

Loading Unit

New Product!



LK 810

- Automatic loading unit for solid-fuel boiler/storage tank installations
- Makes the boiler reach an optimum operation mode faster which means less environmental impact
- Ensures a constant minimum return temperature into the boiler which increases boiler efficiency, prevents tarring and considerably prolongs the lifetime of the boiler.
- To ensure a maximum supply of hot water from boiler to storage tank an automatic balancing valve closes the by-pass loop in the end phase of the firing time.
- LK 810 is for boilers with a capacity up to 90kW

LK 810



General Information

LK 810 is an automatic loading unit for solid-fuel boiler/storage tank installations. The loading unit ensures a minimum return-water temperature into the solid fuel boiler, which increases boiler efficiency, prevents tarring and considerably prolongs the life-time of the heating boiler.

LK 810 eliminates the risk of destructive thermal shock caused by surges of cold return water and renders a more effective burning. The heating boiler quickly reaches the right working temperature. In the end phase of the firing an automatic balancing valve closes the by-pass loop. This results in a maximum cooling of the boiler and the storage tank is fully filled with hot water.

LK 810 loading unit comes in two versions, with or without backflow preventer.

With the backflow preventer the LK 810 automatically allows self-circulation as soon as the fire has gone out so that the rest of the heat in the boiler is transferred into the storage tank. It also allows self-circulation in case of power failure.

Operation and Maintenance

LK 810 normally requires no maintenance. The loading unit has three ball valves. Any part can be changed without draining the system.

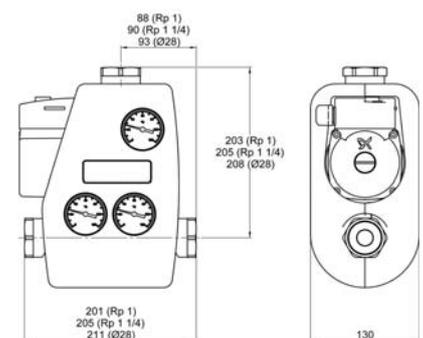
Main Parts

1. Thermally operated loading valve
2. Automatic balancing valve
3. Backflow preventer, depending on model
4. Circulation pump
5. Three thermometers
6. Three ball valves
7. Insulation EPP

Voltage:	230 VAC 50 Hz
Power consumption:	Pump speed I 65 W Pump speed II 78 W Pump speed III 95 W
Thermostatic elements:	For 55 °C, 60 °C, 65 °C and 70 °C return temperature.
Max. boiler capacity:	90 kW with 55 °C element 75 kW with 60 °C element 60 kW with 65 °C element 45 kW with 70 °C element
Max. operating temperature:	110 °C
Max. operating pressure:	1,0 MPa (10 bar)
Circulation pump:	Grundfos UPSO 65 Low Energy
Max. flow:	2800 l/h
Sizes:	Rp 1", Rp 1 1/4" or 28 mm compression fittings NPT threads available
Body	Brass EN 1982 CB752S
Dimensions	215x130x270 mm
Weight	4,8 kg

Article	Art. No. without backflow pre-venter	Art. No. with backflow pre-venter	Dimension	Return temperature to boiler
LK 810	180 005	180 006	Rp1"	55 °C
LK 810	180 007	180 008	Rp1 1/4"	55 °C
LK 810	180 009	180 010	28 mm	55 °C
LK 810	180 011	180 012	Rp1"	60 °C
LK 810	180 013	180 014	Rp1 1/4"	60 °C
LK 810	180 015	180 016	28 mm	60 °C
LK 810	180 017	180 018	Rp1"	65 °C
LK 810	180 019	180 020	Rp1 1/4"	65 °C
LK 810	180 021	180 022	28 mm	65 °C
LK 810	180 596	180 597	Rp1"	70 °C
LK 810	180 598	180 599	Rp1 1/4"	70 °C
LK 810	180 600	180 601	28 mm	70 °C

Loading Unit with Insulation



Mounting/Installation

The valve unit is mounted upright either on the right or left hand side of the boiler. The thermometers are pressed onto the front side of the unit.

For a trouble free system the piping work must be done without air pockets. If this is not possible the system must be fitted with air vents.

Several boilers have integrated thermostats for pump control. If not, a flue gas thermostat must be installed. The circulation pump should start at the same time as the firing. The pump should stop soon after the fire has gone out to let the remaining hot water in the boiler self-circulate to the storage tank.

