

Operating Manual

Gas fired igniter ZA1 / ZDA1



00-002_de-Rev0

Before first use, read the operating manual!

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1 General

1.1 Information on the operating manual

This operating manual provides important information on working with the gas fired igniter. Safe working can only be ensured by adhering to all the safety remarks and instructions provided.

In addition, the locally applicable accident prevention laws and general safety regulations must be followed.

Read the operating manual carefully before using the gas fired igniter the first time. These instructions form an integral part of the product and must be kept near the equipment at all times within easy reach for personnel.

When the gas fired igniter is transferred on to third parties, it must always be accompanied by the operating instructions.

The illustrations in this operating manual are intended to aid understanding of the content. They are not necessarily true to scale and may differ slightly in some details from the actual configuration of the gas fired igniter.

1.2 Explanation of symbols

Warning instructions

Warning instructions are indicated in this operating manual by symbols. The remarks are introduced by the use of signal words which indicate the degree of severity of the hazard. The instructions must be adhered to without fail and acted upon prudently in order to prevent accidents, personal injury or material damage.

**DANGER!**

... denotes a hazardous situation which results in death or serious injury unless prevented.

**WARNING!**

... denotes a hazardous situation which could result in death or serious injury unless prevented.

**CAUTION!**

... denotes a hazardous situation which could result in minor or slight injury unless prevented.

**NOTE!**

... denotes a hazardous situation which could result in material damage unless prevented.

General

Recommendations

**REMARK!**

... highlights useful recommendations and information designed to permit efficient, trouble-free operation.

Special safety remarks

In order to draw attention to special hazards, the following symbol is used in conjunction with safety remarks:

**DANGER!****Fatal danger due to electrical current!**

... denotes a potentially fatal situation due to electrical current. Failure to adhere to the safety instructions can give rise to the danger of serious injury or death.

The work to be performed may only be carried out by a suitably qualified electrician.

1.3 Liability disclaimer

All instructions and remarks contained in this operating manual are collated taking into account applicable standards and regulations, the state of the art and our many years of experience and expertise.

The manufacturer is consequently unable to accept any liability for damage caused as a result of:

- Failure to adhere to the instructions
- Use for any other than the designated purpose
- Deployment of untrained personnel
- Internally executed modifications or conversion work
- Technical modifications
- Use of unapproved spare parts

The actual scope of the delivery may differ in some details from the explanations and illustrations provided here in the case of special versions, where additional optional features are made use of or due to the latest technical modifications.

Otherwise, the obligations agreed in the Supply Agreement, the General Terms and Conditions and the Manufacturer's Conditions of Supply and the statutory regulations in force at the time of conclusion of contract shall be applicable.

1.4 Copyright protection

These operating instructions may not be shared with third parties. They are exclusively intended for those operating the gas fired igniter and may not be made available to third parties without the prior written consent of the manufacturer.

**REMARK!**

The information, texts, drawings, illustrations and other representations are protected by copyright and are subject to industrial property rights. Utilization for any other than their intended purpose renders the perpetrator liable to prosecution.

The contents of all or part of these operating instructions may not be duplicated in any form, nor may they be used and/or communicated to any third party without the written consent of the manufacturer. Any breach of this obligation shall render the perpetrator liable to compensation of damages, without prejudice to any further-reaching claims.

1.5 Spare parts

**WARNING!****Danger of injury due to the use of incorrect spare parts!**

Incorrect or faulty spare parts can result in damage, malfunctions or total failure of the equipment as well as posing a safety hazard.

- Only use original spare parts from the manufacturer.

Order spare parts through your authorized dealer or directly from the manufacturer. Address: see table of contents on the cover sheet.

1.6 Warranty regulations

The warranty regulations are provided as a separate document in the General Terms and Conditions.

General

1.7 After-sales service

For any technical information, consult our after-sales service.

Information can be obtained at any time by phone, fax, e-mail or Internet. For the manufacturer's address, see the cover sheet on the table of contents.

Our employees are always open to feedback and comments related to all of our products which could be of use in the continual and improvement of our products.

2 Safety

This section provides an overview of all important safety aspects for optimum protection of personnel as well as safe, trouble free operation.

Failure to observe the operating instructions and safety remarks contained in this manual can cause serious injury.

2.1 Owner's responsibility

As the gas fired igniter is used commercially, the owner of the gas fired igniter is obliged to adhere to occupational safety regulations as well as any other applicable directives, legislation and standards.

Alongside the occupational safety remarks contained in these operating instructions, the safety, environmental and accident prevention regulations governing the field of application of the gas fired igniter must be adhered to, whereby the following regulations in particular apply:

- The owner must be aware of the valid occupational safety regulations and also determine any additional potential hazards arising as a result of the specific working conditions applicable at the location in which the igniter is used, by performing a risk assessment. This must be implemented in the form of operating instructions governing operation of the gas fired igniter.
- The owner must test, throughout the service life of the gas fired igniter, whether the operating instructions drawn up by him still correspond with the latest revision of the relevant rules and regulations, and must update these where applicable.
- The owner must clearly regulate and define fields of responsibility for installation, operation, maintenance and cleaning.
- The owner must ensure that all employees involved in working with the gas fired igniter have read and understood the operating instructions.
Furthermore, the owner must provide personnel training at regular intervals and inform staff of potential hazards.

As the owner is also responsible for ensuring that the gas fired igniter is always in good technical working order the following requirements additionally apply:

- The owner must ensure that maintenance work is performed regularly.
- The owner must regularly check that all safety devices are fully functional and complete.
- The owner must provide the necessary protective gear for personnel.

Safety

2.2 Operating personnel

2.2.1 Requirements

**WARNING!****Danger of injury due to insufficient qualification**

Incorrect handling of the equipment can result in severe personal injury and material damage.

- Only allow activities to be performed by suitably qualified specialist personnel.

The following qualifications are required for the various fields of activity:

■ **Qualified personnel**

are capable on the basis of their specialist training, knowledge and experience as well as their knowledge of the applicable regulations of executing the work assigned to them and of independently recognizing possible hazards.

■ **Electrical specialists**

are capable on the basis of their specialist training, knowledge and experience as well as their knowledge of the applicable regulations of working on electrical installations and of independently recognizing possible hazards.

Electrical specialists have received training specifically for the work environment in which they are employed and are familiar with the relevant standards and regulations.

■ **Gas specialists**

are capable on the basis of their specialist training, knowledge and experience as well as their knowledge of the applicable regulations of working on gas installations and of independently recognizing possible hazards.

Gas specialists have received training specifically for the work environment in which they are employed and are familiar with the relevant standards and regulations.

Only persons who may be expected to perform their task reliably may be authorized to use the equipment. Persons whose reaction capacity is impaired, for example due to drugs, alcohol or medicine use, may not be authorized.

When selecting suitable personnel, observe the age and profession-specific regulations applicable at the place of use.

2.2.2 Unauthorized persons



WARNING! Danger for unauthorized persons!

Persons who do not comply with the requirements described here are not aware of the dangers inherent in the work area.

- Keep unauthorized persons away from the work area.
- In case of doubt, approach the person in question and direct them out of the work area.
- Interrupt work for as long as any unauthorized person remains in the work area.

2.3 Intended purpose of the equipment

The gas fired igniter is exclusively designed to perform the intended purpose described here.

The gas fired igniter is a piece of equipment that has to be integrated into a gas-consuming installation. It must not be operated without an overriding burner control system.

It is designed for the sole purpose of lighting and supporting any gas-, oil- or solid fuel fired burner of medium heat release in industrial furnaces, thermo-processing plants and boilers.



WARNING!

Danger due to use not in accordance with the intended purpose!

Any application beyond and/or not in accordance with the intended purpose of the gas fired igniter can result in the occurrence of hazardous situations.

- Only operate the gas fired igniter when in a mounted condition. Ensure that the combustion points created by the flame are fitted with a suitable extraction facility over the exposed flue gas channel throughout the plant.
- Only operate the gas fired igniter according to the specifications indicated on the rating plate. Otherwise, potential danger of personal or material damage can arise.
- Adhere to all the instructions provided in this operating manual without fail.

The manufacturer can not be held liable for physical or material harm caused by misuse of equipment or use for anything other than its intended purpose.

Safety

2.4 Personal protective gear

Personal protective gear must be worn while working with the equipment in order to minimize potential health hazards.

- Wear the protective gear necessary for performance of the relevant task at all times while working.
- Observe all signs relating to personal protective gear in the work area.

To be worn at all times

Wear the following for the performance of all work:



Protective work clothing

This comprises tight-fitting work clothes which are resistant to tearing, have tight-fitting sleeves and no projecting parts. This is required primarily to protect against burns.



Safety shoes

To protect the feet against heavy falling articles and to prevent slipping on floors.

To be worn for special types of work

When performing special types of work, special safety equipment is required. This is covered in depth in the individual chapters of this instruction manual. These types of special protective gear are described in the following:



Face protection

To protect one's eyes and face from flames, sparks or embers as well as hot particles or flue gases.



Protective gloves

To protect one's hands from rubbing, chafing, puncturing or deeper injuries and from contact with hot surfaces.

2.5 Special dangers

Remaining dangers are listed in the section below.

The remarks provided here and the safety instructions in the subsequent chapters of this operating manual must be observed in order to reduce the possible risk to health and prevent the occurrence of dangerous situations.

Incorrect transport



WARNING!

Danger of injury as a result of incorrect transport!

In the case of incorrect transport, considerable material damage can occur.

- Note the intrinsic weight of the gas fired igniter or the components. If necessary, use suitable hoisting gear.
- From an outer tube length of 3 m use several lashing points or a suitable hoisting gear with supports.
- Please mind the centre of gravity.
- Secure the gas fired igniter from dropping down or falling over.
- Do not stand under the load while lifting or lowering it and stay out of the danger zone.

Electrical current



DANGER!

Potentially fatal injury due to electrical current!

Contact with live components can cause fatal injury. Damage to the insulation or individual components can have potentially life-threatening consequences.

- In the event of damage to the insulation of the power supply, switch off immediately and arrange for repairs to be carried out.
- Work on the electrical system may only be carried out by suitably qualified electricians.
- Before performing any work at the electrical system, disconnect it from the power supply and check that it is no longer live.
- Before starting work, switch off the power supply and make sure it cannot be inadvertently switched back on.
- Never bypass or decommission fuses. When changing fuses, adhere to the correct amperage and the correct characteristics.
- Keep moisture away from live components. This can create a short circuit.

Safety

Highly inflammable materials

**WARNING!****Danger of burns due to flammable materials!**

Highly flammable materials, liquids or gases can catch fire and cause serious to fatal injuries.

- Do not smoke in the danger area and in the close vicinity. Do not use any naked flames or ignition sources.
- Keep a fire extinguisher on hand.
- Report suspicious substances, liquids or gases immediately to the responsible officer.
- In case of fire, stop work immediately. Leave the danger area until the all-clear is given.

Hot surfaces

**CAUTION!****Danger of burns due to hot surfaces!**

Contact with hot components can cause burns.

