



TIG welding torch

SPOTARC TIG 18 W SPOTARC TIG 26 G

Observe additional system documents!

099-500046-EW501

14.06.2011

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General instructions

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 accident prevention regulations!
- Observe all local regulations!
- Confirm with a signature where appropriate.

NOTE



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.

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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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.

NOTE














Special technical points which users must observe.

- Notes include the "NOTE" keyword in the heading without a general warning symbol.

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
	Press
	Do not press
	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



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!



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 Maintenance and Testing 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).



Validity of this document!

This document describes an accessory and is only valid in combination with the operating instructions for the power source being used (welding machine)!

- Read the operating instructions, in particular the safety instructions for the power source (welding machine)!

WARNING



Risk of accidents if these safety instructions are not observed!

Non-observance of these safety instructions is potentially fatal!

- Carefully read the safety information in this manual!
- Observe the accident prevention regulations in your country.
- Inform persons in the working area that they must observe the regulations!



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!

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!

**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!

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.

**Trained personnel!****Commissioning is reserved for persons who have the relevant expertise of working with arc welding machines.**

2.4 Transport

CAUTION



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!

2.4.1 Scope of delivery

The delivery is checked and packaged carefully before dispatch, however it is not possible to exclude the possibility of damage during transit.

Receiving inspection

- Check that the delivery is complete using the delivery note!

In the event of damage to the packaging

- Check the delivery for damage (visual inspection)!

In the event of complaints

If the delivery has been damaged during transport:

- Please contact the last haulier immediately!
- Keep the packaging (for possible checking by the haulier or for the return shipment).

Packaging for returns

If possible, please use the original packaging and the original packaging material. If you have any queries on packaging and protection during transport, please contact your supplier.

2.5 Ambient conditions

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)!

2.5.1 In operation

Temperature range of the ambient air:

- -10 °C to +40 °C

Relative air humidity:

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

2.5.2 Transport and storage

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

- -25 °C to +55 °C

Relative air humidity

- Up to 90% at 20 °C

3 Intended use

This machine has been manufactured according to the latest developments in technology and current regulations and standards. It must only be operated in line with the instructions on correct usage.

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!

3.1 Applications

3.1.1 spotArc

This process is suitable for tack welding or joint welding of metal sheets made from steel and CrNi alloys up to a thickness of approximately 2.5 mm. Metal sheets of different thicknesses can also be welded on top of one another. As this is a one-sided process, it is also possible to weld metal sheets onto tubular sections such as round or square pipes. In arc spot welding, the arc melts through the upper metal sheet and the lower metal sheet is melted onto it. This produces flat, fine-textured welding tacks which require little or no post weld work, even in visible areas.

3.2 Documents which also apply

3.2.1 Warranty

NOTE



For further information, please see the accompanying supplementary sheets "Machine and Company Data, Maintenance and Testing, Warranty"!

3.2.2 Declaration of Conformity



The designated machine conforms to EC Directives and standards in terms of its design and construction:

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

This declaration shall become null and void in the event of unauthorised modifications, improperly conducted repairs, non-observance of the deadlines for the repetition test and / or non-permitted conversion work not specifically authorised by the manufacturer.

The original copy of the declaration of conformity is enclosed with the unit.

3.2.3 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.

3.2.4 Service documents (spare parts)

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)!

Spare parts can be obtained from the relevant authorised dealer.

