Pressure Independent Balancing and Modulating Control Valve

TA Series 7MP

08.55

½ - 1 ¼"/DN15 – DN32

1 ½ – 2"/DN40 – DN50

2 ½ – 3"/73.0 mm – DN80

1.0 PRODUCT DESCRIPTION

Available Sizes

- ½ – 3"/DN15 – DN80

Maximum Working Pressure

- ½ – 2"/DN15 – DN50: 230 psi/1586 kPa/16 bar
- 2 ½ – 3"/73.0 mm – DN80: 365 psi/2517 kPa/25 bar
- Maximum differential pressure:
  - ½ – 1 ¼"/DN15 – DN32: 87 psi/600 kPa/6 bar
  - ½ – 1"/DN15 – DN25 (with Δp insert in PPS): 58 psi/400 kPa/4 bar
  - 1 ½ – 3"/DN40 – DN80: 58 psi/400 kPa/4 bar
- Minimum differential pressure:
  - ½ – ¾"/DN15 – DN20: 2.2 psi/15 kPa/0.15 bar
  - 1 – 1 ¼"/DN25 – DN32: 3.3 psi/23 kPa/0.23 bar
  - 1 ½ – 3"/DN40 – DN80: 4.4 psi/30 kPa/0.3 bar

Operating Temperature Range

- +32°F to +194°F/0°C to +90°C

Application

- Hydronic heating and cooling systems

Functions

- EQM control
  - Modulating (EMO TM; TA ACTM; TA Slider 160, 160 Plus and 160 KNX; TA Slider 500 and 500 Plus; TA Slider 750 and 750 Plus; and TA MC100 FSE/FSR)
- Balancing via pre-setting (max. flow)
- Measuring (ΔH, T, q)
- Shut-off (for isolation during system maintenance up to maximum rated differential pressure)

2.0 CERTIFICATION/LISTINGS

Not applicable – contact Victaulic with any questions.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

3.0 SPECIFICATIONS - MATERIAL

TA SERIES 7MP

½ – 1 ¼"/DN15 – DN32

Valve Body: Non-ferrous AMETAL® DZR brass copper alloy
Valve Insert: Non-ferrous AMETAL® DZR brass copper alloy and polyphenylsulphide (PPS)
Valve Plug: Stainless steel
Spindle: Stainless steel
Spindle Seal: EPDM O-ring
Δp Insert: PPS and non-ferrous AMETAL® DZR brass copper alloy, or PPS
Membrane: EPDM
Spring: Stainless steel
O-Ring: EPDM

1 ½ – 2"/DN40 – DN50

Valve Body: Non-ferrous AMETAL® DZR brass copper alloy
Valve Insert: Non-ferrous AMETAL® DZR brass copper alloy
Valve Plug: Non-ferrous AMETAL® DZR brass copper alloy and PTFE
Spindle: Stainless steel
Spindle Seal: EPDM O-ring
Δp Insert: PPS
Membrane: EPDM
Spring: Stainless steel
O-Ring: EPDM

2 ½ – 3"/73.0 mm – DN80

Valve Body: Ductile iron EN-GJS-400
Valve Insert: Ductile iron EN-GJS-400 and brass
Valve Plug: Stainless steel and EPDM O-ring
Valve Seat: Stainless steel
Spindle: Stainless steel
Spindle Seal: EPDM
Δp Insert: Ductile iron EN-GJS-400, stainless steel and brass
Membrane: Reinforced EPDM
Spring: Stainless steel
O-Ring: EPDM

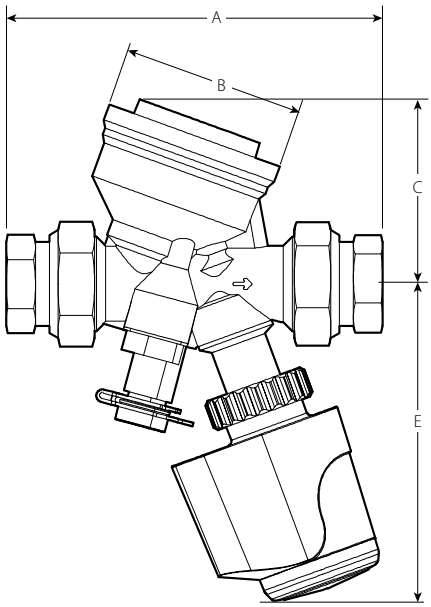
NOTES

- AMETAL® is the dezincification-resistant brass alloy of IMI TA.
- Body material shall be ISO 6509 compliant.

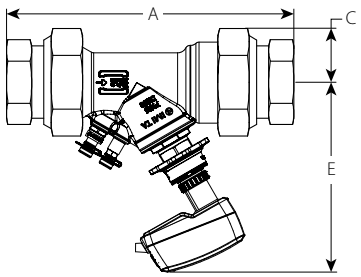
4.0 DIMENSIONS

TA Series 7MP

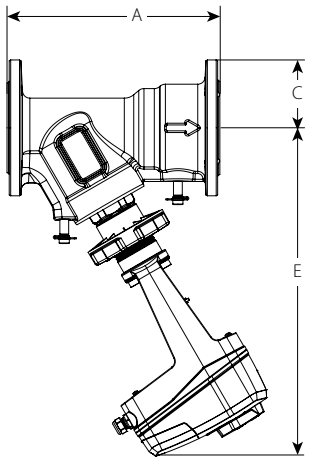
(Shown with Female x Female Threaded Ends)



