Installation Instructions

VIESMANN

Oil Chassis Burner-V, VEC Series
for Vitola 200 VB2 series hot water heating boiler
Input capacities 83 to 219 MBH (24 to 64 kW)

Please file in Service Binder

Oil Chassis Burner-V

C SA® US

IMPORTANT

Read and save these instructions for future reference.

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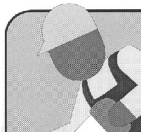
Safety, Installation and Warranty Requirements

Please ensure that this manual is read and understood before commencing installation. Failure to comply with the issues listed below and details printed in this manual can cause **product/property damage**, **severe personal injury**, and/or **loss of life**. Ensure all requirements below are understood and fulfilled (including detailed information found in manual subsections).

■ **Licensed professional heating contractor**
The installation, adjustment, service, and maintenance of this equipment *must be* performed by a licensed professional heating contractor.
Please see section entitled "Safety" in Installation Instructions.

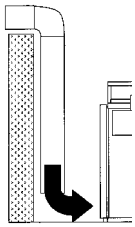


■ **Contaminated air**
Air contaminated by chemicals can cause by-products in the combustion process which are *poisonous* to inhabitants and destructive to Viessmann equipment.

For a listing of chemicals which cannot be stored in or near the boiler room, please see manual entitled "Installation Instructions".

■ **Fresh air**
This equipment requires fresh air for safe operation and must be installed ensuring provisions for *adequate combustion* and *ventilation air* exist.

For information pertaining to the fresh air requirements of this product, please see manual entitled "Installation Instructions".



■ **Product documentation**
Read all applicable documentation before commencing installation. Store documentation near boiler in a readily accessible location for reference in the future by service personnel.
For a listing of applicable literature, please see section entitled "Safety".

■ **Carbon monoxide**
Improper installation, adjustment, service and/or maintenance can cause flue products to flow into living space. Flue products contain *poisonous* carbon monoxide gas.
For information pertaining to the proper installation, adjustment, service and maintenance of this equipment to avoid formation of carbon monoxide, please see section entitled "Values for Burner Calibration" in Start-up, Maintenance and Service Instructions.

■ **Equipment venting**
Never operate boiler without an *installed venting system*. An improper venting system can cause carbon monoxide poisoning.

For information pertaining to venting and chimney requirements, please see Installation Instructions of the boiler.
All products of combustion must be safely vented to the outdoors.

■ **Advice to owner**
Once the installation work is complete, the heating contractor must familiarize the system operator/ultimate owner with all equipment, as well as safety precautions/requirements, shut-down procedure, and the need for professional service annually before the heating season begins.

⚠ WARNING

Installers must follow local regulations with respect to installation of carbon monoxide detectors. Follow manufacturer's maintenance schedule of boiler.

■ **Warranty**
Information contained in this and related product documentation must be read and followed. *Failure to do so renders warranty null and void.*

Safety Terminology

The following terms are used throughout this manual to bring attention to the presence of potential hazards or important product information. **Please heed the advice given!**

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death, serious injury or substantial product/property damage.

⚠ WARNING

Indicates an imminently hazardous situation which, if not avoided, could result in death, serious injury or substantial product/property damage.

⚠ CAUTION

Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or product/property damage.

IMPORTANT

Helpful hints for installation, operation or maintenance which pertain to the product.

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1.0 Contents

1.1 Safety

Take note of all symbols and notations intended to draw attention to potential hazards or important product information. These include "DANGER", "WARNING", "CAUTION", and "IMPORTANT". See page 2 for details.

■ Installation

Please carefully read this manual prior to attempting installation. Any warranty is null and void if these instructions are not followed.

The burner installation shall be in accordance with the regulations of the authorities having jurisdiction or, in the absence of such requirements, in accordance with National Codes. In Canada use CSA B-139 for oil boiler installations. In the U.S. use NFPA 31, "Standard for the Installation of Oil Burning Equipment" for oil boiler installations. Always use latest editions of codes.