4 Machine description – quick overview

4.1 SPOTARC TIG 18/26

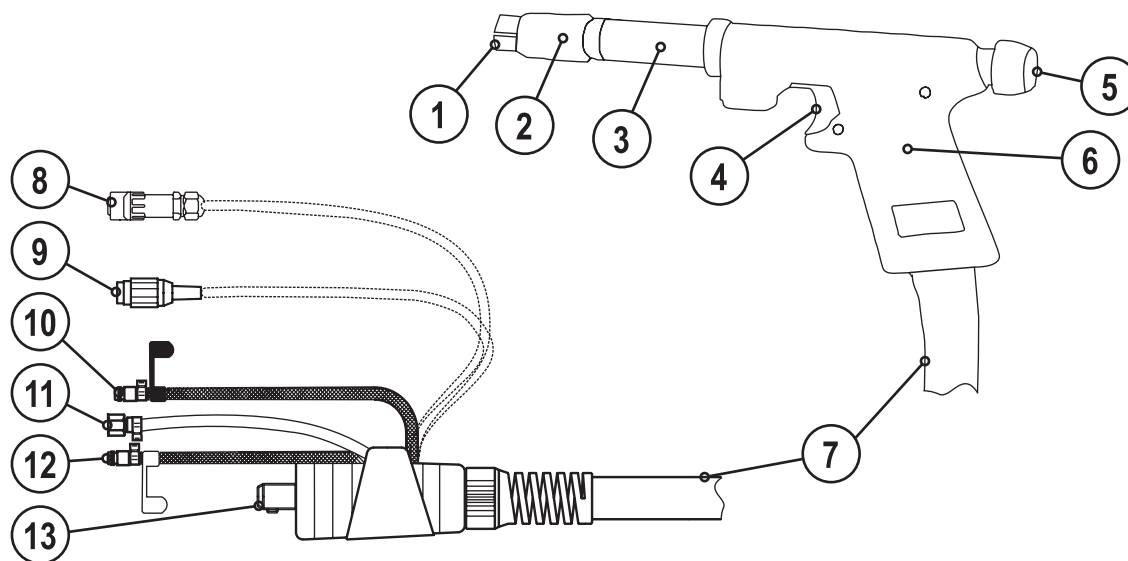


Figure 4-1

Item	Symbol	Description
1		Spot welding nozzle
2		Gas nozzle body
3		Welding torch head
4		Torch trigger
5		Torch cap
6		Torch body
7		Tube package
8		Connector plug, 8-pole Control lead
9		Connector plug, 5-pole Control lead
10		Quick connect coupling (red) coolant return
11		Connecting nipple G $\frac{1}{4}$, shielding gas connection
12		Quick connect coupling (blue) coolant supply
13		Welding torch decentral connection

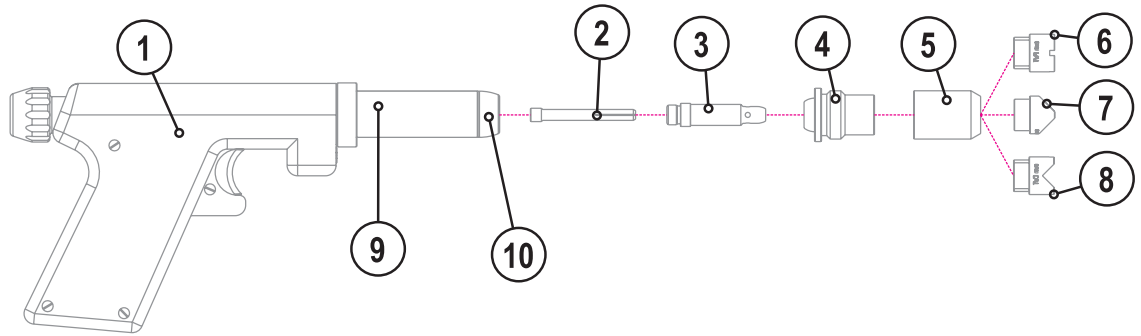


Figure 4-2

Item	Symbol	Description
1		Torch body
2		Collet
3		Collet casing
4		Gas nozzle
5		Gas nozzle body
6		Spot welding nozzle, flat weld
7		Spot welding nozzle, fillet weld
8		Spot welding nozzle, edge weld
9		Welding torch head
10		Insulation

