Climate
Control

IMI TA

TA-Nano, TA-Nano Plus

– NPT threads

Combined control & balancing valves for small terminal units

Pressure independent balancing and control valve (PIBCV)

Breakthrough
engineering for
a better world

TA-Nano, TA-Nano Plus – NPT threads

The pressure-independent balancing and control valve TA-Nano ensures optimum performance over a long life. Adjustable maximum flow enables design flow and eliminates overflows for accurate hydronic control. The TA-Nano Plus together with our balancing instruments enables advanced measuring and diagnostics.

Key features

Smallest PIBCV in the market fitting within the most constrained area
Slim and compact shape simplifies installation.

Precise hydronic balancing
Smoothly adjustable setting of max. flow prevents over flow through terminal unit.

Full control of the system (Plus version)
Exact flow measuring and unique diagnostic functions for ultimate energy savings and highly reliable system.

Precise setting and ease of commissioning
Valve position visible when actuator is mounted, easy valve identification with colour coding.

High reliability
High resistance to corrosion using AMETAL®, strong resistance to dirt and completely tight valve.

Technical description

Application:
Heating (not steam) and cooling systems.

Functions:
Control
Pre-setting (max. flow)
Differential pressure control
Measuring (ΔH, T, q) *
Flushing *
Isolation (for use during system maintenance – see also Leakage rate)

*) Plus version only

Dimensions:
3/8” – 1”

Pressure class:
PN 25 (362 psi)

Differential pressure (ΔpV):
Max. differential pressure (ΔpV_{max}): 87 psi
Min. differential pressure (ΔpV_{min}):
Size 3/8”, 1/2” LF, 1/2”: 2.17 psi
Size 1/2” HF / 3/4”: 2.61 psi
Size 3/4” HF: 4.35 psi
Size 1”: 3.63 psi

(Valid for position 10, fully open. Other positions will require lower differential pressure, check with the software HySelect.)
ΔpV_{max} = The maximum allowed pressure drop over the valve to fulfill all stated performances.
ΔpV_{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”: 0.0859 - 0.881 gpm
1/2” LF: 0.135 - 1.36 gpm
1/2”: 0.207 - 2.47 gpm
1/2” HF: 0.643 - 4.98 gpm
3/4”: 0.867 - 5.33 gpm
3/4” HF: 0.889 - 7.40 gpm
1”: 0.947 - 9.47 gpm

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

Temperature:
Max. working temperature: 248°F
Min. working temperature: 14°F

Note: If the medium temperature is below 36°F, then ice forming on the spindle must be prevented. Therefore valves should be insulated with vapor tight insulation (stem extension can be used). IMI valves were tested for performance and durability with mono-ethylene as well as mono-propylene glycol up to a concentration of 57%.

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

Lift:
0.157 in

Leakage rate:
Tight sealing (Class VI according to EN 60534-4).

Characteristics:
Linear

Material:
Valve body: AMETAL®
Valve insert: AMETAL® and PPS
Valve plug: PPS
Spindle: Stainless steel
Spindle seal: EPDM O-ring
Δp insert: Brass CW614
Membrane: EPDM
Springs: Stainless steel
O-rings: EPDM
Setting wheel: PA

Measuring points: AMETAL®
Sealings: EPDM
Caps: Polyamide and TPE

AMETAL® is the dezincification resistant alloy of IMI.

Marking:
IMI, PN, DN and flow direction arrow.
Insert: TA-Nano, DN (+LF/NF/HF)
LF: Red insert.
NF: White insert.
HF: Grey insert.

