



EN

Electrode grinding machine

TGM 40230 Handy

099-003412-EW501

Observe additional system documents!

22.10.2019

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General instructions

WARNING



Read the operating instructions!

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

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

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

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

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

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

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

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

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2 For your safety

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.



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

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

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

2.2 Explanation of icons

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

2.3 General

WARNING



Risk of accidents due to non-compliance with the safety instructions!

Non-compliance with the safety instructions can be fatal!

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

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!



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

- ***National implementation of the framework directive (89/391/EWG), as well as the associated individual directives.***
- ***In particular, the directive (89/655/EWG) on the minimum regulations for safety and health protection when staff members use equipment during work.***
- ***The regulations regarding occupational safety and accident prevention for the respective country.***
- ***Check at regular intervals that users are adhering to the safety regulations in their work.***
- ***Check the machine at regular intervals according to BGV A3.***



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.***

3 Intended use

WARNING



Hazards due to improper usage!

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

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

3.1 Applications

Portable tungsten electrode grinder for use at the welding site.

3.2 Documents which also apply

3.2.1 Warranty

For more information refer to the "Warranty registration" brochure supplied and our information regarding warranty, maintenance and testing at www.ewm-group.com!

3.2.2 Declaration of Conformity



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

- Machine directive
- Low Voltage Directive (LVD)
- Electromagnetic Compatibility Directive (EMC)
- Restriction of Hazardous Substance (RoHS)

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 EWM, this declaration shall be voided. An original document of the specific declaration of conformity is included with every product.

3.2.3 Service documents (spare parts)

WARNING



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 TGM 40230 Handy

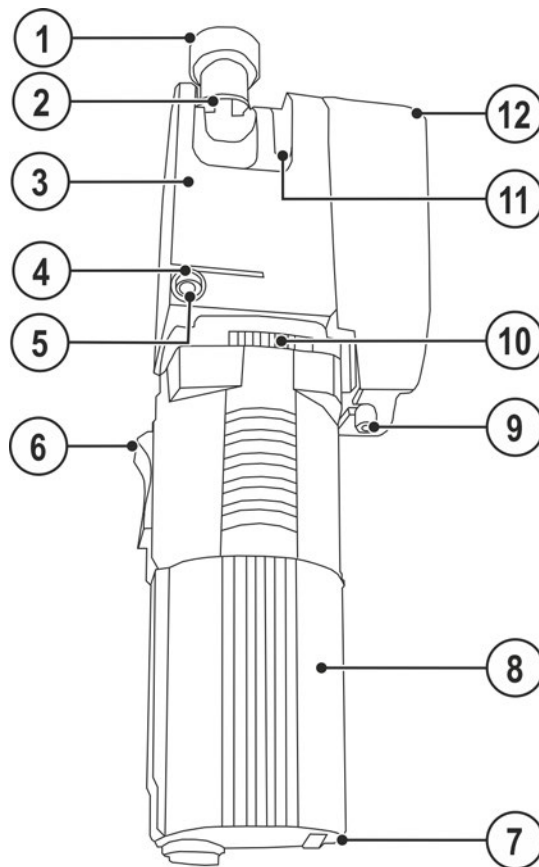


Figure 4-1

Item	Symbol	Description
1		Infeed channel
2		Guide element for setting the grinding tracks
3		Grinding attachment
4		Depth gauge
5		Grinding attachment clamping bolt
6		On/off switch
7		Speed controller
8		Motor
9		Retaining bolt
10		Ventilation slot for machine cooling
11		Grinding angle scale
12		Filter casing

5 Design and function

⚠ WARNING



Harmful electrode material!

Electrodes may contain harmful substances!

- Observe the instructions by the electrode manufacturer!

⚠ CAUTION



Open infeed channel!

If the infeed channel is left open, chips and dirt particles can be expelled from the channel when the grinding disk is running and might get into the eyes or be breathed in!

- Place the electrode holder in the infeed channel before switching on.
- Allow the grinding disk to come to a stop after switching off before removing the electrode holder from the infeed channel.



Starting with electrode against grinding disc!

If the grinder is started while the electrode lies against the grinding disc, the electrode can jam and cause damage to the disc, the machine and people!

- When starting the grinder, make sure the electrode does not lie against the grinding disc!
- Before starting the grinder, check the electrode position through the inspection window!



If too much pressure is exerted from the electrode onto the grinding disk, the electrode may overheat and become annealed. An annealed electrode can become unusable and damage the machine!

- ***Do not press the electrode too forcefully against the grinding disk!***
- ***Turn the electrode evenly during the grinding process!***

5.1 Transport and installation

⚠ CAUTION




Risk of accidents due to supply lines!

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

- Disconnect all supply lines before transport!

5.1.1 Ambient conditions

 **Equipment damage due to contamination!**
Unusually high amounts of dust, acids, corrosive gases or substances can damage the machine (observe maintenance intervals > see 6.2 chapter).

