

Service and Maintenance Instructions

for use by engineers and heating contractors

VIESSMANN

Vitoflex 300-UF 390, 530, 720, 950 AND 1250

Wood-fired Boiler

Output range: UF 390, 334 to 1331 MBH (98 to 390 kW)
UF 530, 450 to 1808 MBH (132 to 530 kW)
UF 720, 614 to 2457 MBH (180 to 720 kW)
UF 950, 812 to 3242 MBH (238 to 950 kW)
UF 1250, 1065 to 4265 MBH (312 to 1250 kW)



Vitoflex 300-UF



WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Do not store or use gasoline or other flammable fluids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL FLUE GAS

- Deactivate heating equipment
- Open windows and doors.
- Inform your heating contractor

WARNING

Improper installation, adjustment and/or operation could cause carbon monoxide poisoning resulting in injury or loss of life. This product must be installed and serviced by a professional service technician who is experienced and qualified in hot water boiler installation and wood fuel combustion.

Product may not be exactly as shown

IMPORTANT

Read and save these instructions for future reference.



Safety, Installation and Warranty Requirements

Please ensure that these instructions are read and understood before commencing service and/or maintenance. Failure to comply with the instructions 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).

■ 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 "Important Regulatory and Safety Requirements".



■ Warranty

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



■ 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 "Important Regulatory and Installation Requirements".



■ 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 subsection entitled "Mechanical Room".



■ 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, shutdown procedure, and the need for professional service.

■ 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.

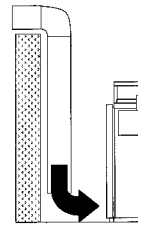
►For information pertaining to the proper installation, adjustment, service and maintenance of this equipment to avoid formation of carbon monoxide, refer to the "Installation and Operating Instructions".



■ 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 subsection entitled "Combustion Air Supply".



■ Equipment venting

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


►For information pertaining to venting and chimney requirements, refer to the "Installation and Operating Instructions". All products of combustion must be safely vented to the outdoors.



! WARNING


Installers must follow local regulations with respect to installation of carbon monoxide detectors. Follow the manufacturer's maintenance schedule of the boiler contained in the section "Cleaning and Maintenance".

About these Instructions

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

 WARNING
Warnings draw your attention to the presence of potential hazards or important product information.

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

 CAUTION
Cautions draw your attention to the presence of potential hazards or important product information.

► 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.



► This symbol indicates to note additional information.



► This symbol indicates that other instructions must be referenced.

Note: Viessmann Manufacturing Company Inc. reserves the right to make product changes or updates without notice and will not be held liable for errors or omissions in the product literature.

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Product Information

Viessmann solid-fuel boiler can only be installed and serviced by qualified trained personnel.

Steel wood-fired hot water heating boiler.

For operation primarily with modulating boiler water temperatures in closed loop forced circulation hot water heating systems. Under certain conditions, open loop systems may also be considered. Contact Viessmann for details.

Maximum allowable working pressure (water)...30 or 60 psi

Maximum water temperature...250°F (120°C) (closed loop)

Maximum boiler temperature.....210°F (99°C) (open loop)

This boiler does not require a flow switch.

 **WARNING**

Exposing the boiler to pressures and temperatures in excess of those listed will result in damages and will render the warranty null and void.

Codes

CSA B366.1-M91

Solid Fuel Fired Central Heating Appliances

CSA C22.2 NO. 3-M1988 (latest edition)

Electrical Features of Fuel Burning Equipment

UL2523

Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters and Boilers

CSA B365 (latest edition)

Installation Code for Solid Fuel Burning Appliances and Equipment

ASME section IV boilers and pressure vessels.

Important Regulatory and Installation Requirements

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

For information regarding other Viessmann System Technology componentry, please reference documentation of the respective product.

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 hot water boilers.

Ensure main power supply to equipment, the heating system, and all external controls have been deactivated. Take precautions to avoid accidental activation of power during service work.



CAUTION

RISK OF INJURY: Shut the system off before starting any cleaning. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning tools that come with the system (danger of blow-ups, burns and getting crushed)!

Technical literature

Literature applicable to all aspects of the Vitoflex 300-UF wood-fired boiler:

- Installation and Operating Instructions
- Service and Maintenance Instructions
- Field Wiring Diagram

- ▶ *The completeness and functionality of field supplied electrical controls and components must be verified by the heating contractor. These include low-water cutoffs, flow switches (if used), staging controls, pumps, motorized valves, air vents, thermostats, etc.*

- ▶ *Leave all literature at the installation site and advise the system operator/ultimate owner where the literature can be found. Contact Viessmann for additional copies.*
- ▶ *This product comes with several safety instruction labels attached. Do not remove! Contact Viessmann immediately if replacement labels are required.*

Important Regulatory and Installation Requirements *(continued)*

Regular maintenance and service

The entire heating system must be cleaned and serviced on a regular basis by a qualified contractor or service agency to ensure reliable, energy-efficient, and environmentally friendly operation.

The build-up of soot on the heat exchanger raises the flue gas temperature and reduces efficiency.

WARNING

The boiler must not be located in areas or rooms where chemicals are stored, or aggressive vapors from (i.e. bleach, hair spray, methyl chloride, carbon tetrachloride or perchloroethylene) or high dust levels or humidity levels are present. Heat exchanger corrosion might occur and reduce the lifetime of the boiler significantly. If above criteria are not properly observed and boiler damage results, any warranty on the complete boiler and related components will be null and void.

IMPORTANT

Keep boiler and boiler room clear and free of combustible materials, gasoline and other flammable vapors and liquids. Do not obstruct the flow of combustion and ventilation air. All inspection, maintenance and service must be performed by a qualified heating contractor.

WARNING

Improper installation, adjustment, service, or maintenance can cause flue products to flow into living space. Flue products contain poisonous carbon monoxide gas, which can cause nausea or asphyxiation resulting in severe personal injury or loss of life.

WARNING

Service and maintenance can only be performed by a qualified heating contractor.

Important to know

Do not use this boiler if any part has been under, or exposed to, water. Immediately call a qualified heating contractor to inspect the boiler and to replace any part of the control system, which has been under or exposed to water.

Safety Instructions

IMPORTANT

The local building codes and regulations must be followed by the heating contractor.

IMPORTANT



Please refer to the Installation and Operating Instructions for installation, commissioning and technical specification information. The Installation and Operating Instructions contain the necessary safety and national/local code requirements which, if not followed exactly, may lead to property damage, personal injuries and/or death.

Important Information

Safety instructions

When carrying out work on the heating system, such as cleaning and maintenance, wear appropriate protective equipment when required.

There is a danger of getting injured through: burning, knocking against corners and edges, crushing in moving parts and noise.

Power supply: 120/1/60, 208/1/60 and 240/1/60

In case of an emergency, the Vitoflex 300-UF can be disconnected from the electrical power supply at all the leads by the main switch on the control cabinet.

If you notice fire coming from the appliance, call the fire department immediately!

DO NOT attempt to extinguish the fire unless qualified to do so.

WARNING

Fire causes a risk of burns and explosion!

- Shut down the boiler
- Close fuel shut-off valves
- Use a tested fire extinguisher, class ABC.