½ - 1 ¼"/DN15 – DN32



1 ½ – 2"/DN40 - DN50



2 ½ – 3"/73.0 mm – DN80

Size		Dimensions									Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**A End to End** inches mm	**B** inches mm	**C** inches mm	**E EMO TM** inches mm	**E TA ACTM** inches mm	**E TA Slider 160 Family** inches mm	**E TA Slider 500 Family** inches mm	**E TA Slider 750 Family** inches mm	**E TA MC 100 FSE/FSR** inches mm	**Approximate (Each)** lb kg
½ DN15	0.840 21.3	4.87 124	2.13 54	2.17 55	4.21 107	5.25 133	4.68 119	– –	– –	– –	2.0 0.9
¾ DN20	1.050 26.9	5.17 131	2.52 64	2.52 64	4.21 107	5.25 133	4.68 119	– –	– –	– –	2.3 1.0
1 DN25	1.315 33.7	5.78 147	2.52 64	2.52 64	– –	– –	5.12 130	– –	– –	– –	2.8 1.2
1 ¼ DN32	1.660 42.4	7.05 179	3.07 78	3.07 78	– –	– –	5.24 133	– –	– –	– –	4.3 2.0
1 ½ DN40	1.900 48.3	9.88 251	– –	1.80 46	– –	– –	– –	8.35 212	– –	– –	7.7 3.5
2 DN50	2.375 60.3	10.24 260	– –	1.80 46	– –	– –	– –	8.46 215	– –	– –	8.6 3.9
2 ½	2.875 73.0	11.42 290	– –	3.74 95	– –	– –	– –	– –	18.30 465	16.80 427	39.9 18.1
3 DN80	3.500 88.9	12.20 310	– –	3.74 95	– –	– –	– –	– –	18.80 478	17.30 439	47.8 21.7

NOTE

- Depending on union end types selected, length "A" may vary slightly.

5.0 PERFORMANCE

EMO TM, TA ACTM, TA Slider 160 Family, TA Slider 500 Family, TA Slider 750 Family, and TA MC100 FSE/FSR

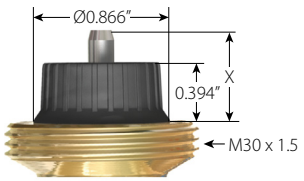
TA Series 7MP is designed to work together with the following modulating actuators:

- EMO TM (½" and ¾" sizes only)
- TA ACTM (½" and ¾" sizes only)
- TA Slider 160, 160 Plus and 160 KNX (½" through 1 ¼" sizes only)
- TA Slider 500 and 500 Plus (1 ½" and 2" sizes only)
- TA Slider 750 and 750 Plus (2 ½" and 3" sizes only)
- TA MC100 FSE/FSR (2 ½" and 3" sizes only)

Actuators of other brands require a working range of:

- ½ – ¾": X (closed - fully open) = 0.46 – 0.62"/11.7 – 15.7 mm
- 1 – 1 ¼": X (closed - fully open) = 0.40 – 0.66"/10.1 – 16.8 mm

Closing force: Minimum 28 lbf (maximum 112 lbf) for ½ – ¾"; Minimum 43 lbf for 1 – 1 ¼" (maximum 112 lbf)



The ½" and ¾" valves can only use the EMO TM, TA ACTM, TA Slider 160, 160 Plus or 160 KNX actuators.

The 1" and 1 ¼" valves can only use the TA Slider 160, 160 Plus or 160 KNX actuators.

The 1 ½" and 2" valves can only use the TA Slider 500 and 500 Plus actuators.

The 2 ½" and 3" valves can only use the TA Slider 750 or 750 Plus and TA MC100 FSE/FSR actuators.

IMI TA and Victaulic will not be held responsible for the control function if actuators other than those listed above are used.

Actuation Speed	
Control Valve	**Actuator Travel Speed**
EMO TM	30 s/mm
TA ACTM	0.40 s/mm, proportional range
TA Slider 160, 160 Plus or 160 KNX	10 s/mm
TA Slider 500 or 500 Plus	4 or 6 s/mm (Default setting is 4 s/mm)
TA Slider 750 or 750 Plus	3 to 16 s/mm
TA MC100 FSE/FSR	1 s/mm

NOTE

• ½"/15 mm and ¾"/20 mm TA Series 7MP have 4 mm of travel.

5.0 PERFORMANCE (Continued)

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

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

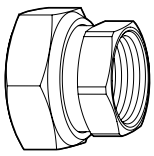
Size		Maximum Recommended Pressure Drop								
		E EMO TM		E TA ACTM		E TA Slider 160 Family		E TA Slider 500 Family	E TA Slider 750 Family	E TA MC100 FSE/FSR
Nominal inches mm	Actual Outside Diameter inches mm	(ΔpV_{close}) psi kPa	(ΔpV_{max}) psi kPa	(ΔpV_{close}) psi kPa	(ΔpV_{max}) psi kPa	(ΔpV_{close}) psi kPa	(ΔpV_{max}) psi kPa	(ΔpV_{close}) / (ΔpV_{max}) psi kPa	(ΔpV_{close}) / (ΔpV_{max}) psi kPa	(ΔpV_{close}) / (ΔpV_{max}) psi kPa
½ DN15	0.840 21.3	58 400	87 600	58 400	87 600	58 400	87 600	– –	– –	– –
¾ DN20	1.050 26.9	58 400	87 600	58 400	87 600	58 400	87 600	– –	– –	– –
1 DN25	1.315 33.7	– –	– –	– –	– –	58 400	87 600	– –	– –	– –
1 ¼ DN32	1.660 42.4	– –	– –	– –	– –	– –	87 600	– –	– –	– –
1 ½ DN40	1.900 48.3	– –	– –	– –	– –	– –	– –	58 400	– –	– –
2 DN50	2.375 60.3	– –	– –	– –	– –	– –	– –	58 400	– –	– –
2 ½	2.875 73.0	– –	– –	– –	– –	– –	– –	– –	58 400	58 400
3 DN80	3.500 88.9	– –	– –	– –	– –	– –	– –	– –	58 400	58 400

