

Climate
Control

IMI TA

TA-COMPACT-DP



Combined Δp controller, balancing and control valves

For small pressure independent circuits

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)
Isolation (for use during system maintenance – see “Leakage rate”)

Dimensions:

DN 10-25

Pressure class:

PN 16

Differential pressure (ΔH):

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

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

DN 10: 20 kPa = 0,20 bar

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”.

(Δp_L 10 kPa)

DN 10: 16-71 l/h

DN 15: 60-300 l/h

DN 20: 160-840 l/h

DN 25: 280-1500 l/h

Temperature:

Max. working temperature: 120°C

Min. working temperature: -20°C

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

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: Brass CW724R (CuZn21Si3P)

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.

Marking:

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

Grey handwheel: TA-COMPACT-DP and DN.

Connection:

External thread according to ISO 228.

Connection to actuator:

M30x1.5

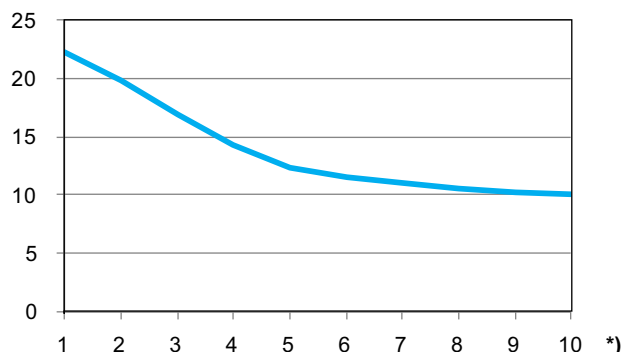
Actuators:

See separate technical documentation 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 ($\leq 20 \text{ cSt} = 3^\circ \text{E} = 100 \text{ S.U.}$), 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 HySelect or directly in our balancing instruments.

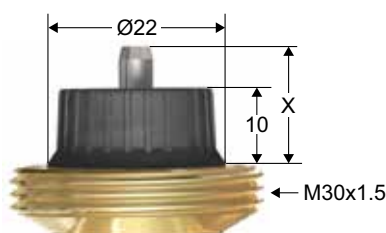
Noise

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

Actuators

TA-COMPACT-DP is developed to work together with recommended actuators according to table. Care should be taken by the user to ensure that actuators not manufactured by IMI are fully compatible to provide optimal control from the valve. Failure to do so may provide unsatisfactory results. See separate catalogue leaflets for more details about the actuators.

Actuators of other brands require;
Working range: X (closed - fully open) = 11,6 - 15,8
Closing force: Min. 125 N (max. 500 N)



If TA-COMPACT-DP is used with EMO TM the setting of the valve must be setting 3 or higher in order to achieve the minimum stroke of 1 mm.

Maximum recommended pressure drop (Δp_V) for valve and actuator combination

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

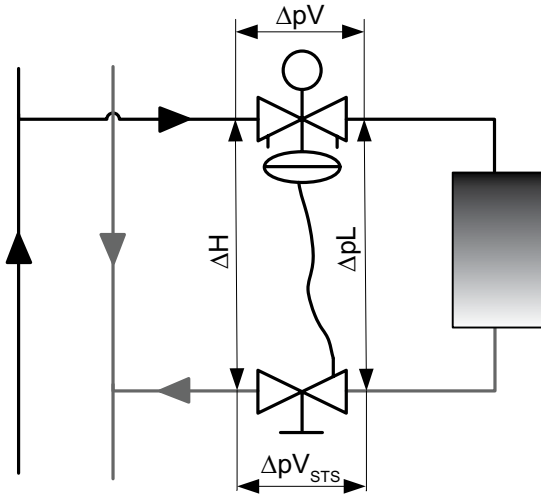
| DN | EMO T/EMO TM * [kPa] |
|----|----------------------|
| 10 | 400 |
| 15 | |
| 20 | |
| 25 | |

*) Closing force 125 N.

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

$\Delta p_{V_{max}}$ = The maximum allowed pressure drop over the valve to fulfill all stated performances.

