

– weishaupt –

# product

Information on industrial burners



## Industrial burner WK

Industrial burners WK40 to WK80 • 300 kW to 22,000 kW

# A powerful industrial burner of modular construction

**Weishaupt WK series industrial burners have been especially designed for industrial use. The modular design principle enables these burners to be matched to numerous special applications. A large capacity range supports the wide spectrum of applications.**

## **Modular principle**

Weishaupt WK series industrial burners are of modular design. That means the fan, control panel, pump assembly and preheater station are all matched independently of the burner. This concept offers a high degree of flexibility in matching with numerous application requirements.

## **Digital combustion management**

Using digital combustion management ensures simple and reliable operation of a combustion plant. All important functions such as fuel and air supply, flame monitoring, etc. are controlled with digital precision. Operational functions are optimised, economy is maximised, and emissions are reduced to a minimum.

## **New mixing head**

The newly developed mixing head has greatly reduced burner pressure losses. Operational vibrations have been reduced, as have NO<sub>x</sub> emissions — considerably so in some cases.

## **Insulated burner housing**

The burner housing is fitted with internal insulation as standard. This significantly reduces the surface temperature of the housing during operation with preheated combustion air. The insulation also provides effective noise reduction, with noise levels below 85 dB(A).

## **Nozzle head shut off device**

At burner shutdown or when changing over to gas operation, a safety shut off device located in the oil atomising system shuts off the oil flow directly in the nozzle orifice. Oil cannot escape from the nozzle head. However, on heavy oil burners it is possible for preheated oil to flow through the nozzle during the heat up phase. This ensures that oil with the correct viscosity is available immediately for flame formation.

By using the type tested nozzle head shut off device the high operational availability of the burner is further increased.

## **Modulating control**

The modulating burners operate according to the current heat demand at any point within the control range.

## **Reduced capacity at start up**

A gas ignition device enables gas firing burners to start operation at a reduced ignition load. This means that only a small quantity of gas flows into the combustion chamber. After a short delay the burner drives to partial load.

## **Controlled shutdown from partial load**

Controlled shutdown of the burner always takes place from the partial load position, thus preventing impact on the gas main.

## **Heat recovery using preheated combustion air**

Many industrial processes create high flue gas temperatures due to the high temperature of the medium used. A large amount of energy can be reclaimed from these hot flue gases, which is returned via a heat exchanger in the flue. Efficiency can be increased by up to 9% using this technology. Weishaupt WK series industrial burners can be operated with combustion air temperatures of up to 250° C.

## **Valve trains**

To comply with EN 676 burners must be equipped with two safety shut off valves. Weishaupt gas and dual fuel burners are equipped with Class A double gas valves as standard. The W-FM100/200 combustion manager provides for gas valve proving as standard. The required gas pressure switch is included in the delivery. Other gas side accessories such as gas filters and gas pressure regulators can be found in the list of accessories.

## **Simple maintenance**

Upon removing the housing's cover the diffuser, nozzle, ignition electrodes and mixing head are readily accessible. After removing the mixing head, the flame tube can simply be withdrawn through the opening in the housing. The components for the regulation of gas, oil and air are neatly arranged in the controls assembly and are easily accessible. This simplifies all maintenance work.

## **Fuels**

Fuel oil EL (< 6 mm<sup>2</sup>/s at 20° C) to DIN 51 603, T1  
Fuel oil S (< 50 mm<sup>2</sup>/s at 100° C) to DIN 51 603, T3 and T5  
Natural Gas E  
Natural Gas LL  
Liquid Petroleum Gas B/P

## **Applications**

The burners can be used with heat exchangers such as hot water boilers, steam boilers, air heaters and for certain process applications. The combustion air must be free of aggressive substances (Halogens, Chloride, Fluoride, etc) and impurities (dust, debris, moisture, etc). Oil and gas installations must comply with prevailing standards.

## **Permissible ambient conditions**

- Ambient temperature -15 to +40° C (in operation)
- Humidity: ≤ 80% relative humidity, no dew point

- Suitable for indoor operation only
- For plant in unheated areas certain further measures may be required (please enquire)

Use of the burner for applications or in ambient conditions not detailed above is not permitted without the prior written agreement of Max Weishaupt GmbH. The service intervals will be reduced in accordance with the more extreme operational conditions.

#### **Type test certification**

The burners sizes 70 and 80 have been type tested by an independent body and conform to the following standards and EU Directives:

- EN 267 and EN 676
- Pressure Vessel Directive 97/23/EC
- Gas Appliance Directive 2009/142/EC
- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility 2004/108/EC
- Low Voltage Directive 2006/95/EC
- The burners carry the CE mark and a CE-PIN No. and are voluntarily DIN registered.

To meet the NO<sub>x</sub> limit values certain requirements regarding minimum combustion chamber dimension must be observed.

#### **Outstanding service**

Weishaupt maintains an extensive global sales and service network. Customer service is available every day around the clock. In-house training by Weishaupt ensures the high standard of their service engineers.

#### **A number of variation are available to meet the different emission requirements:**

##### **Version ZM (Standard)**

Oil, gas and dual fuel burners for installations without specific NO<sub>x</sub> requirements. Suitable for Natural Gas, Liquid Petroleum Gas, distillate oil, residual oil, as well as special gases and special oils on request. Type tested burners for Natural Gas and distillate oil in vers. ZM (cold air) comply with NO<sub>x</sub> Class 1 to EN 676 and EN 267.

##### **Version NR**

Gas and dual fuel burners with advanced, standard mixing head for installations with gas side NO<sub>x</sub> requirements. NR means: lower gas side NO<sub>x</sub> values compared to the standard version. Oil side as standard version. Suitable for Natural Gas, Liquid Petroleum Gas, distillate oil, residual oil. Type tested burners for Natural Gas, Liquid Petroleum Gas and distillate oil in vers. ZM-NR (cold air) comply with NO<sub>x</sub> Class 2 (in some cases even NO<sub>x</sub> Class 3) on the gas side and NO<sub>x</sub> Class 1 to EN 676 and EN 267 on the oil side.

##### **Version 1LN**

LowNO<sub>x</sub> gas and dual fuel burners with special mixing head for installations with gas and oil side NO<sub>x</sub> requirements. 1LN means: lower NO<sub>x</sub> values compared to version NR. Suitable for Natural Gas, Liquid Petroleum Gas, distillate oil. Type tested burners for Natural Gas, Liquid Petroleum Gas and distillate oil in vers. ZM-1LN (cold air) comply with NO<sub>x</sub> Class 3 on the gas side and NO<sub>x</sub> Class 2 to EN 676 and EN 267 on the oil side.

