

Technical Data Manual

Model Nos. and pricing: see Price List



Vitogas 050

RS Series

Gas-/Propane-Fired Boiler

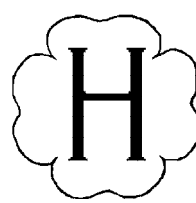
cast iron construction

atmospheric

single- or two-stage burners

Heating input: 550 to 1050 MBH

161 to 308 kW

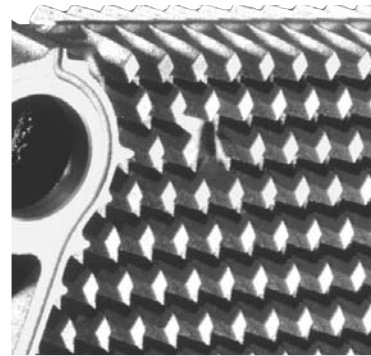


Vitogas 050

For commercial applications, be it new construction or retrofit, the Vitogas 050, RS Series is the mid-efficiency, quality decision. The Vitogas 050 is economical in two ways - initial investment and operational cost.

The benefits at a glance:

- **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; **combustion efficiency of 85%**.
- Optimal operation due to wide water passageways and a wet-base, sectional design.
- Although the heat exchanger block is fully factory assembled, it may be shipped in section blocks for field assembly to accommodate **tighter handling**.
- **Problem-free transport into difficult-to-access** boiler rooms due to cast iron sectional 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.	RS-8	RS-11	RS-14
CSA input	full load ^{*1}	MBH	550	800	1050
		kW	161	234	308
	partial load ^{*2}	MBH	372	541	710
		kW	109	158	208
CSA output	full load ^{*1}	MBH	468	680	893
		kW	137	199	261
	partial load ^{*2}	MBH	316	460	604
		kW	93	135	177
Combustion efficiency		%	85	85	85
Heat exchanger surface area		ft ²	99	141	182
		m ²	9.2	13.1	16.9
Cast iron sections			8	11	14
Burners			7	10	13
Manifold pressure					
Natural gas	full load	“w.c.	3.5	3.5	3.5
	partial load ^{*3}	“w.c.	1.3	1.3	1.3
Propane gas	full load	“w.c.	10	10	10
	partial load	“w.c.	Not available in 2-stage configuration		
Max. gas supply pressure ^{*4}		“w.c.	14	14	14
Dimensions					
Depth	inches	34¾	34¾	34¾	
	mm	883	883	883	
Width	inches	36¾	49½	62½	
	mm	921	1255	1582	
Height	inches	53¾	53¾	53¾	
	mm	1366	1366	1366	
Overall dimensions					
Total depth	inches	47	47	47	
	mm	1195	1195	1195	
Total width	inches	36¾	49½	62½	
	mm	921	1255	1588	
Total height					
– Height 1 (control unit in position for operation)	inches	60¾	60¾	60¾	
	mm	1531	1531	1531	
– Height 2 (control unit in position for servicing)	inches	73½	73½	73½	
	mm	1867	1867	1867	
Weight, boiler with insulation, burners and packaging	lbs	1280	1709	2138	
	kg	582	777	972	
Boiler water content	USG	20	28	35	
	ltr	77	106	134	
Max. operating pressure	psig	60	60	60	
	kPa	414	414	414	
Boiler connections					
Boiler supply and return	Ø”	2	2	2	
	(male thread)				
Boiler drain	Ø”	¾	¾	¾	
Gas supply connection	Ø”	1	1 ¼	1 ¼	
	(male thread)				
Vent pipe collar	Ø” inches	10	12	14	
	Ø” mm	250	300	350	

^{*1}Combustion results are based on a heating system supply temperature of 167°F / 75°C, return 140°F / 60°C.

