

MD15-FTL-HE and MD15-FTL-OV Wireless Small Actuators

For valves of the Rxx and RWxx series, valves manufactured by Heimeier, Honeywell-MNG, Junkers, Honeywell-Baukmann, Oventrop, and Cazzaniga.

Application

Wirelessly controlled, battery-powered small actuator for room temperature control

For thermostat valve bodies for direct mounting on commercially available radiator valves for room-specific temperature control in heating systems.

The actuator is controlled wirelessly based on the non-proprietary EnOcean wireless protocol.



Content	Page
Important Information Regarding Product Safety	2
MD15-FTL-HE and MD15-FTL-OV Wireless Small Actuators	3
Technical Data	3
Accessories (not included in delivery)	3
Dimensions	4
Functions of the Wireless Small Actuator	5
Wireless Interface	6
EnOcean Equipment Profiles EEP A5-20-01 (Battery Powered Actuator)	7
Rxx and RWxx Two-Way/Three-Way Valves for MD15-FTL-HE Wireless Small Actuator	8
Types	8
Technical Data: Rxx and RWxx Valves	8
Valve Installation.....	10
Installing the Wireless Small Actuator	11
Removing the Wireless Small Actuator	13
Commissioning	14
Teaching in the MD15-FTL-xx on a Wireless Partner.....	15
Deleting the Wireless Partner	15
Turning Valve Block Protection On and Off.....	15
Performing a Communication Test	16
Manual adjustment	16

Änderungen vorbehalten - Contents subject to change - Sous réserve de modifications - Reservado el derecho a modificación - Wijzigingen voorbehouden - Con riserva di modifichie - Innehåll som skall ändras - Změny vyhrazeny - Zmiany zastrzeżone - Возможны изменения - A változtatások jogát fenntartjuk - 保留未经通知而改动的权力

Important Information Regarding Product Safety

Safety Instructions

This data sheet contains information on installing and commissioning the product "MD15-FTL-HE, MD15-FTL-OV". Each person who carries out work on this product must have read and understood this data sheet. If you have any questions that are not resolved by this data sheet, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this data sheet, the protection provided will be impaired.

Applicable regulations must be observed when installing and using the device. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies). If the device is used in other countries, it is the responsibility of the system installer or operator to comply with local regulations.

Mounting, installation and commissioning work on the devices may only be carried out by qualified technicians. Qualified technicians are persons who are familiar with the described product and who can assess given tasks and recognize possible dangers due to technical training, knowledge and experience as well as knowledge of the appropriate regulations.

Legend



WARNING

Indicates a hazard of medium risk which can result in death or severe bodily injury if it is not avoided.



CAUTION

Indicates a hazard of low risk which can result in minor or medium bodily injury if it is not avoided.



NOTICE

Indicates a hazard of medium risk which can result in material damage or malfunctions if it is not avoided.



NOTE

Indicates additional information that can simplify the work with the product for you.

Notes on Disposal

For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed of as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

Product Description**MD15-FTL-HE, MD15-FTL-OV****MD15-FTL-HE and MD15-FTL-OV Wireless Small Actuators**

- MD15-FTL-HE Wireless small actuator for valves with an M30x1.5 connection manufactured by Heimeier, Honeywell-MNG, Junkers, Honeywell-Baukmann, Oventrop (1998 and later), Cazzaniga, etc.
- MD15-FTL-OV Wireless small actuator for valves with an M30x1 connection manufactured by Oventrop (before 1998)

**Technical Data**

Nominal voltage	Battery-operated, 3 alkaline AA batteries (LR6 1.5 V 3,400 mAh)
Battery life	Approx. 3 years (depending on frequency and method of operation)
Measuring system	Integrated digital temperature sensor; 0 °C to 40 °C; ±0.5 °C at 25 °C
Interfaces	technoLink® wireless interface: <ul style="list-style-type: none"> ■ Radiogram: EnOcean radiogram ■ EEP A5-20-01 (Battery Powered Actuator) ■ Frequency: 868.3 MHz ■ Operating range: Approx. 30 m in buildings (depending on building structure) ■ Duty cycle: < 1 % ■ Transmission and reception interval: every 10 min.
Motor switch-off	Actuator spindle: extending = load-dependant, retracting = path-dependant
Indicator	Status LED
Actuating noise	<31 dB (A)
Nominal stroke	Up to 3 mm
Travel time	15 s/mm
Positioning force	100 N (nominal)
Position indicator	Stroke range scale
Manual adjustment	Only when disconnected from the power supply Socket for hexagon key under the actuator cover, key socket 4 mm
Housing	RAL 9010 pure white, battery compartment cover with mechanical locking mechanism
Ambient temp.	0 °C to 200 °C
Degree of protection	IP40
Installation position	Anywhere from vertical to horizontal
Maintenance	Maintenance-free
Weight	180 g