All electrical wiring is to be done in accordance with the applicable codes. In Canada use the Canadian Electrical Code CSA C22.1 and/or local codes. In the U.S.A. use the latest edition of the National Electrical Code ANSI/NFPA 70.

We offer frequent installation and service seminars to familiarize our partners with our products. Please inquire.

■ Working on the equipment

The installation, adjustment, service, and maintenance of this boiler must be done by a **licensed professional heating contractor** who is qualified and experienced in the installation, service, and maintenance of oil-fired hot water heating equipment. There are no user serviceable parts on the boiler, burner, or control.

Ensure **main power** supply to equipment, the heating system, and all external controls has been **deactivated**. **Close** main oil **supply valve**. Take precautions in both instances to avoid accidental activation of power during service work.

1.2 Important Regulatory and Installation Requirements

■ Approvals and Standards

Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

Follow all local codes.

The oil burner/boiler combinations as shown in Section 2.3 are approved by CSA to the latest editions of the following standards:

- CAN/CSA - B140.2.1 - Oil Burners, Atomizing Type
- UL 296 - Oil Burners
- CAN/CSA - C22.2 No. 0 - General Requirements - Canadian Electrical Code, Part II
- CSA C22.2 No. 3 - Electrical Features of Fuel Burning Equipment

■ Literature

Literature applicable to installation of the Oil Chassis Burner-V:
- Installation Instructions
- Start-up, Maintenance and Service Instructions
- Operating Instructions and User's Information Manual
- Parts List
- Installation codes mentioned in this manual

2.1 Oil Chassis Burner-V

The Viessmann VEC series Oil Chassis Burner-V is intended for use with the Vitola 200 VB2 series hot water heating boiler.

This burner is factory calibrated for use with fuel oil #2. No other fuel shall be used.

Each burner is factory tested on the correct boiler size with the appropriate oil nozzle. The factory test includes oil flow rate and combustion measurements. Do not overfire or underfire the burner. The burner is for use with the rating plate input only. A record of the flow rate and combustion results is being provided with each burner.

Regional performance must be verified in the field and adjusted, if necessary, via the air adjustment on the burner.

2.2 Combustion Air Supply

⚠ WARNING

This burner/boiler combination requires clean fresh air for safe operation and must be installed so that there are provisions for adequate combustion and ventilation air.

Provisions for combustion and ventilation air must be made in accordance with "CSA B-139 - Installation Code for Oil Burning Equipment" (Canada) and/or provisions of local codes and "NFPA 31 - Installation of Oil Burning Equipment" (U.S.).

The recommended air supply duct sizes outlined in Table 2.3 should be used when installing a round duct to supply combustion air from the outside.

⚠ WARNING

The boiler must not be located in areas or rooms where chemicals containing chlorine, bromine, fluorine, or other corrosive chemicals are stored. Examples include refrigerants, bleach, paint, paint thinner, hair spray, cleaning solvents, water softener salt, etc. The combustion air must not be contaminated with any amount of the above mentioned chemicals.

Do not locate the boiler where high humidity or high levels of dust exist. If above criteria are not properly observed and boiler damage results, any warranty on the boiler and related components will be null and void.

If burner activation occurs prior to completion of renovations to the mechanical room, dirt and dust caused by construction will necessitate a cleaning and recalibration of the burner after all construction work is complete.

During drywall sanding the heating boiler should be turned off and properly covered including controls, or the burner must receive clean combustion air when operated during that time - all controls must be protected from dust and dirt.

