New Product!

Loading Unit eco

LK 810 ECO

- 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 ECO is for boilers with a capacity up to 75 kW

LK 810 eco

General Information

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

With the backflow preventer the LK 810 ECO 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.

Voltage:	230 VAC 50 Hz
Power consumption:	Min. 5 W Max. 45 W
Thermostatic elements:	For 55 °C, 60 °C, 65 °C and 70 °C return temperature.
Max boiler capacity:	75 kW with 55 °C element 65 kW with 60 °C element 50 kW with 65 °C element 35 kW with 70 °C element
Max operating temperature:	110 °C
Max operating pressure:	1,0 MPa (10 bar)
Circulation pump:	Grundfos Alpha 2L 60
Max flow:	2300 l/h
Sizes:	Rp 1", Rp 1¼" or 28 mm compression fittings NPT threads available
Body	Brass EN 1982 CB752S
Dimensions	240x130x270 mm
Weight	4,8 kg

Operation and Maintenance

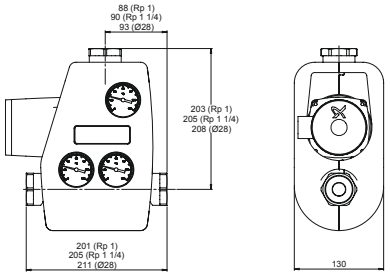
LK 810 ECO normally requires no maintenance. The loading unit has three ball valves. Any part can be changed without draining the system.

Main Parts

1. Thermally operated loading valve
2. Automatic balancing valve
3. Backflow preventer, depending on model
4. Circulation pump Grundfos Alpha 2L 60
5. Three thermometers
6. Three ball valves
7. Insulation EPP

Article Type	Art. no. without backflow pre-venter	Art. no. with backflow pre-venter	Dimension	Return tem-perature to boiler
LK 810 ECO	181048	181049	Rp1"	55 °C
LK 810 ECO	181050	181051	Rp1¼"	55 °C
LK 810 ECO	181052	181053	28 mm	55 °C
LK 810 ECO	181054	181055	Rp1"	60 °C
LK 810 ECO	181056	181057	Rp1¼"	60 °C
LK 810 ECO	181058	181059	28 mm	60 °C
LK 810 ECO	181060	181061	Rp1"	65 °C
LK 810 ECO	181062	181063	Rp1¼"	65 °C
LK 810 ECO	181064	181065	28 mm	65 °C
LK 810 ECO	181066	181067	Rp1"	70 °C
LK 810 ECO	181068	181069	Rp1¼"	70 °C
LK 810 ECO	181070	181071	28 mm	70 °C

Loading Unit with Insulation



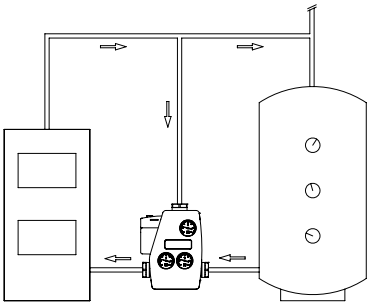
Mounting/Installation

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.

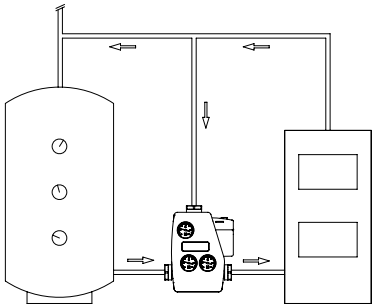
Several boilers have integrated thermostats for pump control. If not, a flue gas thermostat must be installed. The circulation pump should start at the same time as the firing. The pump should stop soon after the fire has gone out to let the remaining hot water in the boiler self-circulate to the storage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

Right-hand mounting



Boiler Storage Tank

Left-hand mounting



Storage Tank Boiler

Dimensioning

Pipe dimensioning between heating boiler and storage tank:

- LK 810 ECO loading unit with Rp 1" ball valves. For heating boilers up to 35 kW ... DN 25
- LK 810 ECO loading unit with 28 mm ball valves. For heating boilers up to 35 kW ... DN 28
- LK 810 ECO loading unit with Rp 1¼" ball valves. For heating boilers up to 75 kW ... DN 32

Function of the Backflow Preventer

The LK 810 ECO 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

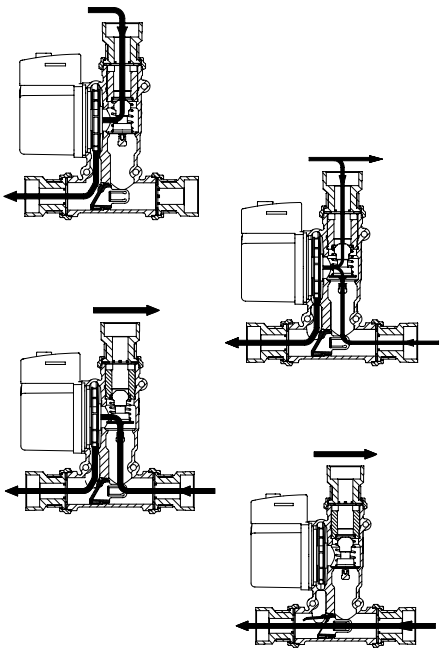
The thermostatic element is fully open. The balancing valve is closed. This results in a maximum cooling of the heating boiler and the storage tank is fully filled with supply water.