Sizing



Δp_L = 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.

$$\Delta H = \Delta p_V + \Delta p_L + \Delta p_{V_{STs}}$$

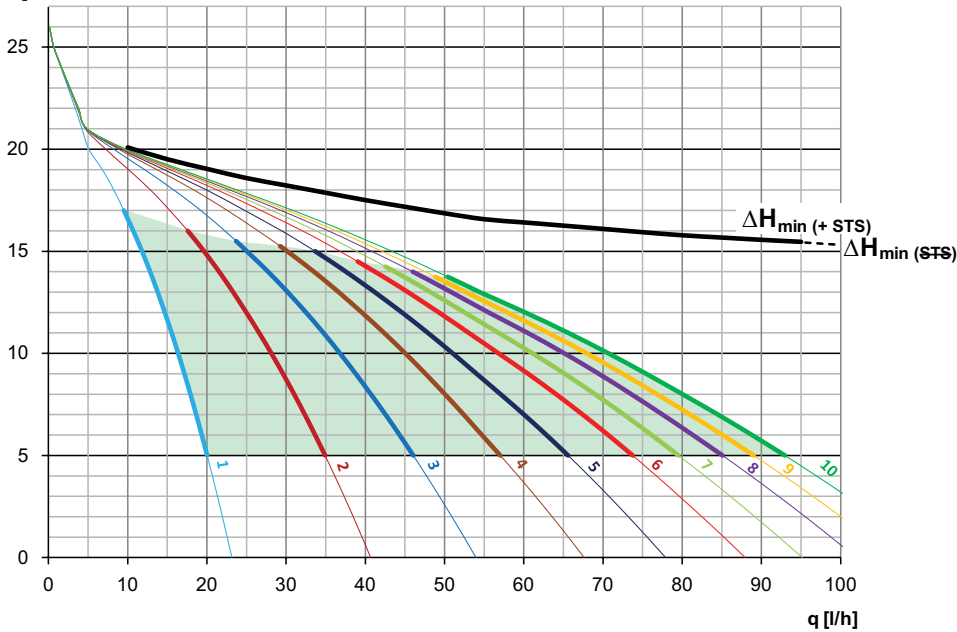
*

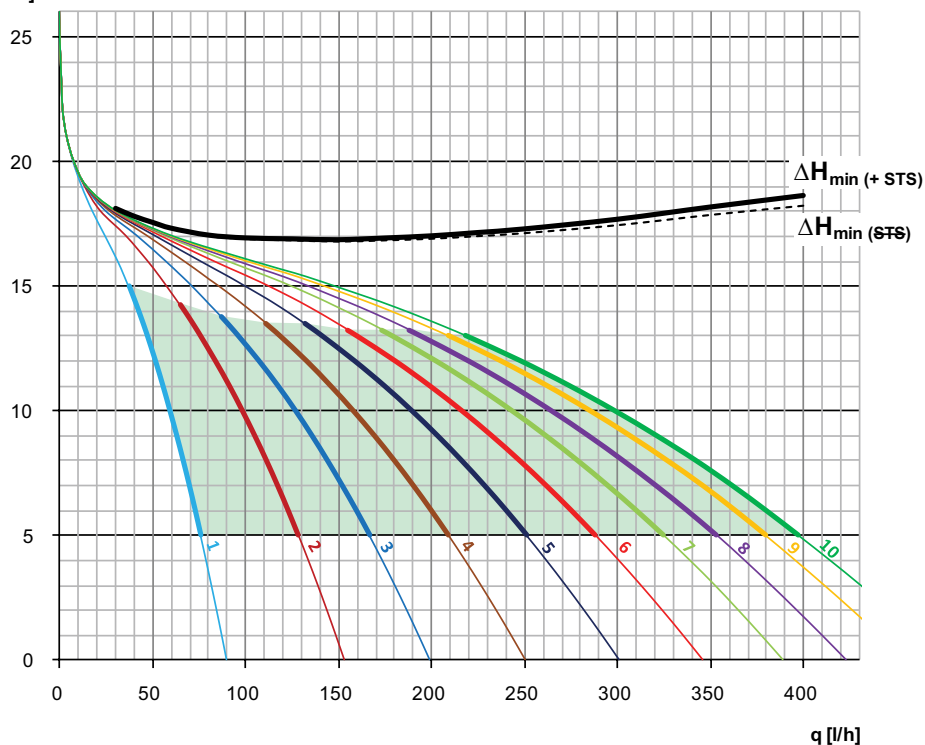
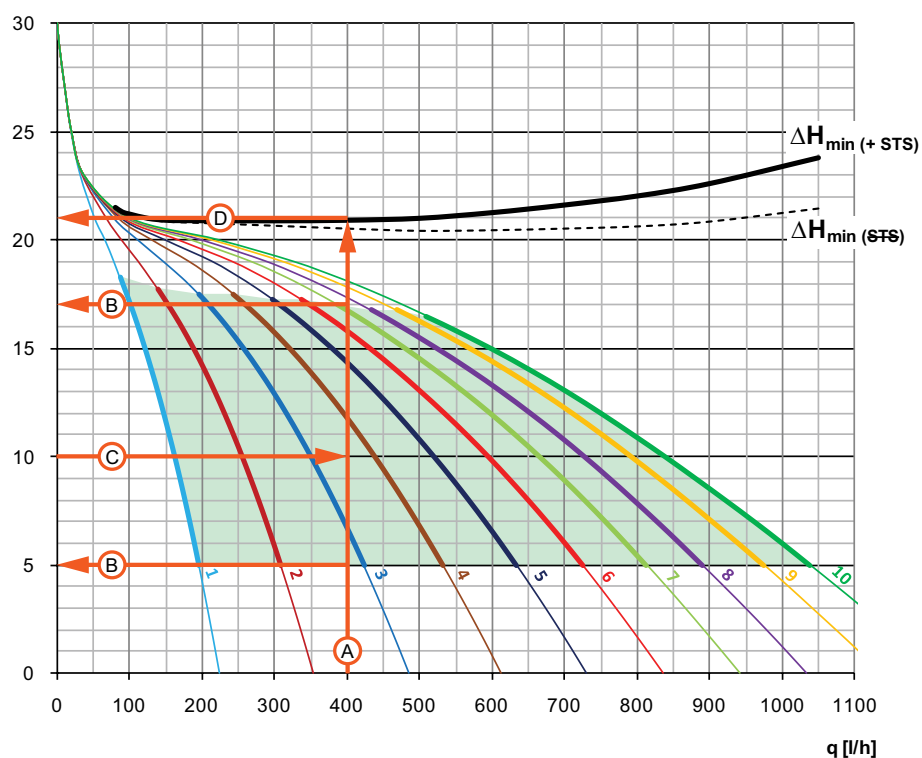
Diagrams

The colored curves (1-10) are the nominal Δp_L 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 10

Δp_L (ΔH_{\min})
[kPa]



DN 15
 $\Delta p_L (\Delta H_{min})$
[kPa]
**DN 20**
 $\Delta p_L (\Delta H_{min})$
[kPa]
**Example - DN 20**

Design flow 400 l/h and Δp_L 10 kPa.

