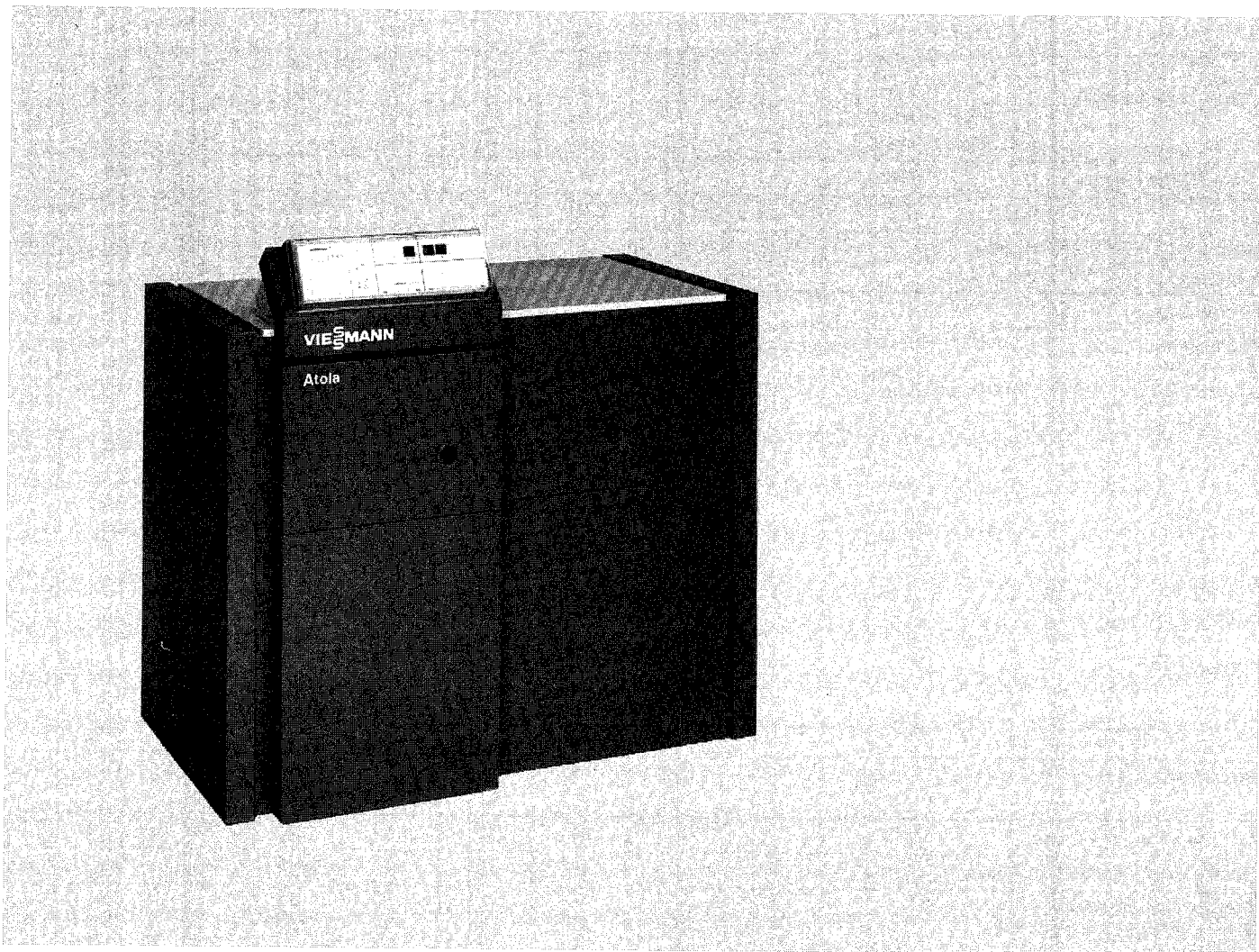
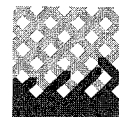


Technical Data Manual

Model Nos. and pricing: see Price List



Atola-RN

Atmospheric gas-fired cast-iron boiler for closed hot water heating systems with maximum 60 psi / 414 kPa, 248°F / 120°C. For single or multiple boiler installations. For use with natural or propane gas with atmospheric burners. Nitrous oxide reducing inserts used on natural gas boilers only.

Single-stage gas manifold assemblies for single-stage operation are standard on model sizes RN-140 and RN-175. **Two-stage gas manifold** assemblies for two-stage operation are standard on model sizes RN-210 to RN-385. RN-210 may be ordered with either single- or two-stage gas manifold.

The base control for the Atola-RN is the **SR-RN**. Advanced control alternative: **Trimatik-RN** digital indoor/outdoor control with menu-driven Comfortrol programming unit. **Multimatik** for multiple boiler installations.