2.3 Technical Data (for fuel oil #2 only)

Burner Model	Model No.	VEC-O-18	VEC-O-22	VEC-O-33	VEC-O-40	VEC-O-50	VEC-O-63
Boiler	Model No.	VB2-18	VB2-22	VB2-33	VB2-40	VB2-50	VB2-63
Input	MBH kW	83 24	107 31	135 39	170 50	219 64	n.a.
Consumption	GPH ltr/h	0.59 2.23	0.76 2.87	0.96 3.63	1.21 4.58	1.56 5.90	n.a.
Voltage	V	120	120	120	120	120	n.a.
Frequency	Hz	60	60	60	60	60	n.a.
Amperage	A	1.70	1.70	1.70	1.70	1.70	n.a.
Motor revolutions	rpm	3,380	3,380	3,380	3,380	3,380	n.a.
Oil pump flow capacity	ltr/h	45	45	45	45	45	n.a.
Connections (metric flare) inside threads of supply and return oil hoses	inches	$^3/_8$	$^3/_8$	$^3/_8$	$^3/_8$	$^3/_8$	n.a.
Recommended air supply duct size - round duct ∅	inches	5	5	6	7	8	n.a.

IMPORTANT

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

3.1 Mounting Burner on Boiler

(all parts necessary for burner mounting are contained in the burner packaging)

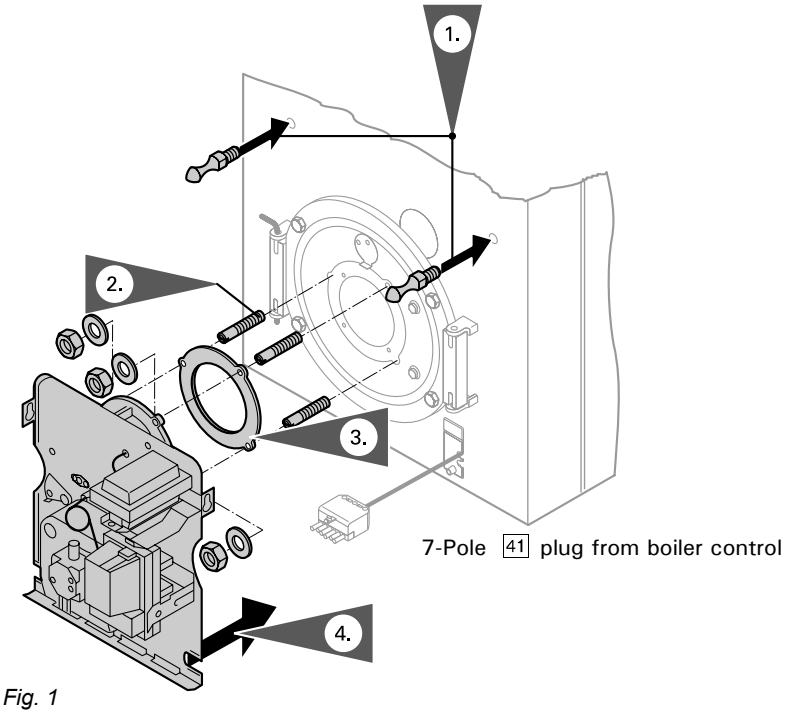

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Fig. 1
Mounting burner on combustion chamber door

1. Fasten the two burner hood holding mounts ① (supplied) on front panel of boiler.
2. Ensure combustion chamber door is secured tightly with bolts supplied.
3. Mount three M 8 spacer bolts ② in threaded holes of combustion chamber door.
4. Slide burner housing gasket ③ over spacer bolts.
5. Mount burner chassis on spacers with M 8 nuts and washers.