4.2 Setting gauge

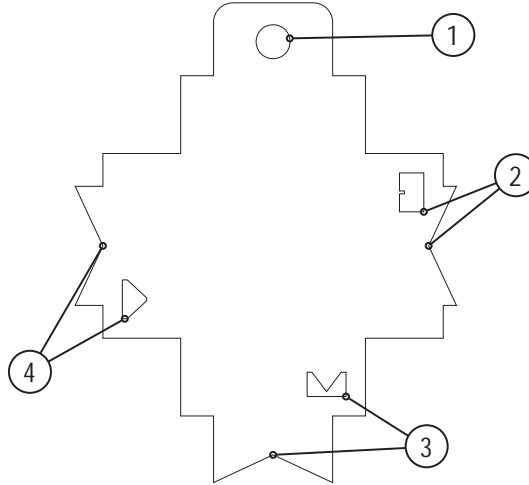


Figure 4-3

Item	Symbol	Description
1		Fixing hole
2		Gauge, flat weld
3		Gauge, edge weld
4		Gauge, fillet weld

5 Design and function

NOTE



Observe documentation of other system components when connecting!

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 of injury due to moving parts!

The wire feed units are equipped with moving parts, which can trap hands, hair, clothing or tools and thus injure persons!

- Do not reach into rotating or moving parts or drive components!
- Keep casing covers closed during operation!



Risk of injury due to welding wire escaping in an unpredictable manner!

Welding wire can be conveyed at very high speeds and, if conveyed incorrectly, may escape in an uncontrolled manner and injure persons!

- Before mains connection, set up the complete wire guide system from the wire spool to the welding torch!
- Remove the pressure rollers from the wire feed unit if no welding torch is fitted!
- Check wire guide at regular intervals!
- Keep all casing covers closed during operation!



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**Damage due to incorrect connection!**

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.

**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 Welding torch cooling system

5.2.1 General

CAUTION



Coolant mixtures!

Mixtures with other liquids or the use of unsuitable coolants result in material damage and renders the manufacturer's warranty void!

- Only use the coolant described in this manual (overview of coolants).
- Do not mix different coolants.
- When changing the coolant, the entire volume of liquid must be changed.



Insufficient frost protection in the welding torch coolant!

Depending on the ambient conditions, different liquids are used for cooling the welding torch (see overview of coolants).

Coolants with frost protection (KF 37E or KF 23E) must be checked regularly to ensure that the frost protection is adequate to prevent damage to the machine or the accessory components.

- The coolant must be checked for adequate frost protection with the TYP 1 frost protection tester (see accessories).
- Replace coolant as necessary if frost protection is inadequate!

NOTE



The disposal of coolant must be carried out according to official regulations and observing the relevant safety data sheets (German waste code number: 70104)!

- Coolant must not be disposed of together with household waste.
- Coolant must not be discharged into the sewerage system.
- Recommended cleaning agent: water, if necessary with cleaning agent added.

