

Motorised diverting ball valve for heat pump systems

6445 series



01392/25 EN

replaces. 01392/22 EN



Product range

| | | |
|-------------|---|----------------------------------|
| 6445 series | Diverting ball valve for heat pump systems | size DN 20 (3/4") and DN 20 (1") |
| 6445 series | Diverting ball valve for heat pump systems complete with insulation | DN 20 (1") |

Technical specifications

Materials

Valve body

| | |
|--------------------|-----------------------------|
| Body: | brass EN 12165 ADZ CW602N-M |
| Ball: | brass EN 12165 ADZ CW617N |
| Ball seal: | PTFE with EPDM O-Ring |
| Control stem seal: | double EPDM O-Rings |
| Union seal: | EPDM O-Ring |

Actuator

| | |
|-------------------|----------------------------------|
| Protective shell: | self-extinguishing polycarbonate |
|-------------------|----------------------------------|

Performance

Valve body

| | |
|--------------------------------|-------------------------|
| Medium: | water, glycol solutions |
| Maximum percentage of glycol: | 50 % |
| Maximum working pressure: | 10 bar |
| Working temperature range: | -5–110 °C |
| Maximum differential pressure: | 10 bar |
| Connections: | |
| 1" M with union (ISO 228-1) | |

Actuator

| | |
|---|-----------------------------|
| Synchronous motor | |
| Electric supply: | 230 V ~ (AC) ±10 % 50/60 Hz |
| Power consumption: | 4 VA |
| Auxiliary microswitch contact rating: | 0.8 A (230 V) |
| Protection class: | IP 54 |
| Operating time (angle of rotation 90°): | |
| - code 644562, 644553, 644563: | 40 s |
| - code 644566, 644557, 644567: | 10 s |

Ambient temperature range: 0–55 °C

Dynamic torque: 8 N·m (40 s)
4 N·m (10 s)

Supply cable length: 1 m

Conforms to: EN 60730-1 • EN 60730-2-14
2014/35/EC • 2014/30/EC

Function

Motorised diverting valves can be used to automatically divert the thermal medium in heating and cooling systems.

The exceptional hydraulic performance levels, compact size and frontally-located common channel make this series of valves particularly suitable for use in cooling/heat pump systems and in domestic hot water production.

Complete with insulation as standard or as an optional extra, they are especially ideal for application in heat pump systems, which feature particularly low thermal medium working temperatures resulting in condensation build-up.

The 6445 series was specifically developed to divert the thermal medium originating from the heat pump between the heating system and the storage used in the production of DHW.

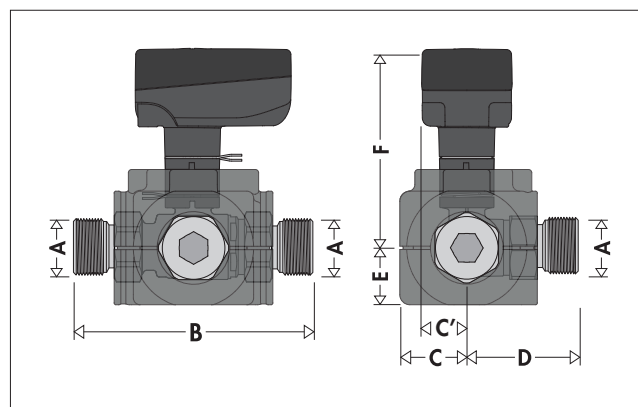
European directive conformity

CE mark directives 2014/35/EU and 2014/30/EU.

Insulation

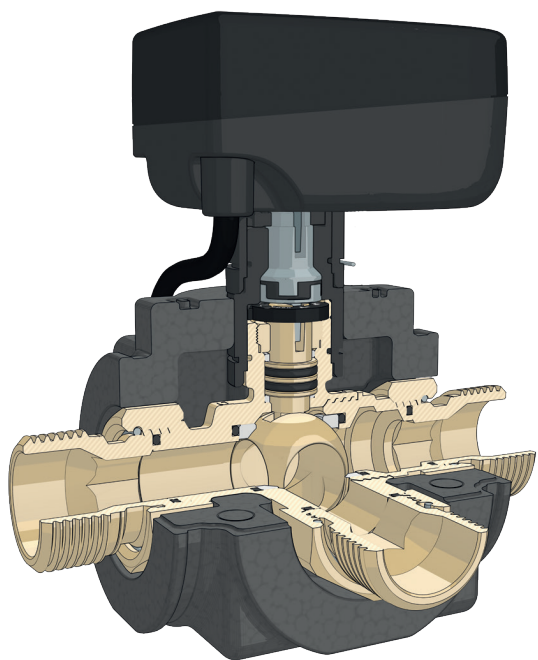
| | |
|--------------------------------|--------------------------|
| Material: | closed cell expanded EPP |
| Density: | 40 kg/m ³ |
| Thermal conductivity: | 0,037 W/(m·K) (at 10 °C) |
| Reaction to fire (DIN 4102-1): | class B2 |