LF = Low flow
NF = Normal flow
HF = High flow

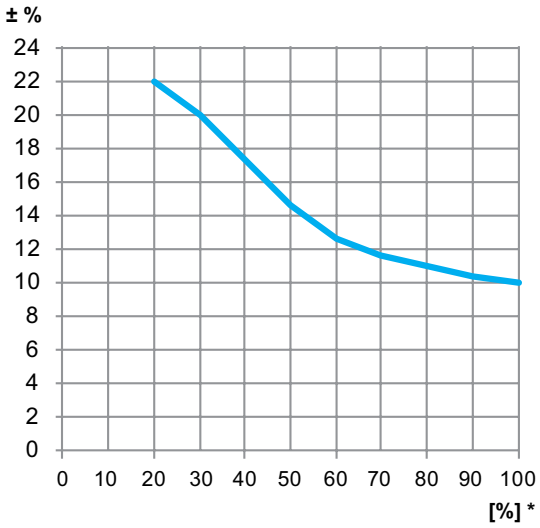
Connection:
External thread according to ISO 228. Connections (accessories) with internal and external thread NPT according to ANSI/ASME B1.20.1-1983, or for soldering according to ASME/ANSI B16.18. Internal thread according to ANSI/ASME B1.20.1-1983.

Connection to actuator:
M30x1.5

Actuators:
See separate technical documentation on EMO T II, EMO TM II, TA-TRI and TA-Slider 160.

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 (≤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.

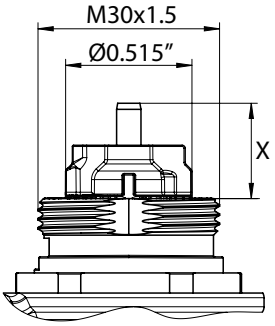
Noise

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

Actuators

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 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) = 0.46 in - 0.62 in
Closing force: Min. 22.5 lbf



Maximum 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}).

Size	EMO T II / EMO TM II / TA-TRI / TA-Slider [psi]
3/8”	87
1/2”	
3/4”	
1”	

ΔpV_{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.)
ΔpV_{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 ΔpV is within the working range (according to valve size) - 87 psi.

q_{max} values

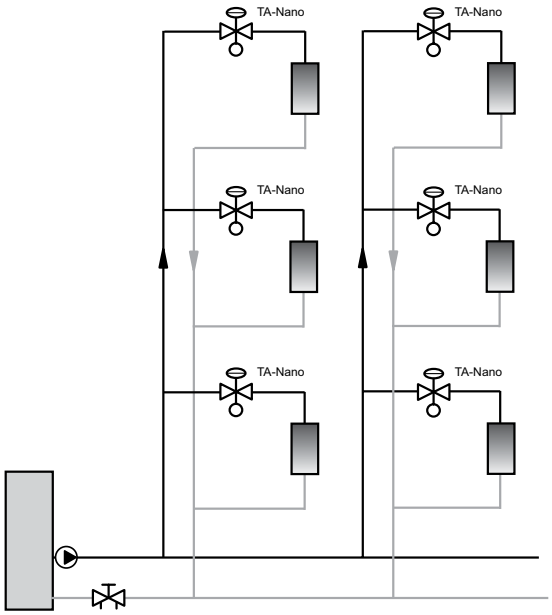
Low flow (LF) **Normal flow (NF)** **High flow (HF)**

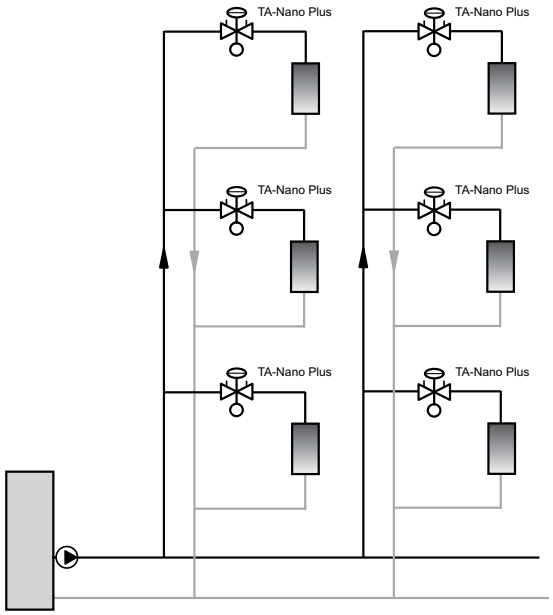
	Position									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
3/8"	0.0859	0.165	0.261	0.344	0.431	0.524	0.616	0.704	0.797	0.881
1/2" LF	0.135	0.267	0.404	0.537	0.678	0.815	0.955	1.09	1.22	1.36
1/2"	0.207	0.533	0.837	1.06	1.32	1.58	1.78	1.99	2.22	2.47
1/2" HF	0.643	1.14	1.62	2.10	2.58	3.11	3.61	4.11	4.58	4.98
3/4"	0.867	1.41	1.88	2.37	2.88	3.39	3.94	4.45	4.93	5.33
3/4" HF	0.889	1.55	2.18	2.77	3.44	4.20	4.89	5.81	6.65	7.40
1"	0.947	1.89	2.84	3.79	4.73	5.68	6.63	7.57	8.52	9.47

