

TA-FUS10N-P

Pressure independent combined control and balancing valves with independent EQM characteristics



TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

These innovative pressure independent control and balancing valves for heating and cooling systems combine the key hydronic functions of control and balancing 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.

> **Adjustable max. flow**

Adjustable Kvs technology allows setting to design flow.

> **Independent, inherent EQM characteristic**

Proper EQM valve characteristic and high authority for all settings.

> **Self-sealing measuring points**

Simple and accurate measurement for balancing, trouble shooting and power measurement.

> **Actuators**

Valves and actuators supplied together ensuring optimum control performance and simplified selection.



> 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

Dimension:

DN 32-150

Pressure class:

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

Differential pressure (Δp_V):

Max. differential pressure:
 DN 32-50: 350 kPa = 3,5 bar
 DN 65-150: 400 kPa = 4 bar
 Min. differential pressure:
 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
 (Valid for position 10, fully open. Other positions will require lower differential pressure, check with the software TA-Select.)

Recommended flow range:

The flow (q_{max}) can be set within the range [m^3/h]:
 DN 32: 0,88 - 4,30
 DN 40: 1,01 - 6,10
 DN 50: 2,58 - 10,9
 DN 65: 9,40 - 25,2
 DN 80: 14,5 - 38,7
 DN 100: 26,9 - 71,6
 DN 125: 45,4 - 121
 DN 150: 75,0 - 200

Important: All values are provisional and may be subject to change. Please check the website for up-to-date information.
 $q_{max} = l/h$ 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.
 (For other media contact TA Hydronics.)

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 TA Hydronics.

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 number, valve body material and flow direction arrow, label.**Surface treatment:**

DN 32-50: Non treated

DN 65-150: Electrophoretic painting.

Connection:

DN 32-50: Female thread according to ISO 228.

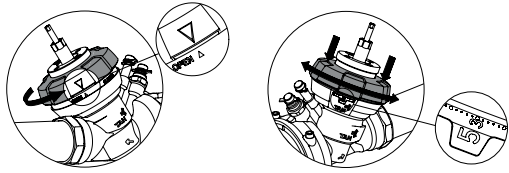
Thread length according to ISO 7/1.

DN 65-150: Flanges according to EN-1092-2, type 21.

Face to face length according to EN 558-1 series 1.

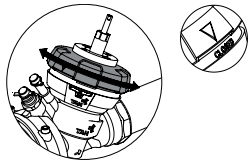
Operating function DN 32-50

Setting DN 32-50



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

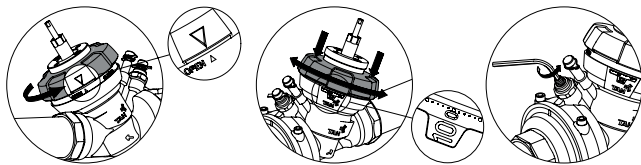
Shut-off DN 32-50



1. Turn the handwheel to "Closed".

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

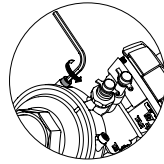
Flushing DN 32-50



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 DN 32-50



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

Measuring q DN 32-50

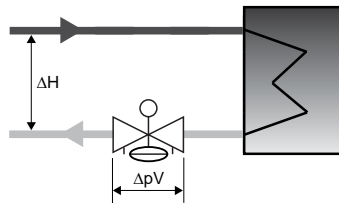
Connect TA Hydronics balancing instrument to the measuring points. Input the valve type, size and setting and the actual flow is displayed.

Measuring ΔH DN 32-50

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

Connect TA Hydronics 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.

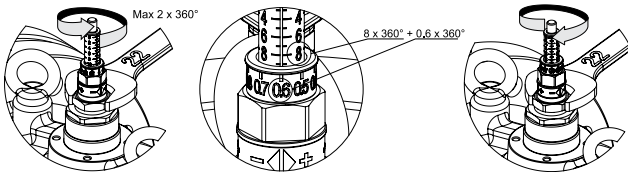


NOTE!

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

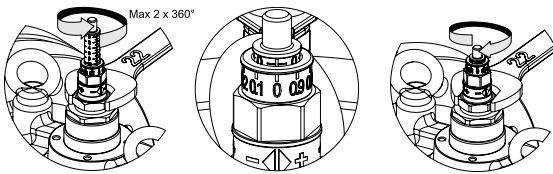
Operating function DN 65-150

Setting DN 65-150



1. Release the fixing nut.
2. Turn the setting screw to desired value on the scale, e.g. 8.6.
3. Tighten the fixing nut.

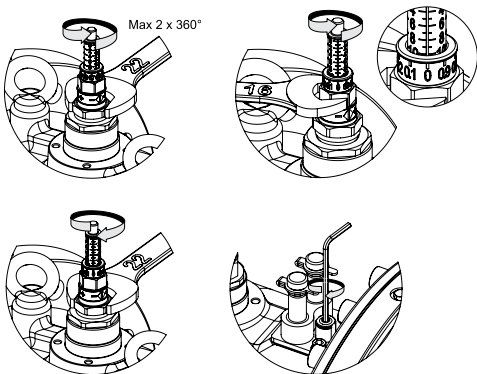
Shut-off DN 65-150



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

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

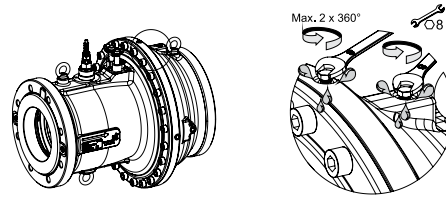
Flushing DN 65-150



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

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

Venting DN 65-150



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

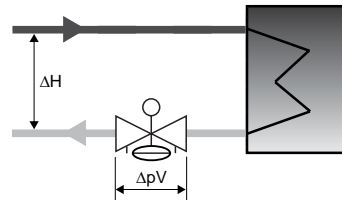
Measuring q DN 65-150

Connect TA Hydraulics balancing instrument to the measuring points. Input the valve type, size and setting and the actual flow is displayed.

Measuring ΔH DN 65-150

Close the valve according to "Shut-off", deactivate the Δp part according to "Flushing". Connect TA Hydraulics balancing instrument to the measuring points and measure.

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

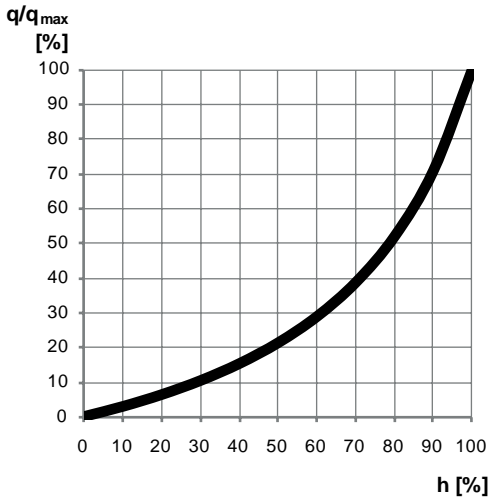


NOTE!

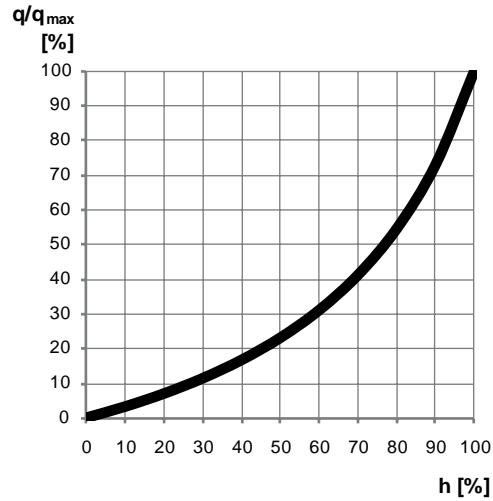
Ensure that the actuator is disengaged from the valve spindle during all operating functions described above, except venting.

Valve characteristics

DN 32-50



DN 65-150

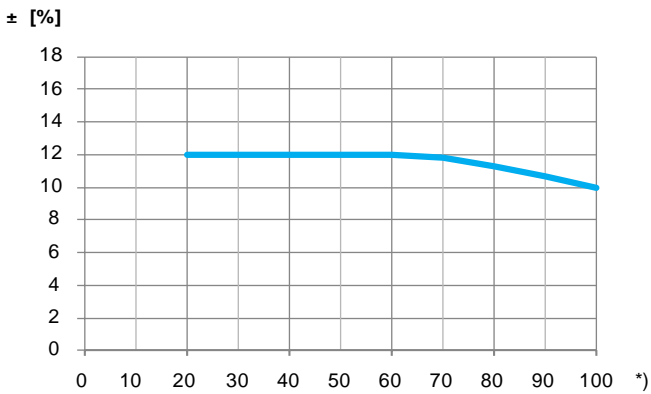


Nominal valve characteristic for all recommended settings.

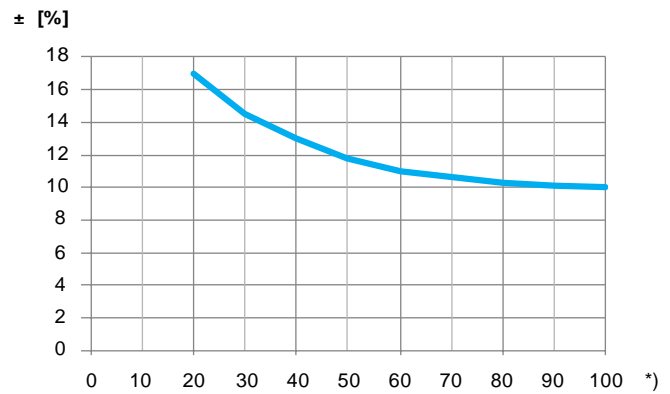
Measuring accuracy

Maximum flow deviation at different settings

DN 32-50



DN 65-150



*) Setting (%) of fully open valve.

Correction factors

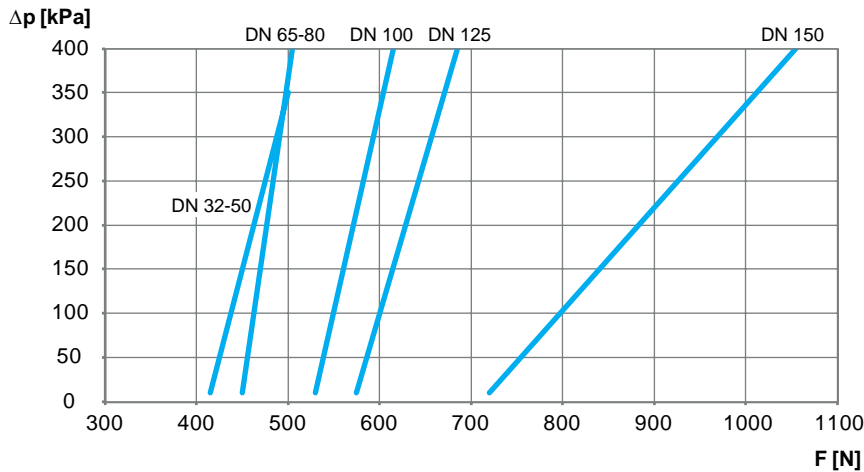
The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤ 20 cSt = $3^\circ E=100S.U.$), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves.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

Noise

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

Closing force

Necessary force (F) to close the valve versus the differential pressure (Δp), up to max. Δp .



q_{\max} values

Important: All values are provisional and may be subject to change. Please check the website for up-to-date information.