Doors: for safety keep firing and ash pit doors tightly closed

CAUTION

FIRE HAZARD:

The boiler must **NEVER** be operated with the doors open! Any burning bits that escape could start a fire.

RISK OF INJURY:

If the doors are open during operation, sparks or flames could leap out.

Equipment for dissipating excess heat: a competent specialist should examine the operational reliability of the thermal safety flush valve annually. The safety heat exchanger must not by any means be used as an operational heat exchanger.

Seals: for the functioning and controllability of the boiler, it is important that no unwanted air can enter unchecked through leaks.

The doors and lids have to shut tight - any damaged seals must be replaced immediately. Tighten the retaining screws and handles well.

Operation, cleaning and maintenance: bear in mind that even the best product can only fulfill its functions well, doing so for a long time and free of malfunctions, if operated and maintained properly.

IMPORTANT

Compliance with the "Cleaning" section is mandatory!

Carbon Monoxide

Carbon monoxide

The U.S. Consumer Product Safety Commission strongly recommends the installation of carbon monoxide detectors in buildings in which gas-burning equipment is installed. Carbon monoxide (CO) is a colorless, odorless gas, which may be produced during incomplete combustion of fuel and/or when the flame does not receive an adequate supply of combustion air. Carbon monoxide can cause severe personal injury or loss of life.

Therefore, carbon monoxide detectors that are in compliance with a nationally recognized standard (e.g. ANSI/UL 2034-2002, CSA 6.19-01) should be installed and maintained in buildings that contain gas-burning equipment.

Note: Viessmann does not test any detectors and makes no representation regarding any brand or type of detector.

For safe operation

We recommend that you frequently:

- Check for debris which could obstruct the flow of flue gases. The vent or chimney must not be blocked. A blocked or partially blocked vent or chimney can cause flue gases to leak into the structure. Flue gases leaking into the house can cause injury or death. Blocked or partially blocked chimneys must have the blockage removed by a qualified heating contractor.
- Check pressure gage for correct system (water) pressure. Check for water on the floor from the discharge pipe of the pressure relief valve or any other pipe, pipe joint, valve or air vent.
- Check for moisture, water, or appearance of rust on the flue gas pipes, their joints as well as vent dampers, or side wall vent terminals (if so equipped).
- Ensure that nothing is obstructing the flow of combustion and ventilation air and no chemicals, garbage, gasoline, combustible materials, flammable vapors and liquids are stored (not even temporarily) in the vicinity of the boiler.
- DO NOT allow unsupervised children near the boiler.

Service/inspection of the boiler and the system must be performed on a regular basis. Maintenance, service and cleaning are specified in the section on maintenance.

Before the heating season begins, it is recommended that the boiler be serviced by a qualified heating technician.

WARNING

Improper installation, adjustment, service, or maintenance can cause flue products to flow into living space. Flue products contain poisonous carbon monoxide gas, which can cause nausea or asphyxiation resulting in severe personal injury or loss of life.

WARNING

The operator/ultimate owner is required to have the heating boiler and controls checked, as a minimum once per year, by the original installer or by a competent heating contractor familiar with the equipment. Defects must be corrected immediately.

Extreme Weather Conditions

Frozen water pipe hazard

Your heating boiler is designed to provide a warm and comfortable living environment. It is NOT designed to ensure against freezing of water pipes. The boiler is equipped with several safety devices that are designed to shut down the boiler and to prevent it from restarting in the event of various unsafe conditions.

If your boiler remains off for an extended period of time during cold weather, water pipes may freeze and burst, resulting in extensive water damage and conditions in which mold could grow. Certain molds are known to cause respiratory problems, as well as to pose other serious health risks. In case of water damage, immediate measures should be taken to dry out affected areas as quickly as possible to prevent mold from developing.

 **WARNING**

As there are no user-serviceable parts on the boiler, or control, the end-user must not perform service activities of any kind on system components. Failure to heed this warning can cause property damage, severe personal injury or loss of life.

If your home will be unattended for an extended period of time during cold weather, you should...

Shut off the water supply to the building, drain the water pipes and add antifreeze for potable water to drain traps and toilet tanks. Open faucets where appropriate.

or...

Have someone check the building frequently during cold weather and call a qualified service agency if required.

or...

Install a reliable remote temperature sensor that will notify somebody of freezing conditions within the home.

Hazardous Material

Fiberglass wool and ceramic fiber materials



WARNING

Inhaling of fiberglass wool and/or ceramic fiber materials is a possible cancer hazard. These materials can also cause respiratory, skin and eye irritation.

The state of California has listed the airborne fibers of these materials as a possible cancer hazard through inhalation. When handling these materials, special care must be applied.



WARNING

Appliance materials of construction, products of combustion and the fuel contain alumina, silica, heavy metals, carbon monoxide, nitrogen oxides, aldehydes and/or other toxic or harmful substances which can cause serious injury or loss of life and which are known to the State of California to cause cancer, birth defects and other reproductive harm. Always use proper safety clothing, respirators and equipment when servicing or working nearby the appliance.

First aid measures

- If eye contact occurs, flush eyes with water to remove dust. If symptoms persist, seek medical attention.
- If skin contact occurs, wash affected areas gently with soap and warm water after handling.

Suppliers of ceramic fiber products recommend the following first aid measures:

- Respiratory tract (nose and throat) irritation: If respiratory tract irritation develops, move the person to a dust free location.
- Eye irritation: If eyes become irritated, flush immediately with large amounts of lukewarm water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes.
- Skin irritation: If skin becomes irritated, remove soiled clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.
- Gastrointestinal irritation: If gastrointestinal tract irritation develops, move the person to a dust free environment.

Suppliers of fiberglass wool products recommend the following precautions be taken when handling these materials:

- Avoid breathing fiberglass dust and contact with skin and eyes.
- Use NIOSH approved dust/mist respirator.
- Wear long-sleeved, loose fitting clothing, gloves and eye protection.
- Wash work clothes separately from other clothing. Rinse washer thoroughly.
- Operations such as sawing, blowing, tear-out and spraying may generate airborne fiber concentration requiring additional protection.

Mechanical Room

No combustible materials may be stored in the heating room. The heating boiler may only be set up on a fire-resistant and temperature-resistant floor. No temperature-sensitive pipes or lines may be installed in the floor beneath the heating boiler.

A sufficient supply of fresh air must be provided directly from outdoors into the heating room. Induced ventilation is necessary for heating rooms that are confined or enclosed. See "Installation and Operating Instructions" for more details.

The temperature in the heating room must not exceed 104°F (40°C) while the system is in operation (in the area approx. 3 ft. (1 m) away from the boiler). The temperature in the heating room must not fall below 50°F (10°C) while the system is in operation (measured at the inner side of exterior walls).

IMPORTANT

Always follow the most up-to-date local, municipal and building regulations and codes.

Mechanical room conditions



WARNING

Incorrect ambient conditions can lead to damage to the heating system and put safe operation at risk.

Prevent the air from becoming contaminated by homogenate hydrocarbons (e.g. as contained in paints solvents or cleaning fluids) and excessive dust (e.g. through grinding or polishing work). Combustion air for the heating process, and ventilation of the boiler room must be free of corrosive contaminants. To that end, any boiler must be installed in an area that has no chemical exposure. The list to the right indicates the main, currently known sources.

