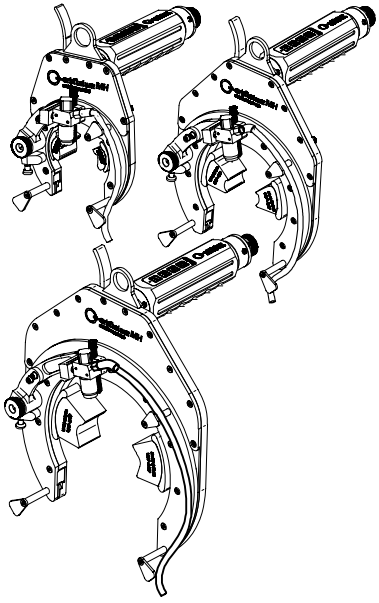
MOBILE HEAD

en **Open orbital weld head**

Translation of original operating instructions and spare parts list



803 060 201 REV 00 | 2309

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1 About these instructions

1.1 Warning messages

The warnings used in these instructions warn you of injuries or damage to property.

Always read and observe these warnings!

This is a warning icon. It warns against dangers of injury. In order to avoid injuries or death observe the measures marked with a safety sign.

	WARNING LEVEL	MEANING
⚠	**DANGER**	Imminently hazardous situation that results in death or serious injuries if the safety measures are not observed.
⚠	**WARNING**	Potentially hazardous situation that may result in death or serious injuries if the safety measures are not observed.
⚠	**CAUTION**	Potentially hazardous situation that may result in slight injuries if the safety measures are not observed.
❗	*NOTE!*	Potentially hazardous situation that may result in material damage if the safety measures are not observed.

1.2 Further icons and displays

SYMBOL	MEANING
ℹ	Request for action in a sequence of actions: Action is required here.
1. 2. 3. …	Request for action in a sequence of actions: Action is required here.
►	Single request for action: Action is required here.

1.3 Abbreviations

ABBREVIATION	MEANING
MH	Orbital weld head, type “Mobile Head”

1.4 Further applicable documents

The following documents apply together with these operating instructions:

- Instructions for orbital welding power supply

2 Information and safety instructions for the owner

2.1 Requirements for the owner-operator

Workshop/outdoor/field use: The owner is responsible for safety in the danger zone around the machine, and should allow only qualified personnel to enter the zone or operate the machine in the danger zone.

Employee safety: The operator has to observe the safety regulations described in this chapter as well as has to work safety-consciously and with all prescribed safety equipment.

The employer undertakes to give the employees clear notice of the dangers arising that are specified in the EMF directives and to evaluate the workplace correspondingly.

Requirements for special EMF evaluations with regard to general activities, working materials and workplaces*:

TYPE OF WORKPLACE OR WORK EQUIPMENT	EVALUATION REQUIRED FOR:		
	Employees without particular risk	Employees at particular risk (with the exception of those with active implants)	Employees with active implants
	(1)	(2)	(3)
Arc welding, manual (including MIG (Metal Inert Gas), MAG (Metal Active Gas), TIG (Tungsten Inert Gas) under observance of tried-and-tested procedures and without physical contact to the line	No	No	Yes

* To Directive 2013/35/EU

2.2 Using the machine

2.2.1 Proper use

The orbital weld head is intended solely for the following utilization:

- Utilization in combination with an Orbital welding power supply of the Mobile Welder and Smart Welder series.
- TIG welding of materials that are specified in these operating instructions (see chap. applications).
- Empty unpressurized tubes that are free of contaminations, explosive atmospheres or liquids.

Only protective gases that are classified for TIG welding in accordance with EN ISO 14175 may be used.

Proper use also includes the following points:

- Permanent supervision of the machine during operation. The operator must always be able to stop the process.
- Observing all safety and warning information in these operating instructions and the general safety information for enclosed orbital weld heads.
- Observing of the further applicable documents.
- Complying with all inspection and maintenance work.
- Use of the machine solely in its original state.
- Usage solely of original accessories as well as original spare parts and operating materials.
- Checking of all the safety-relevant items and functions before commissioning.
- Processing of those materials named in the operating instructions.
- Proper usage of all components involved in the welding processes as well as of all further factors that have an influence on the welding process.
- Solely commercial usage.

2.2.2 Machine constraints

- The workplace can be in the tube preparation, in plant construction or in the plant itself.
- The machine is operated by one person.
- A space of about 2 m for people to move around the machine must be provided.
- Work lighting: min. 300 Lux.
- Ambient conditions during operation:
  Ambient temperature: –10 °C to +40 °C
  Relative humidity: < 90% at +20 °C, < 50 % at +40 °C
- Ambient conditions during storage and transport:
  Ambient temperature: –20 °C to +55 °C
  Relative humidity: < 90% at +20 °C, < 50 % at +40 °C

- The machine may only be installed and operated in a dry environment according to IP 23 (not in fog, rain, thunderstorms, etc.). If appropriate, use a welding tent.
- Smoke, steam, oil vapors and grinding dust must be avoided.
- Avoid salty ambient air (sea air).

2.3 Environmental protection and disposal

2.3.1 Information regarding the Ecodesign Directive 2009/125/EG

- Do not dispose of product (if applicable) with general waste.
- Reuse or recycle waste electrical and electronic equipment (WEEE) by disposing of it at a designated collection point.
- Contact your local recycling office or dealer for more information. Critical raw materials potentially present in indicative quantities greater than 1 gram at the component level.

(as per RL 2012/19/EU)

Critical raw materials potentially present in indicative quantities greater than 1 gram at the component

COMPONENT	CRITICAL RAW MATERIAL
Printed circuit boards	Barite, bismuth, cobalt, gallium, germanium, hafnium, indium, heavy rare earth, light rare earth, niobium, metals of the platinium group, scandium, silicon metal, tantalum, vanadium
Plastic components	Antimony, Barite
Electrical and electronic components	Antimony, beryllium, magnesium
Metal components	Beryllium, cobalt, magnesium, tungsten, vanadium
Cable and cable assemblies	Borate, antimony, barite, beryllium, magnesium
Displays	Gallium, indium, heavy rare earths, light rare earths, niobium, platinum group metals, scandium
Batteries	Fluorspar, heavy rare earths, light rare earths, magnesium

2.3.2 REACh (Registration, Evaluation, Authorization and Restriction of Chemicals)

The regulation (EC) 1907/2006 of the European Parliaments and of the Council concerning the registration, evaluation, authorization and restriction of chemicals (REACh) regulates the production, placing on the market and use of chemical substances and the mixtures produced from these.

Our products are "products" in the sense of the REACh regulation. In accordance with Article 33 of the REACh regulation, suppliers of products must inform their customers if the supplied product contains a substance specified in the REACh SVHC candidate list exceeding 0.1 percent by mass of the object. On June 27, 2018 lead (CAS: 7439-92-1 / EINECS: 231-100-4) was included in the SVHC candidate list. This inclusion activates an obligation to inform along the chain of delivery.

We herewith inform you that individual partial components of our products contain lead in quantities exceeding 0.1 % by mass of the object as an alloy component in steel, aluminum and copper alloys as well as in solders and capacitors of electronic components. The lead content lies within the exceptions specified in the RoHS Directive.

Since lead as an alloy component is firmly bound and therefore no exposure is to be expected in the case of proper use, no additional specification of its safe use are required.

2.3.3 Electric tools and accessories

Used-up power tools and accessories contain a large amount of valuable raw materials and plastics which can be recycled:

- Used electronic devices marked with the adjacent icon may not be disposed of with household waste in accordance with EU directives.
- By actively using the offered return and collection systems, you are doing your part to reuse and recycle used electronic devices.
- Used electronic devices contain parts that must be handled selectively according to the EU directive. Separate collection and selective treatment are the basis for environmentally responsible disposal and protection of human health.
- We will properly dispose of devices and machines from Orbitalum Tools GmbH purchased after August 13th, 2005 if they are sent to us postage-paid.
- In the case of used electronic devices which may represent a risk to human health or safety due to contamination during use, we have the option of refusing return.
- **Important note for Germany:** Devices and machines of Orbitalum Tools GmbH may not be disposed of at communal dumps, as they are only used in the commercial sector.

2.4 Personnel qualification

CAUTION! The weld head/manual welding torch may only be used by instructed personnel.

- Only employ personnel who satisfy the job- and age-specific regulations that apply to the operation site.
- **No** physical and mental impairments.
- Persons whose ability to respond is affected by drugs, alcohol or medications are not eligible as staff.
- Operation of the machine by underage persons only under supervision by a person authorized to issue instructions.
- A basic knowledge of the TIG welding process is advisable.

2.5 Fundamental information on operational safety

CAUTION! Observe valid safety and accident prevention regulations!

Improper usage can impair safety. This can result in life-threatening injuries.

- Never leave the weld head unattended when the power supply is switched on.
- The operator must ensure that no 2nd person is located within the danger zone.
- Do **not** modify or convert the weld head.
- Use the weld head only in technically flawless operating order and condition.
- Use only genuine tools, spare parts and accessories as well as specified operating materials.
- In case of changes in the operating behavior, stop operation immediately and have the fault eliminated.
- Do not remove safety devices.
- Do not pull the machine by the hose package or the cable.
- Repair and maintenance work on the electrical equipment may only be carried out by a qualified expert.
- Opening or altering the weld head is prohibited, except for the purpose of removing foreign matter from the transmission.
  Observe the troubleshooting information (*see chapt.* “Troubleshooting” of the operating instructions).

⚠	**CAUTION!**	Risk of injury due to monotonous work and exhausting work in places that are difficult to access and performing overhead work! Discomfort, tiredness and malfunctions in the motor system, restricted ability to react and cramping.

► Increase break times.

► Perform "loosening-up" exercises.

► Assume an upright, fatigue-free and comfortable body position during operation.

► Ensure a varied range of activities.

- Perform "loosening-up" exercises.
- Ensure a varied range of activities.
- Assume an upright, fatigue-free and comfortable body position during operation.

2.6 Personal protective equipment

The following personal protective equipment must be worn while working at the system:

- ► Safety gloves according to EN 407 for welding operation and DIN 388 for installing the electrode.
- ► Safety shoes according to EN ISO 20345, Class SB.
- ► For overhead work safety helmet according to EN 397.
- ► Wear hearing protection in work environments > 80 db (A).

2.7 Remaining risks

2.7.1 Injury through high weight

A significant health hazard exists during lifting. Observe machine weights, chapt. Gross weight!

Danger of impact and crushing exists in the following situations:

	CAUTION!	Falling of the orbital weld head during transportation, mounting/dismantling or setting up.

⚠	**CAUTION!**	Falling of the transport case caused by it being put down improperly!

- ► Place the transport case on a stable base near (approx. 1.5 m) the welding power supply.

⚠	**CAUTION!**	Falling of the weld head in case of impermissible usage in overhead position!

- ► Wear safety shoes to EN ISO 20345, Class SB.
- ► Place the transport case on a stable base near (approx. 1.5 m/ 4.9 ft) the welding power supply.
- ► Do **not** carry the transport case on a ladder.
- ► To set up the weld head place it flat and ensure that it cannot fall down.
- ► Fit drop guard to weld head.
- ► Weld head may **only be used with drop guard** in overhead positions.
- ► Do not transport the device by crane. Use handles, straps or holders for hand transport only.
- ► Always carry out orbital weld head OW 170 mounting/dismantling work on the pipe employing 2 persons.

- ► Wear safety shoes to EN ISO 20345, Class SB.
- ► Place the transport case on a stable base near (approx. 1.5 m/ 4.9 ft) the welding power supply.
- ► Do **not** carry the transport case on a ladder.

- ► To set up the weld head place it flat and ensure that it cannot fall down.
- ► Fit drop guard to weld head.
- ► Weld head may **only be used with drop guard** in overhead positions.
- ► Do not transport the device by crane. Use handles, straps or holders for hand transport only.
- ► Always carry out orbital weld head OW 170 mounting/dismantling work on the pipe employing 2 persons.

2.7.2 Prick injury through pointed electrode and, if appropriate, cold wire

⚠	**CAUTION!**	Falling of the orbital weld head during transportation, mounting/dismantling or setting up.

2.7.3 Danger of crushing through being caught in by moving parts

⚠	**CAUTION!**	Hands and fingers can be caught in and crushed while setting up the weld head.

- ► Before setting up or before electrode replacement lay the weld head flat on the base
- ► Switch off the welding power supply before setting up or before an electrode replacement.

⚠	**CAUTION!**	Risk of body parts being crushed due to the clamping cassette falling off when clamping onto the workpiece.

- ► Attach drop guard to the clamping cassette (OW 25 GC only).
- ► Make sure that no one is beneath the site of operation.
- ► Wear personal protective equipment.

2.7.4 Injury through rotating machine parts

	DANGER!	The rotating machine parts can cause hair, jewelry or clothes to be caught and pulled into the housing.
	CAUTION!	Risk of crushing of hands and fingers! The rotor can start up unexpectedly during the setup of the electrode.

- ► Before connecting the weld head and before mounting the electrode: Switch off orbital welding system.
- ► Before moving the rotor with closed weld heads, fit clamping cassette or clamping unit and close flip cover.

- ► Wear tight-fitting clothes.
- ► **Do not** wear open hair, jewelry or other accessories that can be easily drawn in.

2.7.5 Danger of cuts at sharp edges

	CAUTION!	Danger of cut injuries caused by sharp tube edges when clamping the weld head at the tube.

- ► Wear safety gloves according to DIN 388.

2.7.6 Burns and risk of fire

	CAUTION!	After welding the weld head and the workpiece are hot. Very high temperatures arise in particular after several consecutive welding processes. There is a danger of burns or damage to the points of contact when working on the weld head (for example, when changing clamps or mounting/removing the electrode). Materials without thermal resistance can be damaged when coming into contact with the hot weld head.
	WARNING!	Thermal problems can arise in the case of incorrect positioning of the weld head or the use of impermissible materials in the welding area. In the worst case a fire will be started. Observe the local general fire protection measures.
	WARNING!	Tripping over the above could cause the weld current connection to be pulled out so that an arc may arise between the weld current connection and the orbital weld system. This can result in burns and blindness, in the worst case a fire can be started.

- ► Safety gloves in accordance with EN 407.
- ► Wait until the surfaces have cooled down to below 50 °C (122 °F) before working on the weld head or before packing into the transport case.
- ► Position the weld head correctly.
- ► Use only permissible materials in the welding area.
- ► Let the cleaning agent evaporate completely after cleaning the weld head and prior to welding.
- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Do **not** put lines or cables under tension.
- ► Place the weld head in the transport case after dismantling.
- ► Ensure that the hose package is connected properly and that the strain relief is attached.

2.7.7 Tripping over wires and cables

CAUTION!	If the power cable, gas line or control cable are under tension, there is the danger that persons may trip over them and be injured.
WARNING!	Tripping over the above could cause the weld current connection to be pulled out so that in the worst case an arc may arise between the weld current connection and the orbital weld system. Burns and glaring light may be the result.

- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Do **not** put lines or cables under tension.
- ► Place the welding tongs in the transport case after dismantling.
- ► Ensure that the hose assembly is connected properly and that the strain relief is attached.

2.7.8 Long-lasting physical damage through wrong posture

CAUTION!	Long-lasting physical damage due to incorrect posture. Risk of discomfort, tiredness and malfunctions in the motor system, restricted ability to react and cramping.

- ► Increase break times.
- ► Perform "loosening-up" exercises.
- ► Assume an upright, fatigue-free and comfortable body position during operation.
- ► Ensure a varied range of activities.

2.7.9 Electric shock

Two electrical potentials are applied during the welding process:

- Potential 1: Electrode/torch body (-)
- Potential 2: Remaining components of the weld head incl. pipe (+)

DANGER!	There is the risk of a fatal electric shock on simultaneous contact with both potentials during the high-frequency ignition.

- ► Before connecting the weld head and before mounting the electrode: Switch off orbital welding system.
- ► Before moving the rotor with closed weld heads, fit clamping cassette or clamping units and close clamping unit and flip cover.
- ► From the start of the welding process avoid contact with the tube and the housing of the orbital weld head.
- ► Wear safety gloves DIN 12477, Type A for welding operation and DIN 388, Class 4 for mounting the electrode.

- ► From the start of the welding process avoid contact with the tube and the housing of the orbital weld head.
- ► Wear safety gloves DIN 12477, Type A for welding operation and DIN 388, Class 4 for mounting the electrode.

⚠	**DANGER!**	Risk of death for people with heart problems or cardiac pacemakers.

- ► From the start of the welding process avoid contact with the tube and the housing of the weld head.
- ► Switch off the power supply when connecting or disconnecting a weld head or manual welding torch.
- ► If the weld head or manual welding torch is not ready for operation, switch it to the "Test" function.

⚠	**DANGER!**	Electrical hazards through touching as well as incorrect or damp protective equipment.

- ► Wear dry safety shoes, dry metal-free (grommet-free) leather gloves and dry safety suits to minimize the electrical hazard.
- ► Work on a dry surface.

⚠	**DANGER!**	Electric shock along with injuries and damage to property on other devices due to erroneous ignition with unmounted or incorrectly positioned weld head!

- ► Do **not** play with weld head.

⚠	**DANGER!**	Electric shock and risk of crushing due to improper action and opening of the weld head.

- ► Unplug the weld head from the power source.
- ► Allow machine to cool down sufficiently before opening.
- ► Allow only a professional electrician to access the electrical system.
- ► **Never** connect open weld head to the power source.

⚠	WARNING!	Various injuries and damage to property due to electromagnetic incompatibility of surrounding devices during high-frequency ignition and devices in operation without a protective ground.