A. Draw a straight vertical line from the required flow up to the black curve.

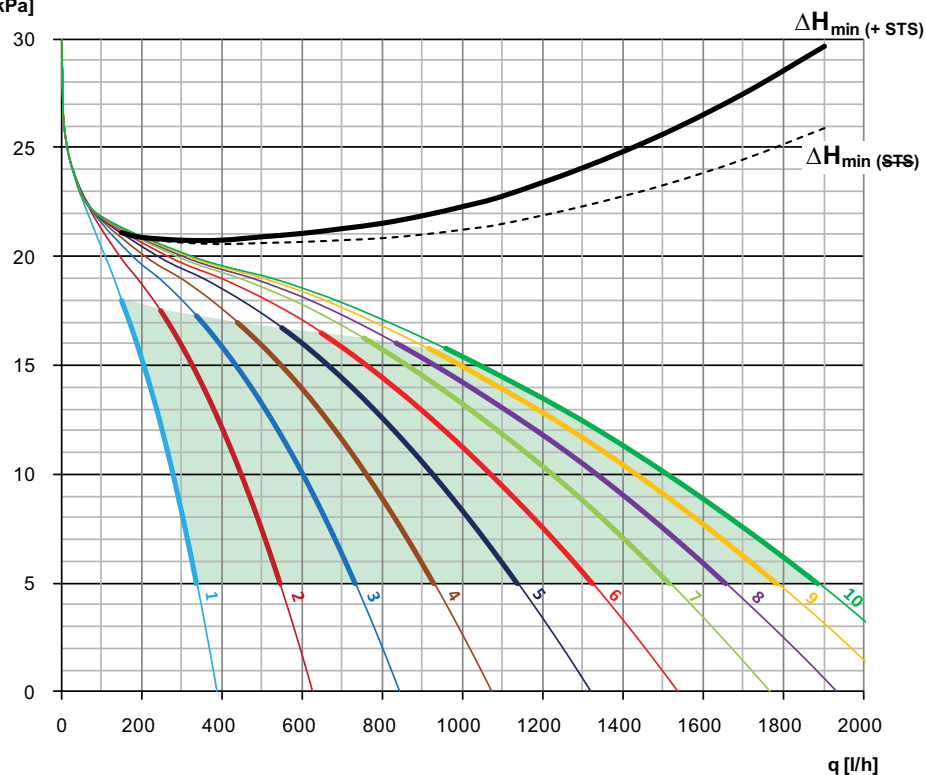
B. This line crosses the green area for recommended setting range of Δp_L , in this case 5-17 kPa.

C. Draw a straight horizontal line from the chosen Δp_L , 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 meets the ΔH_{min} curve to the scale and read the ΔH_{min} , in this case 21 kPa (including the Δp_V of STS, dashed curve excluding Δp_V of STS).

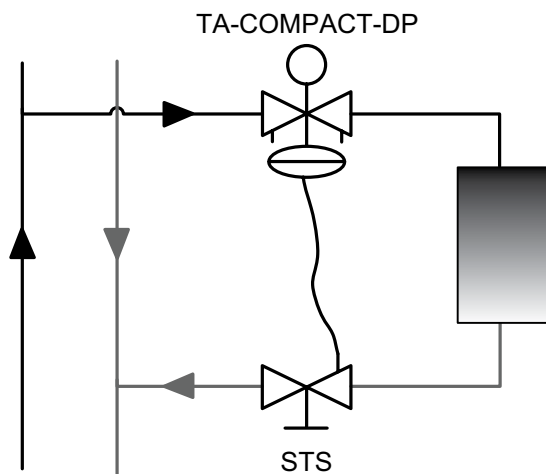
DN 25

Δp_L (ΔH_{min})
[kPa]



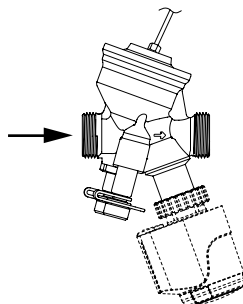
Installation

Application example



Note: The TA-COMPACT-DP must be installed before the load (inlet pipe) and the capillary pipe must be connected before the shut-off valve (STS) to enable isolation during system maintenance, see "Shut-off" under "Operating function".

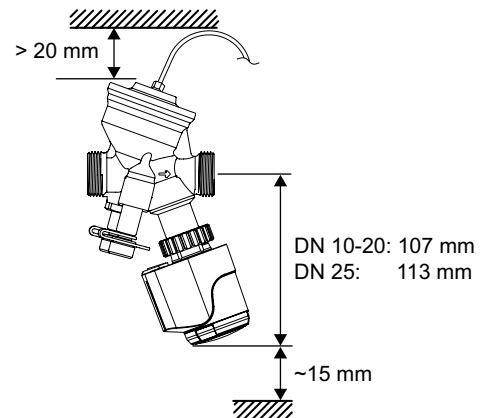
Flow direction



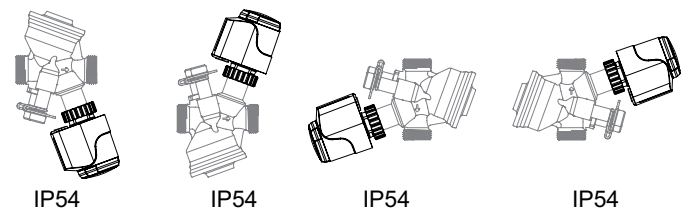
Note: For proper function capillary pipe and membrane chamber must be deaerated, see "Venting" under "Operating function".