Avoid continuously high levels of humidity (e.g. through frequent drying of laundry).

Never close existing ventilation openings.

IMPORTANT

Components which are not tested with the heating system may damage the heating system or affect its functions. Installation or replacement may only be carried out by a qualified heating contractor.

Sources of combustion and ventilation air contaminants

Areas likely to contain contaminants:

- New building construction
- Swimming pools
- Remodeling areas, hobby rooms
- Garages with workshops
- Furniture refinishing areas
- Dry cleaning/laundry areas and establishments
- Auto body shops
- Refrigeration repair shops
- Metal fabrication plants
- Plastic manufacturing plants
- Photo processing plants
- Beauty salons

Products containing contaminants:

- Chlorine-type bleaches, detergents and cleaning solvents found in household laundry rooms
- Paint and varnish removers
- Hydrochloric acid, muriatic acid
- Chlorine-based swimming pool chemicals
- Spray cans containing chlorofluorocarbons
- Chlorinated waxes and cleaners
- Cements and glues
- Refrigerant leaks
- Calcium chloride used for thawing
- Sodium chloride used for water softening salt
- Permanent wave solutions
- Adhesives used to fasten building products and other similar item
- Antistatic fabric softeners used in clothes dryers

Combustion Air Supply

Codes

Provision for combustion and ventilation air must be made in accordance with applicable local codes.

In the absence of local codes, use:

CSA B365, Installation Code for Solid Fuel Burning Appliances and Equipment.

Always use latest edition codes.

WARNING

Failure to provide an adequate supply of fresh combustion air can cause poisonous flue gases to enter living space. Flue gases entering living space can cause carbon monoxide poisoning which can result in severe personal injury or loss of life.

WARNING

Never cover the boiler or store debris or other materials near the boiler, or in any way block the flow of adequate fresh air to the boiler. Never cover the combustion air opening. Advise system operator/ultimate owner accordingly.

WARNING

The boiler must not be located in areas or rooms where chemicals are stored or aggressive vapors (i.e. bleach, hair spray, methyl chloride, carbon tetrachloride or perchloroethylene) or high dust levels or humidity levels are present. Heat exchanger corrosion might occur and reduce the lifetime of the boiler significantly. If above criteria are not properly observed and boiler damage results, any warranty on the complete boiler and related components will be null and void.

General

This equipment requires fresh air for safe operation.

The boiler location must never be under negative pressure. Exhaust fans, attic fans, or dryer fans may cause air to be exhausted at a rate higher than air can enter the structure for safe combustion.

The heating contractor shall ensure all of the following requirements are met:

- An adequate supply of combustion air must be available to ensure proper combustion.
- Ambient air temperatures must be maintained within safe operating limits.
- When a damper is provided in any opening intended to admit combustion air into the room within which the appliance is installed, the damper shall be interlocked to prevent any boiler from starting before the damper is fully open.
- Each duct used to convey air from the outdoors shall have:
 1. a cross-sectional area throughout its length at least equal to the free area of the inlet and outlet openings which it connects,
 2. making a provision for outside combustion air, the intake shall not be less than 1 ft. (0.3 m) above the anticipated snow level for the location.
- The heating contractor must check with local authorities (municipal building department) for combustion air requirements particular to the area.

See "Installation and Operating Instructions" for more details.

Information on Maintenance

CAUTION

Fuel emissions and incomplete combustion lead to the formation of life threatening carbon monoxide (CO). Carbon monoxide is a colorless, odourless and tasteless, extremely poisonous gas, which in sufficient concentration results in death.
 Always wear a mobile CO monitor when entering the fuel store, rooms where fuel is transported and the boiler room. If the monitor sounds an alarm, leave the room immediately.
 Observe the safety instructions for the fuel store.

CAUTION

Serious injuries or risk to life through electric shock. Switch OFF the mains isolator before starting any maintenance on the heating system. Safeguard the system against reconnection.

CAUTION

Risk to life if the system starts up unexpectedly. Before restarting the system, ensure that no persons are in the danger zone around the system.

Note: Wear personal protective equipment.
 Always wear a face mask when handling ash or slag.

WARNING

Missing protective covers pose a risk of crushing and cutting injuries through entanglement in rotating or moving parts.
 After completing maintenance work, ensure that all protective covers are re-installed correctly.

WARNING

Risk of burns due to hot system components
 Only carry out maintenance work when the system has cooled down.

Responsible Groups

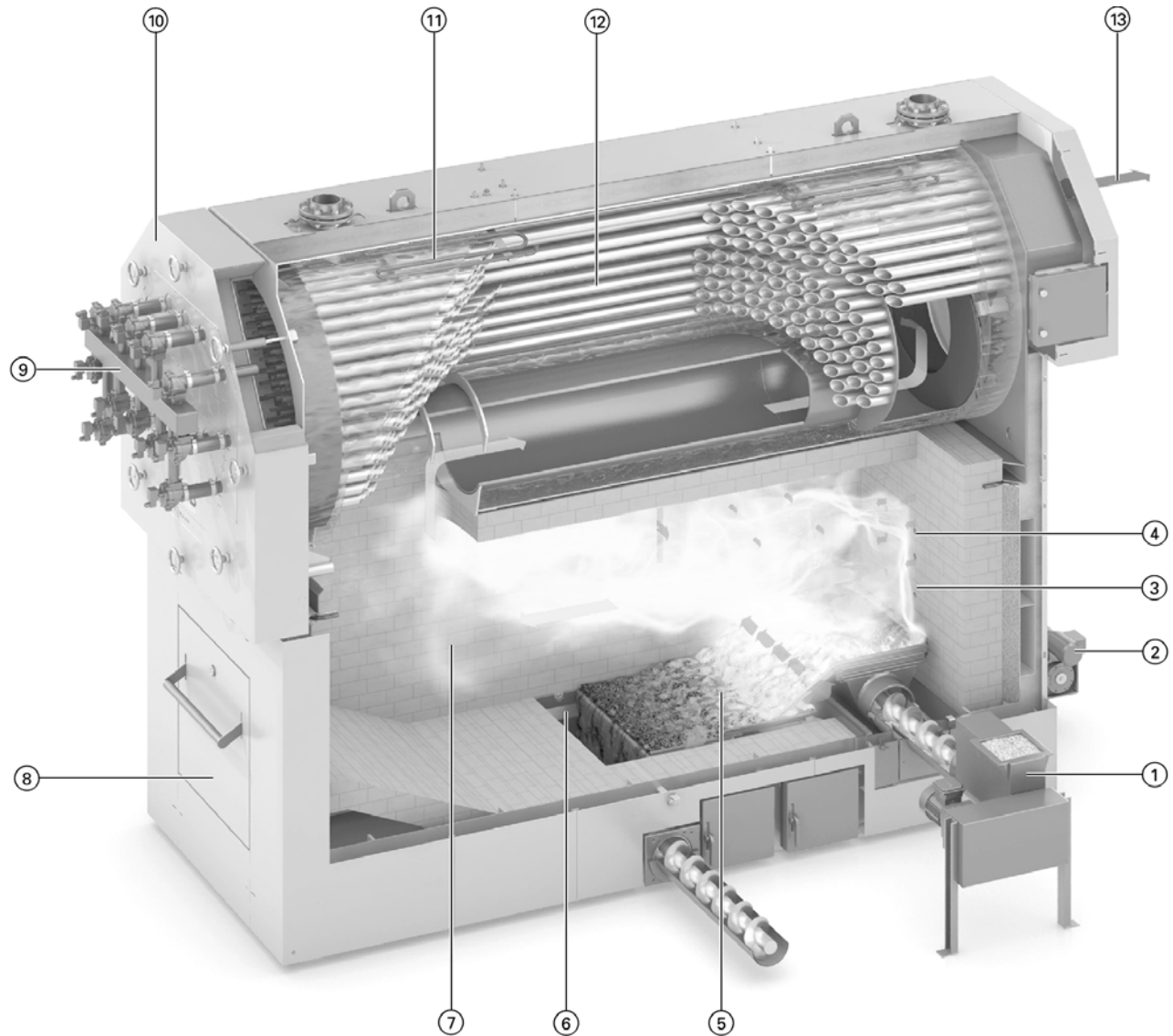
Maintenance jobs are carried out by various groups of personnel. All personnel charged with working on the heating system must be instructed with reference to the documentation supplied.
 The maintenance and cleaning schedules listed below use the following symbols for each group.

