

Vertomat

gas-fired condensing boiler

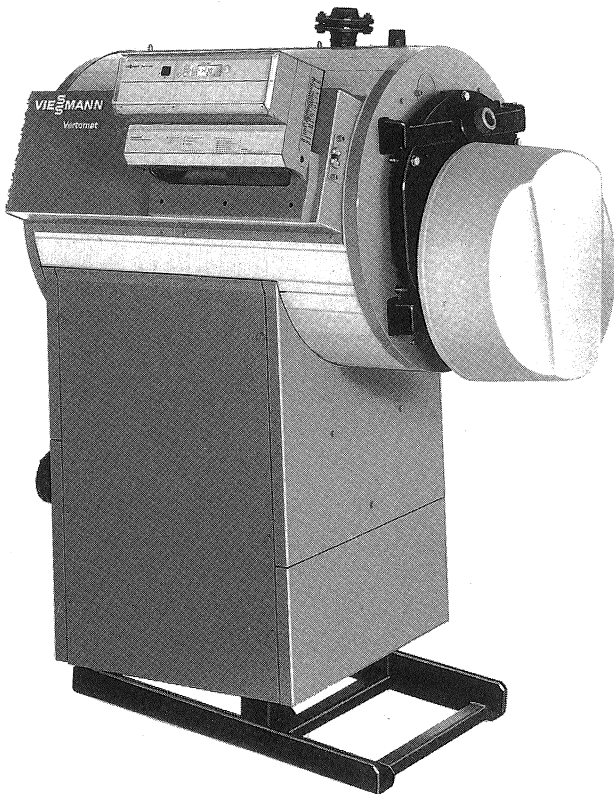
Input capacities 56 kW – 143 kW
190,000 – 488,000 Btu/h

Type: VSB

VIESSMANN

Technical Data Sheet

For prices, please see separate price sheet



Gas-fired condensing boiler

with vertical "Inox-Crossal" heat exchanger surfaces made from high grade stainless steel.

For operation without low limit on boiler return water temperature.

For closed hot water heating systems with maximum supply water temperatures of 99°C – 210°F for a maximum operating pressure of 30 psi.

Advantages:

- Optimized condensing boiler design
- Vertical heat exchanger surfaces manufactured from high-alloy stainless steel, corrosion-resistant, to guarantee long service life
- Seasonal efficiency ratings in excess of 95% – Manufacturer's efficiency statement.
- Reduced NO_x emissions due to combustion chamber geometry



Content of delivery:

Boiler shell complete with insulation jacket and pressure relief valve.
 Burner as per selection (priced separately) or to be field-supplied by mechanical contractor.
 As per specification, all models of burners to be of make Weishaupt.

The appropriate Weishaupt burner model may be ordered together with the boiler or can be ordered directly through Weishaupt Canada Ltd., 6150 Kennedy Rd., Unit 8, Mississauga, Ont., L5T 2J4.

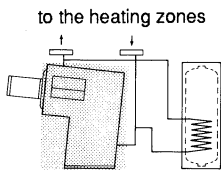
The Vertomat VSB boiler series must be used with a **Viessmann control Dekamatik** as per selection chart below.

Dekamatik-DE

for single boiler with one- or two-stage burner or fully modulating burner and maximum two heating circuits* with mixing valves, including domestic hot water tank, temperature control, and integrated diagnostic system

* For each heating circuit, an additional mixing valve including mixing valve motor and supply sensor is necessary.

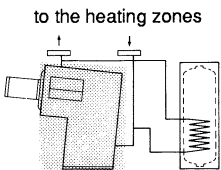
Outside Sensor



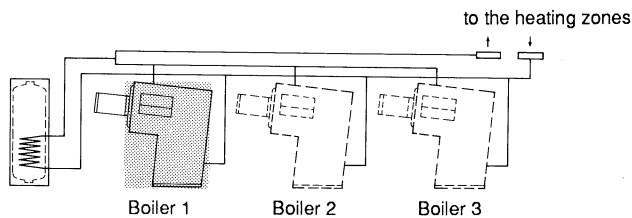
Dekamatik-D1

for single boiler systems or to be used as the lead control for the first heating boiler in a multiple boiler system with one-stage, two-stage, or fully modulating burner.
 Including domestic hot water tank, temperature control, lead boiler selection switch, integrated diagnostic system, without mixing valve control