	Position									
	1	2	3	4	5	6	7	8	9	10
DN 32	880	1 030	1 220	1 450	1 750	2 200	2 580	3 150	3 770	4 300
DN 40	1 010	1 230	1 540	1 930	2 410	2 980	3 720	4 520	5 300	6 100
DN 50	2 580	3 130	3 750	4 450	5 450	6 400	7 550	8 650	10 000	10 900

	Position									
	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
DN 65	4 950	5 810	6 820	8 010	9 440	11 200	13 400	16 200	19 900	25 200
DN 80	7 610	8 940	10 500	12 300	14 500	17 200	20 600	24 900	30 700	38 700
DN 100	14 000	16 500	19 400	22 800	26 900	31 800	38 000	46 000	56 700	71 600
DN 125	23 700	28 000	32 800	38 500	45 400	53 700	64 300	77 800	95 800	121 000
DN 150	39 200	46 200	54 200	63 600	75 000	88 800	106 200	128 600	158 400	200 000

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

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

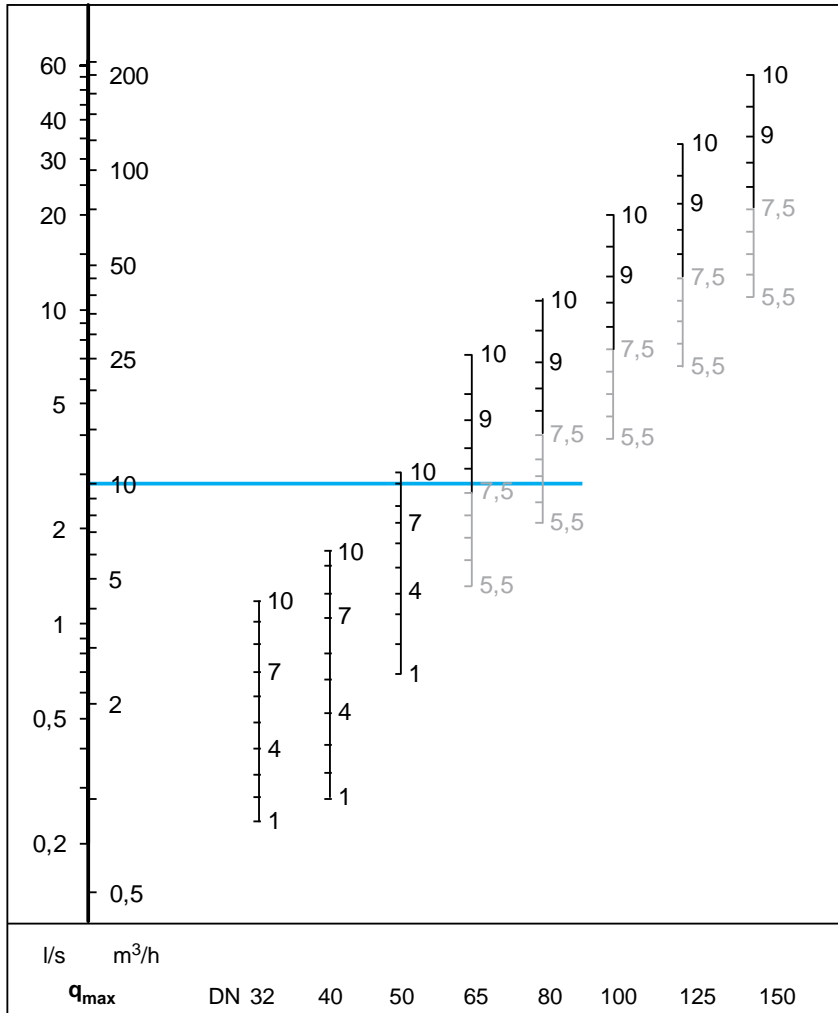
Sizing

Example

Flow is 10 m³/h, available ΔpV is 20 kPa and control signal (input signal) is 0-10 VDC.

1. Go to sizing diagram.
2. Draw a straight horizontal line from 10 m³/h, which will cross the setting bars for all valves which fit the application. In this case DN 50 setting 9,0, DN 65 setting 7,7.
3. Check that the available ΔpV is within the working range (between min. and max. allowed ΔpV). In this case, the ΔpV is 20kPa which is out of range for DN 65 (min. ΔpV=25 kPa valid for setting 10, other settings will require slightly lower ΔpV, this can be checked with the software TA Select).
4. Choose the smallest option (with some safety margin). In this case DN 50 is preferable.
5. Go to the selection tables to select the correct set. In this case article number 22202-031050.

Sizing diagram



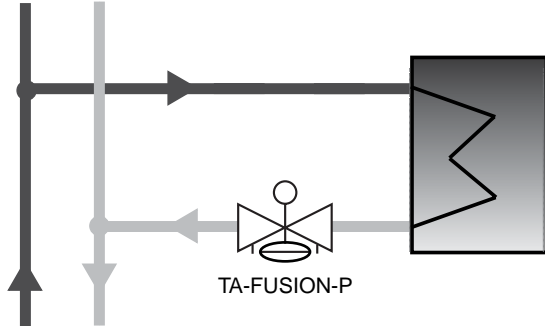
DN	Differential pressure ΔpV [kPa]	
	Min.	Max.
32-50	15	350
65-80	25	400
100-125	30	400
150	40	400

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

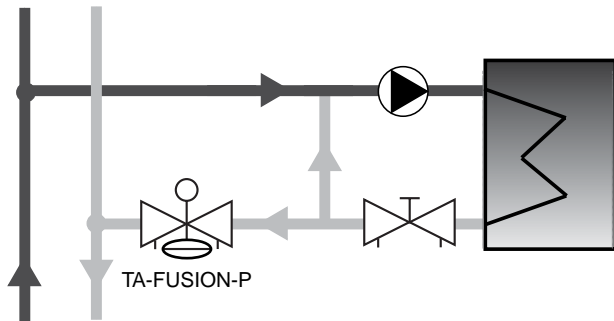
Installation

Application examples

2-way direct circuit



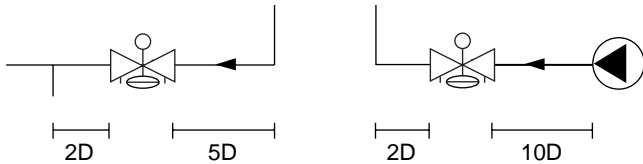
Injection circuit



Normal pipe fittings

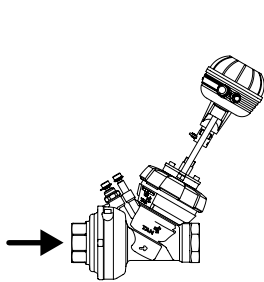
Avoid mounting taps and pumps immediately before or after the valve.

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

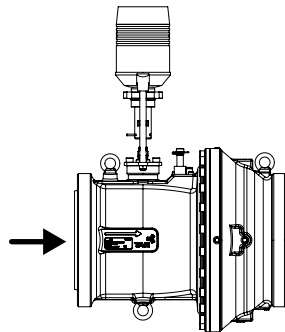


Flow direction

DN 32-50

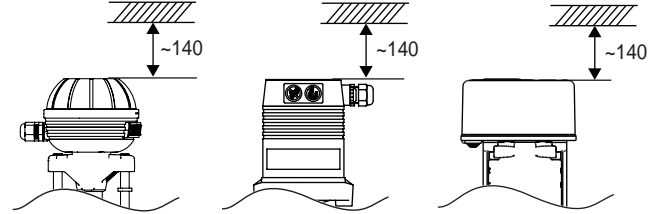


DN 65-150



Installation of actuator

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



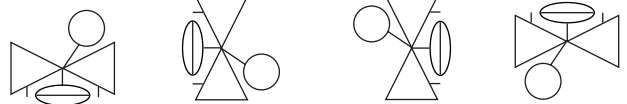
Enclosure class

Automatic operation: IP 54

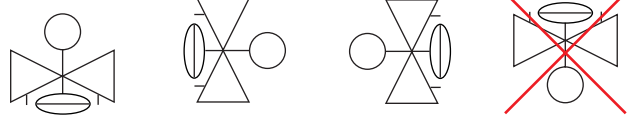
(Manual operation TA-MC55: IP 30)

Note: Read carefully the installation instruction of the actuator. Intended for indoor installation applications. For outdoor installation applications please contact TA Hydraulics. In cooling systems, the pipe and valve must be insulated.

DN 32-50



DN 65-150



Actuators

A wide range of high performance proportional actuators are available from TA Hydraulics (e.g. 24V, 230V, fail safe) to provide accurate modulating or 3-point control, when used together with combined control and balancing valves. See “Selection tables”.

For more details on actuators, see related technical leaflet “TA-MC Actuators” or contact TA Hydraulics.

Selection tables

Valves and actuators are supplied together ensuring optimum control and simplified selection.

The codes in the selection tables are for different sets of valve size (DN) and type of actuator. All fail safe and non-fail safe sets are able to close off (or fail safe open) against 0–max. ΔpV (350-400 kPa).

For more details on actuators, see related technical leaflet “TA-MC Actuators” or contact TA Hydraulics.

Article number: 22202-xxxxxx

To get the complete article number, simply add the code stated below according to your required set.

Example: 22202-031032

Product codes in *italics* are with additional actuator functionalities.

			TA-MC55Y	TA-MC55	TA-MC55	TA-MC100/160 ³⁾	TA-MC100/160 ³⁾
Input signal: ¹⁾			0(2)-10 VDC / 0(4)-20 mA	3-point	3-point	0(2)-10 VDC / 0(4)-20 mA and 3-point	0(2)-10 VDC / 0(4)-20 mA and 3-point
Output signal: ¹⁾			0-10 VDC	0-10 VDC	0-10 VDC	0-10 VDC (0(4)-20 mA) ²⁾	0-10 VDC (0(4)-20 mA) ²⁾
Supply voltage:			24 V	24 V	230 V	24 V	230 V
Fail safe:			No	No	No	No	No
DN	PN	Flow range [m ³ /h]					
32	16	0,88 - 4,30	031032	011032	021032	<i>041032</i>	<i>051032</i>
40	16	1,01 - 6,10	031040	011040	021040	<i>041040</i>	<i>051040</i>
50	16	2,58 - 10,9	031050	011050	021050	<i>041050</i>	<i>051050</i>
65	16	9,40 - 25,2	032065	012065	022065	<i>042065</i>	<i>052065</i>
65	25	9,40 - 25,2	033065	013065	023065	<i>043065</i>	<i>053065</i>
80	16	14,5 - 38,7	032080	012080	022080	<i>042080</i>	<i>052080</i>
80	25	14,5 - 38,7	033080	013080	023080	<i>043080</i>	<i>053080</i>
100	16	26,9 - 71,6	-	-	-	042100	052100
100	25	26,9 - 71,6	-	-	-	043100	053100
125	16	45,4 - 121	-	-	-	042125	052125
125	25	45,4 - 121	-	-	-	043125	053125
150	16	75,0 - 200	-	-	-	062150	072150
150	25	75,0 - 200	-	-	-	063150	073150

Important: All values are provisional and may be subject to change. Please check the website for up-to-date information.

1) Invertible input and output signal

2) Output signal: 0(4)-20 mA on request (accessory), please contact TA Hydraulics.

3) TA-MC160 required for sets with DN 150 only.

DN 32-50: Female threaded

DN 65-150: Flanged

With fail safe actuators

			TA-MC100 FSE	TA-MC100 FSR	TA-MC100 FSE	TA-MC100 FSR
Input signal:			0(2)-10 VDC / 0(4)-20 mA and 3-point	0(2)-10 VDC / 0(4)-20 mA and 3-point	3-point	3-point
Output signal:			0(2)-10 VDC 0(4)-20 mA	0(2)-10 VDC 0(4)-20 mA	0-10 VDC	0-10 VDC
Supply voltage:			24 V	24 V	230 V	230 V
Fail safe:			Extending (closing)	Retracting (opening)	Extending (closing)	Retracting (opening)
DN	PN	Flow range [m ³ /h]				
32	16	0,88 - 4,30	081032	091032	101032	111032
40	16	1,01 - 6,10	081040	091040	101040	111040
50	16	2,58 - 10,9	081050	091050	101050	111050
65	16	9,40 - 25,2	082065	092065	102065	112065
65	25	9,40 - 25,2	083065	093065	103065	113065
80	16	14,5 - 38,7	082080	092080	102080	112080
80	25	14,5 - 38,7	083080	093080	103080	113080
100	16	26,9 - 71,6	082100	092100	102100	112100
100	25	26,9 - 71,6	083100	093100	103100	113100
125	16	45,4 - 121	082125	092125	102125	112125
125	25	45,4 - 121	083125	093125	103125	113125
150*	16	75,0 - 200	-	-	-	-
150*	25	75,0 - 200	-	-	-	-

Important: All values are provisional and may be subject to change. Please check the website for up-to-date information.

*) For DN 150 with fail safe actuator, please contact
TA Hydronics.

DN 32-50: Female threaded
DN 65-150: Flanged

Selection tables – individual components

The valve and actuator sets detailed previously ensure optimum control and simplified selection and are therefore the recommended option. Under certain circumstances

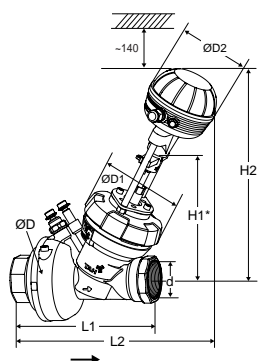
however, for example when delivery to site is required on different dates, the individual set components may be ordered using the following table;

DN	PN	Article No (for individual valve)	Article No – Adapter for actuator			TA-MC100 FSE/FSR
			TA-MC55Y/TA-MC55	TA-MC100	TA-MC160	
32	16	22202-001032	-	-	n. a.	22412-101100
40	16	22202-001040	-	-	n. a.	22412-101100
50	16	22202-001050	-	-	n. a.	22412-101100
65	16	22202-002065	22413-001055	22413-001100	n. a.	22413-101100
65	25	22202-003065	22413-001055	22413-001100	n. a.	22413-101100
80	16	22202-002080	22413-001055	22413-001100	n. a.	22413-101100
80	25	22202-003080	22413-001055	22413-001100	n. a.	22413-101100
100	16	22202-002100	n. a.	22413-001100	n. a.	22413-102100
100	25	22202-003100	n. a.	22413-001100	n. a.	22413-102100
125	16	22202-002125	n. a.	22413-001100	n. a.	22413-102100
125	25	22202-003125	n. a.	22413-001100	n. a.	22413-102100
150	16	22202-002150	n. a.	n. a.	22413-001160	FSE on request FSR n. a.
150	25	22202-003150	n. a.	n. a.	22413-001160	FSE on request FSR n. a.