- *Avoid large amounts of smoke, steam, oily fumes, grinding dust and corrosive ambient air!*

 **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!*

5.1.1.1 In operation

Temperature range of the ambient air:

- *-25 °C to +40 °C (-13 °F to 104 °F) ^[1]*

Relative humidity:

- *up to 50 % at 40 °C (104 °F)*
- *up to 90 % at 20 °C (68 °F)*

5.1.1.2 Transport and storage

Storage in a closed room, temperature range of the ambient air:

- *-30 °C to +70 °C (-22 °F to 158 °F) ^[1]*

Relative humidity

- *up to 90 % at 20 °C (68 °F)*

5.1.2 Mains connection

⚠ DANGER**Hazards caused by improper mains connection!****An improper mains connection can cause injuries or damage property!**

- The connection (mains plug or cable), the repair or voltage adjustment of the device must be carried out by a qualified electrician in accordance with the respective local laws or national regulations!
- The mains voltage indicated on the rating plate must match the supply voltage.
- Only operate machine using a socket that has correctly fitted protective earth.
- Mains plug, socket and lead must be checked by a qualified electrician on a regular basis!
- When operating the generator, always ensure it is earthed as stipulated in the operating instructions. The network created must be suitable for operating machines according to protection class I.

5.1.2.1 Mains configuration



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

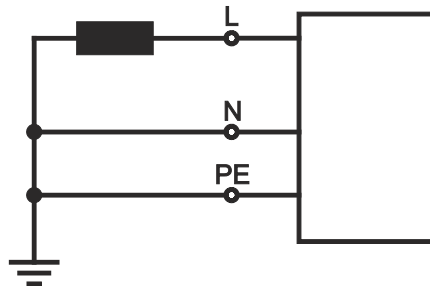


Figure 5-1

Legend

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

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

5.2 Presets

5.2.1 Selecting the grinding track

If the result is not satisfactory, the grinding machine provides the option to select different tracks on the disk, depending on the wear of the diamond disk.

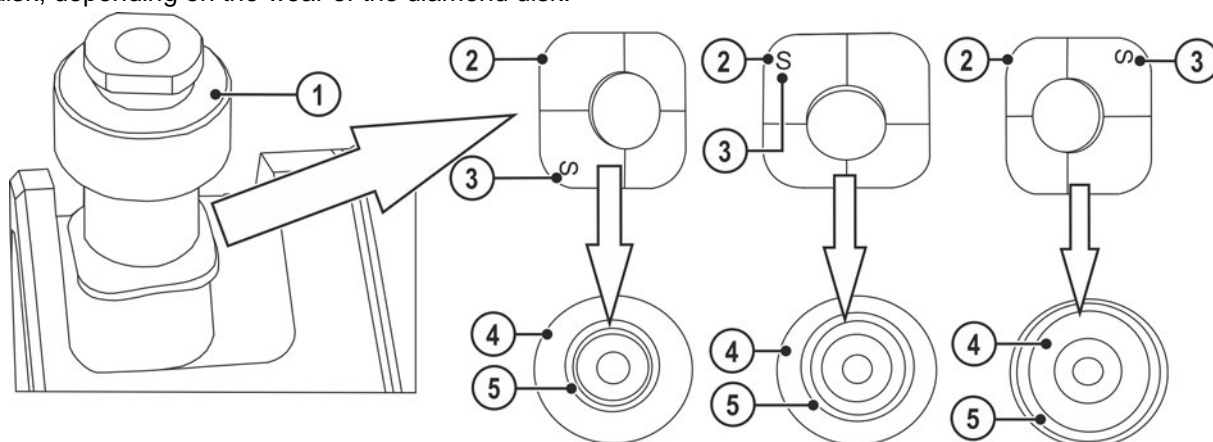


Figure 5-2

Item	Symbol	Description
1		Clamping bolt
2		Guide element for setting the grinding tracks
3		"S" mark
4		Grinding disk
5		Grinding track

- Unfasten the clamping bolt.
- Lift up the guide element.
- Rotate the guide element by 90°.
- By turning it, position the angle guide exactly underneath the guide element.
- Insert the guide element into the angle guide.
- Re-tighten the clamping screw.



The filter must be replaced whenever the grinding track is changed or if dispersed dust can be seen constantly in the grinding chamber.

5.2.2 Preparing electrodes for the grinding process

⚠ CAUTION



Incorrect collet chuck!

Using a collet chuck that does not match the electrode size can mean that the electrode may become loose, the machine damaged and can also result in injury.

- Only use genuine collet chucks!
- Only use collet chucks that match the relevant electrode diameter!

Various collet chucks modified to the electrode diameter should be used to secure the electrodes for the grinding process.

Status on delivery!

The collet chuck for an electrode with a diameter of 2.4 mm is pre-fitted in the electrode holder at the factory.

