

# **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 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.

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.



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 Standard: Sanitary "Tri-Clamp®". De-

Connections: signed to seal against weld type clamp

liners per ISO 2852.

Optional: Butt weld (Opt-24).

Inherent

Characteristic: Linear.

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

Operating Temperature

0° to +300°F (-17° to +149°C)

Range:

**Max Operating** 

Pressure Drop: 60 psid (4.1 Bard).

Flow Capacity: PerISA75.11.01 standard. See Tables 3&4.

Body	Port	Stra	ight	Angle		
Size	Size	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 por-

tions 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 SIP – Steam-in-Place.

Conditions: Recommended: 20 psig @ SAT (1.4 Barg

@ SAT).

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

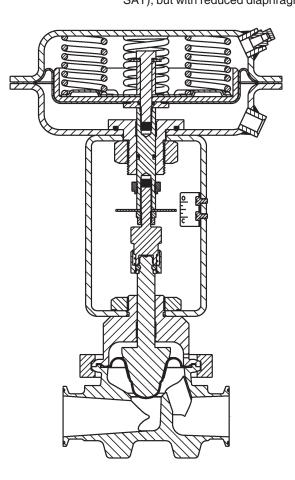


FIGURE 1 - STRAIGHT BODY

Shown with Reverse Action ATO-FC Actuator

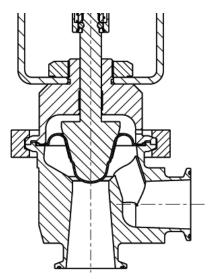


FIGURE 2 – ANGLE BODY

®Registered Tradename, Alfa-Laval Group, Tri-Clover Division.

#### **BODY TECHNICAL SPECIFICATIONS**

#### Port Size, Stroke:

Pody		Port	Non	inal		
Body Size	Full		Opt-12 Reduced		Nominal Stroke	
in.	in.	(mm)	in.	(mm)	in.	(mm)
3/4"	.500	(12.7)	_	_		
1"	.688	(17.5)	.500	(12.7)	0.50	(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 Internal surfaces sloped and oriented to Orientation: give "self-draining" with valve plug "open"

when installed per Figure 3.

Quick 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:

<u>Standard</u>: For mating to piping with quick couple, mechanical joints; Alfa-Laval "Tri-Clamp<sup>®</sup>". See Figure 4.

STRAIGHT PATTERN	ANGLE PATTERN		
	ZONTAL ACT.		
VERTICA OUT			

**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)		

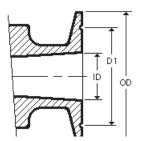


FIGURE 4 - Std. "Tri-Clamp®" End Connection

Nominal	Dimensions for Fig. 5						
Body Size	ID in. (mm)	OD in. (mm)	t in. (mm)	C1 in. (mm)	C2 in. (mm)		
0/4	0.620	0.750					
3/4"	(15.7)	(19.0)		MIN. 0.69 (17.5)			
1"	0.870	1.000	.065		0.09		
'	(22.1)	(25.4)	(1.65)		(2.4)		
1-1/2"	1.370	1.500					
	(34.8)	(38.1)					

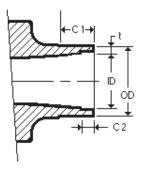


FIGURE 5 - Opt-24 Butt Weld End Connection

#### **BODY SUB-ASSEMBLY MATERIAL SPECIFICATIONS**

Body: Forged, ASTM F182, Gr. F316L (316L

SST). Bar Stock, ASTM A479, S31603

(316L SST)

**Body Wetted** Mechanically polished with 240 grit com-**Surface Finish:** pound; manually polished where required.

Electro-polished. Final surface is 10 micro-inch R<sub>a</sub>. 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				
R2	FC Elast.** + Dacron	21CFR177.2600			
R3	Silicone + Dacron				
* 504 1104 5 1 10 41 111 11					

- 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				Volumes			
	hragm rea	~ I		Action	Clearance		Displacement	
in²	(cm²)	in	(mm)		in³	(cm³)	in³	(cm³)
32	(209)	0.5"	(40.7)	ATC	30.3	(496.5)	16.2	(265.5)
32   (209)	0.5" (12.7)	ATO	28.2	(462.1)	16.4	(268.7)		

#### **Bench Set:**

Range		Normal Air Pre		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.

SCV-30-TB

<u>EPOXY PAINT:</u>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.

<u>I/P Electro-Pneumatic.</u> 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

**Model D20 E** is ATEX EEX d IIB+H<sub>2</sub>, T6 FM Approved. - **Approval Pending** Gauge block is built in, no gauges. Not available with limit switch option.

ATEX.

**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+H<sub>2</sub>, 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

Cl 1, Div 1 and Cl 1, Div 2

Other 764 P/PD pressure controller.

Accessories: 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.

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#### **TECHNICAL SPECIFICATIONS**

TABLE 1
MAXIMUM PRESSURE vs. TEMPERATURE RATINGS

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

TABLE 2
MAXIMUM INLET PRESSURE & PRESSURE DROP

Bench Set Range		IV	laximum Va	- 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.