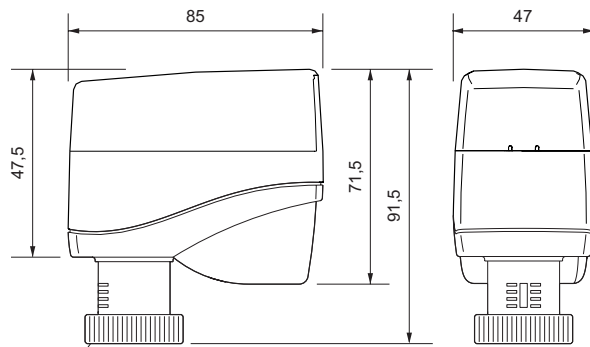
- When used properly, this device complies with the requirements of the R&TTE Directive (1999/5/EC).

Accessories (not included in delivery)

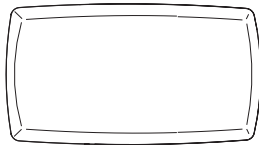
Z220	Protective battery cover for MD15-FTL-xx
VS3	Anti-vandalism protector for MD15-xx-HE

Dimensions

- MD15-FTL-HE, MD15-FTL-OV



M30x1,5 DIN 13 (MD15-FTL-HE)
 M30x1 DIN 13 (MD15-FTL-OV)



Functions of the Wireless Small Actuator

Actuator mode

If a 0 to 100% EnOcean telegram is received from an external wireless partner for controlling the wireless small actuator, the internal loop controller is not active.

The transmitted actuating signal is translated into a positioning movement.

A suitable wireless single room controller takes over the control functions.

Self-controlling operation

The integrated room temperature controller is activated if no external 0 to 100% EnOcean radiogram is received.

- Without external operator panel (= emergency mode):

The temperature is controlled to a fixed setpoint of 20 °C using the integrated temperature sensor (actual value) and the integrated control function of the actuator.

- With external operator panel (EnOcean technology):

Using the operator panel, the users can freely determine the setpoint or enter their own schedule.

The actual value and the setpoint are transmitted via an EnOcean telegram (EEP A5-20-01).

The integrated control algorithm makes room control easy and convenient.

Battery monitoring

The battery capacity is continuously monitored. If the battery capacity is too low, a wireless signal is transmitted to the wireless partner and 2 acoustic signal tones are emitted in succession every 6 hours. If this message is activated, the remaining capacity of the batteries is < 10%.



NOTICE

The batteries must be replaced within the next 30 days.

As the battery capacity decreases, the interval between the audible signals becomes shorter and the number of signal tones increases to 4 signal tones in succession every 3 hours, then 8 in succession every 2 hours.

If the remaining battery capacity is insufficient to maintain motorized operation, the actuator moves into the safety position of 50%.

The wireless communication with the wireless partner still functions in this operating state.

Valve stroke optimization

To improve operation, the small actuator performs an automatic calibration run in order to determine the working point and the effective valve stroke. Depending on the valve used, this can take up to 6 hours.

This valve calibration cycle is only performed at constant temperature conditions (steady-state control circuit, heating period). The internal loop controller is always active during the calibration cycle.

Warning:

When an external loop controller controls an MD15-FTL-xx in accordance with proper use, the external loop controller is not active during the time of the valve calibration cycle.

The valve stroke optimization is performed again 1 time after the batteries are replaced.

Valve block protection

Block protection prevents the cone from jamming when the valve is inactive for a long time. When block protection is active, the actuator performs a displacement of 50% once every 21 days.

Automatic closing point control

The small actuator continuously monitors the closing point and corrects it if necessary.

Actuator mode communication test

- This test can only be performed when the small actuator is controlled by an external loop controller with an actuating signal of 0 to 100% (actuator mode).

