IMI TA

TA-COMPACT-DP

Combined Δp controller, balancing and control valves

For small pressure independent circuits

Engineering GREAT Solutions

IMI Hydronic Engineering

TA-COMPACT-DP

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: 90°C
Min. working temperature: 0°C

Media:
Water or neutral fluids, water-glycol mixtures.

Lift:
4 mm

Leakage rate:
Leakage flow ≤ 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.

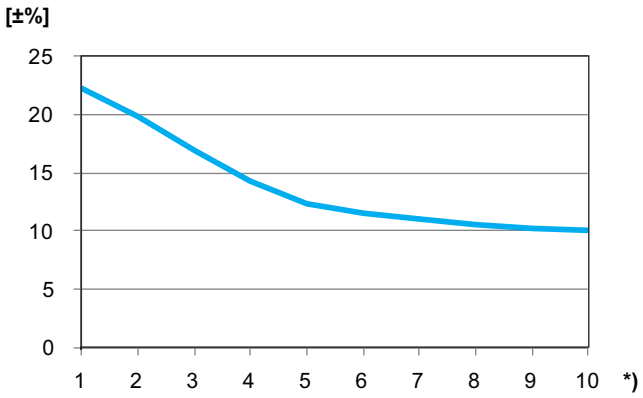
Connection:
Male thread according to ISO 228.

Connection to actuator:
M30x1,5

Actuators:
See separate information on EMO T.

Measuring accuracy

Maximum flow deviation at different settings



*) Setting

Correction factors

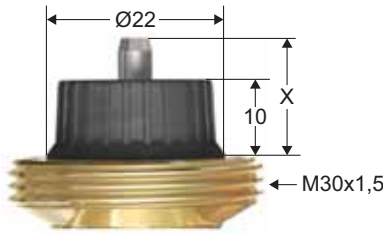
The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤20 cSt = 3°E=100S.U.), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This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



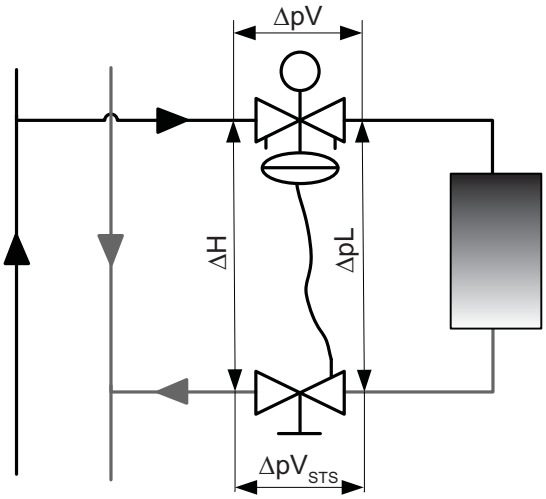
IMI Hydronic Engineering will not be held responsible for the control function if actuators other brand than IMI TA are used.

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	400
25	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

