

Oil, Gas and Dual Fuel Burners

Burner series 300...700

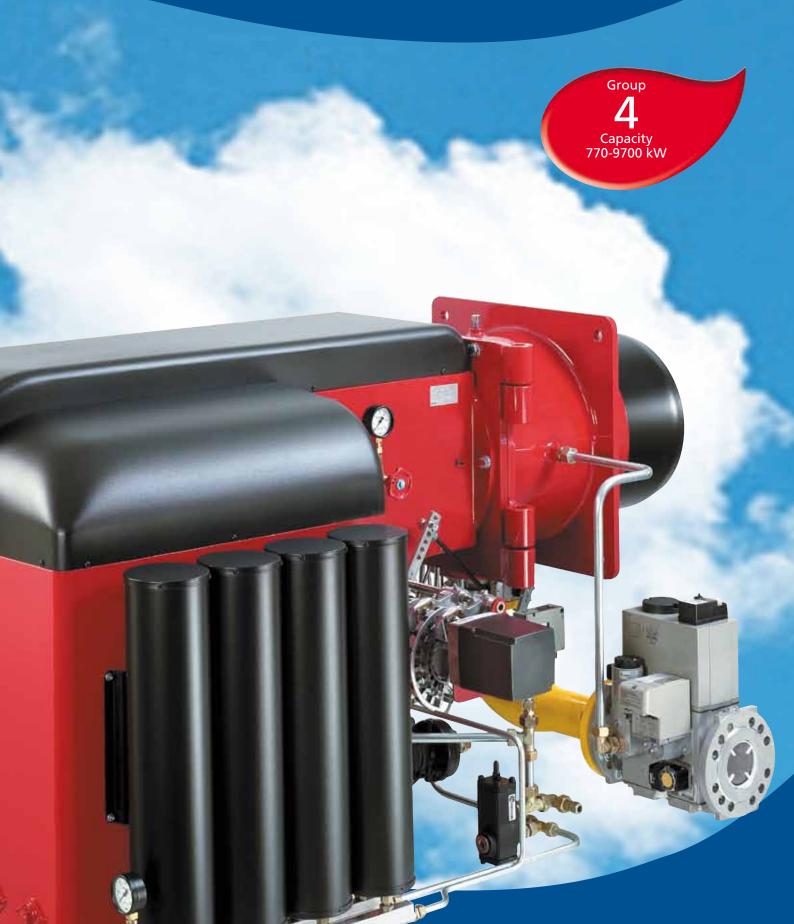


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Light oil burners



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Dual fuel burners, light fuel oil/gas



Dual fuel burners, heavy fuel oil/gas

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Oil, Gas and Dual Fuel Burners

Burner series 300...700

Oilon oil, gas, and dual fuel burners are fully automatic, safe, and reliable. The design and manufacturing of the burners is based on economy, safety, and service as well as environmental friendliness. Our gas burners comply with the EN 676 standard, oil burners with the EN 230 and EN 267 standards, and dual fuel burners with all of these standards. All burners are EU type tested. We also supply burners complying with various marine classification society requirements, such as ABS, BV, CCS, DNV, GL, KR, LR, NKK, RINA, and RS.

Construction

The steel plate housing incorporates a three-phase motor that runs the fan located in the housing. The oil pump has its own three-phase motor. The surface of the housing is finished with durable high-gloss paint. The housing is equipped with a hinged burner flange with a safety interlock switch, enabling the burner to be swung open to the left or right. The burner flange enables servicing of the combustion head, nozzles, and ignition electrodes without having to remove hte burner itself. The stainless steel alloy combustion head and the diffuser disc can withstand temperatures up to 1,200 °C. The combustion head is adjustable, to optimise the mixing of fuel regardless of the firing rate. The burner houses a sight glass for flame observation. On the fan suction side there is an air damper that, together with the servomotor, automatically controls the amount of fuel and air based on demanded firing rate. A removable top cover allows ease of electrical installations and burner service.

Installation and suitable applications

The burners are suitable for warm and hot water boilers, steam boilers, hot air generators, and various types of process heating. They are also designed to suit furnaces with high back pressure. The burners can be mounted in horizontal, vertical and upward-facing, or vertical and downward-facing orientation. Our burners are designed for operation in covered areas, max. +50 °C. Normal operation altitude is 500 metres above sea level (other altitudes upon request). The burner enclosure class of the burner is IP 20.

Fuels

Different fuels can be used depending on the burner model: KP models:

- light fuel oil, viscosity 4 to 12 mm²/s, +20 °C
 RP models:
- heavy fuel oil, viscosity max. 250 mm²/s, +50 °C
- heavy fuel oil, viscosity max. 450 mm²/s, +50 °C
- heating cartridge for pump, nozzle and solenoid valves
- heavy fuel oil, viscosity max. 650 mm²/s, +50 °C

heating cartridges as above + trace heating for the oil piping GP models:

- natural gas, 2^{nd} family gases, groups H and E (equipment category $I_{_{2B}})$

- GKP and GRP dual fuel burners:
- fuel properties as above, natural gas/light fuel oil

- fuel properties as above, natural gas/heavy fuel oil

Burners using other fuels are available upon request.

Gas and dual fuel burners meet the low NOx class requirements (EN 676 and EN267) in gas burning.

Capacity regulation method

Modulating burners are equipped with a servomotor with a run time of 30 sec./90°. The servomotor is connected to the oil regulator and compound regulator via an axle. A modulating burner operates regardless of the firing rate, on the basis of the load. The burners are adjusted on the basis of combustion gas analysis.

Oilon preheater guarantees accurate oil temperature control

RP and GRP models are equipped with oil shut-off valves and a filter, and an electric mass preheater. The preheater is controlled via an electronic regulator that keeps the oil temperature stable. A stable oil temperature makes it easier to obtain optimal combustion conditions. For our heavy oil burners, oil heated during the pre-burge phase flows to the nozzle through the preheater to ensure that the oil temperature is high enough during the ignition phase.

Gas equipment

Gas-related components of the gas and dual fuel burners comply the standard EN 676: two shut-off valves, pressure switches (min./ max.), and an automatic valve leak tester. Other pipingrelated equipment is available upon request.

Oil piping

Mounted on the burner, three-stage burners with four solenoid valves (one main valve and one valve for each nozzle). Modulating burners have three solenoid valves. The oil regulator for the modulating burner is located on the nozzle return oil line. The oil filter is located on the suction side of the pump. The two oil hoses enable the burner to be hinged.

Flame monitoring

All models are equipped with automatic flame monitoring. In KP and RP models, flame monitoring is taken care of via photocell; in GP, GKP, and GRP models, it is performed via UV cell.

Control devices

The control automation (control unit) is located in a separate control panel. The control unit handles all burner operation phases automatically. In the event of a burner failure, the unit stops the burner automatically. The modulating burners also incorporate a pre-mounted capacity controller. Subject to additional charge, the burners can be delivered with electronic ratio control.

Silencer

The sound level of the burners is low, but, if desired, they can be equipped with a separate silencer to make them even quieter.

Optimising combustion head pressure loss

For an additional charge, the modulating burners can be equipped with a system that optimises the combustion head pressure loss. The system reduces the amount of excess air and also improves combustion figures for partial burner loads.

We reserve the right to make technical alterations.

How to choose a burner

A. Procedure

- 1 Establish relevant boiler and application information
 - boiler capacity and efficiency, or required burner capacity
 furnace back-pressure
 - fuel/fuels to be used
 - burner fuel inlet pressure
 - burner capacity regulation method
- 2 Calculate the burner capacity. Burner capacity = boiler capacity/ efficiency

Example: boiler capacity of 6,500 kW, efficiency of 90 % \rightarrow burner capacity = 6,500 kW / 0.9 = 7,220 kW.

3 Gas burners: Required gas flow [m³n/h] = (burner capacity [kW] x 3.6)/gas's calorific value [MJ/m³n]. Example: required burner capacity = 7,220 kW → required gas flow = (7,220 kW x 3.6)/35.8 MJ/m³n = 726 m³n/h, where 35.8 MJ/m³n is the calorific value of natural gas.

Oil burners: Calculate the required oil flow [kg/h]. Required oil flow [kg/h] = (burner capacity [kW] x 3.6)/ the oil's calorific value [MJ/kg]. Example: required burner capacity = 7,220 kW \rightarrow required oil flow = (7,220 kW x 3.6)/42.7 MJ/kg = 609 kg/h, where 42.7 MJ/kg is the calorific value of light oil.

- 4. See relevant brochure for burner capacity/back pressure graphs: The graphs indicate the burner operating range. For example, the boiler back pressure with a burner capacity of 7,220 kW is 18 mbar. Looking at the adjoining graph, plot your burner capacity along the horizontal axis. On the vertical axis plot your boiler back-pressure. Where the two lines meet, defines the required burner type. The optimum burner is best chosen by ensuring that the plotted operating point is as close as possible to the right hand edge of the corresponding operating envelope. Different fuels and capacity regulation methods require separate graphs. The fuel calorific value is stated on the graphs.
- 5. Gas and dual fuel burner valve selection: Choose a large enough valve, using the gas valve selection table. Note that the values in the selection table apply when the furnace back pressure is 0 mbar. Therefore, you must subtract the furnace back pressure from the actual gas inlet pressure and choose the valve on the basis of the value thus obtained. The ratings shown in the table apply to natural gas.