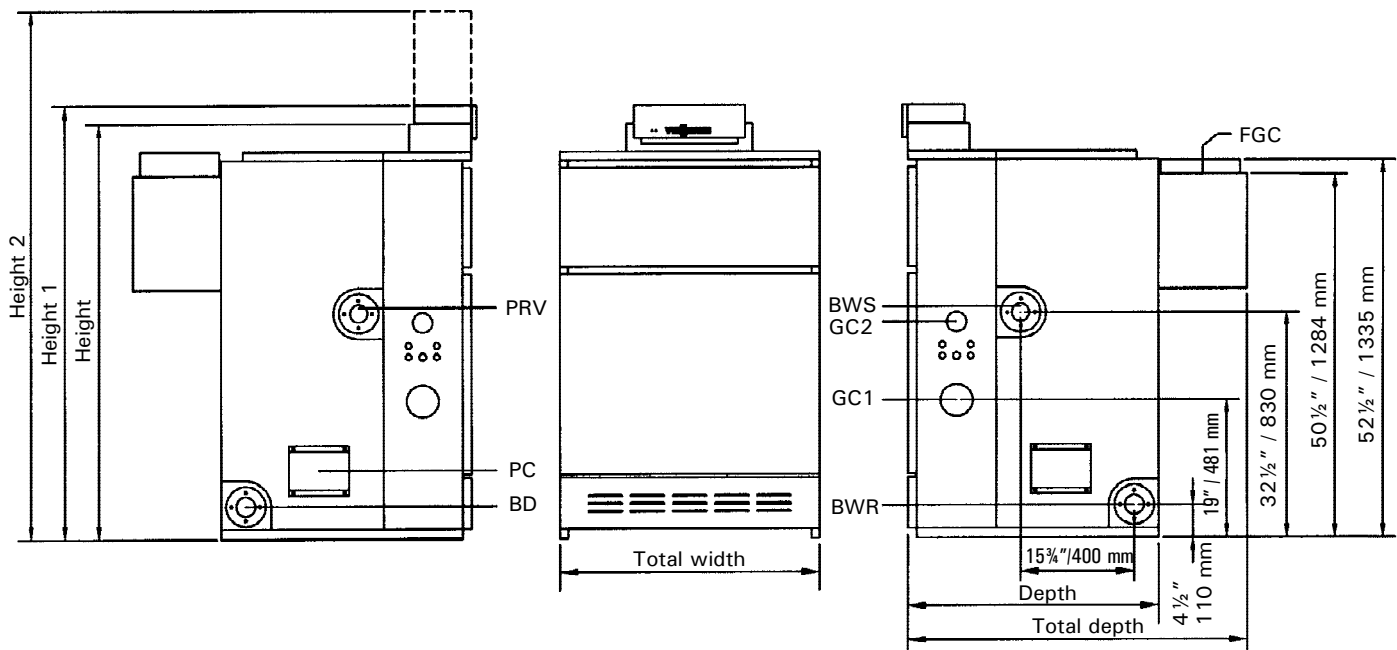
^{*2}For two-stage boilers only.

^{*3}Partial load manifold pressure is factory preset. Any attempt to readjust in the field will render boiler warranty null and void.

^{*4}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.

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

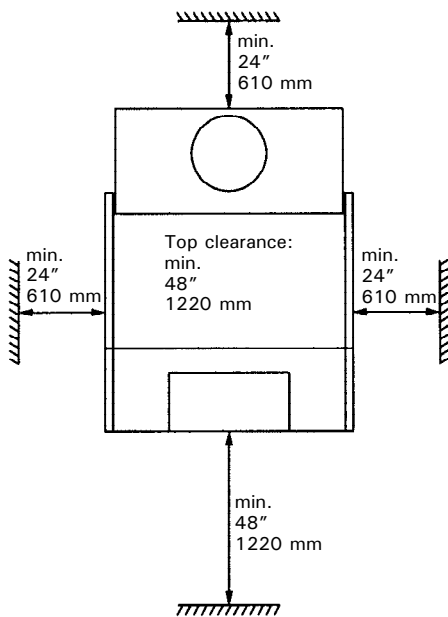
Technical Data



Legend

BD	Boiler Drain
BWR	Boiler Water Return
BWS	Boiler Water Supply
FGC	Flue Gas Collar
GC1	Main Gas Connection
GC2	Pilot Gas Connection
PC	Pilot Cover Plate
PRV	Pressure Relief Valve Connection