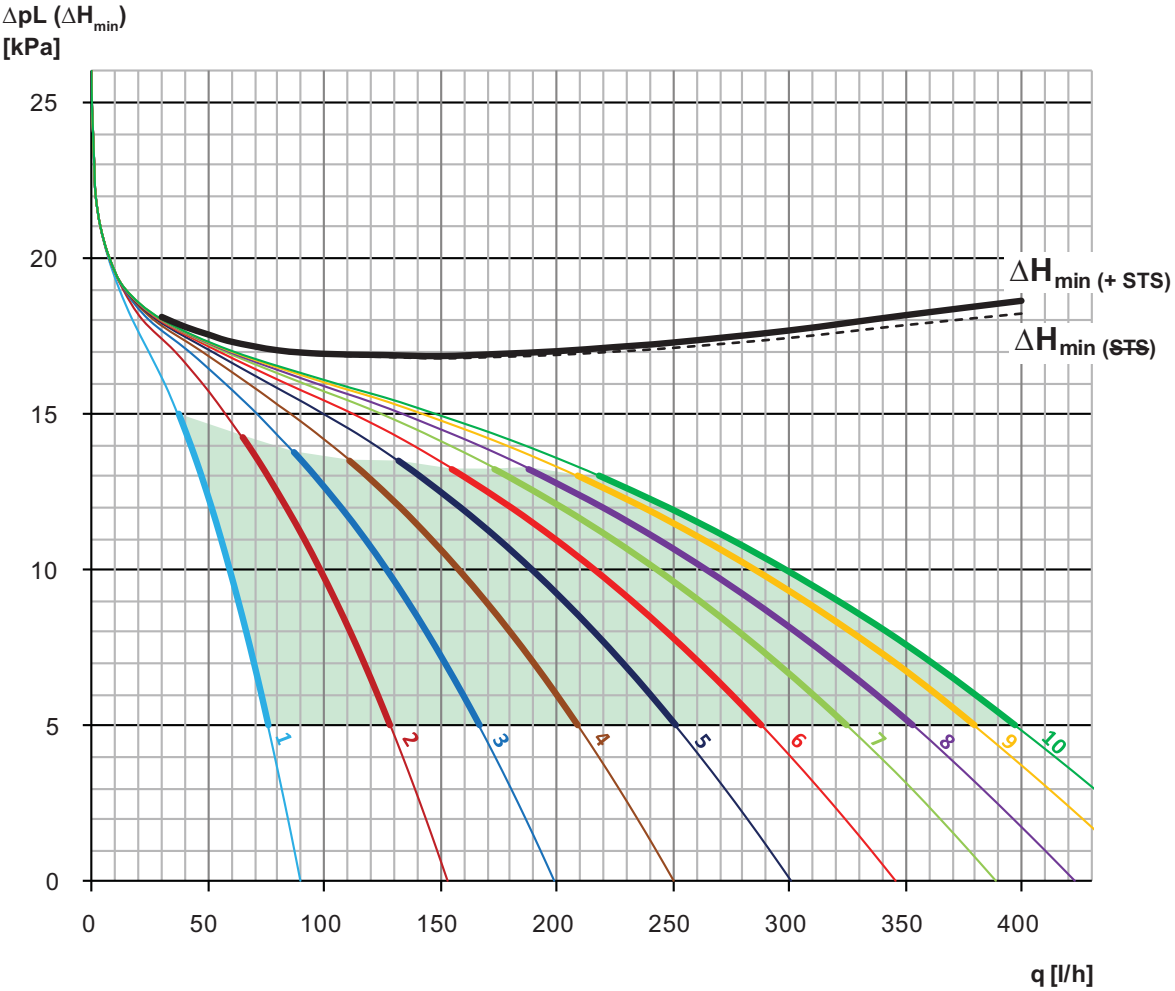


ΔpL = The differential pressure over the load.
ΔH = Available differential pressure.
ΔH_{min} = The minimum needed pressure drop over the circuit, for proper differential pressure control.