3.2 Oil Cartridge Assembly

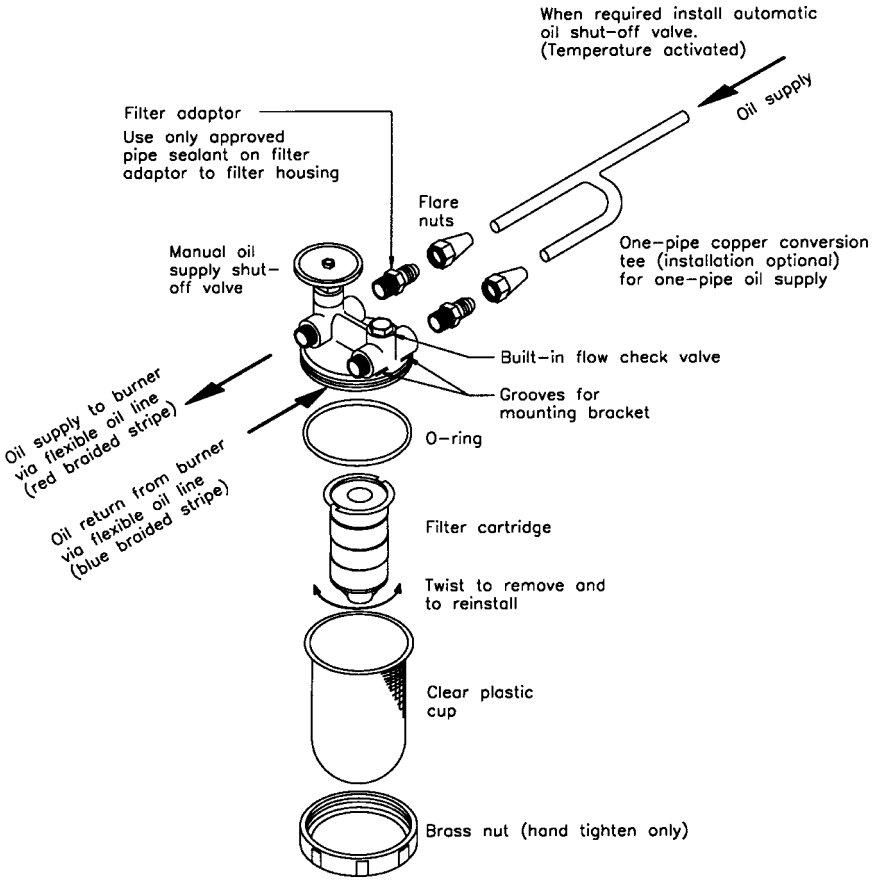


Fig. 2
Oil cartridge assembly

1. Check that all surfaces are clean before installing new O-ring supplied with replacement filter cartridge.

2. Set O-ring in place and mount new filter cartridge.

3. Attach clear plastic cup and tighten brass nut.

IMPORTANT

Never tighten brass nut with a tool; hand tighten only. Cap and O-ring might deform and leak air.

IMPORTANT

The flare adaptors are tapped 3/8" BSP (British straight pipe) at the factory. Replacement flare adaptors must be ordered from Viessmann. Do not use 3/8" NPT flare adaptor as replacement.

⚠ CAUTION

When new cartridge assembly is mounted, remove brass nut and plastic cup. Check for clean and proper O-ring and O-ring seats before starting oil flow.

⚠ CAUTION

Never use Teflon tape or compression fittings in fuel oil piping.

3.3 Connections with Two-Pipe Supply

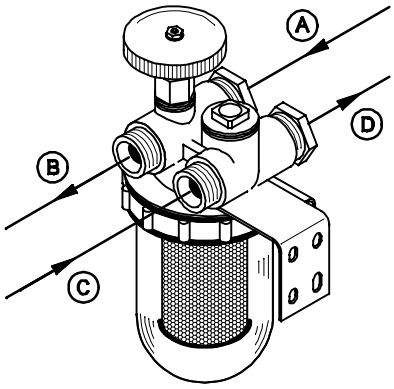


Fig. 3
Oil filter in two-pipe system

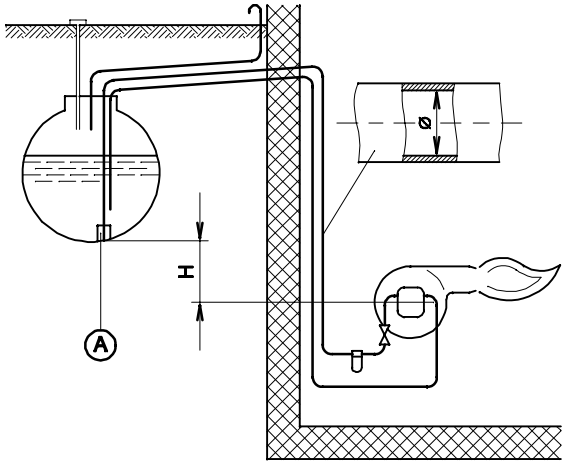
Viessmann strongly recommends two-pipe oil supply piping wherever possible. For optimum air venting and oil pump performance use two-pipe oil supply piping.

