ESAB ®

A2, A6
PEK *Control panel*

Instruction manual

1   INTRODUCTION

To benefit as much as possible from your welding equipment, we recommend that you read this instruction manual.

For general information about operation, see the instruction manual for the control unit, automatic welding machine, column and boom or power source.

The text presented in the display is available in the following languages:
English, Swedish, Finnish, Norwegian, Danish, German, French, Italian, Dutch, Spanish, Portuguese, Hungarian, Polish, American, Czech, Chinese and Russian.

1.1   Control panel

1   Menu

2   Knob for moving cursor (positioning knob)

3   ENTER

4   Green indicating lamp, illuminates when the function is active

5   Welding start

6   Welding stop

7   Knob for setting the travel speed in the measurements menu, in other menus to increase or decrease the set values (settings knob)

8   Manual travel motion

9   Manual wire feed downwards

10   Knob for setting the arc voltage in the measurements menu, in other menus to increase or decrease the set values (settings knob)

11   Fast motion

12   Manual travel motion

13   Knob for setting the welding current / wire feed speed in the measurements menu, in other menus to increase or decrease the set values (settings knob)

14   Emergency stop

15   Manual wire feed upwards

16 Soft keys [S1] [S2] [S3] [S4] [S5]
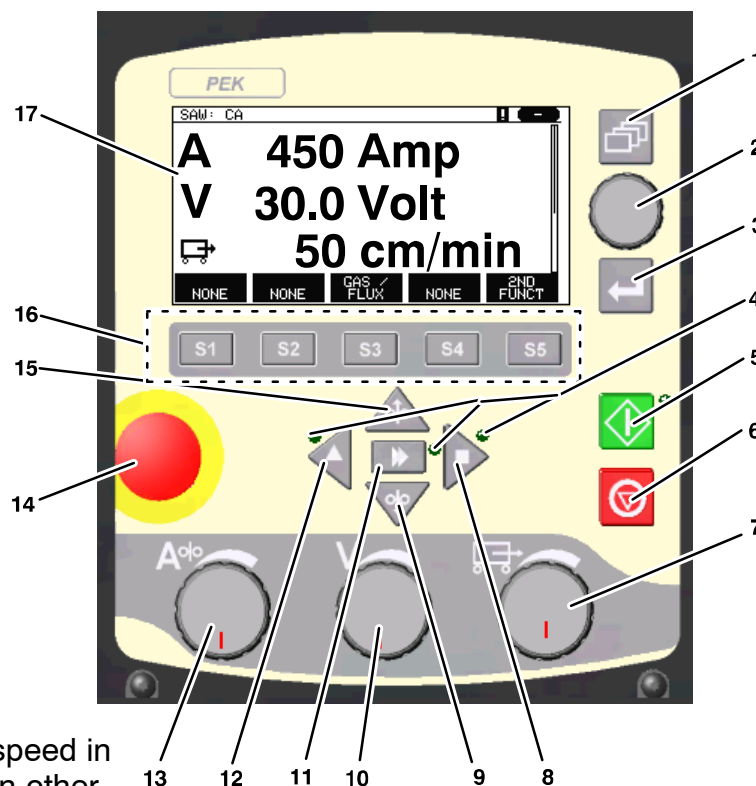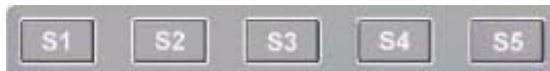
17 Display

1.1.1 Keys and knobs

Menu

The Menu key always takes you back to the main menu in the relevant process:

SAW	
PROCESS	SAW
REGULATION TYPE	CA
WIRE TYPE	Fe SOLID
WIRE DIMENSION	3.0 mm
CONFIGURATION▶	
TOOLS▶	

SET	MEASURE	MEMORY	FAST MODE	
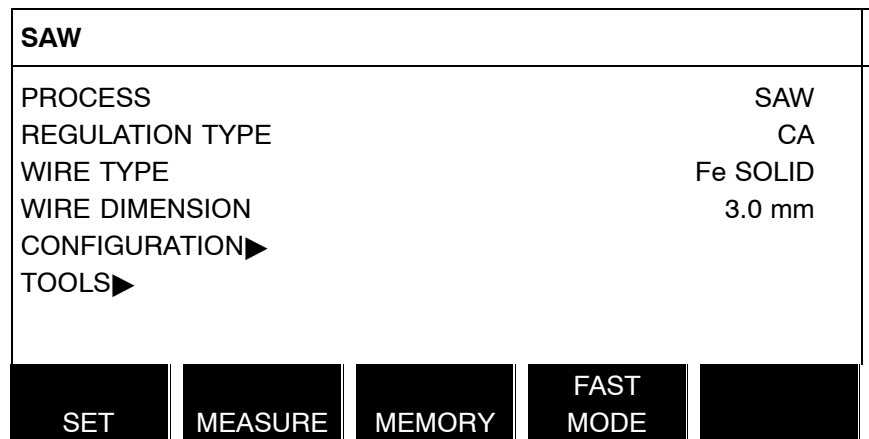
ENTER

Use the ENTER key to confirm a selection.

Soft keys [S1] [S2] [S3] [S4] [S5]
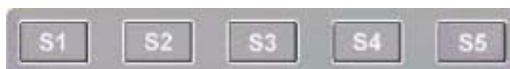
The five keys (S1 – S5) under the display have different functions. They are called ”soft” keys, i.e. they can have different functions depending on which menu you are in. The current function for these keys can be seen from the text in the bottom row of the display. When the function is active, this is indicated by the field with the text box turning white.

Wire feed upwards

Key for reversing the wire without arc voltage, when replacing wire bobbin for example. The wire is fed as long as the button is depressed.

Wire feed downwards

Key for feeding wire without arc voltage. The wire is fed as long as the button is depressed.

Travel motion

Key for travel motion in the direction of welding where the symbol is indicated on the weld equipment. To stop travel motion press , or .

The LED illuminates during travel motion.

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Travel motion

Key for travel motion in the direction of welding where the symbol is indicated on the weld equipment. To stop travel motion press ▷ , ◁ or 🛑 .

The LED illuminates during travel motion.

Fast motion

Key for fast motion of wire feed or travel motion.

The LED illuminates during fast motion.

Welding start

Key for welding start.

Welding stop

Key for welding stop for all travel motions and all motors.

Positioning knob

The uppermost right−hand knob is called the positioning knob in the instruction manual and is used to position the cursor.

Settings knob

The three knobs under the panel are called settings knobs in the instruction manual and are used to change the set values in the panel.

1.2   First step

1.2.1   Choice of language

This menu appears when the machine is first started:

SAW: CA				
A	**450 Amp**			
V	**30.0 Volt**			
	50 cm/min			
NONE	NONE	GAS / FLUX	NONE	2ND FUNCT
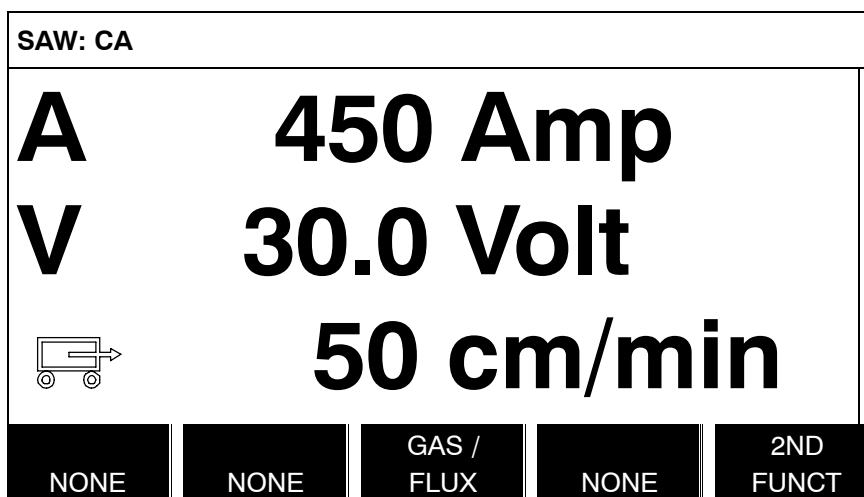
The control panel is set to English on delivery. To select your language, proceed as follows:

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Press Menu [icon] to access the main menu.

Position the cursor using the positioning knob on the CON-FIGURATION row.

SAW	
PROCESS	SAW
REGULATION TYPE	CA
WIRE TYPE	Fe SOLID
WIRE DIMENSION	3.0 mm
CONFIGURATION▶	
TOOLS▶	

			FAST	
SET	MEASURE	MEMORY	MODE	

Press ENTER [icon] to confirm the selection.

Position the cursor on the LANGUAGE row. Press ENTER to bring up a list of the languages that are available in the control panel.

CONFIGURATION	
LANGUAGE	**ENGLISH**
CODE LOCK	
GENERAL CONFIGURATION▶	
MACHINE CONFIGURATION▶	
CABLE LENGTHS▶	
MAINTENANCE▶	

				QUIT

Position the cursor on the row for your language and press ENTER.

NORSK
POLSKI
PORTUGUES
SUOMI
SVENSKA
CHINESE

1.2.2   Unit of measurements

The control panel is set to metric measurement on delivery. To select another mesurement, proceed as follows:

Press Menu [icon] to access the main menu.

Position the cursor using the positioning knob on the CON-FIGURATION row.

SAW	
PROCESS	SAW
REGULATION TYPE	CA
WIRE TYPE	Fe SOLID
WIRE DIMENSION	3.0 mm
CONFIGURATION▶	
TOOLS▶	

SET	MEASURE	MEMORY	FAST MODE	

Press ENTER [icon] to confirm the selection.

Position the cursor on the GENERAL CON-FIGURATION row.

CONFIGURATION	
LANGUAGE	ENGLISH
CODE LOCK	
GENERAL CONFIGURATION▶	
MACHINE CONFIGURATION▶	
CABLE LENGTHS▶	
MAINTENANCE▶	

				QUIT

Press ENTER [icon] to confirm the selection.

Position the cursor on the UNIT OF LENGTH row. Press ENTER to bring up a list of the mesurements that are available in the control panel.

GENERAL CONFIGURATION	
FAST MODE SOFT BUTTONS	1
QUALITY DATA LOG TO FILE	ON
SOFT KEYS SETUP▶	
AUTO SAVE MODE	OFF
UNIT OF LENGTH	**METRIC**

				QUIT

Position the cursor on the row for correct mesurement and press ENTER.

METRIC
INCH.

1.3   Display

SAW	
PROCESS	SAW
REGULATION TYPE	CW
WIRE TYPE	Fe SOLID
WIRE DIMENSION	0.8 mm
CONFIGURATION▶	
TOOLS▶	

SET	MEASURE	MEMORY	FAST MODE	
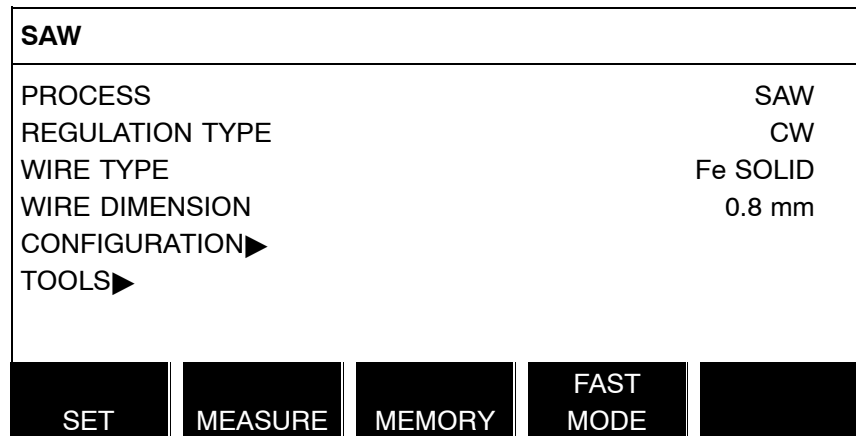
Cursor

The control panel's cursor is presented as a black field around the text, with the selected text turning white. The cursor is displayed in the instruction manual with bold text.

