VIESMANN

Single-stage oil burner

83 to 300 MBH /
24 to 88 kW

Technical Data Manual

Model Nos. and pricing: see Price List

**Vitoflame 100 oil burner
installed on a Vitola 200 boiler**

Vitoflame 100
Oil Burner (VEM Series)

for Vitola 200 hot water heating boiler

C US

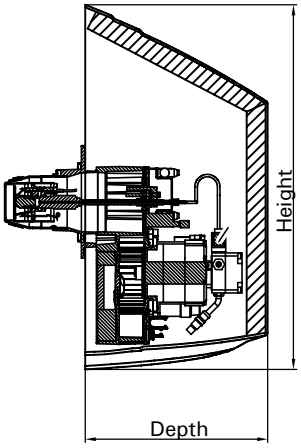
5285 524 - 03 04/2025

Technical Data

For fuel oil #2 or lighter

Burner Model	Model No.	VEM-18	VEM-22	VEM-33	VEM-40	VEM-50	VEM-63
Boiler	Model No.	VB2-18	VB2-22	VB2-33	VB2-40	VB2-50	VB2-63
Input	MBH	83	107	135	170	219	300
	kW	24	31	39	50	64	88
Consumption at oil discharge pressure stated	GPH	0.59	0.76	0.96	1.21	1.56	2.14
	ltr/h	2.23	2.87	3.63	4.58	5.90	8.10
	psig	240	170	170	180	180	175
Voltage	V	120	120	120	120	120	120
Frequency	Hz	60	60	60	60	60	60
Amperage	A	2.0	2.0	2.0	2.0	2.0	2.0
Power consumption	Watt	90	90	90	90	90	90
Motor revolutions	rpm	3450	3450	3450	3450	3450	3450
Max. oil pump flow capacity	ltr/h	45	45	45	45	45	45
Connections (metric flare) inside threads of supply and return oil lines	inches	$^3/_8$	$^3/_8$	$^3/_8$	$^3/_8$	$^3/_8$	$^3/_8$
Recommended combustion air supply duct size - round duct ∅	inches	5	5	6	7	8	8
Depth* [1]	inches	13	13	13	15	15	15
	mm	335	335	335	370	370	370
Width* [1]	inches	21	21	21	26	26	26
	mm	535	535	535	650	650	650
Height* [1]	inches	23	23	23	26	26	26
	mm	580	580	580	660	660	660
Weight *(shipping weight)*	lbs	46	46	46	49	50	50
	kg	21	21	21	22	22.5	22.5

[1] Dimensions include burner hood. See below.



IMPORTANT

Burners are approved for one input each. Do not change input of burner by oversizing or undersizing of nozzle.