- When carrying out any work near hot components, always wear protective work clothing and safety gloves.
- Before performing any work, ensure that all components have cooled to ambient temperature.

Sharp edges and pointed corners

**CAUTION!****Danger of injury on edges and corners!**

Sharp edges and pointed corners can cause chafing of the skin and cuts.

- Take particular care when performing work near to sharp edges and pointed corners.
- In unsure, wear safety gloves.

2.6 Securing against unauthorized switching use



DANGER!

Risk of fatal injury due to unauthorized use!

When working in the danger area, there is a risk that the energy supply could be switched on by an unauthorized person. This creates a potentially fatal hazard for persons working in the danger area.

- Observe the instructions provided on securing against unauthorized switching back on in the chapters of this operating manual.
- Always observe the procedure described below to secure against unauthorized switching back on.

Switch safeguarded by lock
on: athours

DO NOT SWITCH ON

The lock may only be removed

by:

once steps have been taken to ensure
that no persons are located in the
danger area.

Securing against unauthorized use

1. Switch off the power supply.
2. If possible, secure the switch with a lock and attach a sign in an easily visible location at the switch.
3. Have the key looked after by the employee named on the sign.
4. Should it not be possible to secure a switch using a lock, set up a sign.
5. Once all the work has been carried out, ensure that there are no longer any persons located in the danger area.
6. Ensure that all safety devices are installed and are fully functional.
7. Only then may the sign be removed.

Switched off

on: athours

DO NOT SWITCH ON

The lock may only be removed

by:

once steps have been taken to ensure
that no persons are located in the
danger area..

Safety

2.7 Response in case of danger or accident

Preventive actions

- Always be prepared for accidents and for fires!
- Keep first aid equipment (first aid kit, blankets etc.) and a fire extinguisher on hand.
- Familiarize personnel with accident alarm, first aid and rescue facilities.
- Ensure that access paths for emergency vehicles are kept unobstructed.

In case of accident: React correctly

- Initiate first aid measures.
- Evacuate any persons located in the danger area.
- Inform those responsible at the incident location.
- Alert the emergency medical / fire services.
- Clear access paths for emergency vehicles.

3 Transport, packaging and storage

3.1 Safety instructions for transport

Incorrect transport



WARNING!

Danger of injury as a result of incorrect transport!

In the case of incorrect transport, considerable material damage can occur.

- When unloading packaged items on delivery, and when transporting within the premises, take extreme care and observe the symbols and instructions on the packaging.
- Depending on the length of the product and the scope of delivery suitable lifting equipment should be used for unloading. The load capacity of the lifting equipment should exceed the total weight of the delivery.
- The centre of gravity is assumed to be in the middle of the longitudinal axis.
- Only use the provided lashing points.
- Do not stand under the load while lifting or lowering it and stay out of the danger zone.

3.2 Transport inspection

Check the delivery on receipt without delay for completeness and transport damage.

In the case of externally recognizable transport damage, report the damage immediately, adopting the following procedure:

- Only conditionally accept the delivery.
- Note the extent of the damage on the transport documents or on the shipping agent's delivery note.
- Initiate a complaint.

Concealed transport damage must be reported within seven days.



REMARK!

Report any defect immediately it is noticed. Claims for damages can only be asserted within the applicable deadlines for the filing of complaints.

Transport, packaging and storage

3.3 Packaging

Packaging

The individual products are packaged in accordance with the transport conditions expected for the consignment. Exclusively environmentally friendly materials are used for the packaging.

The packaging should protect the individual components from transport damage, corrosion and other damage up until such time as they are assembled. For this reason, do not destroy the packaging and only remove it shortly before assembly.

Handling packaging materials

If no outline agreement has been reached for packaging, separate the materials according to type and size, and send for re-use or recycling.



NOTE!

Environmental damage due to incorrect disposal!

Packaging materials are valuable raw materials and in many cases can be reused or usefully processed and recycled.

- Ensure environmentally responsible disposal of packaging materials.
- Observe locally applicable disposal regulations.

3.4 Storage conditions

Storage

Store the gas fired igniter and the spare parts under the following conditions:

- Never keep outdoors.
- Store in dry, dust-free conditions.
- Do not expose to any corrosive substances.
- Avoid any drop in temperature below the dew point.
- Protect the gas fired igniter from mechanical damage.
- Storage temperature: 0 °C to 60 °C
- Relative humidity: max. 60 %
- When storing for longer than 3 months, regularly check the condition of all parts and the packaging. If necessary refresh or replace the conservation.



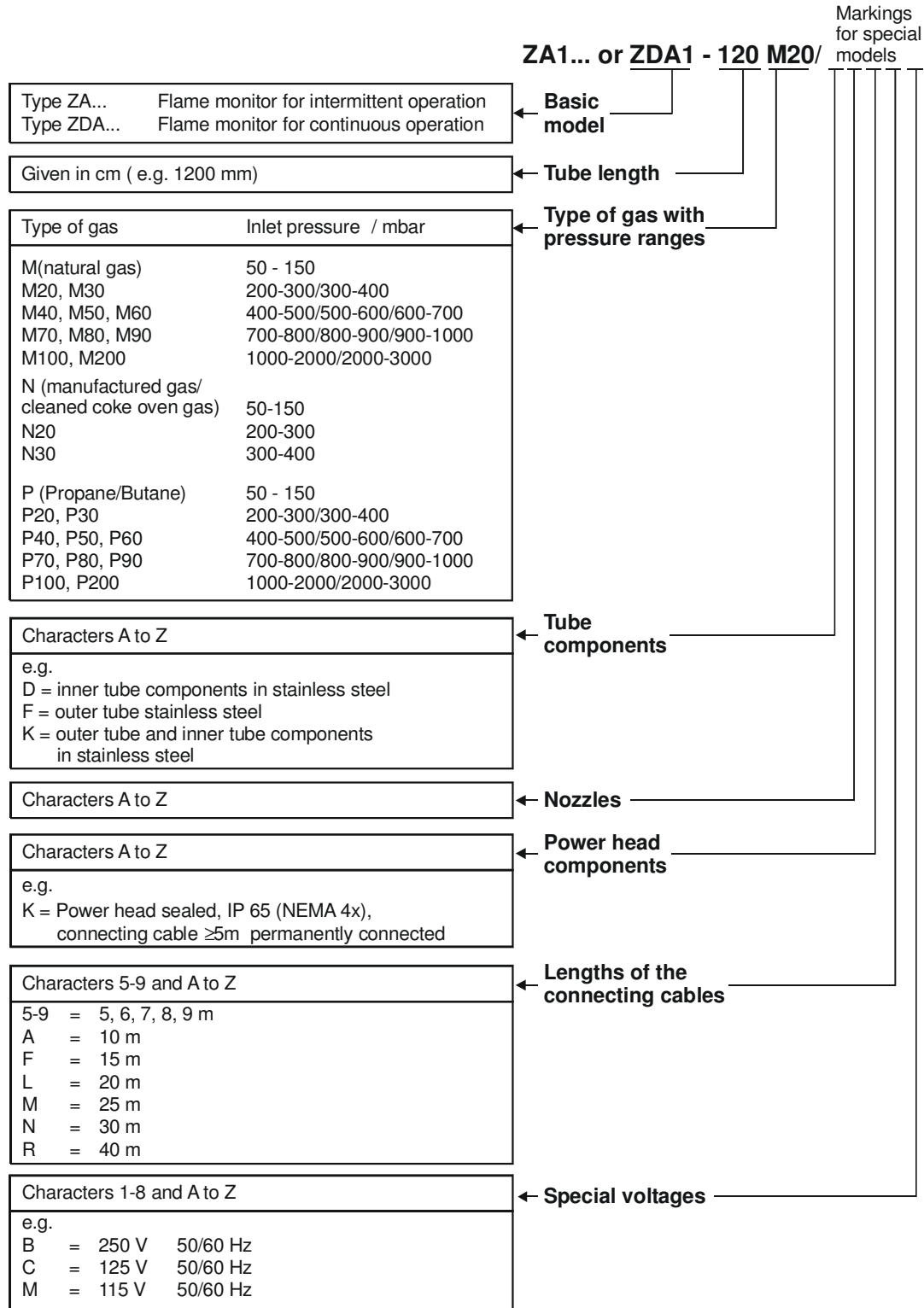
REMARK!

The packaging units may come with storage instructions applicable in addition to the requirements outlined here. These must be adhered to.

4 Specifications

4.1 Type designation with type key

Example of type designations with the most important igniter data:



04-004_uk-Rev0

Fig. 1: Type key

Specifications

4.2 Gas fired igniter

Characteristic	Value
Heat release	max. 250 kW
Flame length (depending on the gas)	max. 1200 mm
Outside tube length in 10 mm increments from – to	240 – 15000 mm
Outside tube diameter Tube length up to 4000 mm Tube length from 4000 mm	dia. 65 mm dia. 70 mm For the stainless steel version always dia. 70 mm
Design pressure gas flange	max. 10 bar
Gas connection	¾", top or bottom
Maximum counter pressure in gas fired igniter housing	200 mbarg overpressure
Air connection	1½", rotatable 4 x 90°
Air volume	max. 120 m³/h
Air coefficient The remaining air volume must be made available in the combustion chamber.	0.3 – 0.5
Maximum ambient temperature of the outside tube If the temperature is higher, see chapter, "Mounting and electrical connection".	500 °C
Total weight (depending on scope of delivery)	approx. 7 kg power head with mounting flange + approx. 4.5 kg/m (length of outer tube in cm, as indicated in the rating plate)
Total dimensions (depending on scope of delivery)	Length of power head with mounting flange (see dimensional drawing in section 4.4) + outer tube length (in cm, as indicated in the rating plate)

4.3 Power head

Characteristic	Value
Connected voltage of ionisation flame monitor	230 VAC, 50/60 Hz (standard) or in accordance with rating plate
Connected voltage of spark transformer	Primary: 230 VAC, 50/60 Hz (standard) or in accordance with rating plate Secondary: 5 kV against ground
Protection rating	IP 54 (standard) or IP 65 (special version)
Connection type Standard version, IP 54, with plug connection, type ZA1..., ZDA1...	Electrical connecting plug (10-pin) with 2 cable glands (M20x1.5) for cable diameter 7 - 13 mm; Line-/screw connection 0.5 – 2.5 mm ² (2.5 mm ² only without core cable ends)
Connection type Special version, IP 65, with 7-core control cable, sealed ionisation flame monitor connection, type ZA1...	Permanently sealed control cable, wire gauge 1 mm ² , cable diameter approx. 8.0 mm
Connection type Special version, IP 65, with 12-core control cable, sealed ionisation flame monitor connection, type ZDA1...	Permanently sealed control cable, wire gauge 1 mm ² , cable diameter approx. 10.5 mm
Current consumption	Spark transformer: 100 VA (fusing 2 A slow blowing, to be fused externally) Ionisation flame monitor: 10 VA (fusing 2 A slow blowing, to be fused externally)
ON duration	Spark transformer: actuation via control unit, 100 % duty cycle Ionisation flame monitor: 100 % duty cycle
Ambient temperature	- 30 °C to + 60 °C (condensation must be avoided)
Ambient temperature (special version)	- 30 °C to + 80 °C (condensation must be avoided)
Interconnection	With Hegwein control units (see chapter "Functional characteristics and structure")
Contact load with ZDA configuration at terminals 4, 5 and 6	Volt-free SPDT contact (flame relay), max. 250 VAC, 1A, cos φ 1 (ohmic), fusing 1A slow blowing on front plate
Ionisation flame monitor	Safety period/Lock-out time ≤ 1 s Switching threshold ≥ 1 µA

