

# Technical Data Manual

Model Nos. and pricing: see Price List



## Vitogas 050

### ECV Series

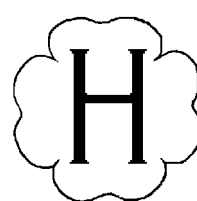
#### Gas-/Propane-Fired Boiler

cast iron construction

atmospheric

Heating input: 65 to 200 MBH

19 to 59 kW

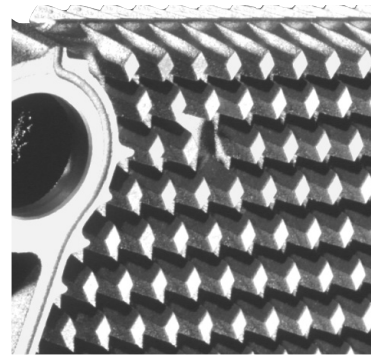


### Vitogas 050

Impressive performance, yet a very compact design. Due to its compact dimensions, the Vitogas 050 is ideal for installation in small mechanical rooms and even in closets. In addition to saving space, the Vitogas 050 is economical in two ways - initial investment and operational cost.

#### The benefits at a glance:

- **Economical, compact, with integrated power vent** for side wall venting only.
- **High operational reliability and a long service life** due to special high-grade gray cast iron with lamellar graphite and uniform heat transfer to avoid stress fractures.
- Large diameter, stainless steel burners provide quiet, reliable performance; **Annual Fuel Utilization Efficiency (A.F.U.E.) of up to 83.1%**.
- Optimal operation due to wide water passageways and a wet-base, sectional design.
- **Compact dimensions** – therefore suitable for installation in almost any mechanical room, or even closet installation.
- **Problem-free transport into difficult-to-access** boiler rooms due to light weight and compact design.



**Heat exchanger surfaces of special high-grade gray cast iron for high operational reliability and a long service life**

**Technical data**

Boiler Model	Model No.	ECV-65	ECV-80	ECV-100	ECV-115	ECV-140	ECV-155	ECV-180	ECV-200
<b>CSA input</b>	MBH	65	80	100	115	140	155	180	200
	kW	19	23	29	34	41	45	53	59
<b>CSA / DOE output</b>	MBH	55	67	84	97	118	131	151	168
	kW	16	20	25	28	35	38	44	49
<b>A.F.U.E. *1</b>	%	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1
<b>Heat exchanger surface area</b>	ft <sup>2</sup>	14.32	14.32	21.10	21.10	27.99	27.99	34.88	34.88
	m <sup>2</sup>	1.33	1.33	1.96	1.96	2.60	2.60	3.24	3.24
<b>Cast iron sections</b>		3	3	4	4	5	5	6	6
<b>Burners</b>		2	2	3	3	4	4	5	5
<b>Manifold pressure</b>									
Natural gas	"w.c.	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Propane gas	"w.c.	10	10	10	10	10	10	10	10
<b>Max. gas supply pressure *2</b>	"w.c.	14	14	14	14	14	14	14	14
<b>Overall dimensions</b>									
Overall depth	inches	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
	mm	502	502	502	502	502	502	502	502
Overall width	inches	13½	13½	17	17	21	21	25	25
	mm	340	340	432	432	533	533	635	635
Overall height	inches	41½	41½	41½	41½	41½	41½	41½	41½
	mm	1030	1030	1030	1030	1030	1030	1030	1030
Height of Vitocell-H DHW tank under boiler									
– 130 to 200 ltr / 34 to 53 USG capacity	inches	28¾	28¾	28¾	28¾	–	–	–	–
	mm	715	715	715	715				
– 350 ltr / 92 USG capacity	inches	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾
	mm	847	847	847	847	847	847	847	847
– 450 ltr / 120 USG capacity	inches	–	–	–	–	37¾	37¾	37¾	37¾
	mm					947	947	947	947
<b>Weight, boiler with insulation, burners and packaging</b>	lbs	243	243	293	293	364	364	430	430
	kg	110	110	133	133	165	165	195	195
<b>Boiler water content</b>	USG	2.6	2.6	3.5	3.5	4.3	4.3	7.1	7.1
	ltr	9.9	9.9	13.2	13.2	16.5	16.5	26.8	26.8
<b>Max. operating pressure</b>	psig	50	50	50	50	50	50	50	50
	kPa	345	345	345	345	345	345	345	345
<b>Boiler connections</b>									
Boiler supply and return	Ø" (male thread)	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
<b>Gas supply connection</b>	Ø" (male thread)	½	½	½	½	½	½	½	½
<b>Vent pipe collar *3</b>	inches	3	3	3	3	3	3	3	3
<b>Maximum equivalent vent length</b>	ft. / m	20 ft. / 6 m with 3" Ø vent pipe 30 ft. / 9 m with 4" Ø vent pipe							

