



Operating instructions



EN

Welding machine

TIG 180 DC

299-020100-TWD01

18.03.2016

General information

CAUTION



Read the operating instructions!

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

- Read the operating instructions for all system components.
- Observe the applicable accident prevention regulations.
- Observe all country-specific statutory provisions.
- Have confirmed by signature if necessary.



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 2623 9276400.

A list of authorised sales partners can be found at www.teamwelder.com.

Liability in conjunction with the operation of this system is explicitly limited to the functioning of the system. Any further liability, regardless of which type, is explicitly excluded. This liability disclaimer is regarded as having been accepted by the user when the system is commissioned.

The manufacturer can neither monitor the compliance with these instructions nor the conditions and methods employed during the installation, operation, use and maintenance of the machine. An incorrectly performed installation can lead to material damage and injure persons as a result. Therefore, we assume no responsibility or liability for losses, damages or costs arising from erroneous installation, improper operation or incorrect use and maintenance, or any consequences in conjunction thereof.

TEAMWELDER Germany GmbH
Sälzerstraße 20a
D-56235 Ransbach-Baumbach
Deutschland / Germany

The copyright to this document remains the property of the manufacturer.

Reprinting, including extracts, only permitted with written approval.

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



1 Contents

1	Contents	3
2	Safety instructions	5
2.1	Notes on the use of these operating instructions	5
2.2	Explanation of icons	6
2.3	General	7
2.4	Transport and installation	11
2.4.1	Ambient conditions	12
2.4.1.1	In operation	12
2.4.1.2	Transport and storage	12
3	Intended use	13
3.1	Documents which also apply	13
3.1.1	Warranty	13
3.1.2	Declaration of Conformity	13
3.1.3	Welding in environments with increased electrical hazards	13
3.1.4	Service documents (spare parts and circuit diagrams)	13
3.1.5	Calibration/Validation	13
4	Machine description – quick overview	14
4.1	Front view	14
4.2	Rear view	15
4.3	Machine control – Operating elements	16
4.3.1	Welding data display	17
5	Design and function	18
5.1	General	18
5.2	Machine cooling	18
5.3	Workpiece lead, general	19
5.4	Transport and installation	19
5.4.1	Adjusting the length of the carrying strap	19
5.5	Mains connection	20
5.5.1	Mains configuration	20
5.6	TIG welding	21
5.6.1	Welding torch and workpiece line connection	21
5.6.2	5-pole control lead	22
5.6.3	Shielding gas supply (shielding gas cylinder for welding machine)	22
5.6.3.1	Connecting the shielding gas supply	23
5.6.3.2	Setting the shielding gas quantity	24
5.6.4	Welding task selection	25
5.6.5	Arc ignition	26
5.6.5.1	HF ignition	26
5.6.5.2	Liftarc ignition	26
5.6.6	TIG automatic cut-out	26
5.6.7	Function sequences/operating modes	27
5.6.7.1	Legend	27
5.6.7.2	TIG non-latched operation	28
5.6.7.3	TIG latched operation	29
5.6.8	Welding torch (operating variants)	30
5.6.8.1	Tap torch trigger (tapping function)	30
5.6.9	Torch mode and up/down speed setting	31
5.6.9.1	Standard TIG torch (5-pole)	32
5.6.10	Average value pulse welding	34
5.6.11	Expert menu (TIG)	36
5.7	MMA welding	37
5.7.1	Connecting the electrode holder and workpiece lead	37
5.7.2	Welding task selection	38
5.7.3	Hotstart	38
5.7.4	Arcforce	38



5.7.5	Antistick.....	39
5.7.6	Average value pulse welding.....	39
5.7.7	Expert menu (MMA).....	41
5.8	Remote control.....	42
5.8.1	TW-RT1 19POL.....	42
5.8.2	Power-saving mode (Standby)	42
5.9	Machine configuration menu	42
6	Maintenance, care and disposal	44
6.1	General.....	44
6.2	Maintenance work, intervals	44
6.2.1	Daily maintenance tasks.....	44
6.2.1.1	Visual inspection	44
6.2.1.2	Functional test	44
6.2.2	Monthly maintenance tasks	44
6.2.2.1	Visual inspection	44
6.2.2.2	Functional test	44
6.2.3	Annual test (inspection and testing during operation)	45
6.3	Disposing of equipment.....	45
6.3.1	Manufacturer's declaration to the end user	45
6.4	Meeting the requirements of RoHS.....	45
7	Rectifying faults.....	46
7.1	Checklist for rectifying faults	46
7.2	Machine faults (error messages)	47
7.3	Resetting welding parameters to the factory settings	48
7.4	Display machine control software version.....	48
7.5	Dynamic power adjustment.....	48
8	Technical data.....	49
8.1	TIG 180 DC	49
9	Accessories	50
9.1	Internet	50



2 Safety instructions

2.1 Notes on the use of 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.

CAUTION

Working and operating procedures which must be followed precisely to avoid damaging or destroying the product.

- The safety information includes the "CAUTION" keyword in its heading without a general warning symbol.
- The hazard is explained using a symbol at the edge of the page.



Special technical points which users must observe.

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
	Special technical points which users must observe.
	Correct
	Wrong
	Press
	Do not press
	Press and keep pressed
	Turn
	Switch
	Switch off machine
	Switch on machine
ENTER	enter the menu
NAVIGATION	Navigating in the menu
EXIT	Exit the menu
	Time display (example: wait 4s/press)
	Interruption in the menu display (other setting options possible)
	Tool not required/do not use
	Tool required/use



2.3 General



DANGER



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 - See 6 chapter!
- 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).



Do not carry out any unauthorised repairs or modifications!

To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!

The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!



Electric shock!

Welding machines use high voltages which can result in potentially fatal electric shocks and burns on contact. Even low voltages can cause you to get a shock and lead to accidents.

- Do not touch any live parts in or on the machine!
- Connection cables and leads must be free of faults!
- Switching off alone is not sufficient!
- Place welding torch and stick electrode holder on an insulated surface!
- The unit should only be opened by specialist staff after the mains plug has been unplugged!
- Only wear dry protective clothing!
- Wait for 4 minutes until the capacitors have discharged!



WARNING



Risk of injury due to radiation or heat!

Arc radiation results in injury to skin and eyes.

Contact with hot workpieces and sparks results in burns.

- Use welding shield or welding helmet with the appropriate safety level (depending on the application)!
- Wear dry protective clothing (e.g. welding shield, gloves, etc.) according to the relevant regulations in the country in question!
- Protect persons not involved in the work against arc beams and the risk of glare using safety curtains!



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!



WARNING



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!



Fire hazard!

Flames may arise as a result of the high temperatures, stray sparks, glowing-hot parts and hot slag produced during the welding process.

Stray welding currents can also result in flames forming!

- Check for fire hazards in the working area!
- Do not carry any easily flammable objects such as matches or lighters.
- Keep appropriate fire extinguishing equipment to hand in the working area!
- Thoroughly remove any residue of flammable substances from the workpiece before starting welding.
- Only continue work on welded workpieces once they have cooled down.
Do not allow to come into contact with flammable material!
- Connect welding leads correctly!



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!



Danger when coupling multiple power sources!

Coupling multiple power sources in parallel or in series has to be carried out by qualified personnel and in accordance with the manufacturer's guidelines. Before bringing the power sources into service for arc welding operations, a test has to verify that they cannot exceed the maximum allowed open circuit voltage.

- Connection of the machine may be carried out by qualified personnel only!
- When decommissioning individual power sources, all mains and welding current leads have to be safely disconnected from the welding system as a whole. (Danger due to inverse voltages!)
- Do not couple welding machines with pole reversing switch (PWS series) or machines for AC welding, as a minor error in operation can cause the welding voltages to be combined.



CAUTION



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!



CAUTION



Obligations of the operator!

The respective national directives and laws must be observed for operation of the machine!

- National implementation of the framework directive (89/391/EEG), as well as the associated individual directives.
- In particular, directive (89/655/EEG), on the minimum regulations for safety and health protection when staff members use equipment during work.
- The regulations regarding work safety and accident prevention for the respective country.
- Setting up and operating the machine according to IEC 60974-9.
- Check at regular intervals that users are working in a safety-conscious way.
- Regular checks of the machine according to IEC 60974-4.



Damage due to the use of non-genuine parts!

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.



Damage to the machine due to stray welding currents!

Stray welding currents can destroy protective earth conductors, damage equipment and electronic devices and cause overheating of components leading to fire.

- Make sure all welding leads are securely connected and check regularly.
- Always ensure a proper and secure electrical connection to the workpiece!
- Set up, attach or suspend all conductive power source components like casing, transport vehicle and crane frames so they are insulated!
- Do not place any other electronic devices such as drillers or angle grinders, etc., on the power source, transport vehicle or crane frames unless they are insulated!
- Always put welding torches and electrode holders on an insulated surface when they are not in use!



Mains connection

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.



CAUTION



EMC Machine Classification

In accordance with IEC 60974-10, welding machines are grouped in two electromagnetic compatibility classes - See 8 chapter:

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 equipment
- 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



2.4 Transport and installation



WARNING



Incorrect handling of shielding gas cylinders!

Incorrect handling of shielding gas cylinders can result in serious and even fatal injury.

- Observe the instructions from the gas manufacturer and in any relevant regulations concerning the use of compressed air!
- Place shielding gas cylinders in the holders provided for them and secure with fixing devices.
- Avoid heating the shielding gas cylinder!



Risk of accident due to improper transport of machines that may not be lifted!

Do not lift or suspend the machine! The machine can fall down and cause injuries! The handles and brackets are suitable for transport by hand only!

- The machine may not be lifted by crane or suspended!



CAUTION



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.



Damage due to supply lines not being disconnected!

During transport, supply lines which have not been disconnected (mains supply leads, control leads, etc.) may cause hazards such as connected equipment tipping over and injuring persons!

- Disconnect supply lines!

CAUTION



Equipment damage when not operated in an upright position!

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!



2.4.1 Ambient conditions



CAUTION



Installation site!

The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!

- The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.
- Safe operation of the machine must be guaranteed at all times.

CAUTION



Equipment damage due to dirt accumulation!

Unusually high quantities of dust, acid, corrosive gases or substances may damage the equipment.

- Avoid high volumes of smoke, vapour, oil vapour and grinding dust!
- Avoid ambient air containing salt (sea air)!



Non-permissible ambient conditions!

Insufficient ventilation results in a reduction in performance and equipment damage.

- Observe the ambient conditions!
- Keep the cooling air inlet and outlet clear!
- Observe the minimum distance of 0.5 m from obstacles!

2.4.1.1 In operation

Temperature range of the ambient air:

- -25 °C to +40 °C

Relative air humidity:

- Up to 50% at 40 °C
- Up to 90% at 20 °C

2.4.1.2 Transport and storage

Storage in an enclosed space, temperature range of the ambient air:

- -30 °C to +70 °C

Relative air humidity

- Up to 90% at 20 °C



3 Intended use



WARNING



Hazards due to improper usage!

