



ISO Registered Company

# MODEL 5381

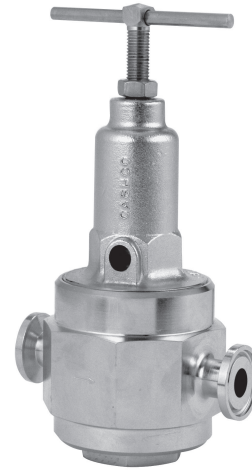
## PRESSURE REDUCING REGULATOR

### OVERVIEW

The Model 5381 is a stainless steel pressure reducing regulator designed to handle small to mid-capacity flow rates in sanitary biotechnical process piping systems. This unit is capable of controlling outlet pressure to a level between 5 and 200 psig (0.34 and 13.8 Barg).

### FEATURES

- High Stability:** High mass plug allows dampening of high frequency disturbances from inlet or outlet side of regulator.
- Trim Removal:** Easily removable trim from regulator while in-line.
- Adjustment Ease:** Adjusting knob for frequent set point changes.
- Wetted Materials Construction:** All metallic parts are SST. Unit is cleaned to Cashco Spec. #S-1576.
- Surface Finish:** Interior of body surface electropolished to 32 micro-inch  $R_a$  finish with electro-polished exterior.



MODEL 5381



**LINE SIZES AVAILABLE**  
1/2" (DN15)



**END CONNECTIONS**  
SANITARY CLAMP



**COMMON APPLICATIONS**  
PHARMACEUTICAL HEALTH CARE PRODUCTS, PROCESSED FOOD PRODUCTION, COSMETIC PRODUCTIONS, SPECIALTY CHEMICALS



**DESIGN PRESSURE**  
INLET: UP TO 600 psig (41.3 Barg)  
MAXIMUM DROP: 400 psig (27.6 Barg)

Алматы (7273)495-231  
 Ангарск (3955)60-70-56  
 Архангельск (8182)63-90-72  
 Астрахань (8512)99-46-04  
 Барнаул (3852)73-04-60  
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## STANDARD/GENERAL SPECIFICATIONS

**Body Size and Material:** 1/2" (DN15)  
Wrought Barstock; ASTM A479,  
Type 316L SST.

**Cv's/Capacities:** See Tables 1, 2, 3, and 4.

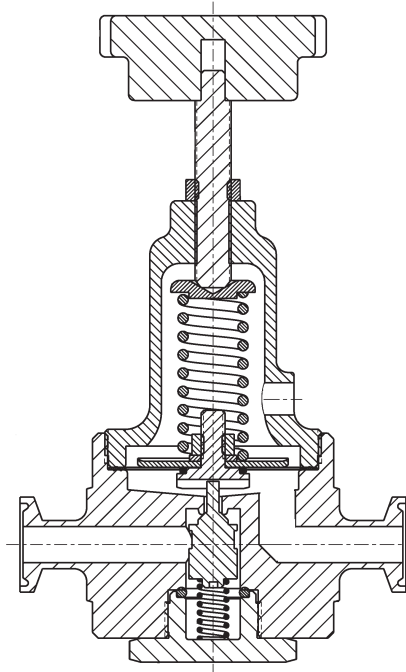
**Body Connection:** Standard - Sanitary clamp end connections compliant with ASME BPE Type A.

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

**Spring Chamber Materials:** Standard - Cast SST; ASTM A351, Grade CF3M.

**Trim:**

PART	S1L	SET
Diaphragm	302 SST	EPDM
Diaphragm Cover	--	TFE <sup>2</sup>
Piston	316L SST	316L SST
Seat Disc <sup>1</sup>	--	TFE <sup>2</sup>
Return Spring	302 SST	302 SST
Pusher Plate	316L SST	316L SST
Body Cap	316L SST	316L SST
O-Ring - Pusher Plate	TFE <sup>2</sup>	TFE <sup>2</sup>
O-Ring - Body Cap	TFE <sup>2</sup>	TFE <sup>2</sup>
Temperature Range °F (°C)	-20 to +400 (-29 to +205)	
<sup>1</sup> Seat disc is integral with the piston sub-assembly.		
<sup>2</sup> USP Class VI certification available upon request.		



