

Tender specification:

The pressure independent control valve “Cocon QTZ” PN 25 with automatic, differential pressure independent flow control is a valve combination consisting of a flow regulator and a regulating valve. The nominal value of the flow regulator can be set with the help of an easily accessible handwheel. The regulating valve can be equipped with a temperature controller or a manual head (connection thread M 30 x 1.5).

The pressure independent control valve “Cocon QTZ” is designed to be installed in heating and cooling systems with closed circuits (like central and surface heating systems, fan coil units, chilled ceilings, fan convectors etc.) for automatic flow control (hydraulic balancing). It can also be used for the control of another variable (e.g. room temperature) by modifying the flow rate with the help of actuators, thermostats or temperature controllers.

Technical data:

Performance data

Max. operating temperature: 120 °C

Min. operating temperature: -10 °C

Max. operating pressure: 25 bar (2500 kPa)

Medium: Water or mixtures of water and ethylene/propylene glycol (max. 50 %), pH value 6.5-10, according to VDI 2035/ÖNORM 5195

Max. closing pressure: 6 bar (600 kPa)
in the direction of flow

Control range:

DN	Valve lift [mm]	Control range [l/h] (min.-max.)	Differential pressure p1-p3 (min.-max.)
10	2.8	30- 210	10 - 600 kPa
10	4	150- 700	13 - 600 kPa
15	2.8	30- 210	10 - 600 kPa
15	4	150- 700	13 - 600 kPa
15	4	200-1300	16 - 600 kPa
20	4	250-1800	18 - 600 kPa
25	4	400-2500	20 - 600 kPa
32	4	600-4800	23 - 600 kPa

Data for actuator connection:

Connection thread: M 30 x 1.5

Closing dimension: 11.8 mm

Closing pressure
(actuator): 90 - 150 N

Lower lift position: ≤ 11.3

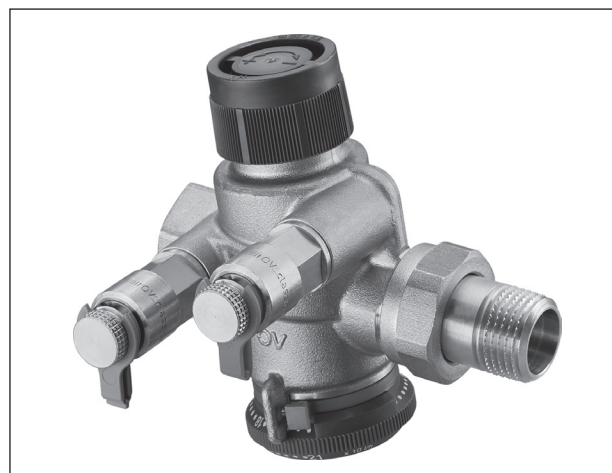
Upper lift position: ≥ 14.6 (30-210 l/h)
≥ 15.8

Materials:

Body made of dezincification resistant brass, seals made of EPDM, valve stem made of stainless steel.

Function:

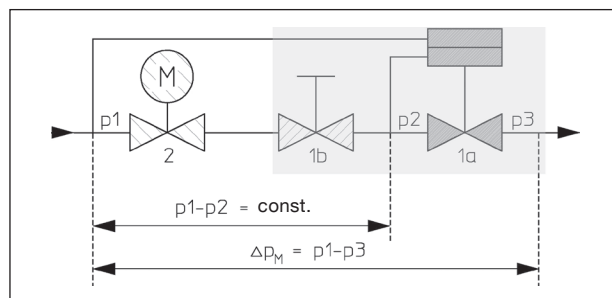
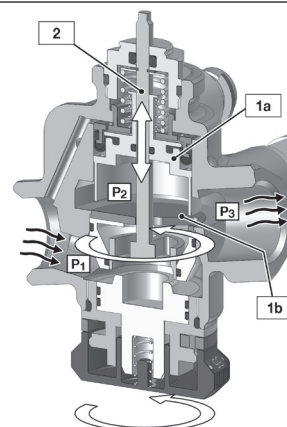
The required flow rate can be set at the handwheel (see page 3 at the bottom). The nominal value setting can be secured by engaging the handwheel and by inserting the locking ring, which is lead sealable. During low demand periods, regulation can be carried out with the help of an actuator or a temperature controller, which can be screwed onto the valve.