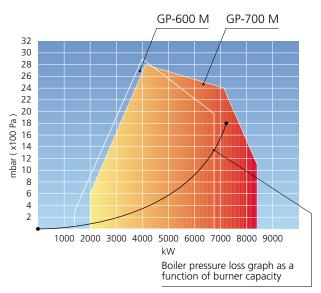
For example, using a gas inlet pressure of 100 mbar, a required burner capacity of 7,220 kW, and required burner capacity is 7,220 kW, the effective pressure will be 100 mbar - 18 mbar = 82 mbar. For the GP-700 M burner, for example, you should choose a valve allowing a minimum burner capacity of 7,220 kW with 82 mbar gas inlet pressure \rightarrow in this case, valve DN 100.

- 6. Check that the outer dimensions of the burner, especially those of the combustion head, are suitable for the application; the length of the combustion head should be such that, when mounted, the combustion head is even with the furnace wall or about 10 to 20 mm inside the furnace (see 'Masonry' figure).
- **7**. Check the flame dimensions in the flame dimension table. Please note that the flame must not come in to contact the walls of the furnace.
- Accessory requirements must also be taken into consideration: gas pressure regulator, oil pumping unit, boiler thermostats/ pressostats.

B. Equations and rules of thumb

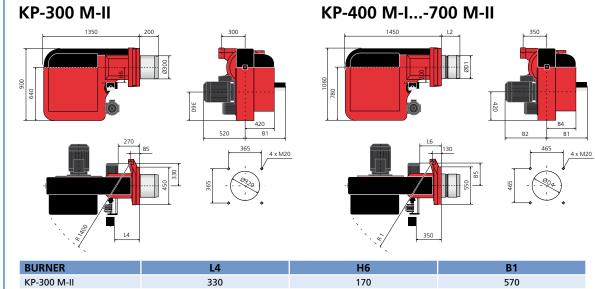
- 1. Burner capacity = boiler capacity / 0.9 (when boiler efficiency is 90 %)
- **2.** Steam boilers: 1 ton/h steam \approx 700 kW boiler capacity **3.** Light oil: 1 kg/h \approx 11 86 kW burner capacity
 - Light oil:1 kg/h \approx 11.86 kW burner capacity
with calorific value 42.7 MJ/kgHeavy oil:1 kg/h \approx 11.22 kW burner capacity
- 4. Heavy oil:1 kg/h \approx 11.22 kW burner capacity
with calorific value 40.5 MJ/kg5. Natural gas:1 m³n/h \approx 10 kW burner capacity
- with calorific value 35.84 MJ/m³n
 The amount of combustion air:
 - Gas burners: required amount of combustion air for each 10 kW of burner capacity is 12 to 13 m³/h.
 Oil burners: required amount of combustion air for each kilo of oil burned [kg/h] is 13.5 m³/h.
- 7. Oil pumping, filtering, and preheating unit (Oilon HotBox) is required when firing heavy fuel oil. When the burner capacity is more than 2 MW, a transfer pump unit (Oilon SPY) is always needed, including for use with light fuel oil. The required minimum pump output [kg/h] can be calculated as follows: Required minimum output [kg/h] = (oil flow to be burned in kg/h + 150 to 200 kg/h)* 1.25 to 1.3, where the expression inside the parentheses indicates the preheated oil flow to each burner.

An example of burner selection



The max. capacity of a hot water boiler is 6,500 kW, efficiency 0.9, and the corresponding burner capacity 6,500 kW / 0.9 = 7,220 kW. The graph indicates that a suitable gas burner for this capacity is the GP-700 M, as the pressure loss value for the boiler is located inside the area for the GP-700 M burner on the capacity/back pressure graph. The GP-600 M can also be used for this application, provided that the full boiler capacity is not required. Remember to take efficiency into account when relating the boiler pressure loss information to the burner capacity/back pressure graph.

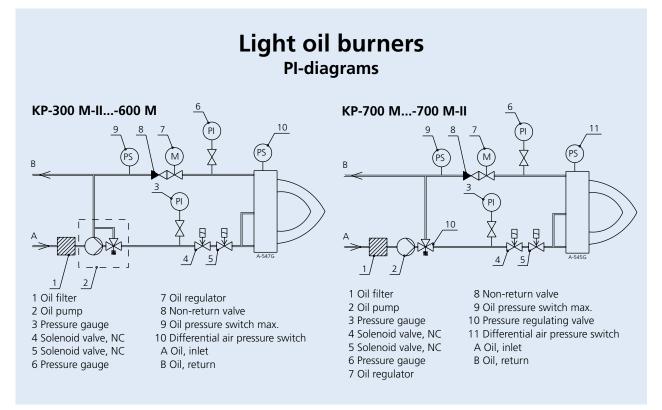




KP-300 M-II

BURNER	L2	L6	B1	B2	B4	B5	Ø D1	Ø D4	R1
KP-400 M-I	264	280	590	630	440	330	340	400	1450
KP-500 M	264	280	590	630	440	330	340	400	1450
KP-600 M	285	280	590	630	440	330	370	430	1450
KP-700 M	338	250	640	730	490	360	395	455	1550
KP-700 M-II	338	250	640	780	490	360	395	455	1550

Technical Data			E	BURNER	KP-300 M-II
			C	Capacity kg/h kW	80 - 380 950 - 4500
				an motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	7.5 15.0 2870
			c -	Dil hose onnection suction return	R1″ R1″
			-	Dil pump Motor 3~ 400 V 50 Hz Dutput kW Current A Speed rpm	TA4 1.5 4.8 2860
Note! The weight varies a to delivery contents.	according		v	Veight kg	340
5	According	KP-500 M	۷ KP-600 I	<u> </u>	
o delivery contents.		KP-500 M 120 - 515 1400 - 6070		VI KP-700 0 170 - 7 ⁻	M KP-700 M-II 10 170 - 821
o delivery contents. BURNER Capacity kg/h	KP-400 M-I 110 - 420	120 - 515	KP-600 I 120 - 570	VI KP-700 0 170 - 7 ⁻	M KP-700 M-II 10 170 - 821 400 2000 - 9700 22.0 41.0
o delivery contents. BURNER Capacity kg/h kW Fan motor 3~400 V 50 Hz Output kW Current A	KP-400 M-I 110 - 420 1300 - 5000 11.0 21.0	120 - 515 1400 - 6070 11.0 21.0	KP-600 I 120 - 57(1400 - 67 15.0 28.03	KP-700 0 170 - 7' 50 2000 - 8' 18.5 34.0	M KP-700 M-II 10 170 - 821 400 2000 - 9700 22.0 41.0
b delivery contents. BURNER Capacity kg/h kW Fan motor 3 - 400 V 50 Hz Output kW Current A Speed rpm Oil hose connection - suction - return Oil pump - Motor 3 - 400 V 50 Hz	KP-400 M-I 110 - 420 1300 - 5000 11.0 2925 R1" R1" TA4	120 - 515 1400 - 6070 11.0 21.0 2925 R1" R1" TA5	KP-600 I 120 - 57(1400 - 67 28.03 2925 R1" R1" TA5	KP-700 0 170 - 7' 50 2000 - 8' 18.5 34.0 2930 R1" R1" T3	M KP-700 M-II 10 170 - 821 2000 - 9700 22.0 41.0 2940 R1" R1" T4
o delivery contents. BURNER Capacity kg/h kW Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm Oil hose connection - suction - return Oil pump - Motor	KP-400 M-I 110 - 420 1300 - 5000 11.0 2925 R1" R1"	120 - 515 1400 - 6070 11.0 21.0 2925 R1″ R1″	KP-600 I 120 - 57(1400 - 67 28.03 2925 R1" R1"	KP-700 0 170 - 7' 50 2000 - 8' 18.5 34.0 2930 R1" R1" R1"	M KP-700 M-II 10 170 - 821 2000 - 9700 22.0 41.0 2940 R1" R1" T4 4.0 8.1 10
b delivery contents. BURNER Capacity kg/h kW Fan motor 3 ~ 400 V 50 Hz Output kW Current A Speed rpm Oil hose connection - suction - return Oil pump - Motor 3 ~ 400 V 50 Hz Output kW Current A	KP-400 M-I 110 - 420 1300 - 5000 11.0 21.0 2925 R1" R1" TA4 1.5 4.8	120 - 515 1400 - 6070 11.0 21.0 2925 R1" R1" TA5 2.2 5.4	KP-600 I 120 - 57(1400 - 67 28.03 2925 R1" R1" TA5 2.2 5.4	M KP-700 0 170 - 7 50 2000 - 84 18.5 34.0 2930 R1" R1" T3 4.0 8.1	M KP-700 M-II 10 170 - 821 2000 - 9700 22.0 41.0 2940 R1" R1" T4 4.0 8.1 2840



• standard delivery

o option

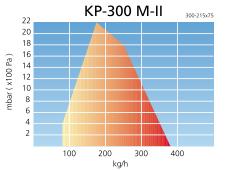
Scope of delivery Burners include following equipment:

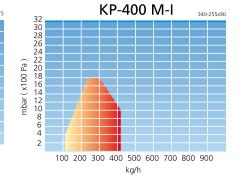
sumers melade following equipment.	• standard derivery 0 option
	KP-300 M-II700 M-II
Hinge flange with limit switch	•
Burner flange gasket	•
Oil nozzle/nozzles	•
Solenoid valves for oil	•
Oil pump with pressure regulating valve	•
Oil pump motor, separate	•
Non-return valve	•
Pressure gauge/gauges for oil	•
Pressure switch for return oil	•
Deaerator	
2 oil hoses, length 3000 mm	•
Oil filter	•
Pressure gauge for control of inlet oil	0
Pressure switch for control of inlet oil	0
Controller unit for regulation of air/oil ratio incl.: - oil regulator - servomotor	•
WiseDrive (electronic ratio control) for regulating the air/oil ratio, incl.: - oil regulator - servomotor for oil regulator - servomotor for air dampers - servomotor for combustion head regulation	o
Potentiometer fitted in servomotor	0
Differential air pressure switch	•
Ignition transformer	•
Ignition cables and electrodes	•
Flame sensor	•
Inbuilt combustion air fan with direct-driven electric motor	•
Air dampers	•
Separate servomotor for air dampers	
Pressure gauge for fan pressure	o
Manual	•

4

Light oil burners

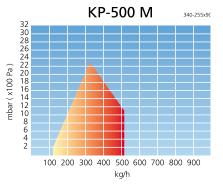
Capacity/back pressure graphs

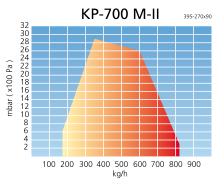




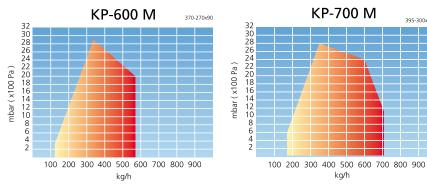
KP-700 M

395-300x100

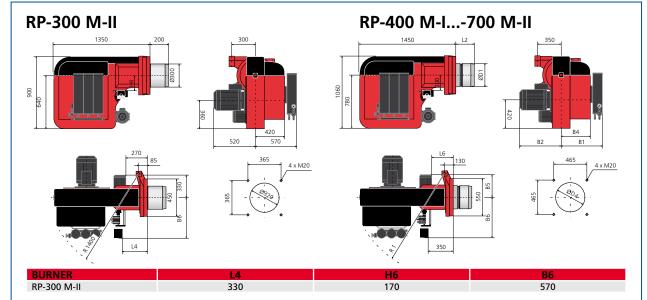




Light fuel oil: 1 kg/h = 11.86 kW





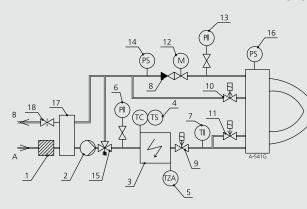


BURNER	L2	L6	B1	B2	B4	B5	B 6	Ø D1	Ø D4	R1
RP-400 M-I	264	280	620	630	440	330	590	340	400	1450
RP-500 M	264	280	620	630	440	330	590	340	400	1450
RP-600 M	285	280	620	630	440	330	590	370	430	1450
RP-700 M	338	250	670	730	490	360	640	395	455	1550
RP-700 M-II	338	250	670	780	490	360	640	395	455	1550

Technical Data			BURNER		RP-300 M-II
				cg/h cW	80 - 380 900 - 4200
			Fan motor 3~ 400 V 50 Output kW Current A Speed rpm		7,5 15,0 2870
			Oil hose connection - suction - return		R1″ R½″
			Oil pump - Motor 3~ 400 V 50 Output kW Current A Speed rpm		SPF10R46 1,5 4,8 2860
			Preheater 3~ 400 V 50) Hz	
Note! The weight varies acco to delivery contents.	ording		Output kW		12 390
o delivery contents.		RP-500 M	Output kW Weigh kg		390
	RP-400 M-I 110 - 420 1300 - 4700	RP-500 M 140 - 535 1585 - 6060	Output kW		
to delivery contents. BURNER Capacity kg/h kW Fan motor 3~400 V 50 Hz Output kW Current A	RP-400 M-I 110 - 420	140 - 535	Output kW Weigh kg RP-600 M 125 - 600	RP-700 M 170 - 710	390 RP-700 M-II 170 - 850
to delivery contents. BURNER Capacity kg/h kW Fan motor 3~ 400 V 50 Hz Output kW	RP-400 M-I 110 - 420 1300 - 4700 11.0 21.0	140 - 535 1585 - 6060 11.0 21.0	Output kW Weigh kg RP-600 M 125 - 600 1400 - 6750 15.0 28.0	RP-700 M 170 - 710 1900 - 7900 18.5 34.0	390 RP-700 M-II 170 - 850 1900 - 9500 22.0 41.0
to delivery contents. BURNER Capacity kg/h kW Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm Oil hose connection - suction - return Oil pump - Motor 3~ 400 V 50 Hz	RP-400 M-I 110 - 420 1300 - 4700 11.0 21.0 2925 R1" R½" SPF10R56	140 - 535 1585 - 6060 11.0 21.0 2925 R1" R½" SPF10R56	Output kW Weigh kg RP-600 M 125 - 600 1400 - 6750 15.0 28.0 2925 R1" R½" SPF20R38	RP-700 M 170 - 710 1900 - 7900 18.5 34.0 2930 R1" R½" SPF20R56	390 RP-700 M-II 170 - 850 1900 - 9500 22.0 41.0 2940 R1" R½" SPF20R56
to delivery contents. BURNER Capacity kg/h kW Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm Oil hose connection - suction - return Oil pump - Motor	RP-400 M-I 110 - 420 1300 - 4700 11.0 21.0 2925 R1" R½"	140 - 535 1585 - 6060 11.0 21.0 2925 R1" R½"	Output kW Weigh kg RP-600 M 125 - 600 1400 - 6750 15.0 28.0 2925 R1" R½"	RP-700 M 170 - 710 1900 - 7900 18.5 34.0 2930 R1" R½"	390 RP-700 M-II 170 - 850 1900 - 9500 22.0 41.0 2940 R1" R½"
to delivery contents. BURNER Capacity kg/h kW Fan motor 3~400 V 50 Hz Output kW Current A Speed rpm Oil hose connection - suction - return Oil pump - Motor 3~400 V 50 Hz Output kW Current A	RP-400 M-I 110 - 420 1300 - 4700 11.0 21.0 2925 R1" R½" SPF10R56 2.2 5.4	140 - 535 1585 - 6060 11.0 21.0 2925 R1" R½" SPF10R56 2.2 5.4	Output kW Weigh kg RP-600 M 125 - 600 1400 - 6750 15.0 28.0 2925 R1" R½" SPF20R38 2.2 5.4	RP-700 M 170 - 710 1900 - 7900 18.5 34.0 2930 R1" R½" SPF20R56 4.0 8.1	390 RP-700 M-II 170 - 850 1900 - 9500 22.0 41.0 2940 R1" R½" SPF20R56 4.0 8.1

Heavy oil burners

PI-diagrams



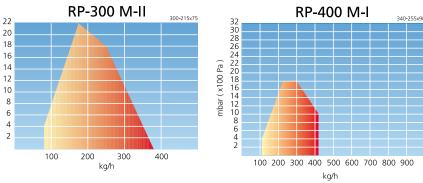
RP-300 M-II...-700 M-II

- 1 Oil filter
- 2 Oil pump, without plug 3 Preheater
- 4 Temperature regulation/ lower limit
- 5 Limit thermostat
- 6 Pressure gauge
- 7 Thermometer
- 8 Non-return valve 9 Solenoid valve, NC
- 10 Solenoid valve, NO 11 Solenoid valve, NC 12 Oil regulator 13 Pressure gauge 14 Pressure switch, max. 15 Pressure regulating valve 16 Differential air pressure switch 17 Deaerator 18 Drilled ball valve A Oil, inlet B Oil, return

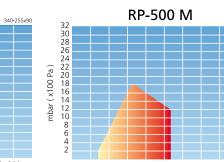
Scope of delivery

Burners include following equipment:	standard delivery o option
	RP-300 M-II700 M-II
Hinge flange with limit switch	•
Burner flange gasket	•
Oil nozzle/nozzles	•
Heating cartridge for oil nozzle	0
Solenoid valves for oil	•
Heating cartridge for solenoid valves	•
Oil pump with pressure regulating valve	•
Heating cartridge for oil pump	0
Separate motor for oil pump	•
Non-return valve	•
Pressure gauge/gauges for oil	•
Thermometer	•
Pressure switch for return oil	•
Deaerator	•
Electric preheater incl.: - limit thermostat temperature server	•
- temperature sensor	•
2 oil hoses, length 3000 mm Electric tracing cables for burner oil pipes	0
Electric tracing cables for oil hoses	0
Oil filter	•
Pressure gauge for control of inlet oil	0
Pressure switch for control of inlet oil	0
Controller unit for regulation of air/oil ratio incl.: - oil regulator - servomotor	•
WiseDrive (electronic ratio control) for regulating the air/oil ratio, incl.: - oil regulator - servomotor for oil regulator - servomotor for air dampers - servomotor for combustion head regulation	O
Potentiometer fitted in servomotor	0
Differential air pressure switch	•
Ignition transformer	•
Ignition cables and electrodes	•
Flame sensor	•
Inbuilt combustion air fan with direct-driven electric motor	•
Air dampers	•
Separate servomotor for air dampers	
Pressure gauge for fan pressure	0
Manual	•