DOE

Technical Data

Technical data

Boiler Model			Model No.	RN-140	RN-175	RN-210	RN-245	RN-280	RN-315	RN-350	RN-385
AGA/CGA input	full load	MBH	140	175	210	245	280	315	350	385	
		kW	41	51	61	72	82	92	102	113	
	partial load (first stage)	MBH	-	-	105	140	140	175	175	210	
		kW	-	-	31	41	41	51	51	61	
AGA/CGA output	full load	MBH	119	149	179	209	238	268	298	328	
		kW	35	44	52	61	70	79	87	96	
DOE heating capacity	partial load (first stage)	MBH	-	-	90	119	119	149	149	179	
		kW	-	-	26	35	35	44	44	52	
Net I=B=R rating (full load)		MBH	103	130	156	182	207	233	259	285	
AFUE	flue damper	%	82.5	83.5	83.5	83.5	83.6	85 ^{*1}	85 ^{*1}	85 ^{*1}	
Number of burners (partial load)			4	5	6 (3)	7 (4)	8 (4)	9 (5)	10 (5)	11 (6)	
Number of burner firing stages			1	1	1 or 2	2	2	2	2	2	
Heat exchanger surface		ft ²	31.1	38.6	46.4	54	61.5	69	77	84	
Dimensions											
Boiler length ^{*2} (as delivered)		inches	27	27	28¾	28¾	28¾	28¾	28¾	28¾	
		mm	687	687	730	730	730	730	730	730	
Total length (with draft hood)		inches	40	40	42	42	42	42	42	42	
		mm	990	990	1068	1068	1068	1068	1068	1068	
Total width		inches	28¼	32¼	40¼	40¼	44¼	48¼	52¼	56¼	
		mm	719	821	1023	1023	1124	1226	1327	1429	
Total height		inches	43¾	43¾	47¾	47¾	47¾	47¾	47¾	47¾	
		mm	1108	1108	1215	1215	1215	1215	1215	1215	
Total height with flue pipe		inches	45½	45½	51	51	51	51	51	51	
		mm	1155	1155	1296	1296	1296	1296	1296	1296	
Weight boiler block		lbs	-	-	481	516	580	644	708	772	
		kg	-	-	218	234	263	292	321	350	
Total weight boiler with insulation, burners and boiler control		lbs	408	470	536	571	635	699	763	827	
		kg	185	213	243	259	288	317	346	375	
Number of cast-iron sections			5	6	7	8	9	10	11	12	
Boiler water content		USG	5.8	6.8	7.6	8.5	9.3	10.2	11.1	11.9	
		ltrs	22	25.7	28.7	32.0	35.2	38.6	41.9	45.2	
Max. operating pressure		psi	60	60	60	60	60	60	60	60	
Combustion and dilution air (approx.)		cfm	47	58	70	82	93	105	117	128	
Boiler water connections											
Supply and return (see page 5)		inches	1½	1½	1¼	1¼	1¼	1¼	1¼	1¼	
Safety supply		inches	1¼	1¼	1	1	1	1	1	1	
Drain valve		inches	¾	¾	¾	¾	¾	¾	¾	¾	
Gas supply connection		inches	½	½	1	1	1	1	1	1	
Flue gas											
Temperature ^{*3}	full load	°F	284	284	302	302	302	302	302	302	
		°C	140	140	150	150	150	150	150	150	
	partial load	°F	-	-	239	239	239	239	239	239	
		°C	-	-	115	115	115	115	115	115	
Flue gas mass flow	full load	lbs/h	226	282	388	445	492	540	608	639	
		kg/h	103	128	176	202	223	245	276	290	
	partial load	lbs/h	-	-	196	256	247	304	298	355	
		kg/h	-	-	89	116	112	138	135	161	
Vent pipe collar		outer Ø inches	6	6	7	7	8	8	8	8	

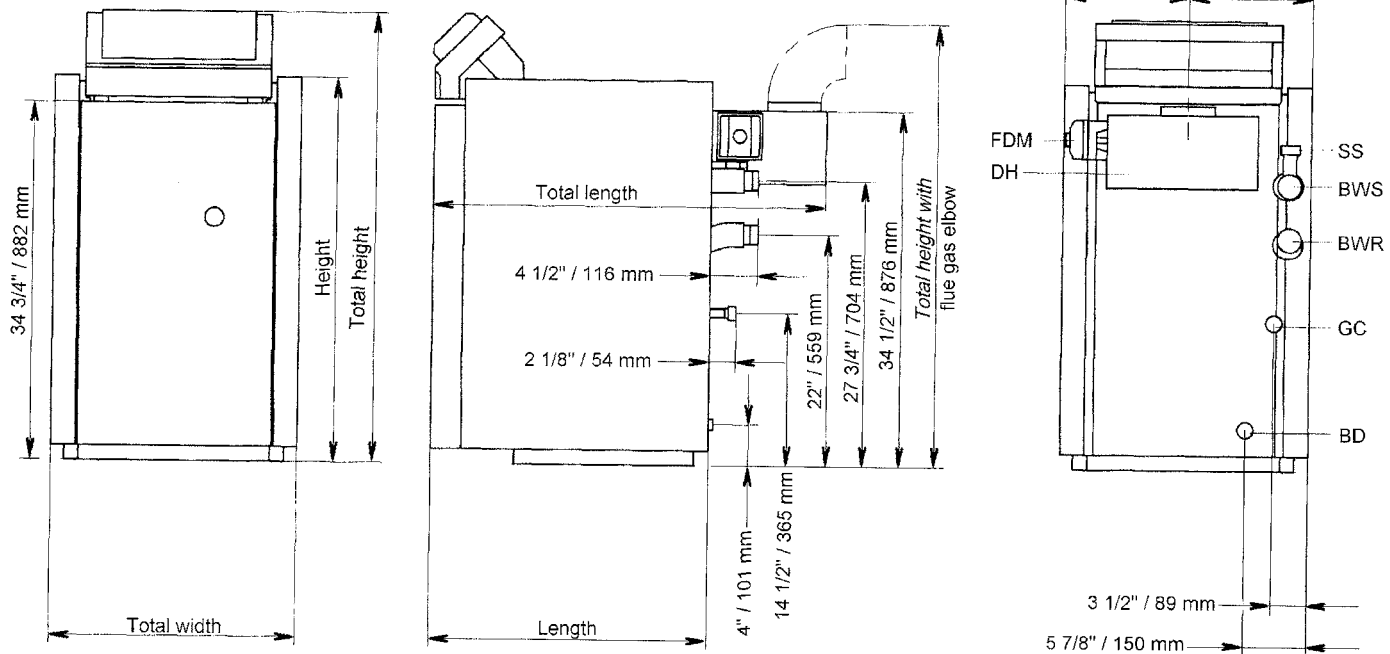
^{*1} Steady state efficiency, not A.F.U.E., for model sizes RN-315 to RN-385. Viessmann flue damper is standard equipment on all models.