“Cocon QTZ” PN 25

Legend:

- 1 Flow control unit
- 1a Diaphragm unit
- 1b Nominal value unit
- 2 Control unit



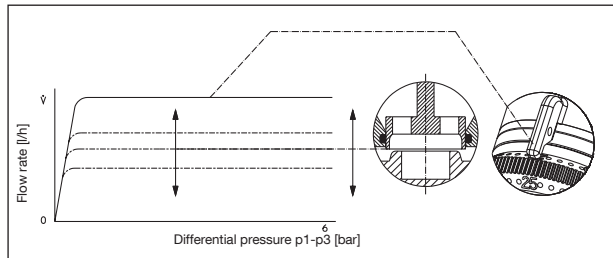
The illustrated section of the pressure independent control valve “Cocon QTZ” shows three pressure ranges.

“p1” is the inlet pressure, “p3” the outlet pressure of the valve. “p2” is the pressure actuating the integrated diaphragm unit (pos. 1a) which maintains the differential pressure “p1”-“p2” at a constant level via the regulating unit (pos. 2) which is activated through the actuator and via the nominal value unit (pos. 1b) which can be set to a maximum flow rate.

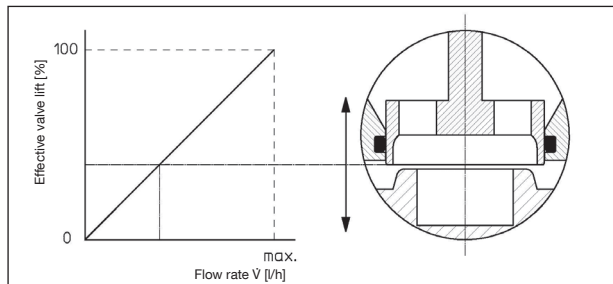
Even where high differential pressure variations “p1” – “p3” occur, for instance if sections of the system are activated or inactivated, the differential pressure “p1” – “p2” is kept at a constant level. This way, the valve authority of 100% is maintained (a = 1). Even during low demand periods with steady control (for instance in combination with 0-10 V actuators), the valve authority of the “Cocon QTZ” valve within the effective valve lift amounts to 100 % (a = 1).

Advantages:

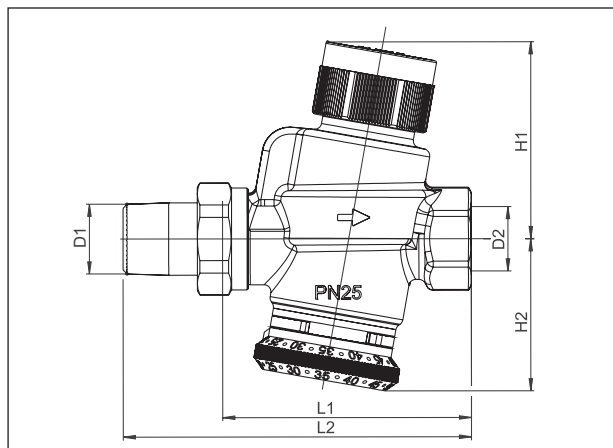
- constant high valve authority
- small sizes
- presetting of the nominal values even with mounted actuator
- optical display of the set nominal value even with mounted actuator
- excellent optical display of the presetting in any installation position
- nominal values can be read off in l/h without conversion
- presetting is secured by engaging the handwheel
- presetting can be locked and lead sealed with the help of the locking ring
- installation can be optimised by measuring the regulating pressure
- almost linear characteristic line if actuator driven
- high valve lift, even with small presetting values
- soft sealing valve disc
- draining, filling, bleeding and flushing of the system via the measuring connections



The maximum flow rate (\dot{V}) within the control range is set with the help of the handwheel. During low demand periods, room temperature control may, for instance, be carried out with the help of actuators and room thermostats.

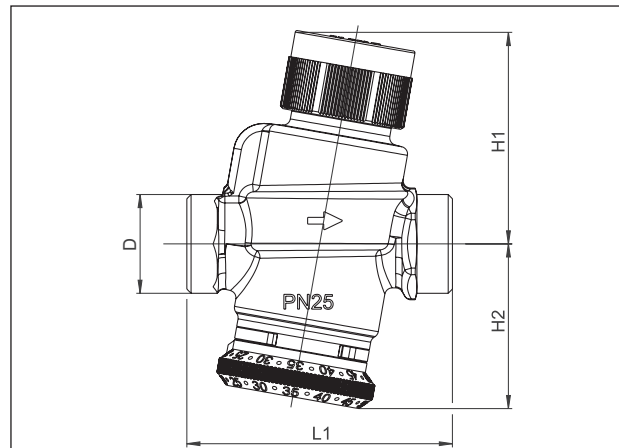


The pressure independent control valve “Cocon QTZ” has an almost linear characteristic line within the effective valve lift. This is advantageous when using actuators (electrothermal or electromotive) which also have a linear stroke behaviour across the control voltage. In general, the valve can also be combined with a temperature controller.