Dimensions



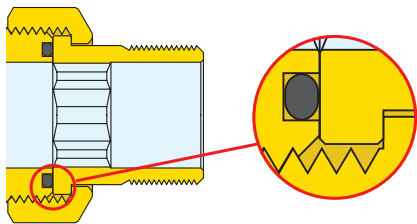
| Code | A | B | C | C' | D | E | F | Elec. supp. | Op. T (s) | Mass (kg) |
|--------|------|-----|----|----|----|----|-----|-------------|-----------|-----------|
| 644562 | 1" | 144 | 40 | - | 67 | 34 | 115 | 230 V | 40 | 1,4 |
| 644566 | 1" | 144 | 40 | - | 67 | 34 | 115 | 230 V | 10 | 1,4 |
| 644553 | 3/4" | 144 | - | 34 | 67 | 34 | 91 | 230 V | 40 | 1,3 |
| 644557 | 3/4" | 144 | - | 34 | 67 | 34 | 91 | 230 V | 10 | 1,3 |
| 644563 | 1" | 144 | - | 34 | 67 | 34 | 91 | 230 V | 40 | 1,3 |
| 644567 | 1" | 144 | - | 34 | 67 | 34 | 91 | 230 V | 10 | 1,3 |

Construction details



Seals

The valves are equipped with unions with a flat seat with EPDM O-Ring seal.



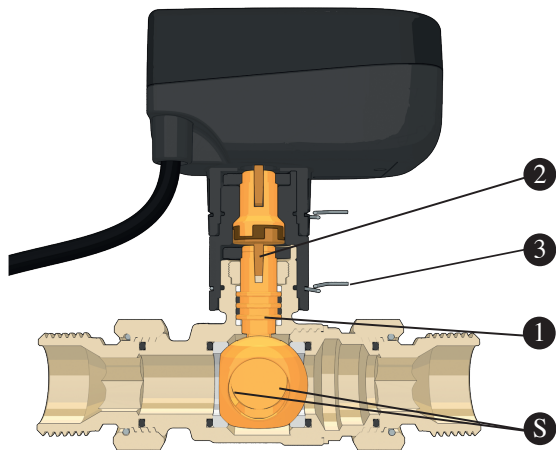
Actuator

ON/OFF mode

The valves can be used in ON/OFF mode with a single electrical enabling signal for opening or closing given by a three-point regulator.

Drive transmission

Thanks to the tapered coupling between the valve stem (1) and the gearmotor shaft (2), there is a constant connection between the two components. This permits automatic compensation of the mechanical slack thanks to the thrust (S) on the stem applied by the pressure of the medium.

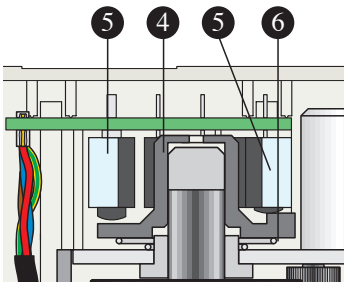


Valve actuator coupling

An elastic steel locking clip (3) allows the valve to be coupled to the actuator quickly and easily, simply by pushing the two parts together until they click into place and are automatically locked together.

Cam and limit microswitches

The cam (4) that controls the limit microswitches (5) can move vertically and is supported by a tapered spring (6). This keeps the cam in constant contact with the microswitches and compensates for wear over time.



Auxiliary microswitch

The auxiliary microswitch is triggered by the opening motion of the actuator. The auxiliary microswitch shuts off at an actuator opening value of 80 %.

Operating times

The actuator is available in two versions, with an operating time of 10 seconds or 40 seconds, both with 90° angle of rotation.

