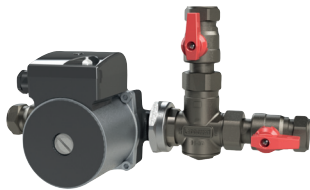
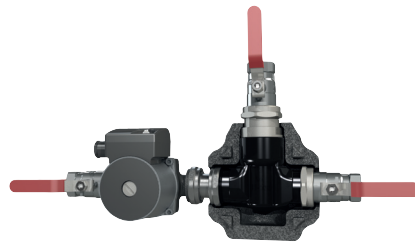


# LADDOMAT® MR 10

## Installation instructions



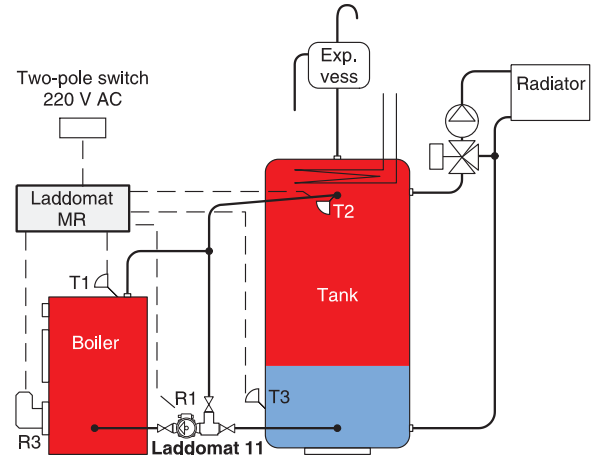
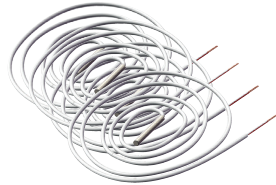
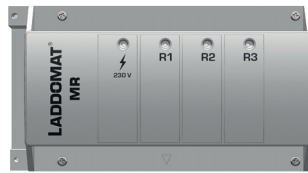
Laddomat 11-30



Laddomat 11-200



Laddomat MR



### Scope of delivery

#### Sys 10 – Valve package Laddomat MR 10 with:

- Laddomat MR, complete with 4 sensors and with relay outputs for 2 pumps and booster heating
- Charge package Laddomat 11-30 (Laddomat 11-200 is available as an option) with pump and shut-off valves.
- 2 x 3-bulb submersible tubes for bulbs with D=6 mm. R15, L=150 m
- 3 x sensor holders and hose ties for pipe fitting

## Function Sys 10 – Burner control

**This system is used when the hot water heater and mixing valve are fitted to the tank.**

Burner R3 starts when sensor TR2 at the top of the tank becomes cold and stops when sensor T3 at the bottom of the tank is hot.

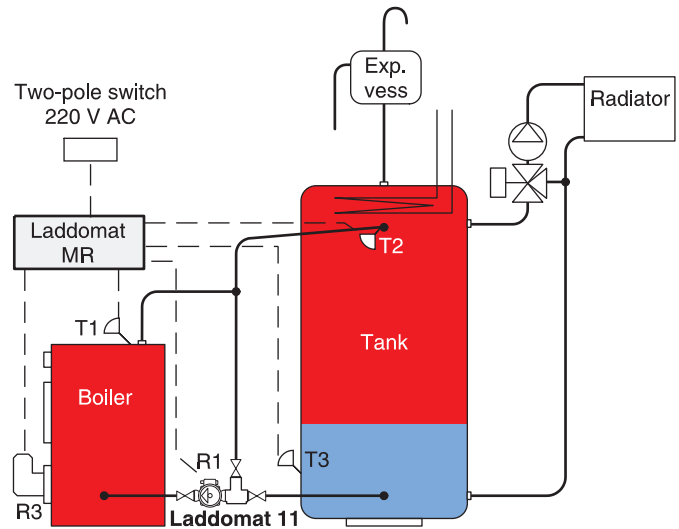
Charge pump R1 starts when sensor T1 in the boiler heats up, or directly when the burner starts, so-called "Constant" operation.

### Pipe connections

Connection with thermal valve, Laddomat 11, according to the connection drawing on the right, means that you get optimum separation in the tank, and pre-heated water at the bottom of the boiler, which prevents corrosion.

Dimension Cu 28 or greater is used up to a maximum of 35 kW.

See page 3-6 for further instructions and advice.



## Electrical connection

According to the instruction on page 7, with the following versions possible:

Burners can be started and stopped in two different ways:

A. With power supply via LMR. This connection is most common when connecting an oil burner:

B. With direct power supply via separate working switches. Start and stop controlled by potential-free outputs directly to the terminal block R3 in LMR. This connection is most used for pellets burners that must always have a power supply for internal control functions.

Oil, pellets or wood chips burners must always be connected with an operational and safety thermostat (double thermostat).

