REHAU®

Unlimited Polymer Solutions

DUAL SENSING DIAL THERMOSTAT

PRODUCT INSTRUCTIONS

SCOPE

This guide gives instruction regarding REHAU Dual Sensing Dial Thermostat installation and operation. Thermostats may only be installed, calibrated and maintained by an appropriately trained installer of radiant systems. The installer should also have a basic understanding of electrical wiring and electronic controls.

ABOUT DUAL SENSING DIAL THERMOSTATS

This 3-wire thermostat display includes a straight-forward dial control with a red LED light that illuminates when there is a call for heat. With the optional floor sensor, this thermostat can regulate either the floor or the room temperature. The optional floor sensor can also be used as a floor temperature limiter (high or low) in combination with the internal ambient air sensor.

A “Selector Mode” switch on the thermostat allows the user to select a night reduction mode which automatically reduces the temperature by 7°F (4°C).

Dual Sensing Dial Thermostats are used for controlling up to 4 manifold valve actuators either independently or when used with REHAU electronic controls. The thermostats may also be used to control relays and other low voltage controls.

Components

Each thermostat (Art. No. 236477-001) comes complete with:

– Installation instructions
– °F and °C dials
– Mounting template

In addition, you will need:

– 10K floor sensor, where applicable
– Needle nose pliers
– No. 1 Phillips head screw driver
– 1/8 in. flat head screw driver
– Mounting screws (typical for drywall installation)
– Drill
– Pencil
– Level

Table 1: Thermostat Technical Specifications

Control	Microprocessor control
Material	White PVC plastic
Dimensions (H x W x D)	3 1/4 x 3 1/4 x 1 in. (80 x 80 x 27 mm)
Measured temperature precision	0.1°C (0.2°F)
Packaged weight	0.23 lb (84.4 g)
Floor limiting temperature range	50 to 104°F (10 to 40°C)
Ambient conditions (indoor use only)	32 to 122°F (0 to 50°C), < 90% RH non-condensing
Electrical protection class	Class II – IP30
Power supply	24 V ±10% 60 Hz 15 W max
Output	TRIAC output 24 VAC, 15W max (typical – 4 actuators)
Optional floor sensor	NTC thermistor, 10k Ohms, 10 ft (3 m) cable (Art. 236497-001)
Wire type	Minimum of three conductor thermostat wires (18-24 AWG), four or eight conductor thermostat wires are recommended

