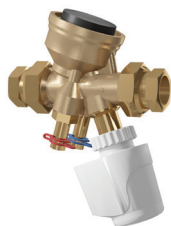


# Compact Pressure Independent Balancing and Control Valve (Compact-P)

## TA Series 7CP



08.37



### 1.0 PRODUCT DESCRIPTION

#### Available Sizes

- $\frac{3}{8}$  – 1  $\frac{1}{4}$ "/DN10 – DN32

#### NOTE

- The  $\frac{3}{8}$ " TA Series 7CP valve has a  $\frac{1}{2}$ " NPT connection.

#### Maximum Working Pressure

- 230 psi/1586 kPa/16 bar
- Maximum differential pressure: 58 psi/4000 kPa/4 bar
- Minimum differential pressure:
  - $\frac{3}{8}$  –  $\frac{3}{4}$ ": 2.18 psi/15 kPa/0.15 bar
  - 1" – 1  $\frac{1}{4}$ ": 3.36 psi/23 kPa/0.23 bar

#### Operating Temperature Range

- +32°F to +194°F/0°C to +90°C

#### Application

- Hydronic heating and cooling systems

#### Function

- Control
  - On/Off (EMO T or TA ACT Normally Closed Actuator)
  - Off/On (EMO T or TA ACT Normally Open Actuator)
  - Modulating (EMO TM or EMO 3 Actuators)
  - Digitally configurable with proportional control (Slider 160 Actuators)
  - With optional TA Slider fail-safe actuators, the TA Series 7CP valve can be programmed to return to any given position (full open, full closed, or anywhere in the travel) on loss of power
- Balancing via pre-setting (max. flow)
- Valve pressure drop max of 58 psi/400 kPa/4 bar
- Measuring ( $\Delta H$ , T, q)
- Shut-off (for isolation during system maintenance up to maximum rated differential pressure)

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



## 2.0 CERTIFICATION/LISTINGS

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Not applicable – contact Victaulic with any questions.

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## 3.0 SPECIFICATIONS – MATERIAL

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### TA Series 7CP Compact Pressure Independent Balancing and Control Valve

**Body:** Non-ferrous AMETAL® DZR brass copper alloy

**Spindle Seal:** EPDM O-ring

**Valve Insert:** Non-ferrous AMETAL® DZR brass copper alloy

**Spring:** Stainless steel

**Spindle:** Stainless steel

**Valve Plug:** Stainless steel

**Diaphragm:** EPDM and HNBR

**Diaphragm Support:** Polyphenylsulphide (PPS)

**O-Ring:** EPDM

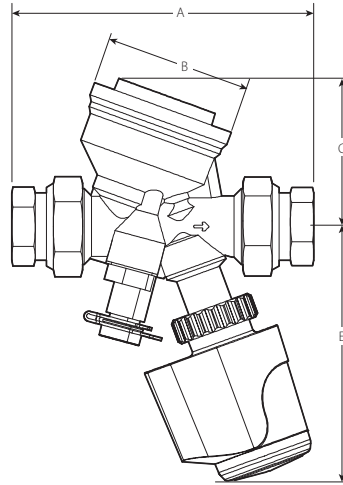
#### NOTES

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

## 4.0 DIMENSIONS

### TA Series 7CP Compact Pressure Independent Balancing and Control Valve

Female X Female Threaded



Size		Dimensions									Weight
Nominal	Actual Outside Diameter	A End to End	B	C	E EMO TM	E EMO 3	E TA ACT	E TA Slider 160 & 160 I/O	E TA Slider 160 Plus & 160 CO	E TA Slider 160 Fail-Safe & 160 BACNet	Approximate (Each)
inches DN	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	lb kg
3/8	0.840	2.91	2.13	2.17	4.21	4.21	5.25	4.68	5.18	5.78	1.2
DN10	21.3	74	54	55	107	107	133	119	132	147	0.5
1/2 LF	0.840	2.91	2.13	2.17	4.21	4.21	5.25	4.68	5.18	5.78	1.2
DN15 LF	21.3	74	54	55	107	107	133	119	132	147	0.5
1/2	0.840	2.91	2.13	2.17	4.21	4.21	5.25	4.68	5.18	5.78	1.2
DN15	21.3	74	54	55	107	107	133	119	132	147	0.5
3/4	1.050	3.35	2.52	2.52	4.21	4.21	5.25	4.68	5.18	5.78	1.5
DN20	26.7	85	64	64	107	107	133	119	132	147	0.7
1	1.315	3.66	2.52	2.52	4.50	4.45	5.25	5.12	5.62	6.22	1.7
DN25	33.7	93	64	64	114	113	133	130	143	158	0.8
1 1/4	1.660	4.41	3.07	3.07	4.50	4.45	5.25	5.24	5.74	6.34	3.3
DN32	42.4	112	78	78	114	113	133	133	146	161	1.5

