

TA-FUSION-P



Combined control & balancing valves

Pressure independent combined balancing and control valves with independent EQM characteristics

TA-FUSION-P

These innovative pressure independent balancing and control valves for heating and cooling systems combine the key hydronic functions of balancing and control in one valve. Adjustable max. flow and inherent independent EQM characteristics allow correct valve sizing and optimum system controllability. The measuring points enable accurate measurement of flow, differential pressure, temperature and available differential pressure.



Key features

- > **Adjustable max. flow**
Adjustable Kvs technology allows setting to design flow.
- > **Self-sealing measuring points**
Simple and accurate measurement for balancing, trouble shooting and power measurement.
- > **Independent, inherent EQM characteristic**
Proper EQM valve characteristic and high authority for all settings.

Technical description

Application:

Heating and cooling systems.

Functions:

Control (EQM)
Differential pressure control
Pre-setting (max. flow)
Measuring (ΔH , T, q)
Shut-off (for isolation during system maintenance)
Flushing (of the system)

Dimensions:

DN 32-50
(DN 65-150: See TA-Modulator)

Pressure class:

PN 16

Differential pressure (ΔpV):

Max. differential pressure (ΔpV_{max}):
800 kPa = 8 bar

Min. differential pressure (ΔpV_{min}):
15 kPa = 0,15 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.

Recommended flow range:

The flow (q_{max}) can be set within the range [m³/h]:

DN 32: 0,88 - 4,21

DN 40: 1,01 - 6,19

DN 50: 2,71 - 11,1

q_{max} = m³/h at each setting and fully open valve plug.

Lift:

20 mm

Rangeability:

>100 (for all recommended settings)

Leakage rate:

Tight sealing

Characteristics:

Independent EQM.

Temperature:

Max. working temperature: 120°C

Min. working temperature: -20°C

Media:

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

(For other media contact IMI Hydronic Engineering.)

Material:

Valve body: AMETAL®
 Valve plug: AMETAL®
 Seat seal: EPDM/Stainless steel
 Spindle seal: EPDM O-ring
 O-rings: EPDM
 Valve insert: AMETAL®/PPS/PTFE
 Δp insert: Stainless steel/PPS
 Membrane: HNBR
 Springs: Stainless steel
 Spindle: Stainless steel

Surface treatment:

Non treated

Marking:

TAH, IMI, DN, PN, DR, serial No and flow direction arrow.

Connection:

Female thread according to ISO 228.
 Thread length according to ISO 7-1.
 Male thread according to ISO 228.

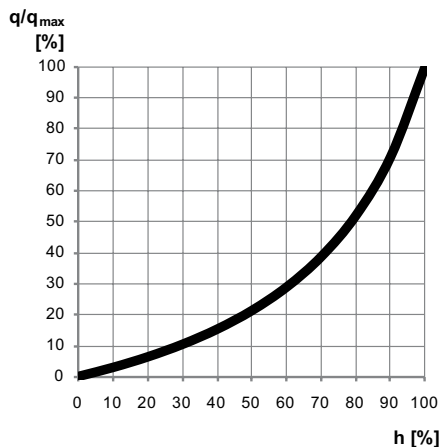
Actuators:

TA-Slider 750
 TA-MC100 FSE/FSR (fail-safe)
 For more details on actuators, see separate technical leaflets.

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

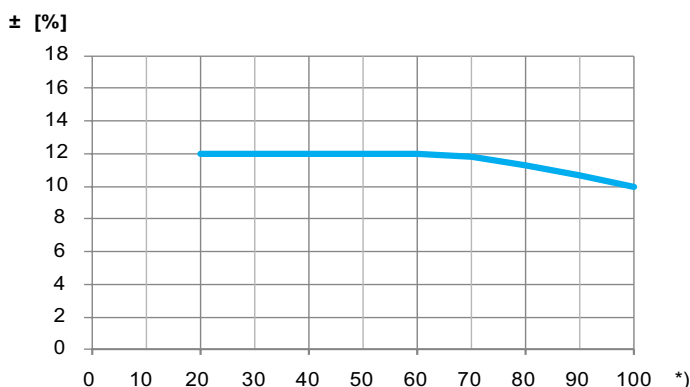
Valve characteristics

Nominal valve characteristic for all recommended 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 = $3^\circ\text{E}=100\text{S.U.}$), 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.

