

## MODEL DA0

### DO-ALL SERIES IVP PRESSURE REDUCING REGULATORS SMALL PISTON, PILOT-OPERATED

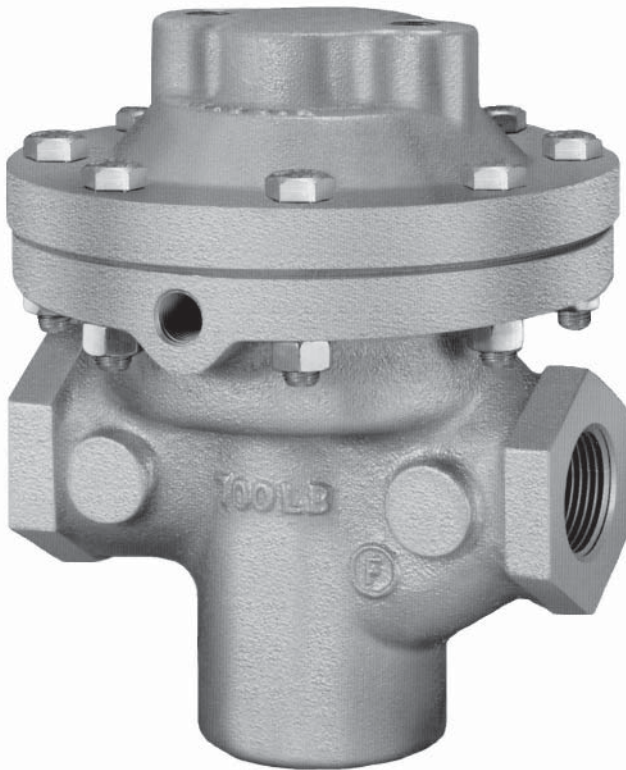
Model DA0 is a pilot-operated steam reducing regulator with a piston design. The internal pressure balanced plug/piston provides high flow capacity and moderate pressure drop capability. Applied as a steam service valve only. Maximum operating steam pressure is 250 psig (17.2 Barg) at 406°F (208°C).

#### FEATURES

- Versatile:** Two basic body materials to select from.
- Capacity:** High capacity. Allows smaller body sizes than competitors in majority of applications.
- Accuracy:** Pilot provides outlet pressure control to  $\pm 2$  psi.
- Trim Design:** "DO-ALL" trim design provides FTO and pressure balancing for higher inlet pressure. Results in unmatched sensitivity and stability. Internals are cage-contained within easily removable quick change trim.
- Rangeability:** Basic valve gives outstanding rangeability due to close tolerances, balanced trim, and soft seats. Can be as high as 500:1.
- Heavy-Duty Guiding:** Both top and bottom guided to maintain stability and increased trim and seal life.
- Failure Position:** Fails closed on loss of pilot loading pressure. Fails open on loss of  $P_1$  or  $P_2$  pressures with loading pressure yet applied.

#### APPLICATIONS

STEAM SERVICE ONLY !



MODEL DA0  
MAIN BODY

## STANDARD / GENERAL SPECIFICATIONS

### Main Body / Cover Dome Materials

DI/DI, CS/CS.

DI = Ductile Iron    CS = Carbon Steel

### Main Body Sizes

1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4".  
(DN15, 20, 25, 32, 40, 50, 65, 80, 100)

### End Connections

Standard: Female NPT (screwed).  
ASME Flanged: 125#, 150#, 250#, 300#;  
DIN Flanged: PN16, PN25, PN40;  
(Integral Flanged Body unless listed under Opt.-30)

### Pilot Body / Spring or Loading Chamber Materials

CI/CI.

### Pilot Body Size / End Connections

1/4" - NPT (DN6)

### Tubing & Fittings

BR fittings, bite-type compression.  
Cu (copper) tubing, refrigeration; 1/4" O.D. x 0.030" wall,  
3/8" O.D. x 0.035" wall.

### Pressure Drop Limits

Minimum: 35 psid (2.4 Bard)  
Maximum: 225 psid (15.5 Bard)

### Inlet Pressure Range

Operating: 35 - 400 psig (2.4 - 27.6 Barg)  
See Table 1 for design P vs. T limits.