NOTES

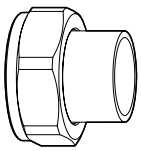
- Closing force 28 lbf (EMO TM), 28 lbf (TA ACTM), 43 lbf (TA Slider 160), 112 lbf (TA Slider 500), 168 lbf (TA Slider 750) or 225 lbf (TA MC100 FSE/FSR).
- ΔpV_{close} = The maximum pressure drop that the valve can close against from an opened position, with a specified force by actuator, without exceeding leakage rate. Leakage flow ≤ 0.01% of max. q_{max} (max. setting) and correct flow direction (Class IV according to EN 60534-4).
- ΔpV_{max} = The maximum allowed pressure drop over the valve, to fulfill all stated flow performances.

5.0 PERFORMANCE (Continued)

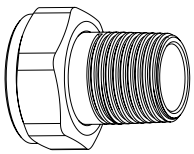
Accessories



Female NPT



Sweat



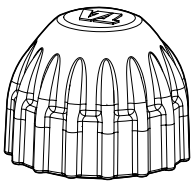
Male NPT

TA Series 7MP Tailpiece Accessories			
Size	**Female**	**Sweat**	**Male**
½"	P0047CPF04	P0047CPS04	P0047CTM04
Gasket	P0047CPGSK	P0047CPGSK	P0047CTGSK
¾"	P0067CPF06	P0067CPS06	P0067CTM06
Reducer ¾" as ½"	P0067CPF04	Not Available	Not Available
Gasket	P0067CPGSK	P0067CPGSK	P0067CTGSK
1"	P0107CPF10	P0107CPS10	P0107CTM10
"Reducer 1" as ¾"	P0107CPF06	Not Available	Not Available
Gasket	P0107CPGSK	P0107CPGSK	P0107CTGSK
1 ¼"	P0127CPF12	P0127CPS12	Not Available
Reducer 1 ¼" as 1"	P0127CPF10	Not Available	Not Available
Gasket	P0127CPGSK	P0127CPGSK	Not Available
1 ½"	P0147MPF14	P0147MPS14	Not Available
1 ½" Gasket	P0147MPGSK	P0147MPGSK	Not Available
2"	P0207MPF20	P0207MPS20	Not Available
Reducer 2" as 1 ½"	P0207MPF14	Not Available	Not Available
2" Gasket	P0207MPGSK	P0207MPGSK	Not Available

NOTE

- All tailpieces are one-piece union assemblies with a gasket.

Protection Cap

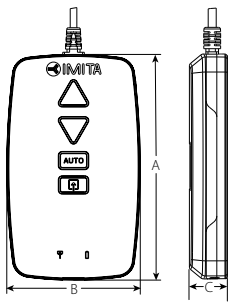


inches mm		Part Code
½ – 1¼ 12 – 32	Red	P0047CPCAP

Actuator Mounting Adapter (Used with 2 ½" and 3" valves only)

Part Code
P0247FCADP

Dongle



Size			Part Code
A inches mm	**B** inches mm	**C** inches mm	
5.12 130	3.03 77	0.71 18	P0007MPDON