^{*2} Where entry to mechanical room is very restrictive, boiler supply and return pipes, as well as control, can be removed.
This reduces the length of the boiler by approx. 18" / 460 mm.

^{*3} Flue gas temperature measurements are taken before dilution air with a combustion air supply temperature of 68°F / 20°C.

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

Technical data - RN-140, RN-175



Measurements

Boiler model		RN-140	RN-175
a	inches	14	16
	mm	358	409
b	inches	14	16
	mm	360	411

Inch dimensions rounded to the nearest 1/4".

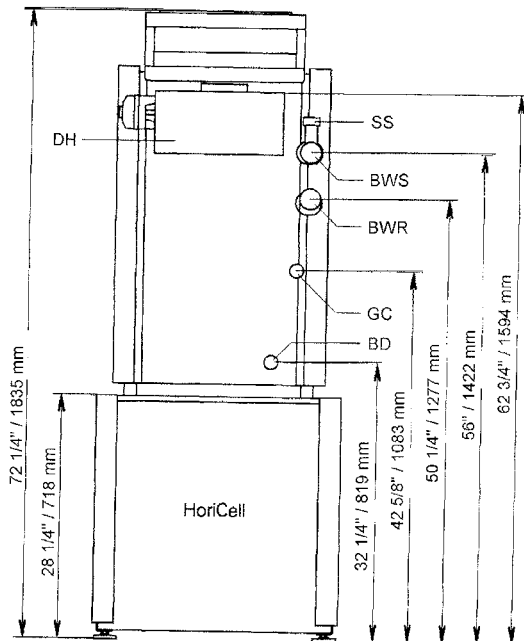
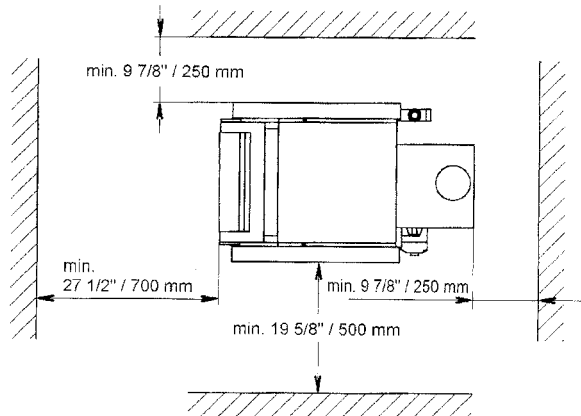
Legend

- FDM Flue damper motor (accessory)
- BD Boiler drain
- BWR Boiler water return
- BWS Boiler water supply
- DH Draft hood
- GC Gas connection
- SS Safety supply

Minimum clearances to combustible construction

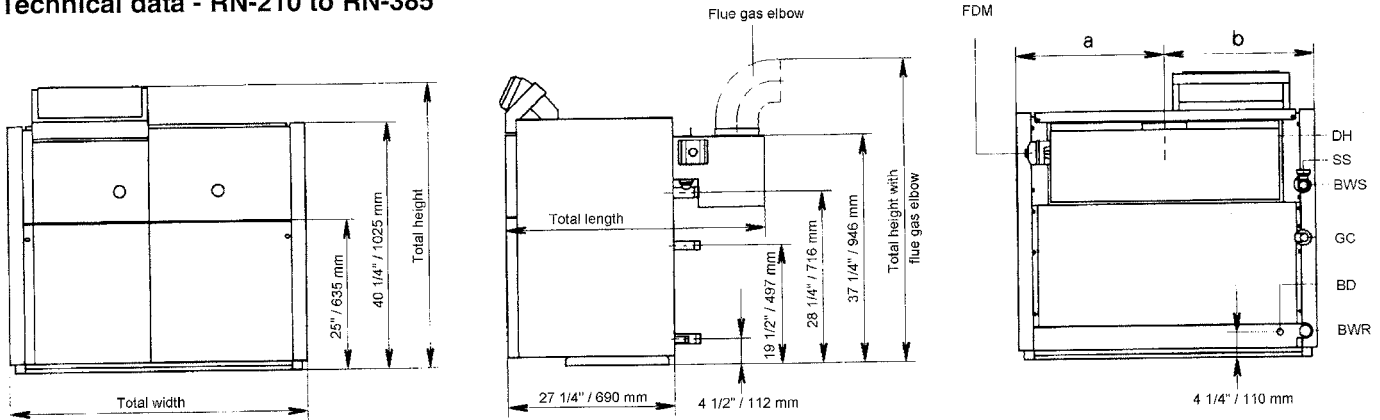
Top 18", LS 6", RS 0", Rear 6", Floor - only install on combustible flooring with factory attached steel base.

Recommended minimum service clearances



Technical Data

Technical data - RN-210 to RN-385



Measurements

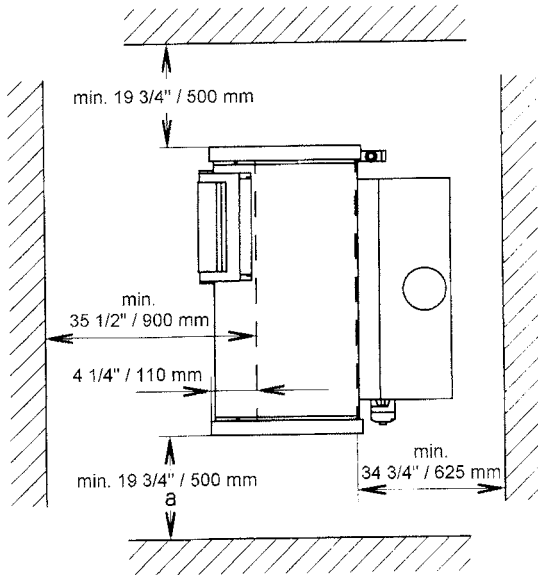
Boiler model	RN-210	RN-245	RN-280	RN-315	RN-350	RN-385
a	inches 22	20	22	24	26	28
	mm 558	509	559	611	661	712
b	inches 18 1/4	20 1/4	22 1/4	24 1/4	26 1/4	28 1/4
	mm 465	514	565	615	666	717

Inch dimensions rounded to the nearest 1/4".