5.3 Adjusting the spotArc nozzle position

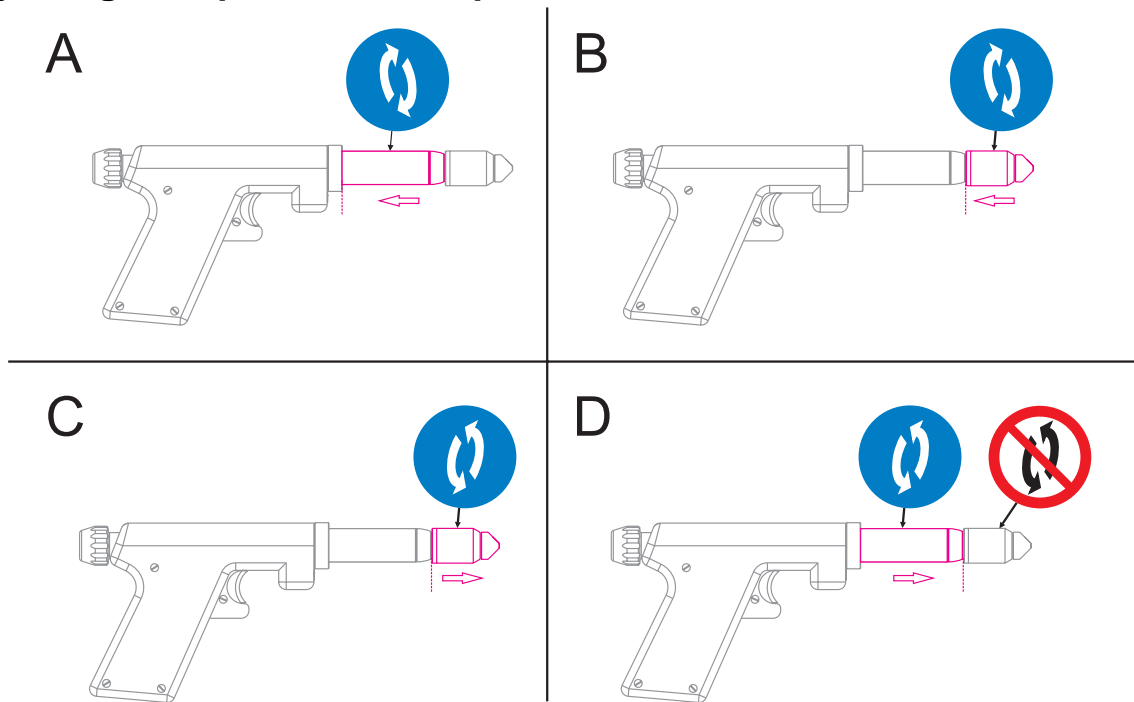


Figure 5-1

- Screw the torch head completely into the handle.
- Screw the gas nozzle body into place.
- Loosen the gas nozzle body and adjust the nozzle position.
- Secure the gas nozzle body and unscrew the torch head (thus locking the gas nozzle body with the torch head).

5.4 Set electrode distance

NOTE



The setting gauge has different gauges on the three sides for the different welding nozzles.

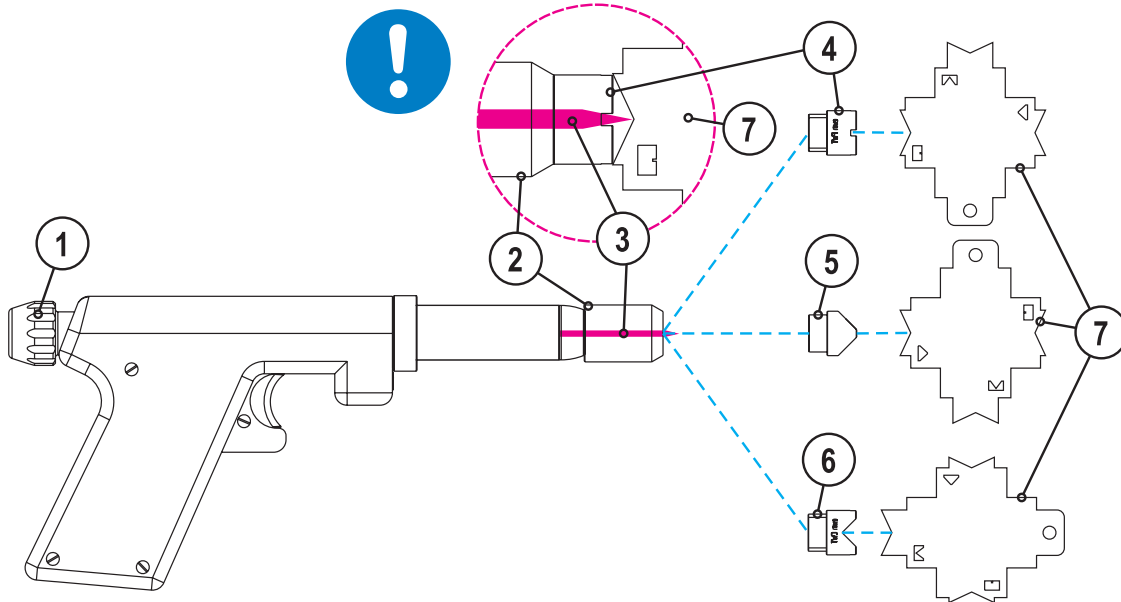


Figure 5-2


Item	Symbol	Description
1		Torch cap
2		Gas nozzle body
3		Tungsten electrode
4		Spot welding nozzle, flat weld
5		Spot welding nozzle, edge weld
6		Spot welding nozzle, fillet weld
7		Setting gauge

Use the setting gauge supplied to correctly adjust the distance between electrode tip and welding nozzle.

