



Model 964
Model C27 Actuator
(ATO-FC Action)

MODEL 964

PNEUMATIC CONTROL VALVE

1/2" - 2" Size w/C27 or C53 Actuator

The Model 964 is a globe-style, pneumatic control valve for general plant utility services. The design incorporates characterized trim for most pressure, temperature, level or flow applications. Standard metal seat design gives Class IV shutoff; also available in TFE soft seat design for Class VI shutoff. Available in sizes 1/2" thru 2" (DN 15 thru DN 50).

FEATURES

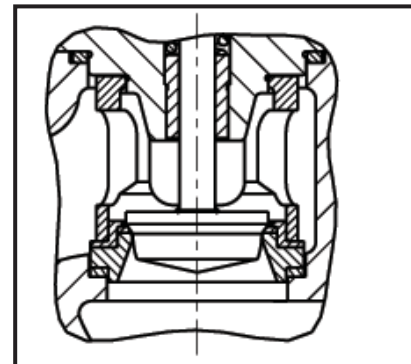
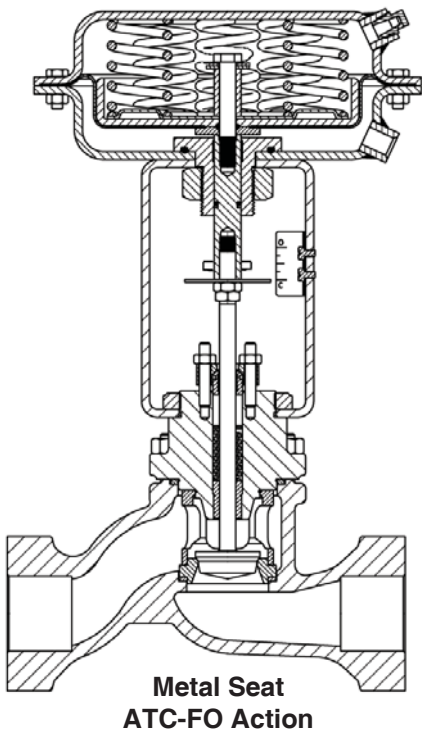
- Quick change trim
- Equal percentage trim characterization
- Metal seat or TFE soft seat designs
- Optional stellited metal seating surfaces
- Standard stainless steel trim
- Full or reduced orifice trim
- Field reversible fail safe action
- Stem position indicator
- Standard non-asbestos construction
- Standard Actuator compliant with IEC 60534-6-1 for mounting standardized positioners.

APPLICATIONS

General service utility fluids including air, water, industrial gases and steam.

GENERAL SPECIFICATIONS

Body Sizes:	1/2"- 1", 1-1/2" and 2". (DN15 - 25, 40 and 50).	Maximum Pressure Drop:	Metal seated – Up to 740 psid (51 Bard). TFE Soft Seated – Up to 400 psid (27.6 Bard). (See Tables 3 and 4).
Body Pressure/ Temperature Rating:	<u>Carbon Steel</u> mat'l meets ASME B16.34 for 150# or 300# pressure classes, and meets 300# pressure class for NPT and socket weld conn. <u>Ductile Iron</u> mat'l with NPT conn. meets Cast Iron requirements for ASME B16.4 for 250# pressure class. <u>DI</u> - with 125# or 250# flange conn. meets Cast Iron requirements for ASME B16.1. See Table 1.	Seat Design:	Metal or TFE soft seat designs with full or reduced orifice, all sizes.
Max. Inlet Pressure:	CS – Up to 740 psig (51 Barg). DI – Up to 500 psig (34.5 Barg).	Seat Leakage:	Meets ANSI/FCI 70-2 (Rev. 1982). Standard – Metal seated, Class IV. Optional – TFE soft seated, Class VI, with metal-to-metal backup.
Working Temperature Range:	Standard – all materials: -20°F to +450°F. (-28°C to +232°C.)	Flow Direction:	<u>Standard</u> : Flow-to-Open (FTO); required to maintain flow characteristic.
End Connections:	<u>Female NPT</u> – 1/2"- 1", 1-1/2" and 2". (1/2" NPT not available in CS.) <u>Flanged</u> – 1-1/2" and 2". DI – 125# FF, 250# RF. <u>Flanged</u> – 3/4" 1", 1-1/2" and 2". CS – 150# RF, 300# RF, separable type. <u>Socket weld</u> – 3/4", 1", 1-1/2" and 2". CS material only.	Rangeability:	50:1.
		Inherent Flow Characteristic:	Equal Percentage; FTO direction only.
		Flow Capacity:	Up to 47 Cv. See Table 5.
		Actuator/Bench Setting:	Spring diaphragm type. Field reversible. See Tables 3 or 4 for proper selection of required bench setting.
		Painting:	<u>Standard</u> – All non corrosion resistant portions are powder coated per Spec. S-1743 and/or with corrosion resistant epoxy paint per Cashco Spec #S-1606.
		Body/Bonnet Materials:	DI – ASTM A395. CS – ASTM A216, Gr. WCB.
		Separable Flange:	CS flanges, ASTM A216 GR WCB or ASTM A105, with CS split rings ASTM A106.