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 proper usage and by trained or expert staff!
- Do not modify or convert the equipment improperly!

Arc welding machine for TIG DC welding with HF ignition (contactless) or contact ignition with Liftarc. It may be possible to expand the functionality by using accessories (see the documentation in the relevant chapter).

3.1 Documents which also apply

3.1.1 Warranty



For more information on the warranty topic refer to the included CD-ROM or the website: www.teamwelder.com.

3.1.2 Declaration of Conformity



The labelled machine complies with EC directives in terms of its design and construction:

- EC Low Voltage Directive (2006/95/EC)
- EC EMC Directive (2004/108/EC)

In case of unauthorised changes, improper repairs, non-compliance with specified deadlines for "Arc Welding Equipment – Inspection and Testing during Operation", and/or prohibited modifications which have not been explicitly authorised by TEAMWELDER, this declaration shall be voided. An original document of the specific declaration of conformity is included with every product.

3.1.3 Welding in environments with increased electrical hazards



In compliance with IEC / DIN EN 60974, VDE 0544 the machines can be used in environments with an increased electrical hazard.

3.1.4 Service documents (spare parts and circuit diagrams)



DANGER



Do not carry out any unauthorised repairs or modifications!

To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!

The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

Original copies of the circuit diagrams are enclosed with the unit.

To obtain spare parts, please refer to the included CD-ROM or contact your local authorised dealer.

3.1.5 Calibration/Validation

We hereby confirm that this machine has been tested using calibrated measuring equipment, as stipulated in IEC/EN 60974, ISO/EN 17662, EN 50504, and complies with the admissible tolerances. Recommended calibration interval: 12 months



4 Machine description – quick overview

4.1 Front view

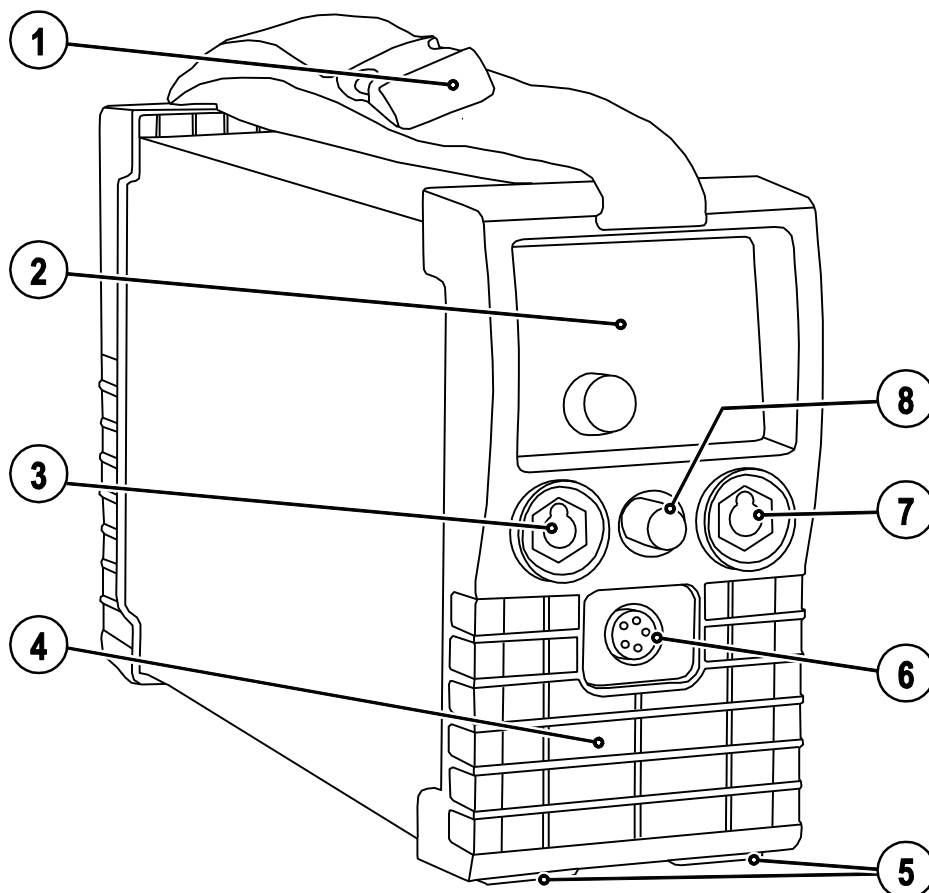






Figure 4-1

Item	Symbol	Description
1		Carrying strap - See 5.4.1 chapter
2		Machine control - See 4.3 chapter
3		Connection socket, "+" welding current <ul style="list-style-type: none"> TIG: Connection for workpiece lead MMA: Electrode holder or workpiece lead connection
4		Cooling air outlet
5		Machine feet
6		Connection socket, 5-pole Standard TIG torch control lead
7		Connection socket, "-" welding current <ul style="list-style-type: none"> TIG: Welding current lead connection for TIG welding torch MMA: Electrode holder or workpiece lead connection
8		G1/4" connecting nipple Shielding gas connection (with yellow insulating cap) for TIG welding torch



4.2 Rear view

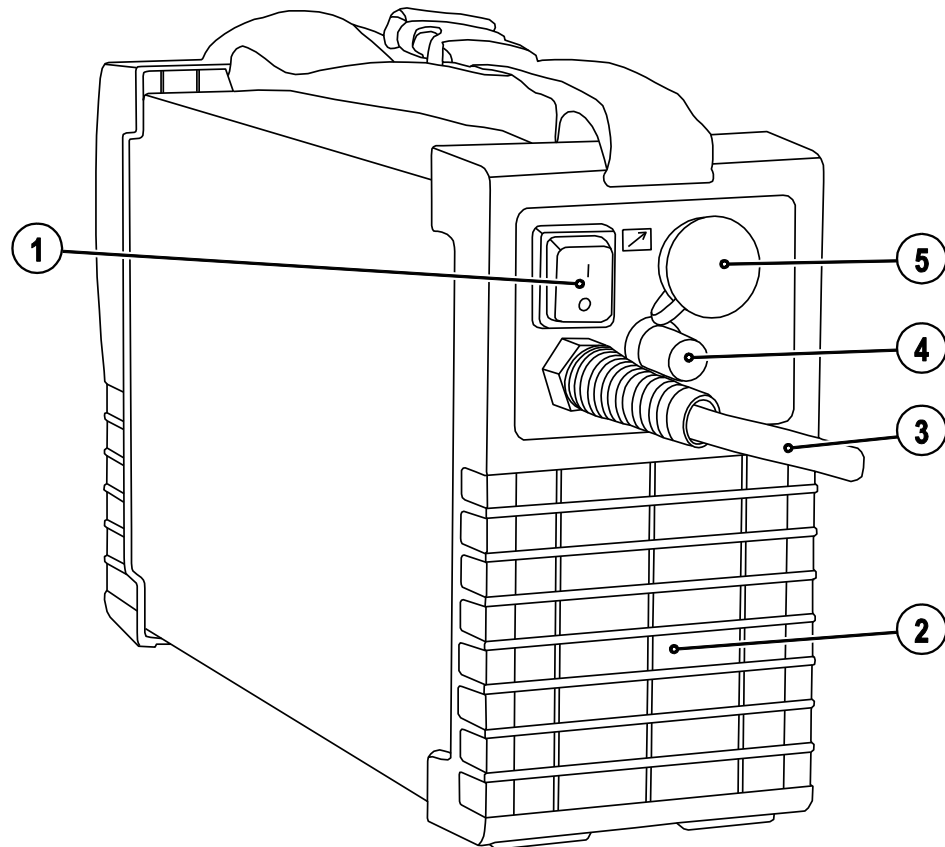


Figure 4-2

Item	Symbol	Description
1		Main switch, machine on/off
2		Cooling air inlet
3		Mains connection cable - See 5.5 chapter
4		G$\frac{1}{4}$" connecting nipple Shielding gas connection on the pressure regulator.
5		Connection socket, 19-pole Remote control connection



4.3 Machine control – Operating elements

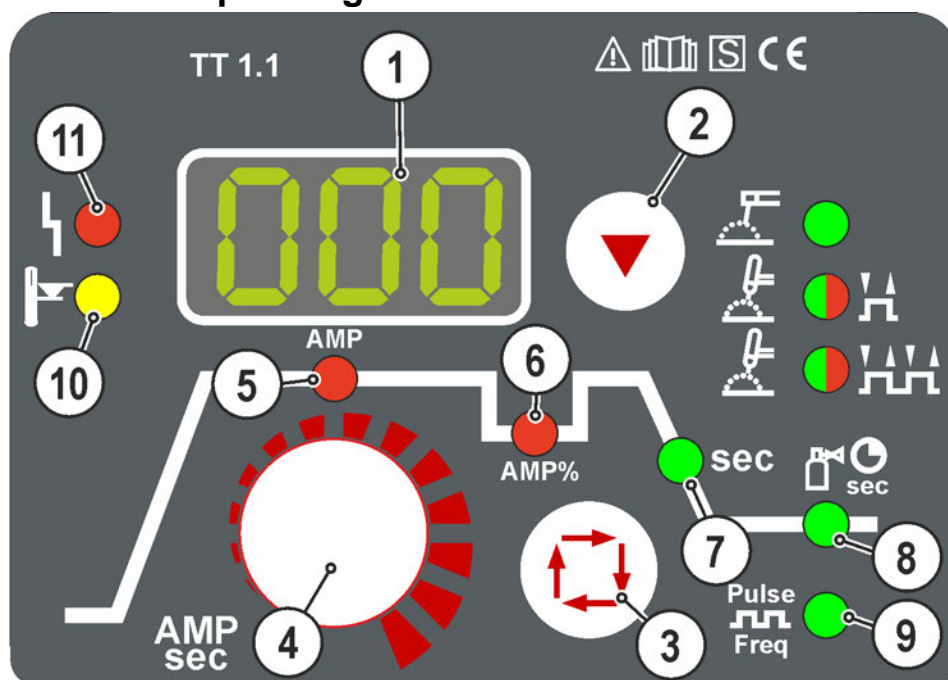


Figure 4-3

Item	Symbol	Description
1		Welding data display (3-digit) Displays the welding parameters and the corresponding values- See 4.3.1 chapter
2		Welding procedure/power-saving mode push-button --- MMA welding -- TIG welding (non-latched operating mode) HH TIG welding (latched operating mode) Signal light green: HF start (contactless) switched on (ex works) Signal light red: Liftarc (contact ignition) switched on STBY Press for 2 s to put the machine into power-saving mode. To reactivate, activate one of the operating elements- See 5.8.2 chapter
3		Select welding parameters button This button is used to select the welding parameters depending on the welding process and operating mode used.
4		Welding parameter setting rotary dial Setting currents, times and parameters.
5	AMP	Main current signal light Imin to Imax (1 A increments)
6	AMP%	Secondary current (TIG) Setting range 1 % to 200 % (1 % increments). Percentage of the main current.
7	sec	Down-slope time (TIG) 0.00 s to 20.0 s (0.1 s increments).
8	sec	Gas post-flow time (TIG) Setting ranges: 0.1 s to 20.0 s (0.1 s increments).
9		Pulse welding (average value pulses) signal light On: ----- Function switched on on Not on:-- Function switched off off Flashing: Parameter selection and frequency setting FrE :



Item	Symbol	Description
10		Excess temperature signal light In case of excess temperature, temperature monitors de-activate the power unit, and the excess temperature control lamp comes on. Once the machine has cooled down, welding can continue without any further measures.
11		Collective interference signal light For error messages, - See 7 chapter

4.3.1 Welding data display

The machine will be calibrated for approx. 2 seconds each time it is switched on. This will be indicated by **ERR** on the display. Subsequently, the value set for the dynamic power adjustment will be displayed for approx. 3 s- See 7.5 chapter.