### Settings, temperatures

See page 7-10.

### Location of sensors

Sensor T1 is fitted in a submersible tube in the top of the boiler or on the delivery pipe when it comes out of the boiler.

Sensor T2 in the tank's top is fitted at a suitable location on the pipe where this enters the tank.

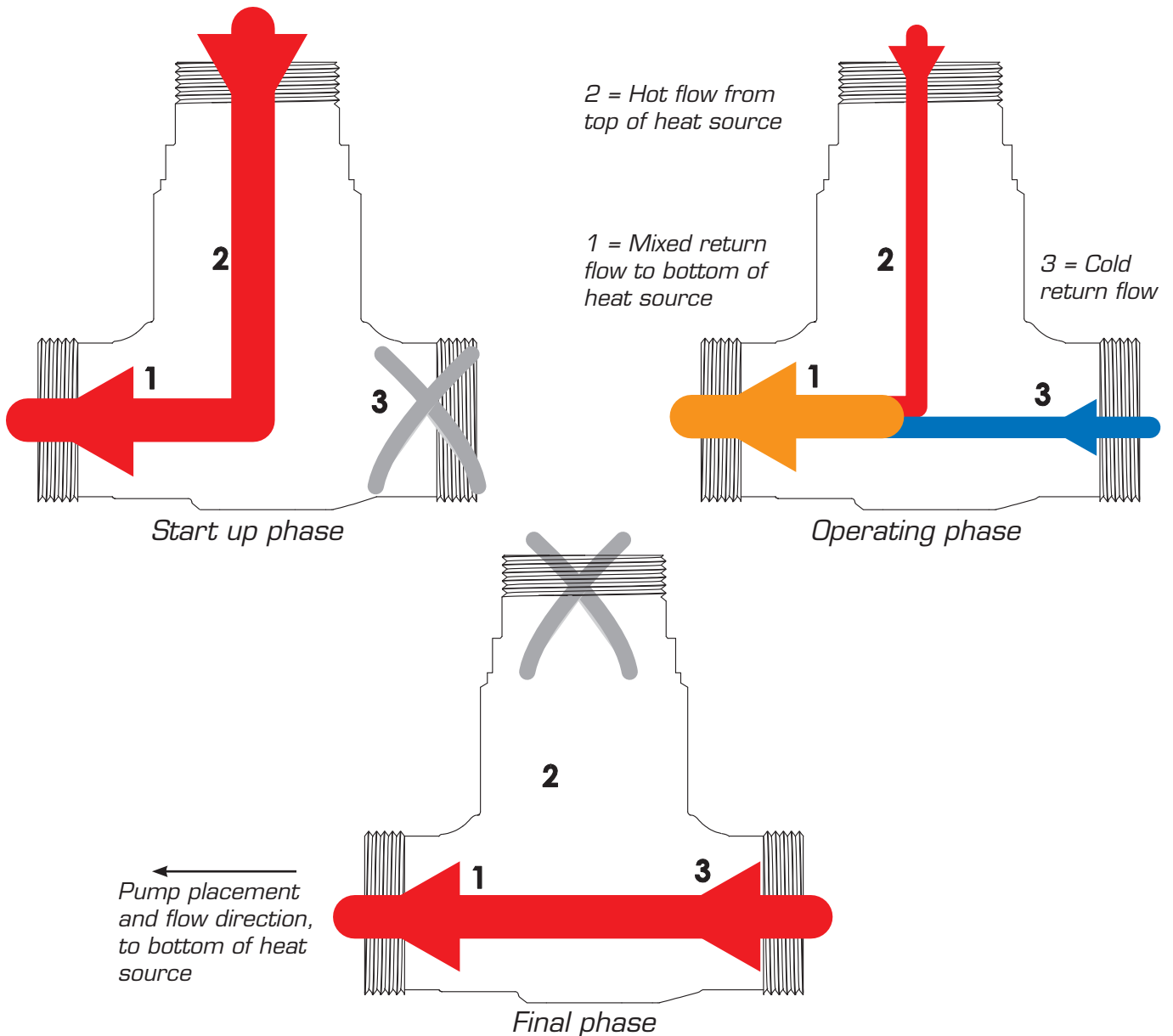
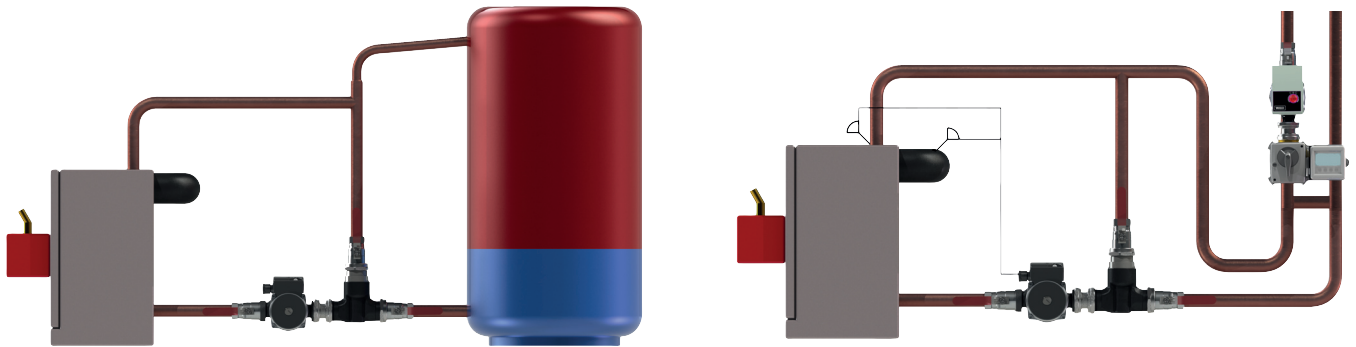
Sensor T3 in the bottom of the tank is fitted in a submersible tube directly in the tank or clamped into place on the return pipe to the boiler. The submersible tube should be positioned at least 10 cm above the bottom outlet. There is otherwise a risk that the burner will not stop when it should.