Specifications

4.4 Dimensional drawing

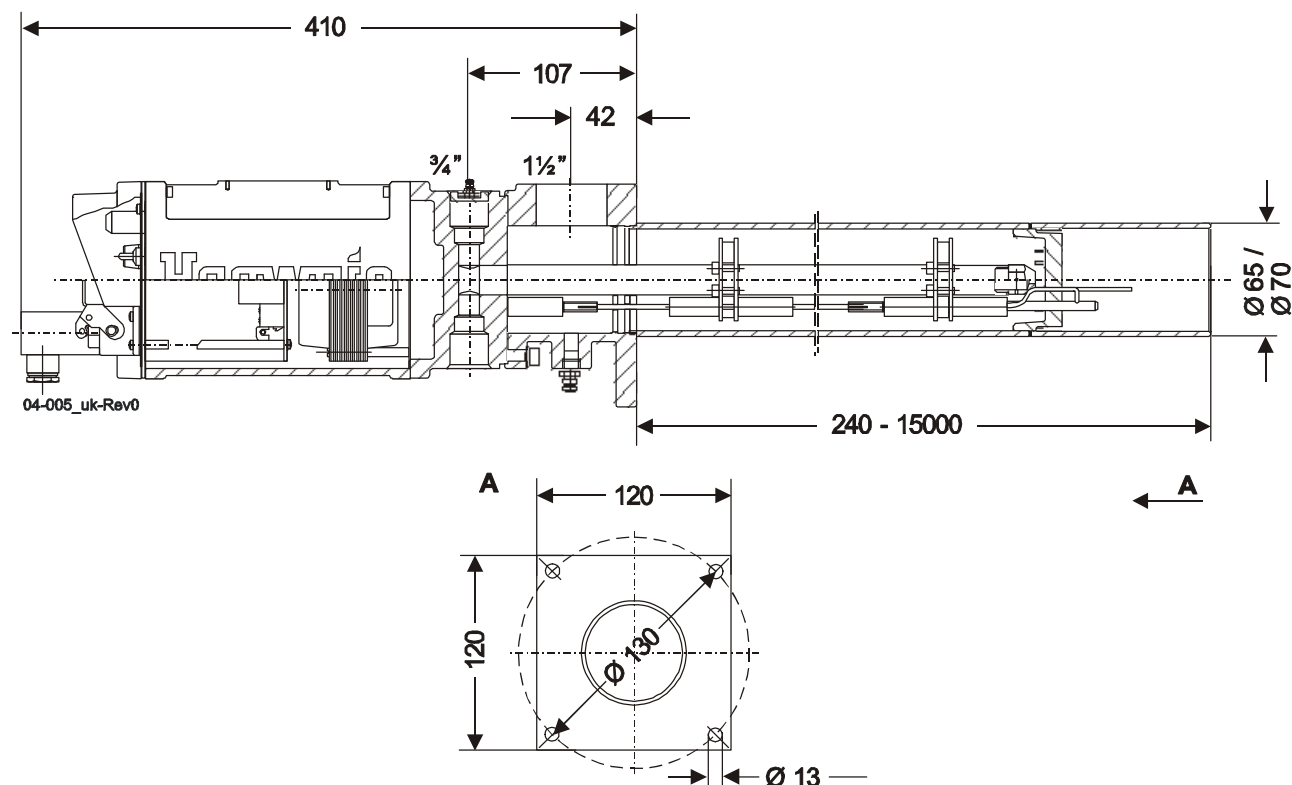


Fig. 2: Dimensional drawing, gas fired igniter

4.5 Rating plate

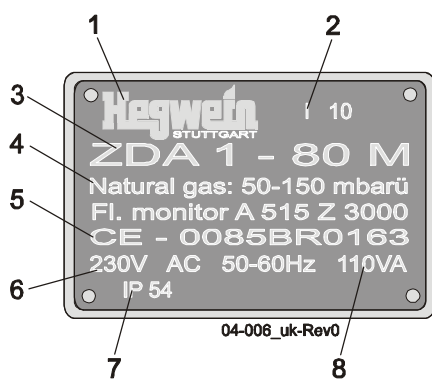


Fig. 3: Example of rating plate

The rating plate is located on the housing of the ionisation flame monitor and contains the following information:

- 1 Manufacturer
- 2 Date of manufacture (Hegwein code)
- 3 Type
- 4 Gas type and maximum system pressure
- 5 CE product identification number and approval number
- 6 Connected voltage
- 7 Protection rating
- 8 Maximum current consumption

4.6 Service life



NOTE!

This product does not have an unlimited service life!

It was designed and type tested for a maximum service life. In applications involving 50 switching processes per day, this service life is set at around 10 years. This period can be substantially reduced in the event of increased stress (temperature, vibrations, dirt etc.).

- System operators and owners must take the steps to ensure that regular safety checks are performed depending on the actually occurring degree of stress.
- Exchange the gas fired igniter after it has exceeded the specified service life. After expiry of the maximum operating period, functional defects can occur more frequently.
- Check wearing parts independently of actual stress levels and exchange if required.

Life of the ionisation flame monitors (based on EN 298)

Specification	Value	Unit
Maximum operating life	250,000	Switch cycles

Functional characteristics and structure

5 Functional characteristics and structure

5.1 Functional characteristics

The gas fired igniter is a device whose flame is designed to ignite a main burner. A high voltage is generated from an input voltage (mains voltage), which generates an ignition spark at the gas nozzle. The resulting flame generates a flame signal via the flame rod. This flame signal is amplified in the ionisation flame monitor and enables the main burner.

5.2 Structure

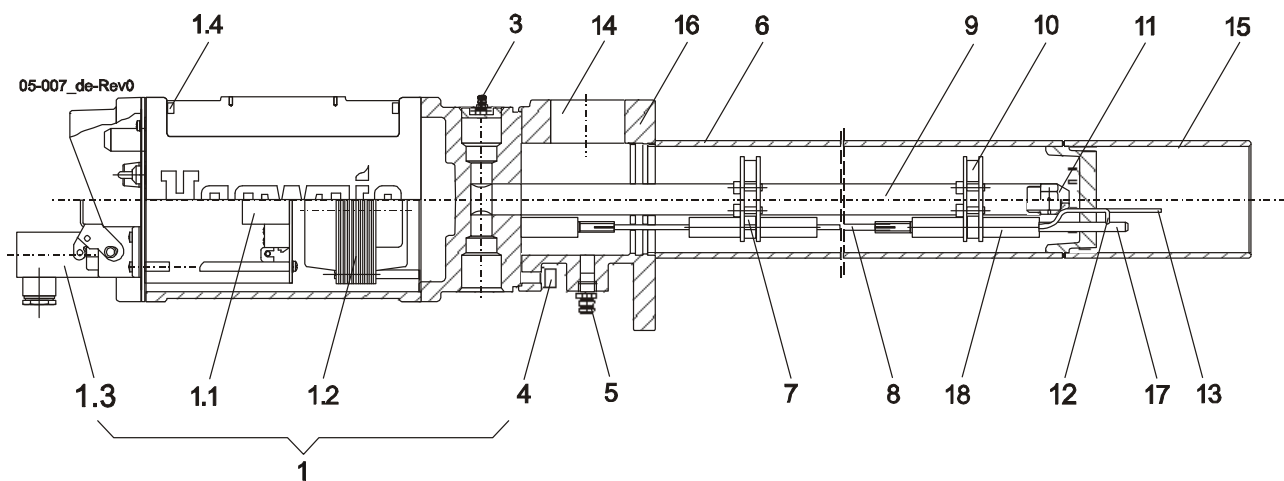


Fig. 4: Gas fired igniter (sectional drawing)

- | | |
|---|---------------------------------|
| 1 Power head | 8 Connecting rods |
| 1.1 Ionisation flame monitor | 9 Gas tube |
| 1.2 Spark transformer | 10 Final electrode support ring |
| 1.3 Electrical plug | 11 Gas nozzle |
| 1.4 Allen screw | 12 Ignition electrode |
| 1.5 Contact spring | 13 Flame rod |
| 3 Gas pressure test nipple (opposite gas inlet) | 14 Air inlet |
| 4 Allen screw | 15 Mixing chamber |
| 5 Air pressure test nipple | 16 Mounting flange |
| 6 Outer tube | 17 Earth rod |
| 7 Intermediate support ring with two ceramic insulators | 18 Ceramic insulator |

The gas fired igniter comprises the following main components:

- the power head (1), in which the spark transformer (1.2) and the ionisation flame monitor (1.1) are mounted,
- the complete outer tube (6), incl. mixing chamber (15) and mounting flange (16) with air inlet (14),
- the gas tube (9) and the gas nozzle (11),
- the final electrode support ring (10) with two ceramic insulators (18), ignition electrode (12), flame rod (13) and earth rod (17).

The outer tube (6) is screwed to the power head (1) and can be removed or depending on the position of the air supply pipe can be turned by 90°.

The gas inlet can be from top or bottom. The unused opening is sealed off by a sealing screw, into which a gas pressure testing nipple (3) is screwed.

The final electrode support ring (10) is fastened on the end of the gas tube (9).

The flame rod (13) and the ignition electrode (12) are extended by connecting rods (8). These connecting rods are guided through the floor of the transformer housing and are supported around every 300 mm by intermediate support rings (7).

5.3 Flame monitoring

The flame is monitored by the flame rod, which must immerse in the direction of the flame. Alternating voltage is applied to this flame rod. The burning flame creates an electrically conductive connection to the igniter earth and at the same time acts as a rectifier for the ionisation current. This direct current signal is measured and amplified in the ionisation flame monitor. The enforced flame signal activates the flame relay with one SPDT contact (only series ZDA...).

5.3.1 Safety time

The safety time is the response time of the ionisation flame monitor as the reaction to a failure of the flame signal (flame sensor current) and as a result of that the clearing switch of the terminals for the „flame-on“ signal. The standard safety time is ≤ 1 s, a modification is not possible.

Functional characteristics and structure

5.4 Connections on the transformer part front panel

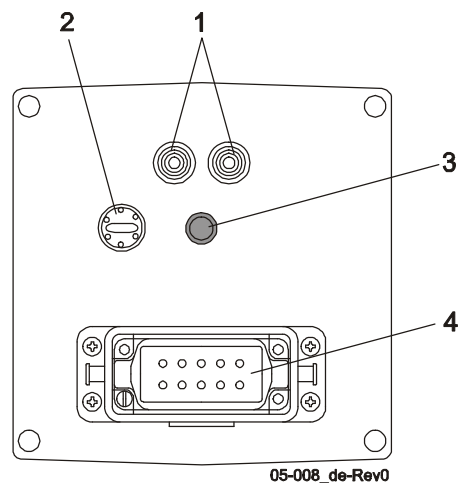


Fig. 5: Transformer part front panel

Version with protection rating IP54

- 1 Test sockets
Flame signal 0 - 25 μA (measuring range max. 50 μA);
switching threshold $\geq 1 \mu\text{A}$



REMARK!

