**CAUTION!**

Before putting the boiler into operation read this manual carefully.

WARNING!

Improper installation, adjustment, alteration, service or maintenance can cause injury, loss of life or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

CAUTION!

The operating manual is part of the documentation that is delivered to the installation's operator. Go through the information in this manual with the owner/operator and make sure that he or she is familiar with all the necessary operating instructions.

NOTICE!

In the Commonwealth of Massachusetts this boiler must be installed by a licensed Plumber or Gas Fitter.

Warning: If the information in these instructions 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 vapors and liquids in the vicinity of this or any other appliance.
- What to do if you smell gas
 - Do not try to light any boiler.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Notice:

This manual is available in the English and French language. This manual must be retained for future reference.

Logamax plus GB162-80 kW/100 kW

For the registered installer

Please read these
instructions carefully
before starting the
operation



Buderus

Overview Cascade frame for Logamax plus GB162-80 kW/100 kW

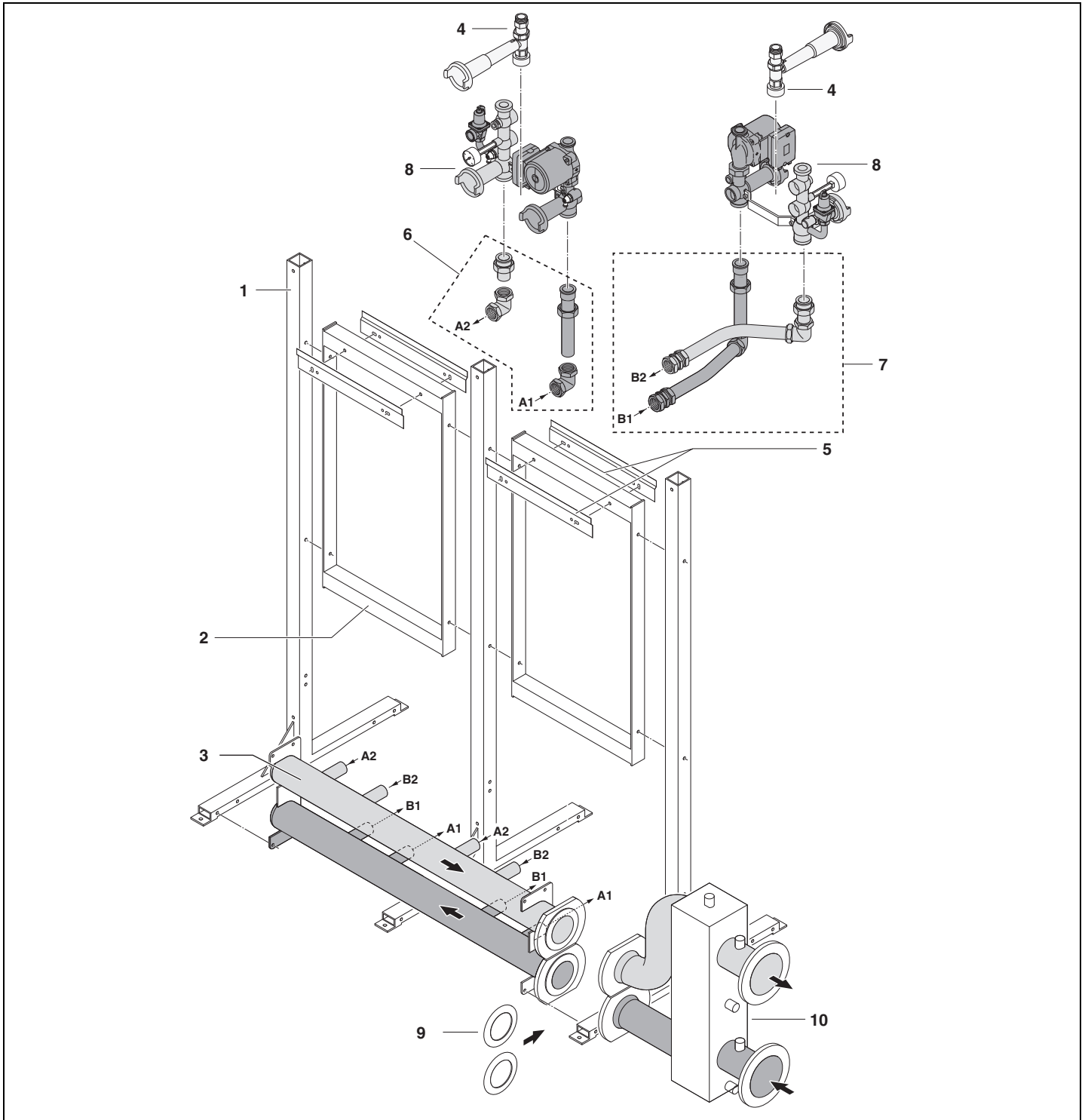


Fig. 1 Overview of cascade frame for Logamax plus GB162-80 kW/100 kW

- | | |
|-----------------------------|---|
| 1: Supports | 6: Cascade connection set TL-inline |
| 2: Connecting frame | 7: Cascade connection set TR-back-to-back |
| 3: Supply and return header | 8: Pump group |
| 4: Manual gas shutoff valve | 9: Flange seals - gaskets |
| 5: Mounting bracket | 10: Low loss header |