- = Adapter supplied together with the valve.

n. a. = Not applicable.

Articles



DN 32-50 Female threads

0(2)-10 VDC / 0(4)-20 mA, 24 V (TA-MC55Y)

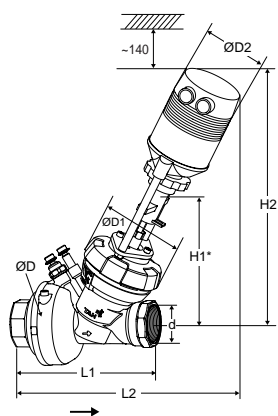
DN	d	D	D1	D2	L1	L2	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	109	213	333	186	326	8,0	5901688821329	22202-031032
40	G1 1/2	130	128	109	218	332	186	326	8,0	5901688821350	22202-031040
50	G2	130	128	109	226	340	190	330	8,5	5901688821381	22202-031050

3-point, 24 V (TA-MC55)

DN	d	D	D1	D2	L1	L2	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	109	213	333	186	326	8,0	5901688821305	22202-011032
40	G1 1/2	130	128	109	218	332	186	326	8,0	5901688821336	22202-011040
50	G2	130	128	109	226	340	190	330	8,5	5901688821367	22202-011050

3-point, 230 V (TA-MC55)

DN	d	D	D1	D2	L1	L2	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	109	213	333	186	326	8,0	5901688821312	22202-021032
40	G1 1/2	130	128	109	218	332	186	326	8,0	5901688821343	22202-021040
50	G2	130	128	109	226	340	190	330	8,5	5901688821374	22202-021050



0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC100) ¹⁾

DN	d	D	D1	D2	L1	L2	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	103	213	380	186	398	9,0	5901688821398	22202-041032
40	G1 1/2	130	128	103	218	380	186	398	9,0	5901688821411	22202-041040
50	G2	130	128	103	226	384	190	402	9,5	5901688821435	22202-041050

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC100) ¹⁾

DN	d	D	D1	D2	L1	L2	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	103	213	380	186	398	9,0	5901688821404	22202-051032
40	G1 1/2	130	128	103	218	380	186	398	9,0	5901688821428	22202-051040
50	G2	130	128	103	226	384	190	402	9,5	5901688821442	22202-051050

*) Height to the spindle top (for threaded valves).

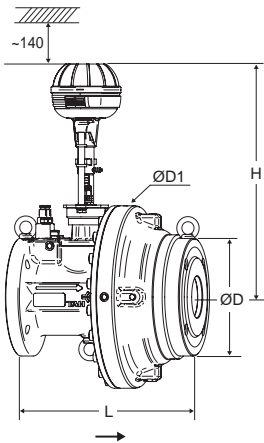
1) Actuators with additional functionalities, such as position switches, output signal 0(4)-20 mA, see related technical leaflet "TA-MC Actuators".

→ = Flow direction

Actuators in all sets are sized for actuation up to max. ΔpV.

Valve and actuator are individually packaged for easy handling on site.

DN 65-150 With flanges
0(2)-10 VDC / 0(4)-20 mA, 24 V (TA-MC55Y)



DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	339	47	5901688821626	22202-032065
80	200	290	310	339	54	5901688821718	22202-032080
PN 25							
65	185	290	290	339	47	5901688821657	22202-033065
80	200	290	310	339	54	5901688821749	22202-033080

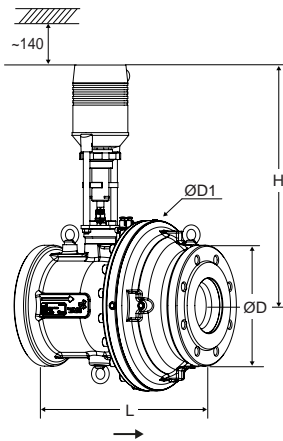
3-point, 24 V (TA-MC55)

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	339	47	5901688821602	22202-012065
80	200	290	310	339	54	5901688821695	22202-012080
PN 25							
65	185	290	290	339	47	5901688821633	22202-013065
80	200	290	310	339	54	5901688821725	22202-013080

3-point, 230 V (TA-MC55)

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	339	47	5901688821619	22202-022065
80	200	290	310	339	54	5901688821701	22202-022080
PN 25							
65	185	290	290	339	47	5901688821640	22202-023065
80	200	290	310	339	54	5901688821732	22202-023080

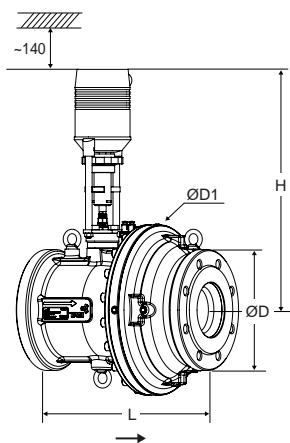
0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC100) ¹⁾



DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	438	48	5901688821770	22202-042065
80	200	290	310	438	55	5901688821831	22202-042080
100	220	310	350	438	62	5901688822135	22202-042100
125	250	344	400	438	85	5901688822197	22202-042125
PN 25							
65	185	290	290	438	48	5901688821794	22202-043065
80	200	290	310	438	55	5901688821855	22202-043080
100	235	310	350	438	62	5901688822159	22202-043100
125	270	344	400	438	85	5901688822210	22202-043125

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC100) ¹⁾

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	463	48	5901688821787	22202-052065
80	200	290	310	463	55	5901688821848	22202-052080
100	220	310	350	463	62	5901688822142	22202-052100
125	250	344	400	463	85	5901688822203	22202-052125
PN 25							
65	185	290	290	463	48	5901688821800	22202-053065
80	200	290	310	463	55	5901688821862	22202-053080
100	235	310	350	463	62	5901688822166	22202-053100
125	270	344	400	463	85	5901688822227	22202-053125



0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC160) ¹⁾

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
150	285	380	480	533	121	5901688822258	22202-062150
PN 25							
150	300	380	480	533	121	5901688822272	22202-063150

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC160) ¹⁾

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
150	285	380	480	558	121	5901688822265	22202-072150
PN 25							
150	300	380	480	558	121	5901688822289	22202-073150

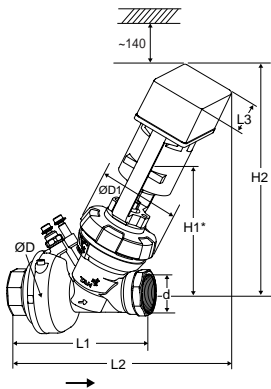
1) Actuators with additional functionalities, such as position switches, output signal 0(4)-20 mA, see related technical leaflet "TA-MC Actuators".

→ = Flow direction

Actuators in all sets are sized for actuation up to max. ΔpV.

Valve and actuator are individually packaged for easy handling on site.

Articles – Fail-safe, extending (closing)



DN 32-50 Female threads

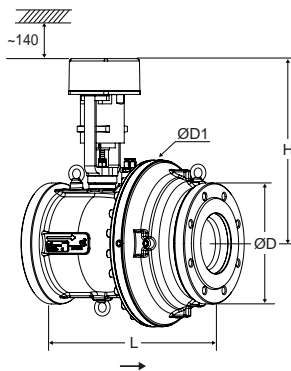
0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC100FSE)

DN	d	D	D1	L1	L2	L3	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	213	379	141	186	356	9,3	5901688821459	22202-081032
40	G1 1/2	130	128	218	379	141	186	356	9,3	5901688821497	22202-081040
50	G2	130	128	226	383	141	190	360	9,8	5901688821534	22202-081050

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC100FSE)

DN	d	D	D1	L1	L2	L3	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	213	379	141	186	356	9,3	5901688821473	22202-101032
40	G1 1/2	130	128	218	379	141	186	356	9,3	5901688821510	22202-101040
50	G2	130	128	226	383	141	190	360	9,8	5901688821558	22202-101050

*) Height to the spindle top (for threaded valves).



DN 65-150 With flanges

0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC100FSE)

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	382	48	5901688821916	22202-082065
80	200	290	310	382	55	5901688822036	22202-082080
100	220	310	350	382	62	5901688822333	22202-082100
125	250	344	400	382	85	5901688822456	22202-082125
PN 25							
65	185	290	290	382	48	5901688821954	22202-083065
80	200	290	310	382	55	5901688822074	22202-083080
100	235	310	350	382	62	5901688822371	22202-083100
125	270	344	400	382	85	5901688822494	22202-083125

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC100FSE)

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	382	48	5901688821930	22202-102065
80	200	290	310	382	55	5901688822050	22202-102080
100	220	310	350	382	62	5901688822357	22202-102100
125	250	344	400	382	85	5901688822470	22202-102125
PN 25							
65	185	290	290	382	48	5901688821978	22202-103065
80	200	290	310	382	55	5901688822098	22202-103080
100	235	310	350	382	62	5901688822395	22202-103100
125	270	344	400	382	85	5901688822517	22202-103125

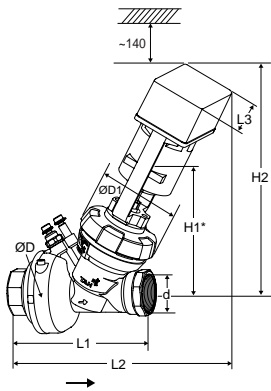
DN 150 with fail safe actuator, please contact TA Hydraulics.

→ = Flow direction

Actuators in all sets are sized for actuation up to max. ΔpV .

Valve and actuator are individually packaged for easy handling on site.

Articles – Fail-safe, retracting (opening)



DN 32-50 Female threads

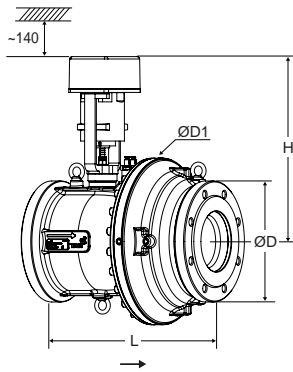
0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC100FSR)

DN	d	D	D1	L1	L2	L3	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	213	379	141	186	356	9,3	5901688821466	22202-091032
40	G1 1/2	130	128	218	379	141	186	356	9,3	5901688821503	22202-091040
50	G2	130	128	226	383	141	190	360	9,8	5901688821541	22202-091050

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC100FSR)

DN	d	D	D1	L1	L2	L3	H1*	H2	Kg	EAN	Article No
PN 16											
32	G1 1/4	130	128	213	379	141	186	356	9,3	5901688821480	22202-111032
40	G1 1/2	130	128	218	379	141	186	356	9,3	5901688821527	22202-111040
50	G2	130	128	226	383	141	190	360	9,8	5901688821565	22202-111050

*) Height to the spindle top (for threaded valves).



DN 65-125 With flanges

0(2)-10 VDC / 0(4)-20 mA and 3-point, 24 V (TA-MC100FSR)

DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	382	48	5901688821923	22202-092065
80	200	290	310	382	55	5901688822043	22202-092080
100	220	310	350	382	62	5901688822340	22202-092100
125	250	344	400	382	85	5901688822463	22202-092125
PN 25							
65	185	290	290	382	48	5901688821961	22202-093065
80	200	290	310	382	55	5901688822081	22202-093080
100	235	310	350	382	62	5901688822388	22202-093100
125	270	344	400	382	85	5901688822500	22202-093125

0(2)-10 VDC / 0(4)-20 mA and 3-point, 230 V (TA-MC100FSR)

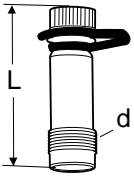
DN	D	D1	L	H	Kg	EAN	Article No
PN 16							
65	185	290	290	382	48	5901688821947	22202-112065
80	200	290	310	382	55	5901688822067	22202-112080
100	220	310	350	382	62	5901688822364	22202-112100
125	250	344	400	382	85	5901688822487	22202-112125
PN 25							
65	185	290	290	382	48	5901688821985	22202-113065
80	200	290	310	382	55	5901688822104	22202-113080
100	235	310	350	382	62	5901688822401	22202-113100
125	270	344	400	382	85	5901688822524	22202-113125

→ = Flow direction

Actuators in all sets are sized for actuation up to max. ΔpV.

Valve and actuator are individually packaged for easy handling on site.

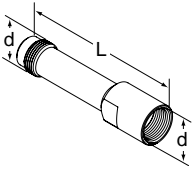
Accessories



Measuring points

For DN 65-150.

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

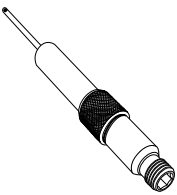


Extension for measuring point M14x1

Suitable when insulation is used.

For DN 65-150.

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



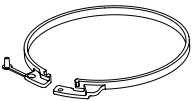
Measuring point

Extensions 60 mm.

Can be installed without draining of the system.

For all dimensions.

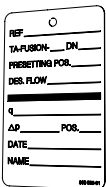
L	EAN	Article No
60	7318792812804	52 179-006



Tamper proof ring

For locking of set Kv_{max} .

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



Identification tag

EAN	Article No
7318794001701	22107-000002

Insulation

See related insulation instruction under "Products & Solutions" on www.tahydraulics.com or contact TA Hydraulics.