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

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 by-pass plug installed. The two flexible oil lines are to be used for all installations. The copper tee is used to convert to a single-pipe supply from tank to burner. See page 6.

Elevated Tank (two-pipe)



Ⓐ foot valve

Observe oil supply dimensions on table below.

The oil pressure within the oil supply system must not exceed 29 psig / 2 bar.

⚠ 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. At completion, perform a pressure test of 75 psi / 5 bar to ensure oil lines and filter are sound; ensure oil burner is not connected during the pressure test!

Suction height H		Inside diameter of suction line			
ft	m	3/8″	8 mm	1/2″	10 mm
		Maximum supply line length (ft. / m)			
13	+4.0	328 ft.	100 m	328 ft.	100 m
11 ½	+3.5	321	98	328	100
9 ¾	+3.0	299	91	328	100
8 ¼	+2.5	279	85	328	100
6 ½	+2.0	260	79	328	100
5	+1.5	236	72	328	100
3 ¼	+1.0	216	66	328	100
1 ½	+0.5	197	60	328	100

For #2 fuel oil, 6.0 CST viscosity is calculated with four 90° pipe elbows, one shut-off valve, and one foot valve.

Fig. 4
Oil supply (two-pipe system), elevated tank

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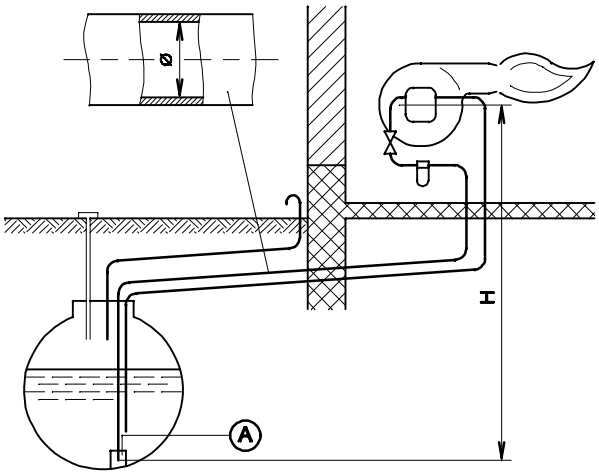
3.3 Connections with Two-Pipe Supply

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



Ⓐ foot valve

Observe oil supply 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, 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. At completion, perform a pressure test of 75 psi / 5 bar to ensure oil lines and filter are sound; ensure oil burner is not connected during the pressure test!

Suction height H		Inside diameter of suction line			
ft	m	3/8″	8 mm	1/2″	10 mm
		Maximum supply line length (ft. / m)			
0	0	174 ft.	53 m	328 ft.	100 m
- 1 ½	-0.5	154	47	328	100
- 3 ¼	-1.0	135	41	325	99
- 5	-1.5	112	34	276	84
- 6 ½	-2.0	92	28	233	68
- 8 ¼	-2.5	72	22	176	53
- 9 ¾	-3.0	49	15	121	37
-11 ½	-3.5	30	9	72	22

