

# TA-Modulator

– NPT threads/ANSI flanges



## Combined control & balancing valves

Pressure independent balancing and control valve for modulating control

# TA-Modulator

## – NPT threads/ANSI flanges

The uniquely shaped EQM characteristics provide highly precise temperature control. The valve is compatible with linear, proportional or 3-point actuators. A built-in differential pressure controller provides high control authority, control stability and automatic limitation of design flow. Measurement of flow and available pressure enables system optimisation and diagnostics.

### Key features

- > **Precise temperature control**  
Provide uniquely shaped EQM characteristic for best modulating control.
- > **Precise control**  
Uniquely shaped EQM characteristic provides an up to 6 times larger operating stroke than linear valves.
- > **Quick hydronic balancing**  
Automatic flow limitation when actuator is fully open protects entire system against overflows.
- > **Easy troubleshooting**  
Flow and differential pressure measuring helps to reduce pump consumption and provides all necessary data for system diagnostics.



### Technical description

#### Application:

Heating (not steam) and cooling systems.

#### Functions:

Control EQM: 1/2" low flow, 3/8" - 8" normal flow  
Control LIN: 2 1/2" - 8" high flow  
Pre-setting (max. flow)  
Differential pressure control  
Measuring ( $\Delta H$ ,  $t$ ,  $q$ )  
Isolation (for use during system maintenance – see "Leakage rate")

#### Dimensions:

3/8" - 8"

#### Pressure class:

3/8" - 2": PN 16 (230 psi)  
2 1/2" - 8": Class 150

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

Max. differential pressure ( $\Delta pV_{\max}$ ):  
3/8" - 1 1/4": 87 psi

3/8" - 1": 58 psi\*

1 1/2" - 2": 87 psi

2 1/2" - 8": 116 psi

Min. differential pressure ( $\Delta pV_{\min}$ ):

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

1" - 1 1/4": 3.3 psi

1 1/2" - 8": 4.4 psi

2 1/2" - 3" HF: 6.5 psi

4" - 5" HF: 8.0 psi

6" - 8" HF: 8.7 psi

(Valid for maximum setting, fully open. Other settings 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.

\*) With  $\Delta p$  insert in PPS.

HF = High flow

#### Flow range:

The flow ( $q_{\max}$ ) can be set within the range:

3/8": 0.075 - 0.53 gpm

1/2" LF: 0.17 - 1.01 gpm

1/2": 0.41 - 2.11 gpm

3/4": 0.88 - 4.29 gpm

1": 1.50 - 7.71 gpm

1 1/4": 3.17 - 15.8 gpm

1 1/2": 4.40 - 28.6 gpm

2": 9.46 - 49.3 gpm

2 1/2": 18.3 - 106 gpm

2 1/2" HF: 32.8 - 161 gpm

3": 25.8 - 164 gpm

3" HF: 41.9 - 216 gpm

4": 51.5 - 228 gpm

4" HF: 79.3 - 334 gpm

5": 66 - 340 gpm

5" HF: 103 - 559 gpm

6": 115 - 555 gpm

6" HF: 171 - 837 gpm

8": 154 - 919 gpm

8" HF: 322 - 1447 gpm

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

LF = Low flow

HF = High flow

### Temperature:

3/8" - 1 1/4":  
 Max. working temperature: 248°F  
 Min. working temperature: -4°F  
 3/8" - 1" with Δp insert in PPS, 1 1/2" - 2":  
 Max. working temperature: 194°F  
 Min. working temperature: 14°F  
 2 1/2" - 8":  
 Max. working temperature: 248°F  
 Min. working temperature: 14°F

### Media:

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

### Lift:

3/8" - 3/4": 0.157 in.  
 1" - 1 1/4": 0.256 in.  
 1 1/2" - 2": 0.590 in.  
 2 1/2" - 5": 0.787 in.  
 6": 1.181 in.  
 8": 1.279 in.

### Rangeability:

3/8" - 1/2" LF: >50  
 1/2" - 1 1/4": >75  
 1 1/2" - 3": >125  
 4" - 6": >150  
 4" - 6" HF: >125  
 8": >125  
 8" HF: >125

### Leakage rate:

Leakage flow  $\leq 0.01\%$  of max.  $q_{\max}$  (max. setting) and correct flow direction. (Class IV according to EN 60534-4).

### Characteristics:

Independent shaped EQM.  
 2 1/2" - 8" HF: Linear.