Stem Size:

Body Size	Stem Diameter	
	Inch	(mm)
1/2" - 1", 1-1/2" (DN15 - 25, 40)	0.375	(9.5)
2" (DN50)	0.625	(15.9)

Packing Flange Bolting: Type 18-8 SST studs and nuts

Packing: V-Ring TFE live loaded packing.

Miscellaneous Materials:

Part	Body Size	
	1/2" - 1-1/2" (DN15 - 40)	2" (DN50)
Cage	316 SST	DI Body - DI CS Body - CS
Guide Bushing	440C SST	440C SST
Retaining Ring	-	304 SST
Packing Stop	-	303 SST
Packing Follower	316 SST	316 SST
Packing Flange	316 SST	316 SST

Trim: SST – See Table 2 for detailed material identification.

Gaskets: Standard – Spiral wound SST with carbon filler.

Bonnet Bolting: Zinc plated carbon steel; ASTM A449, Gr. 5 or ASTM A193, Gr. B7 with ASTM A194, Gr. 2H Nuts.

ACTUATOR SUB-ASSEMBLY SPECIFICATIONS

Action: Air-to-Open, Fail Close. Increase loading pressure pushes stem up, plug opens.
Air-to-Close, Fail Open. Increase loading pressure pushes stem down, plug closes.

Bench Ranges and Operating Pressures:

Bench Set		Air Pressures			
		Normal Supply		Design Max.	
psig	(Barg)	psig	(Barg)	psig	(Barg)
5-15	(0.34-1.03)	20	(1.4)	100	(6.9)
15-60	(1.03-4.14)	75	(5.2)	100	(6.9)

No springs available for split ranges. A Positioner is required for split range input signal.

Ambient Temperature: -50 to +180°F (-45 to +83°C).
-20 to +140°F (-28 to +60°C) with electrical accessories.

Sizes, Stroke and Volumes:

Basic Actuator		Dia-phragm Area	Nominal Stroke	Volumes					
				Clearance		Displacement			
Model	Action	in ²	(cm ²)	in	(mm)	in ³	(cm ³)	in ³	(cm ³)
C27	ATC	32	(209)	0.5	(12.7)	30.3	(496.5)	16.2	(265.5)
	ATO					28.2	(462.1)	16.4	(268.7)
	ATC			0.75	(19.05)	25.8	(422.8)	25.4	(416.2)
	ATO					24.4	(399.8)	24.1	(394.9)
C53	ATC	53	(342)	0.5	(12.7)	46.1	(755.4)	28.2	(462.1)
	ATO					44.3	(725.9)	24.7	(404.8)
	ATC			0.75	(19.05)	38.4	(629.3)	39.3	(644.0)
	ATO					36.9	(604.7)	39.0	(639.0)

Materials:

Part	Material
Diaphragm	Buna-N w/Polyester Insert
Lower & Upper Case, Yoke	Steel
Attachment Hub	17-4 PH SST
Stem	316/316L SST
Diaphragm Plate, Stem Spacer, Spring, Spring Plate, Hub Nut, Stem Bolt,	Steel
Diaphragm Washer	316/316L SST
Diaph. Washer O-ring, Hub O-ring, Stem O-ring	Buna-N
Bolts & Nuts	Steel Plated
Stem Lock Washer,	Steel

OPTION SPECIFICATIONS

Option-3: MANUAL HANDWHEEL. Overrides the actuator spring force to allow manual stroking of valve. Single acting design, side-mounted. For ATO-FC action, handwheel operator "opens" the plug against spring force; may be utilized as a travel stop to prevent full closure. For ATC-FO action, handwheel operator "closes" the

plug against spring force; may be utilized as an "up" travel stop to prevent full opening.

Option-12: REDUCED ORIFICE. For reducing the maximum flow rate or for handling higher pressure drops than the full port orifice.

Option-15: STELLITED TRIM. For metal seated trim design only. Plug and seat seating surfaces are Stellite #6 material. Recommended for flashing or partially cavitating liquid service, or where extended time periods of ON-OFF or low flow (less than 10% open) operation occur and Class IV shutoff is required.

Option-56: SPECIAL CLEANING. Special cleaning per Cashco Specifications #S-1542. Suitable for fluids other than oxygen.

Option-95: 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: 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 I.

Model D20 D is general purpose.

Model D20 I is Intrinsically safe, ATEX Ex ia IIC T4, FM CLS 1 DIV 1, FM Non-incendive CLS 1 DIV 2.

Model D20 E is ATEX EEX d IIB+H₂, T6 FM Approved. Gauge block is built in, no gauges.

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

Gauge block is built in, no gauges.

Model PS2 is 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 PS2-1 is general purpose.

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

Air Tubing: 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.

TECHNICAL SPECIFICATIONS

TABLE 1						
MATERIAL PRESSURE/TEMPERATURE RATINGS						
Body/Bonnet Materials		End Connection	English Units		Metric Units	
General	ASTM Specifications		Pressure (psig)	Temperature (°F)	Pressure (Barg)	Temperature (°C)
Ductile Iron (DI)	A395	NPT	400	-20 to 150	27.5	-28.6 to +65.6
			370	200	25.5	93.3
			310	300	21.3	148.8
			250	406	17.2	207.7
Ductile Iron (DI)	A395	125# Flanged	200	-20 to +150	13.8	-28.6 to +65.6
			190	200	13.1	93.7
			175	250	12.1	121.1
			165	300	11.4	149.2
			140	400	9.7	204.8
			125	450	8.6	232.6
		250# Flanged	500	-20 to +150	34.5	-28.6 to +65.6
			460	200	31.7	93.7
			415	250	28.7	121.1
			375	300	25.8	149.2
			335	350	23.1	177.0
			290	400	20.0	204.8
			250	450	17.2	232.6
			Cast Carbon Steel (CS)	A216 Grade WCB	150# Flanged	285
260	200	17.9				93.7
230	300	15.8				149.2
200	400	13.8				204.8
185	450	12.6				232.6
NPT or 300# Flanged	740	-20 to +100			51.0	-28.6 to +38.1
	680	200			46.8	93.7
	655	300			45.2	149.2
	635	400			43.8	204.8
	620	450			42.7	232.6

TABLE 2		
TRIM MATERIALS		
Seat/Trim Designation	Part	Material Description
Metal / S1	Plug/Stem	316/316L SST
	Seat Ring	
	Guide Bushing	440C SST
TFE Soft / S3	Valve Seat	TFE
	Seat Ring	316/316L SST
	Adapters	
	Stem	
	Guide Bushing	440C SST

