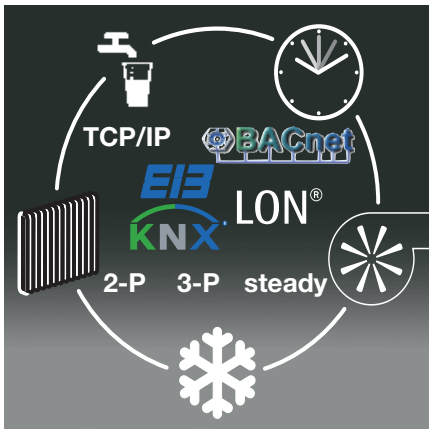
oventrop

Innovation + Quality

Valves, controls + systems

Valves, actuators and systems for building automation

Product range



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Introduction

Building automation systems become more and more important not only for new buildings but also for the renovation of existing buildings.

Building automation systems with their monitoring, controlling and optimising devices are paramount for a comfortable, energy-efficient and cost-saving building management.

The effectiveness of such systems is, however, only guaranteed if the actuators, valves and controls are coordinated to the optimum and if they adapt to the different demands during heat transport and transmission.

Oventrop offers valves and controls which can be combined for different tasks of building automation.

The Oventrop products may also be integrated into the systems of other manufacturers. The valve/actuator combinations allow the setting of different total characteristic lines.

Actuators for two and three point as well as steady control are available for the bus systems KNX/EIB, LON.

They can be connected to the control devices of the different building automation systems.

Apart from the standard valves and actuators, Oventrop offer their own, modular building automation system which is called “DynaTemp”.

The system is used for individual room temperature control, potable water circulation, hydronic balancing as well as heat generation, storage and distribution.

Building automation with Oventrop components and systems:
European Parliament in Strasbourg, France

Overview building automation and system components

Building automation
Building automation is (functionally) subdivided into three levels:

- Control level
- Automation level
- Field level

Control level
All information supplied by the assigned building control components is gathered on this level and decisions regarding operating management and priority monitoring are taken. They can be influenced by parameters within the software or operating personnel.

Automation level
Functional level for the sequence of the building control and monitoring functions. The data and signals are compared to the sensors and actuators of the field level.

Field level
Functional level for control and measurement via sensors and actuators. When combined with Oventrop valves, they accomplish different tasks in heating, sanitary and cooling systems.

(Interface explanations see page 4)

Interface explanations:

EIB/KNX:
The European Installation Bus and its successor KNX (Konnex) are common field bus systems in Europe. The sensors, actuators and the automation devices communicate via the field bus.

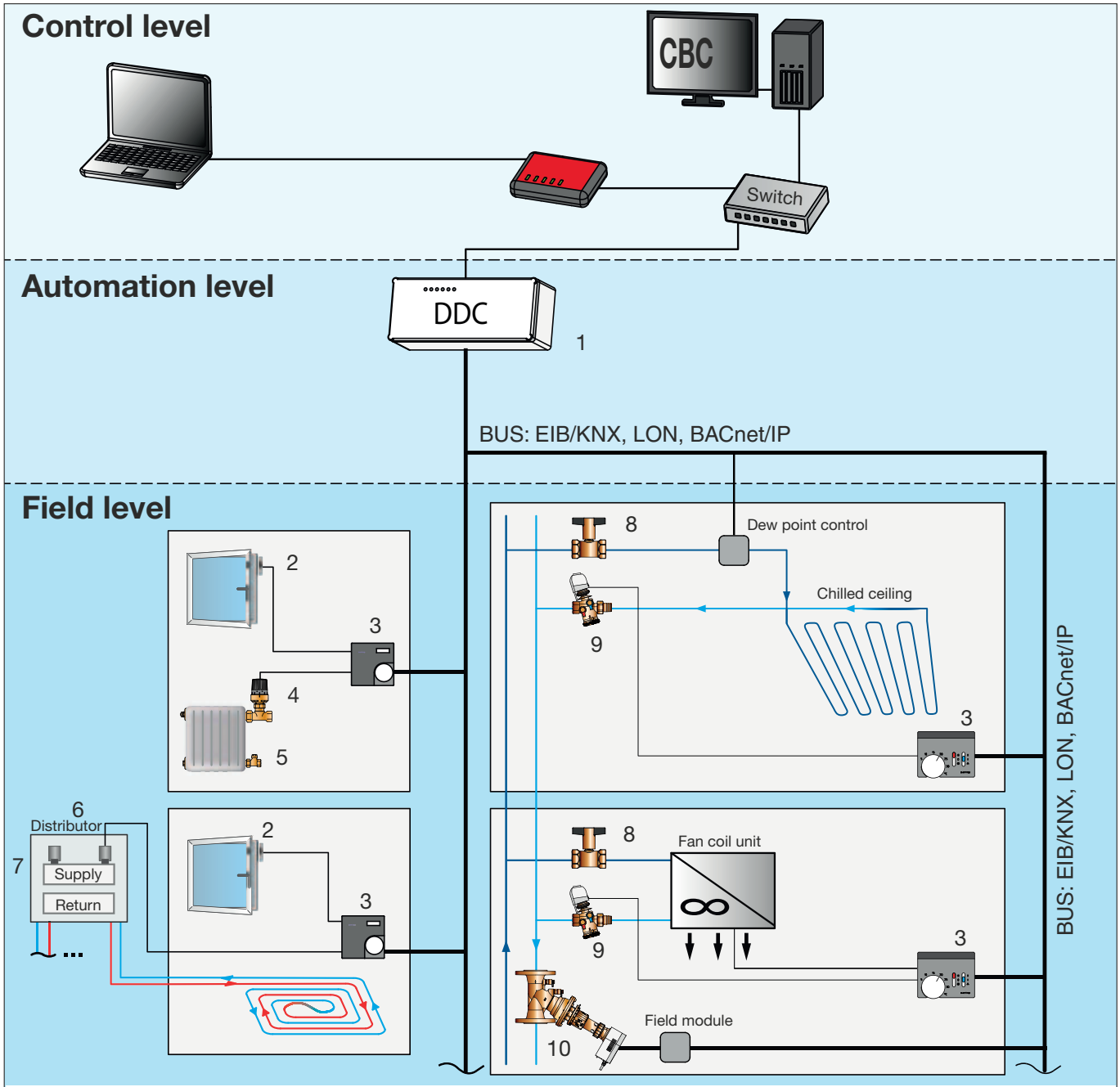
LON:
The Local Operating Network is of American origin. Enjoying a high international reputation and having proved its worth over the years, this system is now also used in Europe.

