



ISO Registered Company

MODEL SA4

ULTRA HIGH PURITY PRESSURE REDUCING REGULATOR

OVERVIEW

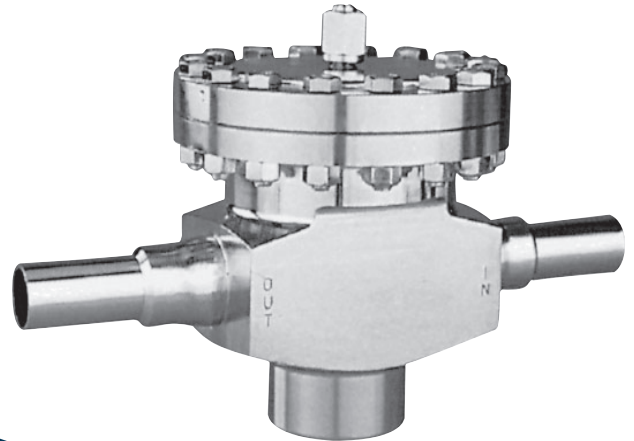
Model SA4 is a high performance dome loaded, flow-to-open pressure reducing regulator with internal pressure balancing piston-cylinder that provides medium flow capacity and high pressure drop capability.

FEATURES

- All SST wetted trim materials.
- Electro-polished.
- Tube-end connections.
- High pressure capability.
- Body Finish - Internal Surface Only
Barstock Body - 10 μ -in R_a average surface finish.
- In-line maintenance.

APPLICATIONS

For “electronic grade” and other ultra high purity fluids. For either gaseous or liquid service. Most common fluids are high purity oxygen, nitrogen, hydrogen and argon.



MODEL SA4



LINE SIZES AVAILABLE

3/4" (DN20), 1" (DN25), 1-1/2" (DN40),
2" (DN50)



END CONNECTIONS

TUBE-ENDS FOR BUTTWELDING USING
ORBITAL WELDER



COMMON APPLICATIONS

GASEOUS OR LIQUID SERVICE,
HIGH PURITY OXYGEN, NITROGEN,
HYDROGEN, ARGON



DESIGN PRESSURE

INLET: UP TO 3000 psig (207 Barg)
OUTLET: 5 - 300 psig (0.34-20.7 Barg)

TECHNICAL SPECIFICATIONS

BODY SIZES

3/4", 1", 1-1/2", 2"
(DN20, 25, 40, 50)

MAXIMUM INLET PRESSURE

Up to 3000 psig (207 Barg)
Function of body size and elastomeric internal materials. See Table 1 for Design Pressure vs. Temperature Ratings, and maximum operating pressures. (Internals can withstand a full vacuum.)

FLOW CAPACITY

Body Size - Form - C _v		
in	(DN)	Max C _v
3/4" 1"	(20, 25)	3.5
1-1/2"	(40)	11.0
2"	(50)	18.0

OUTLET PRESSURE RANGE

5 – 300 psig (.34 – 20.7 Barg)

TEMPERATURE RANGE

-20 to +400° F (-29° to +204° C)
Function of elastomeric internal materials. See Table 1.

HELIUM LEAK TEST

Inboard leakage less than 1 X 10⁻⁹ std cc/sec, actual test.

END CONNECTIONS

Tube-ends for butt welding using orbital welder. Wall thickness = 0.065 in. (1.65 mm); Nominal Body Size = Tube OD.

AGGREGATE INTERNAL LEAKAGE

Combination of dynamic seal and seat leakage rates:
0.000 1% of rated Cv.

MATERIAL SPECIFICATIONS

BODY FORM

BS - Barstock; All sizes.

BODY MATERIALS - SST

BS - ASTM A479, Tp. 316L.

Loading Chamber fabricated from materials of 316L SST.

SURFACE FINISH

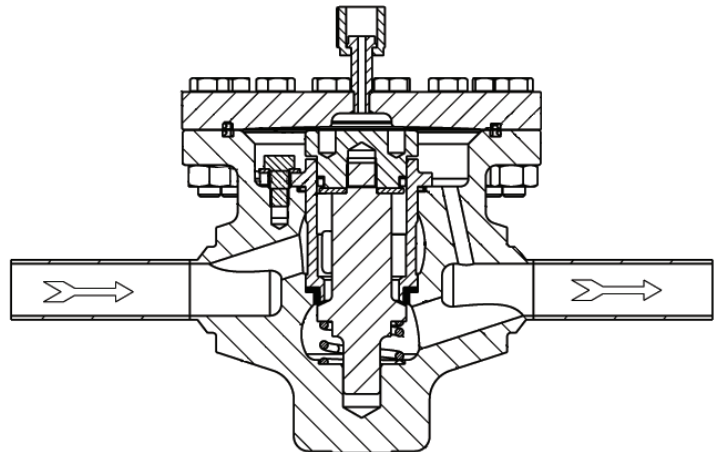
Metallic parts are electro-polished, passivated, and ultra-sonically cleaned to Cashco specification #S-1662.

Surface Finish - μ-in.