### Material:

Size 3/8" - 1 1/4":  
 Valve body: AMETAL®  
 Valve insert: AMETAL® and PPS  
 Valve plug: Brass CW724R (CuZn21Si3P)  
 Spindle: Stainless steel  
 Spindle seal: EPDM O-ring  
 Δp insert: PPS and AMETAL® or PPS  
 Membrane: EPDM  
 Springs: Stainless steel  
 O-rings: EPDM

Size 1 1/2" - 2":  
 Valve body: AMETAL®  
 Valve insert: AMETAL®  
 Valve plug: AMETAL® and PTFE  
 Spindle: Stainless steel  
 Spindle seal: EPDM O-ring  
 Δp insert: PPS  
 Membrane: EPDM  
 Springs: Stainless steel  
 O-rings: EPDM

Size 2 1/2" - 8":  
 Valve body: Ductile iron EN-GJS-400-15  
 Valve insert: Ductile iron EN-GJS-400-15 and brass  
 Valve plug: Stainless steel and EPDM  
 O-ring  
 Valve seat: Stainless steel  
 Spindle: Stainless steel  
 Spindle seal: EPDM  
 Δp insert: Ductile iron EN-GJS-400-15, stainless steel and brass.  
 Membrane: Reinforced EPDM, 8" EPDM  
 Springs: Stainless steel  
 O-rings: EPDM

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

### Surface treatment:

Size 3/8" - 2": Non treated  
 Size 2 1/2" - 8": Electrophoretic painting

### Connection:

Size 3/8" - 2": External thread according to ISO 228. Connections (accessories) with internal and external thread NPT according to ANSI/ASME B1.20.1-1983, or for soldering according to ASME/ANSI B16.18.  
 Size 2 1/2" - 8": Flanges according to ASME 7 ANSI B16.42 Class 150.

### Connection to actuator:

3/8" - 1 1/4": M30x1.5, push  
 1 1/2" - 2": M30x1.5, push/pull  
 2 1/2" - 8": 2xM8, push/pull

### Actuators:

3/8" - 3/4":  
 TA-Slider 160, EMO TM, TA-TRI, TA-ACTM (fail-safe).  
 1" - 1 1/4":  
 TA-Slider 160, TA-TRI, TA-MC50-C\*.  
 1 1/2" - 2":  
 TA-Slider 500, TA-Slider 750\*.  
 2 1/2" - 5":  
 TA-Slider 750.  
 4" - 5" HF:  
 TA-Slider 750 ΔpV ≤ 58 psi,  
 TA-Slider 1600 ΔpV ≤ 116 psi.  
 6" - 8", 6" - 8" HF:  
 TA-Slider 1600.

TA-Slider 160, 500, 750 and 1600 also available with fail-safe function.

\*) Adapter to be ordered separately, see "Adapters for actuators".

For more details on actuators, see separate technical leaflets.

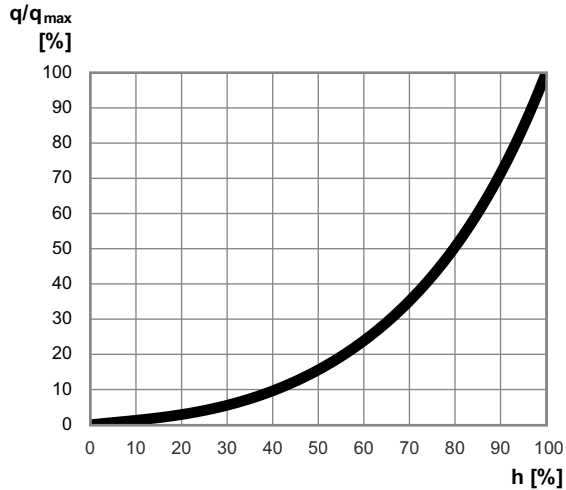
### Certification and directives:

2 1/2" - 8": CE, EAC, UKCA

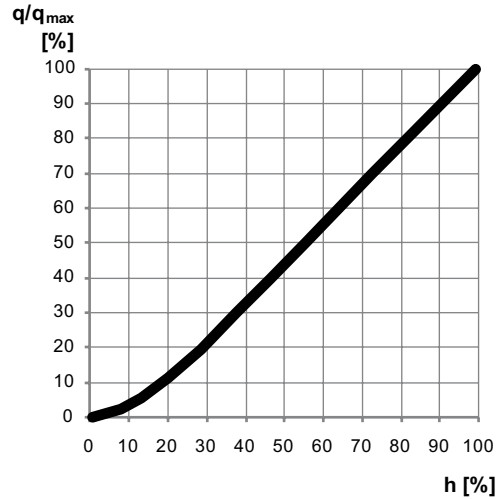
## Valve characteristics

### Nominal valve characteristic for all settings

EQM



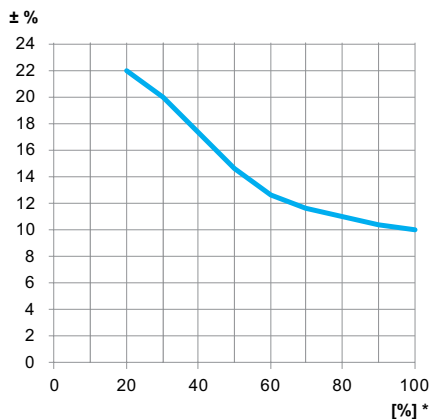
LIN



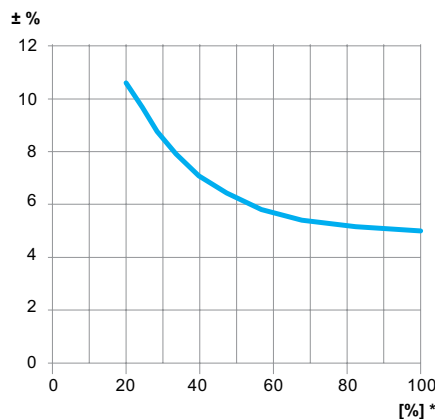
## Measuring accuracy

### Maximum flow deviation at different settings

DN 10 - 32 (3/8" - 1 1/4")



DN 40 - 200 (1 1/2" - 8")



\*) 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 =  $3^\circ\text{E}$  = 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

Performance of the valves is subject to water quality being of an appropriate regional standard (including particulate and free, entrained and dissolved gases compliant with VDI 2035), failure to do so can result in shortened life span, reduced controllability and noise.