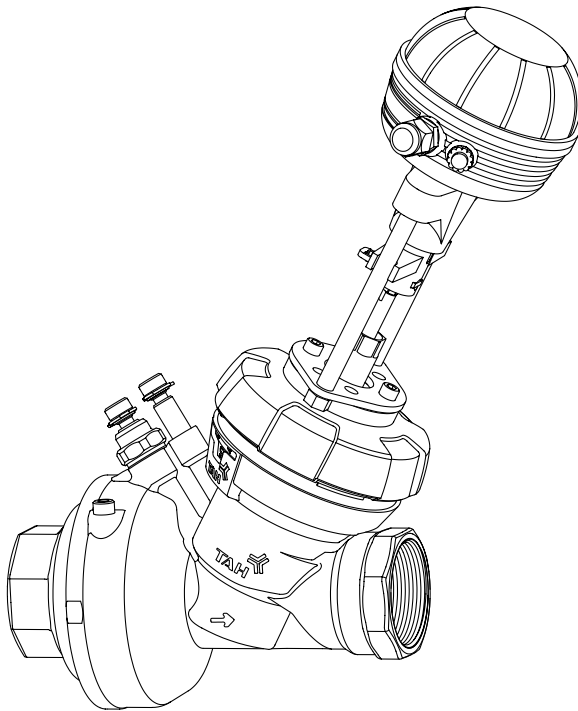
Actuators accessories

See related technical leaflet "TA-MC Actuators" or contact TA Hydraulics.

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5-22-10 TA-FUSION-P 12.2012

TA-FUS10N-P (DN 32-50)



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

-20°C – +120°C

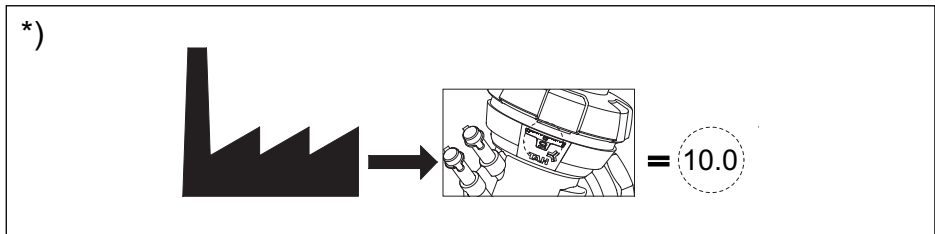
PN 16

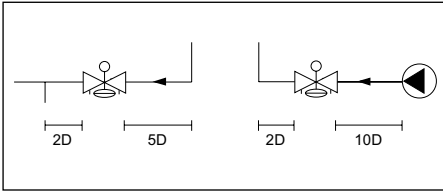
Max. $\Delta pV_{\max} = 800 \text{ kPa} = 8 \text{ bar}$

Min. $\Delta pV_{\min} = 15 \text{ kPa} = 0.15 \text{ bar}$

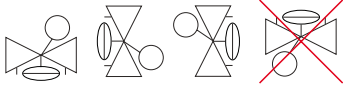
q_{max} =

- EN l/h at each setting and fully open valve plug.
 DE l/h bei der jeweiligen Einstellung und voll geöffnetem Regelkegel.
 FR l/h à chaque réglage et vanne complètement ouverte.
 NL l/h van elke instelstand en volledig geopende afsluiterkegel.
 ES l/h para cada ajuste, estando el obturador en la posición totalmente abierta.
 PT l/h para cada ajuste e válvula totalmente aberta.
 IT l/h per ciascuna impostazione e con apertura totale della valvola.
 RU л/ч для каждой настройки и при полностью поднятом штоке клапана.
 HU l/h maximális térfogatáram az egyes előbeállításoknál, a szeleptányér teljes nyitásánál.
 PL l/h dla każdej nastawy przy w pełni otwartym grzybku zaworu.
 CS l/h pro každé nastavení při zcela otevřeném regulačním kuželce.
 SK l/hod pri danom nastavení a plne otvorenej regulačnej kúželke.
 SL l/h pri vsaki nastavitvi in popolnoma odprtem vretenu.
 RO l/h pentru fiecare poziție de reglare și vana complet deschisă.
 BG л/h за всяка настройка и при напълно отворен вентил.
 HR l/h za svaku prednamještenu poziciju i potpuno otvorenom ventilu.
 BiH l/h za svaku prednamještenu poziciju i potpuno otvorenom ventilu.
 SR l/h za svaku poziciju predpodešavanja i potpuno otvorenom ventilu.
 ET konkreetsele eelseadearvule vastav täiesti avatud ventili vooluhulk l/h.
 LV l/h katram priekšiestatījumam un pie pilnībā atvērta vārsta.
 LT l/h prie kiekvieno nustatymo ir pilnai atidaryto vožtuvo.
 TR tüm önayar değerlerinde ve tam açık vana için l/h.
 ZH l/h 在每个设定值且阀芯全开时。
 SV l/h vid respektive inställning och fullt öppna ventilkägla.
 NO l/h ved angitt innstilling og helt åpen ventilkjegle.
 FI l/h kyseisellä esisäättöarvolla venttiilikara täysin auki.
 DA l/h ved respektiv indstilling og fuldt åben reguleringskegle.

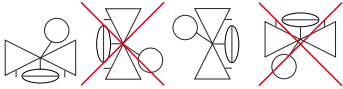




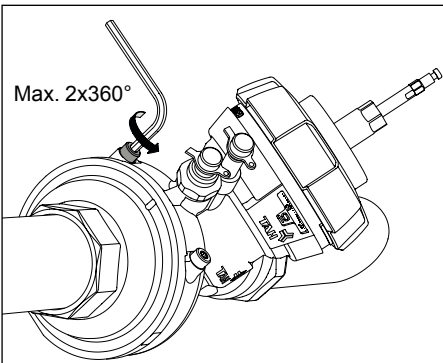
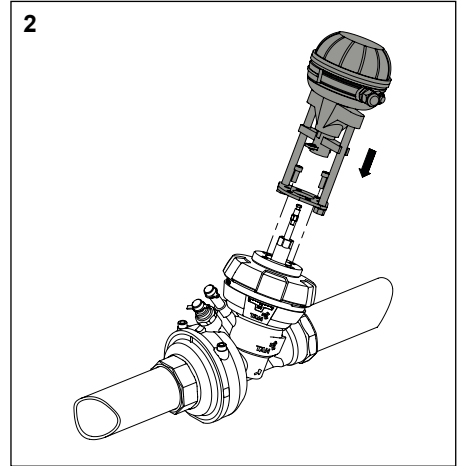
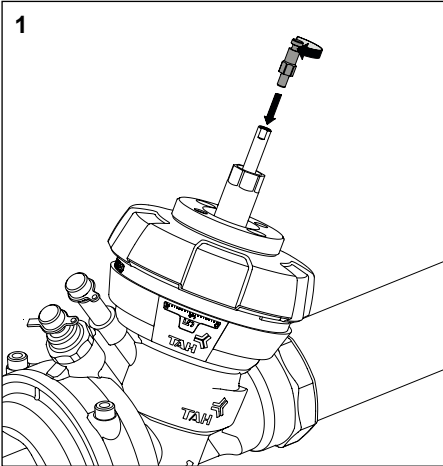
TA-MC55/55Y, TA-MC100



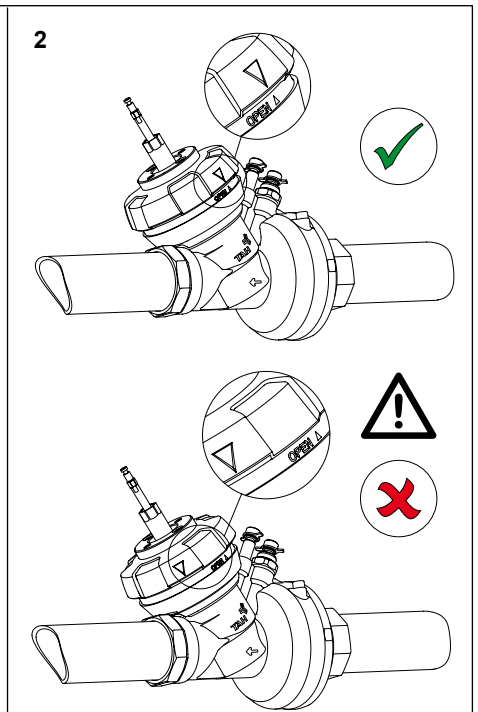
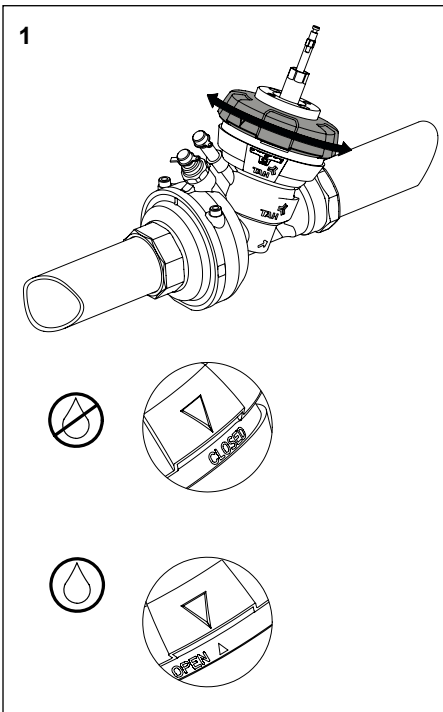
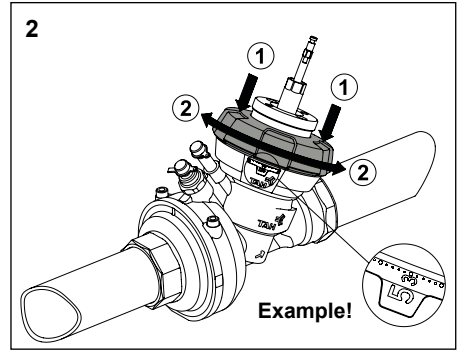
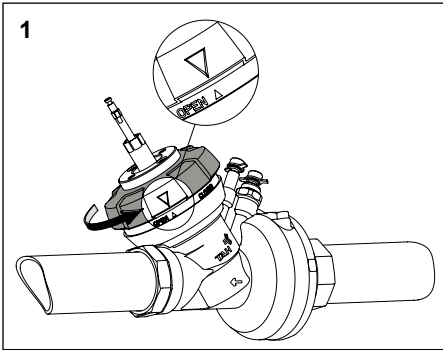
TA-MC100FSE/FSR



DN	H [mm]		
	TA-MC55	TA-MC100	TA-MC100 FSE/FSR
32	326	398	356
40	326	398	356
50	330	402	360

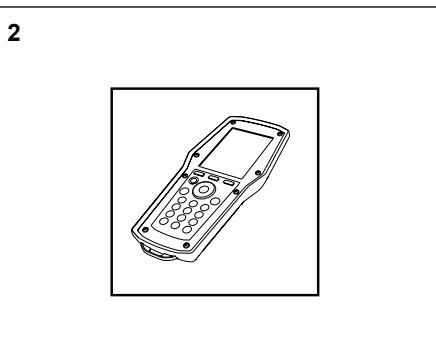
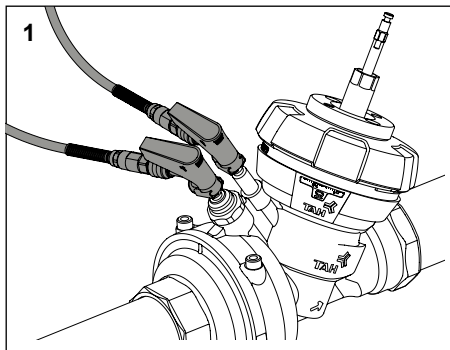


