

– weishaupt –

product

Information on oil burners



Compact and powerful

Weishaupt monarch® oil burner, WM-L20 (400 – 2600 kW)

Progress and tradition: The new monarch[®] oil burner



For more than 50 years the monarch[®] trademark has stood for power and quality

For more than five decades Weishaupt's monarch[®] series burners have been used on a wide variety of heat exchangers and industrial plant, forming the basis of Weishaupt's outstanding reputation.

This successful series is now continued by the new WM-L20 oil burner. Ultra-modern technology in conjunction with a compact construction make this powerful burner universally employable.

Digital.

Digital combustion management for economical and safe burner operation. The controls are easy to use.

Compact.

The aerodynamic housing and special air feed enable a higher capacity within smaller dimensions.

Quiet.

The new monarch burners operate with considerably reduced noise levels, thanks to the newly developed fan unit.



Digital

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

Weishaupt WM-L20 oil burners are equipped as standard with electronic compound regulation and digital combustion management. Modern combustion technologies demand a precise, continually reproducible dosing of fuel and combustion air. Only in this way can optimal combustion figures be ensured over extended periods.

Simple operation

Setting and control of the burner is achieved using a control and display unit. The CDU is linked to the combustion manager via a bus system, enabling the user friendly setting of the burner.



Flexible communication possibilities

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

Communication with external systems via bus

Several bus systems are available via the E-Gate if data from the burners are to be exchanged with a PLC unit, or if the burners are to be integrated into a building management system. For the control and management levels Weishaupt offers ProGraf NT, a real time software product to meet any and all requirements.

