

TA-COMPACT-DP

– NPT threads



**Combined Δp controller,
balancing and control valves**

For small pressure independent
circuits



Engineering
GREAT Solutions

TA-COMPACT-DP

– NPT threads

The TA-COMPACT-DP is the ideal solution for zone control of small circuits, enables setting of max. flow and prevent control valves from too high differential pressure. TA-COMPACT-DP combines 5 functions: differential pressure control, balancing, control, diagnostics and shut-off.

Key features

- > **5 in 1 concept reduces costs**
Installing one valve with 5 functions reduces investment costs and installation time.
- > **Saves energy and money**
Balanced and pressure independent circuits protects systems against over flows and too high energy consumption.
- > **Zone control**
Time controlled circuits can save up to 20% energy.
- > **Noise protection**
Differential pressure control protects control valves from too high differential pressure.



Technical description

Application:

Heating and cooling systems.

Functions:

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

Dimensions:

DN 15-25

Pressure class:

PN 16

Differential pressure (ΔH):

Max. differential pressure (ΔH_{\max}):
400 kPa = 4 bar

Min. differential pressure (ΔH_{\min}):

DN 15: 18 kPa = 0,18 bar

DN 20: 21 kPa = 0,21 bar

DN 25: 25 kPa = 0,25 bar

(Valid for the most demanding settings.

Other settings will require a lower ΔH .

Check with graphs under “Sizing” or

software HySelect.)

ΔH_{\max} = The maximum allowed pressure

drop over the circuit, to fulfill all stated

performances.

ΔH_{\min} = The minimum needed pressure

drop over the circuit, for proper differential

pressure control.

Setting range:

Indication of recommended setting range. For more detailed information see “Sizing”.

DN 15: ΔpL 10 kPa, 60-300 l/h

DN 20: ΔpL 10 kPa, 160-840 l/h

DN 25: ΔpL 10 kPa, 280-1500 l/h

Temperature:

Max. working temperature: 120°C

Min. working temperature: -20°C

Media:

Water or neutral fluids, water-glycol mixtures.

Lift:

4 mm

Leakage rate:

Leakage flow $\leq 0,01\%$ of max. recommended flow (setting 10) in 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: AMETAL®, PPS

(polyphenylsulphide)

Membrane: EPDM and HNBR

Springs: Stainless steel

O-rings: EPDM

AMETAL® is the dezincification resistant alloy of IMI Hydronic Engineering.

Marking:

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

Grey handwheel: TA-COMPACT-DP and DN.

Connection:

Male thread according to ISO 228.

Connections (accessories) with female

and male threads NPT according to

ANSI/ASME B1.20.1-1983, or for

soldering according to ASME/ANSI

B16.18.

Connection to actuator:

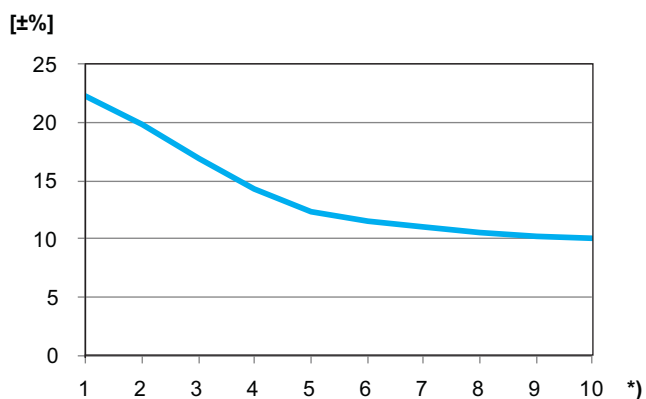
M30x1,5

Actuators:

See separate information on EMO T.

Measuring accuracy

Maximum flow deviation at different settings



*) Setting

Correction factors

The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤ 20 cSt = $3^{\circ}E=100S.U.$), 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 HySelect or directly in our balancing instruments.

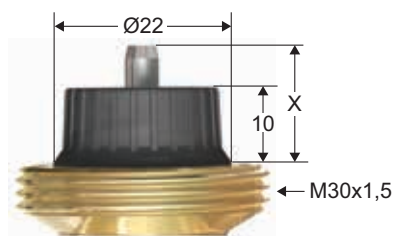
Noise

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-DP 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)



IMI Hydronic Engineering will not be held responsible for the control function if other brands of actuator are used.

