TA-COMPACT-T

Control valve with return temperature controller for cooling systems

TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

TA-COMPACT-T is an On/Off control valve with built-in return temperature controller that guarantees requested return temperature from terminal units in cooling systems. Correct return temperature increases energy efficiency of the entire system and helps to protect chillers against low temperature. Hydronic balancing by means of return temperature control limits overflows and provides energy savings. A measuring point makes temperature measuring possible.

› Correct return temperature from terminal units
Built-in return temperature controller keeps the return temperature on a pre-set value and ensures high energy efficiency of the cooling system.

› Hydronic balancing
Overflows are limited by return temperature control.

› Measuring
Self-sealed measuring point for temperature measuring and monitoring.

› Technical description

Applications area:
Cooling systems with variable flow.
Installation in return pipe.

Functions:
Control
Return temperature control
Temperature measuring
Shut-off

Dimensions:
DN 15-25

Pressure class:
PN 16

Temperature range:
Return temperature: 8°C - 18°C
Delivery setting: 12°C

Temperature:
Max. working temperature: 50 °C
Min. working temperature: -10 °C

Media:
Water or neutral fluids, water-glycol mixtures.
(For other media contact TA Hydronics.)

Lift:
4 mm

Materials:
Valve body: Corrosion resistant gunmetal
O-rings: EPDM rubber
Valve seat gasket: EPDM rubber
Return spring: Stainless steel
Valve inserts: Brass
Spindle: Niro-steel spindle with double O-ring sealing.
Handwheel: ABS

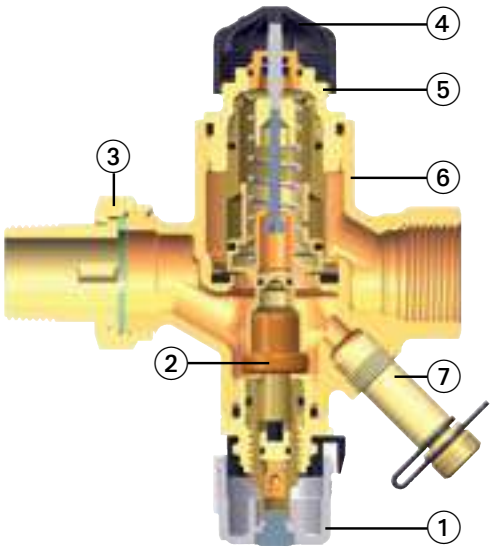
Marking:
TAH, PN 16, DN and flow direction arrow.
Black protection cap.

Connection to actuator:
M30x1,5

Actuators:
See separate information on EMO T.

Construction

TA-COMPACT-T



1. Handwheel for return temperature limiter
2. Sensor
3. Connection screw
4. Protection cap
5. Connection for actuator M30x1,5
6. Valve body made of corrosion resistant gunmetal
7. Measuring point for temperature measurement

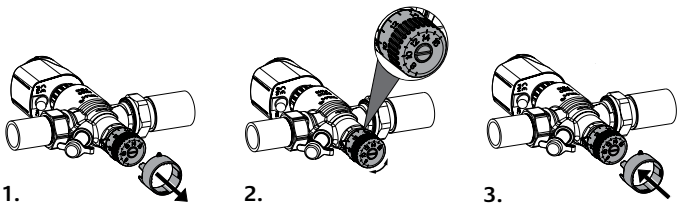
Function

TA-COMPACT-T is an On/Off control valve with built-in return temperature limiter. From the control aspect, the return temperature controller is a constant proportional controller (P-controller) without any auxiliary power. It does not need any electrical connection or other outside power source. The temperature change of the fluid flowing through (controlled variable) is proportional to the change of the valve lift (correcting variable) and is transferred to the sensor by means of thermal conduction. In case of a decrease of the return temperature, the substance in the temperature sensor shrinks and acts on the diaphragm plunger. The diaphragm plunger decreases flow through the valve. With increasing temperature of the medium, the process is reversed.

Setting

The factory setting of the TA-COMPACT-T return temperature controller is 12 °C.
Other return temperatures can be set as follows:

1. Remove the locking ring of the handwheel.
2. Adjust the handwheel to the desired temperature.
3. Insert the locking ring again, until it clicks.
   The locking ring protects the handwheel against unauthorized changes of settings.



TA-COMPACT-T

Setting	8 *)	10	12 **)	14	16	18
Return temperature [°C]	8	10	12	14	16	18
Return temperature [°F]	46	50	54	57	61	64

*) Fill and flush setting
**) Delivery setting

Sizing

When Δp and the design flow are known, use the formula to calculate the Kv-value.

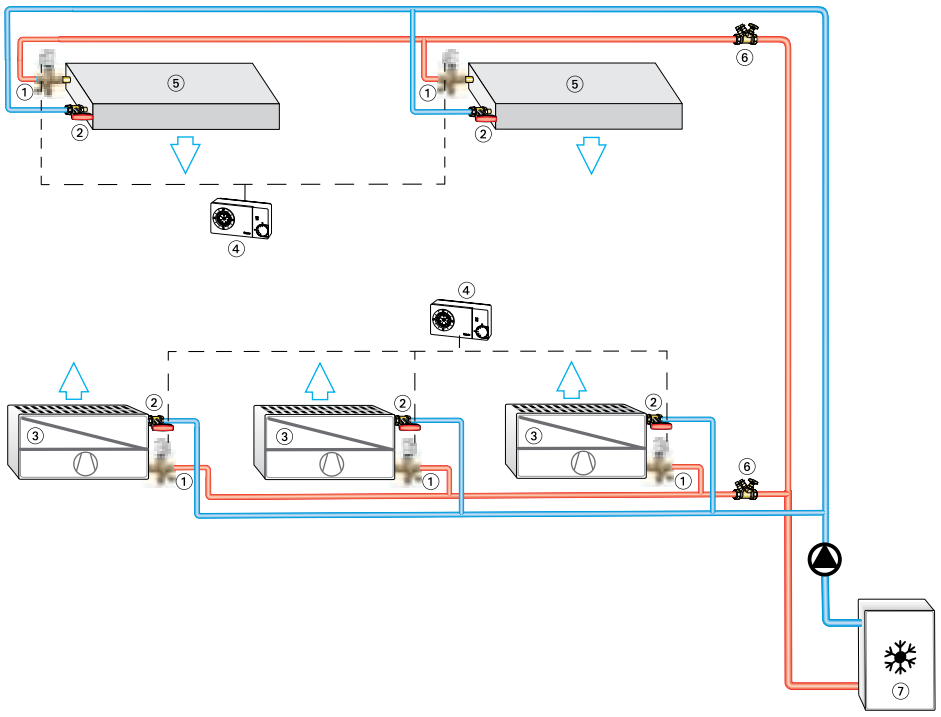
$$Kv = 0{,}01 \frac{q}{\sqrt{\Delta p}} \qquad q\ l/h,\ \Delta p\ kPa$$