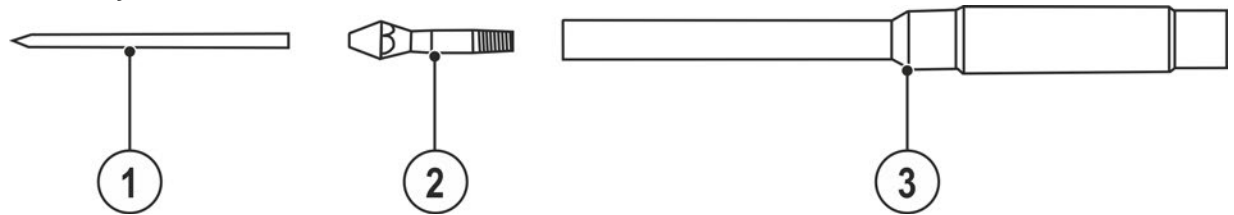


Figure 5-3

Item	Symbol	Description
1		Electrode
2		Collet chuck
3		Electrode holder Area of application: unalloyed and low-alloy materials

- Select the collet chuck according to the electrode diameter.
- Insert the electrode into the collet chuck.
- Screw the collet chuck into the electrode holder.

Collet chucks supplied!

Collet chucks for electrode diameters of 1.6, 2.4 and 3.2 mm are included as standard. For other collect chucks, see the > see 8 chapter.

5.2.3 Setting the grinding angle of the tungsten electrode

The grinding angle can be set from 15° to 180° in 5° increments. The angle of 180° creates a right-angled surface at the electrode tip.

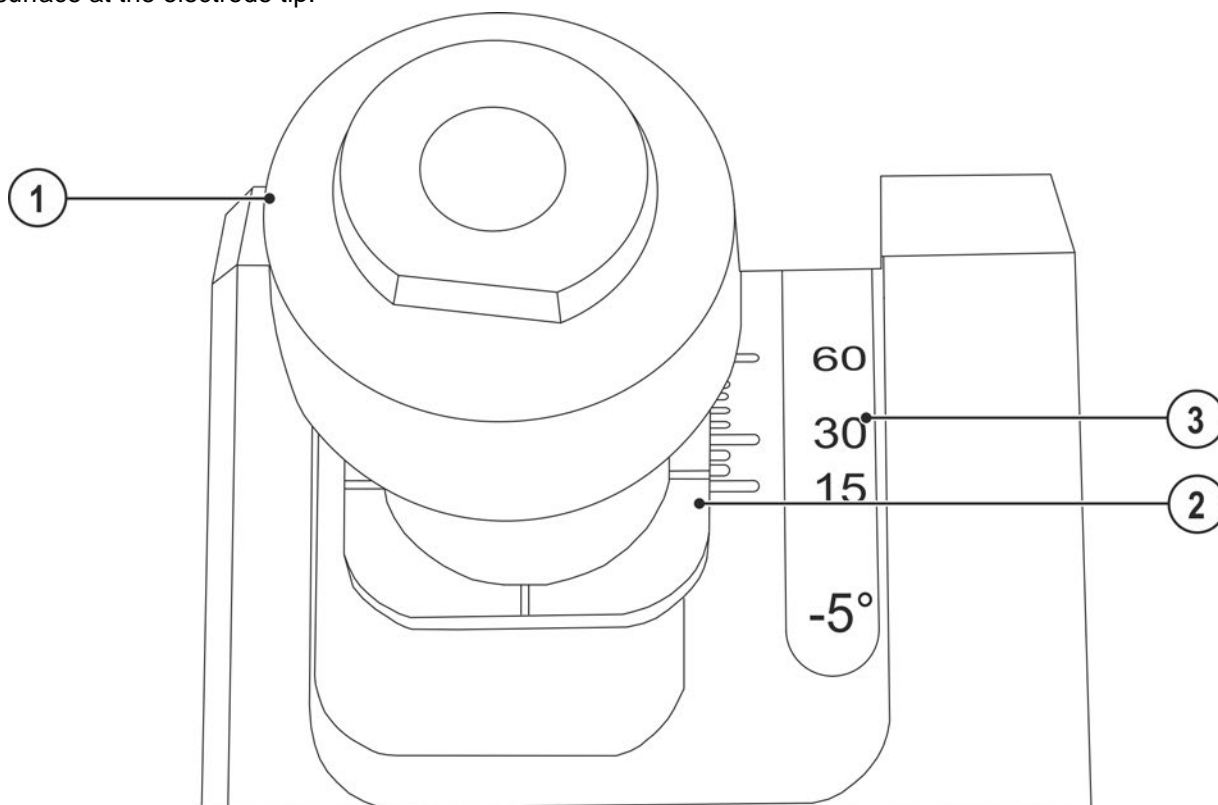


Figure 5-4

Item	Symbol	Description
1		Clamping bolt
2		Mark
3		Grinding angle scale

- Unfasten the clamping bolt.
- Move the guide until the mark is pointing to the required degree setting.
- Tighten the clamping bolt.

5.3 Setting the speed

Using a speed that matches the electrode diameter is very important to achieve precise and clean grinding of the electrode.