## Actuators

The valve 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 Hydronic Engineering 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.

Push actuators of other brands require:

**Working range** (setting 1-10)

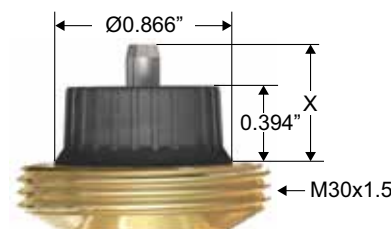
3/8" - 3/4": X (closed - fully open) = 0.46 in - 0.62 in

1" - 1 1/4": X (closed - fully open) = 0.40 in - 0.66 in

**Closing force**

3/8" - 3/4": Min. 28 lbf (max. 112 lbf)

1" - 1 1/4": Min. 43 lbf (max. 112 lbf)



### 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 ( $\Delta pV_{close}$ ) and to fulfill all stated performances ( $\Delta pV_{max}$ ).

Size	EMO TM [psi]	TA-ACTM [psi]	TA-TRI [psi]	TA-Slider 160 [psi]	TA-MC50-C [psi]	TA-Slider 500 [psi]	TA-Slider 750 [psi]	TA-Slider 1600 [psi]
3/8"	58/87	58/87	58/87	58/87	-	-	-	-
1/2" LF	58/87	58/87	58/87	58/87	-	-	-	-
1/2"	58/87	58/87	58/87	58/87	-	-	-	-
3/4"	58/87	58/87	58/87	58/87	-	-	-	-
1"	-	-	58/87	58/87	58/87	-	-	-
1 1/4"	-	-	87	87	87	-	-	-
1 1/2"	-	-	-	-	-	87	87	-
2"	-	-	-	-	-	87	87	-
2 1/2"	-	-	-	-	-	-	116	-
2 1/2" HF	-	-	-	-	-	-	116	-
3"	-	-	-	-	-	-	116	-
3" HF	-	-	-	-	-	-	116	-
4"	-	-	-	-	-	-	116	-
4" HF	-	-	-	-	-	-	58	116
5"	-	-	-	-	-	-	116	-
5" HF	-	-	-	-	-	-	58	116
6"	-	-	-	-	-	-	-	116
6" HF	-	-	-	-	-	-	-	116
8"	-	-	-	-	-	-	-	116
8" HF	-	-	-	-	-	-	-	116
<b>Closing force</b>	28 lbf	28 lbf	45 lbf	43 lbf	112 lbf	112 lbf	168 lbf	360 lbf

TA-Slider 160, 500, 750 and 1600 also available with fail-safe function.

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

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

LF = Low flow

HF = High flow

## 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 according to the valve size and variant.

## $q_{\max}$ values

Size	Position									
	1	2	3	4	5	6	7	8	9	10
3/8"	0.075	0.12	0.17	0.22	0.27	0.33	0.39	0.44	0.49	0.53
1/2" LF	0.17	0.23	0.30	0.37	0.46	0.55	0.64	0.74	0.87	1.01
1/2"	0.41	0.50	0.62	0.75	0.92	1.17	1.43	1.72	1.96	2.11
3/4"	0.88	1.14	1.59	2.03	2.49	2.95	3.39	3.74	4.05	4.29
1"	1.50	1.94	2.64	3.57	4.45	5.28	5.94	6.69	7.22	7.71
1 1/4"	3.17	4.23	5.94	7.71	9.47	11.13	12.54	13.77	14.87	15.8

Size	Position												
	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
1 1/2"	4.40	5.46	6.73	8.10	9.68	11.31	13.29	15.18	17.42	20.0	22.9	25.5	28.6
2"	9.46	11.62	14.17	16.68	19.49	22.7	26.4	30.2	34.3	38.7	42.9	46.7	49.3

Size	Position												
	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
2 1/2"	-	-	18.3	22.5	27.4	33.9	41.6	50.6	59.4	70.8	83.6	95.9	106
3"	-	-	25.8	32.1	40.4	53.7	68.2	84.0	100	116	132	148	164
4"	51.5	62.1	74.0	86.7	101	116	133	151	169	187	204	218	228
5"	66	82.8	100	121	141	163	187	210	235	260	285	313	340

Size	Position															
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
2 1/2" HF	32.8	42.2	51.0	59.7	68.2	77.2	86.4	95.8	105	113	123	131	138	147	153	161
3" HF	41.9	53.2	64.3	75.0	85.9	96.7	107	118	129	142	153	164	177	189	198	216
4" HF	79.3	99.5	119	137	155	173	191	209	227	245	263	280	296	311	324	334
5" HF	103	132	161	190	218	246	276	307	337	368	400	435	462	493	524	559