##### **Version LN**

LowNO<sub>x</sub> gas burners with special mixing head for installations with gas side NO<sub>x</sub> requirements. LN means: lower gas side NO<sub>x</sub> value compared to vers. 1LN. Suitable for Natural Gas and Liquid Petroleum Gas. Type tested burners for Natural Gas in vers. ZM-LN (cold air) comply with NO<sub>x</sub> Class 3 to EN 676.

##### **Version 3LN**

LowNO<sub>x</sub> gas and dual fuel burners with multiflam mixing head for installations with extremely low NO<sub>x</sub> requirements (only for boilers of the three pass or burn-through principle). Extremely low NO<sub>x</sub> values achieved by fuel division. Suitable for Natural Gas, Liquid Petroleum Gas and distillate oil. Type tested burners for Natural Gas in vers. ZM-3LN (cold air) comply with NO<sub>x</sub> Class 3 to EN 676 and EN 267.

# Digital Combustion management: Precise, simple and reliable



Setting and control of the burner via the ABE display and operating unit

## **Digital combustion management means optimal combustion figures, continually reproducible setting figures and ease of use.**

Weishaupt WK series burners are equipped as standard with electronic compound regulation and digital combustion management. Modern combustion technologies demand a precise, continually reproducible mixing of fuel and combustion air. Only in this way can optimum combustion figures be ensured over extended periods.

### **Simple operation**

Setting and control of the burner is achieved using the ABE display and operating unit. The unit, which is linked to the combustion manager via a bus system, presents clear text messages in a choice of languages, enabling the user friendly setting of the burner.

## **Flexible communication possibilities**

The integral interface enables all necessary information and functions to be relayed to superordinate control systems. If required, a modem enables a telephone connection to be installed for remote operation, monitoring and diagnosis.

### **Bus communication with customer systems / BMS systems**

Burner data can be exchanged with a PLC system or integrated into a BMS system. Converters are available, which allow data transfer from the internal burner bus technology to various common Bus systems.

### **New technology advantages**

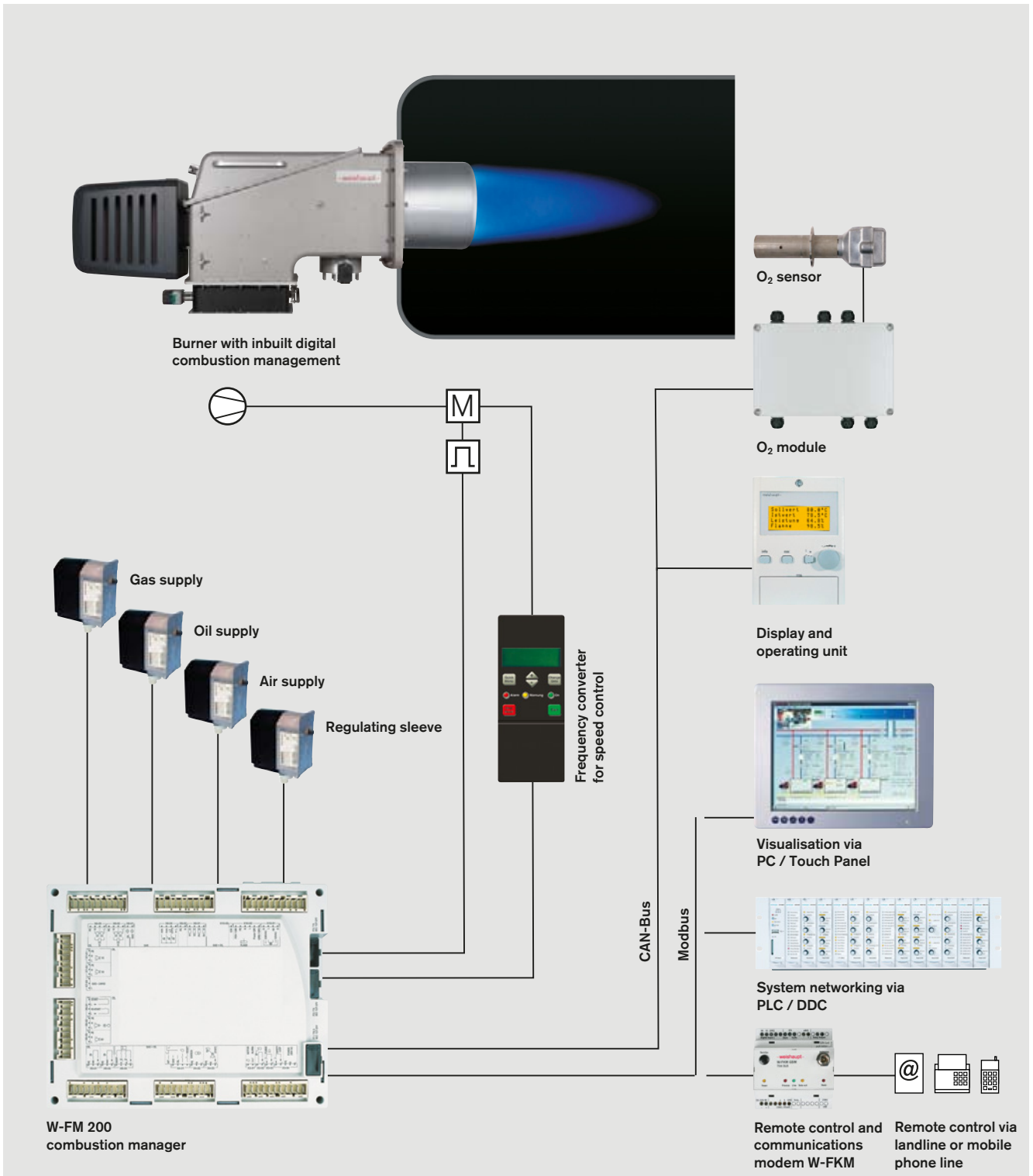
Digital combustion management makes burner operation simple and reliable.