- Only use test sockets for short-term measurement purposes on site.
- Do not use the test sockets as a measurement device output for remote or continuous displays.
- Never bridge the test sockets

- 2 Fuse holder for volt-free SPDT contact (only with ZDA..) with
fuse A 665 Z1 (1A slow blowing)
- 3 LED (flame present)
- 4 10-pin plug connector

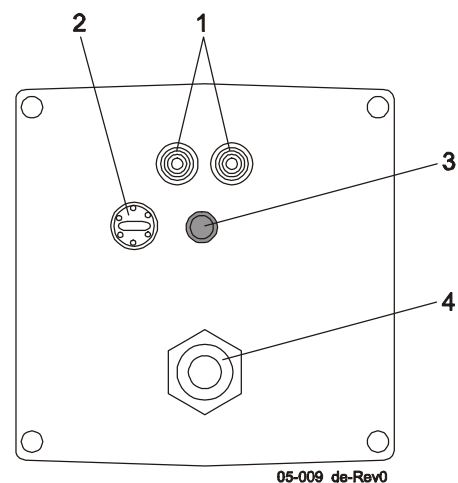


Fig. 6: Transformer part front panel

Version with protection rating IP65

- 1 Test sockets
Flame signal 0 - 25 μA (measuring range max. 50 μA);
switching threshold $\geq 1 \mu\text{A}$



REMARK!

- Only use test sockets only for short-term measurement purposes on site.
- Do not use the test sockets as a measurement device output for remote or continuous displays.
- Never bridge the test sockets under any circumstances

- 2 Fuse holder for volt-free SPDT contact (only with ZDA..) with
fuse A 665 Z1 (1A slow blowing)
- 3 LED (flame present)
- 4 Cable gland

5.5 Gas and air adjusting components (accessories)



REMARK!

Accessories and special tools have to be ordered separately.

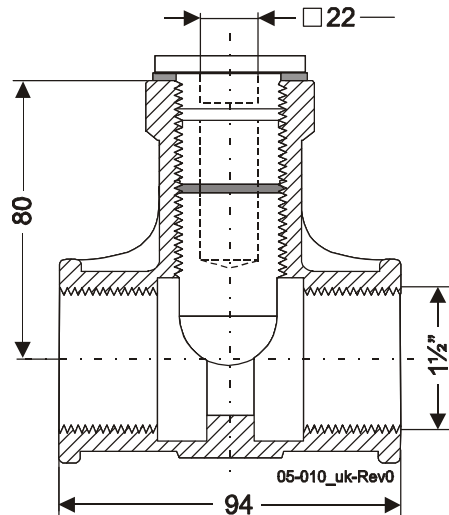


Fig. 7: Air regulating sleeve

Air regulating sleeve Z 945 Z 3/0FV

- Housing: Malleable cast iron, galvanized
- Taper: Brass Ms 58
- Lid: Brass Ms 58
- Max. temperature range - 20 °C to + 60 °C
- Max. pressure 300 mbarg

Special version (e.g. free of non-ferrous metal) on request.

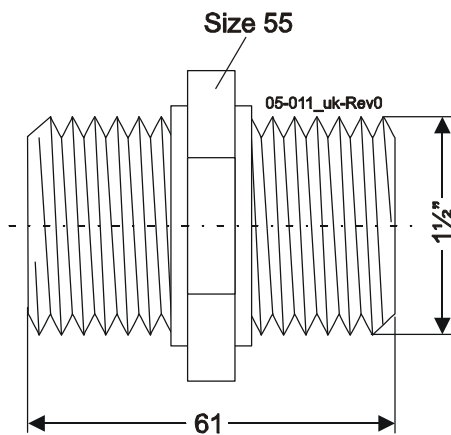


Fig. 8: Double nipple

Double nipple Z 946 F 4/00V

- Malleable cast iron, galvanized
- Max. temperature range - 20 °C to + 60 °C
- Max. pressure 300 mbarg

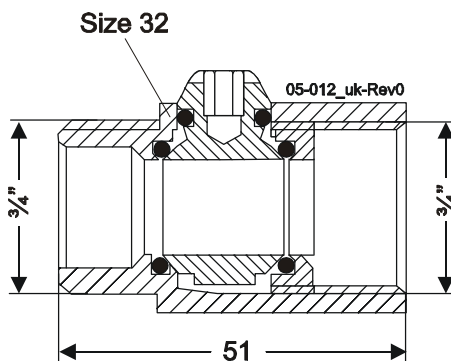


Fig. 9: Ballofix ball valve

Ballofix ball valve Z 845 Z4

- Housing: Brass Ms 58
- Gaskets: Teflon
- Max. temperature range - 20 °C to + 60 °C
- Max. pressure 4 barg

Functional characteristics and structure

5.6 Burner controls

The gas fired igniter can be interconnected with the following control units:

- Burner control AAUS 620 L 20
for intermittent operation, add-on unit
230 VAC, 50/60 Hz, IP 40 (special voltages possible, see also separate HEGWEIN description)
- Burner control AASD 820 L 20
for continuous operation, add-on unit
230 VAC, 50/60 Hz, IP 40 (special voltages possible, see also separate HEGWEIN description)
- Burner control A240 K3/ 306
for intermittent or continuous operation
with 3 seconds safety time
(versions with 5 or 8 seconds are also available)
19" plug-in Euro board,
24 VDC (special versions possible, see also separate HEGWEIN description)
- Flame relay A285 K2.3
with 2 volt-free SPDT contacts.
Fixture for rail mounting to IEC/EN 60715
for burner control systems complying with valid standards and regulations, for safety integration of the gas fired igniter (see also separate HEGWEIN description).

6 Installation and initial commissioning

6.1 Safety

Personnel

- Installation may only be performed by suitably qualified specialist staff of the plant installer.
- Initial commissioning may only be performed by employees of the manufacturer or by trained personnel.

Basics



WARNING!

Danger of injury due to faulty installation and initial commissioning!

Errors during installation and initial commissioning can result in potentially fatal situations or entail substantial material damage.

- Prior to any commissioning/maintenance work that part of the plant where the gas fired igniter is installed must be switched off and secured against accidental restart. All feedlines to the gas fired igniter must be blocked, emptied and cleaned, if necessary.
- Before starting work, ensure that there is sufficient freedom of movement for the installation work.
- Take care when handling open, sharp-edged components.
- Ensure that the installation site is clean and tidy. Loose components and tools lying around or piled on top of each other are a possible cause of accidents.
- Assemble components professionally and correctly, observing prescribed screw tightening torque levels.
- Secure components so that they cannot drop down or fall over.

Installation and initial commissioning

6.2 Installation and electrical connection

- Ensure that the following tasks are only performed by suitably trained personnel.

1. Prepare the installation location and installation opening.

From an outer tube length of 3 m observe the following:

- Use a guide tube to prevent sagging of the outer tube.
- The end of the outer tube must project at least 150 mm over the inserted tube.
- The annular gap between the outer tube and the push-in tube must be at least 5 mm.

2. Push the gas fired igniter into the installation opening.

3. Tighten the mounting flange (1) using four suitable screws. (Observe the max. torque specified in the table, use a suitable tool). Select the screw lengths in line with the wall thickness.

4. Connect the combustion air at the air inlet (2).

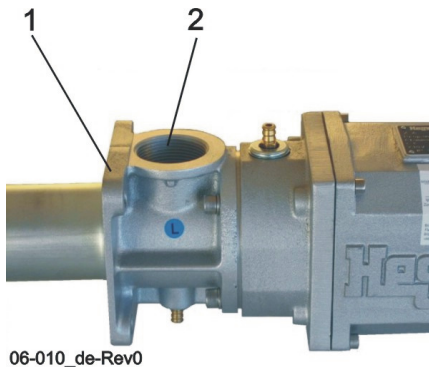


Fig. 10: Installation of the gas fired igniter

Thread size	Tightening torque
M 4	2.5 Nm
M 5	5 Nm
M 6	7 Nm
M 8	15 Nm
1/8"	5 Nm
1/4"	7 Nm
1/2"	10 Nm
3/4"	15 Nm
1"	15 Nm
1 1/2"	20 Nm
2"	25 Nm



REMARK!

- If the temperature around the outer tube is higher than 500 °C, connect the combustion air partially (20%) as cooling air and use a stainless steel outer tube.
- At temperatures > 700 °C apply additional cooling air in the annular gap between the push-in and the outer tube.



NOTE!

Excessive temperature can cause damage!

In igniters which are designed to permit division or swivel action, the temperature at the dividing or swivel joints can cause damage to the gas fired igniter.

- The temperature at the dividing / moving point must not exceed 180 °C.



WARNING!

Danger of burns due to wrong type of gas!

Using an incorrect gas type can cause too large an ignition flame to emerge from the gas fired igniter. This entails a risk of fatal injury due to serious burns and danger of fire.

- Only connect the gas fired igniter to the gas type indicated on the rating plate.

5. At the gas inlet, connect a Ballofix ball valve for gas volume setting.

6. Connect the gas line at the Ballofix ball valve connector.

Installation and initial commissioning



REMARK!

The gas fired igniter must be connected by the owner to the plant control system in accordance with the terminal diagrams.



REMARK!

The high-voltage ignition spark can suppress the ionization signal to such a degree that the flame relay is not able to pick up. For this reason, the plant control system must ensure that the ignition voltage ("spark transformer" terminal) is switched off before the end of the ignition safety period (see EN standard 298). This ensures a short ignition-free period (approx. 0.5 s).

- Connect the gas fired igniter in accordance with the relevant terminal diagram. If only one of the two cable glands installed is to be used, the unused cable gland should be removed and a blind plug screwed in instead.

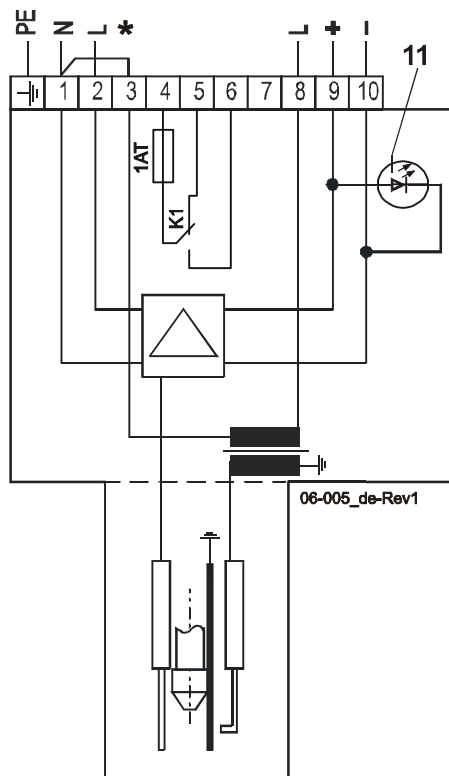


Fig. 11: Terminal diagram IP 54

Standard version, IP 54

with plug connection, Type ZA1..., ZDA1...