The value shown on welding data display depends on the selected parameter (current or time). After approx. 5 s the display switches back to the welding current nominal value.

Advanced parameters are shown by the alternate display of the welding parameter with the respective value (the parameter code illuminates for approx. 2 s, parameter value illuminates for approx. 2 s). After approx. 60 s the display switches back to the welding current nominal value.

In case of failures, error codes are shown on the display.



5 Design and function

5.1 General



WARNING



Risk of injury from electric shock!

Contact with live parts, e.g. welding current sockets, is potentially fatal!

- Follow safety instructions on the opening pages of the operating instructions.
- Commissioning may only be carried out by persons who have the relevant expertise of working with arc welding machines!
- Connection and welding leads (e.g. electrode holder, welding torch, workpiece lead, interfaces) may only be connected when the machine is switched off!



CAUTION



Risk of burns on the welding current connection!

If the welding current connections are not locked, connections and leads heat up and can cause burns, if touched!

- Check the welding current connections every day and lock by turning in clockwise direction, if necessary.



Risk from electrical current!

If welding is carried out alternately using different methods and if a welding torch and an electrode holder remain connected to the machine, the open-circuit/welding voltage is applied simultaneously on all cables.

- The torch and the electrode holder should therefore always be placed on an insulated surface before starting work and during breaks.

CAUTION



Using protective dust caps!

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!

5.2 Machine cooling

To obtain an optimal duty cycle from the power components, the following precautions should be observed:

- Ensure that the working area is adequately ventilated.
- Do not obstruct the air inlets and outlets of the machine.
- Do not allow metal parts, dust or other objects to get into the machine.



5.3 Workpiece lead, general

CAUTION



Risk of burns due to incorrect connection of the workpiece lead!

Paint, rust and dirt on the connection restrict the power flow and may lead to stray welding currents.

Stray welding currents may cause fires and injuries!

- Clean the connections!
- Fix the workpiece lead securely!
- Do not use structural parts of the workpiece as a return lead for the welding current!
- Take care to ensure faultless power connections!

5.4 Transport and installation

WARNING



Risk of accident due to improper transport of machines that may not be lifted!

Do not lift or suspend the machine! The machine can fall down and cause injuries! The handles and brackets are suitable for transport by hand only!

- The machine may not be lifted by crane or suspended!

CAUTION



Installation site!

The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!

- The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.
- Safe operation of the machine must be guaranteed at all times.

5.4.1 Adjusting the length of the carrying strap



To demonstrate adjustment, lengthening the strap is shown in the figure. To shorten, the strap's loops must be inched in the opposite direction.

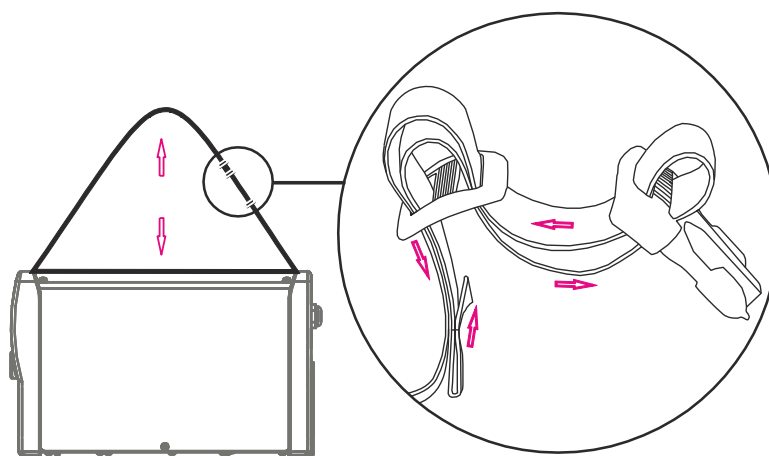


Figure 5-1



5.5 Mains connection



DANGER



Hazard caused by improper mains connection!

An improper mains connection can cause injuries or damage property!

- Only use machine with a plug socket that has a correctly fitted protective conductor.
- If a mains plug must be fitted, this may only be carried out by an electrician in accordance with the relevant national provisions or regulations!
- Mains plug, socket and lead must be checked regularly by an electrician!
- When operating the generator always ensure it is earthed as stated in the operating instructions. The resulting network has to be suitable for operating devices according to protection class 1.

5.5.1 Mains configuration



The machine may only be connected to a one-phase system with two conductors and an earthed neutral conductor.

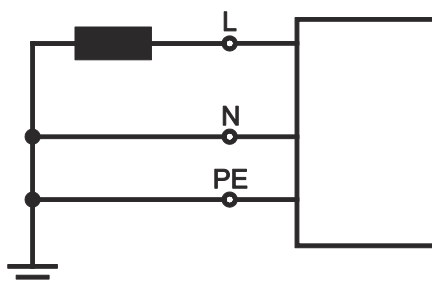


Figure 5-2

Legend

Item	Designation	Colour code
L	Outer conductor	brown
N	Neutral conductor	blue
PE	Protective conductor	green-yellow

CAUTION



Operating voltage - mains voltage!

The operating voltage shown on the rating plate must be consistent with the mains voltage, in order to avoid damage to the machine!

- - See 8 chapter!

- Insert mains plug of the switched-off machine into the appropriate socket.



5.6 TIG welding

5.6.1 Welding torch and workpiece line connection



Prepare welding torch according to the welding task in hand (see operating instructions for the torch).

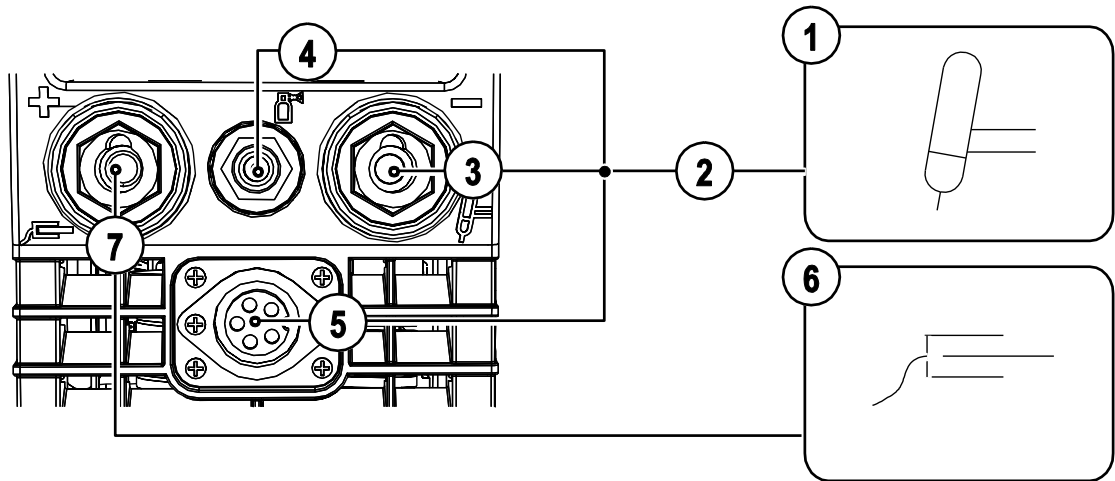








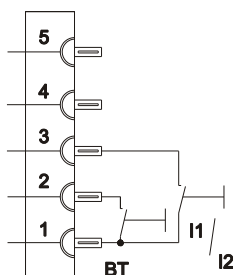
Figure 5-3

Item	Symbol	Description
1		Welding torch
2		Welding torch hose package
3		Connection socket, "-" welding current Welding current lead connection for TIG welding torch
4		
5		Connection socket, 5-pole Standard TIG torch control lead
6		Workpiece
7		Connection socket for "+" welding current Workpiece lead connection

- Insert the welding current plug on the welding torch into the welding current connection socket and lock by turning to the right.
- Remove yellow protective cap on G $\frac{1}{4}$ " connecting nipple.
- Screw welding torch shielding gas connection tightly onto the G $\frac{1}{4}$ " connection nipple.
- Insert the control lead plug on the welding machine into the connection socket for the welding torch control lead (5-pole) and tighten.
- Insert the cable plug on the work piece lead into the "+" welding current connection socket and lock by turning to the right.



5.6.2 5-pole control lead



5.6.3 Shielding gas supply (shielding gas cylinder for welding machine)



WARNING



Incorrect handling of shielding gas cylinders!

Incorrect handling of shielding gas cylinders can result in serious and even fatal injury.

- Observe the instructions from the gas manufacturer and in any relevant regulations concerning the use of compressed air!
- Place shielding gas cylinders in the holders provided for them and secure with fixing devices.
- Avoid heating the shielding gas cylinder!

CAUTION



Faults in the shielding gas supply.

An unhindered shielding gas supply from the shielding gas cylinder to the welding torch is a fundamental requirement for optimum welding results. In addition, a blocked shielding gas supply may result in the welding torch being destroyed.

- Always re-fit the yellow protective cap when not using the shielding gas connection.
- All shielding gas connections must be gas tight.



Before connecting the pressure regulator to the gas cylinder, open the cylinder valve briefly to expel any dirt.



5.6.3.1 Connecting the shielding gas supply

- Place the shielding gas cylinder into the relevant cylinder bracket.
- Secure the shielding gas cylinder using a securing chain.

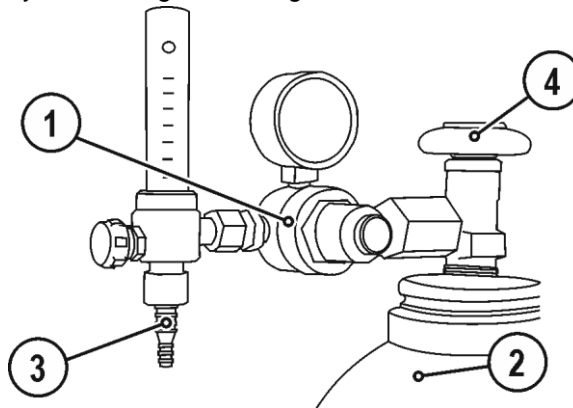


Figure 5-4

Item	Symbol	Description
1		Pressure regulator
2		Shielding gas cylinder
3		Output side of the pressure regulator
4		Cylinder valve

- Tighten the pressure regulator screw connection on the gas bottle valve to be gas-tight.
- Screw gas hose connection crown nut onto the output side of the pressure regulator.