Recommended Minimum Service Clearances



Minimum Clearances to Combustibles

Top	Rear	Left	Right	Floor
18"	6"	6"	6"	Non-combustible

Installation

Never install the boiler in a confined space with **only** the minimum service clearances on **all** sides as above.

Never install the boiler on combustible flooring.

Standard Equipment

Note:
Boiler controls and burners are purchased separately. Please see Price List for details.

- The cast iron sections can be shipped as one block or split as requested by the customer and are shipped together with
- 1 carton with boiler jacketry, burner tray, and mid panel with electronic componentry
 - 1 carton with draft hood
 - 1 set of boiler ID hardware (coding card and technical literature)
 - 1 carton of installation fittings (50 psig pressure relief valve, air vent, pressure gage, drain valve, and installation fittings)
 - 1 cleaning brush
 - 1 carton with boiler control unit

Boiler Control Alternatives

Vitotronic 100, KK10
enhanced boiler control
for high temperature heating systems

Vitotronic 100, KW10
enhanced boiler control
for modulating temperature heating systems with indoor/outdoor system control

Vitotronic 200, KW2
for multiple temperature heating systems with or without a mixing valve with indoor/outdoor digital boiler and heating system control

Vitotronic 300, KW3
for multiple temperature heating systems with two mixing valves with indoor/outdoor digital boiler and heating system control

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.

Vent damper or wall vent system

Wherever possible, vertically vent the boiler with a properly sized chimney which meets all local and national codes. See section entitled "Chimney".

Viessmann strongly recommends the purchase of a vent damper to reduce standby losses, improve seasonal efficiency, and thereby preserve our environment.

If chimney venting is not possible, order a wall vent system from Viessmann and do **not** order a vent damper.

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.

Chimney

For proper operation of the Vitogas boiler, all products of combustion must be safely vented to the outdoors, while ensuring that flue gases do not cool prematurely.

It is critical that the chimney system be properly designed and sized to handle the relatively cool flue gas temperatures which the Vitogas boiler produces.

Flue gases which cool too quickly and produce condensation lead to damages if the chimney diameter is too large and the chimney system is not well insulated.

If a calculated chimney diameter lies between two values, the larger diameter should be selected.

Intermediate vent section

The intermediate (vertical and horizontal) section of venting between the boiler vent pipe collar and the chimney must be of the identical diameter as the vent connection of the boiler. Use the shortest possible path between the boiler and the chimney. A maximum of two elbows may be installed in the intermediate section. Avoid the use of two level 90° elbows.

The intermediate section must be sealed pressure tight at the boiler vent pipe collar and at the chimney connection. Ensure any test port for combustion values is sealed as well.

The chimney connection length between the boiler vent pipe collar and the chimney must be installed with insulation. We recommend consulting a reputable chimney installer for advice in project-specific circumstances.

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.

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).

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.

Installation Examples

Important!

