



ISO Registered Company

8310-BASIC-TB

07-21

# MODEL 8310LP MODEL 8310HP

## PRESSURE REDUCING REGULATORS



MODEL 8310HP



MODEL 8310LP

### OVERVIEW

The Models 8310LP and 8310HP are high capacity, self-contained pressure reducing regulators with a double-seat design. These units are utilized to control outlet (downstream) pressure between 1 – 200 psig (0.07 – 13.8 Barg). Available in two outlet pressure designs; the Low Pressure, LP design has larger diaphragm for reduced pressures up to 30 psig (2.07 Barg), and the High Pressure design has a smaller diaphragm for reduced pressures up to 200 psig (13.8 Barg).

### FEATURES

- High Capacity:** The double ported design provides high flow capacity, the highest capacity regulators Cashco manufactures due to dual ports.
- High Stability:** Outstanding operation resulting from balanced design which minimizes imbalance plug forces, even at very high pressure drops. Diaphragm isolated from fluid velocity effects.
- Heavy Guiding:** Plug is top and bottom guided with hardened stem guides.
- Broad Setpoint Range:** 8310LP: 1 – 30 psig (.07 – 2.07 Barg)  
8310HP: 10 – 200 psig (.7 – 13.8 Barg)
- High Pressure Drop Capability:** 8310LP: Up to 200 psid (13.8 Bard).  
8310HP: Up to 450 psid (31.0 Bard).



### LINE SIZES AVAILABLE

1-1/2" (DN40), 2" (DN50), 2-1/2" (DN65), 3" (DN80), 4" (DN100)



### END CONNECTIONS

NPT, FLANGED, FLAT FACED, RAISED FACED, 14" FACE TO FACE,



### COMMON APPLICATIONS

AIR, INERT GASES, CHEMICALS, WATER, FUEL OILS, STEAM



### DESIGN PRESSURE

INLET: UP TO 650 psig (44.8 Barg)  
OUTLET: UP TO 200 psig (13.8 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  
Белгород (4722)40-23-64  
Благовещенск (4162)22-76-07  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Владикавказ (8672)28-90-48  
Владимир (4922)49-43-18  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Коломна (4966)23-41-49  
Кострома (4942)77-07-48  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Курган (3522)50-90-47  
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Ноябрьск (3496)41-32-12  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Петрозаводск (8142)55-98-37  
Псков (8112)59-10-37  
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Саранск (8342)22-96-24  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Сыктывкар (8212)25-95-17  
Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
Томск (3822)98-41-53  
Тула (4872)33-79-87  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Улан-Удэ (3012)59-97-51  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Чебоксары (8352)28-53-07  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Чита (3022)38-34-83  
Якутск (4112)23-90-97  
Ярославль (4852)69-52-93

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Киргизия +996(312)96-26-47

## STANDARD GENERAL SPECIFICATIONS

**Variations:** LP – “Low Pressure” variation, larger diaphragm area.  
 HP – “High Pressure” variation, smaller diaphragm area.

**Body Sizes:** 1-1/2", 2", 2-1/2", 3" and 4"  
 (DN40, 50, 65, 80, 100)  
 (Complies with ASME B16.4 and B16.34)

**End Connections:** NPT – 1-1/2" and 2" (DN40, 50) sizes only.  
Opt-30: Integral Flanged:  
 CI with 125 lb. FF, CS with 150 lb. RF  
 CI with 250 lb. RF, CS with 300 lb. RF  
 Flanges – all sizes.  
Opt-34: 14" Face to Face Flange Dim. (CS - Sizes 1-1/2" & 2" only)  
  
 (Complies with ASME B16.4 and B16.34)

**Body / Spring Chamber Material Combinations:**  
 8310HP: CI/DI, CS/CS  
 8310LP: CI/CI, CS/CS  
 CI = Cast Iron  
 DI = Ductile Iron.  
 CS = Cast Carbon Steel.

**Inlet Pressure:** 8310LP: Up to 200 psig (13.8 Barg).  
 8310HP: Up to 650 psig (44.8 Barg).

**Outlet Pressure:** 8310LP: 1–30 psig (.07–2.07 Barg).  
 8310HP: 10–145 psig (.7–10 Barg).  
 8310HP-80: 130 – 200 psig (9.0 – 13.8 Barg).

**External Sensing:** 3/8" NPT steel needle valve for down-stream sensing connection.

**Inlet Temperature:** -20° to +450°F.  
 (-29° to +233°C.)

**Gaskets:** Standard:  
 Gaskets – Graphite/ NBR,  
 O-ring – TFE.

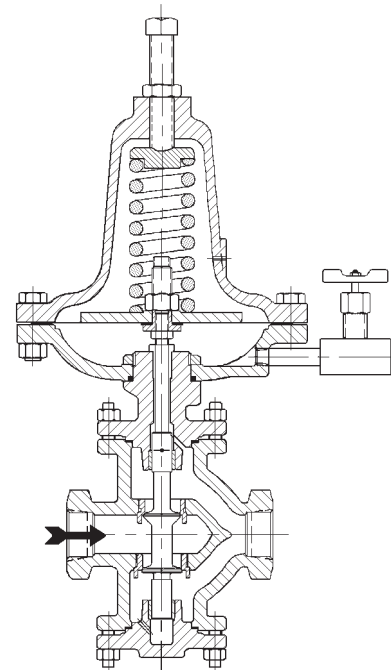
**Seat Leakage:** FCI 70-2

**Trim Design:** 316 SST, metal or composition seat, balanced, double seated. Eight material combination choices.

**Capacities:** Up to 100 Cv.

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

**NOTE:** Refer to “OPTION SPECIFICATIONS” for alternative designs, and to the “TECHNICAL SPECIFICATIONS” tables for a more complete description of the above specifications.