- ► Use only electrical devices with protective insulation in the working area of the welding system.
- ► Observe electromagnetically-sensitive devices when igniting the system.

2.7.10 Damage to eyes through radiation

WARNING! During the welding process infrared, glaring and ultraviolet rays arise that can seriously damage the eyes.

- **Do not** look into the electric arc.
- Wear eye protection to EN 170.

- **Do not** look into the electric arc.
- Wear eye protection to EN 170.

2.7.11 Dangers through electromagnetic fields

DANGER! Depending on the form of the workplace, life-threatening electromagnetic fields can arise in the direct vicinity.

- People with heart problems or cardiac pacemakers must not operate the welding system.
- The owner has to ensure safe design of the workplace in accordance with the EMF Directive 2013/35/EU.
- Use only electrical devices with protective insulation in the working area of the welding system.
- Observe electromagnetically-sensitive devices when igniting the system.

2.7.12 Risk of suffocation from an excessive amount of argon in the air

DANGER! When leaks in the gas supply occur, there is a danger of suffocation due to the high argon content in the ambient air. Irreversible damage or deadly hazard due to suffocation may be the result.

- Replace defective parts immediately and check daily for proper functioning.
- Check machine daily for externally visible damage and defects and have them remedied by a professional if necessary.
- Keep the lines and hoses away from heat, oil, sharp edges or moving device parts.
- Use only in well ventilated areas.
- Monitor oxygen, if necessary.

2.7.13 General injuries through tools

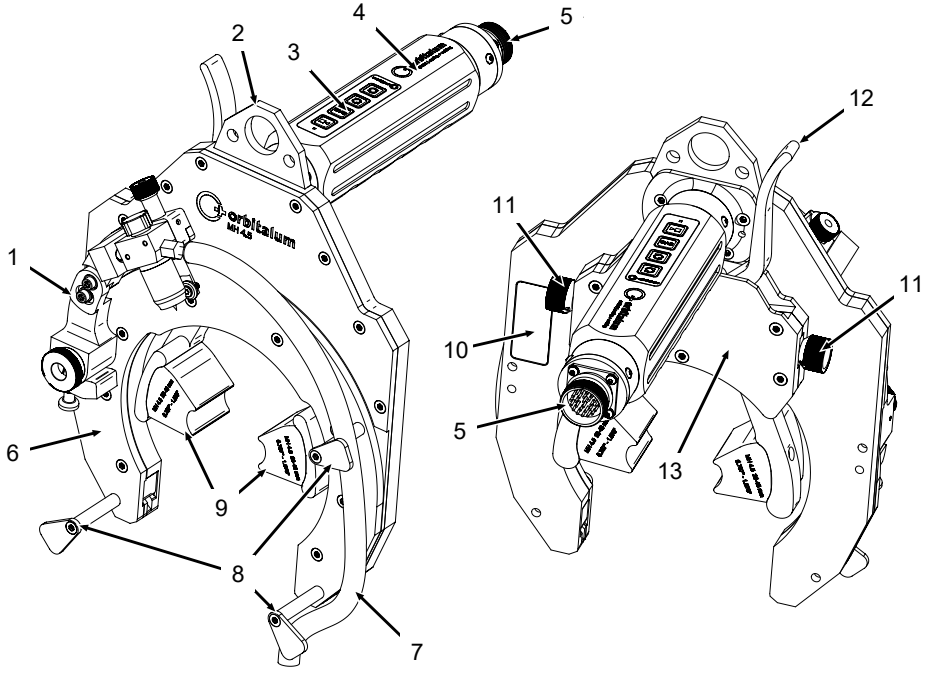
CAUTION! Injuries can occur during dismantling for the proper disposal of the weld head through uncertainties in handling tools.

- ► In case of uncertainties send the weld head to Orbitalum Tools – proper disposal is carried out here.
- ► Allow only a professional electrician to access the electrical system and open the weld head.

3 Description

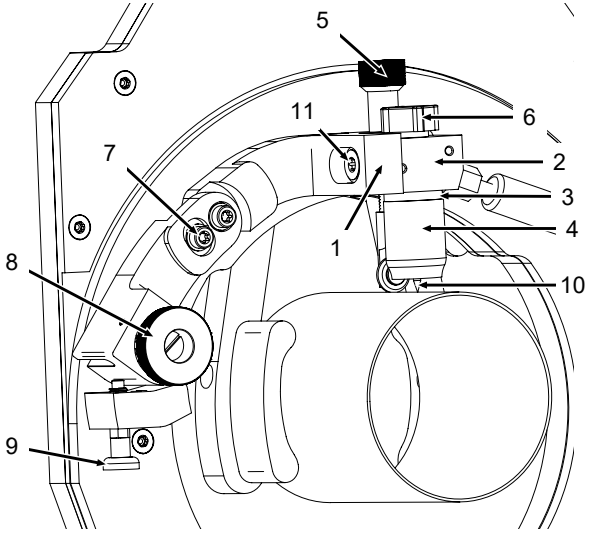
3.1 Basic machine

The MH 4.5 is shown in the figure as an example.



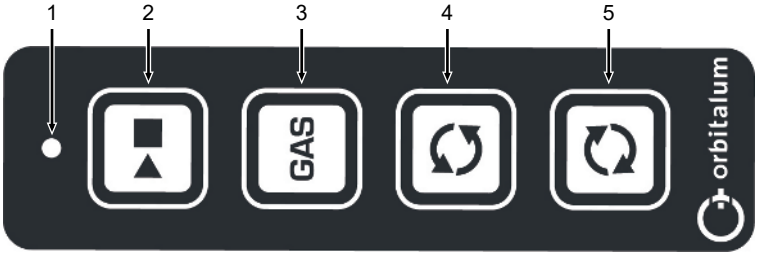
NO.	DESIGNATION	FUNCTION
1	Torch articulated arm	Holder and movement of torch assembly.
2	Mounting lug	Fastening of a drop guard.
3	Control panel	Control of weld head functions.
4	Motor/handle	Drive of rotation movement and handle.
5	Connection control line	For connection to the control cable.
6	Rotor plate	Carrier part for torch arm and hose holder.
7	Power/gas cable	Transfer of welding current and shielding gas.
8	Hose holder	For the secure winding of the hose package during rotation of the weld head.
9	Clamp arms	For clamping the weld head to the workpiece to be welded. Installation option of reduction jaws.
10	Type plate	Lists data for the weld head.
11	Setting of the clamping range (pipe Ø)	For setting the pipe diameter.
12	Clamping lever	For clamping and releasing the weld head to the workpiece.
13	Clamping unit	For clamping the weld head to the workpiece.

3.2 Torch unit



NO.	DESIGNATION	FUNCTION
1	Holder for torch body	Fastening of torch body
2	Torch body	Supply of the weld current to the electrode.
3	Insulation ring	Sealing of torch and gas nozzle against air intake.
4	Gas nozzle	Bundling of the gas flow.
5	Electrode gap adjusting screw	Setting of the distance between electrode and workpiece. Depending on the application, the arc gap must amount to between approx. 1 mm and 3 mm (0.039" and 0.118") and be effected by means of a feeler gage.
6	Torch cap	Clamping of electrode.
7	Electrode angle adjusting screw	Adjusting of electrode angle to pipe axis.
8	Axial torch adjustment knurled nut	Linear torch adjustment parallel to the pipe axis.
9	Torch arm locking	Fixing and releasing of the torch arm.
10	Electrodes	Transfer of welding current.
11	Torch position adjusting screw	Linear torch rough adjustment to pipe axis and side torch tilt adjustment.

3.3 Control panel/control elements



POS.	CONTROL ELEMENT	FUNCTION
1	**LED**	• LED blinks in ready-to-weld state.
		• LED lights up constantly during the welding process.
2	**START/**	• Pressing once: Starts the welding process.
	STOP	• Press during the welding process: Welding process is stopped and gas post purge time is started.
		• Press during the gas post purge time: Gas post purge is interrupted.
3	**GAS**	• Pressing once: Function test of the gas supply is started.
		• Pressing again: Function test is terminated.
		• Pressing and holding the key in welding mode or in test mode of welding power supply: Mode is switched.
4	**ROTATION (COUNTERCLOCKWISE)**	• Pressing briefly: Rotor rotates step-by-step (counterclockwise) in the welding direction.
		• Pressing and holding: Rotor rotates continuously (counterclockwise) in the welding direction.
5	**ROTATION (CLOCKWISE)**	• Pressing briefly: Rotor rotates step-by-step (clockwise) in the welding direction.
		• Pressing and holding: Rotor rotates continuously (clockwise) in the welding direction.

4 Scope of application

ART	UNIT	MH 3.0	MH 4.5	MH 6.6
Pipe (outer diameter) min. - max.	[mm]	10 - 76.20	20 - 114.30	40 - 168.30
	[inch]	0,394 – 3,000	0,787 – 4,500	1,575 – 6,626
Electrode lengths min. - max.	[mm]	30 - 55	30 - 55	30 - 55
	[inch]	0,181 - 2,165	0,181 - 2,165	0,181 - 2,165
Welding process	Tungsten inert gas process (TIG)			
Materials	All materials that are fundamentally suitable for the TIG welding process.			

5 Technical data

5.1 Weld head

MODEL		MH 3.0	MH 4.5	MH 6.6
Code		803000001	804000001	805000001
Machine weight including power/gas cable	[kg]	4.24	5.42	6.11
	[lbs]	9.35	11.95	13.47
Power/gas cable length	[m]	7.0	7.0	7.0
	[ft]	23.0	23.0	23.0
Duty cycle	[A]	35 % @ 140 A	35 % @ 140 A	35 % @ 140 A
Weld current, max.	[A]	140	140	140
Ignition voltage, max.	[kV]	9	9	9
Motor voltage, max.	[VDC]	24	24	24
Motor current, max.	[A]	1.0	1.0	1.0
Rotor speed, max.	[rpm]	13.5	8.6	6.4
Torch pivot range	[°]	0 – 90	0 – 90	0 – 90
Sound level, max. (1 m gap)	[dB (A)]	70	70	70

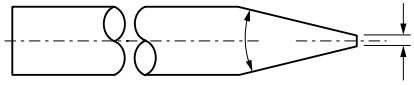
5.2 Electrodes

NOTICE!

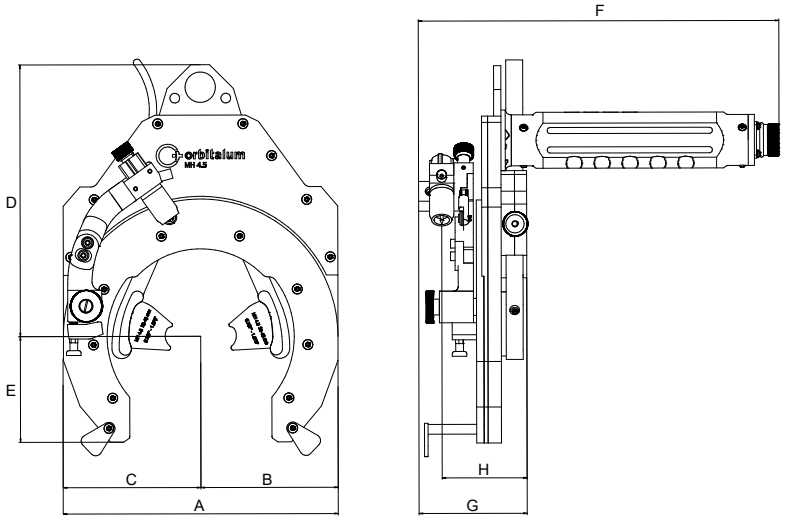
Tungsten is used as the electrode base material

If possible, do not use electrodes with thorium oxide additives.

MODEL		MH 3.0	MH 4.5	MH 6.6
Code		803000001	804000001	805000001
Arc length (gap) min.	[mm]	0.8	0.8	0.8
	[inch]	0,031	0,031	0,031
Arc length (gap) max.	[mm]	3.0	3.0	3.0
	[inch]	0,118	0,118	0,118
Electrode length, max.	[mm]	55	55	55
	[inch]	2,165	2,165	2,165
Electrode length, min.	[mm]	30	30	30
	[inch]	1,181	1,181	1,181

MODEL		MH 3.0	MH 4.5	MH 6.6
Electrode diameter standard version	[mm]	2.4	2.4	2.4
	[inch]	0,094	0,094	0,094
Tip angle	[°]	30	30	30
Breaking the tip after grinding is recommended (see sketch)				
Preparing the tip	Solely by grinding			
Grinding direction	Solely lengthwise			
Recommended tool	ORBITALUM TOOLS electrode grinder ESG Plus			

5.3 Dimensions



MODEL		MH 3.0	MH 4.5	MH 6.6
Code		803000001	804000001	805000001
Dimension "A":	[mm]	150.00	226.00	290.00
	[inch]	5.91	8.90	11.42
Dimension "B"	[mm]	75.00	113.00	145.00
	[inch]	2.95	4.45	5.71
Dimension "C":	[mm]	75.00	113.00	145.00
	[inch]	2.95	4.45	5.71
Dimension "D":	[mm]	172.50	224.50	252.50
	[inch]	6.79	8.84	9.94
Dimension "E":	[mm]	60.99	87.00	110.00
	[inch]	2.40	3.43	4.33
Dimension "F":	[mm]	296.70	296.70	296.70
	[inch]	11.68	11.68	11.68
Dimension "G":	[mm]	88.90	88.90	88.90
	[inch]	3.50	3.50	3.50

MODEL		MH 3.0	MH 4.5	MH 6.6
Dimension "H":	[mm]	69.90 – 74.90	69.90 – 74.90	69.90 – 74.90
	[inch]	2.75 – 2,949	2.75 – 2,949	2.75 – 2,949

6 Transport

INFO

The figures shown in these operating instructions for the individual work steps are based on an MH 4.5 in as far as the work steps are identical for all MH versions. Procedures or work steps that deviate are, if required, described separately and represented in a separate figure.

6.1 Gross weight

MODEL		MH 3.0	MH 4.5	MH 6.6
Weight (Standard version)	[kg]	4,24	5,42	6,11
	[lbs]	9.35	11.95	13,47

**Machine weight incl. Power/gas cable*

6.2 Transport weld head

WARNING

Danger of injury through high weight of the weld head!
Depending on the model, the orbital weld head with power/gas cable weighs max. 6.50 kg (14.33 lbs).

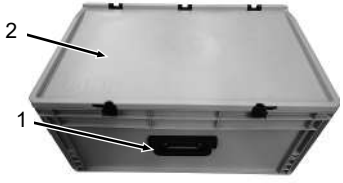
- ► Lift the orbital weld head carefully.
- ► Place the storage box on a secure base.
- ► Wear safety shoes to EN ISO 20345, Class SB.

Transport weld head and wound up power/gas cable, either

- By the handle (1) of the transport box (2)

or

- Directly by the handle (3) of the unpacked weld head and by the power/gas cable (4).




3


4

7 Commissioning

7.1 Scope of delivery

ITEM	MH 3.0	MH 4.5	MH 6.6
Transport box	X	X	X
Consumables/set of tools	X	X	X
MH 3.0 clamping jaw 10 - 30 mm (0.394” - 1.181”)	X		
MH 3.0 clamping jaw 30 - 45 mm (1,181” - 1,772”)	X		
MH 4.5 clamping jaw 20 - 40 mm (0.787” - 1.575”)		X	
MH 4.5 clamping jaw 40 - 80 mm (1,575” - 3,150”)		X	
MH 6.6 clamping jaw 40 - 80 mm (1.575” - 3.150”)			X
MH 6.6 clamping jaw 80 - 120 mm (3,150” - 4,724”)			X
Power/gas hose MH	X	X	X
Operating instructions and spare parts list MH 3.0 / 4.5 / 6.6	X	X	X

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We reserve the right to make changes.

- ► Check the delivery for completeness and damage caused by transport.
- ► Report any missing parts or damage caused by transport to your supplier immediately.

7.2 Preparing initial operation

Prerequisite: Welding power supply connected and ready to operate.

- ► Check the weld head, power/gas hose, ground cable and lines for damage.
- ► Check the working environment for possible sources of danger and, if applicable, eliminate these.

8 Set-up and mounting

INFO		The figures shown in these operating instructions for the individual work steps are based on an MH 4.5 in as far as the work steps are identical for all MH versions. Procedures or work steps that deviate are, if required, described separately and represented in a separate figure.

8.1 Procedure

INFO		Observe operating instructions of the ORBIMAT welding power supply or MOBILE WELDER.

Carry out setting up and mounting in the following order:

1. In case of overhead use there is a possibility to fit a drop guard.
2. Fit clamping jaws
3. Clamp the weld head onto the workpieces
4. Set up the electrode
5. Set up the torch
6. Connecting the weld head to the power source
7. Wind up power/gas hose
8. Carry out gas function test
9. Configure the welding procedure.

8.2 Fit drop guard

WARNING

Falling of unsecured weld head.

The device may drop and injure people.

- ► Before start of work, fit drop guard with sufficient load capacity (e.g. wire cable with snap hook) to weld head.
- ► Weld head must **not** be used unsecured in overhead positions.

Before start of work the weld head must be secured against falling.

To this end the MOBILE HEAD weld heads have a mounting lug (1) for fastening of a suitable drop guard, such as a screw snap hook (2) to a wire cable (3).

8.3 Fit clamping jaws

Depending on the workpiece diameter to be clamped, clamping jaws suitable for the diameter must be fitted to the clamp arms of the clamping unit.