Fig. 5
Oil supply (two-pipe system), tank below or at same level as burner

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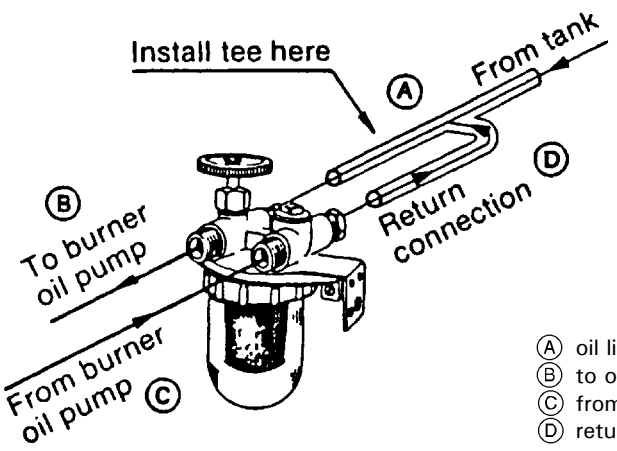
3.4 Oil Supply with Single-Pipe System



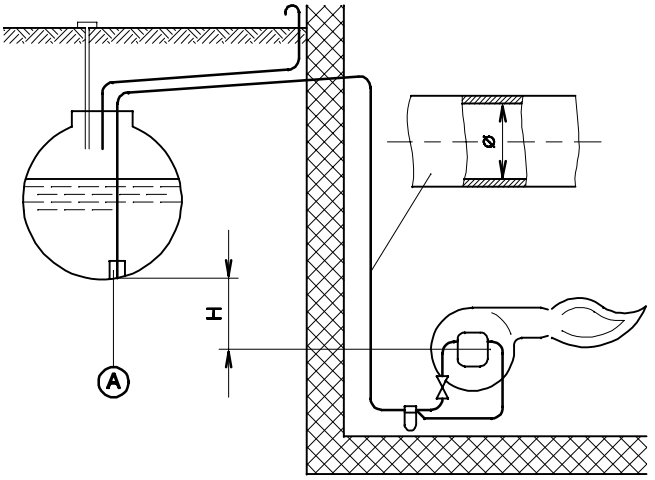
Ⓐ oil line from tank
Ⓑ to oil pump on burner
Ⓒ from oil pump on burner
Ⓓ return to tank

Fig. 6
Oil filter in single-pipe system

A Viessmann oil filter assembly must be used in the oil supply system.

A copper tee must be used to connect the two-pipe filter assembly to a single-pipe oil supply system.

Elevated Tank (single-pipe)



Ⓐ foot valve

Observe oil supply dimensions on table below.

If the oil supply must be converted from a two-pipe system to a single-pipe system, please observe supply line diameters provided in Fig. 7.

⚠ 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. At completion, perform a pressure test of 75 psi / 5 bar to ensure oil lines and filter are sound; ensure oil burner is not connected during the pressure test!

Suction height H		Boiler input			
		83 to 107 MBH		135 to 219 MBH	
ft	m	¼ "	6 mm	¼ "	6 mm
		Maximum supply line length (ft. / m)			
13	+4.0	328 ft.	100 m	328 ft.	100 m
11 ½	+3.5	328	100	328	100
9 ¾	+3.0	328	100	318	97
8 ¼	+2.5	328	100	265	81
6 ½	+2.0	320	100	213	65
5	+1.5	318	97	160	49
3 ¼	+1.0	149	65	105	32
1 ½	+0.5	105	32	53	16

3/8" oil lines may also be used.

Fig. 7
Oil supply (single-pipe system), elevated tank

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Tank at same level as burner (single-pipe)

A Viessmann oil filter assembly must be used in the oil supply system.

A copper tee must be used to connect the two-pipe filter assembly to a single-pipe oil supply system.

It is not recommended to use this burner with a single-pipe “lift” system where the oil tank is below the level of the burner.

The maximum oil supply (suction) line length is 328 ft. / 100 m of 3/8” tubing.

3.5 Electrical Connections

120 V connection to boiler control
All power for burner is supplied through 7-pole 41 plug from the boiler control. Connect the 7-pole 41 plug of the control with the 7-pole plug of the burner. Plugs must snap together with a “click”.