#### NOTES

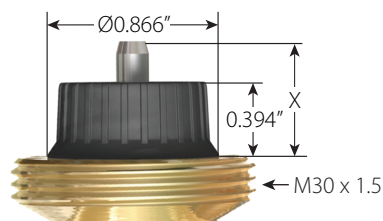
- Depending on union end types selected, length "A" may vary slightly.
- The 3/8" TA Series 7CP valve has a 1/2" NPT connection.
- LF = Low Flow

## 5.0 PERFORMANCE

The TA Series 7CP is designed to work together with the following actuators: EMO T (on/off or off/on), EMO TM (modulating), EMO 3 (three-point for 24 V AC signals), TA ACT or TA Slider 160 Family.

Actuators of other brands require a working range of:

- $\frac{3}{8}$  –  $\frac{3}{4}$ " X (closed – fully open) = 0.46 – 0.62"/11.7 – 15.7 mm
- 1 – 1  $\frac{1}{4}$ " X (closed – fully open) = 0.40 – 0.66"/10.1 – 16.8 mm
- Closing force: Minimum 28 lbf (maximum 112 lbf)



IMI TA and Victaulic will not be held responsible for the control function if actuators other than EMO T, EMO TM, EMO 3, TA ACT or TA Slider 160 Family are used.

Actuation Speed	
	Actuator Travel Speed seconds/mm
EMO T	Approx. 4-minute cycle
EMO TM	30 s/mm
EMO 3	70 s/mm - 50 Hz
	56 s/mm - 60 Hz
TA ACT	4.45 s/mm, proportional range
TA Slider 160 Family	10 s/mm

### NOTE

- The  $\frac{3}{8}$ "/DN10,  $\frac{1}{2}$ "/DN15 and  $\frac{3}{4}$ "/DN20 TA Series 7CP valves have 4 mm of travel.

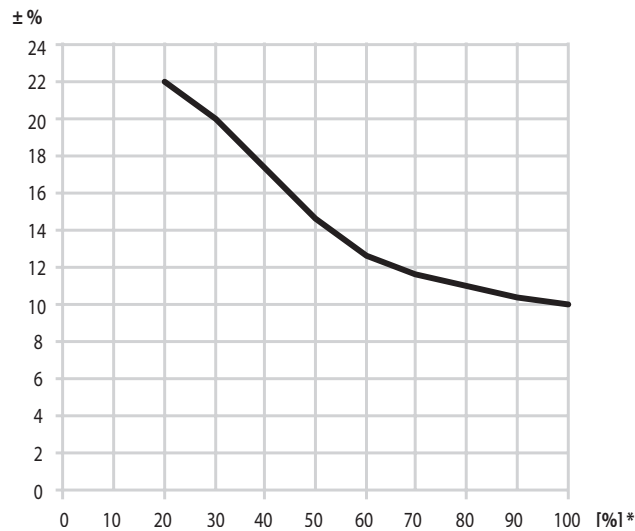
### TA Series 7CP – Actuator Only

TA Series 7CP – Actuator Only				
Actuator	Supply Voltage	Input Signal If Modulating	Actuation Type	Partcode
EMO-T NC	24VAC/VDC	–	Normally Closed Off/ON	P0000TCANC
EMO-T NO	24VAC/VDC	–	Normally Open On/Off	P0000TCANP
EMO-TM	24VAC	0(2) – 10 V, 10 – 0(2)V	Modulating	P0007MPS10
SLIDER 160	24VAC/VDC	0(2) – 10 VDC	Modulating	P0007MPS10
SLIDER 160 I/O	24VAC/VDC	0(2) – 10 VDC	Modulating	P0007MPS11
SLIDER 160 PLUS	24VAC/VDC	0(2) – 10 VDC	Modulating	P0007MPS1P
TA Slider 160 BACNet	24VAC/VDC	via Bus or 0(2)-10 VDC	Modulating	P0007MPS1B
TA Slider 160 BACNet CO	24VAC/VDC	via Bus or 0(2)-10 VDC, with binary input, 2 connections for PT1000 temperature probe and relay 24V	Modulating	P0007MPSBC
TA Slider 160 CO	24VAC/VDC	0(2)-10VDC w/ binary input, relay with connector to TA-M106 actuator, VDC output	Modulating	P0007MPSCO
TA Slider 160 Fail-Safe I/O	24VAC/VDC	0(2)-10VDC w/ binary input, VDC output signal	Modulating	P0007MPS1F
TA Slider 160 Fail-Safe R24	24VAC/VDC	0(2)-10VDC w/ binary input, VDC output signal and relay 24V	Modulating	P0007MPS1R
TA ACT 24VAC NC	24VAC	–	Fail-Safe Normally Closed	P000ACT001
TA ACT 24VAC NO	24VAC	–	Fail-Safe Normally Open	P000ACT002
TA ACT 110V NC	110VAC	–	Fail-Safe Normally Closed	P000ACT003
TA ACT 110VAC NO	110VAC	–	Fail-Safe Normally Open	P000ACT004