Text boxes

At the bottom of the display are five boxes containing text that describes the current function of the five soft keys below the display.

1.3.1   Symbols in the display

A   The selected weld data set

B   Welding direction

C   A fault has occurred. See chapter 15

D   Recalled memory position number

E   Scroll bar. Further information can be found in this menu
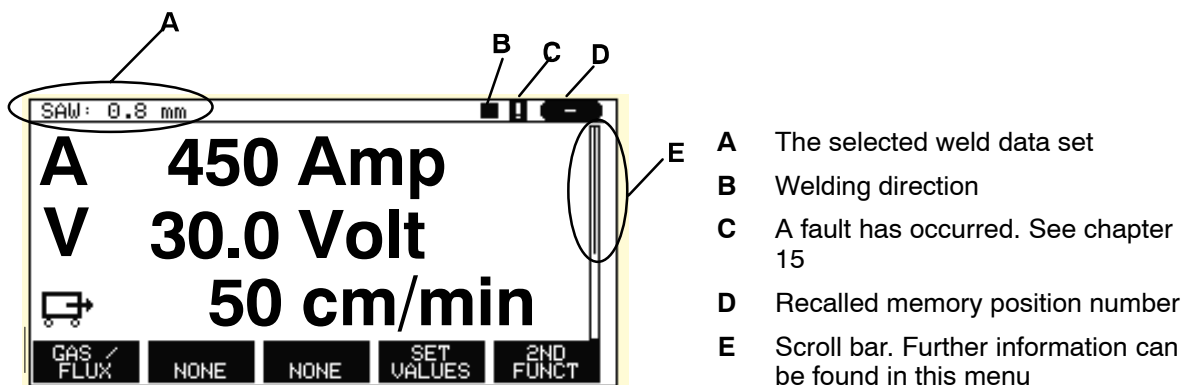
Arrows

Where there is more information behind a row, this is indicated with a black arrow ▶ behind the text.
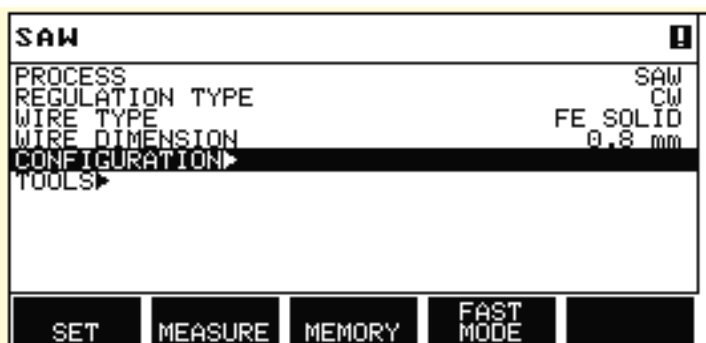
1.4   General information about settings

There are three types of setting:

*   Setting of numerical values
*   Setting of given alternatives
*   Setting of ON/OFF mode

1.4.1   Setting of numerical values

The settings knobs are used to increase or decrease the set values when setting numerical values. In the measurements menu, the knobs for welding current / wire feed speed, arc voltage or travel motion are used.

1.4.2   Setting with given alternatives

Some settings are made by selecting an option from a list.

This is an example of the list:

```
SAW
GMAW
GOUGING
```
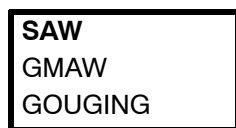
The cursor is positioned on the row for SAW. By pressing ENTER in this position, the SAW option is selected. If you want to choose another option instead, position the cursor on the correct row by scrolling up or down using the positioning knob. Then press ENTER. If you want to exit the list without making a selection, press QUIT.

1.5   QUIT and ENTER

The "soft" key farthest to the right is used primarily for QUIT, although it is occasionally used for other functions.

*   QUIT returns you to the previous menu or image.
*   Pressing ENTER entails the execution of a selected choice in a menu or a list.

    The key is called ENTER in this manual.

2   MENUS

The control panel uses several different menus:

* Main menu

* Configuration menu

* Tools menu

* Weld data setting menu   SET

* Measurements menu   MEASURE

* Weld data memory menu   MEMORY

* Fast mode menu   FAST MODE

The menu trees are displayed on page 54 and onwards. During start−up, a start−up screen containing information about the current program version is displayed briefly.

```
┌─────────────────────────────────────────┐
│                                         │
│  ┌─────┐       PEK                       │
│  │ESAB │       Version:                  │
│  └─────┘                                 │
│                                         │
│   Copyright © 2008, ESAB AB Sweden       │
│  ─────────────────────────────────────  │
│   ⧖   VERIFYING CONFIGURATION...         │
│                                         │
└─────────────────────────────────────────┘
```
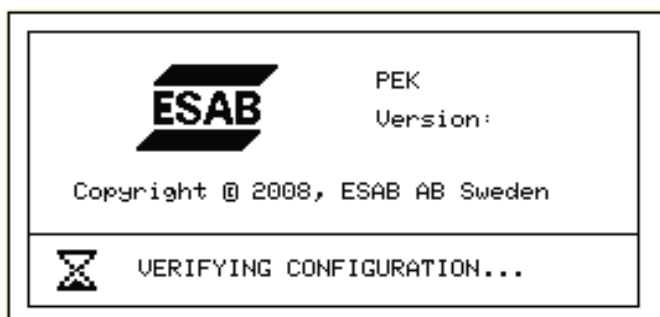
Start−up screen

2.1   Main menu

In the MAIN MENU, you can change welding process, wire type, control method, wire dimension etc.

You can access other sub menus from this menu.

SAW	
PROCESS	SAW
REGULATION TYPE	CA
WIRE TYPE	Fe SOLID
WIRE DIMENSION	0.8 mm
CONFIGURATION▶	
TOOLS▶	

SET	MEASURE	MEMORY	FAST MODE	

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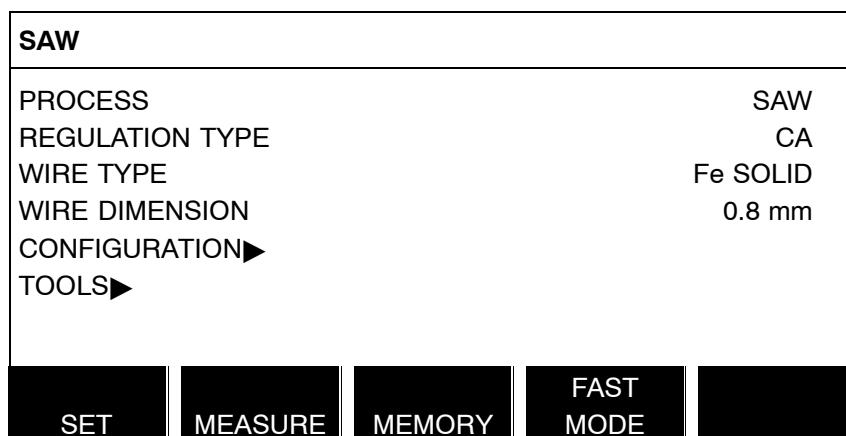
2.1.1 Configuration menu

Main menu → Configuration

In the CONFIGUR-
ATION menu it is
possible to change
language, change
password, make
general settings, make
machine adjustments
etc.

CONFIGURATION	
LANGUAGE	ENGLISH
CODE LOCK	
GENERAL CONFIGURATION▶	
MACHINE CONFIGURATION▶	
CABLE LENGTHS▶	
MAINTENANCE▶	
	QUIT

2.1.2 Tools menu

Main menu → Tools

In the TOOLS menu
you can transfer files,
view quality and
production statistics,
error logs, etc.

TOOLS
ERROR LOG▶
EXPORT / IMPORT▶
FILE MANAGER▶
SETTING LIMIT EDITOR▶
MEASURE LIMIT EDITOR▶
PRODUCTION STATISTICS▶
QUALITY FUNCTIONS▶
CALENDAR▶
USER ACCOUNTS▶
UNIT INFORMATION▶
QUIT

2.1.3 Weld data setting menu

Main menu → SET

In the weld data setting
menu, SET, it is
possible to change
different welding
parameters. The menu
has different appear-
ances depending on
which welding process
is selected.

SAW WELD DATA SETTING	
VOLTAGE	20.5 V
CURRENT	395 A
TRAVEL SPEED	0 cm/min
DIRECTION	■
START DATA▶	
STOP DATA▶	
DYNAMIC REGULATION	AUTO
SETTING LIMITS▶	
MEASURE LIMITS▶	
	QUIT

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2.1.4   Measurements menu

Main menu → MEASURE

In MEASURE, you can view measured values for various welding parameters while welding is in progress.

A 450 AMP

Measured welding current

30.0 Volt

Measured arc voltage

50 cm/min

Measured travel speed

```
SAW: CA

A      450 Amp
V      30.0 Volt
       50 cm/min

NONE    NONE   GAS /    NONE   2ND
               FLUX            FUNCT
```

300 cm/min

Measured wire feed speed

30 kJ/cm

Indicates energy per unit length, which is obtained using the values selected for welding current, arc voltage and travel speed

```
SAW: CA

       50 cm/min
       300 cm/min
       30.0 kJ/cm

NONE    NONE   GAS /    NONE   2ND
               FLUX            FUNCT
```

The measured values remain in the display even after welding has been completed.

You can move to different menus without losing the measurement values.

The settings knobs can be used to change the welding parameters in the measurement display.

If the set value is changed when welding is not in progress, the measurement value changes to zero.

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In the measurement display one can also see the set values if the soft key SET VALUES is activated. For activating see chapter "Setting soft keys" 8.2.3 .

300 cm/min

Set wire feed speed

20.0 Volt

Set arc voltage

30 cm/min

Set travel speed

SAW: CA				
⌀ **300 cm/min**				
V 20.0 Volt				
30 cm/min				
NONE	NONE	SET VALUES	NONE	2ND FUNCT

2.1.5 Weld data memory menu

Main menu → MEMORY

In the WELD DATA MEMORY menu you can store, recall, delete and copy various set weld data. The weld data sets can be stored in 255 different memory positions.

WELD DATA MEMORY				
1 –				
2 –				
3 –				
4 –				
5 –				
6 –				
7 –				
STORE			2ND FUNCT	QUIT

For further information, see the chapter 7 "Memory management".

2.1.6 Fast mode menu

Main menu → `FAST MODE`

In the FAST MODE menu, you can "link" soft keys to weld data memory positions. These settings are carried out in the Configuration menu. The number of the selected memory position is displayed in the top right corner.

				16

A **450 Amp**

V **30.0 Volt**

50 cm/min

WELD DATA 1	WELD DATA 2	WELD DATA 3	WELD DATA 4	2ND FUNCT
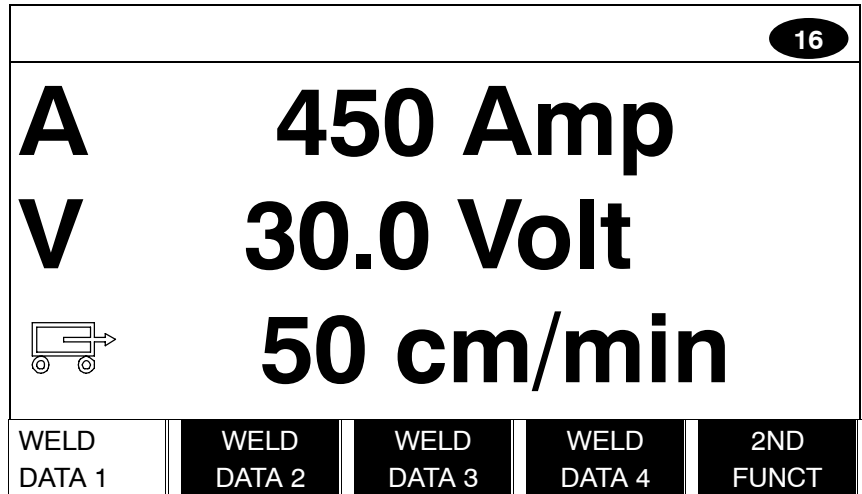
For further information, see the chapter 8.2.1 "Fast mode soft keys".