Heavy oil burners



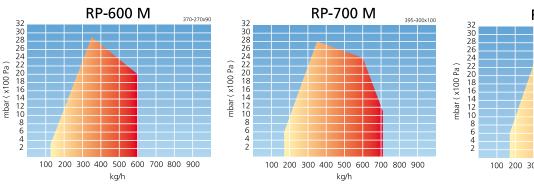
Capacity/back pressure graphs

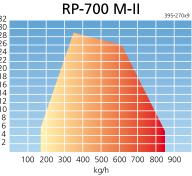


0

100 200 300 400 500 600 700 800 900 kg/h

340-255x90

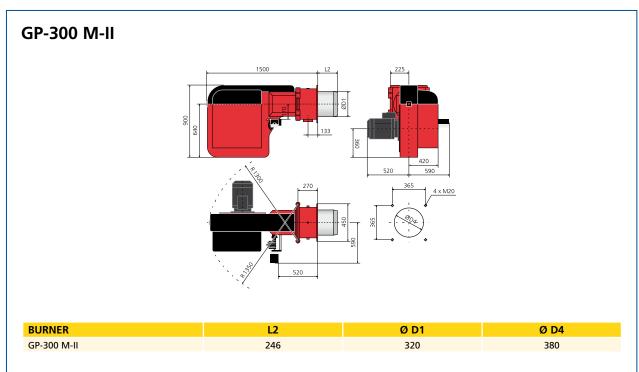




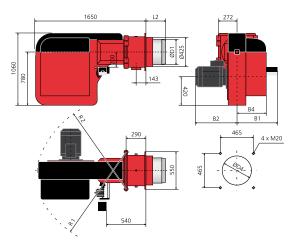
Heavy fuel oil: 1 kg/h = 11.22 kW

mbar (x100 Pa)





GP-400 M-I...-700 M-II



BURNER	L2	B1	B2	B4	Ø D1	Ø D4	R1	R2
GP-400 M-I	290	520	630	440	370	440	1500	1400
GP-500 M	290	520	630	440	370	440	1500	1400
GP-600 M	310	520	630	440	395	455	1500	1400
GP-700 M	310	570	730	490	395	455	1600	1500
GP-700 M-II	310	570	780	490	395	455	1600	1500

Gas burners

Technical Data

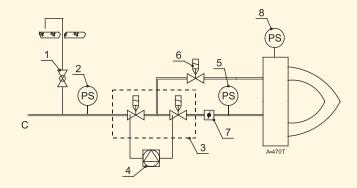
BURNER	GP-300 M-II
Capacity kW	950 - 4500
Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	7.5 15.0 2870
Weight kg	320

BURNER	GP-400 M-I	GP-500 M	GP-600 M	GP-700 M	GP-700 M-II
Capacity kW	1300 - 5000	1400 - 6070	1400 - 6750	2000 - 8400	2000 - 9500
Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	11.0 21.0 2925	11.0 21.0 2925	15.0 28.0 2925	18.5 34.0 2930	22.0 41.0 2940
Weight kg	450	450	460	535	565

Note! The weight varies according to delivery contents.

PI-diagrams

GP-300 M-II...-700 M-II



1 Ball valve, blow-off

2 Pressure switch, min.

3 Double solenoid valve, NC

4 Valve leak tester

5 Pressure switch, max.

6 Solenoid valve, NC, ignition gas 7 Gas butterfly valve

8 Differential air pressure switch

C Gas

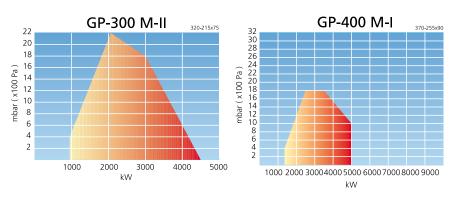
Gas burners

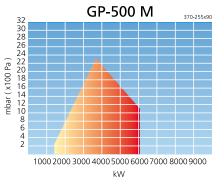
Scope of delivery

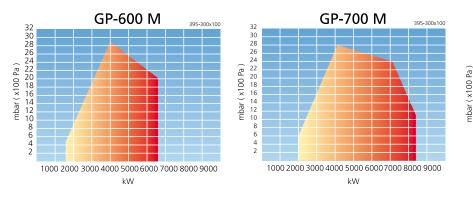
Burners include following equipment:	• standard delivery o option
	GP-300 M-II700 M-II
Hinge flange with limit switch	•
Burner flange gasket	•
Controller unit for regulation of air/gas ratio incl.: - servomotor - gas butterfly valve	•
WiseDrive (electronic ratio control) for regulating the air/gas ratio, incl.: - gas butterfly valve - servomotor for gas butterfly valve - servomotor for air dampers - servomotor for combustion head regulation	0
Potentiometer fitted in servomotor	0
Gas nozzle	•
Pressure gauge for measuring the pressure in gas nozzle	0
Max. gas pressure switch	•
Differential air pressure switch	•
Ignition transformer	•
Ignition cables and electrodes	•
Flame sensor	•
Inbuilt combustion air fan with direct-driven electric motor	•
Air dampers	•
Pressure gauge for fan pressure	0
Operating switches	•
Elbow 90°	•
Double solenoid valve for gas incl.: - gas pressure switch, min. - 2 gas valves - automatic valve leak tester - ball valve, blow-off (loose)	•
Solenoid valve for ignition gas	•
Manual	•

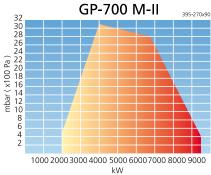
Gas burners

Capacity/back pressure graphs

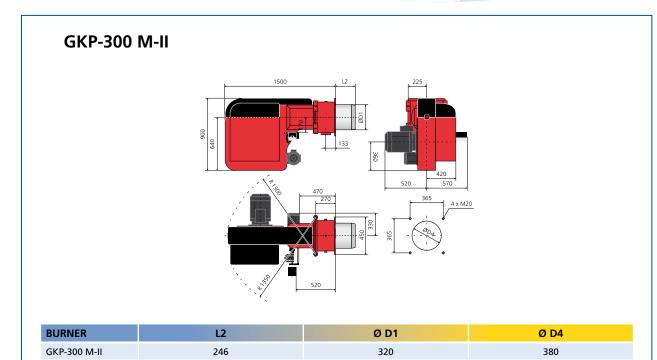




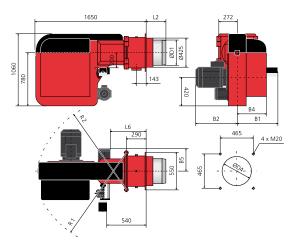




Natural gas: gases of $2^{\rm nd}$ family, groups H and E (equipment category ${\rm I_{_{2R}}}$)



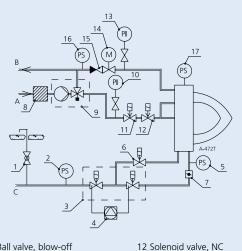
GKP-400 M-I...-700 M-II



BURNER	L2	L6	B1	B2	B4	B5	Ø D1	Ø D4	R1	R2
GKP-400 M-I	290	480	590	630	440	350	370	440	1500	1400
GKP-500 M	290	480	590	630	440	350	370	440	1500	1400
GKP-600 M	310	480	590	630	440	350	395	455	1500	1400
GKP-700 M	310	450	640	730	490	360	395	455	1600	1500
GKP-700 M-II	310	450	640	780	490	360	395	455	1600	1500

Technical Data BURNER GKP-300 M-II 80 - 380 Capacity kg/h kW 950 - 4500 Fan motor 3~ 400 V 50 Hz Output kW 7.5 Current A 15.0 2870 Speed rpm Oil hose connection - suction R1″ R1″ - return Oil pump TA4 - Motor 3~ 400 V 50 Hz Output kW 1.5 Current A 4.8 Note! The weight varies according Speed rpm 2860 to delivery contents. Weight kg 390 BURNER GKP-400 M-I **GKP-600 M GKP-700 M** GKP-700 M-II **GKP-500 M** Capacity kg/h 110 - 420 120 - 515 120 - 570 170 - 710 180 - 821 kŴ 1300 - 5000 1400 - 6070 1400 - 6750 2000 - 8400 2100 - 9500 Fan motor 3~ 400 V 50 Hz Output kW 11.0 11.0 15.0 18.5 22.0 Current A 21.0 21.0 28.0 34.0 41.0 2925 2930 2940 2925 2925 Speed rpm Oil hose connection R1″ R1″ R1″ R1″ R1″ - suction R1″ R1″ R1″ R1″ R1″ - return Oil pump TA4 TA5 TA5 Т3 Т4 - Motor 3~ 400 V 50 Hz Output kW 4.0 1.5 2.2 2.2 4.0 Current A 4.8 5.4 5.4 8.1 8.1 Speed rpm 2860 2870 2870 2840 2840 Regulating valve TV4001 TV4001 Weight kg 505 510 520 565 680

PI-diagrams



GKP-300 M-II...-600 M

- 1 Ball valve, blow-off
- 2 Pressure switch, min 3 Double solenoid valve, NC
- 4 Valve leak tester
- 5 Pressure switch, max. 6 Solenoid valve, NC, ignition gas
- 7 Gas butterfly valve
- 8 Oil filter
- 9 Oil pump, with plug
- 10 Pressure gauge
- 11 Solenoid valve, NC
- 13 Pressure gauge
- 14 Oil regulator
- 15 Non-return valve
- 16 Pressure switch for oil, max.
- 17 Differential air pressure switch
- A Oil, inlet
- B Oil, return
- C Gas

- 8 Oil filter 9 Oil pump
 - 10 Pressure gauge
- - 11 Solenoid valve, NC

7 Gas butterfly valve

2 Pressure switch, min.

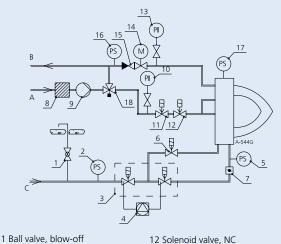
5 Pressure switch, max.

