 Stroke

Gas purging

TIG welding with pulsing

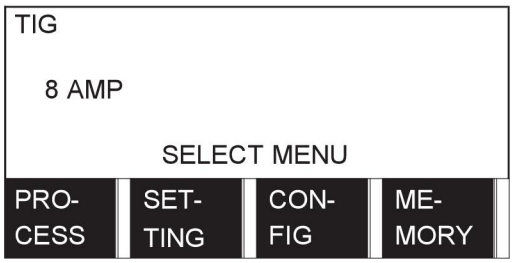


PRO-CESS	SET-TING	CON-FIG	ME-MORY
HF / Lift-Arc	Peak pulse ampere	Language	Store
	Peak pulse time	Dimensions	Recall
	Background ampere	Panel enable ON / OFF	Delete
	Background time	Auto save ON / OFF	
	Gas pre-flow time	Limits ON / OFF	
	Slope up time	Code lock ON / OFF	
	Slope down time	VRD	
	Gas post-flow time		
	Remote min		
	Trigger data ON / OFF		

2 / 4 Stroke

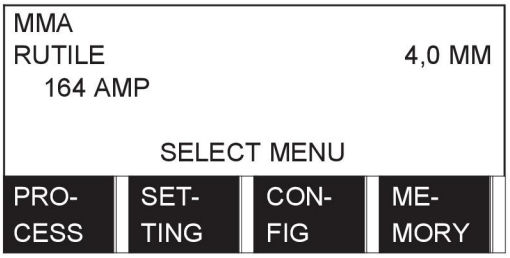
GAS purging

TIG welding with Live-Tig start



PRO-CESS	SET-TING	CON-FIG	ME-MORY
Live-Tig	Remote min	Language Dimensions Panel enable ON / OFF Auto save ON / OFF Limits ON / OFF Code lock ON / OFF VRD	Store Recall Delete

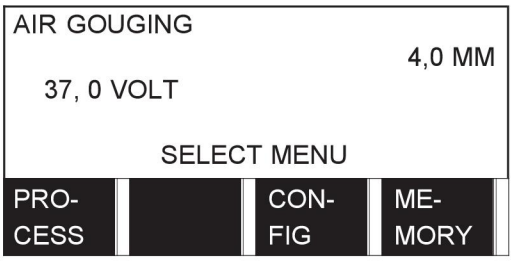
MMA welding



PRO-CESS	SET-TING	CON-FIG	ME-MORY
Electrode type Electrode diameter	Arc force Hot start time Remote min	Language Dimensions Panel enable ON / OFF Auto save ON / OFF Limits ON / OFF Code lock ON / OFF VRD	Store Recall Delete

Hot start

Air gouging



PRO-CESS	CON-FIG	ME--MORY
Electrode diameter	Language Dimensions Panel enable ON / OFF Auto save ON / OFF Limits ON / OFF Code lock ON / OFF VRD	Store Recall Delete

ORDERING NUMBERS

Ordering no.	Denomination
0458 535 890	Aristo™ U6
0458 818 990	Spare parts list M2, MA4, MA6, U6

Instruction manuals and the spare parts list are available on the Internet at **www.esab.com**

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