**TABLE 3
MAXIMUM PRESSURE DROP - psid (Bard)
METAL SEAT
DIRECT ATC-FO & REVERSE ATO-FC ACTION**

Body Size	Port - Orifice		Max Operating Pressure Drop				Actuator			Air Supply Pressure			
	Inch (DN)	Description	Size		DI Body Material		CS Body Material		Bench Setting		Model	Air Supply Pressure	
			Inch	(mm)	psid	(Bard)	psid	(Bard)	psig	(Barg)		psig	(Barg)
1/2" - 1" (15 - 25)	Full	.813	(20.7)	115	(7.9)	115	(7.9)	5 - 15	(0.34 - 1.03)	C27	20	(1.4)	
				500	(34.9)	739	(51.0)	15 - 60	(1.03 - 4.14)		75	(5.2)	
				314	(21.6)	314	(21.6)	5 - 15	(0.34 - 1.03)	C53	20	(1.4)	
	Opt-12 Red.	.500	(12.7)	500	(34.5)	505	(34.8)	5 - 15	(0.34 - 1.03)	C27	20	(1.4)	
				500	(34.5)	740	(51.0)	15 - 60	(1.03 - 4.14)		75	(5.2)	
1 1/2" (40)	Full	1.375	(34.9)	211	(14.5)	211	(14.5)	15 - 60	(1.03 - 4.14)	C27	75	(5.2)	
				62	(4.3)	62	(4.3)	5 - 15	(0.34 - 1.03)		C53	20	(1.4)
				419	(28.9)	419	(28.9)	15 - 60	(1.03 - 4.14)	75		(5.2)	
	Opt-12 Red.	.813	(20.7)	115	(7.9)	115	(7.9)	5 - 15	(0.34 - 1.03)	C27	20	(1.4)	
				500	(34.5)	739	(51.0)	15 - 60	(1.03 - 4.14)		75	(5.2)	
				314	(21.6)	314	(21.6)	5 - 15	(0.34 - 1.03)	C53	20	(1.4)	
2" (50)	Full	1.938	(49.2)	82	(5.7)	82	(5.7)	15 - 60	(1.03 - 4.14)	C27	75	(5.2)	
				187	(12.9)	187	(12.9)	15 - 60	(1.03 - 4.14)		C53	75	(5.2)
	Opt-12 Red.	1.375	(34.9)	211	(14.5)	211	(14.5)	15 - 60	(1.03 - 4.14)	C27	75	(5.2)	
				62	(4.3)	62	(4.3)	5 - 15	(0.34 - 1.03)		C53	20	(1.4)
				419	(28.9)	419	(28.9)	15 - 60	(1.03 - 4.14)	75		(5.2)	

**TABLE 4
MAXIMUM PRESSURE DROP - psid (Bard)
SOFT SEAT
DIRECT ATC-FO & REVERSE ATO-FC ACTION**

Body Size	Port - Orifice		Max Operating Pressure Drop				Actuator			Air Supply Pressure			
	Inch (DN)	Description	Size		DI Body Material		CS Body Material		Bench Setting		Model	Air Supply Pressure	
			Inch	(mm)	psid	(Bard)	psid	(Bard)	psig	(Barg)		psig	(Barg)
1/2" - 1" (15 - 25)	Full	.781	(19.8)	236	(16.3)	236	(16.3)	5 - 15	(0.34 - 1.03)	C27	20	(1.4)	
				400	(27.6)	400	(27.6)	15 - 60	(1.03 - 4.14)		75	(5.2)	
	Opt-12 Red.	.500	(12.7)	400	(27.6)	400	(27.6)	5 - 15	(0.34 - 1.03)	C27	20	(1.4)	
1 1/2" (40)	Full	1.375	(34.9)	269	(18.5)	269	(18.5)	15 - 60	(1.03 - 4.14)	C27	75	(5.2)	
				120	(8.3)	120	(8.3)	5 - 15	(0.34 - 1.03)		C53	20	(1.4)
				400	(27.6)	400	(27.6)	15 - 60	(1.03 - 4.14)	75		(5.2)	
	Opt-12 Red.	.813	(20.7)	214	(14.8)	214	(14.8)	5 - 15	(0.34 - 1.03)	C27	20	(1.4)	
				400	(27.6)	400	(27.6)	15 - 60	(1.03 - 4.14)		75	(5.2)	
				400	(27.6)	400	(27.6)	5 - 15	(0.34 - 1.03)	C53	20	(1.4)	
2" (50)	Full	1.938	(49.2)	123	(8.5)	123	(8.5)	15 - 60	(1.03 - 4.14)	C27	75	(5.2)	
				228	(15.7)	228	(15.7)	15 - 60	(1.03 - 4.14)		C53	75	(5.2)
	Opt-12 Red.	1.375	(34.9)	269	(18.5)	269	(18.5)	15 - 60	(1.03 - 4.14)	C27	75	(5.2)	
				120	(8.3)	120	(8.3)	5 - 15	(0.34 - 1.03)		C53	20	(1.4)
				400	(27.6)	400	(27.6)	15 - 60	(1.03 - 4.14)	75		(5.2)	