4 Valve leak tester

3 Double solenoid valve, NC

6 Solenoid valve, NC, ignition gas

GKP-700 M...-700 M-II



- 12 Solenoid valve, NC
- 13 Pressure gauge
- 14 Oil regulator
- 15 Non-return valve
- 16 Pressure switch for oil, max.

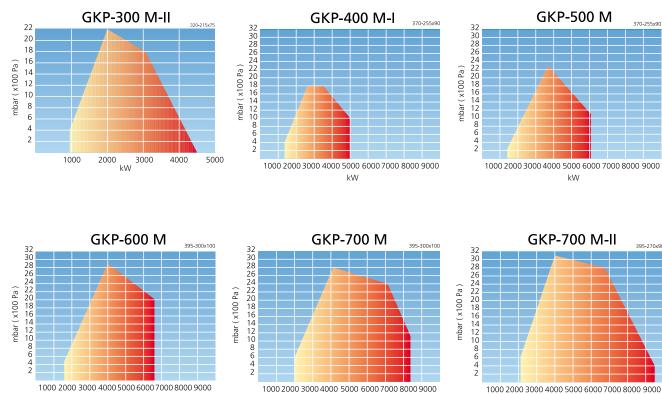
14

- 17 Differential air pressure switch
- 18 Pressure regulating valve
- A Oil, inlet
- B Oil, return C Gas

Scope of delivery

Scope of delivery Burners include following equipment:	 standard delivery 	o optior
	GKP-300 M-II700 M-II	
Hinge flange with limit switch	•	
Burner flange gasket	•	
Oil nozzle/nozzles	•	
Solenoid valves for oil	•	
Oil pump with pressure regulating valve	•	
Separate motor for oil pump	•	
Non-return valve	•	
Pressure gauge/gauges for oil	•	
Pressure switch for return oil	•	
Deaerator	0	
2 oil hoses, length 3000 mm	•	
Oil filter	•	
Pressure gauge for control of inlet oil	0	
Pressure switch for control of inlet oil	ο	
Controller unit for regulation of air/oil/gas ratio incl.: - oil regulator - gas butterfly valve - servomotor	•	
WiseDrive (electronic ratio control) for regulating the air/oil/gas ratio, incl.: - oil regulator - gas butterfly valve - servomotor for oil regulator - servomotor for gas butterfly valve - servomotor for air dampers - servomotor for combustion head regulation	O	
Potentiometer fitted in servomotor	0	
Gas nozzle	•	
Pressure gauge for measuring the pressure in gas nozzle	0	
Gas pressure switch, max.	•	
Differential air pressure switch	•	
Ignition transformer	•	
Ignition cables and electrodes	•	
Flame sensor	•	
Inbuilt combustion air fan with direct-driven electric motor	•	
Air dampers	•	
Pressure gauge for fan pressure	0	
Elbow 90°	•	
Double solenoid valve for gas incl.: - pressure switch for gas, min. - 2 gas valves - automatic valve leak tester - ball valve, blow-off (loose)	•	
Solenoid valve for ignition gas	•	
Manual	•	

Capacity/back pressure graphs



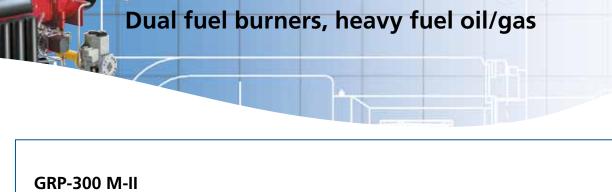
kW

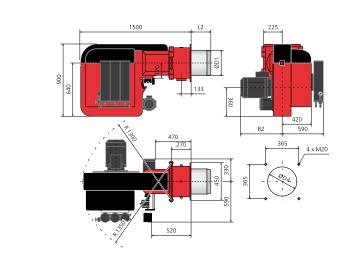
1000 2000 3000 4000 5000 6000 7000 8000 9000 kW

Natural gas: gases of 2nd family, groups

kW

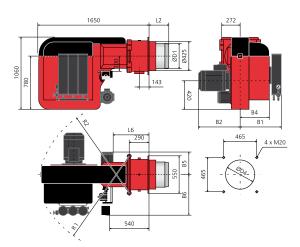
H and E (equipment category I_{2R})





BURNER	L2	Ø D1	Ø D4
GRP-300 M-II	246	320	380

GRP-400 M-I...-700 M-II



BURNER	L2	L6	B1	B2	B4	B5	B6	Ø D1	Ø D4	R1	R2
GRP-400 M-I	290	480	620	630	440	350	590	370	440	1500	1400
GRP-500 M	290	480	620	630	440	350	590	370	440	1500	1400
GRP-600 M	310	480	620	630	440	350	590	395	455	1500	1400
GRP-700 M	310	450	670	730	490	360	640	395	455	1600	1500
GRP-700 M-II	310	450	670	780	490	360	640	395	455	1600	1500

Dual fuel burners, heavy fuel oil/gas

Technical Data

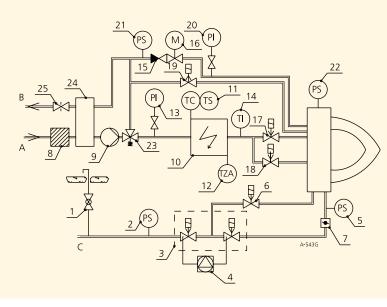
BURNER	GRP-300 M-II
Capacity kg/h kW	80 - 380 900 - 4200
Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	7.5 15.0 2870
Oil hose connection - suction - return	R1″ R½″
Oil pump - Motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	SPF10R46 1.5 4.8 2860
Preheater 3~ 400 V 50 Hz Capacity kW	12
Weight kg	440

Note! The weight varies according to delivery contents.

BURNER	GRP-400 M-I	GRP-500 M	GRP-600 M	GRP-700 M	GRP-700 M-II
Capacity kg/h kW	110 - 420 1300 - 4700	140 - 535 1585 - 6050	125 - 600 1400 - 6750	170 - 710 1900 - 7900	170 - 850 1900 - 9500
Fan motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	11.0 21.0 2925	11.0 21.0 2925	15.0 28.0 2925	18.5 34.0 2930	22.0 41.0 2940
Oil hose connection - suction - return	R1″ R½″	R1″ R½″	R1″ R½″	R1″ R½″	R1″ R½″
Oil pump - Motor 3~ 400 V 50 Hz Output kW Current A Speed rpm	SPF10R56 2.2 5.4 2870	SPF10R56 2.2 5.4 2870	SPF20R38 2.2 5.4 2870	SPF120R56 4.0 8.1 2840	SPF20R56 4.0 8.1 2840
Preheater 3~ 400 V 50 Hz Capacity kW	18	18	18	24	30
Weight kg	570	575	590	660	710

PI-diagrams

GRP-300 M-II...-700 M-II



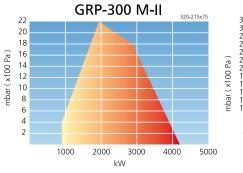
- 1 Ball valve, blow-off
- 2 Pressure switch, min.
- 3 Double solenoid valve, NC
- 4 Valve leak tester
- 5 Pressure switch, max.
- 6 Solenoid valve, NC, ignition gas 7 Gas butterfly valve
- 8 Oil filter
- 9 Oil pump, with plug
- 10 Preheater
- 11 Temperature regulation/lower limit 12 Limit thermostat
- 13 Pressure gauge
- 14 Thermometer
- 15 Non-return valve
- 16 Oil regulator
- 17 Solenoid valve, NC
- 18 Solenoid valve, NC 19 Solenoid valve, NO
- 20 Pressure gauge
- 21 Pressure switch, max.
- 22 Differential air pressure switch
- 23 Pressure regulating valve
- 24 Deaerator
- 25 Drilled ball valve
- A Oil, inlet B Oil, return
- C Gas