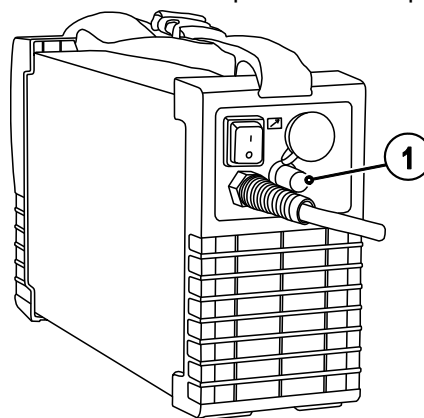


Figure 5-5

Item	Symbol	Description
1		G $\frac{1}{4}$ " connecting nipple Shielding gas connection on the pressure regulator.

- Screw the gas hose connection nipple onto the G $\frac{1}{4}$ " connection nipple.



5.6.3.2 Setting the shielding gas quantity



CAUTION



Electric shocks!

When setting the shielding gas quantity, high voltage ignition pulses or open circuit voltage are applied at the welding torch; these can lead to electric shocks and burning on contact.

- Keep the welding torch electrically insulated from persons, animals or equipment during the setting procedure.



Incorrect shielding gas setting!

- *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!*



Rule of thumb for the gas flow rate:

Diameter of gas nozzle in mm corresponds to gas flow in l/min.

Example: 7mm gas nozzle corresponds to 7l/min gas flow.

- Press the torch trigger and set the shielding gas quantity with the flow gauge of the pressure regulator.



5.6.4 Welding task selection

Operating element	Action	Result
		Select welding procedure
		MMA welding
		TIG welding (non-latched operating mode)
		TIG welding (latched operating mode)
		Signal light green: HF start (contactless) switched on Signal light red: Lift arc start (contact ignition) switched on
		Welding current setting range
		Secondary current AMP% selection
		Secondary current setting Setting range 1% to 200% (percentage depending on the main current).
		Down-slope time selection
		Down-slope time setting sec Setting range 0.0 s to 20.0 s
		Gas post-flow time selection sec
		Gas post-flow time setting Setting range 0.0 s to 20.0 s



This completes the basic settings and you can now start welding.

Further welding parameters, such as gas pre-flow time, are predefined for the most common applications but can be adjusted when necessary- See 5.6.11 chapter.



5.6.5 Arc ignition



The HF ignition type is activated ex works.

To switch the ignition type, access the machine control advanced menu- See 5.6.11 chapter.

5.6.5.1 HF ignition

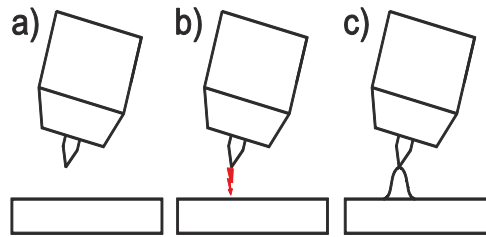


Figure 5-6

The arc is started without contact from high-voltage ignition pulses.

- Position the welding torch in welding position over the workpiece (distance between the electrode tip and workpiece should be approx. 2-3mm).
- Press the torch trigger (high voltage ignition pulses ignite the arc).
- Ignition current flows, and the welding process is continued depending on the operating mode selected.

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

5.6.5.2 Liftarc ignition

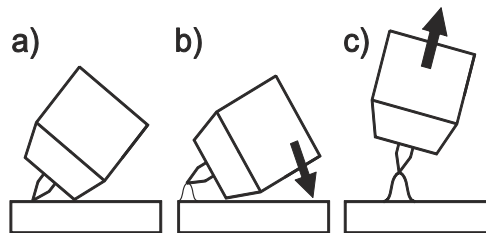


Figure 5-7

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.

5.6.6 TIG automatic cut-out



The automatic cut-out function will be triggered by two conditions during the welding process:

- During the ignition phase (ignition fault) If there is no welding current within 3s after starting the welding.**
- During the welding phase (arc interruption) If the arc is interrupted for longer than 3s.**

In both cases, the welding machine ends the ignition or welding process immediately.



5.6.7 Function sequences/operating modes

Using the welding parameter push-button and welding parameter setting rotary knob the sequence parameters are set.

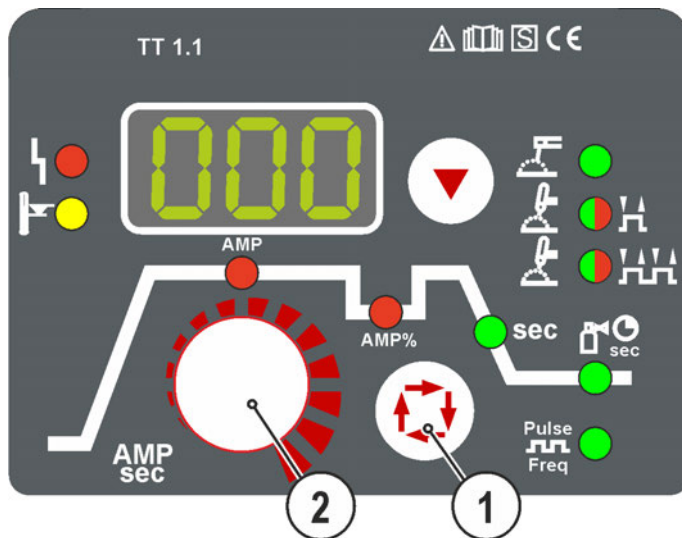


Figure 5-8

Item	Symbol	Description
1		Select welding parameters button This button is used to select the welding parameters depending on the welding process and operating mode used.
2		Welding parameter setting rotary dial Setting currents, times and parameters.

By pressing the "select welding parameter" push-button for approx. 2 s you can access the advanced settings and optimise further parameters for your welding task.

- See 5.6.11 chapter

5.6.7.1 Legend



For parameter setting, - See 5.6.11 chapter.

Symbol	Meaning
	Gas pre-flows (factory setting 0.5 s)
	I_{start} Ignition current (factory setting 20%)
	t_{Up} Upslope time (factory setting 1.0 s)
	AMP Main current (minimum to maximum current)
	AMP% Secondary current (1% to 200% of main current AMP)
	t_{Down} Downslope time
	I_{end} End-crater current (factory setting 20%)
	Gas post-flow time
	Press torch trigger 1
	Release torch trigger 1
	I Welding current
	t Time



5.6.7.2 TIG non-latched operation



When the foot-operated remote control RTF is connected, the machine switches automatically to non-latched operation.

The up- and down-slopes are switched off.

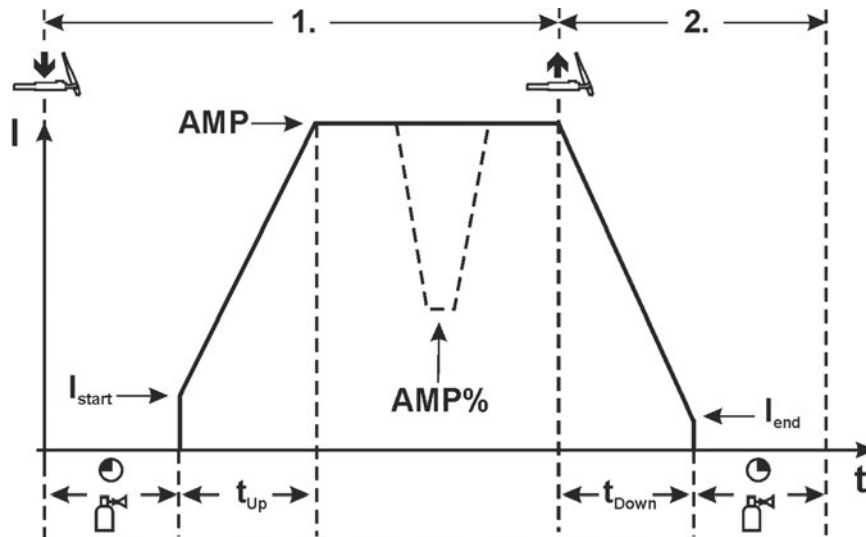


Figure 5-9

1st cycle:

- Press and hold torch trigger 1.
- The gas pre-flow time elapses.
- HF ignition pulses jump from the electrode to the workpiece, the arc ignites.
- The welding current flows and immediately assumes the value set for the ignition current I_{start} .
- HF is switched off.
- The welding current increases with the adjusted up-slope time to the main current AMP.

If torch trigger 2 is pressed in addition to torch trigger 1 during the main current phase, the welding current drops at the slope time set (t_{S1}) to the secondary current AMP%.

After torch trigger 2 is released, the welding current rises at the slope time set (t_{S2}) back to the main current AMP.

2nd cycle:

- Release torch trigger 1.
- The main current falls in the set down-slope time to the end-crater current I_{end} (minimum current).

If the 1st torch trigger is pressed during the down-slope time, the welding current returns to the main current AMP set.

- The main current reaches the end-crater current I_{end} , the arc extinguishes.
- The set gas post-flow time elapses.



When the foot-operated remote control RTF is connected, the machine switches automatically to non-latched operation.

The up- and down-slopes are switched off.



5.6.7.3 TIG latched operation

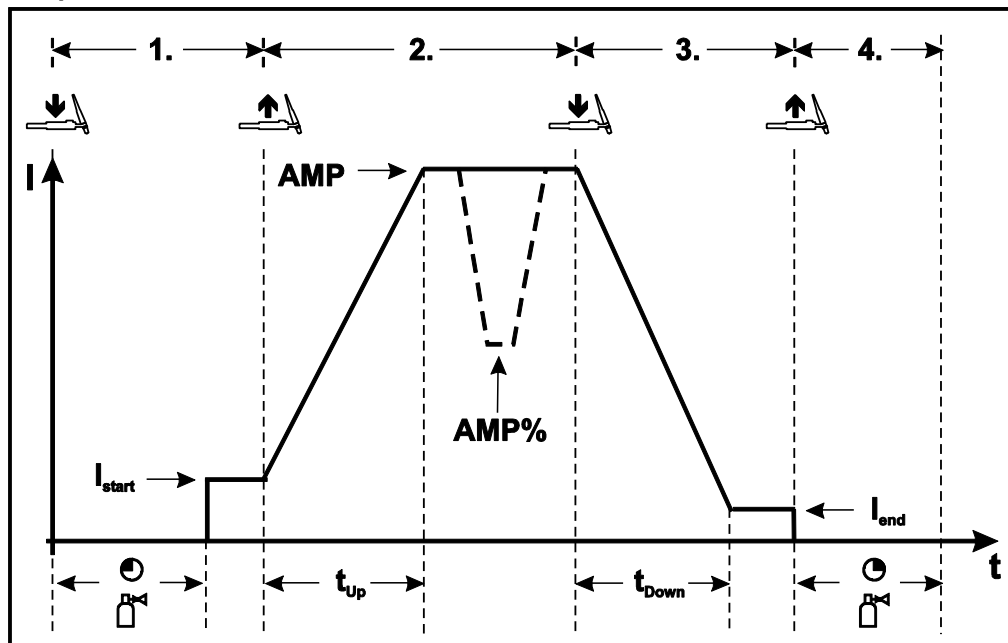


Figure 5-10

Step 1

- Press torch trigger 1, the gas pre-flow time elapses.
- HF ignition pulses jump from the electrode to the workpiece, the arc ignites.
- Welding current flows and immediately assumes the ignition current value set (search arc at minimum setting). HF is switched off.