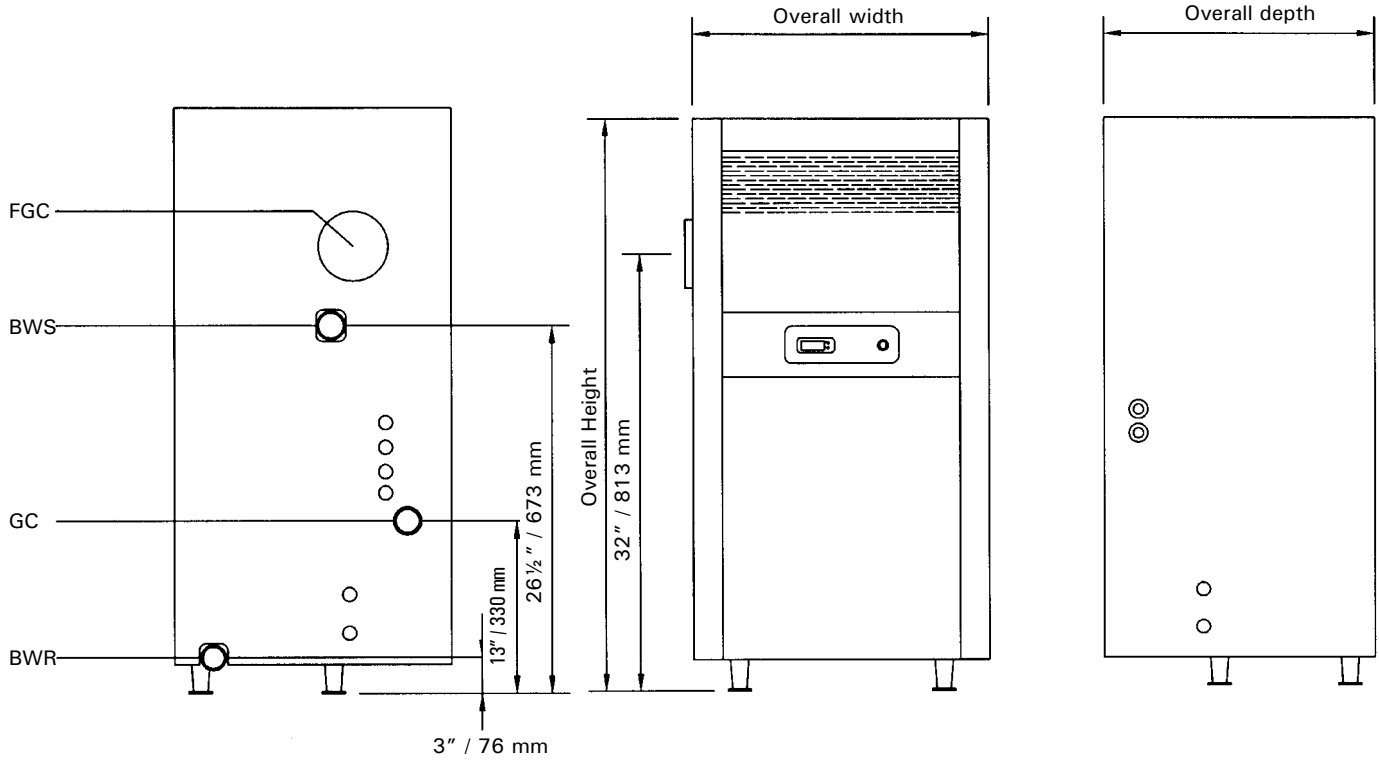
\*1 With intermittent pilot electronic ignition system and integrated power vent.

Vitogas ECV Series boilers exceed the Canadian and U.S. minimum A.F.U.E. requirement of 80%.

\*2 If the gas supply pressure is higher than the maximum permissible value, a separate field supplied gas regulator must be installed upstream of the boiler gas train.