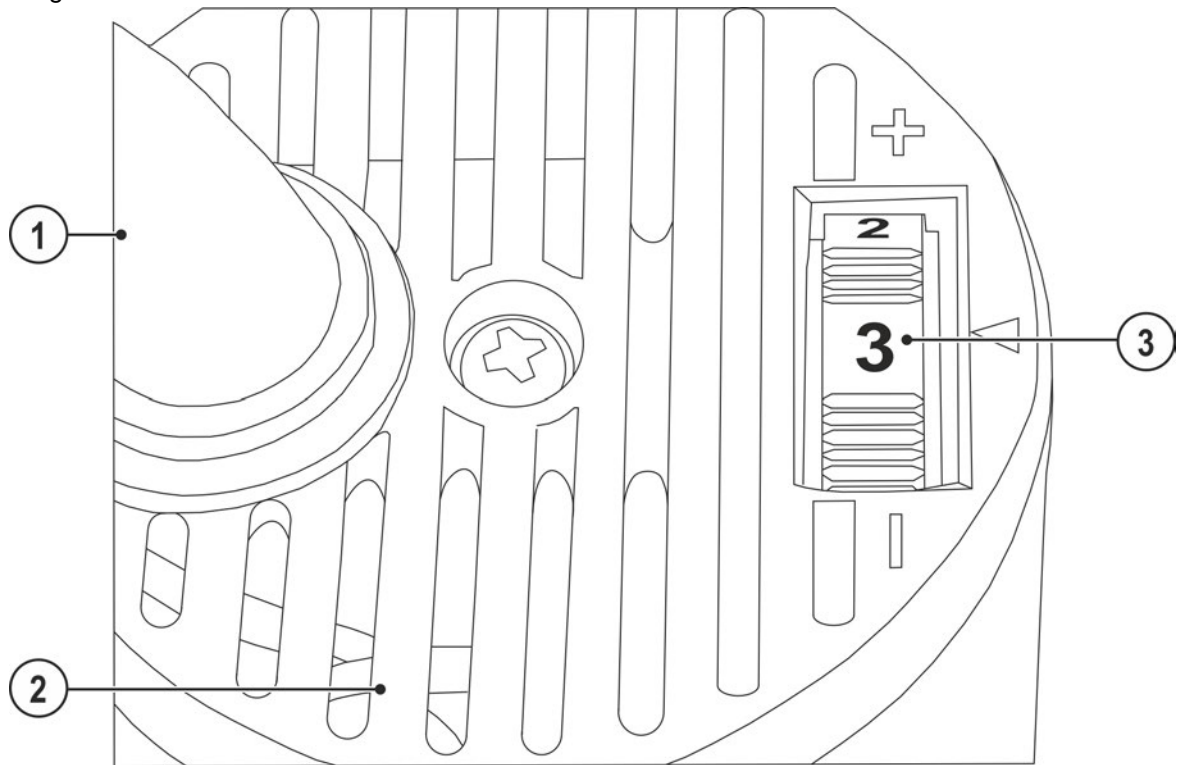


Figure 5-5

Item	Symbol	Description
1		Mains connection cable > see 5.1.2 chapter
2		Motor casing
3		Speed controller

- Speed for the individual electrode diameter > see 5.3.1 chapter.
- Set the speed controller to the required value.

5.3.1 Guideline values for speed controller setting

Electrode diameter	Ø mm	0.8 - 1.6	2.0 - 2.4	3.0 - 4.0
Speed controller position	No.	1	2	3

5.4 Inserting the electrode

Before every grinding operation:

Set the electrode grinding using the grinding attachment clamping bolt depth gauge.

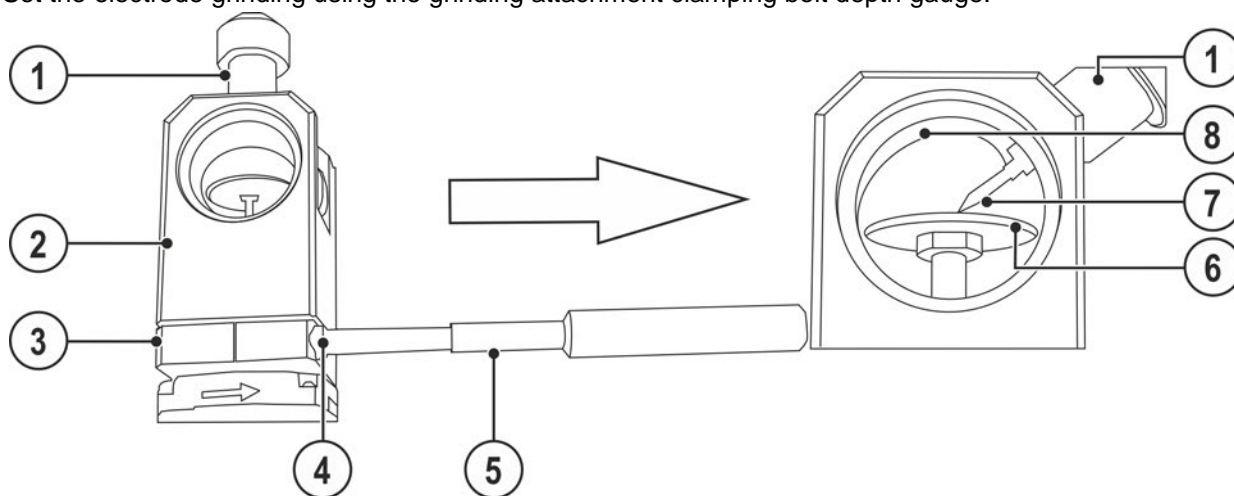


Figure 5-6

Item	Symbol	Description
1		Infeed channel
2		Grinding attachment
3		Depth gauge setting bolt
4		Depth gauge
5		Electrode holder
6		Grinding disk
7		Electrode
8		Inspection glass

