

Control

Basic XQ (M3.7X-S, M3.7X-T)

099-0M37XS-EW501

Observe additional system documents!

15.12.2022

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General instructions

WARNING



Read the operating instructions!

The operating instructions provide an introduction to the safe use of the products.

- Read and observe the operating instructions for all system components, especially the safety instructions and warning notices!
- Observe the accident prevention regulations and any regional regulations!
- The operating instructions must be kept at the location where the machine is operated.
- Safety and warning labels on the machine indicate any possible risks. Keep these labels clean and legible at all times.
- The machine has been constructed to state-of-the-art standards in line with any applicable regulations and industrial standards. Only trained personnel may operate, service and repair the machine.
- Technical changes due to further development in machine technology may lead to a differing welding behaviour.

In the event of queries on installation, commissioning, operation or special conditions at the installation site, or on usage, please contact your sales partner or our customer service department on +49 2680 181-0.

A list of authorised sales partners can be found at www.ewm-group.com/en/specialist-dealers.

Liability relating to the operation of this equipment is restricted solely to the function of the equipment. No other form of liability, regardless of type, shall be accepted. This exclusion of liability shall be deemed accepted by the user on commissioning the equipment.

The manufacturer is unable to monitor whether or not these instructions or the conditions and methods are observed during installation, operation, usage and maintenance of the equipment.

An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

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The content of this document has been prepared and reviewed with all reasonable care. The information provided is subject to change; errors excepted.

Data security

The user is responsible for backing up data of all changes from the factory setting. The user is liable for erased personal settings. The manufacturer does not assume any liability for this.

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2 For your safety

2.1 Notes on using these operating instructions

DANGER

Working or operating procedures which must be closely observed to prevent imminent serious and even fatal injuries.

- Safety notes include the "DANGER" keyword in the heading with a general warning symbol.
- The hazard is also highlighted using a symbol on the edge of the page.

WARNING

Working or operating procedures which must be closely observed to prevent serious and even fatal injuries.

- Safety notes include the "WARNING" keyword in the heading with a general warning symbol.
- The hazard is also highlighted using a symbol in the page margin.

CAUTION

Working or operating procedures which must be closely observed to prevent possible minor personal injury.

- The safety information includes the "CAUTION" keyword in its heading with a general warning symbol.
- The risk is explained using a symbol on the edge of the page.



Technical aspects which the user must observe to avoid material or equipment damage.

Instructions and lists detailing step-by-step actions for given situations can be recognised via bullet points, e.g.:

- Insert the welding current lead socket into the relevant socket and lock.

2.2 Explanation of icons

Symbol	Description	Symbol	Description
	Indicates technical aspects which the user must observe.		Activate and release / Tap / Tip
	Switch off machine		Release
	Switch on machine		Press and hold
	Incorrect / Invalid		Switch
	Correct / Valid		Turn
	Input		Numerical value – adjustable
	Navigation		Signal light lights up in green
	Output		Signal light flashes green
	Time representation (e.g.: wait 4 s / actuate)		Signal light lights up in red
	Interruption in the menu display (other setting options possible)		Signal light flashes red
	Tool not required/do not use		Signal light lights up in blue
	Tool required/use		Signal light flashes blue

2.3 Safety instructions

WARNING



Risk of accidents due to non-compliance with the safety instructions!
Non-compliance with the safety instructions can be fatal!

- Carefully read the safety instructions in this manual!
- Observe the accident prevention regulations and any regional regulations!
- Inform persons in the working area that they must comply with the regulations!



Risk of injury from electrical voltage!

Voltages can cause potentially fatal electric shocks and burns on contact. Even low voltages can cause a shock and lead to accidents.

- Never touch live components such as welding current sockets or stick, tungsten or wire electrodes!
- Always place torches and electrode holders on an insulated surface!
- Wear the full personal protective equipment (depending on the application)!
- The machine may only be opened by qualified personnel!
- The device must not be used to defrost pipes!



Hazard when interconnecting multiple power sources!

If a number of power sources are to be connected in parallel or in series, only a technical specialist may interconnect the sources as per standard IEC 60974-9:2010: Installation and use and German Accident Prevention Regulation BVG D1 (formerly VBG 15) or country-specific regulations.

Before commencing arc welding, a test must verify that the equipment cannot exceed the maximum permitted open circuit voltage.

- Only qualified personnel may connect the machine.
- When taking individual power sources out of operation, all mains and welding current leads must be safely disconnected from the welding system as a whole. (Hazard due to reverse polarity voltage!)
- Do not interconnect welding machines with pole reversing switch (PWS series) or machines for AC welding since a minor error in operation can cause the welding voltages to be combined, which is not permitted.



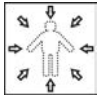
Risk of injury due to radiation or heat!

Arc radiation can lead to skin and eye injuries.

Contact with hot workpieces and sparks can lead to burns.

- Use hand shield or welding helmet with the appropriate safety level (depends on the application).
- Wear dry protective clothing (e.g. hand shield, gloves, etc.) in accordance with the applicable regulations of your country.
- Persons who are not directly involved should be protected with a welding curtain or suitable safety screen against radiation and the risk of blinding!

WARNING



Risk of injury due to improper clothing!

During arc welding, radiation, heat and voltage are sources of risk that cannot be avoided. The user has to be equipped with the complete personal protective equipment at all times. The protective equipment has to include:

- Respiratory protection against hazardous substances and mixtures (fumes and vapours); otherwise implement suitable measures such as extraction facilities.
- Welding helmet with proper protection against ionizing radiation (IR and UV radiation) and heat.
- Dry welding clothing (shoes, gloves and body protection) to protect against warm environments with conditions comparable to ambient temperatures of 100 °C or higher and arcing and work on live components.
- Hearing protection against harming noise.



Explosion risk!

Apparently harmless substances in closed containers may generate excessive pressure when heated.

- Move containers with inflammable or explosive liquids away from the working area!
- Never heat explosive liquids, dusts or gases by welding or cutting!



Fire hazard!

Due to the high temperatures, sparks, glowing parts and hot slag that occur during welding, there is a risk of flames.

- Be watchful of potential sources of fire in the working area!
- Do not carry any easily inflammable objects, e.g. matches or lighters.
- Ensure suitable fire extinguishers are available in the working area!
- Thoroughly remove any residue of flammable materials from the workpiece prior to starting to weld.
- Only further process workpieces after they have cooled down. Do not allow them to contact any flammable materials!

⚠ CAUTION**Smoke and gases!**

Smoke and gases can lead to breathing difficulties and poisoning. In addition, solvent vapour (chlorinated hydrocarbon) may be converted into poisonous phosgene due to the ultraviolet radiation of the arc!

- Ensure that there is sufficient fresh air!
- Keep solvent vapour away from the arc beam field!
- Wear suitable breathing apparatus if appropriate!

**Noise exposure!**

Noise exceeding 70 dBA can cause permanent hearing damage!

- Wear suitable ear protection!
- Persons located within the working area must wear suitable ear protection!



According to IEC 60974-10, welding machines are divided into two classes of electromagnetic compatibility (the EMC class can be found in the Technical data):

Class A machines are not intended for use in residential areas where the power supply comes from the low-voltage public mains network. When ensuring the electromagnetic compatibility of class A machines, difficulties can arise in these areas due to interference not only in the supply lines but also in the form of radiated interference.



Class B machines fulfil the EMC requirements in industrial as well as residential areas, including residential areas connected to the low-voltage public mains network.

**Setting up and operating**

When operating arc welding systems, in some cases, electro-magnetic interference can occur although all of the welding machines comply with the emission limits specified in the standard. The user is responsible for any interference caused by welding.

In order to **evaluate** any possible problems with electromagnetic compatibility in the surrounding area, the user must consider the following: (see also EN 60974-10 Appendix A)

- Mains, control, signal and telecommunication lines
- Radios and televisions
- Computers and other control systems
- Safety equipment
- The health of neighbouring persons, especially if they have a pacemaker or wear a hearing aid
- Calibration and measuring equipment
- The immunity to interference of other equipment in the surrounding area
- The time of day at which the welding work must be carried out

Recommendations for reducing interference emission

- Mains connection, e.g. additional mains filter or shielding with a metal tube
- Maintenance of the arc welding system
- Welding leads should be as short as possible and run closely together along the ground
- Potential equalization
- Earthing of the workpiece. In cases where it is not possible to earth the workpiece directly, it should be connected by means of suitable capacitors.
- Shielding from other equipment in the surrounding area or the entire welding system

**Electromagnetic fields!**

The power source may cause electrical or electromagnetic fields to be produced which could affect the correct functioning of electronic equipment such as IT or CNC devices, telecommunication lines, power cables, signal lines and pacemakers.



- Observe the maintenance instructions!
- Unwind welding leads completely!
- Shield devices or equipment sensitive to radiation accordingly!
- The correct functioning of pacemakers may be affected (obtain advice from a doctor if necessary).

CAUTION



Obligations of the operator!

The respective national directives and laws must be complied with when operating the machine!

- Implementation of national legislation relating to framework directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work and associated individual guidelines.
- In particular, directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work.
- The regulations applicable to occupational safety and accident prevention in the country concerned.
- Setting up and operating the machine as per IEC 60974.-9.
- Brief the user on safety-conscious work practices on a regular basis.
- Regularly inspect the machine as per IEC 60974.-4.



The manufacturer's warranty becomes void if non-genuine parts are used!

- ***Only use system components and options (power sources, welding torches, electrode holders, remote controls, spare parts and replacement parts, etc.) from our range of products!***
- ***Only insert and lock accessory components into the relevant connection socket when the machine is switched off.***

Requirements for connection to the public mains network

High-performance machines can influence the mains quality by taking current from the mains network. For some types of machines, connection restrictions or requirements relating to the maximum possible line impedance or the necessary minimum supply capacity at the interface with the public network (Point of Common Coupling, PCC) can therefore apply. In this respect, attention is also drawn to the machines' technical data. In this case, it is the responsibility of the operator, where necessary in consultation with the mains network operator, to ensure that the machine can be connected.

2.4 Transport and installation

WARNING



Risk of injury due to improper handling of shielding gas cylinders!

Improper handling and insufficient securing of shielding gas cylinders can cause serious injuries!

- Observe the instructions from the gas manufacturer and any relevant regulations concerning the use of compressed air!
- Do not attach any element to the shielding gas cylinder valve!
- Prevent the shielding gas cylinder from heating up.

⚠ CAUTION**Risk of accidents due to supply lines!**

During transport, attached supply lines (mains leads, control cables, etc.) can cause risks, e.g. by causing connected machines to tip over and injure persons!

- Disconnect all supply lines before transport!

**Risk of tipping!**

There is a risk of the machine tipping over and injuring persons or being damaged itself during movement and set up. Tilt resistance is guaranteed up to an angle of 10° (according to IEC 60974-1).

- Set up and transport the machine on level, solid ground.
- Secure add-on parts using suitable equipment.

**Risk of accidents due to incorrectly installed leads!**

Incorrectly installed leads (mains, control and welding leads or intermediate hose packages) can present a tripping hazard.

- Lay the supply lines flat on the floor (avoid loops).
- Avoid laying the leads on passage ways.

**Risk of injury from heated coolant and its connections!**

The coolant used and its connection or connection points can heat up significantly during operation (water-cooled version). When opening the coolant circuit, escaping coolant may cause scalding.

- Open the coolant circuit only when the power source or cooling unit is switched off!
- Wear proper protective equipment (protective gloves)!
- Seal open connections of the hose leads with suitable plugs.



The units are designed for operation in an upright position!

Operation in non-permissible positions can cause equipment damage.

- ***Only transport and operate in an upright position!***



Accessory components and the power source itself can be damaged by incorrect connection!

- ***Only insert and lock accessory components into the relevant connection socket when the machine is switched off.***
- ***Comprehensive descriptions can be found in the operating instructions for the relevant accessory components.***
- ***Accessory components are detected automatically after the power source is switched on.***



Protective dust caps protect the connection sockets and therefore the machine against dirt and damage.

- ***The protective dust cap must be fitted if there is no accessory component being operated on that connection.***
- ***The cap must be replaced if faulty or if lost!***

3 Intended use

WARNING



Hazards due to improper usage!

The machine has been constructed to the state of the art and any regulations and standards applicable for use in industry and trade. It may only be used for the welding procedures indicated at the rating plate. Hazards may arise for persons, animals and material objects if the equipment is not used correctly. No liability is accepted for any damages arising from improper usage!

- The equipment must only be used in line with its designated purpose and by trained or expert personnel!
- Do not improperly modify or convert the equipment!

3.1 Use and operation solely with the following machines

This description may only be used for machines with machine control M3.7X-S or M3.7X-T.

3.2 Software version

The software version of the machine control can be displayed in the machine configuration menu (menu *Srv*) > see 5.7 chapter.

3.3 Documents which also apply

- Operating instructions for the connected welding machines
- Documents of the optional expansions

3.3.1 Part of the complete documentation

This document is part of the complete documentation and valid only in combination with all other parts of these instructions! Read and observe the operating instructions for all system components, especially the safety instructions!

The illustration shows a general example of a welding system.