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

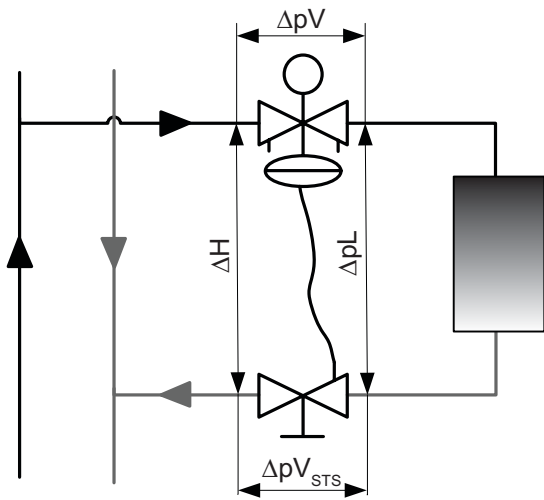
The maximum recommended pressure drop over a valve and actuator combination for close off (ΔpV_{close}) and to fulfill all stated performances (ΔpV_{max}).

DN	EMO T * [kPa]
15	400
20	
25	

*) 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



ΔpL = The differential pressure over the load.

ΔH = Available differential pressure.

ΔH_{\min} = The minimum needed pressure drop over the circuit, for proper differential pressure control.

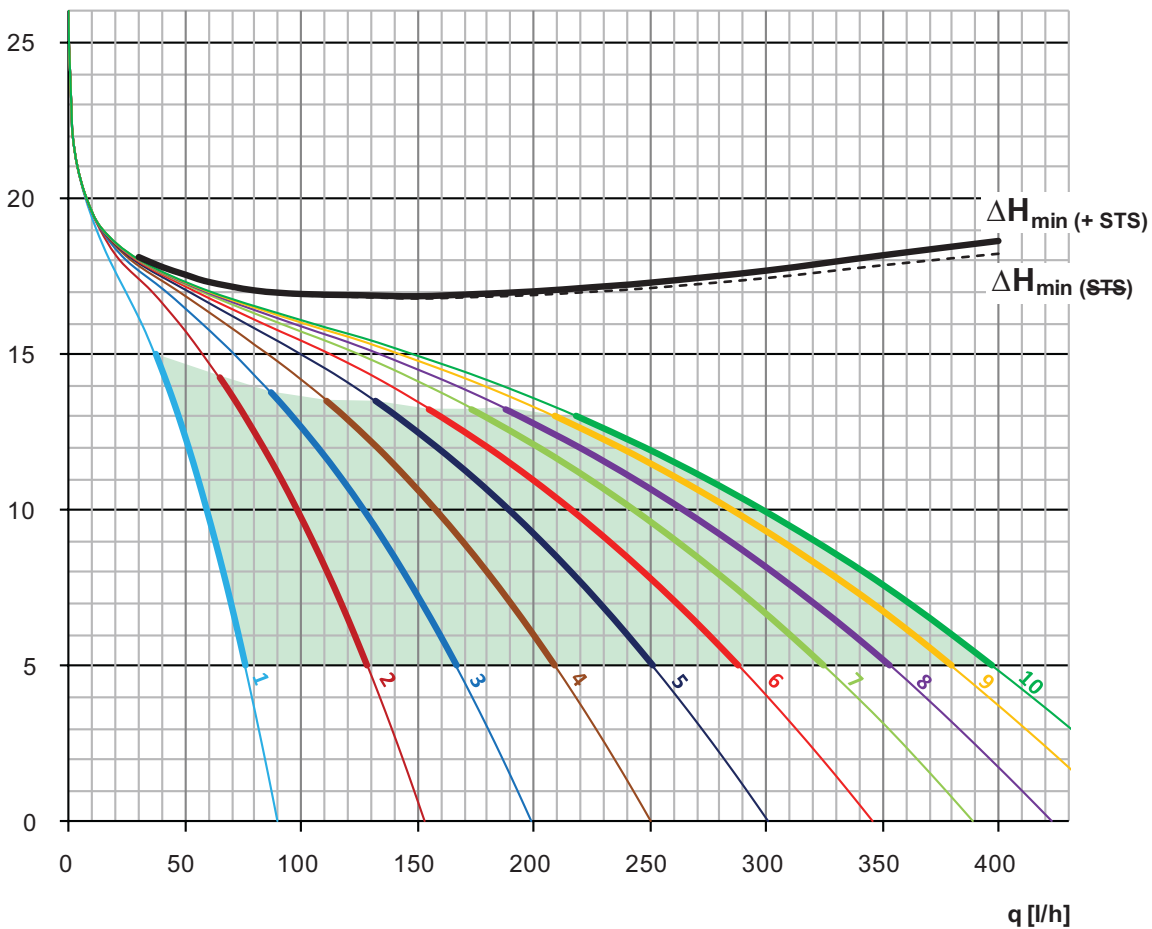
$$\Delta H = \Delta pV + \Delta pL + \Delta pV_{STs}$$