A communication test can be started manually at any time by pressing the push-button located under the actuator cover (Figure 4, page 14).

Pressing this push-button (approx. 2 s) checks the signal path to the wireless partner for which the teach-in procedure was carried out on the device. A successful communication test is acknowledged both visually (by the status LED) and audibly (2 signal tones in succession) after the push-button is released. The status LED lights up for approx. 3 s.

Performing a communication test has no effect on the transmission/reception interval.

Energy block (automatic “Window open” recognition)

When a window is open, the flow of heat energy to the room is interrupted. An open window is signified by a large and rapid temperature drop at the MD15-FTL-xx small actuator. If such a drop is measured by the internal temperature sensor, the small actuator closes the valve for 30 min.

After 30 min, the small actuator returns to normal operation and the energy block function is active again.

If the remaining battery capacity is < 10% (indicated by 2 signal tones in succession every 6 h), this function is inactive.

Frost protection function

If the temperature at the integrated temperature sensor drops below 6 °C, the small actuator opens the valve until 8 °C is reached.

Wireless Interface

The communication with the wireless partner is cyclical, bidirectional and includes intelligent reception/transmission management.

Upon the first reception of the wireless protocol (for teaching-in a wireless partner, see page 15), the wireless small actuator automatically adapts its operation according to the method of control from the wireless partner (actuator mode or self-controlled mode).



NOTE

If the wireless small actuator is operating in “self-controlled mode” with an external operator panel and the wireless path/wireless communication is interrupted, the status bit “emergency mode” (=self-controlled mode) is set (can be evaluated for service diagnostics).

After the malfunction has been rectified (details can be found in the documentation of the wireless partner), the wireless partner is automatically resynchronized.



NOTICE

This product uses only EnOcean telegrams

When selecting a wireless partner, ensure that the wireless interface also works with the EnOcean telegram EEP A5-20-01 (Battery Powered Actuator).

Product Description**MD15-FTL-HE, MD15-FTL-OV****EnOcean Equipment Profiles EEP A5-20-01 (Battery Powered Actuator)**

DATA BYTES

Transmit mode:	Message from the actuator to the controller
DB_3:	Current Value value 0...100 %, linear n=0...100
DB_2.BIT_7:	Service on
DB_2.BIT_6	Energy input enabled (not applicable)
DB_2.BIT_5	Energy Storage > xx% charged (not applicable)
DB_2.BIT_4	Battery capacity < 10%
DB_2.BIT_3	Contact, cover open
DB_2.BIT_2	Failure temperature sensor, out of range
DB_2.BIT_1	Detection, window open
DB_2.BIT_0	Actuator obstructed
DB_1:	Temperature 0...40°C, linear n=0...255
DB_0.BIT_7:	Not used
DB_0.BIT_6	Not used
DB_0.BIT_5	Not used
DB_0.BIT_4	Not used
DB_0.BIT_3	LRN Bit 0b0 Teach-in telegram 0b1 Data telegram
DB_0.BIT_2 *	Self-controlled mode 0b0 off 0b1 on
DB_0.BIT_1	Not used
DB_0.BIT_0	Not used
Receive mode:	Commands from the controller to the actuator
rx time = max. 1s	Note: The data transfer from the wireless partner to the wireless small actuator must be completely finished within a maximum time window of 1 s.
DB_3:	Valve set point 0...100 %, linear n=0...100 Temperature set point 0...40°C, linear n= 0...255
DB_2:	Temperature actual from RCU = 0b0, Room controller-unit ...
DB_1.BIT_7:	Run init sequence, only active in service mode
DB_1.BIT_6	Lift set, only active in service mode
DB_1.BIT_5	Valve open, only active in service mode
DB_1.BIT_4	Valve closed, only active in service mode
DB_1.BIT_3	Summer bit, reduction of energy consumption
DB_1.BIT_2	Set point selection DB_3 0b0 set point 0...100 %, 0b1 temperature set point 0...40°C
DB_1.BIT_1	Set point inverse
DB_1.BIT_0	Select function 0b0 RCU 0b1 service on

* Supported in version 2.32 and up

Rxx and RWxx Two-Way/Three-Way Valves for MD15-FTL-HE Wireless Small Actuator

Types

PN10 gunmetal two-way valve for the small actuator (water up to 120 °C)