The most important advantages at a glance:

- One unit for all burner variations
- Optimum combustion values achieved by precise control
- Integrated valve proving (gas operation)
- Integrated load controller
- Separate display and operating unit for increased convenience
- Clear text display for simple operation
- Available in a number of different languages
- Flexible communication possibilities are offered by various types of interface

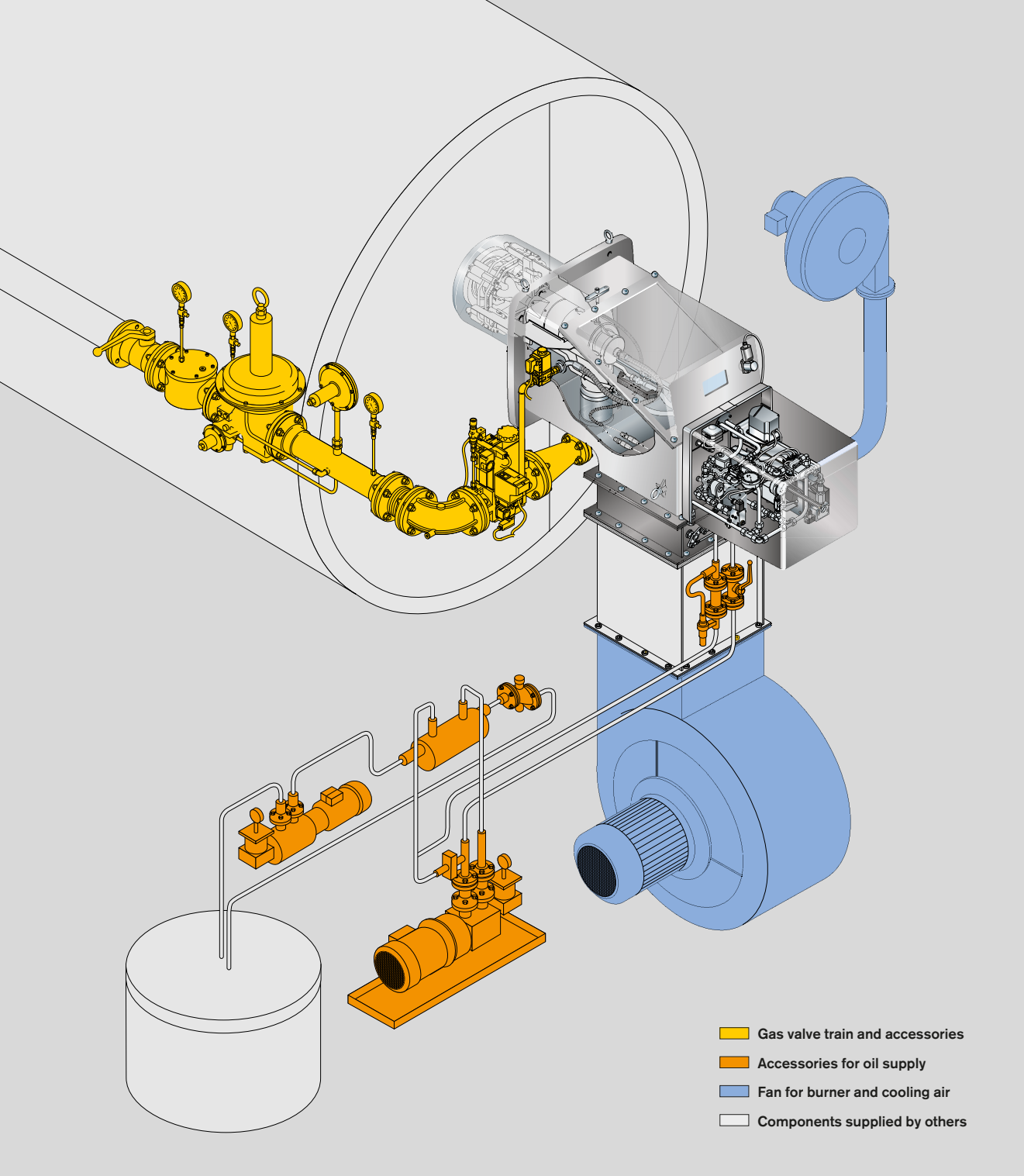
Other advantages:

- No additional burner controls are necessary as control is effected by the combustion manager.
- Reduced installation expense: Each burner is tested and supplied by the factory as a complete unit.
- Commissioning and service work takes less time. The burner's basic parameters are set at the factory. Adjustment to site conditions and combustion emission checks are effected via the combustion manager's menu controlled commissioning program.



Example diagram with W-FM 200

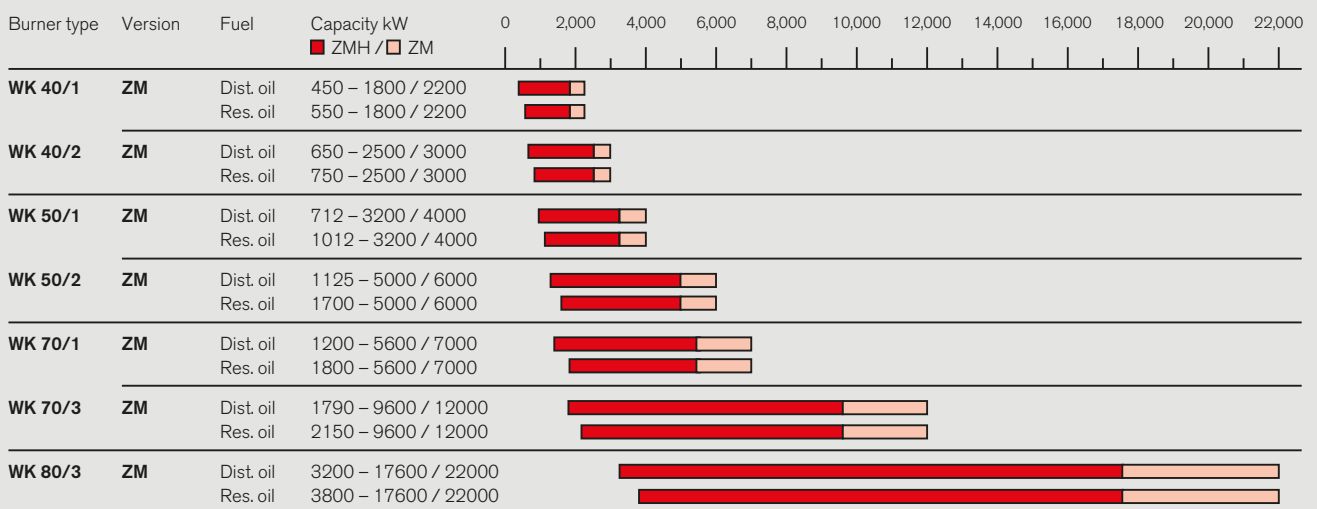
# System technology from one source ensures reliability



# Capacity overview Oil burners

## Version ZM

### Distillate and residual oil burners WKL and WKMS



Selection and design of the fan, gas valve trains, special equipment as well as technical data and dimensions see planning document.