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1 General information

The installation instructions for cascade systems with Logamax plus GB162 appliances are provided to enable correct and easy installation.

The modular cascade frame consists of a number of supports with connecting frames which are screwed together during installation.

The compact dimensions of the individual cascade frame parts enable simple and quick installation.



NOTICE

Please refer to the Logamax plus GB162-80kW/100kW Installation Instruction Manual for details on the installation, start-up, maintenance and troubleshooting of the boiler(s).

2 Items supplied with unit

Cascade frame (fig. 2)

See also fig. 1 on page 2:

1. Pallet with cascade frame:
 - supports
 - connecting frame
 - supply and return header
 - flange seals - gaskets
 - low loss header
 - blank flanges
 - rubber pump seals
 - fixings
 - fasteners
2. Box with cascade connection set TL-inline; For a TL-inline configuration then 2 cascade connection sets for the TL-inline are included.
3. Box with cascade connection set TR-back-to-back; For a TR-back-to-back cascade connection set then 1 TR-back-to-back cascade connection set is included and one TL-inline cascade connection set is included
4. Installation instructions.

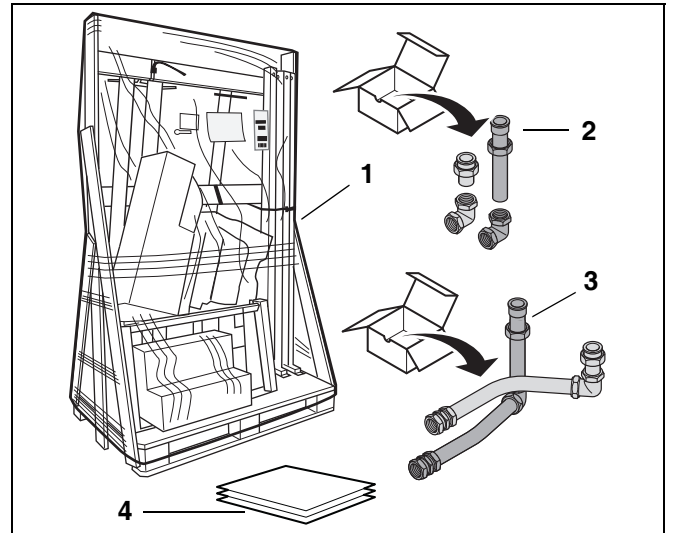


Fig. 2 Items supplied with the cascade frame

Boiler (fig. 3):

(to be ordered from your supplier)

1. Boiler with casing
2. Parallel flue adapter
3. Screws and plugs for wall bracket
4. Union nut for gas connection
5. Wall bracket
6. Condensate trap with hose
7. Supply and return union nuts with sealing rings
8. Technical documents set.