BACnet (Building Automation and Control Networks):
Building automation network recording. BACnet was developed to provide a uniform, neutral standard for the data communication in and with systems of the building automation.

2-P:
The 2 point standard serves to control two point actuators. The actuator is directly activated via two electric connections and features two positions, e.g. “on” and “off”.

3-P:
The 3 point standard serves to control three point actuators. The actuator features three electric connections and is set to the required position by the activation cycle at the respective directional connection.

Steady
Steady actuators are activated via the power supply and a steady control signal (e.g. 0-10 V). Depending on the control signal, the exact position is initiated.



Legend:

1 DDC: Direct digital control, electronic product assembly, used for control and regulation in the building automation
2 Window contact
3 Room operating appliance
4 Thermostat “Uni LHZ”
5 Thermostatic valve “Series AV6”
6 Electrothermal actuator, 24 V
7 Surface heating distributor “Multidis SF”
8 Ball valve “Optibal”
9 Pressure independent valve “Cocon QTZ”
10 Pressure independent control valve “Cocon QFC”

System illustration

Different types of control and actuators are used for the building automation:

For a complete isolation of the volume flow, the installation of an actuator with two point control (“on”/”off”) on the flow valve is sufficient.

Short and long stroke periods are optional.

When using mixing- or diverting valves, intermediate actuator positions become necessary for the adaption of two volume flows.

These actuators feature a steady control and any position between fully opened and fully closed can be initiated.

Depending on whether a control voltage is supplied by the building automation permanently or only at the point of adjustment, distinction is made between the 0-10 V and three point control.

As before with the two point actuators, a long or short stroke period is optional.

The below table shows the actuators and its distinctive features.

Illustration	Control	Supply voltage	Connection	Description
	2 point	230 V 24V	M 30 x 1,5 Squeeze connection	Electrothermal actuator for room temperature control or as zone valve
	2 point	230 V 24 V	M 30 x 1,5	Electromotive actuator with quick stroke period
	3 point	230 V	M 30 x 1,5	Electromotive actuator
	0-10 V	24V	M 30 x 1,5	Electrothermal actuator for steady room temperature control
	0-10 V	24V	M 30 x 1,5	Electromotive actuator with different characteristic lines (linear, equal percentage, logarithmic, exponential etc.)
	EIB/KNX	BUS	M 30 x 1,5	Electromotive actuator system EIB/KNX with integrated bus coupling
	LON	BUS	M 30 x 1,5	Electromotive actuator system LON with integrated bus coupling

For heating and cooling system control, the flow volumes in the terminal units such as radiators, chilled ceilings, fan coils etc. are balanced by corresponding valves and controls.

At the same time, presettings for hydronic balancing can be carried out at the valves or the flow volume is limited automatically.

The table illustrates a choice of valves and controls for different applications.

The valves and controls can be combined with the preceding actuators.