**TABLE 5
THEORETICAL CAPACITY
METAL SEAT DESIGN
EQUAL % CHARACTERISTIC
FLFactor = 0.90**

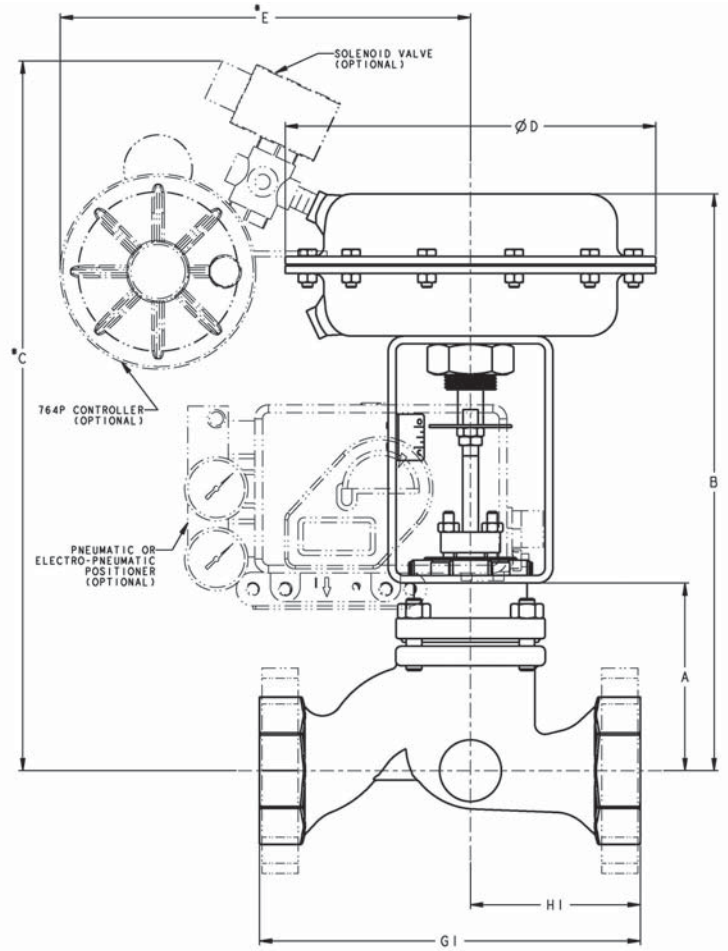
Valve Size		Port Size	Minimum Cont. Cv	Cv at 10% Increments									
Inch	(DN)			10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2"	(15)	Full	0.15	0.4	0.7	1.1	1.5	2.2	3.1	4.0	5.0	6.2	7.4
		Opt-12 Red.	0.08	0.2	0.2	0.4	0.5	0.8	1.1	1.6	2.3	3.2	4.1
3/4"	(20)	Full	0.15	0.4	0.7	1.1	1.6	2.3	3.3	4.7	6.3	7.9	9.3
		Opt-12 Red.	0.08	0.2	0.2	0.4	0.5	0.8	1.1	1.7	2.4	3.3	4.4
1"	(25)	Full	0.2	0.4	0.7	1.1	1.6	2.3	3.4	4.9	6.7	8.9	10.7
		Opt-12 Red.	0.09	0.2	0.2	0.4	0.5	0.8	1.1	1.7	2.4	3.5	4.5
1-1/2"	(40)	Full	0.4	1.0	1.7	2.7	4.2	6.1	8.5	11.5	14.6	17.6	20.5
		Opt-12 Red.	0.2	0.3	0.6	1.0	1.6	2.5	3.8	5.3	7.1	9.2	11.3
2"	(50)	Full	0.9	2.6	4.4	6.9	10.3	14.7	21.1	27.7	34	40	45.5
		Opt-12 Red.	0.6	1.2	2.1	3.5	5.5	8.2	11.7	15.9	20.7	25.6	30.5