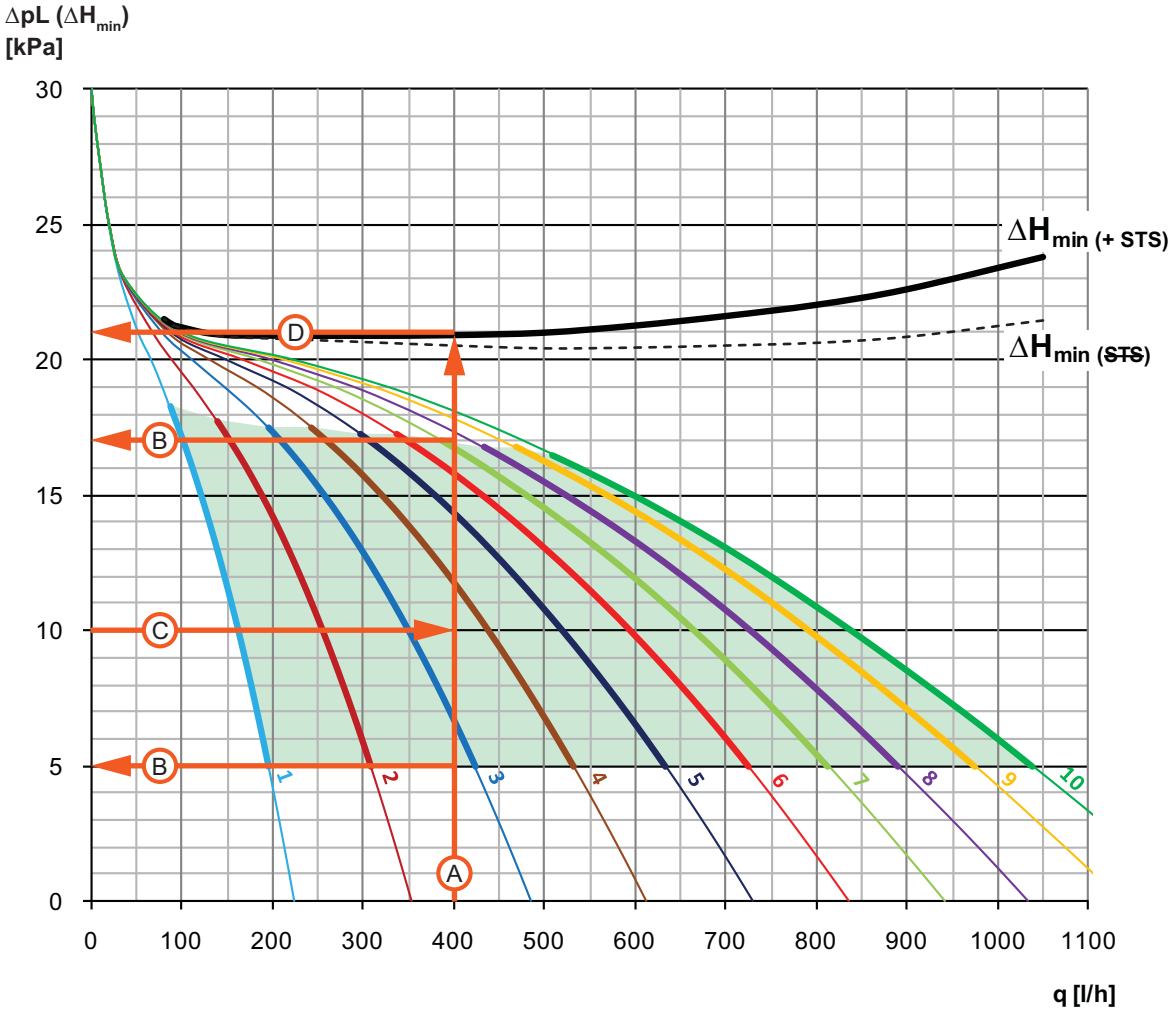
$\Delta H = \Delta pV + \Delta pL + \Delta pV_{STS}$

