

MODEL SCV-30

SANITARY GLOBE-STYLE CONTROL VALVES

OVERVIEW

The Model SCV-30 * is a revolutionary, **throttling**, pneumatically actuated control valve. This unique design provides a geometrically characterized plug for superior **throttling** dynamics, plus the unit's ease of cleanability and maintenance meet the requirements of sanitary control valves.

The design incorporates a formed internal diaphragm that is bonded to a characterized metal plug. The diaphragm/body provides the smooth internal passages necessary for ease in cleaning and sanitizing. The plug head provides rigidity to the otherwise flexible diaphragm in the **throttling** zone where characterized control is desired.

FEATURES

Design Concept: A control valve for **throttling** applications.

Two Body Configurations: Traditional straight-through globe pattern, or angle body pattern, both self-draining. Forged 316L SST or Bar Stock 316L SST body material.

Multiple Ports: Both full and reduced port designs to optimize dynamic response.

Characteristic: Linear.

Multiple Diaphragms: Three to select from — EPDM, Fluorocarbon Elastomer, or Silicone.

Polished Interior: Interior of wetted body mechanically polished and electro-polished to 10 micro-inch R_a finish.

Exterior Finish: SST portions of body electro-polished. All other metallic exposed surfaces are of SST or painted with epoxy.

Readily Accessible: Unit can be easily and quickly disassembled in-line for inspection or trim replacement. Quick disconnect stem.

Cleaning Capability: Unit designed for clean-in-place (CIP) and steam-in-place (SIP) systems.



3A Construction: Selection of composition diaphragms bonded to metallic plug/stem meets 3A Sanitary Standards, Authorization No. 745.

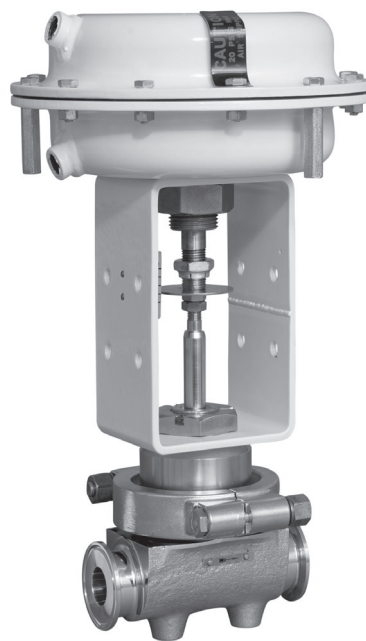
APPLICATIONS

Used in pharmaceutical and biotechnical industries in production of shear sensitive microorganisms and many health care products for both human and animal consumption. Suitable for processed food and cosmetics production.

Would be found supporting fermenters, batching tanks, cookers, dryers and other similar sanitary equipment. Suitable in WFI (Water for Injection) systems.

Model SCV-30 is applicable in saturated steam up to 15 psig (1.03 Barg) in continuous service when R1 trim is utilized.

* Patented



MODEL SCV-30
STRAIGHT-GLOBE PATTERN
WITH C27 ACTUATOR



LINE SIZES AVAILABLE

3/4" (DN20), 1" (DN25), 1-1/2" (DN40)



END CONNECTIONS

SANITARY TRI-CLAMP, BUTT WELD



COMMON APPLICATIONS

PHARMACEUTICAL, BIOTECHNICAL, HEALTH CARE, PROCESSED FOOD, COSMETICS, BATCHING TANKS, COOKERS, DRYERS



DESIGN PRESSURE

MAX INLET: UP TO 60 psig (4.1 Barg)
MAX PRESSURE DROP: 60 psig (4.1 Barg)

STANDARD/GENERAL SPECIFICATIONS

Body Sizes: Full Port - 3/4", 1", 1-1/2".
Opt-12 Reduced Port – 1" and 1-1/2".

Body Form: Straight-Globe and Angle-Globe.

End Connections: Standard: Sanitary "Tri-Clamp®". Designed to seal against weld type clamp liners per ISO 2852.
Optional: Butt weld (Opt-24).