Dimensioning

Pipe dimensioning between heating boiler and storage tank:

- LK 810 loading unit with Rp 1" ball valves. For heating boilers up to 45 kW ... DN 25
- LK 810 loading unit with 28 mm ball valves. For heating boilers up to 45 kW ... DN 28
- LK 810 loading unit with Rp 1¼" ball valves. For heating boilers up to 90 kW ... DN 32

Function of the Backflow Preventer

The LK 810 loading unit has, depending on model, a backflow preventer which automatically opens for self-circulation when the pump stops. The backflow preventer has the following functions:

1. After the fire has gone out and the circulating pump has stopped the remaining hot water will self-circulate to the storage tank.
2. In case of power failure the hot water will self-circulate to the tank.
3. Back flow from storage tank to heating boiler is prevented.

The function of the backflow preventer can, if needed, be blocked. The backflow preventer is then replaced by a plug LKA Art. No. 187 022.

Function

1. Heating phase

The boiler water circulates to the loading unit and back while the temperature of the boiler is rising.

2. Loading phase

The thermostatic element starts to open and allows return water from the storage tank to be mixed with supply water before it returns back to the boiler. The return temperature to the boiler is constant.

3. End phase

The thermostatic element is fully open. The balancing valve is closed. This results in a maximum cooling of the heating boiler and the storage tank is fully filled with supply water.

4. Self-circulation with a backflow preventer

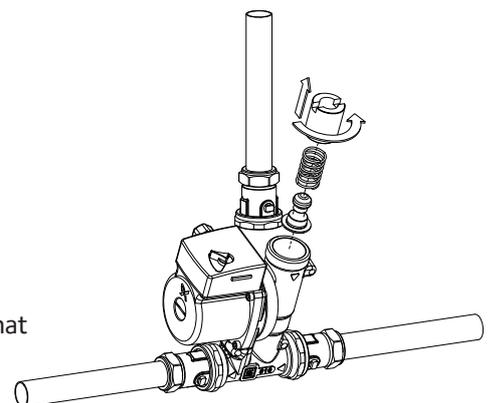
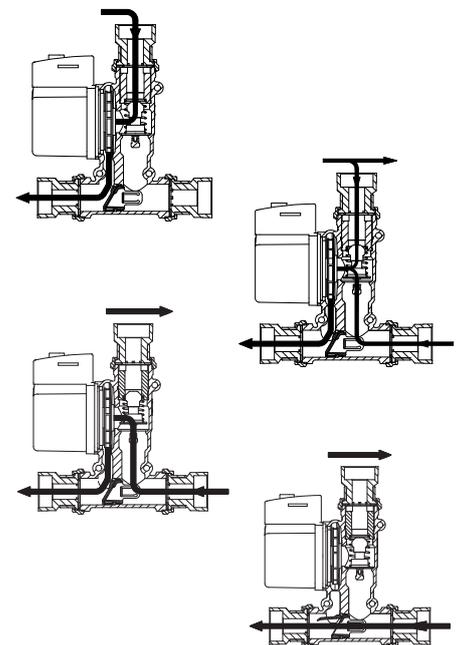
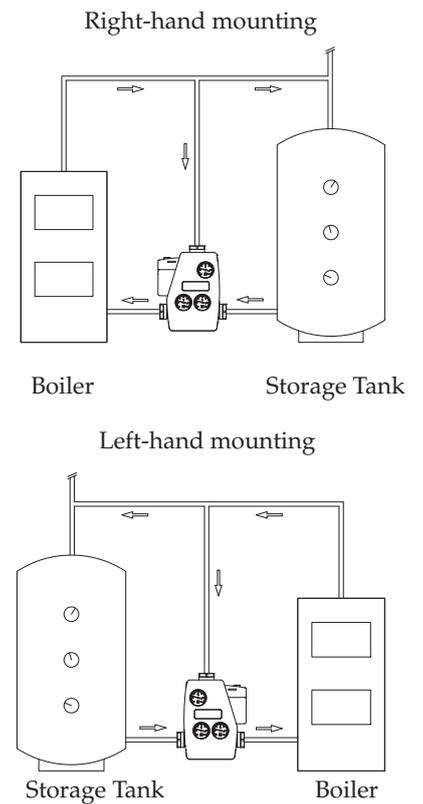
Self-circulation is obtained as soon as the fire and the circulating pump have stopped. The remaining hot water self-circulates to the storage tank.

In case of power or pump failure the backflow preventer automatically opens for self-circulation. The backflow preventer stops the self-circulation from tank to boiler.

Replacing Thermostatic Elements

1. Turn off the pump
2. Close the three ball valves
3. Unscrew the upper ball valve from the loading unit
4. Loosen the two remaining ball valves
5. Tilt the loading unit forwards
6. Unscrew the element housing
7. Replace the thermostatic element

After replacing the element, open the three ball valves and start the pump. Check that there is no air in the system.