Terminal	Designation	Meaning
	PE	Protective earth conductor
1	N	Mains connection, ionisation flame monitor
2	L	
3 *	N	Spark transformer (primary)
4/5/6		Only with type ZDA..., volt-free SPDT contact (flame relay), max. 250 VAC, 1A, cos ϕ 1 (ohmic), fusing 1A slow blowing on front plate
8	L	Spark transformer (primary)
9	+	Flame signal output 90-110 VDC
10	-	
item 11		LED (flame present)

* Jumper between terminal 1 and 3, if spark transformer and ionisation flame monitor voltage have the same phase.

Installation and initial commissioning

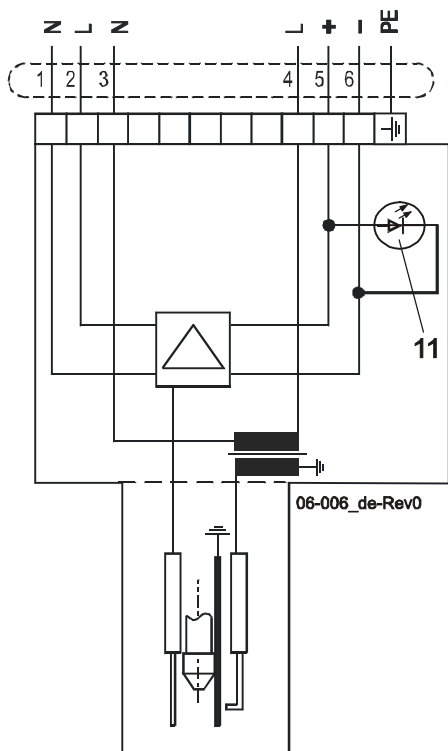


Fig. 12: Terminal diagram IP 65, 7-core

**Special version, IP 65
with 7-core control cable, sealed ionisation flame monitor
connection, type ZA1...**

Core	Designation	Meaning
	PE	Protective earth conductor
1	N	Mains connection, ionisation flame monitor
2	L	
3	N	Spark transformer (primary)
4	L	
5	+	Flame signal output 90-110 VDC
6	-	

item 11		LED (flame present)
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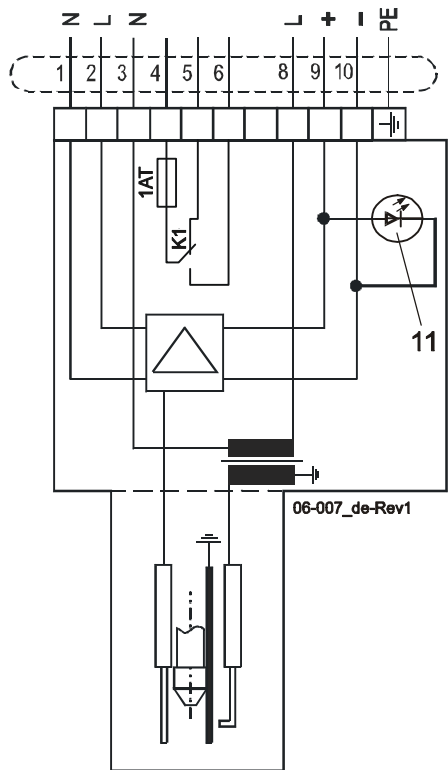


Fig. 13: Terminal diagram IP 65, 12-core

**Special version, IP 65
with 12-core control cable, sealed ionisation flame monitor
connection, type ZDA1...**

Core	Designation	Meaning
	PE	Protective earth conductor
1	N	Mains connection, ionisation flame monitor
2	L	
3	N	Spark transformer (primary)
4/5/6		Volt-free SPDT contact (flame relay), max. 250 VAC, 1A, cos ϕ 1 (ohmic), fusing 1A slow blowing on front plate
8	L	Spark transformer (primary)
9	+	Flame signal output 90-110 VDC
10	-	

item 11		LED (flame present)
---------	--	---------------------

**REMARK!**

Close the terminal box/connecting plugs and check whether all seals, cable strain relief devices etc. are correctly connected.

6.3 Electrical function test

- This test must only be executed by a qualified electrician.
- Additionally required protective gear:
 - Face protection
 - Safety gloves
- Required special tools:
 - Test diode A10Z2 (accessory part)

**DANGER!****Fatal danger due to high voltage!**

High voltage is present in the ignition electrode for ignition purposes. Contact with the electrode could be fatal.

- Never come into contact with the ignition electrode.

**DANGER!****Escaping fuel or the release of other devices may cause an explosion!**

A release of the gas fired igniter can cause the start of subsequent devices (burners).

- Any other devices such as burners and valves shall therefore be blocked.

**DANGER!****Risk of explosion due to leaking gas!**

Accidental gas leaks can cause an explosion or serious burns!

- Before testing, shut off the gas valve!
- Ensure that no residual gas remains, if necessary inert the gas lines.

Installation and initial commissioning

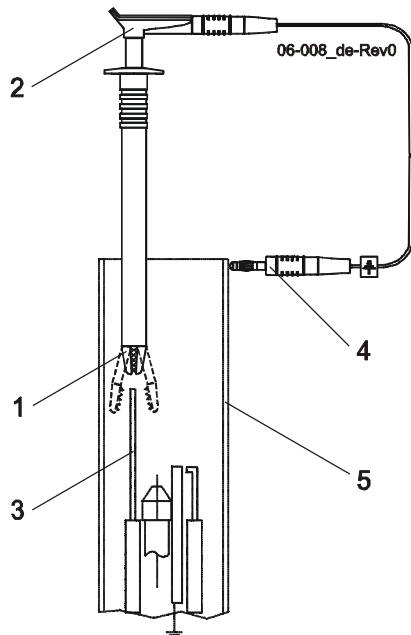


Fig. 14: Test diode

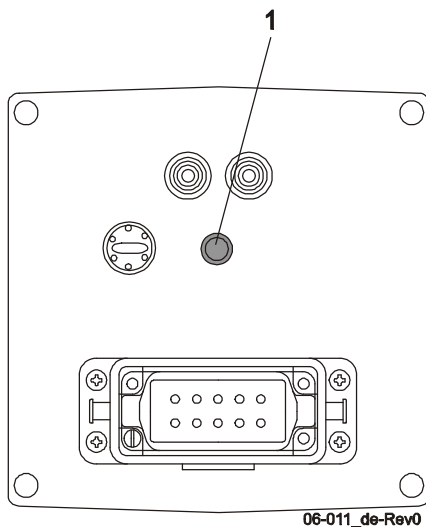


Fig. 15: LED

With the aid of test diode A10Z2, it is possible to simulate the flame signal.

1. Switch off the power (after recommissioning).
2. Open the red terminal (1) of the test diode by pressing button (2).
3. Apply the red terminal (1) of the test diode to the flame rod (3).
4. Release key (2) in order to clamp the red terminal.
5. Release the voltage to the ionisation flame monitor.
6. Bring the yellow plug (4) of the test diode briefly into contact with the outer tube (5).
7. After contact with the test diode, a direct voltage of 90-110 VDC must be measurable at the cores/terminals of the flame signal output.
In parallel, the LED (Fig. 15, 1) in the igniter head must light up.

8. If no flame signal is produced, check the following:
 - Is mains voltage present at core/terminal 1 - 2?
 - Is the polarity of the test diode correct?
 - Are ceramic insulators damp, soiled or broken?
If so, clean or exchange these or if necessary replace the ionisation flame monitor.
 - Connect the flame rod to the power head.



REMARK!

In case of function problems, turn to the chapter "Troubleshooting".

6.4 Setting the required air volume

- This may only be performed by trained personnel.
- Required special tools:
 - Customarily available pressure gauge with a measurement range of 0 - 200 mbar

1. Define the air pressure:
A supply pressure of 20 mbar plus another 13 mbar for every m of tube length is required. A gas fired igniter with a tube length of 5 m should therefore be supplied with 20 mbar + (5 x 13 mbar), i.e. 85 mbar in total (any backpressures need to be taken into account).
2. Turn the Allen screw (size 2.5) in the centre of the air pressure test nipple (1) 1 1/2 turns counter clockwise in order to open the air pressure test nipple.
3. Connect the pressure gauge to the air pressure test nipple (1).
4. Open the air supply (only on initial commissioning).
5. Reduce the air pressure / the air volume using the air regulating sleeve to the length-dependent flow pressure, so at the same time also compensating for any combustion chamber back pressure.

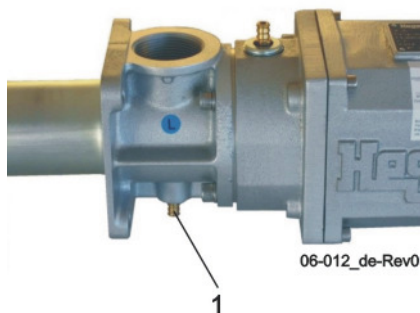


Fig. 16: Air pressure test nipple



REMARK!

In case of a varying combustion chamber back pressure with fluctuations greater than 20 %, integrate an air-side differential pressure regulator.

6. After measurement, remove the pressure gauge.
7. Close the Allen screw.

Installation and initial commissioning

6.5 Setting the required gas volume

- This may only be performed by trained personnel.
- Additionally required safety equipment:
 - Face protection
 - Protective gloves
- Required special tools:
 - Customarily available pressure gauge with a measurement range of 0 - 200 mbar



DANGER!

Risk of explosion due to gas leaks!

An accidental gas leak can cause an explosion or serious burns!

- Only unscrew the Allen screw of the gas pressure test nipple for the duration of the test.
- Never allow any naked flame or ignition source to enter the danger area.

1. Define the required gas volume on the basis of the relevant characteristic curve in the gas volume diagram.
As a rule, the operating pressure is 100 mbar above combustion chamber back pressure.



REMARK!

If a higher gas pressure was specified in the order, then pressure reducing orifices have already been screwed into the two gas inlet threads in the factory. The igniter is consequently adapted for gas pressures above 150 mbar.

Precision setting is performed using the Ballofix ball valve.

In case of service pressure levels above 500 mbar, this setting is extremely difficult. In these cases, the pressure reducing orifices must be retrofitted. When ordering pressure reducing orifices, specify the service pressure.



REMARK!

The illustrated diagram is based on average values in respect of gas density, gas composition, calorific value, igniter version, igniter tube length and optimum ambient conditions, such as free burn-out and pressureless combustion chamber. The service pressure values determined from the diagram must consequently be viewed as guideline values. Depending on the plant conditions, the actually required values may deviate from this.