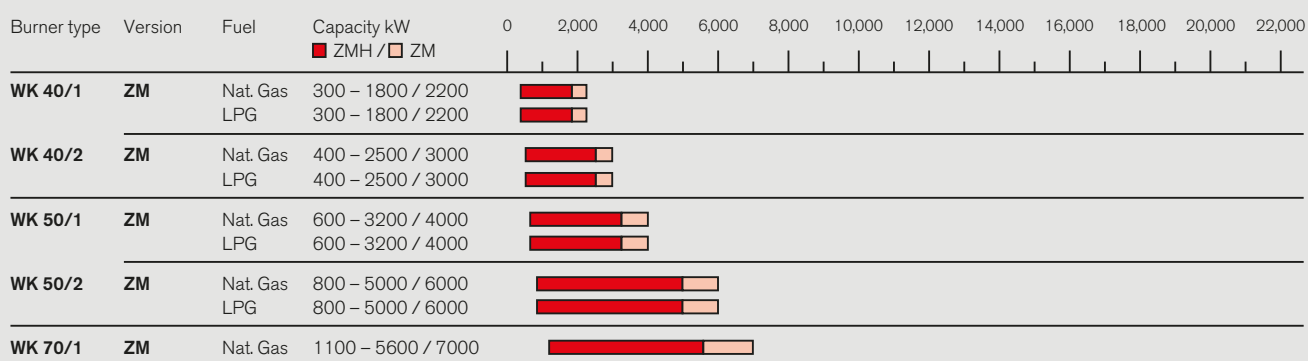
- Version ZM: Combustion air temperature up to 20° C
- Version ZM-H: Combustion air temperature up to 250° C

# Capacity overview

## Gas burners

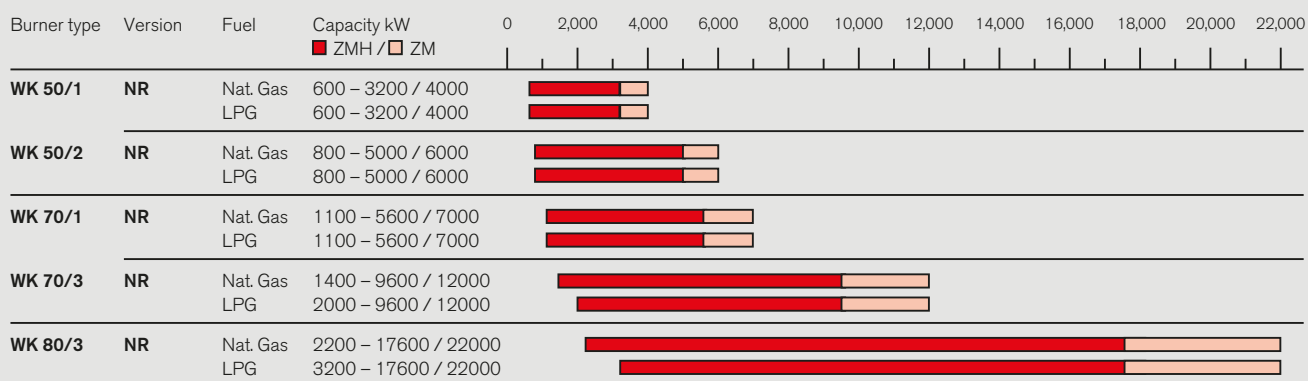
### Version ZM

#### Natural Gas and Liquid Petroleum Gas burners WKG



### Version NR

#### Natural Gas and Liquid Petroleum Gas burners WKG

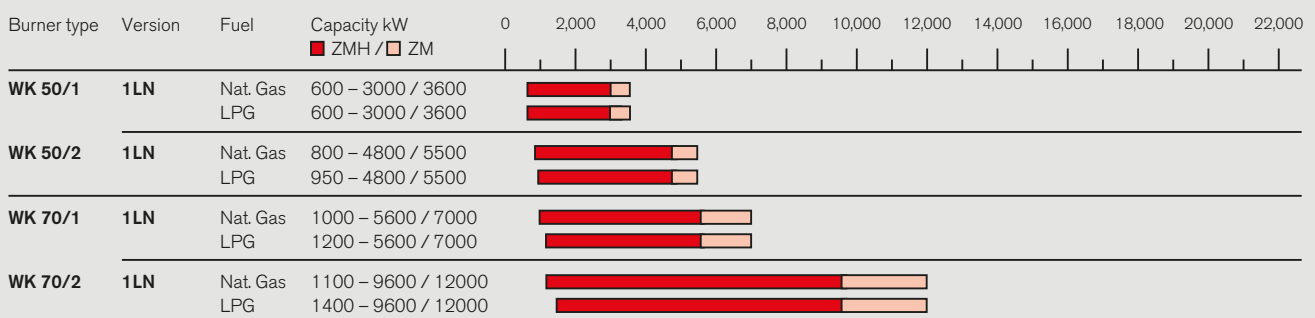


Selection and design of the fan, gas valve trains, special equipment as well as technical data and dimensions see planning document.

- Version ZM: Combustion air temperature up to 20° C
- Version ZM-H: Combustion air temperature up to 250° C

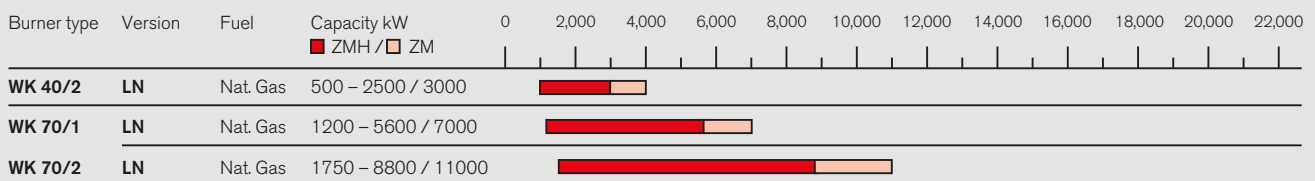
## Version 1LN

### Natural Gas and Liquid Petroleum Gas burners WKG



## Version LN

### Natural Gas burners WKG



Selection and design of the fan, gas valve trains, special equipment as well as technical data and dimensions see planning document.

