

Technical documentation

Commercial / industrial boilers up to 550kW

Steel boilers MKS





Steel boiler for pressure firing in accordance with DIN 4702/EN 303 and valid EC directives, for low temperature operation

Steel boiler MKS

Oil/gas-fired boilers from steel MKS 360-550 kW



- High normative efficiency: up to 94% (Hi) / 89% (Hs) for the best possible energy utilisation
- Large heat exchanger surfaces made of smooth tubing for condensationfree low-temperature operation
- Stainless steel turbulators inserted into heat exchanger surfaces, low flue-gas temperatures
- Fully water-jacketed combustion chamber, no sizzling and expansion noises
- Full-width boiler door opening to left or right, easy cleaning
- Snug-fitted thermal insulation, 100mm thick, very low radiation losses
- Powder-painted casing with supreme finish, easy to assemble
- Six-year guarantee on boilers, two-year guarantee on electrical and moving parts

Technical Data



Туре	MKS	420	500
Output range MKS	kW	360-460	420-550
Recommended range MKS	kW	360-420	420-500
Height/height without casing	A mm	1526 / 1500	1526 / 1500
Width /width without casing	B mm	1034 / 840	1034 / 840
Length	C mm	2065	2065
Total height with control system	D mm	1703	1703
Filling, draining	Emm	178	178
Flue-gas pipe connection	Fmm	1177	1177
Heating return	G mm	430	430
Heating flow	H mm	1184	1184
Expansion flow	Jmm	1474	1474
Flue-gas pipe diameter	mm	250	300
Recommended foundation	mm	2200x1200*	2200x1200*
Filling, draining, expansion return	R	11/2"	11/2"
Heating return (Flange)	DN	100	100
Heating flow (Flange)	DN	100	100
Expansion flow, vent	R	2"	2"
Water capacity of boiler	Ltr.	665	635
Gas capacity of boiler	Ltr.	445	460
Heating surface area	m²	12,5	14,2
Flue-gas resistance	mbar	2,0	2,0
Heating water resistance (at $\Delta t = 20K$)	mbar	14,0	19,0
Max. boiler overpressure	bar	4	4
Max. permissible temperaturer 1)	°C	90/80	90/80
Relative stand-by loss	0/0	0,4	0,3
Flue-gas temperature 2)	°C	150-165	155-170
Flue-gas temperature 1st stage	°C	120	120
Flue-gas mass flow $^{2)}$ (Fuel oil CO ₂ = 13%)	kg/h	605-706	706-839
Flue-gas mass flow $^{2)}$ (Natural gas E CO ₂ = 9,5%)	kg/h	641-749	749-889
Flue-gas mass flow $^{2)}$ (Natural gas LL CO ₂ = 9,0%)	kg/h	666-778	778-925
Flue-gas mass flow $^{2)}$ (LPG CO ₂ = 11%)	kg/h	619-720	720-857
Weight Boiler	kg	975	1035
Electricity supply		230V / 50Hz / 10A	
CE ID number		CE-0085AR0034	

¹⁾ Overheat safety cutout convertible: 120°C/110°C/100°C.
 ²⁾ Figures for upper/lower boiler output in recommended range with a mean boiler water temperature of 60°C.

* Foundation to be provided on site

Height of feet/adjustment screws 20 mm \pm 10 mm to be taken into account!

Control Unit R21

Control unit for boilers and boilers with cylinders for 2-stage and modulating burners.





Illuminated indicator ring as status display

Explanation		
Standby (power supply ON, burner OFF)		
Heat demand: pump running, burner OFF		
Emissions test mode		
Burner ON, flame steady		
Fault		



DHW temperature selector

For boilers in combination with a cylinder the setting range 1 - 9 corresponds to a cylinder temperature of 15 to 60 °C. Combined with a BM programming module, the adjustment at the DHW temperature selector is disabled; instead the temperature is selected at the BM programming module.



Heating water temperature selector

The setting range 2 - 8 corresponds to a heating water temperature of 50 to 75 °C as standard. Combined with a BM programming module, the adjustment at the heating water temperature selector is disabled. If required the minimum boiler water temperature may be decreased to 38 °C on the BM programming module for oil-fired operation.





Winter mode (position 2 to 8)



The circulation pump operates in heating mode.

Summer mode

Switch set to 🕅 circulation pump OFF (heating OFF); only DHW heating, frost protection, pump anti-seizing protection enabled, i.e. the circulation pump runs for approx. 30 s every 24 hours.



Emissions test mode

Turning the switch to position 🎓 lets the boiler operate at maximum output. The illuminated indicator ring flashes yellow for 15 minutes or until the maximum flow temperature has been exceeded.

Overheat safety cutout STB

Convertible 120°C / 110°C / 100°C, optional: Control unit R21 with 2nd STB

In combination with BM programming module:

- programmable output for DHW circulation pump, alarm device etc.
- programmable input for room thermostat, DHW circulation push button etc.
- 0 5 V input for BMS (set value for boiler temperature)

Control accessories



Control accessories



SM1-2 solar module

- Extension module for regulating one solar circuit incl. collector sensor and cylinder sensor, each with sensor well
- In conjunction with Wolf appliance, greater energy savings through intelligent cylinder reheating, i.e. blocking cylinder
- reheating when there is sufficient solar yield
- Measurement of the quantity of heat with an external calorimeter
 Functional check for volume flow and gravity brake
- runctional energy for volume now and gravity orace
 Temperature differential control for one heat consumer
- Maximum cylinder temperature limit
- Display of the set and actual values on the BM-2 programming module
- Integral hours run meter
- eBus interface with automatic energy management
- Rast 5 connection technology

SM2-2 solar module

- Extension module to control one solar thermal system with up to 2 cylinders and 2 collector arrays, incl. 1 collector sensor and 1 cylinder sensor, each with sensor well
- Easy controller configuration by selecting one of the preset system versions
- In conjunction with Wolf appliance, greater energy savings through intelligent cylinder reheating, i.e. blocking cylinder reheating when there is sufficient solar yiel
- Measurement of the quantity of heat with an external calorimeter for all configurations
- Selection of the storage tank operating mode
- Display of the set and actual values on the BM-2 programming module
- eBus interface with automatic energy management
- Rast 5 connection technology



External wireless sensor

(only in conjunction with a receiver for external wireless sensor and remote control, part no. 27 44 209)

Wireless receiver for wireless outside temperature sensor and wireless remote control Incl. radio clock (DCF 77 signal)



W ireless remote control

(only in conjunction with a receiver for external wireless sensor and remote control) Max. one wireless remote control per mixer circuit.



Analogue remote control AFB

- Simple WRS remote control for heating and mixing circuits
- Each heating circuit can be separately operated by one remote control
- Integrated room temperature sensor
- Adjustment of temperature and program selection by rotary switch
- Only used together with the operating module BM-2



Two-wire eBUS cable

Control accessories



In order to prevent the return temperature from falling below 30 °C with oil-fired systems and 40 °C with gas-fired systems during the reheating process of low temperature heating systems and heating systems with high water capacities, a return temperature boost is to be provided. If the boiler temperature controller is set to 90 °C the overheat safety cutout (STB) must not be convertet to 100 °C.



The comprehensive equipment range from system supplier Wolf offers the ideal solution for commercial and industrial buildings, for new build and for modernisation projects alike. The range of Wolf control units fulfils every need where heating convenience is concerned. The products are easy to operate, energy-efficient and reliable. Photovoltaic and solar heating systems can be quickly integrated into existing systems. All Wolf products can be easily and rapidly commissioned and maintained.

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