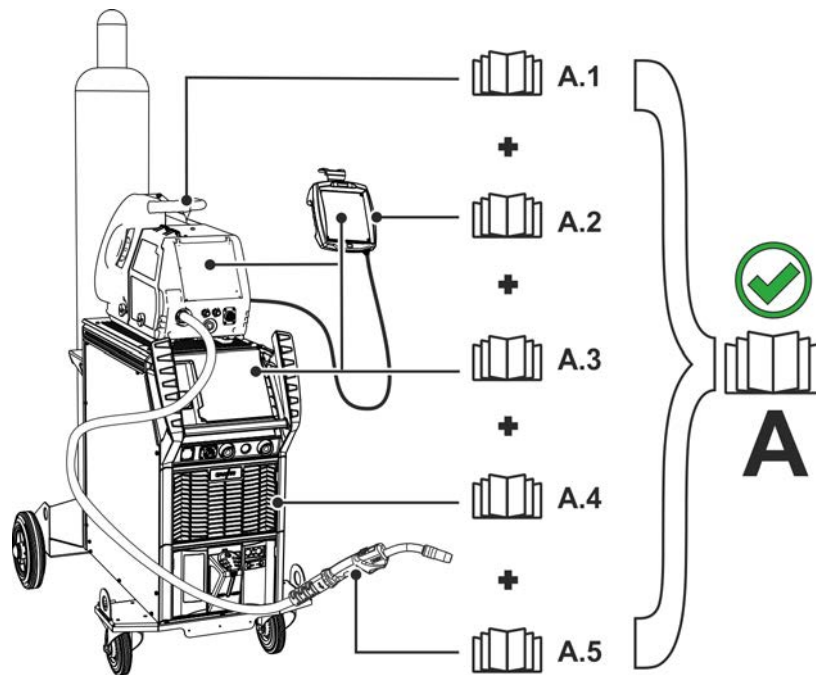


Figure 3-1

The illustration shows a general example of a welding system.

Item	Documentation
A.1	Wire feeder
A.2	Remote adjuster
A.3	Controller
A.4	Power source
A.5	Welding torch
A	Complete documentation

4 Machine control – Operating elements

4.1 Overview of control sections

For description purposes, the machine control has been divided into two sections (A, B) to ensure maximum clarity. The setting ranges for the parameter values are summarised in the parameter overview section > see 8.2 chapter.

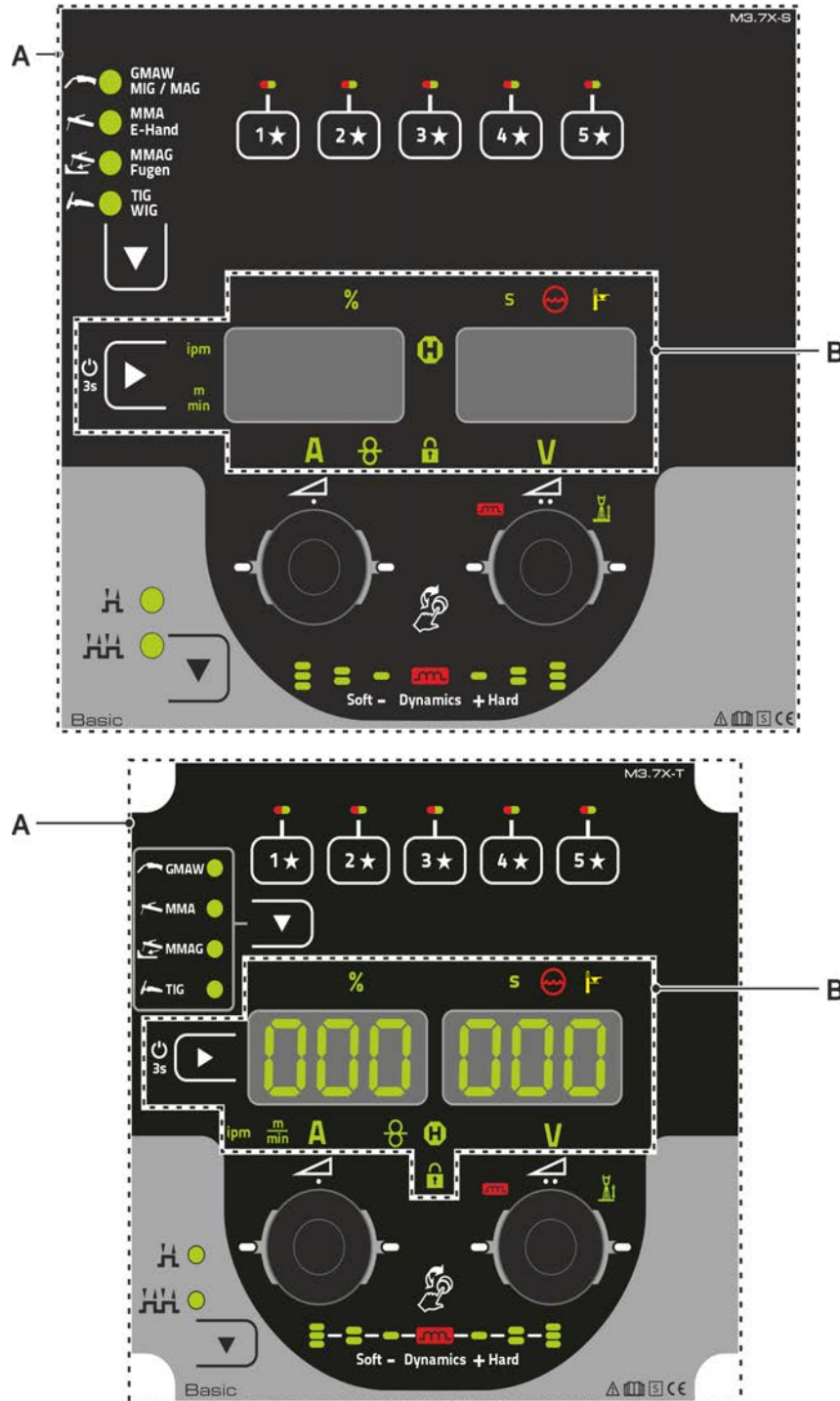


Figure 4-1

Item	Symbol	Description
1		Control section A > see 4.1.1 chapter
2		Control section B > see 4.1.2 chapter

4.1.1 Control section A

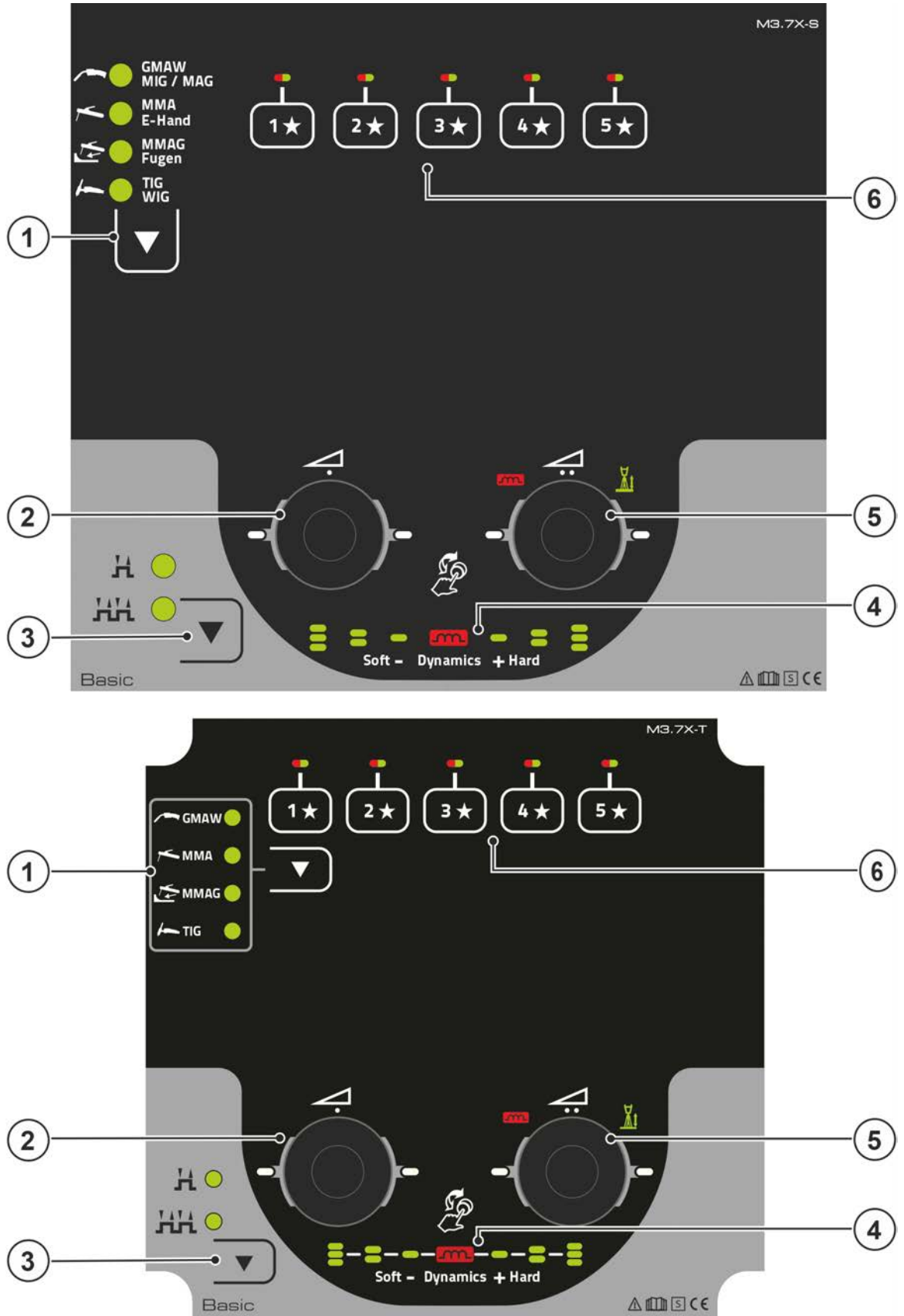











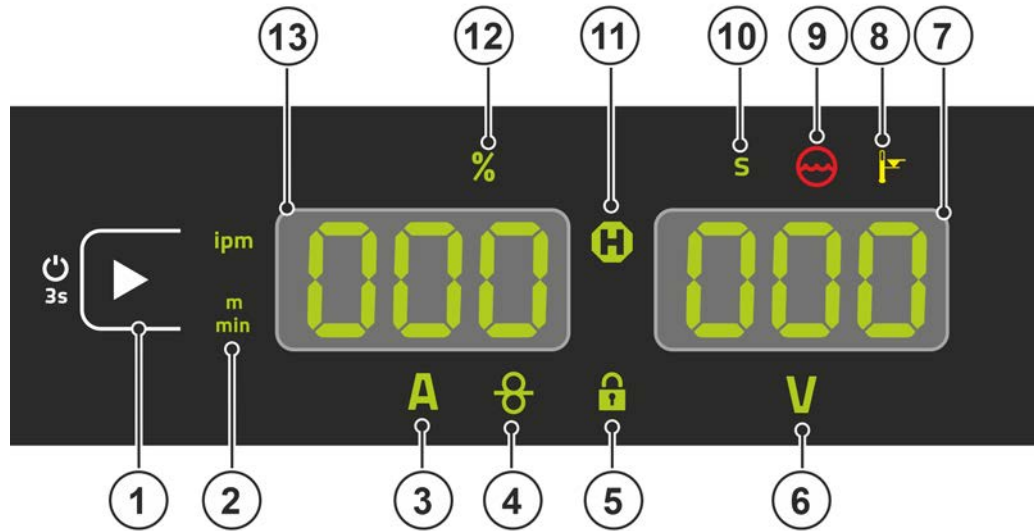


Figure 4-2

Item	Symbol	Description
1		Push-button for welding procedure  ----- MIG/MAG welding  ----- MMA welding  ----- Gouging  ----- TIG welding
2		Click wheel wire feed speed / welding current <ul style="list-style-type: none"> •----- Setting the wire feed speed / welding current > see 4.2.2 chapter •----- Setting various parameters values depending on the preselection. Settings can be made when the backlight is activated.
3		Operating modes push-button (functional sequences) > see 5.2.3 chapter  ----- Non-latched  ----- Latched
4		Display of arc dynamics The height and orientation of the set arc dynamics are displayed.
5		Click wheel welding voltage <ul style="list-style-type: none"> •----- Welding voltage setting > see 4.2.2 chapter •----- Setting the arc dynamics > see 5.2.5 chapter •----- Setting various parameter values depending on the preselection. Settings can be made when the backlight is activated.
6		push-button - JOB Favourites > see 4.2.5 chapter <ul style="list-style-type: none"> •----- Pressing the push-button briefly: Loading Favourites •----- Press and hold the push-button (>2 s): Saving as a Favourite •----- Press and hold the push-button (>12 s): Deleting a Favourite

4.1.2 Control section B

M3.7X-S:



M3.7X-T:

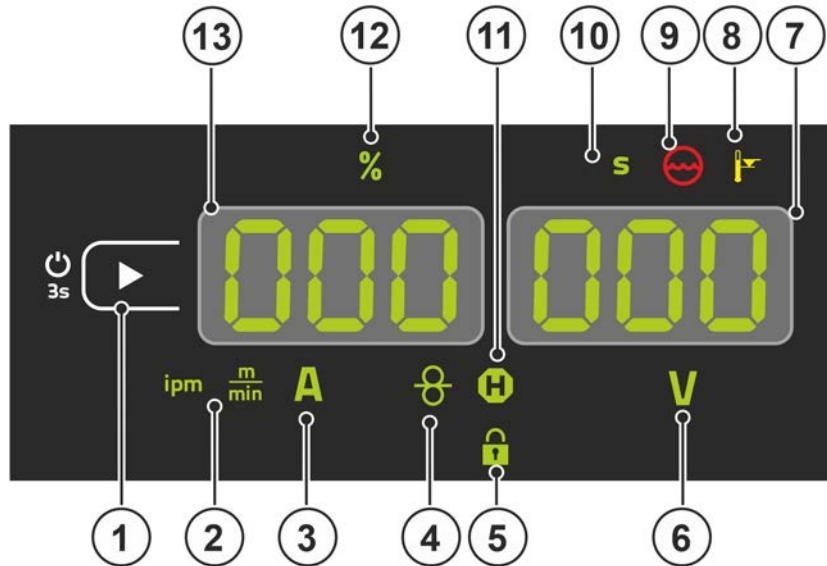


Figure 4-3

Item	Symbol	Description
1		Display left / Lock function push-button Switching the device display between various welding parameters. Signal lamps show the selected parameter. ⏻----- Press for 3 s to put the machine into lock function > see 4.2.4 chapter.
2	 	Wire feed speed unit signal light m/min --- Parameter value is displayed in meters per minute. ipm ----- Parameter value is displayed in inches per minute. Switching between metric or imperial system via special parameters "P29" > see 5.6 chapter.
3		Welding current signal light Display of the welding current in amperes.
4		Signal light, Wire speed Lights when the wire speed is shown on the display.
5		Lock function signal light Use display left / lock function push-button to switch on and off.

