

# TA-COMPACT-P

– with NPT and SWT connections



**Combined control & balancing valves for small terminal units**

Pressure independent balancing and control valve (PIBCV)

# TA-COMPACT-P

## – with NPT and SWT connections

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.

### Key features

- > **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 (not steam) and cooling systems.

#### Functions:

Control  
Pre-setting (max. flow)  
Differential pressure control  
Measuring ( $\Delta H$ , T,  $q$ )  
Isolation (for use during system maintenance – see also Leakage rate)

#### Dimensions:

3/8" – 1 1/4"

#### Pressure class:

PN 16 (230 psi)

#### Differential pressure ( $\Delta pV$ ):

Max. differential pressure ( $\Delta pV_{max}$ ): 58 psi  
Min. differential pressure ( $\Delta pV_{min}$ ):

Size 3/8" - 3/4": 2.2 psi

Size 1" - 1 1/4": 3.3 psi

(Valid for position 10, fully open. Other positions will require lower differential pressure, check with the software HySelect.)

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

$\Delta pV_{min}$  = 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:

3/8": 0.095 - 0.53 gpm

1/2" LF: 0.19 - 1.08 gpm

1/2": 0.39 - 2.07 gpm

3/4": 0.92 - 5.06 gpm

1": 1.63 - 9.46 gpm

1 1/4": 3.52 - 16.3 gpm

$q_{max}$  = gpm at each setting and fully open valve plug.

LF = Low flow

#### Temperature:

Max. working temperature: 194°F

Min. working temperature: 14°F

#### Media:

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

#### Lift:

0.157 in

#### Leakage rate:

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

#### Material:

Valve body: AMETAL®

Valve insert: AMETAL®

Valve plug: Brass CW724R (CuZn21Si3P)

Spindle: Stainless steel

Spindle seal: EPDM O-ring

$\Delta p$  insert: PPS

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-P and DN. For low flow version also LF.

#### Connection:

Male thread according to ISO 228.

Connections (accessories) with female and male thread NPT according to ANSI/ASME B1.20.1-1983, or for soldering according to ASME/ANSI B16.18.

#### Connection to actuator:

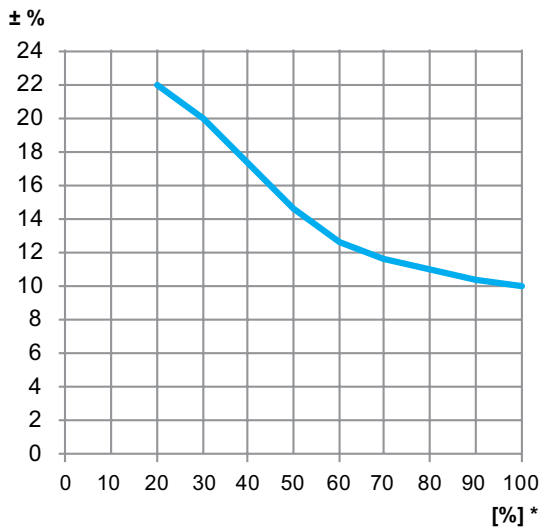
M30x1.5

#### Actuators:

See separate information on EMO T.

## Measuring accuracy

### Maximum flow deviation at different settings



\*) Setting (%) of fully open valve.

## Correction factors

The flow calculations are valid for water (68°F). For other liquids with approximately the same viscosity as water ( $\leq 20$  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.

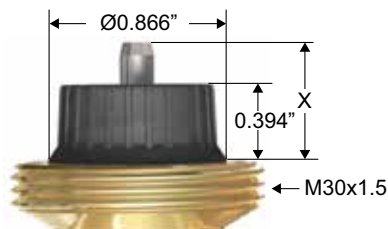
## Noise

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

## Actuators

### 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) = 0.46 in - 0.62 in Closing force: Min. 28 lbf (max. 112 lbf)



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

### Maximum recommended pressure drop ( $\Delta pV$ ) for valve and actuator combination

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

Size	EMO T * [psi]
3/8"	58
1/2"	
3/4"	
1"	
1 1/4"	

\*) Closing force 28 lbf.

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

$\Delta pV_{\text{max}}$  = 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  $\Delta pV$  is within the working range 2.2 - 58 psi or 3.3 - 58 psi.