$$Kv = 36 \frac{q}{\sqrt{\Delta p}} \qquad q\ l/s,\ \Delta p\ kPa$$

Application

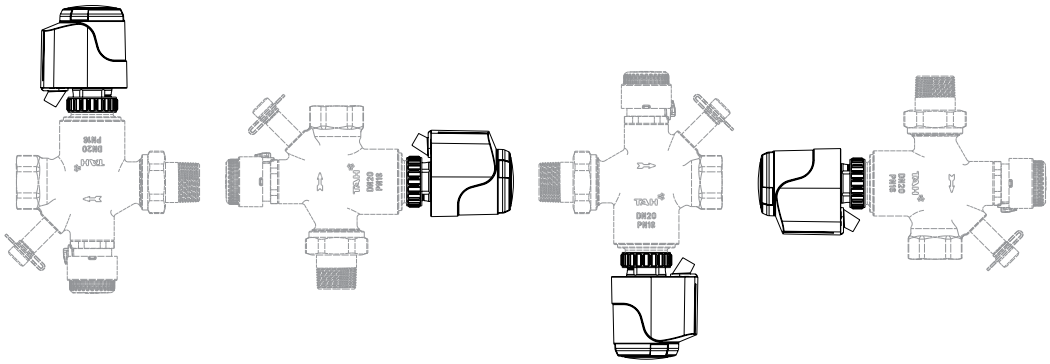
TA-COMPACT-T is an On/Off control valve with built-in return temperature controller that guarantees requested return temperature from terminal units in cooling systems. Correct return temperature ensures a high efficiency in the whole system and protects the chiller from low return temperature (low temperature syndrome). The hydronic balancing by means of return temperature control limits over flows and saves pumping costs. TA-COMPACT-T is also the ideal solution for renovation of existing facilities. A measuring nipple allows temperature measuring and it´s monitoring.

Sample application



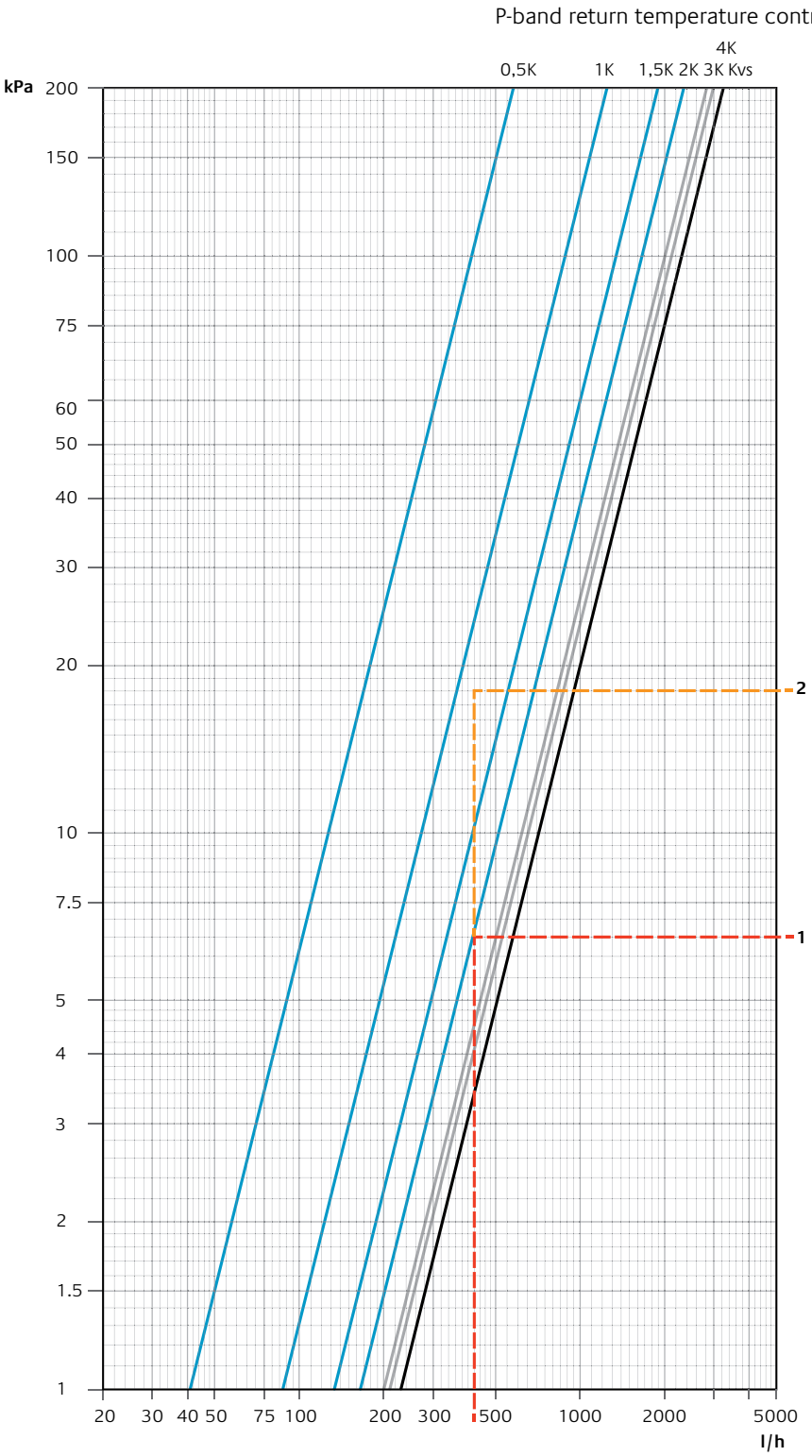
1. TA-COMPACT-T + EMO T
2. Globo ball valve
3. Fancoil
4. Thermostat P
5. Cooling ceiling
6. STAD balancing valve
7. Chiller