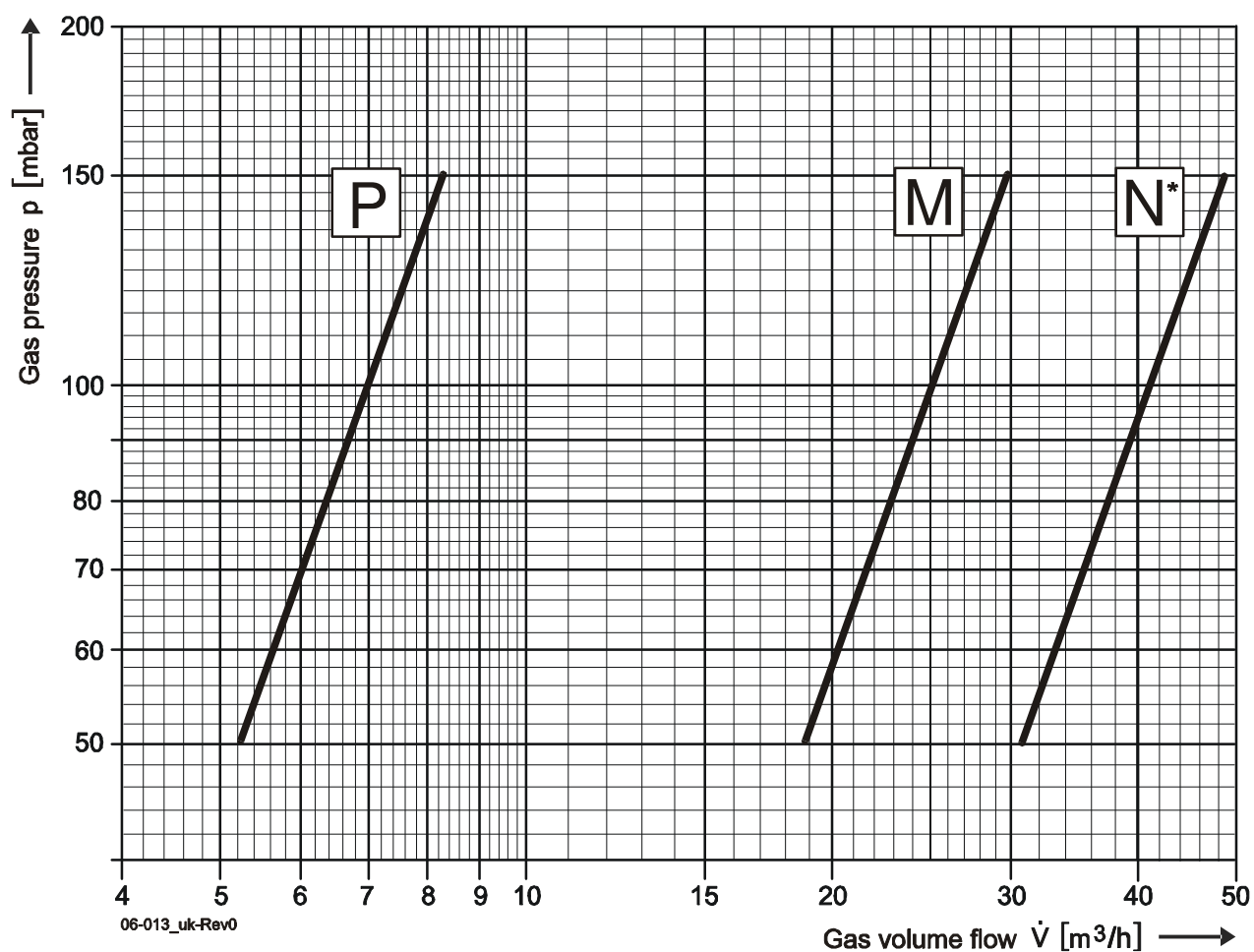


Fig. 17: Gas volume diagram

Characteristic	Gas type	Nozzle article number	Flame length (mm)
P	Propane/butane gas	Z36F4515	max. 1000
M	Natural gas	Z36F6020	max. 1200
N *	Town gas	Z986F1	max. 600

* Gas analysis required

Installation and initial commissioning

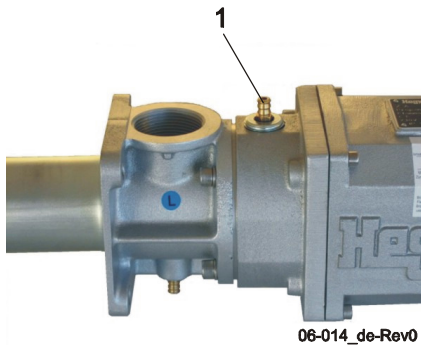


Fig. 18: Gas pressure test nipple

2. Turn the Allen screw (size 2.5) in the centre of the gas pressure test nipple (1) 1 1/2 turns counter clockwise in order to open the gas pressure test nipple.
3. Connect the pressure gauge to the gas pressure test nipple (1) immediately.



DANGER!

Fatal danger when executing ignition tests!

When executing ignition tests, a large ignition flame emerges from the gas fired igniter, which could fatal burns and also fire.

Ignition tests should preferably be performed when the equipment is in a mounted status:

- Ensure that the combustion products generated by the flame are extracted via the opened flue gas path of the entire plant.

If the gas fired igniter has to be tested when not mounted:

- Execute ignition tests in such a way that there are no persons located in the flame exit area of the outer tube.
- Cordon off the danger area.
- Only carry out ignition tests if there are no combustible objects or inflammable materials in the vicinity of the flame.



DANGER!

Fuel leaks or the release of other devices may cause an explosion!

A release of the gas fired igniter can cause the start of subsequent devices (burners).

- Any other devices such as burners and valves shall therefore be blocked.

4. Open the gas supply (only on initial commissioning) and enable the tested plant by means of the control system.
5. Set the previously selected gas pressure / gas volume at the Ballofix ball valve.



REMARK!

In order to achieve a stable flame the air flow needs to be adapted according to the gas pressure.

6. After measurement, remove the pressure gauge.
7. Close the Allen screw immediately.

6.6 Checking the setting result

If correctly set, the following setting results should be in place following initial commissioning:

- Immediate ignition
- Optically good flame pattern / flame signal 90-110 VDC, or optimized ionisation flow $> 10 \mu\text{A}$ (test sockets in the front panel of the igniter head in the standard version)
- Flame length max. 1200 mm at max. output of 250 kW and free burn-out

Operation

7 Operation

7.1 Safety

Personal

- To be executed by suitably trained personnel only.

Basics

**WARNING!****Danger of injury due to incorrect operation!**

Incorrect operation can result in serious personal injury or material damage.

- Before starting work, ensure that all covers and safety devices are installed and in correct working order.
- Never disable safety devices during operation.
- Only operate the gas fired igniter after ensuring that nobody is near the area of the flame.
- Ensure order and cleanliness in the work area. Loose components and tools lying around or piled on top of each other are a possible cause of accidents.

7.2 Operation

**REMARK!**

Operation of the gas fired igniters takes place at the plant control system in which the device is integrated. Manual operation at the gas fired igniter itself is not required.

8 Maintenance

8.1 Safety

Personnel

- To be executed by suitably trained personnel only.

Basics

**WARNING!****Danger of injury due to incorrectly executed maintenance work!**

Incorrectly done maintenance work can result in serious personal injury or material damage.

- Before starting work, ensure that there is sufficient freedom of movement for the installation work.
- Ensure that the installation site is clean and tidy. Loose components and tools lying around or piled on top of each other are a possible cause of accidents.
- When components are removed, ensure correct reassembly. Remount all fastening components and adhere to specified screw tightening torque levels.

8.2 Maintenance, general

The gas fired igniter should be function tested at regular intervals (e.g. every 3 months).

If the gas fired igniter is operated with air containing dust, checks must be performed at shorter intervals, as electrically conductive dirt deposits or moisture on the ceramic insulators of the igniter can result in malfunctions.

The inner resistance of the ionization path is $M\Omega$. These high resistance levels call for the ceramic insulators to be in perfect working order.

Only a few parts are subject to wear in normal operation (see chapter "Spare parts list"). These parts must be exchanged if defects and malfunctions occur with increased frequency.

Maintenance

8.3 Conditions for maintenance work

Take care of the following warnings before carrying out any maintenance work (sections 8.3.1 to 8.3.5):

**DANGER!****Fatal danger due to high voltage!**

High voltage is present in the ignition electrode for ignition purposes. Contact with the electrode could be fatal.

- Never come into contact with the ignition electrode

Performing work at the spark transformer entails a risk of fatal injury due to electric shocks!

- Switch off the gas fired igniter and secure it against being switched back on.
- Before touching parts carrying voltage, ensure that no residual voltage remains.

**DANGER!****Risk of explosion due to leaking gas!**

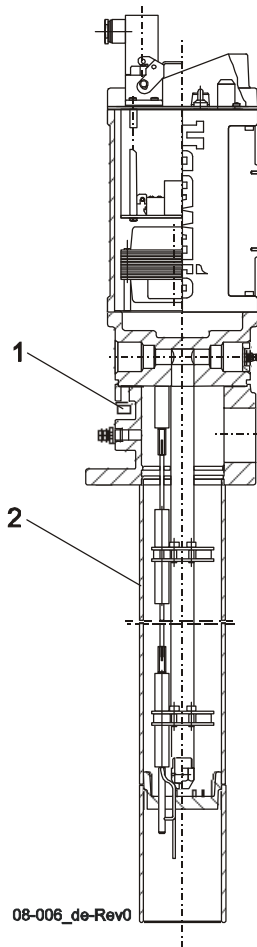
Accidental gas leaks can cause an explosion or serious burns!

When carrying out maintenance work, shut off the gas valve!

- Ensure that no residual gas remains, if necessary inert the gas lines.
- Completely separate the gas fired igniter from the power supply and disconnect the gas / air supply.

The maintenance work listed below can now be performed.

8.3.1 Exchanging the outer tube



■ This may only be performed by suitably qualified personnel.

1. Release the four Allen screws (1).
2. Pull off the outer tube (2).
3. Position the new outer tube (2).
4. Tighten the four Allen screws (1) again.



REMARK!

Depending on the position of the air connection, the outer tube can be turned into 4 x 90° increments and tightened.

Fig. 19: Exchanging the outer tube

Maintenance

8.3.2 Exchanging the power head

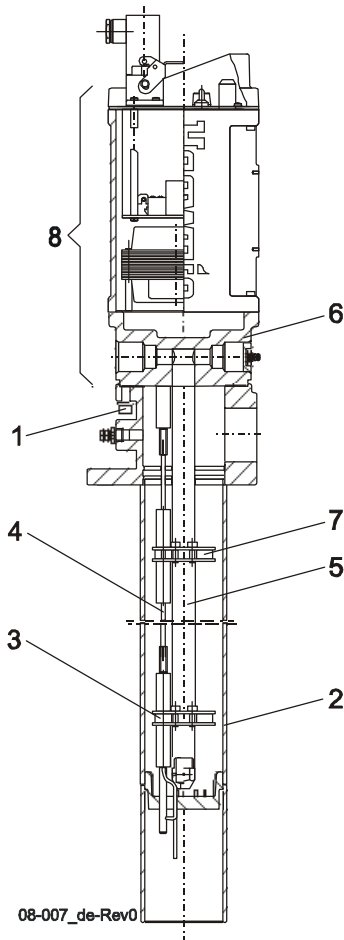


Fig. 20: Exchanging the power head

■ This may only be performed by suitably qualified personnel.