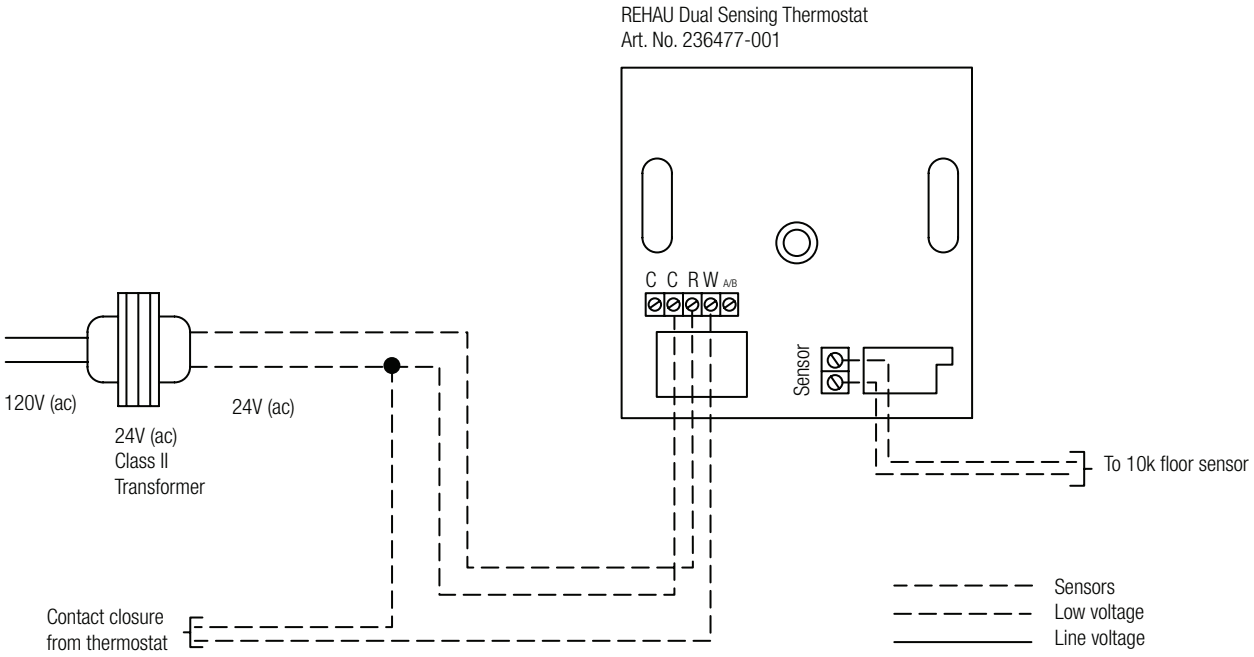


Fig. 1: Wiring diagram for operation without actuator

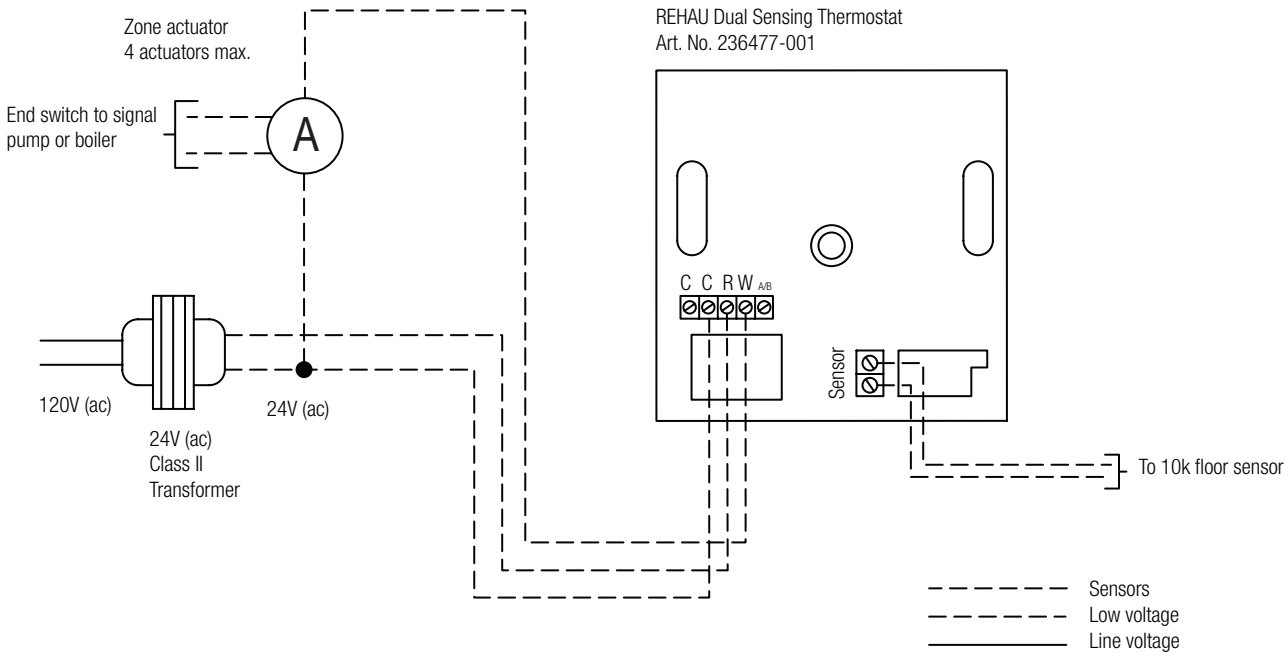


Fig. 2: Wiring diagram for operation with actuator

SETTING UP THE THERMOSTAT

It is easiest to set-up the thermostat before mounting.

