TA-Nano, TA-Nano Plus

– NPT threads

Combined control & balancing valves for small terminal units

Pressure independent balancing and control valve (PIBCV)

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 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:
DN 10-25

Pressure class:
PN 25

Differential pressure (ΔpV):
Max. differential pressure (ΔpV_{max}):
600 kPa = 6 bar
Min. differential pressure (ΔpV_{min}):
DN 10/15 LF/15: 15 kPa = 0.15 bar
DN 15 HF/20: 18 kPa = 0.18 bar
DN 20 HF: 30 kPa = 0.30 bar
DN 25: 25 kPa = 0.25 bar

(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:
DN 10: 19.5 - 203 l/h
DN 15 LF: 30.6 - 310 l/h
DN 15: 47.1 - 562 l/h
DN 15 HF: 146 - 1130 l/h
DN 20: 197 - 1210 l/h
DN 20 HF: 202 - 1680 l/h
DN 25: 215 - 2150 l/h

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

Temperature:
Max. working temperature: 120 °C
Min. working temperature: –10 °C

Note: If the medium temperature is below 2 °C, 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:
4 mm

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.
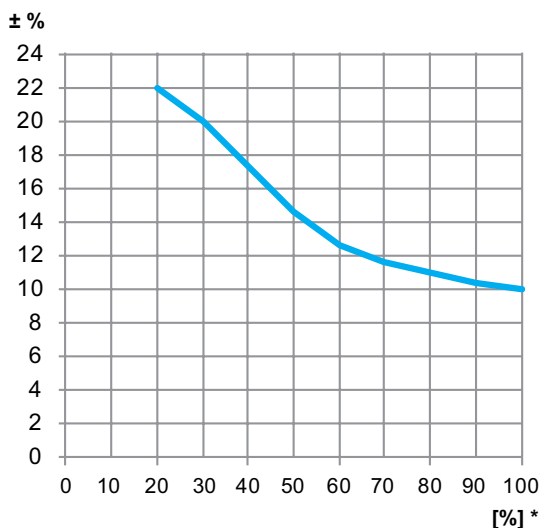
Connection to actuator:
M30x1.5

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 (+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.
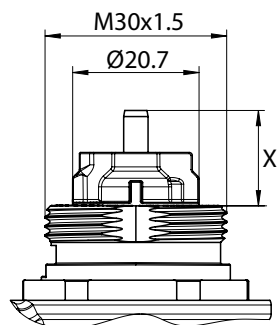
Actuators

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) = 11,7 - 15,7
Closing force: Min. 100 N

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}).

DN	EMO T II / EMO TM II / TA-TRI / TA-Slider [kPa]
10	
15	600
20	
25	

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

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 ΔpV_{min} (according to DN) - 600 kPa.

q_{max} values

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

|	Position									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
DN 10	19,5	37,4	59,2	78,2	97,9	119	140	160	181	203
DN 15 LF	30,6	60,6	91,7	122	154	185	217	247	278	310
DN 15	47,1	121	190	240	299	359	404	451	505	562
DN 15 HF	146	260	369	478	587	707	821	934	1040	1130
DN 20	197	320	428	538	655	771	896	1010	1120	1210
DN 20 HF	202	353	494	628	781	954	1110	1320	1510	1680
DN 25	215	430	645	860	1075	1290	1505	1720	1935	2150

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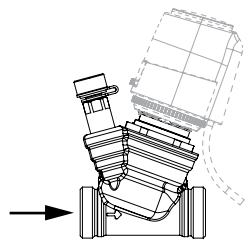LF = Low flow
HF = High flow