5.1 PERFORMANCE

Measuring Accuracy

Maximum flow deviation at different settings



\* Setting (%) of fully open valve.

## 5.2 PERFORMANCE

### TA Series 7CP Sizing

Choose the smallest valve size that can obtain the maximum design flow. The setting should be as open as possible. Check that the available  $\Delta pV$  is within the working range of 2.2 – 58 psi/15.2 – 400 kPa (sizes  $\frac{3}{8}$ "/10 mm through  $\frac{3}{4}$ "/20 mm) or 3.3 – 58 psi/28 – 400 kPa (sizes 1"/25 mm and 1  $\frac{1}{4}$ "/32 mm).

Size  inches DN	Valve Position (q <sub>max</sub> )									
	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
$\frac{3}{8}$ DN10	0.09 0.36	0.17 0.66	0.23 0.90	0.30 1.14	0.35 1.33	0.39 1.52	0.43 1.65	0.46 1.78	0.49 1.88	0.52 2.00
$\frac{1}{2}$ LF DN12 LF	0.19 0.72	0.31 1.17	0.43 1.6	0.54 2.0	0.65 2.5	0.75 2.8	0.84 3.2	0.92 3.5	1.00 3.8	1.08 4.1
$\frac{1}{2}$ DN12	0.39 1.48	0.66 2.50	0.88 3.33	1.09 4.13	1.30 4.92	1.50 5.68	1.67 6.32	1.85 7.00	1.98 7.50	2.07 7.84
$\frac{3}{4}$ DN20	0.92 3.48	1.47 5.56	2.02 7.65	2.53 9.58	2.99 11.32	3.43 12.98	3.92 14.84	4.36 16.50	4.75 17.98	5.06 19.15
1 DN25	1.62 6.16	2.68 10.16	3.65 13.83	4.62 17.50	5.58 21.16	6.55 24.83	7.57 28.66	8.23 31.16	9.02 34.16	9.46 35.83
1 $\frac{1}{4}$ DN32	3.52 13.32	5.37 20.33	7.13 26.99	9.06 34.29	10.80 40.88	12.30 46.56	13.60 51.48	14.70 55.65	15.60 59.05	16.30 61.70

#### NOTES

- q<sub>max</sub> = gpm (lpm) at each pre-setting and fully open valve plug.
- LF = Low Flow

### Correction Factors

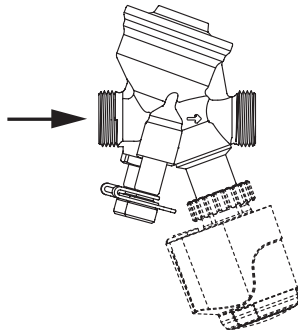
The flow calculations are valid for water (68°F/20°C). For other liquids with approximately the same viscosity as water (less than or equal to symbol 20 cSt = 3°E = 100S.U.), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar 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 TA Select or directly in IMI TA's balancing instruments. The TA Series 734 scope balancing instrument or the HyTools app may be used to convert differential pressure measurements to flow rates based on valve position.