**Figure 1: Metal Seat Design**

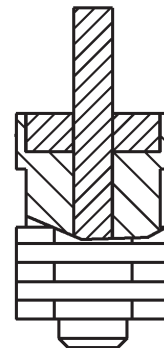
**NOTE:** Cashco, Inc. does not recommend metal seated trim on any service where the flow will be dead ended down stream of the pressure reducing regulator. Use composition seat for dead end service.

**Operating Temperature:** -20 to +400°F (-29° to +205°C)

**Inlet Pressure:** 600 psig (41.3 Barg) maximum

**Range Springs & Maximum Pressure Drop:** Standard: 17-7PH SST

Range Spring		Recommended Max. Pressure Drop	
psig	(Barg)	psig	(Barg)
5-30	(.34-2.1)	400	(27.6)
20-80	(1.4-5.5)	400	(27.6)
70-140	(4.8-9.6)	400	(27.6)
130-200	(9.0-13.8)	400	(27.6)



**Figure 2: Composition Seat Design**

## TECHNICAL SPECIFICATIONS

**TABLE 1**  
**CAPACITY - Cv**  
**(FL = 0.95)**

OUTLET (P2) PRESSURE (psig)	METAL DIAPHRAGM			COMPOSITION DIAPHRAGM		
	% DROOP			% DROOP		
	10%	20%	30%	10%	20%	30%
10	.05	.09	.15	.13	.22	.35
25	.13	.24	.33	.35	.47	.50
50	.07	.15	.22	.35	.47	.50
75	.12	.23	.32	.45	.50	.50
100	.11	.21	.30	.39	.49	.50
125	.13	.24	.33	.42	.50	.50
150	.10	.19	.28	.38	.48	.50
200	.11	.21	.30	.35	.47	.50

**TABLE 2**  
**WATER CAPACITY - GPM**  
**S.G. = 1.0 T - 60°F FL = 0.95**  
**Composition Diaphragm Only**

OUTLET FLOWING PRESSURE (psig)	INLET PRESSURE (psig)	10% Droop	20% Droop	30% Droop	OUTLET FLOWING PRESSURE (psig)	INLET PRESSURE (psig)	10% Droop	20% Droop	30% Droop
5	50	0.9	1.5	2.3	35	50	1.5	1.9	1.9
	75	1.1	1.8	2.9		75	2.5	3.1	3.2
	100	1.3	2.1	3.4		100	3.1	4.0	4.0
	125	1.4	2.4	3.8		125	3.7	4.6	4.7
	150	1.6	2.6	4.2		150	4.2	5.3	5.4
	175	1.7	2.9	4.6		175	4.6	5.8	5.9
	200	1.8	3.1	4.9		200	5.0	6.3	6.4
10	50	2.2	3.0	3.2	50	75	1.9	2.4	2.5
	75	2.8	3.8	4.0		100	2.7	3.4	3.5
	100	3.3	4.5	4.7		125	3.3	4.2	4.3
	125	3.8	5.0	5.4		150	3.8	4.8	5.0
	150	4.1	5.6	5.9		175	4.2	5.4	5.6
	175	4.5	6.0	6.4		200	4.7	5.9	6.1
	200	4.8	6.5	6.9		100	1.8	2.4	2.5
15	50	2.1	2.8	3.0	75	125	2.5	3.3	3.5
	75	2.7	3.6	3.9		150	3.0	4.1	4.3
	100	3.2	4.3	4.6		175	3.5	4.7	5.0
	125	3.7	4.9	5.2		200	3.9	5.3	5.6
	150	4.1	5.5	5.8	100	125	2.0	2.5	2.5
	175	4.4	5.9	6.3		150	2.8	3.5	3.5
	200	4.8	6.4	6.8		175	3.5	4.2	4.3
25	50	2.3	2.5	2.5	125	200	4.0	4.9	5.0
	75	3.2	3.5	3.5		150	2.1	2.5	2.5
	100	3.9	4.3	4.3	175	3.0	3.5	3.5	
	125	4.5	5.0	5.0	200	3.6	4.3	4.3	
	150	5.0	5.6	5.6					
	175	5.5	6.1	6.1					
	200	6.0	6.6	6.6					