3 SUBMERGED ARC WELDING

Main menu → Process

During Submerged Arc Welding (SAW), an arc melts a continuously supplied wire. The weld pool is protected by flux.

When the submerged arc welding process is selected, you can choose between two control methods by marking REGULATION TYPE using the positioning knob and pressing ENTER. Choose between constant welding current CA or constant wire feed CW, see explanation in chapter 6.1 and 6.2.

```
SAW                              ▯
PROCESS                        SAW
REGULATION TYPE                 CA
WIRE TYPE                  FE SOLID
WIRE DIMENSION              0.8 mm
CONFIGURATION▶
TOOLS▶            ┌──┐
                 │CA│
                 │CW│
                 └──┘


         ┌───┬───┬───┬───┬──────┐
         │   │   │   │   │ QUIT │
         └───┴───┴───┴───┴──────┘
```

3.1   Settings for submerged arc welding with CA

Settings	Setting range	In steps of	Value after resetting
Arc voltage*	14 – 50 V	0.1 V (1V)	30 V
Welding current*	0 – 3200 A	1 A	400 A
Travel speed*	0 – 200 cm/min	1 cm/min	50 cm/min
Welding direction	▲ – ■	–	■
Start data			
Flux pre–flow	0 – 99.0 s	0.1 s	0 s
Start type	Direct or Scrape	–	Direct
Wire creep start	Auto or Set speed	–	Auto
Wire creep start speed	0 – 1000 cm/min	1 cm/min	20 cm/min
Start phases	OFF or ON	–	OFF
Open–circuit voltage	OFF or ON	–	OFF
Maximum open–circuit voltage	5 – 60 V	0.1 V	50 V
Stop data			
Flux post–flow	0 – 99.0 s	0.1 s	0 s
Crater filling	OFF or ON	–	OFF
Crater filling time	0 – 10 s	0.01 s	1 s
Burnback time	0 – 10 s	0.01 s	1 s
Stop phases	OFF or ON	–	OFF
Dynamic regulation	OFF or ON	–	ON
Setting limits	–	–	–
Measure limits	–	–	–

*) The setting range is dependent on the product used.

3.2   Settings for submerged arc welding with CW

Settings	Setting range	In steps of	Value after resetting
Arc voltage*	14 – 50 V	0.1 V (1V)	30.0 V
Wire feed speed*	0 – 2500 cm/min	1 cm/min	300 cm/min
Travel speed*	0 – 200 cm/min	1 cm/min	50 cm/min
Welding direction	▲ – ■	–	■
Start data			
Flux pre–flow	0 – 99.0 s	0.1 s	0 s
Start type	Direct or Scrape	–	Direct
Wire creep start	Auto or Set speed	–	Auto
Wire creep start speed	0 – 1000 cm/min	1 cm/min	20 cm/min
Start phases	OFF or ON	–	OFF
Open–circuit voltage	OFF or ON	–	OFF
Maximum open–circuit voltage	5 – 60 V	0.1 V	50 V
Stop data			

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Settings	Setting range	In steps of	Value after resetting
Flux post–flow	0 – 99.0 s	0.1 s	0 s
Crater filling	OFF or ON	–	OFF
Crater filling time	0 – 10 s	0.01 s	1 s
Burnback time	0 – 10 s	0.01 s	0.10 s
Stop phases	OFF or ON	–	OFF
Dynamic regulation	OFF or ON	–	ON
Setting limits	–	–	–
Measure limits	–	–	–

*) The setting range is dependent on the product used.

4   GAS METAL ARC WELDING

Main menu → Process

During Gas Metal Arc Welding (GMAW), an arc melts a continuously supplied wire. The weld pool is protected by shielding gas.

When the Gas Metal Arc Welding (GMAW) process is selected, you can choose between two control methods by marking REGULATION TYPE using the positioning knob and pressing ENTER. Choose between constant welding current CA or constant wire feed CW, see explanation in chapter 6.1 and 6.2.

4.1   Settings for Gas Metal Arc Welding with CA

Settings	Setting range	In steps of	Value after resetting
Arc voltage*	14 – 50 V	0.1 V (1V)	30 V
Welding current*	0 – 3200 A	1 A	400 A
Travel speed*	0 – 200 cm/min	1 cm/min	50 cm/min
Welding direction	▲ – ■	–	■
Start data			
Gas pre–flow	0 – 99.0 s	0.1 s	2.0 s
Start type	Direct or Scrape	–	Direct
Wire creep start	Auto or Set speed	–	Auto
Wire creep start speed	0 – 1000 cm/min	1 cm/min	20 cm/min

Settings	Setting range	In steps of	Value after resetting
Start phases	OFF or ON	–	OFF
Open–circuit voltage	OFF or ON	–	OFF
Maximum open–circuit voltage	5 – 60 V	0.1 V	50 V
Stop data			
Gas post–flow	0 – 99.0 s	0.1 s	2.0 s
Crater filling	OFF or ON	–	OFF
Crater filling time	0 – 10 s	0.01 s	1 s
Burnback time	0 – 10 s	0.01 s	1 s
Stop phases	OFF or ON	–	OFF
Dynamic regulation	OFF or ON	–	ON
Setting limits	–	–	–
Measure limits	–	–	–

*) The setting range is dependent on the product used.

4.2   Settings for gas metal arc welding with CW

Settings	Setting range	In steps of	Value after resetting
Arc voltage*	14 – 50 V	0.1 V (1V)	30.0 V
Wire feed speed*	0 – 2500 cm/min	1 cm/min	300 cm/min
Travel speed*	0 – 200 cm/min	1 cm/min	50 cm/min
Welding direction	▲ – ■	–	■
Start data			
Gas pre–flow	0 – 99.0 s	0.1 s	2.0 s
Start type	Direct or Scrape	–	Direct
Wire creep start	Auto or Set speed	–	Auto
Wire creep start speed	0 – 1000 cm/min	1 cm/min	20 cm/min
Start phases	OFF or ON	–	OFF
Open–circuit voltage	OFF or ON	–	OFF
Maximum open–circuit voltage	5 – 60 V	0.1 V	50 V
Stop data			
Gas post–flow	0 – 99.0 s	0.1 s	2.0 s
Crater filling	OFF or ON	–	OFF
Crater filling time	0 – 10 s	0.01 s	1 s
Burnback time	0 – 10 s	0.01 s	1 s
Stop phases	OFF or ON	–	OFF
Dynamic regulation	OFF or ON	–	ON
Setting limits	–	–	–
Measure limits	–	–	–

*) The setting range is dependent on the product used.

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5   GOUGING

Main menu → Process

With arc air gouging, a special electrode comprising a carbon rod with a copper casing is used.

An arc is formed between the carbon rod and the work piece, which melts the material. Air is supplied so that the melted material is blown away.

When the GOUGING process is selected, you can choose between two control methods by marking REGULATION TYPE using the positioning knob and pressing ENTER. Choose between constant welding current CA or constant wire feed CW, see explanation in chapter 6.1 and 6.2.
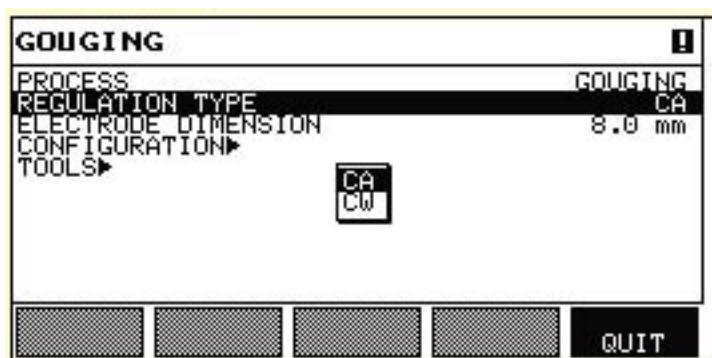
5.1   Settings for gouging with CA

Settings	Setting range	In steps of	Value after resetting
Arc voltage*	14 – 50 V	0.1 V (1V)	30 V
Welding current*	0 – 3200 A	1 A	400 A
Travel speed*	0 – 200 cm/min	1 cm/min	40 cm/min
Welding direction	▲ – ■	–	■
Start data			
Air pre−flow	0 – 99.0 s	0.1 s	0 s
Start type	Direct or Scrape	–	Direct
Wire creep start	Auto or Set speed	–	Auto
Wire creep start speed	0 – 1000 cm/min	1 cm/min	20 cm/min
Start phases	OFF or ON	–	OFF
Open−circuit voltage	OFF or ON	–	OFF
Maximum open−circuit voltage	5 – 60 V	0.1 V	50 V
Stop data			
Air post−flow	0 – 99.0 s	0.1 s	0 s
Crater filling	OFF or ON	–	OFF
Crater filling time	0 – 10 s	0.01 s	1 s
Burnback time	0 – 10 s	0.01 s	1 s
Stop phases	OFF or ON	–	OFF
Dynamic regulation	OFF or ON	–	ON

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Settings	Setting range	In steps of	Value after resetting
Setting limits	–	–	–
Measure limits	–	–	–

*) The setting range is dependent on the product used.

5.2 Settings for gouging with CW

Settings	Setting range	In steps of	Value after resetting
Arc voltage*	14 – 50 V	0.1 V (1V)	30 V
Wire feed speed*	0 – 2500 cm/min	1 cm/min	300 cm/min
Travel speed*	0 – 200 cm/min	1 cm/min	50 cm/min
Welding direction	▲ – ■	–	■
Start data			
Air pre–flow	1.0 – 99.0 s	0.1 s	0 s
Start type	Direct or Scrape	–	Direct
Wire creep start	Auto or Set speed	–	Auto
Wire creep start speed	0 – 1000 cm/min	1 cm/min	20 cm/min
Start phases	OFF or ON	–	OFF
Open–circuit voltage	OFF or ON	–	OFF
Maximum open–circuit voltage	5 – 60 V	0.1 V	50 V
Stop data			
Air post–flow	1.0 – 99.0 s	0.1 s	0 s
Crater filling	OFF or ON	–	OFF
Crater filling time	0 – 10 s	0.01 s	1 s
Burnback time	0 – 10 s	0.01 s	1 s
Stop phases	OFF or ON	–	OFF
Dynamic regulation	OFF or ON	–	ON
Setting limits	–	–	–
Measure limits	–	–	–

*) The setting range is dependent on the product used.

6 FUNCTION EXPLANATIONS

6.1 CA, constant welding current

The wire feed is controlled by the power source so that a constant welding current can be achieved.

– Constant current value can be selected in the main menu.

6.2 CW, constant wire feed

The welding current is a result of the selected wire feed speed.

– Constant wire feed can be selected in the main menu.

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6.3   Wire / electrode dimension

The table on page 58 shows the wire / electrode dimensions that can be selected.

Selected dimensions have a great impact on the start procedure and crater filling. When welding with other wire dimensions other than those found in the table, select one that has a dimension close to one in the list.

– Wire / electrode dimension can be selected in the main menu.

6.4   Arc voltage

Higher arc voltage increases the arc length and produces a hotter, wider weld pool.

– The arc voltage is set in the measurement display, weld data setting menu, or fast mode menu.

6.5   Wire feed speed

This sets the required feed speed of the filler wire in cm/minute.

– The wire feed speed is set in the measurement display, weld data setting menu, or fast mode menu.

6.6   Travel speed

Travel speed indicates the required speed (cm/min) at which a column and boom or trolley is to move.

– The travel speed is set in the measurement display, weld data setting menu, or fast mode menu.

6.7   Welding direction

Travel motion in the direction that the symbol indicates.

– Welding direction is selected in the weld data setting menu.

6.8   Flux pre–flow

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

– Flux pre–flow is set in the weld data setting menu under start data.

6.9   Gas pre–flow

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

– Gas pre–flow is set in the weld data setting menu under start data.

6.10   Air pre–flow

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

– Air pre–flow is set in the weld data setting menu under start data.

6.11 Start type

There are two options for start type:

- Direct start, means that the travel speed starts when the arc is struck.
- Scrape start, means that the travel speed starts at the same time as wire feed.
– Start type is selected in the weld data setting menu under start data.