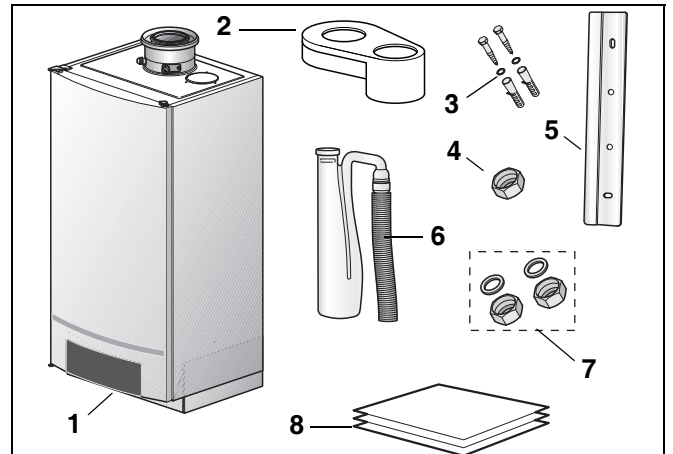


Fig. 3 Items supplied with the boiler assembly

Pump group (fig. 4):

(to be ordered from your supplier)

1. Installation instructions
2. Connection kit.

The connection kit consists of:

3. Maintenance valve(s) - fill and drain
4. Gas isolation valve
5. Flow check valve
6. Pump
7. Pressure gauge
8. Pressure relief valve.

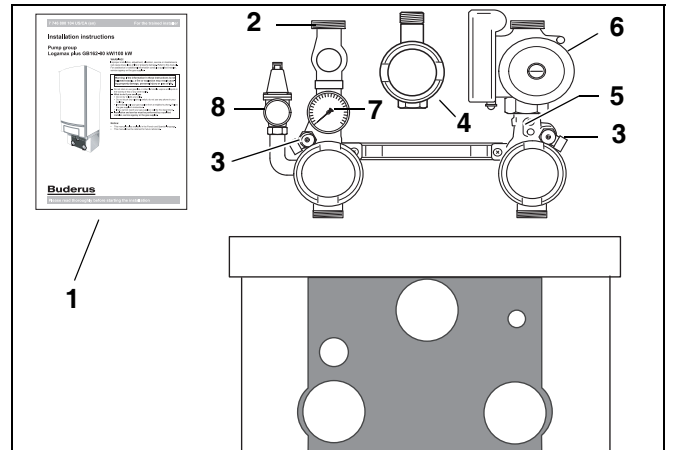


Fig. 4 Items supplied with pump group

2.1 Configurations

Buderus supplies cascade systems in **TL** and **TR** configurations:

TL - Inline installation

All boiler assemblies are installed in one line, enabling an easy-to-monitor installation in a narrow room.

TR - Back-to-back installation

The boiler assemblies are installed back-to-back on both sides of the frame, to create a compact installation which ideally suits rectangular rooms and which ensures the best possible access to all boilers.

The relevant configuration can be selected on the basis of the performance required (see table 1).

Boiler assembly connection kit

The connection kit can be used both for the Logamax plus GB162-80 kW and the GB162-100 kW boilers.

The connection kit includes a pressure relief valve, a flow check valve, a pump and isolating valves.

Low loss header	TL- configuration (inline)	TR- configuration (back-to-back)
2½"	TL2, TL3	TR2
3"	TL4	TR3, TR4
4"	5 boilers and more	

Table 2 Low loss header configuration

The Logamax plus GB162 cascade system can be installed in 2 different configurations (fig. 5).

The gas connection can be made to either side of the boilers, independent of the supply- and return connections.