1. Remove the dial (6) and the inner sleeve assembly (5).
2. Remove cover (1) with a No. 1 Phillips screw driver.

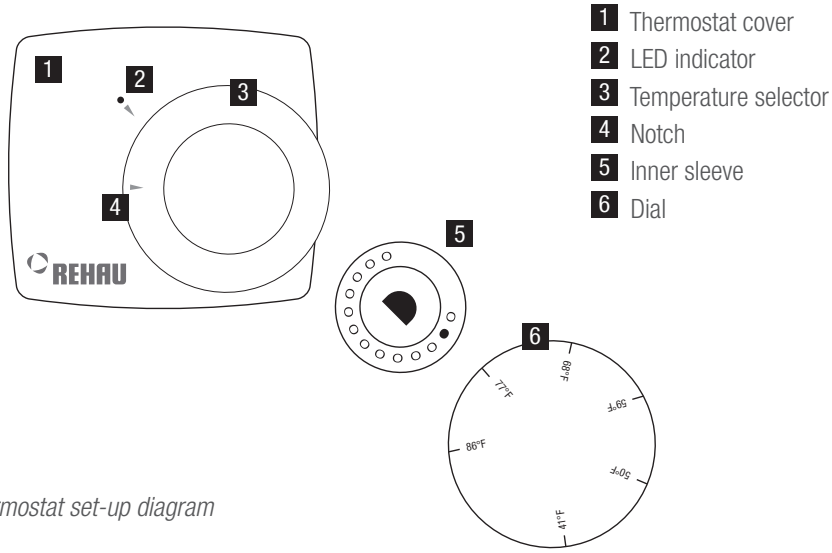


Fig. 3: Thermostat set-up diagram

3. Locate DIP switches.

This thermostat has four DIP switches which allow for limited programming and system configuration.

Settings for the DIP switches include:
– Setting actuator operation
– “On / Off” or pulse width modulation logic
– Room and floor sensing operation

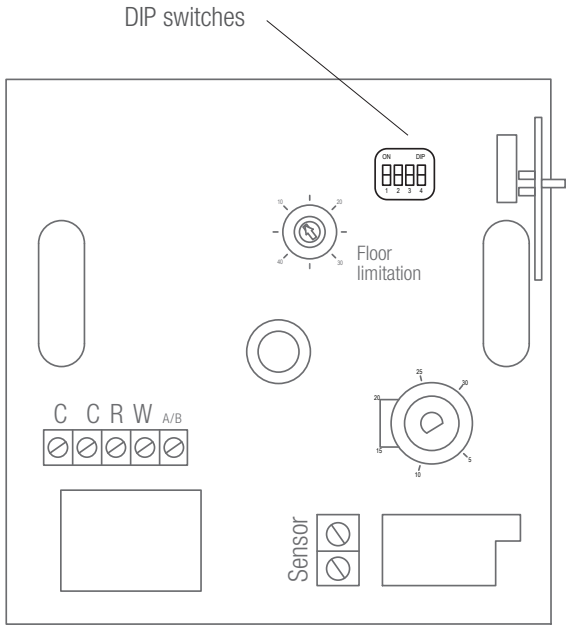


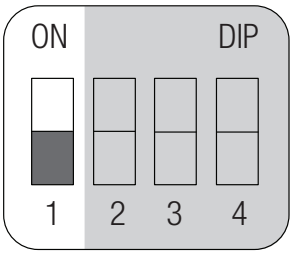
Fig. 4: Location of DIP switches

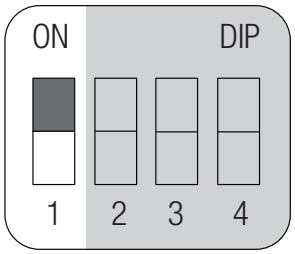
4. Set DIP Switch 1: Actuator operation

Note: Dark box indicates DIP switch position

DIP Switch 1 indicates the type of actuator being used. Set DIP Switch 1 to the up position if a normally closed (NC) actuator is used. For example, REHAU PRO-BALANCE® actuators are normally closed.