- EN Following operations can be made with or without the actuator mounted. Ensure that the actuator is disengaged from the valve spindle during the operations.
- DE Folgende Tätigkeiten können mit oder ohne montiertem Stelltrieb durchgeführt werden. Stellen Sie sicher, dass der Stelltrieb während der Tätigkeiten von der Ventilschindel abgekoppelt ist.
- FR Les opérations suivantes peuvent être réalisées sans démonter le moteur. S'assurer que le moteur est désaccouplé de la vanne durant les opérations.
- NL De volgende handelingen kunnen worden uitgevoerd met of zonder gemonteerde motor. Verzeker u ervan dat de motor is losgekoppeld van de schindel van de afsluiter tijdens de volgende handelingen.
- ES Las siguientes operaciones pueden realizarse con el actuador montado o desmontado. Asegúrese de que el actuador está desacoplado del vástago, durante su realización.
- PT As seguintes operações podem ser feitas com ou sem o atuador montado. Certifique que o atuador está desacoplado do eixo da válvula durante as operações.
- IT Le seguenti operazioni possono essere eseguite con o senza l'attuatore montato. Assicurarsi che l'attuatore sia disinnescato dal pistone della valvola durante il funzionamento.
- RU Операции могут осуществляться как с установленным приводом, так и без него. Убедитесь, что привод отсоединен от штока клапана на время проведения операции.
- HU A következő műveletek elvégezhetőek a szelepszegítő fel- és leszerelt állapotában is. Ellenőrizze, hogy a szelepszegítő le legyen választva a szelepszóról a következő művelet közben.
- PL Powyższe czynności mogą być wykonane z lub bez zamontowanego siłownika. Upewnij się, że siłownik jest zdjęty z trzpienia zaworu podczas wykonywania następujących operacji.
- CS Následující činnosti lze provádět s již nainstalovaným pohonem nebo bez něj. Pohon, ale musí být odpojen od dráku ventilu.
- SK Nasledujúce činnosti možno vykonávať s už nainštalovaným pohonom alebo bez neho. Pohon, ale musí byť odpojený od drieku ventilu.
- SL Sledeče funkcije so možne z nameščenim pogonom ali brez. Prepričajte se, da je pogon ločen od vretena ventila med temi operacijami.
- RO Următoarele operațiuni pot fi realizate cu/fără servomotorul montat. Asigurați-vă că servomotorul este deconectat de pe vană și de pe axul vanei în timpul acestor operațiuni.
- BG Операциите могат да се извършват с или без инсталирана задвижка. Убедете се, че задвижката е разединена от шпиндела на вентила.
- HR Sljedeće operacije mogu biti napravljene sa ili bez montiranog pogona. Tijekom operacije, osigurati da je pogon ventila odvojen od vretena.
- BiH Sljedeće operacije mogu biti napravljene sa ili bez montiranog pogona. Tijekom operacije, osigurati da je pogon ventila odvojen od vretena.
- SR Sledeće operacije je moguće izvršiti sa ili bez pogona montiranog na ventilu. Uverite se da je pogon odvojen od vretena ventila za vreme operacija.
- ET Nende toimingute teostamiseks peab olema eelnevalt lahti ühendatud mootor ventiili spindlist.
- LV Sekojošo darbību var veikt ar vai bez izpildmehānisma montāžas. Nodrošiniet, ka aktuatora ir atvienots no vārsta vārpstas šīs darbības laikā.
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- TR Aşağıda tanımlanan uygulamalar aktüatör vanaya montajlı veya montajsız iken gerçekleştirilebilir. Bu uygulamalar sırasında aktüatörün vana miline bağlı olmadiğın emin olunuz.
- ZH 在有或没有安装执行器的情况下都可进行以下操作。但是在操作时，必须将执行器脱离阀轴。
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- NO Følgende operasjoner kan gjøres med eller uten aktuator monteret. Sørg for at aktuatoren er koblet fra ventilsjindelen under operasjonene.
- FI Seuraavat toimenpiteet voidaan tehdä ilman toimilaitetta tai kun se on kiinnitetty. Varmista että toimilaitte on irrotettu venttiilin karasta seuraavien toimenpiteiden aikana.
- DA Følgende operationer kan foretages med eller uden aktuator monteret. Spindelen skal dog altid være frigjort under disse operationer.



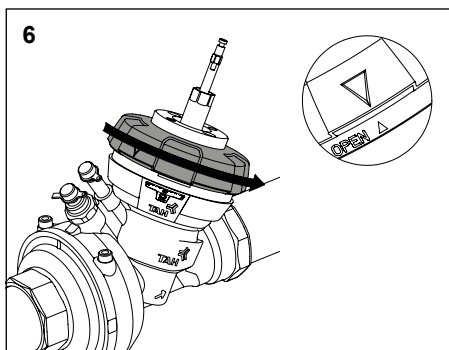
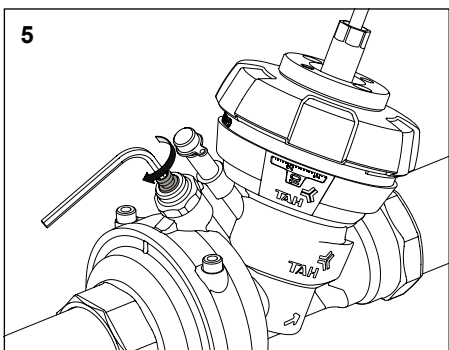
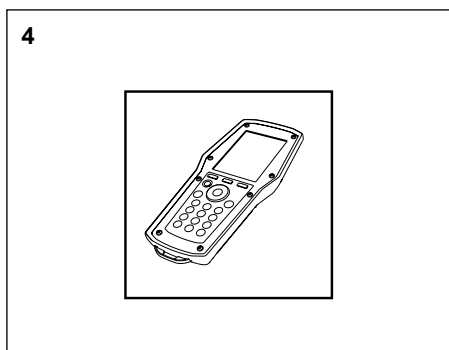
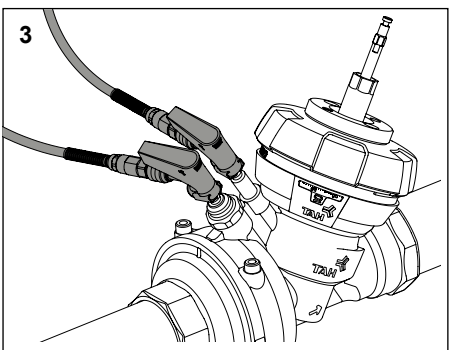
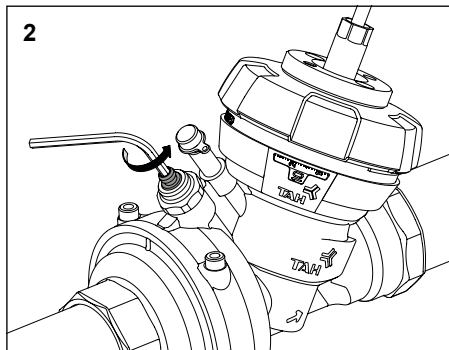
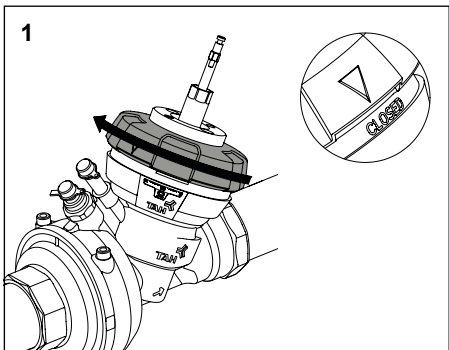


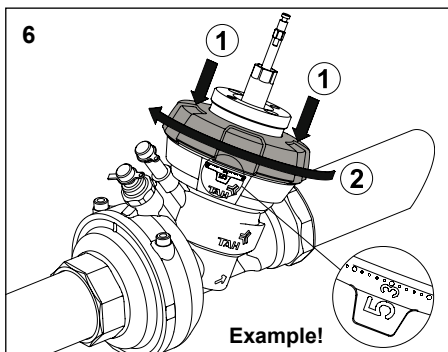
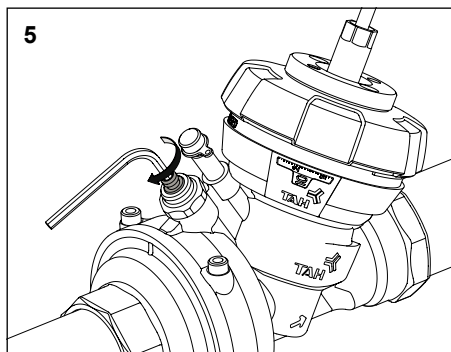
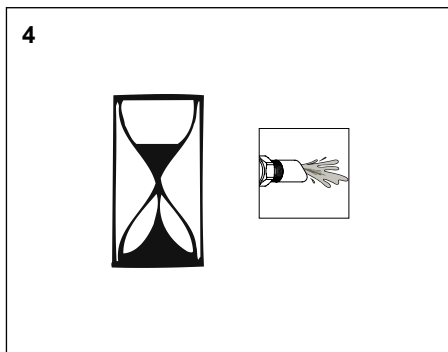
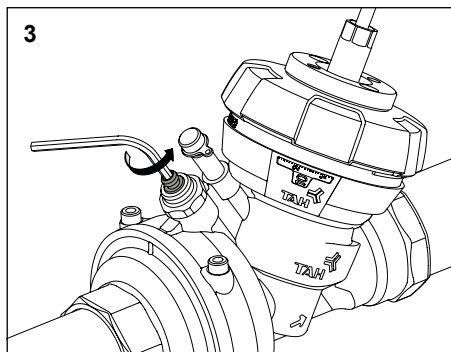
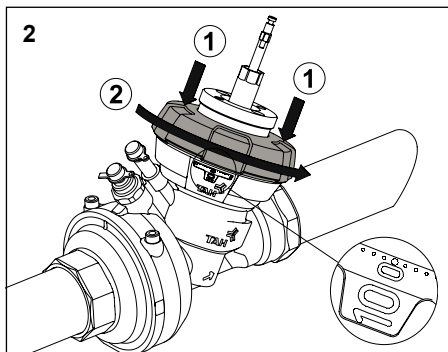
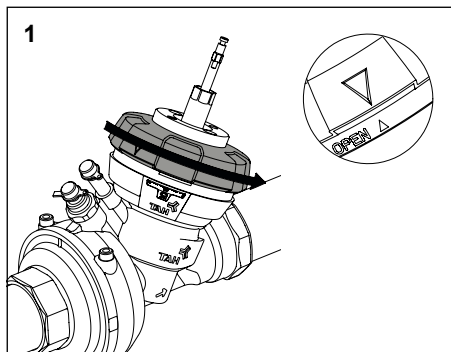
q





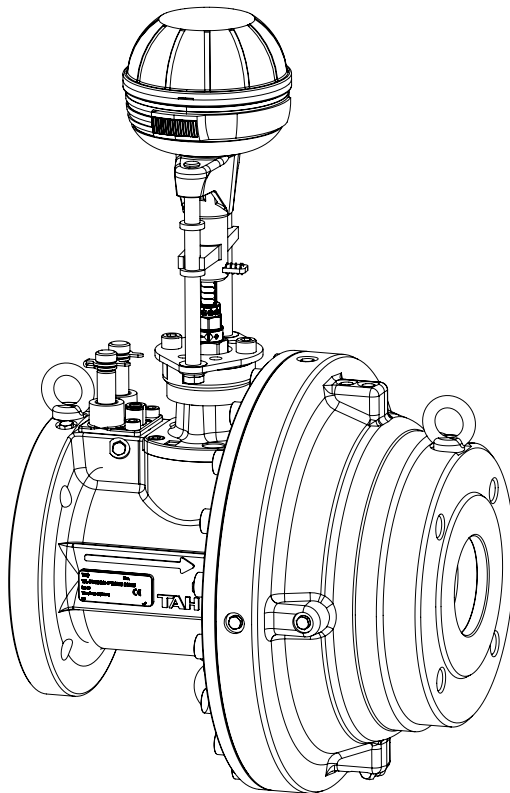
ΔH





We reserve the right to introduce technical alterations without previous notice.

TA-FUS10N-P (DN 65-80)



Pos	q _{max}	
	DN 65	DN 80
5.5	4 950	7 500
6	5 800	9 000
6.5	6 800	10 000
7	8 000	12 000
7.5	9 450	14 500
8	11 200	17 000
8.5	13 400	20 000
9	16 200	25 000
9.5	20 000	30 000
10*	25 200	38 000



Pos 7.5–10

-20°C – +120°C

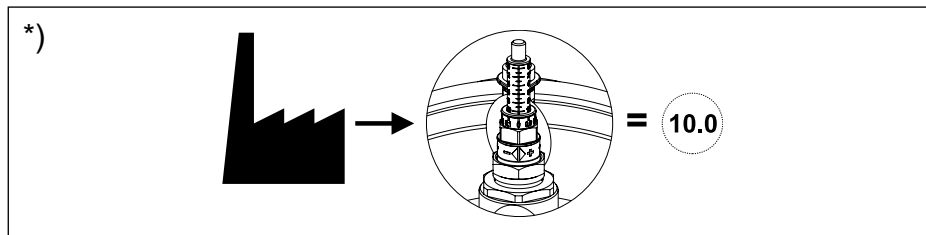
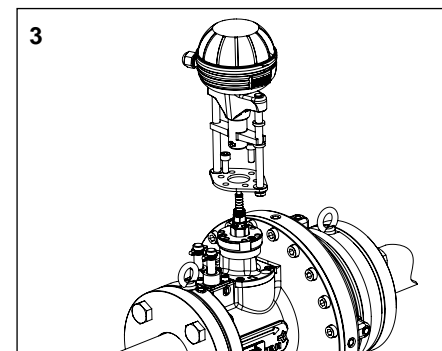
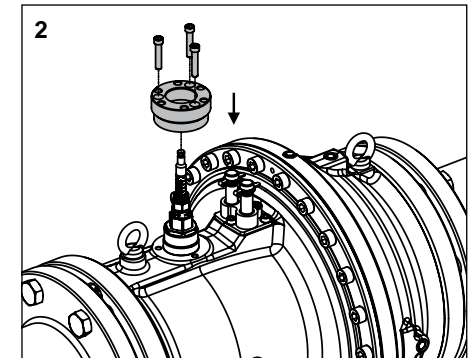
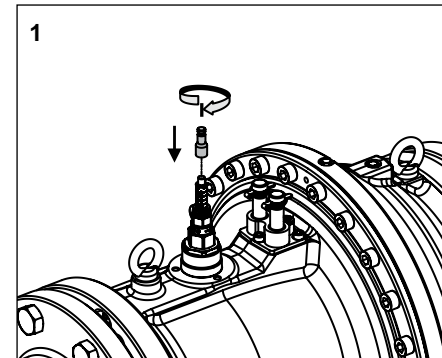
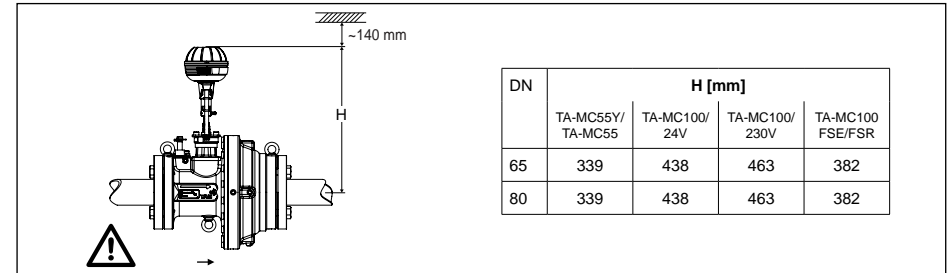
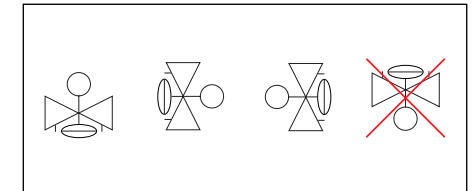
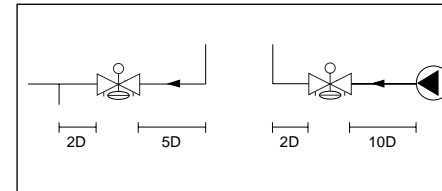
PN 16 / PN 25