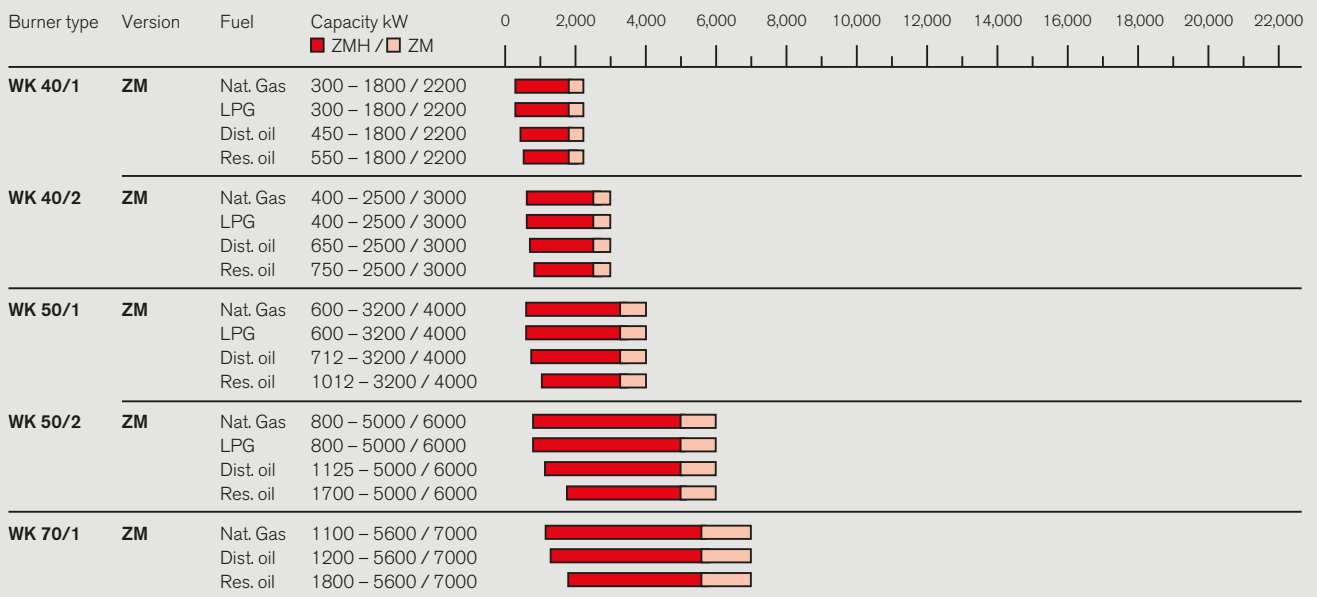
- Version ZM: Combustion air temperature up to 20° C
- Version ZM-H: Combustion air temperature up to 250° C

# Capacity overview

## Dual fuel burners

### Version ZM

#### Dual fuel burners WKGL and WKGMS

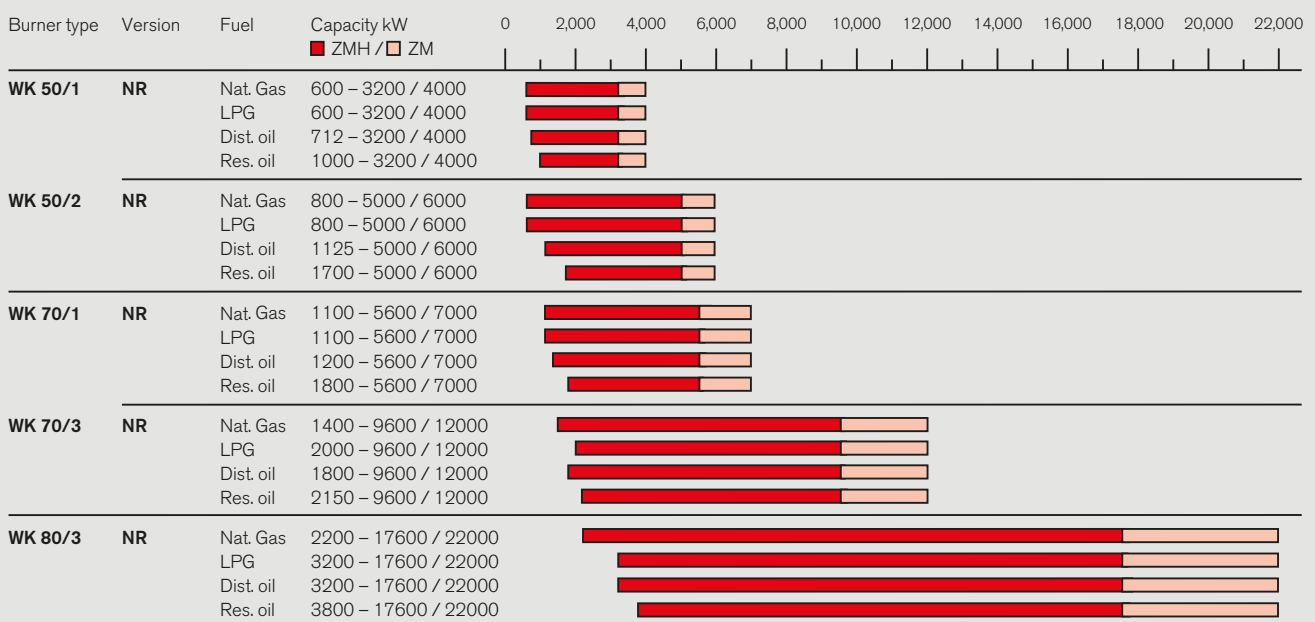


Selection and design of the fan, gas valve trains, special equipment as well as technical data and dimensions see planning document.