Inherent Characteristic: Linear.

Operating Pressure Range: -7.5 psig to +60 psig
(-0.5 Barg to +4.1 Barg)

Operating Temperature Range: 0° to +300°F
(-17° to +149°C)

Max Operating Pressure Drop: 60 psid (4.1 Bard).

Flow Capacity: Per ISA 75.11.01 standard. See Tables 3 & 4.

Body Size	Port Size	Straight		Angle	
		Cv	kv	Cv	kv
3/4"	Full	2.8	2.4	2.9	2.5
1"	Full	6.1	5.2	6.6	5.6
	Opt-12 Red.	3.4	2.9	3.6	3.1
1-1/2"	Full	10.4	8.9	11.7	10.0
	Opt-12 Red.	6.6	5.6	7.1	6.1

Rangeability: 30:1 (FTO only).

Flow Direction: FTO – Flow-to-Open. (Not recommended for FTC direction.)

Seat Leakage: Per ANSI/FCI 70-2 standard; Class VI, composition seated.

Actuator: Spring-diaphragm type. Field reversible action - Model C27.
Direct: ATC-FO; Reverse: ATO-FC.

Direct: Increase in air "LOAD" extends actuator stem.

Reverse: Increase in air "LOAD" retracts actuator stem.

ATC-FO: Air-to-Close, Fail Open.

ATO-FC: Air-to-Open, Fail Closed.

Standard Actuator compliant with IEC60534-6-1 for mounting standardized positioners.

Painting: Standard – All non corrosion resistant portions are powder coated per Spec. S-1743 and/or with corrosion resistant epoxy paint per Cashco Spec #S-1606.
Alternate: See Opt-95

Maximum SIP Conditions:

SIP – Steam-in-Place.
Recommended: 20 psig @ SAT (1.4 Barg @ SAT).

Maximum: 30 psig @ SAT (2.1 Barg @ SAT), but with reduced diaphragm life.

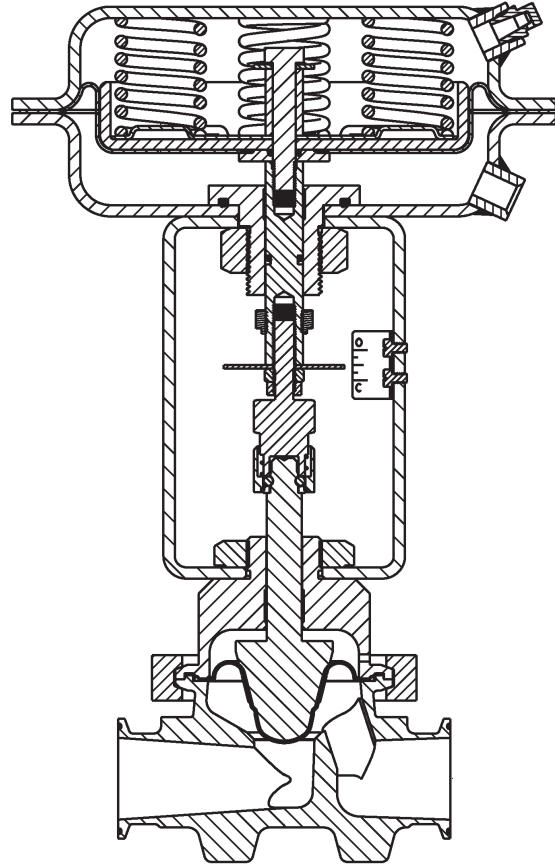


FIGURE 1 – STRAIGHT BODY

Shown with Reverse Action
ATO-FC Actuator

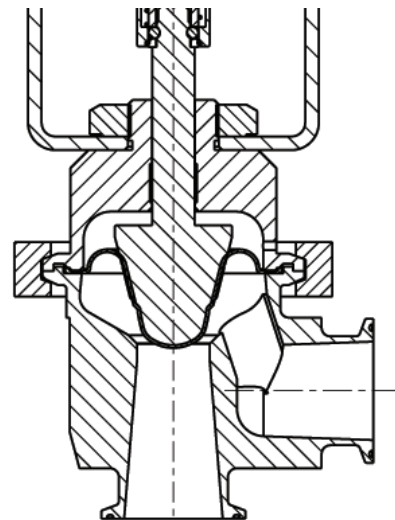


FIGURE 2 – ANGLE BODY

BODY TECHNICAL SPECIFICATIONS

Port Size, Stroke:

Body Size	Port Size				Nominal Stroke	
	Full		Opt-12 Reduced			
in.	in.	(mm)	in.	(mm)	in.	(mm)
3/4"	.500	(12.7)	—	—	0.50	(12.7)
1"	.688	(17.5)	.500	(12.7)		
1-1/2"	1.000	(25.4)	.688	(17.5)		

NOTE: Trim is interchangeable based on port size as each has the same stroke, i.e. 1" - reduced port trim will directly transfer to a 3/4" - full port, either angle or straight pattern.

Installation Orientation: Internal surfaces sloped and oriented to give "self-draining" with valve plug "open" when installed per Figure 3.

Quick Disconnect: Design allows for quick change of complete body sub-assembly (with "Tri-Clamp®" end connections), or just internal trim replacement. Both levels of disassembly can be done within a few minutes, and neither requires recalibration of the positioner.

- clamped end connections,
- clamped bonnet,
- quick-disconnect stem coupler,

End Connection Details: Standard: For mating to piping with quick couple, mechanical joints; Alfa-Laval "Tri-Clamp®". See Figure 4.

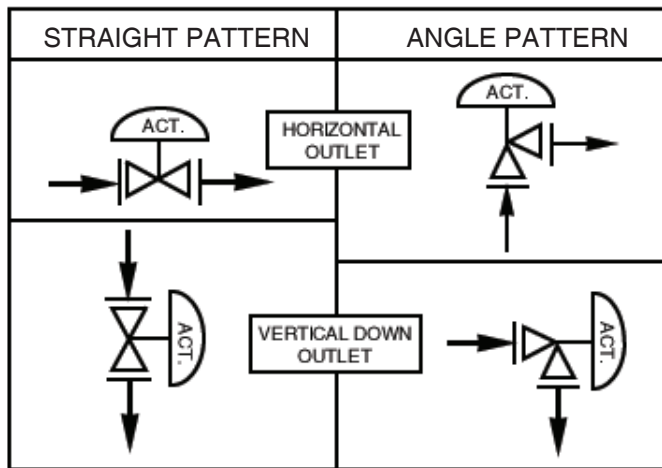


FIGURE 3: Installation Orientation

Nominal Body Size	Dimensions for Fig. 4					
	ID		OD		D1	
	in.	(mm)	in.	(mm)	in.	(mm)
3/4"	0.625	(15.9)	0.98	(24.9)	0.80	(20.3)
1"	0.856	(21.7)	1.984	(50.4)	1.738	(44.1)
1-1/2"	1.356	(34.4)	1.984	(50.4)	1.738	(44.1)

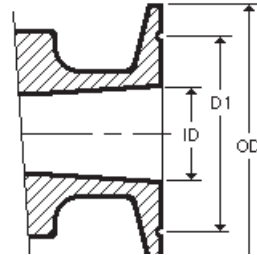


FIGURE 4 – Std. "Tri-Clamp®" End Connection

Nominal Body Size	Dimensions for Fig. 5				
	ID in. (mm)	OD in. (mm)	t in. (mm)	C1 in. (mm)	C2 in. (mm)
3/4"	0.620 (15.7)	0.750 (19.0)	.065 (1.65)	MIN. 0.69 (17.5)	0.09 (2.4)
1"	0.870 (22.1)	1.000 (25.4)			
1-1/2"	1.370 (34.8)	1.500 (38.1)			

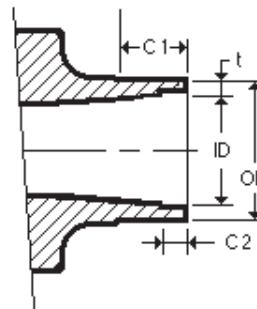


FIGURE 5 – Opt-24 Butt Weld End Connection

BODY SUB-ASSEMBLY MATERIAL SPECIFICATIONS

Body: Forged, ASTM F182, Gr. F316L (316L SST). Bar Stock, ASTM A479, S31603 (316L SST)

Body Wetted Surface Finish: Mechanically polished with 240 grit compound; manually polished where required. Electro-polished. Final surface is 10 micro-inch R_a . Final cleaning per Cashco Specification #S-1576.