Step 2

- Release torch trigger 1.
- The welding current increases with the set up-slope time to the main current AMP.

Switching from main current AMP to secondary current AMP%:

- Press torch trigger 2 or
- Tap torch trigger 1

The slope times can be set.

Step 3

- Press torch trigger 1.
- The main current drops with the set down-slope time to the end-crater current I_{end} (minimum current).

Step 4

- Release torch trigger 1, the arc extinguishes.
- The set gas post-flow time begins.

Immediate termination of the welding procedure without down-slope and end-crater current:

- Briefly press the 1st torch trigger (3rd and 4th step).
The current drops to zero and the gas post-flow time begins.



When the foot-operated remote control RTF is connected, the machine switches automatically to non-latched operation.

The up- and down-slopes are switched off.



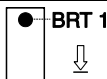
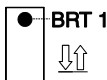
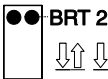
To use the alternative welding start (tapping start) a double-digit torch mode (11-x) has to be set at the welding machine control. The number of torch modes available depends on the machine type. For single-digit torch modes (1-x) this function is disabled.



5.6.8 Welding torch (operating variants)

Welding torches in different operating versions can be connected. The torch trigger (BRT) functions and operating elements can be customised in different modes.

Explanation of operating element symbols:

Symbol	Description
 BRT 1	Press torch trigger
 BRT 1	Tap torch trigger
 BRT 2	Tap torch trigger and then press

- See 5.6.9 chapter

5.6.8.1 Tap torch trigger (tapping function)



Swiftly tap the torch trigger to change the function.

The torch mode set determines the operating mode of the tapping function.



5.6.9 Torch mode and up/down speed setting

The user has the modes 1 to 3 and modes 11 to 13 available. Modes 11 to 13 include the same function options as 1 to 3, but without tapping function for the secondary current.

The function options in the individual modes can be found in the tables for the corresponding torch types.

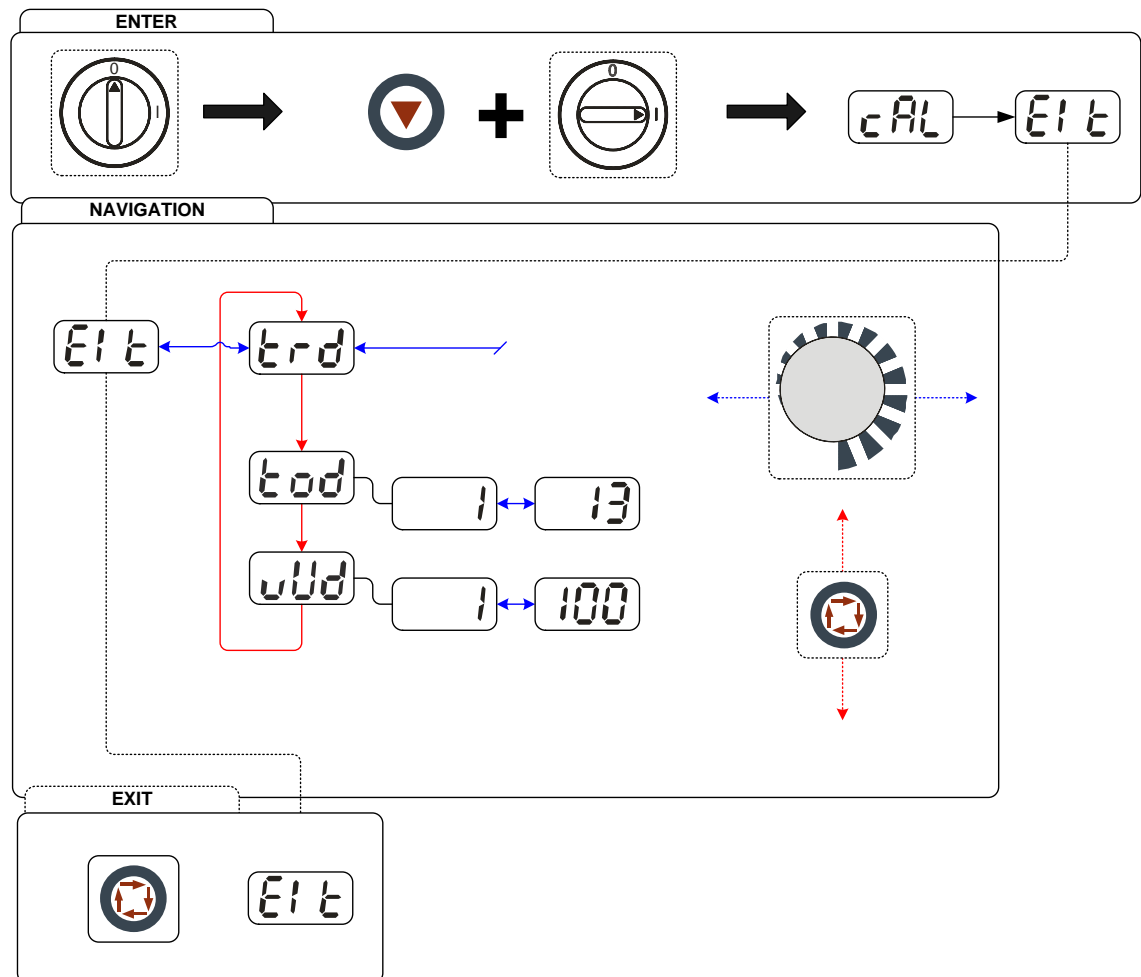


Figure 5-11

Display	Setting/selection
cAL	Calibration The machine will be calibrated for approx 2 seconds each time it is switched on.
EIt	Exit the menu Exit
trd	Torch configuration menu Set welding torch functions
tod	Torch mode (factory setting 1)
vud	Up-/Down speed Increase value = rapid current change (factory setting 10) Reduce value = slow current change



5.6.9.1 Standard TIG torch (5-pole)

Standard torch with one torch trigger:



Diagram	Operating elements	Explanation of symbols
		BRT1 = Torch trigger 1 (welding current on/off; secondary current via tapping function)
Functions	mode	Operating elements
Welding current On/Off	1 (factory-set)	
Secondary current (Latched mode)		












Standard torch with two torch triggers:

Diagram	Operating elements	Explanation of symbols
		BRT1 = torch trigger 1 BRT2 = torch trigger 2
Functions	mode	Operating elements
Welding current On/Off	1 (factory-set)	
Secondary current		
Secondary current (tapping mode) / (latched mode)		
Welding current On/Off	3	
Secondary current (tapping mode) / (latched mode)		
Up function		
Down function		



Standard torch with one rocker (MG rocker, two torch triggers)

Diagram	Operating elements	Explanation of symbols
		BRT 1 = torch trigger 1 BRT 2 = torch trigger 2

Functions	mode	Operating elements
Welding current On/Off	1 (factory-set)	
Secondary current		
Secondary current (tapping mode) / (latched mode)		
Welding current On/Off	2	
Secondary current (tapping mode)		
Up function		
Down function		
Welding current On/Off	3	
Secondary current (tapping mode) / (latched mode)		
Up function		
Down function		



5.6.10 Average value pulse welding

Average value pulse welding means that two currents are switched periodically, a current average value (AMP), a pulse current (Ipuls), a balance (bAL) and a frequency (FrE) having been defined first. The predefined ampere current average value is decisive, the pulse current (Ipuls) is defined by the **PL** parameter as a percentage of the current average value (AMP). The pulse pause current (IPP) requires no setting. This value is calculated by the machine control, so that the welding current average value (AMP) is maintained at all times.

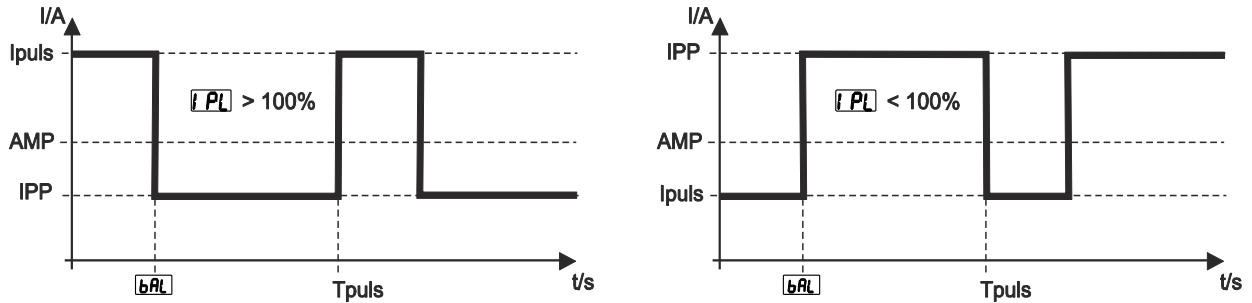


Figure 5-12

AMP = Main current; e.g. 100 A

IPL = Pulse current = $IP1 \times AMP$; e.g. $170\% \times 100 \text{ A} = 170 \text{ A}$

IPP = Pulse pause current

Tpuls = Duration of one pulse cycle = $1/FrE$; e.g. $1/1 \text{ Hz} = 1 \text{ s}$

bAL = Balance = $bAL \times Tpuls$; e.g. $30\% \times 1 \text{ s} = 0.3 \text{ s}$