System gross output			Cascade system options TL = inline TR = back-to-back	Number of boilers GB162	
Natural gas	LPG			80 kW	100 kW
k.Btu/hr	k.Btu/hr	kW			
290	270	80	Single installation	1	–
333	315	100	Single installation	–	1
580	540	160	TL2 or TR2	2	–
623	585	180	TL2 or TR2	1	1
666	630	200	TL2 or TR2	–	2
870	810	240	TL3 or TR3	3	–
913	855	260	TL3 or TR3	2	1
956	900	280	TL3 or TR3	1	2
999	945	300	TL3 or TR3	–	3
1,160	1,080	320	TL4 or TR4	4	–
1,203	1,125	340	TL4 or TR4	3	1
1,246	1,170	360	TL4 or TR4	2	2
1,289	1,215	380	TL4 or TR4	1	3
1,332	1,260	400	TL4 or TR4	–	4

Table 1 Cascade selection

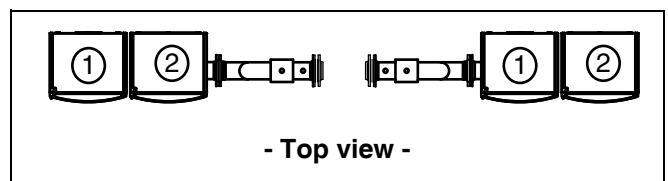


Fig. 5 Cascade system configuration varieties

3 Dimensions

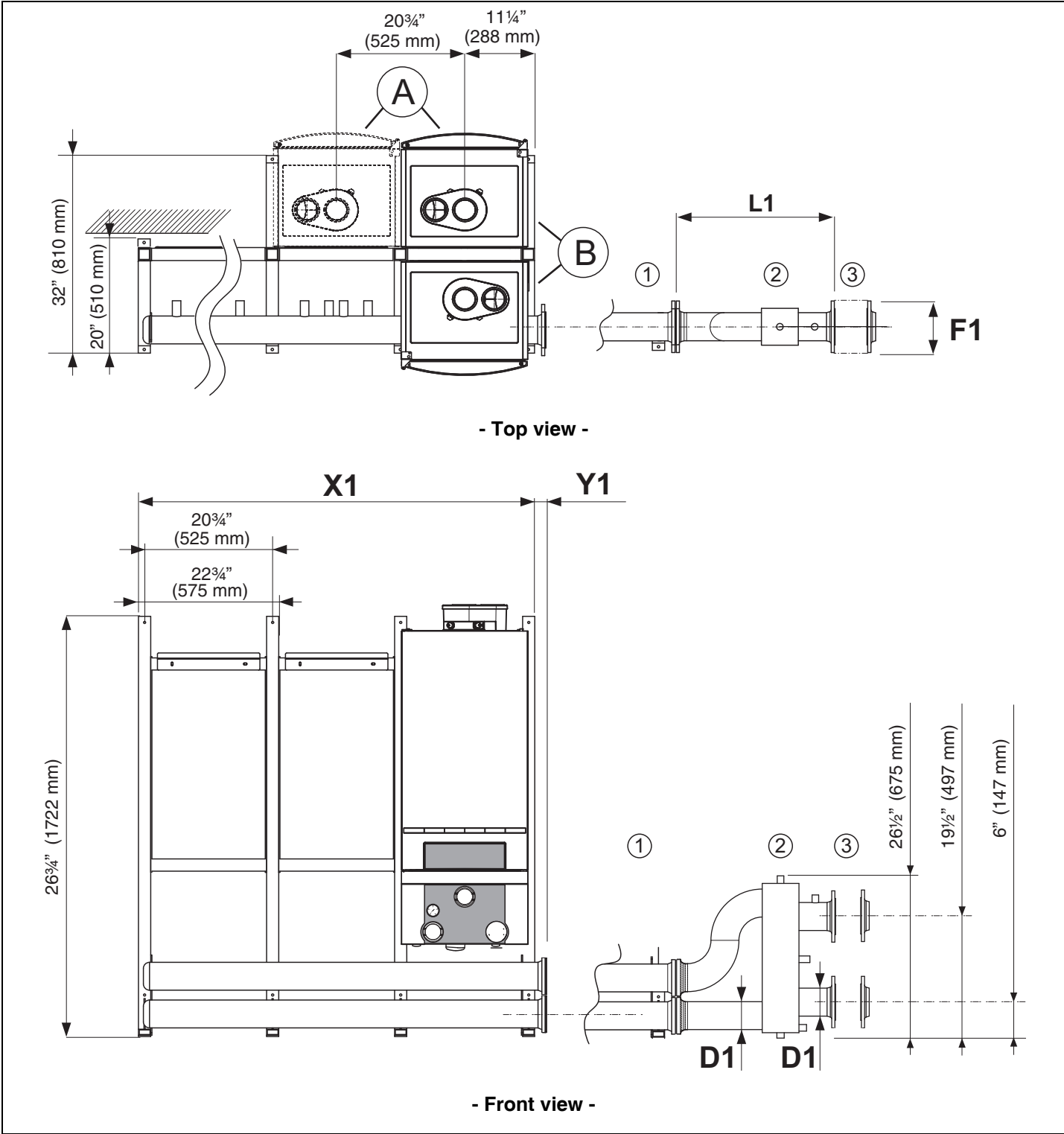