Bonnet: Bar Stock, ASTM A479, S31603 (316L SST), electro-polished after machining.

Plug/Stem Assembly: One-piece investment cast, ASTM A351, Gr. CF8M (316 SST). Electro-polished after machining.

Bonnet Clamp: Alfa-Laval Group, Tri-Clover Div., "Tri-Clamp®"; 304 SST electro-polished.

Diaphragm: (Elastomer + Mesh Insert.)

Trim Designation No.	Basic Material – Food Grade	FDA * Code of Federal (USA) Regulations No.
R1	EPDM + Dacron	21CFR177.2600
R2	FC Elast.** + Dacron	
R3	Silicone + Dacron	
* FDA - USA Food and Drug Administration ** Fluorocarbon Elastomer		

Plug-to-Diaphragm Adhesive:

CSL Silicones, Inc., No. CSL 502, industrial silicone sealant/adhesive. Permitted under FDA Code of Regulations; No. 175.105; Color – Clear. Acceptable as “food grade” by U.S. Dept. of Agriculture and Agriculture Canada where incidental food contact may occur.

ACTUATOR TECHNICAL SPECIFICATIONS

Size, Stroke & Volume:

Nominal Diaphragm Area		Stroke		Action	Volumes			
					Clearance		Displacement	
in ²	(cm ²)	in	(mm)		in ³	(cm ³)	in ³	(cm ³)
32	(209)	0.5"	(12.7)	ATC	30.3	(496.5)	16.2	(265.5)
				ATO	28.2	(462.1)	16.4	(268.7)

Bench Set:

Range		Normal Supply Air Pressure		Max Supply Air Pressure	
psig	(Barg)	psig	(Barg)	psig	(Barg)
5-15	(.34-1.0)	20	(1.4)	100	(6.9)

Ambient Temperature Range:

-50° to +180°F

Field Reversibility: (-45° to +82°C)

Actuator is field reversible without change in actuator parts.

ACTUATOR SUB-ASSEMBLY MATERIAL SPECIFICATIONS

Part	Material
Diaphragm	Buna-N w/Polyester Insert
Lower & Upper Case, Yoke	Steel
Attachment Hub	17-4 PH SST
Stem	316/316L SST
Diaph. Washer O-ring, Hub O-ring, Stem O-ring	Buna-N

Part	Material
Diaphragm Washer	316/316L SST
Diaphragm Plate, Stem Spacer, Spring Plate, Hub Nut, Stem Bolt, Stem Lock Washer	Steel
Bolts & Nuts	Steel Plated
Spring	Epoxy Coated Steel

OPTION SPECIFICATIONS

Option-3:

MANUAL HANDWHEEL. Overrides the actuator spring force to allow manual stroking of the valve. Single acting design, side-mounted handwheel. For ATO-FC action, handwheel operator “opens” the valve against spring force; may be utilized as a travel stop to prevent full closure. For ATC-FO action, handwheel operator “closes” the valve against spring force; may be utilized as a travel stop to prevent full opening.

Option-12:

REDUCED PORT. Standard full port body is replaced with an alternate body with its integral reduced port. See Pg. 3, “Port Size & Stroke” for actual port size. **NOTE:** To

convert from one port size to the other port size for a given body size requires that the body be replaced as well as the plug/stem/diaphragm sub-assembly.

Option-24:

BUTT WELD END CONNS – 16 Ga. Alternate to “Tri-Clamp®” mechanical quick connect end connections. For connecting to 16 Ga. OD tubing. For butt weld jointing using automatic orbital welding process. Dimensions for the standard Opt-24 butt weld are indicated in Figure 5 on page 3; for butt welds of different dimensions consult factory.