6.12 Wire creep start

Wire creep start is used to set the desired creep speed on the electrode motor upon start–up.

If, for example, 50 is set in the menu a creep speed of 50 cm/min is obtained.

Preset value "AUTO" gives a creep speed calculated from the set values.

– Wire creep speed is set in the weld data setting menu under start data.

6.13 Start phases

When welding special wire or material, it may be necessary to create your own start sequence. The start sequence can affect the appearance of the weld pool.

The following can be set for Start phase1 ON

- Time s

  Time for welding in phase 1.
- Arc voltage %

  In percent of set voltage
- Wire feed %

  In percent of set wire feed
- Welding current %

  In percent of set welding current
- Travel speed %

  In percent of set travel speed

The following can be set for Start phase2 ON

- Time s

  Time for welding in phase 2.
- Arc voltage %

  In percent of set voltage
- Wire feed %

  In percent of set wire feed
- Welding current %

  In percent of set welding current
- Travel speed %

  In percent of set travel speed

– Start phases are set in the weld data setting menu under start data.

6.14 Max Open Circuit Voltage (OCV)

ON means that OCV can be set.

OFF means that OCV is set to the set value for welding voltage.

– OCV is set in the weld data setting menu under start data.

6.15 Flux post–flow

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

– Flux post–flow is set in the weld data setting menu under stop data.

6.16   Gas post–flow

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

– Gas post–flow is set in the weld data setting menu under stop data.

6.17   Air post–flow

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

– Air post–flow is set in the weld data setting menu under stop data.

6.18   Crater filling

Crater filling makes a controlled reduction in the heat and size of the weld pool possible when completing the weld. This makes it easier to avoid pores, thermal cracking and crater formation in the weld joint.

– Crate filling is set in the weld data setting menu under stop data.

6.19   Burnback time

Burnback time is a delay between the time when the wire starts to brake until the time when the power source switches off the arc voltage. Too short burnback time results in a long wire stickout after completion of welding, with a risk of the wire being caught in the solidifying weld pool. Too long a burnback time results in a shorter stickout, with increased risk of the arc striking back to the contact tip.

– Burnback time is set in the weld data setting menu under stop data.

6.20   Stop phases

Stop phases are mainly used for setting crater filling.

The following can be set for Stop phase1 ON

- Time s
  Time for welding in phase 1.
- Arc voltage %
  In percent of set voltage
- Wire feed %
  In percent of set wire feed
- Welding current %
  In percent of set welding current
- Travel speed %
  In percent of set travel speed

The following can be set for Stop phase2 ON

- Time s
  Time for welding in phase 2.
- Arc voltage %
  In percent of set voltage
- Wire feed %
  In percent of set wire feed
- Welding current %
  In percent of set welding current
- Travel speed %
  In percent of set travel speed

– Stop phases are set in the weld data setting menu under stop data.

6.21 Dynamic regulation

The dynamic regulation function is developed for multiple electrode welding and alters the characteristics of the power source. The characteristics of the power source are calculated from the set wire data.

– Dynamic regulation is selected in the weld data setting menu under stop data.

6.22 Setting limits

For information about setting limits see chapter 9.4 "Setting limit editor"

6.23 Measure limits

For information about measurement parameters see chapter 9.5 "Measure limits editor"

7 MEMORY MANAGEMENT

7.1 Control panel working method

The control panel can be said to comprise two units: working memory and weld data memory.

Working memory	Store ⇒	Weld data memory
⇐ Recall		

In the working memory, a complete set of weld data settings is created that can be stored in the weld data memory.

During welding, it is always the content of the working memory that controls the process. It is therefore also possible to recall a weld data set from the weld data memory to the working memory.

Note that the working memory always contains the most recently set weld data settings. They can be recalled from the weld data memory or individually altered settings. In other words, the working memory is never empty or "zeroed".

Main menu → MEMORY→ Weld data memory

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 –
6 –
7 –

STORE			2ND FUNCT	QUIT

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It is possible to store up to 255 sets of weld data in the control panel. Each set is given a number from 1 to 255.

You can also delete, copy, change and name data sets and recall a set of weld data to the working memory.

7.2　Store

If the weld data memory is empty, the following screen appears in the display.

We are now going to store a set of weld data. It will have memory position 5. Mark row five using the positioning knob. Press STORE.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 –
6 –
7 –

| STORE | | | 2ND FUNCT | QUIT |

The following screen appears in the display.

The weld data set is now stored as number 5.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –

SAW: CA: FE SOLID: 3.0 mm
30.0 V: 450 A: 50 cm/min

| STORE | RECALL | DELETE | 2ND FUNCT | QUIT |

Parts of the content of weld data set number 5 are presented at the bottom of the display.

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If a data set is already stored in the selected location, you will be asked if you want to overwrite that set or not, YES or NO.

WELD DATA MEMORY

1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –

```
OVERWRITE
DATA SET5
IN MEMORY?
```

S_____ mm
30.0 V: 450 A: 50 cm/min

			NO	YES

Return to the memory menu using NO.

7.3 Recall

We are going to recall a stored data set:

Mark the row using the positioning knob. Press RECALL.

WELD DATA MEMORY

1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –

SAW: CA: FE SOLID: 3.0 mm
30.0 V: 450 A: 50 cm/min

STORE	RECALL	DELETE	2ND FUNCT	QUIT

Press YES to confirm that you want to recall data set number 5.

WELD DATA MEMORY

1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –

```
RECALL
DATA SET 5
FROM MEMORY?
```

S_____ mm
30.0 V: 450 A: 50 cm/min

			NO	YES

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This icon in the measurement display shows which memory position number has been recalled.

```
SAW: FE SOLID                    !! ( 5 )
A    450 Amp
V   30.0 Volt
⊐→       50 cm/min
NONE   NONE   NONE   NONE   2ND
                            FUNCT
```
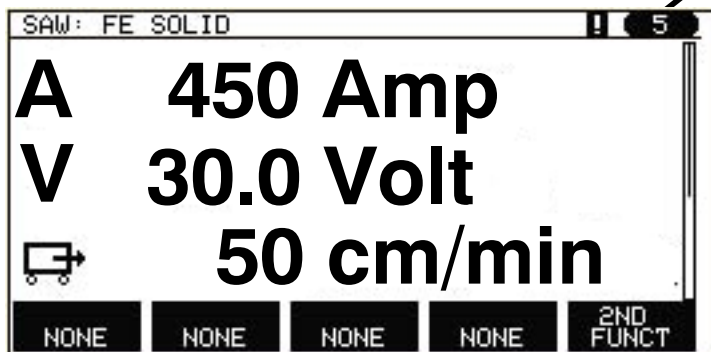
7.4   Delete

It is possible to delete one or more data sets in the memory menu.

Deleting a data set.

Select the data set.
Press DELETE.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –
SAW: CA: FE SOLID: 3.0 mm
30.0 V: 450 A: 50 cm/min

STORE	RECALL	DELETE	2ND FUNCT	QUIT
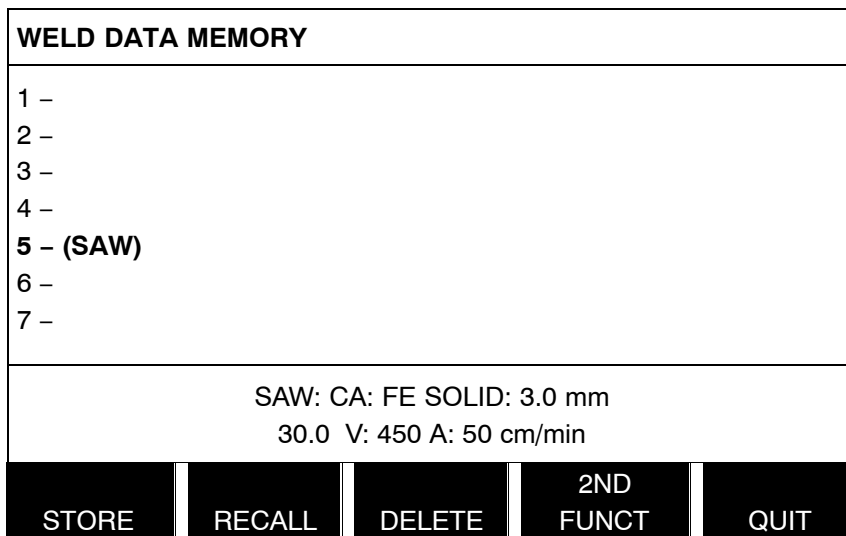
Press YES to confirm that you want to delete.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –

DELETE WELD DATA
NR. 5?

D: 3.0 mm
30.0 V: 450 A: 50 cm/min

			NO	YES
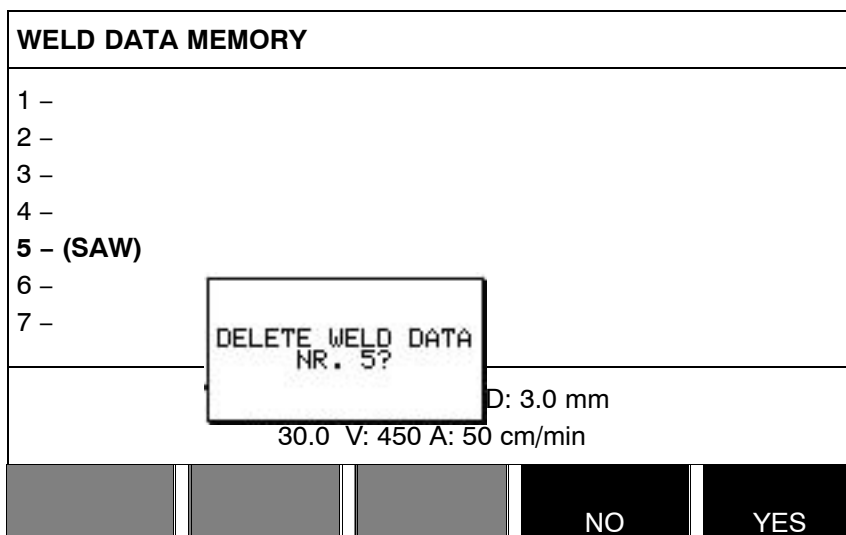
7.5 Copy

To copy the content of a weld data set to a new memory position, proceed as follows:

Select the memory position you want to copy and press 2ND FUNCT.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –
SAW: CA: FE SOLID: 3.0 mm
30.0 V: 450 A: 50 cm/min

STORE	RECALL	DELETE	2ND FUNCT	QUIT

Press COPY.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –
SAW: CA: FE SOLID: 3.0 mm
30.0 V: 450 A: 50 cm/min

COPY	RENAME	EDIT	2ND FUNCT	QUIT

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We are now going to copy the content of memory position 5 to position 50.

Use the positioning knob to scroll to the selected memory position, in this case position 50.

Press YES.

WELD DATA MEMORY				
44–				
45 –				
46 –				
47 –				
48 –				
49 –				
50 –				
COPY				
DATA SET 5 TO POSITION: 50				
			NO	YES
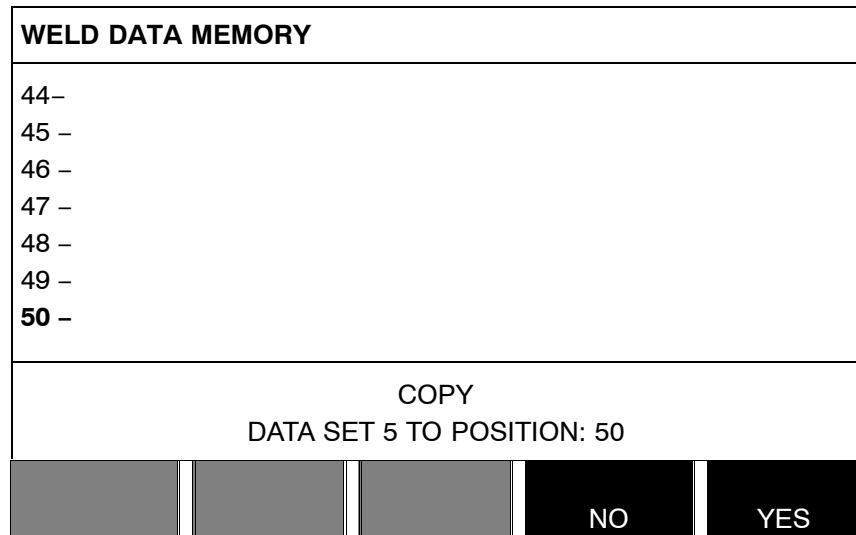
Weld data number 5 has now been copied to memory position 50.