TA-COMPACT-T + EMO T
Max. Δp 200 kPa = 2 bar (EMO T 125 N)



IP 54 IP 54 IP 54 IP 54

Diagram TA-COMPACT-T, DN 15



Calculation example 1

Target:
Pressure drop
TA-COMPACT-T DN 15
with 2 K P-band

Given:
Flow q = 420 l/h

Solution:
Pressure drop from diagram:
ΔpV = 6,5 kPa

Calculation example 2

Target:
P-band

Given:
Flow q = 420 l/h

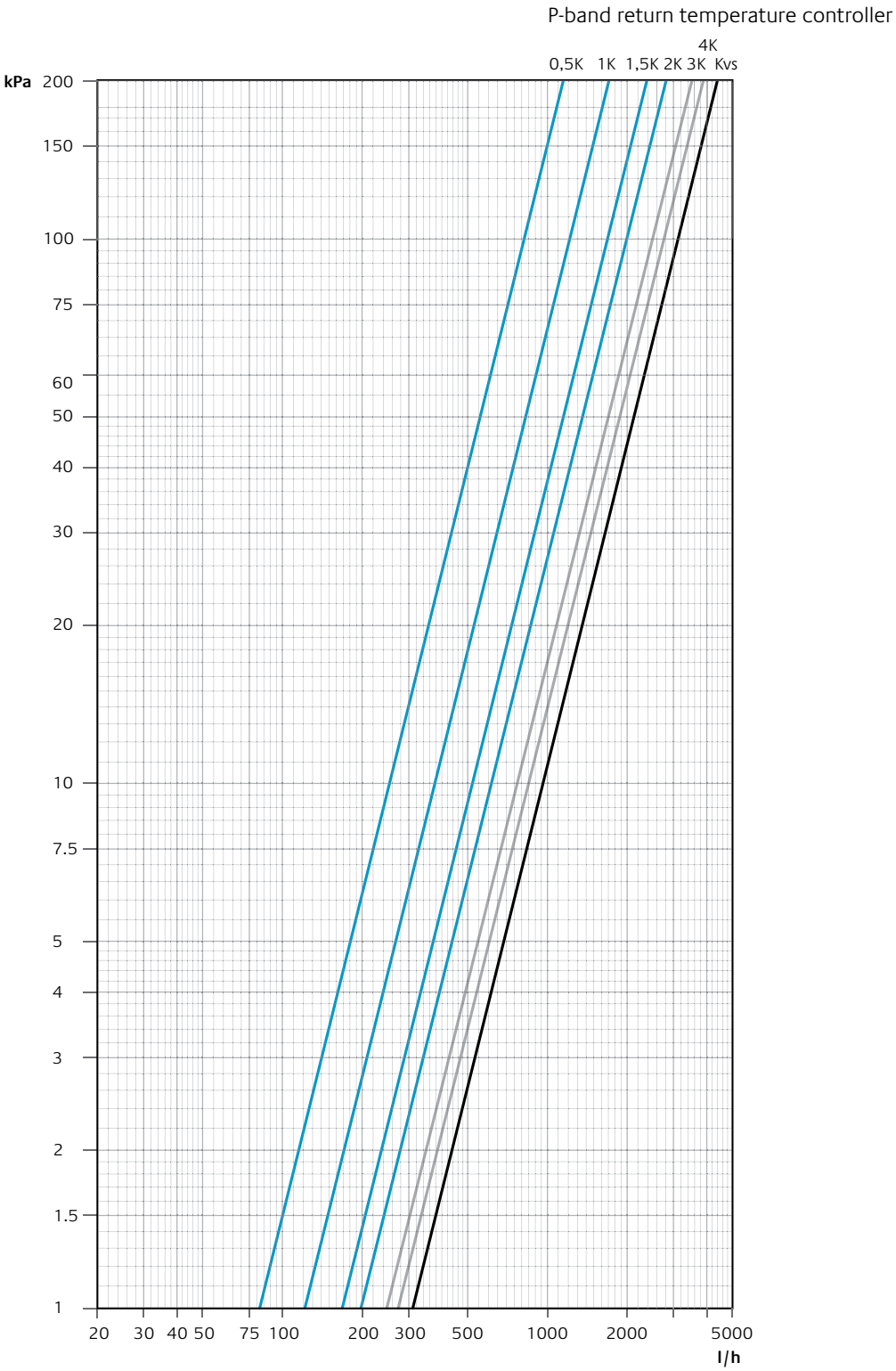
Pressure drop TA-COMPACT-T
ΔpV = 18 kPa

Solution:
P-band from Diagram:
≈ 1,2 K

P-band [K]	0,5	1	1,5	2	3	4	Kvs
Kv	0,41	0,87	1,33	1,65	2,00	2,09	2,27

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
Recommended P-band min. 0,5 K to max. 2 K.

