IMI TA

TA-Modulator

Combined control & balancing valves for small terminal units

Pressure independent balancing and control valve for modulating control

Engineering GREAT Solutions

IMI Hydronic Engineering

TA-Modulator

The new 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**
  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.
- **High reliability**
  AMETAL® and stainless steel guarantees high corrosion resistance and reduces the risk of leakage.

Technical description

Application:
Heating and cooling systems.

Functions:
Control (EQM)
Pre-setting (max. flow)
Differential pressure control
Measuring (ΔH, T, q)
Shut-off (for isolation during system maintenance – see also Leakage rate)

Dimensions:
DN 15-32

Pressure class:
PN 16

Differential pressure (ΔpV):
Max. differential pressure (ΔpV_{max}):
400 kPa = 4 bar
Min. differential pressure (ΔpV_{min}):
DN 15-20: 15 kPa = 0,15 bar
DN 25-32: 23 kPa = 0,23 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 15: 92 - 480 l/h
DN 20: 200 - 975 l/h
DN 25: 340 - 1750 l/h
DN 32: 720 - 3600 l/h
q_{max} = l/h at each setting and fully open valve plug.

Temperature:
Max. working temperature: 90°C
Min. working temperature: 0°C

Media:
Water or neutral fluids, water-glycol mixtures.

Lift:
DN 15-20: 4 mm
DN 25-32: 6,5 mm

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

Characteristics:
Uniquely shaped EQM, best suited for modulating control.

Material:
Valve body: AMETAL®
Valve insert: AMETAL® and PPS
Valve plug: Stainless steel
Spindle: Stainless steel
Spindle seal: EPDM O-ring
Δp 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 and black identification ring on measuring point: TA-Modulator and DN.

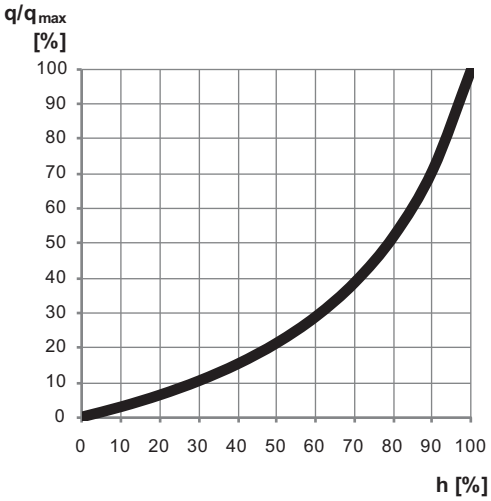
Connection:
Male thread according to ISO 228.

Connection to actuator:
M30x1,5

Actuators:
DN 15-20: EMO TM, TA-Slider 160
DN 25-32: TA-Slider 160
See separate information on EMO TM and TA-Slider 160.

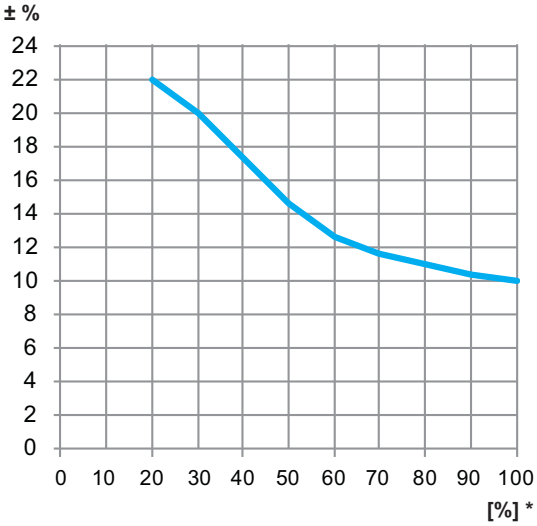
Valve characteristics

Nominal valve characteristic for all settings.



Measuring accuracy

Maximum flow deviation at different settings



*) Setting (%) of fully open valve.

Correction factors

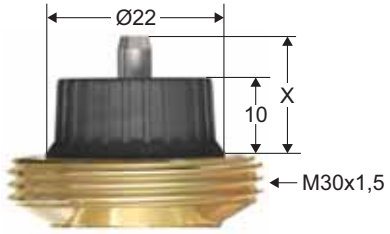
The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤20 cSt = 3°E=100S.U.), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This 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

Actuator EMO TM and TA-Slider 160
For more details about EMO TM and TA-Slider 160, see separate catalogue leaflets.
TA-Modulator is developed to work together with the EMO TM and TA-Slider 160 actuators. Actuators of other brands require;
Working range (setting 1-10)
DN 15-20: X (closed - fully open) = 11,6 - 15,85
DN 25-32: X (closed - fully open) = 10,1 - 16,85
Closing force
DN 15-20: Min. 125 N (max. 500 N)
DN 25-32: Min. 190 N (max. 500 N)



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

Max. 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 TM * [kPa]	TA-Slider 160 * [kPa]
15	400	400
20	400	400
25	-	400
32	-	400

*) Closing force 125 N (EMO TM) and 190 N (TA-Slider 160).

