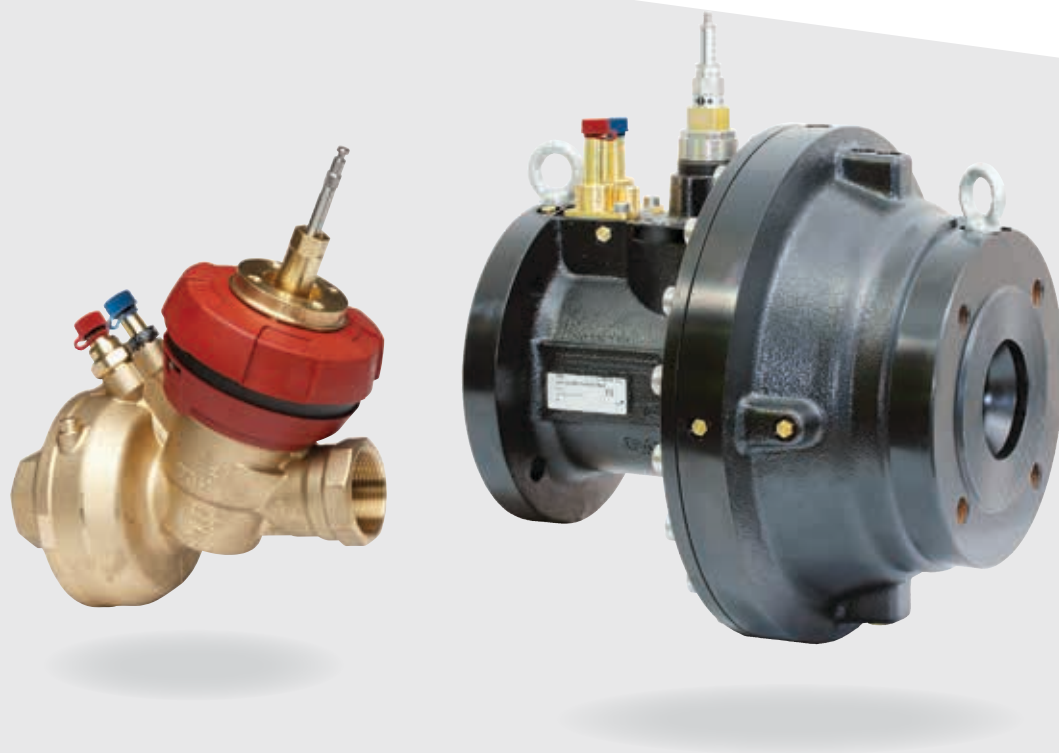


# TA-FUSION-P



## Combined control & balancing valves

Pressure independent combined balancing and control valves with independent EQM characteristics



*Engineering  
GREAT Solutions*

# 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 ( $\Delta H$ , T, q)  
Shut-off (for isolation during system maintenance)  
Flushing (of the system)

### Dimension:

DN 32-150

### Pressure class:

DN 32-50: PN 16  
DN 65-150: PN 16 and PN 25

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

Max. differential pressure ( $\Delta pV_{\max}$ ):  
800 kPa = 8 bar

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

DN 32-50: 15 kPa = 0,15 bar

DN 65-80: 25 kPa = 0,25 bar

DN 100-125: 30 kPa = 0,30 bar

DN 150: 40 kPa = 0,40 bar

DN 150 HF: 60 kPa = 0,60 bar

(Valid for position 10, fully open. Other positions 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.

### Recommended flow range:

The flow ( $q_{\max}$ ) can be set within the range [ $m^3/h$ ]:

DN 32: 0,88 - 4,21

DN 40: 1,01 - 6,19

DN 50: 2,71 - 11,1

DN 65-2: 9,40 - 24,2

DN 80-2: 13,6 - 36,8

DN 100: 27,8 - 68,0

DN 125: 45,6 - 120

DN 150: 78,1 - 207

DN 150 HF: 98,7 - 261

$q_{\max}$  =  $m^3/h$  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:

DN 32-150: 120°C

DN 65-150 with double secured  
measuring points: 150°C

Min. working temperature: -20°C

**Media:**

Water or neutral fluids, water-glycol  
mixtures.