**TABLE 6
THEORETICAL CAPACITY
COMPOSITION SOFT SEAT DESIGN
EQUAL % CHARACTERISTIC
FLFactor = 0.90**

Valve Size		Port Size	Minimum Cont. Cv	Cv at 10% Increments									
Inch	(DN)			10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2"	(15)	Full	0.15	0.4	0.7	1.0	1.5	2.1	2.9	4.1	5.0	6.2	7.4
		Opt-12 Red.	0.08	0.2	0.2	0.4	0.5	0.8	1.1	1.7	2.3	3.3	4.1
3/4"	(20)	Full	0.15	0.4	0.7	1.0	1.5	2.2	3.1	4.8	6.4	8.1	9.6
		Opt-12 Red.	0.08	0.2	0.2	0.4	0.5	0.8	1.1	1.7	2.4	3.5	4.5
1"	(25)	Full	0.2	0.4	0.7	1.0	1.5	2.2	3.1	5.0	6.8	8.8	10.7
		Opt-12 Red.	0.09	0.2	0.2	0.4	0.5	0.8	1.1	1.7	2.4	3.5	4.5
1-1/2"	(40)	Full	0.4	0.9	1.7	2.7	4.1	6.0	8.4	11.3	14.3	17.3	20.3
		Opt-12 Red.	0.2	0.3	0.5	0.9	1.4	2.2	3.2	4.5	6.1	7.9	9.7
2"	(50)	Full	0.9	2.7	4.5	7.1	10.7	15.2	21.6	28.1	34.8	41.2	47
		Opt-12 Red.	0.6	1.3	2.1	3.5	5.5	8.2	11.7	15.9	20.6	25.5	30.5

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DIMENSIONS AND WEIGHTS



ENGLISH UNITS – inch & lbs.								
Act. Model	Dimension		Body Size					
			1/2"	3/4" & 1"	1 1/2"	2"		
C27 & C53	A		4.19	4.57	7.13			
C27	B		13.65	14.03	16.59			
	C		16.89	17.27	19.83			
C53	B		13.79	14.17	16.73			
	C		17.81	18.19	20.75			
C27 or C53	D		C27 Act. = 9.00" / C53 Act. = 11.56"					
	E		C27 Act. = 9.97" / C53 Act. = 11.21"					
C27 & C53	G1 F to F	Npt & SW	7.75	9.25	10.50			
		125 / 250#	NA	9.25	10.50			
		150 / 300#	* 7.75	9.25	10.50			
	H1 to Ctr	Npt & SW	3.50	4.13	4.63			
		125 / 250#	NA	4.13	4.63			
		150 / 300#	* 3.50	4.13	4.63			
* 150 & 300# Flanges not available in 1/2" Size.								
C27	Weight ** NPT Conn.		32	36	59			
C53			42	46	69			
150# 300 # Flanges add to NPT			4	5	6	11	8	12
125# 250# Flanges add to NPT			NA	NA	3	7	5	8

METRIC UNITS – mm & kgs.								
Act. Model	Dimension		Body Size					
			1/2"	3/4" & 1"	1 1/2"	2"		
C27 & C53	A		106.4	116.1	181.1			
C27	B		346.7	356.4	421.4			
	C		429.0	438.7	503.7			
C53	B		350.3	359.9	424.9			
	C		452.4	462.0	527.1			
C27 or C53	D		C27 Act. = 228.6 / C53 Act. = 293.6					
	E		C27 Act. = 253.1 / C53 Act. = 284.7					
C27 & C53	G1 F to F	Npt & SW	196.9	235.0	266.7			
		125 / 250#	NA	235.0	266.7			
		150 / 300#	* 196.9	235.0	266.7			
	H1 to Ctr	Npt & SW	88.9	104.9	117.6			
		125 / 250#	NA	104.9	117.6			
		150 / 300#	* 88.9	104.9	117.6			
* 150 & 300# Flanges not available in 1/2" Size.								
C27	Weight ** NPT Conn.		14.5	16.3	26.7			
C53			19	20.8	31.2			
150# 300 # Flanges add to NPT			1.8	2.2	2.7	4.9	3.6	5.4
125# 250# Flanges add to NPT			NA	NA	1.3	3.1	2.2	3.6