Outside Sensor

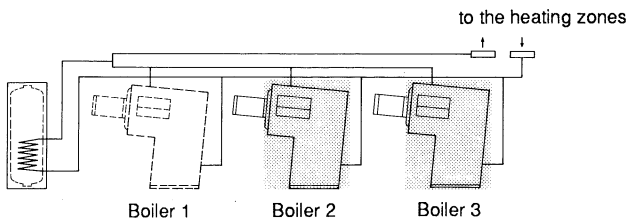


Outside Sensor



Dekamatik-D2

as additional control to supplement Dekamatik-D1 for the second or third heating boiler in a multiple boiler system with one-stage, two-stage, or fully modulating burners.
 With integrated diagnostic system; no mixing valve control



Technical Data

Boiler Model No.	VSB-05			VSB-08			VSB-10			VSB-13		
Max. input	kW		56	88		116		143				
	Btu/h		191,000	300,000		396,000		488,000				
Combustion efficiency ¹⁾ at boiler supply – boiler return temperatures of 80/60°C – 176/140°F 70/50°C – 158/122°F 40/30°C – 104/86°F and max. input	86.6%		86.6%		86.6%		86.6%		86.6%			
	90.0% *		90.0% *		90.0% *		90.0% *		90.0%			
	94.9%		94.9%		94.9%		94.9%		94.9%			
Boiler output at	kW		Btu		kW		Btu		kW		Btu	
80/60°C – 176/140°F	48.5		165,500		76.2		260,000		100.5		342,900	
70/50°C – 158/122°F	50.4		172,000		79.2		270,200		104.4		356,200	
40/30°C – 104/86°F	53.1		181,200		83.5		284,900		110.1		375,500	
Boiler stand-by loss at max. input	Watt	Btu	% of max. input	Watt	Btu	% of max. input	Watt	Btu	% of max. input	Watt	Btu	% of max. input
80/60°C – 176/140°F	433	1477	0.77	433	1477	0.49	547	1866	0.47	663	2262	0.46
70/50°C – 158/122°F	361	1232	0.64	361	1232	0.41	456	1556	0.39	553	1887	0.39
40/30°C – 104/86°F	145	495	0.26	145	495	0.16	182	621	0.16	221	754	0.15
Dimensions – boiler shell	mm – inch		mm – inch		mm – inch		mm – inch		mm – inch		mm – inch	
Length ²⁾	1013		40		1013		40		1013		40	
Width	575		22¾		575		22¾		575		22¾	
Height (incl. flange)	1663		65½		1663		65½		1663		65½	
Dimensions – jacket installed	mm – inch		mm – inch		mm – inch		mm – inch		mm – inch		mm – inch	
Total length	1084		42¾		1084		42¾		1084		42¾	
Width	686		27		686		27		686		27	
Width incl. Dekamatik	986		38¾		986		38¾		986		38¾	
Total height	1663		65½		1663		65½		1663		65½	
Recommended size of foundation	mm – inch		mm – inch		mm – inch		mm – inch		mm – inch		mm – inch	
Length	900		35½		900		35½		950		37½	
Width	600		23½		600		23½		600		23½	
Height	100		4		100		4		100		4	
Weight of boiler shell	kg – lbs		kg – lbs		kg – lbs		kg – lbs		kg – lbs		kg – lbs	
	239		526		247		543		253		557	
Weight incl. insulation (less burner)	kg – lbs		kg – lbs		kg – lbs		kg – lbs		kg – lbs		kg – lbs	
	305		671		313		689		319		702	
Boiler water content	ltr – USG		ltr – USG		ltr – USG		ltr – USG		ltr – USG		ltr – USG	
	180		47.6		180		47.6		225		59.4	
Heat exchanger surface water cooled	m ² – sq. ft.		m ² – sq. ft.		m ² – sq. ft.		m ² – sq. ft.		m ² – sq. ft.		m ² – sq. ft.	
	4.1		44.1		5.1		54.9		5.6		60.3	
Max. operating temperature	°C – °F		°C – °F		°C – °F		°C – °F		°C – °F		°C – °F	
	99		210		99		210		99		210	
Max. operating pressure	kPa – psi		kPa – psi		kPa – psi		kPa – psi		kPa – psi		kPa – psi	
	207		30		207		30		207		30	
Flue gas resistance	Pa – "w.c.		Pa – "w.c.		Pa – "w.c.		Pa – "w.c.		Pa – "w.c.		Pa – "w.c.	
	50		0.20		60		0.24		70		0.28	

¹⁾ Manufacturer's efficiency statements. Only "*" efficiencies CGA-certified.