Diagram TA-COMPACT-T, DN 20

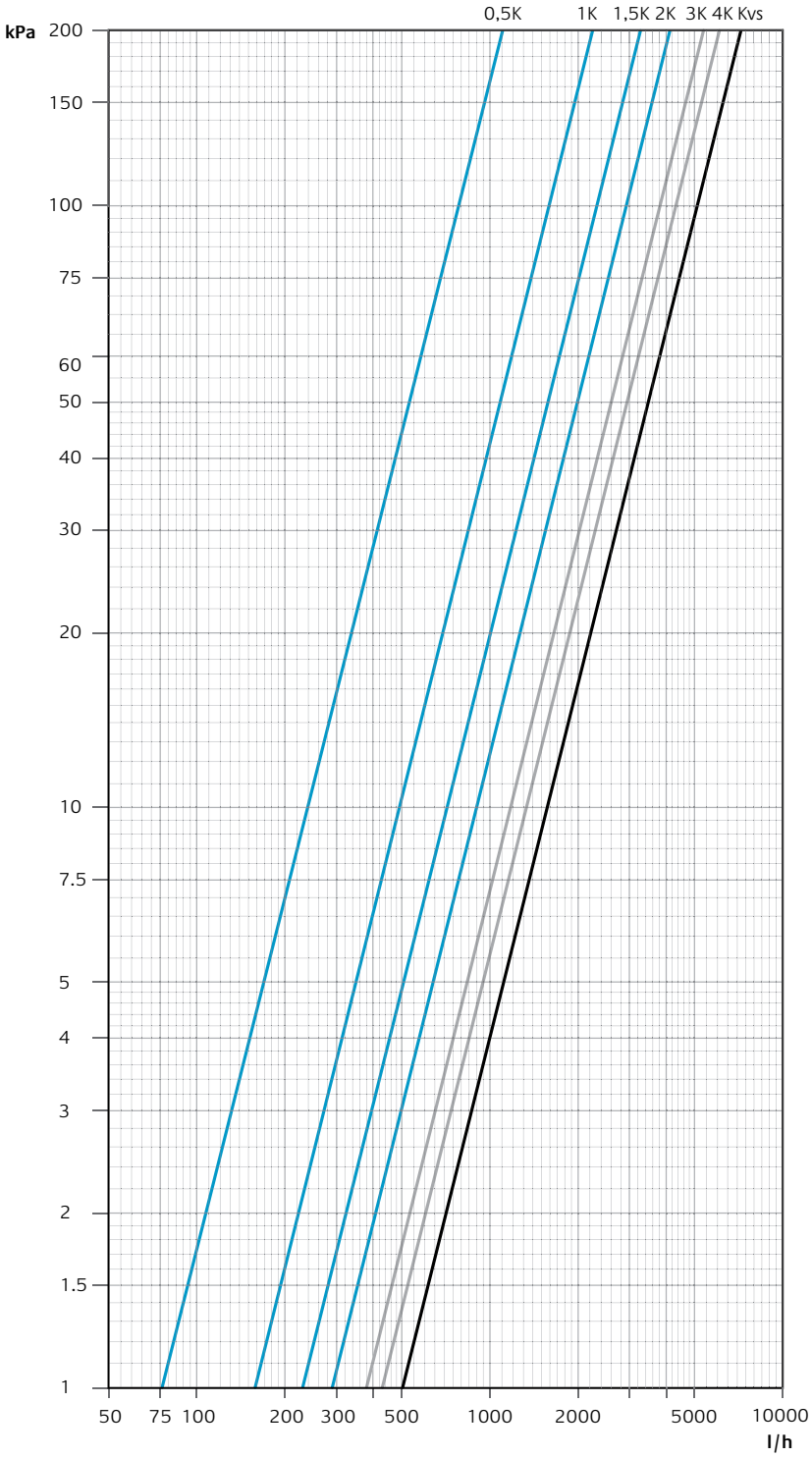


P-band [K]	0,5	1	1,5	2	3	4	Kvs
Kv	0,82	1,22	1,68	1,98	2,44	2,74	3,10

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
Recommended P-band min. 0,5 K to max. 2 K.

Diagram TA-COMPACT-T, DN 25

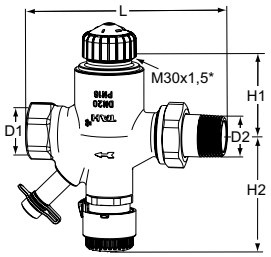
P-band return temperature controller



P-band [K]	0,5	1	1,5	2	3	4	Kvs
Kv	0,76	1,58	2,28	2,91	3,80	4,30	5,06

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
Recommended P-band min. 0,5 K to max. 2 K.

Articles



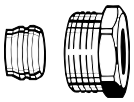
Female thread x male thread connection

ISO threads

DN	D1	D2	L	H1	H2	Kvs	Kg	EAN	Article No
15	Rp1/2	R1/2	112	52	76	2,27	0,73	5901688827635	4221-02.000
20	Rp3/4	R3/4	123	52	76	3,10	0,89	5901688827642	4221-03.000
25	Rp1	R1	140	52	76	5,06	1,23	5901688827659	4221-04.000

*) Connection to actuator.
Value H1 is at the bearing surface of the actuator.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

Accessories



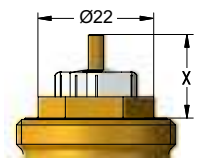
Compression fitting
for copper or precision steel pipes. Female thread connection Rp 1/2 – Rp 3/4. Metal-to-metal joint. Brass nickel-plated. Support sleeves should be used for a pipe wall thickness of 0.8 – 1 mm. Follow the specifications of the pipe manufacturer.

Ø Pipe	DN	EAN	Article No
15	15 (1/2")	4024052175017	2201-15.351
16	15 (1/2")	4024052175116	2201-16.351
18	20 (3/4")	4024052175215	2201-18.351

Support sleeve
for copper or precision steel pipe with a 1 mm wall thickness. Brass.

Ø Pipe	L	EAN	Article No
15	26,0	4024052127917	1300-15.170
16	26,3	4024052128419	1300-16.170
18	26,8	4024052128815	1300-18.170

Actuator EMO T
For more details of EMO T, see separate catalogue leaflet.



TA-COMPACT-T is developed to work together with the EMO T actuator. Actuators of other brands require a working range of X (closed - fully open) = 11,6 - 15,6 and an adjusting force of 125 N.

TA Hydronics will not be held responsible for the control function if actuators other brand than TA Hydronics are used.