\*3 Venting material to be 3" / 76 mm or 4" / 102 mm diameter (depending on maximum equivalent vent length, see above) stainless steel UL approved venting system for positive pressure. Do **not** use any other venting materials. See Price List.

# Technical Data

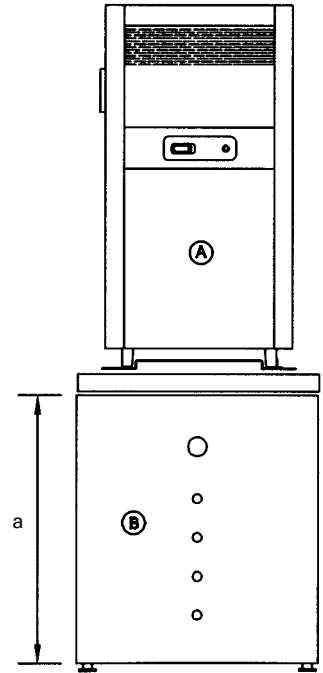


## Legend

- BWR Boiler Water Return
- BWS Boiler Water Supply
- FGC Flue Gas Collar
- GC Gas Connection

- (A) Vitogas 050, ECV Series
- (B) Vitocell-H 100 or 300  
(see separate Technical Data Manuals)

Note:  
Support Bars are installed lengthwise for ECV-65 through ECV-115 and widthwise for ECV-140 through ECV-200. Widthwise installation is pictured. The Base Pan is installed between the boiler and the Support Bars (also shown).

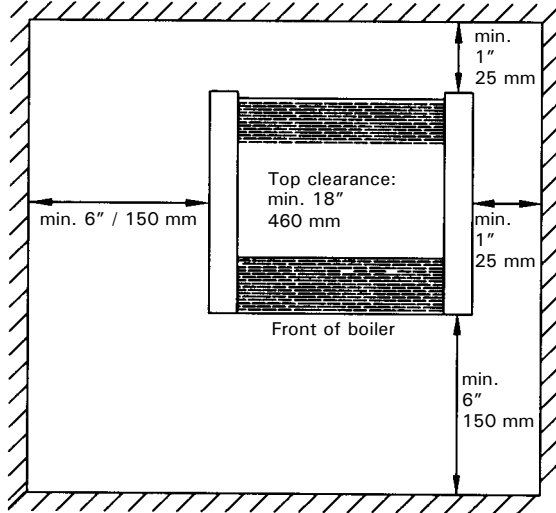


## Dimensions

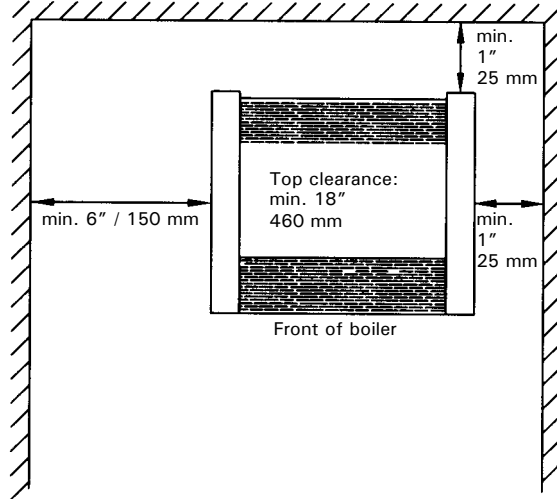
Boiler Model	ECV	-65	-80	-100	-115	-140	-155	-180	-200								
With Vitocell-H DHW tank under boiler	USG	34 to 53	92	34 to 53	92	34 to 53	92	92	120	92	120	92	120	92	120	92	120
	ltr	130 to 200	350	130 to 200	350	130 to 200	350	350	450	350	450	350	450	350	450	350	450
a	inches	28 3/4	33 3/4	28 3/4	33 3/4	28 3/4	33 3/4	28 3/4	33 3/4	33 3/4	37 1/4	33 3/4	37 1/4	33 3/4	37 1/4	33 3/4	37 1/4
	mm	715	847	715	847	715	847	715	847	847	947	847	947	847	947	847	947

### Minimum Clearances to Combustibles

Closet installation, ECV-65 to -155 (top view)