Illustration	Designation/ connection	Description	Application (examples)	Symbols
	"Series AV9" "Series AZ" "Series AF" "Series QV" "Series E" "Series EQ" Female thread Male thread	Thermostatic valve for room temperature control at radiators with classic valve connection. Can also be used zone valve for smaller dimensions.	Radiator	
	"Multiblock T/TU/TFU/TQ" Male thread	Connection fittings "Multiblock T/TU/TFU/TQ" for the control and isolation of radiators with a lower connection of 50 mm. For two and one pipe heating systems.	Radiator	
	Valve inserts	Valve inserts for radiators with integrated distributor	Radiator	
	"Multidis SH/SF/SFQ" Male thread	Distributor/collector "Multidis SH/SF/SFQ" made of stainless steel for radiator connection/ surface temperature balance (heating/cooling). Connection of one actuator for each connected circuit.	Surface heating and surface cooling	
	"Unibox vario"/ "Unibox E vario" Male thread	"Unibox vario" individual room temperature control for surface heating systems for the connection to electronic controls using an actuator.	Surface heating and surface cooling	
	"Cocon QTZ" Female thread Male thread	Pressure independent control valve "Cocon QTZ" for central heating and cooling systems with closed circuits. The valve combination consists of an automatic flow regulator and a regulating valve. It is also used for room temperature control with the help of an actuator or can be used as a zone valve.	Fan coil units Chilled ceilings Radiant ceiling panels Convectors One pipe heating systems Door air curtains	
	"Cocon QFC" Flanged	The pressure independent control valve "Cocon QFC" is installed in heating and cooling systems with closed water circuit (e.g. central heating systems, surface heating systems, fan coil units, chilled ceilings and fan convectors) for an automatic flow control (hydronic balancing) and for room temperature control via actuators by modifying the flow rate.	Building balance Hydronic balancing of large heating and cooling systems	

Hydronic balancing of heating and cooling systems is of major importance for an efficient operation.
This relates for instance to the regulation of radiators, chilled ceiling elements or pipework valves in heating and cooling systems. The status data is processed or monitored by the centralised building control system.
Oventrop offers valves and controls for different applications which are displayed in the below table.
The valves and controls can be combined with the preceding actuators.

Illustration	Designation/ connection	Description	Application (examples)	Symbols
	"Cocon 2TZ" Female thread Male thread	Regulating valve "Cocon 2TZ" for chilled ceiling installations. The calculated flow rate is set at the regulating valve. It is also used for room temperature control with the help of an actuator or can be used as a zone valve.	Chilled ceilings Fan coil units	
	"Tri-M plus TR" Male thread	For room temperature control via fan coils with the help of actuators. The flow rate to the terminal unit is changed whilst maintaining an almost constant flow rate within the distribution circuit. For systems with constant flow rate.	Fan coil units	
	"Hycocon HTZ" Female thread Male thread	Zone valve for medium and large sizes. Low hydronic resistance.	Radiant ceiling panels Zone control One pipe heating	
	"Tri-CTR" Male thread	For use as diverting valve, the three-way valve has one inlet port (AB) and two outlet ports (A and B). Depending on the position of the valve disc, the direction of flow is diverted from one to the other outlet port. For use as mixing valve, the three-way valve has two inlet ports (A and B) and one outlet port (AB). Depending on the position of the valve disc, the cold and hot water is mixed. Operating temperature t_S: -10 °C up to +120 °C The three-way valves "Tri-CTR" can be used for high differential pressures.	Flow rate distribution Flow temperature control Air curtains	

Combinations of valves and actuators for individual room temperature control

(also possible with actuators of other manufacturers)

① Can also be connected to valves with different connections using Oventrop valve adapters (for instance company Danfoss, series RA)

② Valid for sum resulting from pipework and valve

③ In combination with Oventrop extension, item no. 1022698

④ Piston stroke actuator ≥ effective valve lift

Standard values without considering tolerances.
With due consideration of the valve parameters, the combination with actuators of other manufacturers is possible on consultation.