- Loosen the torch cap to check the tungsten electrode mobility.
- Use a spot welding nozzle suitable for the welding task.
- Position the relevant gauge of the setting gauge onto the spot welding nozzle and move the tungsten electrode so that it is flush with the recess of the correct gauge.
- Secure the tungsten electrode with the torch cap.

5.5 TIG spotArc

NOTE

 The settings for the individual parameters are made on the welding machine. The procedure is described in the operating instructions for the respective welding machine.

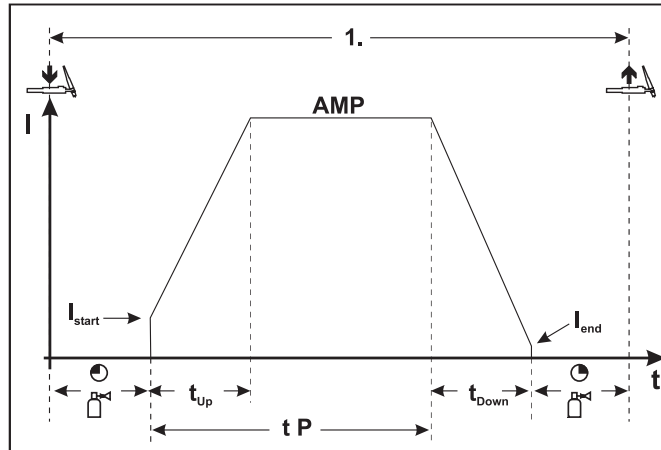


Figure 5-3

Sequence:

- 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 in the adjusted up-slope time to the main current AMP.

NOTE

 The process ends when the set spotArc time elapses or if the torch trigger is released prematurely.

6 Maintenance, care and disposal

CAUTION



The following work must always be carried out with the power source switched off.

6.1 Daily maintenance tasks

- Remove impurities from the spot welding nozzle and spray with protective spray.
- Check torch, tube package and power connections for exterior damage and replace or have repaired by specialist staff as necessary!
- Clean thread on the gas nozzle connection.
- Check the replaceable parts in the torch (collet, collet casing, spot welding nozzle, spot welding nozzle holder and insulator).
- Check that coolant connections are tight.
- Check that the welding torch, and where applicable the power source cooling, are functioning correctly.
- Check the coolant level.

6.2 Monthly maintenance tasks

- Check and clean the welding torch. Deposits in the torch can cause short circuits and have a negative impact on the welding result, ultimately causing damage to the torch.
- Check the wearing parts in the torch.
- Check the coolant container for sludge deposits and check the coolant for cloudiness. Clean the coolant container if contaminated, and change the coolant.
- If the coolant is dirty, rinse through the welding torch alternately several times with fresh coolant using the coolant return and supply.
- Check that all connections and wearing parts are hand-tight and tighten if necessary.
- Check torch, tube package and power connections for exterior damage and replace or have repaired by specialist staff as necessary!

6.3 Maintenance work

CAUTION



Electric current!

Repairs may only be carried out by authorised specialist staff!

- Do not remove the torch from the tube package!
- Never clamp the torch body in a vice or similar, as this can cause the torch to be irreparably destroyed!
- If damage occurs to the torch or to the tube package which cannot be corrected as part of the maintenance work, the entire torch must be returned to the manufacturer

6.4 Disposing of equipment

NOTE



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!



6.4.1 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.
- EWM participates in an approved waste disposal and recycling system and is registered in the Used Electrical Equipment Register (EAR) under number WEEE DE 57686922.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.