Directions of flow and position indicator

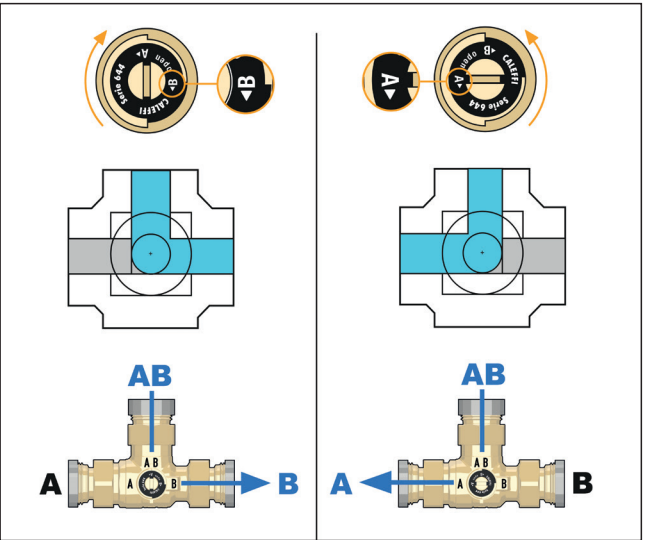
Removing the actuator reveals a slot in the top of the control stem on which the actuator pin acts:

- it allows the valve to be opened/closed manually with a screwdriver;
- its position shows the direction of flow according to the position of the ball, an indication which is particularly useful when testing or checking the system.

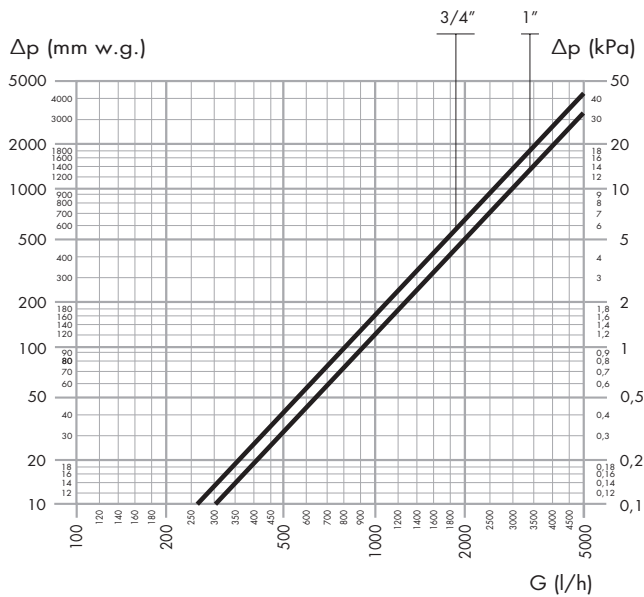
The following diagram illustrates the direction of flow, in accordance with the slot position.

T DRILLING
ON/OFF usage via thermostat or three-wire regulator
90° rotation

The specific configuration of the ball prevents obstructions in circulation and, as a result, any problems with the heat pump.

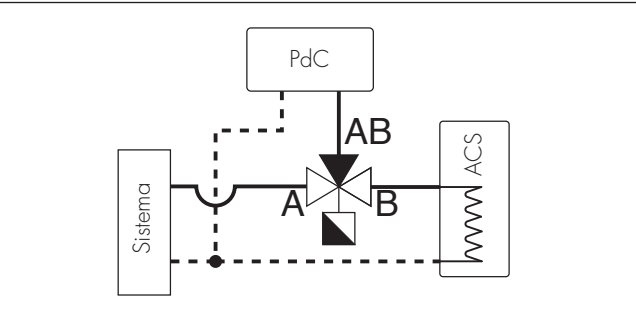


Hydraulic characteristics

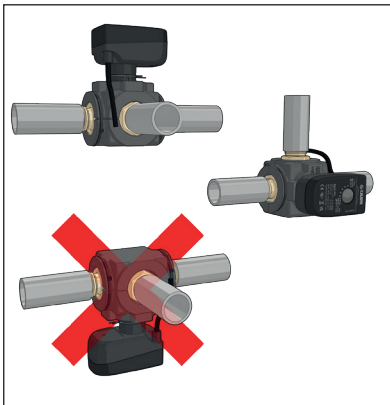


| Code | DN | Connection | Kv (m³/h) |
|-----------------|----|------------|-----------|
| 644562/63/66/67 | 20 | 1" | 9.0 |
| 644553/57 | 20 | 3/4" | 7.7 |

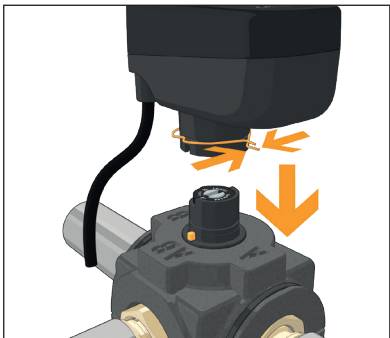
1. The three-way **diverting valve can be installed** on the flow line in the diverter position (common inlet AB and outlets A or B) and ON/OFF usage.