CLAMPING AREAS OVERVIEW
MH 3.0 clamping jaw 10 - 30 mm (0.394” - 1.181”)
MH 3.0 clamping jaw 30 - 45 mm (1,181” - 1,772”)
MH 3.0 without clamping jaws 45 mm – 76.20 mm (1,772” – 3,000”)
MH 4.5 clamping jaw 20 - 40 mm (0.787” - 1.575”)
MH 4.5 clamping jaw 40 - 80 mm (1,575” - 3,150”)
MH 4.5 without clamping jaws 80 mm – 114.30 mm (3,150” – 4,500”)
MH 6.6 clamping jaw 40 - 80 mm (1.575” - 3.150”)
MH 6.6 clamping jaw 80 - 120 mm (3,150” - 4,724”)
MH 6.6 without clamping jaws 120 mm – 168.30 mm (4,724” – 6,626”)

- ► Lay weld head on a slip- and scratch-resistant surface.
- ► Lay clamping jaws into the clamp arms and mount using the bolt and key included in the accessory set.

8.4 Clamp the weld head onto the workpiece

NOTICE!

► When clamping the weld head on the workpiece, align the electrode centered on the workpiece joint.

NOTICE!

► To avoid deformations or damage to the workpiece, adapt the clamping force to the wall thickness of the workpiece.

NOTICE!

Swivel torch articulated arm (1) **before** moving the rotor into home position, until the locking lever engages (see chap. Set up the torch [▶ 37]).

✓ Pipe ends are tacked together light-/gap-free.

✓ Rotor is in home position.

✓ **Before** placing the weld head on the workpiece, ensure that the torch articulated arm (1) is locked in the home position.

1. Roughly adjust clamping jaws with closed clamping unit via the rotating handle (3) to the current tube diameter.
2. Completely open clamping unit with clamping lever (2).
3. Set the weld head onto the workpiece in such a way that the electrode is roughly aligned to the workpiece joint.
4. Carefully tighten clamping lever (2) of clamping unit.
   ⇨ The weld head must fit so tightly that it **cannot** shift by itself.

⇨ If necessary, correct adjustment of tube diameter via the rotating handle (3) and carefully retighten the clamping lever (2) until the weld head is securely clamped to the workpiece.

Fig.: Torch articulated arm in home position

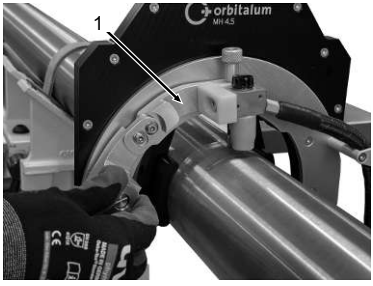


Fig.: Torch articulated arm lowered

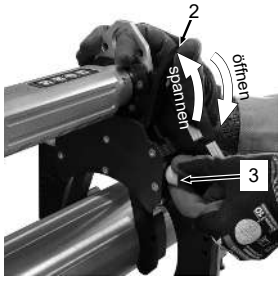


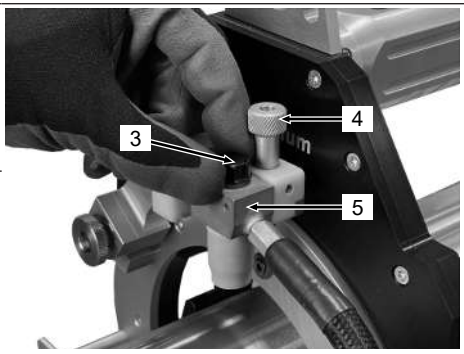
Fig.: Tighten clamping lever

8.5 Set up the electrode

CAUTION		**Unintentional starting up of the weld head!** Crushing of hands and fingers. ► Switch off the Orbital welding power source.

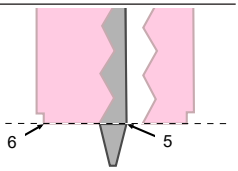
NOTICE!		Before inserting the electrode, check that it has the correct length and the sharpness. Rework, if necessary. *See the chapter* Grinding electrode

1. Unscrew the torch cap (1) and remove the clamping sleeve (2).
2. Insert the electrode (1) into the clamping sleeve (2).
3. Insert the clamping sleeve with electrode into the torch body (5).
4. Screw torch cap (4) on again.
   If required, adjust the electrode projection out of the gas nozzle.



Recommended electrode projection:

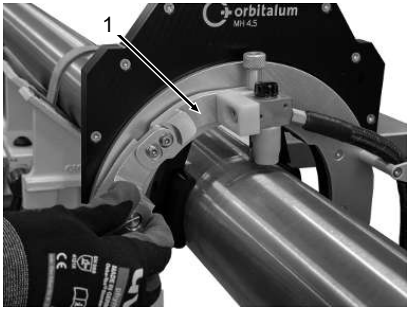
Longitudinal grinding edge electrode (6) flush with lower edge (7) of gas nozzle.



► To remove the electrode carry out the process steps in the reverse order.

8.5.1 Fine-tune electrode

► Position the electrode centrally over the workpiece joint using the bolt of the axial torch adjustment. (2). The possibility of a correction in both directions may be needed later as a result.



8.6 Set up the torch

CAUTION

Unintentional starting up of the weld head!

Crushing of hands and fingers.

► Switch off the Orbital welding power source.

CAUTION

Spring-loaded torch articulated arm!

Damage to the electrode and risk of injury through uncontrolled torch arm lowering.

► The torch arm must be lowered manually.

► Ensure that the torch fixation is locked.

CAUTION

After welding the orbital weld head and the workpiece are hot. Very high temperatures arise in particular after several consecutive welding processes. There is a danger of burns or damage to the points of contact when working on the orbital weld head (for example when changing clamps or mounting/removing the electrodes). Materials without thermal resistance (for example foam inlay of the transport case) can be damaged when coming into contact with the hot orbital weld head.

► Wear safety gloves to EN 388, Performance level 2.

► Wait until the surfaces have cooled down to below 50 °C before working on the orbital weld head or before packing into the transport case.

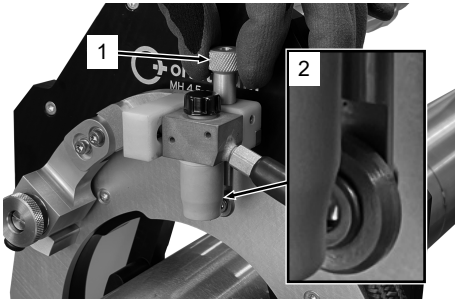
► Position the weld head correctly.

► Use only permissible materials in the welding area.

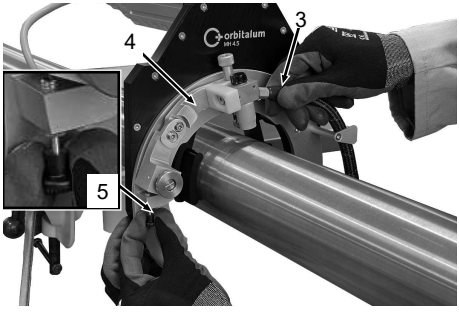
NOTICE!

Check the gas nozzle and lens regularly for soiling, such as by foreign material, clean and, if required, replace (see chap. Replacing the gas nozzle and/or lens [▶ 53]).

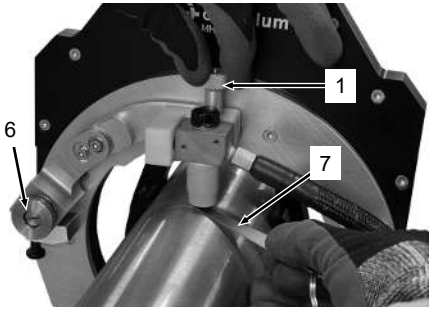
► Move the electrode gap adjusting screw (1) completely out or downward.



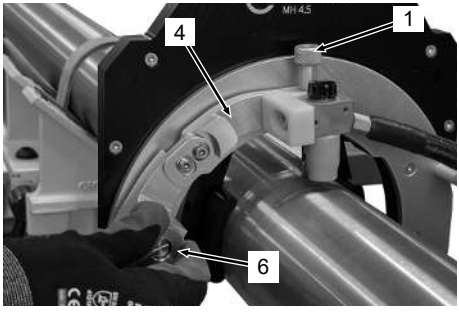
1. Hold torch articulated arm to power/gas hose (3).
2. Pull out the torch locking lever (5) at the torch articulated arm (4) thus releasing it.
3. Slowly and carefully lower torch articulated arm until the scanning wheel (2) touches down on the workpiece.



► Adjust desired electrode gap with the adjusting screw (1) and a feeler gage (7).

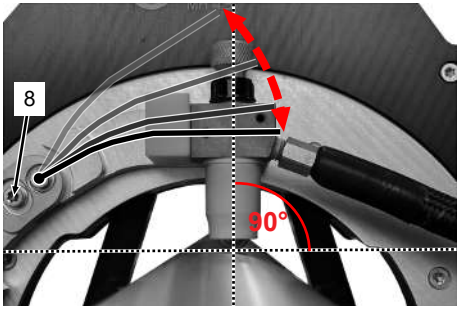


► If necessary, finely align the electrode with the axial torch adjustment (6) to the workpiece joint.
If this is insufficient, the weld head has to be offset slightly and clamped again.
The electrode has to be positioned precisely over the pipe joint.



See chap. Clamp the weld head onto the workpiece [▷ 35]

► Check the 90° angle of the electrode to the workpiece:
Is the electrode setting to the workpiece joint correct (=centered)?
If required, open the clamping screw (8) at the torch articulated arm using a key, adjust to 90°, and tighten again.



► If required, carry out torch angle adjustment by means of the fixating screw (9).

8.7 Connecting the weld head to the power source

CAUTION

Danger of burns from improper welding current connection!

Unsecured welding current plugs or dirty workpiece connections (dust, corrosion) can heat up and cause burns if touched.

- ► Check welding current connections daily and ensure cable socket latch is engaged.
- ► Clean the workpiece connection point thoroughly and fasten it securely!
- ► Do not use structural parts of the workpiece as welding current return line!

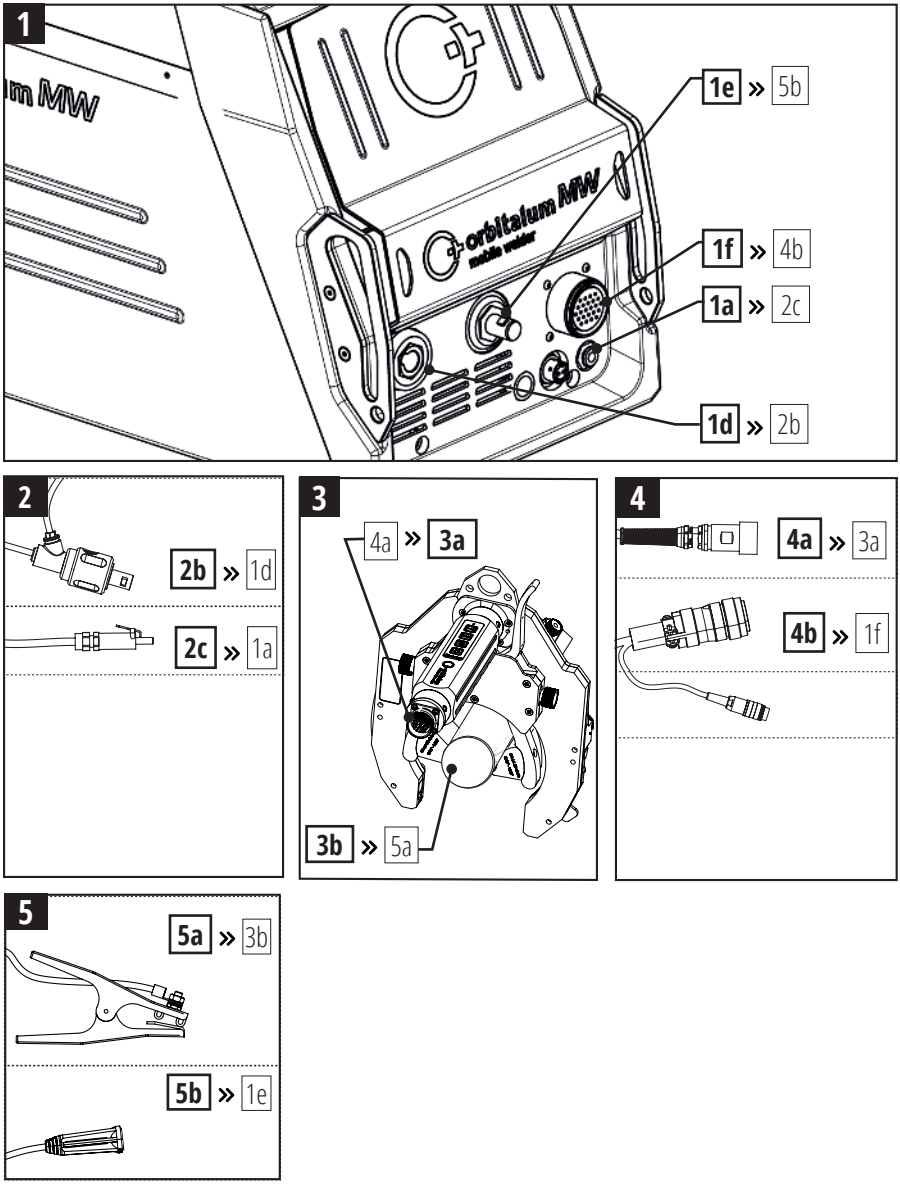
WARNING

Risk of burns, blindness and fire due to arcs

An arc may develop by releasing the welding contacts during operation. This can result in burns and blindness, in the worst case a fire can be started.

- ► Connect and disconnect the weld head only when the power supply is shut down.
- ► Lay the lines and cables so that they are **not** under tension.
- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Attach the strain relief.
- ► Check that hose package connections fit firmly in place when connecting or before activating the power supply.
- ► Do not work near highly flammable substances.

8.7.1 Connection scheme



NO.	DESIGNATION	TO BE CONNECTED WITH	NO.
1	**Power supply**		
1a	Socket "Gas" (quick lock)	Plug "Gas", hose package	**2c**
1d	Socket "Welding current (–)" (hose assembly)	Connector “Welding current (–)”, hose assembly	**2b**
1e	Plug "Welding current +" (ground cable)	Socket "Welding current +", ground cable	**5b**
1f	Socket (Amphenol) "control line"	Plug (Amphenol) "control line to power source"	**4b**
2	**Hose package**		
2a	Plug "Coolant supply line", **blue**	Socket "Coolant supply line", **blue**, power source	**1b**
2b	Plug "Welding current (–)"	Socket "Welding current (–)”, power source	**1d**
2c	"Gas" plug (quick lock)	"Gas" socket, power source	**1a**
3	**Weld head, e.g. type MH 4.5**		
3a	Socket "Control line"	Plug "Control line to weld head", control line	**4a**
3b	Hose	Clamp "Ground cable"	**5a**
4	**Control cable**		
4a	Plug "Control line to weld head"	Socket "Control line", weld head	**3a**
4b	Plug "control line to power source"	Socket "Control line", power source	**1f**
5	**Ground cable**		
5a	Clamp "Ground cable"	Workpiece/hose	**3b**
5b	Socket "Ground cable"	Plug "Welding current +", power source	**1e**

8.7.1.1 Connection sequence

Carry out connections in the following sequence:

NOTICE!

Tungsten is used as the electrode base material

If possible, do not use electrodes with thorium oxide additives.

1. Connect the "Welding current –" plug (**2b**) of the hose package to the "Welding current –" socket (**1d**) at the power source and lock it with a turning movement.
2. Connect the "Gas" plug (**2c**) of the hose package to the "Gas" socket (**1a**) at the power source.
3. Connect the Amphenol plug "Control line" to power source" (**4b**) to the "Control line" socket (**1f**) at the power source.
4. Connect the "Control line to weld head" plug (**4a**) to the "Control line" socket (**3a**) at the weld head and screw tight.

5. Connect the "Ground cable" plug (**5b**) of the ground cable to the "Welding current +" socket (**1e**) at the power source and screw hand-tight.
6. Clamp the "Ground cable" clamp (**5a**) of the ground cable to the workpiece (**3b**). Ensure good electrical contact (if necessary, grind the workpiece surface down to the bare metal).
7. Switch on the welding power supply.
8. Carry out gas function test (see chap. Carry out gas function test [▶ 45]).

8.8 Wind up power/gas hose

CAUTION

Crushing of hands and fingers

► Keep hands out of danger area.

NOTICE!

The power/gas hose must be manually wound up before welding, as during the welding process the hose is automatically unwound due to the rotation movement.

Without prior winding up there may be damage.

► Make sure that there is sufficient hose length available for winding up.

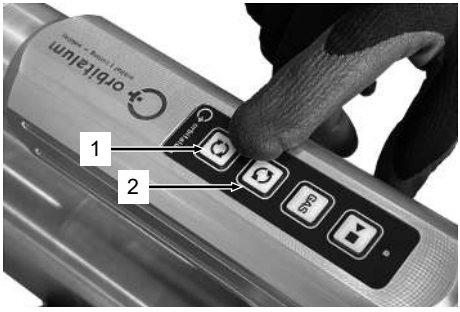
► During winding up ensure that the hose winds up cleanly and does not become squashed. If necessary, guide the hose by hand.

NOTICE!

The torch position of the weld head must agree with the starting/weld starting position of the weld procedure (power source (for example 9 o'clock position).

► If required, the electrode/torch position has to be readjusted.

► Hold rotation key (1 or 2) until the torch reaches the desired start position and the power/gas hose is wound up.



- ► The torch position (3) and start position of the welding procedure (4) must correspond with the torch position of the weld head. In auto-programming the 9 o'clock position is preset and can be changed if required.
- ► Press and hold “ROTATION” key (1 or 2) to carry out winding up.
- ► Release “ROTATION” key (1 or 2) as soon as the torch reaches the desired position and sufficient hose is wound up.