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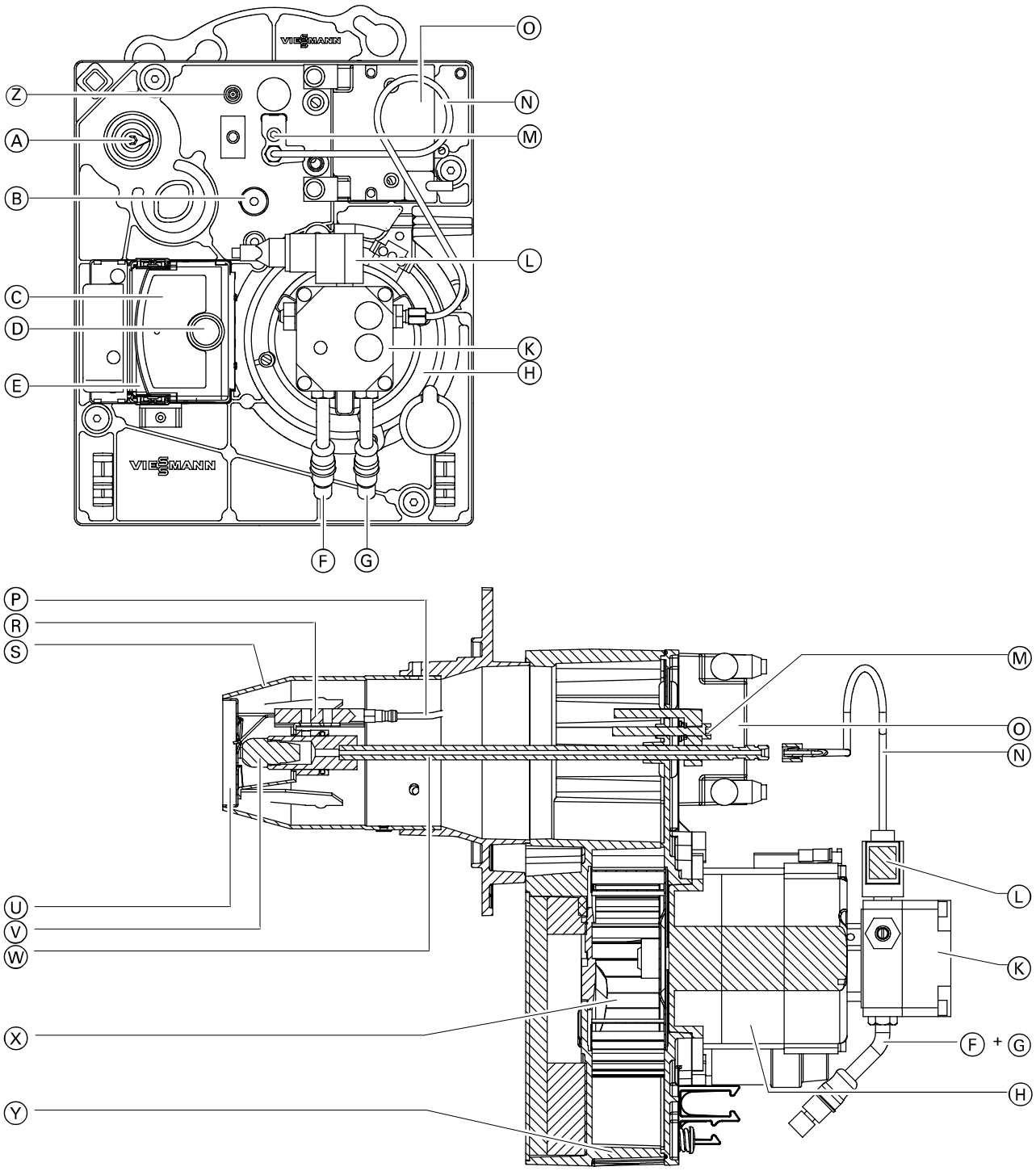

Ⓐ Air gate
Ⓑ Flame sensor (CAD cell)
Ⓒ Oil ignition module
Ⓓ Manual reset button with extension
Ⓔ 41 plug-in connection
Ⓕ Flexible oil return line (blue)
Ⓖ Flexible oil supply line (red)
Ⓗ Fan motor
Ⓚ Oil pump
Ⓛ Solenoid coil
Ⓜ Drawer assembly adjustment screw
Ⓝ Nozzle line
Ⓞ Electronic ignition transformer
Ⓟ Ignition cable
Ⓡ Ignition electrode
Ⓢ Blast tube
Ⓤ Turbulator
Ⓥ Oil nozzle
Ⓦ Drawer assembly
Ⓧ Fan wheel
Ⓨ Burner housing
Ⓩ Fan static air pressure measurement port

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Construction

Vitoflame 100 – a new burner generation

- Lightweight cast aluminum frame – facilitates transportation and handling of burner.
- Four service positions – optimized accessibility of service parts such as drawer assembly and fan wheel.
- Reduced power consumption.
- Integrated sound insulation (foam insert) of fan for reduced noise level.

Standard Equipment

Oil burner complete with nozzle, two flexible oil lines, oil pump, oil filter, single-pipe conversion tee, barometric damper and built-in solenoid coil.

All electrical parts are hard-wired to primary control subbase with coded plug-in connectors. With system plug 41 for connection to the boiler control unit. Burner hood is equipped with an acoustic liner to reduce noise levels.