**Model 8310HP**

## OPTION SPECIFICATIONS

This section indicates special variations which are available to the standard Model 8310 products. Multiple options may be selected; i.e. 8310HP -3+15, which is the standard 8310HP product plus Opt. -3 and Opt. -15 together. Care must be exhibited to not develop conflicting combinations; i.e. 8310HP-3+20.

- |   |  |
|---|--|
| <p><b>Option -1:</b>            <u>CLOSING CAP</u>. Use to prevent tampering with the set point pressure. Available on all spring chamber materials. Consists of a ductile iron closing cap, a sealing gasket, a sealing lock nut on the adjusting screw, and a 1/4" NPT female tapped spring chamber vent hole.</p>  | <p><b>Option -30:</b>        <u>INTEGRAL FLANGED END CONNECTIONS</u>. Available with 125# FF and 250# RF flanges for cast iron body material or with 150# RF or 300# RF flanges for cast steel body material.</p>  |
| <p><b>Option -1+6<br/>And Option -1+8:</b>    <u>DIFFERENTIAL CONSTRUCTION – SINGLE DIAPHRAGM, AND DIFFERENTIAL CONSTRUCTION – DOUBLE DIAPHRAGM</u>. Refer to Technical Bulletin 8310-DIFF-TB for 8310HP's utilized in differential pressure service.</p>   | <p><b>Option -34:</b>        <u>SPECIAL 14" FACE TO FACE DIMENSION FOR FLANGED END CONNECTIONS</u>. CS body material, sizes 1-1/2" &amp; 2" with 150# or 300# RF flanges only. See Opt.-30 for standard face to face dimension.</p>  |
| <p><b>Option -3:</b>            <u>T-BAR AND LOCKING LEVER</u>. All sizes. Utilized for frequent setpoint changes to range spring.</p>  | <p><b>Option -56:</b>        <u>SPECIAL CLEANING</u>. Cleaned per Cashco Specification #S-1542. Utilize when cleanliness level better than normal is required. <u>NOT</u> for Oxygen Service.</p>  |
| <p><b>Option -15:</b>        <u>STELLITED SEATS</u>. Stellite seating surfaces on metal seating portions of plug and on both seat rings. See Table 3 for maximum allowable pressure drops.</p>  | <p><b>Option -80:</b>        <u>HIGH OUTLET PRESSURE CONSTRUCTION</u>. Utilized for 130 – 200 psig (9.0 – 13.8 Barg) outlet pressure spring range. <u>ONLY AVAILABLE WITH HP VARIATION</u>. Special construction includes a diaphragm ring to reduce effective diaphragm area and serve as a travel stop in case of over-pressurization.</p> |
| <p><b>Option -20:</b>        <u>AIR PRESSURE LOADED</u>. No range spring. Incorporates a cast iron or cast steel loading chamber. Use when the outlet pressure is frequently changed. This construction offers the regulators maximum capacity with minimum proportional band "droop" when compared to standard units with a range spring. See Table 1 for capacities. For 10 – 100 psig (.7 – 6.9 Barg) control pressures. <u>ONLY AVAILABLE ON 8310HP VARIATION; NOT AVAILABLE ON 8310LP.</u></p> |  |

Pressures vary in a nearly 1:1 ratio; i.e. 50 psig (3.4 Barg) loading pressure gives nearly a 50 psig (3.4 Barg) outlet pressure.

**TABLE 1  
8310HP-20 AIR PRESSURE LOADED  
Cv's FOR COMPOSITION & METAL DIAPHRAGMS**

Valve Size		Comp. Diaph. Cv	Metal Diaph. Cv
in	(DN)		
1-1/2"	(40)	26	25
2"	(50)	40	35
2-1/2"	(65)	55	44
3"	(80)	78	54
4"	(100)	100	74

# TECHNICAL SPECIFICATIONS

**TABLE 2**  
**DESIGN PRESSURE-TEMPERATURE MATERIAL LIMITS**  
 Lower temperature limits will always measure -20 °F (-29 °C)

MATERIAL SPECIFICATIONS		END CONN.	INLET				OUTLET PRESSURE		TEMPERATURE LIMITS OF TRIMS °F (°C)					
			PRESSURE		TEMPERATURE				METAL DIAPHRAGM		COMPOSITION DIAPHRAGM			
DESCRIPTION ABBREV. (BODY/SP.CH.)	ASTM NO.		psig	(Barg)	°F	(°C)	psig	(Barg)	S1, 36, 3R TRIM		S5, S7, S7R TRIM		S40, S3 TRIM	
								°F	(°C)	°F	(°C)	°F	(°C)	
<b>MODEL 8310LP</b>														
Cast Iron (CI/CI)	A126 Class B	125# Flgd.	200	(13.8)	150	(66)	30	(2.1)	450	(232)	400	(205)	180	(83)
			190	(13.1)	200	(94)								
			175	(12.1)	250	(121)								
			165	(11.4)	300	(149)								
			140	(9.7)	400	(204)								
			125	(8.6)	450	(232)								
Cast Carbon Steel (CS/CS)	A216 Grade WCB	150# Flgd.	200	(13.8)	400	(205)	30	(2.1)	450	(232)	400	(205)	180	(83)
			185	(12.8)	450	(232)								
			200	(13.8)	450	(232)								
<b>MODEL 8310HP</b>														
Cast Iron/ Ductile Iron (CI/DI)	A126 Class B /A395, GR. 60-40-18	125# Flgd.	200	(13.8)	150	(66)	200	(13.8)	150	(66)	150	(66)	150	(66)
			190	(13.1)	200	(94)	190	(13.1)	200	(94)	200	(94)	180	(83)
			175	(12.1)	250	(121)	175	(12.1)	250	(121)	250	(121)		
			165	(11.4)	300	(149)	165	(11.4)	300	(149)	300	(149)		
			140	(9.7)	400	(204)	140	(9.7)	400	(205)	400	(205)		
			125	(8.6)	450	(232)	125	(8.6) & Lower	450	(232)				
		250# Flgd.	375	(25.9)	300	(149)	200	(13.8) & Lower	450	(232)	400	(205)		
			335	(23.1)	350	(177)								
			290	(20.0)	400	(204)								
			250	(17.2)	450	(232)								
		NPT	400	(27.6)	150	(66)	200	(13.8) & Lower	450	(232)	400	(205)	180	(83)
			400	(27.6)	200	(94)								
			400	(27.6)	250	(121)								
			375	(25.9)	300	(149)								
			335	(23.1)	350	(177)								
			290	(20.0)	400	(204)								
		250	(17.2)	450	(232)									
		Cast Carbon Steel (CS/CS)	A216 Grade WCB	150# Flgd.	285	(19.6)	100	(38)	200	(13.8) & Lower	400	(205)	400	(205)
260	(17.9)				200	(94)								
230	(15.9)				300	(149)								
200	(13.8)				400	(204)								
185	(12.8)				450	(232)								
300# Flgd. or NPT	650			(44.8)	300	(149)	200	(13.8) & Lower	450	(232)	400	(205)	180	(83)
	635			(43.8)	400	(204)								
	615			(41.4)	450	(232)								

