



MODEL C-CS “CLEAN STEAM” PRESSURE REDUCING REGULATOR

The Model C-CS* is a 316L SST self-contained pressure reducing regulator designed primarily for steam control in sanitary biotechnological process piping systems. The unit is capable of controlling outlet pressure between 10-75 psig (.69-5.2 Barg) with a maximum inlet pressure of 150 psig (10.3 Barg).



MODEL C-CS
Barstock Design

FEATURES

- Dual-guided Plug:** Combines a “winged” guide design directly above the seat and a “non-wetted” guide above the diaphragm.
- Self-Draining:** Angle style body with bottom inlet and side outlet.
- Surface Finish:** Interior of body mechanically polished and electro-polished per ASME BPE 2012 SF4. Exterior surfaces are electro-polished.
- Wetted Materials Construction:** 316L SST metallic wetted parts. Unit is cleaned to Cashco Spec. #S-1576.
- Versatility:** Standard pressure reducing regulator or vacuum resistant pressure reducing regulator; metal seat or composition seat.

APPLICATIONS

Used in pharmaceutical industry in production of many health care products for both human and animal consumption. Widely applied for processed food production – candy, beverages, nutritional supplements and artificial sweeteners. May also be used in cosmetics production and specialty chemicals.

Would be found supporting fermenters, batching tanks, cookers, dryers, SIP systems, autoclaves, sterilizers, WFI systems and other similar equipment.

Though designed primarily for “clean steam” service, unit will give satisfactory performance on clean gaseous or liquid applications.

SPECIFICATIONS

Body Connections: Sanitary "Tri-Clamp®". Designed to seal against weld-type clamp liners per ISO 2852. (Lower inlet, side outlet connection.)

Body Size and Material: **3/4", 1", 1-1/2", 2", 3" (DN20, 25, 40, 50, 80) sizes.** Wrought Barstock; ASTM A479, Type 316L SST.

1" (DN25) size only. ASTM A351, Gr. CF3M; Investment Cast 316L SST. Includes reduced orifice as standard construction. See capacity specifications.

See Table 4 for dimensions.

Surface Finish: Interior of body mechanically polished and electro-polished per ASME BPE 2012 SF4. Exterior surfaces are electro-polished.

Spring Chamber: ASTM A351, Gr. CF8M; Cast 316 SST. Electro-polished.

Body Design Pressure Rating: 150 psig (10.3 Barg); inlet & outlet. Continuous Steam Service.

Maximum Operating Temp: 366°F (185°C). Continuous Steam Service.

Maximum Allowable Pressure Drop: 90 psid (6.2 Bard) for 10-30 psig (.69-2.1 Barg) range spring.
125 psid (8.6 Bard) for 20-75 psig (1.4-5.2 Barg) range spring.

Minimum Pressure Drop: 3 psid (.21 Bard).

Seat Leakage: Meets ANSI/FCI 70-2.
Metal Seated – Class IV.
Composition Seat – Class VI.

Capacity: Up to 27 Cv.
See Table 2 for Cv Capacity vs. Droop.
See Tables 3A or 3B for Steam Mass Flow vs. Outlet Pressure.

Wetted Trim Materials:

TRIM MATERIAL COMBINATIONS		
PART	METAL	COMPOSITION
	SL1	S36L
Diaphragm	316L SST	316L SST
Stem & Plug	316L SST	316L SST
Seat Disc	N/A	GF-TFE

Materials comply with FDA requirements of 21CFR 177 & USP Class VI material classification.

NOTE: Cashco, Inc. does not recommend metal seated trim on any service where the flow will be dead ended down stream of the pressure reducing regulator. Use composition seat for dead end service.

O-rings: TFE.

Gasket: Expanded PTFE.

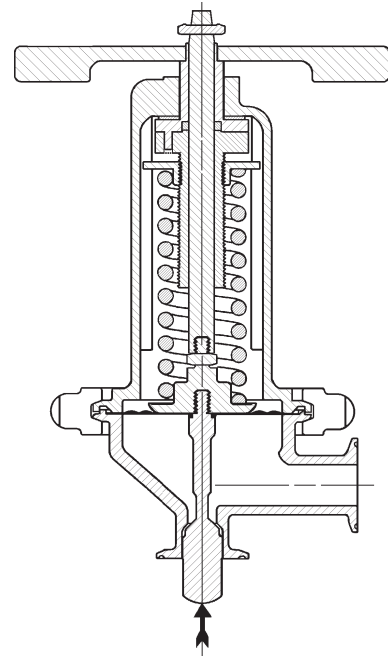
Non-Wetted Trim Materials: Castings - CF8M (316 SST).
Barstock - 18-8 SST.
All cast parts electro-polished.