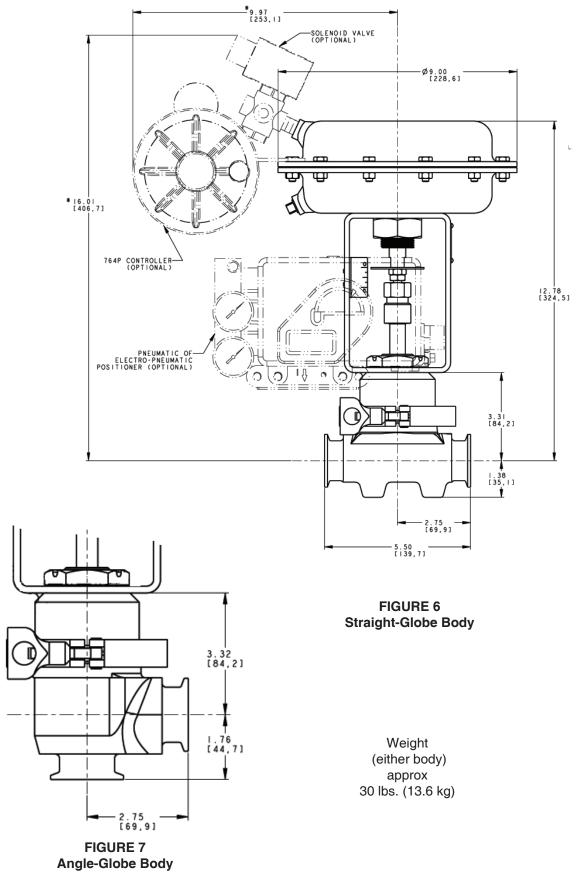
Body	Port		Cv @ % Travel									
Size	Description	Min.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3/4"	Full	0.1	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.4	2.6	2.8
	Full	0.2	0.9	1.5	2.1	2.7	3.2	4.0	4.6	5.3	5.8	6.1
1"	Opt-12 Reduced	0.1	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.4	3.0	3.4
	Full	0.3	1.0	1.6	2.4	3.4	4.5	5.5	6.9	8.7	9.6	10.4
1-1/2"	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	Port	Cv @ % Travel										
Size	Description	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
	Full	0.2	0.9	1.6	2.1	2.7	3.2	3.9	4.6	5.4	6.0	6.6
1"	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
	Full	0.2	0.9	1.5	2.3	3.4	4.4	5.6	7.0	8.6	10.2	11.7
1-1/2"	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

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#### **DIMENSIONS & WEIGHTS**



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product remains solely with the purchaser.

# MODEL SCV-30 PRODUCT CODER 12/02/20









POS POS 12 13

POS 14

POS 15

POS POS 16

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

POSITION 3 - SIZE & PORT							
	Port Size						
Body Size	Full Port	Opt12 Reduced					
	CODE	CODE					
3/4"	5						
1"	6	С					
1-1/2"	8	D					

POSITION 5 - END CO	ONNECTION	& PATTERN
END CONNECTION	Straight Globe	Angle Globe
CONNECTION	CODE	CODE
Tri-Clamp	Α	G
Opt-24 Butt Weld	В	Н

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	Sound Engineering Practice (SEP)	s					
Mark does not apply to DN25 and below)	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							
E 1E noin	Reverse: ATO-FC	1							
5-15 psig	Direct: ATC-FO	2							

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

<sup>\*</sup> Refer to 764-TB for Product Code of Controller.

POSITION 13 - DIRECT ACTING POSITIONER with AIRSET (Bracket Mounted) (3-15 psig) 4-20 mA										
S	Specify Split Range in Special Instructions on the P.O.									
Positioner	Ratings	Analog/Digital	Hart	Fieldbus	Profibus					
Model	Haungs	CODE								
P5 P/P *	Gen. Purpose	1								
D20 D I/P	Gen. Purpose	С	D							
D20 A I/P * ‡	Intrinsically Safe	2	5							
D20 E I/P *** ‡	20 E I/P *** ‡ Explosion Proof		F							
D3 X I/P	Gen. Purpose	L	M	N	Р					
D3 I I/P	Intrinsically Safe	3	6	8	Α					
D3 E I/P **** ‡	Explosion Proof	G	Н	J	K					
PS2-1 I/P	Gen. Purpose	Q	R	S	Т					
PS2-2 I/P	Intrinsically Safe	&	7	9	В					
PS2-3 I/P ***	Explosion Proof	<	U	٧	W					
None **		0								

- \*\* 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
- \*\*\*\* 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 DE gougo porto built in No gougos								

- \* 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	POSITION 15 - POSITIONER OPTIONS							
	F	I/P TRANSDUCERS							
Options	* 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	Т	9						
PS2			8						
No Positioner				С	F				
None			0						
* D20E & PS2	-3 are not available with limit/proximity switch option. Select								

codes "8", "9" or "0"

**	D3E	Pos	ition	er is	not	available	with	options.	Please	select	code	"0"

POSITION 16 - OPTIONS		
Accessories	CODE	
No Handwheel	0	
Handwheel	9	

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

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

<sup>\*\*</sup> Select Code 1 on Position 13 if positioner is needed.
\*\*\* Solenoid rated as 4/4X only.