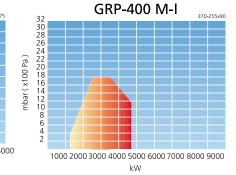
Dual fuel burners, heavy fuel oil/gas

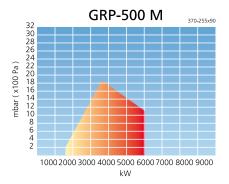
Scope of delivery

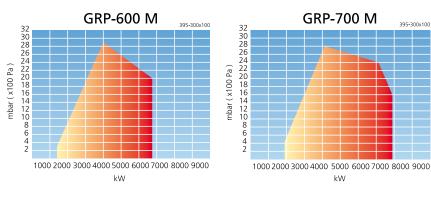
GRP-300 M-IL700 M-II uinge flange with limit switch • Uin ozzle/hozzles • Dil nozzle/hozzles • Ocional Values • Identing cartridge for oil nozzle • Onl purp with pressure regulating value • Exiting cartridge for solenoid values • Oil purp with pressure regulating value • Exiting cartridge for oil purp • Identing cartridge for oil purp • Inserturn value • Ipressure gauges for oil • Inserturn value •	Scope of delivery Burners include following equipment:	• standard delivery o option
tinge flange with limit switch•urmer flange gasket•lin onzel/rozzis•leating cartridge for oil nozzle•oolenoid valves for oil•vetating cartridge for solenoid valves•Dil pump with pressure regulating valve•leating cartridge for oil pump•eleating cartridge for oil pump•eleating cartridge for oil pump•lon-return valve•lon-return valve•ip ressure gauges for oil•ressure switch for return oil•leating cartridge of boll pump•vetsure switch for return oil•vetsure switch for return oil•vetsure switch for return oil•vetsure switch for return oil pipes•leating cables for binner oil pipes•leating tarting cables for oil net oil•vetsure switch for control of inlet oil•vetsure switch for control of inlet oil•vetsure switch for control of inlet oil•oil regulator•gas butterfly valve•servomotor for combustion head regulation•vetsure witch for combustion head regulation•vetsure switch for combustion head regulation•vetsure witch frage in a witch•in regulator•gas butterfly valve•servomotor for combustion head regulation•vetsure witch for combustion head regulation•vetsure witch firet in servomotor•		
humer flange gasket • bil nozzle/nozzles • olenoid valves for oil • iolenoid valves for oil • iolenoid valves for oil • ibl pump with pressure regulating valve • ieating cartridge for oil pump • oparate motor for oil pump • obscretur valve • testing cartridge for oil • testinge	Hinge flange with limit switch	
Dil nozzle/nozzles•leating cartridge for oil nozzleoleating cartridge for solenoid valves•leating cartridge for solenoid valves•li pump with pressure regulating valve•leating cartridge for oil pumpoieparate motor for oil pump•leating cartridge for oil pump•leating cartridge for oil pump•leating cartridge for oil pump•leating cartridge for oil•leating carbon for for for for for oil•leating carbon for for for for for oil•leating carbon for for for for oil pipes•leating carbon for control of inlet oil•li regulator•ressure gauge for control of inlet oil•li regulator•ressure gauge for on all regulator•servomotor for oil regulator•servomotor for oil regulator•servomotor for oil regulator•ser		•
iolenoid valves for oil etating cartridge for solenoid valves il pump with pressure regulating valve etating cartridge for oil pump ouppeter motor for oil pump pearater motor for oil pump pearater motor for oil pump pearator for oil pressure gauges for oil pressure gauges for oil pearater incl.: Init thermoater pearater for oil pearater incl.: Init thermoater cellots of the pearater incl.: Init the	Oil nozzle/nozzles	•
teating cartridge for solenoid valves • Dil pump with pressure regulating valve • teating cartridge for oil pump • teating cartridge for oil pump • tom-return valve • ty pressure gauges for oil • hermometer • ressure switch for return oil • Descentor for oil • testing cartridge for solenoid valves • til breesster smitch for return oil • Descentor for oil • testing cartridge for solenoid valves • testing cartridge for sole valves • testing cartridg	Heating cartridge for oil nozzle	0
Dil pump with pressure regulating valve • leating catridge for oil pump • eiparate motor for oil pump • ieparate motor for oil pump • ion-return valve • it pressure gauges for oil • thermometer • ressure switch for return oil • Deaerator for oil • Differ • Servomotor for oil regulator	Solenoid valves for oil	•
teating cartridge for oil pump o peparate motor for oil pump ion-return valve pressure gauges for oil certify pressure gauges for oil hoses certify pressure gauge for centrol of inlet oil certify pressure gauge for centrol of pregulating the air/oil/gas atto, incl. certify pressure gauge for measuring the pressure in gas nozzle certify pressure gauge for fan pressure in gas nozzle certify pressure gauge for fan pressure certify pressure cer	Heating cartridge for solenoid valves	•
ieparate motor for oil pump ion-return valve is pressure gauges for oil pressure gauges for oil pressure switch for return oil Deaerator for oil iectric prehever incl.: limit thermostat limit the return limit the air/oil/gas limit thermostat li	Oil pump with pressure regulating valve	•
Non-return valve • ip pressure gauges for oil • hermometer • ressure switch for return oil • Deaerator for oil • electric preheater incl.: • limit thermostat • temperature sensor • iol hoses, length 3000 nm • electric tracing cables for burner oil pipes • ol lifter • ressure switch for control of inlet oil • ool regulator • gas butterfly valve servomotor • servomotor for all regulator of air/oil/gas ratio incl.: • oil regulator • gas butterfly valve servomotor or oil regulator servomotor or oil regulator gas butterfly valve servomotor for air dampers • servomotor for air dampers •	Heating cartridge for oil pump	0
t presure gauges for oil thermometer terssure switch for return oil beaerator for oil textic preheater incl.: limit thermostat temperature sensor to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il hoses, length 3000 mm tetric tracing cables for oil hoses to il regulator gas butterfly valve servomotor for oil regulation fair/oil/gas servomotor for oil regulator servomotor for oil regulator servomotor for oil regulator servomotor for oil regulator servomotor for oil hese regulation botentiometer fitted in servomotor tetric tracing cable for measuring the pressure in gas nozzle tetric tracing cables and electrodes tetric tracing cables and electrodes time sensor tetric tracing cables and electrodes te	Separate motor for oil pump	•
hermometer incl.: irressures witch for return oil Deaerator for oil ilectric preheater incl.: limit thermostat temperature sensor Parail hoses, length 3000 mm ilectric tracing cables for burner oil pipes Parail hoses, length 3000 mm ilectric tracing cables for oil hoses Parail hoses, length 3000 mm ilectric tracing cables for oil hoses Parail hoses Parail filter Pressure gauge for control of inlet oil Pressure switch for control of regulator of parailer unit for regulation of air/oil/gas ratio incl.: oil regulator gas butterfly valve servomotor for oil gaulator servomotor for oil gaulator servomotor for oil gaulator servomotor for oil gaulator servomotor for oil servolutor Date fitted in servomotor Date fitted in servomotor Date fitted in servomotor Date fitted in servomotor parailer measuring the pressure in gas nozzle Date fitter ontal air pressure switch ginition cables and electrodes Pressure gauge for fan pressure Pressure gauge for fan pressure Pres	Non-return valve	•
Pressure switch for return oil • Deserator for oil • Identify preheater incl.: • Inimit thermostat • temperature sensor • to il hoses, length 3000 mm • etchtic tracing cables for burner oil pipes • idectric tracing cables for burner oil pipes • idectric tracing cables for oil hoses • Dif filer • Pressure gauge for control of inlet oil • Controller unit for regulation of air/oil/gas ratio incl.: • oil regulator • gas butterfly valve • servomotor • ViseDrive (electronic ratio control) for regulating the air/oil/gas • atio incl: • • oil regulator • • gas butterfly valve • • servomotor for or combustion head regulation • • viseDrive (electronic ratio control) for regulator servomotor for air dampers • • servomotor for or abutterfly valve • • • servomotor for or abutterfly valve • • <t< td=""><td>2 pressure gauges for oil</td><td>•</td></t<>	2 pressure gauges for oil	•
Deterrator for oil • liectric preheater incl.: • limit thermostat • temperature sensor • oil hoses, length 3000 mm • ieltcric tracing cables for burner oil pipes • oil filter • ieltcric tracing cables for oil hoses • Dil filter • ressure gauge for control of inlet oil • orthole value for regulation of air/oil/gas ratio incl.:: • oil regulator • gas butterfly valve • servomotor • ViseDrive (electronic ratio control) for regulating the air/oil/gas • servomotor for oil gas butterfly valve • servomotor for oig as butterfly valve • servomotor for or gas butterfly valve • as torsure	Thermometer	•
Electric preheater incl.: Imit thermostat Imit thermostat • explore sensor • to il hoses, length 3000 mm • electric tracing cables for burner oil pipes • oli hoses, length 3000 mm • electric tracing cables for oil hoses • oli filter • ressure gauge for control of inlet oil • oli regulator • gas butterfly valve • servomotor • WiseDrive (electronic ratio control) for regulating the air/oil/gas atio, incl.: • oil regulator • gas butterfly valve • servomotor for oil regulator • gas butterfly valve • servomotor for oil regulator • gas butterfly valve • servomotor for oil regulator • gas butterfly valve • servomotor for oil regulator • gas butterfly valve • servomotor for oil regulator • gas nozzle • forestrati air pressure switch, max. • <t< td=""><td>Pressure switch for return oil</td><td>•</td></t<>	Pressure switch for return oil	•
limit hermostat temperature sensorcoil hoses, length 3000 mm•cilectric tracing cables for burner oil pipesocilectric tracing cables for oil hosesoDil filter•ressure gauge for control of inlet oilocontroller unit for regulation of air/oil/gas ratio incl.: oil regulator gas butterfly valve servomotor•ViseDrive (electronic ratio control) for regulating the air/oil/gas arstio, incl.: oil regulator gas butterfly valve servomotor for oil galator servomotor for oil galator servomotor for oil regulator of gas butterfly valve servomotor for oil regulator servomotor for gas butterfly valve servomotor for oil gas butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for agas butterfly valve servomotor for agas butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for agas butterfly valve servomotor for agas butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for aga butterfly valve servomotor for agas butterfly valve 	Deaerator for oil	•
to il hoses, length 3000 mm of lines of burner oil pipes of construct racing cables for oil hoses of tracing cables for oil hoses of tracing cables for oil hoses of tracing cables for oil hoses of tressure gauge for control of inlet oil of tressure switch for control of inlet oil of tressure switch for control of inlet oil of tressure switch for control of inlet oil of gas butterfly valve servomotor for oil regulator servomotor for oil regulator servomotor for gas butterfly valve servomotor for gas butterfly valve servomotor for oir gas butterfly valve servomotor for air dampers servomotor for air begulator servomotor for oir ombustion head regulation of as nozzle of tressure switch, max. 0 ifferential air pressure switch gas of the servomotor for oir fressure switch gas butterfly valve servom or or of air far with firett-driven electric motor of the servom of the serve serve serve servom of the serve ser	Electric preheater incl.: - limit thermostat - temperature sensor	•
Electric tracing cables for burner oil pipesoElectric tracing cables for oil hosesoDil filter•Pressure gauge for control of inlet oiloOrtroller unit for regulation of air/oil/gas ratio incl.:ooil regulatorgas butterfly valvegervomotor•WiseDrive (electronic ratio control) for regulating the air/oil/gasooil regulatorogas butterfly valveoservomotoroWiseDrive (electronic ratio control) for regulating the air/oil/gasooil regulatorogas butterfly valveoservomotor for oil regulatorogas butterfly valveoservomotor for oil regulatorogas butterfly valveoservomotor for or air dampersoservomotor for or air dampersoserver switch, max.oDifferential air pressure switchogas traster switch, max.oDifferential air pressure switchointerttrave electric motoroNir dampersooil trave electric motoroNir dampersooil trave electric motoroNir dampersooil trave electric motoroNir dampersooil trave electric motoroNir dampers <td>2 oil hoses, length 3000 mm</td> <td>•</td>	2 oil hoses, length 3000 mm	•
Dil filter•Pressure gauge for control of inlet oiloPressure switch for control of inlet oiloController unit for regulation of air/oil/gas ratio incl.:ogas butterfly valve•servomotoroWiseDrive (electronic ratio control) for regulating the air/oil/gas atio, incl.:ooil regulator gas butterfly valveoservomotoroservomotor for oil regulator servomotor for oil regulator servomotor for oil regulator servomotor for oil segulator servomotor for oil segulator servomotor for oil segulator servomotor for oil adampers servomotor for combustion head regulation ooSas nozzleooDifferential air pressure switch, max.•Differential air pressure switch gintion cables and electrodes•On cables and electrodes•Differential air pressure sersor•Differential air fan with literct-driven electric motor•Diverser gauge for fan pressure Diverser•Diverser gauge for fan pressure gas pressure switch, min. 2 gas valves avalves avalves avalves•Diverser gauge for fan pressure gas pressure switch, min. 2 gas valves avalves•Diverser gauge for fan pressure gas pressure switch, min. 2 gas valves avalves•Diverser gauge for fan pressure avalves•Diverser valve leak tester•	Electric tracing cables for burner oil pipes	0
Dil filter•Pressure gauge for control of inlet oiloPressure switch for control of inlet oiloController unit for regulation of air/oil/gas ratio incl.:ogas butterfly valve•servomotoroWiseDrive (electronic ratio control) for regulating the air/oil/gas atio, incl.:ooil regulator gas butterfly valveoservomotoroservomotor for oil regulator servomotor for oil regulator servomotor for oil regulator servomotor for oil segulator servomotor for oil segulator servomotor for oil segulator servomotor for oil adampers servomotor for combustion head regulation ooSas nozzleooDifferential air pressure switch, max.•Differential air pressure switch gintion cables and electrodes•On cables and electrodes•Differential air pressure sersor•Differential air fan with literct-driven electric motor•Diverser gauge for fan pressure Diverser•Diverser gauge for fan pressure gas pressure switch, min. 2 gas valves avalves avalves avalves•Diverser gauge for fan pressure gas pressure switch, min. 2 gas valves avalves•Diverser gauge for fan pressure gas pressure switch, min. 2 gas valves avalves•Diverser gauge for fan pressure avalves•Diverser valve leak tester•	Electric tracing cables for oil hoses	0
Pressure switch for control of inlet oiloController unit for regulation of air/oil/gas ratio incl.: oil regulator gas butterfly valve servomotor•ViseDrive (electronic ratio control) for regulating the air/oil/gas atio, incl.: oil regulator gas butterfly valve servomotor for oil regulator servomotor for oil regulator servomotor for air dampers servomotor for combustion head regulation totentiometer fitted in servomotoroVotentiometer fitted in servomotor Sas nozzleoOifferential air pressure switch, max.•Oifferential air pressure switch ginition transformer gonition cables and electrodes•Isame sensor Nuill combustion air fan with lirect-driven electric motor•Nuill combustion air fan with lirect-driven electric motor•Nuill combustion air fan sensure sensor•Obuble solenoid valve for gas incl.: gas pressure switch, min. 2 gas valves avalves•Visedrive leek tester•	Oil filter	•
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gas pressure switch, min. 2 gas valves automatic valve leak tester		•
	Double solenoid valve for gas incl.: - gas pressure switch, min. - 2 gas valves - automatic valve leak tester - ball valve, blow-off (loose)	•
iolenoid valve for ignition gas •	Solenoid valve for ignition gas	•
Manual •	Manual	•