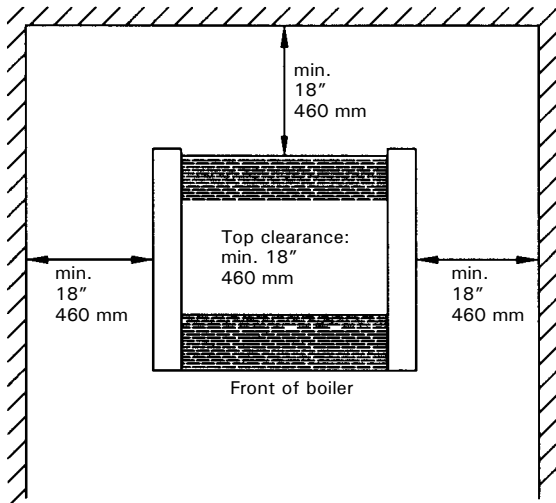


Alcove installation, ECV-180 and -200 (top view)



### Recommended Minimum Service Clearances

For all Vitogas 050, ECV models



#### Installation on combustible flooring

A Base Pan (Optional Equipment) **must** be ordered if the Vitogas 050, ECV Series is to be installed on combustible flooring. See Price List.

#### Mounting the Vitogas 050 on a Vitocell-H

The Vitogas 050 can be mounted on a Vitocell-H as shown previously to reduce the footprint of heating equipment in the mechanical room. Two Support Bars and one Base Pan **are** necessary. Order a Support Bar Kit from the Price List. Do **not** attempt to install combinations not listed in the Price List.

### Standard Equipment

Boiler shell with mounted insulation jacket and atmospheric burners for natural gas or propane gas (as per order) conforming to local regulations.

Standard equipment includes 30 psig pressure relief valve, pressure gage, installation fittings, and cleaning brush.

### Boiler Control

**Standard control (included with boiler)**  
control with temperature gage, adjustable high limit, and fixed high limit.

#### Vitotronic 200-H, HK1M Series (Optional Equipment)

Digital mixing valve mounted heating circuit control with outdoor reset function to operate a heating circuit with a mixing valve.

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## System Design Considerations

### System Design Considerations

The Vitogas 050 is designed for closed loop, forced circulation hot water heating systems only.

#### Boiler selection

The boiler model size should be based on an accurate heat loss calculation of the building. The boiler selected must be compatible with the connected radiation.

#### Venting

The Vitogas 050, ECV Series boiler must be vented with **AL 29-4C** 3" or 4" (depending on maximum equivalent vent length required) stainless steel rigid positive pressure vent pipe. Do **not** use any other venting materials.

The boiler must be located so that the vent length is as short and direct as possible. All products of combustion must be safely vented to the outdoors. Do **not** common vent with any other appliance.

The vent terminal was certified by an independent testing agency to withstand 40 mph winds. This boiler may not be suitable for areas with frequent winds above 40 mph. The vent termination should be located on a wall that is least affected by prevailing winds. High winds may affect the boiler operation and/or degrade the exterior finish of the wall. If wind is a problem, then steps should be considered to protect the vent terminal from high winds, such as a fence or shrub.

#### Maximum equivalent vent length

The maximum equivalent vent length (for all ECV Series sizes) is 20 ft. / 6 m of 3" Ø pipe or 30 ft. / 9 m of 4" Ø pipe. Do **not** exceed the maximum equivalent vent length.

Details of venting instructions are found in the ECV Series Installation/Service Manual. To order venting materials, see Price List.

#### Warranty excerpts

Our warranty does not cover damages resulting from the following:

- installation or service by unqualified and not licensed personnel
- corrosion caused by flue gas condensation due to low boiler water and/or return water temperatures
- operation with contaminated fill and supplementary feed water

For detailed warranty information, please read warranty sheet supplied with product.

#### Combustion air supply

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 the above mentioned, or other aggressive or corrosive chemicals.

Boiler should never be installed in areas where excessive dust, high humidity, or risk of frost exist. Ensure adequate ventilation and supply of fresh combustion air.

Consult Viessmann with uncertainties in regard to a suitable boiler installation location.

This boiler/burner unit needs clean fresh air for safe operation and must be installed so that there are provisions for adequate combustion and ventilation air. For natural gas or propane, use the "Natural Gas Installation Code CAN/CSA-B149.1 or B149.2" (Canada), or "National Fuel Gas Code ANSI Z223.1" (USA), and/or provisions of local codes.

The sizing methods outlined in the above codes must be used when installing a round duct to supply combustion air from the outside. Observe local jurisdictional requirements.