²⁾ Less combustion chamber door

Boiler Model No.	VSB-05		VSB-08		VSB-10		VSB-13		
Boiler connections									
Boiler supply & return	inch	2	2	2	2	2	2	2	
Boiler return ¹⁾ – safety return	inch	1½	1½	1½	1½	1½	1½	1½	
Safety supply	inch	1¼	1¼	1¼	1¼	1¼	1¼	1¼	
Boiler drain	inch	¾	¾	¾	¾	¾	¾	¾	
Condensate drain	inch	½	½	½	½	½	½	½	
Vent pipe	mm – inch	150 6	150 6	150 6	150 6	180 7	increase to 8		
Flue temperature	approx. 5°C to 15°C – 9°F to 27°F higher than boiler return water temperature								
Mass flow of flue gas	kg/h – lbs/h	86 189	140 308	180 396	225 495				
Gas volume of combustion chamber and heat exchanger	m ³ – cu. ft.	0.145 5.12	0.149 5.26	0.151 5.33	0.184 6.50				
Burner data – Weishaupt ²⁾									
2-stage burner		WG 20/0	WG 20 N / 1-A,Z	WG 20 N / 1-A,Z	WG 30 N / 1-A,Z				
Fully modulating burner		on request	on request	on request	on request				
Burner weight	kg – lbs	16.8 40	17.5 38.5	17.5 38.5	28 61.6				
Motor	kW	0.55	0.1	0.1	0.1				
Combustion head ³⁾		WG 20/0	WG 20/1	WG 20/1	WG 30/1				
Comb. head length	mm	145	145	145	145				
Comb. head adjustment ⁴⁾		x = 10	x = 12	x = 12	x = 12				
Minimum gas pressure ⁵⁾ to burner	"w.c.	8	8	8	8				
Viessmann test results	All tests performed at boiler water supply temp. of 80°C – 176°F and boiler water return temp. of 60°C – 140°F								
I = partial input II = maximum input		I	II	I	II	I	II	I	II
Input	kW	31.7	52	33	85.7	31.7	109	31.7	136
Comb. chbr. pressure	Pa	+ 9	+ 38	+ 9	+ 54	+ 9	+ 67	+ 22	+80
Pressure at boiler flue outlet	Pa	- 6	± 0	- 5	± 0	± 0	- 5	- 2	± 0
Blower pressure	Pa	200	620	160	630	200	160	200	200
Airgate position	°	1.1	3.0	1.8	5.8	1.1	9.0	1.1	9.0
CO ₂	Vol. %	9.9	10	9.95	10	9.9	10.12	9.9	10
CO airfree	ppm	0	10	30	1	20	1	20	1
NO _x (NO ₂) airfree	ppm	42	43	52	43	42	43	42	43
Flue temp. gross	°C – °F	58 136	64 147	57 135	67 153	59 138	74 165	58 136	74 165
Room temperature	°C – °F	20 68	20 68	20 68	20 68	20 68	20 68	20 68	20 68

¹⁾ Boiler has two return connections – the heating return with the lower temperature should be connected to boiler return BR 1.

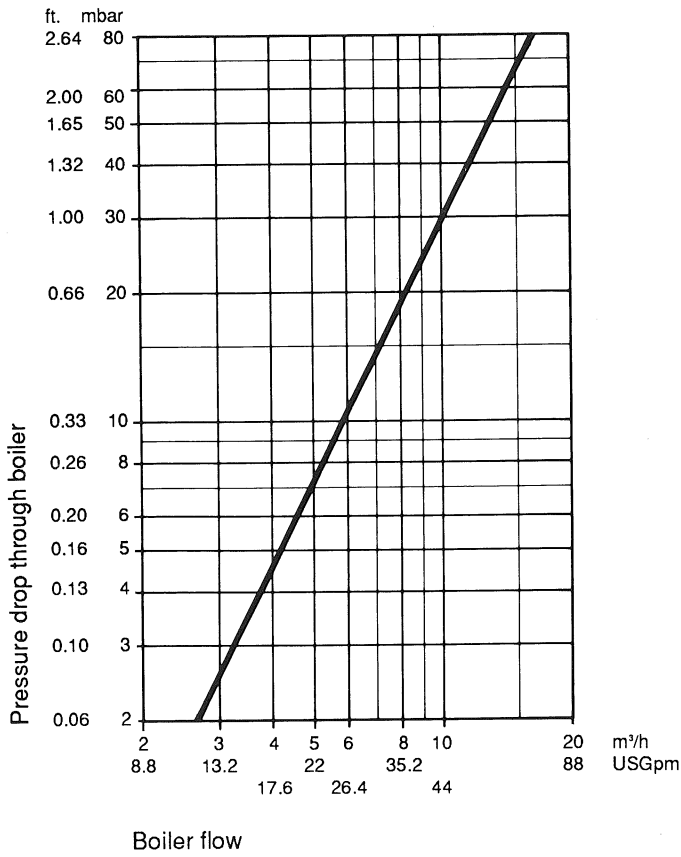
²⁾ Only the Weishaupt burner model stated is CGA certified with the Vertomat boiler series.