Symbol	Description
O	Operator
V	Viessmann Technical Service
HC	Approved heating contractor

Annual General Inspection

Viessmann Technical Service is happy to carry out the inspection and maintenance of your heating system and can provide a quote for a maintenance contract. Contact the Technical Service department for an annual general inspection or if you wish to change fuel. Costs for inspection and maintenance are met by the operator.

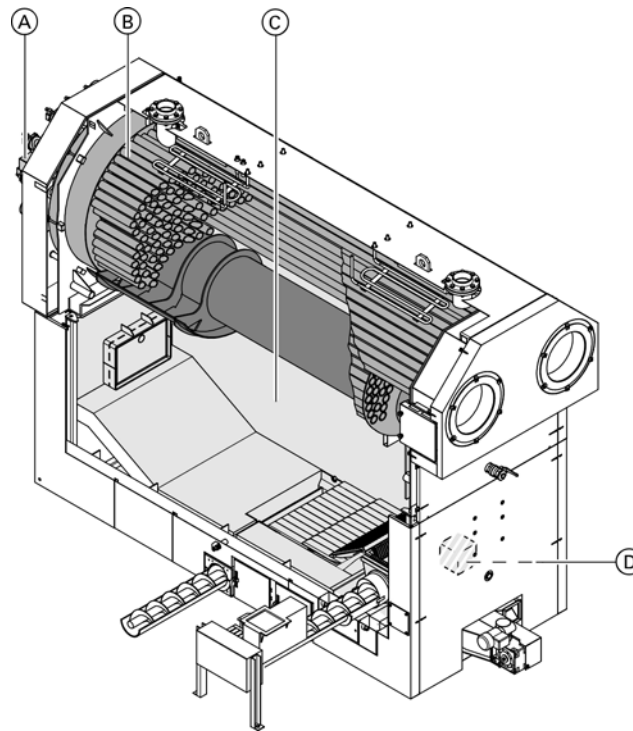
Components of the Biomass Boiler



Legend

- ① In-feed auger with isolating layer
- ② Drive for moving grate
- ③ Igniter
- ④ Controlled combustion air supply system
- ⑤ Moving grate
- ⑥ Drive for automatic de-ashing assembly with ash container (optional)
- ⑦ Combustion chamber
- ⑧ Combustion chamber door
- ⑨ Pneumatic cleaning system (optional)
- ⑩ Heat exchanger door
- ⑪ Safety heat exchanger for thermal safety flush valve
- ⑫ Heat exchanger
- ⑬ Frequency-controlled flue gas exhaust blower

Servicing the Boiler

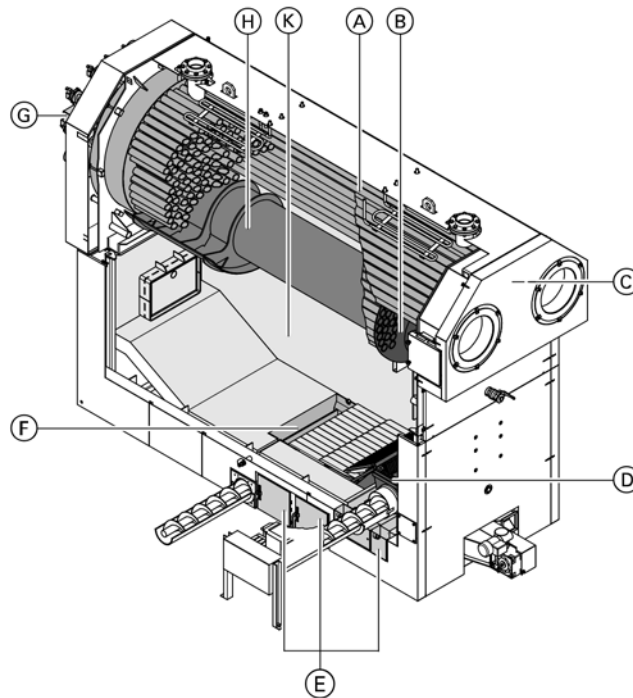


Component, activity	Interval			
	1000 hours	1200 hours	Every 6 months	Annually
Boiler				
Service electrical safety equipment				HC
Service safety equipment on the water side				HC
Pneumatic cleaning system (A)				
Check valves for tightness				O
Heat exchanger (B)				
Check system pressure at pressure gauge (minimum pressure, water shortage)	O			
Check thermally activated safety valve for tightness	O			
Check gaskets on heat exchanger door			O	
Combustion chamber (C)				
Check ash container connection for tightness	O			
Check grate for damage				HC
Check fire bricks of combustion chamber door for cracks				HC
Check refractory lining for damage			O	
Check refractory lining for slag deposits and remove slag where necessary			O	
Check intake aperture for secondary air				O
Check flame temperature thermocouples for damage			O	
Check gaskets of combustion chamber door and ash removal system			O	

Servicing the Boiler *(continued)*

Component, activity	Interval			
	1000 hours	1200 hours	Every 6 months	Annually
Ignition system ⓓ				
Check ignition pipe for blockages and clean if necessary		0		
Service heating system				HC
Compressor system (optional)				
Service the compressor system in accordance with the compressor operating instructions. Note: If the compressor is operating continuously, this indicates that there is a leak in the compressed air system. Check supply lines and valves for leaks. In the case of on-site supply of compressed air, ensure that the compressor is suitable for continuous operation or can be prevented from operating continuously.			0 (Interval in accordance with the compressor operating instructions)	

Cleaning the Boiler



Information on cleaning the boiler

- Note:** Dirt and deposits can damage the boiler. Clean the outside of the heating system as required. Have the inside of the heating system cleaned at least once a year by contractors.
- Note:** Check the lines and pipes of the flue gas path for tightness after cleaning and every six months.
- Note:** Cleaning work may also be carried out by a local chimney sweep.