- Insert the tungsten electrode into the collet chuck and allow to protrude by approx. 35 mm.
- Screw the collet chuck into the electrode holder.
- Insert the electrode holder into the grinding attachment clamping bolt depth gauge.
- Tighten the tungsten electrode by turning the electrode holder to the right.
- Check that the electrode is seated securely.
- Insert the electrode holder slowly into the infeed channel until the tungsten electrode is over the grinding disk. Check the process through the inspection glass.

Depth gauge setting bolt

The setting bolt on the rear of the depth gauge can be used to set the grinding of the tungsten electrode.

- **Rotate out: More grinding**
- **Rotate in: Less grinding**

5.5 Grinding the electrode



A faulty grinding disc can cause damage to the electrode and electrode holder.

- *Do not use the grinder if the grinding disc is damaged.*
- *Use original grinding discs only.*

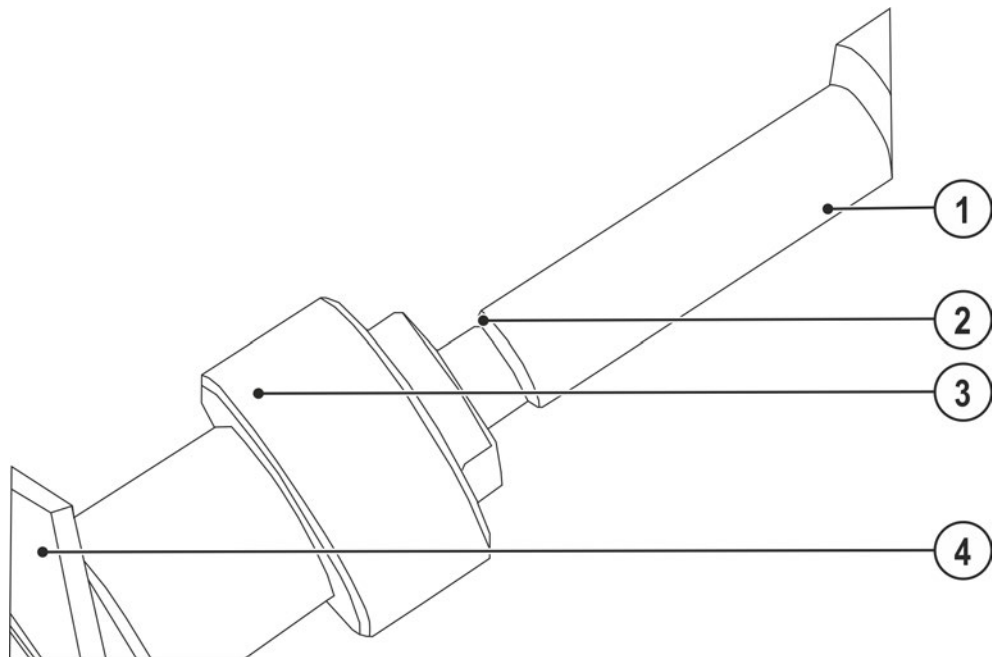


Figure 5-7

Item	Symbol	Description
1		Electrode holder
2		Stop piece
3		Infeed channel
4		Grinding attachment

- Check that the on/off switch is in the "0" position.
- Connect the machine to the power supply.
- Check through the inspection glass that the electrode is not positioned against the grinding disk.
- Switch on machine.
- Move the electrode holder onto the grinding disk while turning it slowly, so that the tungsten electrode does not anneal. Check the process through the inspection glass.
- Complete the grinding process using light pressure and slow even rotation of the electrode holder.
- The grinding process is complete when the electrode holder limit stop has been reached.
- Switch off the machine and allow it to come to a stop.
- Remove the electrode holder from the infeed channel.
- Insert the electrode holder into the depth gauge and unfasten the electrode by turning to the left.

5.6 Changing the filter

WARNING



Mains voltage!

Before carrying out any cleaning or testing measures, ensure that all mains connections and supply lines of the machine are disconnected.

- Disconnect all mains connections and supply lines.



Operation without a filter!

Operating the grinding machine without a filter cartridge may mean that poisonous dust, chips and smoke are expelled from the machine. Chips, dust and smoke from welding electrodes can represent a health risk!

- Never operate the machine without a filter cartridge in place!



The filter must be replaced whenever the grinding track is changed or if dispersed dust can be seen constantly in the grinding chamber.

Disposal!

Use the waste disposal bags supplied for single use filters to dispose of used filter cartridges!
Observe local regulations for the disposal of filter cartridges!

The filter needs to be changed when there are considerable deposits of grinding particles on the inspection glass.