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.

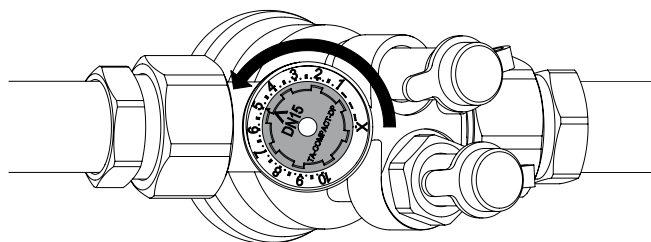


TA-COMPACT-DP + EMO T



Operating function

Setting

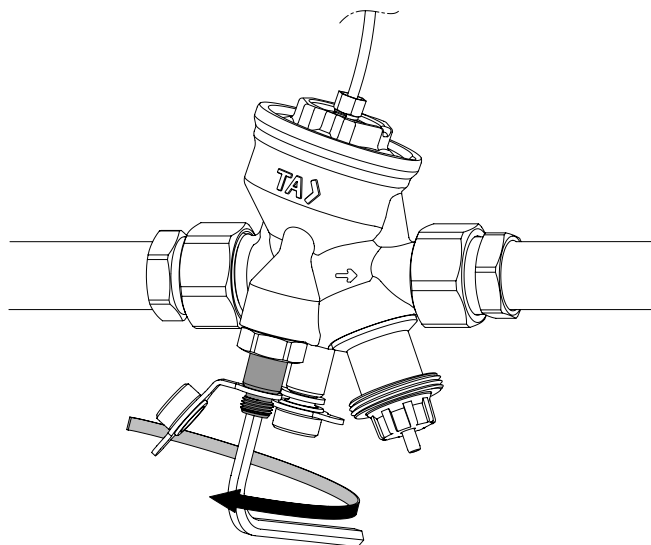


1. Turn the setting wheel to desired value, e.g. 5.0.

Measuring q

1. Remove the installed 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.

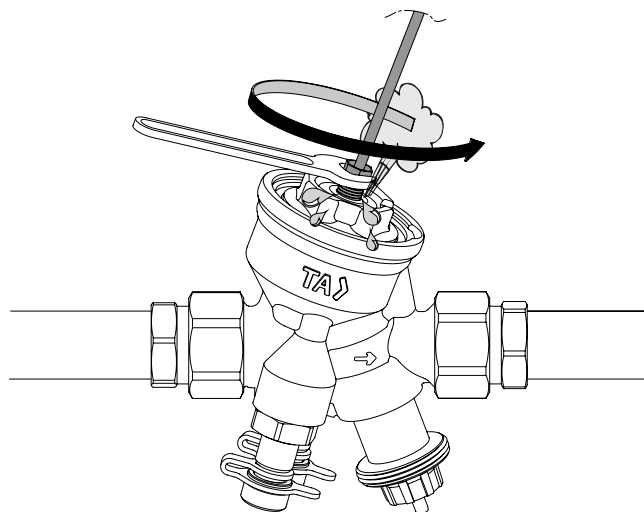
Measuring ΔH



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 IMI TA balancing instrument to the measuring points and measure.

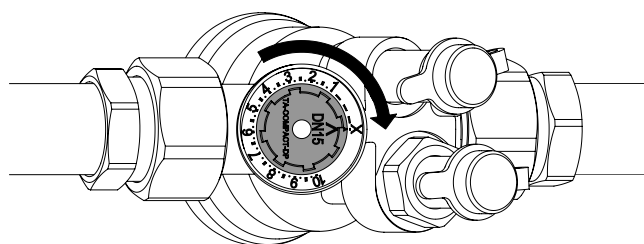
Important! Reopen the valve to previous setting and close the bypass spindle after the measurement is completed.