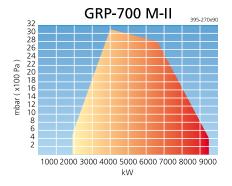
Capacity/back pressure graphs











Natural gas: gases of 2^{nd} family, groups H and E (equipment category I_{2R}) Heavy fuel oil: 1 kg/h = 11.86 kW



Gas valve selection table

BURNER SERIES 300

BURNER	GAS VALVE		E	COMBUSTION				
				GAS INL	ET PRESSU	RE mbar		HEAD
	SIZE	TYPE **)	20	30	50	100	150	
	DN							
GP/GKP/GRP-300 M-II	50	DMV-D		1730	2230	3160	3870	320
GP/GKP/GRP-300 M-II	65	DMV	2090	2560	3310	4500	4500	320
GP/GKP/GRP-300 M-II	80	DMV	2840	3480	4490	4500	4500	320
GP/GKP/GRP-300 M-II	100	DMV	3370	4130	4500	4500	4500	320
GP/GKP/GRP-300 M-II	125	DMV	3840	4500	4500	4500	4500	320

BURNER SERIES 400...700

BURNER	GAS V	ALVE		BURNER M	AX. CAPA)	COMBUSTION HEAD
	SIZE DN	TYPE **)	20	30	50	100	150	
GP/GKP/GRP-400 M-I	50 65	DMV-D DMV		2630	2260 3390	3200 4790	3920 5000	370 370
	80 100	DMV DMV	3050 3810	3730 4670	4820 5000	5000 5000	5000 5000	370 370
GP/GKP/GRP-500 M	125 65 80	DMV DMV DMV	4780 3050	5000 3730	5000 3390 4820	5000 4790 6070	5000 5870 6070	370 370 370
	100 125	DMV DMV DMV	3810 4780	4670 5860	6070 6070	6070 6070 6070	6070 6070	370 370 370
GP/GKP/GRP-600 M	65 80	DMV DMV	3110	3810	3430 4900	4850 6750	5940 6750	395 395
	100 125	DMV DMV	3900 4960	4780 6080	6170 6750	6750 6750	6750 6750	395 395
GP/GKP/GRP-700 M	80 100	DMV DMV	3900	3810 4780	4920 6170	6960 8400	8400 8400	395 395
GP/GKP/GRP-700 M-II	125 80	DMV DMV	4960	6080	7840 5020	8400 7100	8400 8700	395 395
	100 125	DMV DMV	5080	4940 6620	6370 8030	9010 9500	9500 9500	395 395

NOTE! If the gas inlet pressure is less than 20 mbar or if the gas used is not among those mentioned, evaluation must be made case-specifically.
 *) The max. capacities shown by the table are achieved when the boiler back pressure is 0.

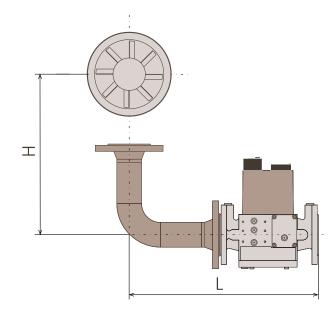
Natural gas 1 m³n/h = 10 kW

**) or corresponding type

Gas inlet pressure (Pmax) at burner

- max. 500 mbar when using DMV(D) valve

Gas elbow



	GAS ELBOW DIMENSIONS WITH DIFFERENT VALVES					
		DN50	DN65	DN80	DN100	DN125
	н	L	L	L	L	L
GP/GKP/GRP-300 M-II	450	590	640	580	620	700
GP/GKP/GRP-400700 M-II	525	640	690	715	660	735

Other dimensions available on special request

Low NOx technology for lower combustion gas emissions

The development of the Low NOx burners increased the Oilon burner selection considerably. The greatest improvement took place at the burner combustion head, where changes to the flow of the combustion gases enable lower NOx emissions. Various tests and practical experience prove that the Low NOx burners can achieve 40 to 60 % lower emission levels than traditional burners do. The carbon monoxide emissions of the Low NOx burners are also very low.

The high efficiency typical of Oilon burners applies to the Low NOx burners, too. With respect to the setting dimensions, the outer dimensions of the burner combustion head are the same as those of standard burners, so Low NOx burners are easy to install in place of traditional Oilon burners, without even electrical modifications. The burners are designed for H and E gases in gas category 2 (natural gas).



Control panels and supply cabinets

This burner series incorporates separate control panels and power supply cabinets. The standard panels and cabinets are designed for voltages $3{\sim}400 \text{ V}$ 50 Hz, control voltage $1{\sim}230 \text{ V}$ 50 Hz. Enclosure class IP 40. Outer dimensions are 600 x 600 x 210 mm.

When necessary, panels and cabinets can be built according to the customer's needs.