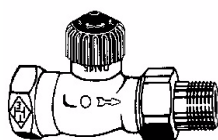
	Type	DN	PN	Kvs	R
Straight throughput	R10D	10	10	1.25	3/8"
	R15D	15	10	1.35	1/2"
	R20D	20	10	2.5	3/4"
Right-angled throughput	R10E	10	10	1.25	3/8"
	R15E	15	10	1.35	1/2"
	R20E	20	10	2.5	3/4"
Straight throughput with Kvs setting	R10DV	10	10	0.73	3/8"
	R15DV	15	10	0.73	1/2"
	R20DV	20	10	0.73	3/4"
Right-angled throughput with Kvs setting	R10EV	10	10	0.73	3/8"
	R15EV	15	10	0.73	1/2"
	R20EV	20	10	0.73	3/4"

PN10 gunmetal three-way valve for the small actuator (water up to 120 °C)

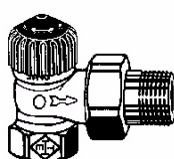
	Type	DN	PN	Kvs	R
Connection left	RW15L	15	10	1.45	1/2"
Connection right	RW15R	15	10	1.45	1/2"

Technical Data: Rxx and RWxx Valves

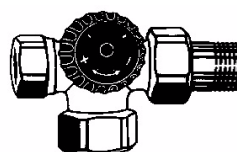
Nominal diameter	DN10 - 20
Pressure rating	PN10
Connection	Pipe screw connections in accordance with DIN EN 2115
Actuating stroke	2 mm
Temperature of medium	Water up to 120 °C
Housing	Gunmetal; nickel-plated
Cone	EPDM
Valve spindle	Stainless steel
Spindle seal	EPDM
Maintenance	Maintenance-free



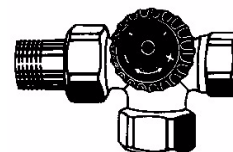
R10..20D, R10..20DV



R10..20E, R10..20EV

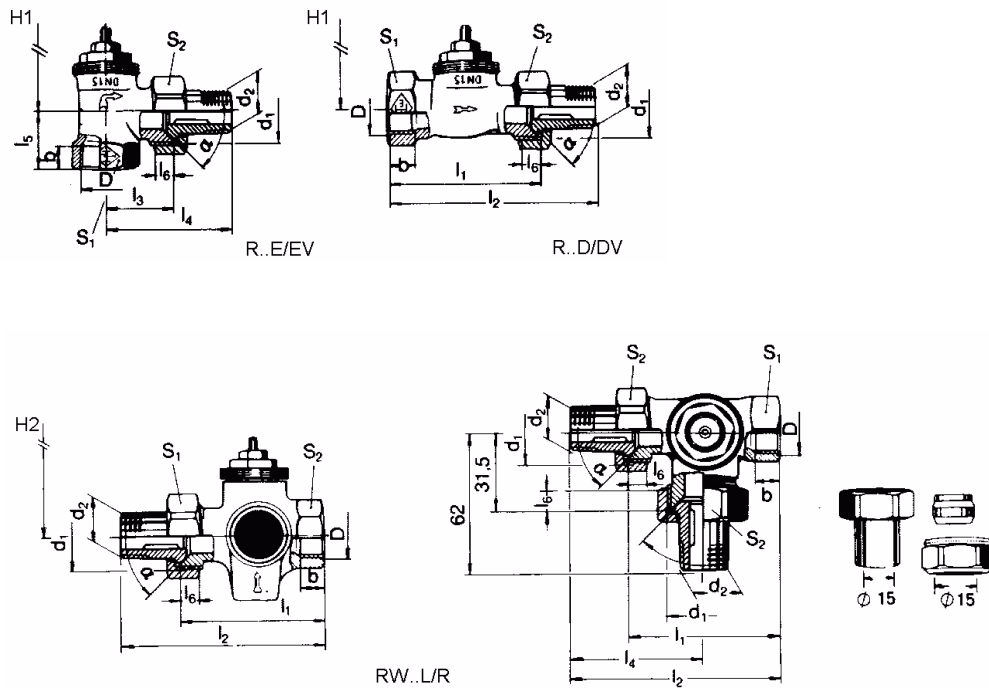


RW15L



RW15R

Dimensions



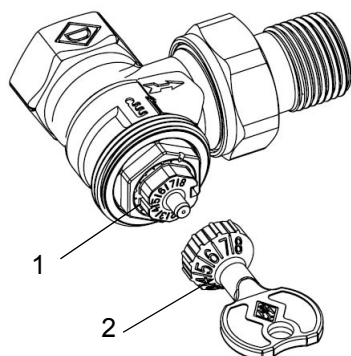
Kvs default setting for R10 - 20DV/EV valves

To adjust to the heat requirement, the R10 - 20DV/EV valves have 8 flow settings for the radiator mass flow rate.