### Outlet Pressure Range

Spring-Operated Pilot: 2 - 50 psig (.13 - 3.4 Barg)  
10 - 200 psig (.69 - 13.8 Barg)  
Pressure-Loaded Pilot: 2 - 215 psig (.13 - 14.8 Barg)

### Max. Useable Cv

Body Size		Full Port Cv	Body Size		Full Port Cv
in	(DN)		in	(DN)	
1/2"	(15)	3.8	2"	(50)	57
3/4"	(20)	7.6	2-1/2"	(65)	85
1"	(25)	14.3	3"	(80)	114
1-1/4"	(32)	21.8	4"	(100)	209
1-1/2"	(40)	28.5			

### Max. CAPACITY with PLUG WIDE OPEN

Body Size		Full Port Cv	Body Size		Full Port Cv
in	(DN)		in	(DN)	
1/2"	(15)	4.0	2"	(50)	60
3/4"	(20)	8.0	2-1/2"	(65)	90
1"	(25)	15	3"	(80)	120
1-1/4"	(32)	23	4"	(100)	220
1-1/2"	(40)	30			

### Temperature Range

+100 to +406° F (+38 - +208° C)  
Limited by DI/DI pilot materials only.

### Inboard Leakage Rates

Class IV

### Optional Constructions

Opt-30: Weld-on Flanges  
Opt-56: Special Cleaned  
Opt-85: Extra Set Pressure Taps  
Opt-95: Epoxy Paint  
Opt-95OS: Epoxy Paint

## MATERIAL SPECIFICATIONS

### Main Body

DI - ASTM A395  
CS - ASTM A216, Gr. WCB.  
See Table 1 for  
Pressure - Temperature Ratings.

### Main Cover Dome

DI - ASTM A395  
CS - ASTM A216, Gr. WCB.

### Pilot Body / Topworks

CI/CI - ASTM A395

### Metallic Trim

17-4PH SST.

### Seat

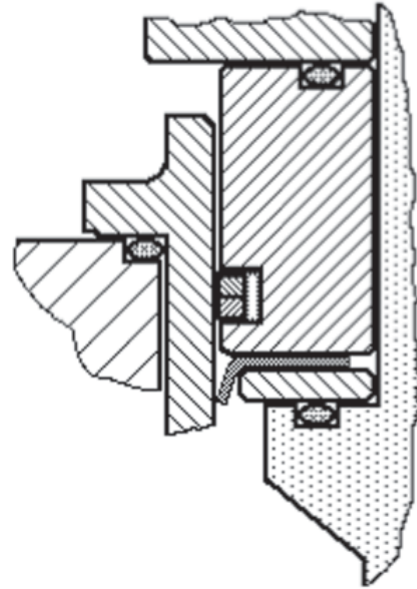
GF-TFE (Glass-fill TFE)

### Static Seals

RTFE (Brz-fill TFE)

### Dynamic Seals

PRA - GF-TFE + 316 SST energizer + GF-TFE Wiper



PRA DYNAMIC  
SEAL + WIPER

### Painting

Standard: All non-corrosion resistant portions to be painted with corrosion resistant epoxy paint per Cashco Spec #S-1606.

Alternate: See Opt-95 or Opt-95OS.

## OPTION SPECIFICATIONS

**OPT-30: WELDED FLANGED CONNECTIONS.** CS body material only. 1/2" & 3/4" (DN15 & 20) body sizes only. Welded-on flange of same general chemistry as body.

Weld-On Flanges		
Sizes	Body Material	ASME Pressure Class
1/2" - 3/4"	CS	150, 300
Sizes	Body Material	ISO Pressure Class
DN15-50	CS	PN40 RF
DN65-100	CS	PN16, 25, 40 RF

**NOTES:** 1. The body P vs. T ratings are the limiting variables for flanged end connections, unless further restricted by ASME B16.5.  
2. No post-weld stress relieving performed.

**OPT-56: SPECIAL CLEANING.** Cleaning per Cashco Spec. #S-1542 for all body & cover dome materials. Higher cleaning level than standard commercial cleaning. NOT suitable for Oxygen Service.