Size	Position																
	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0
6"	115	136	159	183	213	239	272	305	337	379	418	453	493	528	555	-	-
8"	154	193	237	286	342	399	465	522	580	639	695	748	805	841	879	897	919

Size	Position										
	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
6" HF	171	209	240	275	311	347	380	414	449	480	515
8" HF	-	-	322	392	462	530	599	669	738	812	885

Size	Position										
	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0
6" HF	542	577	612	643	678	713	753	788	837	-	-
8" HF	956	1025	1099	1166	1217	1261	1299	1325	1365	1401	1447

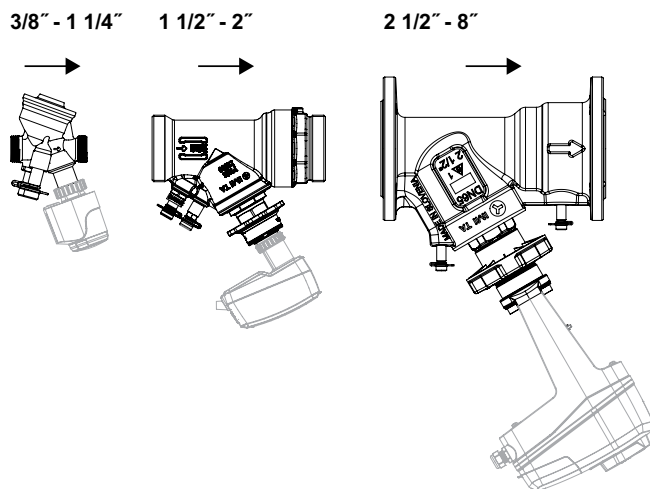
$q_{\max}$  = gpm at each setting and fully open valve plug.

LF = Low flow

HF = High flow

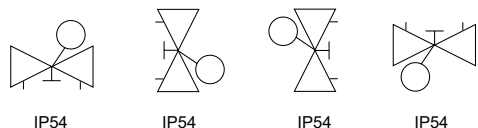
## Installation

### Flow direction

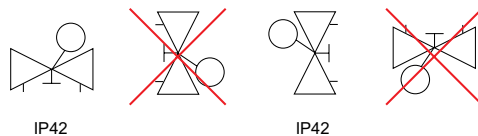


### Ingress protection

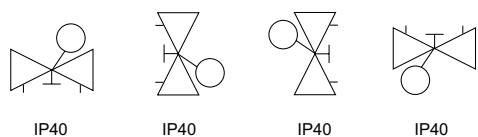
EMO TM / TA-TRI / TA-Slider 160 / TA-Slider 500 / TA-Slider 750 / TA-Slider 1600