5526-18.483 EN 06.2014

TA-COMPACT-T

Control valve with return temperature controller for cooling systems

TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

TA-COMPACT-T is an On/Off control valve with built-in return temperature controller that guarantees requested return temperature from terminal units in cooling systems. Correct return temperature increases energy efficiency of the entire system and helps to protect chillers against low temperature. Hydronic balancing by means of return temperature control limits overflows and provides energy savings. A measuring point makes temperature measuring possible.

› Correct return temperature from terminal units
Built-in return temperature controller keeps the return temperature on a pre-set value and ensures high energy efficiency of the cooling system.

› Hydronic balancing
Overflows are limited by return temperature control.

› Measuring
Self-sealed measuring point for temperature measuring and monitoring.

› Technical description

Applications area:
Cooling systems with variable flow.
Installation in return pipe.

Functions:
Control
Return temperature control
Temperature measuring
Shut-off

Dimensions:
DN 15-25

Pressure class:
PN 16

Temperature range:
Return temperature: 8°C - 18°C
Delivery setting: 12°C

Temperature:
Max. working temperature: 50 °C
Min. working temperature: -10 °C

Media:
Water or neutral fluids, water-glycol mixtures.
(For other media contact TA Hydronics.)

Lift:
4 mm

Materials:
Valve body: Corrosion resistant gunmetal
O-rings: EPDM rubber
Valve seat gasket: EPDM rubber
Return spring: Stainless steel
Valve inserts: Brass
Spindle: Niro-steel spindle with double O-ring sealing.
Handwheel: ABS

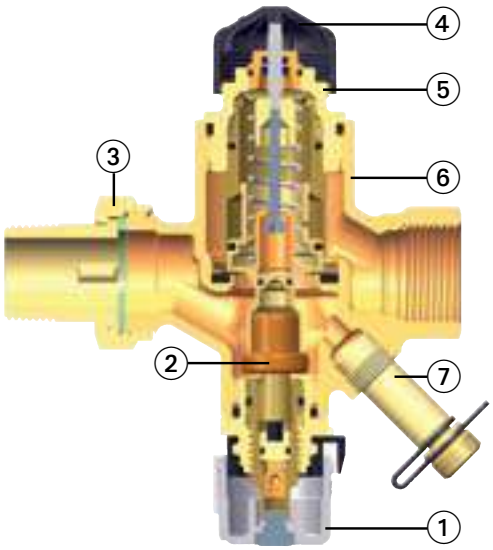
Marking:
TAH, PN 16, DN and flow direction arrow.
Black protection cap.

Connection to actuator:
M30x1,5

Actuators:
See separate information on EMO T.

Construction

TA-COMPACT-T



1. Handwheel for return temperature limiter
2. Sensor
3. Connection screw
4. Protection cap
5. Connection for actuator M30x1,5
6. Valve body made of corrosion resistant gunmetal
7. Measuring point for temperature measurement

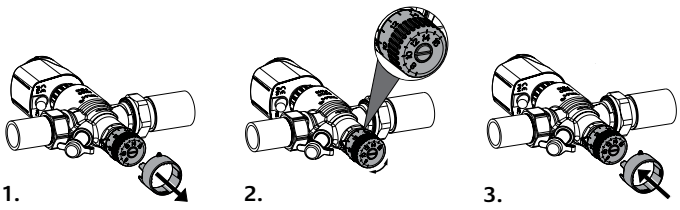
Function

TA-COMPACT-T is an On/Off control valve with built-in return temperature limiter. From the control aspect, the return temperature controller is a constant proportional controller (P-controller) without any auxiliary power. It does not need any electrical connection or other outside power source. The temperature change of the fluid flowing through (controlled variable) is proportional to the change of the valve lift (correcting variable) and is transferred to the sensor by means of thermal conduction. In case of a decrease of the return temperature, the substance in the temperature sensor shrinks and acts on the diaphragm plunger. The diaphragm plunger decreases flow through the valve. With increasing temperature of the medium, the process is reversed.

Setting

The factory setting of the TA-COMPACT-T return temperature controller is 12 °C.
Other return temperatures can be set as follows:

1. Remove the locking ring of the handwheel.
2. Adjust the handwheel to the desired temperature.
3. Insert the locking ring again, until it clicks.
   The locking ring protects the handwheel against unauthorized changes of settings.



TA-COMPACT-T

Setting	8 *)	10	12 **)	14	16	18
Return temperature [°C]	8	10	12	14	16	18
Return temperature [°F]	46	50	54	57	61	64

*) Fill and flush setting
**) Delivery setting

Sizing

When Δp and the design flow are known, use the formula to calculate the Kv-value.

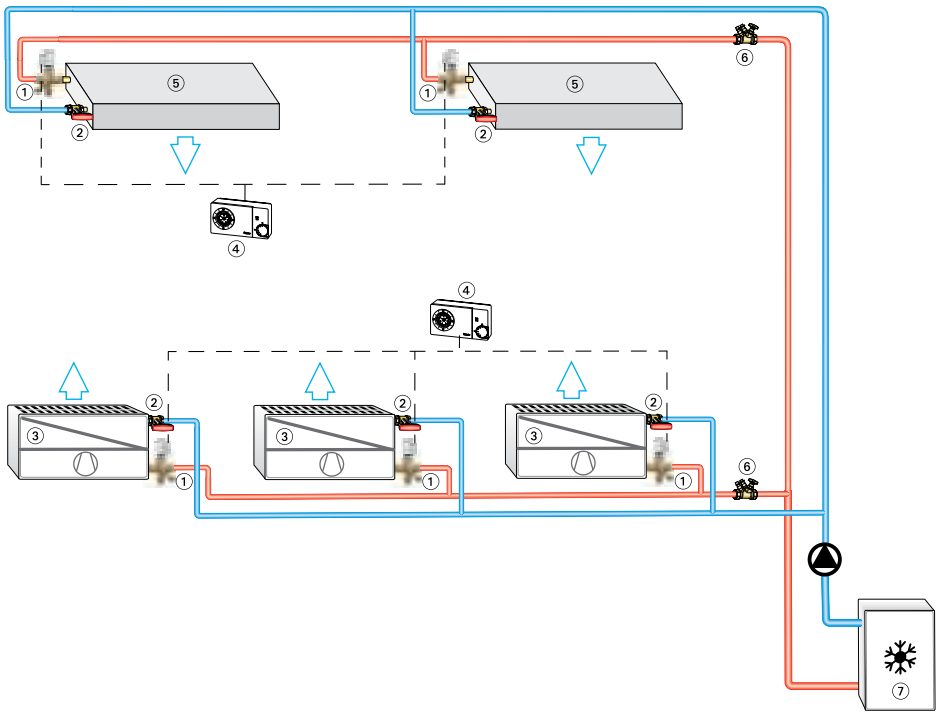
$$Kv = 0{,}01 \frac{q}{\sqrt{\Delta p}} \qquad q\ l/h,\ \Delta p\ kPa$$