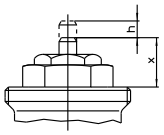
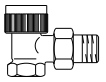
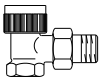
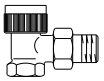
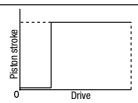
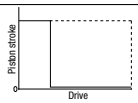
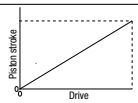
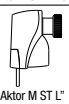
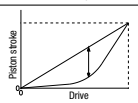
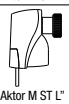
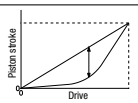
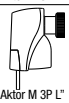
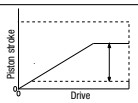
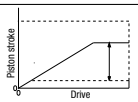
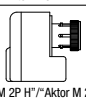
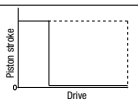
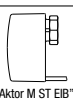
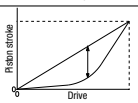
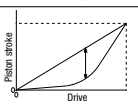
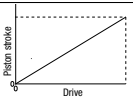
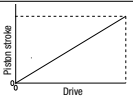
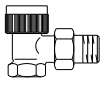
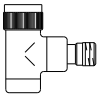
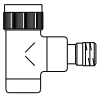
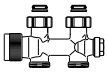
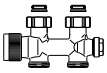
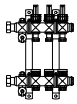
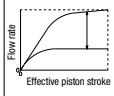
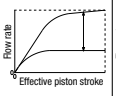
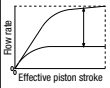
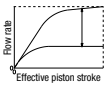
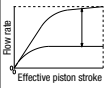
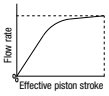
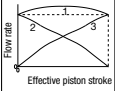
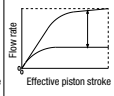
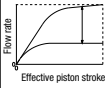
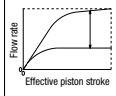
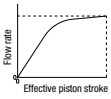


	Illustration (examples) / Ratings Valve	1	2	3
				
		“Series AV9”	“Series A”	“Series AF”
	Item. no.	1183...	1181...	1180...
	DN	10 15 20 25	10 15 20 25 32	10 15 20
	Closing dimension x [mm] (lower lift position of valve)	11.8	11.8	11.8
	Recommended max. differential pressure in operation [bar]	0.2	0.2	0.2
	Valve lift h [mm]	2.2	2.9	1.6
Demands on actuators	Upper lift position [mm]	14.0 or higher	14.7 or higher	13.4 or higher
	Lower lift position [mm]	11.3 or lower	11.3 or lower	11.3 or lower
	Closing press. [N] min/max.	90 / 150	90 / 150	90 / 150

	Ratings actuators / Illustration	Item. no.	Characteristic parameters for CBC: Model	Operating current	Operating behaviour (control signal of the controller)	Interface	Lower lift position [mm]	Upper lift position [mm]	Piston stroke [mm]	Operating power [N]	Medium floating time	Protection	Max. fluid temperature [°C]	Permissible installation position	Valve characteristic line / Actuator characteristic line	1	2	3
A	 ① “Aktor T 2P L NC”/“Aktor T 2P H NC”	10124..	electrothermal, **closed with current “off”**	24 V / 230 V	2 point	digital	11.2	15.8	-	> 90	~5 min	IP54	+100	any		●	●	●
B	 ① “Aktor T 2P L NO”/“Aktor T 2P H NO”	10124..	electrothermal, **open with current “off”**	24 V / 230 V	2 point	digital	11.2	15.8	-	> 90	~5 min	IP54	+100			●	●	●
C	 ① “Aktor T ST L NC”	1012953	electrothermal, **closed with current “off”**	24 V	steady (0–10 V)	analogue	11.2	15.8	4.0	> 90	~40 s/mm	IP54	+100			● ④	● ④	● ④
D	 “Aktor M ST L”	1012705	modulating electromotive	24 V	steady (0–10 V)	analogue	11.2	15.8	0.5 - 4.0	> 90	~15 s/mm	IP40	+100	In vertical to horizontal position, not suspended.		●	●	●
E	 “Aktor M ST L”	1012706	mod. electromotive, with position feedback	24 V	steady (0–10 V)	analogue	11.2	15.8	0.5 - 4.0	> 90	~ 15 s/mm	IP40	+100			●	●	●
F	 “Aktor M 3P L”	1012708	elektromotive	24 V	3 point	digital	11.2	15.8	-	> 90	~15 s/mm	IP40	+100			●	●	●
G	 “Aktor M 3P H”	1012709	electromotive	230 V	3 point	digital	11.2	15.8	-	> 90	~15 s/mm	IP40	+100			●	●	●
H	 “Aktor M 2P H”/“Aktor M 2P L”	1012710/11	electromotive, **open with current “off”**	230 V/24 V	2 point	digital	11.2	17.0	-	> 90	~3 s	IP54	+100			●	●	●
I	 “Aktor M ST EIB”	11560..	electromotive, system “EIB”	24 V	steady	EIB / KNX	11.2	15.2	2.6–4.0	> 90	~30 s/mm	IP44	+100			●	●	●
J	 “Aktor M ST LON”	1157065	electromotive, system “LON”	nom. 48 V	steady	LON	11.2	15.2	2.6–4.0	> 90	~30 s/mm	IP44	+100			●	●	●
K	 “Aktor MH CON B”	1150665	electro-motive	Mignon (2x)	steady (Controller integrated)	EnOcean (OV wireless)	11.0	15.4	2	> 90	~3 s/mm	IP20	+90			●	●	●
L	 “Aktor MH ENO B”	1150765	electro-motive	Mignon (2x)	steady (Controller integrated)	EnOcean (EEP A5-20-01)	11.0	15.4	2	> 90	~3 s/mm	IP20	+90			●	●	●