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



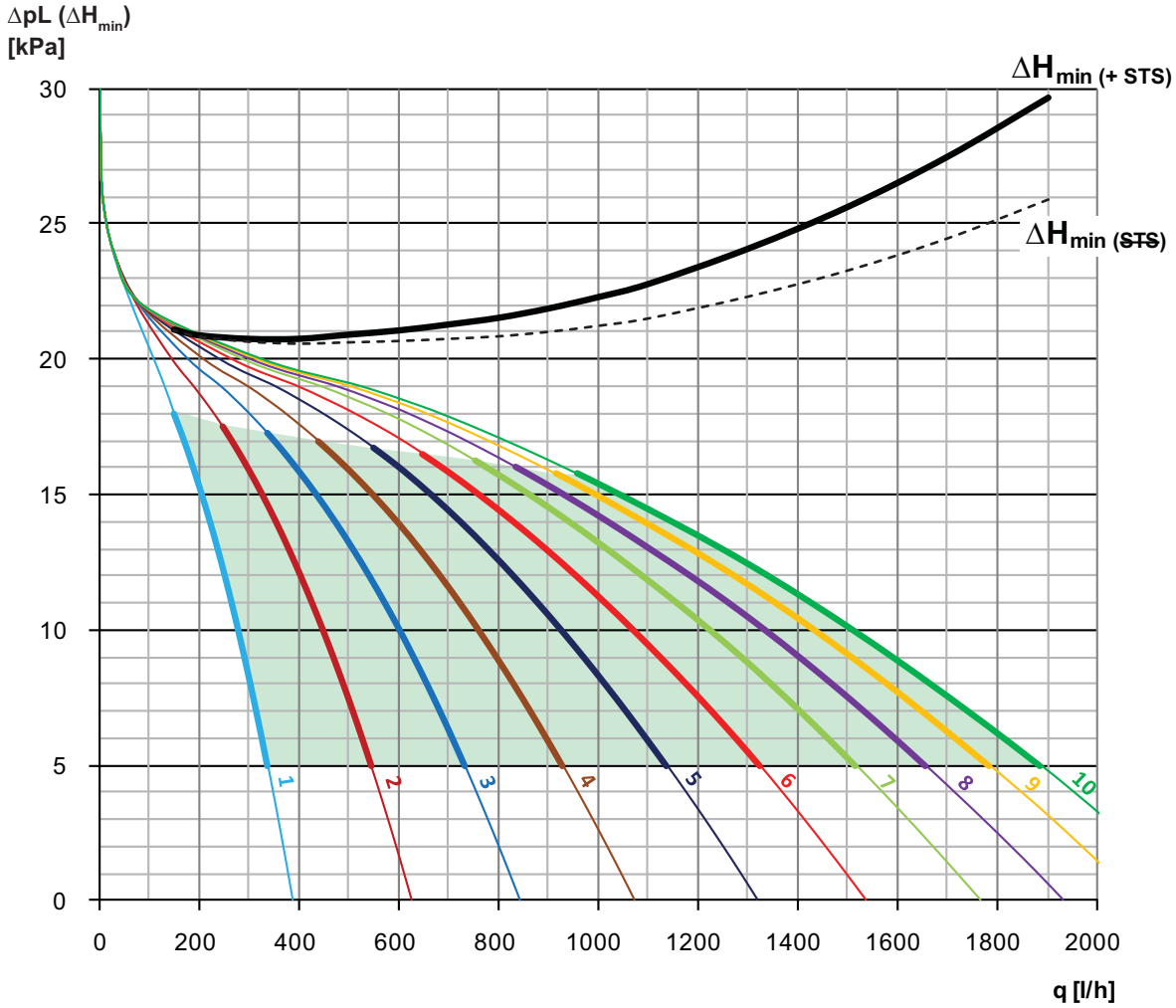
DN 20



Example - DN 20
Design flow 400 l/h and ΔpL 10 kPa.

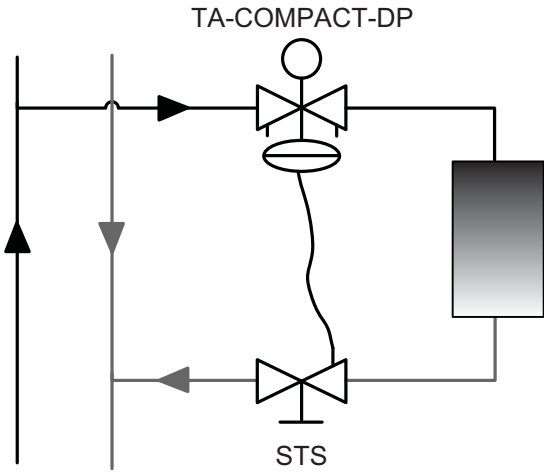
A. Draw a straight vertical line from the required flow up to the black curve.
B. This line crosses the green area for recommended setting range of ΔpL, in this case 5-17 kPa.
C. Draw a straight horizontal line from the chosen ΔpL, this line cross the vertical line A in the setting point. If this setting 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