**NOTE:** See Table 7 for allowable over pressure limits.

**TABLE 3  
MAXIMUM ALLOWABLE PRESSURE DROPS**

Fluid	Max. Recommended Operating Pressure Drop						Option Number	Trim Designation Number
	Model 8310LP		Model 8310HP					
	All Fluid Qualities		Clean Fluid Industrial Quality		Unclean Fluid Pipeline Quality			
	psid	(Bard)	psid	(Bard)	psid	(Bard)		
Non-Cavitating Liquid	150	(10.3)	200	(13.8)	100	(6.9)	None	All
	150	(10.3)	300	(20.7)	150	(10.3)	Stellited Opt-15	
Cavitating Liquids	Consult Factory		Consult Factory		N/R		Stellited Opt-15	S1 Only
Gas	200	(13.8)	450	(31.0)	150	(10.3)	None	All
	200	(13.8)	450	(31.0)	300	(20.7)	Stellited Opt-15	
Steam	150	(10.3)	150	(10.3)	N/R		None	S1, S36R
	200	(13.8)	300	(20.7)	150	(10.3)	Stellited Opt-15	

N/R: Not Recommended

**TABLE 4  
APPLICATIONS**

Fluid	Recommended Construction	Trim Designation Number
Air or Industrial Gases	Composition Seat & Diaphragm	S3, S7
Chemicals	Metal Seat & Composition Diaphragm	S5, S40
	Metal Seat & Diaphragm	S1
	Composition Seat & Diaphragm	S3
	Composition Seat & Metal Diaphragm	S36, S36R
Hydrocarbon Gas or Liquids †	Metal Seat & Composition Diaphragm	S5, S40
	Metal Seat & Diaphragm	S1
	Composition Seat & Diaphragm	S3, S7, SR
Water and Condensate	Metal Seat & Composition Diaphragm	S40
	Metal Seat & Diaphragm	S1
	Composition Seat & Diaphragm	S3
Steam – Saturated or Superheated	Metal Seat & Diaphragm	S1

† In accordance with ASME B31.3 "process piping", do not use Cast Iron Body for hydrocarbon or flammable fluid service with inlet pressures greater than 150 Psig (10.3 Barg) or temperatures greater than 300° F (149° C).

**TABLE 5a  
STAINLESS STEEL TRIM MATERIAL COMBINATIONS**

Part	SST Trim Designation Number		
	Metal Diaphragm		
	S1	S36	S36R
Diaphragm	302 SST	302 SST	302 SST
Plug	316 SST	316 SST	316 SST
Seat Rings	316 SST	316 SST	316 SST
Seat Disc	316 SST ***	TFE	Rulon LR
Stem	316 SST	316 SST	316 SST
Belleville Washer	300 Series SST	300 Series SST	300 Series SST
Stem Guides	Hardened 440C SST	Hardened 440C SST	Hardened 440C SST
Bonnet Plug	**	**	**
Pusher Plate	303 SST	303 SST	303 SST
Pusher Plate Nut	Steel	Steel	Steel
Diaphragm Casing O-Ring	TFE	TFE	TFE
Stem Bushing	303 SST	303 SST	303 SST
Bonnet Nut	Steel	Steel	Steel
Needle Valve	Steel	Steel	Steel
Pipe Nipple	Steel	Steel	Steel

\*\* Same as body material.

\*\*\* 316 SST seat disc is intergral to the plug.