Special Cleaning: All units are cleaned per Cashco Spec. #S-1576.

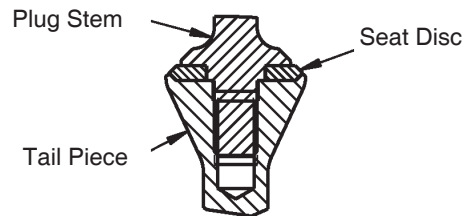
Range Springs: SST material.

psig	(Barg)
10 - 30	(.69 - 2.1)
20 - 75	(1.4 - 5.2)

NOTE: Contact the factory for settings below the lower limit.



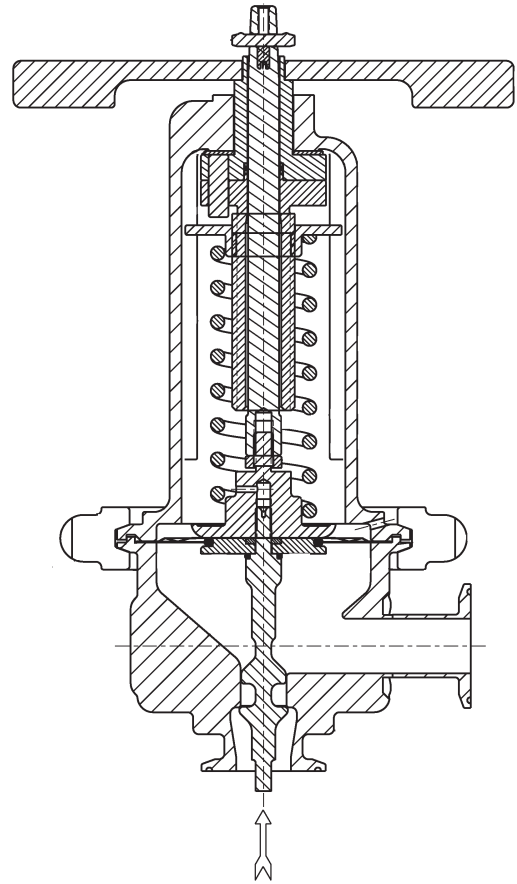
1" Size Investment Cast Body
Metal Seat



Composition Seat
(Not available for Investment Cast Body)

OPTION SPECIFICATIONS

Option-11: DIAPHRAGM RESTRAINT. Utilizes a 316L SST lower diaphragm plate, TFE O-ring, Omniseal and a modified 316L SST plug. Design limits diaphragm deformation when regulator is exposed to vacuum conditions in normal operation sequence. Primarily of importance with autoclaves and sterilizers.



Barstock Body - Metal Seat
with Opt-11

TECHNICAL SPECIFICATIONS

TABLE 1
Maximum Cv with Plug Locked Wide Open
(Use for Relief Valve Sizing and Initial Flow into
an evacuated chamber.)

BODY SIZE		Body CONFIGURATION (PORT)	Cv
inch	(DN)		
3/4"	(20)	* (Full)	2.0
1"	(25)	Investment Cast (Reduced)	3.5
1"	(25)	* (Full)	6.0
1-1/2"	(40)	* (Reduced)	10.0
1-1/2"	(40)	* (Full)	12.0
2"	(50)	* (Full)	19.0
3"	(80)	* (Full)	27.0
* Barstock			