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 15-400 kPa or 23-400 kPa.

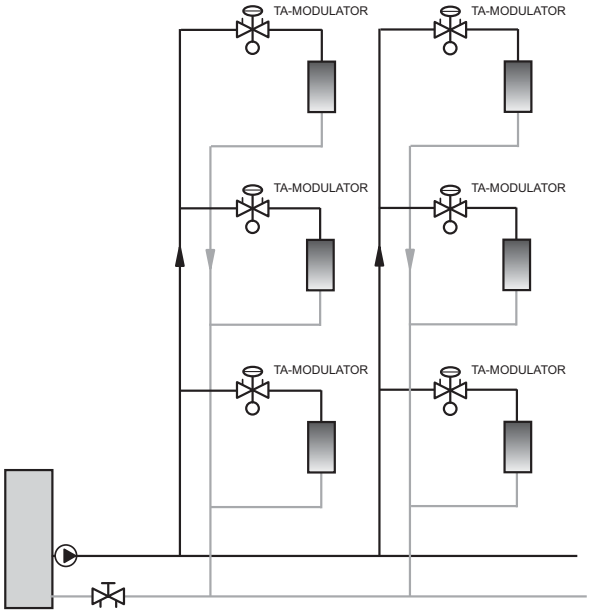
q_{max} values

	Position									
	1	2	3	4	5	6	7	8	9	10
DN 15	92	114	140	170	210	265	325	390	445	480
DN 20	200	260	360	460	565	670	770	850	920	975
DN 25	340	440	600	810	1010	1200	1350	1520	1640	1750
DN 32	720	960	1350	1750	2150	2530	2850	3130	3380	3600

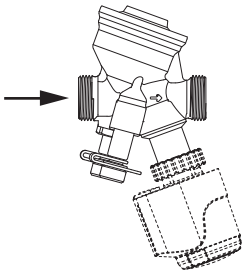
q_{max} = l/h at each setting and fully open valve plug.

Installation

Application example

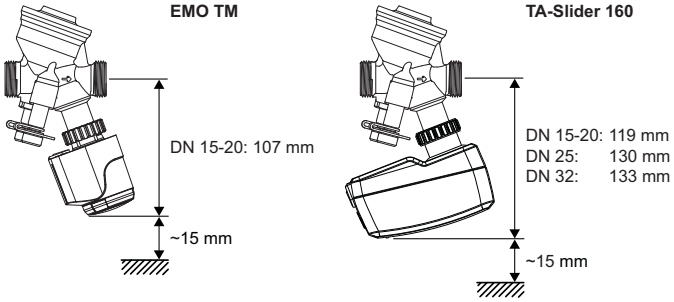


Flow direction

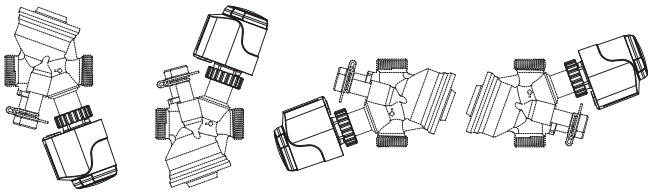


Installation of actuator

Approx. 15 mm of free space is required above the actuator.



TA-Modulator + EMO TM/TA-Slider 160



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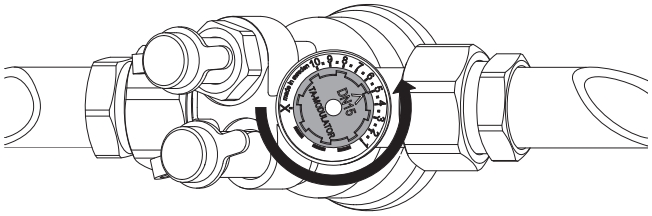
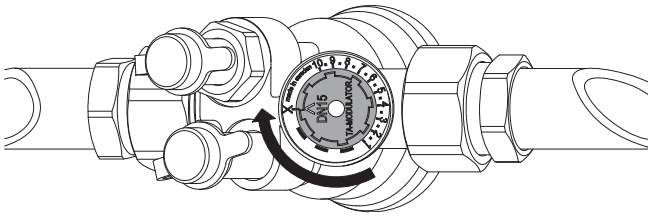
Operating function