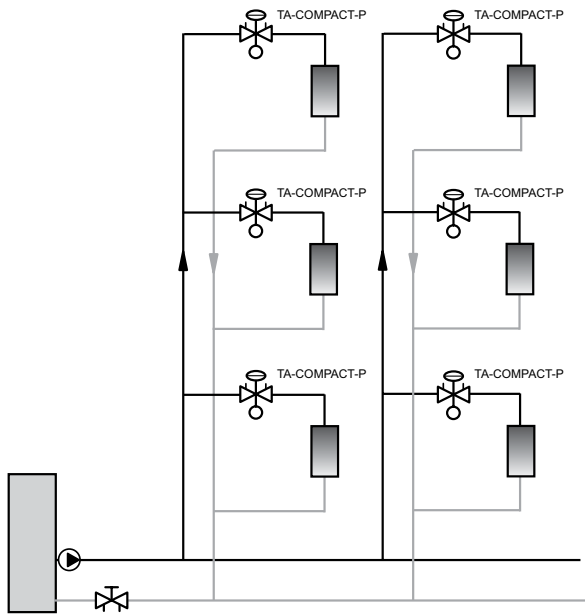
## $q_{max}$ values

Size	Position									
	1	2	3	4	5	6	7	8	9	10
3/8"	0.09	0.17	0.24	0.30	0.35	0.40	0.44	0.47	0.50	0.53
1/2" LF	0.19	0.31	0.43	0.54	0.65	0.75	0.84	0.92	1.00	1.08
1/2"	0.39	0.66	0.88	1.09	1.30	1.50	1.67	1.85	1.98	2.07
3/4"	0.92	1.47	2.02	2.53	2.99	3.43	3.92	4.36	4.75	5.06
1"	1.63	2.68	3.65	4.62	5.59	6.56	7.57	8.23	9.02	9.46
1 1/4"	3.52	5.37	7.13	9.06	10.8	12.3	13.6	14.7	15.6	16.3

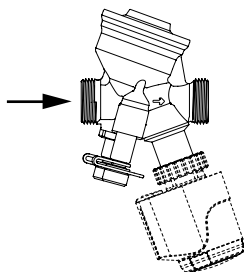
$q_{max}$  = gpm at each setting and fully open valve plug.  
 LF = Low flow

## Installation

### Application example

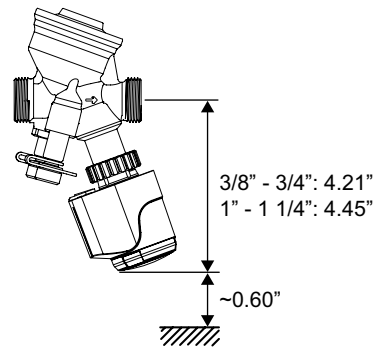


### Flow direction

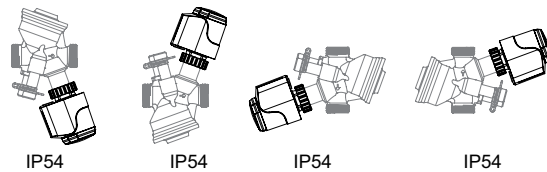


### Installation of actuator

Approx. 0.60" in of free space is required above the actuator.

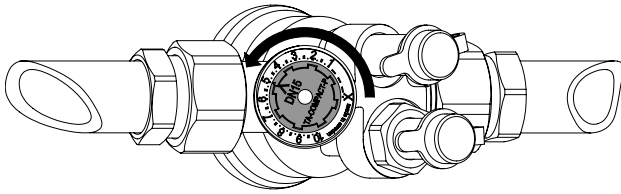


### TA-COMPACT-P + EMO T



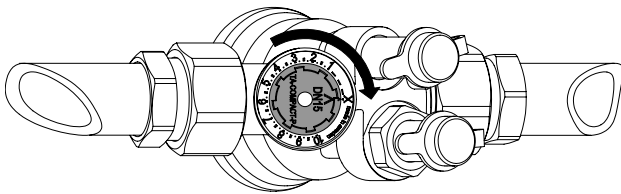
## Operating function

### Setting



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

### Shut-off

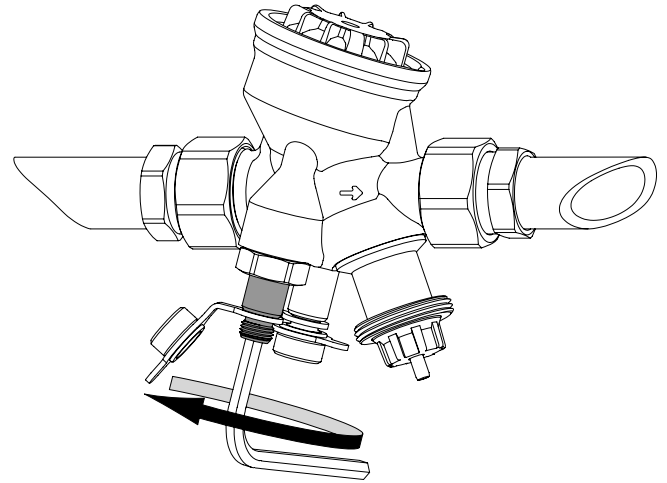


1. Turn the setting wheel clockwise to X.

### Measuring $q$

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

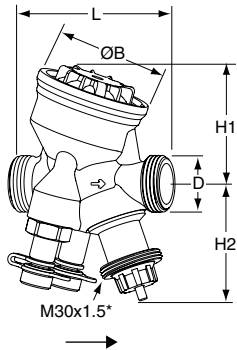
### Measuring $\Delta H$



1. Remove any actuator.
2. Close the valve according to "Shut-off".
3. Bypass the  $\Delta p$  part by opening the bypass spindle  $\approx 1$  turn counterclockwise, with a 5 mm Allen key.
4. Connect TA's 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