Fig. 6 Dimensions of cascade systems - 1

- A: TL - In-line configuration
- B: TR - Back-to-back configuration

- 1: Supply and return header
- 2: Low loss header
- 3: Enclosed welding flanges

Cascade system	Length			Width	
	X1	+	Y1		
TL2	43¼"		1½"	44¾"	22¾"
	1100 mm	+	38 mm	= 1138 mm	
TL3	64"		1½"	65½"	22¾"
	1625 mm	+	38 mm	= 1663 mm	
TL4	84½"		1¾"	86¼"	22¾"
	2150 mm	+	42 mm	= 2192 mm	

Table 3 TL-inline configurations

Cascade system	Length			Width	
	X1	+	Y1		
TR2	22¾"		1½"	24¼"	39"
	575 mm	+	38 mm	= 613 mm	
TR3, TR4	43¼"		1¾"	45"	39"
	1100 mm	+	42 mm	= 1142 mm	

Table 4 TR-back-to-back configurations

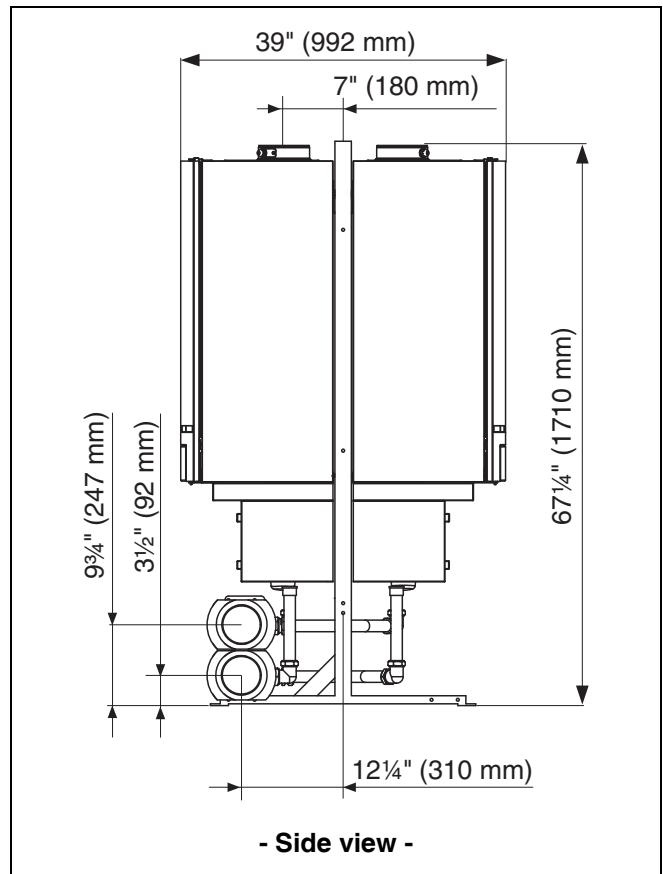


Fig. 7 Dimensions of cascade systems - 2



CAUTION

The dimensional tolerance is ± 5%.