4	5	6	7	8	9	10	11	12	13	14
										
“Series AQ”	“Series E”	“Series EQ”	“Multiblock T-RTL” “Multiblock T/TU/TFU”	“Multiblock TQ-RTL” “Multiblock TQ”	Valves with insertion tube	Three-way conversion valves	Valve inserts for radiators with integrated distributor	Valve inserts for radiators “GHQ” with integrated distributor	“Unibox E vario”	“Multidis”
1183...	1163...	1163...	11840..	11840..	11835.. / 16435..	11805..	10180..	101908.	10226..	1404...
10 15 20	15	15	15	15	15	15 20	-	-	-	-
11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
1.5 (0.6)	0.2	1.5 (0.6)	0.2	1.5 (0.6)	0.2	0.2	0.2	1.5 (0.6)	0.3 ②	0.2 ②
1.6	2.2	1.6	2.2	1.6	2.9	1.6	2.2	1.6	2.1	3.0
13.4 or higher	14.0 or higher	13.4 or higher	14.0 or higher	13.4 or higher	14.7 or higher	13.4 or higher	14.0 or higher	13.4 or higher	13.9 or higher	14.8 or higher
11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower
90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150
										
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
● ④	● ④	● ④	● ④	● ④	● ④	● ④	● ④	● ④	● ④	● ④
●	●	●	●	●	●	●	●	●		●
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●	●	●	●	●	●	●	●	●		●
●	●	●	●	●	●	●	●	●		●
●	●	●	●	●	●	●	●	●		
●	●	●	●	●	●	●	●	●		●
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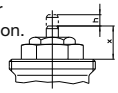
●	●	●	●	●	●	●	●	●		
●	●	●	●	●	●	●	●	●		

Combinations of double regulating and commissioning valves and actuators

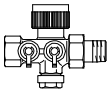
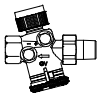
(also possible with actuators of other manufacturers)

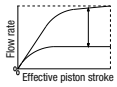
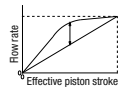
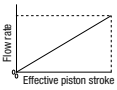
1. Oventrop valves and actuators: see table
2. Oventrop valves with actuators of other manufacturers: With due consideration of the valve parameters, the combination with actuators of other manufacturers is possible on consultation.
   h = valve
   x = lower stroke of the valve



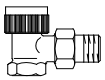
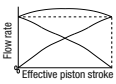
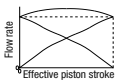
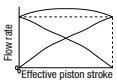
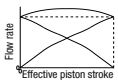
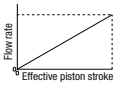
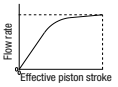
3. Oventrop actuators with valves of other manufacturers: on consultation
4. Integration into the centralised building control system (CBC): The four most important characteristic parameters are shown in the table.

① NC = closed with current "off" NO = open with current "off"
EM = electromotive ET = electrothermal
② Operating behaviour: additionally 4–20 mA / 2–10 V
③ Valve adapter "Hycocon" (item no. 1012992) required.
④ k_{VS}-value can be reduced
⑤ Piston stroke ≥ effective valve lift
⑥ Valve adapter 1012462 required.

	1	2	3	4
Illustration (examples)				
Ratings valve	"Hycocon ETZ"	"Hycocon HTZ"	"Cocon 2TZ"	"Cocon QTZ"
Item no.	10683–10684	10685–10686	11450–11454	11455–11462
DN	15–25	15–25/32/40	15/20	10/15/20/25/32
Connection	M 30 x 1,5	M 30 x 1.5	M 30 x 1.5	M 30 x 1.5
Closing dimension x [mm]	11.8	11.8	11.8	11.8
Δp max [bar]	1	5/3/2	1	4
Valve lift h [mm]	2.2	3/4/4	2.5 / 3.5	2.8 / 2.8 / 2.8 / 3.5 / 4 / 4
PN	16	16	10	16
Demands on actuators: Upper lift position [mm]	14.0 or higher	15.8 or higher	14.3 or higher	14.6/15.8 or higher
Demands on actuators: Lower lift position [mm]	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower
Demands on actuators: Closing press. [N] min/max.	90 / 150	90 / 150	90 / 150	90 / 150