EPOXY PAINT: Special epoxy painting of all non-corrosion resistant external surfaces per Cashco Spec #S-1547. Utilized in harsh atmospheric conditions.

MOUNTED ACCESSORY SPECIFICATIONS

Positioners: **NOTE:** PMV Positioners are not FM Approved at this time. If you need FM Approval, please specify the Siemens PS2.

General: PMV Positioners. Aluminum housing with corrosion resistant powder coated epoxy. Pneumatic output load as required by actuator bench range. Field reversible action. Mounting dimensions per IEC 60534-6-1 Standard.

P/P Pneumatic. Model P5 features SST cam with a simple cam locking device, tapped exhaust port for venting media, external zero adjustment. Input signal 3-15 psig. Includes gauge ports, no gauges. Analog only.

I/P Electro-Pneumatic. Model D20 Digital or Hart compatible. Features single button self-calibration. Input signal 4-20mA. Optional gauge block with gauges for Models D20 D and D20 A.

Model D20 D is general purpose.

Model D20 A is Intrinsically safe, Ex ia ATEX.

Model D20 E is ATEX EEX d IIB+H₂, T6 FM Approved. - **Approval Pending** Gauge block is built in, no gauges. Not available with limit switch option.

Model D3 Digital, Hart, Profibus, or Fieldbus compatible. Input signal 4-20mA. Features large graphic display. Optional gauge block for Models D3 X and D3 I, no gauges.

Model D3 X is general purpose.

Model D3 I is Intrinsically safe, ATEX EEX ia IIC T4.

Model D3 E is ATEX EEX d IIB+H₂, T6 CSA CLS 1 DIV 1

FM CLS 1 DIV 1 - **Approval Pending** Gauge block is built in, no gauges. Not available with limit switch option.

Model PS2 is Digital, Hart, Fieldbus and Profibus compatible. Input signal 4-20mA. Features a Makrolon housing, (Aluminum for Explosion Proof.) Mounting dimensions per IEC 60534-6-1 Standard.

Model PS2-2 is Intrinsically safe, ATEX Ex ia IIC T6/T4, FM CLS 1 DIV 1, CSA CLS 1 DIV 1, SIL 2

Model PS2-3 EX d IIC T6/T4, SIL 2

All I/P positioners not available with 764's.

Air Tubing:

Model PS2-1 is general purpose. Instrument air tubing SST with SST fittings.

Airset:

Model 5200P instrument air supply regulator. Use with positioners. Bracket mounted to actuator casing. Supplied with gauge. See technical bulletin 5200P-TB.

Solenoid Valve: Standard Brass: Available in standard weather-proof model. Brass body, 1/4" female NPT connections. Nipple mounted to actuator casing. 120 VAC, 60 Hz power supply, CSA Approved Class 3221-01, NEMA 2,3,3S,4,4X. 8" HF utilizes a direct mount NAMUR mount style.

X-Proof or SST construction: Consult Factory.

Standard installation vents actuator and drives valve to fail-safe position upon loss of electrical power.

Consult factory for 230/1/50, or 120 VDC power supplies, or intrinsically safe (IS) service.

Transducers: FM, CSA approved NEMA 4X CI 1, Div 1 and CI 1, Div 2

Other

Accessories: 764 P/PD pressure controller. Lockup valve. Position transmitter.

Limit Switches: Model D20 and D3 positioners, switches are available, unit is enclosed in the positioner housing.

Limit switch options not available on Explosion proof rated positioners.