- Version ZM: Combustion air temperature up to 20° C
- Version ZM-H: Combustion air temperature up to 250° C

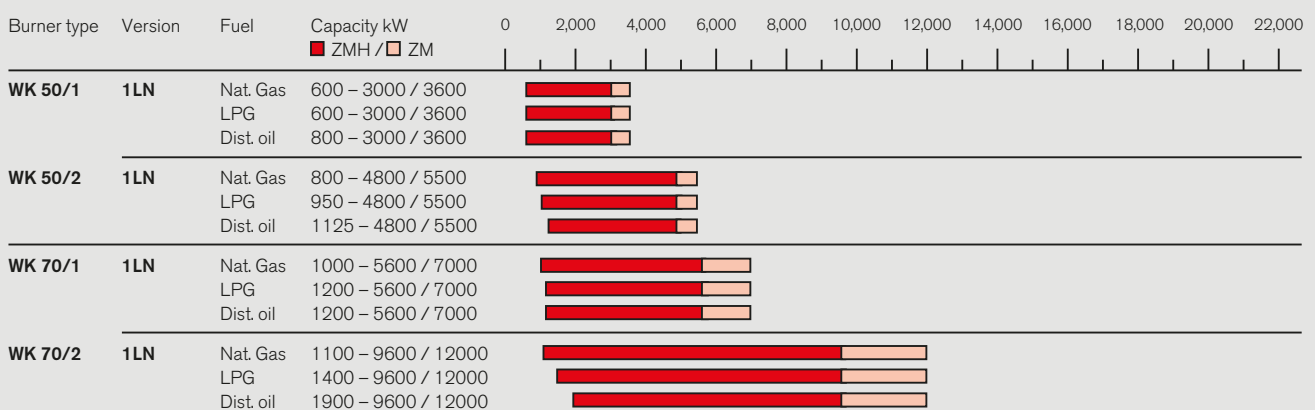
## Version NR

### Dual fuel burners WKGL and WKGMS



## Version 1LN

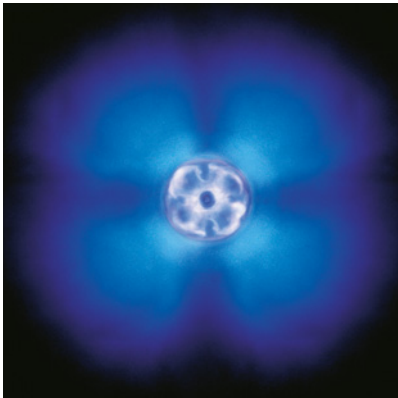
### Dual fuel burner WKGL



Selection and design of the fan, gas valve trains, special equipment as well as technical data and dimensions see planning document.

- Version ZM: Combustion air temperature up to 20° C
- Version ZM-H: Combustion air temperature up to 250° C

# The multiflam<sup>®</sup> principle: Emission reduction as standard

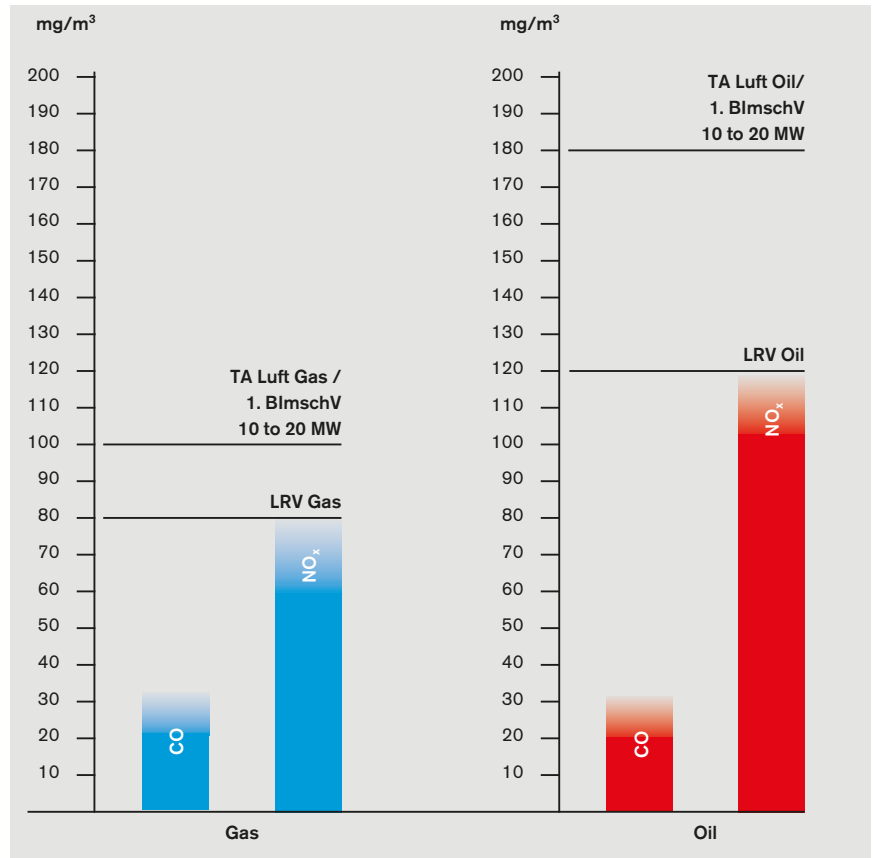


The multiflam<sup>®</sup> flame shows efficient combustion

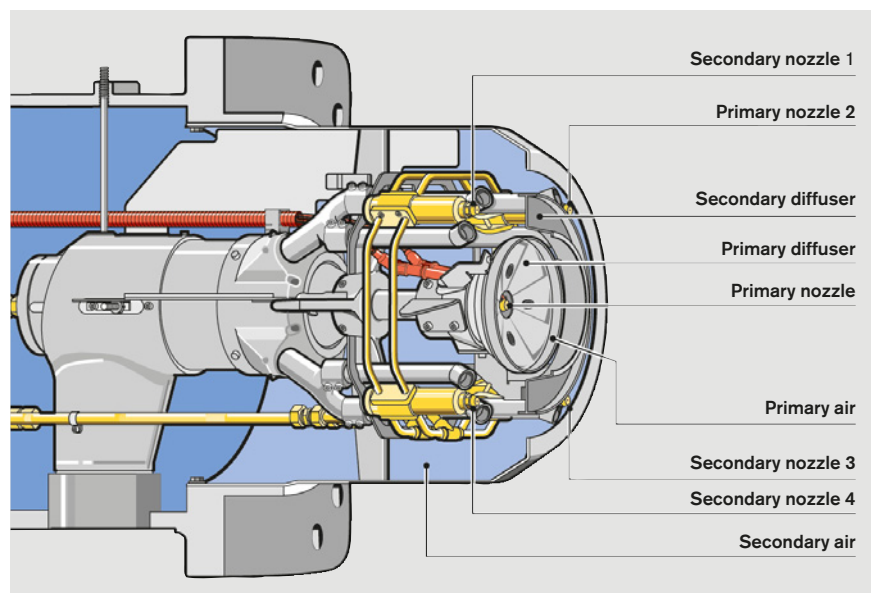
In 1998, Weishaupt made history with the market introduction of multiflam<sup>®</sup> technology. Unprecedented low emissions stunned the industry. With the patented mixing head, Weishaupt was able to reduce the Nitrous Oxide emissions ( $\text{NO}_x$ ) of medium and large burners to those of compact burners. With values below 120 mg/kWh for oil and 80 mg/kWh for gas, dependent on the combustion chamber geometry, Weishaupt set new standards.