	Ratings actuators / Illustration (examples)	Item no.	Characteristic parameters for CBC: ① Model	Operating current	Operating behaviour	Interface	Lower lift position [mm]	Upper lift position [mm]	Piston stroke [mm]	Operating power [mm]	Medium floating	Protection	Max. fluid temperature [°C]	Permissible install. position	Valve characteristic line / Actuator characteristic line	1	2	3	4
															Flow rate / Effective piston stroke				
A	"Aktor T 2P L NC"/"Aktor T 2P H NC"	10124..	ET NC	24 V / 230 V	2 point	digital	11.2	15.8	-	> 90	~5 min	IP54	+100	any	Piston stroke / Drive	● ⑥	● ⑥	●	●
B	"Aktor T 2P L NO"/"Aktor T 2P H NO"	10124..	ET NO	24 V / 230 V	2 point	digital	11.2	15.8	-	> 90	~5 min	IP54	+100		Piston stroke / Drive	● ⑥	● ⑥	●	●
C	"Aktor T ST L NC"	1012953	ET NC	24 V	steady (0–10 V)	analogue	11.2	15.8	4,0	> 90	~40 s/mm	IP54	+100		Piston stroke / Drive	● ⑤	● ⑤	● ⑤	● ⑤
D	"Aktor M ST L"	1012705	EM	24 V	steady (0–10 V)	analogue	11.2	15.8	0.5 - 4.0	> 90	~15 s/mm	IP40	+100		Piston stroke / Drive	●	●	●	●
E	"Aktor M ST L"	1012706	EM	24 V	steady (0–10 V)	analogue	11.2	15.8	0.5 - 4.0	> 90	~15 s/mm	IP40	+100		Piston stroke / Drive	●	●	●	●
F	"Aktor M 3P L"	1012708	EM	24 V	3 point	digital	11.2	15.8	-	> 90	~15 s/mm	IP40	+100		Piston stroke / Drive	●	●	●	●
G	"Aktor M 3P H"	1012709	EM	230 V	3 point	digital	11.2	15.8	-	> 90	~15 s/mm	IP40	+100		Piston stroke / Drive	●	●	●	●
H	"Aktor M 2P H"/"Aktor M 2P L"	1012710/11	EM NO	230 V / 24 V	2 point	digital	11.2	17.0	-	> 90	~3 s	IP54	+100	In vertical to horizontal position, not suspended	Piston stroke / Drive	●	●	●	●
I	"Aktor M ST EIB"	11560..	EM	24 V	steady	EIB / KNX	11.2	15.2	2.6 – 4.0	> 90	~30 s/mm	IP44	+100		Piston stroke / Drive	●	●	●	●
J	"Aktor M ST LON"	1157065	EM	nom. 48 V	steady	LON	11.2	15.2	2.6 – 4.0	> 90	~30 s/mm	IP44	+100		Piston stroke / Drive	●	●	●	●
K	"Aktor MH CON B"	1150665	EM	Mignon (2-x)	steady	EnOcean (EEP A5-20-01) (OV wireless (EnOcean)	11.0	15.4	2	>90	~3 s/mm	IP20	+ 90		Piston stroke / Drive	●			
L	"Aktor MH ENO B"	1150765	EM	Mignon (2-x)	steady (controller integrated)		11.0	15.4	2	>90	~3 s/mm	IP20	+ 90		Piston stroke / Drive	●			

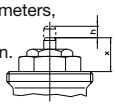
All values are standard values without tolerances

5	6	7	8	9	10
					
“Tri-M plus TR”	“Tri-D plus TB”	“Tri-DTR/Tri-MTR”	“Tri CTR”	Two-way straight pattern valve	“Series KTB”
11427..	11426..	11302 / 11307	11312	11307..	11417 – 11419
15	15	20 / 25 / 40	15-50	20 / 25 / 40	15 / 20 / 25
M 30 x 1.5	M 30 x 1.5	M 30 x 1.5	M 30 x 1.5	M 30 x 1.5	M 30 x 1.5
11.8	11.8	11.8	11.8	11.8	12.8
1	1	0.75 / 0.5 / 0.2		0.75 / 0.5 / 0.2	0.5
2.5	2.5	2.8	2.8	3	2.5
10	16	16	16	16	10
14.3 or higher	14.3 or higher	14.6 or higher	14.6 or higher	14.8 or higher	13.3 or higher
11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	11.3 or lower	10.8 or lower
90 / 150	90 / 150	90 / 150	90 / 150	90 / 150	90 / 150
					
●	●	●	●	●	
●	●	●	●	●	● ④
● ⑤	● ⑤	● ⑤	● ⑤	● ⑤	
●	●	●	●	●	
●	●	●	●	●	
●	●	●	●	●	
●	●	●	●	●	
●	●	●	●	●	● ④
●	●	●	●	●	
●	●	●	●	●	

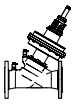
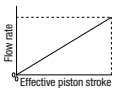
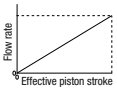
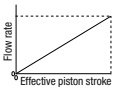
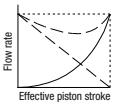
Combinations of double regulating and commissioning valves and actuators

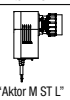
(also possible with actuators of other manufacturers)

1. Oventrop valves and actuators: see table
2. Oventrop valves with actuators of other manufacturers: With due consideration of the valve parameters, the combination with actuators of other manufacturers is possible on consultation.
   h = valve
   x = lower stroke of the valve
3. Oventrop actuators with valves of other manufacturers: on consultation
4. Integration into the centralised building control system (CBC): The four most important characteristic parameters are shown in the table.