DIMENSIONS & WEIGHTS

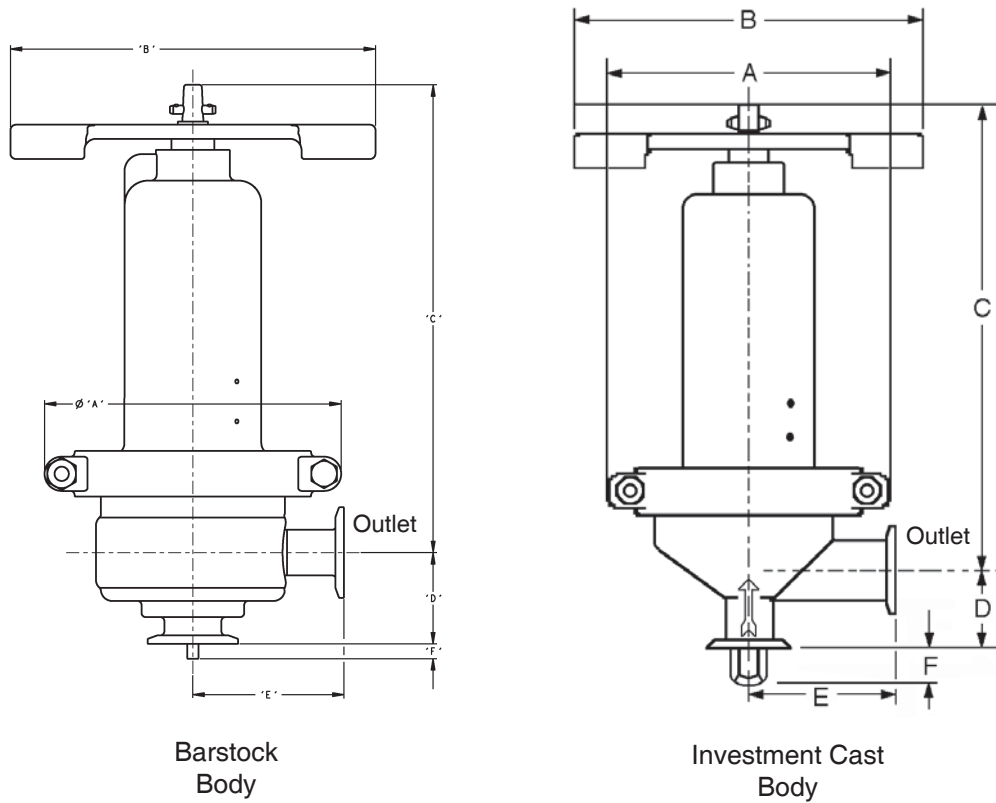


TABLE 4

ENGLISH UNITS - inches							
Regulator Size Inches	Barstock Body						Ship Weight lbs.
	A	B	C	D	E	F	
3/4"	7.50	8.00	10.25	2.00	3.31	0.32	22
1" Full Port	7.50	8.00	10.25	2.00	3.31	0.38	22
1-1/2" Red. Port	7.50	8.00	10.25	2.00	3.31	0.44	22
1-1/2" Full Port	9.50	8.00	12.79	2.60	4.50	0.44	35
2"	9.50	8.00	12.79	2.66	4.50	0.57	35
3"	9.50	8.00	13.38	2.63	4.50	0.75	42
Investment Cast Body							
1" Red. Port	7.50	8.00	9.94	2.00	3.31	0.94	15
METRIC UNITS - mm							
Regulator Size (DN)	Barstock Body						Ship Weight kg
(20)	190	203	260	51	84	8	9.9
(25) Full Port	190	203	260	51	84	10	9.9
(40) Red. Port	190	203	260	51	84	11	9.9
(40) Full Port	241	203	325	66	114	11	15.8
(50)	241	203	325	68	114	14	15.8
(80)	241	203	340	67	114	19	19.0
Investment Cast Body							
(25) Red. Port	190	203	252	51	84	24	6.8

NOTE: The Model C-CS must be installed with the spring chamber in a vertical up orientation.

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MODEL C-CS PRODUCT CODER 03/08/16

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

C S POS 3 — POS 5 POS 6 & 7 POS 8 — **1** POS 11 POS 12 **0 0 0 0 0 0 F**

POSITION 3 - SIZE			
Port	Size		CODE
	in	(DN)	
Full	3/4"	(20)	5
Full	1"	(25)	F
Reduced	1" *	(25)*	6
Reduced	1-1/2"	(40)	8
Full	1-1/2"	(40)	G
Full	2"	(50)	9
Full	3"	(80)	B
* Must select 316L Investment Cast Body from Position 5 Code M			

POSITION 5 - BODY / SPRING CHAMBER MATERIAL		
SST Body / Spring Chamber	Body Sizes	CODE
316 L Investment Cast / 316 Investment Cast	1" (DN25) Only Reduced Port *	M
316 L Barstock / 316 Investment Cast	All	B
* Must select code 6 in Position 3		

POSITION 6 & 7 - TRIM DESIGNATION *	
Desig.	CODE
SL1	SL
S36L √	6L
* Materials Certificates provided - comply with FDA 21CFR 177 & USP Class VI material classification. √ Not available for Investment Cast Body	

POSITION 8 - Product Classification Under European "Pressure Equipment Directive"		
PRODUCT DESTINATION	HAZARD CATEGORY	CODE
Anywhere except Europe	N/A	7
European Countries *	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 - SST RANGE SPRING		
psig	(Barg)	CODE
10 - 30	(.69 - 2.1)	1
20 - 75	(1.4 - 5.2)	2

POSITION 12 - TRIM OPTIONS		
Description	Option	CODE
No Option	---	0
Diaphragm Restraint.	-11	2
For Special Construction Contact Cashco for Special Product Code.	SPQ	X

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