The multiflam<sup>®</sup> burners meet the most stringent worldwide regulations and are therefore leaders among industrial burners, particularly in countries with strict environmental regulations such as Switzerland.

The core of multiflam<sup>®</sup> technology is the special design of the mixing head in which the fuel is divided and the energy is released by secondary and primary flames, more environmentally friendly than ever before. This is achieved by the recirculation of the combustion mixture directly at the mixing head.



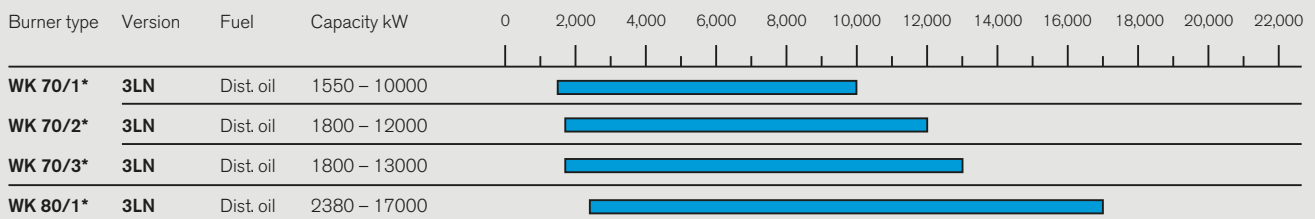
Example values for warm water plant are dependent on the combustion chamber



Schematic representation of the mixing head

## Distillate oil burners version 3LN multiflam®

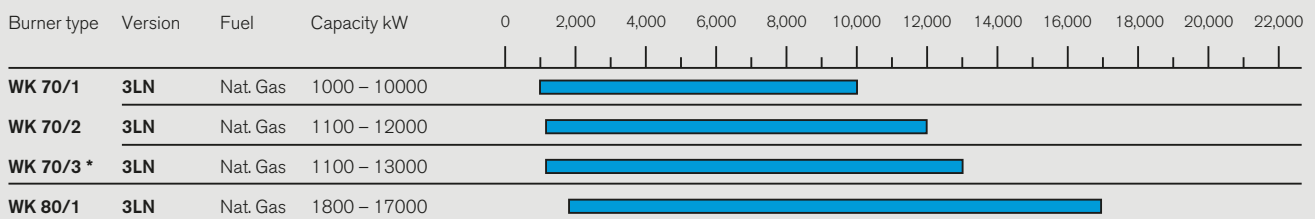
### Distillate oil burners WKGL



\* Burner sizes WK 70 and WK 80 in version 3LN multiflam are not available as oil only burners. However, the dual fuel burner WKGL in version "without gas valve train and gas accessories" can be used. Reduced price see price list.

## Natural Gas burners version 3LN multiflam®

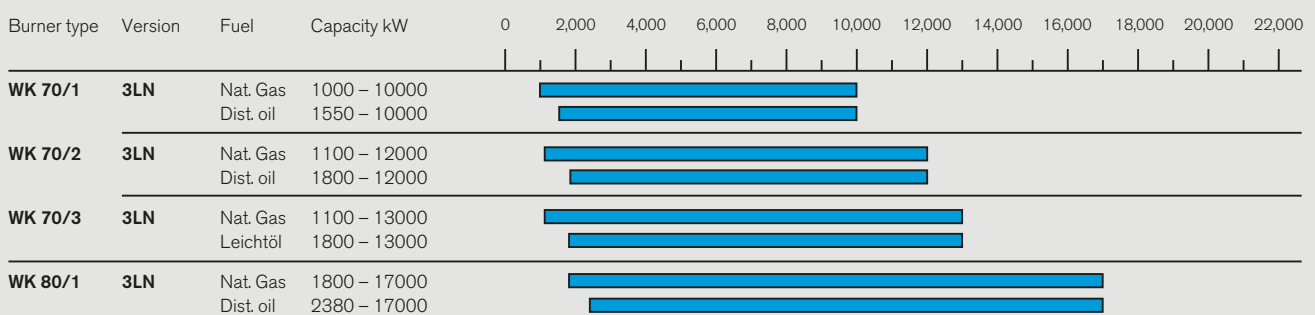
### Natural gas burners WKG and WKGL



\* Burner size WK 70/3 in version 3LN is not available as a gas only burner. However, the dual fuel burner WKGL in version "without oil pump" can be used. Reduced price see price list.

## Dual fuel burners version 3LN multiflam®

### Dual fuel burners WKGL

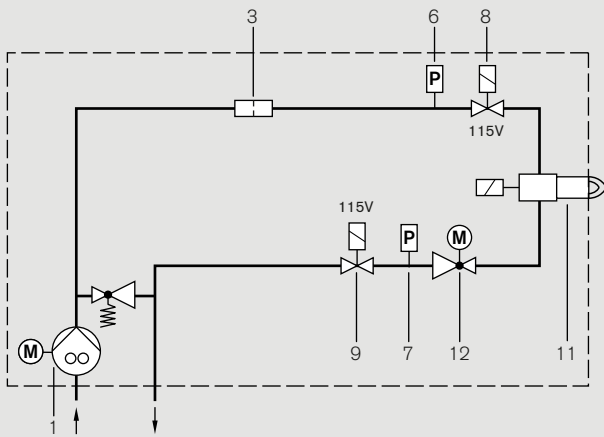


Selection and design of the fan, gas valve trains, special equipment as well as technical data and dimensions see planning document.