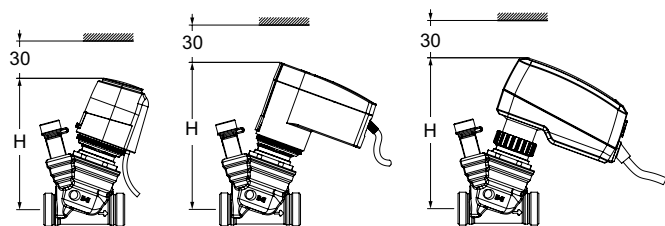# Installation

Application example
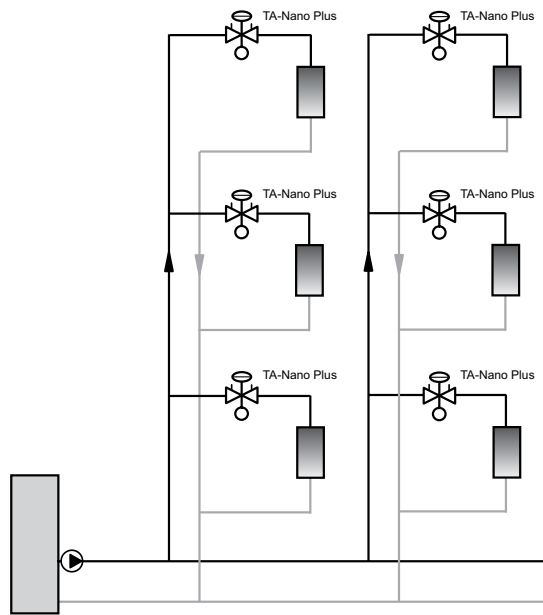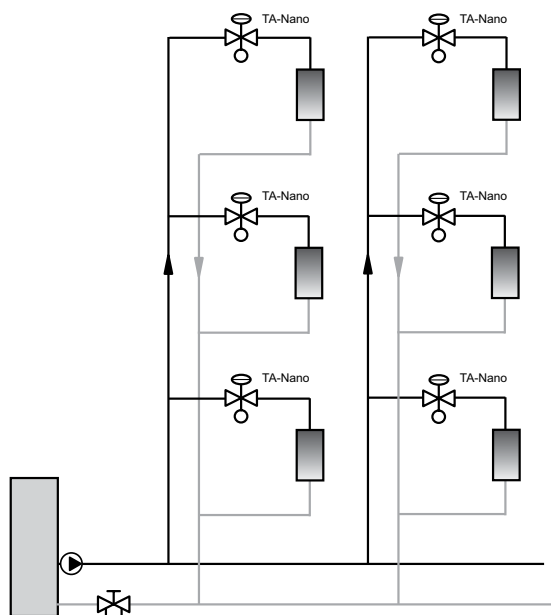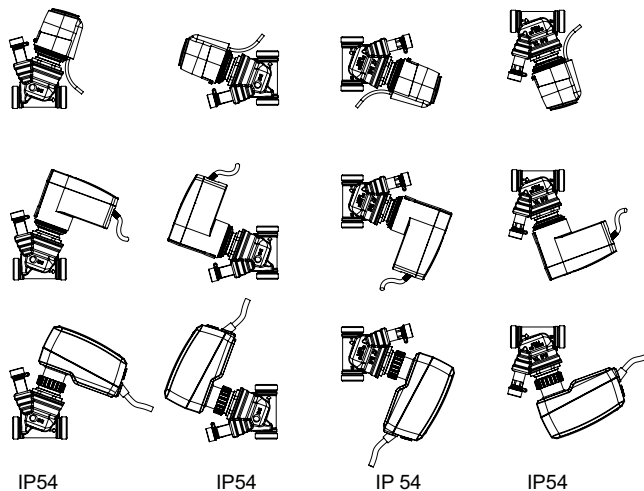

Flow direction

Installation of actuator

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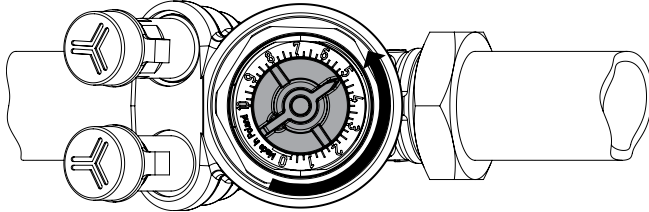