Component, activity	Interval			
	Daily	300 hours	900 hours	Annually
Heat exchanger (A)				
Clean heat exchanger together with complete flue gas path and reversing area (B)			O	
Clean lambda probe (C)			O	
Clean primary air fan, secondary air fan and flue gas fan				O
Check sight glasses of light barriers for dirt and clean if necessary. When doing so, remove any deposits from the apertures for the sight glasses		O		

Cleaning the Boiler *(continued)*

Component, activity	Interval			
	Daily	300 hours	900 hours	Annually
Combustion chamber (K)				
Check combustion block with grate D for dirt and slag deposits and clean if necessary. Cleaning interval depends on fuel and fuel quality		O		
Remove ash from under the infeed grate, the sloping grate and the combustion retort (E)		O		
Check ash level in ash removal channel F through the sight glass and if necessary remove ash in manual mode. Note: After cleaning, the ash removal screw conveyor must be covered with ash again. This will protect the ash channel and the ash removal screw conveyor from excessive temperatures. If necessary, adjust the ash removal cycle via the controller.	O			
Pneumatic cleaning and compressor system (G)				
Drain condensate from the compressor system (G)		O		
Boiler				
Combustion chamber (K) and 2nd pass (H): remove ash			O	

Cleaning

Boiler

The heat exchanger, flue gas pipe, and chimney must be cleaned regularly to remove accumulated creosote and ash. Ensure that the heat exchanger, flue gas pipe, and chimney are cleaned at the end of the heating season to minimize corrosion during the summer months. The appliance, flue gas pipe, and chimney must be in good condition.



CAUTION

DANGER OF INJURY – be absolutely sure to turn OFF main switch.

IMPORTANT

With pneumatic cleaning system, disconnect the compressed air line before opening the boiler door – danger of injury!

Regular cleaning and maintenance of the boiler system is of the utmost importance to assure trouble-free operation and to obtain the greatest possible output at the best efficiency.

The cleaning intervals listed here are for wood chip fuel with clinging bark with 0.8% ash content. The cleaning intervals may vary, depending on the fuel, the amount of fine matter and the operating conditions.



CAUTION

RISK OF INJURY - Shut the system off before beginning any cleaning work. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning utensils that come with the system (danger of blow-ups, burns and getting crushed)!

Check the level of the ash bin regularly and empty the bin before it is completely full.

IMPORTANT

Never operate the boiler without the ash bin.

Cleaning *(continued)*

Heat exchanger tube displacement rods

The displacement rods improve the heat transmission in the heat exchanger tubes and reduce the temperature of the exhaust gas, thus improving the efficiency of the heating system. They have to be taken out to clean the heat exchanger tubes and put back in after cleaning.

Note: Vitoflex 300-UF 390 and 530 do not have displacement rods.

Installing the displacement rods



Insert the displacement rods into the heat exchanger tubes with the thick end first. Push until they are flush with the edge of the tube. Tolerance $\pm 1/4"$ (5 mm).

Removing the displacement rods



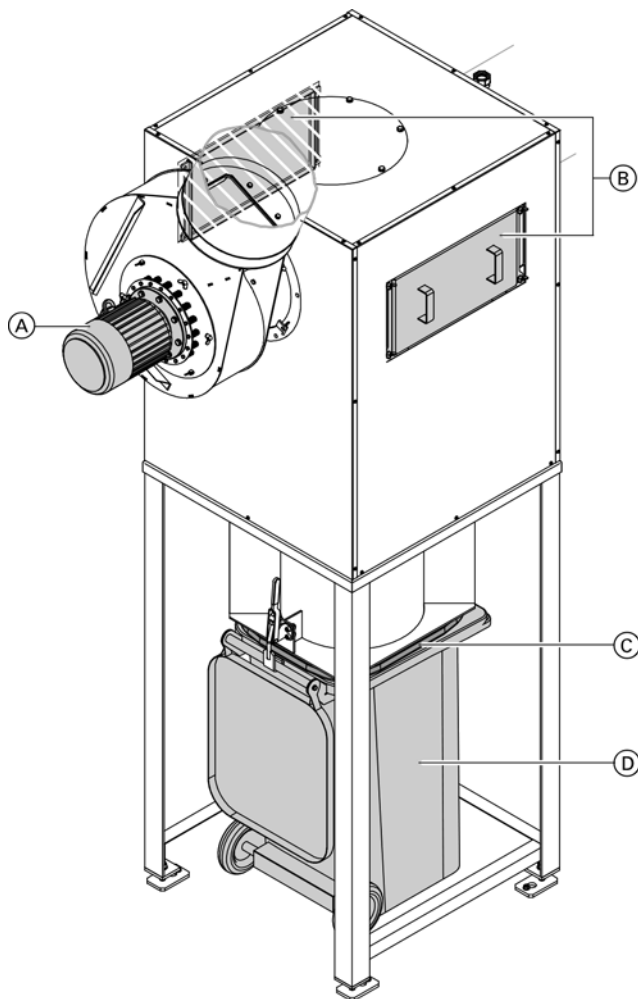
Remove the displacement rods with a pair of pliers, as shown above. The heat exchanger should be cleaned at the intervals prescribed so that performance and efficiency are maintained and the displacement rods can be easily removed.

CAUTION

RISK OF INJURY: Shut the system off before starting any cleaning. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning tools that come with the system (danger of blow-ups, burns and getting crushed)!

Cleaning *(continued)*

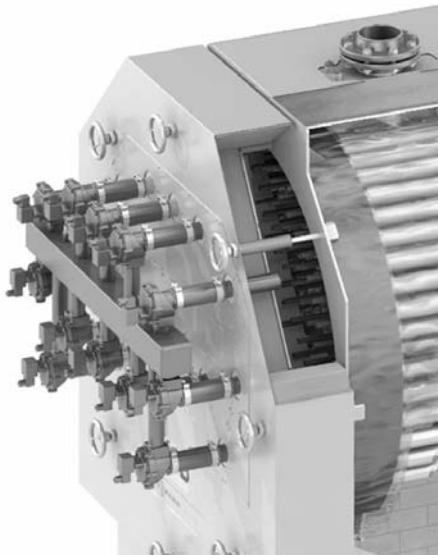
Servicing the flue gas dust extractor (optional)



Component, activity	Interval			
	300 hours	1200 hours	Every 6 months	Annually
Flue gas fan (A) Disconnect plug on motor. Undo wing nuts and extract motor together with impeller. Clean with a brush or wire brush.			0	
Interior Open covers (B) and clean the guide blades of the flue gas dust extractor with a hand brush.		0		
Ash box Check gaskets (C)			0	
Empty ash box (D) underneath the flue gas dust extractor. Tip: Check the fill level of the ash box daily. Note: Only operate the boiler with the ash box installed.			0	Interval depends on the fuel and size of the ash box.

Cleaning *(continued)***CAUTION**

RISK OF INJURY: Shut the system off before starting any cleaning. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning tools that come with the system (danger of blow-ups, burns and getting crushed)!

**Flue gas dust extractor (optional)**

The flue gas cyclone minimizes dust emissions and is designed as a multi-cyclone with an axial function. The cyclone is completely insulated and provided with a total of three lids for cleaning. The untreated exhaust flue gas chamber is cleaned via the cleaning lid on the side. The clean exhaust flue gas chamber is cleaned via the top or rear cleaning lid (unused blower connection).