Venting



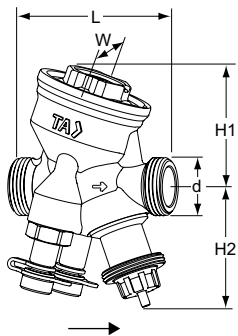
1. To vent the capillary pipe and the membrane chamber, loosen the capillary pipe ~ 1 turn.

Shut-off



1. Turn the setting wheel clockwise to X.

Articles



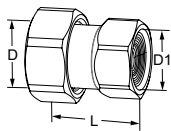
External thread

Threads according to ISO 228
1 m capillary pipe included.

| DN | d | L | H1 | H2 | W | Kg | EAN | Article No |
|----|--------|----|----|----|----|------|---------------|------------|
| 10 | G1/2 | 74 | 55 | 55 | 54 | 0,57 | 7318794040205 | 52 164-210 |
| 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

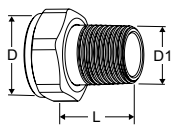
Connections



With internal thread

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

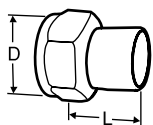
| Valve DN | D | D1 | L* | EAN | Article No |
|----------|--------|--------|------|---------------|------------|
| 10 | G1/2 | G3/8 | 29,5 | 5902276820014 | 52 009-810 |
| 10 | G1/2 | G1/2 | 34,5 | 5902276820021 | 52 009-910 |
| 15 | G3/4 | G1/2 | 31,5 | 5902276820038 | 52 009-815 |
| 15 | G3/4 | G3/4 | 36,5 | 5902276820045 | 52 009-915 |
| 20 | G1 | G3/4 | 33,5 | 5902276820052 | 52 009-820 |
| 20 | G1 | G1 | 39,5 | 5902276820069 | 52 009-920 |
| 25 | G1 1/4 | G1 | 39 | 5902276820076 | 52 009-825 |
| 25 | G1 1/4 | G1 1/4 | 43 | 5902276820083 | 52 009-925 |



With external thread

Threads according to ISO 7-1.
Swivelling nut
Brass

| Valve DN | D | D1 | L* | EAN | Article No |
|----------|--------|------|------|---------------|-------------|
| 10 | - | - | - | - | - |
| 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 |

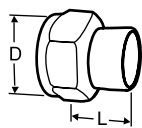


Welding connection

Swivelling nut
Brass/Steel 1.0045 (EN 10025-2)

| 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 |
| 25 | G1 1/4 | 25 | 40 | 7318792748707 | 52 009-025 |

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

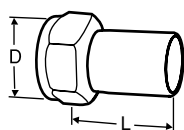


Soldering connection

Swivelling nut

Brass/gunmetal CC491K (EN 1982)

| 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 |
| 25 | G1 1/4 | 28 | 21 | 7318792749704 | 52 009-528 |



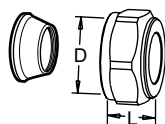
Connection with smooth end

For connection with press coupling

Swivelling nut

Brass/AMETAL®

| 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 |
| 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.

Brass/AMETAL®

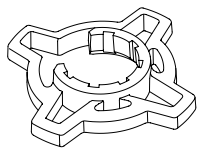
Chrome plated

| Valve DN | D | Pipe Ø | L** | EAN | Article No |
|----------|------|--------|-----|---------------|------------|
| 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 | 22 | 27 | 7318793705204 | 53 319-622 |

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

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

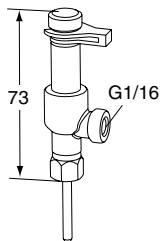
Accessories



Grip for setting wheel, optional

For better grip when presetting.
For TA-COMPACT-P/-DP and
TA-Modulator (DN 10-32).