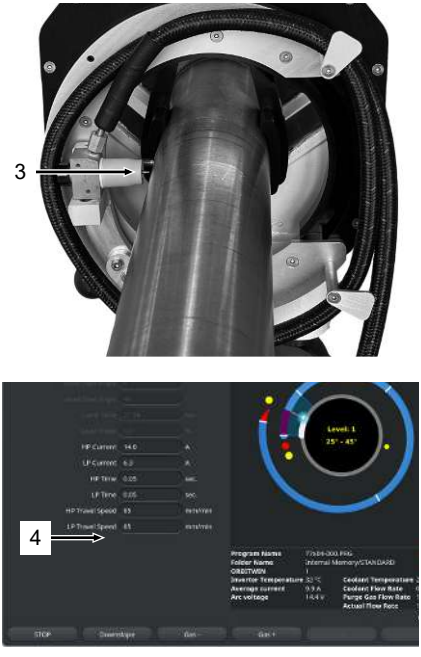


Fig.: Torch and start position welding procedure in 9 o’clock position

8.9 Carry out gas function test

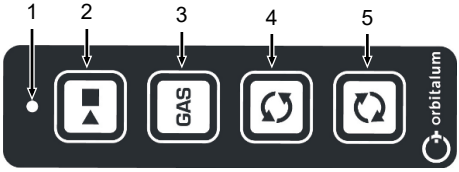
By means of the gas function test, the gas flow can be checked independently of the welding process to ensure functional readiness. In the event of a lack of gas the welding power supply issues an error message.

NOTICE!

Before carrying out the gas function test, ensure the following:

► Gas supply **must** be connected to the power supply and gas quantity correctly adjusted (see power source operating instructions).

Procedure (via control panel of weld head):



✓ Make sure that the welding gas supply and weld head are correctly connected and there is a sufficient quantity of welding gas available.

1. Press the “GAS” key (3).
2. Check and, if necessary, adjust gas quantity. Recommended welding gas quantity 12 l/min.
3. Press the “GAS” key (3) again.

⇨ The gas function test is complete.

NOTICE!

In the event of a welding power supply error message

► Check whether the welding gas supply and weld head are correctly connected, the welding gas quantity correctly set and the gas source is supplying sufficient gas.

► OR: *See operating instructions of the welding power source.*

8.10 Configure the welding procedure

► Configure the welding procedure in accordance with the operating instructions of the welding power supply.

► The weld head is ready to use.

9 Operation

INFO

The figures shown in these operating instructions for the individual work steps are based on an MH 4.5 in as far as the work steps are identical for all MH versions. Procedures or work steps that deviate are, if required, described separately and represented in a separate figure.

9.1 Weld mode

WARNING

Risk of injury due to radiation or heat!

Contact with hot workpieces and sparks leads to burns.

- ► Use welding shield or welding helmet with sufficient protective level (depending on use).
- ► Wear dry protective clothing (e.g. welding shield, gloves, etc.) according to the applicable regulations of the respective country.
- ► Protect uninvolved persons with protective curtains or walls against radiation and glare.

DANGER

Electromagnetic fields arise during the welding process.

- ► The plant operator must realize the workplaces in accordance with the EMF Directive 2013/35/EU in such a manner that no danger whatsoever exists for the operator or persons in the vicinity of the welding system.

DANGER

If the argon share in the air rises above 50%, lasting damage or risk of death can arise through suffocation.

- ► Ensure sufficient ventilation in rooms.
- ► If necessary, monitor the oxygen level in the air.

WARNING

Thermal problems can arise in the case of incorrect positioning of the forming system or the use of impermissible materials in the welding area.

In the worst case a fire will be started.

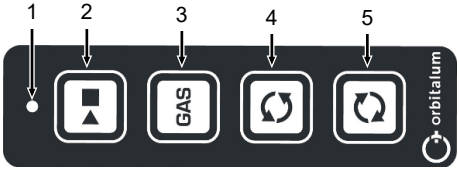
- ► Observe the local general fire protection measures.

NOTICE!

Various risks

- ► Permanently observe welding process!

Procedure via control panel of weld head:



✓ Welding power supply, ground cable and weld head are connected, aligned and ready for operation.

1. Press the “**START/STOP**” (2) key to start the welding process.
2. Observe welding and unwinding of power/gas hose.

OR via welding power supply:

► *See operating instructions of the welding power source.*

⇨ The welding process ends automatically after the gas post purge time has expired.

9.2 Returning the weld head to home position

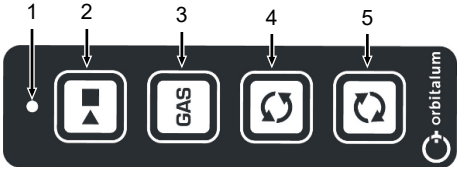
After the welding process has been terminated, the hose package is unwound onto the weld head.

► After completion of the gas post purge time the rotor with hose assembly must be returned to its home position.

NOTICE!

Swivel back torch articulated arm **before** moving the rotor into home position, until it engages (*see chap.* Set up the torch [▶ 37]).

Procedure via control panel of weld head:



► Press and hold “ROTATION COUNTERCLOCKWISE” (4) or “ROTATION CLOCKWISE” (5) key.

OR via welding power supply:

► *See operating instructions of the welding power source.*

9.3 Removing the weld head from the workpiece

NOTICE!

► Swivel back torch articulated arm **before** moving the rotor into home position, until the lock engages (see chap. Set up the torch [▶ 37]).

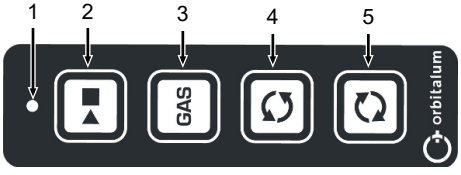
Procedure:

- ✓ The rotor is in home position.
- ✓ Torch articulated arm is locked into home position.

1. Hold weld head to handle/motor.
2. Loosen the clamping lever (9).
3. Remove the weld head from the workpiece and put it down securely.

9.4 Aborting welding

Procedure via control panel of weld head:



► Press “START/STOP” key (2) on the control panel of the weld head. The current process is stopped. Only the programmed gas post purge time continues to run.
By pressing the “START/STOP” key again during the gas post purge time this is also stopped.

OR via welding power supply:

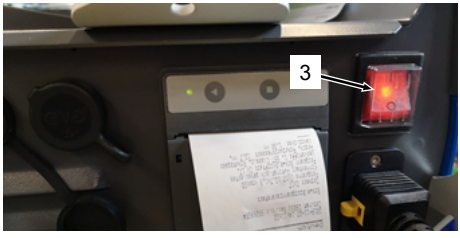
INFO

To demonstrate power sources in these operating instructions the MOBILE WELDER is used as an example.

1. ► Press hardware softkey 1 (7)

2. ► Press touchscreen softkey button “STOP” (8)

3. ► Press the ON-OFF switch (6)



► *See operating instructions of the power source*

9.5 Preparing storage

Carry out the following steps before storage:

1. Switch off the welding power supply.
2. Disconnect the weld head from the welding power supply, see chap. Connecting the weld head to the power source [▶ 40].
3. Remove electrode, see chap. Set up the electrode [▶ 36].
4. Store weld head. Ensure that the power/gas hose is not twisted or squeezed.

Carry out the following steps additionally before longer storage periods:

1. Clean the surfaces.
2. Store dry and dust-free.

The following storage conditions must be observed:

- Storage only in enclosed spaces
- Do not store near materials that may cause corrosion.
- Temperature range -20 to +55 °C
- Relative humidity up to 90 % at 40 °C

Further care and maintenance advice, see chap. Maintenance and troubleshooting [▶ 51].

10 Maintenance and troubleshooting

10.1 Instructions for care

- ► Ensure that **no** dirt particles or small parts enter the transmission (inside weld head).
- ► If the surfaces are soiled, use only residue-free cleaning agents for cleaning.

10.2 Wartung und Pflege

The following instructions for care depend, if not stated otherwise, strongly on the usage of the weld head.

Shorter cleaning intervals influence the equipment service life positively.

INTERVAL	RESPECTIVE COMPONENT	ACTIVITY
Before every use	Weld head, hoses, wires	► Check for damage and ease of operation of all parts (e.g. defective functional surfaces, leakages, cracks, defective screw heads, etc.).
	Control panel	► Check the keys for functionality.
	Clamping unit	► Check the clamping mechanism for ease of use, function and clamping.
	Electrodes	► Ensure the correct electrode gap (*see chap.* Set up the electrode [▶ 36])
		Only use cleanly partially ground quality electrodes. Recommendation: Type WS2, grinding angle 30° (*see chap.* Grinding electrode).

INTERVAL	RESPECTIVE COMPONENT	ACTIVITY
Before every use	Protective gas for welding	► Only use protective gases that are classified for the TIG welding process according to EN ISO 14175 (e.g. Argon 4.6 or purer protective gas for welding).
		► Set the flow rate: 8 – 15 l/min.
		► Set gas pre-flow time to min. 5 seconds.
	Workpiece/hose	► Ensure a straight hose cut of 90° (with Orbital hose saw) (burred and planed).
		► I-seam (hose-to-hose) without gap or axle offset.
		► Hose surfaces have to be metallically bright and completely free of greases and other soiling.
		► Hoses have to be aligned and tacked to each other without offset.
Every 100 weldings or daily	Weld head	► Clean and remove residues. Depending on the soiling, by using, for example, a wipe/alcohol/isopropyl, cleaning fleece or vacuum cleaner (**do not** use aggressive cleaning agents, as the surfaces might be damaged).
At least every 500 welding processes or weekly	Weld head	► Perform the standard cleaning procedure (*see chap.* Standard cleaning process [▶ 52]) Standard cleaning process). A shorter cleaning interval can prolong the service life of the weld head, the clamping cassettes and the clamping inserts.
Min. every 30,000 weldings or every 24 months	Weld head	► Send in weld head to Orbitalum service for basic cleaning or have cleaning performed by an authorized expert trained by Orbitalum.
Every 2 years	Power/gas cable	► Have it replaced by certified Orbitalum service center.

10.2.1 Standard cleaning process

DANGER

The rotation movement of the rotor can cause hair, jewelry or clothes to be caught and pulled into the enclosure.

► Wear tight-fitting clothes.

► Do not wear open hair, jewelery or other accessories that can be easily drawn in.

CAUTION

Risk of crushing due to unexpected start of the rotor when setting up the electrode.

Risk of crushing of hands and fingers!

► Before connecting the weld head and before mounting the electrode: Switch off orbital welding system.

► Before moving the rotor with closed weld heads, fit clamping cassette or clamping inserts and close clamping unit and flip cover.

NOTICE!

Cleaning work on the welding tongs may only be carried after it has cooled down completely!

NOTICE!

Cleaning of the welding tongs should be carried out at least every 500 welding processes. Shorter cleaning intervals influence the equipment service life positively.

CAUTION

The use of lubricants can severely influence the function and cause damage.

► Never spray lubricant **into** the welding tongs!

Required cleaning materials:

- Lint-free cotton cloth
- Lubricant ENI Autol Top 2000 Super Longtime.
  Observe the safety data sheet of the lubricant used!

Procedure:

1. Remove soiled lubricant from the sliding surface of the rotor bearing using a lint-free cotton cloth and apply fresh lubricant thinly.
2. After each usage clean surfaces with a lint-free cotton cloth.
3. Remove foreign matter from the gas nozzle and gas lens. In the case of stubborn soiling, a Scotch-Brite cleaning sponge or a comparable product can be used.

10.3 Replacing the gas nozzle and/or lens

CAUTION

Risk of burning due to hot components

► Components must be cooled down before replacement.

CAUTION

Unintentional starting up of the weld head!

Crushing of hands and fingers.

► Switch off the Orbital welding power source.

Procedure:

► Screw off any soiled or damaged gas nozzle (5) and screw on the new gas nozzle.

Carry out the following additional steps to replace the gas lens:

1. Remove electrode, if fitted, *see chap.* Set up the electrode [▶ 36].
2. Unscrew gas lens (4) and remove Teflon seal (3).
3. Place Teflon seal onto the new gas lens (4).
4. Screw all the components back together and, if applicable, mount the electrode again.

IMAGE	DESIGNATION
1 	Torch cap
2 	Clamping sleeve
3 	Teflon seal
4 	Gas lens
5 	Gas nozzle

Codes, see Ersatzteilliste / Spare parts list

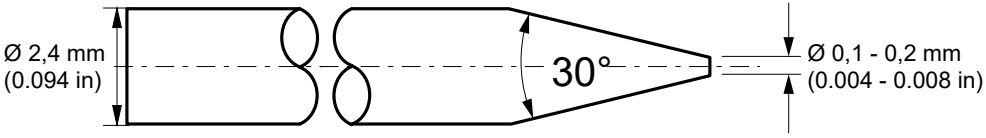
10.4 Troubleshooting

PROBLEM	POSSIBLE CAUSE	REMEDY
Welding process does not start.	No gas supply.	► Check the connections at the welding power supply.
		► Check the hoses, gas bottle and pressure reducer.
Weld head does not clamp correctly on the workpiece.	Hose diameter does not fit the clamping jaw/clamp arm.	► Use clamping jaws that fit or remove the clamping jaws.
Continuously large and constantly different speed deviations.	Defect at the welding power supply or weld head.	► Contact Service.
Arc does not ignite.	Weld head and ground cable incorrectly connected.	1. Clean the workpiece and contact clamp.
	Contact fault between workpiece and contact clamp.	2. Remove isolating intermediate layers.
	Workpieces soiled.	► Clean the workpiece.
	Welding gas concentration too low.	► Check welding gas supply and quantity.
	Electrode distance too large.	► Set the electrode distance. Adjust welding gap
	Electrode tip worn.	► Regrind the electrode. *See chap.* --- FEHLENDER LINK ---
	Cable break.	► Replace power/gas cable.
Arc tends to one side.	Electrode worn.	► Regrind the electrode. *See chap.* --- FEHLENDER LINK ---
	Electrode ground incorrectly.	► Regrind the electrode. *See chap.* --- FEHLENDER LINK ---
	Poor electrode quality.	► Use Orbitalum electrodes. *See the chapter*
	Incorrect workpiece material	► Change workpiece material.
	Bad workpiece quality	► Use different material batch.

PROBLEM	POSSIBLE CAUSE	REMEDY
Rotation movement does not start.	Foreign matter in the transmission.	► If possible, remove the foreign matter by means of a vacuum unit. Otherwise send the weld head to the Service. Under no circumstances let the rotor rotate.
	Connection faulty.	► Check the plug and welding power supply.

10.5 Grinding electrode

1. Grind the electrode only in the longitudinal direction.
2. After the electrode has been ground, break the tip in accordance with the following sketch.



10.6 Servicing/Customer service

The following data are required to order spare parts:

- Machine model: (example: MH 4.5)
- Machine No.: See type plate

► For ordering spare parts, see the spare part list.

► Contact your local branch directly in order to eliminate problematic situations.

11 Accessories (optional)

- Accessory set MH
- Control cable TP/MH 7.5 m
- Ground cable, 5 m
- Hose package extensions
- ORBmax residual oxygen meter
- ORBIPURGE forming set
- WS2 tungsten electrodes
- ESG electrode grinding machine

WARNING

Danger presented by using accessories that have not been approved.

Various injuries and damage to property.

► Use only genuine tools, spare parts, operating materials and accessories from Orbitalum Tools.

► See product catalog "Orbital Welding" for a comprehensive overview of suitable accessories.

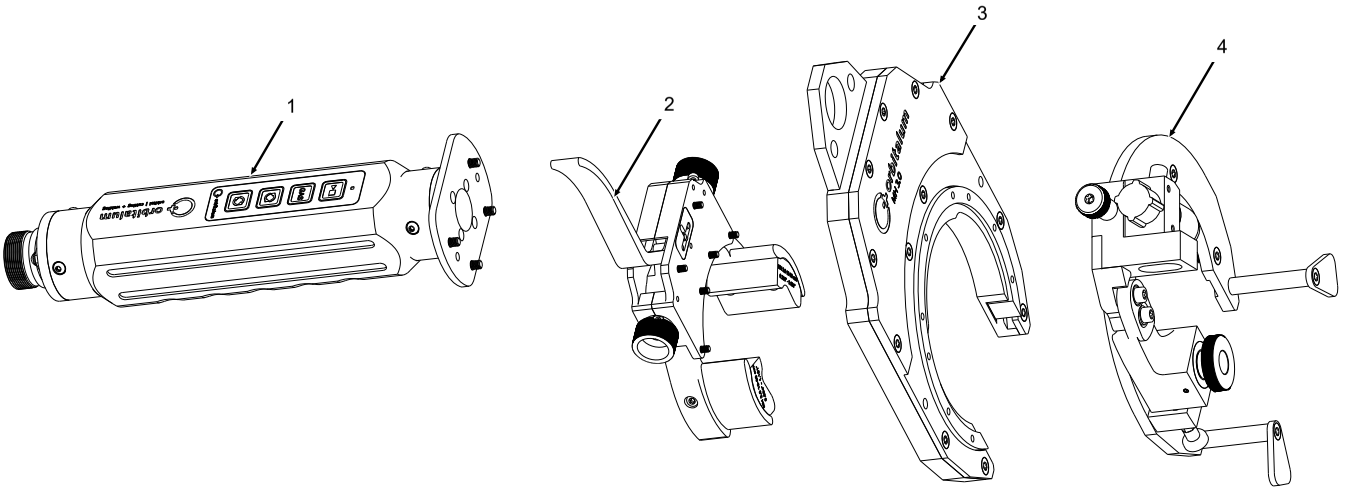
Download links PDF:

https://www.orbitalum.com/de/download.html

► Connect suitable accessories, see operating instructions of accessories.