TECHNICAL SPECIFICATIONS

TABLE 1
MAXIMUM PRESSURE vs. TEMPERATURE RATINGS

Body Size	End Connection	Pressure		Temperature	
		psig	(Barg)	°F	(°C)
3/4"	Std. "Tri-Clamp®" or Opt-25 Butt Weld	60	(4.1)	300°	(149°)
1"					
1-1/2"					

TABLE 2
MAXIMUM INLET PRESSURE & PRESSURE DROP

Bench Set Range		Maximum Valve Pressure				Supply Air Pressure	
		Inlet		Drop			
psig	(Barg)	psig	(Barg)	psid	(Bard)	psig	(Barg)
5-15	(.34-1.0)	60	(4.1)	60	(4.1)	20	(1.4)

Application Note: Consult factory for applying these valves with an I/P Transducer without a positioner. Pressure drop levels may be reduced.
DO NOT apply ATC-FO arrangement with I/P Transducer - could cause permanent damage to valve.

TABLE 3
Cv CAPACITY — STRAIGHT-GLOBE
 $F_L = 0.9$

Body Size	Port Description	Cv @ % Travel										
		Min.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3/4"	Full	0.1	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.4	2.6	2.8
1"	Full	0.2	0.9	1.5	2.1	2.7	3.2	4.0	4.6	5.3	5.8	6.1
	Opt-12 Reduced	0.1	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.4	3.0	3.4
1-1/2"	Full	0.3	1.0	1.6	2.4	3.4	4.5	5.5	6.9	8.7	9.6	10.4
	Opt-12 Reduced	0.2	0.9	1.5	2.1	2.7	3.2	4.0	4.7	5.4	6.0	6.6

TABLE 4
Cv CAPACITY — ANGLE-GLOBE
 $F_L = 0.9$

Body Size	Port Description	Cv @ % Travel										
		Min.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3/4"	Full	0.1	0.2	0.5	0.7	1.0	1.2	1.5	1.8	2.3	2.6	2.9
1"	Full	0.2	0.9	1.6	2.1	2.7	3.2	3.9	4.6	5.4	6.0	6.6
	Opt-12 Reduced	0.1	0.2	0.5	0.7	1.0	1.2	1.5	1.8	2.3	2.9	3.6
1-1/2"	Full	0.2	0.9	1.5	2.3	3.4	4.4	5.6	7.0	8.6	10.2	11.7
	Opt-12 Reduced	0.2	0.9	1.5	2.1	2.7	3.2	4.0	4.7	5.4	6.3	7.1