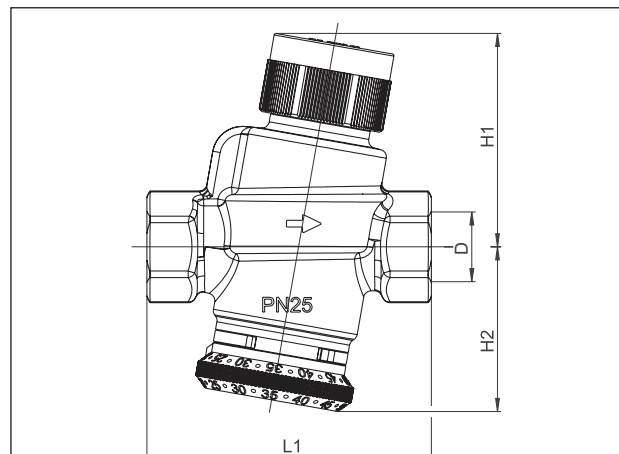
DN	L1	L2	H1	H2	D1	D2
15	72	100.8	57	44	R 1/2	Rp 1/2
20	91	122.7	63.8	48.8	R 3/4	Rp 3/4
25	101	136	61.8	50.5	R 1	Rp 1
32	129	169.9	71.4	70.3	R 1 1/4	Rp 1 1/4

Dimensions



DN	L1	H1	H2	D
10	71	57	44	G 1/2
15	71	57	44	G 3/4
20	91	63.8	48.5	G 1
25	103	61.8	50.58	G 1 1/4
32	129	71.4	70.3	G 1 3/4

Dimensions



DN	L1	H1	H2	D
15	76	57	44	Rp 1/2
20	91	63.8	48.5	Rp 3/4
25	101	61.8	50.5	Rp 1
32	130	71.4	70.3	Rp 1 1/4

Dimensions

Actuators:

The pressure independent control valves “Cocon QTZ” can be combined with the Oventrop actuators* (M 30 x 1.5).

When using actuators with piston strokes smaller than 4 mm, the following must be observed:

Due to the smaller piston strokes, the maximum possible flow rates will not be reached when combining these actuators with the valves.

This does not apply to the valves DN 10: 30-210 l/h and DN 15: 30-210 l/. The “Cocon QTZ” valves can also be used with Oventrop thermostats and temperature controllers*.

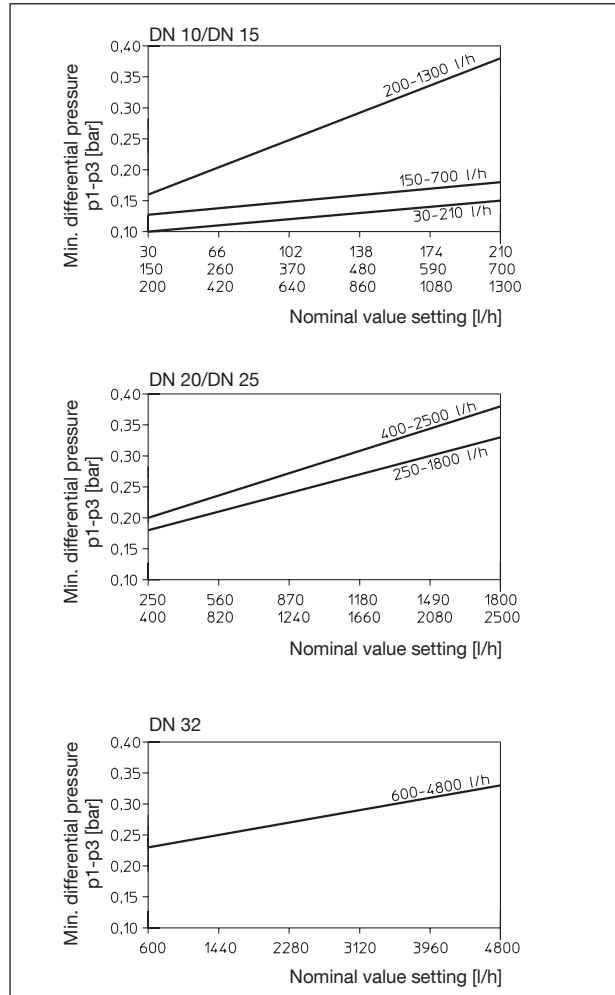
*See Oventrop data sheets “Actuators” and “Temperature controllers”