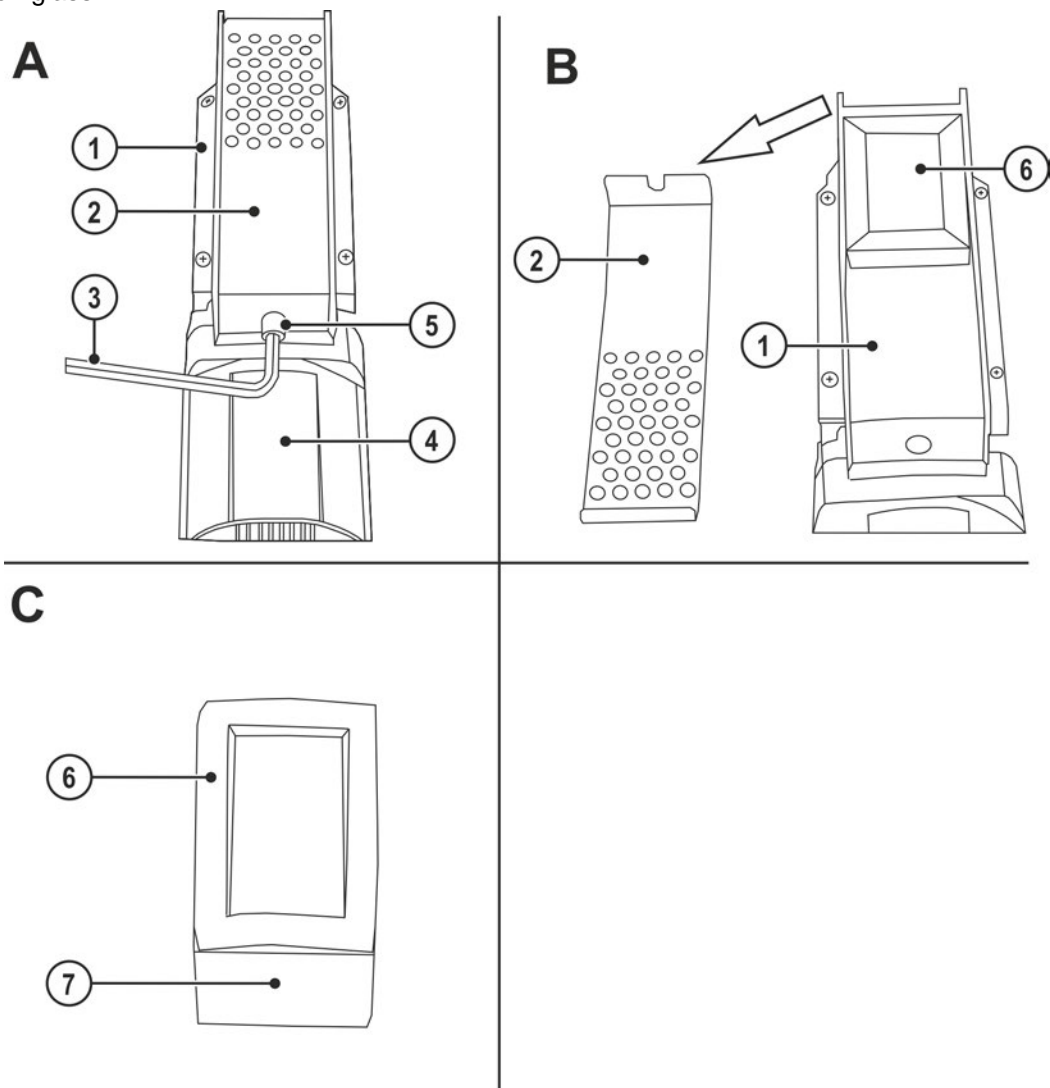


Figure 5-8

Item	Symbol	Description
1		Filter casing
2		Retainer grille
3		Allen key, SW 4
4		Motor casing
5		Retaining bolt
6		Rubber seal
7		Filter cartridge

- Unfasten the retaining bolt on the filter casing.
- Fold down and remove the retainer grille.
- Remove the filter cartridge and dispose of with the waste disposal bag in accordance with regulations.
- Insert a new filter cartridge with the rubber seal in front.
- Hook in the retainer grille on the filter casing and fold up.
- Tighten the retaining bolt hand-tight.