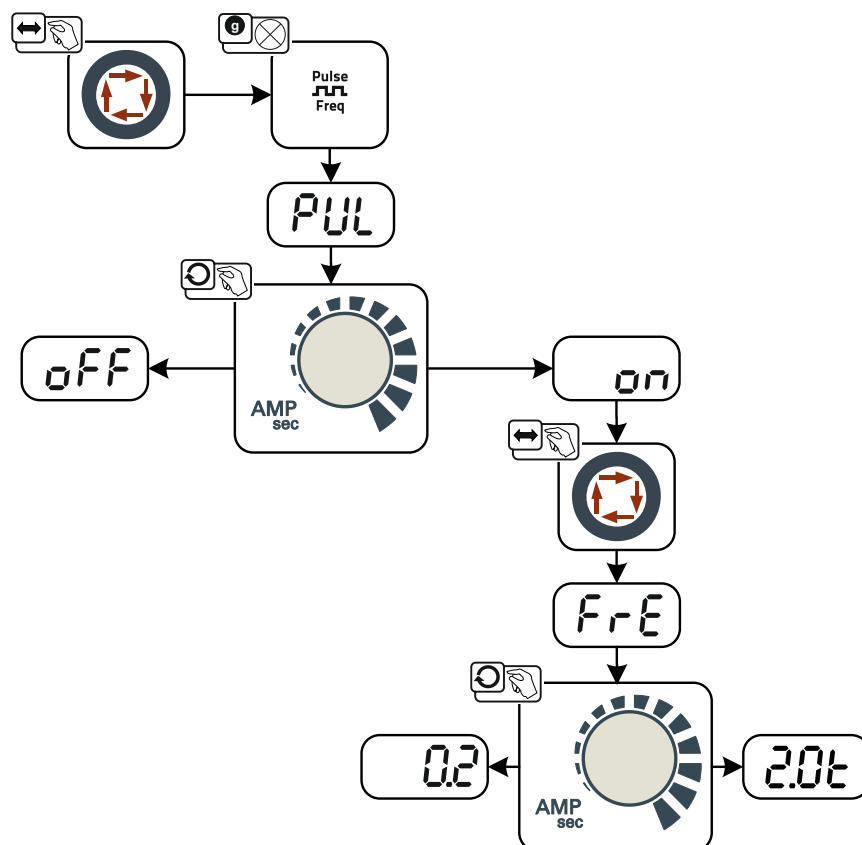



Figure 5-13

Display	Setting/selection
PUL	Pulse welding (average value pulses) on -----Function switched on off -----Function switched off (ex works)
Fr-E	Pulse frequency Setting range: 0.2 Hz to 2.0 kHz, ex works: 2.8 Hz

 **For parameter setting, - See 5.6.11 chapter.**



5.6.11 Expert menu (TIG)

 To change the advanced setting parameters, hold down the "Welding parameters" button for 2 seconds after selecting the welding process.
The following diagram shows the setting options.

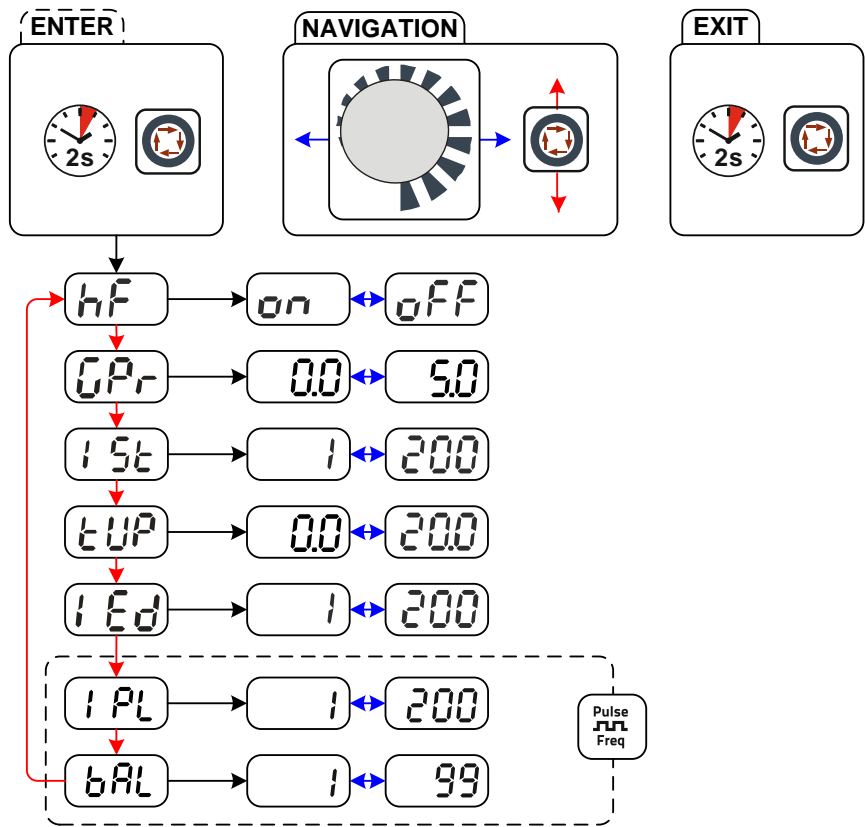







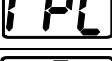




Figure 5-14

Display	Setting/selection
	Switch ignition mode  HF ignition  Liftarc
	Gas pre-flow time Setting range: 0.0 s to 5.0 s (0.1 s increments)
	Ignition current Setting: 1% to 200% of main current AMP (depending on main current)
	Upslope time to main current Setting: 0.0 sec. to 20.0 sec. (factory setting 1.0 sec.)
	End-crater current Setting range in percent: 1 % to 200 % depending on main current
	Pulse current Setting range 1% to 200%
	Pulse balance Percentage of time from pulse cycle Tpuls for pulse current  Setting range 1% to 99%



5.7 MMA welding

CAUTION



Risk of being crushed or burnt.

When replacing spent or new stick electrodes

- Switch off machine at the main switch
- Wear appropriate safety gloves
- Use insulated tongs to remove spent stick electrodes or to move welded workpieces and
- Always put the electrode holder down on an insulated surface.

5.7.1 Connecting the electrode holder and workpiece lead

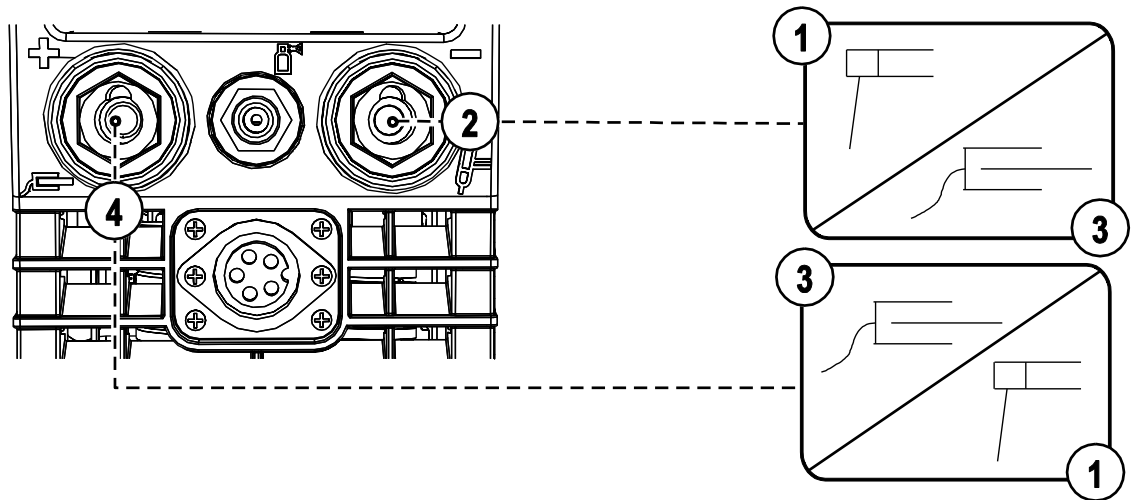






Figure 5-15

Item	Symbol	Description
1		Electrode holder
2		Connection socket, "-" welding current Workpiece lead or electrode holder connection
3		Workpiece
4		Connection socket for "+" welding current Electrode holder or workpiece lead connection

- Insert cable plug of the electrode holder into either the "+" or "-" welding current connection socket and lock by turning to the right.
- Insert cable plug of the workpiece lead into either the "+" or "-" welding current connection socket and lock by turning to the right.



Polarity depends on the instructions from the electrode manufacturer given on the electrode packaging.



5.7.2 Welding task selection

Operating element	Action	Result
		Select welding process
		MMA welding
		Set welding current



This completes the basic settings and you can now start welding.

The optimum values for hot start current, hot start time and arcforcing are predefined ex works, but can be adjusted when necessary- See 5.7.7 chapter.

5.7.3 Hotstart

The hotstart device improves the ignition of the stick electrodes using an increased hotstart current.

After striking the stick electrode, the arc ignites with hotstart current (iht) for the preset hotstart time (tht) and then reduces to the main current (AMP).

The parameter values for hotstart current and time can be optimised for the electrode types being used.



For parameter setting, - See 5.7.7 chapter.

The hotstart device improves the ignition of the stick electrodes using an increased ignition current.

- a) = Hotstart time
- b) = Hotstart current
- I = Welding current
- t = Time

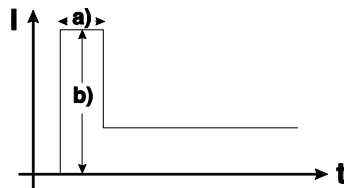


Figure 5-16

5.7.4 Arcforce

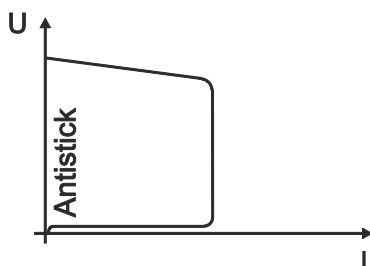
During the welding process, arcforce prevents the electrode sticking in the weld pool with increases in current. This makes it easier to weld large-drop melting electrode types at low current strengths with a short arc in particular.



For parameter setting, - See 5.7.7 chapter.



5.7.5 Antistick



Anti-stick prevents the electrode from annealing.

If the electrode sticks in spite of the Arcforce device, the machine automatically switches over to the minimum current within about 1 second to prevent the electrode from overheating. Check the welding current setting and correct according to the welding task!

5.7.6 Average value pulse welding

Average value pulse welding means that two currents are switched periodically, a current average value (AMP), a pulse current (I_{puls}), a balance (bAL) and a frequency (FrE) having been defined first. The predefined ampere current average value is decisive, the pulse current (I_{puls}) is defined by the IPL parameter as a percentage of the current average value (AMP). The pulse pause current (IPP) requires no setting. This value is calculated by the machine control, so that the welding current average value (AMP) is maintained at all times.