Item	Symbol	Description
6	V	Signal light welding voltage Illuminates when the welding voltage is displayed in volts.
7	000	Display, right > see 4.1.3 chapter V----- welding voltage
8	⚠	Excess temperature signal light / Welding torch cooling failure For error messages > see 7 chapter
9	🌊	Coolant fault signal light Signals pressure loss or low coolant level in the coolant circuit.
10	S	Second signal light The displayed value is displayed in seconds.
11	H	Status display signal light (Hold) Display of average values across the entire welding process.
12	%	Percent signal light The displayed value is displayed in percent.
13	000	Display, left > see 4.1.3 chapter AMP---- welding current ⚙----- wire feed speed

4.1.3 Welding data display

On the left and right of the parameter displays there are push-buttons for the selection of parameters. They are used to select the welding parameters to be displayed and their values.

Each time one the button is clicked, the display proceeds to the next parameter (signal lights indicate the selection). After reaching the last parameter, the system is restarted with the first one.

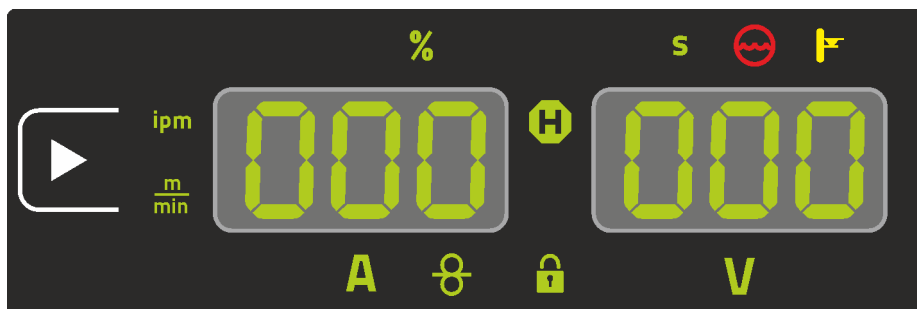


Figure 4-4

MIG/MAG

Parameter	Nominal values ^[1]	Actual values ^[2]	Hold values ^[3]
Welding current	✗	✓	✓
Wire feed speed	✓	✗	✗
Welding voltage	✓	✓	✓

MMA

Parameter	Nominal values ^[1]	Actual values ^[2]	Hold values ^[3]
Welding current	✓	✓	✗
Welding voltage	✓	✓	✗

When settings are changed (e.g. wire feed speed) the display immediately switches to the nominal value setting.

^[1] Nominal values (before welding)

^[2] Actual values (during welding)

^[3] Hold values (after welding, display of average values for entire welding process)

4.2 Operating the machine control

4.2.1 Main screen

The machine control switches to the main screen again and again after it has been turned on or a parameter setting has been completed. This means that the previously selected settings (indicated by signal lights where applicable) are adopted and that the nominal value for the wire feed speed is shown in the left-hand welding data display. The right hand display shows the welding voltage (V).

4.2.2 Welding power setting

The welding power is adjusted with the wire feed speed / welding current rotary knob (click wheel). You can also adjust the parameters or settings in the different machine menus.

4.2.3 Changing basic settings (machine configuration menu)

The basic welding system functions can be adjusted in the machine configuration menu. Only experienced users should change the settings > see 5.7 chapter.

4.2.4 Lock function

The lock function protects against accidental adjustment of the device settings.

The user can switch the lock function on or off by pressing the button for a long time from each machine control or accessory component with the symbol

4.2.5 JOB favourites

Favourites are additional locations for storing and loading frequently used welding tasks, programs and their settings. The status of the Favourites (loaded, changed, not loaded) is indicated by signal lights.

- Five Favourites are available to save any settings.

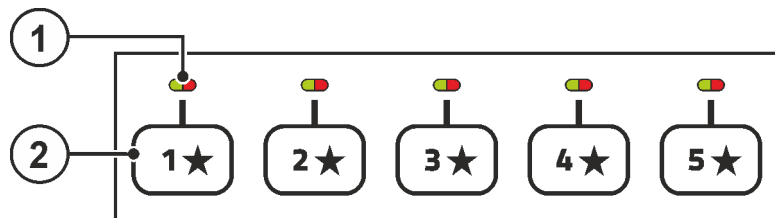


Figure 4-5

Item	Symbol	Description
1		Signal light of Favourite status <ul style="list-style-type: none"> • Signal light is green: Favourite loaded, settings of the Favourite and the current device settings are identical • Signal light is red: Favourite loaded, but settings of the Favourite and the current device settings are not identical (for example, the operating point has been changed) • Signal light is off: Favourite not loaded (e.g. JOB number has been changed)
2		push-button - JOB Favourites > see 4.1.1 chapter <ul style="list-style-type: none"> • Pressing the push-button briefly: Loading Favourites • Press and hold the push-button (>2 s): Saving as a Favourite • Press and hold the push-button (>12 s): Deleting a Favourite

4.2.5.1 Saving current settings to Favourites

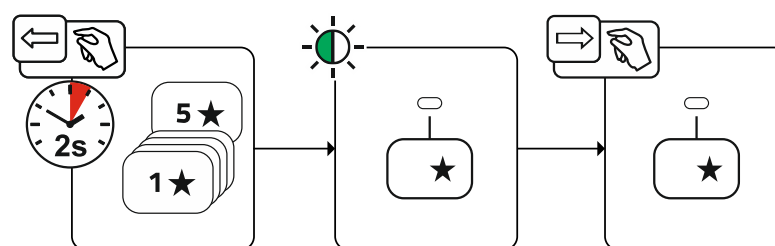


Figure 4-6

- Press and hold the favourite memory push-button for 2 s (the signal light of the favourite status is green).

4.2.5.2 Loading saved Favourites

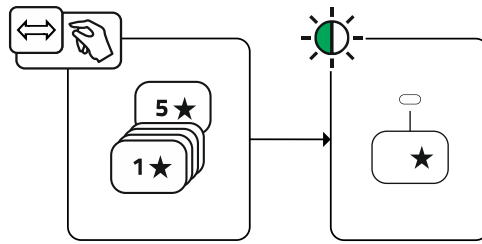


Figure 4-7

- Press the favourite memory push-button (the signal light of the favourite status is green).

4.2.5.3 Deleting saved Favourites

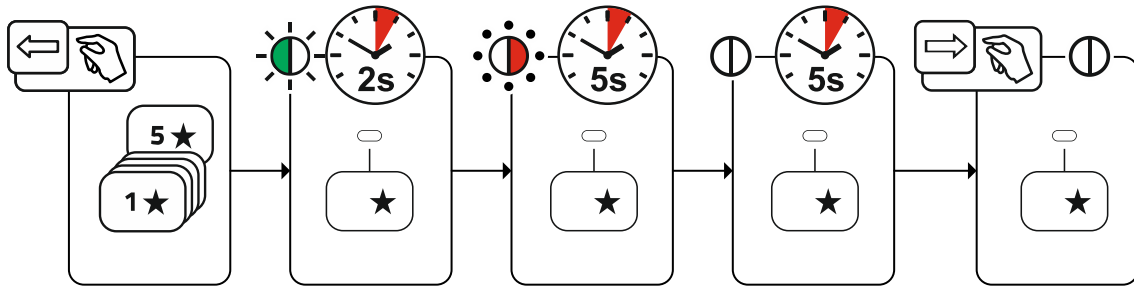


Figure 4-8

- Press and hold the favourite memory push-button.
After 2 seconds, the signal light of the favourite status turns green
after another 5 s, the signal light starts flashing red
after another 5 s the signal light goes out
- Release the favourite memory push-button.

5 Functional characteristics

5.1 Shielding gas volume settings

If the shielding gas setting is too low or too high, this can introduce air to the weld pool and may cause pores to form. Adjust the shielding gas quantity to suit the welding task!

- Slowly open the gas cylinder valve.
- Open the pressure regulator.
- Switch on the power source at the main switch.
- Trigger gas test > see 5.1.1 chapter function (welding voltage and wire feed motor remain switched off – no accidental arc ignition).
- Set the relevant gas quantity for the application on the pressure regulator.

Setting instructions

Welding process	Recommended shielding gas quantity
MAG welding	Wire diameter x 11.5 = l/min
MIG brazing	Wire diameter x 11.5 = l/min
MIG welding (aluminium)	Wire diameter x 13.5 = l/min (100 % argon)
TIG	Gas nozzle diameter in mm corresponds to l/min gas throughput

Helium-rich gas mixtures require a higher gas volume!

The table below can be used to correct the gas volume calculated where necessary:

Shielding gas	Factor
75% Ar/25% He	1.14
50% Ar/50% He	1.35
25% Ar/75% He	1.75
100% He	3.16

5.1.1 Gas test

The operating elements are installed under the protective cap of wire feed mechanism.

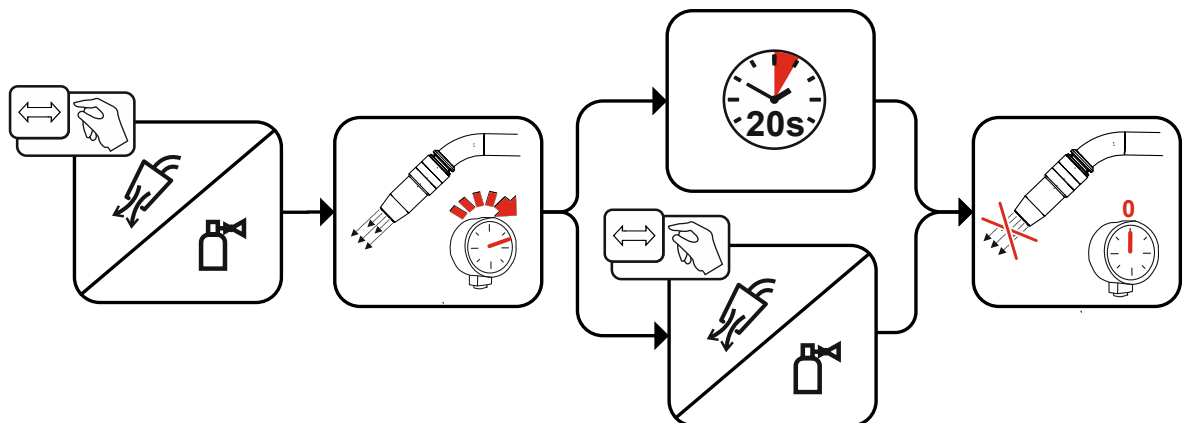


Figure 5-1

5.1.2 Wire inching

The wire inching function is used for potential- and gas-free inching of the wire electrode after the wire spool change. By pressing and holding the wire inching button for a long time, the wire inching speed increases in a ramp function (special parameter P1 > see 5.6.1.1 chapter) from 1 m/min to the set maximum value. The maximum value is set by simultaneously pressing the wire inching button and turning the left click wheel.

The operating elements are installed under the protective cap of wire feed mechanism.

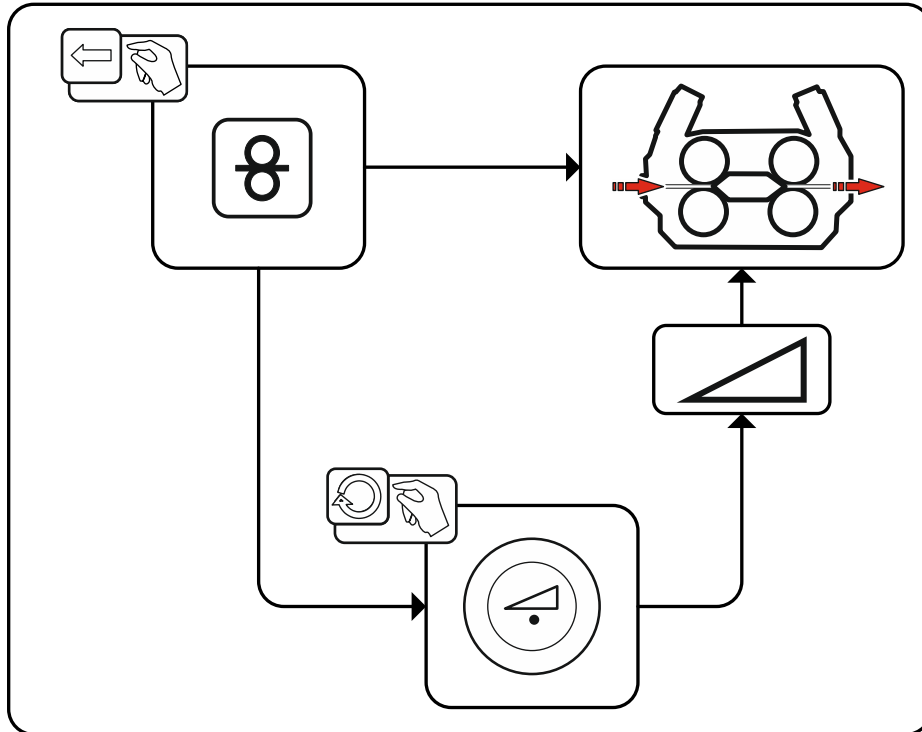


Figure 5-2

5.1.3 Wire return

The wire return function is used to retract the wire electrode without tension and protection gas. By simultaneously pressing and holding the wire inching and gas test buttons, the wire return speed increases in a ramp function (special parameter P1 > see 5.6.1.1 chapter) from 1 m/min to the set maximum value. The maximum value is set by simultaneously pressing the wire inching button and turning the left click wheel. During the process, the wire spool must be turned by hand clockwise to wind up the wire electrode again. The operating elements are installed under the protective cap of wire feed mechanism.