7.6   Name

To give a stored weld data set its own name, proceed as follows:

Select the memory position you want to name and press 2ND FUNCTION. Then press RENAME.

WELD DATA MEMORY				
1 –				
2 –				
3 –				
4 –				
5 – (SAW)				
6 –				
7 –				
SAW: CA: FE SOLID: 3.0 mm				
30.0 V: 450 A: 50 cm/min				
COPY	RENAME	EDIT	2ND FUNCT	QUIT
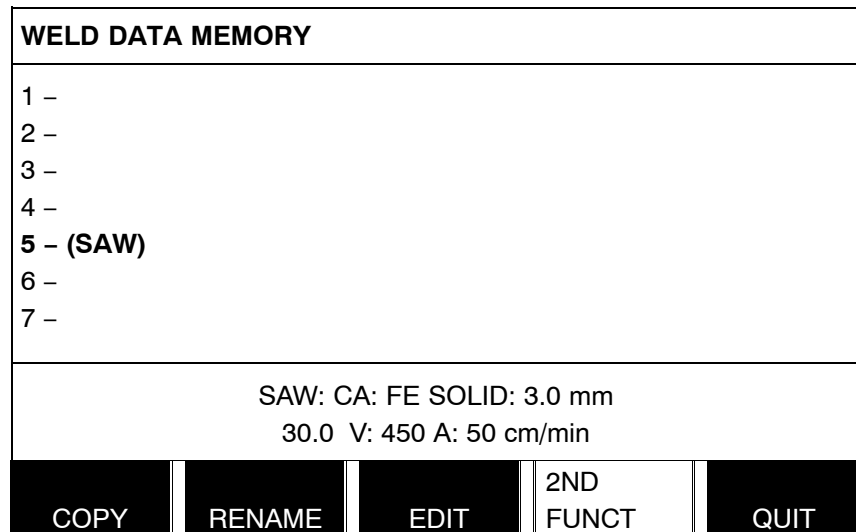
Here you have access to a keyboard that is used as follows:

• Position the cursor on the desired keyboard character using the arrows and the positioning knob. Press DONE. Enter a complete text string with a maximum of 40 characters in this way.

• Press DONE to store. The alternative you have named can now be seen in the list.

KEYBOARD

A B C D E F G H
I J K L M N O P
Q R S T U V W X Y Z
0 1 2 3 4 5 6 7 8 9
SPACE CAPS

0(MAX 40)

DELETE   SYMBOL   DONE

7.7   Edit

To edit the content of a weld data set, proceed as follows:

Mark the memory posi-
tion you wish to
change. Press 2ND
FUNCT and then EDIT.

WELD DATA MEMORY
1 –
2 –
3 –
4 –
5 – (SAW)
6 –
7 –
SAW: CA: FE SOLID: 3.0 mm 30.0 V: 450 A: 50 cm/min

COPY		EDIT	2ND FUNCT	QUIT

Part of the main menu is displayed and the menu shows the symbol ✐ which
means that you are in an editing mode.

Press SET and make
the relevant changes.

SAW	✐
REGULATION TYPE	CA
WIRE TYPE	SS FLUX CORED
WIRE DIMENSION	2.0 mm

SET				QUIT

The following menu appears:

In this example we
change the welding
current from 400 A to
500 A.

Press QUIT twice.

SAW WELD DATA SETTING	
VOLTAGE	20.0 V
CURRENT	**500 A**
TRAVEL SPEED	0 cm/min
DIRECTION	■
START DATA▶	
STOP DATA▶	
DYNAMIC REGULATION	ON
SETTING LIMITS▶	
MEASURE LIMITS▶	
	QUIT

The setting for weld data number 5 has now been edited and stored.

8   CONFIGURATION MENU

Main menu → Configuration menu

This menu contains the following sub−menus:

• Language, see chapter 1.2.1 "Choice of language"

• Code lock, see chapter 8.1

• General settings, see chapter 8.2

• Machine settings, see chapter 8.3

• Cable length, see chapter 8.4

• Maintenance, see chapter 8.5

8.1   Code lock

Main menu → Configuration menu →   Code lock

When the lock function is activated and you are in the measure screen, remote
mode or fast mode menu, a password (lock code) is required to exit from these
menus.

CODE LOCK	
LOCK STATUS	OFF
SET / CHANGE LOCK CODE	
	QUIT

Code lock is activated in the configuration menu.

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8.1.1　Lock code status

In lock code status, you can activate/deactivate the lock function without deleting the existing lock code in the event you deactivate the function. If no lock code is stored and you try to activate the code lock, the keyboard is displayed for entering a new lock code.
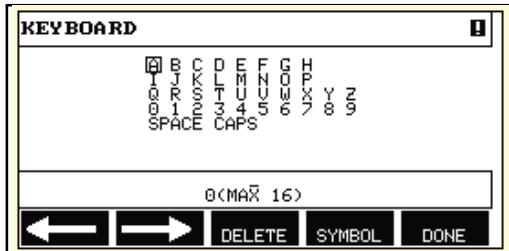
To exit lock status.

When you are in the measure screen or the fast mode menu and the code lock is **deactivated**, you can exit these menus without restrictions by press QUIT or MENU in order to go to the main menu.

If it is **activated** and you try to exit, the following screen appears in order to warn the user about the lock protection.

PRESS ENTER FOR LOCK CODE...

Here you can select QUIT to undo and return to the previous menu, or proceed by pressing ENTER to enter the lock code.

You will then move to the menu with the keyboard, where you can enter the code. Press ENTER after each character, and confirm the code by pressing ENTER again.

The following text box appears:

UNIT UNLOCKED!
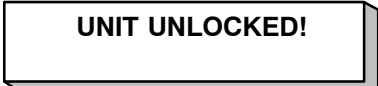
If the code is not correct, an error message is displayed that offers the option of trying again or returning to the original menu, i.e. the measure screen or the fast mode menu.

If the code is correct, all blocks to other menus will be removed, although the code lock remains activated. This means that you can leave the measure screen and the fast mode menu temporarily, yet still retain the lock status when you return to these menus.

8.1.2　Specify/edit lock code

In specify/edit lock code, you can edit an existing lock code or enter a new one. A lock code can comprise a maximum of 16 optional letters or figures.

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8.2 General settings

Main menu → Configuration menu → General settings

In this menu you can set:

- Fast mode soft keys, see chapter 8.2.1

- Quality data log to file, see chapter 8.2.2

- Setting soft keys, see chapter 8.2.3

- Automatic weld data storage, see chapter 8.2.4

- Unit of length, see chapter 1.2.2 "unit of measurement"

8.2.1 Fast mode soft keys

The soft keys WELD DATA 1 up to and including WELD DATA 4 are displayed in the fast mode menu.

SAW: CA				16
A	**450 Amp**			
V	**30.0 Volt**			
⊟→	**50 cm/min**			
WELD DATA 1	WELD DATA 2	WELD DATA 3	WELD DATA 4	2ND FUNCT
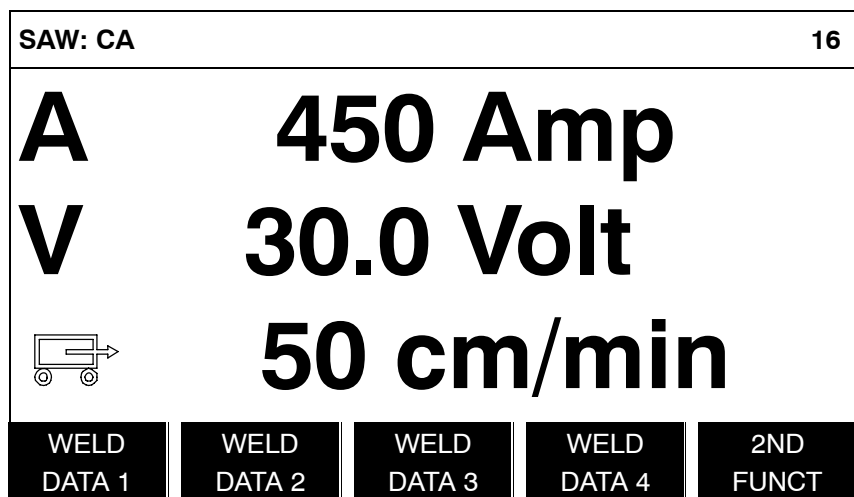
These are configured as follows:

Position the cursor on the row for SOFT KEY NUMBER.

FAST MODE SOFT KEYS	
SOFT KEY NUMBER	**1**
ASSOCIATED WELD DATA	5
SAW: CA: FE SOLID: 0.8 mm	
20.0 V: 500 A: 0 cm/min	
	STORE	DELETE		QUIT

The keys are numbered 1–4 from left to right. Select the desired key by giving its number using the setting knobs.

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Then scroll to the next row, ASSOCIATED WELD DATA. Here you can browse through the weld data sets that are stored in the weld data memory. Selected the desired weld data number using the setting knobs. Press STORE to save. To delete the stored set, press DELETE.

8.2.2   Quality data log to file

In the QUALITY DATA LOG TO FILE menu it is possible to activate it with ON.

GENERAL CONFIGURATION	
FAST MODE SOFT BUTTONS	1
QUALITY DATA LOG TO FILE	**ON**
SOFT KEYS SETUP▶	
AUTO SAVE MODE	OFF
UNIT OF LENGTH	METRIC
	QUIT

Read more about settings for the quality function in chapter 9.7.

8.2.3   Soft key configuration

We have previously described the control panel's "soft" keys. For Submerged Arc Welding (SAW) and for Gas Metal Arc Welding (GMAW) welding, the user has the possibility of setting the function of these keys by selecting from a list of set options. There are eight soft keys that can be allocated a function.

It is possible to choose between the following options:

- None
- Gas purge / Flux valve
- See set values in the measurement menu
- Relay 1
  Sets relay output no.1 on the motor circuit board, which can be used for any function by the customer.

In the display screen there are two columns; one for SOFT KEYS and one for FUNC-TION.

SOFT KEYS SETUP	
SOFT KEYS	FUNCTION
S1	NONE
S2	NONE
S3	NONE
S4	NONE
S1 2ND FUNCT	NONE
S2 2ND FUNCT	NONE
S3 2ND FUNCT	NONE
S4 2ND FUNCT	NONE
	QUIT

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When you allocate functions to these keys, they are numbered from the left as follows:

S1	S2	S3	S4	2ND FUNCT
S1 2ND FUNCT	S2 2ND FUNCT	S3 2ND FUNCT	S4 2ND FUNCT	2ND FUNCT

To allocate a new function to a soft key, proceed as follows:

Position the cursor on the row with the soft key number you wish to use and press ENTER. A pop−up menu shows the function selections. Select using the posi-tioning knob and press ENTER.

SOFT KEYS SETUP		
SOFT KEYS		FUNCTION
S1		**NONE**
S2		NONE
S3		NONE
S4	NONE	NONE
S1 2ND FUNCT	GAS / FLUX	NONE
S2 2ND FUNCT	RELAY 1	NONE
S3 2ND FUNCT		NONE
S4 2ND FUNCT		NONE
		QUIT

You can allocate new functions to the other keys in the same way, by pairing a key number in the left−hand column with a function in the right−hand column.

8.2.4 Auto save mode

When a weld data set has been recalled from a memory position in the weld data memory and you change the settings, the changes will be saved in the working memory at welding stop in the last recalled memory position.

Saving weld data manually in a memory position disables the next automatic save.

The memory position in which the weld data set is stored is displayed in the top right corner of the measure screen.