1. Release the four Allen screws (1).
2. Pull off the outer tube (2).
3. Remove the final electrode support ring (3) and any existing intermediate support rings (7) as well as the connecting rods (4).
4. Unscrew the gas tube (5) from the gas flange (6).
5. If there are pressure reducing orifices screwed into the two gas inlet threads, unscrew these and change them over to the new power head (8).
6. Assembly takes place in reverse sequence.
7. Mount the rating plate on the new power head (8).

8.3.3 Exchanging the ionisation flame monitor

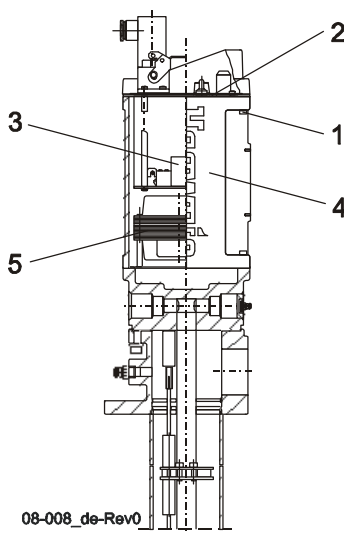


Fig. 21: Exchanging the ionisation flame monitor

■ This may only be performed by suitably qualified personnel.

1. Release the four Allen screws (1).
2. Pull the transformer part's front panel (2) and the ionisation flame monitor (3) carefully out of the housing (4).
3. Disconnect the internal four-pole plug-in connection.
4. Plug the socket of the new ionisation flame monitor (3) to the spark transformer (5).
5. Insert the transformer part's front panel (2) with the ionisation flame monitor (3) into the housing (4), place the gaskets carefully.
6. Tighten the four Allen screws (1).

8.3.4 Exchanging the final electrode support ring

- This may only be performed by suitably qualified personnel.



REMARK!

The final electrode support ring counts as a wearing component and is not included in the warranty cover.

The complete electrode support rings with ready pre-bent and adjusted electrodes can be ordered from HEGWEIN (for address see the cover sheet of the table of contents).

1. Release the four Allen screws (1).
2. Pull off the outer tube (2).
3. Release the clamping screw (6) of the final electrode support ring (3) and pull the ring off the gas tube (4).
4. Position the new final electrode support ring (3).
5. All plug-in sleeves (item 7) should be squeezed carefully with a pair of pliers to ensure a tight fit of the connecting rods (item 5) in the plug-in sleeves.
6. Insert the connecting rods (5) into the plug-in sleeves at the igniter head and into the plug-in sleeves (7) on the final electrode support ring (3).
Ensure that the connecting rods (5) are not twisted or bent.
7. Check the distances at the final electrode support ring (3) and align if necessary.
8. Tighten the clamping screw (6).
9. Mount the outer tube (2).

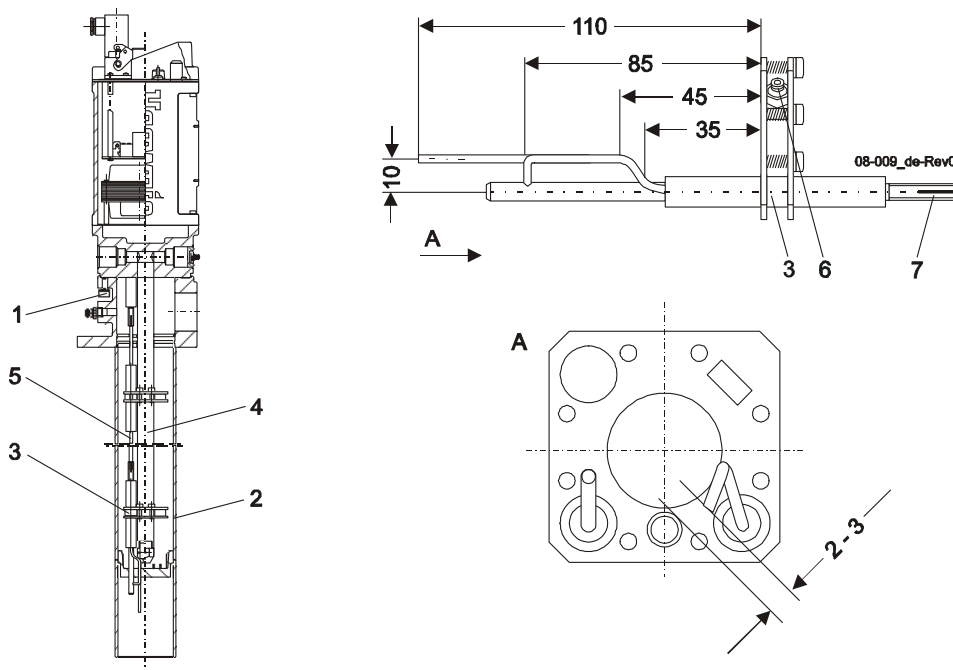


Fig. 22: Exchanging the final electrode support ring

Maintenance

8.3.5 Exchanging the intermediate support rings

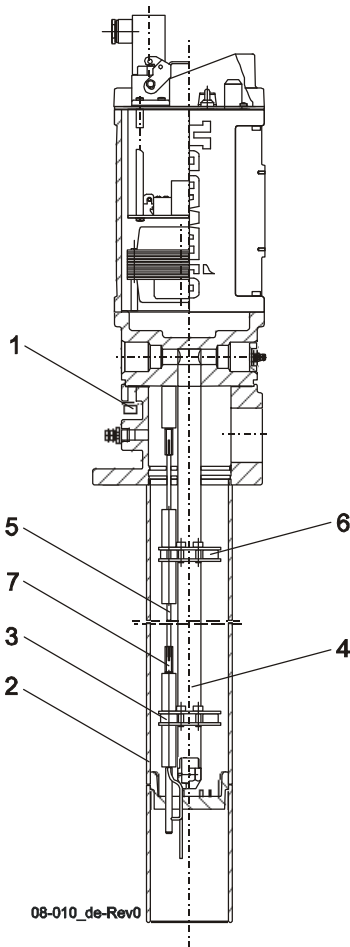


Fig. 23: Exchanging the intermediate support rings

■ This may only be performed by suitably qualified personnel.



REMARK!

Intermediate support rings are used from a tube length of 600 mm. New intermediate support rings must be inserted in the previous position.

1. Release the four Allen screws (1).
2. Pull off the outer tube (2).
3. Release the clamping screw of the final electrode support ring and pull off the final electrode support ring (3) from the gas tube (4).
4. Pull out the connecting rods (5).
5. Release the clamping screws of the intermediate support rings (6).
6. Pull the intermediate support rings (6) off the gas tube (4).
7. Push the new intermediate support rings onto the gas tube (4).
8. Push on the final electrode support ring (3).
9. All plug-in sleeves (7) should be squeezed carefully with a pair of pliers to ensure a tight fit of the connecting rods (5) in the plug-in sleeves.
10. Insert the connecting rods (5) into the plug-in sleeves at the igniter head and into the plug-in sleeves on the final electrode support ring (3).
Ensure that the connecting rods (5) are not twisted or bent.
11. Mount the final electrode support ring (3) and align.
12. Tighten all clamping screws of the intermediate support rings (6).
13. Mount the outer tube (2).

8.4 Actions following completed maintenance work

After completing the maintenance work and before switching on, carry out the following steps:

1. Check all previously released screw connections for a firm fit.
2. Check whether all previously removed protective devices and covers have been correctly replaced.
3. Ensure that all used tools, materials and other equipment have been removed from the work area.
4. Clean the work area and remove any spilt substances such as fluids, processing materials or similar.
5. Ensure that all safety devices are in perfect working order and that the correct function of the equipment is guaranteed.

9 Troubleshooting

The following chapter provides information on possible causes for faults and describes the work required to remedy them.

If faults occur on a more frequent basis, reduce the maintenance intervals in line with the actual degree of stress on the system.

In case of faults which cannot be remedied following these instructions, contact HEGWEIN. For the servicing address, see the cover sheet of the table of contents.

9.1 Safety

Personal

- This may only be performed by trained personnel.

Basics



WARNING!

Danger of injury due to incorrectly performed maintenance work!

Incorrectly executed maintenance work can result in serious personal injury or material damage.

- Before starting work, ensure that there is sufficient freedom of movement for the installation work.
- Ensure that the installation site is clean and tidy. Loose components and tools lying around or piled on top of each other are a possible cause of accidents.
- When components are removed, ensure correct reassembly. Remount all fastening components and adhere to specified screw tightening torque levels.

Response in case of faults

Basic rules of procedure:

1. Determine the cause of the fault.
2. If remedying the fault entails work in the danger area, switch off the gas fired igniter and secure it against being switched back on.
3. Completely disconnect the gas fired igniter from the energy supply and disconnect the fuel/air supply.
4. Inform the person in charge at the site immediately about the fault.
5. Depending on the type of fault, have it remedied by authorized specialist personnel.



REMARK!

The troubleshooting table listed below provides information on how to remedy faults.

Troubleshooting

9.2 Troubleshooting table

Fault	Possible cause	Solution	To be done by
Spark does not form (Not: Carry out optical check of ignition spark with gas valve closed in darkened room)	Gas fired igniter is not receiving any voltage	Check wiring Check control system	Qualified electrician
	Ignition electrode is burned out	Clean the inside of the gas fired igniter and replace ignition electrode, bend to original position	Qualified personnel
	Electrode distance is too large or electrode has short circuited	Clean inside of gas fired igniter if necessary and bend ignition electrode to distance of 2 - 3 mm	Qualified personnel
	Spark transformer defective	Exchange spark transformer	Manufacturer/ Qualified electrician
	Layer of scale on spark electrode or earth rod/ bolt	Clean inside of gas fired igniter and remove deposits using emery paper	Qualified personnel
	Ceramic insulator broken	Exchange ceramic insulator, intermediate support ring or final electrode support	Qualified personnel
Flame fails to form	No combustion air available due to defective air flap or valve	Exchange air flap or valve	Qualified personnel
	No combustion air available due to closed throttle organs	Open throttle organs	Operator
	No combustion air available due to blocked supply line	Unblock line	Qualified personnel
	No gas available because supply line is too long	Dimension supply line accordingly, if necessary change the position of the burner	Qualified personnel
	No gas available, as gas supply line still inert with N ₂	Carry out several ignition attempts until line has filled with gas	Operator
	No gas available, as gas valve defective	Exchange gas valve	Gas specialist / owner
	Gas to air ratio is incorrect	Check settings of the gas and air pressure. Check values and correct on the basis of the diagrams	Qualified personnel
	Wrong gas	Only use gas specified on the rating plate	Qualified personnel