5.0 PERFORMANCE (Continued)

TA Series 7MP - Actuator Only

Actuators	Actuator Code Option	Supply Voltage	Input Signal Options	Victaulic Part Code
TA Slider160	S0	24 VAC/VDC	0(2)- 10 VDC	P0007MPS10
TA Slider 160 PLUS	SP	24 VAC/VDC	0(2)- 10 VDC with binary input, relay, VDC output	P0007MPS1P
TA Slider 160 KNX	SK	*	Twisted Pair; KNX/TP with binary input	P0007MPS1K
TA Slider 500	50	24 VAC/VDC	0(2)- 10 VDC	P0007MPS50
TA Slider 500 Plus	5P	24 VAC/VDC	0(2)- 10 VDC with binary input, relay, VDC output	P0007MPS5P
TA Slider 750	70	24 VAC/VDC	0(2)- 10 VDC, 0(4)-20 mA, 3-point, on-off	P0007FC070
	G0	100-240 VAC	0(2)- 10 VDC, 0(4)-20 mA, 3-point, on-off	P0007FC0G0
TA Slider 750 Plus	8A	24 VAC/VDC	With binary input, relays, mA output	P0007FC08A
	HA	100-240 VAC	With binary input, relays, mA output	P0007FC0HA
	8B	24 VAC/VDC	KNX-TP Twisted Pair with BUS communication (without binary input, relays, mA output)	P0007FC08B
	8C		Modbus/RTU RS 485 with BUS communication (without binary input, relays, mA output)	P0007FC08C
	8D		BACnet MS/TP RS 485 with BUS communication (without binary input, relays, mA output)	P0007FC08D
	8E		Modbus/TCP Ethernet with BUS communication (without binary input, relays, mA output)	P0007FC08E
	8F		KNX/IP Ethernet with BUS communication (without binary input, relays, mA output)	P0007FC08F
	8G		BACnet/IP Ethernet with BUS communication (without binary input, relays, mA output)	P0007FC08G
	HB	100-240 VAC	KNX-TP Twisted Pair with BUS communication (without binary input, relays, mA output)	P0007FC0HB
	HC		Modbus/RTU RS 485 with BUS communication (without binary input, relays, mA output)	P0007FC0HC
	HD		BACnet MS/TP RS 485 with BUS communication (without binary input, relays, mA output)	P0007FC0HD
	HE		Modbus/TCP Ethernet with BUS communication (without binary input, relays, mA output)	P0007FC0HE
	HF		KNX/IP Ethernet with BUS communication (without binary input, relays, mA output)	P0007FC0HF
	HG		BACnet/IP Ethernet with BUS communication (without binary input, relays, mA output)	P0007FC0HG
	8I	24 VAC/VDC	KNX-TP Twisted Pair with BUS communication, binary input, relays, mA output	P0007FC08I
	8J		Modbus/RTU RS 485 with BUS communication, binary input, relays, mA output	P0007FC08J
	8K		BACnet MS/TP RS 485 with BUS communication, binary input, relays, mA output	P0007FC08K
	8L		Modbus/TCP Ethernet with BUS communication, binary input, relays, mA output	P0007FC08L
	8M		KNX/IP Ethernet with BUS communication, binary input, relays, mA output	P0007FC08M
	8N		BACnet/IP Ethernet with BUS communication, binary input, relays, mA output	P0007FC08N
	HI	100-240 VAC	KNX-TP Twisted Pair with BUS communication, binary input, relays, mA output	P0007FC0HI
	HJ		Modbus/RTU RS 485 with BUS communication, binary input, relays, mA output	P0007FC0HJ
	HK		BACnet MS/TP RS 485 with BUS communication, binary input, relays, mA output	P0007FC0HK
	HL		Modbus/TCP Ethernet with BUS communication, binary input, relays, mA output	P0007FC0HL
	HM		KNX/IP Ethernet with BUS communication, binary input, relays, mA output	P0007FC0HM
	HN		BACnet/IP Ethernet with BUS communication, binary input, relays, mA output	P0007FC0HN

* Powered by KNX BUS

5.0 PERFORMANCE (Continued)

Sizing

TA Series 7MP

Choose the smallest valve size that can obtain the maximum design flow. The setting should be as open as possible. Check that the available ΔpV is within the working range of 2.2 – 58/87 psi, 3.3 – 58/87 psi, or 4.4 – 58 psi.

Size inches mm	Valve Position (q_max) 1 gpm lpm	2 gpm lpm	3 gpm lpm	4 gpm lpm	5 gpm lpm	6 gpm lpm	7 gpm lpm	8 gpm lpm	9 gpm lpm	10 gpm lpm
½ 15	0.41 1.55	0.50 1.89	0.62 2.35	0.75 2.84	0.92 3.48	1.17 4.43	1.43 5.41	1.72 6.51	1.96 7.42	2.11 7.99
¾ 20	0.88 3.33	1.14 4.31	1.59 6.02	2.03 7.68	2.49 9.42	2.95 11.17	3.39 12.83	3.74 14.16	4.05 15.33	4.29 16.24
1 25	1.50 5.68	1.94 7.34	2.64 9.99	3.57 13.51	4.45 16.84	5.28 19.98	5.94 22.48	6.69 25.32	7.22 27.33	7.71 29.18
1 ¼ 32	3.17 12.00	4.23 16.01	5.94 22.48	7.71 29.18	9.47 35.84	11.10 42.01	12.50 47.31	13.80 52.23	14.90 56.40	15.80 59.80

NOTES

- q_{max} = gpm (lpm) at each pre-setting and fully open valve plug.
- ½" HF, ¾" HF and 1" HF use the ¾", 1" and 1 ¼" valve position flow rates and have reducing female union tailpieces on both the inlet and outlet.

Size		Valve Position (q_max)												
Nominal inches DN	Actual Outside Diameter inches mm	0.8 gpm lpm	0.9 gpm lpm	1.0 gpm lpm	1.1 gpm lpm	1.2 gpm lpm	1.3 gpm lpm	1.4 gpm lpm	1.5 gpm lpm	1.6 gpm lpm	1.7 gpm lpm	1.8 gpm lpm	1.9 gpm lpm	2.0 gpm lpm
1 ½ DN40	1.900 48.3	3.92 14.84	5.06 19.15	6.21 23.50	7.53 28.50	8.94 33.84	10.48 39.67	12.28 46.48	14.22 53.82	16.29 61.66	18.71 70.82	21.60 81.76	24.70 93.49	28.20 106.74
2 DN50	2.375 60.3	8.63 32.66	10.74 40.65	13.03 49.32	15.50 58.67	18.27 69.15	21.60 81.76	25.30 95.76	29.50 111.66	33.70 127.55	38.10 144.21	42.50 160.86	46.70 176.76	49.30 186.60

NOTE

- q_{max} = gpm (lpm) at each pre-setting and fully open valve plug.