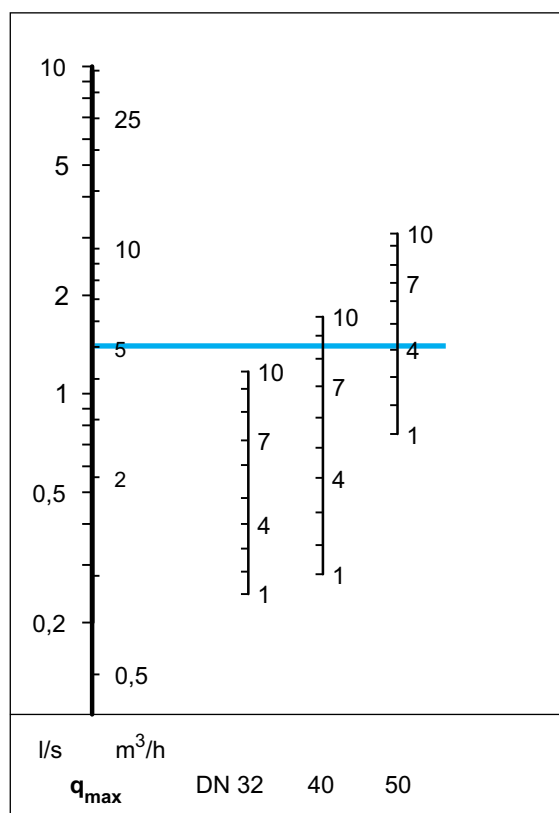
Sizing

Example

Flow is $5\text{ m}^3/\text{h}$, available ΔpV is 20 kPa and control signal (input signal) is $0-10\text{ VDC}$, supply voltage 24 VAC .

1. Go to sizing diagram.
2. Draw a straight horizontal line from $5\text{ m}^3/\text{h}$, which will cross the setting bars for all valves which fit the application. In this case DN 40 setting 8.5, DN 50 setting 4.1.
3. Check that the available ΔpV is within the working range (between min. and max. allowed ΔpV). Min. ΔpV is valid for setting 10, other settings will require slightly lower ΔpV , this can be checked with the software HySelect.
4. Choose the smallest option (with some safety margin). In this case DN 40 is preferable. See "Articles – Valves".
5. Go to "Selection of actuator" to select the actuator. In this case TA-Slider 750, article number 322226-10110.

Sizing diagram



DN	Differential pressure ΔpV [kPa]	
	Min.	Max.
32-50	15	800

q_{max} values

	Position									
	1	2	3	4	5	6	7	8	9	10
DN 32	880	1 030	1 210	1 440	1 730	2 180	2 590	3 170	3 730	4 210
DN 40	1 010	1 240	1 560	1 990	2 460	3 040	3 790	4 610	5 410	6 190
DN 50	2 710	3 320	4 050	4 900	5 890	6 910	7 850	8 910	10 200	11 100

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

Selection of actuator

		TA-Slider 750	TA-MC100 FSE	TA-MC100 FSR
Input signal	0(2)-10 VDC	√	√	√
	0(4)-20 mA	√	√	√
	3-point	√	√	√
Output signal	0(2)-10 VDC	√	√	√
	0(4)-20 mA		√	√
Supply voltage	24 VAC	√	√	√
	24 VDC	√		
	100-240 VAC	√		
	230 VAC		√	√
Fail-safe	Extending (closing)		√	
	Retracting (opening)			√
For valve		DN 32-50	DN 32-50	DN 32-50

Article number can be found under “Articles – Actuators”.