The maximum flow rate, Kvs value (m³/h) can be selected by using the settings 1, 2, 3, 4, 5, 6, 7 or 8 (delivery setting = 8, corresponds to a Kvs value = 0.86).

The setting can be made using a Z29 socket key (accessory). The setting between 1 and 8 can be read from the valve, and will be implemented by the installed small actuator.

Position	1	2	3	4	5	6	7	8
Kvs value	0,049	0,102	0,185	0,313	0,420	0,565	0,740	0,860



- (1) Setting marks
- (2) Z29 socket key (accessory)

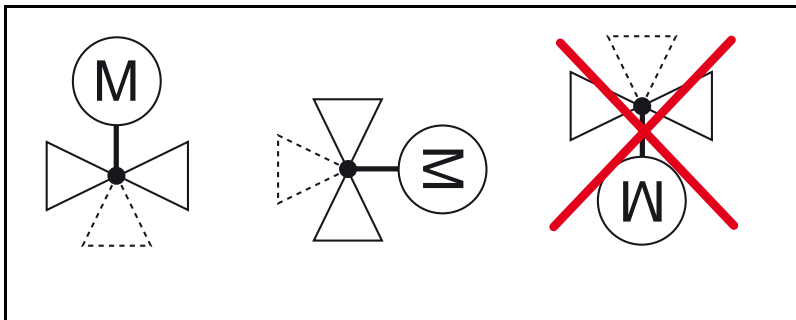
Valve Installation



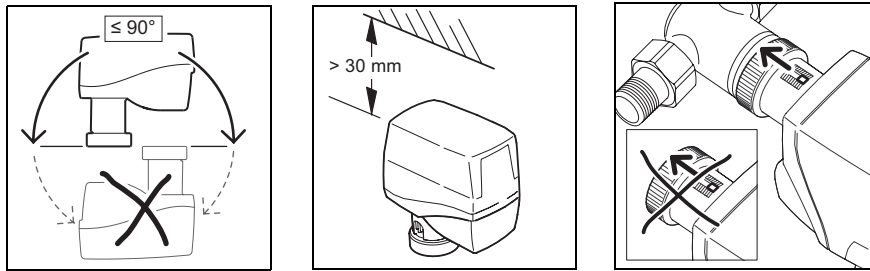
WARNING!

The valve may only be installed by qualified technicians. In addition to the generally valid installation guidelines, the following points are to be observed:

- The pipeline system and the interior of the fitting must be free of foreign objects. In the event of contaminated media, dirt collectors are to be inserted upstream of the valves with fine screens, mesh width 0.25 mm.
- There must be no tension between the valve and the pipeline connection.
- To avoid eddy formations in the valve body, the valve should be installed in a straight section of the pipe. A distance of 10 times the nominal diameter is recommended between the valve flange and manifold or other similar parts.
- The installation location is to be selected so that the ambient temperature at the actuator is kept between 0 – +50 °C.
- When carrying out installation, the permissible maximum pressure difference Δp and the specified direction of flow must be observed (see table in "Types" section).
- The three-way valves are to be used as mixing valves. Observe the specified direction of flow.
- Once the valve is installed, make sure the ball in the valve seating can be moved easily by pushing in the valve stem.
- Approximately 30 mm of free space is required above the actuator to install the actuator and remove the housing cover.
- For safety reasons, do not suspend the small actuators from under the valve.
- Observe the direction of flow arrow on the valve body. Inverting the direction of flow impairs control behavior.



Installing the Wireless Small Actuator

**NOTICE**

Do not operate the wireless small actuator without a valve.

**NOTICE**

Insert the batteries with the correct polarity.