### TA-ACTM



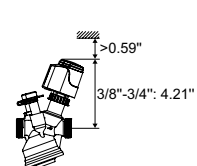
### TA-MC50-C



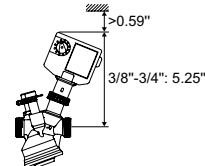
### Installation of actuator

**Note:** Free space is required above the actuator for easy mounting/dismounting.

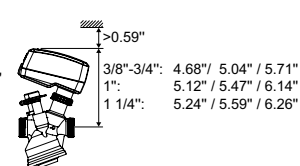
#### EMO TM



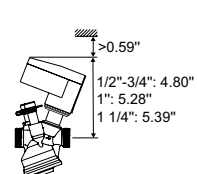
#### TA-ACTM



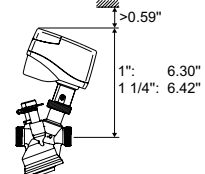
#### TA-Slider 160 \*



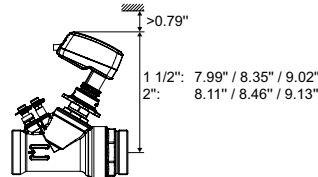
#### TA-TRI



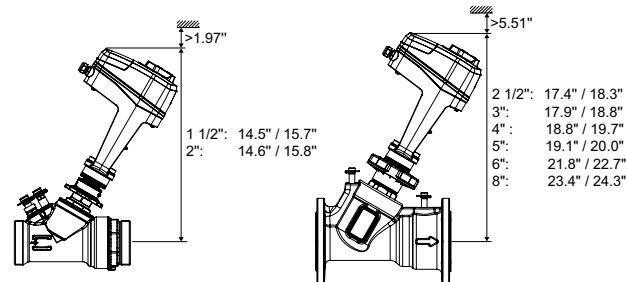
#### TA-MC50-C



#### TA-Slider 500 \*

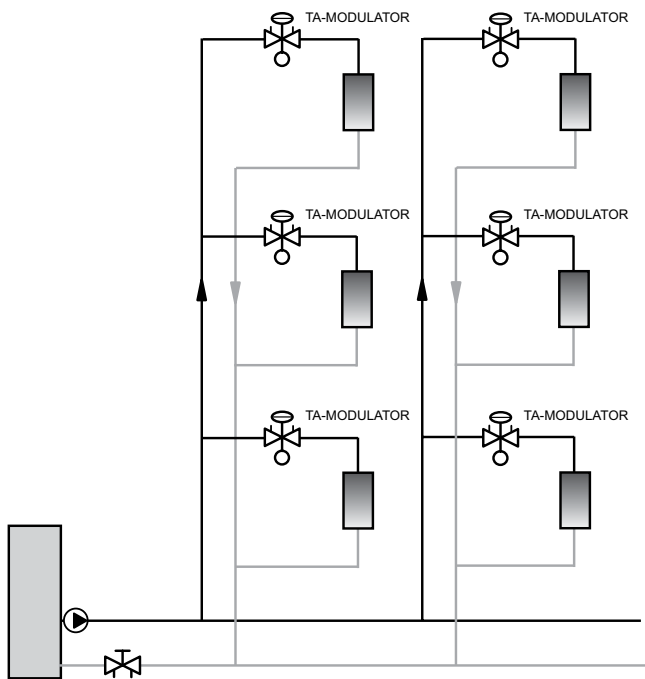


#### TA-Slider 750/1600 / TA-Slider 750/1600 Plus, Fail-Safe Plus



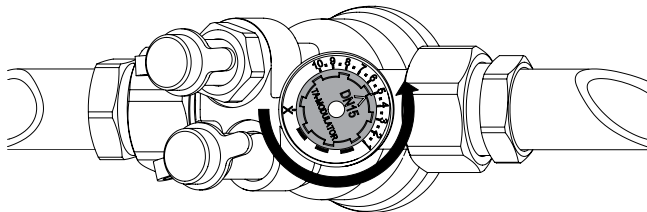
\*) Height depending on actuator version.

## Application example



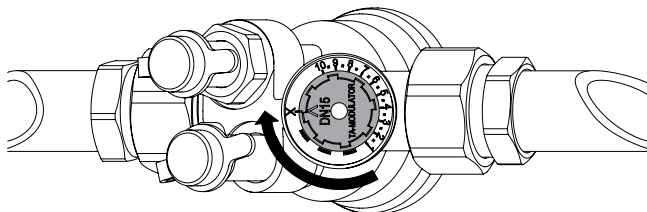
## Operating function 3/8" - 1 1/4"

### Setting



1. Remove the installed actuator.
2. Turn the setting wheel to desired value, e.g. 5.0.

### Isolation

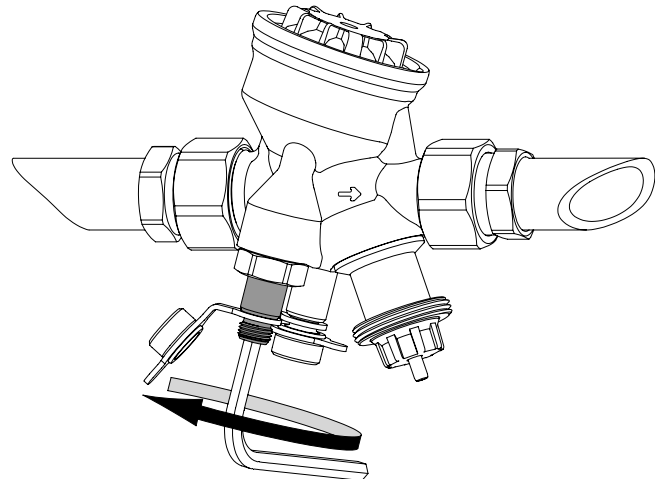


1. Remove the installed actuator.
2. Turn the setting wheel clockwise to X.

### Measuring q

1. Remove the installed actuator.
2. Connect the TA 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 "Isolation".
3. Bypass the  $\Delta p$ -part by opening the  $\Delta H$  spindle (red measuring point) ~1 turn **counterclockwise**, with a 5 mm Allen key.
4. Connect the TA balancing instrument to the measuring points and measure.

**Important!** After the measurement is completed;

5. Close the  $\Delta H$  spindle (red measuring point) **clockwise** to stop.
6. Reopen the valve to previous setting.

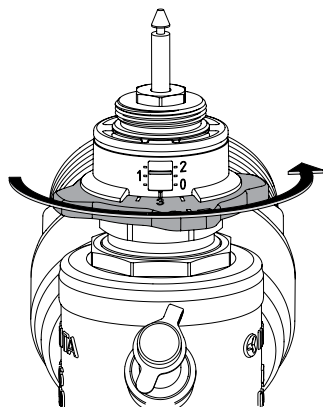
### Measuring temperature

For temperature measurement the **red** measuring point is recommended.