Legend

- FDM Flue damper motor (accessory)
- BD Boiler drain
- BWR Boiler water return
- BWS Boiler water supply
- DH Draft hood
- GC Gas connection
- SS Safety supply

Recommended minimum service clearances



Minimum clearances to combustible construction

Top 18", LS 6", RS 0", Rear 6", Floor - non-combustible

The measurements apply to the base plate.

Measurement "a" applies if the boiler is later equipped with a motorized flue damper:

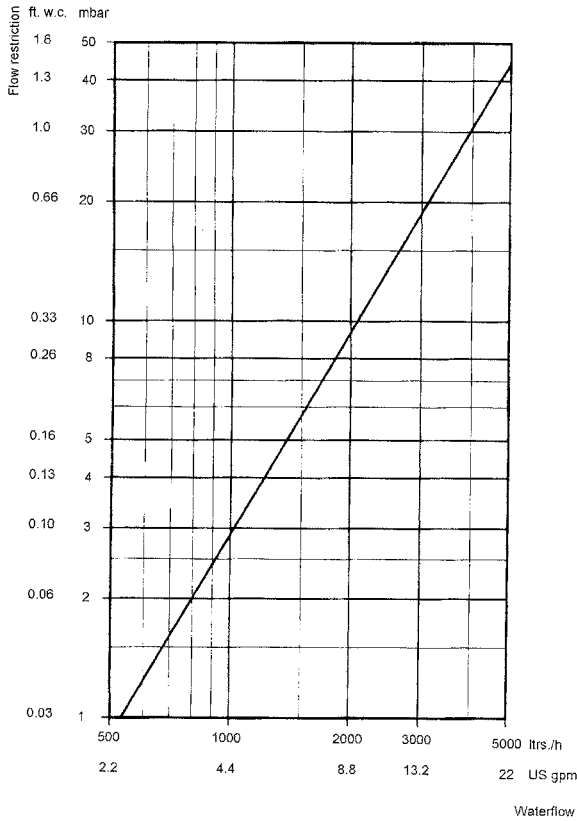
Boiler model	RN-210	RN-245	RN-280	RN-315	RN-350	RN-385
a	inches 33 3/4	37 3/4	37 3/4	41 3/4	45 3/4	49 3/4
	mm 856	958	958	1059	1161	1262

If this amount of space is not available, removal of the draft hood will be necessary if a motorized flue damper is installed in the future.

Inch dimensions rounded to the nearest 1/4".

Waterside flow - all Atola-RN boiler sizes

The Atola-RN is designed for closed loop, forced circulation, hot water heating systems only. A flow switch is not required.



Typical flow rates for Atola-RN boilers

Boiler model	RN-140	RN-170	RN-210	RN-245	RN-280	RN-315	RN-350	RN-385
MBH output	119	149	178	209	238	268	298	327
Flow rates:								
for 20°F rise								
gpm	11.9	14.9	17.8	20.9	23.8	26.8	29.8	32.7
for 30°F rise								
gpm	7.9	9.9	11.9	13.9	15.9	17.9	19.9	21.8
for 40°F rise								
gpm	6.0	7.5	8.9	10.5	11.9	13.4	14.9	16.4

Common water header size (single boiler installation)

The table below shows common header sizes for water piping (friction loss in the range of 1.9 to 4 ft. of head loss per 100 ft. of lineal pipe).

Boiler model	RN-140	RN-170	RN-210	RN-245	RN-280	RN-315	RN-350	RN-385
Pipe size for main header	inches 1 1/4				inches 1 1/2		inches 1 1/2 or 2	
Range of flow through boiler	gpm 7 to 15				gpm 10 to 25		gpm 10 to 25 or 25 to 35	

For **RN-140, -175, -210, -245** use standard 1 1/4" supply and return connections for connecting water piping. This should be satisfactory for the majority of applications.

For **RN-280, -315** increase from 1 1/4" to 1 1/2" before connecting 1 1/2" water piping.

For **RN-350, -385** increase from 1 1/4" to minimum 1 1/2". For flow rates over 25 gpm increase to 2" before connecting water piping.

Use standard friction loss methods for pipe sizing.

Product Delivery / Boiler Control Alternatives System Design Considerations

Product Delivery

Atola-RN boiler sizes RN-140 and RN-175 are shipped with enclosure assembled on the boiler, requiring only field attachment of the draft hood and boiler control.

Atola-RN boiler sizes RN-210 to RN-385 are shipped unassembled with the boiler enclosure panels, insulation, draft hood, and control packaged separately from the sectional cast-iron block. In this manner, the equipment can be handled more easily to its location.

Viessmann flue damper is standard equipment on all Atola-RN boiler sizes.

Boiler Control Alternatives

Electrical requirements:

120 V, 60 Hz, less than 12A.

For single-boiler installations:

SR-RN

base boiler control for single-stage gas manifold configuration.

SR-RN2

base boiler control for two-stage gas manifold configuration.