ΔpL (ΔHmin)
[kPa]
30
25
20
15
10
5
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
q [l/h]
ΔHmin (+ STS)
ΔHmin (~~STS~~)
1
2
3
4
5
6
7
8
9
10

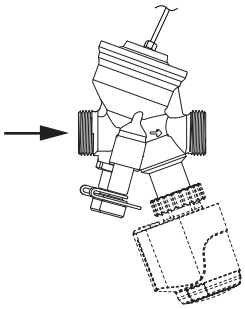
Installation

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”.

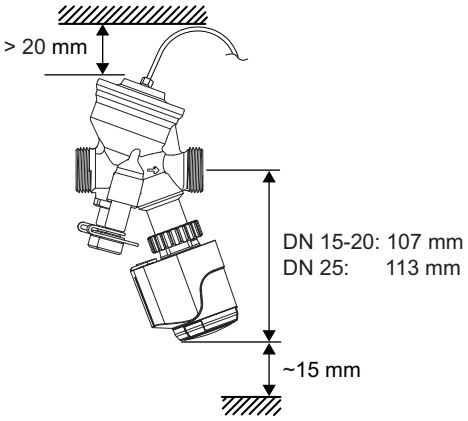
Flow direction



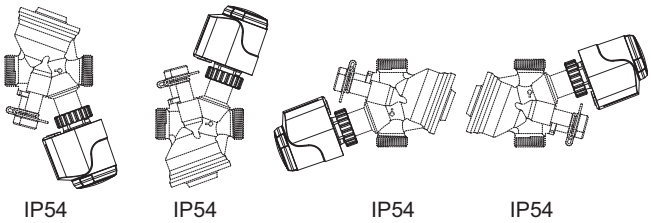
Note: For proper function capillary pipe and membrane chamber must be deaerated, see “Venting” under “Operating function”.

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.