If a normally open (NO) actuator is used, set the DIP switch to the down position.

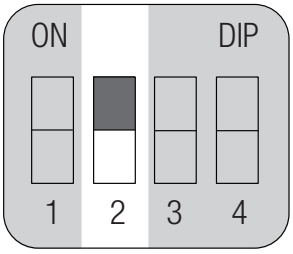




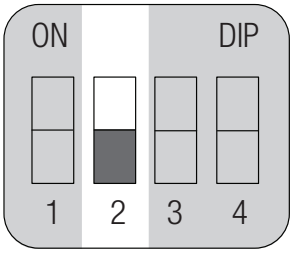
5. Set DIP Switch 2: Thermostat

DIP Switch 2 determines the Heat “On / Off” or pulse width modulation logic.

If you want to use the thermostat as a simple on/off switch to regulate the desired room temperature, set the DIP switch to the up position. This setting is typical for low mass radiant panel systems or fast responding installations such as fan coils and radiators.



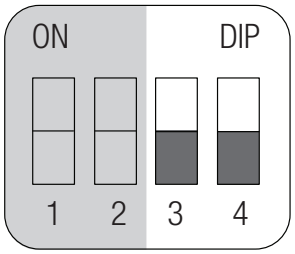
Alternatively, if you want to use the use the thermostat’s pulse width modulation (PWM) logic, set the DIP switch to the down position. The thermostat monitors the setpoint as well as the previous heating cycles to anticipate the response time of the system, providing more effective regulation of the room temperature to the desired thermostat setpoint. This setting is typical for high mass radiant panel systems, which respond more slowly.



6. Set DIP Switches 3 and 4: Room and floor sensing operation

Room Air Sensing Only Operation

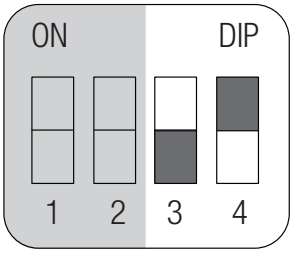
With DIP Switches 3 and 4 in the down position, the thermostat provides room air sensing operation only.



Floor Sensing Only Operation

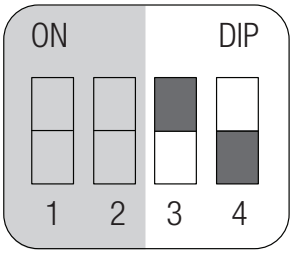
With DIP Switch 3 in the down position and DIP Switch 4 in the up position, the thermostat will only sense the floor temperature with the optional floor sensor.

Note: Floor sensing only operation can over heat or under heat the space.



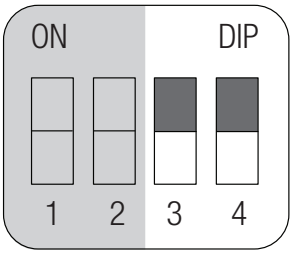
Room Air Sensing With Floor Lower Limit

With DIP Switch 3 in the up position and 4 in the down position, the thermostat will sense room air temperature and will use the optional floor sensor to ensure the floor does not go below a preset temperature.



Room Air Sensing With Floor Upper Limit

With DIP Switches 3 and 4 in the up position, the thermostat will sense room air temperature and will use the optional floor sensor to ensure the floor does not go above a preset temperature.



7. Set the floor limit temperature.

The floor limit sets either low or high temperature limits, depending on the desired operation.

The floor limit temperature is set by turning the small dial in the center of the thermostat. Align the arrowhead with the very small temperatures printed on the circuit board (in degrees Celsius only). See Table 2 for temperature conversion.