2. The valve should be installed with the control stem in a horizontal or upright position, **never upside down**.

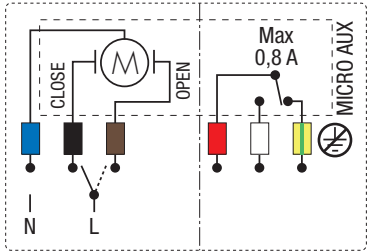


3. The actuator can be fitted on the valve body in the two shown positions. It is secured by means of an elastic stainless steel clip.



Wiring diagrams

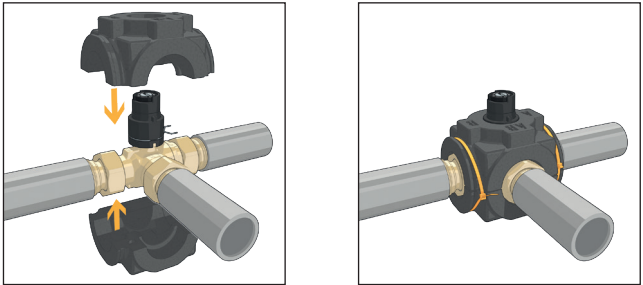
The illustrated connection allows valve rotation, and therefore the diverting of thermal medium, based on the control signal emitted by the heat pump controller. Do not connect several actuators in parallel.



Pre-formed shell insulation

This particular series of motorised ball zone valves is suggested, above all, for specific application in cooling systems, thanks to the hot pre-formed shell insulation, supplied as standard or as an optional extra, that prevents condensation build-up on the surface of the valve body.

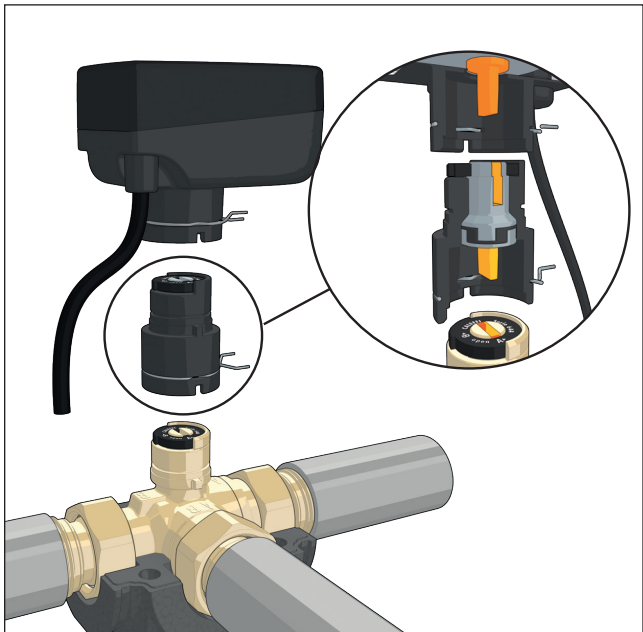
This system, moreover, ensures not only perfect thermal insulation, but also the watertightness required to prevent water vapour entering the device from the surrounding environment.