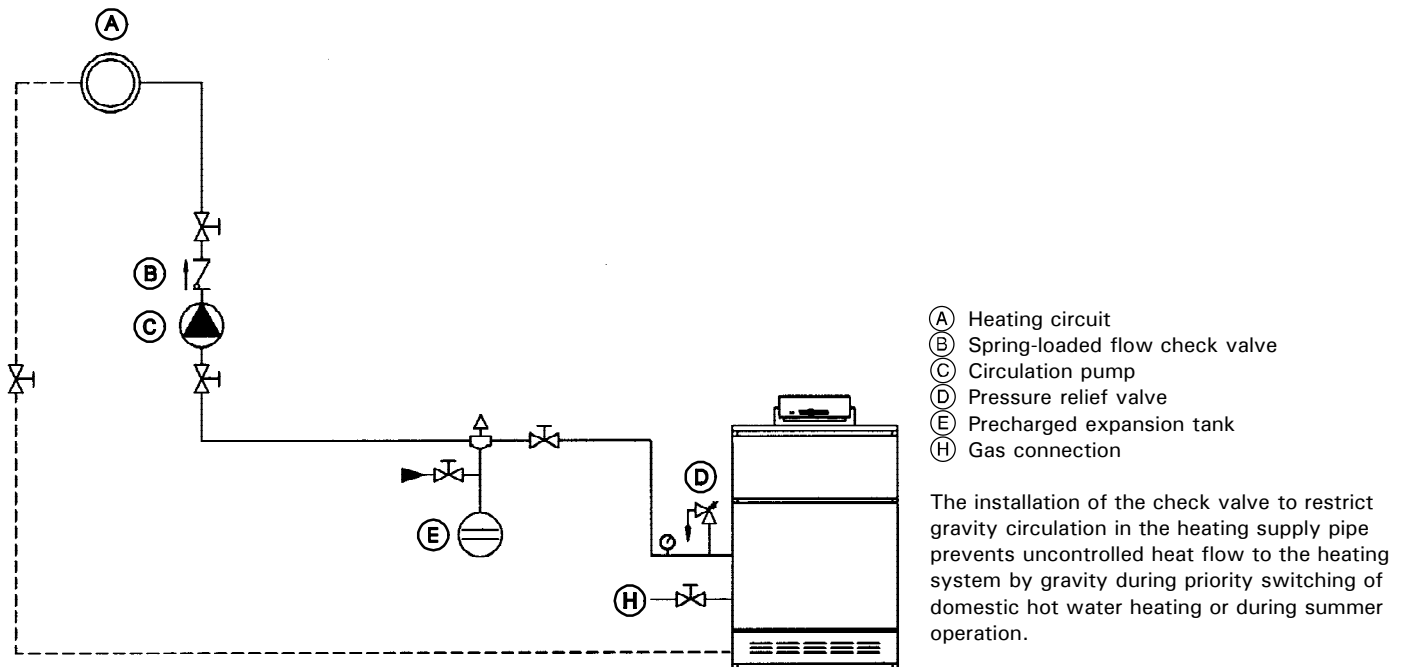
These examples depict possible piping layouts for Viessmann product equipped with Viessmann System Technology. For boiler and tank combinations, please install only the feasible combinations listed in the Price List.

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.