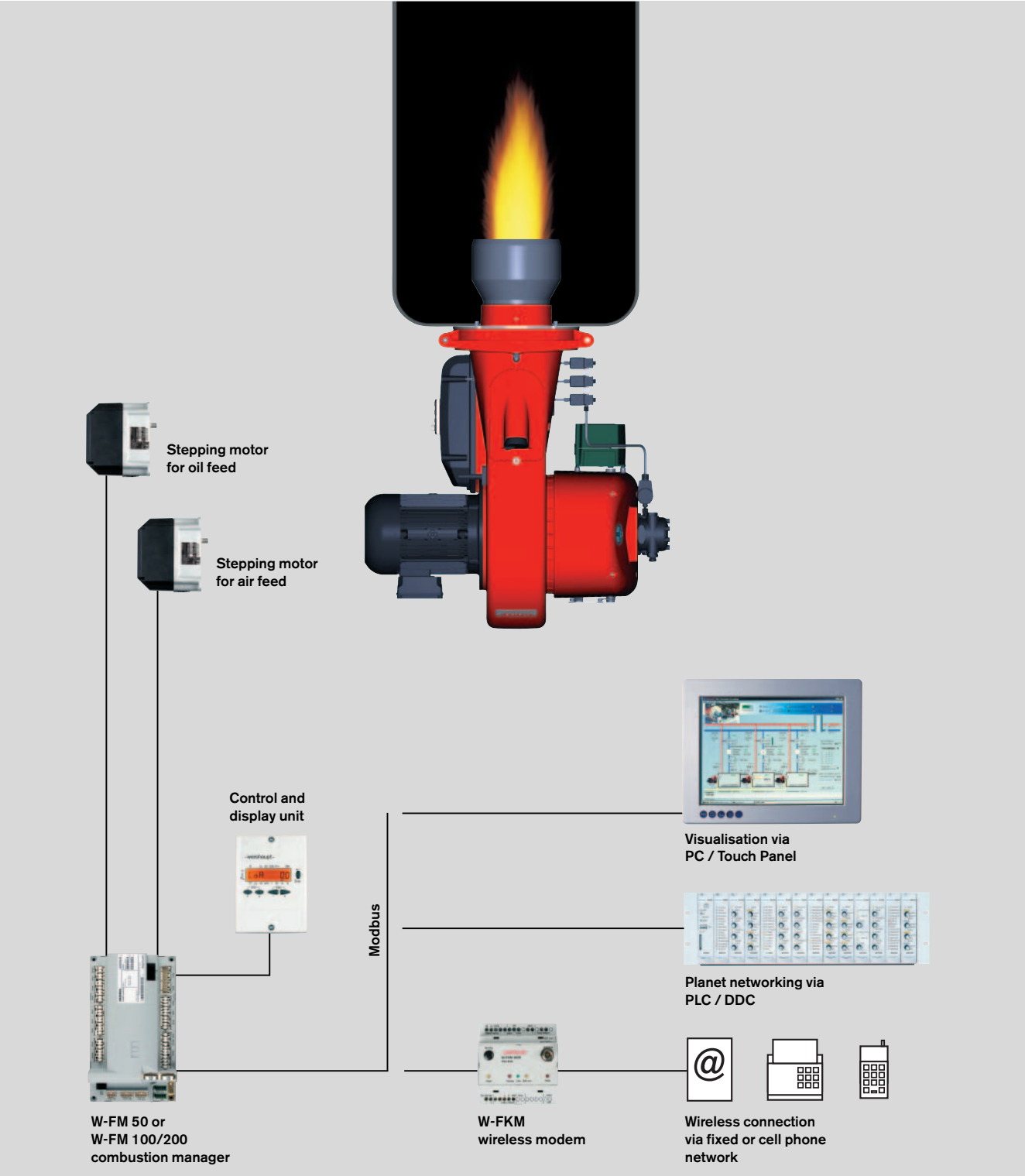
New technology advantages

Digital combustion management makes burner operation simple and safe. The most important advantages:

- No additional burner controls are necessary as control is effected by the combustion manager. The only additional requirements are control and motor fuses (by others).
- 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.

System overview	W-FM 50	W-FM 100	W-FM 200
Digital combustion management			
Combustion manager for intermittent operation	●	●	●
Combustion manager for continuous operation		●	●
Flame sensor for intermittent operation	ION/QRC/QRB	ION/QRI/QRB	ION/QRI/QRB
Flame sensor for continuous operation		ION/QRI	ION/QRI
Servomotors in electronic compound (max.)	2	4	6
Servomotors with stepping motors	●	●	●
Speed control available	●		●
O ₂ trim available			●
Single fuel operation	●	●	●
Dual fuel operation		●	●
Integrated self setting PID controller for temperature or pressure		Optional	●
Removable control unit (max. distance)	20 m	100 m	100 m
Fuel consumption meter	● ¹⁾		●
Display of combustion efficiency			●
eBUS / Modbus interface	●	●	●
PC supported commissioning	●	●	●

¹⁾ Not with speed control



Example with W-FM 50

Compact and quiet

The newly developed WM-L20 Weishaupt monarch® burner is compact, powerful and quiet. It is continuing the successful 50 year history of the legendary monarch® series.

Futuristic fan technology

The special housing design with the self opening air inlet, together with the new fan technology, results in increased fan pressure and thus more capacity from a more compact form.

Innovative air damper control

The newly developed air damper control provides a high degree of linearity over the entire operating range

Reduced noise emissions

Right from the earliest developmental stages of this new burner generation, particular emphasis was placed on low operational noise levels.

Compared to similar monarch® burners, a reduction in noise pressure levels of up to 8 dB(A), has been measured*. That equates to a sone (unit of perceived loudness) reduction of about 30%.

The use of an additional sound absorber is generally not required, as in most cases levels are below 80 dB(A).

Fast commissioning, simple servicing

All WM-L20 burners are delivered with oil nozzles fitted and the mixing assembly preset for the required output of the burner. A final adjustment is made using the combustion manager's menu controlled commissioning program.