5.7 Replacing the grinding disk

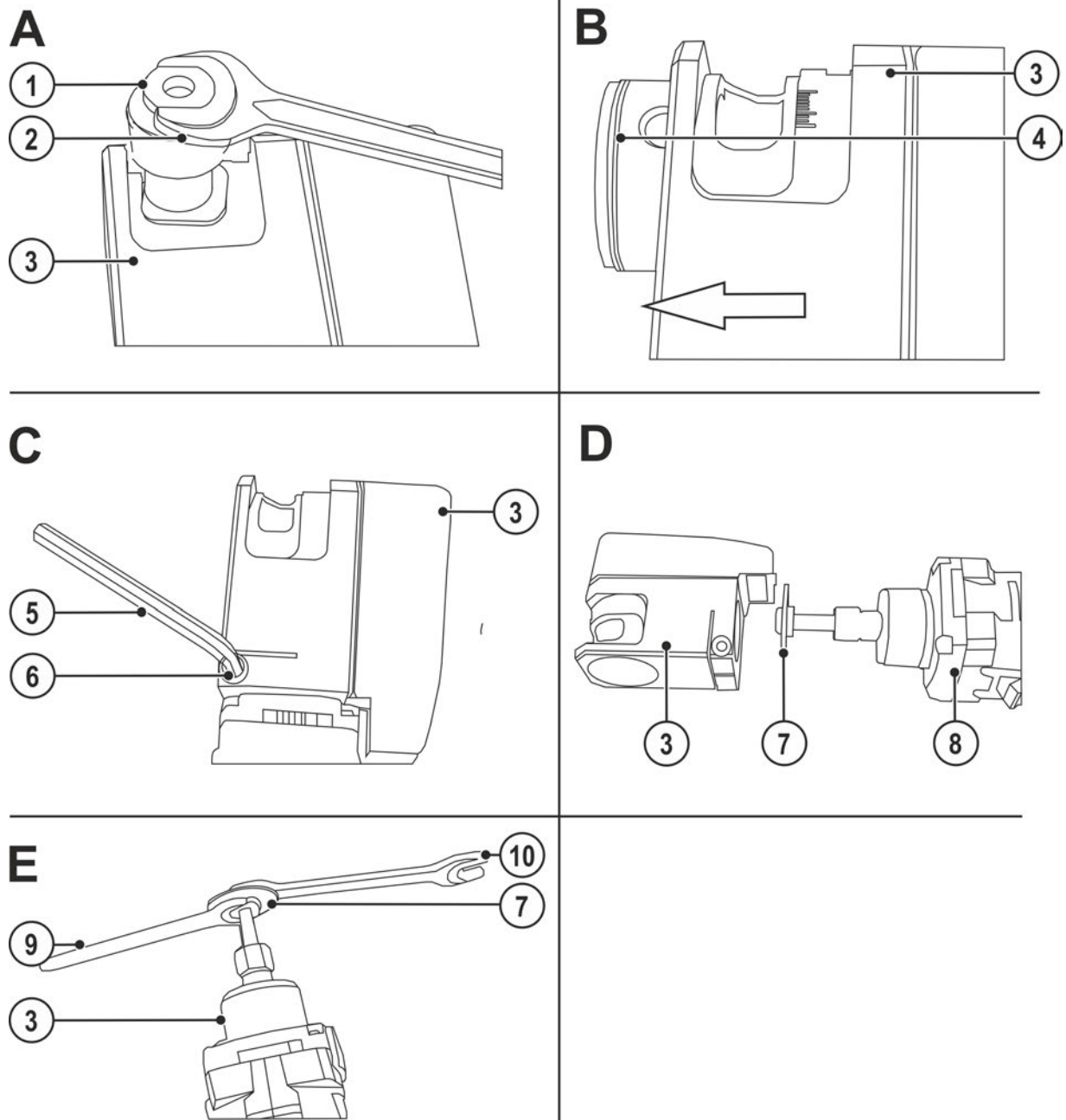


Figure 5-9

Item	Symbol	Description
1		Stop bolt
2		Open-ended spanner, SW 17
3		Grinding attachment
4		Connecting link
5		Allen key, SW 8
6		Grinding attachment clamping bolt
7		Grinding disk
8		Motor casing
9		Open-ended spanner, SW 14
10		Open-ended spanner, SW 13

- Remove the electrode holder.
- Remove the stop bolt using the open-ended spanner (SW 17).
- Remove the connecting link forwards with the inspection glass.
- Unfasten the grinding attachment clamping bolt using the bent-nosed Allan key (SW 8).
- Lift off the grinding head upwards.
- Reverse the grinding disk using an open-ended spanner (SW 14) and unfasten using an open-ended spanner (SW 13).
- Fit new grinding disk and tighten using the open-ended spanners.
- Fit the grinding attachment.
- Tighten the grinding attachment clamping bolt.
- Fit the connecting link with inspection glass.
- Fit the guide element for setting the grinding tracks.
- Tighten the stop bolt hand-tight.

5.7.1 Cleaning

The grinding machine must be cleaned at regular intervals to ensure the correct functioning of the machine in the long-term.



The machine may become damaged if cleaned with liquids! Removing residues using compressed air may disturb chips and result in eye damage!

- ***Do not use any liquids for cleaning!***
- ***Use a small brush or suitable cleaning tool to remove residues!***

6 Maintenance, care and disposal

6.1 General

DANGER



Risk of injury due to electrical voltage after switching off!

Working on an open machine can lead to fatal injuries!

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

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

WARNING



Incorrect maintenance, testing and repair!

Maintenance, testing and repair of the machine may only be carried out by skilled and qualified personnel. A qualified person is one who, because of his or her 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.

Observe the maintenance instructions > see 6.2 chapter.

- In the event that the provisions of one of the below-stated tests are not met, the machine must not be operated again until it has been repaired and a new test has been carried out!