Min. differential pressure $p_1 - p_3$ for the valve design:

The minimum required differential pressure $p_1 - p_3$ across the valve can be obtained from the below chart:

Explanation of chart:

As for valves with integrated flow control, the required minimum differential pressure changes depending on the nominal value setting. The mathematical interrelationship is considered in the chart.

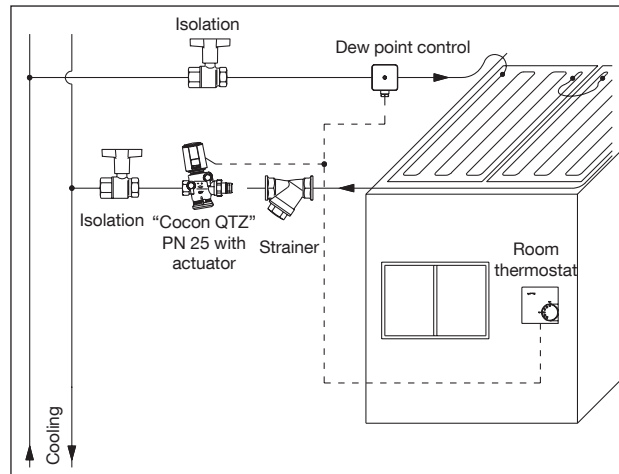


Installation:

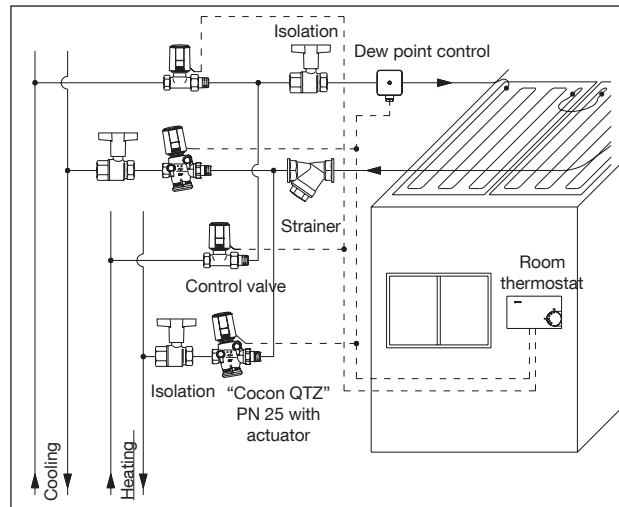
- The direction of flow must conform to the arrow on the valve body.
- The valve may be installed in any position (electric actuators must not be installed in a vertical downward position, the data sheets of the actuators must be observed).
- Do not use any greasing agents or oil for the installation, as these can destroy the seals. Any dirt particles or grease or oil residues must be flushed out of the pipework before the valve is installed.
- Any tension which could be transferred through the pipework must be avoided.
- When choosing the operating fluid, the latest technical status has to be considered (e.g. VDI 2035).
- The installation of an isolating valve in front of and behind the valve or section of the system is recommended for maintenance work.
- A strainer must be installed in the supply pipe to avoid contaminated operating fluids (see VDI 2035).
- The correction factors of the manufacturers of the antifreeze liquids have to be considered when setting the flow rate.
- After installation, check all installation points for leaks.

Pipe connection:

- Use suitable “Ofix” compression fittings, tailpipe connection sets or inserts (when using flat sealing tailpipes) of the Oventrop product range.