All the burner's components, such as the oil nozzles, air damper and combustion manager, are readily accessible despite its compact construction, enabling maintenance and servicing work to be carried out quickly and easily. This is further helped by the standard hinged flange, which provides a perfect servicing position for the burner.

Adjustment to suit different combustion chamber conditions can be easily carried out on the burner in its installed position. The integral sightglass enables ignition and the flame to be observed.

Flexible control possibilities

All WM-L20 burners are available with 3 stage or sliding two stage / modulating operation, enabling numerous control possibilities and making the burner universally employable. Both versions ensure a gentle, problem free start up and high operational safety.

Version T (3 stage):

A change in firing rate is effected by opening and closing the oil solenoid valves with the relevant air amount.

Version R (fully automatic sliding 2 stage or modulating, depending on the type of capacity regulation):

Within its operating range, the burner's output is matched to the current heat demand.

Fuels

Light Oil EL (< 6 mm²/s at 20°C) in accordance with DIN 51 603, Part 1.

The suitability of other fuels must be confirmed in advance by Weishaupt.

Applications

The Weishaupt WM-L20 oil burner is tested to EN 267 and suitable for:

- installation on heat exchangers to EN 303-2
- hot water plant
- steam boilers and high pressure hot water plant
- intermittent and continuous operation
- installation on air heaters

The combustion air must be free of aggressive substances (halogens, chlorides, fluorides etc.) and impurities (dust, debris, vapours etc.).

For many applications the use of an extraneous air supply is recommended (additional cost). Current standards for oil installations must be observed.

Permissible ambient conditions

- Ambient temperature: -10 to +40°C (in operation)
- Humidity: max. 80% relative humidity, no dew point
- Suitable for operation indoors 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.

Certification

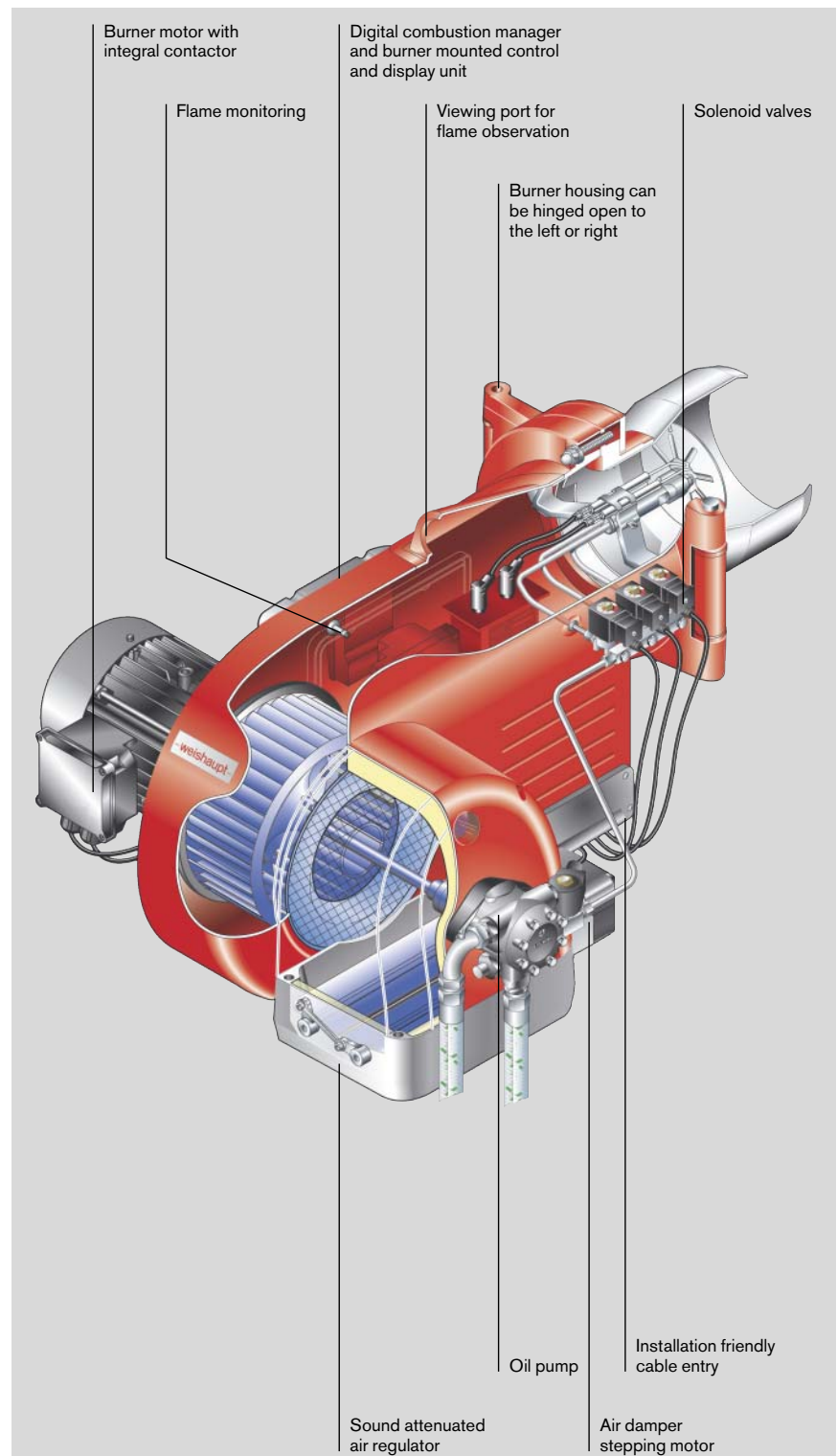
The burners are tested by an independent body and conform to the following standards and EU directives:

- EN 267
- Pressure Vessel Directive 97/23/EC
- Machinery Directive 98/37/EC
- Electromagnetic compatibility EMV 89/336/EEC
- Boiler Efficiency Directive 92/42/EEC
- Low Voltage Directive 73/23/EEC
- The burners carry the CE and CE-PIN marks and are voluntarily DIN registered

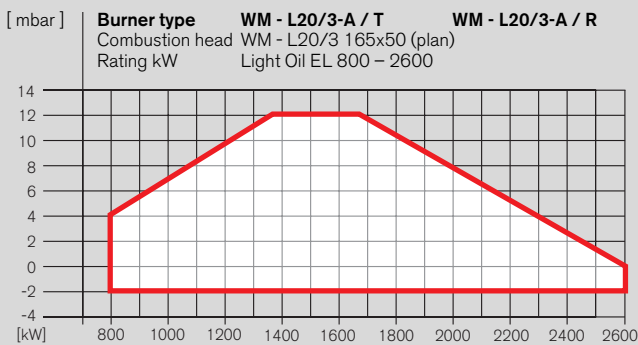
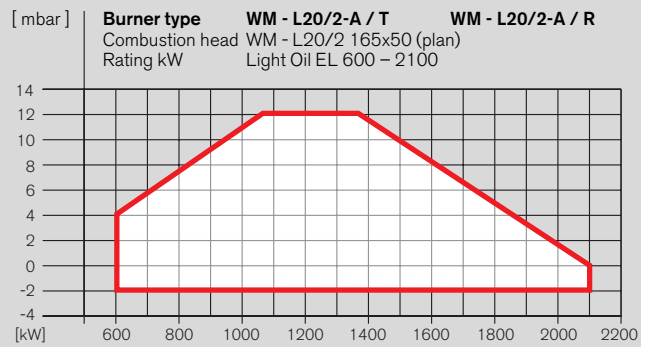
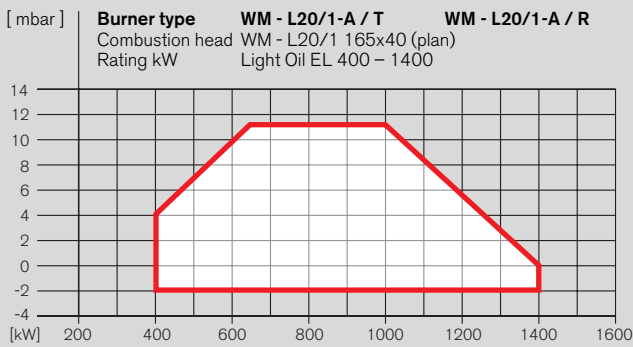
* Measurements recorded on test rigs at the Weishaupt Research and Development Centre.