M3.7x-K

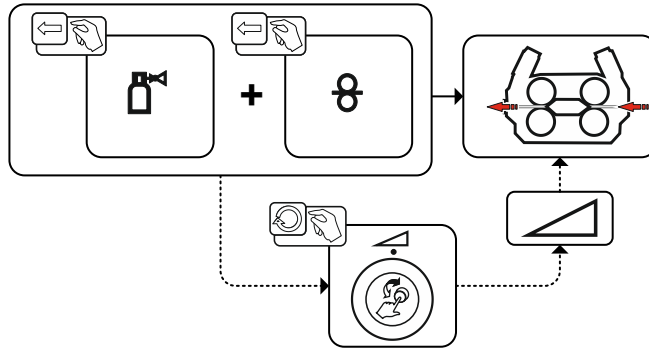


Figure 5-3

M3.7x-T

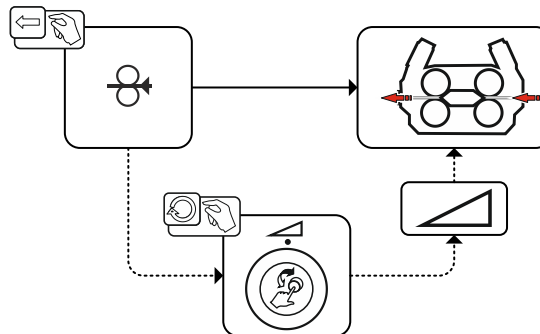


Figure 5-4

5.2 MIG/MAG welding

5.2.1 Welding task selection

The following steps have to be carried out to select the welding job:

- Select welding procedure.
- Select operating mode.
- Set welding power (wire feed speed and welding voltage).
- Correct dynamics if necessary.

5.2.2 Welding procedure

Select welding procedure MIG/MAG welding.

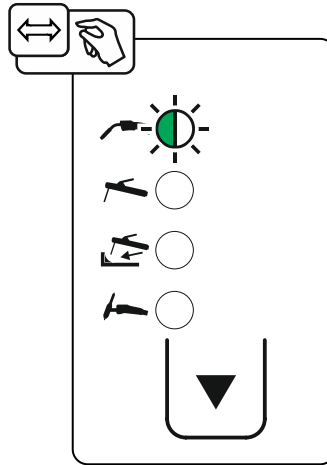


Figure 5-5

5.2.3 Operating mode

The operating mode determines the process sequence controlled by the welding torch. Detailed descriptions of the operating modes > see 5.2.7 chapter.

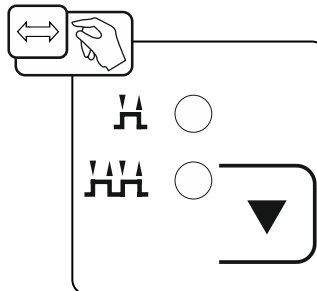


Figure 5-6

5.2.4 Welding power (operating point)

This control uses the principle of twin-knob operation. To specify the operating point, only the wire feed speed and the welding voltage are selected according to the type of material, shielding gas, material thickness, and wire diameter (see also table setting instructions in the Appendix > see 8.1 chapter).

Example of use:

1. Material type: Solid wire SG2/3
2. Shielding gas: Ar-82 / CO₂-18 (M21)
3. Materialdicke: 3,0 mm / 0.12 inch
4. Wire diameter: 1,0 mm / 0.04 inch
5. Wire feed speed: 5,1 m/min / 201 ipm
Welding voltage: 19,0 V

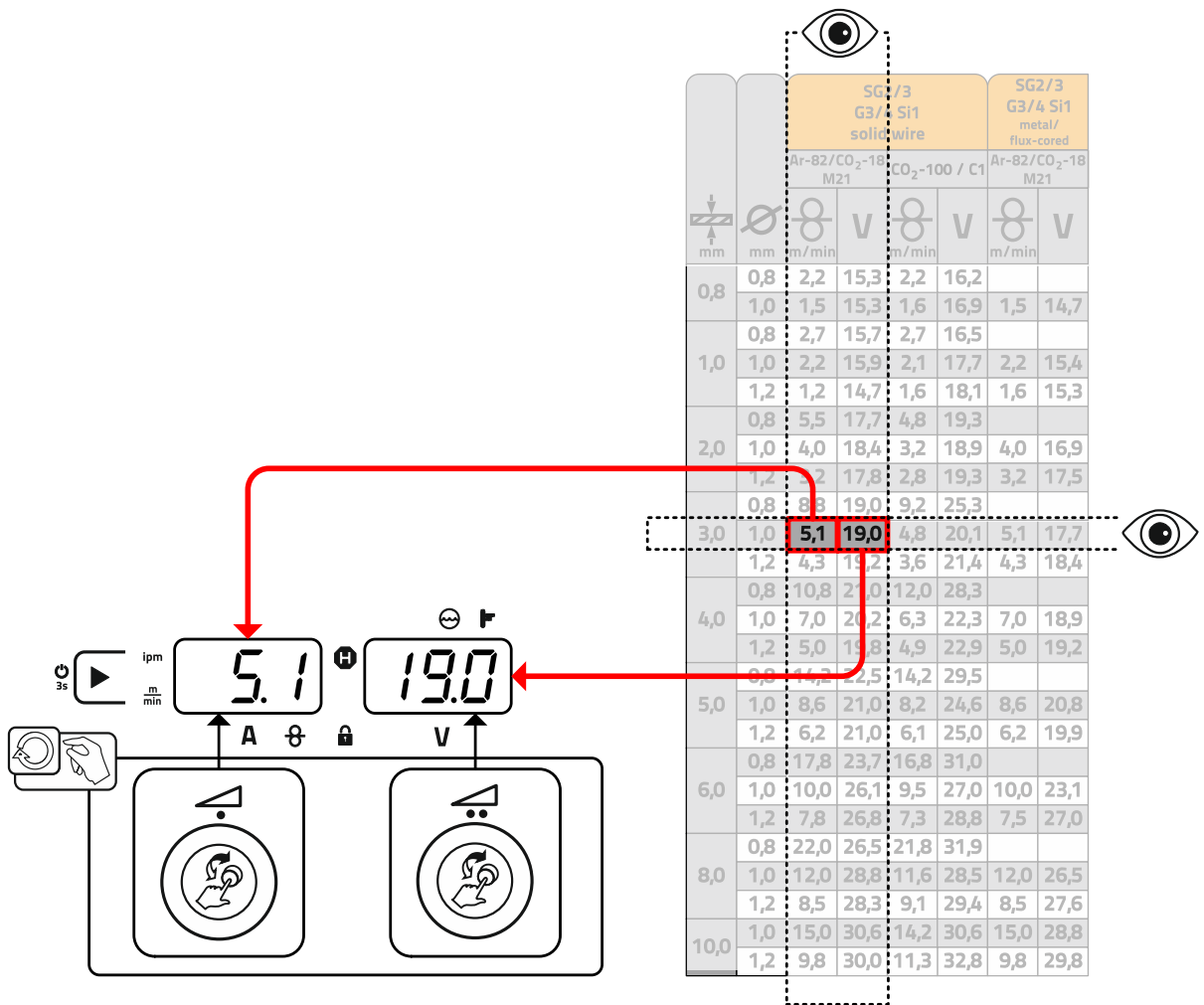


Figure 5-7

5.2.5 Arc dynamics (choke effect)

This function can be used to adjust the arc between a narrow, hard arc with deep penetration (positive values) and a wide and soft arc (negative values). In addition, the selected settings are displayed with signal lights below the rotary knobs.

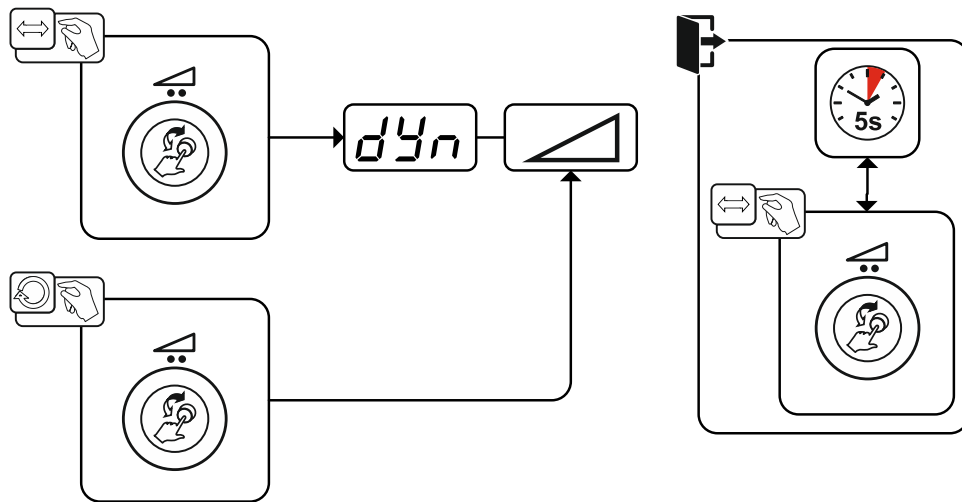


Figure 5-8

5.2.6 Expert menu (MIG/MAG)

The Expert menu has adjustable parameters stored that don't require regular setting. The number of parameters shown may be limited, e.g. if a function is deactivated.

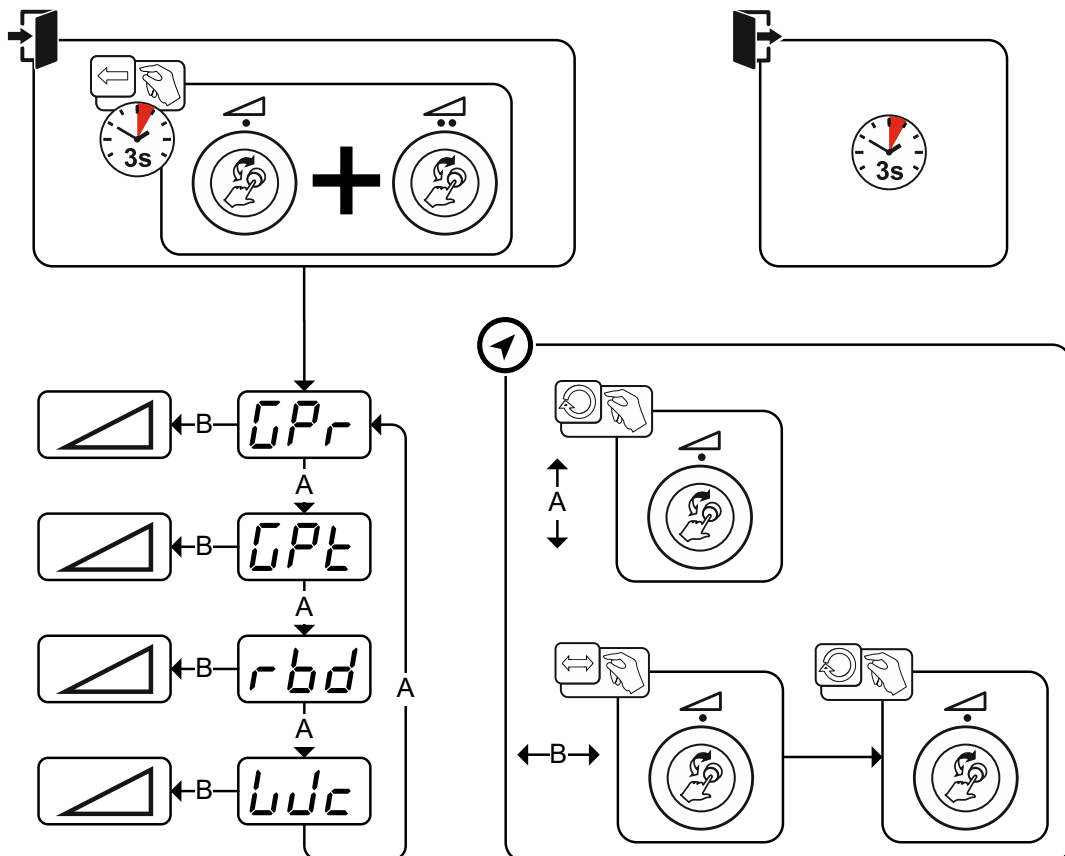


Figure 5-9

Display	Setting/selection
	Gas pre-flow time

Display	Setting/selection
	Gas post-flow time
	Burn-back time > see 5.2.6.1 chapter <ul style="list-style-type: none"> • -----Increase value > increase wire burn-back • -----Decrease value > decrease wire burn-back
	Wire creep <ul style="list-style-type: none"> • -----Increase the value > higher wire creep speed • -----Decrease the value > lower wire creep speed

5.2.6.1 Burn-back

The wire burn-back parameter prevents the sticking of the wire electrode in the weld pool or at the contact tip at the end of the welding process. The value is optimally preset for a variety of applications (but can be adjusted if necessary). The adjustable value stands for the time until the power source switches off the welding current after the welding process has been stopped.

Welding wire behaviour	Setting instructions
Wire electrode is sticking in the weld pool.	Increase value
Wire electrode is sticking on the contact tip or large ball formation on the wire electrode	Reduce value

5.2.7 Operating modes (functional sequences)

5.2.7.1 Explanation of signs and functions

Symbol	Meaning
	Press torch trigger
	Release torch trigger
	Tap torch trigger (briefly press and release)
	Shielding gas is flowing
I	Welding power
	Wire electrode is being fed
	Wire creep
	Wire burn-back
	Gas pre-flow
	Gas post-flow
H	Non-latched
	Latched
t	Time

5.2.7.2 Automatic cut-out

Once the fault periods have elapsed, the automatic cut-out stops the welding process when it has been triggered by one of two states:

- During ignition
5 s after the start of the welding process, no welding current flows (ignition error).
- During welding
The arc is interrupted for more than 5 s (arc interruption).