**TABLE 3**  
**AIR CAPACITY - SCFH**  
**S.G. = 1.0 T - 60°F FL - 0.95**  
**1/2" Size - Composition Diaphragm Only**

OUTLET FLOWING PRESSURE (psig)	INLET PRESSURE (psig)	10% Droop	20% Droop	30% Droop	OUTLET FLOWING PRESSURE (psig)	INLET PRESSURE (psig)	10% Droop	20% Droop	30% Droop
5	25	200	300	500	35	50	700	900	900
	50	300	500	800		75	1200	1500	1500
	75	400	700	1100		100	1600	2000	2000
	100	500	900	1400		150	2300	2900	2900
	150	800	1300	2000		200	3000	3700	3800
	200	1000	1700	2700		300	4400	5500	5600
	300	1500	2500	3900		400	5800	7200	7400
	400	1900	3200	5200		75	1000	1300	1300
10	25	500	600	700	50	100	1500	1800	1900
	50	800	1100	1100		150	2200	2800	2900
	75	1100	1500	1600		200	2900	3600	3800
	100	1400	1900	2000		300	4200	5400	5600
	150	2000	2700	2900		400	5600	7100	7400
	200	2700	3600	3800		100	1100	1400	1500
	300	3900	5300	5600		150	1900	2600	2700
	400	5200	6900	7400		200	2600	3500	3700
15	25	400	600	600	75	300	3600	5200	5600
	50	800	1100	1100		400	5200	6900	7400
	75	1100	1500	1600		150	2000	2400	2400
	100	1400	1900	2000		200	2900	3500	3600
	150	2000	2700	2900		300	4400	5400	5500
	200	2700	3600	3800		400	5900	7200	7400
	300	3900	5300	5600		500	7300	9000	9200
	400	5200	6900	7400		200	2400	2900	2900
25	50	1100	1100	1100	150	300	4400	5300	5300
	75	1400	1600	1600		400	6100	7200	7200
	100	1800	2000	2000		500	7700	9100	9100
	150	2600	2900	2900		300	3300	4400	4700
	200	3400	3800	3800		400	4900	6600	6900
	300	5000	5600	5600		500	6300	8500	9000
	400	6600	7400	7400					

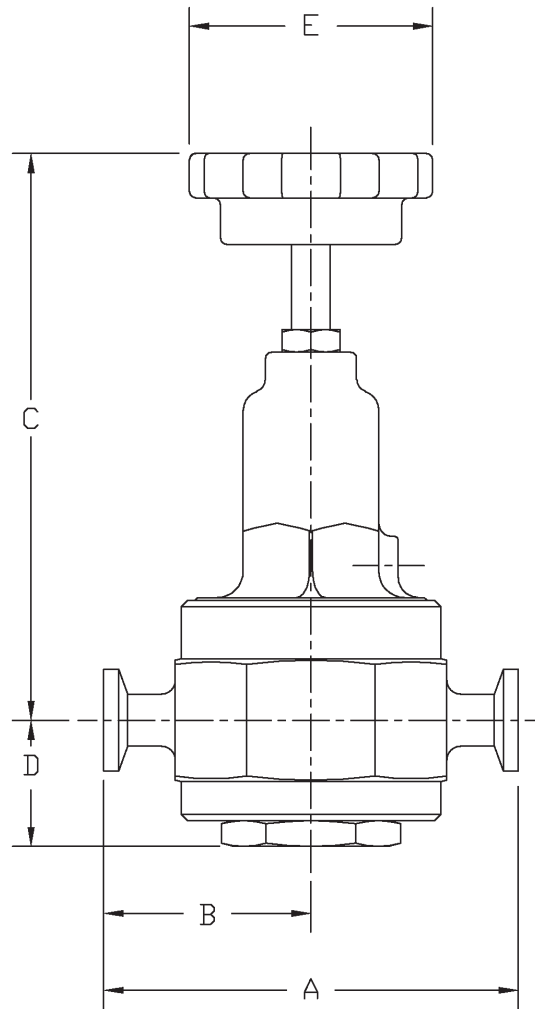
**TABLE 4**  
**STEAM - LBS/HR**  
**S.G. = Actual T = Saturated FL = 0.95**  
**1/2" Size - Metal Diaphragm Only**