**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.

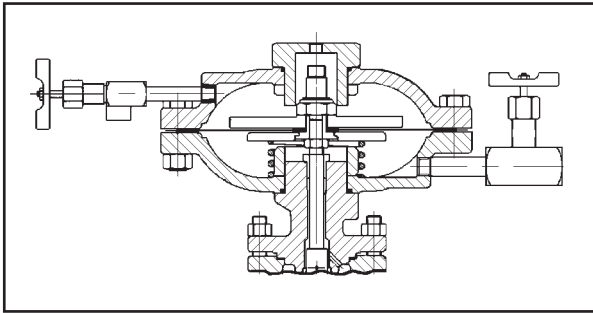
**TABLE 5b  
STAINLESS STEEL TRIM MATERIAL COMBINATIONS**

Part	SST Trim Designation Number				
	Composition Diaphragm				
	S3	S40	S5	S7	S7R
Diaphragm	Neoprene	Neoprene	Fluorocarbon Elastomer	Fluorocarbon Elastomer	Fluorocarbon Elastomer
Plug	316 SST	316 SST	316 SST	316 SST	316 SST
Seat Rings	316 SST	316 SST	316 SST	316 SST	316 SST
Seat Disc	TFE	316 SST ***	316 SST ***	TFE	Rulon LR
Stem	316 SST	316 SST	316 SST	316 SST	316 SST
Belleville Washer	300 Series SST	300 Series SST	300 Series SST	300 Series SST	300 Series SST
Stem Guides	Hardened 440C SST	Hardened 440C SST	Hardened 440C SST	Hardened 440C SST	Hardened 440C SST
Bonnet Plug	**	**	**	**	**
Pusher Plate	303 SST	303 SST	303 SST	303 SST	303 SST
Pusher Plate Nut	Steel	Steel	Steel	Steel	Steel
Diaphragm Casing O-Ring	TFE	TFE	TFE	TFE	TFE
Stem Bushing	303 SST	303 SST	303 SST	303 SST	303 SST
Bonnet Nut	Steel	Steel	Steel	Steel	Steel
Needle Valve	Steel	Steel	Steel	Steel	Steel
Pipe Nipple	Steel	Steel	Steel	Steel	Steel

\*\* Same as body material.

\*\*\* 316 SST seat disc are intergral to the plug.

**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.



**Figure 1**  
Opt.-20  
Air Pressure Loaded

**TABLE 6**  
**STEEL RANGE SPRINGS**  
**METAL OR COMPOSITION DIAPHRAGMS**  
**ALL SIZES**

Construction	Range Spring		
	"LP" Variation		"HP" Variation
Standard	1-4 *	(.07-.27)	10-40 (.69-2.8)
	3-10	(.21-.69)	30-100 (2.1-6.9)
	8-30	(.55-2.1)	75-145 (5.2-10.0)
Option -80	N/A		130-200 (9.0-13.8)

\* Composition Diaphragm Only

N/A: Not Applicable

**TABLE 7**  
**OVER-PRESSURE LIMITS – SAFETY RELIEF VALVE**  
**SIZING & SETPOINT**

Variation	Range Spring		Diaphragm Material	* Emergency Over-Pressure (Rise over Setpoint)		Maximum Cv with Valve Plug Wide Open Body Size - in / (mm)				
	psig	(Barg)		psig	(Barg)	1-1/2" (DN40)	2" (DN50)	2-1/2" (DN65)	3" (DN80)	4" (DN100)
LP	1-4	(.07-.27)	All	20	(1.4)	27	40	55	76	100
	3-10	(.21-.69)								
	8-30	(.55-2.1)								
HP	10-40	(.69-2.8)	All	35	(2.4)	27	40	55	76	100
	30-100	(2.1-6.9)								
	75-145	(5.2-10.0)	All	45	(3.1)					
	130-200	(9.0-13.8)								

\* Exceeding the "Emergency Over-Pressure" level may cause mechanical damage to internal parts of the valve.

# ••••• LP VARIATION •••••

**TABLE 8**  
**8310LP**  
**CAPACITY TABLES – Cv – METAL DIAPHRAGM**

Set Point (Outlet) Pressure, P <sub>2</sub>		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
		Droop			Droop			Droop			Droop			Droop		
psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
5	(.34)	8.5	15.1	22.5	10.2	19.7	29.9	12.0	22.9	37.5	13.9	26.1	43.1	19.0	36.1	59.8
*10	(.69)	2.9	5.6	10.0	3.3	6.7	12.0	3.9	7.5	13.2	4.6	8.7	16.0	6.3	12.0	21.7
15	(1.0)	4.2	8.2	12.5	4.8	10.0	16.0	5.5	11.5	18.0	6.8	13.2	21.0	8.1	17.9	28.5
20	(1.4)	6.1	11.5	16.1	7.1	14.1	21.9	8.1	16.5	25.5	9.5	19.0	29.0	13.1	26.4	40.7
25	(1.7)	8.1	14.7	21.7	9.8	18.7	30.1	11.6	22.0	36.0	13.2	25.0	42.4	18.0	30.0	57.5
30	(2.1)	10.9	18.2	23.5	13.2	25.1	32.6	15.5	29.2	41.0	17.9	33.5	46.8	24.5	45.9	65.0

\* Utilizes 8 - 30 psig (.55 - 2.1 Barg) range spring

**TABLE 9**  
**8310LP**  
**CAPACITY TABLES – Cv – COMPOSITION DIAPHRAGM**

Set Point (Outlet) Pressure, P <sub>2</sub>		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
		Droop			Droop			Droop			Droop			Droop		
psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
2	(.14)	16.8	25.7	26.2	22.0	35.9	39.3	25.3	46.2	52.8	29.0	58.4	73.2	40.5	81.2	99.0
5	(.34)	14.0	23.6	26.2	18.0	32.9	38.0	21.1	41.2	50.0	24.0	47.7	67.0	33.1	66.5	94.4
*10	(.69)	5.5	10.8	15.5	6.3	13.0	20.0	7.8	15.3	22.7	8.8	27.4	26.4	12.2	23.9	36.5
15	(1.0)	7.5	14.0	20.0	8.9	18.0	37.3	10.5	21.2	32.3	12.2	24.2	36.8	16.9	33.2	50.7
20	(1.4)	10.0	17.8	23.7	12.2	23.8	33.1	13.8	27.8	41.9	16.2	32.2	48.8	22.2	44.3	67.9
25	(1.7)	13.3	22.3	26.2	16.9	31.2	37.2	19.7	37.8	48.3	22.5	43.7	53.7	31.2	60.3	90.5
30	(2.1)	17.5	25.8	26.2	23.5	36.5	39.3	27.2	47.3	53.6	31.7	61.3	75.0	43.3	86.1	99.8

