

TA-COMPACT-P

Pressure independent balancing and control valve (PIBCV)



TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

The pressure independent balancing and control valve TA-COMPACT-P ensures optimum performance over a long life. Adjustable maximum flow enables design flow and eliminates over flows for accurate hydronic control. The TA-COMPACT-P together with our balancing instruments enables advanced measuring and diagnostics.

> **Precise hydronic balancing**

Smoothly adjustable setting of max. flow prevents over flow through terminal unit.

> **Installations without limits**

Slim and compact shape simplifies installation, one side access to all functions simplifies operation.

> **Full control of the system**

Exact flow measuring and unique diagnostic functions for ultimate energy savings and highly reliable system.

> **High reliability**

AMETAL® and stainless steel guarantees high corrosion resistance and reduces the risk of leakage.



> Technical description

Application:

Heating and cooling systems.

Functions:

Control
 Pre-setting (max. flow)
 Differential pressure control
 Measuring (ΔH , T, q)
 Shut-off (for isolation during system maintenance – see also Leakage rate)

Dimensions:

DN 10-20

Pressure class:

PN 16

Differential pressure (ΔpV):

Max. differential pressure (ΔpV_{max}):
 400 kPa = 4 bar
 Min. differential pressure (ΔpV_{min}):
 15 kPa = 0,15 bar
 (Valid for position 10, fully open. Other positions will require lower differential pressure, check with the software TA-Select.)
 ΔpV_{max} = The maximum allowed pressure drop over the valve, to fulfill all stated performances.
 ΔpV_{min} = The minimum recommended pressure drop over the valve, for proper differential pressure control.

Flow range:

The flow (q_{max}) can be set within the range:
 DN 10: 21,5 - 120 l/h
 DN 15: 88 - 470 l/h
 DN 20: 210 - 1150 l/h
 q_{max} = l/h at each setting and fully open valve plug.

Temperature:

Max. working temperature: 80°C
 Min. working temperature: 0°C

Media:

Water or neutral fluids, water-glycol mixtures.

Lift:

4 mm

Leakage rate:

Leakage flow $\leq 0,01\%$ of max. q_{max} (setting 10) and correct flow direction. (Class IV according to EN 60534-4).

Characteristics:

Linear, best suited for on/off control.

Material:

Valve body: AMETAL®
 Valve insert: AMETAL®
 Valve plug: Stainless steel
 Spindle: Stainless steel
 Spindle seal: EPDM O-ring
 Δp insert: PPS
 Membrane: EPDM and HNBR
 Springs: Stainless steel
 O-rings: EPDM

AMETAL® is the dezincification resistant alloy of TA Hydraulics.

Marking:

TA, IMI, PN 16, DN and flow direction arrow.

Connection:

Male thread according to ISO 228.

Connection to actuator:

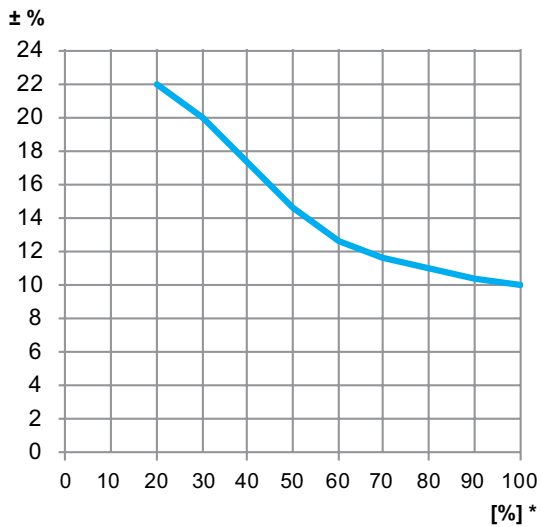
M30x1,5

Actuators:

See separate information on EMO T.

> Measuring accuracy

Maximum flow deviation at different settings



*) Setting (%) of fully open valve.

> Correction factors

The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water ($\leq 20 \text{ cSt} = 3^\circ \text{E} = 100 \text{ S.U.}$), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves.

This causes a flow deviation that increases with small valves, low settings and low differential pressures. Correction for this deviation can be made with the software TA Select or directly in TA Hydraulics balancing instruments.

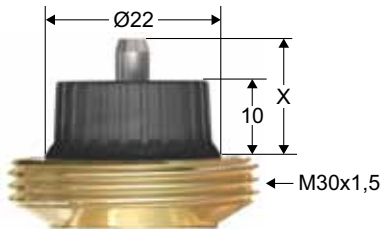
> Noise

In order to avoid noise in the installation the valve must be correctly installed and the water de-aerated.

Actuators

Actuator EMO T

For more details of EMO T, see separate catalogue leaflet.
 TA-COMPACT-P is developed to work together with the EMO T actuator. Actuators of other brands require;
 Working range: X (closed - fully open) = 11,6 - 15,8
 Closing force: Min. 125 N (max. 500 N)



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

Max. recommended pressure drop (ΔpV) for valve and actuator combination

The maximum recommended pressure drop over a valve and actuator combination for close off (ΔpV_{close}) and to fulfill all stated performances (ΔpV_{max}).