(For other media contact IMI Hydronic  
Engineering.)

**Material:**

DN 32-50:

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

DN 65-150:

Valve body: Ductile iron EN-GJS-400

O-rings: EPDM

Valve plug: Stainless steel

Seat seals: EPDM/Stainless steel

Plug mechanisms: Stainless steel and  
brass

Membrane: EPDM

Δp spring: Stainless steel. DN 150  
painted steel.

Screws and nuts: Stainless steel

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

**Surface treatment:**

DN 32-50: Non treated

DN 65-150: Electrophoretic painting.

**Marking:**

DN 32-50: TAH, IMI, DN, PN, DR, serial  
No and flow direction arrow.

DN 65-150: TAH, IMI, DN, PN, Kvs,  
 $T_{min}/T_{max}$ , serial No, valve body material and  
flow direction arrow, label.

CE-marking:

DN 65-125: CE

DN 150: CE 0062 \*

\*) Notified body.

**Connection:**

DN 32-50:

Female thread according to ISO 228.

Thread length according to ISO 7-1.

Male thread according to ISO 228.

DN 65-150:

Flanges according to EN-1092-2, type 21.

Face to face length according to EN 558  
series 1.

**Actuators:**

TA-Slider 750

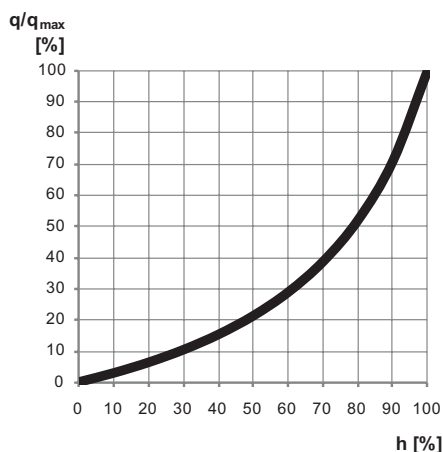
TA-Slider 1250

TA-MC100 FSE/FSR (fail-safe)

For more details on actuators, see  
separate technical leaflets.

## Valve characteristics

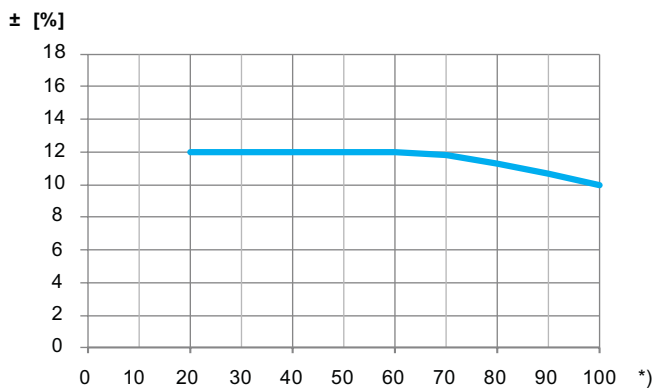
Nominal valve characteristic for all recommended settings.



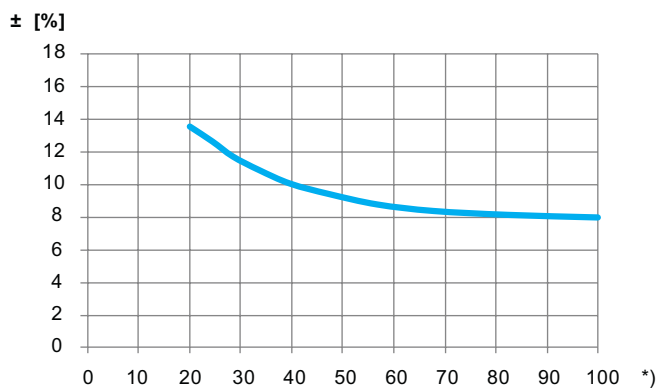
## Measuring accuracy

### Maximum flow deviation at different settings

#### DN 32-50



#### DN 65-150



\*) 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 ( $\leq 20$  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