For more variants and details on actuators, see separate technical leaflets or contact IMI Hydronic Engineering.

Maximum recommended pressure drop (ΔpV) for valve and actuator combination

The maximum recommended pressure drop over the valve and actuator combination for close off (ΔpV_{close}) and to fulfill all stated performances (ΔpV_{max}).

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.

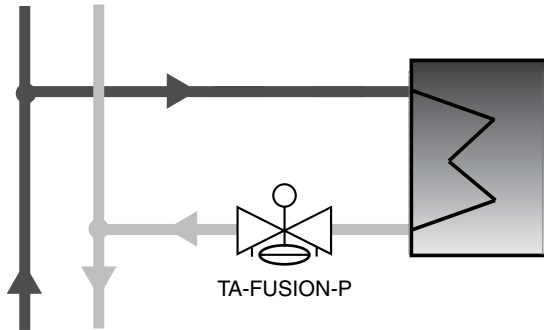
ΔpV_{max} = The maximum allowed pressure drop over the valve to fulfill all stated performances.

DN	TA-Slider 750 TA-MC100FSE/FSR
	[kPa]
32	800
40	800
50	800

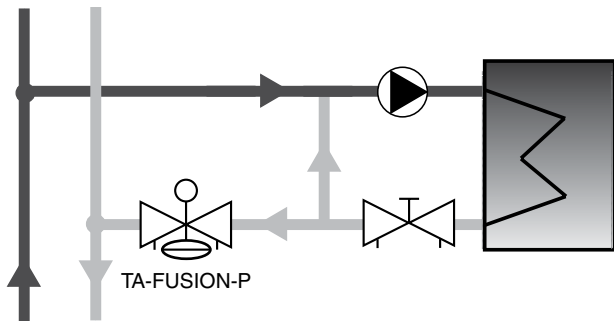
Installation

Application examples

2-way direct circuit



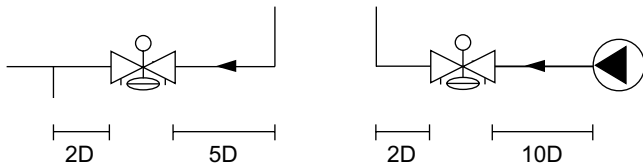
Injection circuit



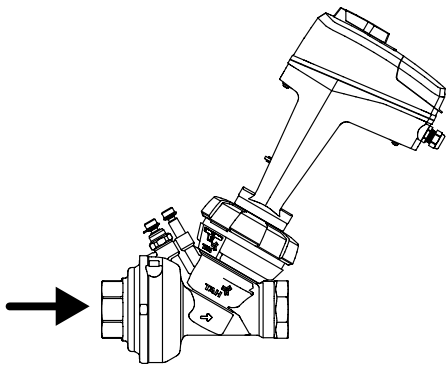
Normal pipe fittings

Avoid mounting taps and pumps immediately before or after the valve.

Installation recommendation for accurate measurement due to distortion of fully developed turbulent flow profile.

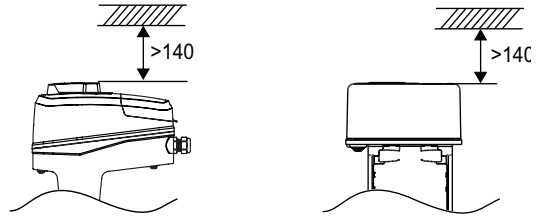


Flow direction



Installation of actuator

Approx. 140 mm of free space is required above the actuator.

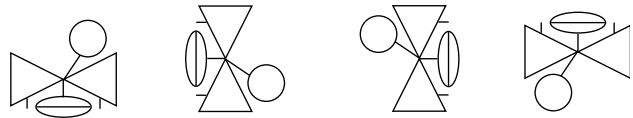


Ingress protection

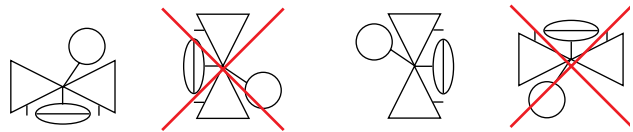
IP54

Note: Read carefully the installation instruction of the actuator.