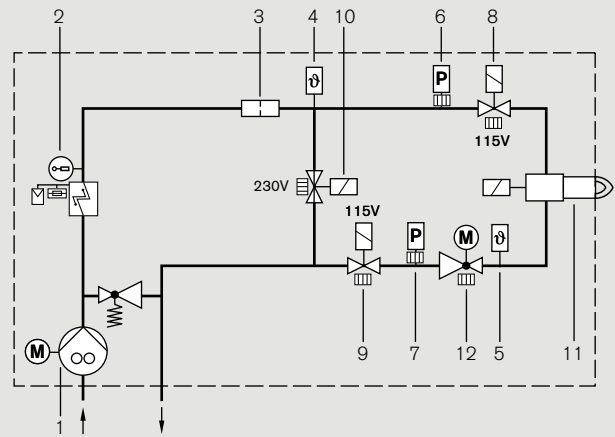
# Fuel systems

## Oil burners

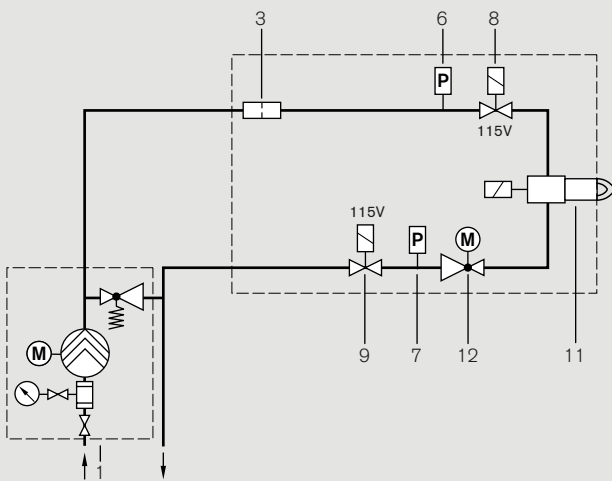
WKL40 pump fitted



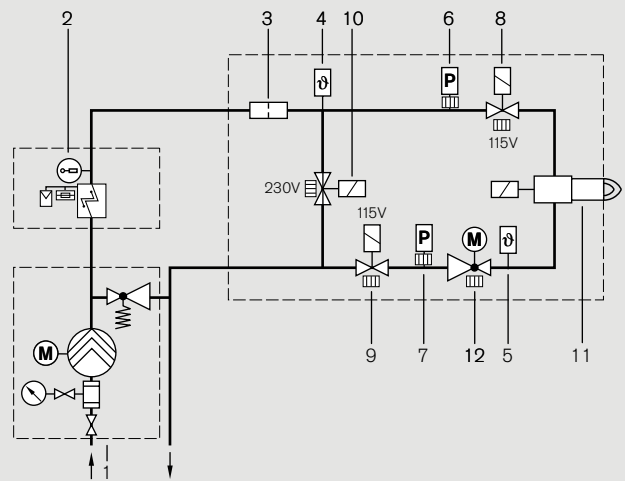
WKMS40 pump and preheater fitted



WKL70 and WKL80



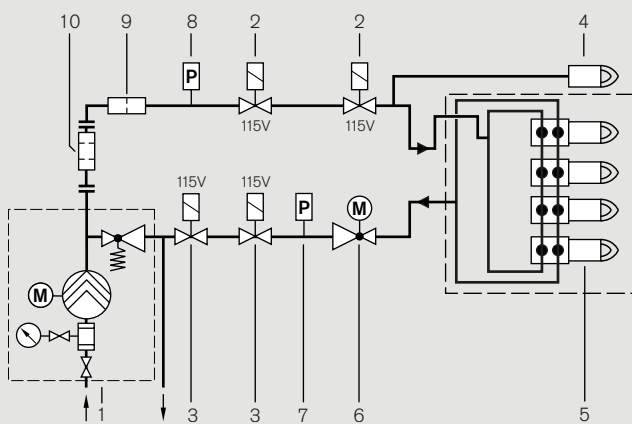
WKMS70 and WKMS80



- 1 Oil pump
- 2 Oil preheater
- 3 Strainer
- 4 Supply temperature sensor
- 5 Return temperature sensor
- 6 Min. pressure switch
- 7 Max. pressure switch
- 8 Supply solenoid valve (fitted in flow direction)
- 9 Return solenoid valve (fitted against the flow direction)
- 10 Bypass solenoid valve (normally open)
- 11 Solenoid nozzle head
- 12 Oil quantity regulator

## Oil burners version 3LN multiflam®

### WKL



- 1 External pump station with pressurisation
- 2 Supply solenoid valve (fitted in flow direction)
- 3 Return solenoid valve (fitted against flow direction)
- 4 Nozzle head with Simplex nozzle and inbuilt shut off valve (primary nozzle)
- 5 Nozzle head HDK30 or HDK40 with return flow nozzle (secondary nozzles)
- 6 Oil regulator
- 7 Oil pressure switch for return pressure
- 8 Oil pressure switch for supply pressure
- 9 Strainer
- 10 Filter (30 bar, mesh aperture: 0.1 mm) fitted close to the burner

### Layout of the valve train

On boilers with hinged doors, the valve train must be mounted on the opposite side to the boiler door hinges.

### Compensator

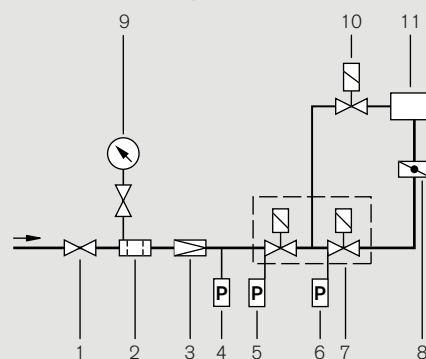
To enable tension free mounting of the valve train, the fitting of a compensator is recommended.

### Break points in the gas valve train

Break points in the valve train should be provided to enable the door of the heat exchanger to be swung open. The main gas line is best separated at the compensator.

## Gas burners

### With gas butterfly valve and valve proving



- 1 Isolating valve
- 2 Gas filter
- 3 Pressure regulator
- 4 High gas pressure switch (with TRD)
- 5 Low gas pressure switch
- 6 Valve proving W-FM100 / W-FM200
- 7 Double gas valve
- 8 Gas butterfly valve
- 9 Pressure gauge with push button valve
- 10 Ignition gas solenoid valve (not with version LN)
- 11 Burner

### Supporting the valve train assembly

The valve train should be properly supported in accordance with the site conditions. See Weishaupt accessories list for various valve train support components.

### Gas meter

A gas meter must be installed to measure gas consumption during commissioning.

### Thermal shut off device (TAE) optional depending on regulations

Integrated into the ball valve on screwed valve trains. Separate component with HTB seals in front of ball valve for flanged valve trains.

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## We're right where you need us

### **A strong service network gives peace of mind**

Weishaupt equipment is available from good heating companies, with whom Weishaupt works in partnership. To support the specialists, Weishaupt maintains a large sales and service network. Delivery, spares and service are thus continually ensured.

Even in an emergency, Weishaupt is on call. The service department is available to Weishaupt customers around the clock, 365 days a year. A Weishaupt branch office or agency near you can answer all your questions on heating and Weishaupt burners.