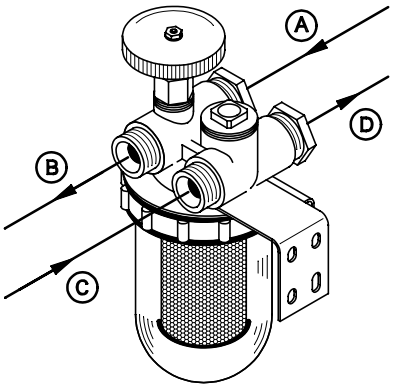
The burner is equipped with the required nozzle for a specific heating input and comes factory adjusted to the heating input to ensure optimized combustion results.

Fuel Type

The burner is designed to use #2 oil or lighter.

Oil Supply

Oil supply in a two-pipe system



Ⓐ oil line from tank
Ⓑ to oil pump on burner
Ⓒ from oil pump on burner
Ⓓ return to tank

Fig. 1
Oil filter in two-pipe system

For optimum air venting and oil pump performance Viessmann strongly recommends two-pipe oil supply piping wherever possible.

A Viessmann oil filter assembly and flexible oil lines must be used in the oil supply system. The red flexible oil line connects the red manual valve side of the filter assembly to the inlet (suction) side of the oil pump. The blue flexible oil line connects the check valve side of the oil filter assembly to the return side of the oil pump.

The oil pump is shipped with the bypass plug installed. The two flexible oil lines must be used for all installations. The copper tee is used to convert to a single-pipe supply from tank to burner oil filter.

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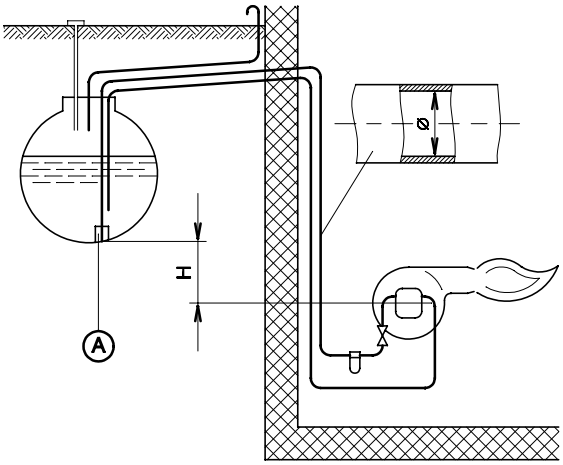
Elevated tank (two-pipe system)



Ⓐ foot valve

Fig. 2
Oil supply (two-pipe system), elevated tank

Suction height H		Inside diameter of suction line			
ft.	m	$^3/_8$"	10 mm	½"	13 mm
		Maximum supply line length (ft. / m)			
+13	+4.0	328 ft.	100 m	328 ft.	100 m
+11½	+3.5	321	98	328	100
+ 9¾	+3.0	299	91	328	100
+ 8¼	+2.5	279	85	328	100
+ 6½	+2.0	260	79	328	100
+ 5	+1.5	236	72	328	100
+ 3¼	+1.0	216	66	328	100
+ 1½	+0.5	197	60	328	100

For #2 fuel oil, 6.0 CST viscosity is calculated with 4 x 90° pipe elbows, one shutoff valve, and one foot valve.

Observe oil supply line dimensions on table below.

The oil pressure within the oil supply system must not exceed 10 psig / 0.7 bar.

CAUTION

Pressurized or gravity feed installations must not exceed 10 psig / 0.7 bar on supply line or return line at the pump. A pressure greater than 10 psig / 0.7 bar may cause damage to the shaft seal.

CAUTION

Ensure that there are absolutely no leaks on any oil lines and connections! Leaks in the oil lines draw in air, causing incomplete combustion.