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

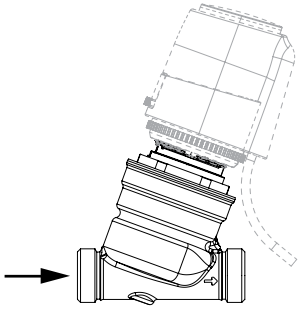
Installation

Application example

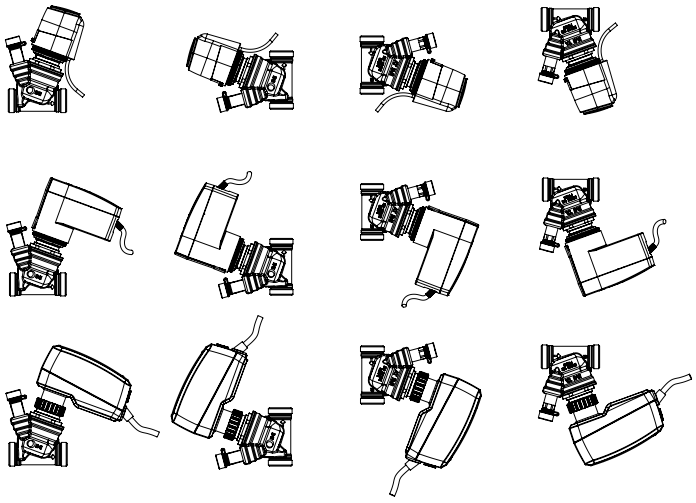




Flow direction



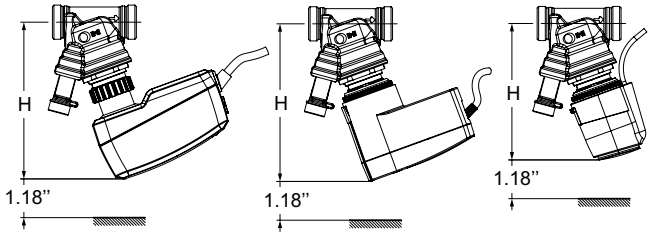
TA-Nano + EMO T II / EMO TM II / TA-TRI / TA-Slider