Setting



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

Shut-off

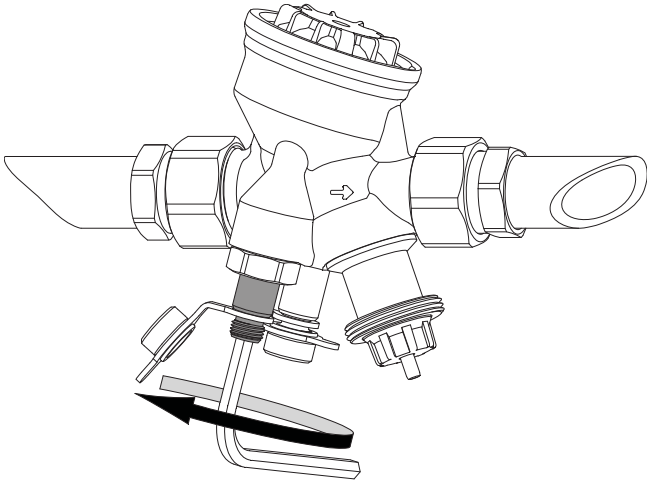


1. Turn the setting wheel clockwise to X.

Measuring q

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

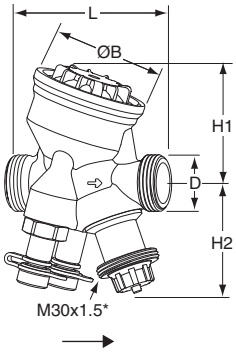
Measuring ΔH



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 the 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.

Articles



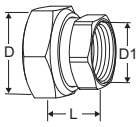
Male thread

Threads according to ISO 228

DN	D	L	H1	H2	B	q_{max} [l/h]	Kg	EAN	Article No
15	G3/4	74	55	55	54	480	0,54	7318794027008	52 164-315
20	G1	85	64	55	64	975	0,69	7318794027107	52 164-320
25	G1 1/4	93	64	67	64	1750	0,79	7318794027206	52 164-325
32	G1 1/2	117	78	70	78	3600	1,5	7318794027305	52 164-332

*) Connection to actuator.
→ = Flow direction

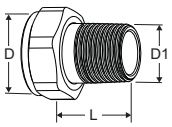
Connections



With female thread

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

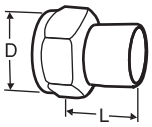
Valve DN	D	D1	L*	EAN	Article No
15	G3/4	G1/2	21	7318794016903	52 163-015
20	G1	G3/4	23	7318794017009	52 163-020
25	G1 1/4	G1	23	7318794017108	52 163-025
32	G1 1/2	G1 1/4	31	7318794017207	52 163-032



With male thread

Threads according to ISO 7-1.
Swivelling nut

Valve DN	D	D1	L*	EAN	Article No
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
32	-	-	-	-	-

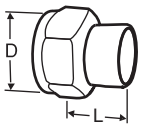


Welding connection

Swivelling nut

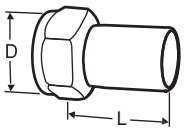
Valve DN	D	Pipe DN	L*	EAN	Article No
15	G3/4	15	36	7318792748509	52 009-015
20	G1	20	40	7318792748608	52 009-020
25	G1 1/4	25	40	7318792748707	52 009-025
32	G1 1/2	32	40	7318792748806	52 009-032

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



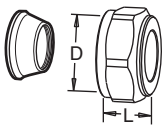
Soldering connection
Swivelling nut

Valve DN	D	Pipe Ø	L*	EAN	Article No
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
32	G1 1/2	35	26	7318792749803	52 009-535



Connection with smooth end
For connection with press coupling
Swivelling nut

Valve DN	D	Pipe Ø	L*	EAN	Article No
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
32	G1 1/2	35	59	7318793811004	52 009-335

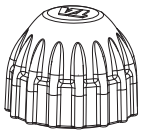


Compression connection
Support bushes shall be used, for more information see catalogue leaflet FPL.
Should not be used with PEX-pipes.
Chrome plated

Valve DN	D	Pipe Ø	L**	EAN	Article No
15	G3/4	15	27	7318793705006	53 319-615
15	G3/4	18	27	7318793705105	53 319-618
15	G3/4	22	27	7318793705204	53 319-622
20	G1	28	29	7318793705402	53 319-928

*) Fitting length (from the gasket surface to the end of the connection).
**) Over all length L refers to unassembled coupling.

Accessories



Protection cap
For TA-COMPACT-P/-DP, TA-Modulator (DN 15-20), TBV-C/-CM/-CMP, KTCM 512.

For valve		EAN	Article No
DN 15-20	Red	7318793961105	52 143-100