The most important advantages at a glance

- Compact and powerful
- Digital combustion management with electronic compound regulation at all ratings
- Sound attenuated air inlet as standard for quieter operation
- Powerful fan due to the specially developed fan geometry and air damper control
- All WM-L20 burners are delivered with oil nozzles fitted and the mixing assembly preset for the required output of the burner
- IP 54 protection as standard
- Easy access to all components, such as: oil nozzles, air damper and combustion manager
- Safe operation with 3 stage or (depending on the type of capacity regulation) sliding 2 stage/modulating operation as standard
- Computer controlled function test at the factory of each individual burner
- Burner can be supplied pre-wired with plug connections
- Excellent price/capacity ratio
- Well established, global service network



Oil burner selection, Order numbers



Capacity graphs in accordance with EN 267.

All ratings given are based on an air temperature of 20°C and an installation altitude of 500 m.

The stated oil throughputs refer to a calorific value of 11.91 kWh/kg for Light Oil EL.

Voltages and frequencies:

The burners are equipped as standard for three phase alternating current 400 V, 3~, N, 50 Hz. Other voltages and frequencies available on request.

Standard burner motor:

Isolation class F, IP 54 protection.

DIN CERTCO certification:

The burners have been type tested by an independent body (TÜV-Süd) and certified by DIN CERTCO.

Burner type 3 stage	Order No.
WM - L20/1-A / T	211 210 10
WM - L20/2-A / T	211 210 20
WM - L20/3-A / T	211 210 30

Burner type sliding 2 stage/modulating	Order No.
WM - L20/1-A / R	215 210 10
WM - L20/2-A / R	215 210 20
WM - L20/3-A / R	215 210 30