$$Kv = 36 \frac{q}{\sqrt{\Delta p}} \qquad q\ l/s,\ \Delta p\ kPa$$

Application

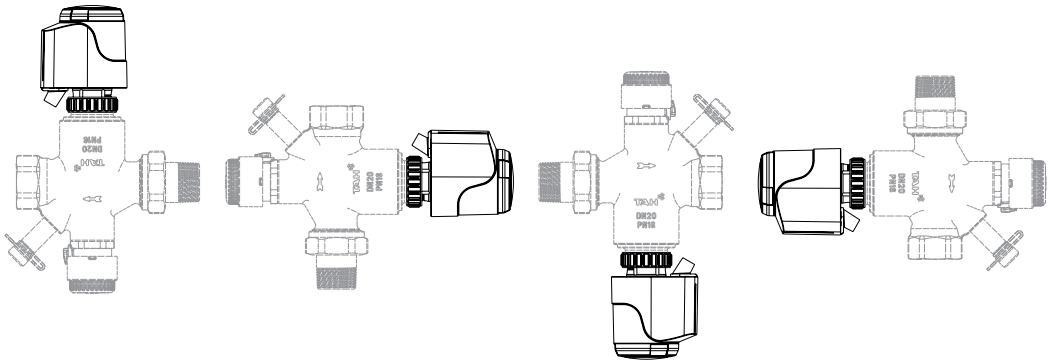
TA-COMPACT-T is an On/Off control valve with built-in return temperature controller that guarantees requested return temperature from terminal units in cooling systems. Correct return temperature ensures a high efficiency in the whole system and protects the chiller from low return temperature (low temperature syndrome). The hydronic balancing by means of return temperature control limits over flows and saves pumping costs. TA-COMPACT-T is also the ideal solution for renovation of existing facilities. A measuring nipple allows temperature measuring and it´s monitoring.

Sample application



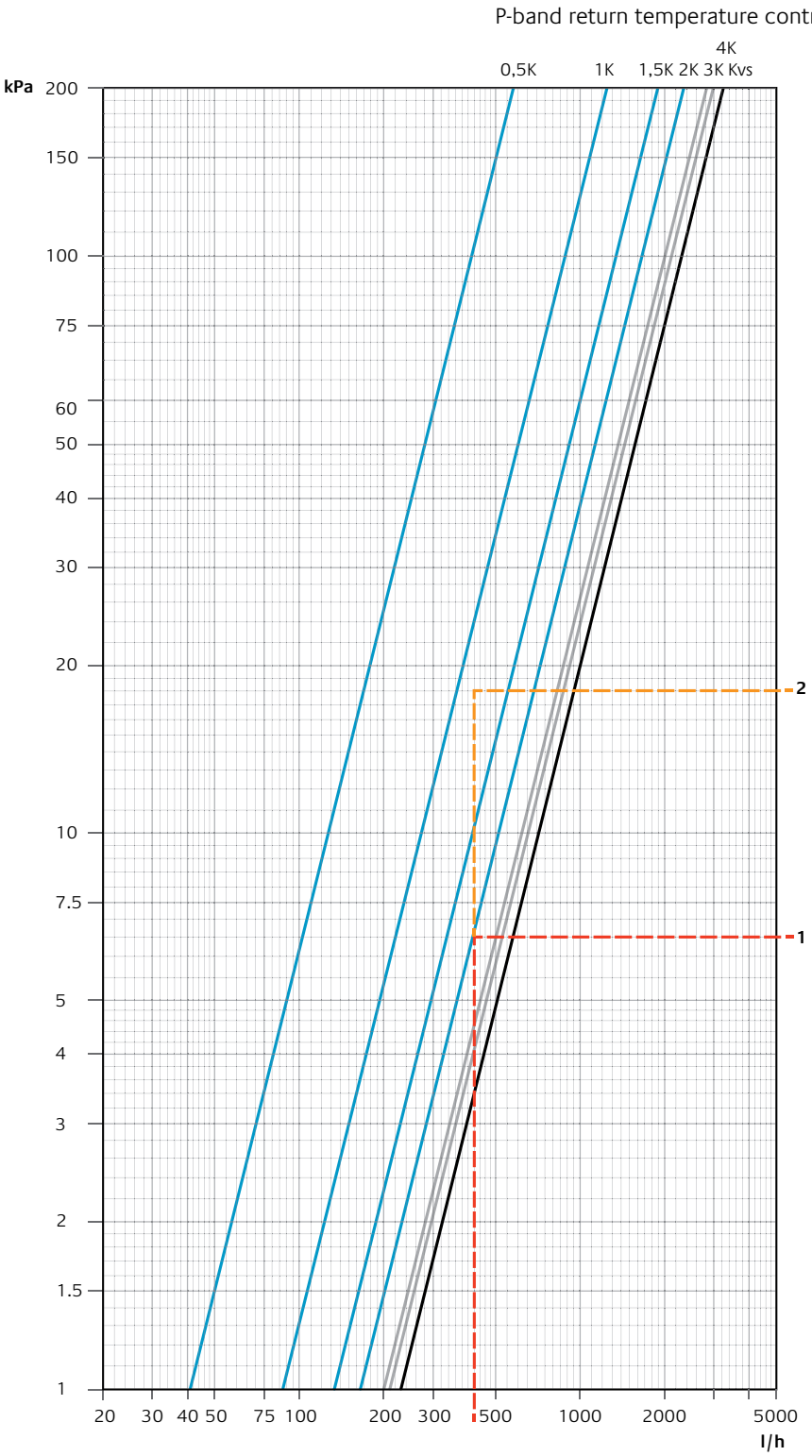
1. TA-COMPACT-T + EMO T
2. Globo ball valve
3. Fancoil
4. Thermostat P
5. Cooling ceiling
6. STAD balancing valve
7. Chiller