Non-latched mode

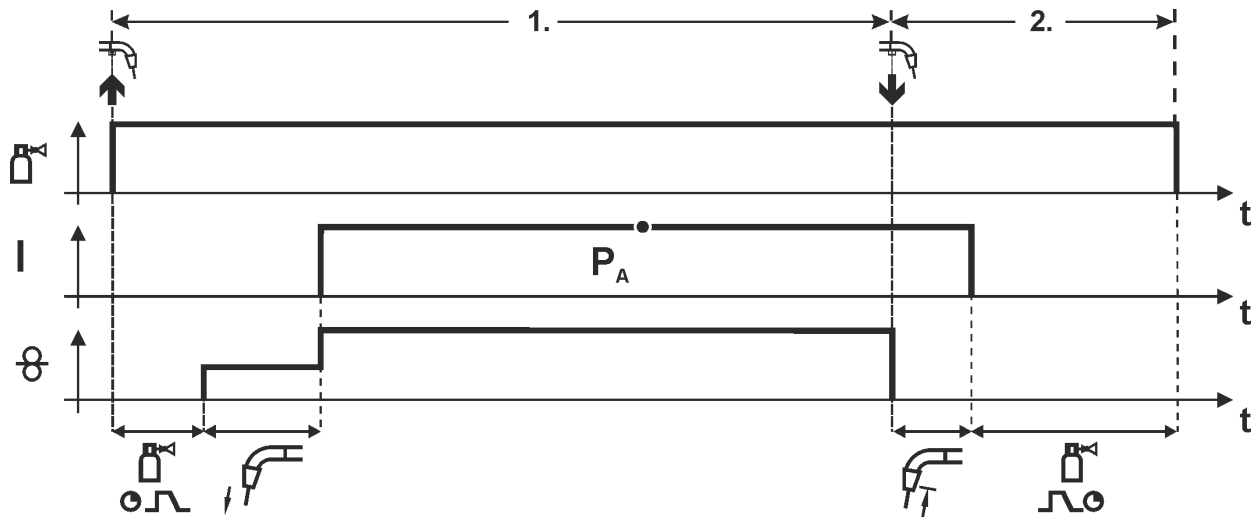


Figure 5-10

Step 1

- Press and hold torch trigger.
- Shielding gas is expelled (gas pre-flows).
- Wire feed motor runs at “creep speed”.
- Arc ignites after the wire electrode makes contact with the workpiece; welding current flows.
- Change over to pre-selected wire speed.

Step 2

- Release torch trigger.
- WF motor stops.
- Arc is extinguished after the preselected wire burn-back time expires.
- Gas post-flow time elapses.

Latched mode

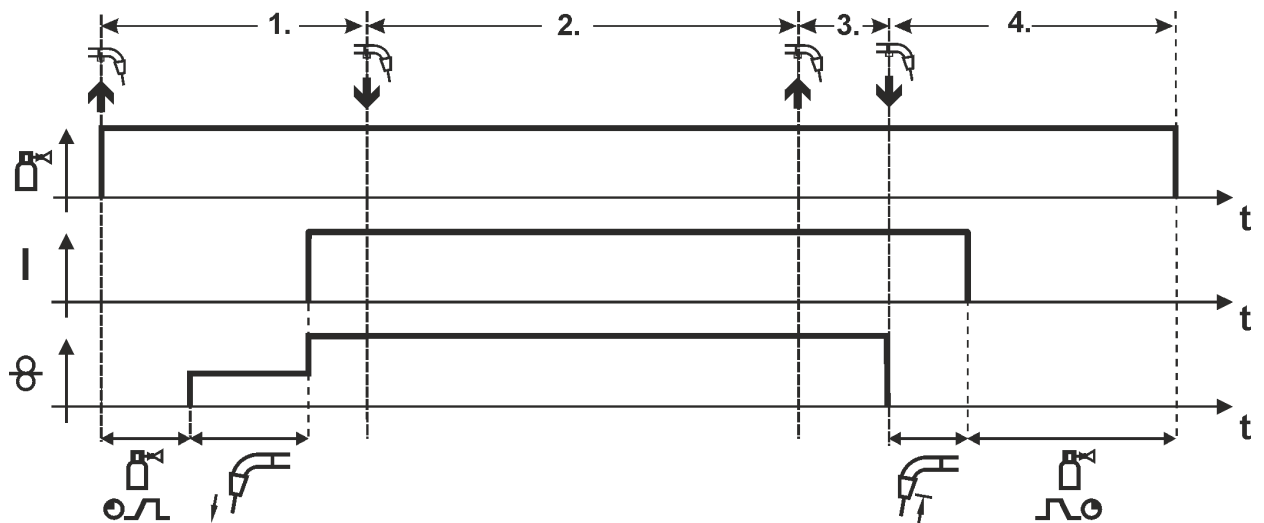


Figure 5-11

Step 1

- Press and hold torch trigger
- Shielding gas is expelled (gas pre-flows)
- Wire feed motor runs at "creep speed".
- Arc ignites after the wire electrode makes contact with the workpiece; welding current flows.
- Change over to pre-selected WF speed (main program P_A).

Step 2

- Release torch trigger (no effect)

Step 3


- Press torch trigger (no effect)

Step 4

- Release torch trigger
- WF motor stops.
- Arc is extinguished after the preselected wire burn-back time expires.
- Gas post-flow time elapses.


5.2.8 Standard MIG/MAG torch

The MIG welding torch trigger is essentially used to start and stop the welding process.


Operating elements	Functions
 Torch trigger	<ul style="list-style-type: none"> Start/stop welding

5.2.8.1 Switching between Push/Pull and intermediate drive

⚠ WARNING

 **No improper repairs and modifications!**
 To prevent injuries and damage to the machine, only competent personnel (authorised service personnel) are allowed to repair or modify the machine.
Unauthorised manipulations will invalidate the warranty!

- Instruct competent personnel (authorised service personnel) to repair the machine.

 **Dangers resulting from failure to perform test after conversion!**
Before reconnection, “Inspection and Testing during Operation” according to IEC/BS EN 60974-4 “Arc welding systems – Inspection and Testing during Operation” has to be performed!

- Perform test to IEC / DIN EN 60974-4!

The plugs are located directly on the M3.7X printed circuit board.

Plug	Function
on X24	Operation with Push/Pull welding torch (factory setting)
on X23	Operation with intermediate drive

5.3 MMA welding

5.3.1 Welding task selection

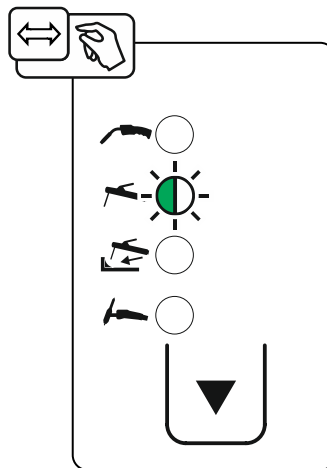


Figure 5-12

5.3.2 Welding current setting

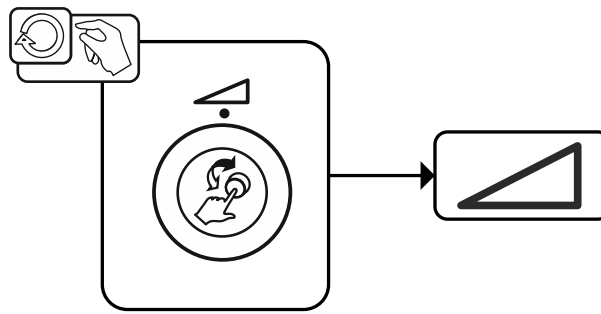


Figure 5-13

5.3.3 Arcforce

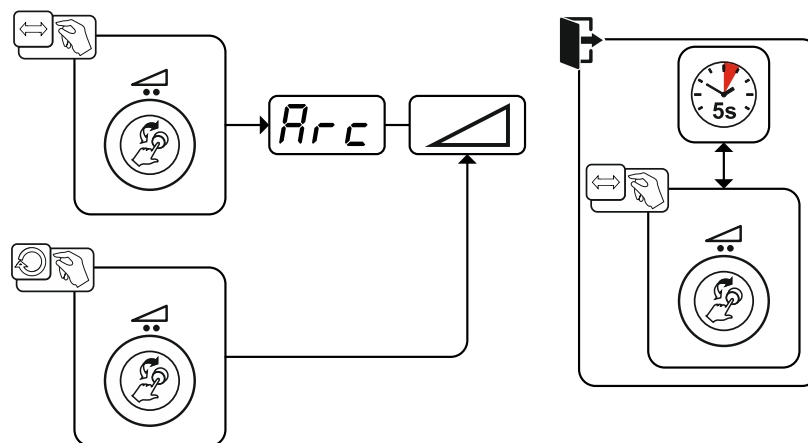
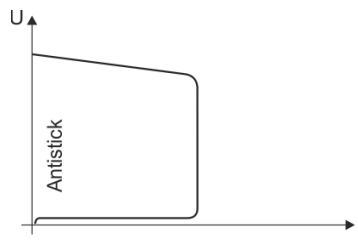


Figure 5-14

Setting:

- Negative values: rutile electrode types
- Values at zero: basic electrode types
- Positive values: cellulose electrode types

5.3.4 Antistick



The Antistick feature prevents the electrode from annealing.

Should the electrode stick despite the Arcforce feature, the machine automatically switches to the minimum current within approx. one second. This prevents the electrode from annealing. Check the welding current setting and correct for the welding task in hand.

Figure 5-15

5.4 Air arc gouging

5.4.1 Welding task selection

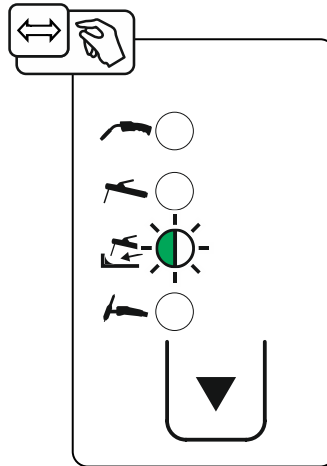


Figure 5-16

5.4.2 Welding current setting

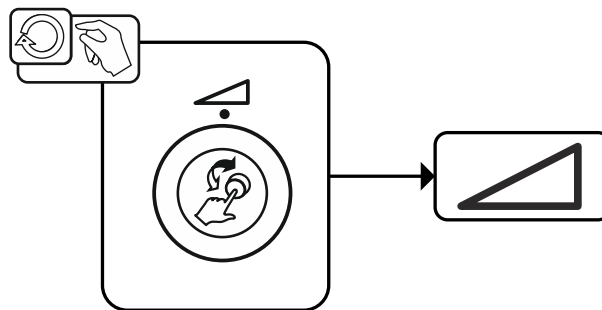


Figure 5-17

5.5 TIG welding

5.5.1 Welding task selection

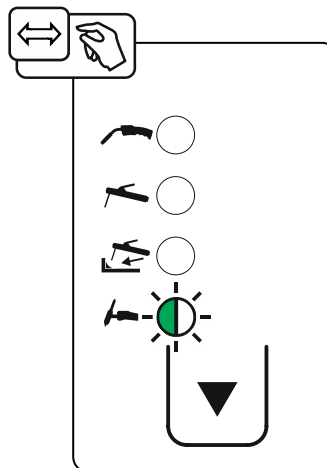


Figure 5-18

5.5.2 Welding current setting

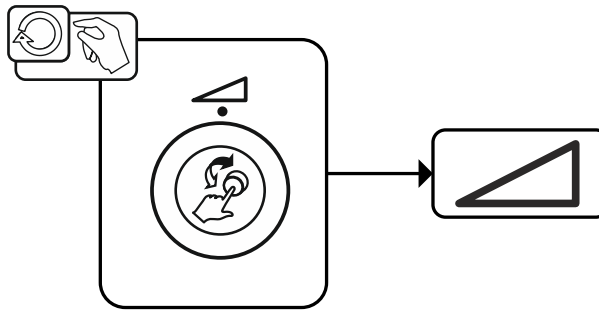


Figure 5-19

5.5.3 Arc ignition

5.5.3.1 Liftarc

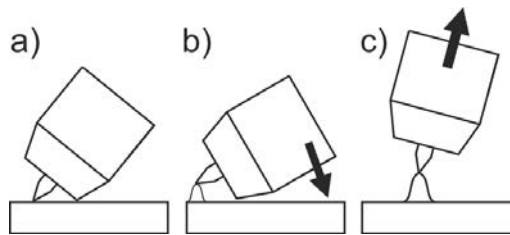


Figure 5-20









The arc is ignited on contact with the workpiece:

- Carefully place the torch gas nozzle and tungsten electrode tip onto the workpiece and press the torch trigger (liftarc current flowing, regardless of the main current set).
- Incline the torch over the torch gas nozzle to produce a gap of approx. 2-3 mm between the electrode tip and the workpiece. The arc ignites and the welding current is increased, depending on the operating mode set, to the ignition or main current set.
- Lift off the torch and swivel to the normal position.

Ending the welding process: Release or press the torch trigger depending on the operating mode selected.

5.5.4 Operating modes (functional sequences)

5.5.4.1 Explanation of signs and functions

Symbol	Meaning
	Press torch trigger
	Release torch trigger
	Tap torch trigger (briefly press and release)
	Shielding gas is flowing
I	Welding power
	Gas pre-flow
	Gas post-flow
	Non-latched
	Latched
t	Time
P _{START}	Start program
P _A	Main program
P _B	Reduced main program
P _{END}	End program
t _{S1}	Slope time from P _{START} to P _A

5.5.4.2 Automatic cut-out

Once the fault periods have elapsed, the automatic cut-out stops the welding process when it has been triggered by one of two states:

- During ignition
5 s after the start of the welding process, no welding current flows (ignition error).
- During welding
The arc is interrupted for more than 5 s (arc interruption).