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

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

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

6.1.1 Cleaning

- Clean the outer surfaces with a moist cloth (no aggressive cleaning agents).
- Purge the machine venting channel and cooling fins (if present) with oil- and water-free compressed air. Compressed air may overspeed and destroy the machine fans. Never direct the compressed air directly at the machine fans. Mechanically block the fans, if required.
- Check the coolant for contaminants and replace, if necessary.

6.1.2 Dirt filter

The duty cycle of the welding machine decreases as an effect of the reduced cooling air volume. The dirt filter must be removed at regular intervals and cleaned by blowing out with compressed air (depending on the level of soiling).

6.2 Maintenance work, intervals

6.2.1 Daily maintenance tasks

Visual inspection

- Mains supply lead and its strain relief
- Gas cylinder securing elements
- Check hose package and power connections for exterior damage and replace or have repaired by specialist staff as necessary!
- Gas tubes and their switching equipment (solenoid valve)
- Check that all connections and wearing parts are hand-tight and tighten if necessary.
- Check correct mounting of the wire spool.
- Wheels and their securing elements
- Transport elements (strap, lifting lugs, handle)
- Other, general condition

Functional test

- Operating, message, safety and adjustment devices (Functional test)
- Welding current cables (check that they are fitted correctly and secured)
- Gas tubes and their switching equipment (solenoid valve)
- Gas cylinder securing elements
- Check correct mounting of the wire spool.
- Check that all screw and plug connections and replaceable parts are secured correctly, tighten if necessary.
- Remove any spatter.
- Clean the wire feed rollers on a regular basis (depending on the degree of soiling).

6.2.2 Monthly maintenance tasks

Visual inspection

- Casing damage (front, rear and side walls)
- Wheels and their securing elements
- Transport elements (strap, lifting lugs, handle)
- Check coolant tubes and their connections for impurities

Functional test

- Selector switches, command devices, emergency stop devices, voltage reducing devices, message and control lamps
- Check wire guide elements (wire feed roll holder, wire feed nipple, wire guide tube) for tight fit. Recommendation for replacing the wire feed roll holder (eFeed) after 2000 hours of operation, see replacement parts).
- Check coolant tubes and their connections for impurities
- 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.

6.2.3 Annual test (inspection and testing during operation)

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. For more information refer to the "Warranty registration" brochure supplied and our information regarding warranty, maintenance and testing at www.ewm-group.com!

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!**
- According to European provisions (Directive 2012/19/EU on Waste of Electrical and Electronic Equipment), used electric and electronic equipment may no longer be placed in unsorted municipal waste. It must be collected separately. The symbol depicting a waste container on wheels indicates that the equipment must be collected separately.
This machine has to be disposed of, or recycled, in accordance with the waste separation systems in use.
- According to German law (law governing the distribution, taking back and environmentally correct disposal of electric and electronic equipment (ElektroG)), used machines are to be placed in a collection system separate from unsorted municipal waste. The public waste management utilities (communities) have created collection points at which used equipment from private households can be disposed of free of charge.
- Information about returning used equipment or about collections can be obtained from the respective municipal administration office.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.

7 Technical data

7.1 TGM 40230 Handy

Power	850 W
Mains connection (EN 50144)	230 V / 50 Hz
Speed	8000 – 22000 rpm
Electrode diameter	0.8 - 4.0 mm
Grinding angle	15 - 180°
Maximum electrode length	175 mm
Diamond disc diameter	40 mm
Protection classification	IP 21
Safety marking	CE
Applied harmonised standards	See declaration of conformity (appliance documents)
Weight without accessories	2.5 kg 5.51 lb

8 Replaceable parts

8.1 TGM 40230 Handy

Type	Designation	Item no.
DG Handy	Diamond disk for EWM tungsten electrode grinders	098-003673-00000
EXCENTER	excenter	098-004309-00000
COL Porta/Handy Ø 0.8 mm	Collet chuck for EWM tungsten electrode grinders	098-003696-00000
COL Porta/Handy Ø 1.0 mm	Collet chuck for EWM tungsten electrode grinders	098-003697-00000
COL Porta/Handy Ø 1.2 mm	Collet chuck for EWM tungsten electrode grinders	098-003698-00000
COL Porta/Handy Ø 1.6 mm	Collet chuck for EWM tungsten electrode grinders	098-003674-00000
COL Porta/Handy Ø 2.0 mm	Collet chuck for EWM tungsten electrode grinders	098-003675-00000
COL Porta/Handy Ø 2.4 mm	Collet chuck for EWM tungsten electrode grinders	098-003676-00000
COL Porta/Handy Ø 3.2 mm	Collet chuck for EWM tungsten electrode grinders	098-003677-00000
COL Porta/Handy Ø 4.0 mm	Collet chuck for EWM tungsten electrode grinders	098-003678-00000
FC TGM	Filter insert	098-003679-00000
Disposal bag	Disposal bag for non-reusable filter	398-003882-00000

9 Appendix**9.1 Searching for a dealer**

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



"More than 400 EWM sales partners worldwide"