TA-COMPACT-T + EMO T
Max. Δp 200 kPa = 2 bar (EMO T 125 N)



IP 54 IP 54 IP 54 IP 54

Diagram TA-COMPACT-T, DN 15



Calculation example 1

Target:
Pressure drop
TA-COMPACT-T DN 15
with 2 K P-band

Given:
Flow q = 420 l/h

Solution:
Pressure drop from diagram:
ΔpV = 6,5 kPa

Calculation example 2

Target:
P-band

Given:
Flow q = 420 l/h

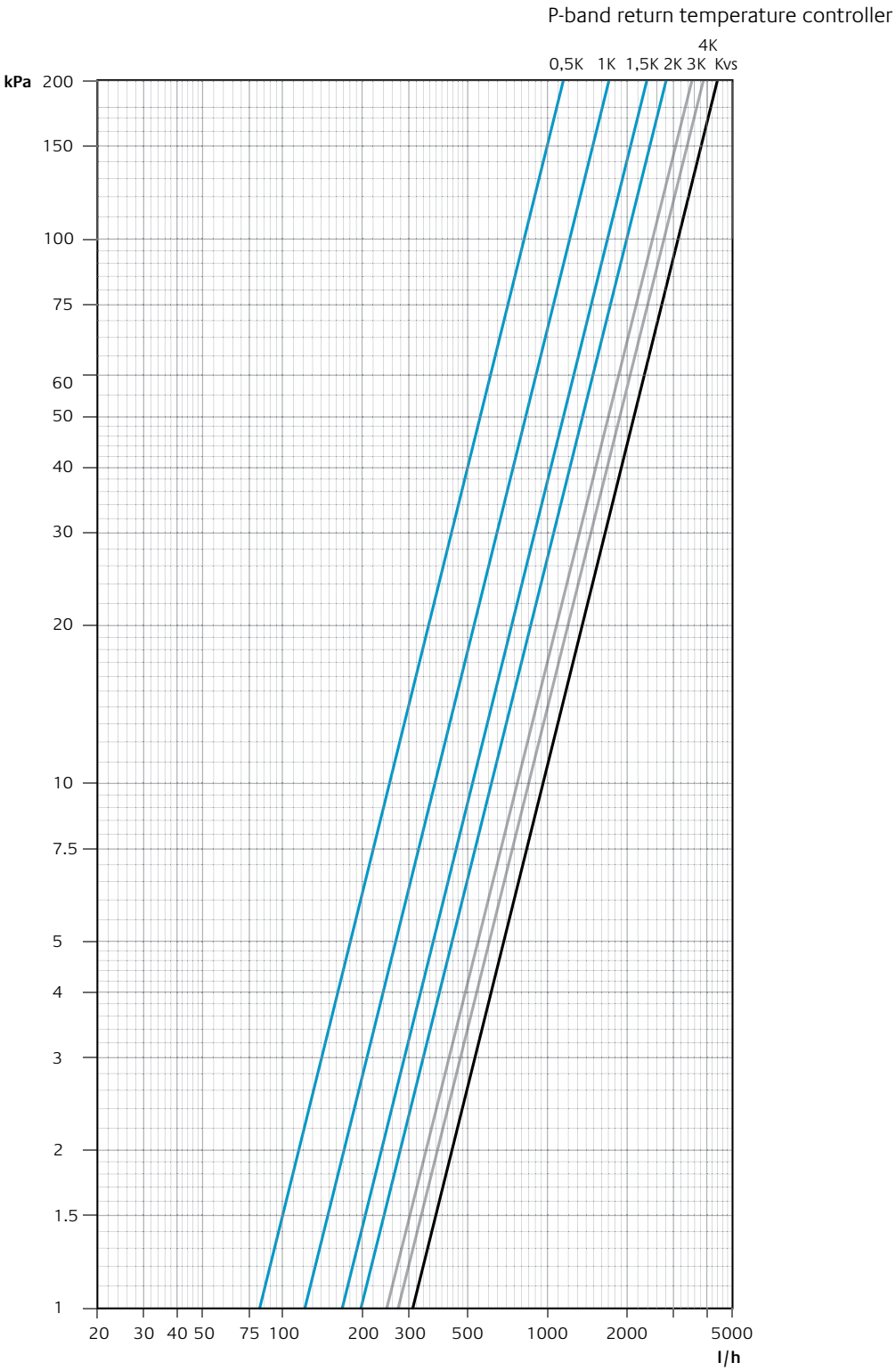
Pressure drop TA-COMPACT-T
ΔpV = 18 kPa

Solution:
P-band from Diagram:
≈ 1,2 K

P-band [K]	0,5	1	1,5	2	3	4	Kvs
Kv	0,41	0,87	1,33	1,65	2,00	2,09	2,27

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
Recommended P-band min. 0,5 K to max. 2 K.