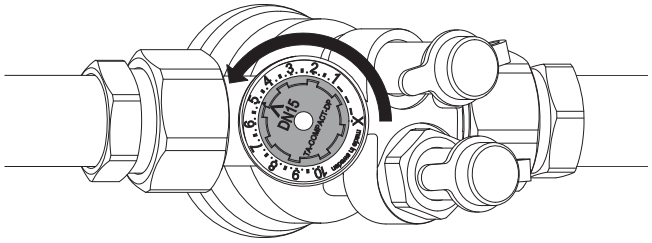


TA-COMPACT-DP + EMO T



Operating function

Setting

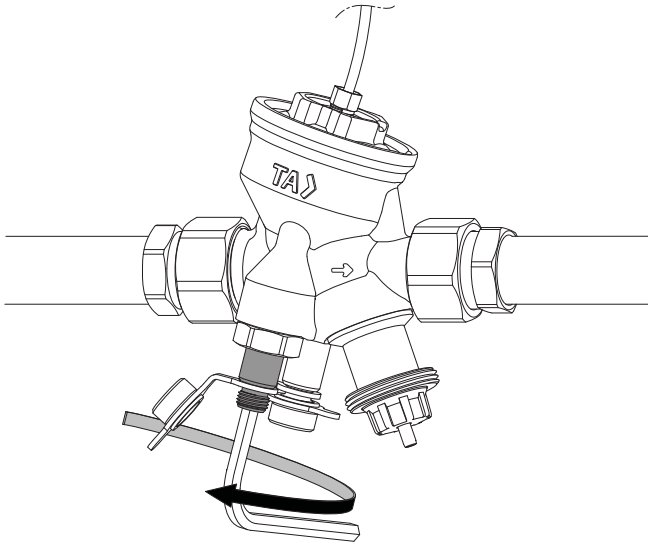


1. Turn the setting wheel to desired value, e.g. 5.0.

Measuring q

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

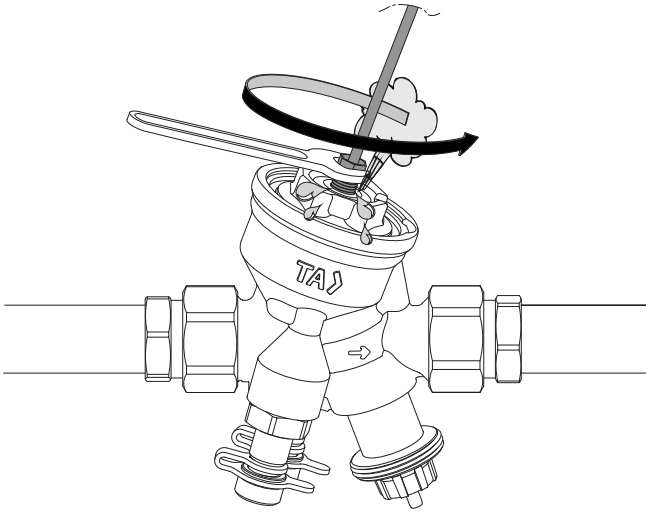
Measuring ΔH



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 IMI TA balancing instrument to the measuring points and measure.

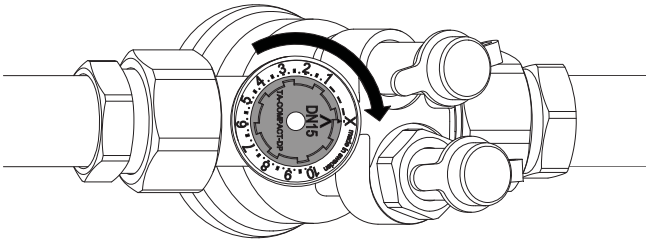
Important! Reopen the valve to previous setting and close the bypass spindle after the measurement is completed.

Venting



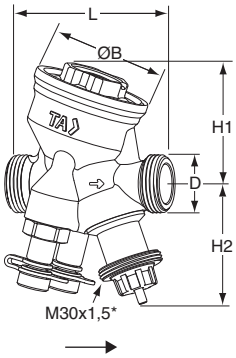
1. To vent the capillary pipe and the membrane chamber, loosen the capillary pipe ~ 1 turn.

Shut-off



1. Turn the setting wheel clockwise to X.

Articles



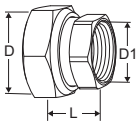
Male thread

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

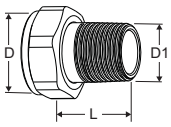
Connections



With female thread

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

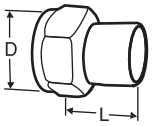
Valve DN	D	D1	L*	EAN	Article No
15	G3/4	G1/2	21	7318794016903	52 163-015
20	G1	G3/4	23	7318794017009	52 163-020
25	G1 1/4	G1	23	7318794017108	52 163-025



With male thread

Threads according to ISO 7-1.
Swivelling nut

Valve DN	D	D1	L*	EAN	Article No
15	G3/4	R1/2	29	4024052516612	0601-02.350
20	G1	R3/4	32,5	4024052516810	0601-03.350
25	G1 1/4	R1	35	4024052517015	0601-04.350

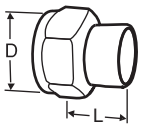


Welding connection

Swivelling nut

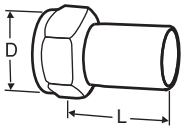
Valve DN	D	Pipe DN	L*	EAN	Article No
15	G3/4	15	36	7318792748509	52 009-015
20	G1	20	40	7318792748608	52 009-020
25	G1 1/4	25	40	7318792748707	52 009-025

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



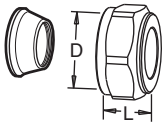
Soldering connection
Swivelling nut

Valve DN	D	Pipe Ø	L*	EAN	Article No
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
25	G1 1/4	28	21	7318792749704	52 009-528