#### System layout

The boiler water temperature limit is factory set to 167°F / 75°C.

The boiler water temperature limit can be increased by altering the adjustable high limit to increase the supply water temperature.

To minimize piping losses of the system however, we recommend that the radiation and domestic hot water production in the system be designed for a 158°F / 70°C boiler supply water temperature (new systems).

#### Water quality

Treatment for boiler feed water should be considered in areas of known problems, such as where a high mineral content and hardness exist. In areas where freezing might occur, an antifreeze may be added to the system water to protect the system. Please adhere to the specifications given by the antifreeze manufacturer. Do not use automotive silicate based antifreeze. Please observe that an antifreeze/water mixture may require a backflow preventer within the automatic water feed and influence components such as diaphragm expansion tanks, radiation, etc. A 40% antifreeze content will provide freeze-up protection to -10°F / -23°C. Do **not** use antifreeze other than specifically made for hot water heating systems. System also may contain components which might be negatively affected by antifreeze. Check total system frequently when filled with antifreeze. Advise system operator/ultimate owner that system is filled with a glycol mix.

The heating contractor must provide an MSDS (Material Safety Data Sheet) for the antifreeze used to the system operator/ultimate owner.

#### Oxygen diffusion barrier underfloor tubing

The boiler warranty does not cover leaks resulting from corrosion caused by the use of underfloor plastic tubing without an oxygen diffusion barrier. Such systems must have the non-oxygen diffusion barrier tubing separated from the boiler with a heat exchanger. Viessmann recommends the use of underfloor plastic tubing with an oxygen diffusion barrier.

#### Low water cut-off

A low water cut-off may be required by local codes. If boiler is installed above the radiation level, a low water cut-off device of approved type must be installed in all instances. An approved type low water cut-off device must be provided by the heating contractor. Do not install an isolation valve between the boiler and the low water cut-off.

## Installation Examples

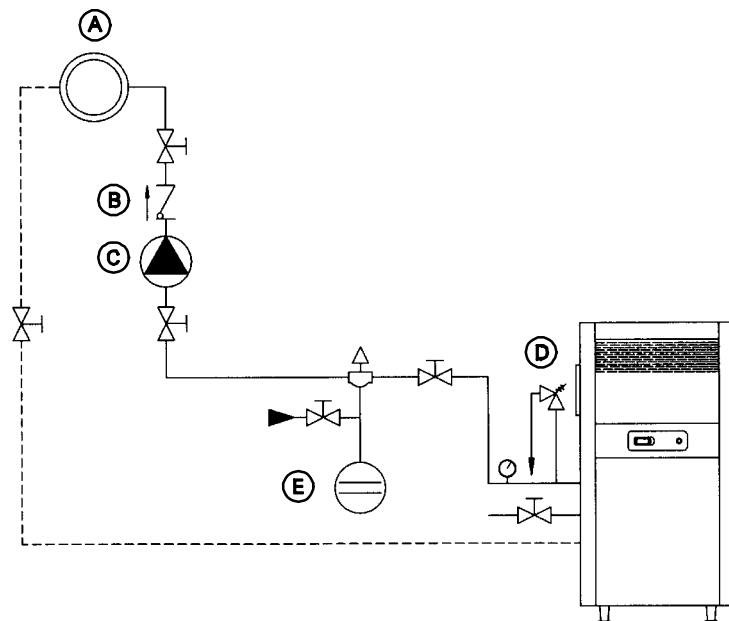
### Important!

These examples depict possible piping layouts for Viessmann product equipped with Viessmann System Technology. For boiler and tank combinations, please install only the feasible combinations listed in the Price List.