TA-Nano + EMO T II / EMO TM II / TA-TRI / TA-Slider

IP54   IP54   IP 54   IP54

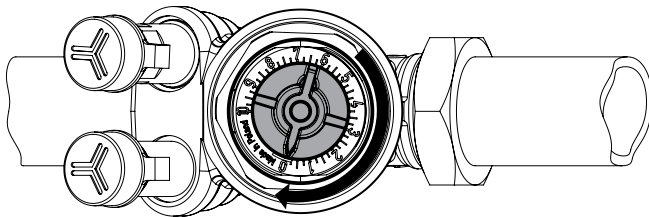|	EMO T II / TM II H	TA-TRI H	TA-Slider 160 H
DN 10-25	106	111	122

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
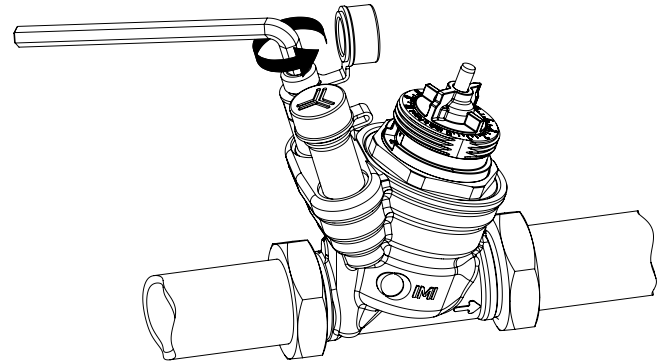
1. Remove any actuator.
2. Open the valve fully, setting 10.
3. Bypass the Δp-part by inserting a 5 mm Allen key in red measuring point and open ≈1 turn anticlockwise.
4. Increase pump head to flush the valve.
Important! Set the valve to previous setting and close the bypass spindle after the flushing is completed.

Articles - Standard, without measuring points
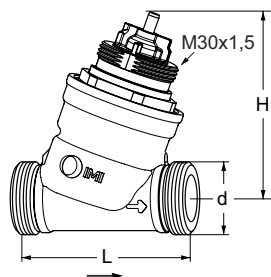
External thread
Threads according to ISO 228. NPT threads - see "Connections".

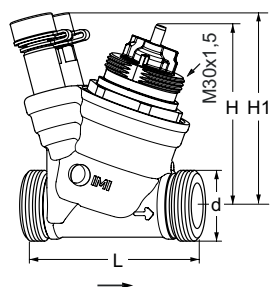| DN	d	L	H	q_{max} [l/h]	Kg	EAN	Article No
10	G1/2	65	68	203	0,31	5902276824005	322213-00110
15 LF	G3/4	65	68	310	0,35	5902276824012	322213-00015
15	G3/4	65	68	562	0,35	5902276824029	322213-00115
15 HF	G3/4	65	68	1130	0,35	5902276824036	322213-00215
20	G1	75	68	1210	0,38	5902276824043	322213-00120
20 HF	G1	75	68	1680	0,38	5902276824050	322213-00220
25	G1 1/4	82	68	2150	0,50	5902276824067	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".

DN	d	L	H	H1	q_{max} [l/h]	Kg	EAN	Article No
10	G1/2	65	68	72	203	0,43	5902276824074	322213-10110
15 LF	G3/4	65	68	72	310	0,47	5902276824081	322213-10015
15	G3/4	65	68	72	562	0,47	5902276824098	322213-10115
15 HF	G3/4	65	68	72	1130	0,47	5902276824104	322213-10215
20	G1	75	68	72	1210	0,51	5902276824111	322213-10120
20 HF	G1	75	68	72	1680	0,51	5902276824128	322213-10220
25	G1 1/4	82	68	72	2150	0,66	5902276824135	322213-10125
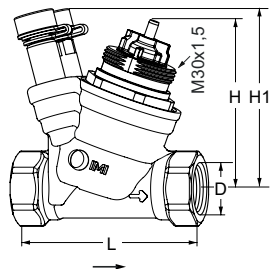
Internal thread NPT
Threads according to ANSI/ASME B1.20.1-1983.