Cascade system	Header diameter D1 (inch)	Length L1 (inch)	F1 (flange dimension in mm)
TL2, TL3	2½ "	19" (482 mm)	Blank flange C2631 37.2 NW 65/76.1 PN6
TL4, TR4	3 "	22¾" (571 mm)	Blank flange C2631 37.2 NW 80/89 PN6
5 boilers and more	4 "	25½" (651 mm)	Blank flange C2631 37.2 NW 100/114¼ PN6

Table 5 Header dimensions

4 Installation

4.1 Installing the Cascade frame



CAUTION

- Make sure that the cascade system is installed on a flat surface.
 - Make sure the cascade system is installed level (use a spirit level).
 - Check that the carpenters load-bearing capacity of the floor is sufficient for the weight of the installation (approx. 220 lbs (100 kg) for each boiler with accessories).
- Fix the supporting frame onto the first support of the cascade unit with the M8 x 70 screws.



NOTICE

Make sure that the slots for the boiler mounting bracket are at the top side of the frame.

- Fix the next support and continue the installation until the cascade unit is complete.
- Position the cascade frame in its final position.
- Level the cascade frame both horizontally and vertically by fitting additional washers below the support.
- Secure the cascade frame to the floor. Make sure that the bolts are aligned with the supports. Do not bend or place the support under stress to make it fit.
- Install the header pipe with the M8 x 70 screws. Do not fully tighten the screws yet.
- Fit the boiler mounting brackets on the top side of the frame with M8 x 65 screws. Install the nuts at the rear of the frame. The bottom side of the bracket should be level with the bottom side of the frame.



NOTICE

For TR-back-to-back configurations, both boiler mounting brackets are attached simultaneously, using the M8 x 65 screws.

4.2 Installing the Boiler assembly and Pump Group

- Hang the first boiler on the cascade frame as shown in fig. 8 or fig. 9.



NOTICE

Observe the boiler installation sequence indicated in fig. 8 and fig. 9.

- Put the boiler in the correct position and level it horizontally and vertically. Use the set screws on the lower rear of the boiler to adjust it.
- Connect the pump group (see Pump group Installation instructions).
- Remove the protective caps from the header.
- Remove all red paint and unevenness from the supply and return connections of the header.
- Install the supply pipe(s) between the header and the pump group.
- Install the return pipe(s) between the header and the pump group.
- Repeat the above steps to install all boilers.
- If required, seal off any unused connections of the header.
- Install the condensate drain pipe. Use the pre-assembled mounting brackets on the supports for this.
- Install the low loss header with the corresponding flange seals. Use the corresponding screws.
 - 2½" low loss header M12 x 50
 - 3" low loss header M16 x 55
 - 4" low loss header M16 x 55.



NOTICE

Pressure test all fittings prior to installing covers.

- Check the cascade system for leaks.