TA-Slider 750

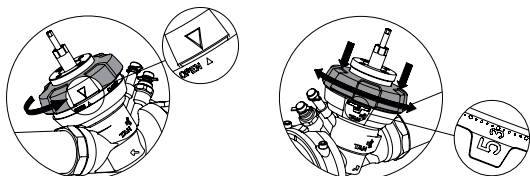


TA-MC100FSE/FSR



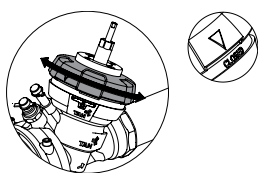
Operating function

Setting



1. Open the valve **fully** with the handwheel.
2. Press the handwheel downwards and turn to desired value, e.g. 5.3.

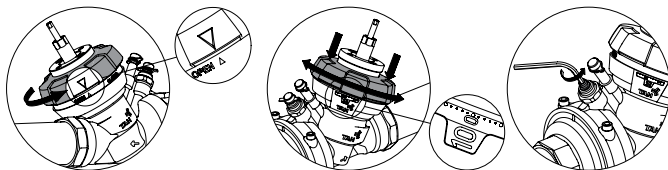
Shut-off



1. Turn the handwheel to "Closed".

Turn the handwheel to "Open" when re-opening the valve.

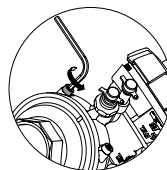
Flushing of the system



1. Open the valve fully with the handwheel.
2. Open the setting fully (position 10).
3. Deactivate the Δp part by opening the flushing spindle fully (anticlockwise).

After flushing, close the flushing spindle and set the valve to previous setting.

Venting



1. To vent the membrane chamber, open the topmost venting screw. **NOTE!** Max. 2 turns opening.

Measuring q

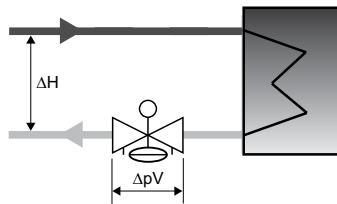
Connect IMI Hydronic Engineering balancing instrument to the measuring points. Input the valve type, size and setting and the actual flow is displayed.

Measuring ΔH

Close the valve according to "Shut-off", deactivate the Δp part according to "Flushing".

Connect IMI Hydronic Engineering balancing instrument to the measuring points and measure.

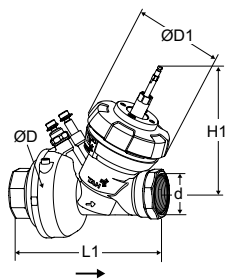
Important! The valve must be re-opened **fully and the Δp part activated** after the measurement is completed.



NOTE!

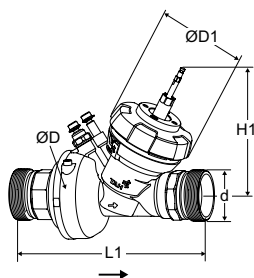
Ensure that the actuator is disengaged from the valve spindle during all operating functions described above, except venting.

Articles – Valves

**Female thread**

Threads according to ISO 228

DN	d	D	D1	L1	H1*	q _{max} [m ³ /h]	Kg	EAN	Article No
PN 16									
32	G1 1/4	130	128	213	186	4,21	6,6	7318798638903	22202-001032
40	G1 1/2	130	128	218	186	6,19	6,6	7318798639009	22202-001040
50	G2	130	128	226	190	11,1	7,1	7318798639108	22202-001050

**Male thread**

Threads according to ISO 228

DN	d	D	D1	L1	H1*	q _{max} [m ³ /h]	Kg	EAN	Article No
PN 16									
32	G1 1/2	130	128	273	186	4,21	7,2	7318794016507	22202-005032
40	G2	130	128	280	186	6,19	7,2	7318794016606	22202-005040
50	G2 1/2	130	128	294	190	11,1	8,1	7318794016705	22202-005050

→ = Flow direction

Articles – Actuators

TA-Slider 750, TA-MC100FSE/FSR

For more variants and details on actuators, see separate technical leaflets or contact IMI Hydronic Engineering.