\* Utilizes 8 - 30 psig (.55 - 2.1 Barg) range spring

# ••••• HP VARIATION •••••

**TABLE 10**  
**8310HP**  
**CAPACITY TABLES – Cv – METAL DIAPHRAGM**

Set Point (Outlet) Pressure, P <sub>2</sub>		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
		Droop			Droop			Droop			Droop			Droop		
psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
10	(.69)	2.0	4.2	7.5	2.6	6.3	9.0	3.0	6.8	10.5	4.0	7.5	12.0	5.0	11.0	16.7
15	(1.0)	3.0	8.0	12.0	4.0	9.2	14.5	5.0	11.2	16.5	6.0	12.5	19.0	8.5	17.5	23.5
25	(1.7)	7.5	14.0	19.0	8.7	18.0	26.5	10.0	21.0	31.3	11.7	23.7	36.5	18.5	32.5	48.0
35	(2.4)	11.5	19.7	25.2	14.0	27.5	35.7	16.5	32.3	45.7	18.7	37.2	55.7	26.5	51.5	78.7
50	(3.4)	6.2	11.7	16.7	7.3	14.8	22.0	8.0	16.8	25.2	9.5	19.0	28.7	13.0	26.8	39.5
75	(5.2)	8.5	15.5	21.0	10.0	20.3	29.0	11.2	23.5	35.0	13.0	27.0	40.5	18.0	36.5	55.7
100	(6.9)	8.7	18.0	21.2	10.5	21.0	29.5	12.0	23.8	36.0	13.7	27.2	41.3	18.7	37.5	56.5
140	(9.7)	10.8	18.5	24.0	12.5	25.0	33.5	15.0	28.8	43.0	17.0	32.5	51.3	23.5	44.7	71.0
150	(10.3)	11.4	19.5	25.0	13.8	27.1	35.5	16.2	31.9	45.0	18.5	36.3	55.5	25.0	50.7	76.5
200	(13.8)	14.0	23.5	26.0	18.7	33.4	38.5	21.2	41.3	50.2	24.4	48.5	67.5	33.7	67.5	95.0

**TABLE 11**  
**8310HP**  
**CAPACITY TABLES – Cv – COMPOSITION DIAPHRAGM**

Set Point (Outlet) Pressure, P <sub>2</sub>		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
		Droop			Droop			Droop			Droop			Droop		
psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
10	(.69)	6.0	11.2	16.2	7.0	14.0	21.5	8.0	16.2	24.8	9.2	18.7	28.7	13.0	26.2	39.1
15	(1.0)	7.5	13.8	19.5	9.1	18.7	27.2	11.2	21.2	32.1	12.5	24.1	36.5	17.0	33.5	50.8
25	(1.7)	10.5	19.0	25.0	13.0	26.3	34.8	15.0	31.0	44.3	17.6	35.5	53.5	24.0	48.8	73.7
35	(2.4)	16.0	25.4	26.2	21.4	35.7	39.0	24.5	45.7	52.4	28.1	56.5	72.2	38.8	78.7	98.2
50	(3.4)	10.5	18.7	24.5	13.0	26.1	34.2	15.0	30.0	43.7	17.4	34.8	52.1	24.0	47.5	72.2
75	(5.2)	15.2	24.7	26.2	20.2	34.7	38.7	22.9	43.7	51.2	26.5	52.8	70.0	36.7	72.8	97.5
100	(6.9)	12.1	21.3	26.0	15.7	29.4	36.9	17.7	36.0	47.5	20.4	41.2	61.3	28.0	57.0	86.0
140	(9.7)	16.5	26.0	26.0	22.4	38.0	37.0	26.0	50.0	52.5	30.0	67.0	72.0	41.5	95.0	97.0
150	(10.3)	17.8	26.2	26.2	24.4	37.0	39.3	28.0	37.9	53.8	32.4	62.5	75.2	44.2	88.5	100.0
200	(13.8)	21.2	26.2	26.2	29.1	38.8	39.5	35.1	51.5	55.0	40.2	70.8	78.0	55.1	97.5	100.0