Type marking of the control panels: OK100 Type marking of the supply cabinets: RK100

Control panel OK100

Scope of delivery Control panels include the following items:

Fuel-specific type markings of the control panels:OK100-KPMC0Control panel for light fuel oil burnerOK100-RPMC0Control panel for heavy fuel oil burnerOK100-RPMC0Control panel for gas burnerOK100-GPMC1Control panel for dual fuel burner light fuel oil/gasOK100-GRPMC1Control panel for dual fuel burner heavy fuel oil/gasOK100-GRPMC1

standard dolivory

o ontional

Scope of delivery Control panels include the following item	5:		 standard 	delivery	o optional
	OK100-	OK100-	OK100-	OK100-	OK100-
	КРМС0	RPMC0	GPMC1	GKPMC1	GRPMC1
Control unit LAL	•	•			
Control unit LFL			•	•	•
Capacity controller RWF-40	•	•	•	•	•
Capacity controller, other	0	0	0	0	0
Auxiliary relays	•	•	•	•	•
Burner control switch	•	•	•	•	•
Run hour counter for oil	•	•		•	•
Run hour counter for gas			•	•	•
Failure reset button	•	•	•	•	•
Signal lamps	•	•	•	•	•
Preheater temperature controller CAL		•			•
Preheater operating switch		•			•
Remote start/stop	0	0	0	0	0
Capacity information for remote use (potentiometer with servomotor)	0	0	0	ο	0
Potential-free alarms	ο	о	0	0	0
Steam/water boiler automatics integrated into the control panel	0	0	0	0	0
O ₂ display/alarm	0	о	0	0	0
Elevated IP class	0	0	0	0	0
Other voltage	0	0	0	0	0
Built according to the requirements of classification societies	0	0			
PLC control and/or electronic fuel/air ratio control	0	0	0	0	0
Flue gas damper control	0	0	0	0	0
Oil leakage alarm	0	0		0	0

Supply cabinet RK100

Scope of delivery Supply cabinets include the following items:

	RK100
Main switch	•
Automatic circuit breakers	•
Contactor outputs	•
Thermal relays	•
Star-delta starter	0
Soft starter	0
Boiler automation power-current outputs	0



All-inclusive burner automatics: oxygen (O;)/pressure difference/cascade control



Control panel OK100



Supply cabinet RK100

WiseDrive

WiseDrive (WD), an electronic regulator for controlling the fuel/air ratio – an energy-efficient and environmentally friendly solution

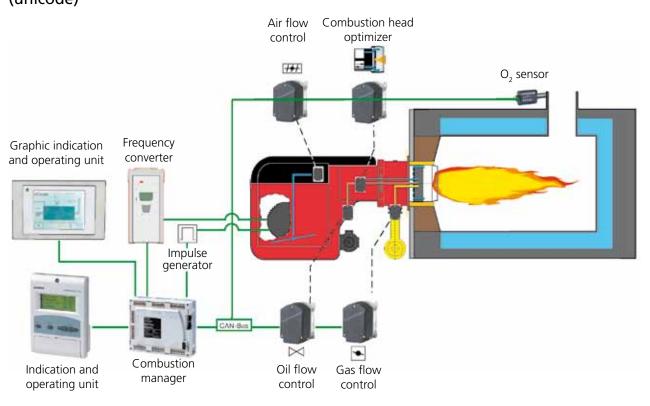
Electronic fuel/air ratio control of the burner (optional) brings the benefits of lower flue gas emissions, decreased consumption of energy and improved technical characteristics of the burner, such as more accurate regulation.

Examples of the WiseDrive's functions:

- Control sequences of the burner, conventional control unit deleted
- Fuel/air ratio control with dedicated servo motors, which can be set accurately for each control device
- Output regulator (PID) as standard, output regulation also by an external 4...20 mA signal

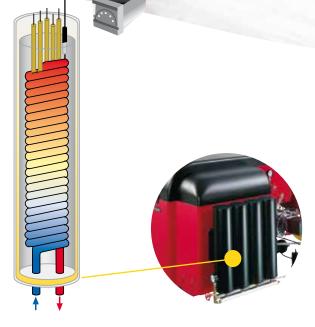
- When combusting gas, leak testing of the main gas valves carried out by the WiseDrive
- O₂ and fan motor RPM regulation according to the output
- Reading of the consumption signals from fuel gauges
- Can be connected with external plant automation via a ModBuss
- 4 operating levels
- Input of parameters via a character display panel and an operating panel. Also comes with a graphical touch screen at extra cost.

WiseDrive 200 + frequency converter + touch screen (unicode)



Control sequences, fuel/air ratio and output regulation as well as leak testing of gas valves and much more in a single package.

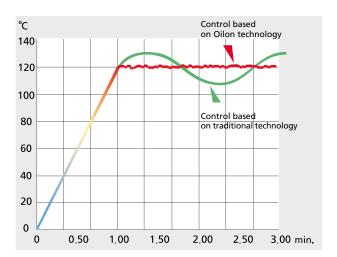
Burner preheater



Oilon ML mass preheater keeps the oil temperature stable even if the incoming temperature fluctuates. On account of the construction and the electronic regulator, the temperature of the oil flowing to the nozzle remains stable. The burner may, depending on the capacity and model, have one or more 6-kW heater equipped with a safety device to guard against overheating. The electronic regulator has an integrated minimum temperature limiter as well; this prevents the burner from starting if the oil is too cold.

Accurate temperature control guarantees good combustion

In burning heavy fuel oil, the right atomising viscosity of the oil is essential for good combustion and low combustion gas emissions. A prerequisite for stable atomising viscosity is that the oil temperature stays stable throughout the firing rate.



Silencer

Intake silencer, type MV 1

Construction

The MV 1 silencer is made of steel plate lined with fireproof dampening wool. The silencer is connected to the burner's suction side via a screw connection. The silencer reduces the high-pitched sound produced by the air flow.

Silencer, type MV 3

Construction

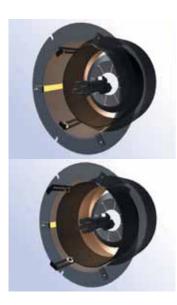
The MV 3 silencer is made of steel plate lined with fireproof dampening wool. This wheel-equipped silencer isolates the burner from four sides. The MV 3 silencer reduces the sounds produced when the burner operates.

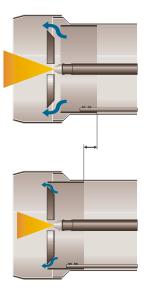




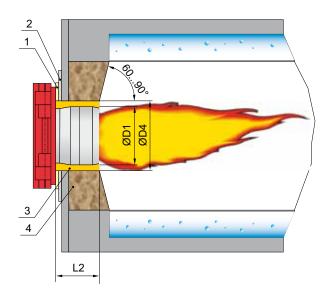
Optimising combustion head pressure loss

The speed of the combustion air at the combustion head is controlled by moving the adjustment ring in the axial direction. When the adjustment ring is in the front position, the gap between the ring and the diffuser disc is small and therefore suitable for the minimum burner capacity. When the adjustment ring is in the rear position, the gap between the ring and the diffuser disc is large and therefore suitable for maximum capacity.





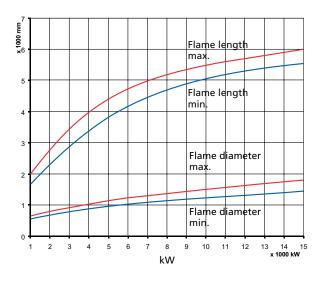
Automatic combustion head optimisation is available as an option for the modulating burners. With this, the movable combustion head adjustment ring is connected to the servomotor regulating the burner capacity. This way, the adjustment ring is always optimised for the required capacity. Furthermore, the adjustment range of the burner increases.



Masonry figure

1	Gasket
2	Mounting panel
3	Ceramic wool or equivalent
4	Masonry
ØD1, ØD4, L2	See burner dimension diagram

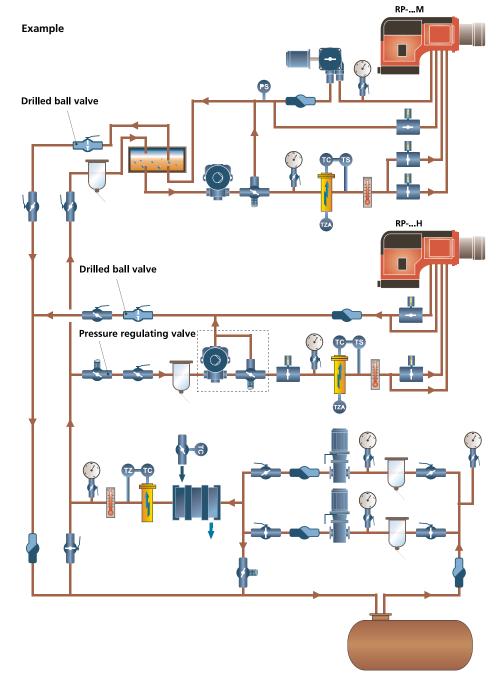
Flame dimensions



The dimensions apply for light oil and gas. For heavy oil, the dimensions used must be larger.

Oil supply diagram for heavy fuel oil

The as



Gas pressure control assembly



27



Oilon invests in product development and research. A modern product development centre meeting all European standards enables us to perform a wide range of burning tests and accurate oil and gas measurements.



We supply burners for ships according to classification societies, such as ABS, BV, CCS, DNV, GL, KR, LR, NKK, RINA, and RS classifications.



We participate in trade shows around the world every year.

OILON OY

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