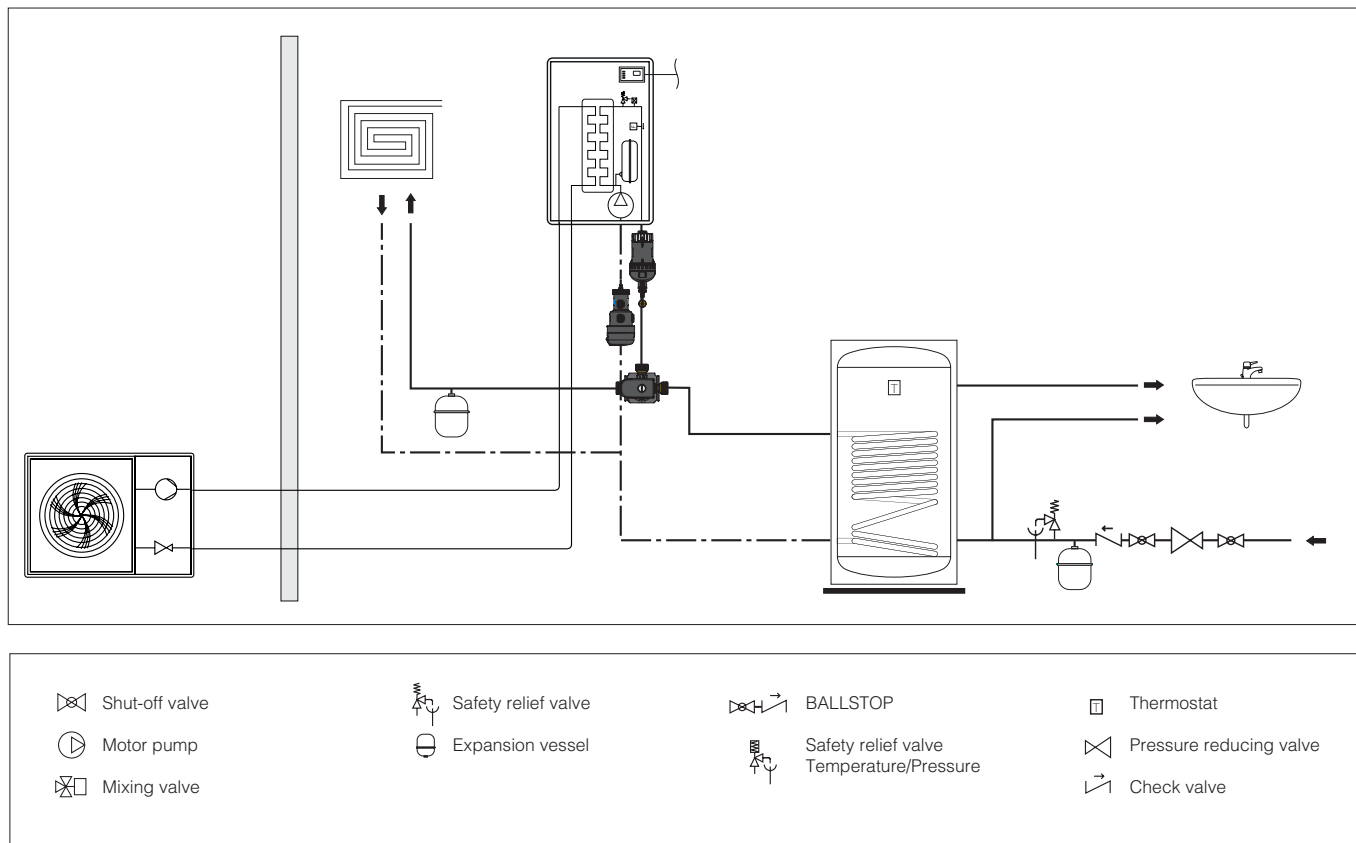
Thermal decoupler

A technopolymer thermal decoupler, containing two stainless steel stems and a central insulating ring, is positioned between the valve body and the actuator.

This prevents the transmission of heat to the electric actuator from the thermal medium. This prevents condensation build-up inside the actuator.



Application diagram



SPECIFICATION SUMMARY

6445 series

Motorized three-way ball diverting valve with three-point control for heat pump systems. Connections 3/4" M or 1" M with union. Brass body. Chrome plated brass ball. PTFE ball seal with EPDM O-ring. Control stem seal with double EPDM O-ring. Union seals with EPDM O-ring. Medium water and glycol solutions; max. percentage of glycol 50 %. Maximum working pressure 10 bar. Working temperature range -5–110 °C. Maximum working differential pressure 10 bar. Self-extinguishing polycarbonate actuator. Three-contact synchronous motor with auxiliary microswitch. Electric supply 230 V- 50/60 Hz. Power consumption 4 VA. Dynamic torque 8 N·m (40 s), 4 N·m (10 s). Auxiliary microswitch contact rating 0,8 A. Protection class IP 54. Operating time (angle of rotation 90°) 40 s (10 s). Ambient temperature range 0–55 °C. PATENT

6445 series

Motorized three-way ball diverting valve with three-point control for heat pump systems. Connections 1" M with union. Brass body. Chrome plated brass ball. PTFE ball seal with EPDM O-ring. Control stem seal with double EPDM O-ring. Union seals with EPDM O-ring. Medium water and glycol solutions; max. percentage of glycol 50 %. Maximum working pressure 10 bar. Working temperature range -5–110 °C. Maximum working differential pressure 10 bar. Self-extinguishing polycarbonate actuator. Three-contact synchronous motor with auxiliary microswitch. Electric supply 230 V- 50/60 Hz. Power consumption 4 VA. Dynamic torque 8 Nm (40s), 4 Nm (10s). Auxiliary microswitch contact rating 0,8 A. Protection class IP 54. Operating time (angle of rotation 90°) 40 s (10 s). Ambient temperature range 0–55 °C. Complete with closed cell expanded PE-X hot pre-formed shell insulation and thermal decoupler. PATENT

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