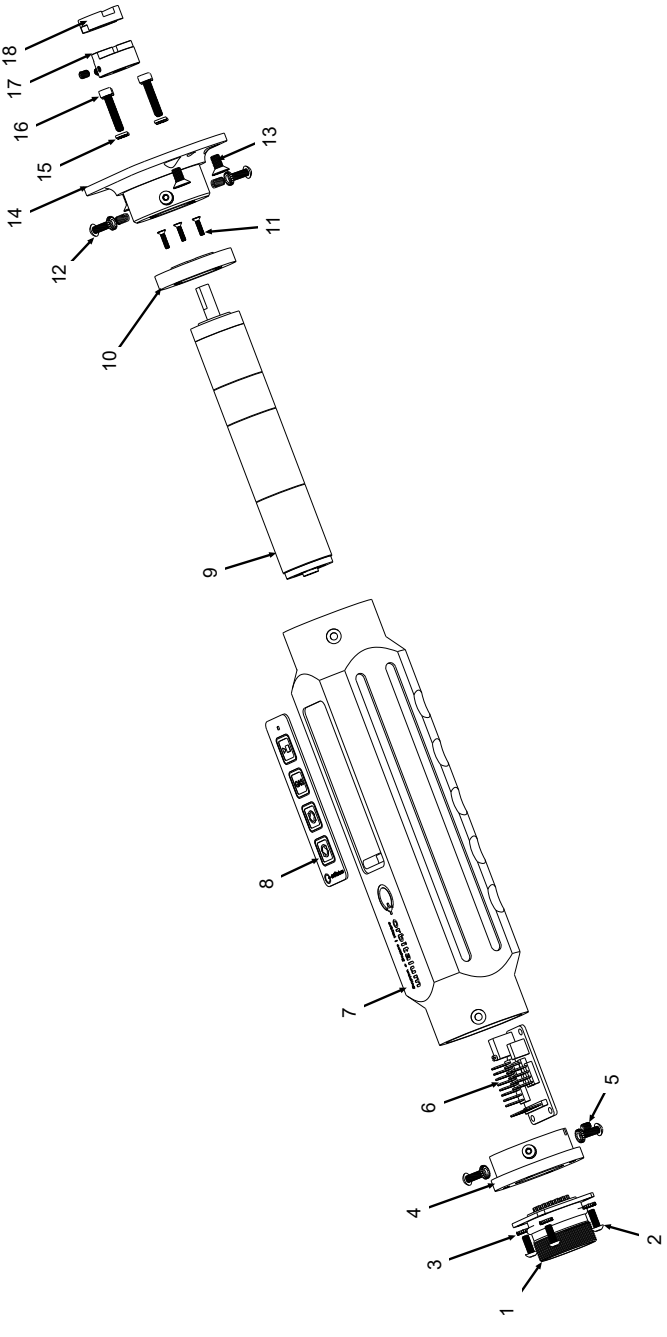
Ersatzteilliste / Spare parts list

Gesamtmaschine MH 3.0 | Total machine MH 3.0



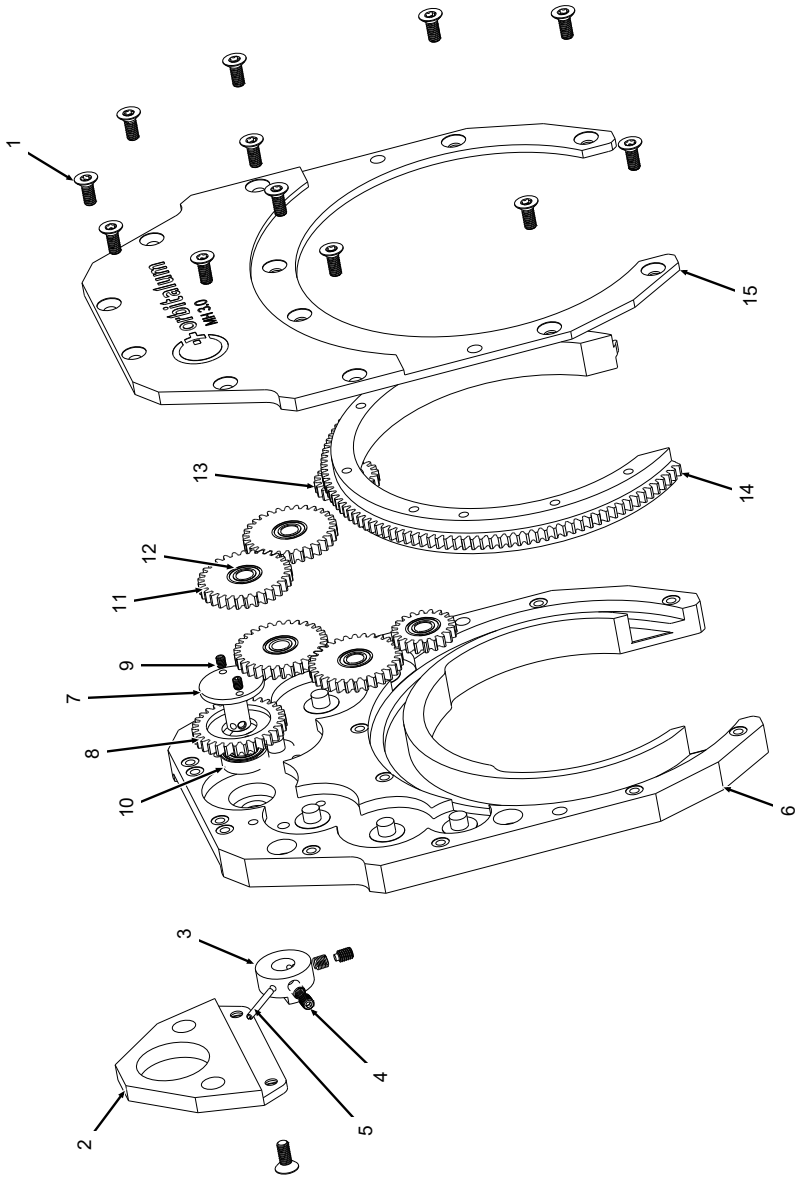
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1		1	Motorhülse MH3.0 Motor sleeve MH3.0
2		1	Spanneinheit MH3.0 Clamping unit MH3.0
3		1	Grundkörper MH3.0 Base body MH3.0
4		1	Rotorplatte MH3.0 Rotor plate MH3.0

Motorhülse MH 3.0/4.5/6.6 | Motor sleeve MH 3.0/4.5/6.6



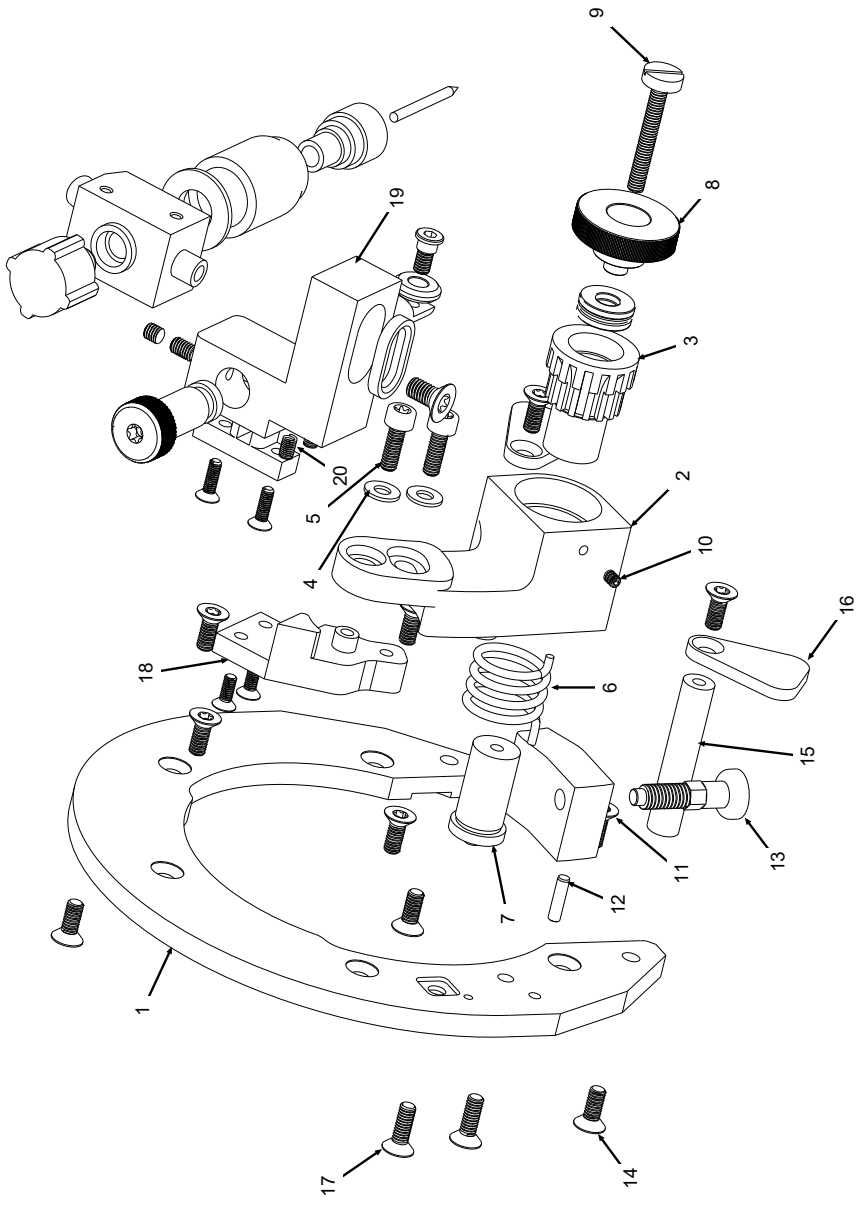
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	803 050 002	1	Anschlussdose Steuerleitung MH 3.0 Connection socket, signals MH 3.0	9	804 050 003	1	Motor/Tachoeinheit MH 4.5 Motor/tacho unit MH 4.5
	804 050 002		Anschlussdose Steuerleitung MH 4.5 Connection socket, signals MH 4.5	10	803 020 006	1	Adapterscheibe Motor MH Adapter disk motor MH
	805 050 002		Anschlussdose Steuerleitung MH 6.6 Connection socket, signals MH 6.6	11	803 025 001	3	Senkkopfschraube DIN965-M2x8-A2 Countersunk screw DIN965-M2x8-A2
2	307 001 114	10	Linsenschraube ISO7380-M3x8-A2 Oval-head screw ISO7380-M3x8-A2	12	811 020 019	3	Gewindeeinsatz M3xM5 Threaded insert M3xM5
3	553 458 325	10	Fächerscheibe DIN6798-A3.2-A2 Serrated lock washer DIN6798-A3.2-A2	13	803 025 004	4	SenkkopfschraubeDIN965-M4x8-A2 Countersunk screw DIN965-M4x8-A2
4	803 020 004	1	Bundbuchse, Anschlussdose MH Flanged socket, connection socket MH	14	803 020 007	1	Motorflansch MH Motor flange MH
5	803 025 011	3	Gewindestift ISO4026-M3x4-A2 Grub screw ISO4026-M3x4-A2	15	553 051 310	4	Federring DIN7980-5-FST Spring washer DIN7980-5-FST
6	826 012 010	1	Tachospannungsteiler, Platine Voltage devider, circuit board	16	803 025 009	4	Zylinderschraube ISO14579-M3x16-A2 Cylinder screw ISO14579-M3x16-A2
7	803 020 005	1	Motorgehäuse MH Motor housing MH	17	803 020 008	1	Motorkupplung, Motor MH Motor coupling, motor MH
8	803 007 002	1	Schalterplatte MH Switch plate MH	18	803 020 009	1	Kupplungsscheibe MH Coupling disk MH

Grundkörper MH 3.0 | Base body MH 3.0

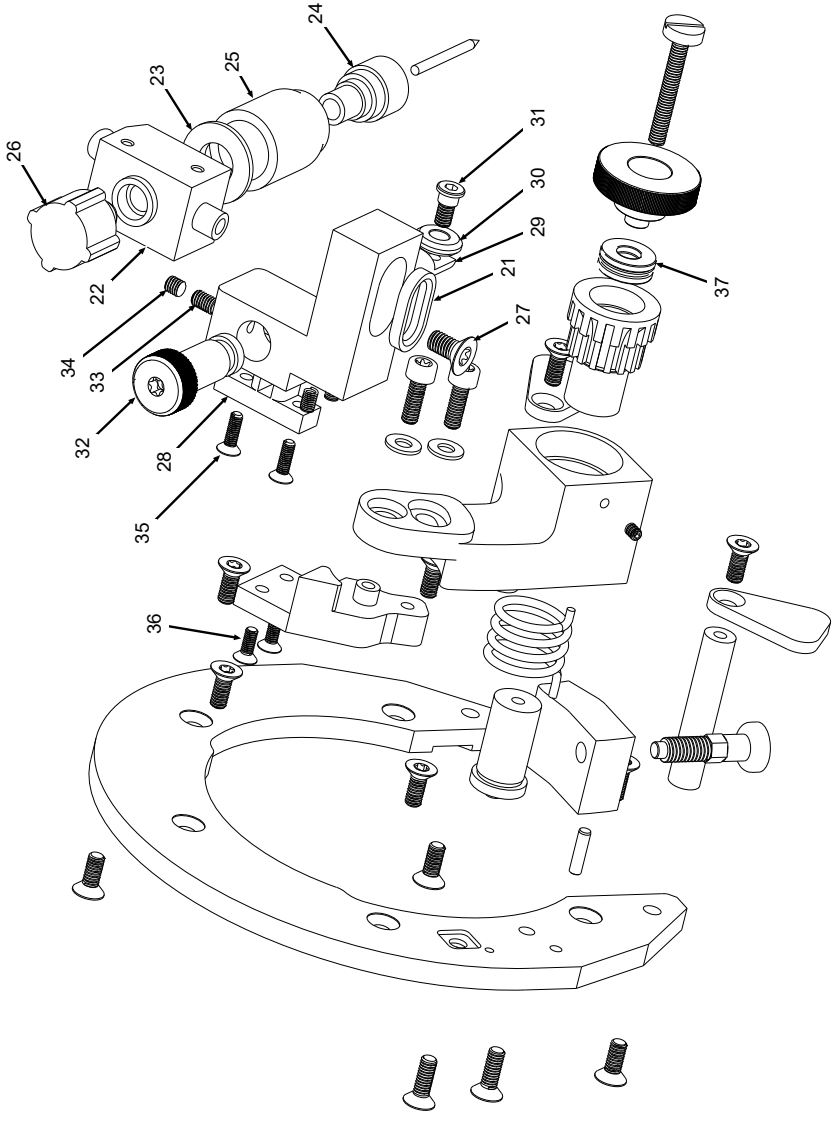


POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	803 025 005	14	Senkkopfschraube DIN965-M4x10-A2 Senkkopfschraube DIN965-M4x10-A2	10	803 020 015	1	Rillenkugellager 688ZZ 8x16x5 Deep groove ball bearing 688ZZ 8x16x5
2	803 020 017	1	Aufhängeöse MH Suspension eye MH	11	803 020 033	4	Zahnrad Z30 MH 3.0 Gear Z30 MH 3.0
3	803 020 016	1	Motorkupplung, Grundkörper MH Motor coupling, basic body MH	12	803 020 014	6	Rillenkugellager MR126-ZZ 6x12x4 Ball bearing MR126-ZZ 6x12x4
4	803 025 016	2	Gewindestift DIN915-M4x6-A2 Grub screw DIN915-M4x6-A2	13	803 020 032	2	Zahnrad Z20 MH 3.0 Gear Z20 MH 3.0
5	803 025 018	1	Spiralspannstift DIN7343-D2x18 Coiled spring pin DIN7343-D2x18	14	803 020 043	1	Rotor MH 3.0 Rotor MH 3.0
6	803 020 041	1	Grundkörper MH 3.0 Base body MH 3.0	15	803 020 042	1	Deckel Grundkörper MH 3.0 Cover base body MH 3.0
7	803 050 007	1	Antriebszahnrad MH Drive gear MH				
8							
9	803 025 012	2	Gewindestift DIN913-M3x4-A2 Grub screw DIN913-M3x4-A2				