Table 2: Temperature Conversion

°Celcius	°Farenheit
10	50
15	59
20	68
25	77
30	86
35	95
40	104

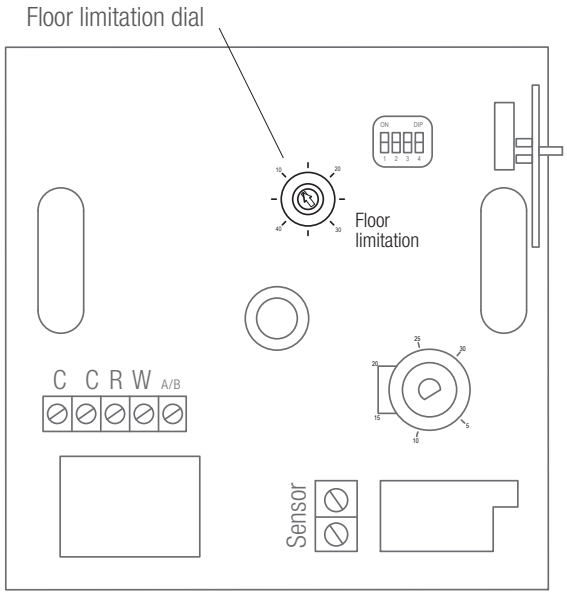


Fig. 5: Location of floor limit

MOUNTING THE THERMOSTAT

Note: Thermostat must be mounted in the correct location to work properly.

1. Thermostat should be located 1.5 m (5 ft) above the finished floor. The thermostat must be installed on an interior wall. Avoid locations in drafts (e.g., staircases, air outlets), behind doors, in direct sunlight or near other heat sources.

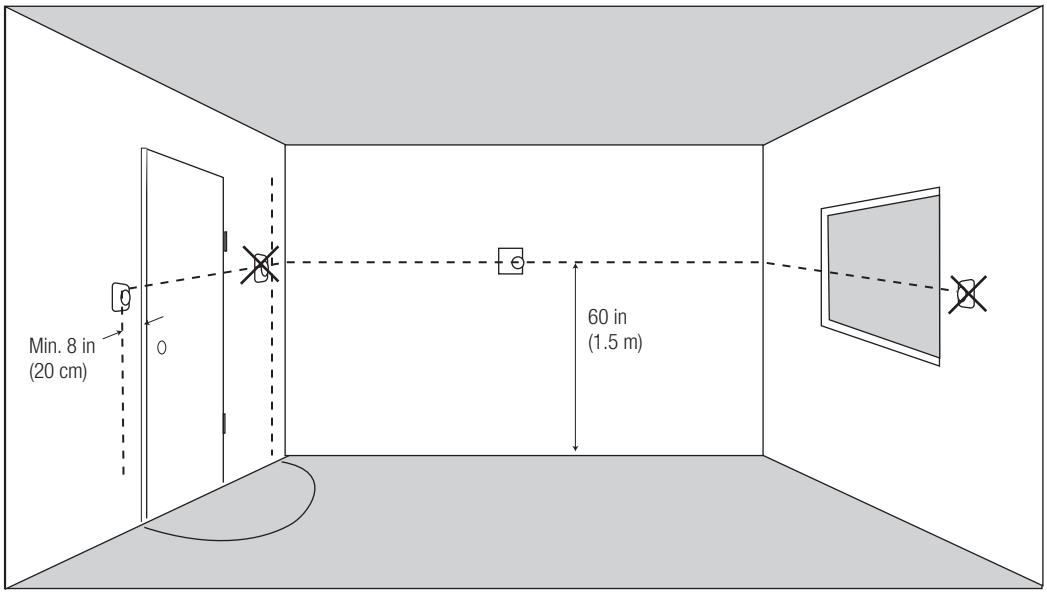


Fig. 6: Locating the thermostat

2. Make sure that wire is installed from control location to the desired thermostat location.

3. Use the mounting template at end of document to help position the thermostat and drill the mounting holes.

4. Pull wires through access holes for thermostat wiring and floor sensor wiring (if applicable). Fasten the screws, but do not completely tighten the screws.

Note: Refer to the wiring diagram (Figs. 1 and 2) for your application.

⚠ **WARNING:** Turn off all power to the wires before connecting wires to terminals. Failure to turn off power can cause electrocution.