DIMENSIONS & WEIGHTS

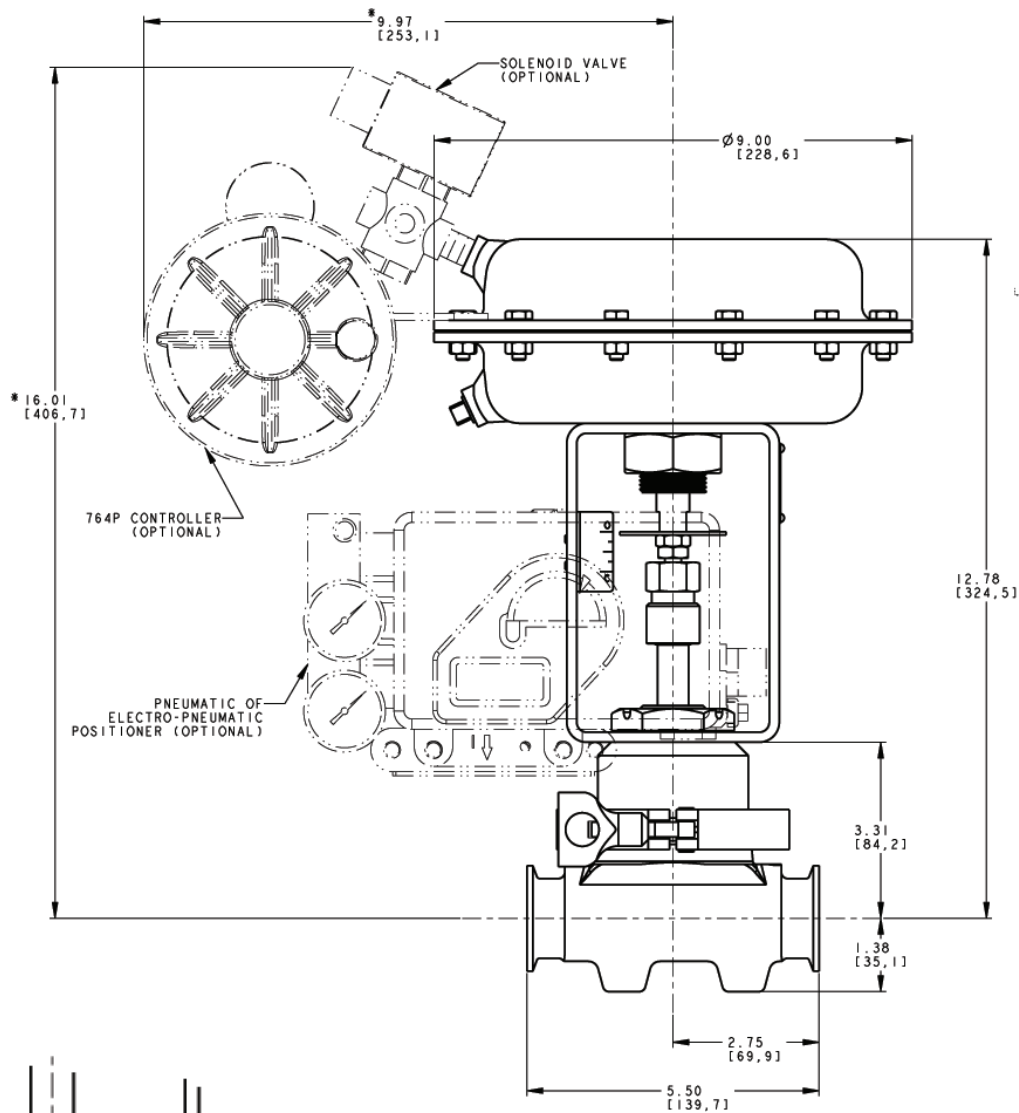


FIGURE 6
Straight-Globe Body

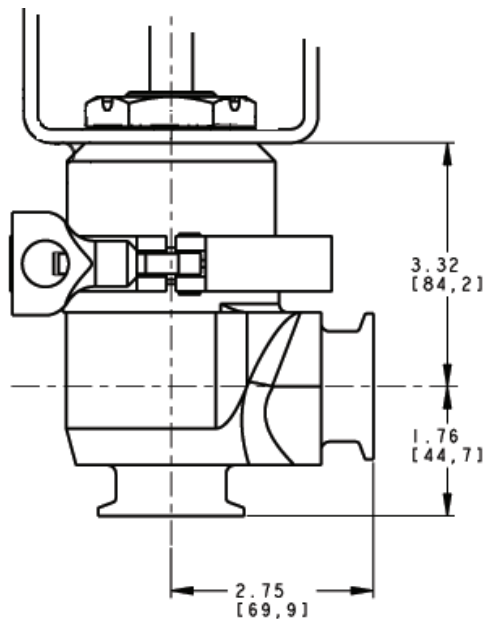


FIGURE 7
Angle-Globe Body

Weight
(either body)
approx
30 lbs. (13.6 kg)

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MODEL SCV-30 PRODUCT CODER 12/02/20

An "X" in POS 12 followed by a 5-digit control number overrides remaining selections.

S	3	POS 3	—	POS 5	POS 6 & 7	POS 8	—	0	POS 11	POS 12	POS 13	POS 14	POS 15	POS 16	POS 17	D
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POSITION 3 - SIZE & PORT		
Body Size	Port Size	
	Full Port	Opt.-12 Reduced
	CODE	CODE
3/4"	5	
1"	6	C
1-1/2"	8	D

POSITION 5 - END CONNECTION & PATTERN		
END CONNECTION	Straight Globe	Angle Globe
	CODE	CODE
Tri-Clamp	A	G
Opt-24 Butt Weld	B	H

POSITION 6 & 7 - TRIM MATERIAL	
Trim Designation No.	CODE
EPDM – 316 SST	R1
Fluorocarbon Elastomer – 316 SST	R2
Silicone – 316 SST	R3

POSITION 8 - Product Classification Under European "Pressure Equipment Directive"		
PRODUCT DESTINATION	HAZARD CATEGORY	CODE
Anywhere except Europe	N/A	7
European Countries * (CE Mark does not apply to DN25 and below)	Sound Engineering Practice (SEP)	S
	CE Marked Hazard Cat I or II	E

* For products to be placed in service in Europe - Ref to Directive 2014/68/EU.
Forward Completed "EU" Application Recorder prior to quotation. (Without Recorder- Processing of Purchase Order will be delayed). Contact Cashco for Assistance.