DN	EMO T * [kPa]
10	400
15	400
20	400

*) Closing force 125 N.

ΔpV_{close} = The maximum pressure drop that the valve can close against from an opened position, with a specified force (actuator) without exceeding stated leakage rate.

ΔpV_{max} = The maximum allowed pressure drop over the valve, to fulfill all stated performances.

Sizing

1. Choose the smallest valve size that can obtain the design flow with some safety margin, see " q_{max} values". The setting should be as open as possible.

2. Check that the available ΔpV is within the working range 15-400 kPa.

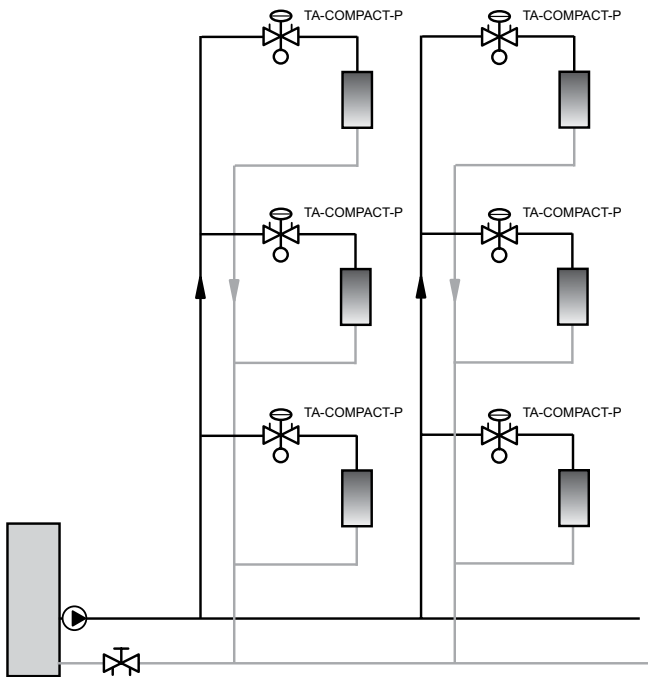
q_{max} values

	Position									
	1	2	3	4	5	6	7	8	9	10
DN 10	21,5	39,5	54,0	68,5	80,0	91,0	99,0	107	113	120
DN 15	88,0	150	200	248	295	340	380	420	450	470
DN 20	210	335	460	575	680	780	890	990	1080	1150

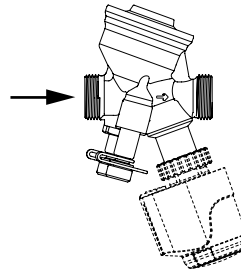
q_{max} = l/h at each setting and fully open valve plug.

Installation

Application example

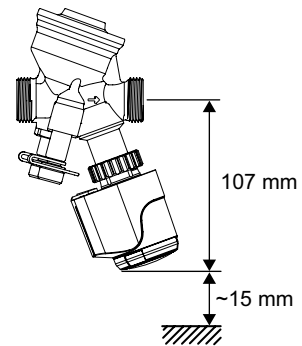


Flow direction

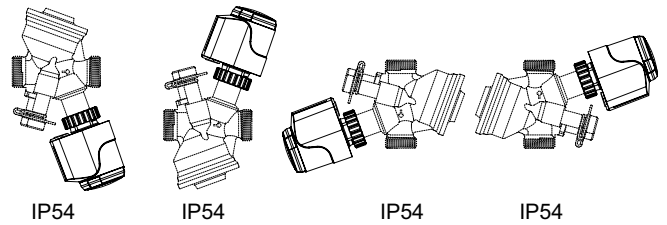


Installation of actuator EMO T

Approx. 15 mm of free space is required above the actuator.