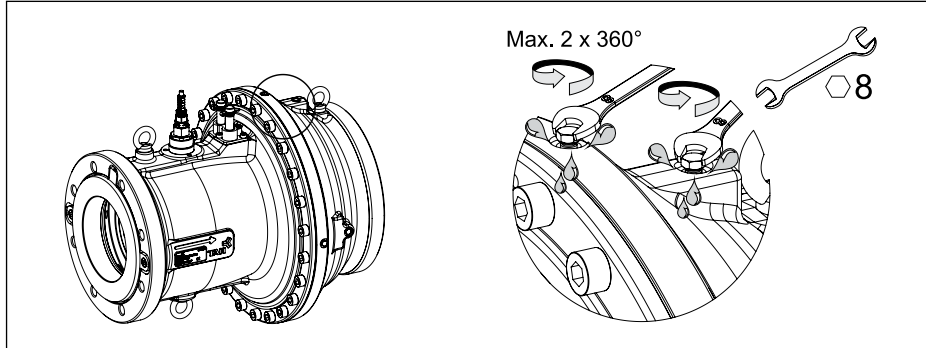
Max. ΔpV = 400 kPa = 4 bar

Min. ΔpV = 25 kPa = 0,25 bar

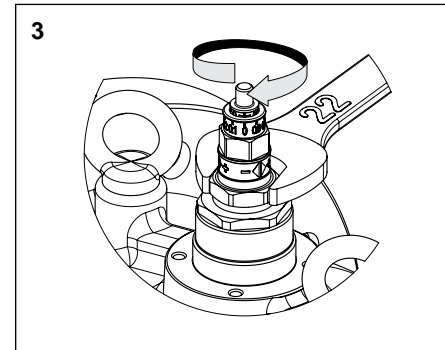
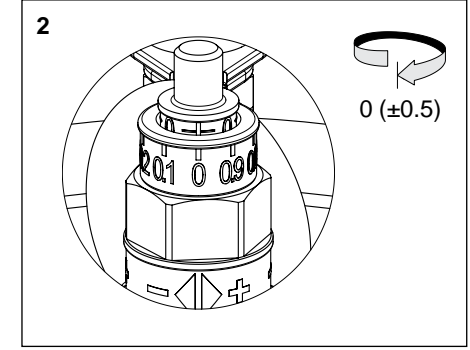
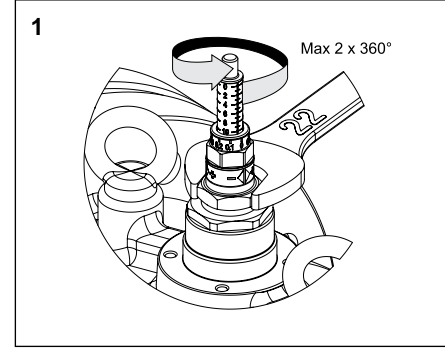
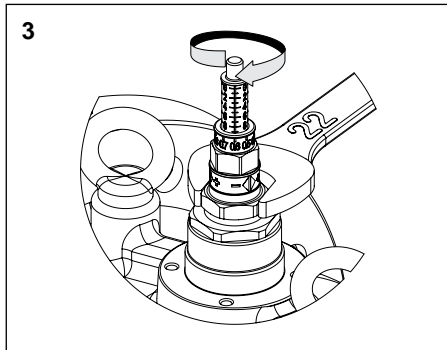
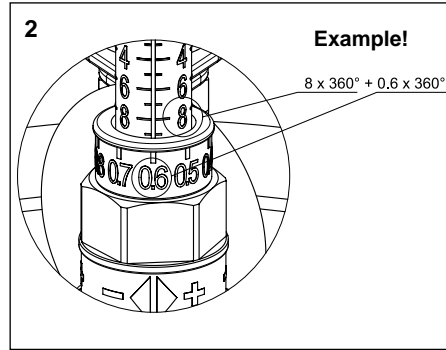
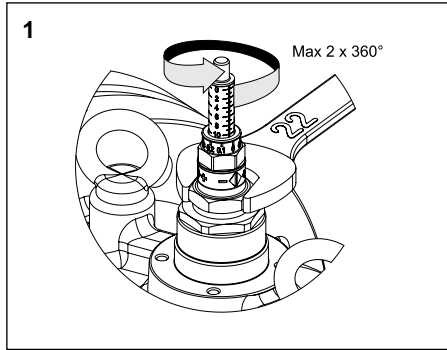
q_{max} =

- EN l/h at each setting and fully open valve plug.
 DE l/h bei der jeweiligen Einstellung und voll geöffnetem Regelkegel.
 FR l/h à chaque réglage et vanne complètement ouverte.
 NL l/h van elke instelstand en volledig geopende afsluiterkegel.
 ES l/h para cada ajuste, estando el obturador en la posición totalmente abierta.
 PT l/h para cada ajuste e válvula totalmente aberta.
 IT l/h per ciascuna impostazione e con apertura totale della valvola.
 RU л/ч для каждой настройки и при полностью поднятом штоке клапана.
 HU l/h maximális térfogatáram az egyes előbeállításoknál, a szeleptányér teljes nyitásánál.
 PL l/h dla każdej nastawy przy w pełni otwartym grzybku zaworu.
 CS l/h pro každé nastavení při zcela otevřeném regulačním kuželce.
 SK l/hod pri danom nastavení a plne otvorenej regulačnej kúželke.
 SL l/h pri vsaki nastavitvi in popolnoma odprtem vretenu.
 RO l/h pentru fiecare poziție de reglare și vana complet deschisă.
 BG l/h за всяка настройка и при напълно отворен вентил.
 HR l/h za svaku prednamještenu poziciju i potpuno otvorenom ventilu.
 BiH l/h za svaku prednamještenu poziciju i potpuno otvorenom ventilu.
 SR l/h za svaku poziciju predpodešavanja i potpuno otvorenom ventilu.
 ET konkreetsele eelseadearvule vastav täiesti avatud ventiili vooluhulk l/h.
 LV l/h katram priekšiestatījumam un pie pilnībā atvērta vārsta.
 LT l/h prie kiekvieno nustatymo ir pilnai atidaryto vožtuvo.
 TR tüm önayar değerlerinde ve tam açık vana için l/h.
 ZH l/h在每个设定值且阀芯全开时。
 SV l/h vid respektive inställning och fullt öppen ventilkägla.
 NO l/h ved angitt innstilling og helt åpen ventilkjegle.
 FI l/h kyseisellä esisäätöarvolla venttiilikara täysin auki.
 DA l/h ved respektiv indstilling og fuldt åben reguleringskegle.

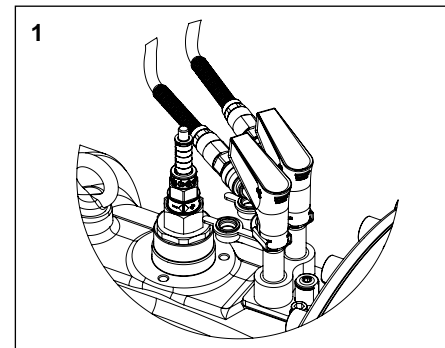




- EN Following operations can be made with or without the actuator mounted. Ensure that the actuator is disengaged from the valve spindle during the operations.
- DE Folgende Tätigkeiten können mit oder ohne montiertem Stellantrieb durchgeführt werden. Stellen Sie sicher, dass der Stellantrieb während der Tätigkeiten von der Ventilspindel abgekoppelt ist.
- FR Les opérations suivantes peuvent être réalisées sans démonter le moteur. S'assurer que le moteur est désaccouplé de la vanne durant les opérations.
- NL De volgende handelingen kunnen worden uitgevoerd met of zonder gemonteerde motor. Verzeker u ervan dat de motor is losgekoppeld van de spindel van de afsluiter tijdens de volgende handelingen.
- ES Las siguientes operaciones pueden realizarse con el actuador montado o desmontado. Asegúrese de que el actuador está desacoplado del vástago, durante su realización.
- PT As seguintes operações podem ser feitas com ou sem o atuador montado. Certifique que o atuador está desacoplado do eixo da válvula durante as operações.
- IT Le seguenti operazioni possono essere eseguite con o senza l'attuatore montato. Assicurarsi che l'attuatore sia disinserito dal pistone della valvola durante il funzionamento.
- RU Операции могут осуществляться как с установленным приводом, так и без него. Убедитесь, что привод отсоединен от штока клапана на время проведения операции.
- HU A következő műveletek elvégezhetőek a szelepmozgató fel- és leszerelt állapotában is. Ellenőrizze, hogy a szelepmozgató le legyen választva a szeleporsóról a következő műveletek közben.
- PL Powyższe czynności mogą być wykonane z lub bez zamontowanego siłownika. Upewnij się, że siłownik jest zdjęty z trzpienia zaworu podczas wykonywania następujących operacji.
- CS Následující činnosti lze provádět s již nainstalovaným pohonem nebo bez něj. Pohon, ale musí být odpojen od dráku ventilu.
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- LV Sekojošo darbību var veikt ar vai bez izpildmehānisma montāžas. Nodrošiniet, ka aktuators ir atvienots no vārsta vārpstas šīs darbības laikā.
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- TR Aşağıda tanımlanan uygulamalar aktüatör vanaya montajlı veya montajsız iken gerçekleştirilebilir. Bu uygulamalar sırasında aktüatörün vana miline bağlı olmadığından emin olunuz.
- ZH 在有或没有安装执行器的情况下都可进行以下操作。但是在操作时，必须将执行器脱离阀轴。
- SV Följande funktioner kan göras med eller utan monterat ställdon. Säkerställ att ställdonet är borkopplat från ventilspindeln innan injustering, avstängning, mätning eller spolning.
- NO Følgende operasjoner kan gjøres med eller uten aktuator monteret. Sørg for at aktuatoren er koblet fra ventilspindelen under operasjonene.
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- DA Følgende operationer kan foretages med eller uden aktuator monteret. Spindelen skal dog altid være frigjort under disse operationer.