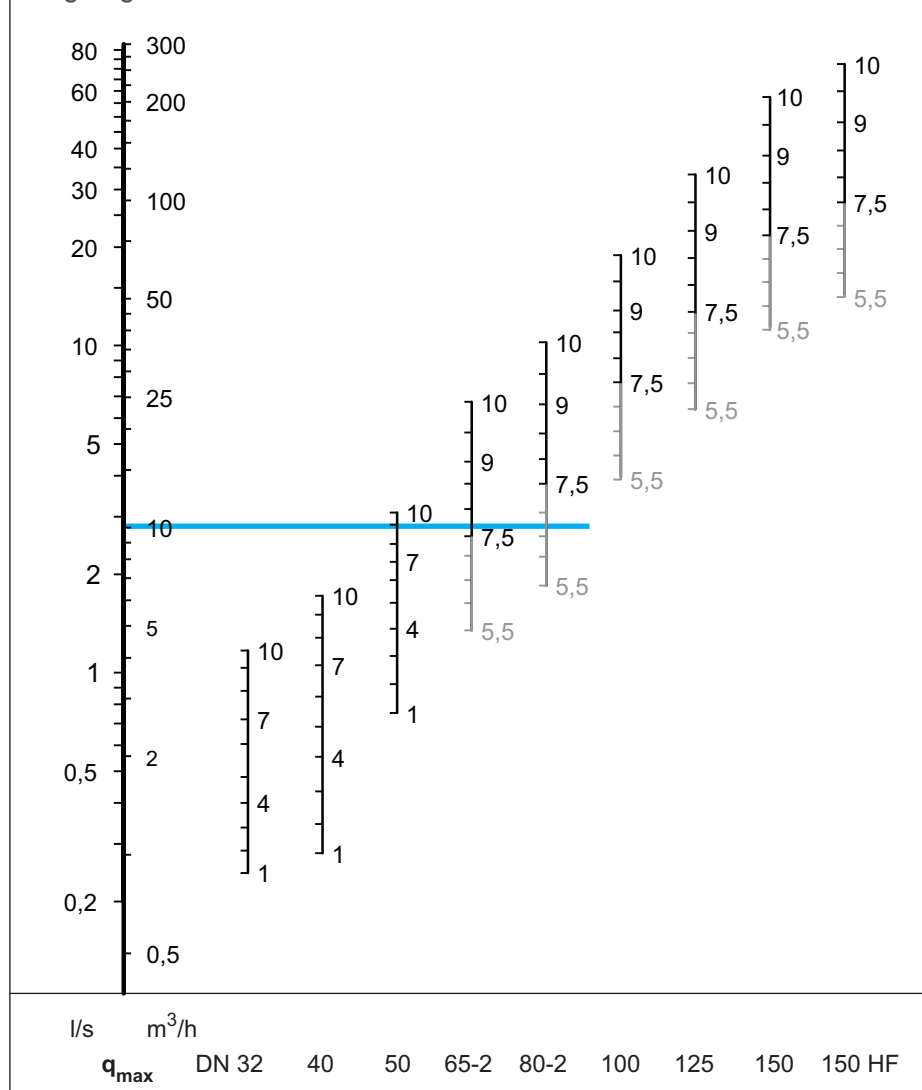
In order to avoid noise in the installation, the valve must be correctly installed and the water de-aerated.