### 5.3 PERFORMANCE

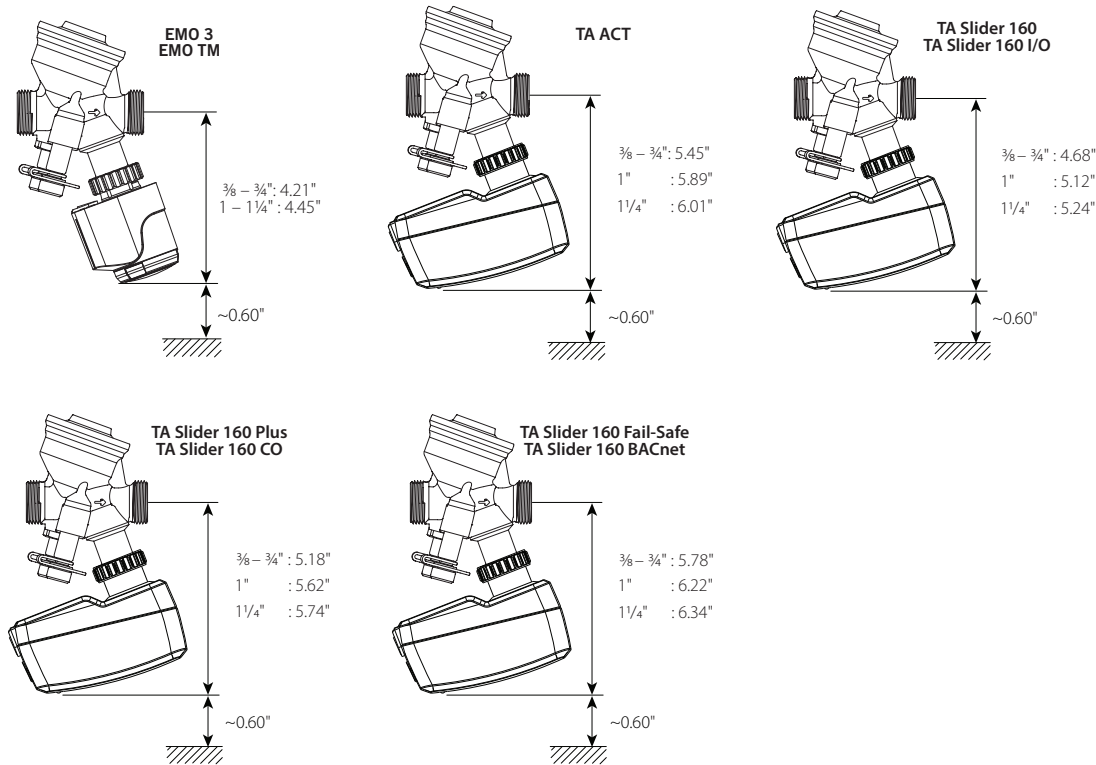
#### Installation

#### Flow Direction



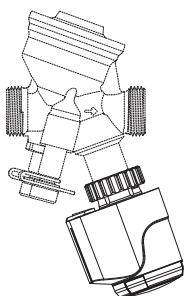
#### Installation of Actuator

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

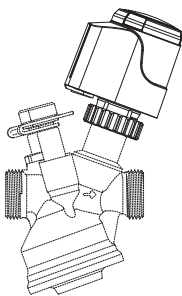


### 5.3 PERFORMANCE (CONTINUED)

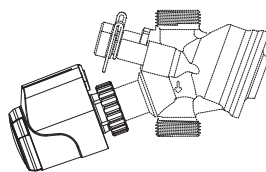
#### Acceptable Valve Piping Angles of Assembly for TA Series 7CP + EMO, TA ACT and TA Slider 160 Actuators



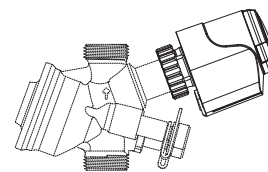
IP54 for EMO T, EMO TM  
& TA Slider 160 Family<sup>1</sup>  
Not allowed for EMO 3 or TA ACT



IP54 for EMO T, EMO TM  
& TA Slider 160 Family  
IP43 for EMO 3  
IP20 for TA ACT



IP54 for EMO T, EMO TM  
& TA Slider 160 Family  
Not allowed for EMO 3 or TA ACT



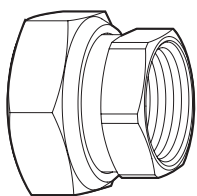
IP54 for EMO T, EMO TM  
& TA Slider 160 Family  
IP43 for EMO 3  
IP20 for TA ACT

<sup>1</sup> For chilled water applications, the valve and surrounding pipe should be insulated to prevent condensation from dripping onto actuator.