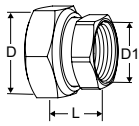| DN	D	L	H	H1	q_{max} [l/h]	Kg	EAN	Article No
15 LF	1/2 NPT	75	68	72	310	0,51	-	322213-13015
15	1/2 NPT	75	68	72	562	0,51	-	322213-13115
15 HF	1/2 NPT	75	68	72	1130	0,51	-	322213-13215
20	3/4 NPT	75	68	72	1210	0,52	-	322213-13120
20 HF	3/4 NPT	75	68	72	1680	0,52	-	322213-13220
25	1 NPT	90	68	72	2150	0,70	-	322213-13125

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

Connections

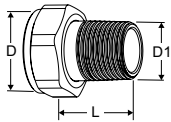### With internal thread NPT
Threads according to ANSI/ASME B1.20.1-1983.
Swivelling nut. Brass/AMETAL®

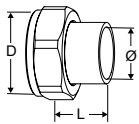| For DN	D	D1	L*	EAN	Article No
10	G1/2	3/8 NPT	21	7318794017801	52 163-210
15	G3/4	1/2 NPT	25	7318794017900	52 163-215
20	G1	1/2 NPT	18	7318794018303	52 163-320
20	G1	3/4 NPT	23	7318794018006	52 163-220
25	G1 1/4	3/4 NPT	27	7318794018402	52 163-325
25	G1 1/4	1 NPT	27	7318794018105	52 163-225

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

For DN	D	D1	L*	EAN	Article No
10	-	-	-	-	-
15	G3/4	1/2 NPT	29	4024052928415	2400-02.350
20	G1	3/4 NPT	32,5	4024052928514	2400-03.350
25	G1 1/4	1 NPT	35	4024052928613	2400-04.350

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

For DN	D	Pipe Ø [in]	~ [mm]	L*	EAN	Article No
10	G1/2	0.504	12.8	13	7318794022805	52 009-710
15	G3/4	0.629	16	16	7318794022904	52 009-715
20	G1	0.879	22	22	7318794023000	52 009-720
25	G1 1/4	1.130	29	26	7318794023109	52 009-725

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

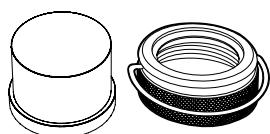Other type of connections (ISO), see international version of TA-Nano.

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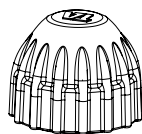
Protection cap
For TA-Nano, TA-COMPACT-P/-DP, TA-Modulator (DN 10-20), TBV-C/-CM.

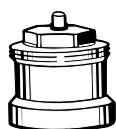| Colour	EAN	Article No
Red	7318793961105	52 143-100

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

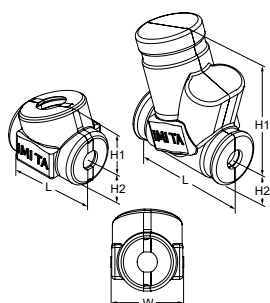|	EAN	Article No
	7318794030206	52 164-100

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

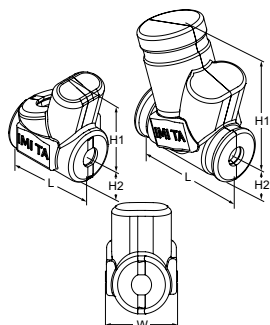| Type	L	EAN	Article No
Plastic, black	30	4024052165018	2002-30.700

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	EAN	Article No
Heating (EPP)						
10-15	97	57	31	84	4030095058408	322213-20001
20	104	56	36	84	4030095058439	322213-20002
Cooling (XPE)						
10-15	126	137	31	76	4030095058453	322213-20111
20	140	137	36	80	4030095058460	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	EAN	Article No
Heating (EPP)						
10-15	97	88	31	84	4030095058422	322213-20101
20	104	88	36	84	4030095058446	322213-20102
Cooling (XPE)						
10-15	126	137	31	76	4030095058453	322213-20111
20	140	137	36	80	4030095058460	322213-20112