Viessmann Trimatik-RN or Trimatik-RN2 with menu-driven Comfortrol

Digital indoor/outdoor control with energy-saving programmable set-backs, control of one high- and one low-temperature heating circuit, management of DHW production, and integrated failure diagnostic system.

For multiple-boiler installations:

Multimatik

for multiple-boiler installations. The Multimatik digital heating system control acts as the master control, and communicates digitally with the base control on each Atola-RN boiler. The Multimatik-TR can control up to 4 single-stage boilers, or 2 two-stage boilers. The Multimatik-D can control up to 6 single-stage boilers, or 3 two-stage boilers. A wide range of sophisticated standard and optional features makes the Multimatik a suitable solution for almost any demanding application. For assistance in selecting the appropriate Multimatik control, please contact your regional Viessmann sales representative.

Custom control panels

In addition, custom control panels for residential or commercial applications are designed and manufactured by Viessmann to suit any customer's specific requirements. Both Multimatik and custom control panels can have features such as pool heating, hot tub heating, snow melting, telephone tie-in and/or several other functions. Please inquire.

System Design Considerations

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 any amount of the above mentioned chemicals.

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

If the above criteria are not properly observed and boiler damage results, any warranty on the boiler and related components will be null and void.

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

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

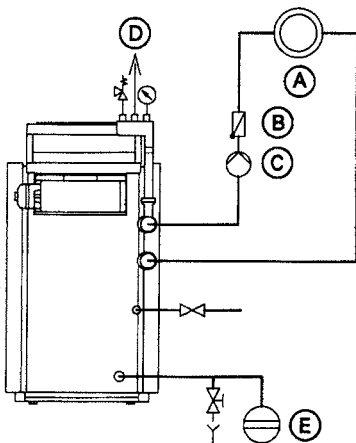
Provisions for combustion and ventilation air must be made in accordance with the "Natural Gas Installation Code CAN/CGA-B149.1" (Canada) and/or provisions of local codes. In the U.S., use the "National Fuel Gas Code ANSI Z223.1."

The sizing methods outlined in the above codes should be used when installing a round duct to supply combustion air from the outside.

Installation Examples - RN-140, RN-175

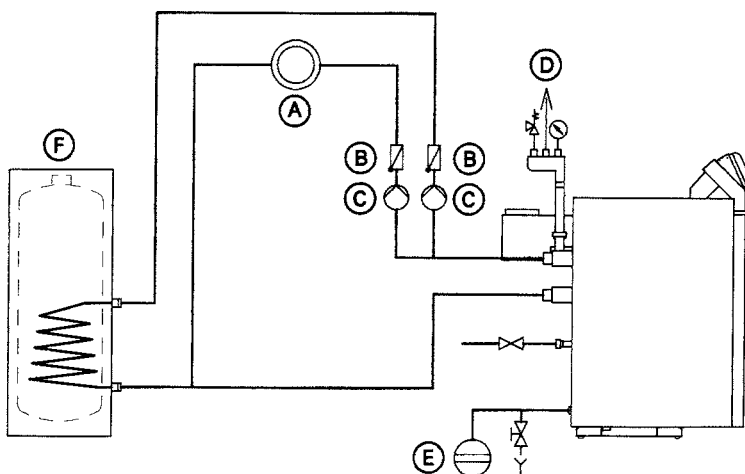
Without mixing valve

with, for example, SR-RN



Installation of a spring-loaded flow-check valve in the heating circuit supply as a mechanical "break" is recommended to prevent hot water from flowing unintentionally to (space) heating circuits during priority DHW production or during summer operation (when only DHW is produced).

with, for example, Viessmann Trimatik-RN

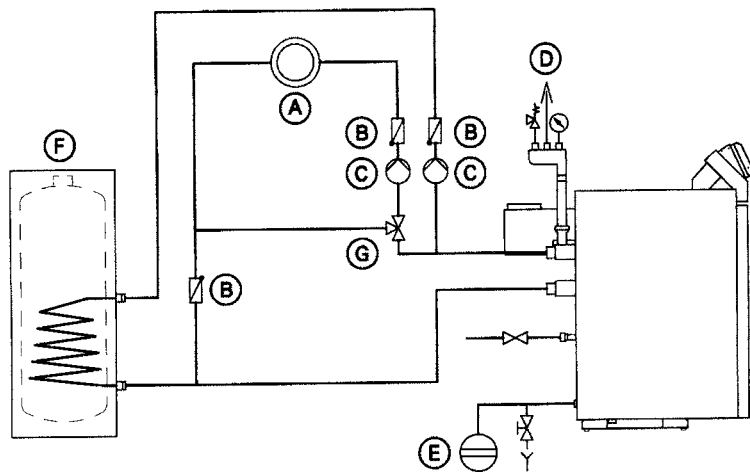
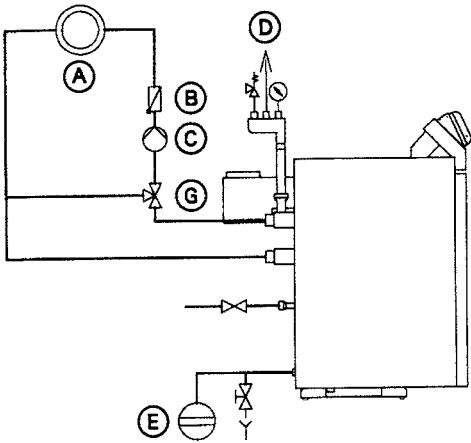


- (A) Heating circuit
- (B) Spring-loaded flow-check valve
- (C) Circuit pump
- (D) Safety header with air vent, safety valve and pressure gage
- (E) Expansion tank
- (F) VertiCell-HG or HoriCell-HG DHW tank (indirect-fired)