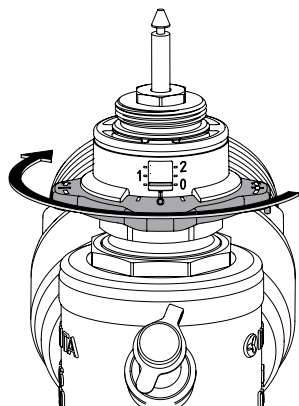
## Operating function 1 1/2" - 2"

### Setting



1. Remove the installed actuator.
2. Turn the setting wheel to desired value, e.g. 1.3.

### Isolation

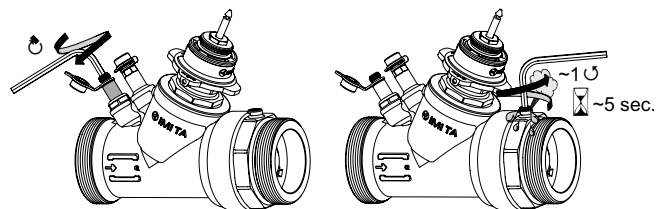


1. Remove the installed actuator.
2. Turn the setting wheel clockwise to stop (position  $0 \pm 0.3$ ).

### Measuring q

1. Remove the installed actuator.
2. Connect the TA 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 "Isolation".
3. Deactivate the  $\Delta p$ -part by closing the  $\Delta H$  spindle (red measuring point) **clockwise** to stop, with a 5 mm Allen key.
4. Open the venting screw ~1 turn for 5 seconds and then close it (some water leakage can occur).
5. Connect the TA balancing instrument to the measuring points and measure.

**Important!** After the measurement is completed;

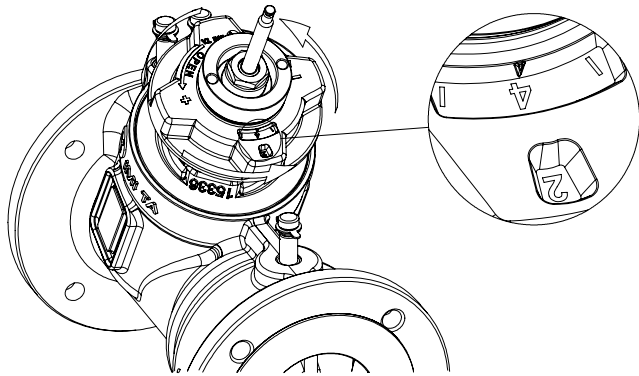
6. Activate the  $\Delta p$ -part by opening the  $\Delta H$  spindle (red measuring point) **counterclockwise** to stop.
7. Reopen the valve to previous setting.

### Measuring temperature

For temperature measurement the **red** measuring point is recommended.

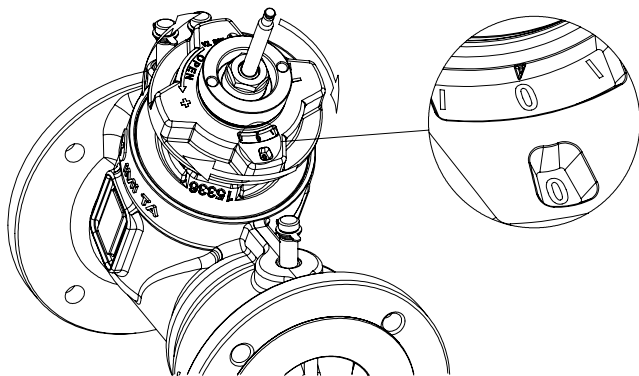
## Operating function 2 1/2" - 8"

### Setting



1. Disengage the actuator from the valve spindle.
2. Turn the setting wheel to desired value, e.g. 2.4.

### Isolation

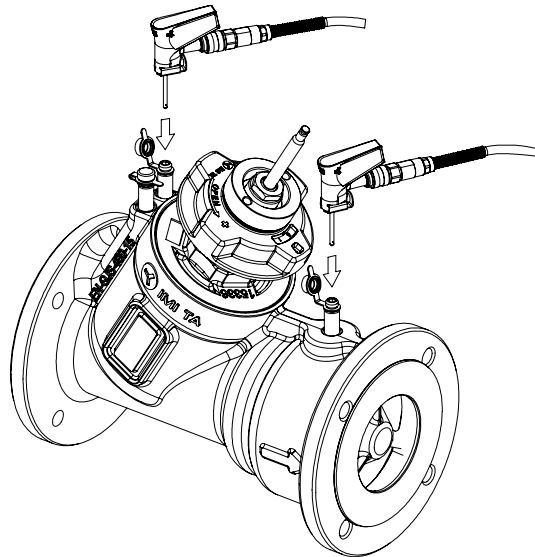


1. Disengage the actuator from the valve spindle.
2. Turn the setting wheel clockwise to stop (position 0  $\pm 0.5$ ).

### Measuring q

1. Disengage the actuator from the valve spindle.
2. Connect the TA balancing instrument to the **red** and **blue** measuring points.
3. Input the valve type, size and setting and the actual flow is displayed.