5. Connect the wires to the terminal.

6. Connect sensor wires to sensor connection.

7. Adjust thermostat with a level and tighten the screws.

8. Do a final check of DIP switches and wiring terminals to ensure proper installation.

9. Put the cover on the thermostat and secure with Phillips head screw, using a No. 1 Phillips screw driver.

10. Turn the dial stem completely counterclockwise until it stops.

11. Install the inner sleeve assembly by pushing it in.

12. Select either the °F or °C dial.

13. Install dial, lining up temperature indicator with the lowest setting on the dial.

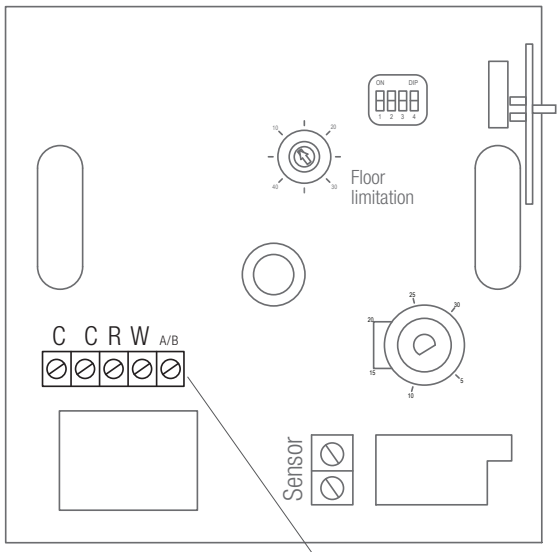


Fig. 7: Installing the thermostat

Thermostat wires:
R = 24 AC
C = Common
W = Contact closure
AB = No wires attached

TROUBLESHOOTING

After setting up and applying power to the thermostat, visually inspect LED indicator to ensure proper operation.

LED Indication	Interval	Message
Solid red	None	Call for heat
Blinking	0.5 seconds	Internal and external sensors failure
Blinking	1 second	Internal sensor failure
Blinking	2 seconds	External sensor failure

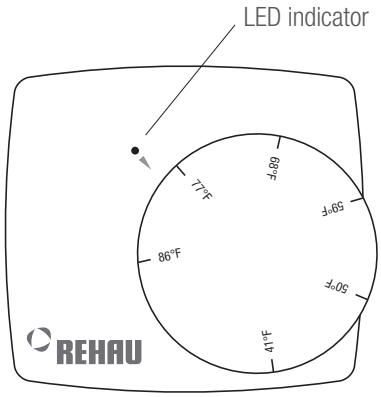


Fig. 8: LED indicator

SETTING LOWER AIR LIMIT OF THERMOSTAT

The thermostat can be limited to a certain temperature range by physically preventing the user from turning the dials beyond the set limits.

Note: All pin locations shown are exemplary.

1. To set the lower limit, turn the dial to the desired minimum temperature (see Fig. 9).

2. Carefully remove the dial and look at the position of the inner sleeve. The limit temperature is now lined up with the notch (see Fig. 10, black dot denotes pin location). To set it, choose the pin location above the notch.

3. Remove the inner sleeve assembly being careful not to turn dial stem, keeping in mind the orientation of the inner sleeve to the raised notch in thermostat cover.

4. Remove the two pins on the back of the inner sleeve assembly.

5. Position lower limit so that the pin is above the notch in the cover and allows the inner sleeve to be reinstalled on the dial stem in the same position. Be careful not to rotate the dial stem.

6. Reposition dial, aligning the arrow with the lower limit temperature. If done correctly, the dial will not turn below the set lower limit.