³⁾ Combustion heads must be heat resistant to a minimum of 500°C – 932°F.

⁴⁾ See Weishaupt Burner Manual for details on burner

⁵⁾ If gas supply pressure is lower than 8"w.c., consult burner manufacturer – Weishaupt.

Pressure drop through boiler – water side



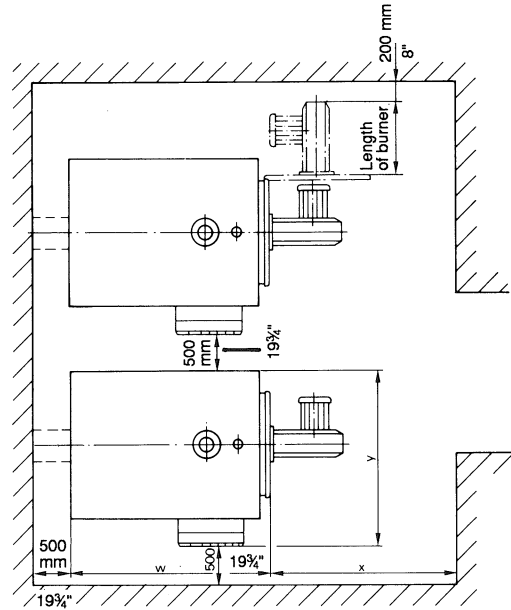
Minimum clearances for proper service access

For proper service access maintain a minimum clearance of 600 mm (24") on all 4 sides of boiler.

Minimum clearances to combustible construction

The burner door can be hinged on left or right boiler side. Clearance to ceiling 300 mm – 12", may be reduced to 150 mm – 6" if piping of boiler supply can be properly arranged.

Floor: Combustible or non-combustible.



Boiler Model	w		x		y	
	mm	inch	mm	inch	mm	inch
VSB-05	1055	41 1/2	770	30 1/2	986	38 3/4
VSB-08	1055	41 1/2	770	30 1/2	986	38 3/4
VSB-10	1055	41 1/2	850	33 1/2	986	38 3/4
VSB-13	1285	50 1/2	850	33 1/2	986	38 3/4

Boiler venting

Depending on the boiler return water temperature, the flue gases in the boiler series Vertomat are cooled down into the condensation or dew point area of the flue gases. Where they exit the boiler, they reach a relative moisture of 100%. The vent temperature is between 5°C and 15°C (9°F and 27°F) higher than the boiler return water temperature. Therefore, depending on the attached heating system, the flue gas temperature can be between 25°C (77°F) and 93°C (227°F). Due to the low flue gas temperature and the resulting minute updraft conditions as well as the additional condensation of the flue gases in the venting system, the vent system must be properly designed by the manufacturer and suitable materials must be selected.

Suitable as vent pipe material is stainless steel of the grade 316 L. The chimney must be designed to be gas and water tight.

The following manufacturers may be contacted for suitable stainless steel chimneys:

Selkirk Metalbestos

Eljer Manufacturing Canada Inc.,
3070 Universal Drive,
Mississauga, Ontario L4X 2C8
Tel.: (416) 629-3113
(416) 629-2797
Fax: (416) 624-5583

Security Chimneys,

Division of Security Chimneys Ltd.,
2125 Monterey,
Laval, Quebec H7L 3T6
Tel.: (514) 973-9999
(514) 337-3387
Fax: (514) 687-9569

Where possible and feasible, these boilers can also be vented directly through the wall with a maximum length of vent pipe of 20 ft. with a maximum of four 90° elbows installed.

CPVC might also be utilized for vent pipe material. Please direct enquiries to Viessmann Manufacturing for assistance.

Condensate and its disposal

During the operation of the Vertomat boiler series, the amount of condensate as per the diagram below can be expected.

The values given are approximate amounts occurring under practical conditions. Not included in the chart is the amount of condensate occurring in the vent pipe and chimney system. The condensate from the chimney system can be collected together with the condensate from the heating boiler and be disposed of into a floor drain. The condensate developing will be between 3 and 4 on the pH scale. If local building requirements demand neutralizing the condensate before disposal, contact Viessmann Manufacturing for a correct size of neutralization tank. The condensate treated will show pH values between 6.5 and 9 and can then be disposed of into the waste water system.