q





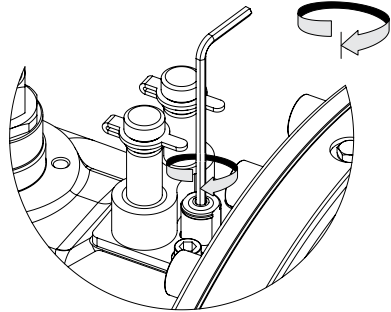
ΔH

1-3

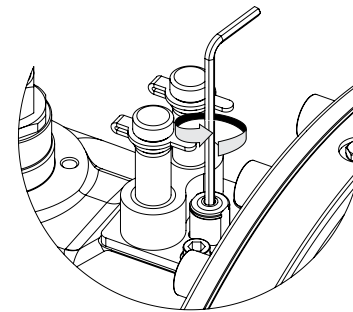


#1-3

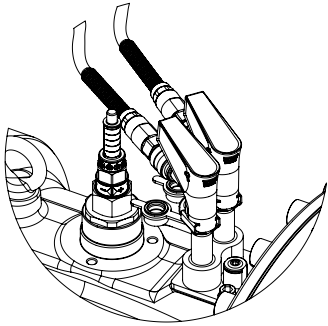
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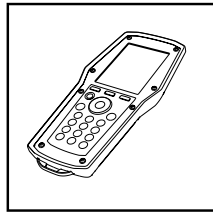
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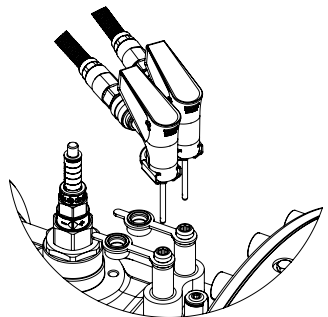
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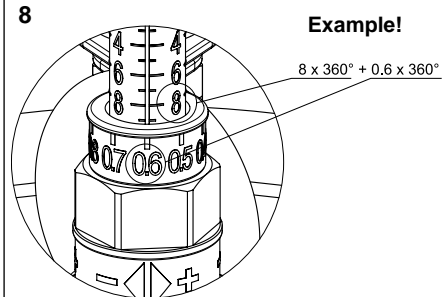
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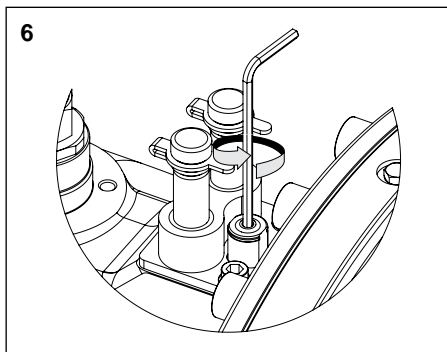
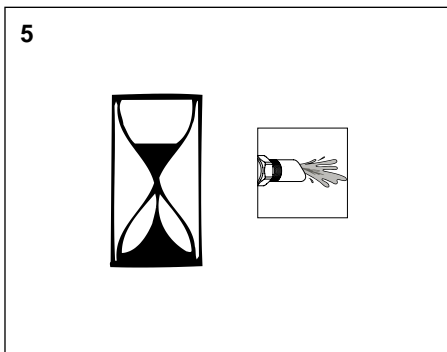
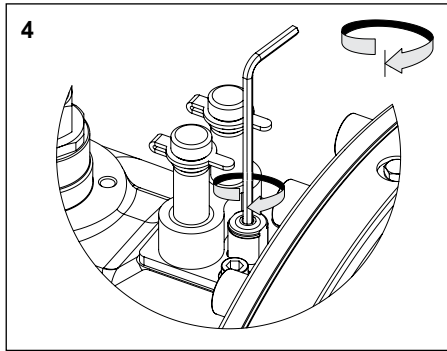
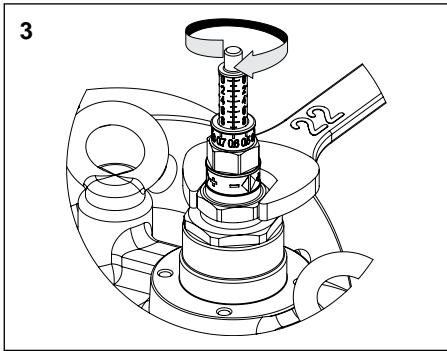
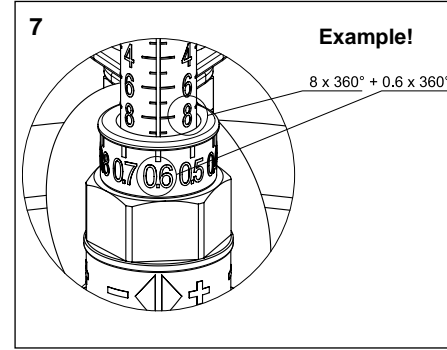
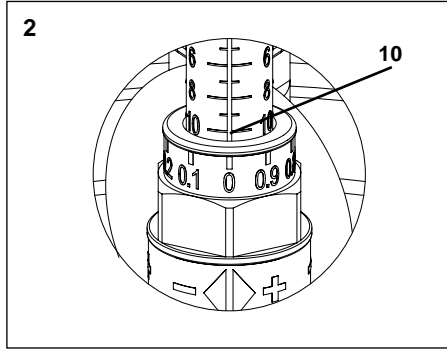
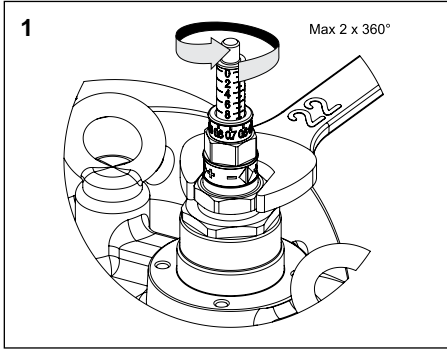


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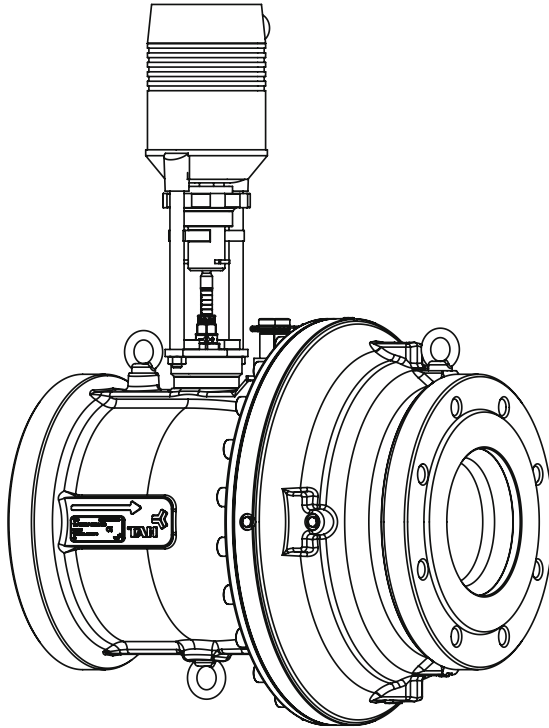


8





TA-FUS10N-P (DN 100-150)



Pos	q _{max}		
	DN 100	DN 125	DN 150
5.5	14 000	23 000	40 200
6	16 600	27 600	47 500
6.5	19 700	33 000	56 200
7	23 400	39 300	66 200
7.5	27 800	45 600	78 100
8	32 900	55 100	93 800
8.5	39 500	66 600	113 000
9	46 000	80 600	137 000
9.5	56 500	98 500	170 000
10*	68 000	120 000	207 000



Pos 7.5–10

-20°C – +120°C

PN 16 / PN 25

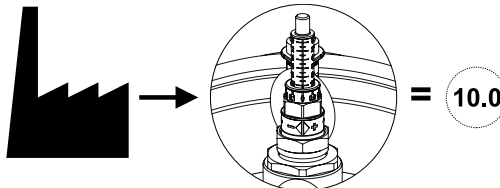
Max. $\Delta pV_{max} = 800 \text{ kPa} = 8 \text{ bar}$

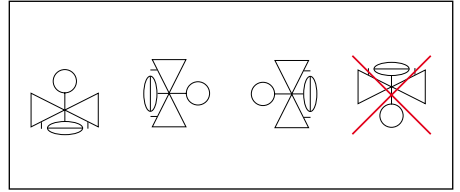
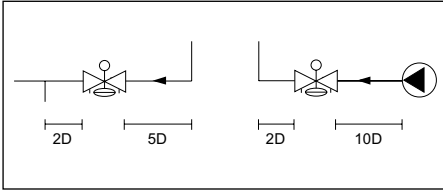
Min. $\Delta pV_{min} =$
 DN 100-125: 30 kPa = 0,30 bar
 DN 150: 40 kPa = 0,40 bar

q_{max} =

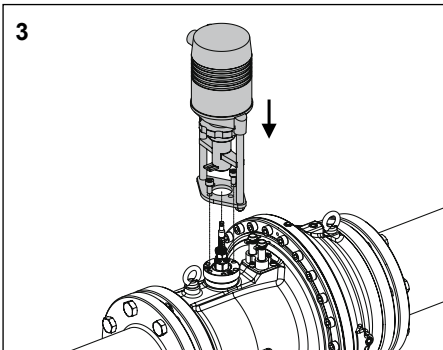
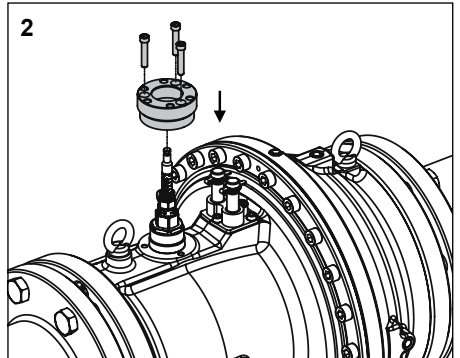
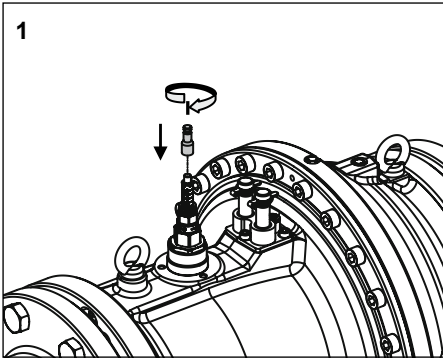
- EN l/h at each setting and fully open valve plug.
 DE l/h bei der jeweiligen Einstellung und voll geöffnetem Regelkegel.
 FR l/h à chaque réglage et vanne complètement ouverte.
 NL l/h van elke instelstand en volledig geopende afsluiterkegel.
 ES l/h para cada ajuste, estando el obturador en la posición totalmente abierta.
 PT l/h para cada ajuste e válvula totalmente aberta.
 IT l/h per ciascuna impostazione e con apertura totale della valvola.
 RU л/ч для каждой настройки и при полностью поднятом штоке клапана.
 HU l/h maximális térfogatáram az egyes előbeállításoknál, a szeleptányér teljes nyitásánál.
 PL l/h dla każdej nastawy przy w pełni otwartym grzybku zaworu.
 CS l/h pro každé nastavení při zcela otevřené regulační kůželce.
 SK l/hod pri danom nastavení a plne otvorenej regulačnej kúželke.
 SL l/h pri vsaki nastavitvi in popolnoma odprtem vretenu.
 RO l/h pentru fiecare poziție de reglare și vana complet deschisă.
 BG л/h за всяка настройка и при напълно отворен вентил.
 HR l/h za svaku prednamještenu poziciju i potpuno otvorenom ventilu.
 BiH l/h za svaku prednamještenu poziciju i potpuno otvorenom ventilu.
 SR l/h za svaku poziciju predpodešavanja i potpuno otvorenom ventilu.
 ET konkreetsele eelseadearvule vastav täiesti avatud ventili vooluhulk l/h.
 LV l/h katram priekšiestatījumam un pie pilnībā atvērta vārsta.
 LT l/h prie kiekvieno nustatymo ir pilnai atidaryto vožtuvo.
 TR tüm önayar değerlerinde ve tam açık vana için l/h.
 ZH l/h 在每个设定值且阀芯全开时。
 SV l/h vid respektive inställning och fullt öppen ventilkägla.
 NO l/h ved angitt innstilling og helt åpen ventilkjegle.
 FI l/h kyseisellä esisääätöarvolla venttiilikara täysin auki.
 DA l/h ved respektiv indstilling og fuldt åben reguleringskegle.