Installation Examples (continued) - RN-140, RN-175

With 3-way mixing valve for heating circuit control

with, for example, Viessmann Trimatik

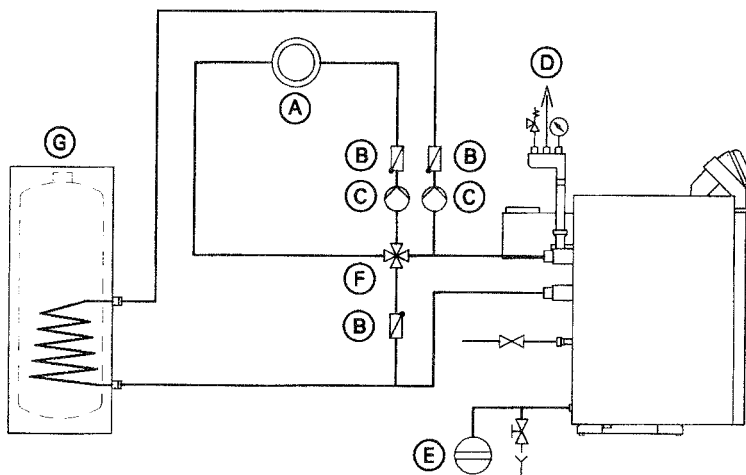
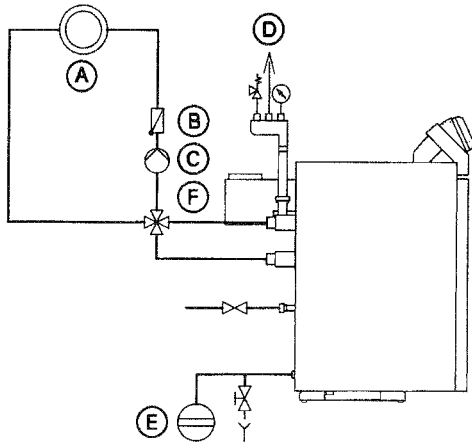


- Ⓐ Heating circuit
- Ⓑ Spring-loaded flow-check valve
- Ⓒ Circuit pump
- Ⓓ Safety header with air vent, safety valve and pressure gage
- Ⓔ Expansion tank
- Ⓕ VertiCell-HG or HoriCell-HG DHW tank (indirect-fired)
- Ⓖ 3-Way mixing valve

Installation Examples (continued) - RN-140, RN-175

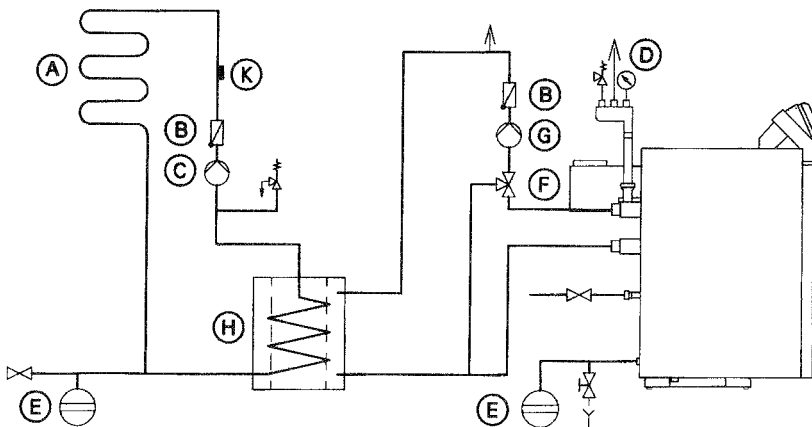
With 4-way mixing valve for heating circuit control

with, for example, Viessmann Trimatik



- Ⓐ Heating circuit
- Ⓑ Spring-loaded flow-check valve
- Ⓒ Circuit pump
- Ⓓ Safety header with air vent, safety valve and pressure gage
- Ⓔ Expansion tank
- Ⓕ 4-Way mixing valve
- Ⓖ VertiCell-HG or HoriCell-HG DHW tank (indirect-fired)

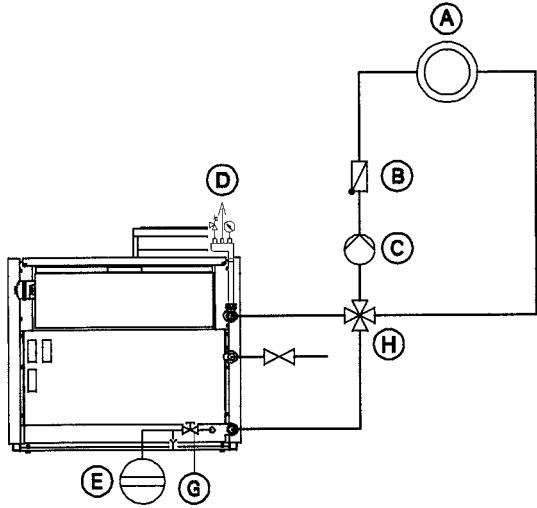
Underfloor heating with system isolation



- Ⓐ Underfloor heating circuit
- Ⓑ Spring-loaded flow-check valve
- Ⓒ Circuit pump for underfloor heating
- Ⓓ Safety header with air vent, safety valve and pressure gage
- Ⓔ Expansion tank
- Ⓕ 3-Way mixing valve
- Ⓖ Circuit pump for heat exchanger
- Ⓗ Heat exchanger
- Ⓚ Supply temperature sensor