Non-latched mode

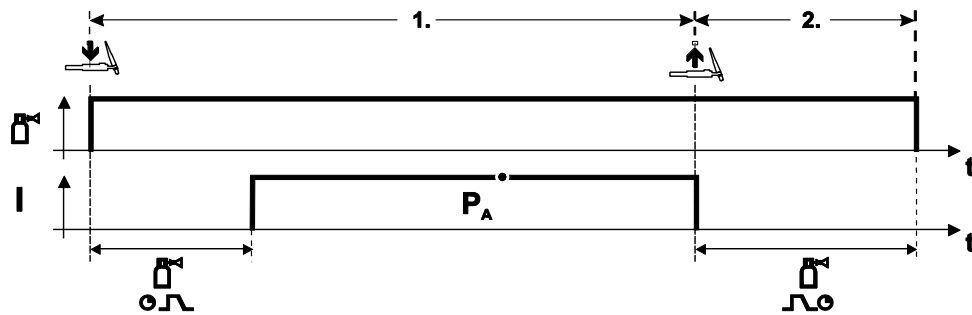


Figure 5-21

Selection

- Select non-latched operating mode

Step 1

- Press and hold torch trigger.
- Shielding gas is expelled (gas pre-flows).

The arc is ignited using liftarc.

- Welding current flows with pre-selected setting.

Step 2

- Release torch trigger.
- Arc is extinguished.
- Gas post-flow time elapses.

Latched mode

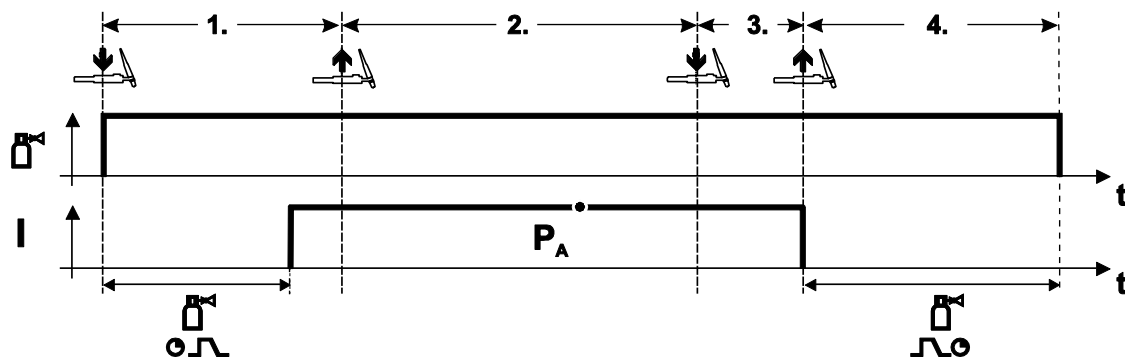


Figure 5-22

Selection

- Select latched operating mode

Step 1

- Press and hold torch trigger
- Shielding gas is expelled (gas pre-flows)

The arc is ignited using liftarc.

- Welding current flows with pre-selected setting.

Step 2

- Release torch trigger (no effect)

Step 3

- Press torch trigger (no effect)

Step 4

- Release torch trigger
- Arc is extinguished.
- Gas post-flow time elapses.

5.6 Special parameters (advanced settings)

Special parameters (P1 to Pn) are applied for customer-specific configuration of machine functions. This allows the user maximum flexibility in optimising their requirements.

These settings are not configured directly on the machine control since a regular setting of the parameters is generally not required. The number of selectable special parameters can deviate between the machine controls used in the welding system (also see the relevant standard operating instructions).

If required, the special parameters can be reset to the factory settings > see 5.6.2 chapter.

5.6.1 Selecting, changing and saving parameters

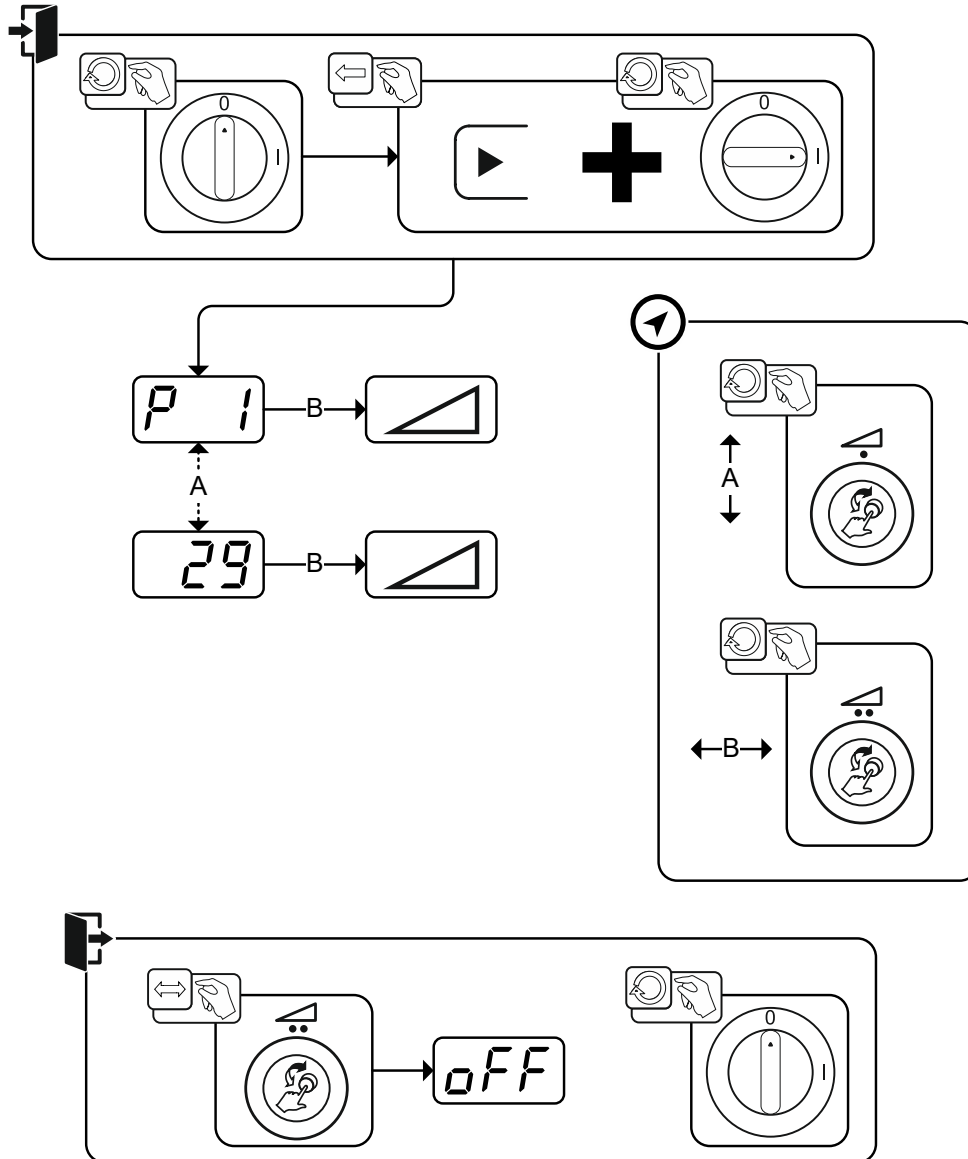


Figure 5-23

Display	Setting/selection
P 1	Wire inching / wire return ramp time 0 = -----normal inching (10 s ramp time) 1 = -----fast inching (3 s ramp time) (ex works)
P 9	Tapping start for latched and special latched operation 0 = -----no 4-cycle inching start 1 = -----4-cycle inching start possible (ex works)
P 15	HOLD function 0 = -----HOLD values are not displayed 1 = -----HOLD values are displayed (Ex works)

Display	Setting/selection
	Unit system > see 5.6.1.4 chapter 0 = -----metric system (ex works) 1 = -----Imperial system

5.6.1.1 Ramp time for wire inching (P1)

The wire inching starts with a speed 1.0 m/min for 2 secs. It is subsequently increased to a ramp function to 6.0 m/min. The ramp time can be set between two ranges.

During wire inching, the speed can be changed by means of the welding power rotary knob. Changing the speed has no effect on the ramp time.

5.6.1.2 Latched/special-latched tap start (P9)

In latched – tap start – operating mode it is possible to switch straight to the second step by tapping the torch trigger; it is not necessary for current to be flowing.

The welding can be halted by pressing the torch trigger for a second time.

5.6.1.3 Hold function (P15)

Hold function active (P15 = 1)

- Average values for the last main program parameters used for welding are displayed.

Hold function not active (P15 = 0)

- Setpoint values for the main program parameters are displayed.

5.6.1.4 Units system (P29)

Function not active

- Metric metric units are displayed.

Function active

- Imperial units are displayed.

5.6.2 Reset to factory settings

All special parameters saved by the user will be overwritten by the factory settings!

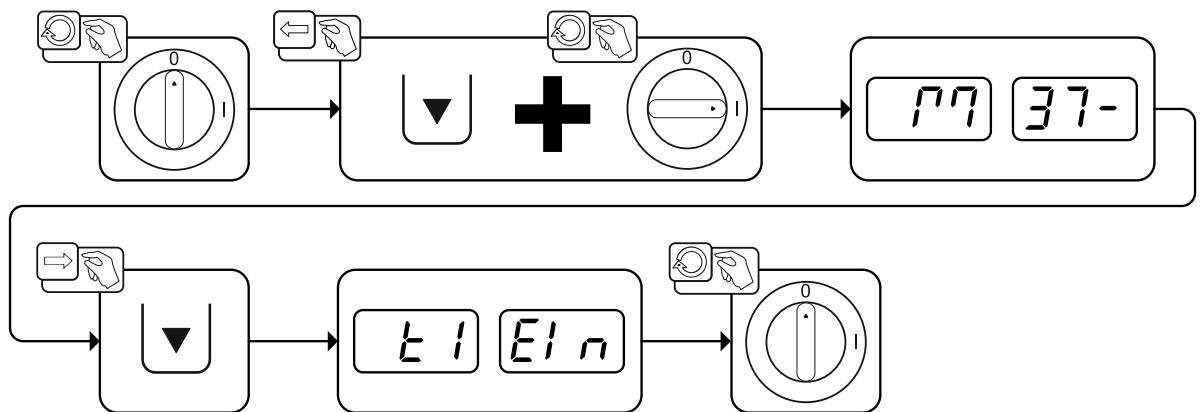


Figure 5-24

5.7 Machine configuration menu

5.7.1 Selecting, changing and saving parameters

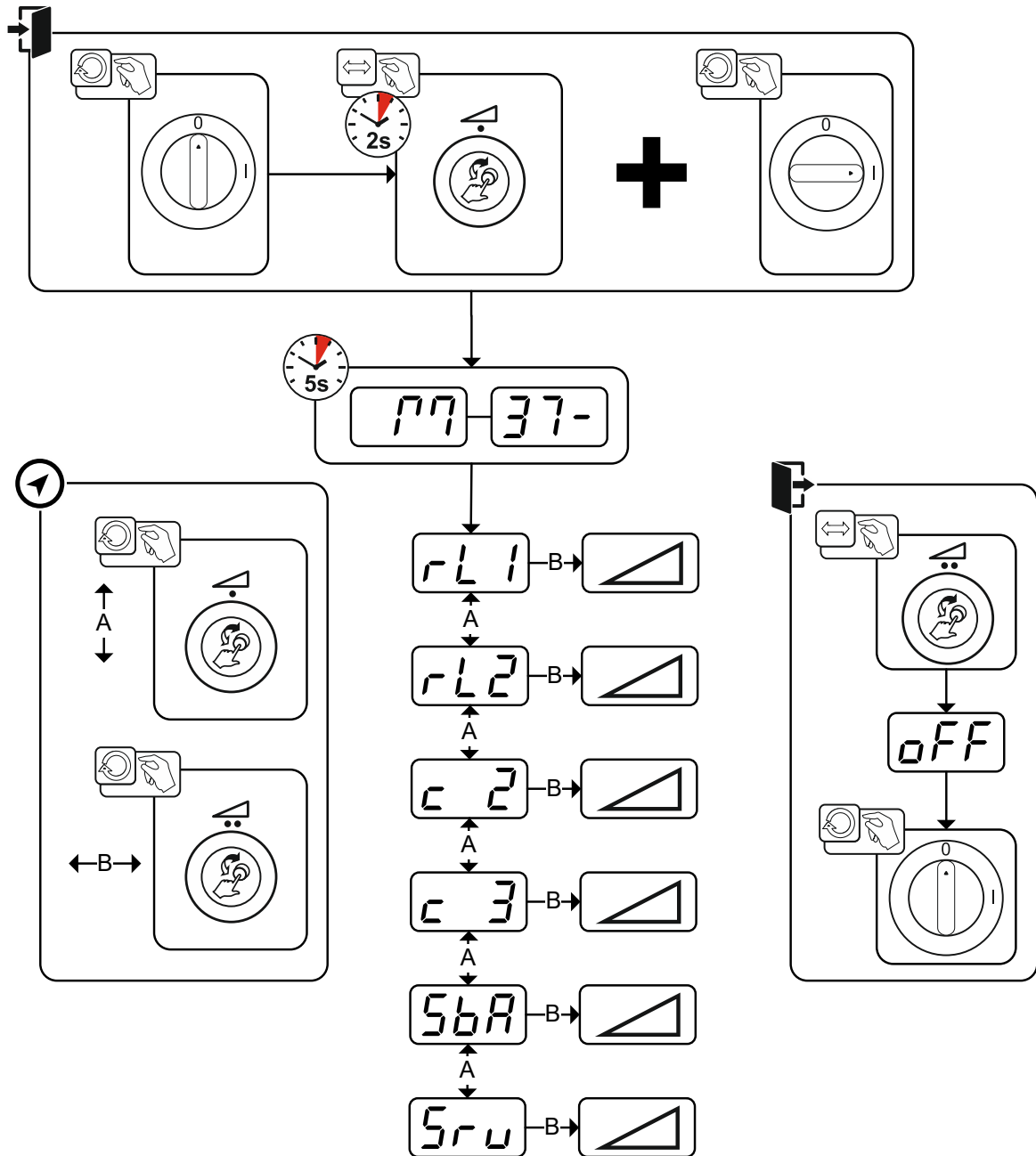


Figure 5-25

Display	Setting/selection
	Lead resistance 1 Lead resistance for the first welding circuit 0 mΩ–60 mΩ (8 mΩ ex works).
	Lead resistance 2 Lead resistance for the second welding circuit 0 mΩ–60 mΩ (8 mΩ ex works).
	Only qualified service personnel may change the parameters!
	Only qualified service personnel may change the parameters!