Diagrams

The colored curves (1-10) are the nominal ΔpL for different settings (1-10) of TA-COMPACT-DP as a function of flow (q). The black curve is ΔH_{\min} as a function of flow (q). The green area is the recommended area of sizing.

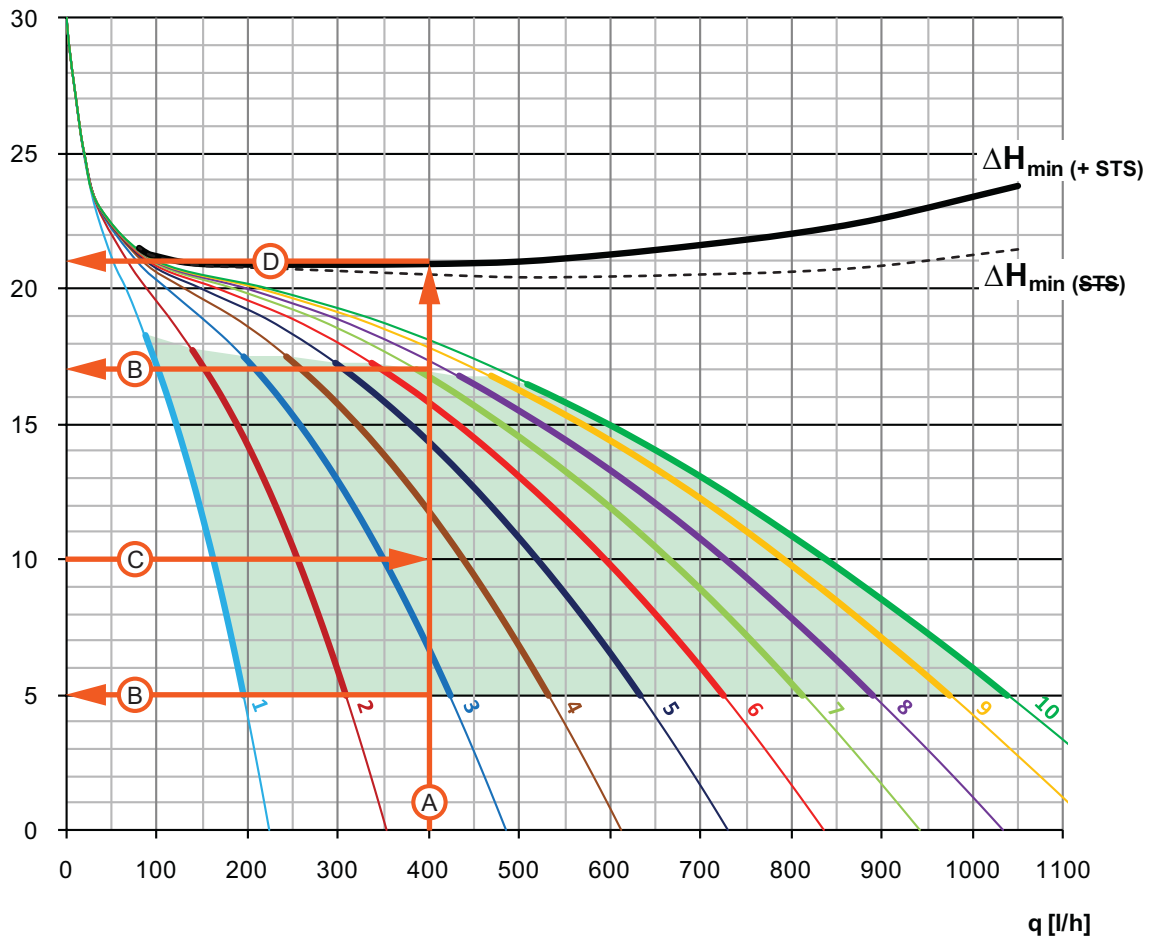
DN 15

ΔpL (ΔH_{\min})
[kPa]