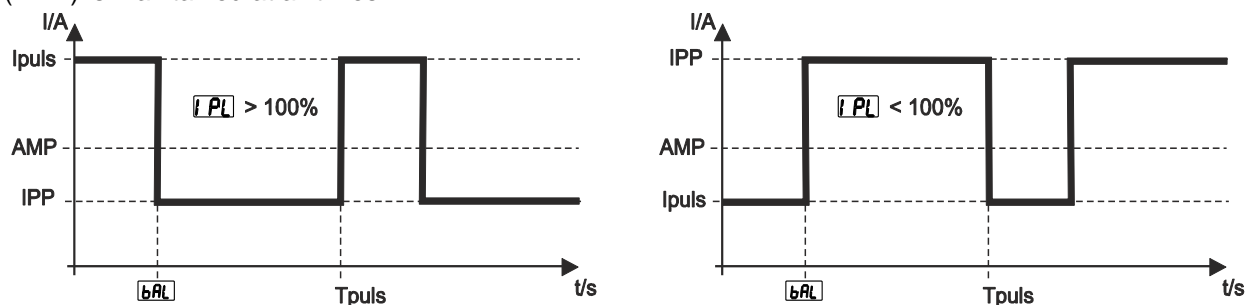


Figure 5-17

AMP = Main current; e.g. 100 A

$IPL = \text{Pulse current} = IPL \times AMP$; e.g. $170\% \times 100 \text{ A} = 170 \text{ A}$

IPP = Pulse pause current

$Tpuls = \text{Duration of one pulse cycle} = 1/FrE$; e.g. $1/1 \text{ Hz} = 1 \text{ s}$

$bAL = \text{Balance} = bAL \times Tpuls$; e.g. $30\% \times 1 \text{ s} = 0.3 \text{ s}$

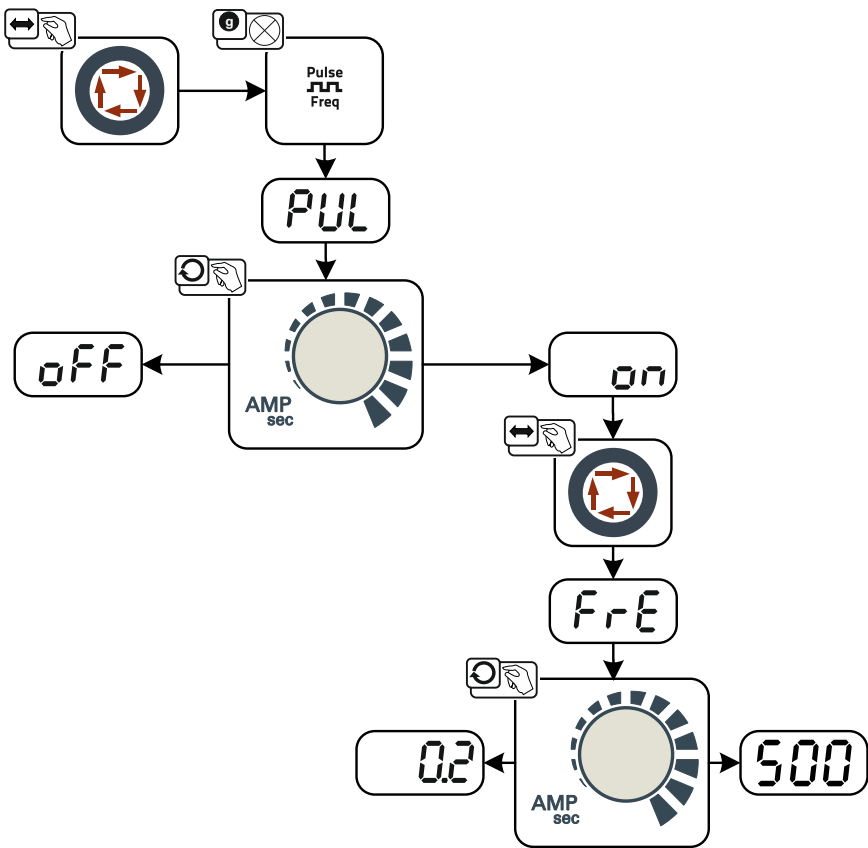


Figure 5-18

Display	Setting/selection
PUL	Pulse welding (average value pulses) on ----- Function switched on off ----- Function switched off (ex works)
Fr-E	Pulse frequency Setting range 0.2 Hz to 500 Hz, 1.2 Hz ex works.

For parameter setting, - See 5.7.7 chapter.



5.7.7 Expert menu (MMA)



To change the advanced setting parameters, hold down the "Welding parameters" button for 2 seconds after selecting the welding process.

The following diagram shows the setting options.

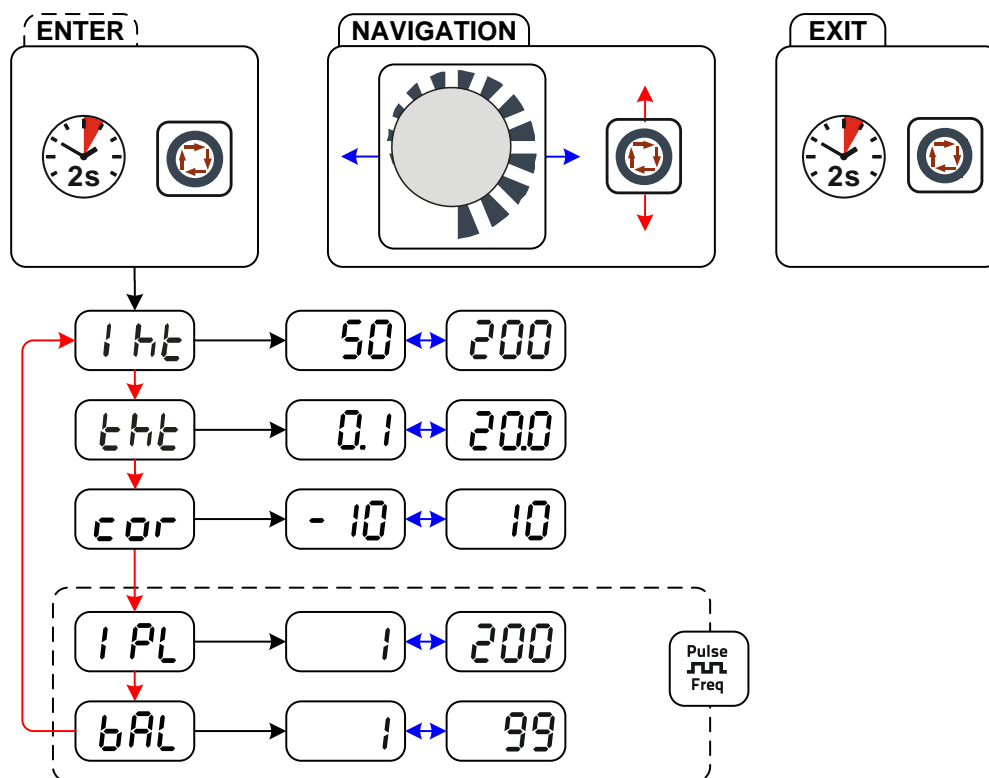


Figure 5-19

Display	Setting/selection
1 ht	Hotstart current Hotstart current setting (50 % to 200 %)
t ht	Hotstart time Hotstart time setting (0,1 s to 20,0 s)
cor	Arcforce correction (setting -10 to 10, factory setting 0) <ul style="list-style-type: none">• Increase value > harder arc• Decrease value > softer arc
1 PL	Pulse current Setting range 1% to 200%, ex works: 142%
bal	Pulse balance Percentage of time from pulse cycle Tpuls for pulse current 1 PL Setting range 1% to 99%, ex works: 30%

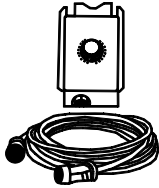


5.8 Remote control



The remote controls are operated on the 19-pole remote control connection socket (analogue).

5.8.1 TW-RT1 19POL



Functions

- Infinitely adjustable welding current (0% to 100%) depending on the preselected main current on the welding machine.

5.8.2 Power-saving mode (Standby)

You can activate the power-saving mode by either pressing the push-button - See 5.9 chapter for a prolonged time or by setting a parameter in the machine configuration menu (time-controlled power-saving mode)- See 5.9 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. tapping the torch trigger) deactivates power-saving mode and the machine is ready for welding again.

5.9 Machine configuration menu



ENTER (Enter the menu)

- **Switch off machine at the main switch.**
- **Hold down the "Welding process" button and simultaneously switch the machine on again. Wait until the "Elt" menu item is shown and release the button.**

NAVIGATION (navigating in the menu)

- **Parameters are selected by pressing the "welding parameters" button.**
- **Set or change the parameters by turning the "welding parameter setting" rotary dial.**

EXIT (Exit the menu)

- **Select the "Elt" menu item.**
- **Press the "Welding parameters" button (settings will be applied, machine changes to the ready-to-operate status).**

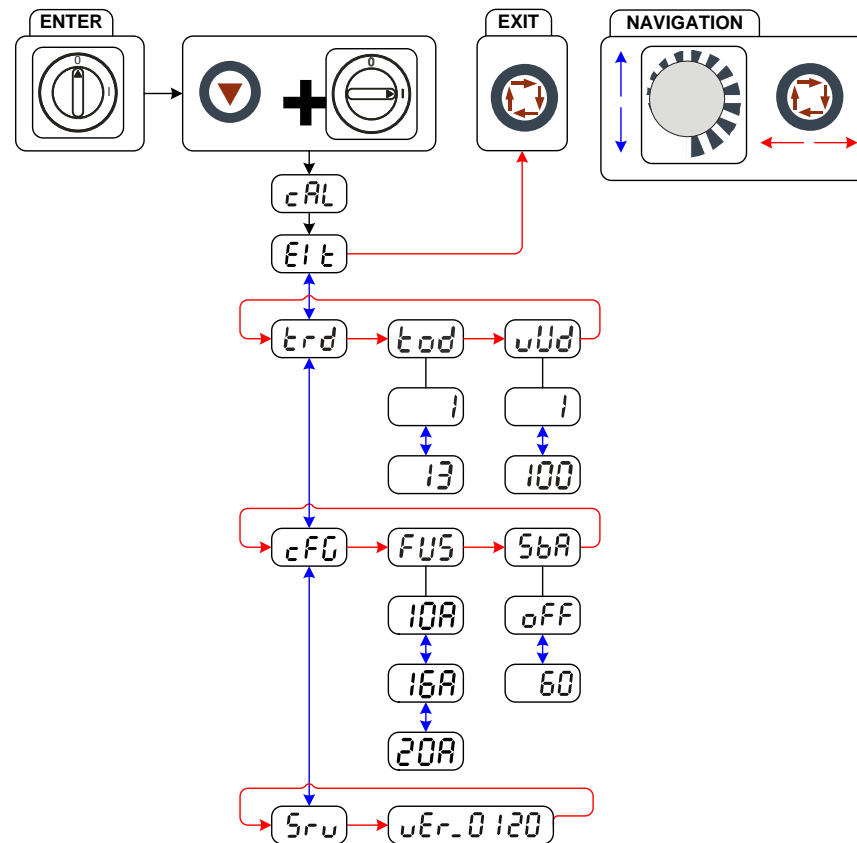


Figure 5-20

Display	Setting/selection
cAL	Calibration The machine will be calibrated for approx 2 seconds each time it is switched on.
EXIT	Exit the menu Exit
trd	Torch configuration menu Set welding torch functions
tod	Torch mode (factory setting 1)
uUd	Up-/Down speed Increase value = rapid current change (factory setting 10) Reduce value = slow current change
cFG	Machine configuration Settings for machine functions and parameter display
FUS	Dynamic power adjustment 20 A -----Setting for 20 A mains fuse protection 16 A -----Setting for 16 A mains fuse protection (factory setting) 10 A -----Setting for 10 A mains fuse protection
SbA	Time-based power-saving mode oFF -----inactivated 5 min.-60 min. = Time to activation of power-saving mode in case of inactivity.
Srv	Service menu Any changes to the service menu should be agreed with the authorised service personnel.
uEr	Software version of the machine control Version display



6 Maintenance, care and disposal



DANGER



Do not carry out any unauthorised repairs or modifications!

To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!

The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!