Installation Examples - RN-210 to RN-385

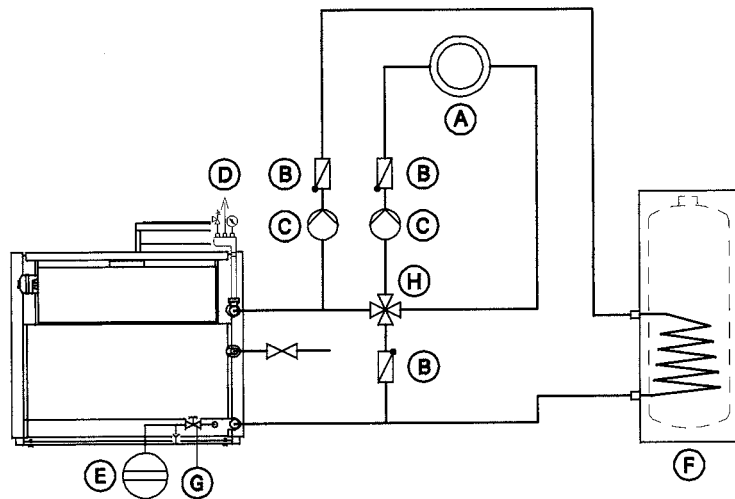
With 4-way mixing valve for heating circuit control



Single-stage operation can only occur when boiler water temperature is above the minimum temperature, and a demand for heat is present. When water temperature is above the minimum, boiler control will determine full input operation or partial load operation based on demand for heat. Refer to boiler control instructions.

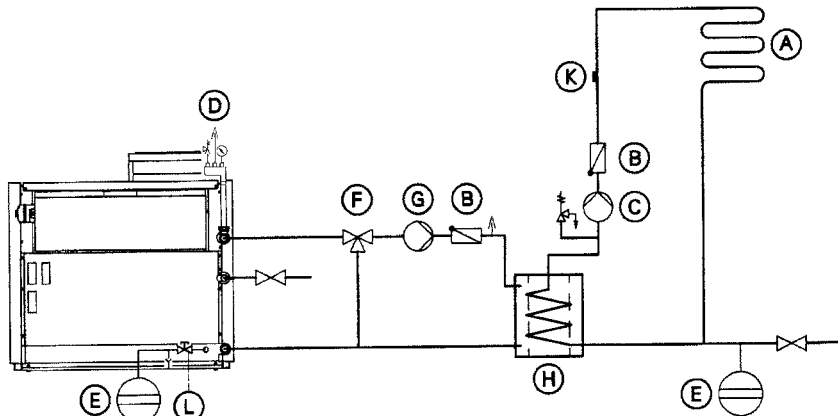
Install LWCO where required by local codes.

Viessmann flue damper is standard equipment. Use of Viessmann flue damper allows chimney to dry out during "off" cycle while reducing heat loss of heat exchanger.



- Ⓐ Heating circuit
- Ⓑ Spring-loaded flow-check valve
- Ⓒ Circuit pump
- Ⓓ Safety header with air vent, safety valve and pressure gage
- Ⓔ Expansion tank
- Ⓕ VertiCell-HG or HoriCell-HG DHW tank (indirect-fired)
- Ⓖ Drain valve
- Ⓗ 4-Way mixing valve

Underfloor heating with system isolation



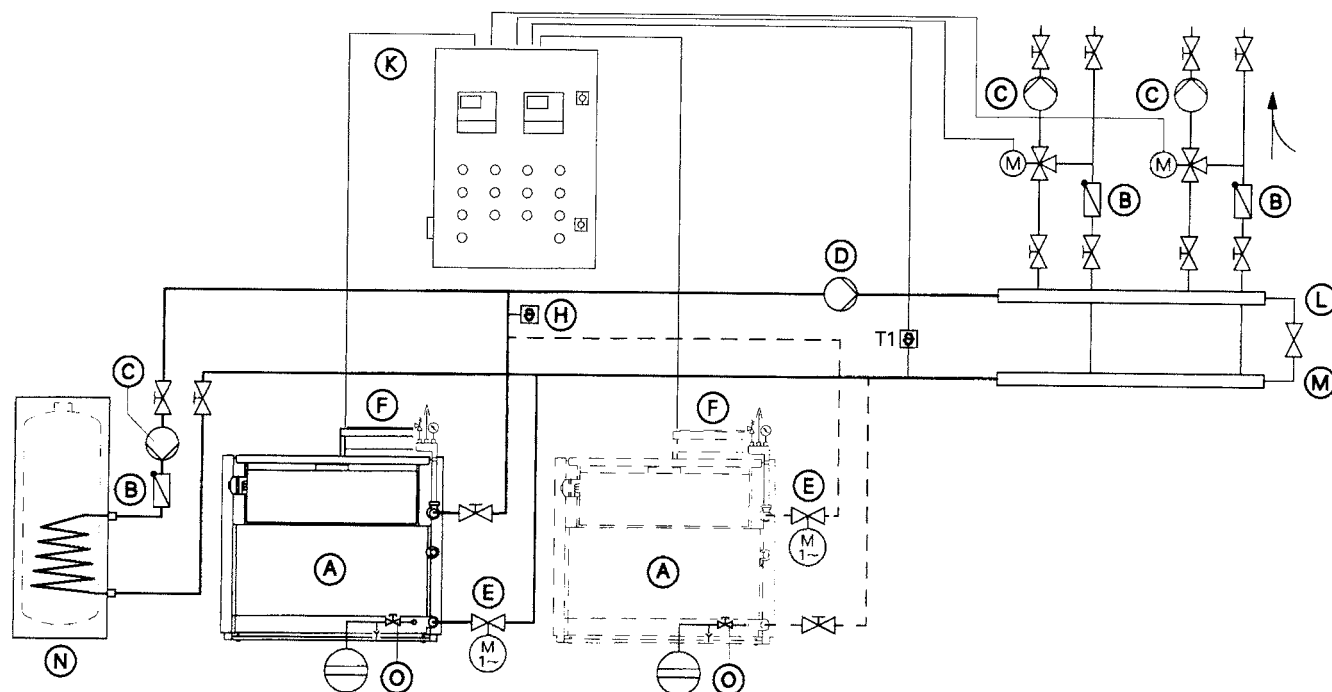
- Ⓐ Underfloor heating circuit
- Ⓑ Spring-loaded flow-check valve
- Ⓒ Circuit pump for heat exchanger
- Ⓓ Safety header with air vent, safety valve and pressure gage
- Ⓔ Expansion tank
- Ⓕ 3-Way mixing valve
- Ⓖ Circuit pump for heat exchanger
- Ⓗ Heat exchanger
- Ⓚ Supply temperature sensor
- Ⓛ Drain valve