Tank below or at same level as burner (two-pipe system)

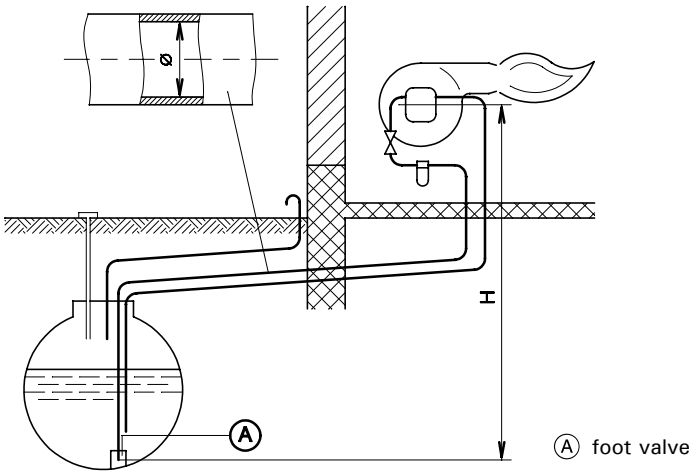


Fig. 3
Oil supply (two-pipe system), tank below or at same level as burner

Suction height H		Inside diameter of suction line			
ft.	m	$^3/_8$"	10 mm	½"	13 mm
		Maximum supply line length (ft. / m)			
0	0	174 ft.	53 m	328 ft.	100 m
- 1½	-0.5	154	47	328	100
- 3¼	-1.0	135	41	325	99
- 5	-1.5	112	34	276	84
- 6½	-2.0	92	28	233	68
- 8¼	-2.5	72	22	176	53
- 9¾	-3.0	49	15	121	37
-11½	-3.5	30	9	72	22

For #2 fuel oil, 6.0 CST viscosity is calculated with 4 x 90° pipe elbows, one shutoff valve, and one foot valve.

Observe oil supply line dimensions on table below.

The height difference (H) between the oil burner pump and the tank must not exceed 11.5 ft. / 3.5 m. Greater heights will cause high vacuum pressures, oil pump noise and damages, burner malfunction and eventually, burner failure.

CAUTION

Ensure that there are absolutely no leaks on any oil lines and connections! Leaks in the oil lines draw in air, causing incomplete combustion.

Oil supply in a single-pipe system

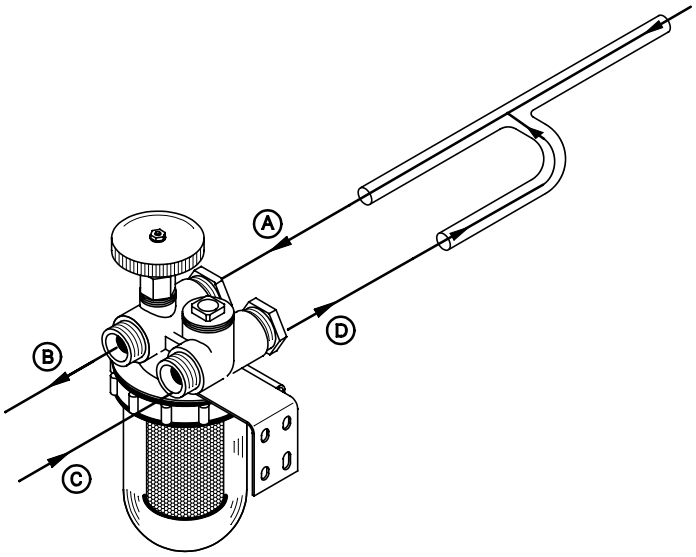


Fig. 4
Oil filter in single-pipe system

Ⓐ oil line tank
Ⓑ to oil pump on burner
Ⓒ from oil pump on burner
Ⓓ return to tank

Use a Viessmann oil filter assembly in the oil supply system.

Use a copper tee to connect the two-pipe filter assembly to a single-pipe oil supply system.

Elevated tank, tank below or at same level as burner (single-pipe system)

A Viessmann oil filter assembly must be used in the oil supply system.
Use a copper tee to connect the two-pipe filter assembly to a single-pipe oil supply system.
For single-pipe oil supply installations Viessmann recommends the use of an automatic air removal vent which is installed between the oil filter assembly and the burner.

Size oil supply line according to table on following page. Suction height H (see illustrations on following page) between the oil burner pump and the foot valve of the oil tank must not exceed 13 ft. / 4 m in an installation with the oil tank below the burner. A suction height exceeding 13 ft. / 4 m can lead to increased pump noise and wear on the pump.

If the suction height or the maximum supply line length in an installation with the tank below the burner is larger than stated in the table on the following page, a single-pipe oil "lift" system is required. In this case the pressure at the burner oil intake may at most be 10 psig / 0.7 bar and the burner must be protected with an additional solenoid coil.