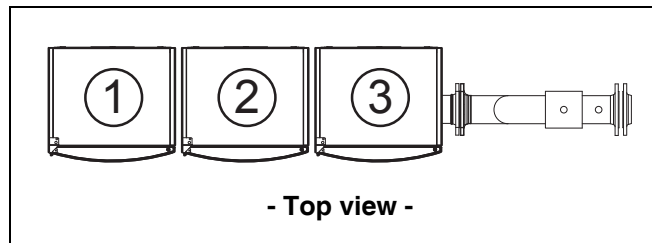


Fig. 8 Installation sequence for a TL-inline configuration

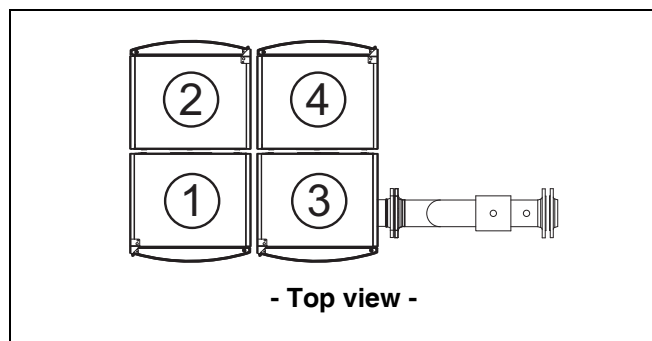


Fig. 9 Installation sequence for TR-back-to-back configuration

4.3 Installing the insulation



NOTICE

First start up the cascade system and test the system for leaks. Then install the insulation.

- Install the rear insulation over the header (fig. 10, [1]).
- Install the rear insulation part over the low loss header (fig. 10, [2]).
- If required, trim the insulation so that it is straight (fig. 10, [3]).

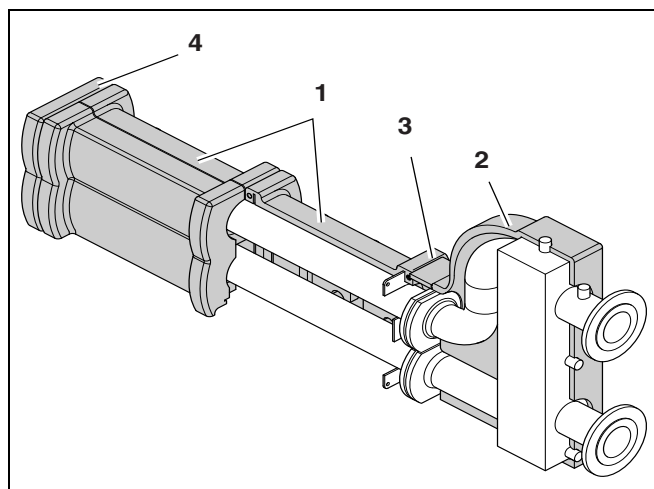


Fig. 10 Header

- For 2½" and 3" low loss header:
 - install the inserts in the outer insulation.
- For a 2½" low loss header:
 - install the reducing inserts in the outer recesses (fig. 11, [2]).
- For a 3" low loss header:
 - install the reducing inserts in the inner grooves (fig. 11, [1]).
- Click the insulation together.
- Install the front insulation of the low loss header. If required, trim the insulation so that it is straight (fig. 10, [3]).
- Install the end cover over the header (fig. 10, [4]).

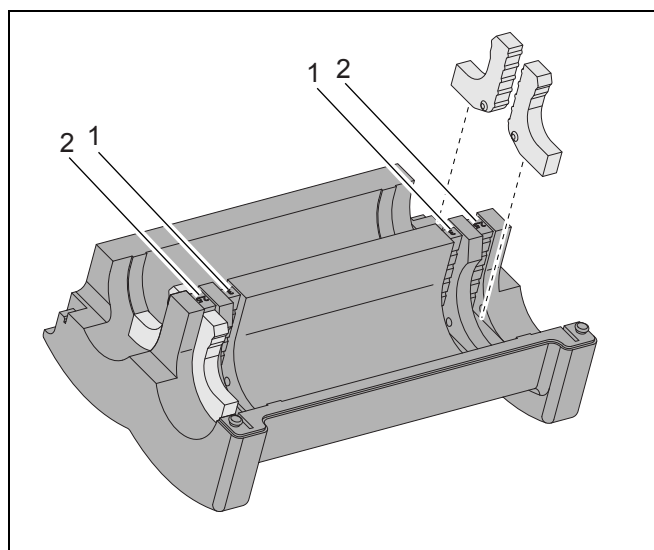


Fig. 11 Inner insulation

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