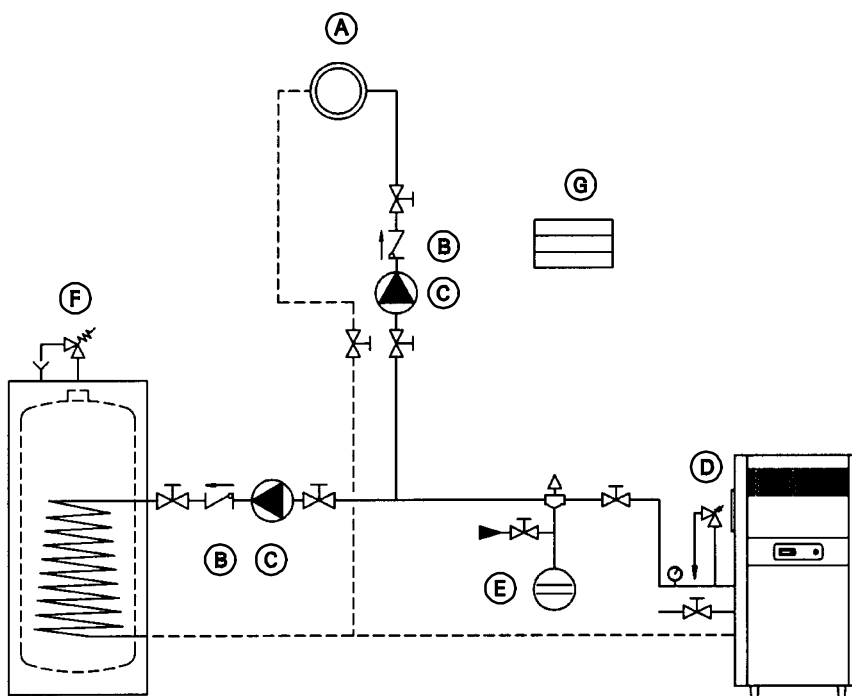
**These are simplified conceptual drawings only! Piping and necessary componentry must be field verified.**

Proper installation and functionality in the field is the responsibility of the heating contractor.

### Without a mixing valve



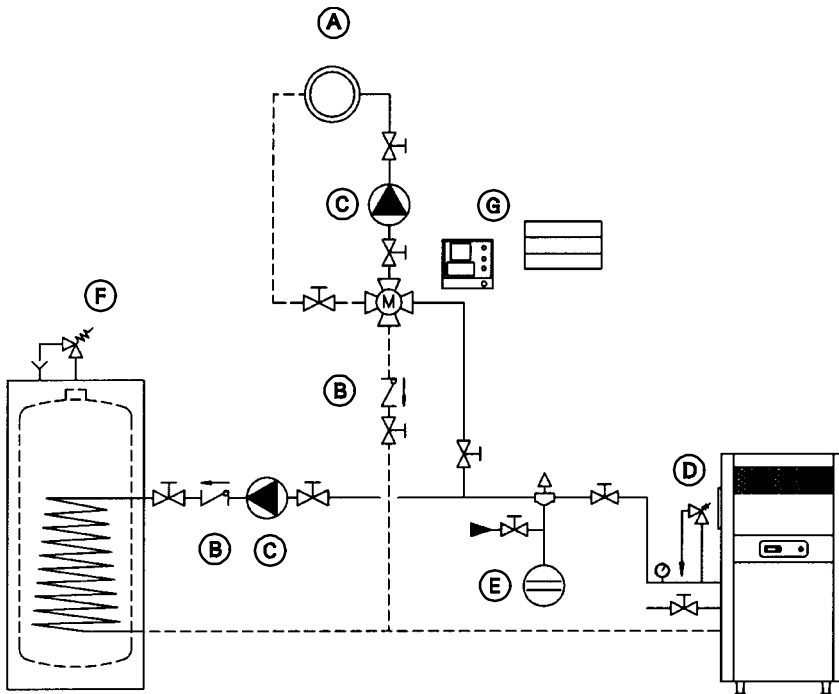
- Ⓐ Heating circuit
- Ⓑ Spring-loaded flow check valve
- Ⓒ Circulation pump
- Ⓓ Pressure relief valve
- Ⓔ Precharged expansion tank
- Ⓕ Domestic hot water storage tank (indirect-fired)
- Ⓖ DHW Pump Module



The installation of the check valve to restrict gravity circulation in the heating supply pipe prevents uncontrolled heat flow to the heating system by gravity during priority switching of domestic hot water heating or during summer operation.

## Installation Examples

With a 4-way mixing valve to regulate heating circuit,  
with domestic hot water control,  
and with boiler activation capability



- Ⓐ Heating circuit
- Ⓑ Spring-loaded flow check valve
- Ⓒ Circulation pump
- Ⓓ Pressure relief valve
- Ⓔ Precharged expansion tank
- Ⓕ Domestic hot water storage tank (indirect-fired)
- Ⓖ Vitotronic 200-H, HK1M Series mixing valve control

Printed on environmentally friendly  
(recycled and recyclable) paper.



Technical information subject to change without notice.