Installation Examples (continued) - RN-210 to RN-385

Distribution header with by-pass and return temperature sensor

for single- and multiple-boiler applications with large water content,
with controlled space heating system via mixing valve(s)

Mixing valve(s) close if return temperature falls below minimum boiler temperature.



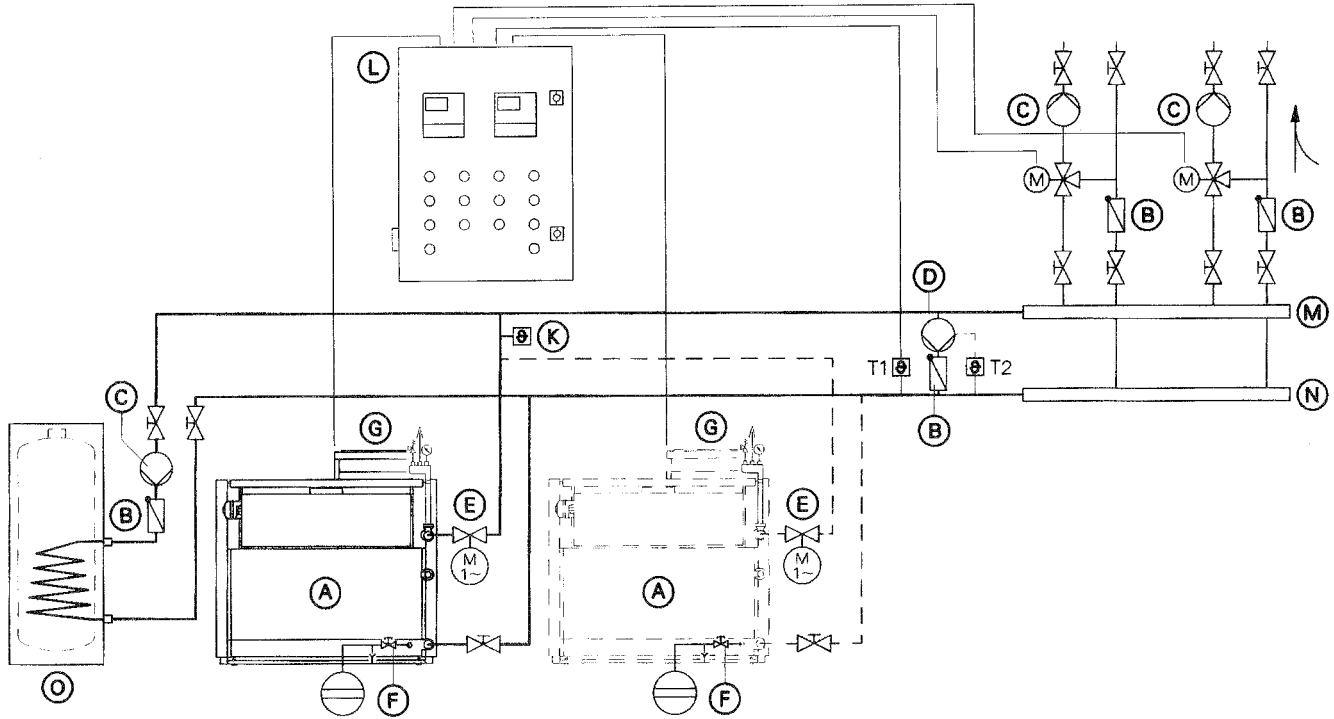
- | | | |
|------------------------------------|---|---|
| (A) Boiler | (F) SR-RN2 (for two-stage gas manifold) | (N) VertiCell-HG or HoriCell-HG DHW tank (indirect-fired) |
| (B) Spring-loaded flow-check valve | (H) Supply temperature sensor | (O) Drain valve |
| (C) Circuit pump | (K) Multimatik-D | T1 Temperature sensor (low limit) for priority switching of the heating circuit; switching point 104 °F / 40 °C |
| (D) Distribution header pump | (L) Supply distribution header | |
| (E) Motorized isolation valve | (M) Return distribution header | |

Installation Examples (continued) - RN-210 to RN-385

With return sensor and by-pass pump

for single and multiple boiler applications with large water content,
with controlled space heating system via mixing valve(s)

By-pass pump activates if return temperature drops below minimum boiler temperature.
Mixing valve(s) will close if return temperature drops lower.



- | | | |
|----------------------------------|---------------------------------------|---|
| Ⓐ Boiler | Ⓒ SR-RN2 (for two-stage gas manifold) | ⓪ VertiCell-HG or HoriCell-HG DHW tank (indirect-fired) |
| Ⓑ Spring-loaded flow-check valve | Ⓚ Supply temperature sensor | Ⓣ1 Temperature sensor (low limit) for priority switching of the heating circuit; switching point 104 °F / 40 °C |
| Ⓒ Circuit pump | Ⓛ Multimatik-D | Ⓣ2 Return temperature aquastat for pump |
| Ⓓ Shunt pump | Ⓜ Supply distribution header | |
| Ⓔ Motorized isolation valve | Ⓝ Return distribution header | |
| Ⓕ Drain valve | | |

Technical information subject to change without notice.