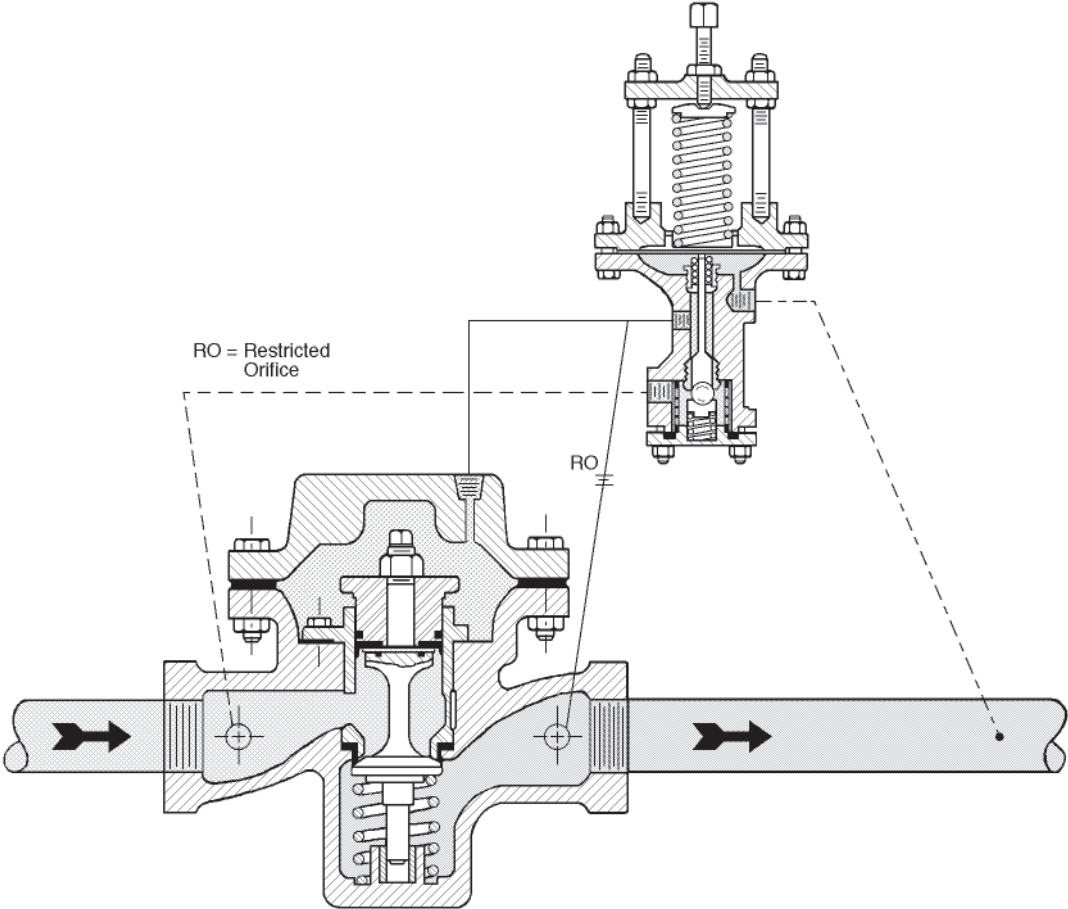
**OPT-85: PRESSURE TAPS.** Provides a **second set** of inlet and outlet 1/4" - FNPT taps with plugs (same basic material as body) on backside of body. Includes second external sensing port tap. See page 6 for details on tap location for both STD and Opt-85.

**OPT-95: EPOXY PAINT.** Special epoxy painting of all non-corrosion resistant external surfaces per Cashco Spec#S-1547. Utilized in harsh atmospheric conditions.

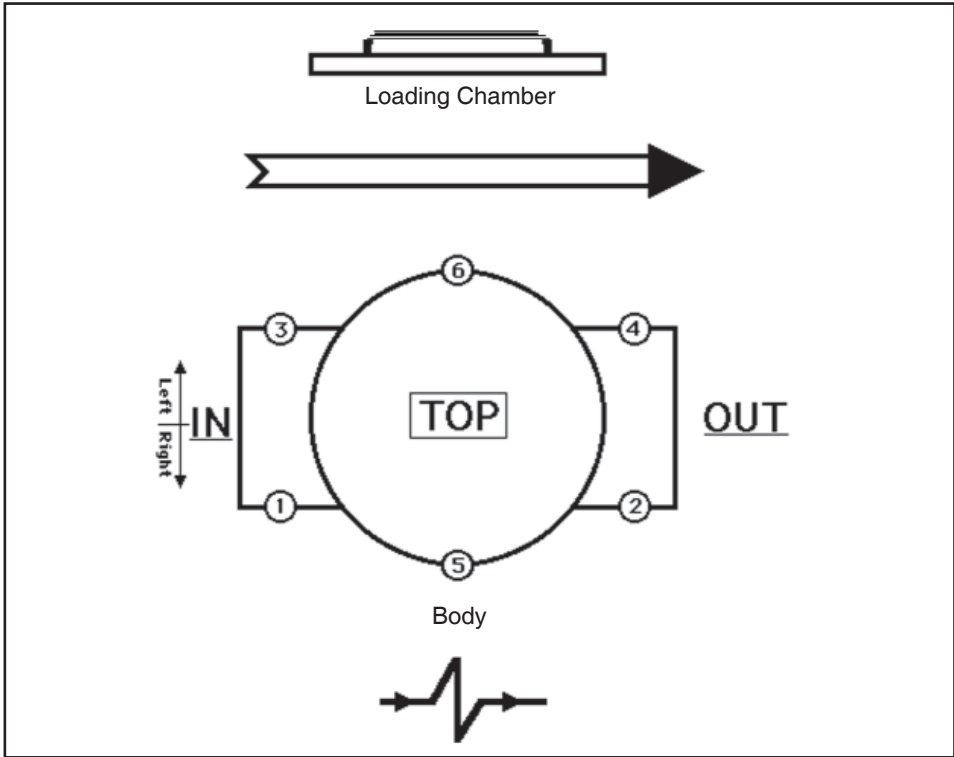
**OPT-95OS: EPOXY PAINT.** Special epoxy painting of all non-corrosion resistant external surfaces per Cashco Spec#S-1687. Utilized in OFFSHORE atmospheric conditions.