## Sizing

### Example

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

1. Go to sizing diagram.
2. Draw a straight horizontal line from  $10 \text{ m}^3/\text{h}$ , which will cross the setting bars for all valves which fit the application. In this case DN 50 setting 8,8, DN 65-2 setting 7,7.
3. Check that the available  $\Delta p_V$  is within the working range (between min. and max. allowed  $\Delta p_V$ ). In this case, the  $\Delta p_V$  is 20 kPa which is out of range for DN 65 (min.  $\Delta p_V=25$  kPa valid for setting 10, other settings will require slightly lower  $\Delta p_V$ , this can be checked with the software HySelect).
4. Choose the smallest option (with some safety margin). In this case DN 50 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 $\Delta pV$ [kPa]	
	Min.	Max.
<b>32-50</b>	15	800
<b>65-80</b>	25	800
<b>100-125</b>	30	800
<b>150</b>	40	800
<b>150 HF</b>	60	800

DN 65-150: Recommended setting range 7.5–10.

## **q<sub>max</sub> values**

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

	Position									
	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
<b>DN 65-2</b>	4 850	5 880	6 900	8 190	9 400	11 400	13 600	15 900	19 500	24 200
<b>DN 80-2</b>	6 650	8 150	9 400	11 100	13 600	16 200	19 400	23 800	29 500	36 800
<b>DN 100</b>	14 000	16 600	19 700	23 400	27 800	32 900	39 500	46 000	56 500	68 000
<b>DN 125</b>	23 000	27 600	33 000	39 300	45 600	55 100	66 600	80 600	98 500	120 000
<b>DN 150</b>	40 200	47 500	56 200	66 200	78 100	93 800	113 000	137 000	170 000	207 000
<b>DN 150 HF</b>	50 600	59 900	70 900	83 700	98 700	117 500	141 900	173 000	215 500	261 000

q<sub>max</sub> = l/h at each setting and fully open valve plug.  
DN 65-150: Recommended setting range 7.5–10.

## Selection of actuator

		TA-Slider 750	TA-Slider 1250	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 32-150	DN 150 HF	DN 32-150	DN 32-150

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 ( $\Delta p_V$ ) for valve and actuator combination

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

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

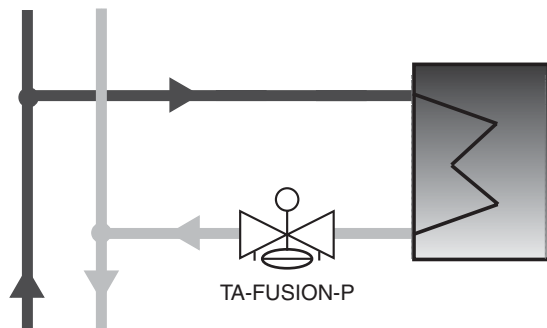
$\Delta p_{V_{max}}$  = The maximum allowed pressure drop over the valve to fulfill all stated performances.

DN	TA-Slider 750 TA-MC100FSE/FSR [kPa]	TA-Slider 1250 [kPa]
32	800	-
40	800	-
50	800	-
65	800	-
80	800	-
100	800	-
125	800	-
150	800	-
150 HF	-	800