DN 20

ΔpL (ΔH_{min})
[kPa]



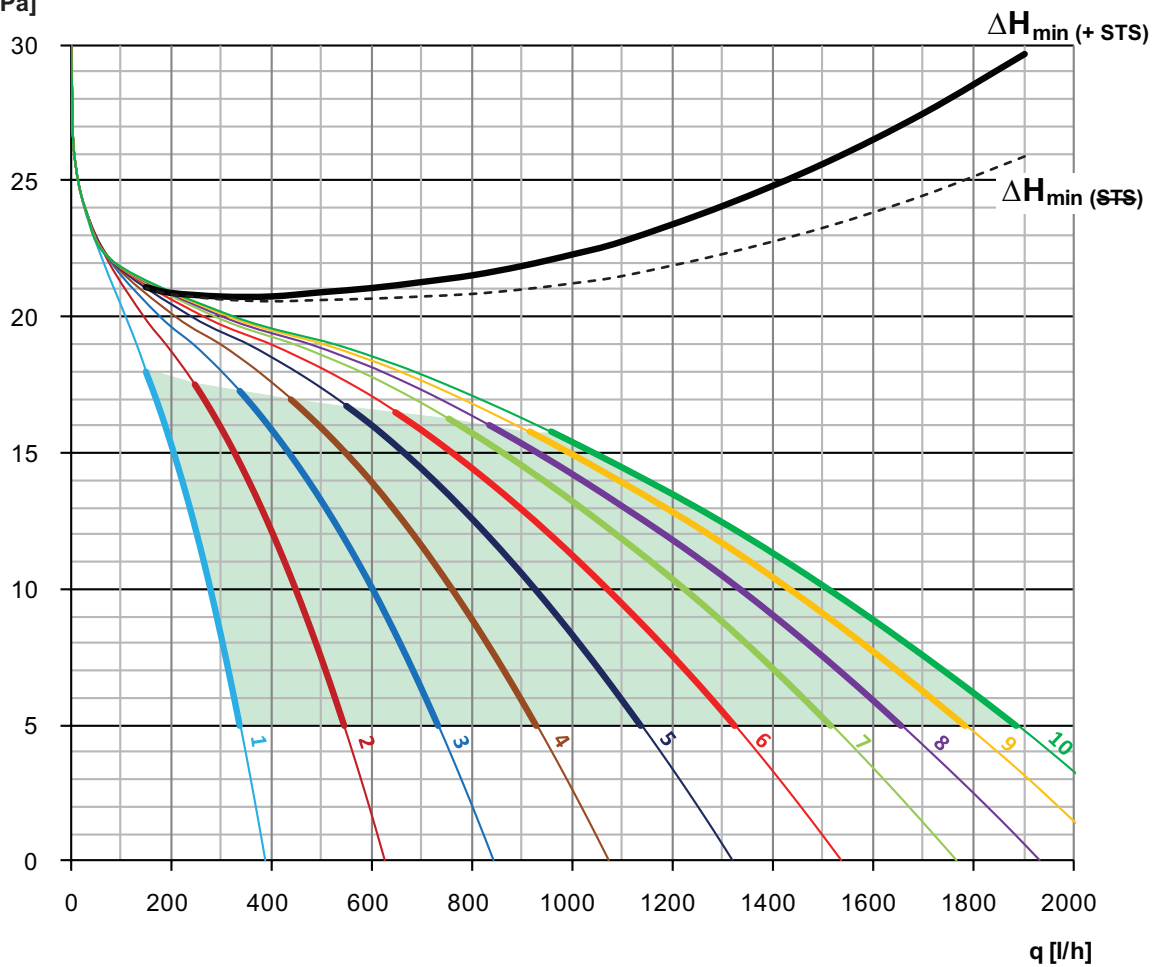
Example - DN 20

Design flow 400 l/h and ΔpL 10 kPa.