### Measuring $\Delta H$

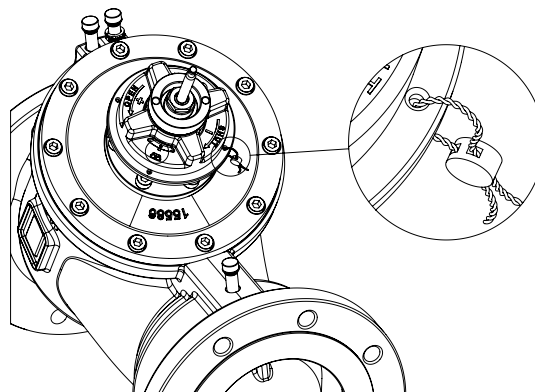


1. Disengage the actuator from the valve spindle.
2. Close the valve according to "Isolation".
3. Connect the TA balancing instrument to the **red** and **black** measuring points and measure.
4. Reopen the valve to previous setting

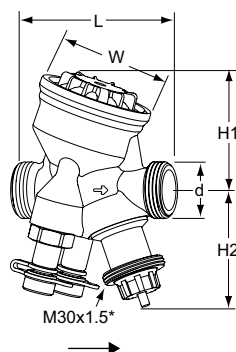
### Measuring temperature

For temperature measurement the **black** measuring point is recommended.

### Secure the setting position (optionally)



## Articles

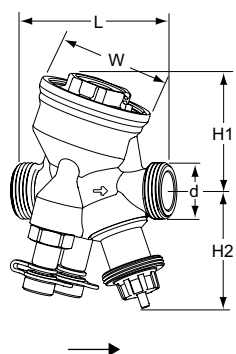


### Size 3/8" - 1" – Temperature +14 – +194°F, ΔpV max. 58 psi

External threads according to ISO 228.

NPT threads - see "Connections".

Size	(DN)	d	L [in]	H1 [in]	H2 [in]	W [in]	q <sub>max</sub> [gpm]	Weight [lb]	Article No
3/8"	10	G1/2	2.91	2.17	2.17	2.13	0.53	1.17	52 164-310
1/2" LF	15	G3/4	2.91	2.17	2.17	2.13	1.01	1.19	52 164-314
1/2"	15	G3/4	2.91	2.17	2.17	2.13	2.11	1.19	52 164-315
3/4"	20	G1	3.35	2.52	2.17	2.52	4.29	1.52	52 164-320
1"	25	G1 1/4	3.66	2.52	2.64	2.52	7.71	1.74	52 164-325

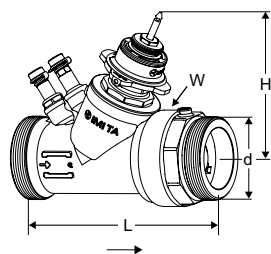


### Size 3/8" - 1 1/4" HP – Temperature -4 – +248°F, ΔpV max. 87 psi

External threads according to ISO 228.

NPT threads - see "Connections".

Size	(DN)	d	L [in]	H1 [in]	H2 [in]	W [in]	q <sub>max</sub> [gpm]	Weight [lb]	Article No
3/8"	10	G1/2	2.91	2.17	2.17	2.13	0.53	1.30	52 164-410
1/2" LF	15	G3/4	2.91	2.17	2.17	2.13	1.01	1.32	52 164-414
1/2"	15	G3/4	2.91	2.17	2.17	2.13	2.11	1.32	52 164-415
3/4"	20	G1	3.35	2.52	2.17	2.52	4.29	1.65	52 164-420
1"	25	G1 1/4	3.66	2.52	2.64	2.52	7.71	1.98	52 164-425
1 1/4"	32	G1 1/2	4.61	3.07	2.76	3.07	15.8	3.31	52 164-332



### Size 1 1/2" - 2" HP – Temperature +14 – +194°F, ΔpV max. 87 psi

External threads according to ISO 228.

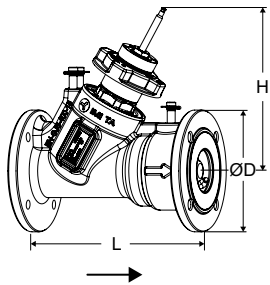
NPT threads - see "Connections".

Size	(DN)	d	L [in]	H [in]	W [in]	q <sub>max</sub> [gpm]	Weight [lb]	Article No
1 1/2"	40	G2	7.36	5.20	3.46	28.6	7.72	52 164-440
2"	50	G2 1/2	7.72	5.31	3.46	49.3	8.60	52 164-450

LF = Low flow

→ = Flow direction

\*) Connection to actuator.


**Size 2 1/2" - 8" – Temperature +14 – +248°F, ΔpV max. 116 psi**

Flanges according to ASME 7 ANSI B16.42 Class 150.

**Class 150**

Size	(DN)	Number of bolt holes	ØD [in]	L [in]	H [in]	q <sub>max</sub> [gpm]	Weight [lb]	Article No ** North America	Article No International
2 1/2"	65	4	7.09	11.42	9.80	106	40	322021-11004	322021-11003
2 1/2" HF	65	4	7.09	11.42	9.80	161	40	322021-11011	322021-11010
3"	80	4	7.48	12.20	10.24	164	48	322021-11104	322021-11103
3" HF	80	4	7.48	12.20	10.24	216	48	322021-11112	322021-11111
4"	100	8	9.06	13.78	11.02	228	73	322021-11206	322021-11202
4" HF	100 HF	8	9.06	13.78	11.02	334	73	322021-11207	322021-11205
5"	125	8	10	15.75	11.30	340	99	322021-11306	322021-11302
5" HF	125 HF	8	10	15.75	11.30	559	99	322021-11307	322021-11305
6"	150	8	11	18.90	14.05	555	165	322021-11406	322021-11402
6" HF	150 HF	8	11	18.90	14.05	837	165	322021-11407	322021-11405
8"	200	8	13.5	23.62	15.39	919	302	322021-11506	322021-11502
8" HF	200 HF	8	13.5	23.62	15.39	1447	302	322021-11507	322021-11505

LF = Low flow

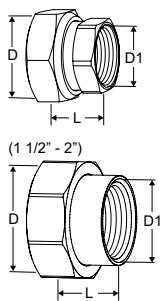
HF = High flow

→ = Flow direction

\*) Connection to actuator.