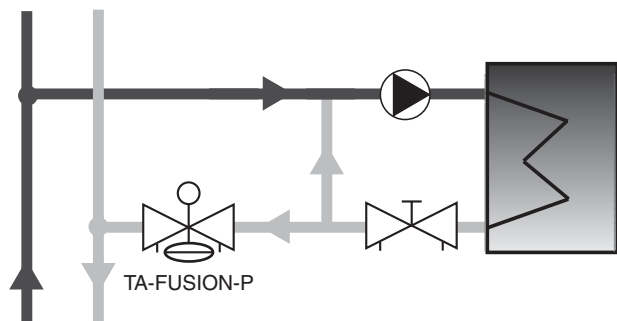
## Installation

### Application examples

2-way direct circuit



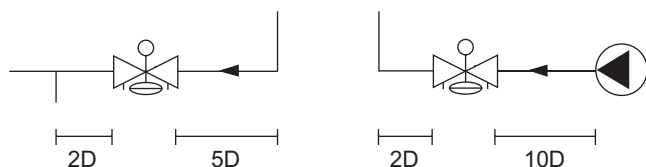
Injection circuit



### Normal pipe fittings

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

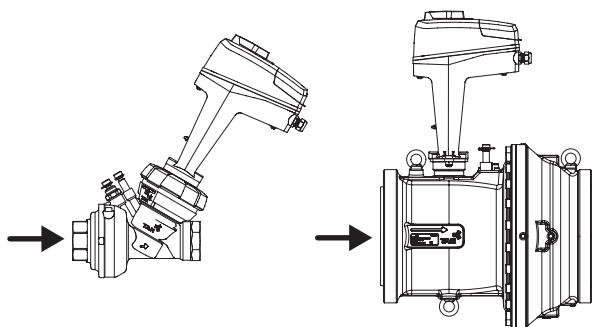
Installation recommendation for accurate measurement due to distortion of fully developed turbulent flow profile.



### Flow direction

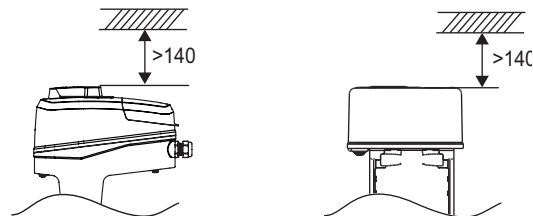
DN 32-50

DN 65-150



### Installation of actuator

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



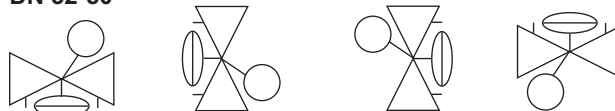
### Ingress protection

IP54

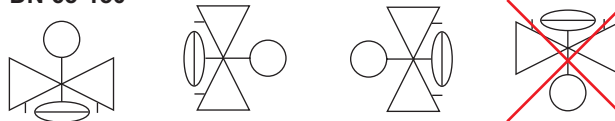
**Note:** Read carefully the installation instruction of the actuator.

### TA-Slider 750/TA-Slider 1250

DN 32-50

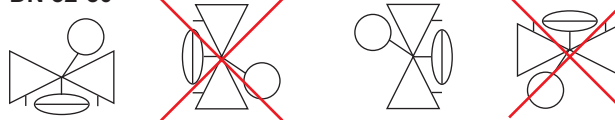


DN 65-150

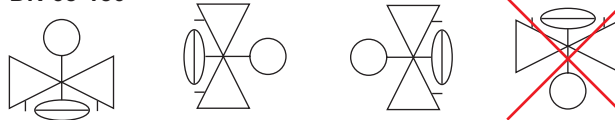


### TA-MC100FSE/FSR

DN 32-50

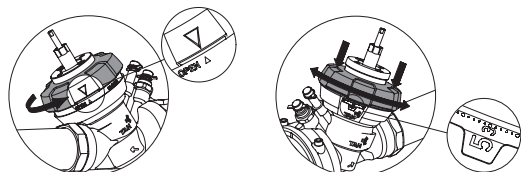


DN 65-150



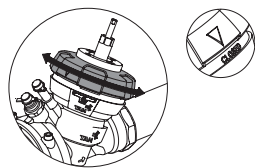
## Operating function DN 32-50

### Setting



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

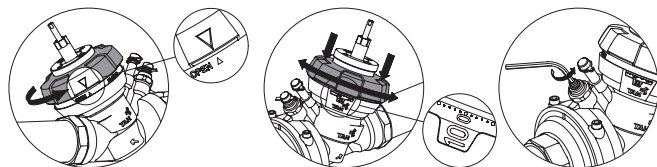
### Shut-off



1. Turn the handwheel to "Closed".

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

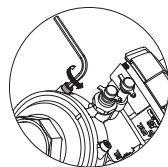
### Flushing of the system



1. Open the valve fully with the handwheel.
2. Open the setting fully (position 10).
3. Deactivate the  $\Delta p$  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 $q$

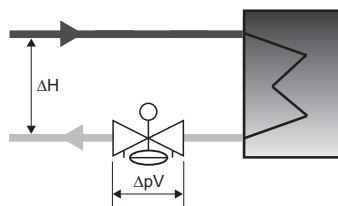
Connect IMI Hydronic Engineering balancing instrument to the measuring points. Input the valve type, size and setting and the actual flow is displayed.