- A.** Draw a straight vertical line from the required flow up to the black curve.
- B.** This line crosses the green area for recommended setting range of ΔpL , in this case 5-17 kPa.
- C.** Draw a straight horizontal line from the chosen ΔpL , this line cross the vertical line A in the setting point. If this setting point is in between two setting curves, then estimate the setting, in this case 3,6.
- D.** Draw a horizontal line from where the vertical line A mate the ΔH_{min} curve to the scale and read the ΔH_{min} , in this case 21 kPa (including the ΔpV of STS, dashed curve excluding ΔpV of STS).

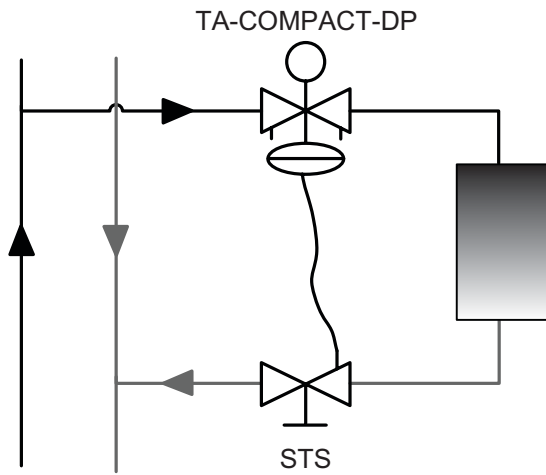
DN 25

Δp_L (ΔH_{min})
[kPa]



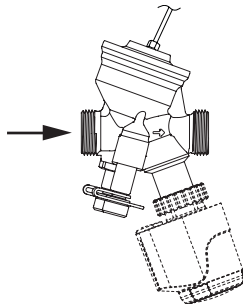
Installation

Application example



Note: The capillary pipe must be connected before the shut-off valve (STS) to enable isolation during system maintenance, see “Shut-off” under “Operating function”.

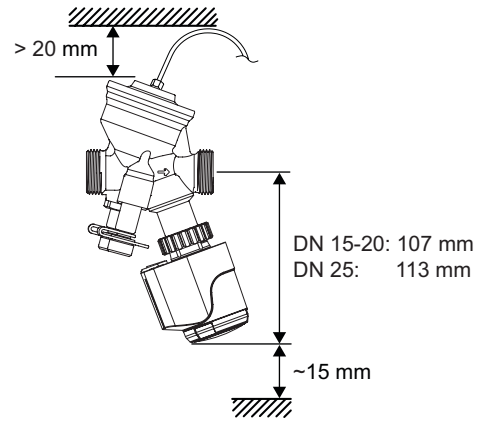
Flow direction



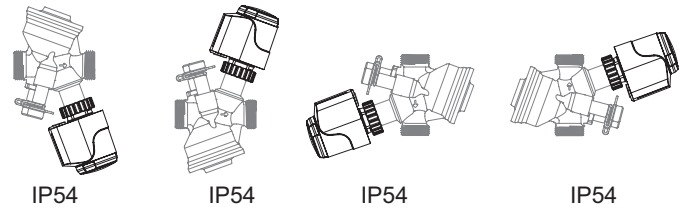
Note: For proper function capillary pipe and membrane chamber must be deaerated, see “Venting” under “Operating function”.

Installation of capillary pipe and actuator EMO T

Approx. 15 mm of free space is required above the actuator. Space above membrane chamber min. 20 mm to avoid interruption on capillary pipe.