6.5 Meeting the requirements of RoHS

We, EWM HIGHTEC Welding GmbH Mündersbach, hereby confirm that all products supplied by us which are affected by the RoHS Directive, meet the requirements of the RoHS (Directive 2002/95/EC).

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 Customer checklist

NOTE



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

Legend

↙: Fault/Cause

✘: Remedy

Welding torch overheated

- ↙ Insufficient coolant flow
 - ✘ Check coolant level and refill if necessary
 - ✘ Eliminate kinks in conduit system (hose packages)
- ↙ Loose welding current connections
 - ✘ Tighten power connections on the torch and/or on the workpiece
 - ✘ Tighten contact tip/collet correctly
- ↙ Overload
 - ✘ Check and correct welding current setting
 - ✘ Use a more powerful welding torch

Functional error with the welding torch operating elements

- ↙ Connection problems
 - ✘ Make control lead connections and check that they are fitted correctly.
- ↙ Insufficient coolant flow
 - ✘ Check coolant level and refill if necessary

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)
- ↙ Unsuitable or worn welding torch equipment
 - ✘ Check size of gas nozzle and replace if necessary
- ↙ Condensation (hydrogen) in the gas tube
 - ✘ Rinse hose package with gas or replace

8 Technical data

NOTE

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

8.1 SPOTARC TIG 18/26

Type	TIG 18 W	TIG 26 G
Electrode polarity with DC	Normally negative	
Operation type	Manually operated	
Voltage type	DC direct voltage or AC alternating voltage	
Voltage measurement	113 V peak value	
Max. arc ignition and stabilisation voltage	12 kV	
Duty cycle	100%	60%
Electrode types	Standard tungsten electrodes	
Ambient temperature	-10 °C to +40 °C	
Torch input pressure, coolant (minimum to maximum)	2.5–5.0 bar	-
Flow quantity (minimum)	1.2 l/min–3.5 l/min	-
Protection rating for the machine connections (EN 60529)	IP3X	
Shielding gas	Shielding gas EN 439	
Gas flow	5–8 l/min	
Maximum welding current (DC/AC)	400 A/360 A	200 A/160 A
Hose package length	4 or 8 m	
Tungsten electrodes	1.0–4.0 mm	
Type of connection	Decentral, G1/4", 5- or 8-pole	
Constructed to standard	EN 60974-7	

9 Replaceable parts

Type	Name	Item number
	Gas nozzle body	094-017309-00000
	Gas nozzle	094-017310-00000
COLB 17/18/26 D=3.2MM CU	Collet casing, PU = 2 pieces	094-000940-90002
COLB 17/18/26 D=1.6MM CU	Collet casing, PU = 2 pieces	094-000936-90002
COLB 17/18/26 D=4.0MM CU	Collet casing, PU = 2 pieces	094-001315-90002
COLB 17/18/26 D=2.0-2.4MM CU	Collet casing, PU = 2 pieces	094-000937-90002
COLB 17/18/26 D=0.5-1.0MM CU	Collet casing, PU = 2 pieces	094-001314-90002
COL 17/18/26 D=1.0MM	Collet, PU = 5 pieces	094-001309-90005
COL 17/18/26 D=2.0MM	Collet, PU = 5 pieces	094-001311-90005
COL 17/18/26 D=4.0MM	Collet, PU = 5 pieces	094-001312-90005
COL 17/18/26 D=3.2MM	Collet, PU = 5 pieces	094-000935-90005
COL 17/18/26 D=2.4MM	Collet, PU = 5 pieces	094-000932-90005
COL 17/18/26 D=1.6MM	Collet, PU = 5 pieces	094-000931-90005
INS 17/18/26 PTFE S	Isolator, PU = 2 pieces	094-001307-90002
GN CWT	Spot welding nozzle, corner weld	094-009602-00002
GN EWT	Spot welding nozzle, fillet weld	094-009603-00002
GN FWT	Spot welding nozzle, flat weld	094-009604-00002

10 Appendix A

10.1 Overview of EWM branches

Headquarters

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