# LADDOMAT® 11-30 & 11-200

## Manual and installation instructions

### Thermal layering

Thanks to its design and control features, the Laddomat 11 means optimal thermal layering in storage tanks, with a low and even charging flow. This layering system is beneficial as it increases storage capacity.



## Technical data

### Laddomat 11-30:

Thermostat cartridge: 45°, 53°, 57°, 63°, 66°, 72°, 78°, 83° or 87°C

Connection: R25  
Cu22 ball valve  
R25 ball valve

Max. boiler output: **See diagram below**

Kvs-value: 3,4 m<sup>3</sup>/h

Pressure class: PN 6

Max. temp: Max +100°C  
Min +5°C

### Laddomat 11-200:

Thermostat cartridge: 45°, 53°, 57°, 63°, 66°, 72°, 78°, 83° or 87°C

Connection: R40  
Cu22 ball valve  
R25 ball valve  
Cu28 ball valve  
R32 ball valve

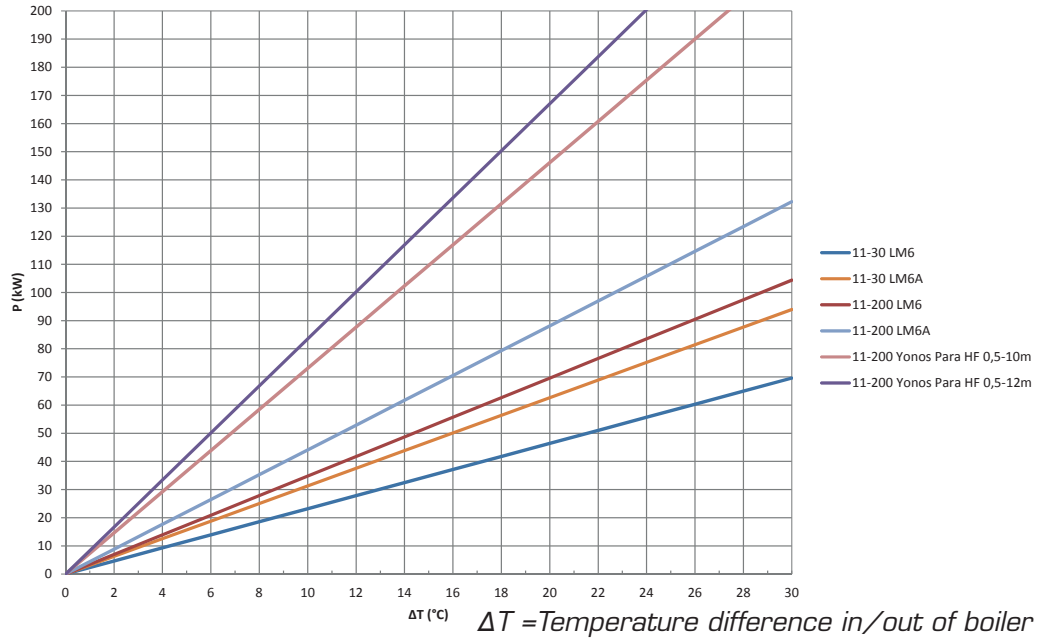
Max boiler output: **See diagram below**