Size		Valve Position (q_max)										
Nominal inches DN	Actual Outside Diameter inches mm	2.50 gpm lpm	2.75 gpm lpm	3.00 gpm lpm	3.25 gpm lpm	3.50 gpm lpm	3.75 gpm lpm	4.00 gpm lpm	4.25 gpm lpm	4.50 gpm lpm	4.75 gpm lpm	5.00 gpm lpm
2 ½	2.875 73.0	18.48 69.95	22.50 85.16	27.30 103.33	33.90 128.31	41.80 158.21	50.60 191.52	59.40 224.83	70.80 267.98	83.60 316.43	95.90 362.98	106.00 401.21
3 DN80	3.500 88.9	26.00 98.41	32.10 121.50	40.50 153.29	53.70 203.25	68.20 258.14	84.00 317.94	100.00 378.50	116.00 439.06	132.00 499.62	148.00 560.18	164.00 620.74

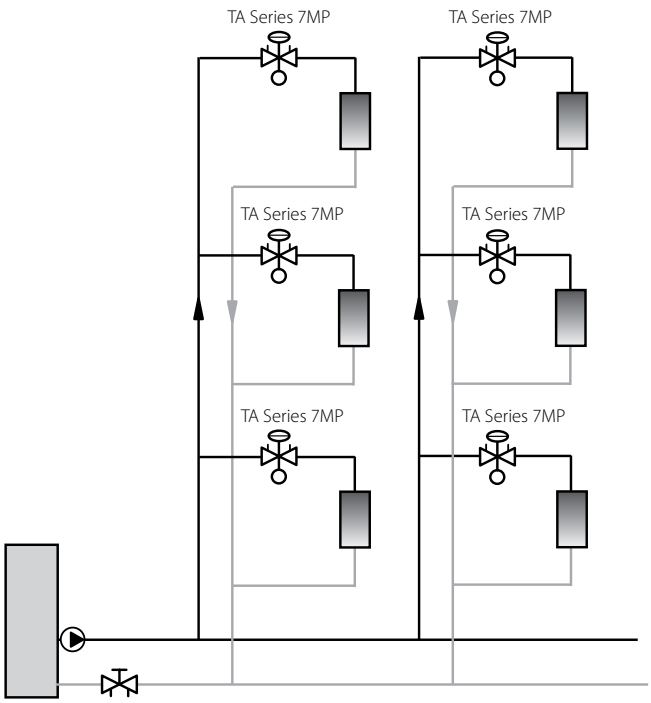
NOTE

- q_{max} = gpm (lpm) at each pre-setting and fully open valve plug.

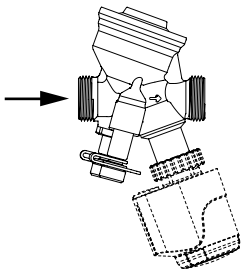
5.0 PERFORMANCE (Continued)

Installation

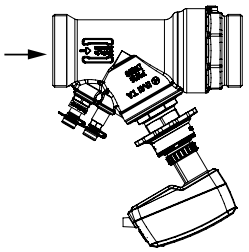
Application Example



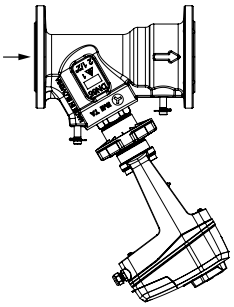
Flow Direction



½ – 1 ¼"/DN15 – DN32



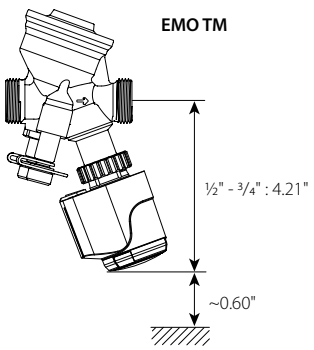
1 ½ – 2"/DN40 – DN50

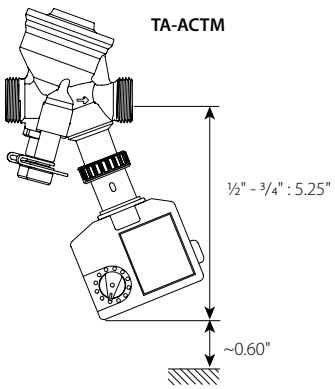


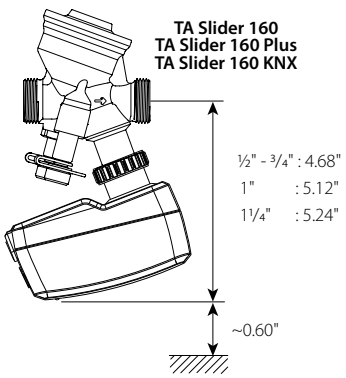
2 ½ – 3"/73.0 mm – DN80

Installation of Actuator

Approximately 0.60 in of free space is required above the actuator to allow for actuator removal and valve setting adjustment once installed.