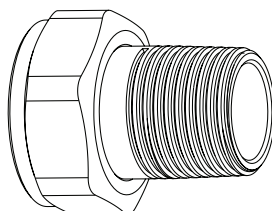
### 5.4 PERFORMANCE

#### TA Series 7CP Tailpiece Accessories

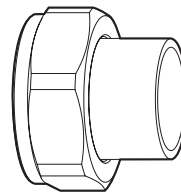
TA Series 7CP Tailpiece Accessories			
Size	Female	Sweat	Male
3/8" (with 1/2" NPT End)	P0037CPF04	–	–
Gasket	G0037CPF04	–	–
1/2"	P0047CPF04	P0047CPS04	P0047CTM04
Gasket	P0047CPGSK	P0047CPGSK	P0047CPGSK
3/4"	P0067CPF06	P0067CPS06	P0067CTM06
Reducer 3/4" as 1/2"	P0067CPF04	Not Available	Not Available
Gasket	P0067CPGSK	P0067CPGSK	P0067CPGSK
1"	P0107CPF10	P0107CPS10	P0107CTM10
"Reducer 1" as 3/4"	P0107CPF06	Not Available	Not Available
Gasket	P0107CPGSK	P0107CPGSK	P0107CPGSK
1 1/4"	P0127CPF12	P0127CPS12	Not Available
Reducer 1 1/4" as 1"	P0127CPF10	Not Available	Not Available
Gasket	P0127CPGSK	P0127CPGSK	Not Available



Female NPT



Male NPT



Sweat

#### NOTE

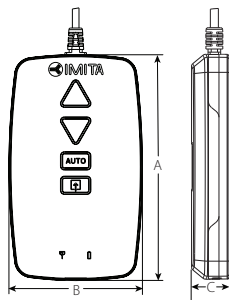
- All tailpieces are one-piece union assemblies with a gasket.



## 5.5 PERFORMANCE

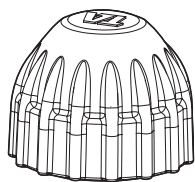
### Accessories

#### Dongle



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

#### Protection Cap



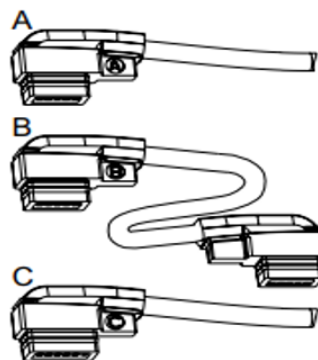
inches mm		Part Code
½ – 1¼ 12 – 32	Red	P0047CPCAP

#### Measuring Nipple



Description	Length	Part Code
	in mm	
Measuring Nipple Can be installed without draining the system	2.36 60	K000740012

#### Daisy Chain Cable



Cable A: To connect the first TA Slider 160.500 BACnet or Modbus of a daisy chain to the Bus.

Cable B: Between two actuators in a daisy chain.

Cable C: To enable hybrid mode or provide power supply if the daisy chain is long enough.

Daisy Chain Cable	Length	Part Code
	ft m	
Type A	4.9 1.5	P0007MPCA1
	16.4 5.0	P0007MPCA2
	32.8 10.0	P0007MPCA3
Type B	4.9 1.5	P0007MPCB1
	16.4 5.0	P0007MPCB2
	32.8 10.0	P0007MPCB3
Type C	4.9 1.5	P0007MPCC1
	16.4 5.0	P0007MPCC2
	32.8 10.0	P0007MPCC3

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## 6.0 NOTIFICATIONS

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Not applicable – contact Victaulic with any questions.

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## 7.0 REFERENCE MATERIALS

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[08.30: Victaulic KOIL-KIT™ Coil Pack](#)

[08.35: Victaulic Koil-Kit™ Coil Pack - Series 79C/79D](#)

[08.38: Victaulic TBV Terminal Balancing and Control Valves TA Series TC/TCM](#)

[08.55: Victaulic Compact Pressure Independent Balancing and Control Valve TA Series ZMP](#)

[I-KOIL.KIT: Koil-Kit™ Coil Pack Installation and Maintenance Instructions](#)

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### User Responsibility for Product Selection and Suitability

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### Note

This product shall be manufactured by Victaulic or to Victaulic specifications. Victaulic recommends all products to be installed in accordance with current IMI TA installation/assembly instructions. Victaulic and IMI TA reserve the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

### Installation

Reference should always be made to the current IMI TA installation/assembly instructions for the product you are installing. For coupling and strainer installation, reference should always be made to the [I-100 Victaulic Field Installation Handbook](#) for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at [www.victaulic.com](http://www.victaulic.com)

### Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

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