The ash container, which is provided with a trolley, connects to the dust extractor by quick-action fasteners and easily moves out for emptying. The flue gas exhaust blower can be mounted either on top or on the side, as desired.

Pneumatic cleaning system (optional)

- Operation and maintenance of the compressor (optional) according to the manual that comes with the system.
- For a field supplied air compressor, the compressor has to be suited for continuous operation or be secured against continuous operation (e.g. timer for limiting running time).
- Continuous operation of the compressor indicates leakage in the air system. Check air supply line and valves for leakage.

IMPORTANT

Never operate the boiler without an ash bin!

Cleaning *(continued)*

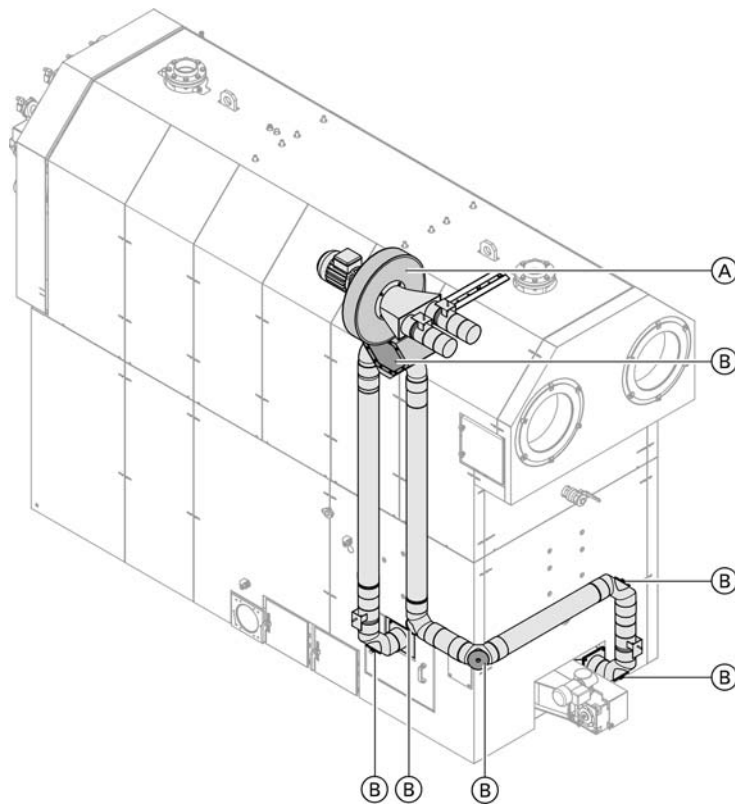
Flue gas re-circulation system (optional)

CAUTION

RISK OF INJURY: Shut the system off before starting any cleaning. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning tools that come with the system (danger of blow-ups, burns and getting crushed)!

WARNING

A mixture of emissions and air that may contain carbon monoxide (CO) and other toxic odorless gases is produced inside the re-circulating flue gas piping system. Its pressure is slightly above atmospheric. Therefore the correct assembly of the cleaning lids must be checked and the system must be checked for leaks each time the system has been cleaned (when the re-circulating flue gas exhaust blower is in operation and the flaps are closed, no gas may escape).



Component, activity		Interval Every 6 months
(A)	Clean recirculation fan (A)	O
(B)	Clean recirculation gas line (B) Note: Check the flue pipe and the maintenance cover for tightness after each cleaning. No gas must escape when the recirculation flue gas fan is operating and the dampers are closed.	O
	Check gaskets on the flue pipes and service apertures (B) for leaks.	O

Feed Systems

When storage facilities for wood are required, the wood should be kept at least 5 ft. (1.5 m) from the heating appliance.

All geared motors on the feed systems are maintenance-free.

- A change of lubricant and/or oil is recommended every 20,000 operating hours or every three years.
- Re-lubricate flange bearings and other lubricating points regularly with lithium soap grease.
- Check chain drives for wear and, if necessary, tighten them up and lubricate with chain oil.
- Check all bolts for tightness.
- Once a year check the extraction components in the silo and/or bunker for damage and soiling. Remove any foreign matter.
- Horizontal discharge system:
Check and lubricate the articulated arms, articulated screws, tension springs and tensioning chains. Adjust articulated arms if required.

Funnel extraction system (AP/APS):

Lubricate the gasket between the extraction casing and the geared motor and universal joint for the auger.

If a fuel hopper is installed, do not alter equipment in any way. May be connected to an existing boiler or solar system.

IMPORTANT

Never use inflammable lubricants!

CAUTION

RISK OF INJURY: Shut the system off before starting any cleaning. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning tools that come with the system (danger of blow-ups, burns and getting crushed)!

Note: Viessmann recommends the installation of carbon monoxide detector(s) inside the fuel storage area.

IMPORTANT

The fuel storage area/room must be designed, operated and maintained to national, provincial and local codes and requirements.

WARNING

The wood chip/pellet storage room must be adequately and permanently ventilated. Ensure the door or latches are securely locked open during presence in the room. No smoking, fires or open flames are permitted.

Shutdown

Boiler

Heat exchanger:

- When the Vitoflex 300-UF is not in operation for a long period (such as for summer breaks), be sure to carefully clean the heat exchanger with a steel brush as required.
- If the heating room is moist or there is any other atmosphere that promotes corrosion (e.g. poor ventilation, residual enamel near the heating room, etc.), spray the heat exchanger tubes with biodiesel after cleaning.
- If there is a danger of frost, empty the heating system or add antifreeze.

Extraction and conveyance systems

When the Vitoflex 300-UF is not in operation for a long period (such as for summer breaks), it is recommended to empty the fuel extraction and conveyance system of all fuel to avoid corrosion of the equipment and decay of the wood fuel. Refill with new fuel after checking the system and before starting the boiler.

Control system

Even when the Vitoflex 300-UF is not in operation for long periods, the power supply to the control system should not be interrupted (do not turn off the main switch).

- The "intermittent control system" switches on the boiler pump for five seconds every 24 hours. This prevents the pump from jamming during long stand stills and prevents expensive repairs.
- Prevent the formation of condensation in the oxygen sensor.
- Extend the service life of the rechargeable battery.

Ash disposal

- Ashes should be stored in covered metal containers on non-combustible floors away from combustible material.
- Comply with customary laws and local regulations on ash disposal.

Disposal of the boiler

- Switch off the Vitoflex 300-UF by pressing the boiler off button. When the burn-out has taken place, and the boiler has cooled down, turn off the main switch.
- Disconnect the power supply to the control cabinet.



CAUTION

DANGEROUS VOLTAGE!

Only a licensed electrician is allowed to disconnect and dismantle the connection to the electrical network.

- Close the supply and return valves.
- Open the drain valve on the back of the boiler and drain the water.

IMPORTANT

Only a qualified heating contractor may drain the boiler and dismantle the connections to the heating system.

- Disconnect the supply pipe and return pipe from the boiler.

Instructions regarding removal

Personnel removing equipment must be aware of the risks and use suitable safety precautions.

Waste disposal

- Comply with customary laws and local regulations on waste disposal.
- Contact a disposal company to dispose and recycle waste in an environmental friendly way.