Drehteller MH 3.0 | Turntable MH 3.0



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	803020044	1	Rotorplatte MH 3.0 Rotor plate MH 3.0	11	803 020 022	1	Montageblock, Brennerarretierung MH Mounting block, torch locking MH
2	803 050 008	1	Basisteil Brennerarm MH Base part burner arm MH	12	803 025 017	1	Zylinderstift DIN6325-D3h6x12 Parallel pin DIN6325-D3h6x12
3				13	803 020 023	1	Rastbolzen, Brennerarretierung MH Locking bolt, torch locking MH
4	542 500 318	1	Scheibe DIN125-A-4.3-A2 Washer DIN125-A-4.3-A2	14	803 025 005	10	Senkkopfschraube DIN965-M4x10-A2 Countersunk screw DIN965-M4x10-A2
5	803 025 010	2	Zylinderschraube ISO14579-M4x12-A2 Cylinder head screw ISO14579-M4x12-A2	15	803 020 029	2	Hülse, Aufnahme Schlauchpaket MH Sleeve, mounting hose assembly MH
6	803 020 018	2	Torsionsfeder MH Torsion spring MH	16	803 020 030	2	Platte, Aufnahme Schlauchpaket MH Plate, mounting hose assembly MH
7	803 020 019	1	Gelenkbolzen, Brennerarm MH Joint bolt, torch arm MH	17	803 025 006	2	Senkkopfschraube DIN965-M4x12-A2 Senkkopfschraube DIN965-M4x12-A2
8	803 020 020	1	Rändelschraube, Brennerverstellung MH Knurled screw, torch adjustment MH	18	803 020 045	1	Ausleger, Brennerarm MH 3.0 Extension arm, torch arm MH 3.0
9	803 020 021	1	Hauptschraube, Brennerarm MH Main screw, torch arm MH	19	803 020 024	1	Brenneraufnahme MH Torch holder MH
10	803 025 014	1	Gewindestift DIN914-M3x5-A2 Grub screw DIN914-M3x5-A2	20	803 025 015	2	Gewindestift DIN915-M4x4-A2 Grub screw DIN915-M4x4-A2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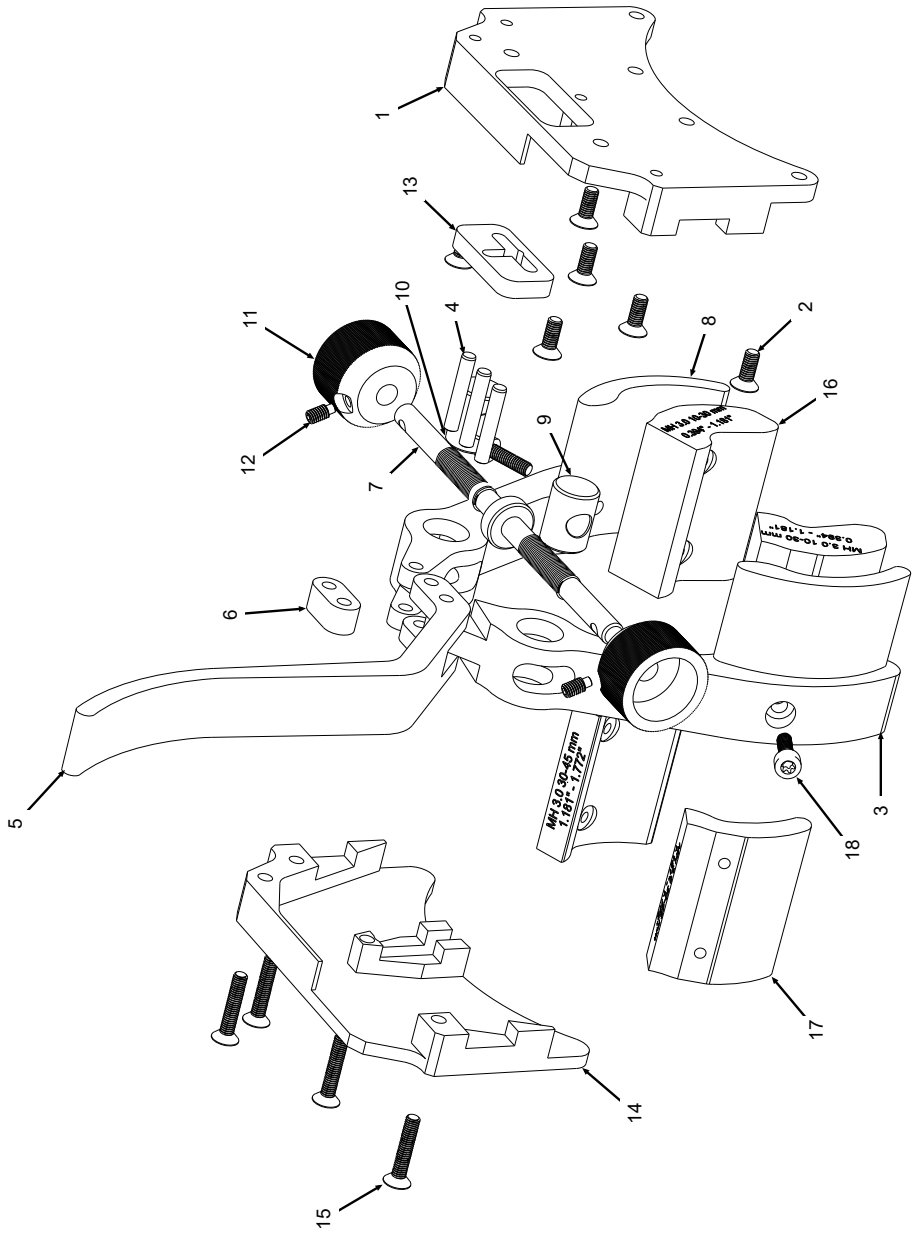
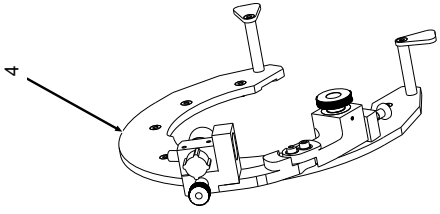
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
21	803 020 025	1	Einleger, Brenneraufnahme MH Insert, torch holder MH	31	803 020 049	1	Schaftschraube, Tastrad MH Shaft screw, feeler wheel MH
22	803 005 001	1	Brennerkörper MH Torch body MH	32	803 020 051	1	Rändelmutter, Tastrad MH Knurled nut, feeler wheel MH
23	803 020 002	1	Brennerisolator MH Torch insulator MH	33	803 025 013	1	Gewindestift DIN913-M4x5-A2 Grub screw DIN913-M4x5-A2
24	812 020 022	1	Gaslinse 2.4 TP/MH/HB V1/MB 250A Gas lens 2.4, TP/MH/HB V1/MB 250A	34	803 025 015	1	Gewindestift DIN915-M4x4-A2 Grub screw DIN915-M4x4-A2
25	812 020 023	1	Gasdüse, TP/MH/HB V1/MB 250A Gas nozzle, TP/MH/HB V1/MB 250A	35	803 025 002	2	Senkkopfschraube DIN965-M3x8-A2-TX Countersunk screw DIN965-M3x8-A2-TX
26	803 020 003	1	Brennerkappe MH Torch cap MH	36	803 025 001	2	Senkkopfschraube DIN965-M2x8-A2 Countersunk screw DIN965-M2x8-A2
27	803 025 019	1	Senkkopfschraube DIN965-M5x10-A2-TX Senkkopfschraube DIN965-M5x10-A2-TX	37	803 020 031	1	Axiallager MH Axial bearing MH
28	803 020 052	1	Haltelasche, Tastrad MH Retaining lug, feeler wheel MH		803 050 006	1	Strom-Gasschlauch MH Current gas hose MH
29	803 020 050	1	Ausleger, Tastrad MH Extension arm, feeler wheel MH				
30	803 020 048	1	Tastrad MH Feeler wheel MH				

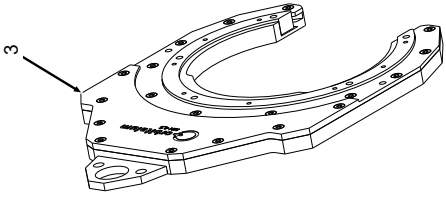
Spanneinheit MH 3.0 | Clamping unit MH 3.0

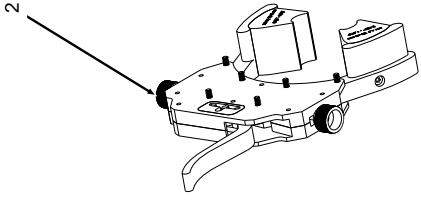


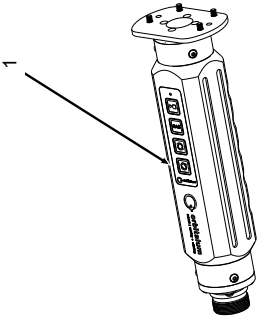
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	803 020 001	1	Grundplatte MH 3.0 Base plate MH 3.0	11	803 020 013	2	Justierknopf MH Adjustment knob MH
2	803 025 005	6	Senkkopfschraube DIN965-M4x10-A2 TX Countersunk screw DIN965-M4x10-A2-TX	12	445 005 226	2	Gewindestift DIN915-M3x6-A2 Grub screw DIN915-M3x6-A2
3	803 020 035	1	Klemmarm links MH 3.0 Clamping arm left MH 3.0	13	803 020 039	1	Führungsplatte MH 3.0 Guide plate MH 3.0
4	565 808 323	3	Zylinderstift DIN6325-D5h6x18 Cylinder pin DIN6325-D5h6x18	14	803 020 040	1	Deckplatte MH 3.0 Cover plate MH 3.0
5	804 020 038	1	Hebel MH 4.5/6.6 Lever MH 4.5/6.6	15	305 501 023	4	Senkkopfschraube ISO14581-M4x18-A2 Senkkopfschraube ISO14581-M4x18-A2
6	803 020 037	1	Pleuel MH 3.0 Connecting rod MH 3.0	16	803 020 046	1	Spannbacken-Set MH3.0 10-30 mm Clamping jaw set MH3.0 10-30 mm
7	804 020 036	1	Welle MH 3.0 Shaft MH 3.0	17	803 020 047	1	Spannbacken-Set MH3.0 30-45 mm Clamping jaw set MH3.0 30-45 mm
8	804 020 006	1	Klemmarm rechts MH 3.0 Clamping arm right MH 3.0	18	803 025 010	2	Zylinderschraube IS014579-M4x12-A2 Cylinder head screw ISO14579-M4x12-A2
9	803 020 011	1	Schwenklager links MH Pivot bearing left MH				
10	803 020 012	1	Schwenklager rechts MH Swivel bearing right MH				

Gesamtmaschine MH 4.5 | Total machine MH 4.5



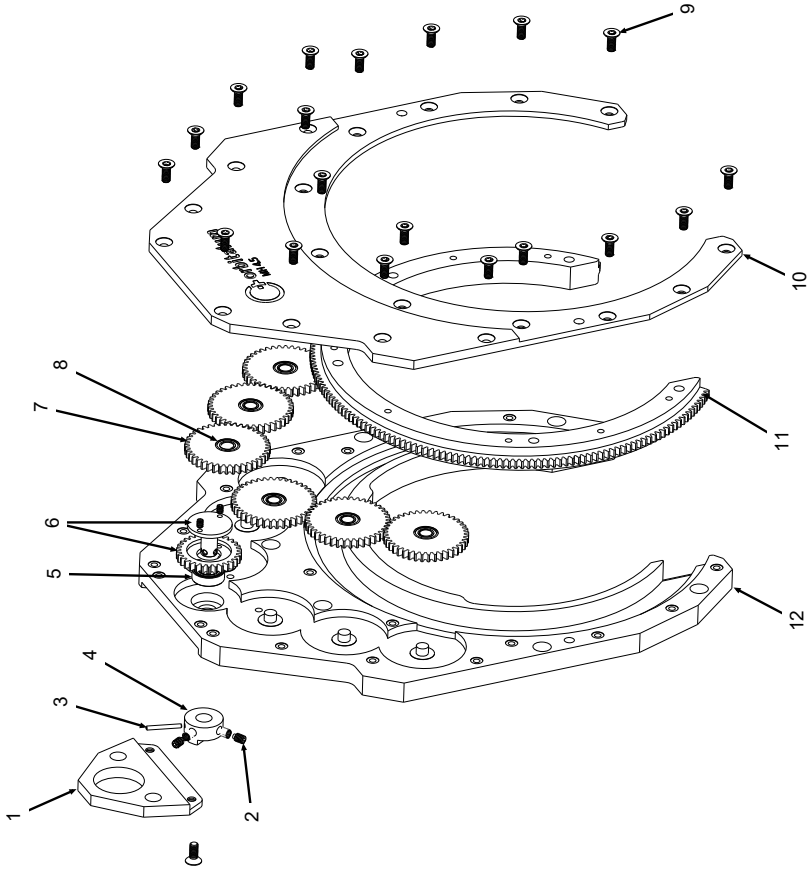






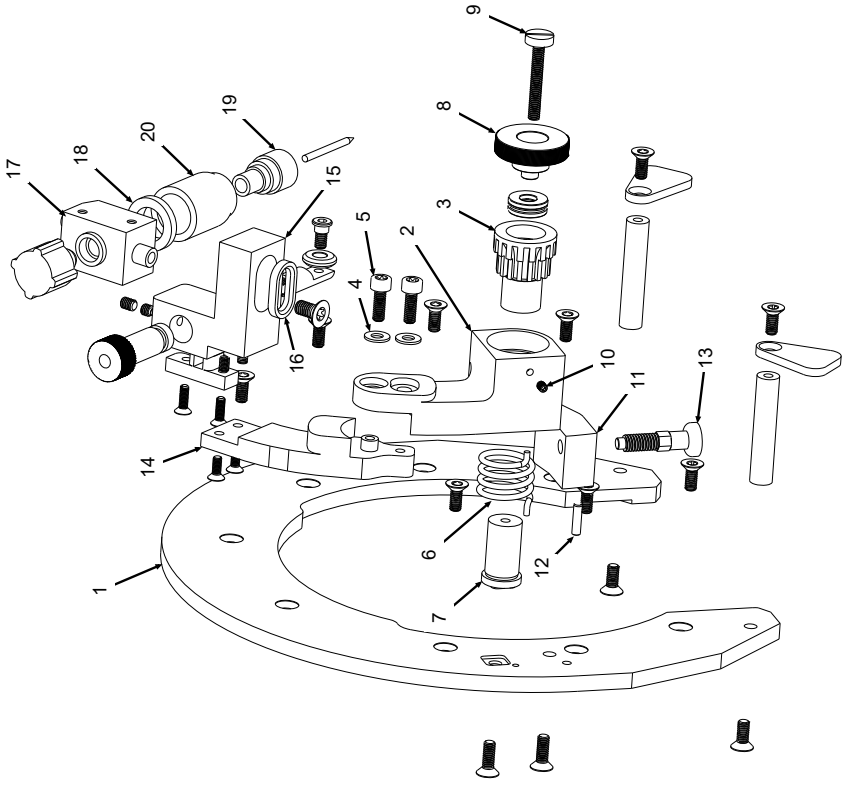
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1		1	Motorhülse MH4.5 Motor sleeve MH4.5
2		1	Spanneinheit MH4.5 Clamping unit MH4.5
3		1	Grundkörper MH4.5 Base body MH4.5
4		1	Rotorplatte MH4.5 Rotor plate MH4.5

Grundkörper MH 4.5 | Base body MH 4.5

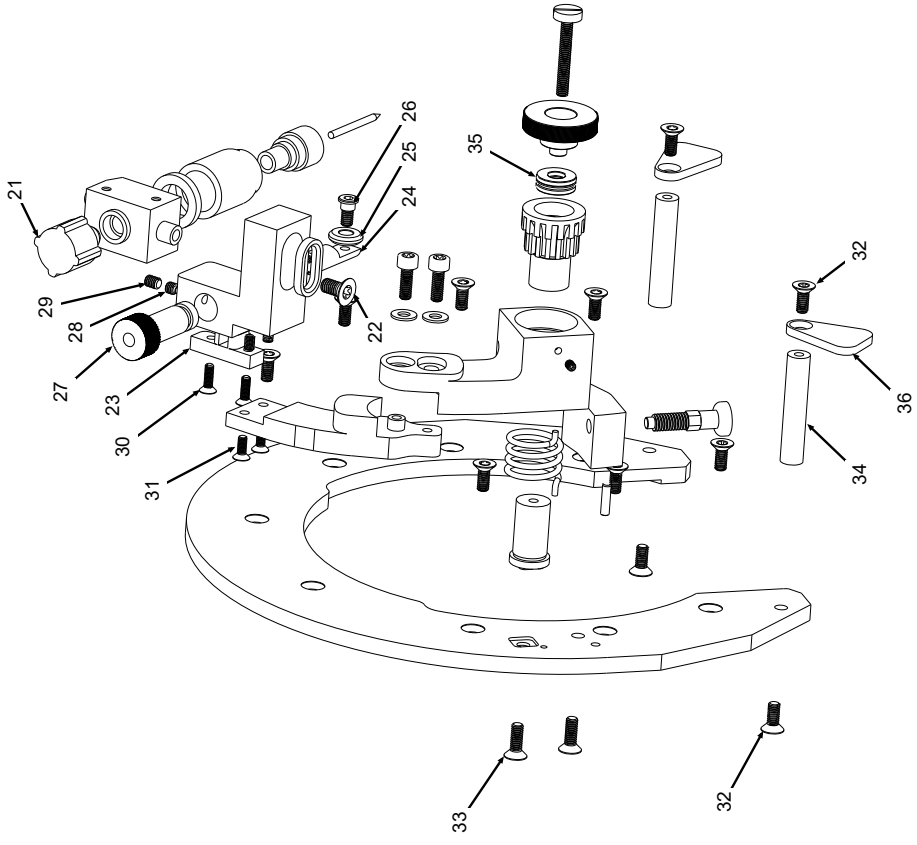


POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	803 020 017	1	Aufhängeöse MH Suspension eye MH	11	804 020 013	1	Rotor MH 4.5 Rotor MH 4.5
2	803 025 016	2	Gewindestift DIN915-M4x6-A2 Grub screw DIN915-M4x6-A2	12	804 020 015	1	Grundkörper MH 4.5 Base body MH 4.5
3	803 025 018	1	Spiralspannstift DIN7343-D2x18 Coiled spring pin DIN7343-D2x18				
4	803 020 016	1	Motorkupplung, Grundkörper MH Motor coupling, basic body MH				
5	803 020 015	1	Rillenkugellager 688ZZ 8x16x5 Deep groove ball bearing 688ZZ 8x16x5				
6	803 050 007	1	Antriebszahnrad MH Drive gear MH				
7	804 020 014	6	Zahnrad Z40 MH 4.5/6.6 Gear Z40 MH 4.5/6.6				
8	803 020 014	6	Rillenkugellager MR126-ZZ 6x12x4 Bearing MR126-ZZ 6x12x4				
9	803 025 005	21	Senkkopfschraube DIN965-M4x10-A2 Senkkopfschraube DIN965-M4x10-A2				
10	804 020 012	1	Deckel Grundkörper MH 4.5 Cover base body MH 4.5				