METRIC CONVERSION FACTORS: Cv ÷ 1.16 = kv

**TABLE 12**  
**MODEL 8310 – “HP VARIATION”**  
**WATER CAPACITY – GPM**  
**S.G. = 1.0 T = 60°F F<sub>L</sub> = 0.88**

**ALL Sizes – Composition Diaphragm Only**

Set Point Pressure - P2		Inlet Pressure		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
				Droop			Droop			Droop			Droop			Droop		
psig	(Barg)	psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
10	(.69)	50	(3.4)	37.9	70.8	102.5	44.3	88.5	136	50.6	102.5	156.8	58.2	118.3	181.5	82.2	165.7	247.3
		75	(5.2)	48.4	90.3	130.6	56.4	112.9	173.3	64.5	130.6	199.9	74.2	150.8	231.4	104.8	211.2	315.2
		100	(6.9)	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV
15	(1.0)	50	(3.4)	44.4	81.6	115.4	53.8	110.6	160.9	66.3	125.4	189.9	74.0	142.6	215.9	100.6	198.2	300.5
		75	(5.2)	58.1	106.9	151.0	70.5	144.8	210.7	86.8	164.2	248.6	96.8	186.7	282.7	131.7	259.5	393.5
		100	(6.9)	69.1	127.2	HI VEL	83.9	172.4	250.8	103.3	195.5	295.9	115.2	222.2	336.5	156.7	308.9	468.4
		125	(8.6)	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV
25	(1.7)	50	(3.4)	52.5	95.0	125.0	65.0	131.5	174.0	75.0	155.0	221.5	88.0	177.5	267.5	120.0	244.0	368.5
		75	(5.2)	74.2	134.4	HI VEL	91.9	186.0	246.1	106.1	219.2	313.2	124.5	251.0	378.3	169.7	345.1	521.1
		100	(6.9)	90.9	HI VEL	HI VEL	112.6	227.8	HI VEL	129.9	268.5	383.6	152.4	307.4	463.3	207.8	422.6	638.3
		125	(8.6)	105.0	HI VEL	HI VEL	130.0	263.0	HI VEL	150.0	310.0	HI VEL	176.0	355.0	535.0	240.0	488.0	737.0
		150	(10.3)	117.4	HI VEL	HI VEL	145.3	HI VEL	HI VEL	167.7	346.6	HI VEL	196.8	396.9	598.1	268.3	545.6	824.0
		175	(12.1)	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV
35	(2.4)	50	(3.4)	62.0	98.4	101.5	82.9	138.3	151.0	94.9	177.0	202.9	108.8	218.8	279.6	150.3	304.8	380.3
		75	(5.2)	101.2	HI VEL	HI VEL	135.3	225.8	246.7	155.0	289.0	331.4	177.7	357.3	456.6	245.4	497.7	621.1
		100	(6.9)	129.0	HI VEL	HI VEL	172.5	HI VEL	HI VEL	197.5	368.4	422.5	226.5	455.5	582.1	312.8	634.5	791.7
		125	(8.6)	151.8	HI VEL	HI VEL	203.0	HI VEL	HI VEL	232.4	HI VEL	HI VEL	266.6	536.0	684.9	368.1	746.6	931.6
		150	(10.3)	HI VEL	HI VEL	HI VEL	229.5	HI VEL	HI VEL	262.7	HI VEL	HI VEL	301.3	605.9	HI VEL	416.1	844.0	1053.1
		175	(12.1)	HI VEL	HI VEL	HI VEL	253.2	HI VEL	HI VEL	289.9	HI VEL	HI VEL	332.5	668.5	HI VEL	459.1	931.2	1161.9
		200	(13.8)	HI VEL	HI VEL	HI VEL	274.9	HI VEL	HI VEL	314.7	HI VEL	HI VEL	361.0	HI VEL	HI VEL	498.4	1010.9	1261.4
		250	(17.2)	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV
50	(3.4)	75	(5.2)	52.5	93.5	122.5	65.0	130.5	171.0	75.0	150.0	218.5	87.0	174.0	260.5	120.0	237.5	361.0
		100	(6.9)	74.2	132.2	HI VEL	91.9	184.6	241.8	106.1	212.1	309.0	123.0	246.1	368.4	169.7	335.9	510.5
		125	(8.6)	90.9	HI VEL	HI VEL	112.6	226.0	HI VEL	129.9	259.8	378.5	150.7	301.4	451.2	207.8	414.4	625.3
		150	(10.3)	105.0	HI VEL	HI VEL	130.0	261.0	HI VEL	150.0	300.0	HI VEL	174.0	348.0	521.0	240.0	475.0	722.0
		175	(12.1)	117.4	HI VEL	HI VEL	145.3	HI VEL	HI VEL	167.7	335.4	HI VEL	194.5	389.1	582.5	268.3	531.1	807.2