Kvs-value: 12

Pressure class: PN 6

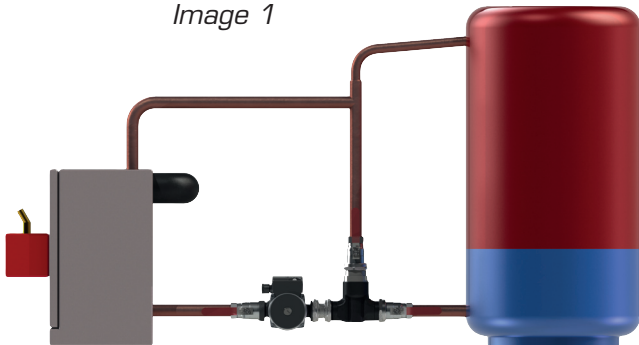
Max. temp: Max +100°C  
Min +5°C

## Dimensioning / Pump choice



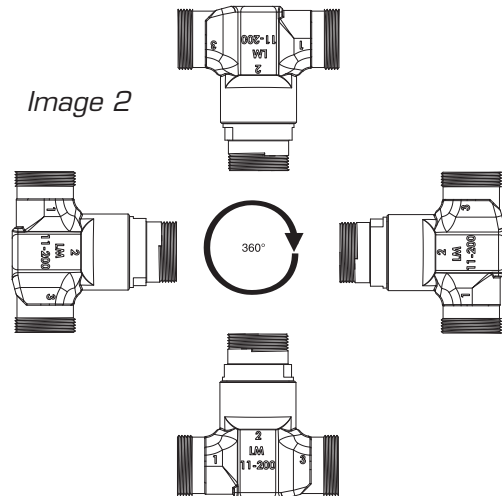
## Connection

Image 1



Installing shut off valves to facilitate servicing is recommended.

Image 2



The installation position does not affect the function of the valve.  
The pipes must be connected to the correct port on the valve.

## Starting the pump

See image 3-6.

### Pump start alternative

On, for example, pellet burners the pump can be started and stopped at the same time as the burner.

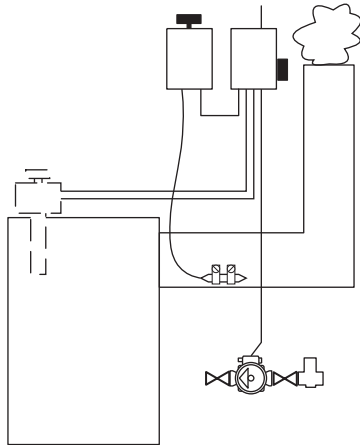


Image 3

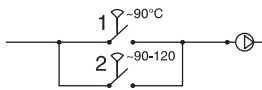


Image 4

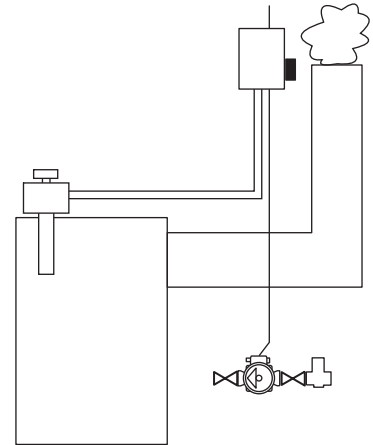


Image 5

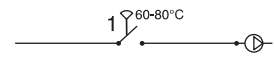


Image 6

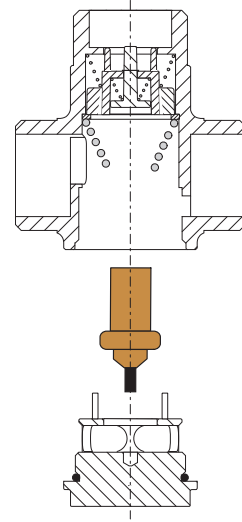
## Service:

Recommended replacement interval for the thermostat cartridge is every three years. See next page for service instruction.