Connection with smooth end
For connection with press coupling
Swivelling nut

Valve DN	D	Pipe Ø	L*	EAN	Article No
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
25	G1 1/4	28	53	7318793810908	52 009-328

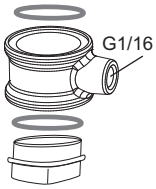


Compression connection
Support bushes shall be used, for more information see catalogue leaflet FPL.
Should not be used with PEX-pipes.
Chrome plated

Valve DN	D	Pipe Ø	L**	EAN	Article No
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

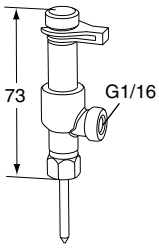
*) Fitting length (from the gasket surface to the end of the connection).
**) Over all length L refers to unassembled coupling.

Accessories



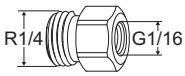
Connection sleeve kit for capillary pipe
For use on STAD or STS.

	EAN	Article No
	7318794027800	52 265-216



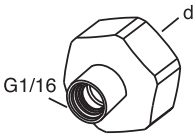
Measuring point, two-way
For connection of capillary pipe while permitting simultaneous use of our balancing instrument.

	EAN	Article No
	7318793784100	52 179-200



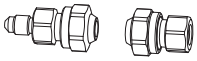
Transition nipple
For capillary pipe with G1/16 connection.

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



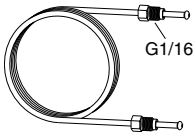
Transition nipple
For connection to e.g. STS or other IMI TA valves with drain.

d	EAN	Article No
G1/2	7318793660206	52 179-981
G3/4	7318793660305	52 179-986



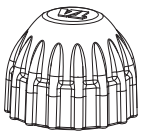
Extension kit for capillary pipe
Complete with connections for 6 mm pipe

	EAN	Article No
	7318793781505	52 265-212



Capillary pipe
1 pc included in TA-COMPACT-DP.

L	EAN	Article No
1 m	7318793661500	52 265-301

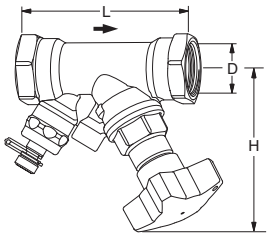


Protection cap
For TA-COMPACT-P/-DP, TBV-C/-CM/-CMP, KTCM 512.

	EAN	Article No
Red	7318793961105	52 143-100

Additional equipment

For shut-off and connection of capillary pipe in the return pipe use STS + Connection sleeve kit for capillary pipe 52 265-216, see Accessories. For more information on STS - see separate catalogue leaflet under section “Expert System Components”.



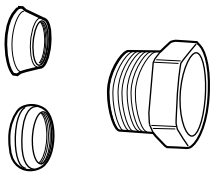
STS

Female threads

Thread according to ISO 228. Thread length according to ISO 7/1.
Without drain (can be installed during operation)

DN	D	L	H	Kvs	Kg	EAN	Article No
15*	G1/2	90	100	3,5	0,52	7318792750403	52 149-015
20*	G3/4	97	100	6,80	0,58	7318792750502	52 149-020
25	G1	110	105	9,80	0,78	7318792750601	52 149-025

→ = Flow direction
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.
*) Can be connected to smooth pipes by KOMBI compression coupling.



KOMBI compression coupling

Max.: 100°C
(See catalogue leaflet KOMBI.)

Male pipe threads on thrust screw	For pipes, diameter	EAN	Article No
G1/2	10	7318792874901	53 235-109
G1/2	12	7318792875007	53 235-111
G1/2	14	7318792875106	53 235-112
G1/2	15	7318792875205	53 235-113
G1/2	16	7318792875304	53 235-114
G3/4	15	7318792875403	53 235-117
G3/4	18	7318792875601	53 235-121
G3/4	22	7318792875700	53 235-123