		200	(13.8)	128.6	HI VEL	HI VEL	159.2	HI VEL	HI VEL	183.7	367.4	HI VEL	213.1	426.2	638.1	293.9	581.8	884.3
		250	(17.2)	148.5	HI VEL	HI VEL	183.8	HI VEL	HI VEL	212.1	424.3	HI VEL	246.1	492.1	HI VEL	339.4	671.8	1021.1
		300	(20.7)	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV	CAV
75	(5.2)	100	(6.9)	76.0	123.5	131.0	101.0	173.5	193.5	114.5	218.5	256.0	132.5	264.0	350.0	183.5	364.0	487.5
		125	(8.6)	107.5	HI VEL	HI VEL	142.8	245.4	273.7	161.9	309.0	362.0	187.4	373.4	495.0	259.5	514.8	689.4
		150	(10.3)	131.6	HI VEL	HI VEL	174.9	HI VEL	HI VEL	198.3	378.5	HI VEL	229.5	457.3	606.2	317.8	630.5	844.4
		175	(12.1)	152.0	HI VEL	HI VEL	202.0	HI VEL	HI VEL	229.0	HI VEL	HI VEL	265.0	528.0	700.0	367.0	728.0	975.0
		200	(13.8)	HI VEL	HI VEL	HI VEL	225.8	HI VEL	HI VEL	256.0	HI VEL	HI VEL	296.3	590.3	HI VEL	410.3	813.9	1090.1
		250	(17.2)	HI VEL	HI VEL	HI VEL	267.2	HI VEL	HI VEL	302.9	HI VEL	HI VEL	350.6	698.5	HI VEL	485.5	963.1	1289.8
		300	(20.7)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	343.5	HI VEL	HI VEL	397.5	HI VEL	HI VEL	550.5	1092	HI VEL
100	(6.9)	125	(8.6)	60.5	106.5	130.0	78.5	147.0	184.5	88.5	180.0	237.5	102.0	206.0	306.5	140.0	285.0	430.0
		150	(10.3)	85.6	150.6	HI VEL	111.0	207.9	260.9	125.2	254.6	335.9	144.2	291.3	433.5	198.0	403.1	608.1
		175	(12.1)	104.8	HI VEL	HI VEL	136.0	254.6	HI VEL	153.3	311.8	411.4	176.7	356.8	530.9	242.5	493.6	744.8
		200	(13.8)	121.0	HI VEL	HI VEL	157.0	HI VEL	HI VEL	177.0	360.0	HI VEL	204.0	412.0	613.0	280.0	570.0	860.0
		250	(17.2)	148.2	HI VEL	HI VEL	192.3	HI VEL	HI VEL	216.8	HI VEL	HI VEL	249.8	504.6	HI VEL	342.9	698.1	1053.3
		300	(20.7)	HI VEL	HI VEL	HI VEL	222.0	HI VEL	HI VEL	250.3	HI VEL	HI VEL	288.5	582.7	HI VEL	396.0	806.1	1216.2
140	(9.7)	150	(10.3)	52.2	82.2	82.2	70.8	120.2	117.0	82.2	158.1	166.0	94.9	211.9	227.7	131.2	300.4	306.7
		175	(12.1)	97.6	153.8	153.8	132.5	224.8	218.9	153.8	295.8	310.6	177.5	396.4	426.0	245.5	562.0	573.9
		200	(13.8)	127.8	HI VEL	HI VEL	173.5	HI VEL	HI VEL	201.4	387.3	406.7	232.4	519.0	557.7	321.5	735.9	751.4
		250	(17.2)	HI VEL	HI VEL	HI VEL	234.9	HI VEL	HI VEL	272.7	HI VEL	HI VEL	314.6	702.7	HI VEL	435.3	996.4	1017.3
		300	(20.7)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	328.9	HI VEL	HI VEL	379.5	HI VEL	HI VEL	524.9	1201.7	1227.0
150	(10.3)	175	(12.1)	89.0	131.0	131.0	122.0	185.0	196.5	140.0	189.5	269.0	162.0	312.5	376.0	221.0	442.5	500.0
		200	(13.8)	125.9	HI VEL	HI VEL	172.5	261.6	277.9	198.0	268.0	380.4	229.1	441.9	531.7	312.5	625.8	707.1
		250	(17.2)	HI VEL	HI VEL	HI VEL	244.0	HI VEL	HI VEL	280.0	379.0	HI VEL	324.0	625.0	HI VEL	442.0	885.0	1000
		300	(20.7)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	342.9	HI VEL	HI VEL	396.8	HI VEL	HI VEL	541.3	1083.9	1224.7
200	(13.8)	250	(17.2)	149.9	HI VEL	HI VEL	205.8	274.4	279.3	248.2	364.2	388.9	284.3	500.6	551.5	389.6	689.4	707.1
		300	(20.7)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	351.0	HI VEL	HI VEL	402.0	708.0	HI VEL	551.0	975.0	1000