8.3 Machine settings

Main menu → Configuration menu → Machine settings

In this menu you can set:

- Product code, see chapter 8.3.1

- Wire feed axis, see chapter 8.3.2

- Travel axis, see chapter 8.3.3

- Outer axis, see chapter 8.3.4

- Tandem, see chapter 8.3.5

8.3.1   Product code

In the PRODUCT CODE menu it is possible to select the automatic welding machine, column and boom, roller bed or positioner to be used.

MACHINE CONFIGURATION	
PRODUCT CODE	A2TFX
WIRE FEED AXIS▶	
TRAVEL AXIS▶	
TANDEM	OFF
	QUIT

When selecting product code, the correct motor type and gear ratio for the used gearbox in the relevant product are selected automatically.

The following options can be selected:

- **A2TFJ1**

  A2 tractor automatic welding machine for Submerged Arc Welding (SAW)

- **A2TGJ1**

  A2 tractor automatic welding machine for Gas–Shielded Metal Arc Welding (GMAW)

- **A6TFF1**

  A6 tractor automatic welding machine for Submerged Arc Welding (SAW)

- **FREE 2 AXIS**

  Optional configuration for connecting 2 motors to the actuator board. One for wire feed and one for travel motion.

- **FREE 3 AXIS**

  Optional configuration for connecting external roller beds, positioners or linear axis as well as for 2 motors to the actuator board. One for wire feed and one for travel motion.

8.3.2   Wire feed axis

The wire feed motor is set automatically according to the tables below.

	A2TFJ1	A2TGJ1	A6TFF1
Motor	5035 38 RPM	5035 68 RPM	VEC4000
Gear 1	49:1	49:1	156:1
Gear 2	1:1	1:1	1:1
Diameter feed rollers	49 mm	49 mm	49 mm
Pulse sensor	28 ppr	28 ppr	32 ppr
Low manual speed	150 cm/min	150 cm/min	150 cm/min
High manual speed	300 cm/min	300 cm/min	300 cm/min

	FREE 2 AXIS	**FREE 3 AXIS**
Motor	5035 38 RPM	5035 38 RPM
Gear 1	49:1	49:1
Gear 2	1:1	1:1
Diameter feed rollers	49 mm	49 mm
Pulse sensor	28 ppr	28 ppr
Low manual speed	150 cm/min	150 cm/min
High manual speed	300 cm/min	300 cm/min

8.3.3 Travel axis

The travel motor is set automatically according to the tables below.

	A2TFJ1	**A2TGJ1**	**A6TFF1**
Motor	4030−350	4030−350	FHP258
Gear 1	37.5:1	37.5:1	24:1
Gear 2	51:1	51:1	51:1
Wheel diameter	158 mm	158 mm	180 mm
Pulse sensor	60 ppr	60 ppr	28 ppr
High manual speed	200 cm/min	200 cm/min	200 cm/min

	FREE 2 AXIS	**FREE 3 AXIS**
Motor	FHP258	FHP258
Gear 1	24:1	24:1
Gear 2	51:1	51:1
Wheel diameter	180 mm	180 mm
Pulse sensor	28 ppr	28 ppr
High manual speed	200 cm/min	200 cm/min

8.3.4 Outer axis

When connecting an external roller bed, positioner or linear axis, FREE 3 AXIS must be selected.

When FREE 3 AXIS is selected, the motor is automatically set according to the tables below.

	Roller bed
Gear 1	560:1
Gear 2	111:22
Gear 3	1:1
Wheel diameter	160 mm
Pulse sensor	30 ppr
High manual speed	200 cm/min
Frequency ratio	85:50
Motor	2000 rpm
Weld diameter	1000 mm
Roller diameter	1000 mm

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8.3.5 Tandem

Used when welding with two welding heads.

Position the cursor on the TANDEM row and press ENTER.

Select ON using the positioning knob and press ENTER.

MACHINE CONFIGURATION	
PRODUCT CODE	A2TFX
WIRE FEED AXIS▶	
TRAVEL AXIS▶	
TANDEM	**ON**
∟ WELDING HEAD	HEAD
∟ WELD HEAD OFFSET	20 mm

QUIT

In order to weld with two welding heads, the WELD HEAD OFFSET function must be set.

WELD HEAD OFFSET is the distance in millimetres between the welding heads.

When you specify the distance between welding head 1 HEAD and welding head 2 TAIL, the value is recalculated by the control unit to a time between when welding head 1 starts and welding head 2 is to start.

The time that the control unit can calculate for the distance between the starting and stopping of the welding power sources is a maximum of 65 seconds. This means that if, for example, 50 cm/min is specified, 540 mm can be entered as the maximum WELD HEAD OFFSET. This is so that time does not expire before welding head 2 reaches the start point.

TAIL   HEAD
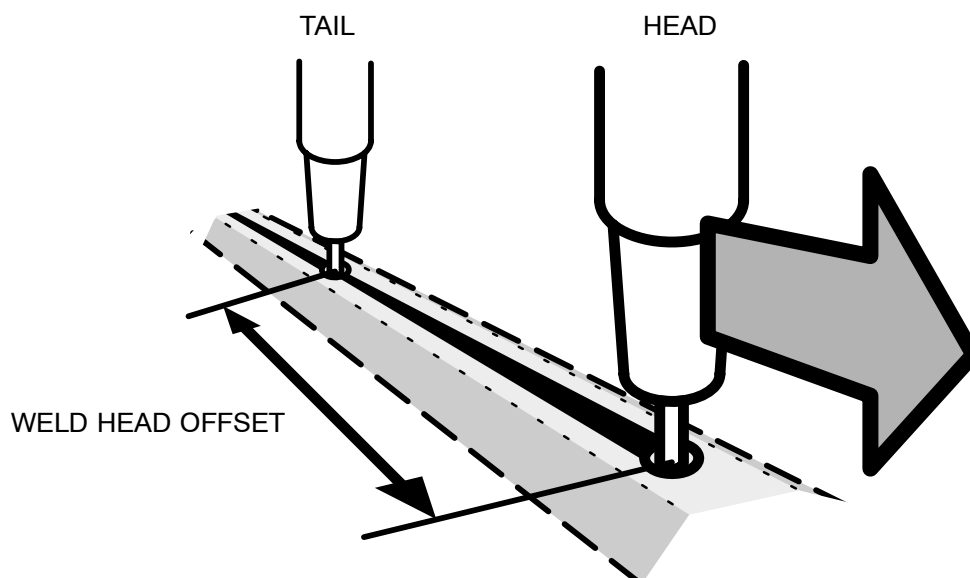
WELD HEAD OFFSET

NOTE!

Ensure that both control units have the same settings for WELD HEAD OFFSET and specify the same travel speed. The "Master" control unit must be allocated HEAD and the "Slave" control unit TAIL. Travel motion is always controlled from "Master".

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Specify the values to weld with two welding heads as follows:

Position the cursor on the WELDING HEAD row.

Select whether the setting is to apply to "master" control unit HEAD or "slave" control unit TAIL.

MACHINE CONFIGURATION	
PRODUCT CODE	A2TFX
WIRE FEED AXIS▶	
TRAVEL AXIS▶	
TANDEM	ON
⌐ WELDING HEAD	HEAD
⌐ WELD HEAD OFFSET	20 mm
	QUIT

- Position the cursor on the WELD HEAD OFFSET row and specify the distance between the two welding heads.

Example

Welding head2, (slave)   Welding head1, (master)
TAIL   HEAD
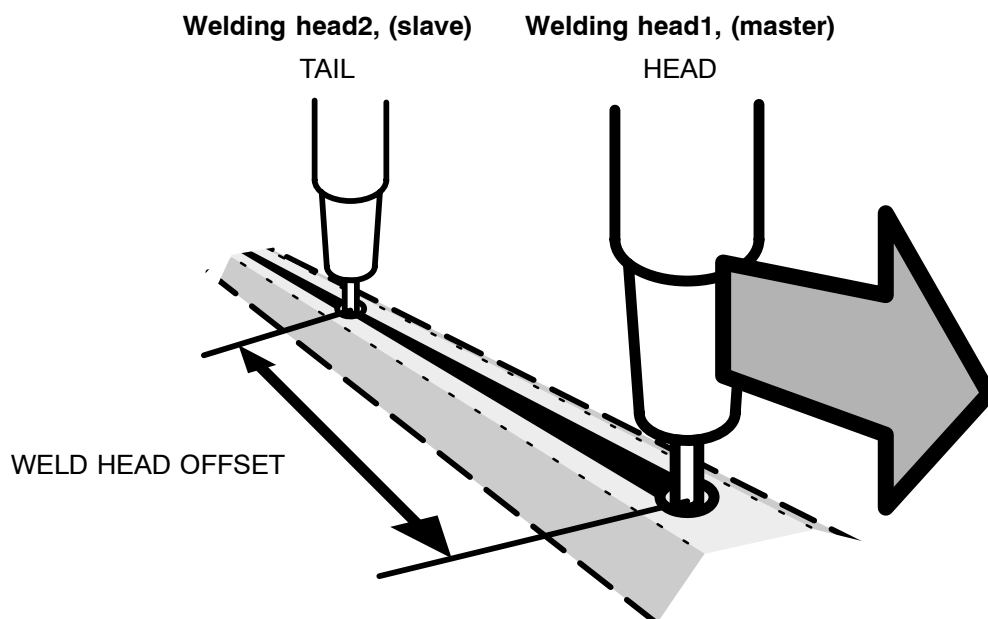
WELD HEAD OFFSET

- Press [▷] Start, for welding head1 and welding head2 at the same time.

- Welding head1 starts to weld.

- Welding head2 starts to weld first when the start position for welding head1 has been reached (the distance given WELD HEAD OFFSET).

- Press [◯] stop, for welding head1 and welding head2 at the same time.

- Welding head1 stops welding but travel motion continues.

- Welding head2 stops welding when it has reached the point where equipment1 stopped welding (the distance that is given in WELD HEAD OFFSET).

- Welding is complete.

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8.4   Cable length

The arc voltage is affected by the impedance in the welding cables. The impedance is affected by the length and area of the cables as well as by how they are routed. This is especially prominent during AC welding.

Compensation for the voltage drop with long cables is maintained if the actual cable length is specified.

The total cable length (weld cable and connector together) must be fed in.

Note! When using two cables, the areas must be combined for both cables.

This function is active during the start process before the power source has received a measurement value that it can regulate at.

If "Max OCV" has been selected this function is inactive.

8.5   Maintenance

Main menu → Configuration menu → Maintenance

In this menu you set how often the contact tip is to be changed. Specify the number of weld starts after which the tip is to be changed by selecting the CONTACT TIP CHANGE INTERVAL row and pressing ENTER. Change the value using the setting knobs. When the interval has been passed, fault code 54 is displayed in the error log. Reset by pressing RESET.

When TOTAL RUNNING TIME LIMIT is selected instead of the number of starts, an authorised ESAB service technician is contacted.

MAINTENANCE	
CONTACT TIP CHANGE INTERVAL	0 Welds
⌊ WELD COUNT	0 Welds
TOTAL RUNNING TIME LIMIT	0d00:00:00
⌊ TOTAL RUNNING TIME	0d00:00:00

| RESET | | | | QUIT |

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9   TOOLS

Main menu → Tools

This menu contains the following sub−menus:

- Error log, see chapter 9.1
- Export/Import, see chapter 9.2
- File manager, see chapter 9.3
- Edit setting limits, see chapter 9.4
- Edit measure limits, see chapter 9.5
- Production statistics, see chapter 9.6
- Quality functions, see chapter 9.7
- Calendar, see chapter 9.8
- User accounts, see chapter 9.9
- Unit information, see chapter 9.10

9.1   Error log

Main menu → Tools → Error log

Fault management codes are used to indicate that a fault has occurred in the welding process. Indicated in the display via a pop−up menu and an exclamation

mark ▯ appears in the upper right−hand corner of the display.

Note! ▯ disappears from the display as soon as you enter the error log menu.

All errors that arise during the use of the welding equipment are documented as error messages in the error log. Up to 99 error messages can be saved. If the error log becomes full, i.e. if 99 error messages have been saved, the oldest message is automatically deleted when the next fault occurs.