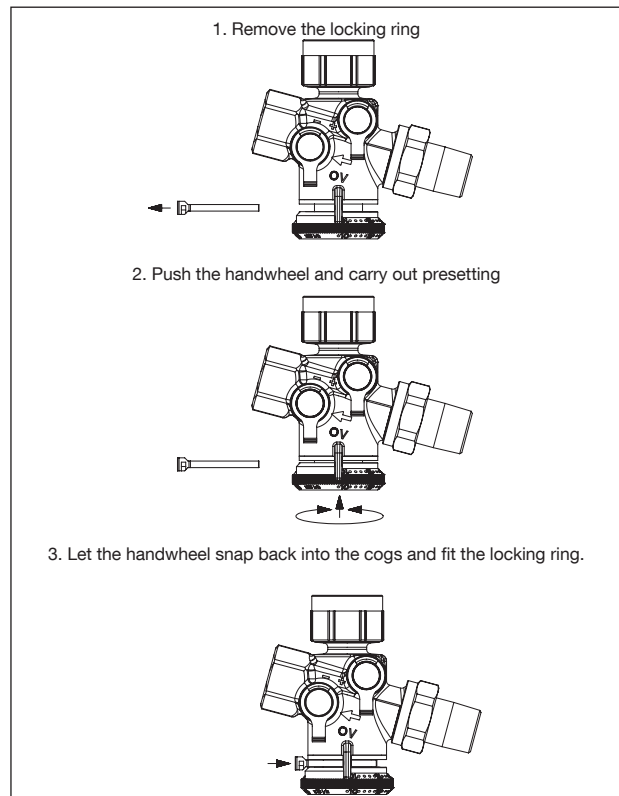
System illustration: Two pipe system



System illustration: Four pipe system

Setting of the flow rate:

The maximum flow rate can be set with the help of the protected presetting at the handwheel.

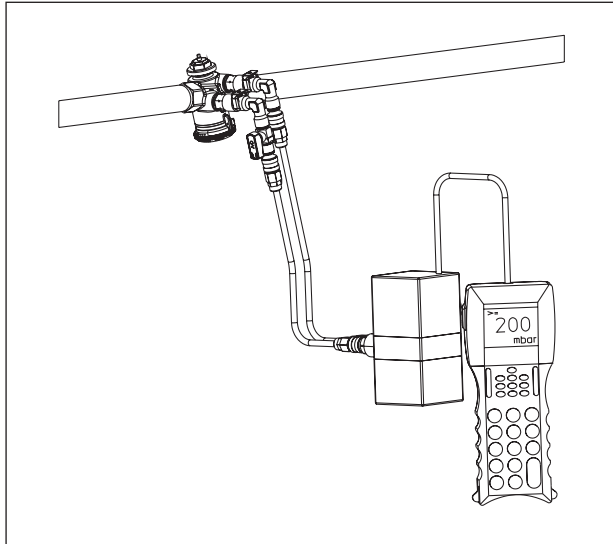


Differential pressure measurement p1-p3:

The measuring system “OV-DMC 2 /OV-DMC 3” can be connected to the pressure test points (model “Cocon QTZ” with pressure test points). This will confirm if the valve is working within the control range. The pump setting can be optimised by measuring the differential pressure.

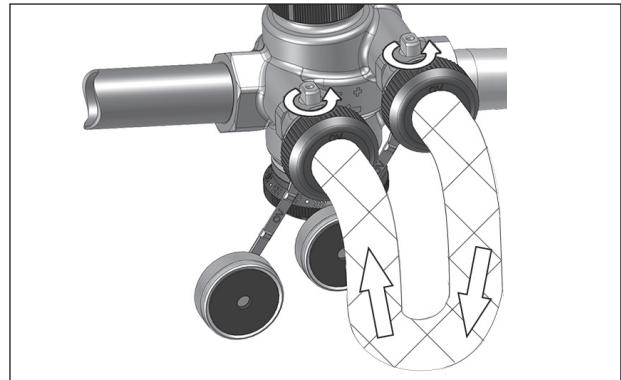
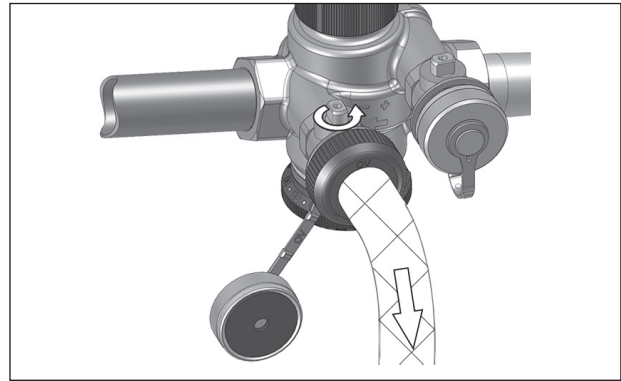
For this purpose, the pump head is reduced until the hydraulically underprivileged valves are just working within the control range.