OUTLET FLOWING PRESSURE (psig)	INLET PRESSURE (psig)	10% Droop	20% Droop	30% Droop	OUTLET FLOWING PRESSURE (psig)	INLET PRESSURE (psig)	10% Droop	20% Droop	30% Droop	
5	25	2	3	5	35	50	6	10	15	
	50	3	6	9		75	10	17	26	
	75	5	8	13		100	14	23	35	
	100	6	10	16		125	17	29	43	
	125	7	12	20		150	20	34	51	
	150	9	15	23		175	23	39	58	
	175	10	17	27		200	26	45	67	
	200	11	19	30		240	31	53	80	
10	25	4	5	8	50	75	10	21	30	
	50	7	8	14		100	15	31	44	
	75	9	12	20		125	19	40	56	
	100	12	15	25		150	22	47	67	
	125	15	19	31		175	26	55	77	
	150	17	22	36		200	29	62	88	
	175	20	25	42		240	35	74	104	
	200	23	28	47		75	100	17	32	45
240	27	33	56	125	24		46	65		
15	25	4	10	14	150		30	58	82	
	50	8	19	28	175		36	69	97	
	75	12	27	39	200		41	79	111	
	100	15	35	50	240		50	95	133	
	125	19	43	62	100		125	16	36	50
	150	22	51	73			150	23	51	72
	175	25	58	83		175	29	64	90	
	200	28	66	94		200	34	76	107	
240	33	78	111	240		42	93	130		
25	50	13	25	30		150	175	19	37	53
	75	20	38	46			200	27	52	76
	100	26	49	59			240	38	72	104
	125	31	60	72	200	240	33	60	83	
	150	37	71	85						
	175	43	83	100						
	200	49	94	113						
	240	58	111	134						

**TABLE 5  
OUTLET PRESSURE LIMIT-  
SAFETY RELIEF VALVE SIZING & SETPOINT**

RANGE SPRING (psig)	DIAPHRAGM MATERIAL	EMERGENCY <sup>1</sup> OVER-PRESSURE (psig)	MAXIMUM Cv WITH VALVE PLUG WIDE OPEN
5-30, 20-80, 70-140, 130-200	ALL	1.5 x UVRS <sup>2</sup>	0.5

<sup>1</sup> "Emergency Over-Pressure" is defined as the level of pressure, which if exceeded, may cause internal mechanical damage.  
<sup>2</sup> UVRS - "Upper Value of Range Spring"; i.e. 130-200 psig (9 -13.8 Barg) range spring, value would be 200 psig (13.8 Barg).



Weight = 4 Lbs.  
(1.82 kgs)

**DIMENSIONS AND WEIGHTS**

Units in. (mm)				
A	B	C	D	E
4.00 (102)	2.00 (51)	5.47 (139)	1.22 (31)	2.35 (60)

# MODEL 5381 PRODUCT CODE 02/17/22

FOR THE FOOD AND PHARMACEUTICAL INDUSTRY

**MS** **4** – **A** POS 6 & 7 **7** – **1** POS 11 **6** POS 13 **0000C**

POSITION 6 & 7 – TRIM DESIGNATION NUMBERS	
Desig.	CODE
S1L*	L1
SET	ST

\* Trim utilized on steam service only.

POSITION 11 – RANGE SPRINGS		
SST Range Spring		CODE
psig	(Barg)	
5-30	(.34-2.1)	A
20-80	(1.4-5.5)	B
70-140	(4.8-9.7)	C
130-200	(9.0-13.8)	D

POSITION 13 - OPTIONS		
Description	Option	CODE
#32Ra Micro-inch Internal finish.	Std	0
#20Ra Micro-inch Internal Finish.		P

Алматы (7273)495-231  
 Ангарск (3955)60-70-56  
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