Special equipment

Special equipment		WM - L20/1-A / T	WM - L20/2-A / T	WM - L20/3-A / T
Version T (3 stage)				
Pressure gauge with ball valve		110 000 79	110 000 79	110 000 79
Vacuum gauge with ball valve		110 005 69	110 005 69	110 005 69
Combustion head extension	100 mm	210 030 49	210 030 52	210 030 55
	200 mm	210 030 50	210 030 53	210 030 56
	300 mm	210 030 51	210 030 54	210 030 57
Oil hoses 1300 mm in lieu of 1000 mm		110 000 72	110 000 72	110 000 72
2 stage operation with soft start or partial load shutdown		210 030 31	210 030 31	210 030 31
Extraneous air inlet		210 030 47	210 030 47	210 030 47
Oil meter	< 150 kg	VZ 08	210 030 42	210 030 42
		VZ 08 with LF output	210 030 43	210 030 43
	> 150 kg	VZ 020	210 030 44	210 030 44
		VZ 020 with LF output	210 030 45	210 030 45
Plug connections ST 18/7 and ST 18/4		210 030 13	210 030 13	210 030 13
Solenoid valve for air pressure switch test for continuous running fan or post purge		250 030 21	250 030 21	250 030 21
KS40 modulation controller fitted on burner (W-FM 50)		210 030 67	210 030 67	210 030 67
W-FM 100 in lieu of W-FM 50 (for continuous operation)		210 030 32	210 030 32	210 030 32
DSA58 pressure switch for TRD 72 h		210 030 46	210 030 46	210 030 46
QRI flame sensor in lieu of QRB (required for TRD)		210 030 24	210 030 24	210 030 24
Analogue signal convertor/capacity controller for W-FM 100		110 017 18	110 017 18	110 017 18
W-FM 200 in lieu of W-FM 50 with capacity regulator, analogue signal convertor and speed control module, with optional fuel metering		210 030 10	210 030 10	210 030 10
Motor D 112 mit Leistungsschutz 230 V und Überstromauslöser		250 030 95	250 030 95	250 030 95
Special equipment				
Version R (sliding 2 stage or modulating)		WM - L20/1-A / R	WM - L20/2-A / R	WM - L20/3-A / R
Pressure gauge with ball valve, fitted to pump		110 002 82	110 002 82	110 002 82
Pressure gauge with ball valve, in return		110 011 50	110 011 50	110 011 50
Vacuum gauge with ball valve		on request	on request	on request
Combustion head extension	100 mm	210 030 58	210 030 61	210 030 64
	200 mm	210 030 59	210 030 62	210 030 65
	300 mm	210 030 60	210 030 63	210 030 66
Oil hoses 1300 mm in lieu of 1000 mm		110 001 59	110 001 59	110 001 59
Extraneous air inlet		210 030 47	210 030 47	210 030 47
Solenoid valve for air pressure switch test for continuous running fan or post purge		250 030 21	250 030 21	250 030 21
KS40 modulation controller fitted on burner (W-FM 50)		210 030 82	210 030 82	210 030 82
W-FM 100 in lieu of W-FM 50 (for continuous operation)		210 030 38	210 030 38	210 030 38
Analogue signal convertor/capacity controller for W-FM 100		110 017 18	110 017 18	110 017 18
W-FM 200 in lieu of W-FM 50 with capacity regulator, analogue signal convertor and speed control module, with optional fuel metering		210 030 39	210 030 39	210 030 39
Plug connections ST 18/7 and ST 18/4		210 030 13	210 030 13	210 030 13
DSA58 pressure switch for TRD 72 h version		210 030 46	210 030 46	210 030 46
Frequenzumformer für Drehzahlsteuerung angebaut, inkl. Induktiver Näherungsschalter und LGW 10 statt LGW 50 (W-FM 50 oder 200 erforderlich)		210 030 40	210 030 40	210 030 40
Motor D 112 with 230 V contactor and motor overload protection		250 030 95	250 030 95	250 030 95

Technical data

Technical data

Burner		WM - L20/1-A / T WM - L20/1-A / R	WM - L20/2-A / T WM - L20/2-A / R	WM - L20/3-A / T WM - L20/3-A / R
Burner motor	Weishaupt type	D112/110-2/2	D112/110-2/3	D112/110-2/4
Nominal capacity	kW	3	3,5	4,5
Nominal load	A	6,0	6,6	9,5
Motor prefuse(ΥΔ start)	A minimal	20 AT (external)	20 AT (external)	25 AT (external)
Speed (50 Hz)	rpm	2900	2900	2900
Combustion manager	Type	W-FM 50	W-FM 50	W-FM 50
Flame monitoring	Type	QRB	QRB	QRB
Air/Oil stepping motor	Type	STE 50	STE 50	STE 50
Integral pump	Type	J6 TA2	J6 TA2	J7 TA3
NO _x class in accordance with EN 267		2	2	2
Oil hoses	DN / length	13 / 1000 20 / 1000	13 / 1000 20 / 1000	13 / 1000 20 / 1000
Weight	kg	approx. 80	approx. 80	approx. 80

Voltages and frequencies:

The burners are equipped as standard for three phase alternating current 400 V, 3~, N, 50 Hz. Other voltages and frequencies available on request.