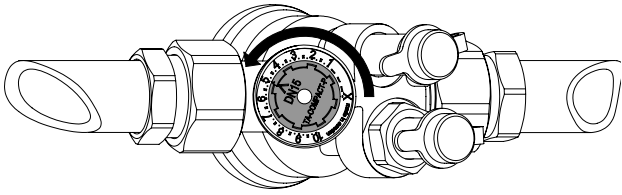


TA-COMPACT-P + EMO T



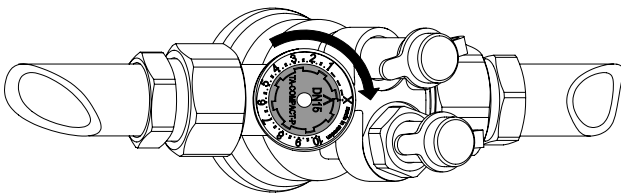
Operating function

Setting



1. Turn the setting wheel to desired value, e.g. 5.0.

Shut-off

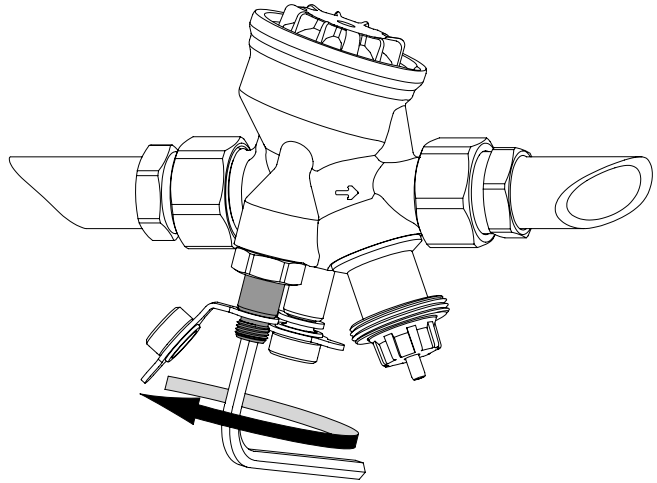


1. Turn the setting wheel clockwise to X.

Measuring q

1. Remove any actuator.
2. Connect TA Hydronics balancing instrument to the measuring points.
3. Input the valve type, size and setting and the actual flow is displayed.

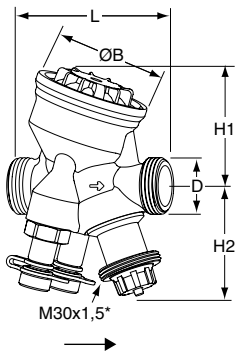
Measuring ΔH



1. Remove any actuator.
2. Close the valve according to "Shut-off".
3. Bypass the Δp part by opening the bypass spindle ≈ 1 turn anticlockwise, with a 5 mm Allen key.
4. Connect TA Hydronics balancing instrument to the measuring points and measure.

Important! Close the bypass spindle after the measurement is completed.

Articles



Male thread

Threads according to ISO 228

DN	D	L	H1	H2	B	Kg	q _{max} [l/h]	EAN	Article No
10	G1/2	74	55	54	54	0,53	120	7318794013308	52 164-010
15	G3/4	74	55	54	54	0,54	470	7318794013407	52 164-015
20	G1	85	64	56	64	0,69	1150	7318794013506	52 164-020

*) Connection to actuator.

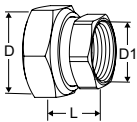
→ = Flow direction

Connections

With female thread

Threads according to ISO 228. Thread length according to ISO 7-1.

Swivelling nut

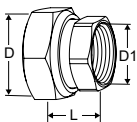


Valve DN	D	D1	L*	EAN	Article No
10	G1/2	G3/8	21	7318794016804	52 163-010
15	G3/4	G1/2	21	7318794016903	52 163-015
20	G1	G3/4	23	7318794017009	52 163-020

With female thread NPT

Threads according to ANSI/ASME B1.20.1-1983.

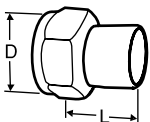
Swivelling nut



Valve DN	D	D1	L*	EAN	Article No
10	G1/2	3/8 NPT	21	7318794017801	52 163-210
15	G3/4	1/2 NPT	25	7318794017900	52 163-215
20	G1	1/2 NPT	18	7318794018303	52 163-320
20	G1	3/4 NPT	23	7318794018006	52 163-220

Welding connection

Swivelling nut

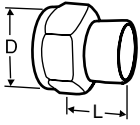


Valve DN	D	Pipe DN	L*	EAN	Article No
10	G1/2	10	30	7318792748400	52 009-010
15	G3/4	15	36	7318792748509	52 009-015
20	G1	20	40	7318792748608	52 009-020

*) Fitting length (from the gasket surface to the end of the connection).

Soldering connection

Swivelling nut

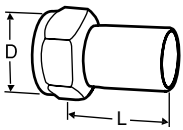


Valve DN	D	Pipe Ø	L*	EAN	Article No
10	G1/2	10	10	7318792749100	52 009-510
10	G1/2	12	11	7318792749209	52 009-512
15	G3/4	15	13	7318792749308	52 009-515
15	G3/4	16	13	7318792749407	52 009-516
20	G1	18	15	7318792749506	52 009-518
20	G1	22	18	7318792749605	52 009-522

Connection with smooth end

For connection with press coupling

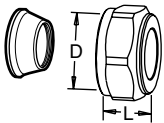
Swivelling nut



Valve DN	D	Pipe Ø	L*	EAN	Article No
10	G1/2	12	35	7318793810502	52 009-312
15	G3/4	15	39	7318793810601	52 009-315
20	G1	18	44	7318793810700	52 009-318
20	G1	22	48	7318793810809	52 009-322

Compression connection

Support bushes shall be used, for more information see catalogue leaflet FPL.



Valve DN	D	Pipe Ø	L**	EAN	Article No
10	G1/2	8	16	7318793620002	53 319-208
10	G1/2	10	17	7318793620101	53 319-210
10	G1/2	12	17	7318793620200	53 319-212
10	G1/2	15	20	7318793620309	53 319-215
10	G1/2	16	25	7318793620408	53 319-216
15	G3/4	15	27	7318793705006	53 319-615
15	G3/4	18	27	7318793705105	53 319-618
15	G3/4	22	27	7318793705204	53 319-622
20	G1	28	29	7318793705402	53 319-928

*) Fitting length (from the gasket surface to the end of the connection).

**) Over all length L refers to unassembled coupling.

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