TABLE 1												
INLET & OUTLET PRESSURE vs. TEMPERATURE RATINGS												
INLET PRESSURE RATINGS												
Material- Body/ Cover Dome	Temperature		End Connection - Pressure Class - ASME									
			NPT		150#		300#		125#		250#	
	°F	°C	psig	Barg	psig	Barg	psig	Barg	psig	Barg	psig	Barg
DI/DI	-20 to +150	-29 to +65	400	27.6	NA	NA	NA	NA	200	13.8	400	27.6
	406	208	250	17.2	NA	NA	NA	NA	140	9.3	250	17.2
CS/CS	-20 to +150	-29 to +65	400	27.6	285	19.6	400	27.6	NA	NA	NA	NA
	406	208	250	17.2	200	13.8	250	17.2	NA	NA	NA	NA
OUTLET PRESSURE RATINGS												
Material- Body/ Cover Dome	Temperature		End Connection - Pressure Class - ASME									
			NPT		150#		300#		125#		250#	
	°F	°C	psig	Barg	psig	Barg	psig	Barg	psig	Barg	psig	Barg
DI/DI	-20 to +150	-29 to +65	400	27.6	NA	NA	NA	NA	200	13.8	400	27.6
	406	208	250	17.2	NA	NA	NA	NA	140	9.3	250	17.2
CS/CS	-20 to +150	-29 to +65	400	27.6	285	19.6	400	27.6	NA	NA	NA	NA
	406	208	250	17.2	200	13.8	250	17.2	NA	NA	NA	NA

**Regulator with Pilot Assembly**



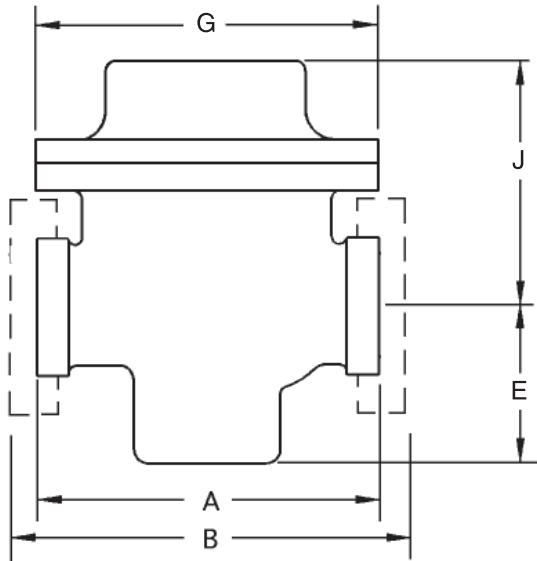
**Location of BODY TAPS**



**Flow To Open Direction**

Location	Description	Opt. No.	NPT - Size	Body Mat'l.
1 & 2	Inlet & Outlet – Right	STD	1/4"	DI, & CS
5	External Sensing – Right	STD	1/4"	DI & CS
1, 2, 3 & 4	Inlet & Outlet – Right Inlet & Outlet – Left	85	1/4"	DI & CS
5 & 6	Double External Sensing	85	1/4"	DI, & CS

## DIMENSION and WEIGHTS



### ENGLISH UNITS - (in)

Dimen.	End Conn.	Body Mat'l	Body Size					
			1/2", 3/4" & 1"	1-1/4" & 1-1/2"	2"	2-1/2"	3"	4"
A	NPT	DI	6.00	9.88	9.88			
		CS	8.25	9.88	9.75			
B	125# FF	DI				10.88	11.75	13.88
	250# RF					11.50	12.50	14.50
	150# RF	CS	10.75	12.38 *	10.00	10.88	11.75	13.88
	300# RF		10.75	12.38 *	10.50	11.50	12.50	14.50
E	ALL	DI	2.88	3.81	4.00	5.25	5.50	5.77
		CS	2.72	3.69	4.15	5.25	5.50	6.91
J	ALL	DI	4.67	5.35	5.69	7.90	9.38	9.39
		CS	4.58	5.39	5.80	7.75	9.56	9.42
G	ALL	DI	6.00	7.00	8.00	10.00	11.38	11.38
		CS	6.00	7.00	8.00	10.00	11.13	11.13
Approx. Weight lbs	wo/Flanges	ALL	23	32	48	-	-	-
	w/Flanges	ALL	28	42	61	90	155	164