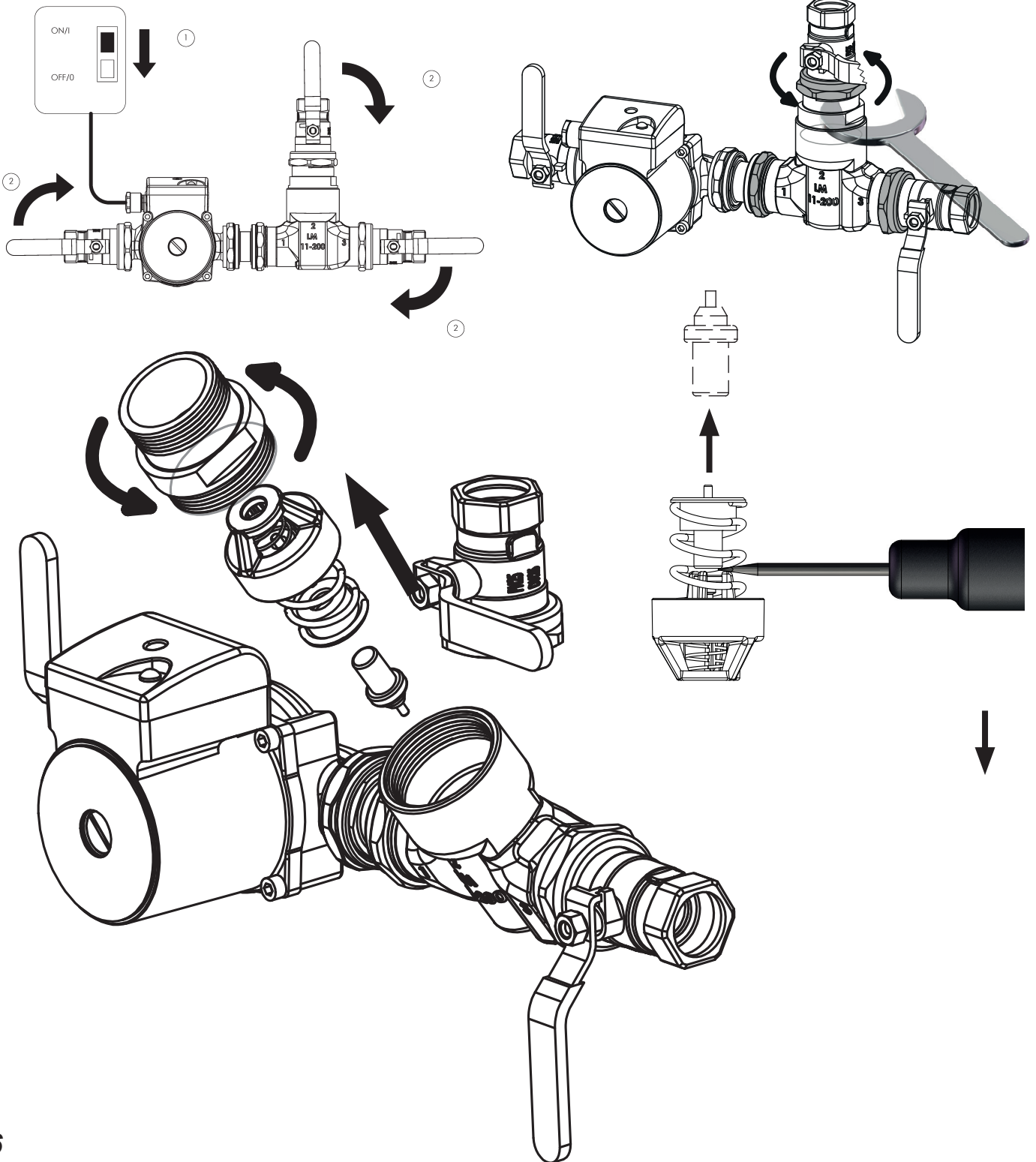
Type	Opening temperature	Art. No.
9311	45°C	11 00 45
5840	53°C	11 00 53
8749	57°C	11 00 57
5839	63°C	11 00 63
1240	66°C	11 00 66
8719	72°C	11 00 72
1456	78°C	11 00 78
1467	83°C	11 00 83
8222	87°C	11 00 87

## Service Laddomat 11-30

The cartridge is easily replaced by unscrewing the cap. The cartridge is loose in the cap and comes out with it (when installing with cap down).



## Service Laddomat 11-200



# LADDOMAT® MR

## Installation and instructions for use

Laddomat MR is a control device with separate Connection Centre (CC) with a total of three relays and 4 temperature sensor inputs. A number of different control schemes/options are available. All settings are made in the separate Control Panel (CP).

### Technical data

The connection centre has:

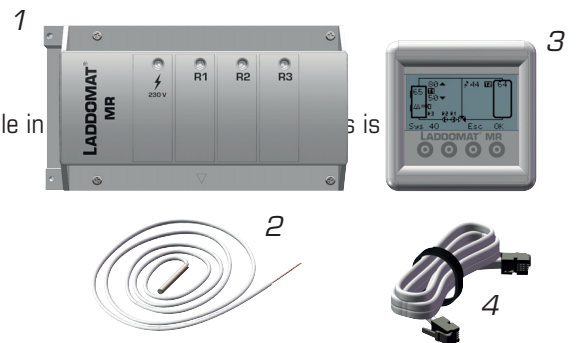
3 relay outputs, one of which is potential free. 250V, 5A.