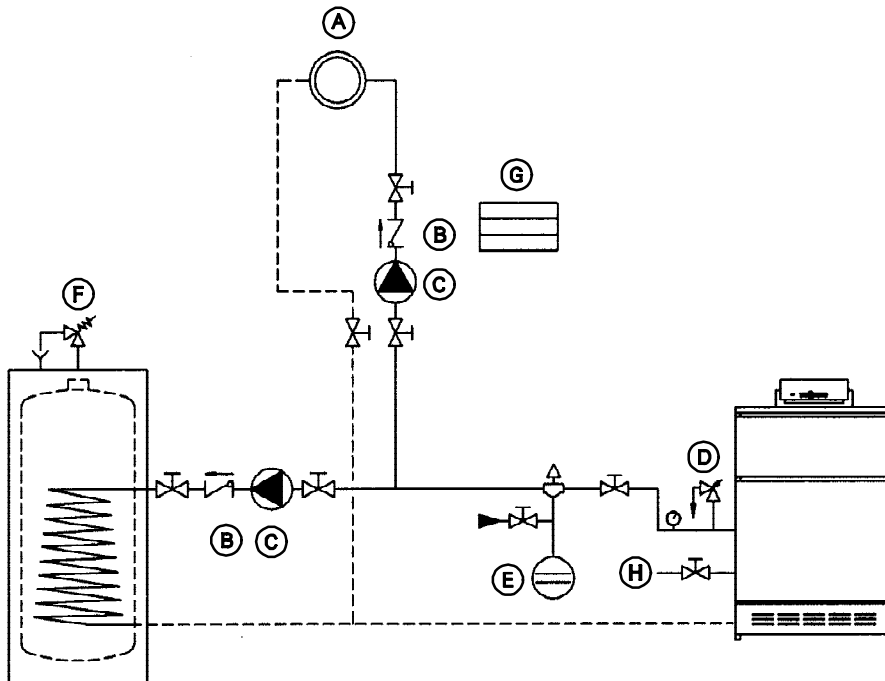
Without a mixing valve

with Vitotronic 100
Model KK10 or KW10 control



Without a mixing valve, and with domestic hot water production

with Vitotronic 100
Model KK10 or KW10 control

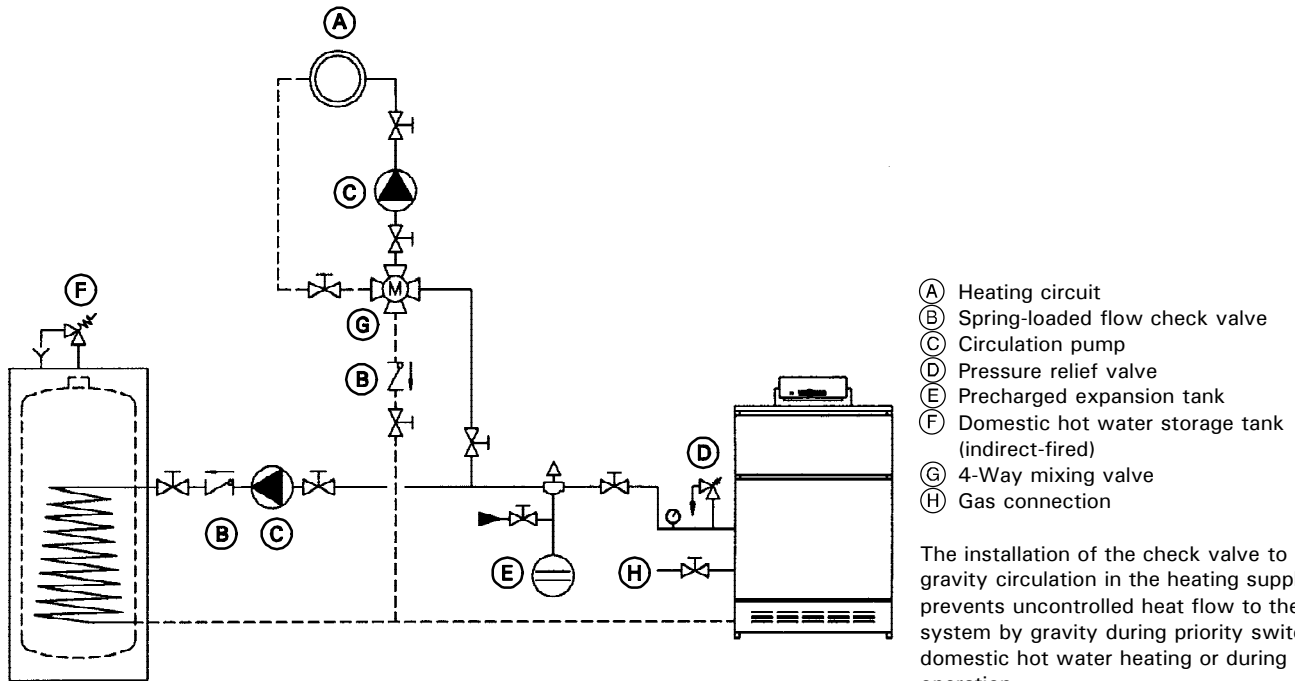


- Ⓐ Heating circuit
- Ⓑ Spring-loaded flow check valve
- Ⓒ Circulation pump
- Ⓓ Pressure relief valve
- Ⓔ Precharged expansion tank
- Ⓕ Domestic hot water storage tank (indirect-fired)
- Ⓖ DHW Pump Module
- Ⓗ Gas connection

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.