If the oil supply must be converted from a two-pipe system to a single-pipe system, please observe supply line diameters provided in the illustrations on the following page.

Elevated tank

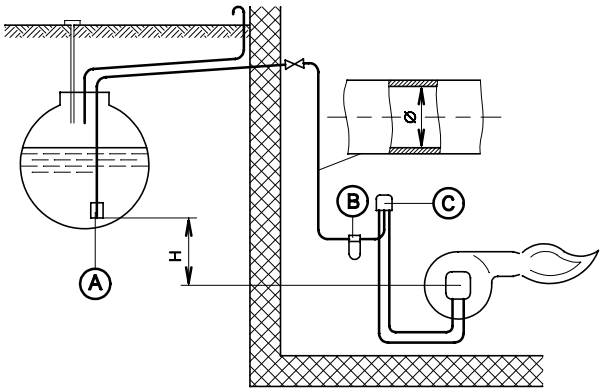


Fig. 5
Oil supply (single-pipe system), elevated tank

Tank below or at same level as burner

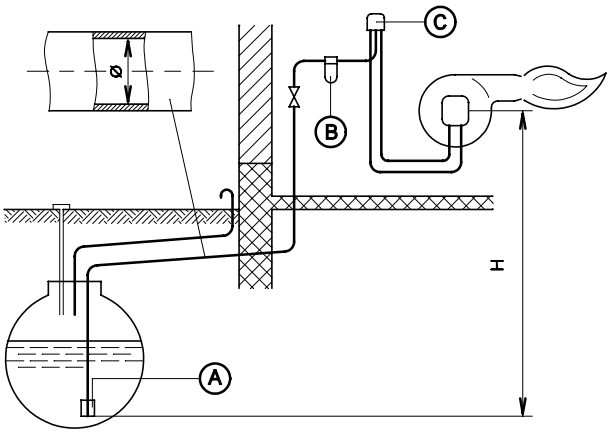


Fig. 6
Oil supply (single-pipe system), tank below or at same level as burner

Ⓐ Foot valve
Ⓑ Oil filter
Ⓒ Air removal vent

Suction height H		Rated boiler input (in MBH)							
		83 to 107		135 to 219		300			
		Inside diameter of suction line							
		¼" / 6 mm		¼" / 6 mm		¼" / 6 mm		¾" / 8 mm	
ft.	m	Max. supply line length in ft. / m *1							
+13	+4.0	328	100	328	100	328	100	328	100
+11½	+3.1	328	100	328	100	328	100	328	100
+ 9¾	+3.0	328	100	328	100	328	100	328	100
+ 8¼	+2.5	328	100	328	100	328	100	328	100
+ 6½	+2.0	328	100	328	100	318	97	328	100
+ 5	+1.5	328	100	328	100	295	90	328	100
+ 3¼	+1.0	328	100	328	100	269	82	328	100
+ 1½	+0.5	328	100	328	100	243	74	328	100

Suction height H		Rated boiler input (in MBH)					
		83 to 107		135 to 219		300	
		Inside diameter of suction line					
		¼" / 6 mm		¼" / 6 mm		¼" / 6 mm	
ft.	m	Max. supply line length in ft. / m *1					
0	0	328	100	328	100	328	100
– 1½	–0.5	328	100	328	100	328	100
– 3¼	–1.0	328	100	328	100	328	100
– 5	–1.5	328	100	276	84	328	100
– 6½	–2.0	328	100	226	69	328	100
– 8¼	–2.5	328	100	174	53	276	84
– 9¾	–3.0	246	75	121	37	194	59
–11½	–3.5	144	44	72	22	115	35
–13	–4.0	39	12	20	6	33	10

*1 *At a total pressure drop of 5.25 psig/0.35 bar for #2 fuel oil with 6.0 CST viscosity taking into account 4 x 90° elbows, 1 shutoff valve, 1 foot valve and 1 air removal vent.*

CAUTION

Ensure that there are absolutely no leaks on any oil lines and connections! Leaks in the oil lines draw in air, causing incomplete combustion.

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