Diagram TA-COMPACT-T, DN 20

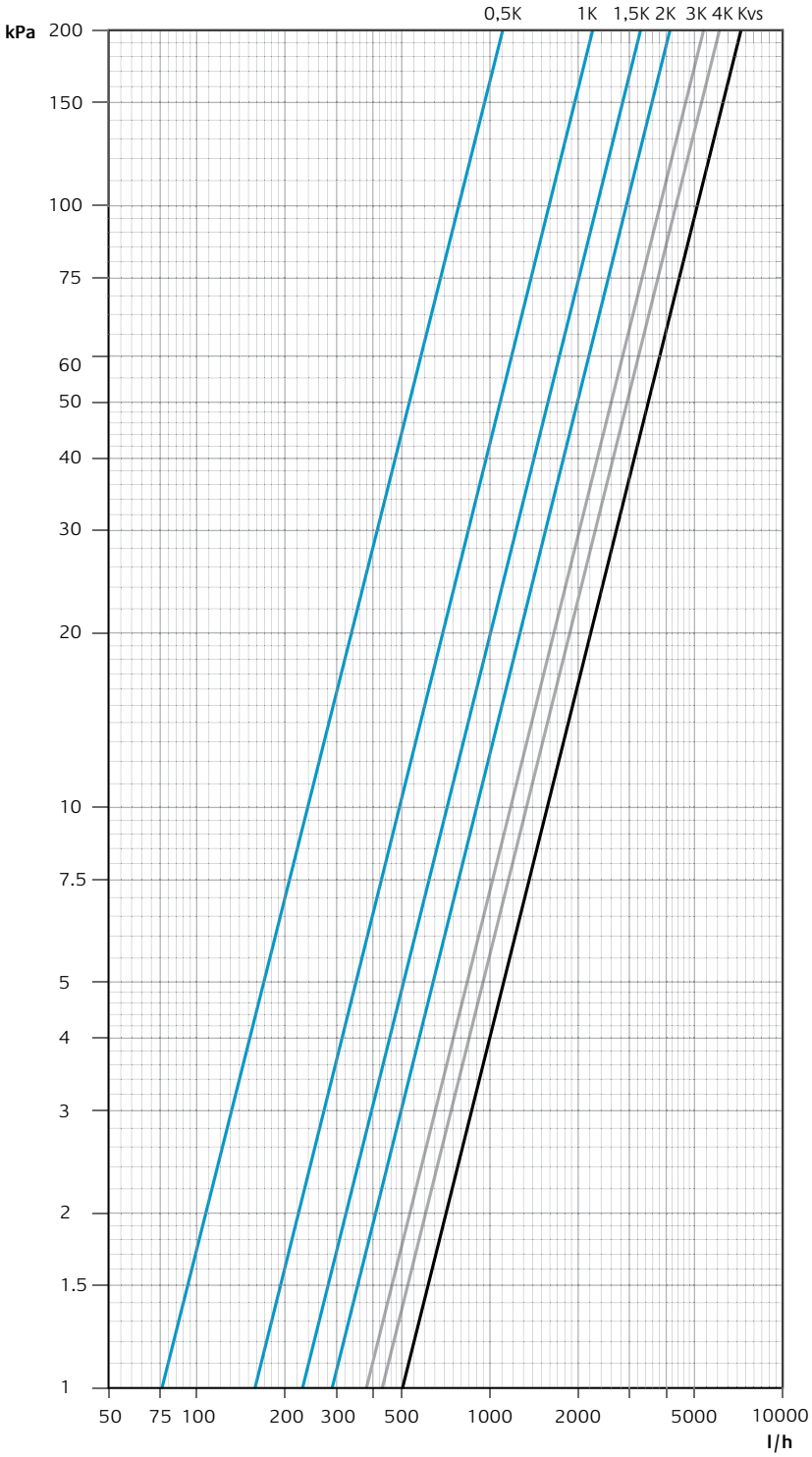


P-band [K]	0,5	1	1,5	2	3	4	Kvs
Kv	0,82	1,22	1,68	1,98	2,44	2,74	3,10

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
Recommended P-band min. 0,5 K to max. 2 K.

Diagram TA-COMPACT-T, DN 25

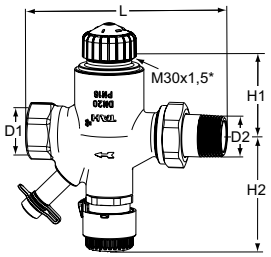
P-band return temperature controller



P-band [K]	0,5	1	1,5	2	3	4	Kvs
Kv	0,76	1,58	2,28	2,91	3,80	4,30	5,06

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
Recommended P-band min. 0,5 K to max. 2 K.

Articles



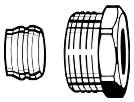
Female thread x male thread connection

ISO threads

DN	D1	D2	L	H1	H2	Kvs	Kg	EAN	Article No
15	Rp1/2	R1/2	112	52	76	2,27	0,73	5901688827635	4221-02.000
20	Rp3/4	R3/4	123	52	76	3,10	0,89	5901688827642	4221-03.000
25	Rp1	R1	140	52	76	5,06	1,23	5901688827659	4221-04.000

*) Connection to actuator.
Value H1 is at the bearing surface of the actuator.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

Accessories



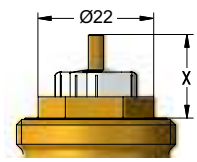
Compression fitting
for copper or precision steel pipes. Female thread connection Rp 1/2 – Rp 3/4. Metal-to-metal joint. Brass nickel-plated. Support sleeves should be used for a pipe wall thickness of 0.8 – 1 mm. Follow the specifications of the pipe manufacturer.

Ø Pipe	DN	EAN	Article No
15	15 (1/2")	4024052175017	2201-15.351
16	15 (1/2")	4024052175116	2201-16.351
18	20 (3/4")	4024052175215	2201-18.351

Support sleeve
for copper or precision steel pipe with a 1 mm wall thickness. Brass.

Ø Pipe	L	EAN	Article No
15	26,0	4024052127917	1300-15.170
16	26,3	4024052128419	1300-16.170
18	26,8	4024052128815	1300-18.170

Actuator EMO T
For more details of EMO T, see separate catalogue leaflet.



TA-COMPACT-T is developed to work together with the EMO T actuator. Actuators of other brands require a working range of X (closed - fully open) = 11,6 - 15,6 and an adjusting force of 125 N.

TA Hydronics will not be held responsible for the control function if actuators other brand than TA Hydronics are used.

5526-18.483 EN 06.2014