When inserting the batteries, observe the polarity as marked in the battery compartment. Use only alkaline batteries (type: AA, LR6 1.5 V).

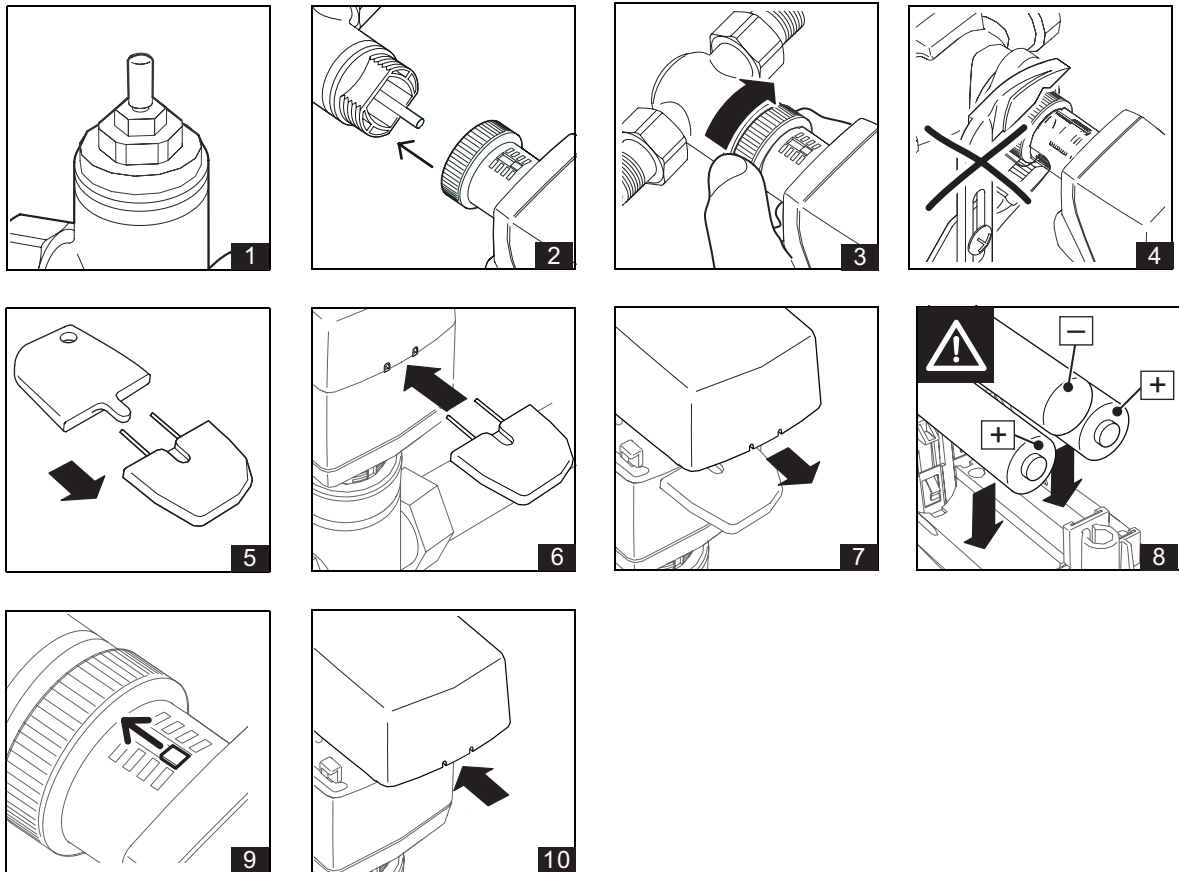
**CAUTION**

Do not dispose of used batteries in the household garbage. Dispose of them in an environmentally friendly manner.

**NOTE**

An initialization run is automatically carried out each time the batteries are replaced.

- MD15-FTL-HE, MD15-FTL-OV



- ▶ Place the small actuator on the threaded connection of the valve and hand tighten using the union nut.
- ▶ Open the battery compartment cover using the special key supplied by inserting it into the intended place. Remove the cover.
The special key is included with delivery of the small actuator.
- ▶ After all batteries have been inserted into the battery compartment, an initialization run is performed automatically.
The status LED flashes during the installation run.