4 x temperature sensor inputs, NTC 10 or 50 kOhms @ 25°C (selectable in CP)

### Dimensions:

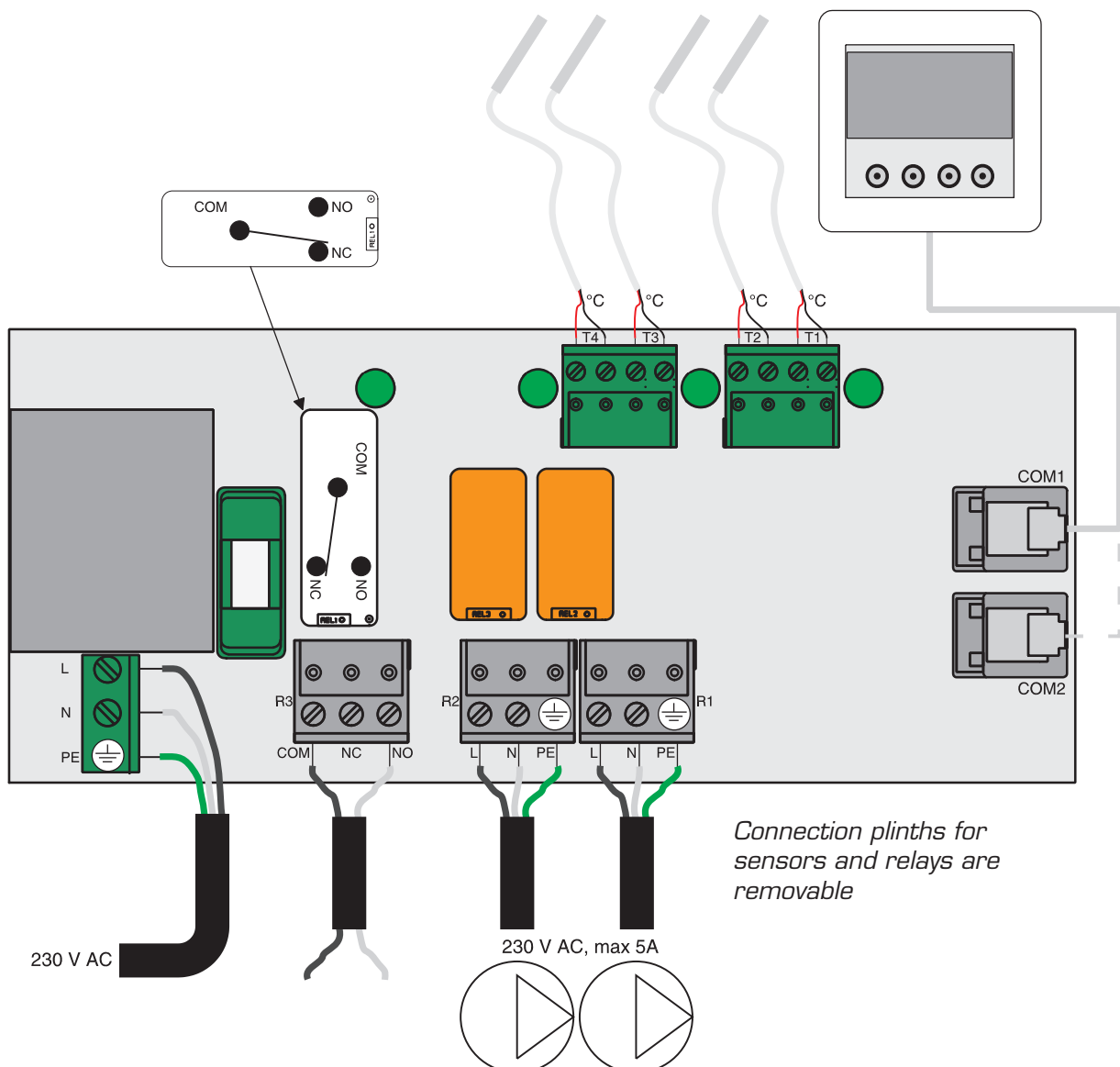
CC: H = 88 mm, W = 160 mm, D = 60 mm

CP: H = 78 mm, W = 78 mm, D = 35 mm



### Connection

Connect the Control Panel with the attached cable

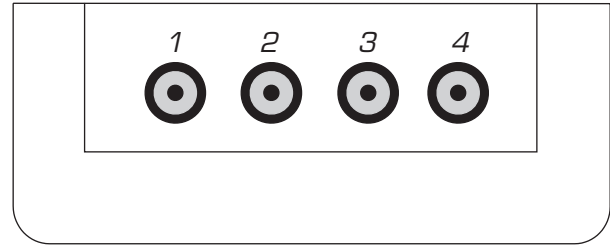


# Introduction and explanation

## Controls

### A.

Press any of the buttons to start the display. The buttons' function is then displayed above the respective buttons. See the pictures on this page for examples.