Risk of injury from electric shock!

Cleaning machines that are not disconnected from the mains can lead to serious injuries!

- Disconnect the machine completely from the mains.
- Remove the mains plug!
- Wait for 4 minutes until the capacitors have discharged!

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.

6.1 General

When used in the specified environmental conditions and under normal operating conditions, this machine is largely maintenance-free and requires a minimum of care.

There are some points, which should be observed, to guarantee fault-free operation of your welding machine. Among these are regular cleaning and checking as described below, depending on the pollution level of the environment and the length of time the unit is in use.

6.2 Maintenance work, intervals

6.2.1 Daily maintenance tasks

6.2.1.1 Visual inspection

- Mains supply lead and its strain relief
- Gas tubes and their switching equipment (solenoid valve)
- Other, general condition

6.2.1.2 Functional test

- Welding current cables (check that they are fitted correctly and secured)
- Gas cylinder securing elements
- Operating, message, safety and adjustment devices (Functional test)

6.2.2 Monthly maintenance tasks

6.2.2.1 Visual inspection

- Casing damage (front, rear and side walls)
- Transport elements (strap, lifting lugs, handle)

6.2.2.2 Functional test

- Selector switches, command devices, emergency stop devices, voltage reducing devices, message and control lamps



6.2.3 Annual test (inspection and testing during operation)



The welding machine may only be tested by competent, capable persons! A capable person is one who, because of his training, knowledge and experience, is able to recognise the dangers that can occur while testing welding power sources as well as possible subsequent damage and who is able to implement the required safety procedures.

A periodic test according to IEC 60974-4 "Periodic inspection and test" has to be carried out. In addition to the regulations on testing given here, the relevant local laws and regulations must also be observed.

6.3 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!***



6.3.1 Manufacturer's declaration to the end user

- According to European provisions (guideline 2002/96/EG of the European Parliament and the Council of January, 27th 2003), 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 is to be placed for disposal or recycling in the waste separation systems provided for this purpose.
- According to German law (law governing the distribution, taking back and environmentally correct disposal of electric and electronic equipment (ElektroG) from 16.03.2005), 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.
- Information about giving back used equipment or about collections can be obtained from the respective municipal administration office.
- TEAMWELDER is registered for the Rema® System for disposal and recycling with the Reg. No. 07416/08-ECZ, and EKO-KOM with the Reg. No. F00034148.

6.4 Meeting the requirements of RoHS

We, TEAMWELDER Germany GmbH, hereby confirm that all products which we supply to you that are subject to the RoHS Directive comply with the requirements of the RoHS (Directive 2011/65/EU).



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 Checklist for rectifying faults



The correct machine equipment for the material and process gas in use is a fundamental requirement for perfect operation!

Legend	Symbol	Description
	✓	Fault/Cause
	✗	Remedy

Functional errors

- ✓ All machine control signal lights are illuminated after switching on
- ✓ No machine control signal light is illuminated after switching on
- ✓ No welding power
 - ✗ Phase failure > check mains connection (fuses)
- ✓ Connection problems
 - ✗ Make control lead connections and check that they are fitted correctly.

No arc ignition

- ✓ Incorrect ignition type setting.
 - ✗ Set ignition type changeover switch to the HF ignition setting.

Bad arc ignition

- ✓ Material inclusions in the tungsten electrode due to contact with filler material or workpiece
 - ✗ Regrind or replace the tungsten electrode
- ✓ Bad current transfer on ignition
 - ✗ Check the setting on the "Tungsten electrode diameter/Ignition optimisation" rotary dial and increase if necessary (higher ignition energy).

Welding torch overheated

- ✓ Loose welding current connections
 - ✗ Tighten power connections on the torch and/or on the workpiece
 - ✗ Tighten contact tip correctly
- ✓ Overload
 - ✗ Check and correct welding current setting
 - ✗ Use a more powerful welding torch

Unstable arc


- ✓ Material inclusions in the tungsten electrode due to contact with filler material or workpiece
 - ✗ Regrind or replace the tungsten electrode
- ✓ Incompatible parameter settings
 - ✗ Check settings and correct if necessary

Pore formation

- ✓ Inadequate or missing gas shielding
 - ✗ Check shielding gas setting and replace shielding gas cylinder if necessary
 - ✗ Shield welding site with protective screens (draughts affect the welding result)
 - ✗ Use gas lens for aluminium applications and high-alloy steels
- ✓ Unsuitable or worn welding torch equipment
 - ✗ Check size of gas nozzle and replace if necessary
- ✓ Condensation (hydrogen) in the gas tube
 - ✗ Purge hose package with gas or replace



7.2 Machine faults (error messages)

 **A welding machine error is indicated by the collective fault signal lamp (A1) lighting up and an error code (see table) being displayed in the machine control display. In the event of a machine error, the power unit shuts down.**

 **The display of possible error numbers depends on the machine version (interfaces/functions).**

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

Error message	Possible cause	Remedy
E 0	Start signal set in the event of errors	Do not press the torch trigger or the foot-operated remote control
E 4	Temperature error	Allow the machine to cool down
E 5	Mains overvoltage	Switch off the machine and check the mains voltage
E 6	Mains undervoltage	
E 7	Electronics error	Switch the machine on and off again. If the error persists, notify service department
E 9	Secondary overvoltage	
E12	Voltage reduction error (VRD)	
E13	Electronics error	
E14	Adjustment error in current recording	Switch off the machine, place the electrode holder in an insulated position and switch the machine back on. If the error persists, notify service department
E15	Error in on of the electronics supply voltages	Switch the machine off and on again. If the error persists, notify service department
E23	Temperature error	Allow the machine to cool down
E32	Electronics error	Switch the machine on and off again. If the error persists, notify service department
E33	Adjustment error in voltage recording	
E34	Electronics error	Switch the machine on and off again. If the error persists, notify service department
E37	Temperature error	Allow the machine to cool down
E40	Motor fault	Check wire feed unit, switch the machine off and on again, inform the service department if the fault persists.
E55	Failure of a mains phase	Switch off the machine and check the mains voltage
E58	Short circuit in welding circuit	Switch off machine and check welding current leads for correct installation, e.g., put down electrode holder in an electrically insulated manner, disconnect degausser current lead.



7.3 Resetting welding parameters to the factory settings

 All customised welding parameters that are stored will be replaced by the factory settings.

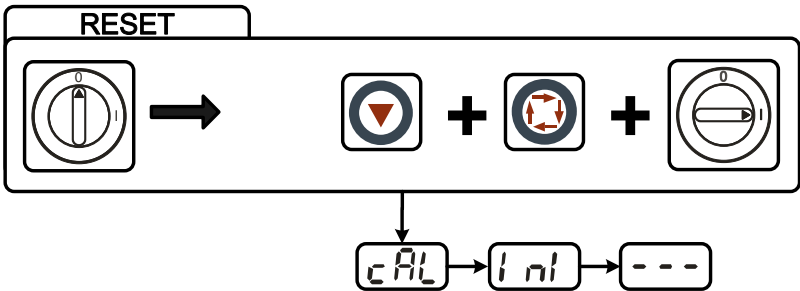







Figure 7-1

Display	Setting/selection
	Calibration The machine will be calibrated for approx 2 seconds each time it is switched on.
	Initialising Keep the push-button pressed until "InI" is shown on the display.
	Input confirmation User entries are applied, release button(s).

7.4 Display machine control software version

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

7.5 Dynamic power adjustment

 This requires use of the appropriate mains fuse.
Observe mains fuse specification- See 8 chapter!

The dynamic power adjustment automatically adjusts the welding performance to an uncritical level for the fuse.

The dynamic power adjustment can be set in three increments in the machine configuration menu using parameter "FUS": 25 A, 16 A, 10 A.

The currently selected value will be shown on the "cal" section of the display for three seconds after the machine has been switched on.



8 Technical data



Performance specifications and guarantee only in connection with original spare and replacement parts!

8.1 TIG 180 DC

	TIG	MMA
Setting range for welding current	5 A–180 A	5 A–150 A
Setting range for welding voltage	10.2 V–17.2 V	20.2 V–26.0 V
Duty cycle (DC) at 40 °C		
35%	180 A	150 A
60%	150 A	120 A
100%	120 A	100 A
Load cycle	10 min (60% DC \triangle 6 min welding, 4 min pause)	
Open circuit voltage	90 V	
Mains voltage (tolerances)	1 x 230 V (-40% to +15%)	
Frequency	50/60 Hz	
Mains fuse (safety fuse, slow-blow)	1 x 16 A	
Mains connection lead	H07RN-F3G2,5	
Max. connected load	5,3 kVA	6,4 kVA
Recommended generator rating	8.6 kVA	
cos ϕ /efficiency	0.99/86%	
Insulation class/protection classification	H/IP 23	
Ambient temperature	-25 °C to +40 °C	
Machine cooling	Fan	
Workpiece cable	35 mm ²	
Dimensions L x W x H in mm	475 x 135 x 250	
Weight	6.9 kg	
EMC class	A	
Constructed to standard	IEC 60974-1, -3, -10 S / C E	



9 Accessories

9.1 Internet

For the accessories available for your product go to www.teamwelder.com.

Startseite Service Fachwissen Über Uns

2 JAHRE GARANTIE

Produktsuche Suche

Teamwelder - Ihr zuverlässiger Partner für hochwertige Schweißgeräte in Industriequalität - und für den ambitionierten Handwerker! Wir bieten Ihnen das komplette Portfolio an Schweißstromquellen für Ihren Bedarf! Unsere Schweißgeräte - Made in EU - bieten Ihnen hochwertige Qualität und den neuesten Stand der Technik zum besten Preis. Erleben Sie das neue Schweißgefühl eines Profigerätes für Ihre Anwendung - Sie werden das Schweißgerät nicht mehr hergeben. Präzisionsgerechte Bedienelemente, hohe Einschüddauer und umfangreiches Zubehör lassen Ihr Schweißergebnis perfekt werden - so macht Schweißen Spaß!

MIG 300 D3 Synergic
MIG/MAG Inverter Schweißgerät - der kompakte und kraftvolle Allrounder für Baustelle und Werkstatt. MIG/MAG, WIG und E-Hand in einem Gerät!

E-Hand-Schweißgeräte

MIG/MAG-Schweißgeräte

WIG-Schweißgeräte

Zubehör

Top 10 Artikel

TIG 180 DC
TEAMWELDER TIG 180 DC - professionell WIG-Schweißen in der...

TIG 180 AC/DC
TEAMWELDER TIG 180 AC/DC - professionell WIG-Schweißen in der...

MIG 250 S
TEAMWELDER MIG 250 S MIG/MAG Schweißgerät...

MIG 300 D3 Synergic
TEAMWELDER MIG 300 D3 SYNERGIC - der kompakte und kraftvolle...

MIG 180 D2 Synergic
TEAMWELDER MIG 180 D2 SYNERGIC - der kompakte Allrounder für...

MMA 160
TEAMWELDER MMA 160 - der ideale Begleiter für die Baustelle und...

Figure 9-1