Standard burner motor:

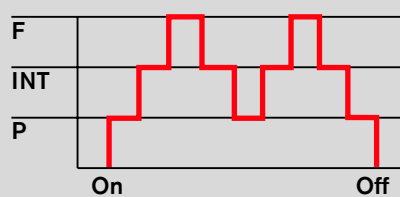
Isolation class F, IP 54 protection.

Mode of operation

3 stage (T)

- Oil is released during start up by the opening of solenoid valves 1 and 2
- Intermediate load is reached by the opening of solenoid valve 3
- Full load is reached by the opening of solenoid valve 4

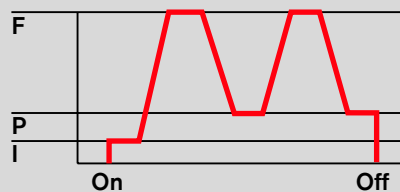
3 stage



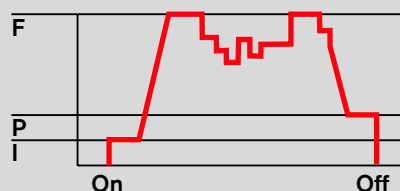
Sliding 2 stage/modulating (R)

- On opening the solenoid valves the correct rate of oil for start up is released
- A digital stepping motor sets the oil regulator to full load
- Capacity regulation between partial and full load through the opening and closing of the oil regulator
- For modulating operation a capacity controller is required, which can be integrated in the W-FM 100 (included as standard with the W-FM200). Alternatively a regulator can be built into a control panel

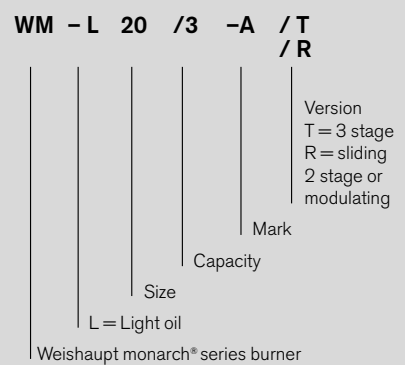
sliding 2 stage



modulating



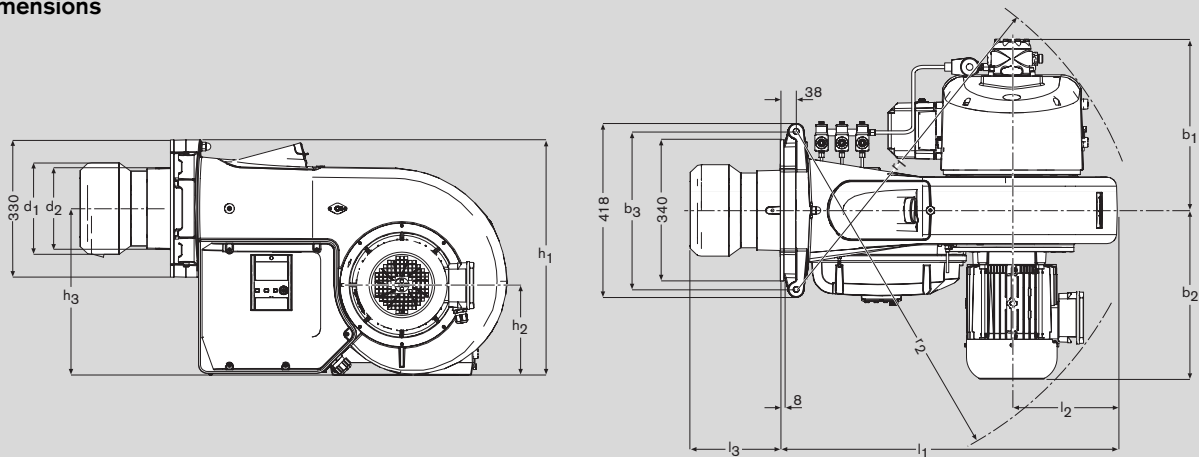
Designation



- F = Full load (nominal load)
- INT = Intermediate load
- P = Partial load (min. capacity)
- I = Ignition load