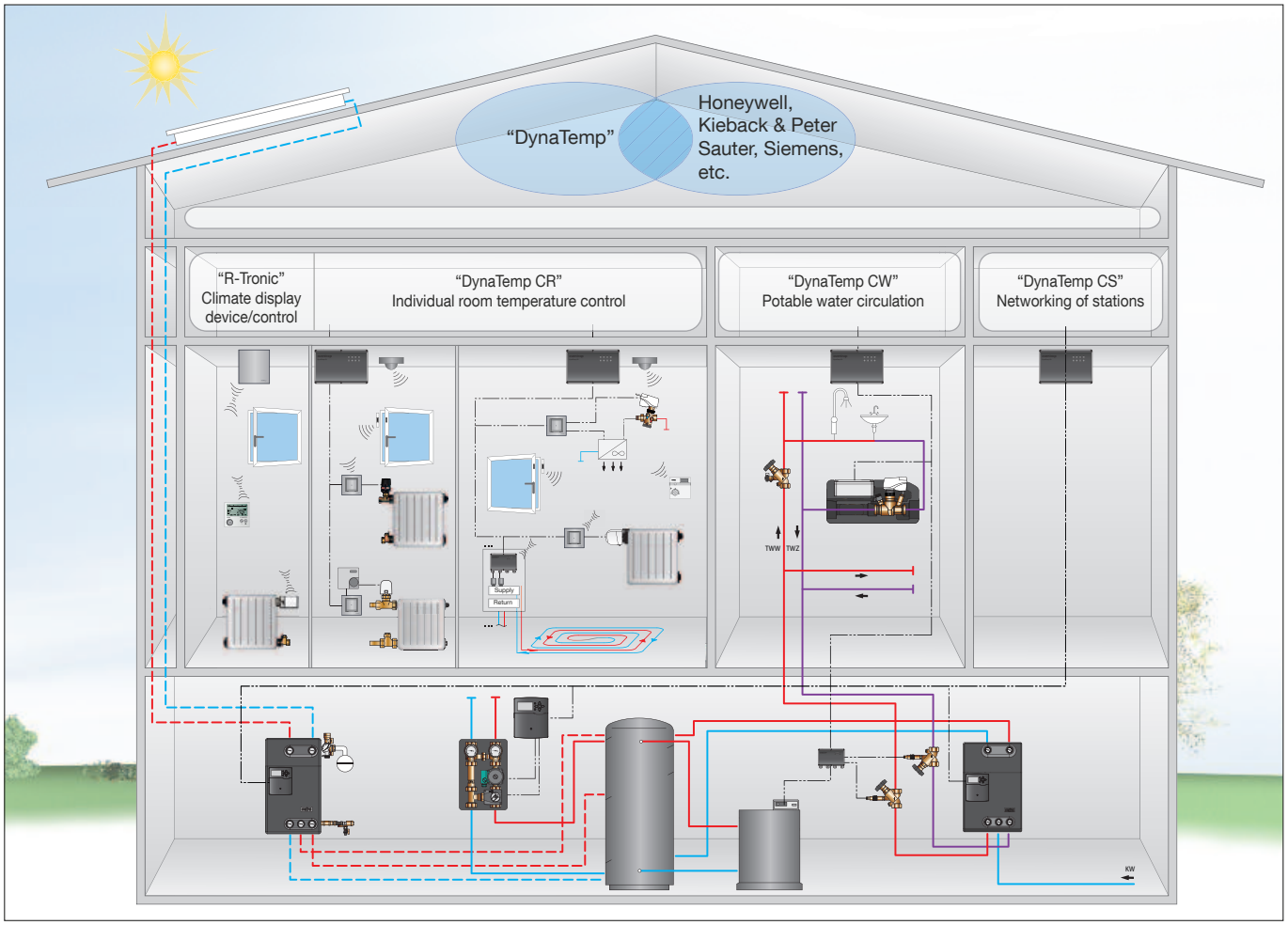


① NC = closed with current "off" NO = open with current "off"
EM = electromotive ET = electrothermal
② Operating behaviour: additionally 4–20 mA / 2–10 V
③ Valve adapter "Hycocon" (item no. 1012992) required.
④ k_{VS}-value can be reduced
⑤ Piston stroke ≥ effective valve lift