Type	Supply voltage	Valve DN	EAN	Article No
TA-Slider 750	24 VAC/VDC	32-50	5901688828458	322226-10110
TA-Slider 750	100-240 VAC	32-50	5902276883620	322226-40110
TA-MC100FSE	24 VAC	32-50	3831112512122	61-100-101
TA-MC100FSE	230 VAC	32-50	3831112512139	61-100-102
TA-MC100FSR	24 VAC	32-50	3831112512146	61-100-201
TA-MC100FSR	230 VAC	32-50	3831112512153	61-100-202

TA-Slider 750 Plus

The Plus version has the following additional functions;

- Binary input, relays, output signal in mA
- BUS communication (with or without binary input, relays, output signal in mA)

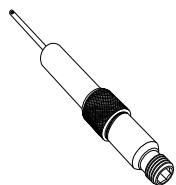
For more variants and details on actuators, see separate technical leaflets or contact IMI Hydronic Engineering.

Adapters for actuators

	Valve DN	EAN	Article No
For recommended actuators			
TA-Slider 750	32-50		*)
TA-MC100FSE/FSR	32-50		*)
For other actuators			
Hora MC55, MC100	32-50		*)
JC VA1125-GGA-1	32-50	3831112531635	22412-000001
JC VA7810-GGA-12	32-50	3831112531642	22412-000002
Sauter AVM322	32-50	3831112532342	22412-000004
Sauter AVM234, AVN, AVF	32-50	3831112531680	22412-000003
Siemens SAX, SQV91	32-50	3831112531611	22214-000002

*) Integrated in the valve.

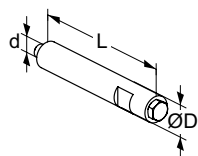
Accessories



Measuring point, extension 60 mm

Can be installed without draining of the system.
AMETAL®/Stainless steel/EPDM

L	EAN	Article No
60	7318792812804	52 179-006



Venting extension

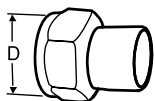
Suitable when insulation is used.
Stainless steel/EPDM/Brass.

d	D	L	EAN	Article No
M6	12	70	3831112531727	52 759-220

Insulation

See related insulation instruction under "Products" on www.imi-hydronic.com or contact IMI Hydronic Engineering.

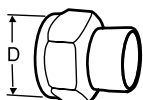
Connections for DN 32-50



Welding connection

Swivelling nut
Max 120°C
Brass/Steel 1.0045 (EN 10025-2)

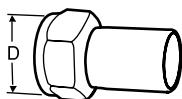
Valve DN	D	Pipe DN	EAN	Article No
32	G1 1/2	32	7318792748806	52 009-032
40	G2	40	7318792748905	52 009-040
50	G2 1/2	50	7318792749001	52 009-050



Soldering connection

Swivelling nut
Max 120°C
Brass/gunmetal CC491K (EN 1982)

Valve DN	D	Pipe Ø	EAN	Article No
32	G1 1/2	35	7318792749803	52 009-535
40	G2	42	7318792749902	52 009-542
50	G2 1/2	54	7318792750007	52 009-554



Connection with smooth end

For connection with press coupling
Swivelling nut
Max 120°C
Brass/AMETAL®

Valve DN	D	Pipe Ø	EAN	Article No
32	G1 1/2	35	7318793811004	52 009-335
40	G2	42	7318793811103	52 009-342
50	G2 1/2	54	7318793811202	52 009-354

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