The following information can be read in the error log menu:

- The error number of the error
- The day on which the error occurred
- The time at which the error occurred
- The unit in which the error has occurred
- The error's error management code

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ERROR LOG				
Index	Date	Time	Unit	Error
1	081120	11:24:13	8	19
2	081120	10:24:18	8	18
3	081121	13:24:18	8	17
Error in battery−driven memory				
	DELETE ALL			QUIT

9.1.1 Delete error message

In order to delete error messages, press DELETE ALL. All rows are emptied from the error log.

9.1.2 Units

2 = Power source

6 = Wire feed and travel motion (motor board)

8 = control panel

9.1.3 Description of fault management codes

The fault management codes that users can correct themselves are given below. If another code appears, restart the machine and if the error persists, contact a service technician.

Error code	Description
6	**High temperature** The power source has overheated and cancels welding. Welding is permitted again when the temperature falls below the maximum temperature parameter. **Action:** Check that the cooling air inlets or outlets are not blocked or clogged with dirt. Check the duty cycle being used, to make sure that the equipment is not being overloaded. If the error persists, send for a service technician.
7	**Low welding current** The weld arc has been shut down due to too low welding current during the welding process. **Action:** Turn off the mains power supply to reset the unit. If the error persists, send for a service technician.
8	**Low battery voltage** Battery voltage too low. If the battery is not replaced, all stored data will be lost. This error does not disable any functions. **Action:** Send for a service technician to replace the battery.
11	**Speed error on a motor,** (wire feed, travel motor) A motor cannot maintain its speed. Welding stops. **Action:** Check that the wire feed has not jammed or runs too fast. If the error persists, send for a service technician.

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Error code	Description
12	**Internal communication error (warning)**
	The load on the system's CAN–bus is temporarily too high.
	The power source may have lost contact with the control unit.
	Action: Check that all the equipment is correctly connected. If the error persists, send for a service technician.
14	**Communication error**
	The system's CAN–bus has temporarily stopped working due to the load being too high.
	The current welding process stops.
	Action: Check that all the equipment is correctly connected. Turn off the mains power supply to reset the unit. If the error persists, send for a service technician.
17	**Lost contact with the unit**
	Lost contact with a unit.
	Action: Check wiring and the connector between the control unit and power source. If the error persists, send for a service technician.
32	**No gas flow**
	Start prevented.
	Action: Check the gas valve, hoses and connectors.
43	**High welding current**
	Power source have switched off the welding process because the current has exceeded the maximum current parameter for the power source.
	Action: Turn off the mains power supply to reset the unit. If the error persists, send for a service technician.
44	**Start pause welding current**
	The welding process has stopped because it has not advanced within 10 seconds.
	Action: Turn off the mains power supply to reset the unit. If the error persists, send for a service technician.

9.2   Export/Import

Main menu → Tools → Export / Import

In the Export/Import menu, it is possible to transfer information to and from the control panel via a USB memory.

The following information can be transferred:

- Weld data sets   Export/Import
- System setting   Export / Import
- Setting limits   Export / Import
- Measure limits   Export / Import
- Error log   Export
- Quality function log   Export
- Production statistics   Export

Carry out the following to save on a USB memory:

Insert the USB memory into the control unit.

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Select the row with the information that is to be transferred. Press EXPORT or IMPORT, depending on whether the information is to be exported or imported.

EXPORT/IMPORT				
WELD DATA SETS				
SYSTEM SETTINGS				
SETTING LIMITS				
MEASURE LIMITS				
ERROR LOG				
QUALITY FUNCTION LOG				
PRODUCTION STATISTICS				
EXPORT	IMPORT			QUIT

9.3   File manager

Main menu → Tools → File manager

In the file manager it is possible to manage information on a USB memory (C:\). File manager makes it possible to delete and copy weld data and quality data manually.

When the USB memory is connected, the display shows the memory's default folder if one is not previously selected.

The control panel remembers where you were the last time you used file manager, so that you return to the same place in the file structure when you come back.

FILE MANAGER				
..				
NEW FOLDER				
QData.xml				
INFO	UPDATE		ALT.	QUIT

• In order to ascertain how much storage space remains for the memory, use the INFO function.

• Update the information by pressing UPDATE.

• When you want to delete, change name, create new folder, copy or paste, press ALT. A list then appears from which you can choose. If (..) or a folder is selected, you can only create a new folder or paste in a file that you have previously copied. If you have selected a file, the options RENAME, COPY or PASTE will be added if you have previously copied a file.

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Select a folder or file
and press ALT.

FILE MANAGER

..
WeldData
NEW FOLDER
ErrorLog.xml
QData.xml
~Weldoffice.dat

| INFO | UPDATE | | ALT. | QUIT |
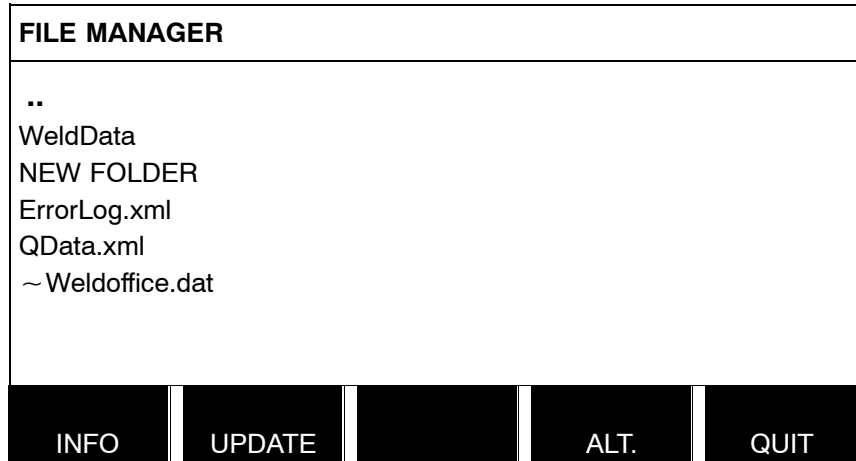
This list is displayed when you have pressed ALT.

COPY
PASTE
DELETE
RENAME
NEW FOLDER
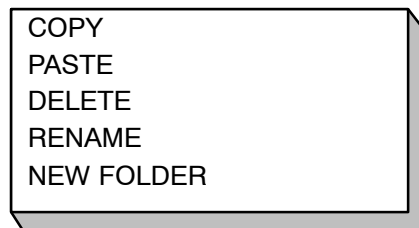
9.3.1 Delete a file/folder

Select the file or folder that is to be deleted and press ALT.

Select DELETE and press ENTER.

DELETE
RENAME
NEW FOLDER
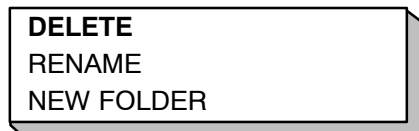
The file/folder is now removed. In order to delete a folder it must be empty, i.e. first delete the files contained in the folder.

9.3.2 Rename a file/folder

Select the file or folder that is to be renamed and press ALT.

Select RENAME and press ENTER.

DELETE
RENAME
NEW FOLDER

A keyboard appears in the display. Use the positioning knob to change row and the arrows to move left and right. Select the character/function that is to be used and press ENTER.

9.3.3 Create new folder

Select where the new folder is to be located and press ALT.

Select NEW FOLDER and press ENTER.

DELETE
RENAME
NEW FOLDER
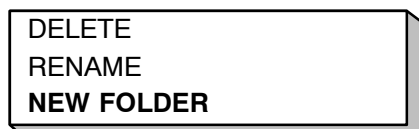
A keyboard then appears in the display. Use the positioning knob to change row and the arrows to move left and right. Select the character/function that is to be used and press ENTER.

bi24d1ea

9.3.4 Copy and paste files

Select the file that is to be copied and press ALT.

Select COPY and press ENTER.

```
COPY
PASTE
DELETE
RENAME
NEW FOLDER
```
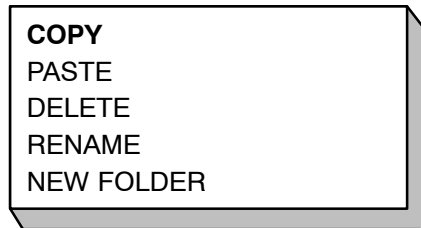
Position the cursor in the folder in which the copied file is to be located and press ALT.

Select PASTE and press ENTER.

```
COPY
PASTE
DELETE
RENAME
NEW FOLDER
```
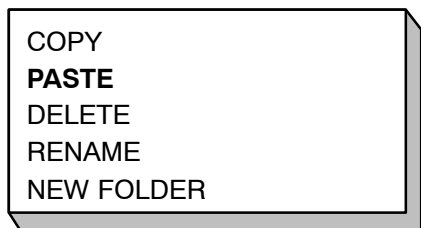
The copy is saved as Copy of plus the original name, e.g. Copy of WeldData.awd.

9.4 Setting limit editor

Main menu → Tools → Setting limit editor

In this menu you set your own max. and min. values for various welding methods. The limits cannot be above or below the values for which the power source is dimensioned. There are 50 storage points. Select the row for an empty storage point and press ENTER. Select process by pressing ENTER and select the welding process using the positioning knob and press ENTER.

The maximum and minimum values for arc voltage, wire feed speed, travel speed and welding current can be selected for all processes.

```
EDIT LIMITS

PROCESS                          SAW
VOLTAGE                          MIN 17.0
VOLTAGE                          MAX 47.0
WIRE SPEED                       MIN 50
WIRE SPEED                       MAX 970
TRAVEL SPEED                     MIN 100
TRAVEL SPEED                     MAX 2400
CURRENT                          MIN 70
CURRENT                          MAX 1500

  STORE            DELETE            QUIT
```

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```
LIMITS

   1 SAW
   2 GMAW
   3 GOUGING
   4 -
   5 -
   6 -
   7 -

   17.0 - 47.0 Volt ,   50 - 970 cm/min
  100 - 2400 cm/min ,   70 - 1500 Amp

                                    QUIT
```
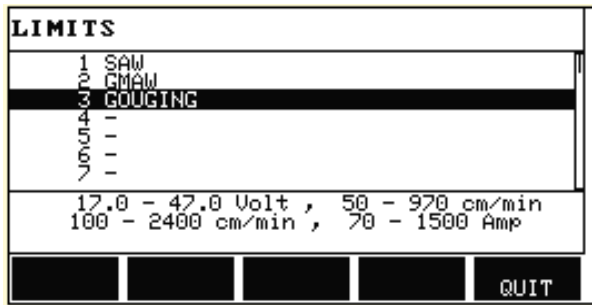
When the values have been adjusted, press STORE. When asked if the limit value is to be saved at the selected storage point, press NO or YES. The storage point's values can be seen under the line at the bottom.

With the AUTO soft key, the parameters are set automatically according to the most recently used parameters.

When asked if the limit settings are to be set automatically, press NO or YES and then STORE if the setting is to be retained.

9.5   Measure limits editor

Main menu → Tools → Measure limits editor

In this menu you set your own measurement values for the various welding methods. There are 50 storage points. Select the row for an empty storage point and press ENTER. Select process by pressing ENTER and select the welding process using the positioning knob and press ENTER.

The following values can be selected:

- arc voltage: min, max
- wire feed speed: min, max
- welding current: min, max
- travel speed: min, max
- energy per unit length: min, max

Set the desired value using the setting knobs and press STORE.

In the dialogue box, you are asked if you want to store the selected storage point. Press YES to save the value. The storage point's values can be seen under the line at the bottom.

```
MEASURE LIMITS

    1 – SAW
    2 – GMAW
    3 –
    4 –
    5 –
    6 –
    7 –

          0.0 – 46.9 Volt , 0 – 2495 cm/min
          3 – 994 cm/min , 3 – 990 Amp
                  5 – 500 kJ/min

                                              QUIT
```

With the AUTO soft key, the parameters are set automatically according to the most recently used measurement values.

When asked if the measurement values are to be set automatically, press NO or YES and then STORE if the setting is to be retained.

9.6   Production statistics

Main menu → Tools → Production statistics

The production statistics will keep track of the total arc time, the total amount of material and the number of welds since the most recent reset. They will also keep track of the arc time and the amount of material used in the most recent weld. For information purposes, the melted wire material per length unit that has been calculated and when the most recent reset occurred are also displayed.

