



*heating and plumbing products
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**FloCal B Circulation unit
for Solar Heating Systems**



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Description

The FloCal B circulation unit is used on the primary circuit of solar heating systems to control the temperature inside the water calorifier. The pump inside the unit is activated by a signal from the differential temperature regulator. This unit also contains the functional and safety devices for optimum circuit control.

Technical data

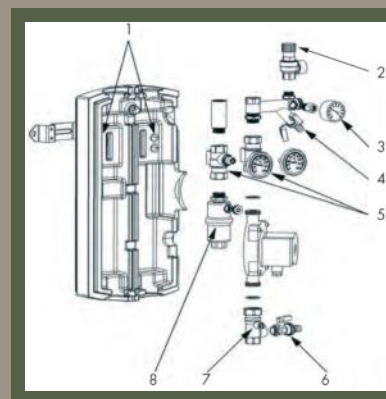
circulating pump:	WILO Star ST20/6 or ST20/7
nominal size:	app. 240 x 515 x 200mm (incl. insulation)
material:	Fittings brass, seals teflon/viton insulation EPP
max. working temp.:	110°C. Intermittent 180°C
operating pressure:	Maximum 10 bar
spring pressure of non return valve:	200mm H ₂ O = 2 kPa
flowmeter:	1 to 13l/m standard or 0.5 to 5l/m

Installation

1. Remove the unit from its packaging and check that all of the components are included.
2. Remove the front insulation cover by pulling it forward. Some effort may be required to separate the two halves. The temperature gauges will 'jump' out of their connections.
3. Determine the position for the circulation unit, allowing space for the expansion tank.
4. Mark the position for the mounting screws (1) horizontally at 150mm centres. Drill two 8mm diameter holes and insert plastic screw plugs.
5. Fix the back housing to the wall using two M6 x 60 screws.
6. Insert the pressure gauge into the instrument holder and screw in fully. Then, unscrew part of a turn until the indicator of the pressure gauge is correctly orientated.
7. The threaded connections of the circulation unit are tightened and tested during assembly at the factory. However, during commissioning, inspect the joints to ensure that they are water tight when pressure tested.
8. Fit the circulation unit into the recess of the back insulation housing and fix by fastening with the 3 x 30 screws and large washers.
9. Fit and connect the expansion tank using the connection kit (optional extra).
10. Make the electrical connections to the system. The cables to the pump (especially) should be of sufficient length so that the front insulation cover can be removed without damaging the controller.
11. Ensure that the cables do not touch the hot water pipes.
12. Refit the front insulation cover but do not re-fit the two temperature gauges as the cover will need to be removed again during commissioning.
13. Store the gauges safely until required.



FloCal B circulation unit



Key

1. Mounting holes
2. Pressure relief valve
3. Pressure gauge
4. Fill and drain valve
5. Ball valve with non-return valve and dial thermometer
6. Fill and drain valve
7. Ball valve
8. Deaerator with manual release valve



Front insulation cover (front view)



Front insulation cover (back view)

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Filling and flushing

1. The ball valve (7) below the pump must be closed.
2. Open the fill and drain valve (4) and fill the system using the separate pump and allow the medium to flow through the system until it discharges through the fill and drain valve (6). Continue until clear water appears.
3. Open the ball valve (7) below the pump so that all of the air is flushed out of the system.
4. If the system is filled with a water and Glycol (anti-freeze) mixture, any additional filling should be carried out using the same percentage of Glycol to water.
5. For further instruction see the commissioning section.

Draining the system

1. A drain valve should have been fitted at the lowest part of the system (not part of the unit or shown).
2. Open both non-return valves in the ball valves (5) by using a 14mm across flats spanner by opening half way.
3. Open the automatic air vent at the highest point of the system (not part of the unit or shown).
4. Open the drain valve at the lowest part of the system.

NOTE: It is not possible to completely drain the circulation and system, so if filled with water, frost damage may occur.

Draining the system (using a pump)

1. Open both non-return valves in the ball valves (5) by using a 14mm across flats spanner, by opening half way.
2. Connect the pump to the fill and drain valve (6) situated below the circulation pump.
3. Open the fill and drain cock and depressurise the system.
4. Start the pump to empty the system and immediately open the fill and drain valve (4) adjacent to the pressure gauge above the circulation pump so that air can be drawn into the system.

NOTE: It is not possible to completely drain the circulation and system, so if filled with water, frost damage may occur.

Commissioning

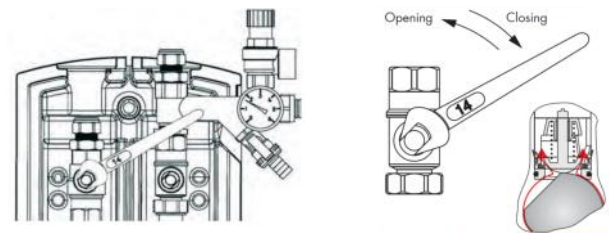
1. Close the fill and drain valve (6) and increase the system pressure to 5 bar by means of an external filling pump via the fill and drain valve (4) then close the valve.
2. Open all the ball valves (5) and (7) and other isolating valves in the circulation system and carry out a pressure test of all system joints for leakage.
3. Let the system circulate for several minutes and repeat the pressure test. Set the controller to manual operation.

Commissioning (continued)

4. Open the manual venting valve on the deaerator several times to release the trapped air.
5. Adjust the system pressure to 3 bar for normal operation. The water volume flow of the system cannot be adjusted.
6. The solar system must again be vented at the deaerator after several hours of operation. After venting, check the operating pressure and pressurise again if required.

Non return valves

1. The non return valves are integrated into the thermometer ball valves (5) and have an operating pressure of 200mm H₂O = 2kPa.
2. Both non return valves must be opened for filling, draining and flushing the system. Half opening the ball valves using a 14mm across flats spanner will open the non return valves.
3. The ball valves must be fully open when the system is operating normally.

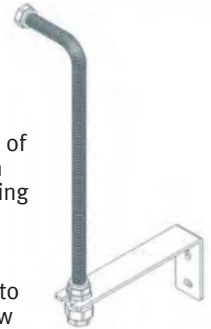


Connection kit for Expansion Vessel

The expansion vessel is supplied complete with a connection kit (pictured right).

Site the vessel within the connection range of the flexible hose. The swivel 3/4" bsp nut on the valve connects directly to the vessel using a gasket to make the seal.

Fasten the bracket to a solid and secure structure or wall, the valve then locates on to the bracket with the vessel supported below the bracket.



The other connection on the flexible steel pipe then connects to the pump station via the 3/4" male connection provided on the safety valve manifold (between the safety valve discharge outlet and the upper filling port).

On large systems of 4 or more panels check the sizing of the vessel with our technical department, it may be necessary to use a larger expansion vessel than the standard 18 litre size.

The discharge from the safety valve should be safe and visible.

Please check with local authorities and building regulations as to the liabilities of discharge waste of chemicals. A guide to good practice is to provide facilities for discharge into a suitable tank so that the Glycol mix can be captured safely.

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