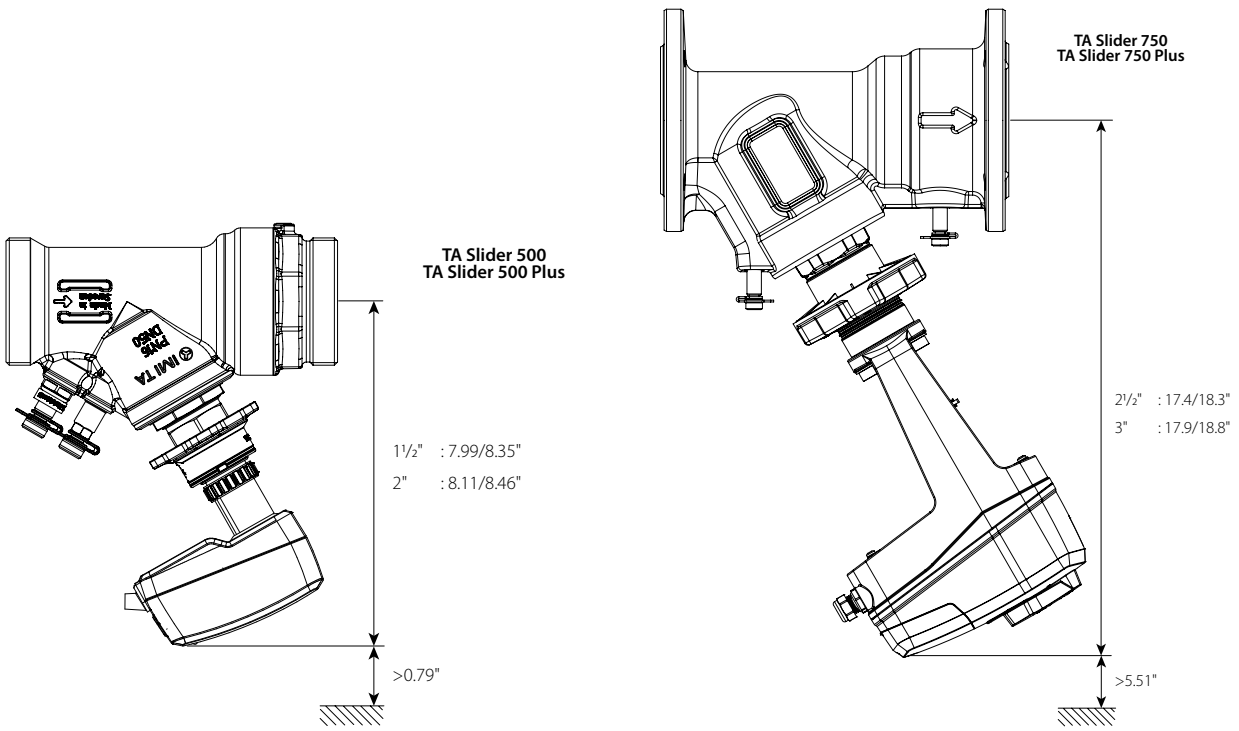


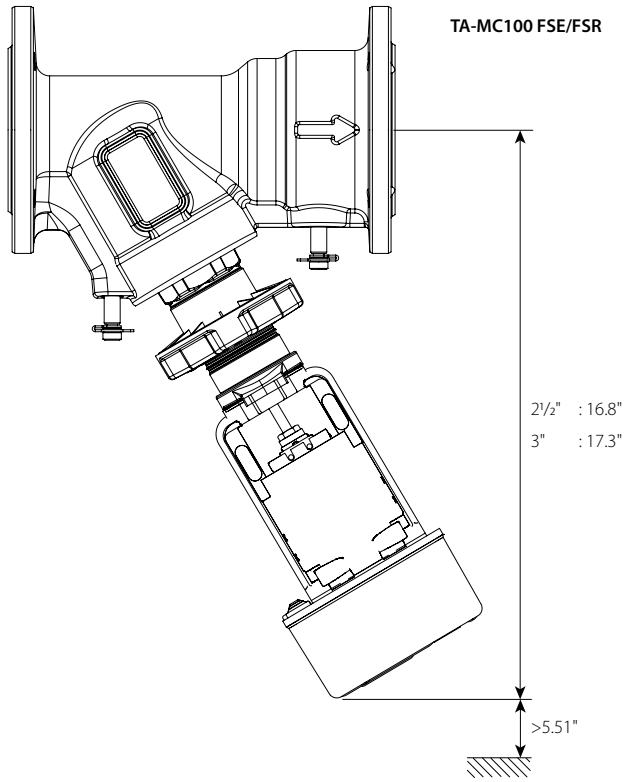
5.0 PERFORMANCE (Continued)

Installation

Installation of Actuator

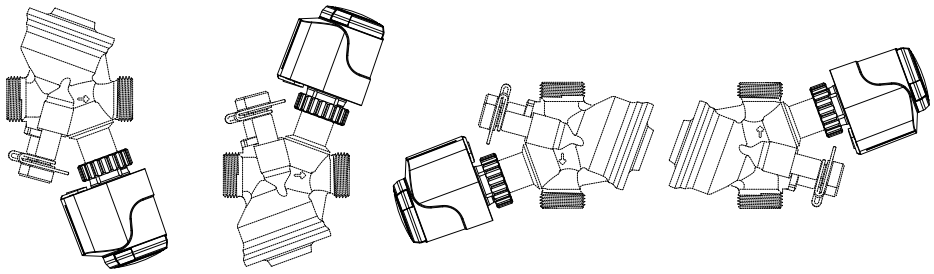
See below graphics for needed free space required above the actuator to allow for actuator removal and valve setting adjustment once installed.





