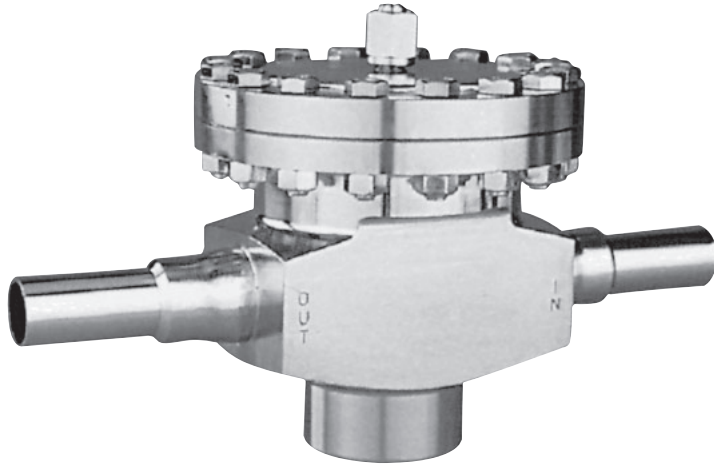




ISO Registered Company

MODELS CA4 and SA4



Model CA4
(Investment Casting)

**ULTRA HIGH PURITY
PRESSURE REDUCING REGULATORS**

**Dome Loaded:
3/4" - 2" (DN20 – DN50)**

Models CA4 and SA4 are high performance dome loaded, flow-to-open pressure reducing regulators 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
 - Investment Cast Body - 10 μ-in R_a average surface finish.
 - 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. (A “special” variation including Hastelloy C internal parts is available for anhydrous HCl; consult factory.)

TECHNICAL SPECIFICATIONS

BODY SIZES

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

OUTLET PRESSURE RANGE

5 – 300 psig (.34 – 20.7 Barg)

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.)

TEMPERATURE RANGE

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

TECHNICAL SPECIFICATIONS (cont.)

FLOW CAPACITY

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

HELIUM LEAK TEST

Inboard leakage less than 1×10^{-9} std cc/sec, actual test.

END CONNECTIONS

Tube-ends for buttwelding 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 C_v.

MATERIAL SPECIFICATIONS

BODY FORM

IC - Investment Casting; 3/4" & 1" (DN20 & 25).
BS - Barstock; All sizes.

SURFACE FINISH

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

BODY MATERIALS - SST

IC - ASTM A351, Gr. CF3M.
BS - ASTM A479, Tp. 316L.

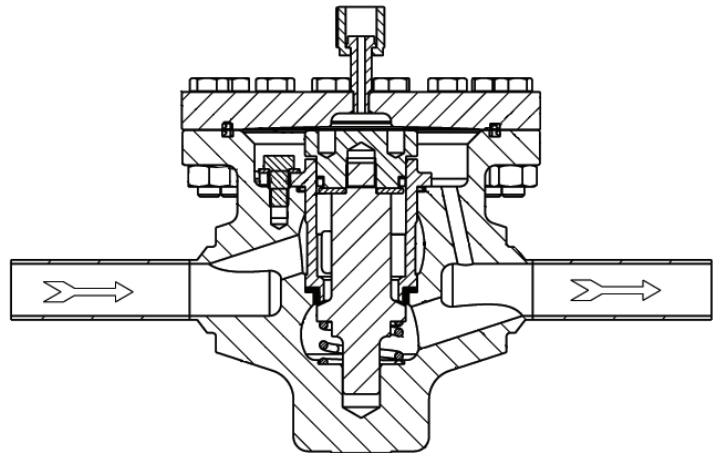
Loading Chamber fabricated from materials of 316L SST.

Surface Finish - μ-in.