		1	2	3	4
Illustration (examples) / Ratings valve		 "Cocon QTR"	 "Cocon QFC"	 "Cocon QFC/QGC"	 Two-way valve
Item no.		11461..	1146149/50	1146151-55/1676251-53	11308../16708..
DN		40/50	40/50	65/80/100/125/150/200	15-150
Connection		Squeeze connection	Squeeze connection	Squeeze connection	Squeeze connection
Closing dimension x [mm]					
Δp max [bar]		4	4	4	0.7-12.1
Valve lift h [mm]		10	10	20 / 36 / 40	10 / 30 / 40
PN		16	16	16	16
Demands on actuators	Upper lift position [mm]				
	Lower lift position [mm]				
	Closing pressure [N] min/max	500	500	2000	
Valve characteristic line / Actuator characteristic line		 Flow rate / Effective piston stroke	 Flow rate / Effective piston stroke	 Flow rate / Effective piston stroke	 Flow rate / Effective piston stroke

	Ratings actuators / Illustration (examples)	Item. no.	Characteristic parameters for CBC: Model ①	Operating current	Operating behaviour	Interface	Lower lift position [mm]	Upper lift position [mm]	Piston stroke [mm]	Operating power [mm]	Medium floating	Protection	Max. fluid temperature [°C]	Permissible install. position	Actuator characteristic line				
A	 "Aktor M ST L"	1158010	EM	24 V	steady (0-10 V)/2 point/3 point	analogue/digital/digital	72.5	82.5	10	500	7.5 s/mm	IP54	+120	In vertical to horizontal position, not suspended	Adjustable at the actuators	●	●		
B	 "Aktor M ST L"	1158011	EM				72.5	82.5	10	500	7.5 s/mm	IP54	+120		Adjustable at the actuators				● DN 15-50
C	 "Aktor M ST L"	1158030	EM ②				72.5	112.5	40	2500	2 s/mm	IP66	+120		Adjustable at the actuators			● DN 125-200	● DN 65-150
D	 "Aktor M ST L"	1158031	EM with spring return ②				72.5	112.5	40	2000	2 s/mm	IP66	+120		Adjustable at the actuators			● DN 125-200	● DN 65-150
E	 "Aktor M ST L"	1158032	EM				72.5	112.5	40	2000	2 s/mm	IP66	+120		Adjustable at the actuators			● DN 125-200	● DN 65-150
F	 "Aktor M ST L"	1158022	EM with spring return ②						20	1000	2 s/mm	IP54	+120		Piston stroke / Drive	●	●	● DN 65-100	
G	 "Aktor M ST L"	1158021	EM with spring return ②						20	1000	2 s/mm	IP54	+120		Piston stroke / Drive	●	●	● DN 65-100	
H	 "Aktor M ST L"	1158020	EM						20	850	9 s/mm	IP54	+120		Piston stroke / Drive	●	●	● DN 65-100	

All values are standard values without tolerances



“DynaTemp” System house

“DynaTemp” System summary / Advantages

“DynaTemp” is a modular system for the automation of systems for heat generation, distribution and transmission as well as cooling, ventilation and sanitary.

The Oventrop components with sensors and actuators are the basic components in the so-called room or field level. They are connected to the “DynaTemp” control units (automation stations) via bus based room or field modules and provide automation of individual tasks of a centralised building control system.

To save energy and increase comfort conditions for the user, the “DynaTemp” control units handle the relevant tasks. Standardised interfaces allow a centralised building control system with external access to be created.

The control units can also be integrated into an existing building control system via “BACnetIP”. Monitoring of the automated appliances can be carried out via the central access.

Modification and viewing of the installation parameters is possible with direct connection to a computer. When connected to a LAN network, it is also possible to access these parameters via internet. The automation stations and their software are programmed for use in heating, sanitary and cooling systems.

Advantages of “DynaTemp”:

- Extensive building automation for heating, potable water and cooling systems
- Ease of use (plug & work)
- Modular construction allowing individual modules to be used independently
- Operation of partial areas of the automation and field level is guaranteed in case of failure of the centralised building control system
- High efficient intelligent networking of individual modules
- Based upon open network standards (e.g. BACnet, web services)
- System status documentation
- Connection to standard LAN network appliances
- Integration into centralised building control systems of other manufacturers

Further information can be found in the catalogue “Products”, the product range “DynaTemp” and on the internet, product ranges 1, 3 and 8.

Subject to technical modifications.

Private persons may purchase our products from their qualified installer.

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