### B.

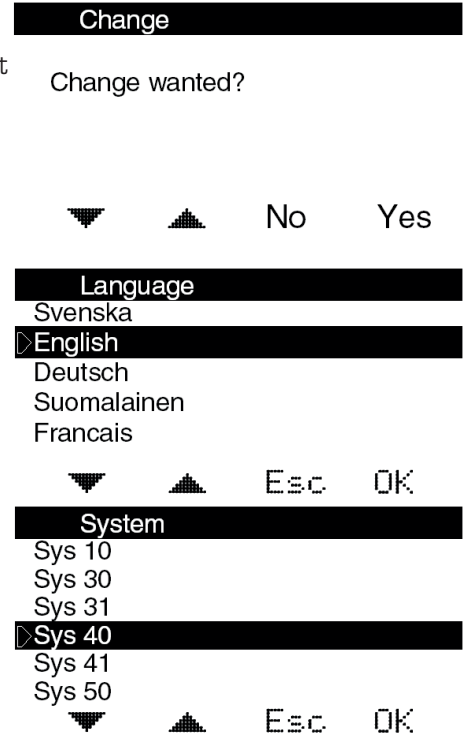
**NB! None of the values can be changed "by mistake".** In all of the modes in which it is possible to change a value, you will be prompted whether you are sure that you want to make the change before the value is actually changed.

## Initial start-up - Choice of language and system schedule:

The first time LMR is started (and after factory reset), LADDOMAT is displayed first. Press OK to move to the next menu for language selection. The factory default language is English. Press Esc to proceed.

The next menu is the selection of system schedule. The factory preset schedule is Sys 40. Press Esc to proceed.

Once this is done you will see the main menu that shows the selected system schedule.



## Main Menu

The main menu shows all set point settings and current actual values of the sensors. Even if only 2 or 3 sensors are used for control, there is always the option to connect up to 4 sensors. If other sensors are not connected, this is not shown in the display. If a sensor that is included in chosen control system is not connected, a sensor error will be indicated.

T1 = Main sensor 1

T2 = Main sensor 2

T3 + T4 = Optional extra sensors. Displayed in the temperature menu.

The sensors can be installed in submersible tubes or on the outside of a pipe.

R1 = Pump 1, 230V 5A

R 2 = Pump 2, 230V 5A

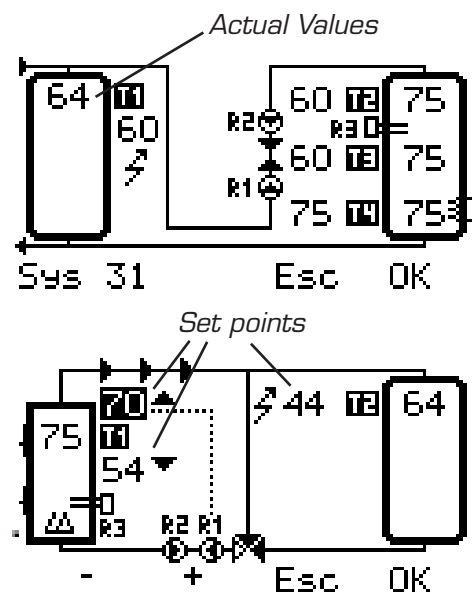
R3 = Booster (potential-free relay), alternating NO/NC, max 250V 5A

S1-S5 = Set point settings 1-5

## Main menu settings

Pressing any button lights the display and pressing the OK button activates the menu. First, the set point flashes, along with a dotted line until the set point starts or stops. Use the arrow keys to move between the set points.

To change a set point, press OK so the value is marked with a black box (see picture on right). Use the +/- buttons to change the value and press OK to save.





# Sys 10

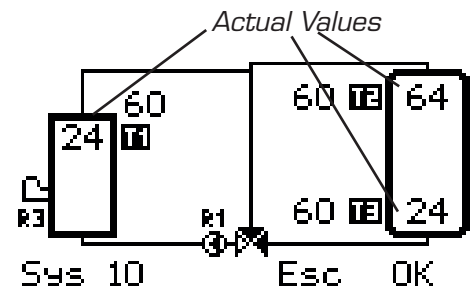
## Burner control

### Basic mode

The menu shows all set point settings and current actual values of the sensors. Thermal valve type Laddomat 11 must be fitted for optimum performance. Laddomat 11 ensures that the boiler quickly achieves and maintains a high working temperature and protects the boiler from corrosion.

T1 = Temperature Boiler  
 T2 = Tank Top Temperature  
 T3 = Tank Bottom Temperature  
 T4 = Optional additional sensors

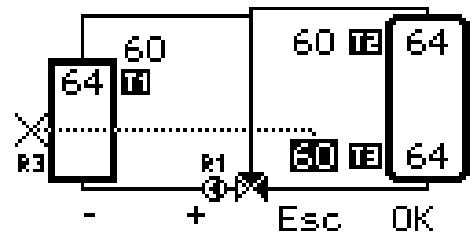
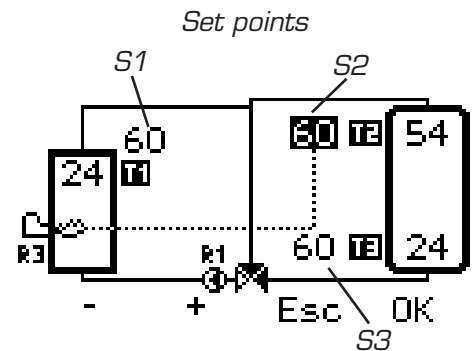
R1 = Charge Pump  
 R3 = Burner  
 S1 = Charging temperature setting  
 S2 = Burner start temperature setting  
 S3 = Burner stop temperature setting



### Burner start + stop

Burner R3 starts when the sensor T2 at the top of the tank is under the set value for Start burner S2. Selectable values are from 30 to 90°C. The factory setting is 60°C.