IP54 IP54 IP 54 IP54

Installation of actuator

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

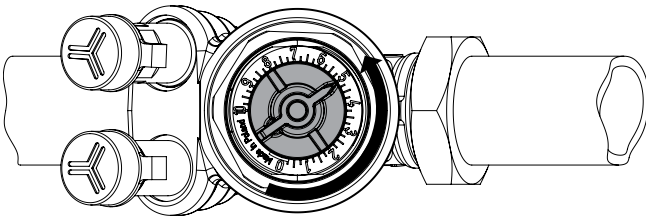


Size	EMO T/TM H [in]	TA-TRI H [in]	TA-Slider 160 H [in]
3/8” - 1”	4.17	4.37	4.80

Operating function

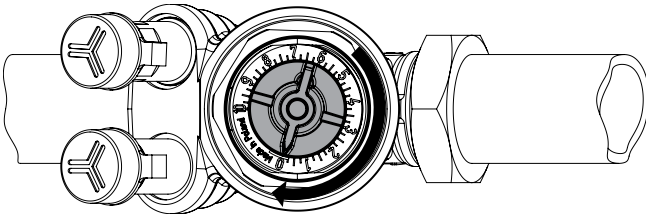
Standard / Plus versions

Setting



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

Shut-off



1. Turn the setting wheel clockwise to 0.

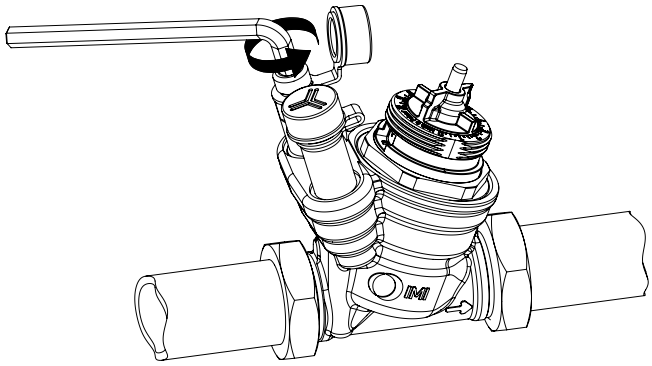
Plus version

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

Important! Reopen the valve to previous setting after the measurement is completed.

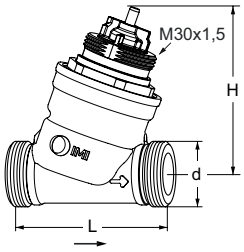
Flushing



1. Remove any actuator.
2. Open the valve fully, setting 10.
3. Bypass the Δp-part by inserting a 5 mm Allen key in red measuring point and open ≈1 turn anticlockwise.
4. Increase pump head to flush the valve.

Important! Set the valve to previous setting and close the bypass spindle after the flushing is completed.

Articles - Standard, without measuring points

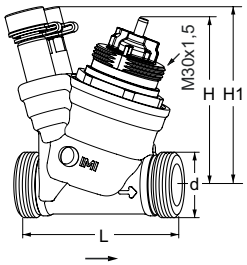


External thread
Threads according to ISO 228. NPT threads - see “Connections”.

Size	(DN)	d	L [in]	H [in]	q_{max} [gpm]	Weight [lb]	Article No
3/8”	10	G1/2	2.56	2.68	0.881	0.68	322213-00110
1/2” LF	15	G3/4	2.56	2.68	1.36	0.77	322213-00015
1/2”	15	G3/4	2.56	2.68	2.47	0.77	322213-00115
1/2” HF	15	G3/4	2.56	2.68	4.98	0.77	322213-00215
3/4”	20	G1	2.95	2.68	5.33	0.84	322213-00120
3/4” HF	20	G1	2.95	2.68	7.40	0.84	322213-00220
1”	25	G1 1/4	3.23	2.68	9.47	1.10	322213-00125

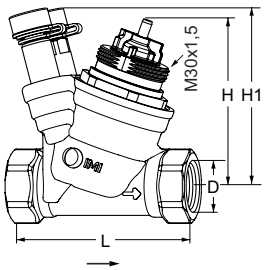
LF = Low flow
HF = High flow
*) Connection to actuator.
→ = Flow direction

Articles - Plus, with measuring points



External thread
Threads according to ISO 228. NPT threads - see “Connections”.

Size	(DN)	d	L [in]	H [in]	H1 [in]	q_{max} [gpm]	Weight [lb]	Article No
3/8”	10	G1/2	2.56	2.68	2.83	0.881	0.95	322213-10110
1/2” LF	15	G3/4	2.56	2.68	2.83	1.36	1.04	322213-10015
1/2”	15	G3/4	2.56	2.68	2.83	2.47	1.04	322213-10115
1/2” HF	15	G3/4	2.56	2.68	2.83	4.98	1.04	322213-10215
3/4”	20	G1	2.95	2.68	2.83	5.33	1.12	322213-10120
3/4” HF	20	G1	2.95	2.68	2.83	7.40	1.12	322213-10220
1”	25	G1 1/4	3.23	2.68	2.83	9.47	1.45	322213-10125

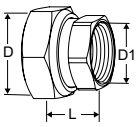


Internal thread NPT
Threads according to ANSI/ASME B1.20.1-1983.