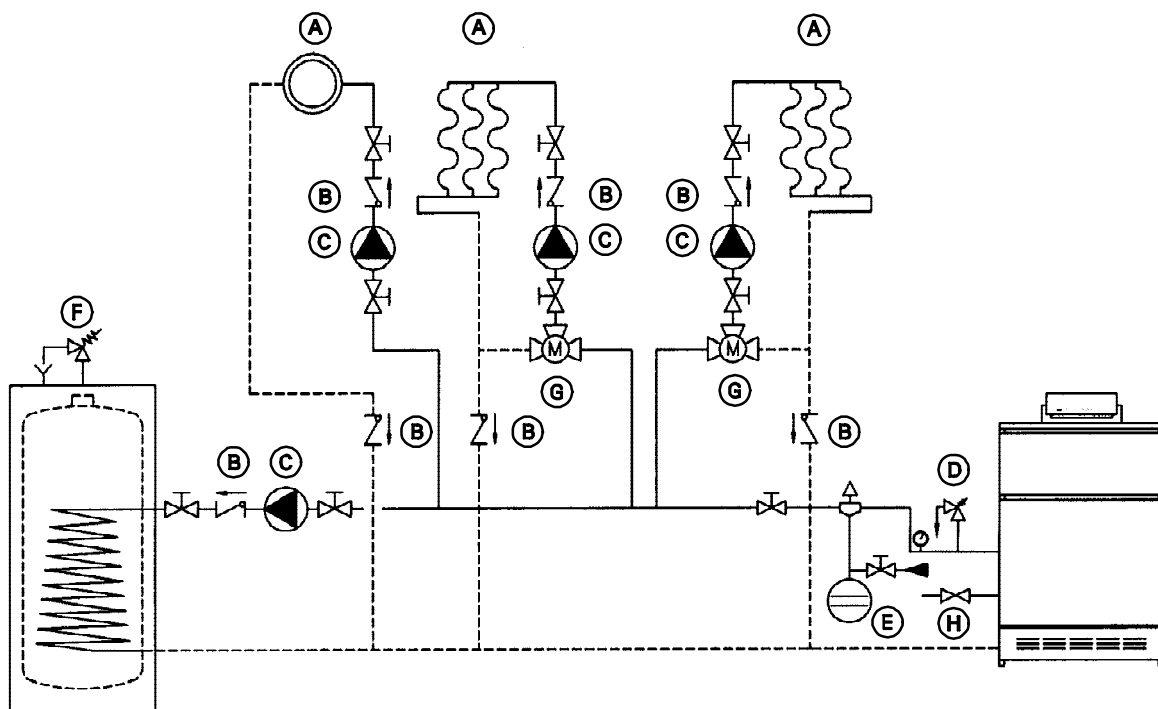
With a 4-way mixing valve to regulate heating circuit, and with domestic hot water production

with Vitotronic 200
Model KW2 control



**With two low-temperature circuits with mixing valves,
one high temperature circuit without mixing valve,
and with domestic hot water production**

with Vitotronic 300
Model KW3 control,
combined with two Mixing Valve Actuator Accessory Kits



- (A) Heating circuit
- (B) Spring-loaded flow check valve
- (C) Circulation pump
- (D) Pressure relief valve
- (E) Expansion tank
- (F) Domestic hot water storage tank (indirect-fired)
- (G) 3-Way mixing valve
- (H) Gas connection

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.

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