** Basic valve (NPT) with actuator, no accessories or manual operator. Add approx. 4 lbs (1.8 kg) for positioner; 3 lbs (1.4 kg) for limit switch; and 16 lbs (7.2 kg) for manual handwheel operator.

MODEL 964 PRODUCT CODER 02/23/16

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

16	POS 3	POS 5	POS 6	0	POS 8	POS 11	POS 12	POS 13	POS 14	POS 15	POS 16	POS 17	F
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POSITION 3 - SIZE & BODY MATERIAL		
Body Size	Body Material	
	DI	CS
	CODE	CODE
1/2" *	3	
3/4"	1	A
1"	2	B
1-1/2"	4	D
2"	5	E

* Only available with NPT Conn.

POSITION 5 - END CONNECTIONS	
End Connection	CODE
NPT - Screwed	1
* 125 Lb. Flgs. - DI Body	2
150 Lb. CS S.O. Flgs. - CS Body	3
* 250 Lb. Flgs. - DI Body	4
300 Lb. CS S.O. Flgs. - CS Body	5
Socket Weld - CS Body	6

* Not available in 1/2" - 1" Sizes

POSITION 6 - PORT SIZE / TRIM		
Port Size / Description	TRIM	
	S1	S3
	CODE	CODE
Full	1	5
Opt.-12 Red.	2	6
Full & Opt.-15 Stellite	3	
Opt.-12 & 15 Red. & Stellite	4	

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 97/23/EC. Forward Completed "EU" Application Recorder prior to quotation. (Without Recorder- Processing of Purchase Order will be delayed). Contact Cashco for Assistance.

POSITION 11 - ACTUATOR MODEL / BENCH SET RANGE & ACTION				
Bench Range (psig)	Model C27		Model C53	
	ATO FC	ATC FO	ATO FC	ATC FO
	CODE			
5-15 *	A	1	3	5
15-60	B	2	4	6

* Not Available for 2" size w/ C27 Actuator or 2" Size Full Port w/ C53 Actuator. See Tables 3 & 4 for Max. Pressure Drops

POSITION 12 - 764P * (Bracket Mtd) - ADDITIONAL Airset (Bracket Mtd) & Solenoid Valves			
764P / Action	Solenoid Valve *** Exhaust on Deenergization		
	CODE		
	None	120VAC 60 Hz	24 VDC
None	0	6	C
None W/ Airset	1	7	D
Reverse	2	8	E
Reverse W/ Airset	3	9	F
Direct	4	A	G
Direct W/ Airset	5	B	H
For Special Construction Contact Cashco for Special Code	X		

* Refer to 764-TB for Product Code of Controller
*** 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. Split Range Not Available for Model P5 P/P					
Positioner Model	Ratings	Analog/Digital	Hart	Fieldbus	Profibus
CODE					
P5 P/P *	Gen. Purpose	1			
D20 D I/P	Gen. Purpose	C	D		
D20 I 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		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.

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 & D20 I 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	0-60 PSIG No Airset	0-60 PSIG W/ Airset
CODE							
P5				4	5		
D3 & D20	7	T	9				
PS2			8				
No Positioner				C	F	R	S
None	0						

* For 0-60 Psig Transducer please contact the factory.

POSITION 16 - OPTIONS	
Accessories	CODE
No Handwheel	0
Handwheel	9

POSITION 17 - PAINTING & CLEANING			
Painting	Opt.	Std. Commercial Cleaning	Cleaned to Spec. #S-1542
		CODE	
Standard	—	0	3
Epoxy Painted Per Cashco Spec #S-1547	-95	1	4

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