Note: Clean and empty the ash conveyers and bins during which the boiler is shutdown for an extended period of time.

Warning Message

1. Eliminate the cause of the warning.
2. Acknowledge the warning message in the controller.

Fault Messages



WARNING

Risk of injury due to faults in the heating system that have not been rectified.

In the event of faults, shut down the heating system and safeguard against reconnection.

Immediately notify faults to the responsible body or individual.

Rectify faults immediately.

When rectifying a fault, no-one else should be present in the danger zone around the heating system.

Prior to starting the heating system ensure that no one else is within the danger zone around the heating system.

1. Locate the fault.
2. Check the fault.
3. Decide whether to: repair the fault yourself or inform the Technical Services department.
4. Eliminate the cause of the fault.
5. Acknowledge the fault message on the programming unit.

Fault Messages *(continued)*

Fault message	Cause	Remedy
Fault, high limit safety cut-out	Incorrect set supply temperature (too high)	Check set supply temperature
	Faulty system component (boiler circuit pump or return valve)	Check boiler circuit pump and return temperature raising facility
	Amount of heat drawn drops suddenly	Check the heat drawn. If boiler water temperature is below 158°F (70°C): remove protective cap on HLSC and press reset button.
Fault, combustion chamber, pressure	Flue gas fan failure	Check flue gas fan
	Vacuum pressure measurement failed	Check vacuum pressure measurement
	Heat exchanger heavily soiled	Clean heat exchanger
Fault, repeat heat-up	No combustion detected Insufficient fuel or fuel too wet	Add fuel. If fuel is above M40: preheat the combustion chamber or use suitable dry fuel.
Fault, boiler sensor faulty	Temperature sensor or lead faulty	Consult a qualified electrician
Fault, boiler return sensor faulty	Temperature sensor or lead faulty	Consult a qualified electrician
Temperature sensor or lead faulty	Temperature sensor or lead faulty	Consult a qualified electrician
Fault, flue gas temperature sensor	Temperature sensor or lead faulty	Consult a qualified electrician
Fault, material shortage	Fuel store empty	Fill fuel store
	Material blockage	Switch OFF mains isolator and remove material blockage
	Shut-off gate valve jammed	Check shut-off gate valve for ease of operation
Fault, water level in extinguishing water tank	Too little water in the extinguishing water tank	Fill the extinguishing water tank
Fault, motor protection, conveyor devices	Motor overloaded due to blockage (foreign body)	Remove foreign body
	Bearing damage	Check bearings for ease of operation
Fault, maintenance cover open	Maintenance cover open	Close maintenance cover
Fault, light barrier, firebed monitoring	Sight glasses dirty	Remove and clean both sight glasses
	Ash deposits in apertures	Remove dust and ash deposits from the apertures
	Light barrier dirty or faulty	Clean or replace the light barrier sensors
O2 measurement fault	Lambda probe heavily soiled or faulty, or O2 transducer faulty	Contact Viessmann Technical Service
Warning, combustion chamber door open	Combustion chamber door open or not fully closed	Close combustion chamber door

Fault Messages *(continued)*

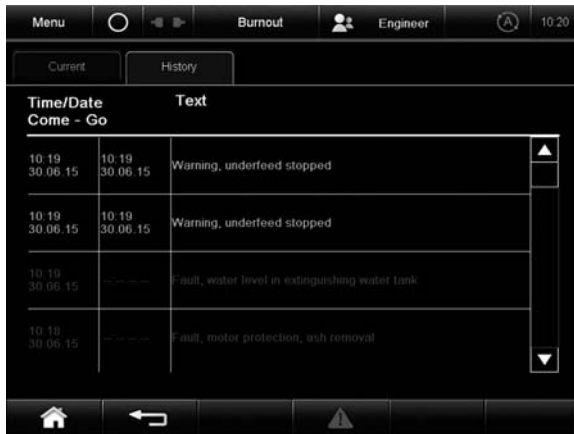


“Current” tab

Current fault messages

This screen displays unprocessed fault messages.

Display	Description
“Time/Date”	Time the fault message occurred.
“Text”	Displays the fault text. Warning: Information or minor system fault Fault: Serious system fault
“Acknowledge”	You can use this key to acknowledge the fault message after the fault has been rectified. Tapping on “Acknowledge” acknowledges all currently unacknowledged fault messages. Once acknowledged, the fault message is then only displayed under History.



“History” tab

All fault messages

All fault messages, including those already acknowledged, are shown on this screen. The latest fault message is always at the top. Once the number of fault messages reaches 100, the oldest message is deleted when a new one is generated.

Note: Acknowledged messages are displayed in grey. Unacknowledged messages are displayed in red.

Display	Description
“Time/Date Come”	Time the fault message occurred.
“Time/Date Go”	Time the fault message was acknowledged.
“Text”	Displays the fault text. Warning: Information or minor system fault Fault: Serious system fault

Adjusting the Fuel Supply and Air Supply



WARNING

Risk of poisoning from carbon monoxide and carbonization gas as a result of incomplete combustion caused by overfilling with fuel.

Ensure that the fuel supply and air supply are adjusted correctly.

When changing to a different fuel, adjust the parameters to suit the new fuel.

The boiler is commissioned by Viessmann engineers. As part of this process, the boiler will be adjusted so that the available fuel in conjunction with the amount of air supplied will result in optimum combustion.

Note: Overloading the combustion chamber leads to ash glazing on the fireclay walls and thereby to premature damage to the combustion chamber. The lining, grates and metal parts in the combustion chamber are wearing parts. Excessively high loads will cause the parts to wear more quickly. Overloading the system will also have an increased impact on the boiler, dust extractor and chimney causing them to wear more quickly too. Ensure that the fuel supply and air supply are adjusted correctly.

Note: The composition of the fuel may differ in terms of particle size, type of wood, moisture content, bulk density and other characteristics. When changing to a different fuel, adjust the parameters to suit the new fuel. This will ensure optimum combustion of each fuel type, that the combustion chamber is not overloaded and that emission values are observed.

Adjusting the Ash Removal

The amount of ash in the combustion chamber depends on the ash content of the fuel. The Vitoflex 300-UF removes ash automatically by moving the grate. The intervals at which the grate is moved can be adjusted to individual requirements. The ash is discharged automatically via the ash removal system. The ash removal cycle is matched to the relevant fuel type during commissioning. Check the runtimes and pause times of the ash removal cycle during operation. The contractor or suitably trained persons must adjust the times to suit the relevant fuel. When setting the ash removal cycles, observe the following principles:

- Short runtime
- Long pause time between ash removal events

Small pieces of fireclay (fragments) may break away from the combustion chamber lining as a result of normal wear. These fireclay fragments are removed by the ash removal system. The breaking off of small fireclay particles has no negative impact on the standard service life of the combustion chamber.

Visual Inspection of Combustion

CAUTION

Risk of burns due to hot machine components.
 Only touch handles and identified parts.
 Never touch sight glasses or their retainers.
 These components are connected directly to the combustion chamber.

During operation, the controller controls, regulates and monitors all components and system parts automatically.

Check flames in the combustion chamber through the sight glass.

The ideal flame is yellow to light yellow. This indicates normal combustion in which the fuel burns cleanly.