Dimensions

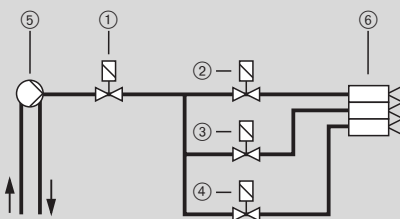
Dimensions



Burner type	Dimensions in mm			b1	b2	b3	h1	h2	h3	r1	r2	d1	d2	d3	d4	d5
	l1	l2	l3													
WM-L20/1-A / T	810	254	217 - 232	411	406	380	565	217	400	840	858	200	198	M12	270	298
WM-L20/2-A / T	810	254	227 - 247	411	406	380	565	217	400	840	858	200	198	M12	270	298
WM-L20/3-A / T	810	254	237 - 257	411	406	380	565	217	400	840	858	200	198	M12	270	298
WM-L20/1-A / R	810	254	217 - 232	409	406	380	565	217	400	840	858	200	198	M12	270	298
WM-L20/2-A / R	810	254	227 - 247	409	406	380	565	217	400	840	858	200	198	M12	270	298
WM-L20/3-A / R	810	254	237 - 257	414	406	380	565	217	400	840	858	200	198	M12	270	298

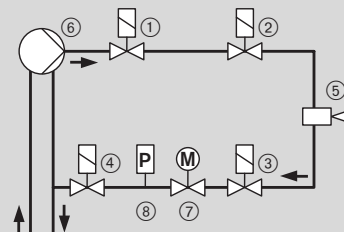
All dimensions are approximate. Weishaupt reserve the right to make alterations in light of future developments.

Oil system, version T



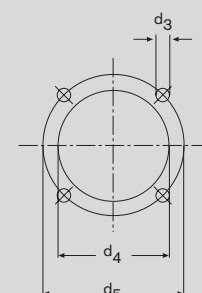
- ① Safety solenoid valve
- ② Stage 1 solenoid valve
- ③ Stage 2 solenoid valve
- ④ Stage 3 solenoid valve
- ⑤ Burner mounted oil pump
- ⑥ Nozzle assembly with 3 atomising nozzles

Oil system, version R



- ① Normally closed solenoid valve 1st shut off device in flow
- ② Normally closed solenoid valve 2nd shut off device in flow
- ③ Normally closed solenoid valve 1st shut off device in return
- ④ Normally closed solenoid valve 2nd shut off device in return
- ⑤ Nozzle assembly with regulating nozzle
- ⑥ Burner mounted oil pump
- ⑦ Oil regulator
- ⑧ Pressure switch in return

Boiler plate drilling dimensions



That's no Utopia. Weishaupt's constant research and development programme ensures ever cleaner and more economical burners and heating systems. That's reliability.



Test beds at the Weishaupt Research and Development Centre



Making advances.

Weishaupt has long recognised the theme of our times and is continually researching into ever more effective and environmentally friendly burners and heating systems. So Weishaupt is not only contributing considerably to the reduction of unnecessary energy costs, but is also taking an active part in protecting the environment.

In-house production

Not only research and development takes place at Weishaupt. Burner and heating system production is also deeply rooted at our sites in Germany and Switzerland. That enables the real time, seamless monitoring and control of the quality of all the products produced by Weishaupt.

That's no façade. That's reliability.

Weishaupt is reliability.

The family owned business in Schwendi, southern Germany, was founded in 1932 by Max Weishaupt. Today, with branch offices and subsidiary companies in 55 countries, it counts as an international market leader in the fields of combustion and heating technology.

The values of trust, quality, customer service, innovation and experience are those on which the pioneering Max Weishaupt founded his company. That, summed up in a single word, is reliability. And Weishaupt stands for that to this very day.



The Weishaupt Forum in Schwendi



- weishaupt -

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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.