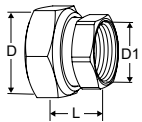
Size	(DN)	D	L [in]	H1 [in]	H2 [in]	B [in]	q <sub>max</sub> [gpm]	lb	Article No
3/8"	10	G1/2	2.91	2.17	2.17	2.13	0.53	1.17	52 164-010
1/2" LF	15	G3/4	2.91	2.17	2.17	2.13	1.08	1.19	52 164-115
1/2"	15	G3/4	2.91	2.17	2.17	2.13	2.07	1.19	52 164-015
3/4"	20	G1	3.35	2.52	2.17	2.52	5.06	1.52	52 164-020
1"	25	G1 1/4	3.66	2.52	2.40	2.52	9.46	1.74	52 164-025
1 1/4"	32	G1 1/2	4.41	3.07	2.40	3.07	16.3	3.31	52 164-032

\*) Connection to actuator.

→ = Flow direction

LF = Low flow

## Connections

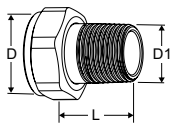


### With female thread NPT

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

Swivelling nut.

Valve size	D	D1	L [in] *	Article No
3/8"	G1/2	3/8 NPT	0.83	52 163-210
1/2"	G3/4	1/2 NPT	0.98	52 163-215
3/4"	G1	1/2 NPT	0.71	52 163-320
3/4"	G1	3/4 NPT	0.91	52 163-220
1"	G1 1/4	3/4 NPT	1.06	52 163-325
1"	G1 1/4	1 NPT	1.06	52 163-225
1 1/4"	G1 1/2	1 NPT	1.06	52 163-332
1 1/4"	G1 1/2	1 1/4 NPT	1.22	52 163-232



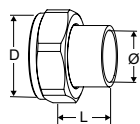
### With male thread NPT

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

Swivelling nut

Valve size	D	D1	L [in] *	Article No
3/8"	-	-	-	-
1/2"	G3/4	1/2 NPT	1.14	2400-02.350
3/4"	G1	3/4 NPT	1.28	2400-03.350
1"	G1 1/4	1 NPT	1.38	2400-04.350
1 1/4"	-	-	-	-

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



### Soldering connection

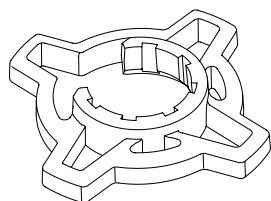
According to ASME/ANSI B16.18

Swivelling nut

Valve size	D	Pipe Ø [in]	L [in] *	Article No
3/8"	G1/2	0.504	0.51	52 009-710
1/2"	G3/4	0.629	0.63	52 009-715
3/4"	G3/4	0.879	0.87	52 009-720
1"	G1 1/4	1.130	1.02	52 009-725
1 1/4"	G1 1/2	1.380	1.10	52 009-732

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

## Accessories

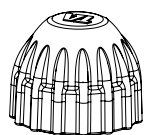


### Grip for setting wheel, optional

For better grip when presetting.

For TA-COMPACT-P/-DP and TA-Modulator (size 1/2"-1 1/4").

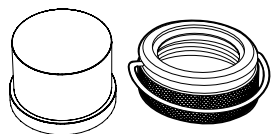
Colour	Article No
Orange	52 164-950



### Protection cap

For TA-COMPACT-P/-DP, TA-Modulator (1/2"-3/4"), TBV-C/-CM.

Article No
Red
52 143-100

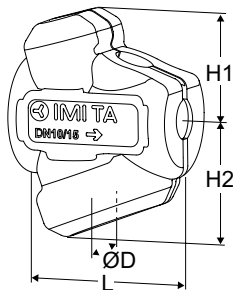


### Tamper proof cover

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

Prevents manipulation of setting.

Article No
52 164-100



### Insulation

For heating/comfort cooling.

Material: EPP.

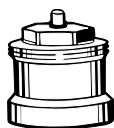
Fire class: E (EN 13501-1), B2 (DIN 4102).

Valve size	L [in]	H1 [in]	H2 [in]	D [in]	Article No
3/8"-1/2"	3.94	2.40	2.79	3.31	52 164-901
3/4"	4.65	2.64	3.11	3.54	52 164-902
1"	5.00	2.79	3.31	4.09	52 164-903
1 1/4"	6.06	3.35	3.90	4.88	52 164-904

### Spindle extension

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

M30x1,5.



L [in]	Article No
<b>Plastic, black</b>	
1.18	2002-30.700

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