The burner stops when the sensor T3 in the tank bottom is above the value set for Stop burner S3. Selectable values are from 30 to 90°C. The factory setting is 60°C.



### Charging

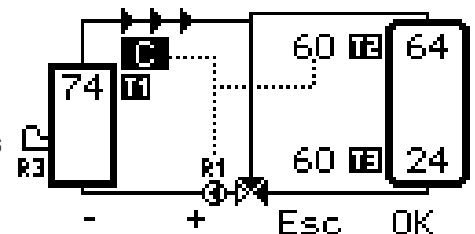
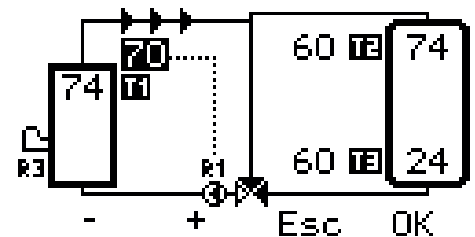
Charging means that heat is sent from the boiler to the tank.

The charge pump R1 can be started in two ways:

- When the boiler temperature T1 is above the value set for Charging S1, the charge pump R1 starts and pumps the heat to the tank.
- In mode C the charge pump runs as long as the burner is running. If the boiler is hot after the burner stops, the pump runs as long as T1 is above 85°C.

Selecting **Optional time 1** in the Service menu allows the pump to run from 0 to 20 minutes after the burner stops, even if T1 is below 85°C. Selectable values are 0-20 minutes. The factory setting is 0.

Selectable values for charging are 50-90°C. The factory setting is 60°C. Mode C is selected by setting the temperature higher than 90°C.



## Menus and Settings

### Temperature

This menu displays the read temperatures for all sensors.

NB. The figures in parentheses in the middle show a possible calibration for each sensor, but this is only displayed if you activate the row.

Press OK to activate the menu, then press the arrow keys up/down and OK once more to change the calibration.

Selectable values are - 10 to + 10°C. The factory setting is 0.

Temperature		
▶T1	(+0)	48°C
T2	(+0)	55°C
T3	(+0)	47°C
T4	(+0)	38°C

▼ ▲ Esc OK

### Service

Basic settings are made in the Service menu.

Service	
▶Settings	
Save/Restore set.	
Manual Test	
Security code	
Language	

▼ ▲ Esc OK

### Settings

#### Settings Sys 10

**Optional time 1** – When the pump is in Constant mode "C", you can set the pump to continue to run for a given time after the burner is stopped. Selectable values are 0-20 minutes. The factory setting is 0.

**NTC Sensor Type** – The type of sensor to be used; NTC 10k or 50k @ 25°C. The factory setting is 50k.

#### Save/Restore Settings

Used to save the user's settings, restore your settings or restore factory settings. Reset to factory settings is the only way to change the system after initial start-up. NB: to avoid factory reset by mistake, the "Yes" button must be held in for 1 second.

#### Manual test

Used to run each relay manually. When a relay is activated but not deactivated, this is active for 10 minutes or until you leave the menu.

#### Security code

If you want to prevent unauthorised persons from accessing other than the Basic menu, you can set a button combination that must be pressed to make changes. The lock is activated 30 seconds after the last button press.

#### Languages

### Troubleshooting

In the event of any malfunction it is easy to see from the display if any of the temperatures are not correct. In addition, all the features of Laddomat MR will be deactivated.

If there is a communication error between the Control panel and Connection Centre "COMM ERROR" will appear on the display. This may be due to a fault on the cable or a connector is not properly inserted.

If there is a sensor fault (or the temperature is outside the normal range), two different characters will be displayed, depending on the type of sensor fault.

At short circuit or too high temperature "--" is displayed instead of the temperature.

If there is an open circuit or too low temperature "XX" will be displayed instead of the temperature.

Save/Restore set.	
▶Save settings	
Restore prev	
Restore Factory	

▼ ▲ Esc OK

Manual Test	
▶R1	Off
R2	Off
R3	Off

▼ ▲ Esc OK

Security code	
▶ --	
1 + 2	
1 + 3	
2 + 4	
2 + 3	
3 + 4	

▼ ▲ Esc OK