\*\*) Distributed by Victaulic.

## Connections


**With internal thread NPT**

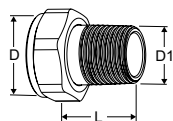
Threads according to ANSI/ASME B1.20.1-1983.

Swivelling nut

Brass/AMETAL®

For 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
1 1/2"	G2	1 NPT	1.18	52 163-340
1 1/2"	G2	1 1/2 NPT	1.26	52 163-240
2"	G2 1/2	1 1/2 NPT	1.26	52 163-350
2"	G2 1/2	2 NPT	1.26	52 163-250

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



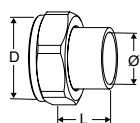
### With external thread NPT

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

Swivelling nut

Brass

For 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"	-	-	-	-



### Soldering connection

According to ASME/ANSI B16.18

Swivelling nut

Brass/gunmetal CC491K (EN 1982)

For 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"	G1	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
1 1/2"	G2	1.630	1.22	52 009-740
2"	G2 1/2	2.130	1.50	52 009-750

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

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

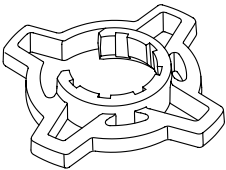
## Adapters for actuators

### Adapters

Adapters to other combinations of valve and recommended actuator are NOT needed.

For actuator	For size	Article No
TA-MC50-C	1" - 1 1/4"	322042-10700
TA-Slider 750	1 1/2" - 2"	322042-80800

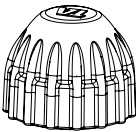
Accessories



Grip for setting wheel, optional

For better grip when presetting.  
For TA-COMPACT-P/-DP and TA-Modulator (3/8" - 1 1/4").

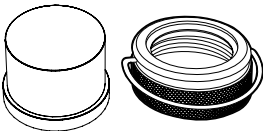
Color	Article No
Orange	52 164-950



Protection cap

For TA-COMPACT-P/-DP, TA-Modulator (3/8"-3/4"), TBV-C/-CM.

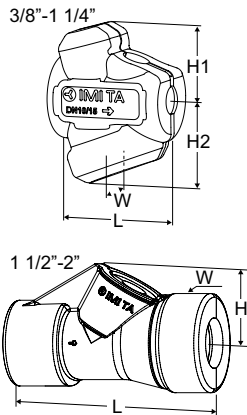
Color	Article No
Red	52 143-100



Tamper proof cover

Set containing plastic cover and locking ring for valves with connection M30x1.5 to thermostatic head/ actuator.  
Prevents manipulation of setting.  
Suitable for sizes 3/8" - 1 1/4".

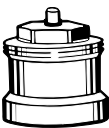
Article No
52 164-100



Insulation

For heating/comfort cooling.  
Material: EPP.  
Fire class:  
Size 3/8" - 1 1/4": E (EN 13501-1), B2 (DIN 4102).  
Size 1 1/2" - 2": F (EN 13501-1), B3 (DIN 4102).

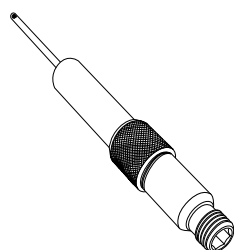
For size	L [in]	H	H1 [in]	H2 [in]	D [in]	Article No
3/8" - 1/2"	3.94	-	2.40	2.79	3.31	52 164-901
3/4"	4.65	-	2.64	3.11	3.54	52 164-902
1"	5.00	-	2.79	3.31	4.09	52 164-903
1 1/4"	6.06	-	3.35	3.90	4.88	52 164-904
1 1/2"	10.91	4.13	-	-	5.16	52 164-905
2"	10.91	4.13	-	-	5.16	52 164-906



Spindle extension for size 3/8" - 3/4"

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

Type	L [in]	Article No
Plastic, black	1.18	2002-30.700



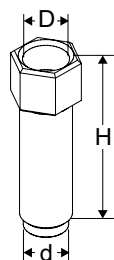
### Measuring point, extension 2.36 in.

Can be installed without draining of the system.

AMETAL®/Stainless steel/EPDM

For all sizes.

L [in]	Article No
2.36	52 179-006



### Venting extension

Suitable when insulation is used.

AMETAL®

For size	D	d	H [in]	Article No
1 1/2" - 2"	M10x1	M10x1	1.26	52 164-301



### Venting plug

Spare part.

AMETAL®

For size	Article No
1 1/2" - 2"	52 164-302