Electrical configuration
See manual entitled “Start-up, Maintenance and Service Instructions, Oil Chassis Burner-V”.

3.6 Burner Hood Installation

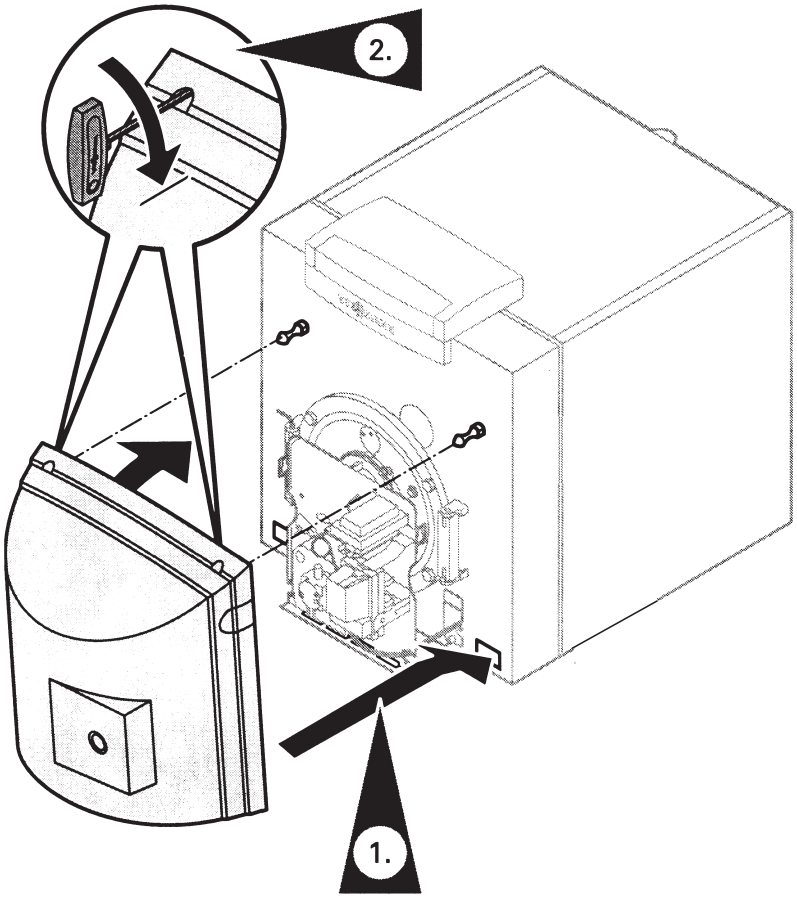

Fig. 8
Mount burner hood

1. Hook claws of burner hood into boiler front enclosure panel and pull upward to snap into place.

2. Secure boiler hood to holding mounts with Viessmann screwdriver.

4.1 Operation

See manual entitled “Operating Instructions and User’s Information Manual, Oil Chassis Burner-V”.

4.2 Calibration to Ensure Optimal Efficiency and Fuel Consumption

We recommend a service inspection of the equipment on an annual basis.

Early detection of poor combustion, faulty components or wear and tear symptoms reduces service and maintenance costs, ensuring peak efficiency and minimum fuel costs.

5 Maintenance/Service

See manual entitled “Start-up, Maintenance and Service Instructions, Oil Chassis Burner-V”.

IMPORTANT

Regular annual inspection and service by a qualified heating contractor is recommended for optimal performance of the Viessmann Oil Chassis Burner.

Neglected maintenance impacts on product warranty; regular cleaning and maintenance ensures clean, environmentally friendly and efficient operation.

We recommend a maintenance contract with a qualified heating contractor.

CAUTION

If burner activation occurs prior to completion of renovations to the mechanical room, dirt and dust caused by construction will necessitate cleaning and recalibration of the burner after all construction work is complete.

During drywall sanding the heating boiler should be turned off and properly covered including controls, or the burner must receive clean combustion air when operated during that time - all controls must be protected from dust and dirt.

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