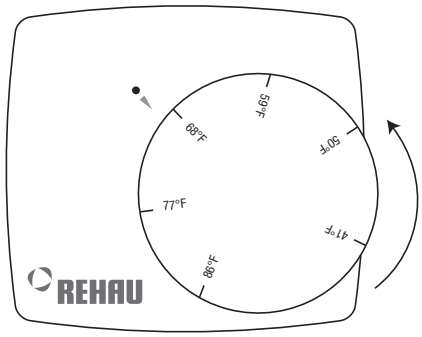


Fig. 9: Turn dial to lower limit setting

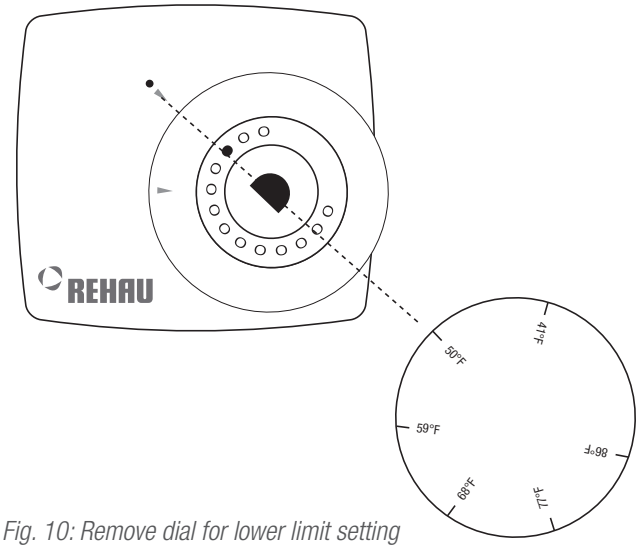


Fig. 10: Remove dial for lower limit setting

SETTING UPPER AIR LIMIT OF THERMOSTAT

1. To set the upper limit, turn the dial to the desired maximum temperature.

2. Carefully remove the dial and look at the position of the inner sleeve. The limit temperature is now lined up with the notch. To set it, choose the pin location below the notch.

3. Remove the inner sleeve assembly being careful not to turn dial stem, keeping in mind the orientation of the inner sleeve to the raised notch in thermostat cover.

4. Remove the pin on the back of the inner sleeve assembly.

5. Position upper limit so that the pin is below the notch in the cover and allows the inner sleeve to be reinstalled on the dial stem in the same position. Be careful not to rotate the dial stem.

6. Reposition dial, aligning the arrow with the upper limit temperature. If done correctly, the dial will not turn above the set upper limit.

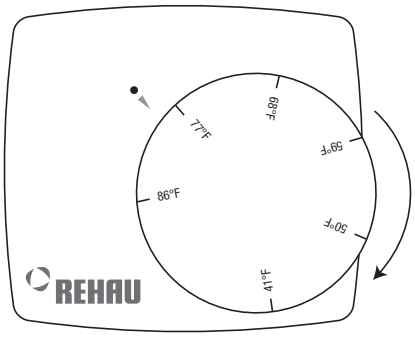


Fig. 11:Turn dial to upper limit setting

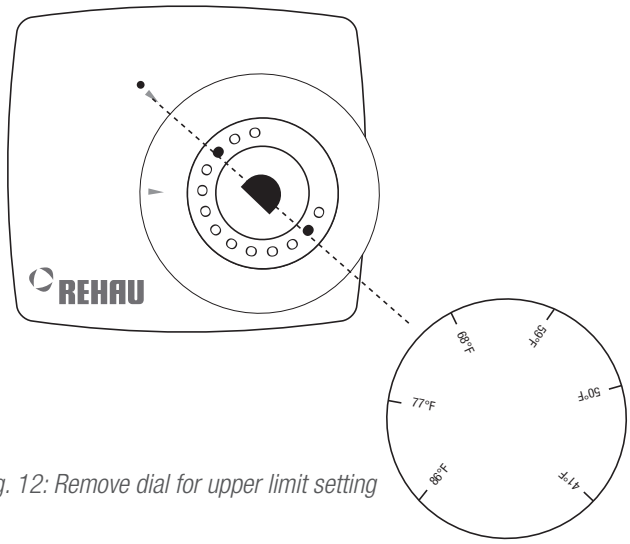


Fig. 12: Remove dial for upper limit setting

CALIBRATING THE THERMOSTAT

Calibration is normally not required. If necessary, do the following:

1. Remove the dial from the thermostat.

2. Check the room temperature using another trusted thermometer.

3. Remove the inner sleeve assembly from the dial and insert it onto the dial stem coming out of the thermostat.

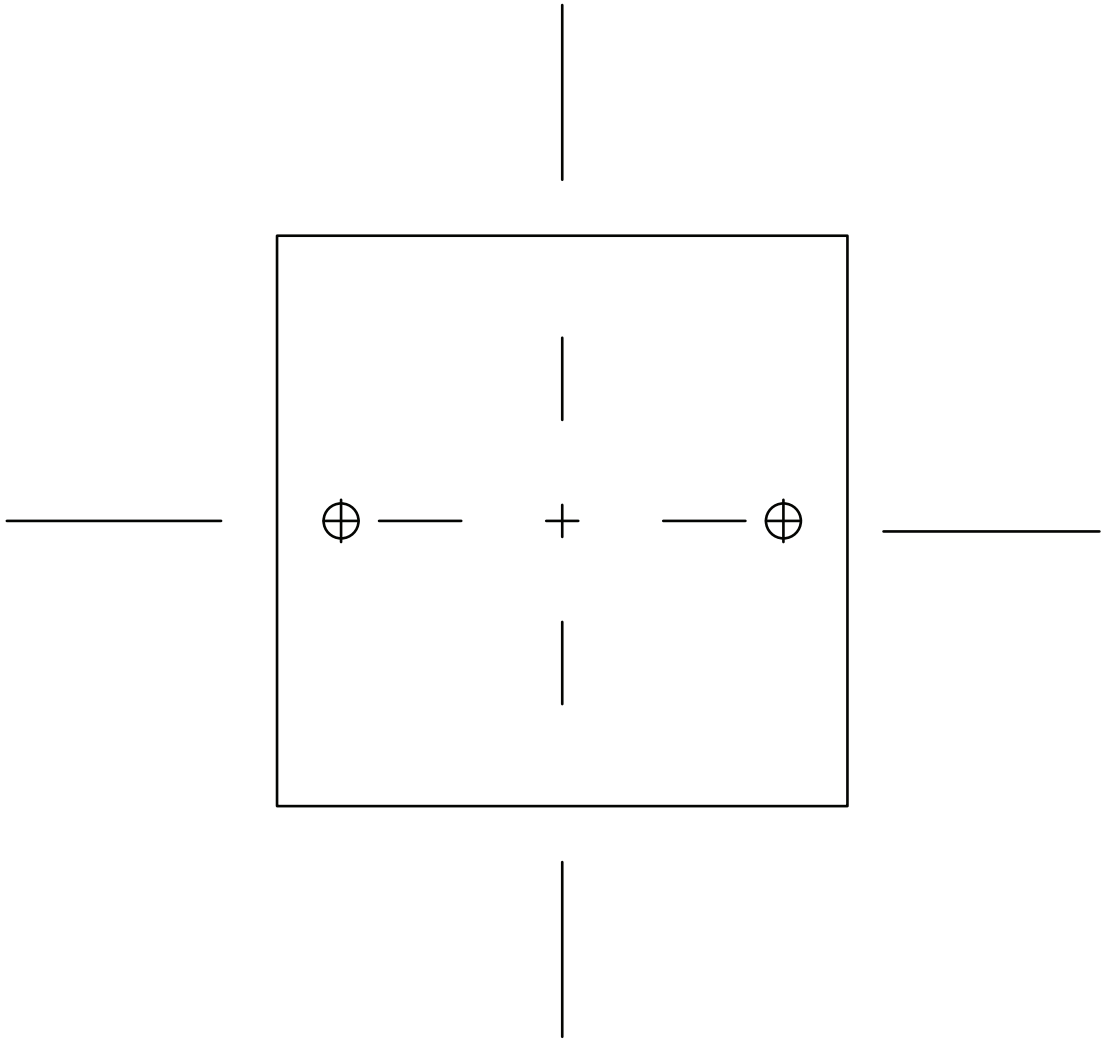
4. Carefully position the dial so that the correct temperature is at the temperature indicator and rotate the dial accordingly.

5. Push the dial back onto the dial stem.

APPENDIX

MOUNTING TEMPLATE

Clip page and use as mounting template



Thermostat should be located 1.5 m (5 ft) above the finished floor

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855.666 04.2011