### Measuring $\Delta H$

Close the valve according to "Shut-off", deactivate the  $\Delta p$  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  $\Delta p$  part activated** after the measurement is completed.



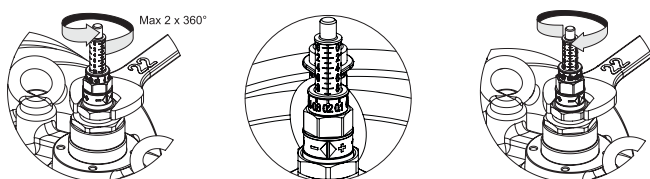
### NOTE!

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



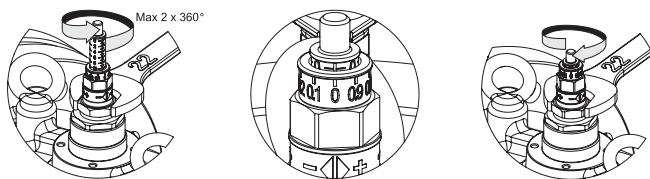
## Operating function DN 65-150

### Setting



1. Release the fixing nut.
2. Turn the setting screw to desired value on the scale, e.g. 9.2.
3. Tighten the fixing nut.

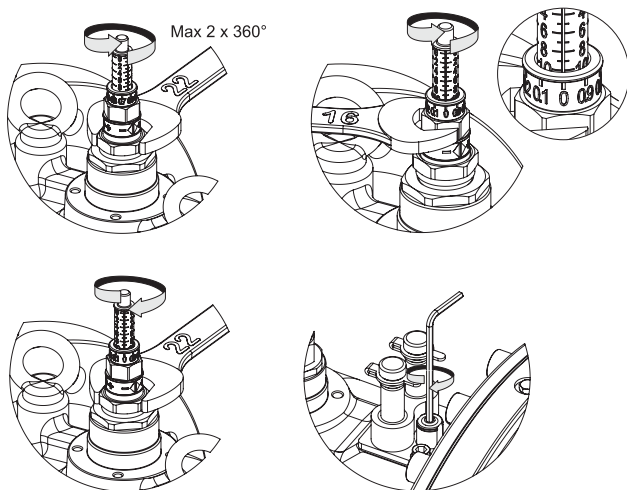
### Shut-off



1. Release the fixing nut.
2. Turn the setting screw clockwise to stop (position  $0 \pm 0.5$ ).  
The presetting is visible on the setting scale.
3. Tighten the fixing nut.

Open to **previous setting** when re-opening the valve.

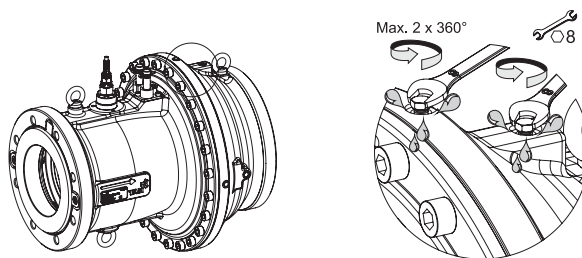
### Flushing of the system



1. Release the fixing nut.
2. Turn the setting screw to fully open (position 10).
3. Tighten the fixing nut.
4. Deactivate the  $\Delta p$  part by closing the flushing spindle fully (clockwise).