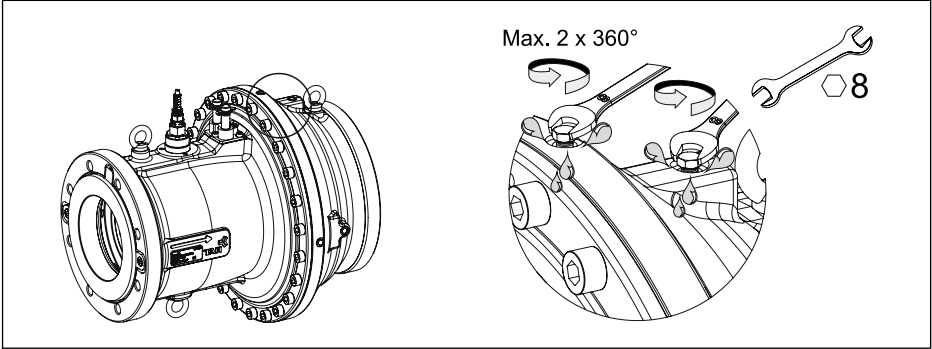
*)





DN	H [mm]		
	TA-MC100/ 24V	TA-MC100/ 230V	TA-MC100 FSE/FSR
100	438	463	382
125	438	463	382
150	457	482	401

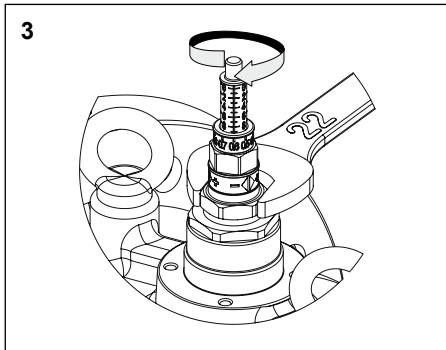
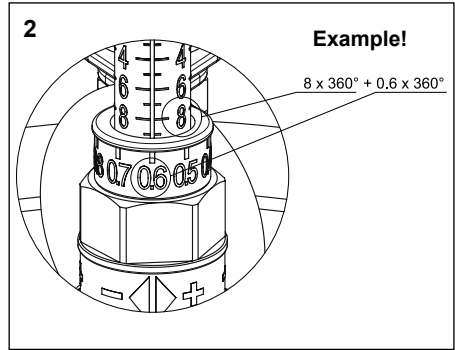
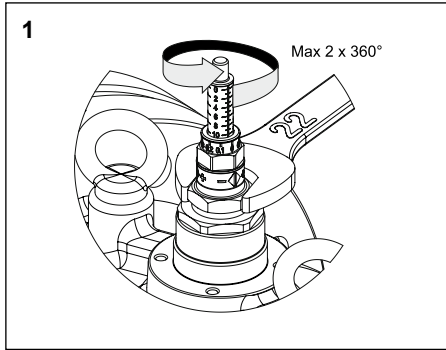


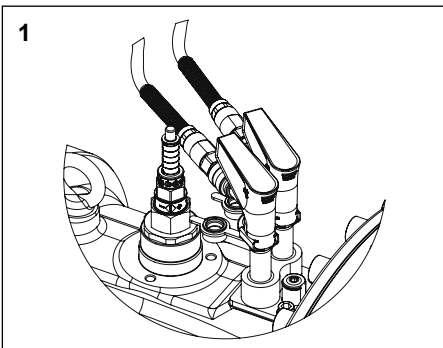
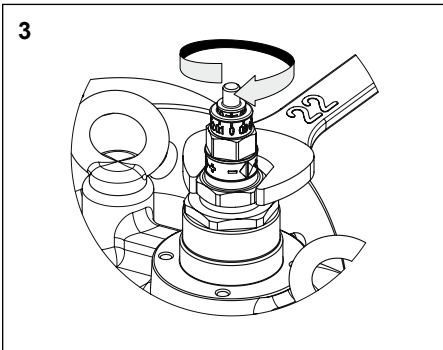
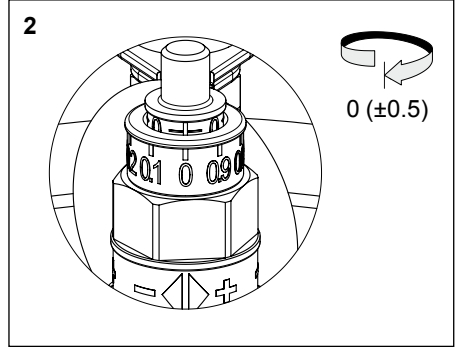
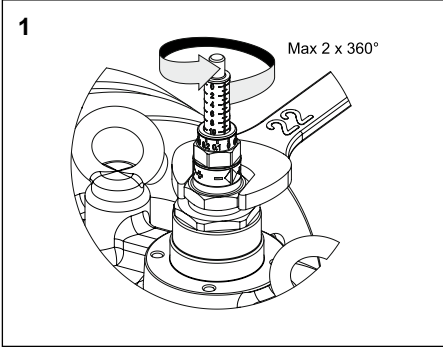


Max. 2 x 360°

8

- EN Following operations can be made with or without the actuator mounted. Ensure that the actuator is disengaged from the valve spindle during the operations.
- DE Folgende Tätigkeiten können mit oder ohne montiertem Stellantrieb durchgeführt werden. Stellen Sie sicher, dass der Stellantrieb während der Tätigkeiten von der Ventilspindel abgekoppelt ist.
- FR Les opérations suivantes peuvent être réalisées sans démonter le moteur. S'assurer que le moteur est désaccouplé de la vanne durant les opérations.
- NL De volgende handelingen kunnen worden uitgevoerd met of zonder gemonteerde motor. Verzeker u ervan dat de motor is losgekoppeld van de spindel van de afsluiter tijdens de volgende handelingen.
- ES Las siguientes operaciones pueden realizarse con el actuador montado o desmontado. Asegúrese de que el actuador está desacoplado del vástago, durante su realización.
- PT As seguintes operações podem ser feitas com ou sem o atuador montado. Certifique que o atuador está desacoplado do eixo da válvula durante as operações.
- IT Le seguenti operazioni possono essere eseguite con o senza l'attuatore montato. Assicurarsi che l'attuatore sia disinserito dal pistone della valvola durante il funzionamento.
- RU Операции могут осуществляться как с установленным приводом, так и без него. Убедитесь, что привод отсоединен от штока клапана на время проведения операции.
- HU A következő műveletek elvégeztetők a szelepszegítő fel- és leszerelt állapotában is. Ellenőrizze, hogy a szelepszegítő le legyen választva a szelepszóról a következő művelet közben.
- PL Powyższe czynności mogą być wykonane z lub bez zamontowanego siłownika. Upewnij się, że siłownik jest zdjęty z trzpienia zaworu podczas wykonywania następujących operacji.
- CS Následující činnosti lze provádět s již nainstalovaným pohonem nebo bez něj. Pohon, ale musí být odpojen od dráku ventilu.
- SK Nasledujúce činnosti možno vykonávať s už nainštalovaným pohonom alebo bez neho. Pohon, ale musí byť odpojený od drieku ventilu.
- SL Sledeče funkcije so možne z nameščenim pogonom ali brez. Prepričajte se, da je pogon ločen od vretena ventila med temi operacijami.
- RO Următoarele operațiuni pot fi realizate cu/fără servomotorul montat. Asigurați-vă că servomotorul este deconectat de pe vană și de pe axul vanei în timpul acestor operațiuni.
- BG Операциите могат да се извършват с или без инсталирана задвижка. Убедете се, че задвижката е разединена от шпиндела на вентила.
- HR Slijedeće operacije mogu biti napravljene sa ili bez montiranog pogona. Tijekom operacije, osigurati da je pogon ventila odvojen od vretena.
- BiH Slijedeće operacije mogu biti napravljene sa ili bez montiranog pogona. Tijekom operacije, osigurati da je pogon ventila odvojen od vretena.
- SR Sledeće operacije je moguće izvršiti sa ili bez pogona montiranog na ventilu. Uverite se da je pogon odvojen od vretena ventila za vreme operacija.
- ET Nende toimingute teostamiseks peab olema eelnevalt lahti ühendatud mootor ventiili spindlist.
- LV Sekojošo darbību var veikt ar vai bez izpildmehānisma montāžas. Nodrošiniet, ka aktuators ir atvienots no vārsta vārpstas šīs darbības laikā.
- LT Šiuos veiksmus galima atlikti tiek esant sumontuotoms pavaroms, tiek ir be jų. Patikrinkite, kad eksploatuojant pavara būtų atjungta nuo vožtuvo ašies.
- TR Aşağıda tanımlanan uygulamalar aktüatör vanaya montajlı veya montajsız iken gerçekleştirilebilir. Bu uygulamalar sırasında aktüatörün vana miline bağlı olmadığından emin olunuz.
- ZH 在有或没有安装执行器的情况下都可进行以下操作。但是在操作时，必须将执行器脱离阀轴。
- SV Följande funktioner kan göras med eller utan monterat ställdon. Säkerställ att ställdonet är borkopplat från ventilspindeln innan injustering, avstängning, mätning eller spolning.
- NO Følgende operasjoner kan gjøres med eller uten aktuator monteret. Sørg for at aktuatorene er koblet fra ventilspindelen under operasjonene.
- FI Seuraavat toimenpiteet voidaan tehdä ilman toimilaitetta tai kun se on kiinnitetty. Varmista että toimilaite on irrotettu venttiilin karasta seuraavien toimenpiteiden aikana.
- DA Følgende operationer kan foretages med eller uden aktuator monteret. Spindelen skal dog altid være frigjort under disse operationer.

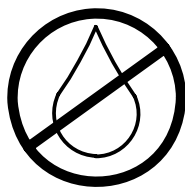






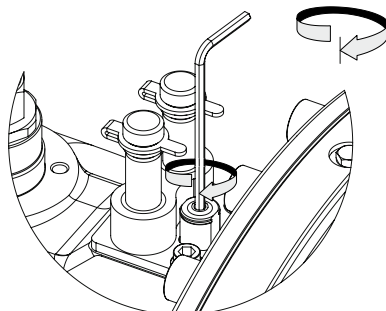
ΔH

1-3

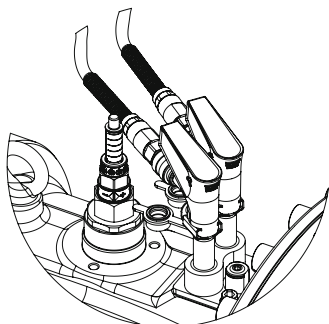


#1-3

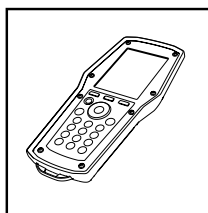
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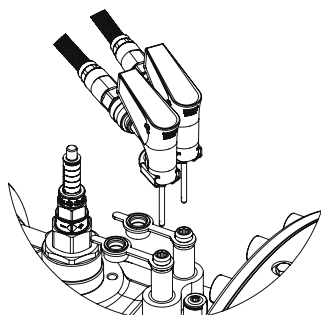
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6



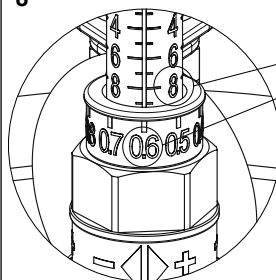
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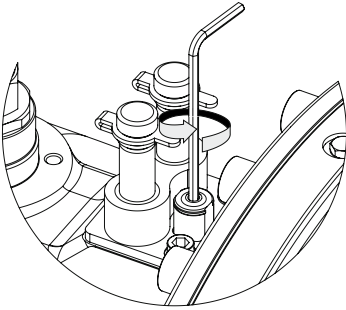
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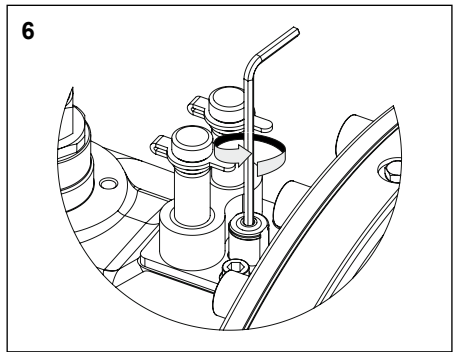
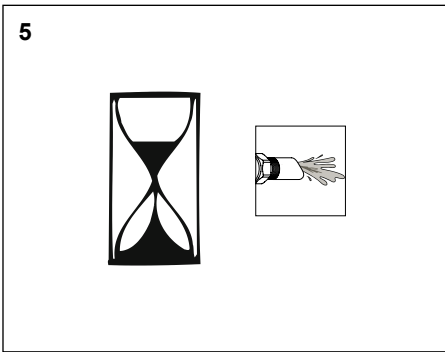
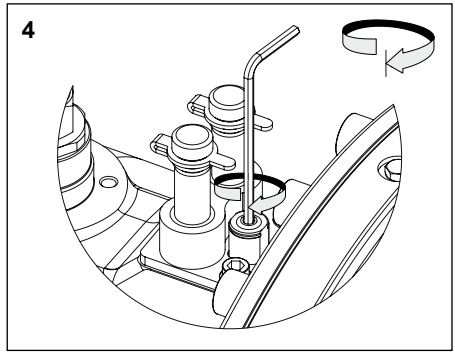
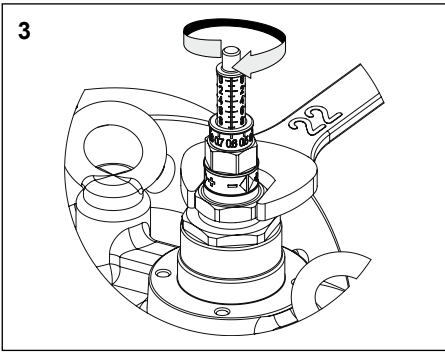
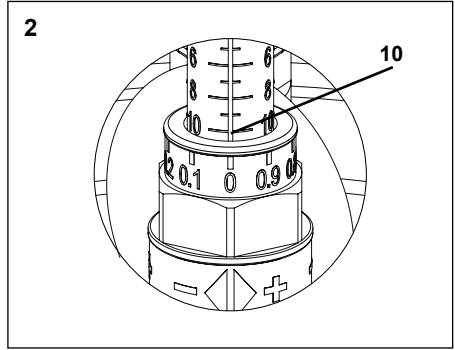
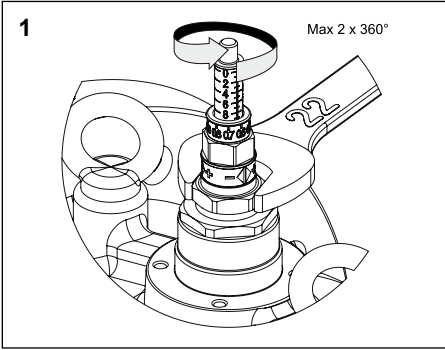
Example!

$$8 \times 360^\circ + 0.6 \times 360^\circ$$



9





7

Example!

$$8 \times 360^\circ + 0.6 \times 360^\circ$$