Surface Finish - μ-in.		
Barstock	Metal Trim Parts	10 R _a Avg

INTERNAL TRIM & MISC MATERIALS

- Trim - 316L SST
- Diaphragm - 17-7PH SST
- Static Seals - U-CUP: TFE/SST
- Dynamic Seal - Type "UC": TFE/SST
- Seat - PolyAll (GN2, Ar, H2)
V-TFE (All above fluids)
CTFE (All above fluids)
- Lower Piston Spring - 17-7PH SST;
316 SST
- Cap Screws - Ag-plated SST
- Flange Bolting - SST
- Diaphragm Seal - FFKM - Parafluor Elastomer O-ring



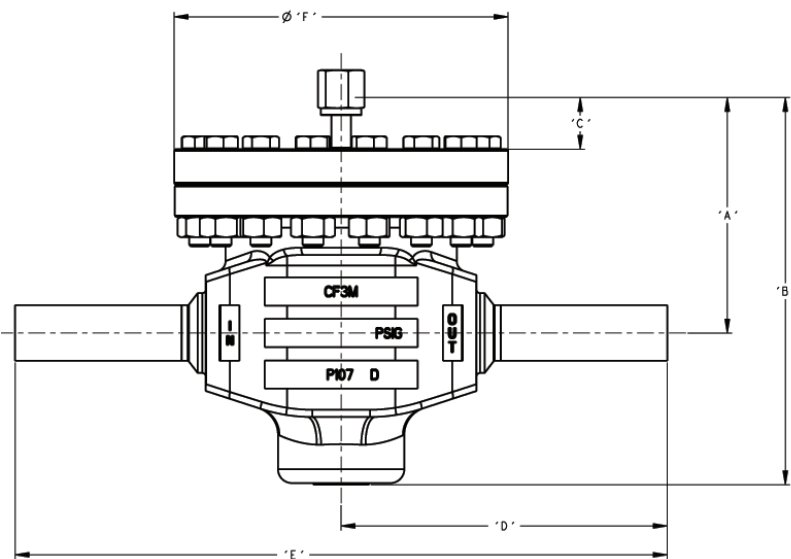
**TABLE 1
MAXIMUM DESIGN PRESSURE vs. TEMPERATURE:
MAXIMUM OPERATING PRESSURES, TEMPERATURES,
PRESSURE DROPS AND Cv FLOW CAPACITY**

NOTE: The below ratings may be further "derated" by limitations thru the Pressure Equipment Directive (2014/68/EU)

Size in (DN)	Design Pressure *		Temperature Range °F	Seat	Maximum Operating Pressures					
	Inlet psig	Outlet psig			GAS			LIQUID **		
					Inlet psig	Outlet psig	ΔP psid	Inlet psig	Outlet psig	ΔP psid
3/4' (20)	3000	600	-20 to +225	PolAll	1050	300	750	900	300	600
	3000	600	-20 to +300	V-TFE	900	300	600	600	300	300
	2895	600	400							
	3000	600	-20 to +300	CTFE	3000	300	2950	900	300	600
	2945	600	350							
1" (25)	2400	600	-20 to +225	PolyAll	1050	300	750	900	300	600
	2400	600	-20 to +300	V-TFE	900	300	600	600	300	300
	2230	600	400							
	2400	600	-20 to +300	CTFE	2400	300	2350	900	300	600
	2315	600	350							
1-1/2" (40)	1600	600	-20 to +225	PolyAll	1050	300	750	900	300	600
	1600	600	-20 to +300	V-TFE	900	300	600	600	300	300
	1485	600	400							
	1600	600	-20 to +300	CTFE	1600	300	1550	900	300	600
	1540	600	350							
2" (50)	1200	600	-20 to +225	PolyAll	1050	300	750	900	300	600
	1200	600	-20 to +300	V-TFE	900	300	600	600	300	300
	1115	600	400							
	1200	600	-20 to +300	CTFE	1200	300	1150	900	300	600
	1155	600	350							

* For fluid containment only. - Exceeding these levels of pressure will damage internals and may render unit inoperable.
** Non-Cavitating Liquid.

DIMENSIONS & WEIGHTS



English Units (in)							Wt lbs.
Size	A	B	C	D	E	F dia.	
3/4"	4.50	7.25	1.00	5.37	10.75	6.00	25
1"	4.50	7.25	1.00	5.87	11.75	6.00	
1-1/2"	5.25	8.44	1.00	6.75	13.50	8.00	50
2"	5.81	9.69	1.00	8.37	16.75	9.97	80

Metric Units (mm)							Wt kgs.
DN	A	B	C	D	E	F dia.	
20	114	184	254	136	273	152	12
25	114	184	254	149	298	152	
40	133	214	254	171	343	203	23
50	148	246	254	212	425	253	37

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MODEL SA4 PRODUCT CODER 03/28/24

B4 POS 3 - **S L** POS 7 **7** - **T 0 3 0 0 0 0 0 0 0 D**

POSITION 3 - SIZE & STYLE		
Size		CODE
in.	(DN)	
3/4"	(20)	B
1"	(25)	C
1-1/2"	(40)	E
2"	(50)	F

POSITION 7 - TRIM MATERIALS								
Inlet Pressure	Service	Diaphragm	Seat	Seals			CODE	
				Static	Dynamic	Diaphragm Seal		
$P_1 \leq 375^1$ psig	GOX	17-7 PH SST	V-TFE	U-CUP SST/TFE	U-CUP SST/TFE	FFKM	C	
$P_1 \leq 750$ psig	ALL ²		V-TFE				U-CUP SST/TFE	T
	ALL ²		POLLYALL				U-CUP SST/TFE	R
$P_1 \leq 3000$ psig	ALL ²		CTFE				U-CUP SST/TFE	Z

¹: PER CGA-4.4
²: GN2, Ar, H2, and He

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

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