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.

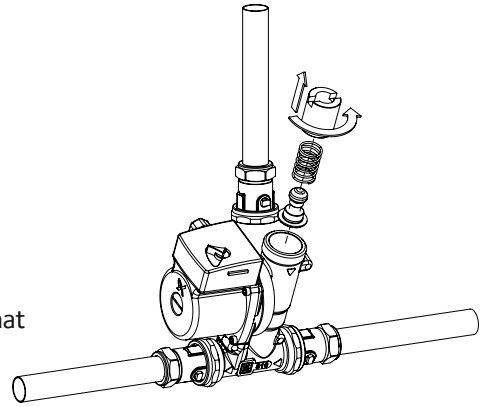
The backflow preventer stops the self-circulation from tank to boiler.



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.

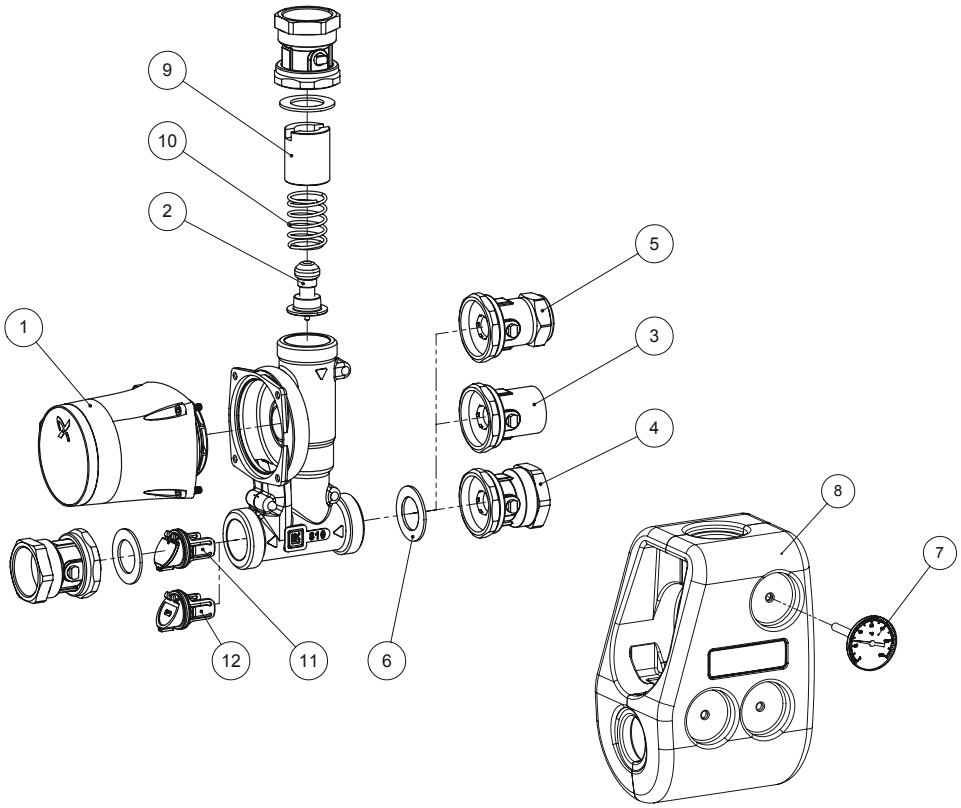


Circulating Pump

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	Consump-tion	Flow	Return temperature to boiler	Output Temperature from boiler
40 kW	Pos. I	10 W	1200 l/h	55° C	85° C
65 kW	Pos. II	35 W	2000 l/h	55° C	85° C
75 kW	Pos. III	45 W	2300 l/h	55° C	85° C
30 kW	Pos. I	10 W	1200 l/h	60° C	85° C
55 kW	Pos. II	35 W	2000 l/h	60° C	85° C
65 kW	Pos. III	45 W	2300 l/h	60° C	85° C
25 kW	Pos. I	10 W	1200 l/h	65° C	85° C
40 kW	Pos. II	35 W	2000 l/h	65° C	85° C
50 kW	Pos. III	45 W	2300 l/h	65° C	85° C
15 kW	Pos. I	10 W	1200 l/h	70° C	85° C
30 kW	Pos. II	35 W	2000 l/h	70° C	85° C
35 kW	Pos. III	45 W	2300 l/h	70°C	85° C



Part No.	Art. no.	Article	Part No.	Art. no.	Article
1	187 040	Pump head Grundfos Alpha 2l 60	6	013 025	EPDM 44x27x2 mm Sealing
2	187 015	Thermostatic element 55°C	7	180 352	Thermometer 0-120°C
2	187 016	Thermostatic element 60ºC	8	187 020	EPP Insulation
2	187 023	Thermostatic element 65ºC	9	016 168	Element housing
2	187 024	Thermostatic element 70ºC	10	014 069	Spring
3	187 017	Ball valve Rp 25	11	187 021	Backflow preventer
4	187 018	Ball valve Rp 32	12	187 022	Plug
5	187 019	Ball valve 28 mm			

Garnisonsgatan 49• SE-254 66 Helsingborg • Sweden
Phone: +46 (0)42-16 92 00 • Fax: +46 (0)42-16 92 20
info@lkarmatur.se • www.lkarmatur.se

LK Armatur