To do so, the regulating valve must be fully open (unscrew the protection cap or set the actuator to open position). As soon as the measured differential pressure has reached or exceeded the differential pressure Δp_m indicated in the chart, the valve works within the control range.



Differential pressure measurement p1-p3

Sections of the system can be drained, filled, flushed and bled with the “Cocon QTZ” in mounted condition. Fill and drain ball valves (accessory) which are fitted to the measuring connections of the valve can be used for this purpose.



DN	Control range [l/h]	kvs value	Item no.					
			without pressure points			with pressure test points		
			male/male	female/coupling	female/female	male/male	female/coupling	female/female
10	30-210 l/h	0.55	1143563	–	–	1143163	–	–
10	150-700 l/h	1.7	1143663	–	–	1143263	–	–
15	30-210 l/h	0.55	1143564	1143504	1147204	1143164	1143104	1149204
15	150-700 l/h	1.7	1143664	1143604	1147304	1143264	1143204	1149304
15	200-1300 l/h	2.1	1143764	1143704	1147404	1143364	1143304	1149404
20	250-1800 l/h	3.1	1143666	1143606	1147306	1143266	1143206	1149306
25	400-2500 l/h	4.1	1143668	1143608	1147308	1143268	1143208	1149308
32	600-4800 l/h	8.4	1143670	1143610	1147310	1143270	1143210	1149310

Subject to technical modifications without notice.

Product range 3
ti 391-EN/10/MW
Edition 2018

Aktor T 2P

Thermal Actuators On/Off Control



Thermal actuators are used in the heating, ventilation and air conditioning trades. The actuators can be used for room temperature control or as zone valves.

In combination with Oventrop thermostatic valves or heating circuit distributors/collectors for surface heating and Oventrop room thermostats, they enable individual room temperature control.

The control can be carried out by regulation via on/off outputs or by pulse width modulation.

If Oventrop actuators are used for room temperature control, a time-controlled setback of the room temperature via room thermostats is possible, for example by means of time programmes of the ClimaCon F room thermostats (e.g. ClimaCon F 210 / F 310).

Oventrop offers actuators in "normally closed" or "normally open" versions.

In the "normally closed" version, the valve is opened evenly when voltage is applied; this can be seen from the extended stroke indicator. If no voltage is applied to the actuator, the valve closes evenly after the idle time has elapsed.

The function of the thermal actuators "normally open" is reversed, when voltage is applied the valve is closed, in the de-energized state the valve is open.

Actuators "normally closed"

Thermal actuators "normally closed" have a first-open function. In the delivery state, these actuators are normally open. This enables heating operation during the shell construction phase, even if the electrical wiring of the individual room control has not yet been completed. If the operating voltage is applied for longer than 6 minutes, the first-open function is released and the actuator is ready for operation.

Features

- Simple plug-in mounting on valve adapter
- Can be used in conjunction with room thermostats
- Silent operation with low power consumption
- Universally applicable
- Mounting independent of position
- Protected against overvoltage

Product Details

Aktor T 2P Thermal Actuators 230 V

Item no.	Version	Cable length [m]	Connection cable
1012415	Normally closed	1	2 x 0.75 mm ²
1012425	Normally open	1	2 x 0.75 mm ²
1012435*	Normally closed with integrated auxiliary switch	1	4 x 0.75 mm ²
1012452	Normally closed	2	See table cable cross-section
1012455	Normally closed	5	See table cable cross-section
1012459	Normally closed	10	See table cable cross-section

Maximum cable length for an actuator with specified cable cross-sections (voltage drop approx. 5% at 230 V). When using several actuators, the specified cable length must be divided by the number of actuators.

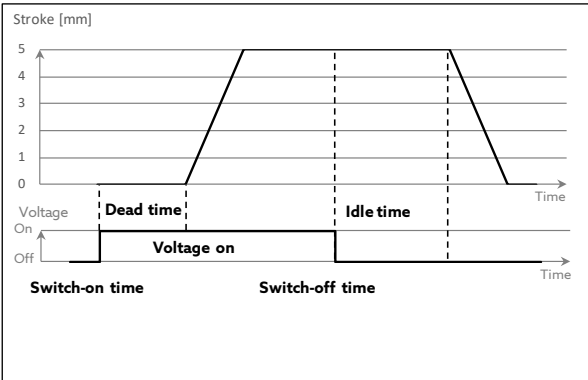
Cable cross-section [mm ²]	Max. length [m]
2 x 0.75	1051
2 x 1.00	1402
2 x 1.50	2102
2 x 2.50	3504