Unjamming the Ash Removal Screw Conveyor

CAUTION

Risk of crushing by and entanglement in the ash removal screw conveyor.
 Never reach in through the maintenance cover.

WARNING

There is a risk of deflagration when the combustion chamber door is opened. Poking around in the firebed leads to oxygenation, which can produce a flash. Both can result in severe burns.
 Never open the combustion chamber door during operation. Before opening the combustion chamber door, ensure that you are standing in a safe place.
 Never poke around in the firebed.

CAUTION

Hot ash and slag may result in burns.
 Wear protective gloves when handling ash and slag.

Note: Wear personal protective equipment.

Always wear a face mask when handling ash or slag.

Requirements:

The system is switched off.

The firebed is completely burned down.

Check the firebed through the sight glass.

1. At the programming unit, switch to manual mode under "Fuel" – "Combustion chamber ash removal".
2. Open the combustion chamber door.
3. Select the "Fuel" screen, then under "Combustion chamber ash removal" alternately select "Clockwise rotation" and "Anti-clockwise rotation".
 The ash removal screw conveyor runs forwards and backwards alternately. This action will unjam the ash removal screw conveyor.
4. Stop the movement of the ash removal screw conveyor.
 The ash removal screw conveyor comes to a halt.
5. Remove large bits of slag with a poker or similar.
6. Close the combustion chamber door.
7. On the programming unit, switch back to automatic mode. The ash removal screw conveyor is now unjammed.

Operating Data



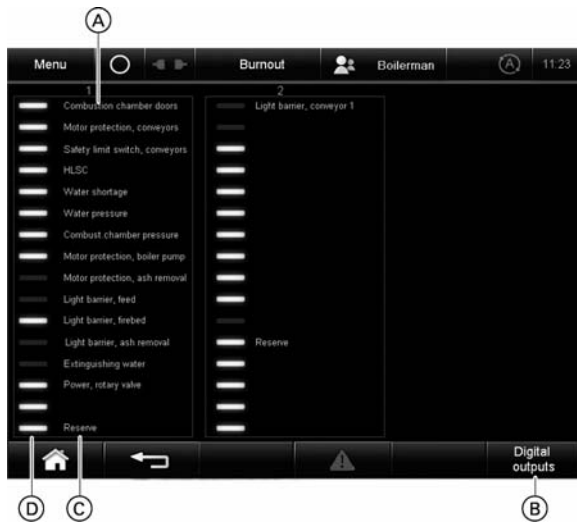
Tap the following keys:

1. "Menu"
2. "Operating data"

This is where operating data such as hours run are displayed.

Parameter	Description
"Hours run, load"	Displays the number of hours run in the "Load" operating state.
"Hours run, firebed maintenance"	Displays the number of hours run in the "Firebed maintenance" operating state.
"Hours run, standby"	Displays the number of hours run in the "Standby" operating state.
"Hours run, boiler 2"	Displays the number of hours run by boiler 2 (external heat generator).

I/O Modules



Tap the following keys:

1. "Menu"
2. "I/O modules"

Note: The I/O modules screen is a display-only screen and is used for checking and troubleshooting inputs and outputs.

Legend

- (A) Designation of the input and output module in the controller
- (B) Displays the function of the inputs and outputs
Tap the display to switch to the next screen.
- (C) Designation of the input and output
- (D) The status display is illuminated if the input and output are active.

Manual Mode and Other Scans

The sub-area screens are accessed from the default display via the “Fuel”, “Secondary air”/“Primary air”, “Flame”, “Flow” and “Flue gas fan” keys. The screens are divided into manual mode and information display areas.

Manual mode


Components can be operated manually via keys.


Scanning

The sub-area screens display set and actual values as well as status information. Many of the actual values are displayed graphically in the form of a scale.








Keys for Manual Mode

The Manual mode and Automatic mode keys enable you to operate components manually or automatically.

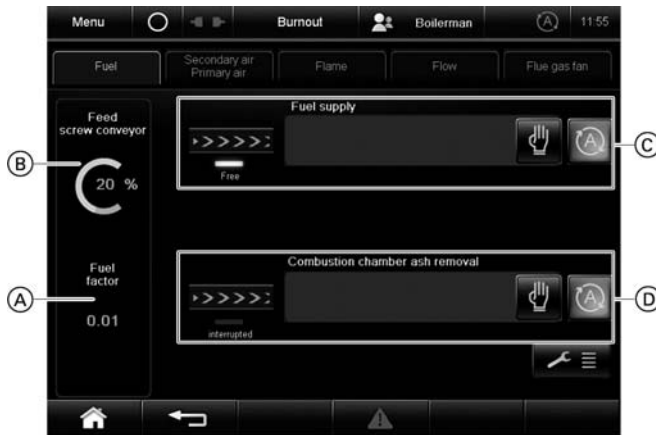
 Switches manual mode for the component on or off.
 Symbol colors:
 Orange = active
 Neutral = off

 Switches automatic mode for the component on or off. If automatic mode is switched off, this means that the component is in manual mode.
 Symbol colors:
 Green = active
 Neutral = off

Additional keys in manual mode

Symbol	Description
	Opens the damper.
	Closes the damper.
	Switches the function on and off alternately. When the function is switched on, the symbol is depicted as pressed.
	Switches the function off and on alternately. When the function is switched on, the symbol is depicted as pressed.
	Increases the value.
	Reduces the value.
	Stops the movement.

Fuel



Legend

- (A) Fuel factor, value range 0 to 1
- (B) Feed cycle time in %
- (C) "Fuel supply"
Green arrow is animated: fuel feed active
___/"Free": light barrier of the feed screw conveyor is clear
___/"interrupted": light beam [of the light barrier] of the feed screw conveyor is interrupted
- (D) "Combustion chamber ash removal"
Green arrow is animated: ash removal active
___/"Free": Light barrier for ash removal is clear
___/"interrupted": Light beam of [the light barrier] for ash removal is interrupted

Secondary Air



If you tap the "Secondary air/Primary air" key in the default display, the following screen is shown.

Tap on the following key:

"Secondary air"

The following sub-area screen appears.



Legend

- (A) Display of actual and set oxygen content in the flue gas in %
- (B) Display of actual and set secondary air fan utilization level in %
- (C) "Secondary fan"
Fan animated: secondary air fan active

Flame



Legend

- (A) Display of actual and set combustion chamber bottom temperature in °C
- (B) Display of utilisation level of recirculation fan in %
- (C) "Recirculation fan"
Fan animated: recirculation fan active
- (D) "Recirculation damper"
Opening of recirculation damper in %
The damper's current opening position is depicted as an animation.
- (E) "Fresh air damper"
Opening of fresh air damper in %
The damper's current opening position is depicted as an animation.

Flow



Legend

- (A) Display of actual and set return temperature in °C
- (B) Display of actual and set supply temperature in °C
- (C) "Supply temperature controller"
Hand key: disables flow control.
A key: enables flow control.
- (D) "Return mixer"

Flue Gas Fan



Legend

- (A) Display of actual and set vacuum pressure in Pa
- (B) Displays flue gas fan utilisation level in %
- (C) "Flue gas fan"
Fan animated: flue gas fan active

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