Drehteller MH 4.5 | Turntable MH 4.5



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	804 020 016	1	Rotorplatte MH 4.5 Rotor plate MH 4.5	11	803 020 022	1	Montageblock, Brennerarretierung MH Mounting block, torch locking MH
2	803 050 008	1	Basisteil Brennerarm MH Base part burner arm MH	12	803 025 017	1	Zylinderstift DIN6325-D3h6x12 Parallel pin DIN6325-D3h6x12
3				13	803 020 023	1	Rastbolzen, Brennerarretierung MH Locking bolt, torch locking MH
4	542 500 318	2	Scheibe DIN125-A-4.3-A2 Washer DIN125-A-4.3-A2	14	804 020 017	1	Ausleger, Brennerarm MH 4.5 Extension arm, torch arm MH 4.5
5	803 025 010	2	Zylinderschraube ISO14579-M4x12-A2 Cylinder head screw ISO14579-M4x12-A2	15	803 020 024	1	Brenneraufnahme MH Torch holder MH
6	803 020 018	1	Torsionsfeder MH Torsion spring MH	16	803 020 025	1	Einleger, Brenneraufnahme MH Insert, torch holder MH
7	803 020 019	1	Gelenkbolzen, Brennerarm MH Joint bolt, torch arm MH	17	803 005 001	1	Brennerkörper MH Torch body MH
8	803 020 020	1	Rändelschraube, Brennerverstellung MH Knurled screw, torch adjustment MH	18	803 020 002	1	Brennerisolator MH Torch insulator MH
9	803 020 021	1	Hauptschraube, Brennerarm MH Main screw, torch arm MH	19	812 020 022	1	Gaslinse 2.4 TP/MH/HB V1/MB 250A Gas lens 2.4, TP/MH/HB V1/MB 250A
10	803 025 014	1	Gewindestift DIN914-M3x5-A2 Grub screw DIN914-M3x5-A2	20	812 020 023	1	Gasdüse, TP/MH/HB V1/MB 250A Gas nozzle, TP/MH/HB V1/MB 250A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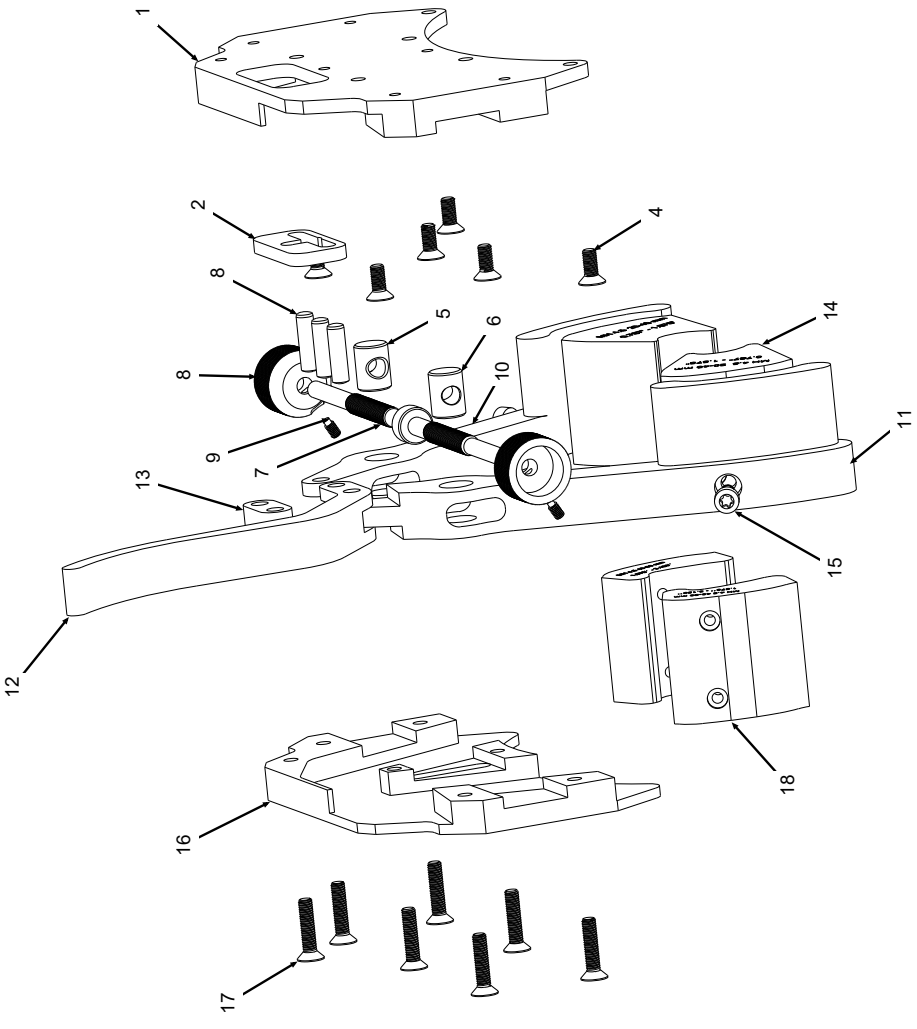
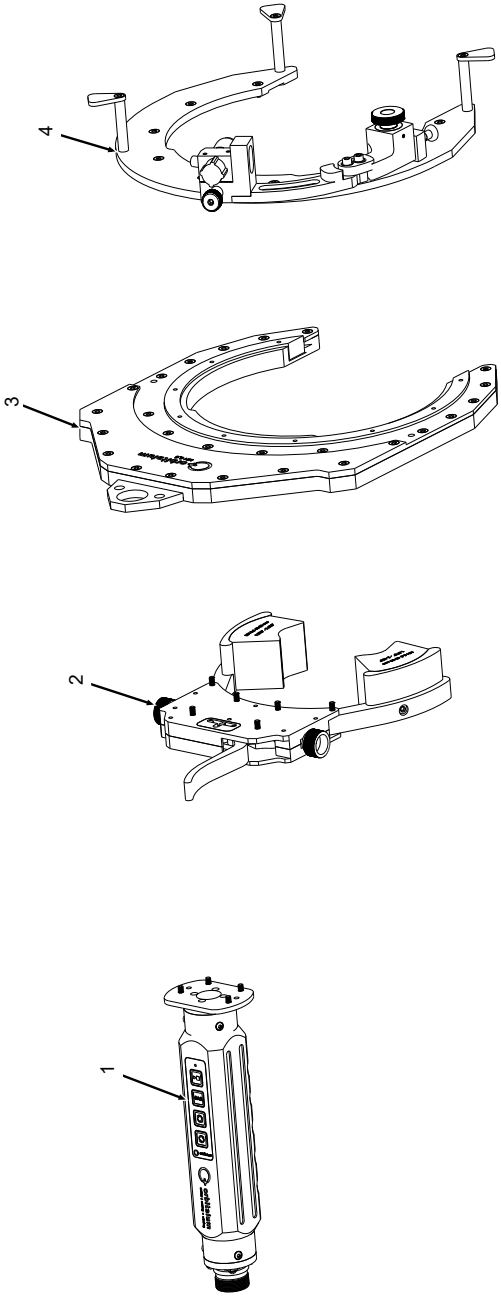
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
21	803 020 003	1	Brennerkappe MH Torch cap MH	31	803 025 002	2	Senkkopfschraube DIN965-M3x8-A2 Countersunk screw DIN965-M3x8-A2
22	803 025 019	1	Senkkopfschraube DIN965-M5x10-A2 Senkkopfschraube DIN965-M5x10-A2	32	803 025 005	12	Senkkopfschraube DIN965-M4x10-A2 Countersunk screw DIN965-M4x10-A2
23	803 020 052	1	Haltelasche, Tastrad MH Retaining lug, feeler wheel MH	33	803 025 006	2	Senkkopfschraube DIN965-M4x12-A2 Senkkopfschraube DIN965-M4x12-A2
24	803 020 050	1	Ausleger, Tastrad MH Extension arm, feeler wheel MH	34	803 020 029	3	Hülse, Aufnahme Schlauchpaket MH Sleeve, mounting hose assembly MH
25	803 020 048	1	Tastrad MH Feeler wheel MH	35	803 020 031	1	Axiallager MH Axial bearing MH
26	803 020 049	1	Schaftschraube, Tastrad MH Shaft screw, feeler wheel MH	36	803 020 030	3	Platte, Aufnahme Schlauchpaket MH Plate, mounting hose assembly MH
27	803 020 051	1	Rändelmutter, Tastrad MH Knurled nut, feeler wheel MH		803 050 006	1	Strom-Gasschlauch MH Current gas hose MH
28	803 025 015	1	Gewindestift DIN915-M4x4-A2 Grub screw DIN915-M4x4-A2				
29	803 025 013	1	Gewindestift DIN913-M4x5-A2 Grub screw DIN913-M4x5-A2				
30	803 025 003	2	Senkkopfschraube DIN965-M3x10-A2-TX Countersunk screw DIN965-M3x10-A2-TX				

Spanneinheit MH 4.5 | Clamping unit MH 4.5



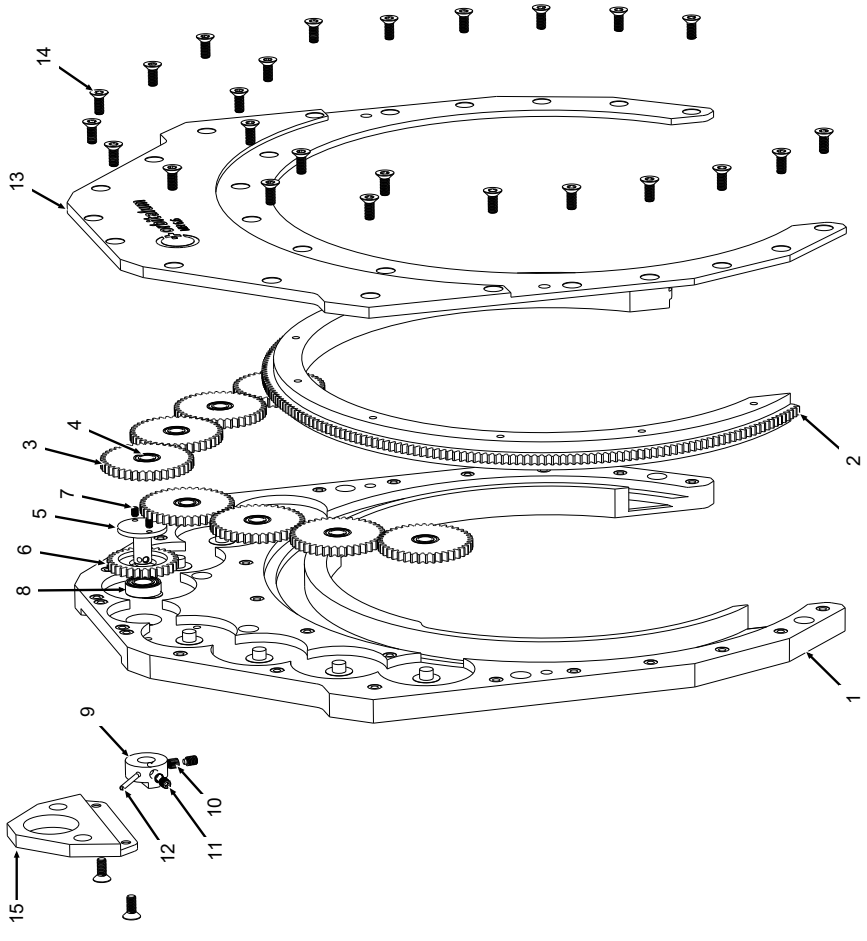
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	804 020 001	1	Grundplatte MH 4.5 Base plate MH 4.5	11	804 020 002	1	Klemmarm links MH 4.5 Clamping arm left MH 4.5
2	804 020 007	1	Führungsplatte MH 4.5/6.6 Guide plate MH 4.5/6.6	12	804 020 005	1	Hebel MH 4.5/6.6 Lever MH 4.5/6.6
3	803 025 005	6	Senkkopfschraube DIN965-M4x10-A2 Senkkopfschraube DIN965-M4x10-A2	13	804 020 004	1	Pleuel MH 4.5/6.6 Connecting rod MH 4.5/6.6
4	565 808 323	3	Zylinderstift DIN6325-D5h6x18 Cylinder pin DIN6325-D5h6x18	14	804 020 009	1	Spannbacken-Set MH4.5 20-40 mm Clamping jaw set MH4.5 20-40 mm
5	803 020 012	1	Schwenklager rechts MH Swivel bearing right MH	15	803 025 010	2	Zylinderschraube IS014579-M4x12-A2 Cylinder head screw ISO14579-M4x12-A2
6	803 020 011	1	Schwenklager links MH Pivot bearing left MH	16	804 020 008	1	Deckplatte MH4.5 Cover plate MH 4.5
7	804 020 003	1	Welle MH 4.5/6.6 Shaft MH 4.5/6.6	17	305 501 023	7	Senkkopfschraube ISO14581-M4x18-A2 Senkkopfschraube ISO14581-M4x18-A2
8	803 020 013	2	Justierknopf MH Adjustment knob MH	18	804 020 011	1	Spannbacken-Set MH4.5 40-80 mm Clamping jaw set MH4.5 40-80 mm
9	445 005 226	2	Gewindestift DIN915-M3x6-A2 Grub screw DIN915-M3x6-A2				
10	804 020 006	1	Klemmarm rechts MH 4.5 Clamping arm right MH 4.5				

Gesamtmaschine MH 6.6 | Total machine MH 6.6



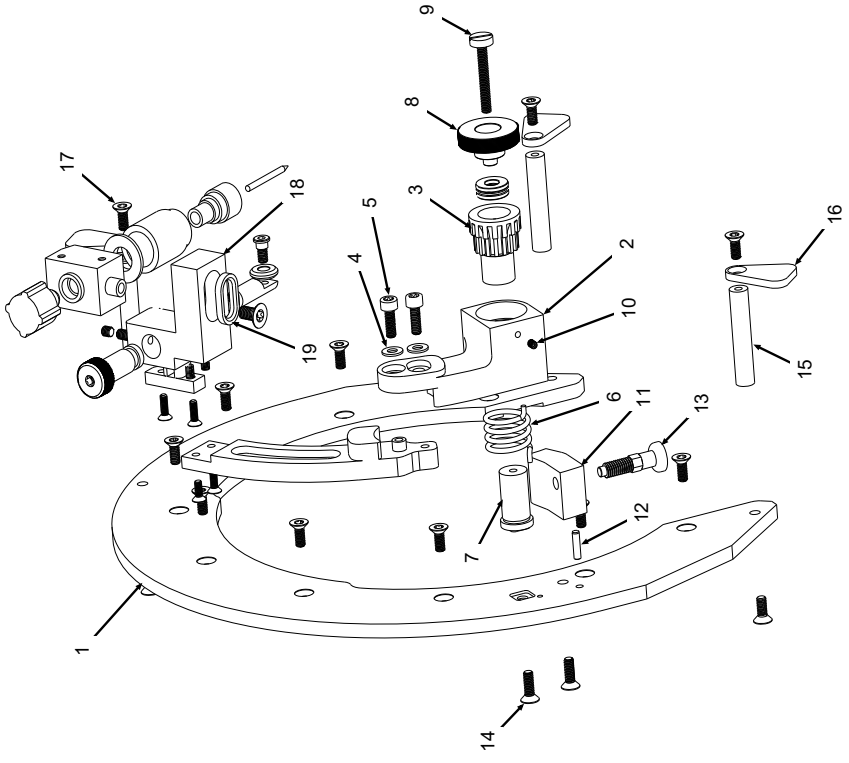
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1		1	Motorhülse MH6.6 Motor sleeve MH6.6
2		1	Spanneinheit MH6.6 Clamping unit MH6.6
3		1	Grundkörper MH6.6 Base body MH6.6
4		1	Rotorplatte MH6.6 Rotor plate MH6.6