Technical Data

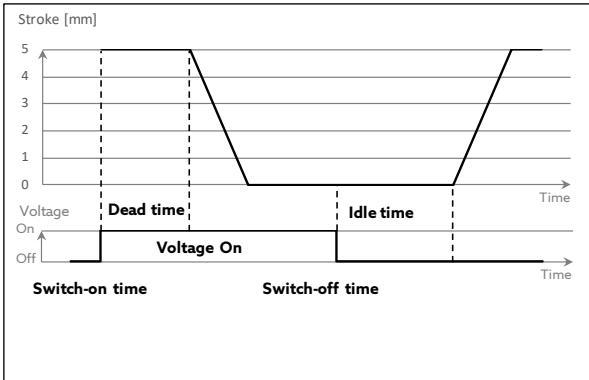
Connection thread	M 30 x 1.5
Operating voltage	230 V AC ± 10 %, 50...60 Hz
Switch-on current	< 550 mA for max. 100 ms
Continuous current	4.5 mA
Opening or closing time	approx. 5 min.
Stroke	5 mm
Positioning force	> 90 N
Auxiliary switch, switching current	5 A resistive load 1 A inductive load
Auxiliary switch, switching point	approx. 2 mm
Protection type	IP 54 in all installation positions
Protection class	II according to EN 60730
Colour	RAL 9016 (traffic white)
Medium temperature	0...+100 °C
Ambient temperature	0...+60 °C
Storage temperature	-25...+60 °C

* Actuator with auxiliary switch

Thermal actuators with auxiliary switch can switch a pump directly, for example, via the integrated potential-free contact.



Characteristic line, normally closed



Characteristic line, normally open

Aktor T 2P Thermal Actuators 24 V

Item no.	Version	Cable length [m]	Connection cable
1012416	Normally closed	1	2 x 0.75 mm ²
1012426	Normally open	1	2 x 0.75 mm ²
1014235	Normally closed	1	2 x 0.75 mm ²

Maximum cable length for an actuator with specified cable cross-sections (voltage drop approx. 1.2% at 24 V). When using several actuators, the specified cable length must be divided by the number of actuators.

Cable cross-section [mm ²]	Max. length [m]
2 x 0.75	202
2 x 1.00	268
2 x 1.50	402
2 x 2.50	671

Technical Data

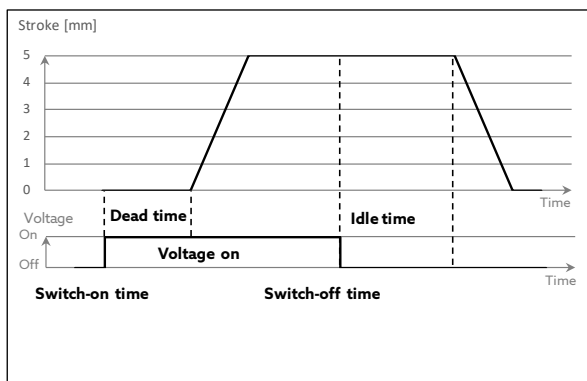
Connection thread	M 30 x 1.5
Operating voltage	24 V AC -10...+20 %, 0...60 Hz
Switch-on current	< 300 mA for max. 2 min
Continuous current	45 mA
Closing or opening time	approx. 5 min.
Stroke	5 mm
Positioning force	> 90 N
Protection type	IP 54 in all installation positions
Protection class	III according to EN 60730
Colour	RAL 9016 (traffic white)
Medium temperature	0...+100 °C
Ambient temperature	0...+60 °C
Storage temperature	-25...+60 °C

For the versions with 24 V operating voltage, a safety transformer according to EN 61558-2-6 must always be used. The dimensioning of the transformer results from the switch-on power of the actuators.

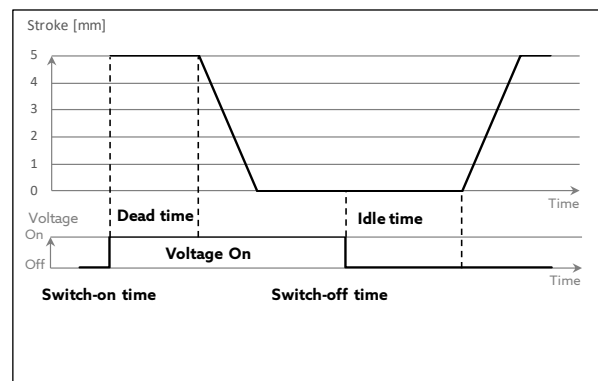
Rule of thumb:

$$P_{\text{Transformer}} = 7,2 \text{ W} \times n$$

n = Number of actuators



Characteristic line, normally closed



Characteristic line, normally open

Range of application, installation and mounting

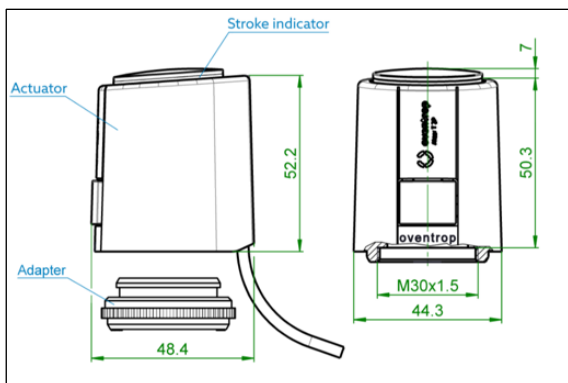
The electrical connections must comply with the regulations of the local Electricity Board.

Please note: Brown connection cable to phase (L). Fusing of the control circuit is recommended. The connection cable must not be laid on heat-carrying pipes or the like, as this accelerates the ageing of the cable material.

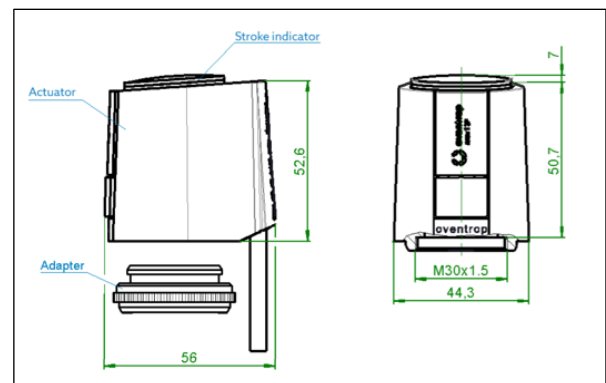
When selecting the switching contacts and the mains fuses, the switch-on current of the heating element must be taken into account. The voltage loss through electrical cables must not exceed 10% to comply with the specified running time.

The actuators are mounted by means of a valve adapter and do not require any tools. The valve adapter is screwed onto the valve by hand and the actuator is attached to the adapter by plug-in mounting.

The Oventrop thermal actuators can be operated in any installation position. Vertical (stroke indicator at the top) and horizontal positions are preferable. When mounted vertically downwards, special circumstances (e.g. dirty water) can reduce the service life.



Dimensions of actuators with connection thread M 30 x 1.5




Dimensions of actuators with auxiliary switch

Accessories


Reinforcing cap

To protect the thermal actuators against vandalism.

	Suitable for	Item no.
	Connection thread M 30 x 1.5	1012450


Valve adapter

For thermal actuators.

	Suitable for	Item no.
	Connection thread M 30 x 1.5	1012461 (replacement)
	Connection thread M 30 x 1.5 high model (11 mm)	1012462
	Connection thread M 30 x 1.0	1012890 (manufactured until 1998)
	Squeeze connection	1012463


FloorCon F electrical connecting block

With automatic hydronic balancing for surface heating and cooling.

	Suitable for	Room thermostats	Item no.
	230 V, without channel allocation	8	1400984
	230 V, with channel allocation	10	1400985


Electrical connecting block for surface heating

When using item no. 1400980/82 with 24 V, an external power supply of 24 V must be available. Item no. 1153053 can be used as transformer.

	Suitable for	Control zones	Item no.
	24 V and 230 V, heating	6	1400980
	230 V, heating/cooling (C/O), pump control	10	1400981
	24 V, heating/cooling (C/O), pump control	10	1400982
	230 V, heating/cooling (C/O), pump and boiler control and integrated time switch	10	1400983


ClimaCon F Room thermostat

The room thermostat can be used as leader room thermostat.

	Suitable for	Item no.
	230 V, heating	11155021 (230 V, F 210)
		1155031 (230 V, F 310)
	24 V, heating	1155531 (24 V, F 310)

ClimaCon F Room thermostat

The room thermostat can be used as follower room thermostat.

	Suitable for	Item no.
	230 V, heating	1155009 (230 V, F 90)
		1155010 (230 V, F 100)
	24 V, heating	1155510 (24 V, F 100)