5.0 PERFORMANCE (Continued)

Acceptable Valve Piping Angles of Assembly for TA Series 7MP + EMO TM, TA Slider 160, TA Slider 160 Plus or TA Slider 160 KNX

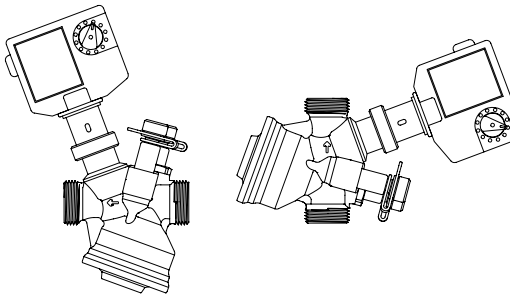


IP54 IP54 IP54 IP54

NOTE

- For chilled water applications, the valve and surrounding pipe should be insulated to prevent condensation from dripping onto actuator.

Acceptable Valve Piping Angles of Assembly for ½ - ¾"/DN15 – DN20 TA Series 7MP + TA ACTM

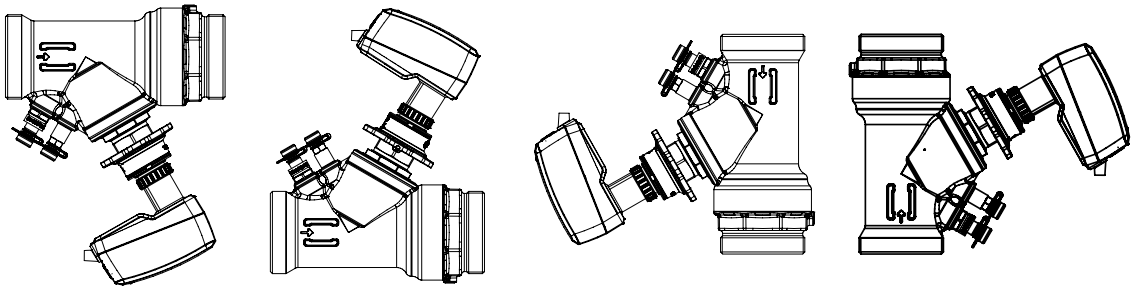


IP20 IP20

NOTE

- For chilled water applications, the valve and surrounding pipe should be insulated to prevent condensation from dripping onto actuator.

Acceptable Valve Piping Angles of Assembly for 1 ½ – 2"/DN40 - DN50 TA Series 7MP + TA Slider 500



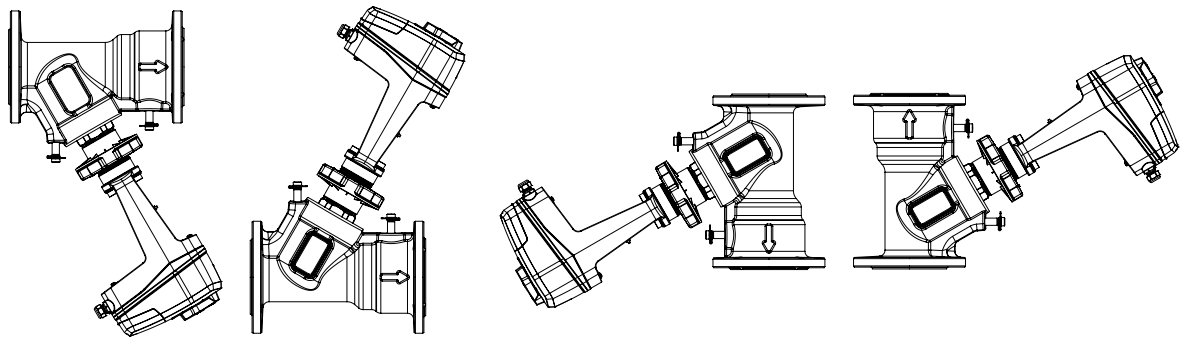
IP54 IP54 IP54 IP54

NOTE

- For chilled water applications, the valve and surrounding pipe should be insulated to prevent condensation from dripping onto actuator.

5.0 PERFORMANCE (Continued)

Acceptable Valve Piping Angles of Assembly for 2 ½ – 3"/73.0 mm - DN80 TA Series 7MP + TA Slider 750

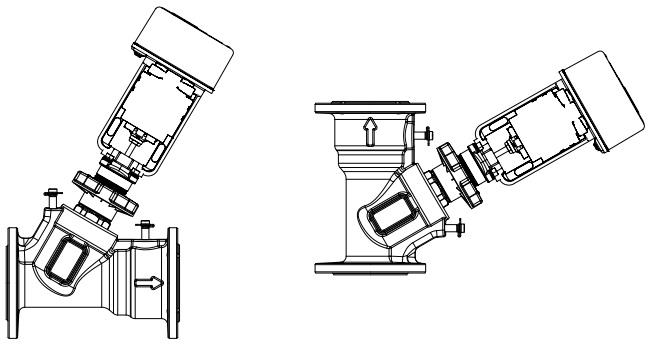


IP54 IP54 IP54 IP54

NOTE

- For chilled water applications, the valve and surrounding pipe should be insulated to prevent condensation from dripping onto actuator.