Size	(DN)	D	L [in]	H [in]	H1 [in]	q_{max} [gpm]	Weight [lb]	Article No
1/2” LF	15	1/2 NPT	2.95	2.68	2.83	1.36	1.12	322213-13015
1/2”	15	1/2 NPT	2.95	2.68	2.83	2.47	1.12	322213-13115
1/2” HF	15	1/2 NPT	2.95	2.68	2.83	4.98	1.12	322213-13215
3/4”	20	3/4 NPT	2.95	2.68	2.83	5.33	1.15	322213-13120
3/4” HF	20	3/4 NPT	2.95	2.68	2.83	7.40	1.15	322213-13220
1”	25	1 NPT	3.54	2.68	2.83	9.47	1.54	322213-13125

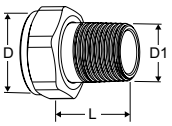
LF = Low flow
HF = High flow
*) Connection to actuator.
→ = Flow direction

Connections



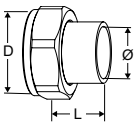
With internal thread NPT
Threads according to ANSI/ASME B1.20.1-1983.
Swivelling nut. Brass/AMETAL®.

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



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



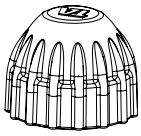
Soldering connection
According to ASME/ANSI B16.18.
Swivelling nut. Brass/gunmetal CC491K (EN 1982).

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

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

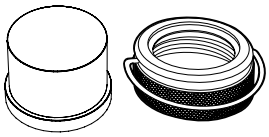
Other type of connections (ISO), see international version of TA-Nano.

Accessories



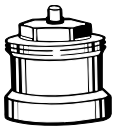
Protection cap
For TA-Nano, TA-COMPACT-P/-DP, TA-Modulator (3/8”-3/4”), TBV-C/-CM.

Color	Article No
Red	52 143-100



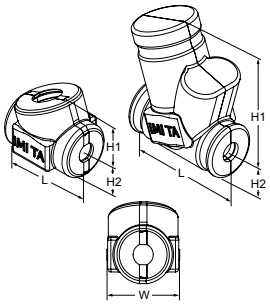
Tamper proof cover
Set containing plastic cover and locking ring for valves with connection M30x1.5 to thermostatic head/actuator. Prevents manipulation of setting.

	Article No
	52 164-100



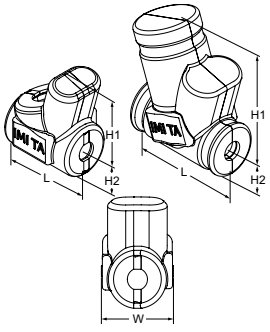
Spindle extension
Recommended together with the insulation to minimize the risk of condensation at the valve-actuator interface. M30x1,5.

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



Insulation for TA-Nano
For heating and non-condensing cooling applications.
Material: EPP (heating) or XPE (cooling).
Fire class: EPP (heating) E (EN 13501-1), B2 (DIN 4102). XPE (cooling) B2 (DIN 4102).

For DN	L	H1	H2	W	Article No
Heating (EPP)					
10-15	97	57	31	84	322213-20001
20	104	56	36	84	322213-20002
Cooling (XPE)					
10-15	126	137	31	76	322213-20111
20	140	137	36	80	322213-20112



Insulation for TA-Nano Plus
For heating and non-condensing cooling applications.
Material: EPP (heating) or XPE (cooling).
Fire class: EPP (heating) E (EN 13501-1), B2 (DIN 4102). XPE (cooling) B2 (DIN 4102).

For DN	L	H1	H2	W	Article No
Heating (EPP)					
10-15	97	88	31	84	322213-20101
20	104	88	36	84	322213-20102
Cooling (XPE)					
10-15	126	137	31	76	322213-20111
20	140	137	36	80	322213-20112