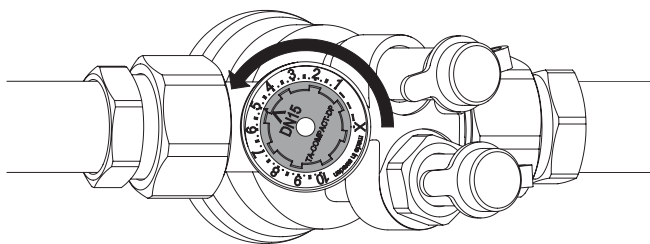


TA-COMPACT-DP + EMO T



Operating function

Setting

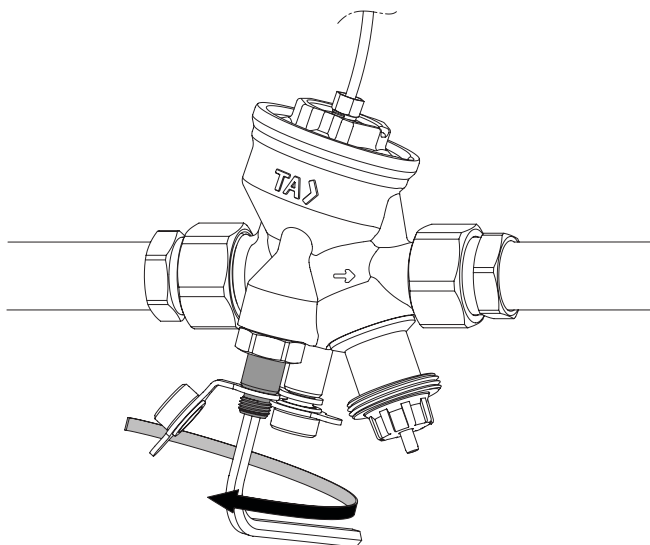


1. Turn the setting wheel to desired value, e.g. 5.0.

Measuring q

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

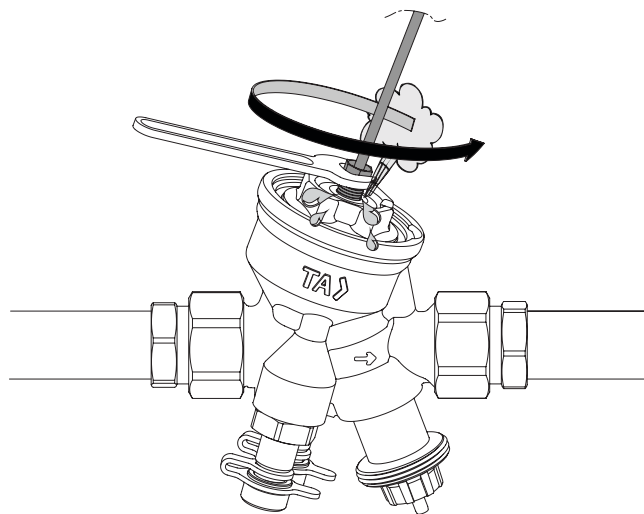
Measuring ΔH



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 the IMI TA balancing instrument to the measuring points and measure.

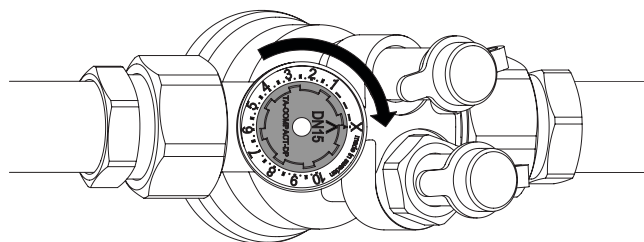
Important! Reopen the valve to previous setting and close the bypass spindle after the measurement is completed.

Venting



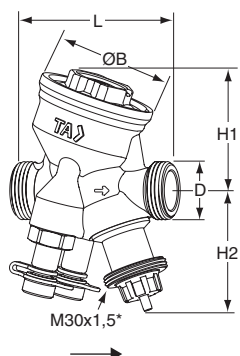
1. To vent the capillary pipe and the membrane chamber, loosen the capillary pipe ~ 1 turn.

Shut-off



1. Turn the setting wheel clockwise to X.

Articles



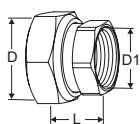
Male thread

Threads according to ISO 228
1 m capillary pipe included.