Troubleshooting

Fault	Possible cause	Solution	To be done by
	Combustion air contaminated	If necessary use a filter or clean/replace existing filter	Qualified personnel
The flame comes on for a short time, but trips once the ignition safety time has elapsed	Flame rod is burned out, deformed or has short circuited	Exchange the flame rod and bend back to original position Clean any scale/internal burner parts	Qualified personnel
	Ceramic insulator of flame rod broken	Exchange ceramic insulator or electrode support ring	Qualified personnel
	When switched together with the Hegwein control unit, operating voltage is enabled at the same time as the bias voltage	As the operating voltage must lag behind the bias voltage by at least 5 s, always leave the bias voltage switched on	Qualified electrician
	When using control unit from a different manufacturer, the ignition spark always disturbs the ionization feedback	Switch off ignition voltage approx. 0.5 s before expiry of the ignition safety time	Qualified electrician
	Gas fired igniter was exposed to excessively high temperature in the combustion chamber when switched off. Ceramic insulators too hot, the insulation resistance has dropped too far	Leave fan air running when the gas fired igniter is switched off for cooling purposes	Qualified personnel
	The setting of the gas and air pressure levels at the gas fired igniter is not correct, flame root not in the area of the flame rod	Check settings and correct	Qualified personnel
	Wrong connection	Check complete wiring, carry out electrical function test	Qualified electrician
	Ionisation flame monitor defective	Carry out electrical function test, exchange ionisation flame monitor	Manufacturer/ Qualified electrician
Fault shutdown takes place during operation	Fluctuating combustion chamber of supply pressure levels, resulting in flame blow-off	Check the pressure settings at the test nipples. If necessary provide a differential pressure regulation system for gas and air If possible, carry out ignition and burning tests outside the combustion chamber (observe local regulations)	Qualified personnel

Troubleshooting

Fault	Possible cause	Solution	To be done by
	Pilot flame highly subject to influence by the main flame or is suffocated	Change the position of the gas fired igniter	Qualified personnel
		Use more powerful gas fired igniter	
Lock-out because a flame is signalled at the start before the gas valve has opened	Flame was not extinguished when switching off due to a leaking valve, and is already present when restarting	Replace the gas valve	Gas specialist personnel/ Owner
	Defective ionisation flame monitor	Replace the ionisation flame monitor	Manufacturer/ Qualified electrician
The gas fired igniter and control unit are operational, but no signals are transmitted via the integrated flame relay	Integrated fuse defective	Replace fuse	Qualified electrician

10 Dismantling / Disposal

Once it has reached the end of its service life, the gas fired igniter has to be dismantled and sent for ecologically responsible disposal.

10.1 Safety

Personnel

- This may only be performed by trained personnel.

Basics

**WARNING!****Danger of injury due to incorrect dismantling!**

Residual stored energy, sharp components, pointed corners and edges on or in the gas fired igniter or on the required tools can cause injury.

- Before starting work, ensure that there is sufficient space available.
- Take particular care when dealing with sharp-edged components.
- Ensure that the installation site is clean and tidy. Loose components and tools lying around or piled on top of each other are a possible cause of accidents.
- If any points are unclear, consult the manufacturer.

10.2 Dismantling

Before starting to dismantle it, carry out the following steps:

**DANGER!****Potentially fatal injury due to electrical current!**

Contact with live components can cause fatal injury.

- Before starting dismantling work, switch off the electrical supply and finally disconnect.

Dismantling / Disposal

**DANGER!****Risk of explosion due to leaking gas!**

Accidental gas leaks can cause an explosion or serious burns!

When dismantling, shut off the gas valve!

- Ensure that no residual gas remains, if necessary inert the gas lines.
- If gas is unintentionally released into the atmosphere, immediately shut off the gas flow. Prevent gas entering drainage systems, basements, work pits or other locations in which collected gas could cause a hazard.

1. Switch off the gas fired igniter and secure it against being switched back on.
2. Completely disconnect the gas fired igniter from the energy supply and gas / air supply.
3. Remove operating and auxiliary materials as well as residual processing materials and ensure their ecologically responsible disposal.

The gas fired igniter can now be cleaned for separation and dismantled in compliance with applicable occupational safety and environmental protection legislation.

10.3 Disposal

Provided no return acceptance or disposal agreement has been concluded, the components once dismantled can be sent for recycling:

- Scrap the metal.
- Send plastic elements for recycling.
- Dispose of the remaining components separated according to material properties.

**NOTE!****Environmental damage due to incorrect disposal!**

Electric scrap, electronic components, lubricants and other auxiliary materials are subject to special waste treatment and may only be disposed of by authorized specialist companies!

The local authorities or specialist disposal companies can provide information on environmentally responsible disposal.

11 Spare parts list

11.1 Spare and wearing parts

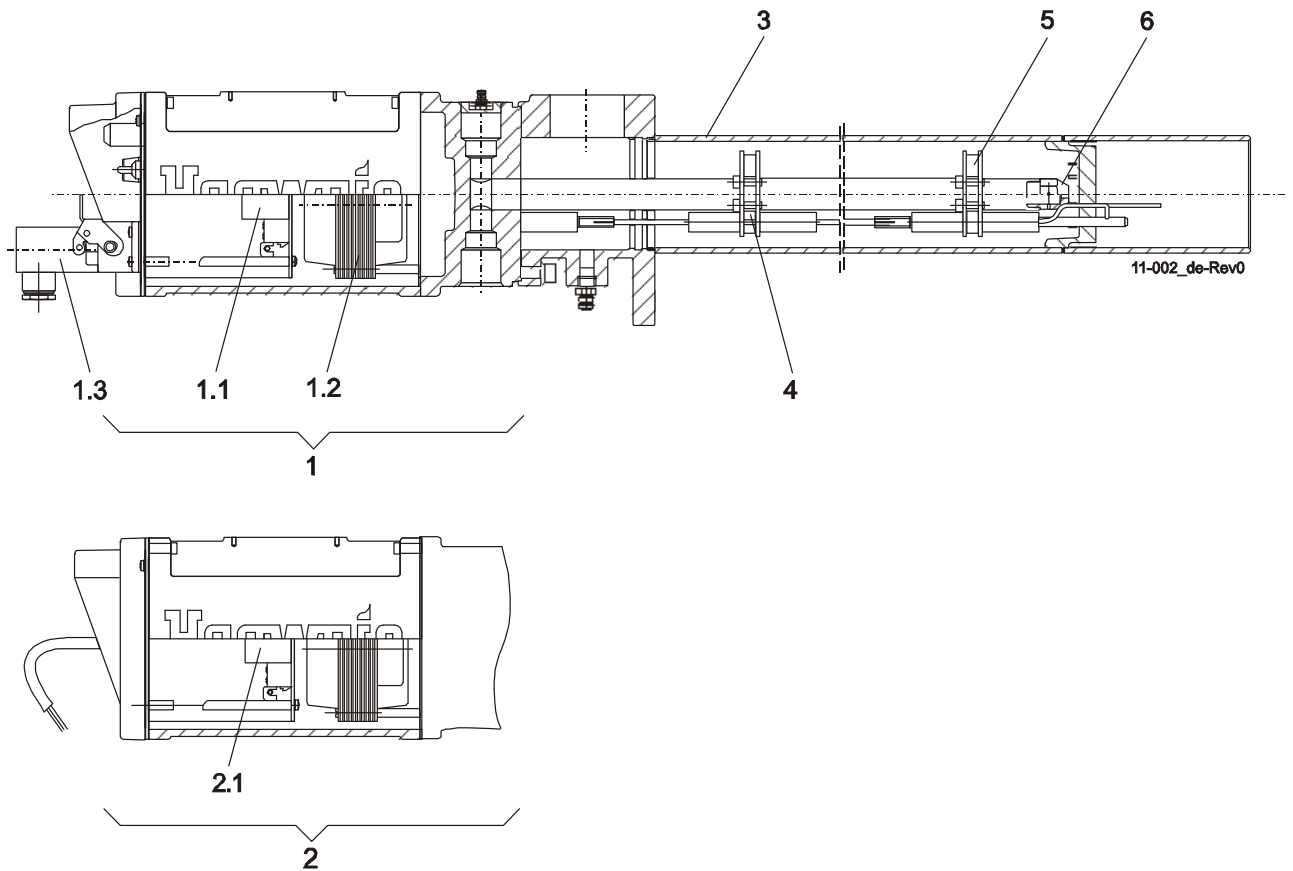


Fig. 24: Spare parts drawing

Item	Qty.	Designation	Part number	Voltages	Material/ configuration	Remarks
1	1	Power head / IP 54 for ZA1...	Z420K2 Z420K2/00M Z420K2/00C Z420K2/00B	230 V 115 V 125 V 250 V	With housing, plug connection and gas flange	Standard Special version Special version Special version
	1	Power head / IP 54 for ZDA1...	Z420K3 Z420K3/00M Z420K3/00C Z420K3/00B	230 V 115 V 125 V 250 V		Standard Special version Special version Special version
1.1	1	Ionisation flame monitor (A515Z3...) with transformer part's front panel for ZA1...	Z884K2 Z884K2/00M Z884K2/00C Z884K2/00B	230 V 115 V 125 V 250 V	Plug connection	Standard Special version Special version Special version
	1	Ionisation flame monitor (A515Z3...) with transformer part's front panel for ZDA1...	Z884K3 Z884K3/00M Z884K3/00C Z884K3/00B	230 V 115 V 125 V 250 V	Plug connection	Standard Special version Special version Special version

Spare parts list

Item	Qty.	Designation		Part number	Voltages	Material/ configuration	Remarks
1.2	1	Spark transformer		Z546K230E2 Z546K115E2 Z546K00BE2	230 V 115 V 250 V	Without housing	Standard Special version Special version
1.3	1	Electrical connecting plug with 2 cable glands		A5Z1			
2	1	Power head / IP 65 with control cable for ZA1...		Z420K7_ _ _	Special version alternative to 1 : With the addition of control cable length and voltage specification in line with type key (see chapter “Specifications”)		
	1	Power head / IP 65 with control cable for ZDA1...		Z420K8_ _ _			
2.1	1	Ionisation flame monitor (A515Z3...) with transformer part's front panel for ZA1...		Z884K7_ _ _	Special version alternative to 1.1: With the addition of control cable length and voltage specification in line with type key (see chapter “Specifications”)		
	1	Ionisation flame monitor (A515Z3...) with transformer part's front panel for ZDA1...		Z884K8_ _ _			
3	1	Complete outer tube, incl. mixing chamber (heat resistant tube 1.4841) and mounting flange with air inlet		Z1010Z_ _ _ or Z1016Z_ _ _	Tube length given should be the same in line with type key (see chapter “Specifications”)	Steel Stainless steel	Standard Special version
4	*	Intermediate support ring with 2 ceramic insulators		Z944K3 or Z944K103		Steel Stainless steel	* length dependent
5	1	Final electrode support ring with 2 ceramic insulators and 2 electrodes		Z944K9 or Z944K109		Steel Stainless steel	Standard Special version Wearing part
6	1	Gas nozzle	Natural gas	Z36F6020		Stainless steel 1.4104	Standard
			Propane/ butane gas	Z36F4515		Stainless steel 1.4104	Standard
			Town/coke oven gas	Z986F1		Stainless steel 1.4104	Standard
7	1	Fuse		A 665 Z1			1A slow blowing