```
PRODUCTION STATISTICS

                          LAST WELD           TOTAL

ARCTIME                      0s                 0s
CONSUMED WIRE                0g                 0g
BASED ON                    1g/m
NUMBER OF WELDS                                 0




LAST RESET                 081114           08:38:03

    RESET      UPDATE                            QUIT
```

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When you press RESET, all counters are reset. Date and time show the most recent reset.

If you do not reset the counters, these are all automatically reset when one of them has reached its maximum value.

Maximum counter values

Time   999 hours, 59 minutes, 59 seconds
Weight   13350000 grams
Quantity   65535

9.7   Quality functions

Main menu → Tools → Quality functions

Quality functions keep track of various interesting weld data for individual welds.

These functions are:

*   Time of welding start.
*   Duration of welding.
*   Maximum, minimum and average current during welding.
*   Maximum, minimum and average voltage during welding.
*   Maximum, minimum and average energy per unit length during welding.

The number of welds since the most recent reset is displayed in the row at the bottom. Information can be stored about a maximum of 100 welds. In the event of more than 100 welds, the first one is overwritten.

The most recently noted weld is presented in the display, although it is also possible to browse between other noted welds. All logs are deleted when you press RESET.

QUALITY FUNCTIONS			
#WELD: 1 / 4			
START 20090107 15:59:14 WELD TIME 00:00:20 WELD DATA: HEAT INPUT: 3.12 kJ/mm			
	MAX	MIN	AVE.
I (Amp)	293.00	243.00	289.00
U (V)	41.50	16.20	39.40
Q (kJ/min)	7.00	0.00	2.00
NUMBER OF WELDS SINCE RESET: 4			
RESET	UPDATE		QUIT

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9.7.1 Store quality data

Main menu → Tools → Export / Import

The files that are produced in the control panel are stored as xml files. The USB memory must be formatted as FAT32 in order to work.

Insert a USB memory in the control panel, see chapter **9.3** "File manager".

Select QUALITY
FUNCTION LOG, press
EXPORT.

EXPORT/IMPORT				
WELD DATA SETS				
SYSTEM SETTINGS				
SETTING LIMITS				
MEASURE LIMITS				
ERROR LOG				
QUALITY FUNCTION LOG				
PRODUCTION STATISTICS				
EXPORT				QUIT

The entire set of quality data (information about the 100 most recent welds) that is stored in the control panel is now saved on the USB memory.

The file is in a folder called QData. QData is created automatically when you insert a USB memory.

9.8 Calendar

Main menu → Tools → Calendar

Date and time are set here.

Select the row that is to be set: year, month, day, hour, minutes and seconds. Set the correct value using one of the setting knobs. Press SET.

DATE & TIME		
YEAR		2008
MONTH		NOV
DAY		21
HOUR		10
MINUTES		45
SECONDS		55
20081121	10:48:59	
	SET	QUIT

bi24d1ea

9.9   User accounts

Main menu → Tools → User accounts

Occasionally it is particularly important from a quality perspective that the product cannot be used by unauthorised parties.

User name, account level and password are registered in this menu.

Select USER NAME and press ENTER. Step down to an empty row and press ENTER. Key in a new user name on the keyboard using the positioning knob and the arrows and ENTER.

USER ACCOUNTS	
USER NAME	ADMINISTRATOR
⌐ ACCOUNT LEVEL	ADMIN
⌐ PASSWORD	
USER ACCOUNTS	OFF

| STORE | DELETE | | | QUIT |

There is space for 16 user accounts. In the quality data files it will be evident which users have executed a particular weld.

In the ACCOUNT LEVEL line, you can choose between administrator, responsible or normal user.

In the PASSWORD row, key in a password using the keyboard. When the power source is switched on and the control panel activated, you are asked in the display to enter your password.

If you choose not to have this function, but instead want the power source and control panel to be unlocked for all users, select USER ACCOUNTS OFF.

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9.10 Unit information

Main menu → Tools → Unit information

I this menu you can see the following information:

- Machin ID
- Node ID

    2 = power source

    6 = wire feed and travel motion (motor board)

    8 = control panel
- Software version

UNIT INFORMATION		
Machine ID	Node ID	Software Version
44	8	1.00A
23	2	2.00A
5	6	1.18A
	PEK CONTROLLER	
		QUIT
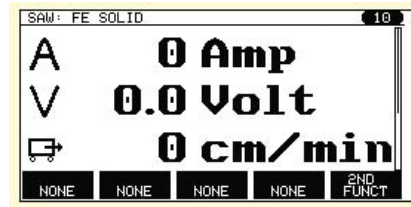
bi24d1ea

Menu structure

NO TAG54

SAW (CA)

– Process
– Regulation type
– Wire type
– Wire dimension
– Configuration,
  see page 57
– Tools, see page 57

Voltage
Current
Travel speed
Direction
Start data
– flux preflow
– start type
– wire creep start
– start phases
– max OCV
Stop data
– flux postflow
– crater fill
– burn−back time
– stop phases
Dynamic regulation
Setting limits
Measure limits

GMAW (CA)
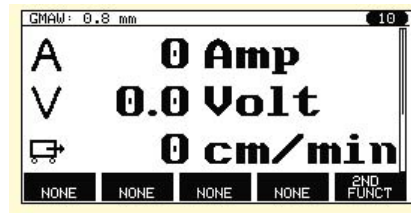
```
GMAW: 0.8 mm                    10
A        0 Amp
V      0.0 Volt
⊏→       0 cm/min
NONE  NONE  NONE  NONE  2ND
                        FUNCT
```

– Process

– Regulation type

– Wire type

– Wire dimension

– Configuration, see page 57

– Tools, see page 57

```
GMAW
PROCESS                    GMAW
REGULATION TYPE              CA
WIRE TYPE              FE SOLID
WIRE DIMENSION          0.8 mm
CONFIGURATION▶
TOOLS▶

SET   MEASURE  MEMORY  FAST
                       MODE
```

SET

Voltage

Current

Travel speed

Direction

Start data

– gas preflow

– start type

– wire creep start

– start phases

– max OCV

Stop data

– gas postflow

– crater fill

– burn–back time

– stop phases

Dynamic regulation

Setting limits

Measure limits

GOUGING (CA)

```
GOUGING: 8.0 mm                    10
A        0 Amp
V        0.0 Volt
⊏⊐       0 cm/min
NONE  NONE  NONE  NONE  2ND
                         FUNCT
```

– Process
– Regulation type
– Electrode   dimension
– Configuration,
  see page 57
– Tools, see page 57

```
GOUGING
PROCESS                        GOUGING
REGULATION TYPE                     CA
ELECTRODE DIMENSION            8.0 mm
CONFIGURATION▶
TOOLS▶



SET   MEASURE  MEMORY   FAST
                        MODE
```

SET

Voltage
Current
Travel speed
Direction
Start data
– air preflow
– start type
– wire creep start
– start phases
– max OCV
Stop data
– air postflow
– crater fill
– burn−back time
– stop phases
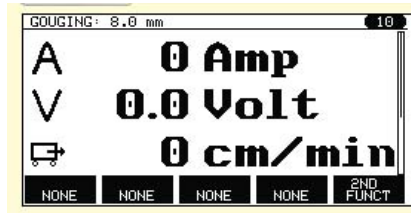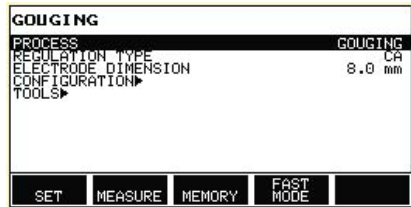Dynamic regulation
Setting limits
Measure limits

NO TAG

SAW, GMAW, GOUGING

Configuration	Tools

```
CONFIGURATION
LANGUAGE                    ENGLISH
CODE LOCK
GENERAL CONFIGURATION▶
MACHINE CONFIGURATION▶
CABLE LENGTHS▶
MAINTENANCE▶



                              QUIT
```

```
TOOLS
ERROR LOG▶
EXPORT / IMPORT▶
FILE MANAGER▶
SETTING LIMIT EDITOR▶
MEASURE LIMIT EDITOR▶
PRODUCTION STATISTICS▶
QUALITY FUNCTIONS▶
CALENDAR▶
USER ACCOUNTS▶
UNIT INFORMATION▶
                              QUIT
```

Configuration	Tools
Language	Error log
Code lock	Export / Import
General configuration	File manager
– fast mode soft buttons	Setting limit editor
– quality data log to file	Measure limit editor
– soft keys setup	Production statistics
– auto save mode	Quality functions
– unit of length	Calendar
Machine configuration	User accounts
– product code	Unit information
– wire axis	
– travel axis	
– tandem	
Cable lengths	
– cable lengths	
– cable area	
Maintenance	
– Contact tip change interval	
– Total running time limit	
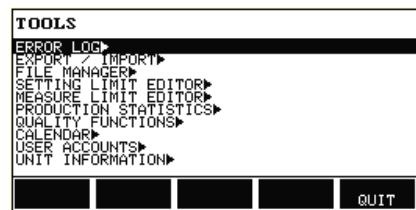
Edition 090529

Wire dimension

Submerged arc welding with constant ampere (SAW CA)

Wire type	Wire diameter (mm)
Fe Solid	0.8 1.0 1.2 1.6 2.0 2.4 3.0 3.2 4.0 5.0 6.0
Fe Solid Twin	2x0.8 2x1.0 2x1.2 2x1.6 2x2.0 2x2.4 2x3.0 2x4.0 2x5.0
Fe Flux Cored	0.8 1.0 1.2 1.6 2.0 2.4 3.0 3.2 4.0
Fe Flux Cored Twin	2x0.8 2x1.0 2x1.2 2x1.6 2x2.0 2x2.4 2x3.0 2x4.0
SS Solid	0.8 1.0 1.2 1.6 2.0 2.4 3.0 3.2 4.0 5.0 6.0
SS Solid Twin	2x0.8 2x1.0 2x1.2 2x1.6 2x2.0 2x2.4 2x3.0 2x3.2 2x4.0
SS Strip	30 x 0.5 60 x 0.5 90 x 0.5
SS Flux Cored	0.8 1.0 1.2 1.6 2.0 2.4 3.0 3.2 4.0 5.0 6.0
SS Flux Cored Twin	2x0.8 2x1.0 2x1.2 2x1.6 2x2.0 2x2.4 2x3.0 2x3.2 2x4.0

MIG/MAG welding with constant ampere (GMAW CA)

Wire type	Wire diameter (mm)
Fe Solid	0.8 1.0 1.2 1.6 2.0 2.4
Fe Flux Cored	0.8 1.0 1.2 1.6 2.0 2.4
SS Solid	0.8 1.0 1.2 1.6 2.0 2.4
SS Flux Cored	0.8 1.0 1.2 1.6 2.0 2.4
Al Solid	0.8 1.0 1.2 1.6 2.0 2.4
Al Flux Cored	0.8 1.0 1.2 1.6 2.0 2.4

Gouging with constant ampere (CA)

Electrode dimension (mm)
8.0   9.5 13.0

bi24wire

Ordering number

Ordering no.	Denomination
0460 504 880	Control unit PEK
0460 949 070	Instruction manual SE
0460 949 071	Instruction manual DK
0460 949 072	Instruction manual NO
0460 949 073	Instruction manual FI
0460 949 074	Instruction manual GB
0460 949 075	Instruction manual DE
0460 949 076	Instruction manual FR
0460 949 077	Instruction manual NL
0460 949 078	Instruction manual ES
0460 949 079	Instruction manual IT
0460 949 080	Instruction manual PT
0460 949 081	Instruction manual GR
0460 949 082	Instruction manual PL
0460 949 083	Instruction manual HU
0460 949 084	Instruction manual CZ
0460 949 027	Instruction manual RU, GB
0460 949 085	Instruction manual SK
0460 949 089	Instruction manual EE
0460 949 090	Instruction manual LV
0460 949 091	Instruction manual SI
0460 949 092	Instruction manual LT

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Fax: +34 91 802 3461

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Fax: +46 31 50 92 22

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