Removing the Wireless Small Actuator

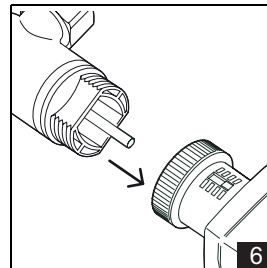
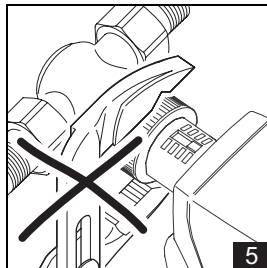
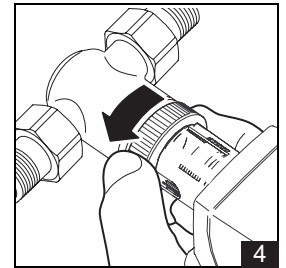
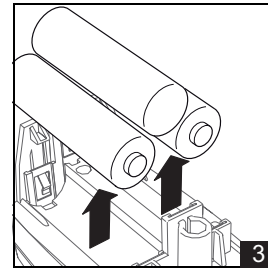
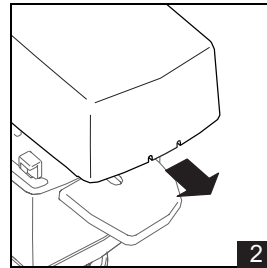
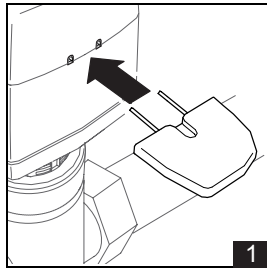


CAUTION

Before beginning to remove the unit, make sure that no differential pressure builds up in the valve body before beginning work. If necessary, close the gate valve and turn off pumps.

After the pipeline has cooled off, you can begin removal of the small actuator.

- MD15-FTL-HE, MD15-FTL-OV



- ▶ Open the battery compartment cover using the special key supplied by inserting it into the intended place. Remove the cover.
The special key is included with delivery of the small actuator.
- ▶ Remove the battery.
- ▶ Loosen the union nut.
- ▶ Remove the small actuator from the valve.

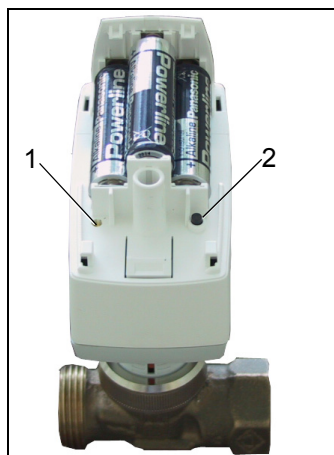
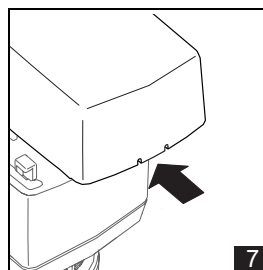
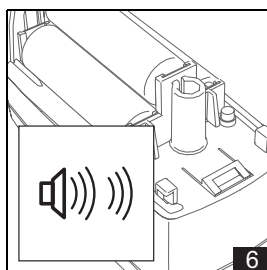
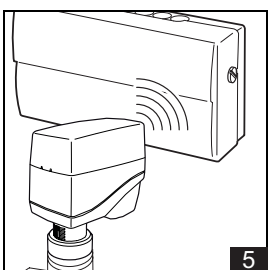
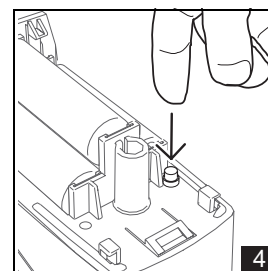
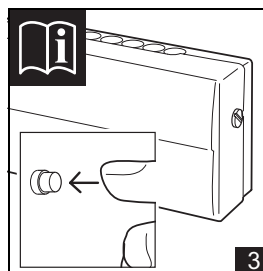
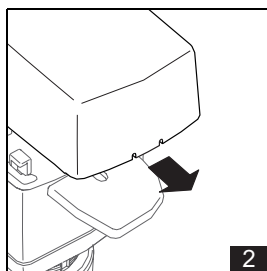
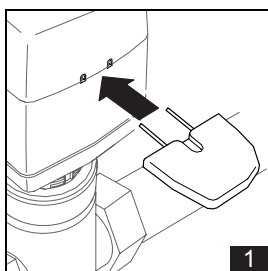
Commissioning



NOTICE

This product description describes specific settings and functions of the MD15-FTL-xx. In addition to these instructions, the product descriptions of other system components, such as wireless partners, are to be observed.