Display	Setting/selection
	Time-based power-saving mode > see 5.7.1.2 chapter Time to activation of the power-saving mode in case of inactivity. Setting = disabled or numerical value 5-60 min..
	Service menu Modifications to the service menu may only be carried out by authorised maintenance staff!

5.7.1.1 Aligning the cable resistance

The resistance value of the cables can be set directly or it can be adjusted through the power source. The power source cable resistance value is set to 8 mΩ when delivered. This value corresponds to an earth cable length of 5 m, an intermediate hose package length of 1.5 m and a water-cooled welding torch length of 3 m. A +/- welding voltage correction is therefore required to optimise the welding properties for other hose package lengths. By realigning the cable resistance, the voltage correction value can be set close to zero again. The electric cable resistance should be realigned whenever an accessory component such as the welding torch or the intermediate hose package has been changed.

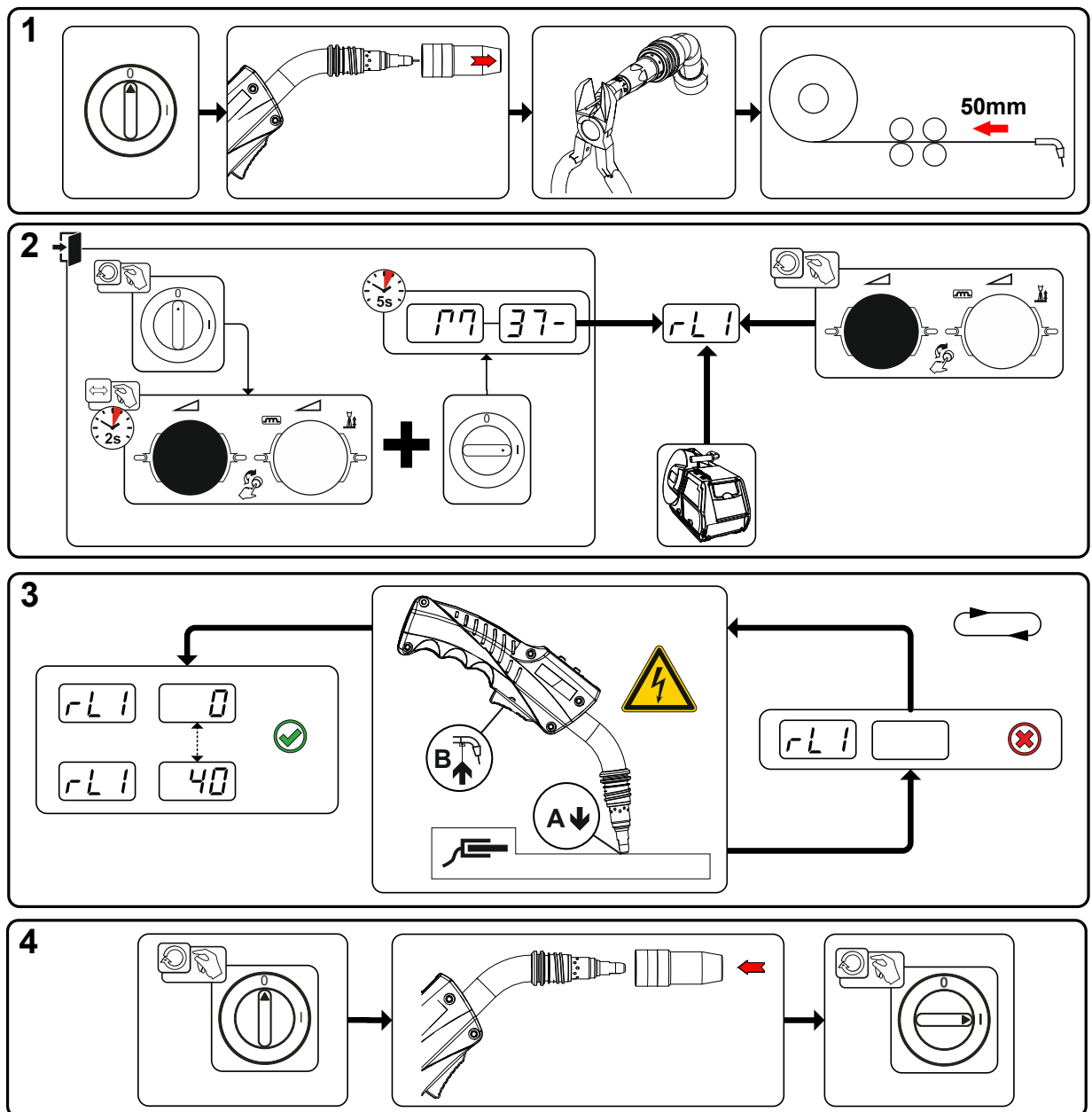


Figure 5-26

1 Preparation

- Switch off the welding machine.
- Unscrew the gas nozzle from the welding torch.
- Trim the welding wire so that it is flush with the contact tip.
- Retract the welding wire a little (approx. 50 mm) on the wire feeder. There should be no more welding wire in the contact tip at this point.

2 Configuration

- Press and hold the “Welding power rotary knob”; at the same time switch on the welding machine (at least 2 s). Release the rotary knob (after a further 5 s the device will switch to the cable resistance 1 parameter).
- Turn the “Welding power rotary knob” to select the appropriate parameter. The “rL1” parameter has to be adjusted for all machine combinations.

3 Alignment/Measurement

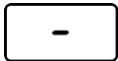
- Applying slight pressure, put the welding torch in place with the contact tip on a clean, purged location on the workpiece and then press the torch trigger for approx. 2 seconds. A short-circuit current will flow briefly, which is used to determine and display the cable resistance. The value can be between 0 mΩ and 40 mΩ. The new value is immediately saved without requiring further confirmation. If no value is shown on the right-hand display, then measurement failed. The measurement must be repeated.

4 Restoring welding standby mode

- Switch off the welding machine.
- Screw the gas nozzle onto the welding torch.
- Switch on the welding machine.
- Insert the welding wire again.

5.7.1.2 Power-saving mode (Standby)

You can activate the power-saving mode by setting a parameter in the machine configuration menu (time-controlled power-saving mode [5.6.8](#)) > see 5.7 chapter.



When power-saving mode is activated, the machine displays show the horizontal digit in the centre of the display only.

Pressing any operating element (e.g. turning a rotary knob) deactivates power-saving mode and the machine is ready for welding again.

6 Maintenance, care and disposal

6.1 General

DANGER



Risk of injury due to electrical voltage after switching off!

Working on an open machine can lead to fatal injuries!

Capacitors are loaded with electrical voltage during operation. Voltage remains present for up to four minutes after the mains plug is removed.

1. Switch off machine.
2. Remove the mains plug.
3. Wait for at least 4 minutes until the capacitors have discharged!

WARNING



Improper maintenance, testing and repairs!

Maintenance, testing and repair of the machine may only be carried out by skilled and qualified personnel (authorised service personnel). A competent person is someone who, based on training, knowledge and experience, can recognize the hazards and possible consequential damage that may occur when testing power sources and can take the necessary safety precautions.

- Follow the maintenance instructions.
- If any of the test requirements below are not met, the unit must not be put back into operation until it has been repaired and tested again.

Repair and maintenance work may only be performed by qualified authorised personnel; otherwise the right to claim under warranty is void. In all service matters, always consult the dealer who supplied the machine. Return deliveries of defective equipment subject to warranty may only be made through your dealer. When replacing parts, use only original spare parts. When ordering spare parts, please quote the machine type, serial number and item number of the machine, as well as the type designation and item number of the spare part.

Under the specified ambient conditions and normal working conditions this machine is essentially maintenance-free and requires just a minimum of care.

Contamination of the machine may impair service life and duty cycle. The cleaning intervals depend on the ambient conditions and the resulting contamination of the machine. The minimum interval is every six months.

6.2 Disposing of equipment



Proper disposal!

The machine contains valuable raw materials, which should be recycled, and electronic components, which must be disposed of.

- **Do not dispose of in household waste!**
- **Observe the local regulations regarding disposal!**
- According to European provisions (Directive 2012/19/EU on Waste of Electrical and Electronic Equipment), used electric and electronic equipment may no longer be placed in unsorted municipal waste. It must be collected separately. The symbol depicting a waste container on wheels indicates that the equipment must be collected separately.
This machine has to be disposed of, or recycled, in accordance with the waste separation systems in use.

According to German law (law governing the distribution, taking back and environmentally correct disposal of electrical and electronic equipment (ElektroG)), used machines are to be placed in a collection system separate from unsorted municipal waste. The public waste management utilities (communities) have created collection points at which used equipment from private households can be disposed of free of charge.

The deletion of personal data is the responsibility of the end user.

Lamps, batteries or accumulators must be removed and disposed of separately before disposing of the device. The type of battery or accumulator and its composition is marked on the top (type CR2032 or SR44). The following EWM products may contain batteries or accumulators:

- **Welding helmets**
Batteries or accumulators are easy to remove from the LED cassette.
- **Device controls**
Batteries or accumulators are located on the back of these in corresponding sockets on the circuit board and are easy to remove. The controls can be removed using standard tools.

Information on returning used equipment or collections can be obtained from the respective municipal administration office. Devices can also be returned to EWM sales partners across Europe.

Further information on the topic of the disposal of electrical and electronic equipment can be found on our website at: <https://www.ewm-group.com/de/nachhaltigkeit.html>.

7 Rectifying faults

All products are subject to rigorous production checks and final checks. If, despite this, something fails to work at any time, please check the product using the following flowchart. If none of the fault rectification procedures described leads to the correct functioning of the product, please inform your authorised dealer.


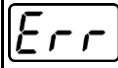
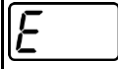
7.1 Software version of the machine control

The query of the software versions only serves to inform the authorised service staff. It is available in the machine configuration menu > see 5.7 chapter.

7.2 Error messages (power source)

The possible error numbers displayed depend on the machine series and version!

Depending on the options of the machine display, a fault is shown as follows:

Display type - machine control	Display
Graphic display	
two 7-segment displays	
one 7-segment display	

The possible cause of the fault is signalled by a corresponding fault number (see table). In the case of an error, the power unit shuts down.

- Document machine errors and inform service staff as necessary.
- If multiple errors occur, these are displayed in succession.

Reset error (category legend)

^A The error message disappears when the error is eliminated.

^B The error message can be reset by pressing a push-button ◀.

All other error messages can only be reset by switching the machine off and on again.

Error 3: Tacho error

Category A, B

- ✓ Fault in the wire feeder.
 - ✘ Check the electrical connections (connectors, lines).
- ✓ Permanent overload of the wire drive.
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the wire in the liner for ease of movement.

Error 4: Excess temperature

Category A

- ✓ The power source is overheating.
 - ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✘ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
 - ✘ Check the air inlet and outlet.

Error 5: Mains overvoltage

- ✓ Mains voltage is too high.
 - ✘ Check the mains voltages and compare them with the connection voltages of the power source.

Error 6: Mains undervoltage

↯ Mains voltage is too low.

- ✘ Check the mains voltages and compare them with the connection voltages of the power source.

Error 7: Low coolant level

Category B

↯ Low flow rate.

- ✘ Fill with coolant.
- ✘ Check coolant flow - remove kinks in the hose package.
- ✘ Adjust the flow threshold ^[1].
- ✘ Clean the cooler.

↯ Pump does not turn.

- ✘ Turn the pump shaft.

↯ Air in the coolant circuit.

- ✘ Vent the coolant circuit.

↯ The hose package is not filled with coolant.

- ✘ Switch the machine off and on > pump running > filling process.

↯ Operation with a gas-cooled welding torch.

- ✘ Deactivate the torch cooling.
- ✘ Connect the coolant feed and return with a hose bridge.

Error 8: Shielding gas error

Category A, B

↯ No gas.

- ✘ Check the gas supply.

↯ The pre-pressure is too low.

- ✘ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 9: Secondary overvoltage

↯ Overvoltage at the output: Inverter error.

- ✘ Request service.

Error 10: Earth fault (PE error)

↯ Connection between welding wire and machine casing.

- ✘ Remove the electrical connection.

↯ Connection between welding circuit and machine casing.

- ✘ Check the connection and routing of the earth wire / welding torch.

Error 11: Fast shut-down

Category A, B

↯ Remove the logical signal "Robot ready" during the process.

- ✘ Eliminate errors on the higher-level control.

Error 16: Pilot arc power source - collective error

Category A

- ✓ The external emergency stop circuit has been interrupted.
 - ✘ Check the emergency stop circuit and eliminate the cause of the error.
- ✓ The emergency stop circuit of the power source has been activated (internally configurable).
 - ✘ Deactivate the emergency stop circuit.
- ✓ The power source is overheating.
 - ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✘ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
 - ✘ Check the air inlet and outlet.
- ✓ Short circuit on welding torch.
 - ✘ Check the welding torch.
 - ✘ Request service.