DN	D	L	H1	H2	B	Kg	EAN	Article No
15	G3/4	74	55	55	54	0,60	7318794025608	52 164-215
20	G1	85	64	55	64	0,75	7318794025707	52 164-220
25	G1 1/4	93	64	61	64	0,90	7318794025806	52 164-225

*) Connection to actuator.
→ = Flow direction

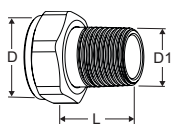
Connections



With female thread NPT

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

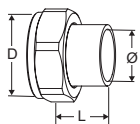
Valve DN	D	D1	L*	EAN	Article No
15	G3/4	1/2 NPT	25	7318794017900	52 163-215
20	G1	1/2 NPT	18	7318794018303	52 163-320
20	G1	3/4 NPT	23	7318794018006	52 163-220
25	G1 1/4	3/4 NPT	27	7318794018402	52 163-325
25	G1 1/4	1 NPT	27	7318794018105	52 163-225



With male thread NPT

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

Valve DN	D	D1	L*	EAN	Article No
15	G3/4	1/2 NPT	29	4024052928415	2400-02.350
20	G1	3/4 NPT	32,5	4024052928514	2400-03.350
25	G1 1/4	1 NPT	35	4024052928613	2400-04.350



Soldering connection

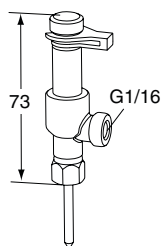
According to ASME/ANSI B16.18
Swivelling nut

Valve DN	D	Pipe Ø [in]	~ [mm]	L*	EAN	Article No
15	G3/4	0.629	16.0	16	7318794022904	52 009-715
20	G3/4	0.879	22	22	7318794023000	52 009-720
25	G1 1/4	1.130	29	26	7318794023109	52 009-725

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

Other type of connections (ISO), see international version of TA-COMPACT-DP.

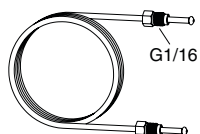
Accessories



Measuring point, two-way

For connection of capillary pipe while permitting simultaneous use of our balancing instrument.

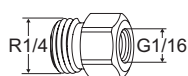
EAN	Article No
7318793784100	52 179-200



Capillary pipe

1 pc included in TA-COMPACT-DP.

L	EAN	Article No
1 m	7318793661500	52 265-301



Transition nipple

For capillary pipe with G1/16 connection.

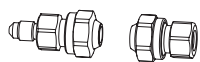
R1/4xG1/16	EAN	Article No
R1/4xG1/16	7318794025509	52 265-306



Transition nipple

For connection to e.g. STS or other IMI TA valves with drain.

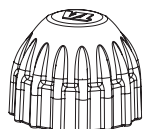
d	EAN	Article No
UNS 1 1/16" x 11.5	7318793959300	52 179-987



Extension kit for capillary pipe

Complete with connections for 6 mm or 1/4" pipe.

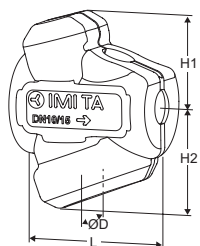
	EAN	Article No
6 mm	7318793781505	52 265-212
1/4"	7318793959201	52 266-212



Protection cap

For TA-COMPACT-P/-DP, TA-Modulator (DN 15-20), TBV-C/-CM, KTCM 512.

	EAN	Article No
Red	7318793961105	52 143-100



Insulation

For heating/comfort cooling.

Material: EPP.

Fire class: E (EN 13501-1), B2 (DIN 4102).

The insulation must be manually adjusted for the capillary pipe.

Valve DN	L	H1	H2	D	EAN	Article No
15	100	61	71	84	7318794027404	52 164-901
20	118	67	79	90	7318794027503	52 164-902
25	127	71	84	104	7318794027602	52 164-903



Spindle extension

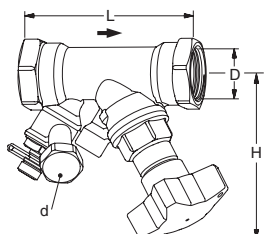
Recommended together with the insulation to minimize the risk of condensation at the valve-actuator interface.

M30x1,5.

L	EAN	Article No
Plastic, black		
30	4024052165018	2002-30.700

Additional equipment

For shut-off and connection of capillary pipe in the return pipe use STS and transition nipple 52 179-987, see Accessories. For more information on STS - see separate catalogue leaflet under section "Expert System Components".



STS

Female threads

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

With drain

DN	D	L	H	Kvs	Kg	EAN	Article No
d = UNS 1 1/16" x 11.5							
15	1/2 NPT	90	100	3,5	0,62	7318794026209	52 149-515
20	3/4 NPT	97	100	6,8	0,68	7318794026308	52 149-520
25	1 NPT	110	105	9,8	0,88	7318794026407	52 149-525

→ = Flow direction

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.