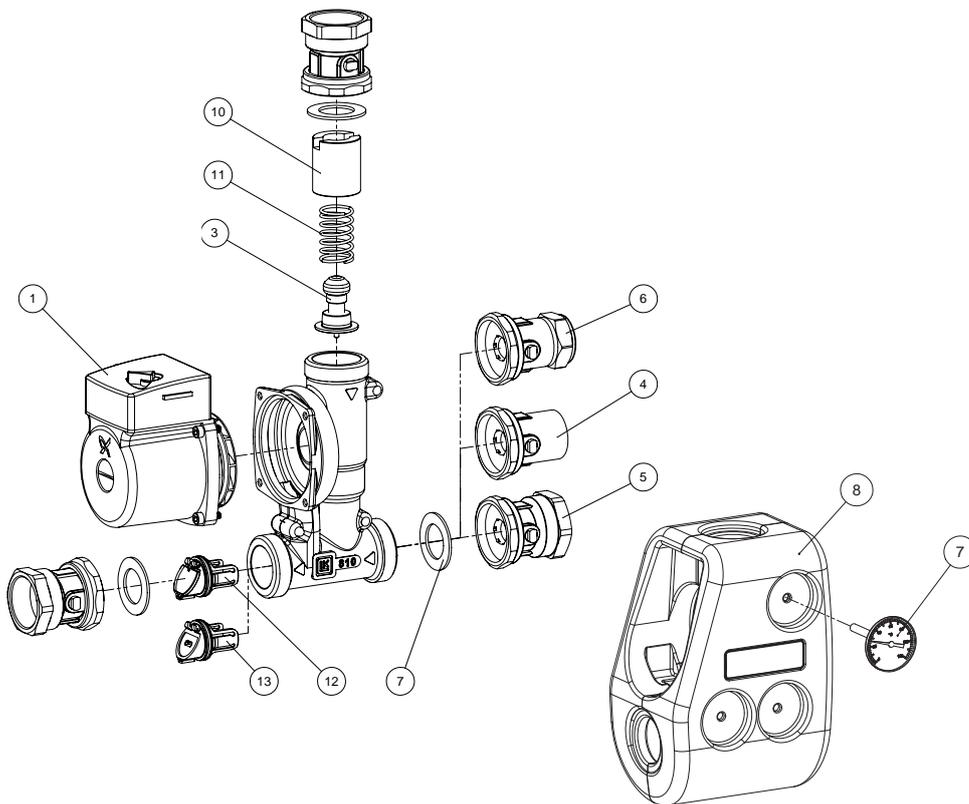


Circulating Pump

Three pump positions are available depending on boiler capacity.

It is to be noted that the maximum capacity of a boiler may be higher than its nominal capacity.

BOILER CAPACITY	POSITION	CONSUMPTION	FLOW	RETURN TEMPERATURE TO BOILER	OUTPUT TEMPERATURE FROM BOILER
45 kW	Pos. I	65 W	1400 l/h	55° C	85° C
70 kW	Pos. II	78 W	2200 l/h	55° C	85° C
90 kW	Pos. III	95 W	2800 l/h	55° C	85° C
35 kW	Pos. I	65 W	1400 l/h	60° C	85° C
60kW	Pos. II	78 W	2200 l/h	60° C	85° C
75 kW	Pos. III	95 W	2800 l/h	60° C	85° C
30 kW	Pos. I	65 W	1400 l/h	65° C	85° C
50 kW	Pos. II	78 W	2200 l/h	65° C	85° C
60 kW	Pos. III	95 W	2800 l/h	65° C	85° C
20 kW	Pos. I	65 W	1400 l/h	70° C	85° C
35 kW	Pos. II	78 W	2200 l/h	70° C	85° C
45 kW	Pos. III	95 W	2800 l/h	70° C	85° C



Part No.	Art. No.	Article	Part No.	Art. No.	Article
1	187 014	Pump head Grundfos UPSO 65	7	013 025	EPDM 44x27x2 mm Sealing
3	187 015	Thermostatic element 55° C	8	180 352	Thermometer 0-120° C
3	187 016	Thermostatic element 60° C	9	187 020	EPP Insulation
3	187 023	Thermostatic element 65° C	10	016 168	Element housing
3	187 024	Thermostatic element 70° C	11	014 069	Spring
4	187 017	Ball valve Rp 25	12	187 021	Backflow preventer
5	187 018	Ball valve Rp 32	13	187 022	Plug
6	187 019	Ball valve 28 mm			