- The buttons and LED displays that are used during commissioning are located inside the housing.
- Remove the housing cover before commissioning (Figures 1 and 2).



(1) Status LED
(2) Push-button

Teaching in the MD15-FTL-xx on a Wireless Partner

**NOTE**

The teach-in procedure can only be performed once the initialization run is finished (see page 11).

- ▶ Set the wireless partner to teach-in standby mode (Figure 3, page 14). Details are described in the documentation of the wireless partner.
- ▶ Trigger a teach-in telegram on the MD15-FTL-xx by pressing the push-button (2) on the MD15-FTL-xx until a signal tone is heard (Figure 4, page 14).
- ▶ Release the push-button (2).
 - The teach-in process is started. The status LED (1) flashes for 1 s.
 - The wireless partner confirms that the teach-in function was successful. Details are described in the documentation of the wireless partner.
 - The wireless small actuator confirms that the teach-in function was successful both visually (status LED lights up for approx. 3 s) and acoustically (2 signal tones in succession).
- ▶ Close the housing of the MD15-FTL-xx by snapping on the housing cover (Figure 7, page 14).

**NOTE**

After the teach-in function has worked successfully, the device ID of the wireless partner is permanently stored in the wireless small actuator. You do not need to perform the teach-in process again if you change the batteries.

Deleting the Wireless Partner

It is not possible to delete the device ID of the wireless partner which is saved internally on the MD15-FTL-xx. This ID is overwritten by the new wireless ID when a new teach-in process is performed.

Turning Valve Block Protection On and Off**Switching on**

- ▶ Press the push-button (2) and hold it (approx. 4 s) until two successive signal tones are heard. After you release the push-button (2), the status LED (1) lights up for approx. 3 s and 2 audible signal tones are heard in succession.

Switching off

- ▶ Press the push-button (2) and hold it (approx. 4 s) until two successive signal tones are heard. After the push-button (2) is released, the status LED (1) is off and no signal tone is heard.

**NOTE**

If three signal tones are emitted after approx. 9 s, the switching on/off of the valve block protection was not successful. The procedure must be repeated.

Performing a Communication Test

- This test can only be performed when the small actuator is controlled by an external loop controller with an actuating signal of 0 to 100% (actuator mode).
- ▶ Press the push-button (2) and hold it (approx. 2 s) until a signal tone is heard.

A successful communication test is acknowledged both visually (by the status LED) and audibly (2 signal tones in succession) after the push-button is released. The status LED lights up for approx. 3 s.



NOTE

A successful communication test may require an adjustment of the current valve position.

An unsuccessful communication test is signaled by rapid blinking of the status LED for approx. 3 s.



NOTE

In case of an unsuccessful communication test, check the wireless partner and the wireless path.



NOTE

If the communication with the wireless partner is interrupted for >1 h, the wireless small actuator switches to emergency mode (see page 5) and the “emergency mode” status bit (self-controlled mode) is activated.

When a proper telegram is received, the wireless small actuator returns to normal operation automatically.

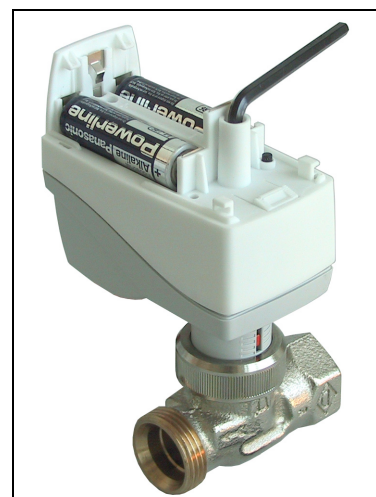
Manual adjustment



NOTICE

Manual adjustment may only be performed when the actuator is installed.

- The small actuator must be disconnected from the power supply when performing manual adjustment, which means at least one of the batteries must be removed.
- A hexagon key (key socket 4 mm) can be used to move the actuator into any position.



NOTICE

If you manually adjust until the slip clutch responds, turn the hexagon key half a turn in the opposite direction after the manually set stroke position has been reached.