Error 17: Cold wire error

Category B

- ✓ Fault in the wire feeder.
 - ✘ Check the electrical connections (connectors, lines).
- ✓ Permanent overload of the wire drive.
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for ease of movement.

Error 18: Plasma gas error

Category B

- ✓ No gas.
 - ✘ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✘ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 19: Shielding gas error

Category B

- ✓ No gas.
 - ✘ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✘ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 20: Low coolant level

Category B

- ✓ Low flow rate.
 - ✘ Fill with coolant.
 - ✘ Check coolant flow - remove kinks in the hose package.
 - ✘ Adjust the flow threshold^[1].
 - ✘ Clean the cooler.
- ✓ Pump does not turn.
 - ✘ Turn the pump shaft.
- ✓ Air in the coolant circuit.
 - ✘ Vent the coolant circuit.
- ✓ The hose package is not filled with coolant.
 - ✘ Switch the machine off and on > pump running > filling process.
- ✓ Operation with a gas-cooled welding torch.
 - ✘ Deactivate the torch cooling.
 - ✘ Connect the coolant feed and return with a hose bridge.

Error 22: Excess coolant temperature

Category B

- ✓ Coolant is overheating^[1].
 - ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✘ Check, clean or replace the fan.
- ✓ Air inlet or outlet is blocked.
 - ✘ Check the air inlet and outlet.

Error 23: Excess temperature of the HF choke

Category A

- ✓ External XF ignition unit is overheating.
 - ✘ Allow the switched-on machine to cool.

Error 24: Pilot arc ignition error

Category B

- ✓ The pilot arc cannot ignite.
 - ✘ Check the welding torch equipment.

Error 25: Forming gas error

Category B

- ✓ No gas.
 - ✘ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✘ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 26: Excess pilot arc module temperature

Category A

- ✓ The power source is overheating.
 - ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✘ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
 - ✘ Check the air inlet and outlet.

Error 32: Error I>0

- ↘ Current recording is faulty.
- ✘ Request service.

Error 33: Error UIST


- ↘ Voltage recording is faulty.
- ✘ Eliminate the short circuit in the welding circuit.
- ✘ Remove the external sensor voltage.
- ✘ Request service.


Error 34: Electronics error

- ↘ A/D channel error
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 35: Electronics error

- ↘ Slope error
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 36:  errors

- ↘  conditions violated.
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 37: Electronics error

- ↘ The power source is overheating.
- ✘ Allow the switched-on machine to cool.
- ↘ Fan is blocked, dirty or defective.
- ✘ Check the fan and clean or replace.
- ↘ Air inlet or outlet is blocked.
- ✘ Check the air inlet and outlet.

Error 38: Error IIST

- ↘ Short circuit in the welding circuit before welding.
- ✘ Eliminate the short circuit in the welding circuit.
- ✘ Request service.

Error 39: Electronics error

- ↘ Secondary overvoltage
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 40: Electronics error

- ↘ Error I>0
- ✘ Request service.

Error 47: Radio link (BT)

Category B

- ↘ Connection error between welding machine and peripheral unit.
- ✘ Note the documentation for the data interface with radio transmission.

Error 48: Ignition error

Category B

- ✓ No ignition at process start (automated machines).
 - ✘ Check the wire feeding
 - ✘ Check the load cable connections in the welding circuit.
 - ✘ Clean corroded surfaces on the workpiece before welding if necessary.

Error 49: Arc interruption

Category B

- ✓ An arc interruption occurred during welding with an automated system.
 - ✘ Check the wire feeding.
 - ✘ Adjust the welding speed.

Error 50: Program number

Category B

- ✓ Internal error.
 - ✘ Request service.

Error 51: Emergency stop

Category A

- ✓ The external emergency stop circuit has been interrupted.
 - ✘ Check the emergency stop circuit and eliminate the cause of the error.
- ✓ The emergency stop circuit of the power source has been activated (internally configurable).
 - ✘ Deactivate the emergency stop circuit.

Error 52: No wire feeder

- ✓ After switching on the automated system, no wire feeder (DV) was detected.
 - ✘ Check or connect the control cables of the wire feeders.
 - ✘ Check the identification number of the automated wire feeder (for 1DV: number 1, for 2DV: each a wire feeder with number 1 and a wire feeder with number 2).

Error 53: No wire feeder 2

Category B

- ✓ Wire feeder 2 was not detected.
 - ✘ Check the control cable connections.

Error 54: VRD errors

- ✓ Error in the open-circuit voltage reduction.
 - ✘ If necessary, disconnect the external machine from the welding circuit.
 - ✘ Request service.

Error 55: Excess wire feeder current

Category B

- ✓ Excess current detected in the wire feed mechanism.
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for ease of movement.

Error 56: Mains phase failure

- ✓ One phase of the mains voltage has failed.
 - ✘ Check mains connection, mains plug and mains fuses.

Error 57: Slave tacho error

Category B

- ✓ Fault in the wire feeder (slave drive).
 - ✘ Check the connections (connectors, lines).
- ✓ Permanent overload of the wire drive (slave drive).
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for ease of movement.

Error 58: Short circuit

Category B

- ✓ Short circuit in the welding circuit.
 - ✘ Eliminate the short circuit in the welding circuit.
 - ✘ Place the welding torch on an insulated surface.

Error 59: Incompatible machine

- ✓ A machine connected to the system is not compatible.
 - ✘ Disconnect the incompatible machine from the system.

Error 60: Incompatible software

- ✓ The software of a machine is not compatible.
 - ✘ Disconnect the incompatible machine from the system
 - ✘ Request service.

Error 61: Welding monitoring

- ✓ The actual value of a welding parameter is outside the specified tolerance range.
 - ✘ Maintain the tolerance ranges.
 - ✘ Adjust the welding parameters.

Error 62: System component

- ✓ The system component was not found.
 - ✘ Request service.

Error 63: Mains voltage error

- ✓ Operating and mains voltage are incompatible.
 - ✘ Check or adjust the operating and mains voltage.

[1] See technical data for values and other switching thresholds.

7.3 Warnings

Depending on the display options of the machine display, a warning message is displayed as follows:

Display type - machine control	Display
Graphic display	
two 7-segment displays	
one 7-segment display	

The cause of the warning is indicated by a corresponding warning number (see table).

- In case of multiple warnings, these are displayed in sequence.
- Document machine warning and inform service personnel, if required.

Warning	Potential cause / remedy
1 Excess temperature	A shutdown is imminent due to excess temperature.

Warning	Potential cause / remedy
2 Half-wave failures	Check process parameters.
3 Torch cooling warning	Check coolant level and top up if necessary.
4 Shielding gas	Check shielding gas supply.
5 Coolant flow	Check min. flow rate. ^[2]
6 Wire reserve	Only a small amount of wire is left on the spool.
7 CAN bus failure	Wire feeder not connected; automatic circuit-breaker of wire feed motor (reset the tripped automatic circuit-breaker by actuating).
8 Welding circuit	The inductance of the welding circuit is too high for the selected welding task.
9 WF configuration	Check WF configuration.
10 Partial inverter	One of several partial inverters is not supplying welding current.
11 Excess temperature of the coolant ^[1]	Check temperature and switching thresholds. ^[2]
12 Welding monitoring	The actual value of a welding parameter is outside the specified tolerance field.
13 Contact error	The resistance in the welding circuit is too high. Check earth connection.
14 Alignment error	Switch the machine off and on. If the error persists, notify Service.
15 Mains fuse	The power limit of the mains fuse is reached and the welding power is reduced. Check the fuse setting.
16 Shielding gas warning	Check the gas supply.
17 Plasma gas warning	Check the gas supply.
18 Forming gas warning	Check the gas supply.
19 Gas warning 4	reserved
20 Coolant temperature warning	Check coolant level and top up if necessary.
21 Excess temperature 2	reserved
22 Excess temperature 3	reserved
23 Excess temperature 4	reserved
24 Coolant flow warning	Check coolant supply. Check coolant level and top up if necessary. Check flow and switching thresholds. ^[2]
25 Flow 2	reserved
26 Flow 3	reserved
27 Flow 4	reserved
28 Wire stock warning	Check wire feeding.
29 Low wire 2	reserved
30 Low wire 3	reserved
31 Low wire 4	reserved
32 Tacho error	Fault of wire feeder - permanent overload of the wire drive.
33 Excess current on the wire feed motor	Excess current detected on wire feed motor.

Warning		Potential cause / remedy
34	JOB unknown	JOB selection was not carried out because the JOB number is unknown.
35	Excess current on the wire feed motor slave	Excess current detected on wire feed motor slave (push/push system or intermediate drive).
36	Slave tacho error	Fault of wire feeder - permanent overload of the wire drive (push/push system or intermediate drive).
37	FAST bus failure	Wire feeder not connected (reset by actuating the automatic circuit-breaker of the wire feed motor).
38	Incomplete component information	Check the XNET component management.
39	Mains half-wave failure	Check supply voltage.
40	Weak power grid	Check supply voltage.
41	Cooling unit not recognised	Check the cooling unit connection.
47	Battery (remote control, type BT)	Battery level is low (replace battery)

^[1] only for the XQ machine series

^[2] See technical data for values and other switching thresholds.

8 Appendix
8.1 Setting instructions





		Basic						mm	
 mm	 mm	SG2/3 G3/4 Si1 solid wire				SG2/3 G3/4 Si1 metal/ flux-cored		 mm	 mm
		Ar-82/CO ₂ -18 M21		CO ₂ -100 / C1		Ar-82/CO ₂ -18 M21			
		 m/min	V	 m/min	V	 m/min	V		
0,8	0,8	2,2	15,3	2,2	16,2				
	1,0	1,5	15,3	1,6	16,9	1,5	14,7		
1,0	0,8	2,7	15,7	2,7	16,5				
	1,0	2,2	15,9	2,1	17,7	2,2	15,4		
	1,2	1,2	14,7	1,6	18,1	1,6	15,3		
2,0	0,8	5,5	17,7	4,8	19,3				
	1,0	4,0	18,4	3,2	18,9	4,0	16,9		
	1,2	3,2	17,8	2,8	19,3	3,2	17,5		
3,0	0,8	8,8	19,0	9,2	25,3				
	1,0	5,1	19,0	4,8	20,1	5,1	17,7		
	1,2	4,3	19,2	3,6	21,4	4,3	18,4		
4,0	0,8	10,8	21,0	12,0	28,3				
	1,0	7,0	20,2	6,3	22,3	7,0	18,9		
	1,2	5,0	19,8	4,9	22,9	5,0	19,2		
5,0	0,8	14,2	22,5	14,2	29,5				
	1,0	8,6	21,0	8,2	24,6	8,6	20,8		
	1,2	6,2	21,0	6,1	25,0	6,2	19,9		
6,0	0,8	17,8	23,7	16,8	31,0				
	1,0	10,0	26,1	9,5	27,0	10,0	23,1		
	1,2	7,8	26,8	7,3	28,8	7,5	27,0		
8,0	0,8	22,0	26,5	21,8	31,9				
	1,0	12,0	28,8	11,6	28,5	12,0	26,5		
	1,2	8,5	28,3	9,1	29,4	8,5	27,6		
10,0	1,0	15,0	30,6	14,2	30,6	15,0	28,8		
	1,2	9,8	30,0	11,3	32,8	9,8	29,8		

		Basic						inch	
 inch	 inch	SG2/3 G3/4 Si1 solid wire				SG2/3 G3/4 Si1 metal/ flux-cored		 inch	 inch
		Ar-82/CO ₂ -18 M21		CO ₂ -100 / C1		Ar-82/CO ₂ -18 M21			
		 ipm	V	 ipm	V	 ipm	V		
.030	.030	087	15.3	087	16.2				
	.040	059	15.3	063	16.9	059	14.7		
.040	.030	106	15.7	106	16.5				
	.040	087	15.9	083	17.7	087	15.4		
	.045	047	14.7	063	18.1	063	15.3		
.080	.030	217	17.7	189	19.3				
	.040	157	18.4	126	18.9	157	16.9		
	.045	126	17.8	110	19.3	126	17.5		
.120	.030	346	19.0	362	25.3				
	.040	201	19.0	189	20.1	201	17.7		
	.045	169	19.2	142	21.4	169	18.4		
.155	.030	425	21.0	472	28.3				
	.040	276	20.2	248	22.3	276	18.9		
	.045	197	19.8	193	22.9	197	19.2		
.195	.030	559	22.5	559	29.5				
	.040	339	21.0	323	24.6	339	20.8		
	.045	244	21.0	240	25.0	244	19.9		
.235	.030	701	23.7	661	31.0				
	.040	394	26.1	374	27.0	394	23.1		
	.045	307	26.8	287	28.8	295	27.0		
.315	.030	866	26.5	858	31.9				
	.040	472	28.8	457	28.5	472	26.5		
	.045	335	28.3	358	29.4	335	27.6		
.395	.040	591	30.6	559	30.6	591	28.8		
	.045	386	30.0	445	32.8	386	29.8		

Figure 8-1

8.2 Parameter overview – setting ranges

8.2.1 MIG/MAG welding

Name	Display			Setting range	
	Code	Standard (ex works)	Unit	Min.	Max.
Gas pre-flow time		0,2	s	0	- 20
Gas post-flow time		0,2	s	0	- 20
Burn-back time		19		0	- 333
Wire creep		30	%	10	100

8.2.2 MMA welding

Name	Display			Setting range	
	Code	Standard (ex works)	Unit	Min.	Max.
Arcforce		0		-40	- 40

8.3 Searching for a dealer

Sales & service partners
www.ewm-group.com/en/specialist-dealers



"More than 400 EWM sales partners worldwide"