### METRIC UNITS - (mm)

Dimen.	End Conn.	Body Mat'l	Body Size					
			DN15, 20 & 25	DN32 & 40	DN50	DN65	DN80	DN100
A	NPT	DI	152	251	251			
		CS	210	251	247			
B	125# FF	DI				276	298	353
	250# RF					292	318	368
	150# RF	CS	273	314 *	254	276	298	353
	300# RF		273	314 *	267	292	318	368
E	ALL	DI	73	97	102	133	140	147
		CS	69	94	105	133	140	176
J	ALL	DI	119	136	145	201	238	239
		CS	116	137	147	197	243	239
G	ALL	DI	152	178	203	254	289	289
		CS	152	178	203	254	283	283
Approx. Weight kgs	wo/Flanges	ALL	10	14	22	-	-	-
	w/Flanges	ALL	12	19	28	41	70	74

\* Flanged Connections Not available for 1-1/4" (DN32) size.

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# MODEL DA0 PRODUCT CODER 03/11/16

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



POSITION 3 - SIZE		
Size		CODE
In	(DN)	
1/2"	(15)	4
3/4"	(20)	5
1"	(25)	6
1-1/4"	(32)	7
1-1/2"	(40)	8
2"	(50)	9
2-1/2"	(65)	A
3"	(80)	B
4"	(100)	C

POSITION 5 - BODY/COVER DOME MATERIALS	
Materials	CODE
DI/DI	1
CS/CS	5

SEAT/SEAL MATERIALS				
Trim Material	O-ring/Seal			CODE
	Seat	Static	Dynamic	
17-4PH SST "P"	GF-TFE	RTFE	PRA + W	PG

POSITION 8 - Product Classification Under European "Pressure Equipment Directive"		
PRODUCT	HAZARD CATEGORY	CODE
Standard	N/A	7
EUROPEAN * Consult Factory for Special Code (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 .  
Forward Completed "EU" Application Recorder prior to quotation.  
(Without Recorder- Processing of Purchase Order will be delayed).  
Ref to Directive 97/23/EC. Contact Cashco for Assistance.

POSITION 10 - END CONNECTIONS / ASME								
Size	Material	Method	End Conn	CODE	End Conn	CODE	End Conn	CODE
1/2" - 2"	ALL	-	NPT	1	-	-	-	-
2-1/2" - 4"	DI	Integral	125#FF	2	250#RF	3	-	-
1/2" - 3/4"	CS	Opt-30	150#RF	4	300#RF	5	-	-
1" - 4"	CS	Integral *	-	-	-	-	-	-

END CONNECTIONS FOR ISO DIN FLANGES				
Size	Material	Method	End Conn	CODE
DN15-25, 40, 50	CS	Opt-30	PN40 RF - will mate with PN16, 25 and 40	D
DN65-100	CS	Integral	PN16 RF A PN25 RF C PN40 RF G	

\* Flanged Connections Not available for 1-1/4" (DN32) size.

POSITION 12 - PILOT VALVE TYPE / MATERIALS		
<b>Spring Loaded</b>		
Type No.	Body Mat'l.	CODE
90SO	Cl	1
<b>Pressure Loaded</b>		
90MA6 1:1	Cl	B
90MD6 1:3		C
90MA7 1:6		D
For Special Construction Contact Cashco for Special Code		X

POSITION 13 - RANGE SPRINGS	
Spring Range	CODE
Pressure Loaded	0
2-50 psig (.13 - 3.4 Barg)	A
10-200 psig (.69 - 13.8 Barg)	B

POSITION 15 - BODY OPTIONS		Option	CODE
No Option		-	0
Second "Set" of 1/4" (DN8) FNPT Pressure Taps & Plugs.		-85	T

POSITION 16 - CERTIFICATE OPTIONS		Option	CODE
No Option		-	0
SPECIAL CLEANING: Per Cashco Spec #S-1542.		-56	N

POSITION 17 - PAINT OPTIONS		Option	CODE
No Option		-	0
Epoxy Painted Per Cashco Spec #S-1547.		-95	W
Epoxy Painted Per Cashco Spec #S-1687 OFFSHORE Applic.		-95OS	Y

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