POSITION 11 - ACTUATOR		
Bench Set	Action	CODE
5-15 psig	Reverse: ATO-FC	1
	Direct: ATC-FO	2

POSITION 12 - 764P * (Bracket Mtd) -Airset (Bracket Mtd) - SOLENOID VALVE			
764P / Action	Solenoid Valve *** Exhaust on Deenergization		
	None	120VAC 60 Hz	24 VDC
None	CODE		
	0	6	C
Reverse **	2	8	E
Reverse W/ Airset **	3	9	F
Direct **	4	A	G
Direct W/ Airset **	5	B	H
Special Construction Contact Cashco for Code	X		

* Refer to 764-TB for Product Code of Controller.
** Select Code 1 on Position 13 if positioner is needed.
*** Solenoid rated as 4/4X only.

POSITION 13 - DIRECT ACTING POSITIONER with AIRSET (Bracket Mounted) (3-15 psig) 4-20 mA Specify Split Range in Special Instructions on the P.O.					
Positioner Model	Ratings	Analog/Digital	Hart	Fieldbus	Profibus
CODE					
P5 P/P *	Gen. Purpose	1			
D20 D I/P	Gen. Purpose	C	D		
D20 A I/P * ‡	Intrinsically Safe	2	5		
D20 E I/P *** ‡	Explosion Proof	E	F		
D3 X I/P	Gen. Purpose	L	M	N	P
D3 I I/P	Intrinsically Safe	3	6	8	A
D3 E I/P **** ‡	Explosion Proof	G	H	J	K
PS2-1 I/P	Gen. Purpose	Q	R	S	T
PS2-2 I/P	Intrinsically Safe	&	7	9	B
PS2-3 I/P ***	Explosion Proof	<	U	V	W
None **		0			

* Stock Item
** Actuator Assembly includes dimensions for (Namur) Mounting per IEC 60534-6-1.
*** D20E & PS2-3 are not available with limit/proximity switch option. Select codes "8", "9" or "0" in Pos. 15.
**** D3E Positioner is not available with options. Please select code "0" in Pos. 15.
‡ PMV Positioners are not FM Approved at this time. If you need FM Approval, please specify the Siemens PS2.

POSITION 14 - GAUGE BLOCK	
Option for Positioner	Code
None *	0
Gauge Block **	1

* For P5 gauge ports built in. No gauges.
* For D20 E, D3 E & PS2-3 gauge block is standard. No gauges.
** For D20 D, D20E & D20 A and PS2-1 & PS2-2 - gauge block with gauges.
** For D3 X & D3 I gauge block only - no gauges.

POSITION 15 - POSITIONER OPTIONS					
Options	POSITIONERS			I/P TRANSDUCERS	
	* Inductive Limit Switches	* Micro-switches Limit Switches	Position Transmitter	3-15 PSIG No Airset	3-15 PSIG W/ Airset
CODE					
P5				4	5
D3 & D20 **	7	T	9		
PS2			8		
No Positioner				C	F
None	0				

* D20E & PS2-3 are not available with limit/proximity switch option. Select codes "8", "9" or "0".
** D3E Positioner is not available with options. Please select code "0".

*** For information on ATEX see pages 11 & 12 on the IOM.**

POSITION 16 - OPTIONS	
Accessories	CODE
No Handwheel	0
Handwheel	9

POSITION 17 - PAINTING & CLEANING		
Painting	Option	Standard Cleaning
CODE		
Standard	—	0
Epoxy Painted Per Cashco Spec #S-1547	-95	1