After flushing, open 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

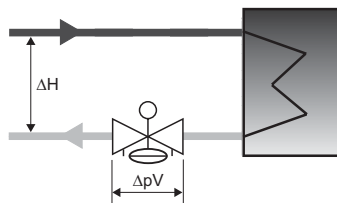
Connect IMI Hydronic Engineering balancing instrument to the measuring points. Input the valve type, size and setting and the actual flow is displayed.

### Measuring $\Delta H$

Close the valve according to "Shut-off", deactivate the  $\Delta p$  part according to "Flushing".

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

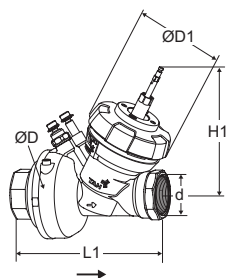
**Important!** The valve must be re-opened to **previous setting and the  $\Delta p$  part activated** after the measurement is completed.



### NOTE!

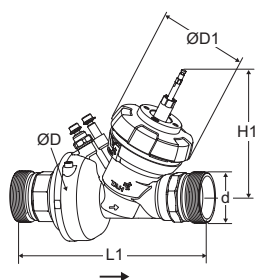
Ensure that the actuator is disengaged from the valve spindle during all operating functions described above, except venting.

## Articles – Valves

**Female thread**

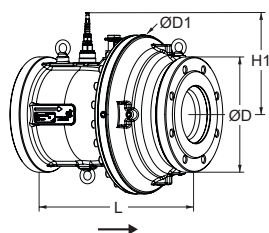
Threads according to ISO 228

DN	d	D	D1	L1	H1*	q <sub>max</sub> [m³/h]	Kg	EAN	Article No
<b>PN 16</b>									
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 <sub>max</sub> [m³/h]	Kg	EAN	Article No
<b>PN 16</b>									
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

**Flanged**

Flanges according to EN-1092-2, type 21.

DN	D	D1	L	H1*	q <sub>max</sub> [m³/h]	Kg	EAN	Article No
PN 16								
65-2	185	224	290	205	24,2	45	5901688827581	22202-002065
80-2	200	278	310	205	36,8	52	5901688827611	22202-002080
100	220	310	350	221	68,0	59	3831112529427	22202-002100
125	250	344	400	221	120	82	3831112529441	22202-002125
150	285	380	480	251	207	118	3831112529489	22202-002150
150 HF	285	380	480	251	261	118	3831112531741	32202-021440
PN 25								
65-2	185	224	290	205	24,2	45	5901688827598	22202-003065
80-2	200	278	310	205	36,8	52	5901688827628	22202-003080
100	235	310	350	221	68,0	59	3831112529434	22202-003100
125	270	344	400	221	120	82	3831112529465	22202-003125
150	300	380	480	251	207	118	3831112529496	22202-003150
150 HF	300	380	480	251	261	118	3831112532977	32202-021436

**Max. 150°C (double secured measuring points)**

DN	D	D1	L	H1*	q <sub>max</sub> [m³/h]	Kg	EAN	Article No
PN 16								
65-2	185	224	290	205	24,2	45	5902276893407	32202-021007
80-2	200	278	310	205	36,8	52	5902276893414	32202-021107
100	220	310	350	221	68,0	59	3831112528116	32202-021207
125	250	344	400	221	120	82	3831112528147	32202-021307
150	285	380	480	251	207	118	3831112528178	32202-021400
PN 25								
65-2	185	224	290	205	24,2	45	5902276893421	32202-021008
80-2	200	278	310	205	36,8	52	5902276893438	32202-021108
100	235	310	350	221	68,0	59	3831112528123	32202-021208
125	270	344	400	221	120	82	3831112528154	32202-021308
150	300	380	480	251	207	118	3831112528185	32202-021408