Grundkörper MH 6.6 | Base body MH 6.6

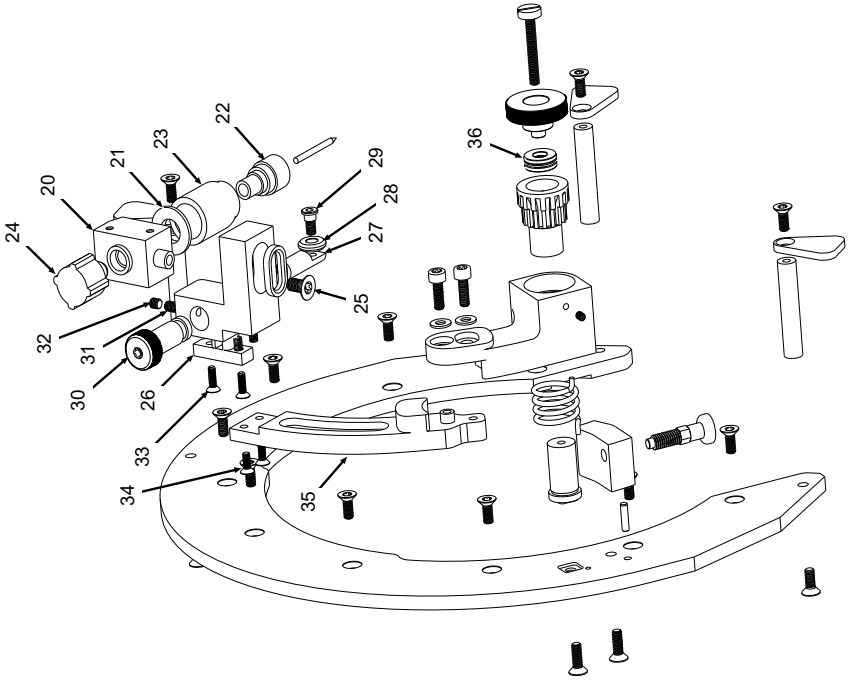


POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	805 020 015	1	Grundkörper MH 6.6 Base body MH 6.6	11	803 025 016	2	Gewindestift DIN915-M4x6-A2 Grub screw DIN915-M4x6-A2
2	805 020 013	1	Rotor MH 6.6 Rotor MH 6.6	12	803 025 018	1	Spiralspannstift DIN7343-D2x18 Coiled spring pin DIN7343-D2x18
3	804 020 014	8	Zahnrad Z40 MH 4.5/6.6 Gear Z40 MH 4.5/6.6	13	805 020 012	1	Deckel Grundkörper MH 6.6 Cover base body MH 6.6
4	803 020 014	8	Rillenkugellager MR126-ZZ 6x12x4 Ball bearing MR126-ZZ 6x12x4	14	803 025 005	27	Senkkopfschraube DIN965-M4x10-A2 Senkkopfschraube DIN965-M4x10-A2
5	803 050 007	1	Antriebszahnrad MH Drive gear MH	15	803 020 017	1	Aufhängeöse MH Suspension eye MH
6							
7	803 025 012	2	Gewindestift DIN913-M3x4-A2 Grub screw DIN913-M3x4-A2				
8	803 020 015	1	Rillenkugellager 688ZZ 8x16x5 Deep groove ball bearing 688ZZ 8x16x5				
9	803 020 016	1	Motorkupplung, Grundkörper MH Motor coupling, basic body MH				
10	??	2	Gewindeeinsatz M4x0,7-1.0D Threaded insert M4x0.7-1.0D				

Drehteller MH 6.6 | Turntable MH 6.6



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	805 020 016	1	Rotorplatte MH 6.6 Rotor plate MH 6.6	11	803 020 022	1	Montageblock, Brennerarretierung MH Mounting block, torch locking MH
2	803 050 008	1	Basisteil Brennerarm MH Base part burner arm MH	12	803 025 017	1	Zylinderstift DIN6325-D3h6x12 Parallel pin DIN6325-D3h6x12
3				13	803 020 023	1	Rastbolzen, Brennerarretierung MH Locking bolt, torch locking MH
4	542 500 318	2	Scheibe DIN125-A-4.3-A2 Washer DIN125-A-4.3-A2	14	803 025 006	2	Senkkopfschraube DIN965-M4x12-A2 Senkkopfschraube DIN965-M4x12-A2
5	803 025 010	2	Zylinderschraube ISO14579-M4x12-A2 Cylinder head screw ISO14579-M4x12-A2	15	803 020 029	3	Hülse, Aufnahme Schlauchpaket MH Sleeve, mounting hose assembly MH
6	803 020 018	1	Torsionsfeder MH Torsion spring MH	16	803 020 030	3	Platte, Aufnahme Schlauchpaket MH Plate, mounting hose assembly MH
7	803 020 019	1	Gelenkbolzen, Brennerarm MH Joint bolt, torch arm MH	17	803 025 005	15	Senkkopfschraube DIN965-M4x10-A2 Senkkopfschraube DIN965-M4x10-A2
8	803 020 020	1	Rändelschraube, Brennerverstellung MH Knurled screw, torch adjustment MH	18	803 020 024	1	Brenneraufnahme MH Torch holder MH
9	803 020 021	1	Hauptschraube, Brennerarm MH Main screw, torch arm MH	19	803 020 025	1	Einleger, Brenneraufnahme MH Insert, torch holder MH
10	445 005 229	1	Gewindestift DIN913-M3x5-A2 Grub screw DIN913-M3x5-A2				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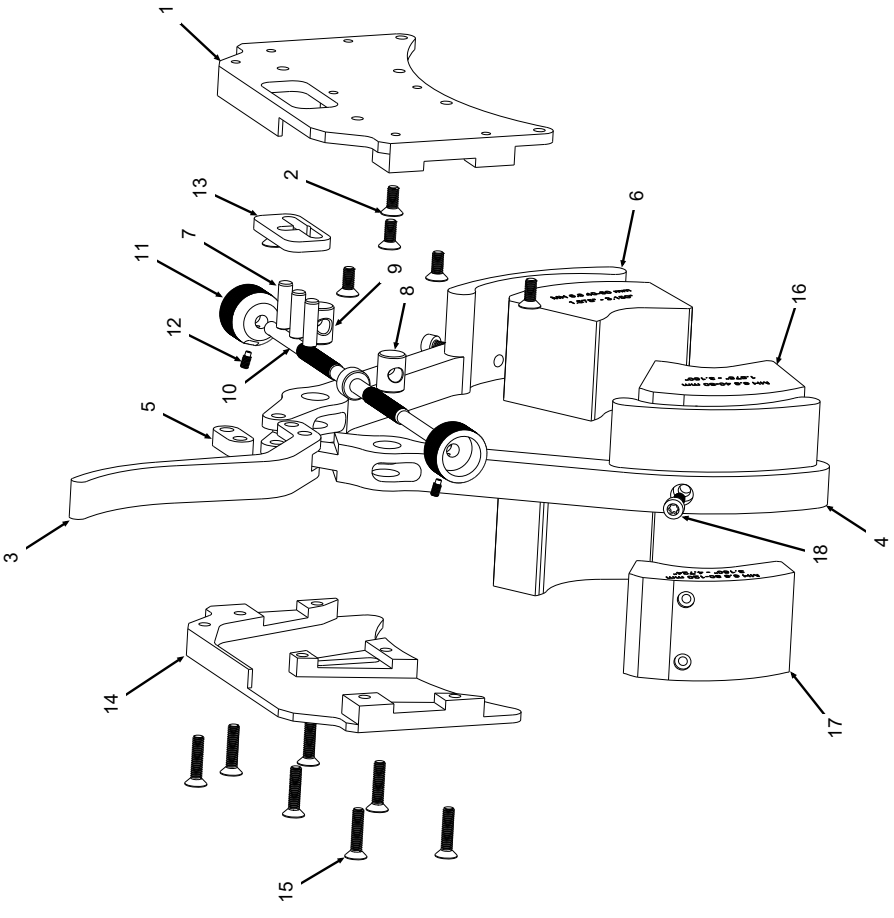
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
20	803 005 001	1	Brennerkörper MH Torch body MH	30	803 020 027	1	Rändelmutter, Rohrabtastschraube MH Knurled nut, tube tracing screw MH
21	803 020 002	1	Brennerisolator MH Torch insulator MH	31	803 025 015	1	Gewindestift DIN915-M4x4-A2 Grub screw DIN915-M4x4-A2
22	812 020 022	1	Gaslinse 2.4 TP/MH/HB V1/MB 250A Gas lens 2.4, TP/MH/HB V1/MB 250A	32	803 025 013	1	Gewindestift DIN913-M4x5-A2 Grub screw DIN913-M4x5-A2
23	812 020 023	1	Gasdüse, TP/MH/HB V1/MB 250A Gas nozzle, TP/MH/HB V1/MB 250A	33	803 025 003	2	Senkkopfschraube DIN965-M3x10-A2-TX Countersunk screw DIN965-M3x10-A2-TX
24	803 020 003	1	Brennerkappe MH Torch cap MH	34	803 025 002	2	Senkkopfschraube DIN965-M3x8-A2 Countersunk screw DIN965-M3x8-A2
25	803 025 019	1	Senkkopfschraube DIN965-M5x10-A2-TX Countersunk screw DIN965-M5x10-A2-TX	35	805 020 017	1	Ausleger, Brennerarm MH 6.6 Extension arm, torch arm MH 6.6
26	803 020 052	1	Haltelasche, Tastrad MH Retaining lug, feeler wheel MH	36	803 020 031	1	Axiallager MH Axial bearing MH
27	803 020 050	1	Ausleger, Tastrad MH Extension arm, feeler wheel MH		803 050 006	1	Strom-Gasschlauch MH Current gas hose MH
28	803 020 048	1	Tastrad MH Feeler wheel MH				
29	803 020 049	1	Schaftschraube, Tastrad MH Shaft screw, feeler wheel MH				

Spanneinheit MH 6.6 | Clamping unit MH 6.6



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	805 020 001	1	Grundplatte MH 6.6 Base plate MH 6.6	11	803 020 013	2	Justierknopf MH Adjustment knob MH
2	803 025 002	6	Senkkopfschraube DIN965-M3x8-A2 Senkkopfschraube DIN965-M4x10-A2	12	445 005 226	2	Gewindestift DIN915-M3x6-A2 Grub screw DIN915-M3x6-A2
3	805 020 006	1	Klemmarm links MH 6.6 Clamping arm left MH 6.6	13	804 020 007	1	Führungsplatte MH 4.5/6.6 Guide plate MH 4.5/6.6
4	565 808 323	3	Zylinderstift DIN6325-D5h6x18 Cylinder pin DIN6325-D5h6x18	14	805 020 008	1	Deckplatte MH6.6 Cover plate MH6.6
5	804 020 038	1	Hebel MH 4.5/6.6 Lever MH 4.5/6.6	15	305 501 023	4	Senkkopfschraube ISO14581-M4x18-A2 Senkkopfschraube ISO14581-M4x18-A2
6	803 020 037	1	Pleuel MH 4.5/6.6 Connecting rod MH 4.5/6.6	16	805 020 018	1	Spannbacken-Set MH 6.6 40-80mm Clamping jaw set MH 6.6 40-80mm
7	804 020 036	1	Welle MH 4.5/6.6 Shaft MH 4.5/6.6	17	805 020 019	1	Spannbacken-Set MH6.6 80-120 mm Clamping jaw set MH6.6 80-120 mm
8	805 020 002	1	Klemmarm rechts MH 3.0 Clamping arm right MH 3.0	18	803 025 010	2	Zylinderschraube IS014579-M4x12-A2 Cylinder head screw ISO14579-M4x12-A2
9	803 020 011	1	Schwenklager links MH Pivot bearing left MH				
10	803 020 012	1	Schwenklager rechts MH Swivel bearing right MH				

Konformitätserklärungen

ORIGINAL

de EG-Konformitätserklärung
en EC Declaration of conformity
fr CE Déclaration de conformité
it CE Dichiarazione di conformità
es CE Declaración de conformidad
nl EG-conformiteitsverklaring
cz ES Prohlášení o shodě
sk EÚ Prehlásenie o zhode
pl Deklaracja zgodności WE

Orbitalum Tools GmbH
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Maschine und Typ (inklusive optional erhältlichen Zubehörartikeln von Orbitalum): / Machinery and type (including optionally available accessories from Orbitalum): / Machine et type (y compris accessoires Orbitalum disponibles en option): / Macchina e tipo (inclusi gli articoli accessori acquistabili opzionalmente da Orbitalum): / Máquina y tipo (incluidos los artículos de accesorios de Orbitalum disponibles opcionalmente): / Machine en type (inclusief optioneel verkrijgbare accessoires van Orbitalum): / Stroj a typ stroje (včetně volitelného příslušenství firmy Orbitalum): / Stroj a typ (vrátane voliteľne dostupného príslušenstva od Orbitalum): / Maszyna i typ (wraz z opcjonalnie dostępnymi akcesoriami firmy Orbitalum):	**Offene Orbitalschweißköpfe (*inkl. Orbitalschweißstromquelle):** **• MOBILE HEAD 3.0** **• MOBILE HEAD 4.5** **• MOBILE HEAD 6.6**
Seriennummer: / Series number: / Nombre de série: / Numero di serie: / Número de serie: / Serienummer: / Sériové číslo: / Sériové číslo / :Numer seryjny	
Baujahr: / Year: / Année: / Anno: / Año: / Bouwjaar: / Rok výroby: / Rok výroby:	
Hiermit bestätigen wir, dass die genannte Maschine entsprechend den nachfolgend aufgeführten Richtlinien gefertigt und geprüft worden ist: / Herewith our confirmation that the named machine has been manufactured and tested in accordance with the following standards: / Par la présente, nous déclarons que la machine citée ci-dessus a été fabriquée et testée en conformité aux directives: / Con la presente confermiamo che la macchina sopra specificata è stata costruita e controllata conformemente alle direttive qui di seguito elencate: / Por la presente confirmamos que la máquina mencionada ha sido fabricada y comprobada de acuerdo con las directivas especificadas a continuación: / Hiermee bevestigen wij, dat de vermelde machine in overeenstemming met de hieronder vermelde richtlijnen is gefabriceerd en gecontroleerd: / Tímto potvrzujeme, že uvedený stroj byl vyroben a testován v souladu s níže uvedenými směrnicemi: / Týmto potvrdzujeme, že uvedený stroj bol zhotovený a odskúšaný podľa nižšie uvedených smerníc: / Niniejszym potwierdzamy, że powyższa maszyna została wyprodukowana i przetestowana zgodnie z wymienionymi poniżej wytycznymi:	**• Maschinen-Richtlinie 2006/42/EG** **• EMV-Richtlinie 2014/30/EU** **• RoHS-Richtlinie 2011/65/EU**
Schutzziele folgender Richtlinien werden eingehalten: / Protection goals of the following guidelines are observed: / Les objectifs de protection des directives suivantes sont respectés : / Gli obiettivi di protezione delle seguenti linee guida sono rispettati: / Se observan los objetivos de protección de las siguientes directrices: / De beschermingsdoelstellingen van de volgende richtlijnen worden in acht genomen: / Jsou splněny ochranné cíle těchto nařízení: / Sú splnené ochranné ciele týchto nariadení / Cele ochronne następujących dyrektyw są spełnione:	**• Niederspannungsrichtlinie 2014/35/EU**
Folgende harmonisierte Normen sind angewandt: / The following harmonized norms have been applied: / Les normes suivantes harmonisées où applicables: / Le seguenti norme armonizzate ove applicabili: / Las siguientes normas armonizadas han sido aplicadas: / Onderstaande geharmoniseerde normen zijn toegepast: / Jsou použity následující harmonizované normy: / Boli aplikované tieto harmonizované normy: / Stosowane są następujące normy zharmonizowane:	**• EN ISO 12100:2010** **• EN ISO 13849-1:2015** **• EN ISO 13849-2:2012** **• EN 60204-1:2018** **• EN IEC 60974-1:2018+A1:2019** **• EN 60974-10:2014+A1:2015** **• EN 60204-1:2018**
Bevollmächtigt für die Zusammenstellung der technischen Unterlagen: / Authorised to compile the technical file: / Autorisé à compiler la documentation technique: / Incaricato della redazione della documentazione tecnica: / Autorizado para la elaboración de la documentación técnica: / Gemachtigde voor het samenstellen van het technisch dossier: / Osoba zplnomocněná k sestavení technické dokumentace: / Splnomocnenec pre zostavenie technických podkladov: / Uprawniony do sporządzania dokumentacji technicznej:	**Gerd Riegraf** **Orbitalum Tools GmbH** **D-78224 Singen**
Bestätigt durch: / Confirmed by: / Confirmé par: / Confermato da: / Confirmado por: / Bevestigd door: / Potvrdil: / Potvrdil: / Bestätigt durch:	
Singen, 03.03.2023:	Jürgen Jäckle - Product Compliance Manager

ORIGINAL

de UKCA-Konformitätserklärung
en UKCA Declaration of conformity

Orbitalum Tools GmbH
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Tel. +49 (0) 77 31 792-0

Maschine und Typ (inklusive optional erhältlichen Zubehörartikeln von Orbitalum): / Machinery and type (including optionally available accessories from Orbitalum):	**Offene Orbitalschweißköpfe / Open orbital weld heads (*inkl. Orbitalschweißstromquelle / incl. Orbital welding power source):** • **MOBILE HEAD 3.0** • **MOBILE HEAD 4.5** • **MOBILE HEAD 6.6**
Seriennummer: / Series number:	
Baujahr: / Year:	
Hiermit bestätigen wir, dass die genannte Maschine entsprechend den nachfolgend aufgeführten Richtlinien gefertigt und geprüft worden ist: / Herewith our confirmation that the named machine has been manufactured and tested in accordance with the following regulations:	• **S.I. 2008/1597 Supply of Machinery (Safety)** • **S.I. 2016/1091 Electromagnetic Compatibility** • **S.I. 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment**
Schutzziele folgender Richtlinien werden eingehalten: / Protection goals of the following guidelines are observerd:	• **S.I. 2016/1101 Electrical Equipment (Safety)**
Folgende harmonisierte Normen sind angewandt: / The following harmonized standards have been applied:	• **EN ISO 12100:2010** • **EN ISO 13849-1:2015** • **EN ISO 13849-2:2012** • **EN 60204-1:2018** • **EN IEC 60974-1:2018+A1:2019** • **EN 60974-10:2014+A1:2015** • **EN 60204-1:2018**
Bevollmächtigt für die Zusammenstellung der technischen Unterlagen: / Authorised to compile the technical file:	
Bestätigt durch: / Confirmed by:	
Singen, 03.03.2023:	Jürgen Jäckle - Product Compliance Manager

Orbitalum Tools GmbH provides global customers one source for the finest in pipe & tube cutting, beveling and orbital welding products.

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