Acceptable Valve Piping Angles of Assembly for 2 ½ – 3"/73.0 mm - DN80 TA Series 7MP + TA MC100 FSE/FSR



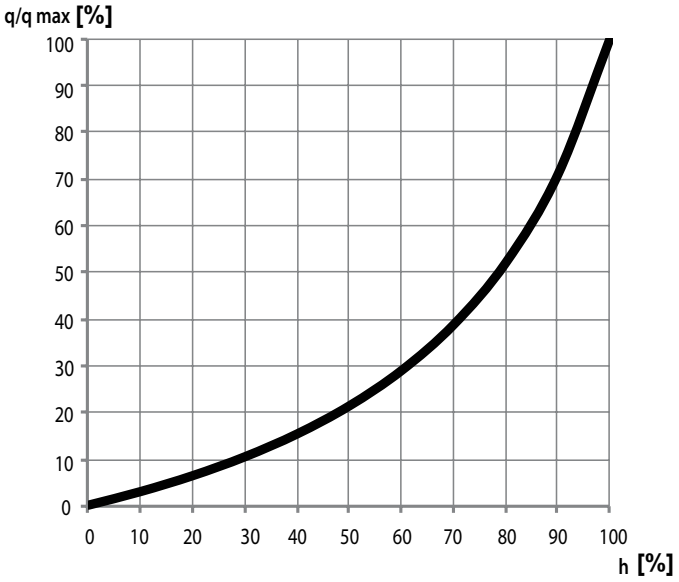
IP54 IP54

NOTE

- For chilled water applications, the valve and surrounding pipe should be insulated to prevent condensation from dripping onto actuator.

Valve Characteristics

Nominal valve characteristics for all settings

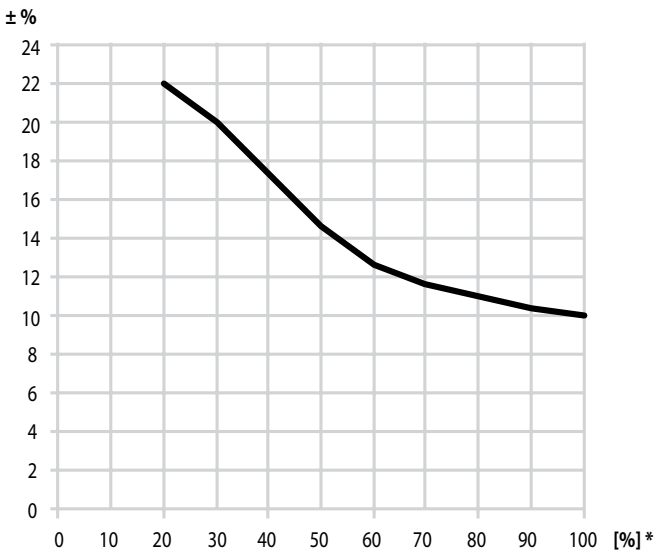


5.0 PERFORMANCE (Continued)

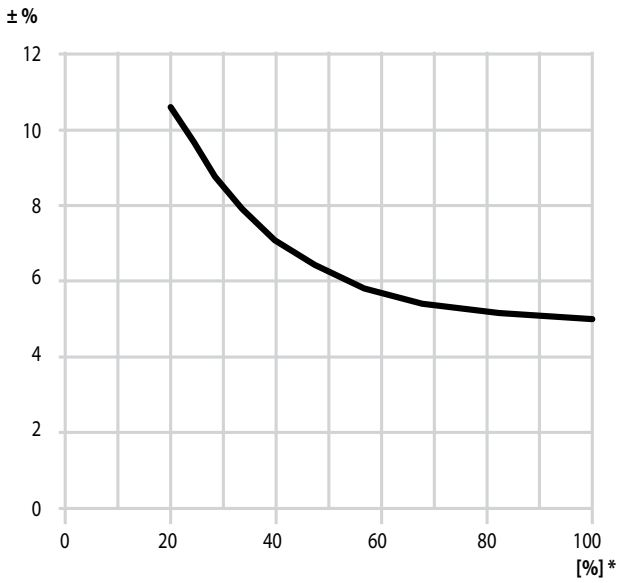
Measuring Accuracy

Maximum flow deviation at different settings

½ – 1 ¼"/DN15 – DN32



1 ½ – 3"/DN40 – DN80



*Setting (%) of fully open valve.

Correction Factors

The flow calculations are valid for water (68°F/20°C). For other liquids with approximately the same viscosity as water (≤ 20 cSt = 3°E = 100S.U.), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This causes a flow deviation that increases with small valves, low settings and low differential pressures. Correction for this deviation can be made with the software HySelect or directly in IMI TA's balancing instruments.

6.0 NOTIFICATIONS

Not applicable – contact Victaulic with any questions.

7.0 REFERENCE MATERIALS

- 08.30: Victaulic Koil-Kit™ Coil Pack - Series 799/79V/79B/79A, Series 78Y/78T/78U and Coil Hoses
- 08.35: Victaulic Koil-Kit™ Coil Pack - Series 79C/79D
- 08.36: Victaulic Control Valve with Return Temperature Controller (COMPACT-T) TA Series 7CT
- 08.37: Victaulic Compact Pressure Independent Balancing and Control Valve (Compact-P) TA Series 7CP
- 08.38: Victaulic TBV Terminal Balancing and Control Valves TA Series TC/TCM
- 08.39: Victaulic Pressure Independent Balancing and Control Valves (PIBCV) TA Series TCP
- 08.52: Victaulic Combined Balancing and Control Valves TA Series 7FC
- 08.53: Victaulic Combined Balancing and Control Valves TA Series 7FP
- I-KOIL.KIT: Koil-Kit™ Coil Pack Installation and Maintenance Instructions