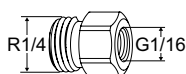
| Colour | EAN | Article No |
|--------|---------------|------------|
| Orange | 7318794040502 | 52 164-950 |



Measuring point, two-way

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

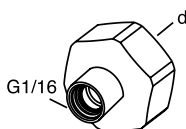
| EAN | Article No |
|---------------|------------|
| 7318793784100 | 52 179-200 |



Transition nipple

For capillary pipe with G1/16 connection.

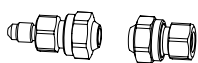
| EAN | Article No |
|------------|--------------------------|
| R1/4xG1/16 | 7318794025509 52 265-306 |



Transition nipple

For capillary pipe with G1/16 connection.
For connection to IMI TA valves with
drain.

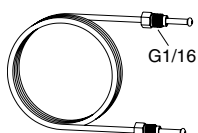
| d | EAN | Article No |
|------|---------------|------------|
| G1/2 | 7318793660206 | 52 179-981 |
| G3/4 | 7318793660305 | 52 179-986 |



Extension kit for capillary pipe

Complete with connections for 6 mm
pipe

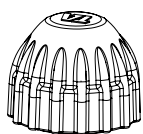
| EAN | Article No |
|---------------|------------|
| 7318793781505 | 52 265-212 |



Capillary pipe

1 pc included in TA-COMPACT-DP.

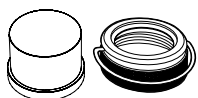
| L | EAN | Article No |
|-----|---------------|------------|
| 1 m | 7318793661500 | 52 265-301 |



Protection cap

For TA-COMPACT-P/-DP, TA-Modulator
(DN 10-20), TBV-C/-CM.

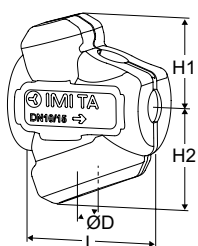
| EAN | Article No |
|-----|--------------------------|
| Red | 7318793961105 52 143-100 |



Tamper proof cover

Set containing plastic cover and locking
ring for valves with connection M30x1,5
to thermostatic head/actuator.
Prevents manipulation of setting.

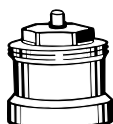
| EAN | Article No |
|---------------|------------|
| 7318794030206 | 52 164-100 |



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 |
|----------|-----|----|----|-----|---------------|------------|
| 10-15 | 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

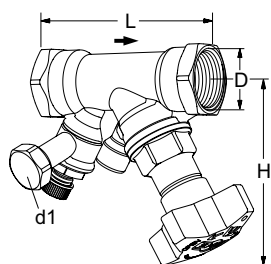
Recommended together with the
insulation to minimize the risk of
condensation at the valve-actuator
interface. M30x1,5.

| 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 + transition nipple 52 179-981/-986.

For more information on STS - see separate catalogue leaflet under section "Expert System Components".



STS

With drain

Internal threads.

Thread according to ISO 228. Thread length according to ISO 7/1.

| DN | D | L | H | Kvs | Kg | EAN | Article No |
|------------------|------|-----|-----|-----|------|---------------|------------|
| d1 = G3/4 | | | | | | | |
| 15* | G1/2 | 84 | 100 | 3,5 | 0,60 | 5902276896569 | 52 849-615 |
| 20* | G3/4 | 94 | 100 | 6,8 | 0,66 | 5902276896576 | 52 849-620 |
| 25 | G1 | 105 | 105 | 9,8 | 0,86 | 5902276896583 | 52 849-625 |
| d1 = G1/2 | | | | | | | |
| 15* | G1/2 | 84 | 100 | 3,5 | 0,60 | 5902276896507 | 52 849-215 |
| 20* | G3/4 | 94 | 100 | 6,8 | 0,66 | 5902276896514 | 52 849-220 |
| 25 | G1 | 105 | 105 | 9,8 | 0,86 | 5902276896521 | 52 849-225 |

→ = Flow direction

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

*) Can be connected to smooth pipes by KOMBI compression coupling.

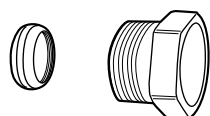


Transition nipple

For capillary pipe with G1/16 connection.

For connection to IMI TA valves with drain.

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



KOMBI compression coupling

Max.: 100°C

(For more information 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 |