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

INTERNAL TRIM & MISC MATERIALS

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



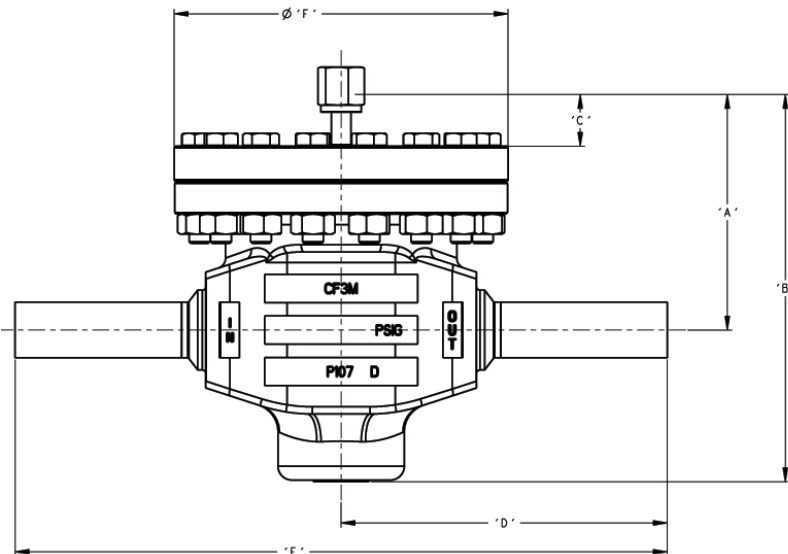
**TABLE 1
MAXIMUM DESIGN PRESSURE vs. TEMPERATURE:
MAXIMUM OPERATING PRESSURES, TEMPERATURES,
PRESSURE DROPS AND Cv FLOW CAPACITY**

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

Size in (DN)	Form	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)	IC or BS	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)	IC or BS	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)	BS	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)	BS	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	Form	A	B	C	D	E	F dia.	
3/4"	IC	4.50	7.25	1.00	5.37	10.75	6.00	25
1"	BS	4.50	7.25	1.00	5.87	11.75	6.00	
1-1/2"	BS	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	Form	A	B	C	D	E	F dia.	
20	IC	114	184	254	136	273	152	12
25	BS	114	184	254	149	298	152	
40	BS	133	214	254	171	343	203	23
50		148	246	254	212	425	253	37

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MODELS CA4 & SA4 PRODUCT CODER

02/07/20

POS 1 & 2 POS 3 — POS 5 **L** POS 7 **7** — **T 0 3 0 0 0 0 0 0 D**

POSITIONS 1 & 2 - MODEL	
Body	CODE
SA4 - Barstock	B4
CA4 - Investment Casting	C4
See Positions 3 & 5	

POSITION 3 - SIZE & STYLE				
Size		Barstock	Investment Casting	CODE
in.	(DN)			
3/4"	(20)	Yes	Yes	B
1"	(25)			C
1-1/2"	(40)		No	E
2"	(50)			F

POSITION 5 - BODY / SPRING CHAMBER MATERIALS		
Body	Materials	CODE
Investment Casting	CF3M/316L SST 10 R _A 3/4" and 1" Size Only (Select "C4" in Position 1 & 2)	C
Bar Stock	316L SST/316L SST 10 R _A (Select "B4" in Position 1 & 2)	S

POSITION 7 - TRIM MATERIALS						
Inlet Pressure	Service	Diaphragm	Seat	Seals		CODE
				Static	Dynamic	
P ₁ ≤ 750 psig (51.7 Barg)	GOX	17-7 PH SST	V-TFE	FFKM	Type "CP"; TFE+FKM	E
	GN2, Ar, H2	17-7 PH SST	PolyAll	FFKM	Type "CP"; TFE+FKM	N
		17-7 PH SST	PolyAll	FFKM	Type "UC"; TFE/SST	R
	* ALL	17-7 PH SST	V-TFE	FFKM	Type "UC"; TFE/SST	T
P ₁ ≤ 3000 psig (207 Barg)	* ALL	17-7 PH SST	CTFE	FFKM	Type "UC"; TFE/SST	Z

* ALL = GOX, GN2, Ar, H2 and He.

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

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