## Articles – Actuators

### TA-Slider 750, TA-Slider 1250, TA-MC100FSE/FSR

**DN 65-150:** Adapter for actuator to be ordered separately.

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	32-150	5901688828458	322226-10110
TA-Slider 750	100-240 VAC	32-150	5902276883620	322226-40110
TA-Slider 1250	24 VAC/VDC	150 HF	5901688828533	322227-10110
TA-Slider 1250	100-240 VAC	150 HF	5902276883828	322227-40110
TA-MC100FSE	24 VAC	32-150	3831112512122	61-100-101
TA-MC100FSE	230 VAC	32-150	3831112512139	61-100-102
TA-MC100FSR	24 VAC	32-150	3831112512146	61-100-201
TA-MC100FSR	230 VAC	32-150	3831112512153	61-100-202

### TA-Slider 750 Plus / TA-Slider 1250 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)

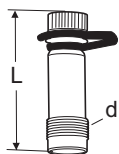
For more variants and details on actuators, see separate technical leaflets or contact IMI Hydronic Engineering.

## Adapters for actuators

	Valve DN	EAN	Article No
<b>For recommended actuators</b>			
TA-Slider 750	32-50		*)
TA-Slider 750, TA-Slider 1250	65-150	3831112529748	22413-001055
TA-MC100FSE/FSR	32-50		*)
TA-MC100FSE/FSR	65-150	3831112529748	22413-001055
<b>For other actuators</b>			
Hora MC55, MC100	32-50		*)
Hora MC55, MC100	65-150	3831112529748	22413-001055
Hora MC160	65-150	3831112527751	22413-001160
Hora MC253	65-150	3831112527973	22413-101253
JC VA1125-GGA-1	32-50	3831112531635	22412-000001
JC VA1125-GGA-1	65-150	3831112531628	22413-000001
JC VA7810-GGA-12	32-50	3831112531642	22412-000002
JC VA7810-GGA-12	65-150	3831112531659	22413-000002
Sauter AVM322	32-50	3831112532342	22412-000004
Sauter AVM322	65-150	3831112532359	22413-000004
Sauter AVM234, AVN, AVF	32-50	3831112531680	22412-000003
Sauter AVM234, AVN, AVF	65-150	3831112512214	22413-000003
Siemens SAX, SQV91	32-50	3831112531611	22214-000002
Siemens SAX, SQV91	65-150	3831112530928	22214-000001

\*) Integrated in the valve.

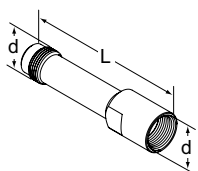
## Accessories



### Measuring point

AMETAL®/EPDM  
For DN 65-150.

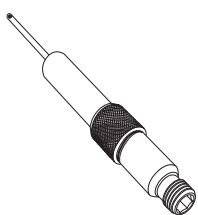
d	L	EAN	Article No
M14x1	44	7318792813207	52 179-014
M14x1	103	7318793858108	52 179-015



### Extension for measuring point M14x1

Suitable when insulation is used.  
AMETAL®  
For DN 65-150.

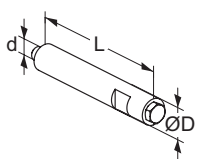
d	L	EAN	Article No
M14x1	71	7318793969507	52 179-016



### Measuring point, extension 60 mm

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

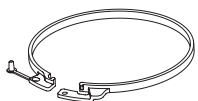
L	EAN	Article No
60	7318792812804	52 179-006



### Venting extension

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

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



### Tamper proof ring

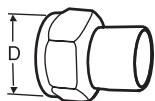
For locking of set  $Kv_{max}$ .

For DN	EAN	Article No
32-50	7318794001800	22107-000001

### Insulation

See related insulation instruction under "Products" on [www.imi-hydronic.com](http://www.imi-hydronic.com) or contact IMI Hydronic Engineering.

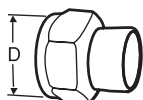
## Connections for DN 32-50



### Welding connection

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

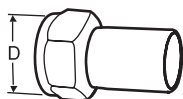
Valve DN	D	Pipe DN	EAN	Article No
32	G1 1/2	32	7318792748806	52 009-032
40	G2	40	7318792748905	52 009-040
50	G2 1/2	50	7318792749001	52 009-050



### 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