**NOTE:** Where "CAV" is indicated within the above capacity tables, the water has reached full cavitation, and flow is choked.  
Where "HI VEL" is indicated, the flow has reached or exceeded the velocities to the right based on Schedule 40 pipe.

**METRIC CONVERSION FACTOR: GPM x 3.785 = LPM**

SIZE		MAX. VEL
in	(DN)	
1-1/2"	(40)	25 fps
2"	(50)	27 fps
2-1/2"	(65)	29 fps
3"	(80)	31 fps
4"	(100)	35 fps

**TABLE 13**  
**MODEL 8310 – “HP VARIATION”**  
**AIR CAPACITY – SCFH**  
**S.G. = 1.0 T = 60°F F<sub>L</sub> = 0.88**

**ALL Sizes – Composition Diaphragm Only**

Set Point Pressure - P2		Inlet Pressure		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
psig	(Barg)	psig	(Barg)	Droop			Droop			Droop			Droop			Droop		
				10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
10	(6.9)	50	(3.4)	12400	23200	33600	14500	29000	44600	16600	33600	51500	19100	38800	59500	27000	5400	81100
		75	(5.2)	17300	32200	46600	20100	40300	61800	23000	46600	71300	26500	53800	82600	37400	75400	112500
		100	(6.9)	22100	41200	59600	25700	51500	79100	29400	59600	91200	33800	68800	105600	47800	96400	143800
		125	(8.6)	26900	50200	72600	31400	62700	96300	35800	72600	111100	41200	83800	128600	58200	117400	175200
		150	(10.3)	31700	59200	85600	37000	73900	113600	42300	85600	131000	48600	98800	151600	68700	138400	206500
		175	(12.1)	36500	68100	SONIC	42600	85200	130800	48700	98500	150900	56000	113800	174600	79100	159400	237900
		200	(13.8)	41300	77100	SONIC	48200	96400	148000	55100	111500	170700	63300	128700	197600	89500	180400	269200
		250	(17.2)	50900	95100	SONIC	59400	118800	SONIC	67900	137500	210500	78100	158700	243600	110300	222400	331900
		300	(20.7)	60600	SONIC	SONIC	70600	141300	SONIC	80700	163500	SONIC	92800	188700	289600	131200	264400	394600
15	(1.0)	50	(3.4)	15600	28600	40500	18900	38800	56400	23200	44000	66600	25900	50000	75700	35300	69500	105400
		75	(5.2)	21600	39700	56100	26200	53800	78200	32200	61000	92300	36000	69300	105000	48900	96400	146100
		100	(6.9)	27600	50800	71700	33500	68800	100000	41200	78000	118100	46000	88600	134300	62500	123200	186900
		125	(8.6)	33600	61800	87400	40800	83800	121900	50200	95000	143800	56000	108000	163500	76200	150100	227600
		150	(10.3)	39600	72900	103000	48100	98800	143700	59200	112000	169500	66000	127300	192800	89800	176900	268300
		175	(12.1)	45600	83900	SONIC	55400	113800	165500	68100	129000	195300	76000	146600	222000	103400	203800	309000
		200	(13.8)	51600	95000	SONIC	62700	128700	187300	77100	146000	221000	86100	165900	251300	117000	230600	349800
		250	(17.2)	63700	SONIC	SONIC	77200	158700	SONIC	95100	180000	SONIC	106100	204600	309800	144300	284400	431200
		300	(20.7)	75700	SONIC	SONIC	91800	188700	SONIC	113000	213900	SONIC	126100	243200	368300	171600	338100	512700
25	(1.7)	50	(3.4)	21300	38600	50700	26400	53400	70600	30400	62900	89900	35700	72000	108600	48700	99000	149600
		75	(5.2)	30200	54700	71900	37400	75700	100100	43100	89200	127400	50600	102100	153900	69000	140400	212000
		100	(6.9)	38600	69900	92000	47800	96700	128000	55200	114000	162900	64700	130600	196800	88300	179500	271100
		125	(8.6)	47000	85100	112000	58200	117800	159900	67200	138900	198500	78800	159000	239700	107500	218600	330200
		150	(10.3)	55500	100300	132000	68700	138900	183800	79200	163700	234000	93000	187500	282600	126800	257700	389300
		175	(12.1)	63900	115600	152100	79100	160000	211700	91200	188600	269500	107100	216000	325500	146000	296900	448300
		200	(13.8)	72300	130800	SONIC	89500	181100	239600	103300	213400	305000	121200	244400	368300	165200	336000	507400
		250	(17.2)	89100	SONIC	SONIC	110300	223200	SONIC	127300	263100	SONIC	149400	301300	454100	203700	414200	625600
		300	(20.7)	106000	SONIC	SONIC	131200	SONIC	SONIC	151400	312800	SONIC	177600	358300	539900	242200	492500	743800
35	(2.4)	50	(3.4)	28600	45400	46900	38300	63900	69800	43800	81700	93700	50300	101100	129100	69400	140800	175600
		75	(5.2)	45400	72100	74400	60800	101400	110700	69600	129700	148800	79800	160400	205000	110200	223400	278800
		100	(6.9)	58900	93400	96400	78700	131300	143400	90100	168100	192700	103400	207800	265600	144200	289500	361200
		125	(8.6)	71700	113800	117400	95900	159900	174700	109800	204700	234700	125900	253100	323400	173800	352600	439900
		150	(10.3)	84500	134200	138400	113000	188600	206000	129400	241400	276800	148400	298400	381300	204900	415700	518600
		175	(12.1)	97300	154500	159400	130200	217200	237200	149000	278000	318800	170900	343700	439200	236000	478800	597400
		200	(13.8)	110200	174900	180400	147300	245800	268500	168700	314600	360800	193500	389000	497100	267100	541800	676100
		250	(17.2)	135800	SONIC	SONIC	181700	303000	SONIC	208000	387900	444800	238500	479600	612900	329300	668000	833600
		300	(20.7)	161500	SONIC	SONIC	216000	SONIC	SONIC	247200	SONIC	SONIC	283600	570200	SONIC	391600	794200	991000
50	(3.4)	75	(5.2)	26900	47900	62700	33300	66800	87600	38400	76800	111900	44600	89100	133400	61500	121700	184900
		100	(6.9)	37800	67300	88100	46800	93900	123000	54000	107900	157200	62600	125200	187400	86300	170900	259800
		125	(8.6)	46900	83600	109500	58100	116700	152900	67000	134100	195300	77800	155500	232900	107300	212300	322700
		150	(10.3)	55500	98800	129400	68700	137800	180600	79200	158400	230800	91900	183800	275200	126800	250900	381300
		175	(12.1)	63900	113800	149000	79100	158800	208000	91200	182500	265800	105800	211700	316900	146000	289000	439200
		200	(13.8)	72300	128700	168700	89500	179700	235500	103300	206500	300900	119800	239600	358700	165200	327000	497100
		250	(17.2)	89100	158700	208000	110300	221500	290300	127300	254700	370900	147700	295400	442200	203700	403200	612900
		300	(20.7)	106000	188700	247200	131200	263400	345100	151400	302800	441000	175600	351200	525800	242200	479400	728600
		100	(6.9)	45300	73700	78100	60200	103500	115400	68300	130300	152700	79000	157500	208800	109400	217100	290800
75	(5.2)	125	(8.6)	63700	103500	109800	84600	145400	162100	95900	183100	214500	111000	221200	293300	153700	305000	408500
		150	(10.3)	78500	127600	135400	104400	179300	199900	118300	225800	264500	136900	272800	361600	189600	376100	503700
		175	(12.1)	91900	149400	158500	122200	209900	234100	138500	264300	309700	160300	319300	423400	222000	440300	589700
		200	(13.8)	104600	170000	180300	139000	238800	266300	157600	300700	352300	182300	363300	481700	252500	500900	670900
		250	(17.2)	129000	209700	222400	171500	294500	328500	194400	370900	434600	224900	448200	594200	311500	618000	827600
		300	(20.7)	153400	249300	264400	203900	350200	390500	231100	441000	516700	267400	532800	706400	370400	734700	983900
		125	(8.6)	40500	71200	86900	52500	98300	123400	59200	120400	158800	68200	137800	205000	93600	190600	287600
		150	(10.3)	56900	100200	122300	73800	138300	173500	83200	169300	223400	95900	193700	288300	131700	268000	404400
		175	(12.1)	69900	123100	150300	90700	169900	213300	102300	208100	274500	117900	238100	354300	161800	329500	497100
100	(6.9)	200	(13.8)	81500	143400	175100	105700	198000	248500	119200	242400	319900	137400	277500	412800	188600	383900	579200
		250	(17.2)	102500	180400	220200	133000	249000	312500	149900	304900	402300	172800	348900	519100	237100	482700	728300
		300	(20.7)	122100	215000	262400	158400	296700	372400	178600	363300	479400	205900	415800	618600	282600	575200	867900
		150	(10.3)	40400	63700	63700	54900	93100	90600	63700	122500	128600	73500	164100	176400	101700	232700	237600
		175	(12.1)	74900	118100	118100	101700	172600	168000	118100	227100	238400	136200	304300	327000	188500	431400	440500
		200	(13.8)	97900	154300	154300	132900	225500	219600	154300	296800	311600	178100	397700	427300	246300	563800	575700
		250	(17.2)	133800	210900	210900	181700	308200	300100	210900	405500	425800	243300	543400	584000	336600	770500	786700
		300	(20.7)	164400	259000	259000	223100	378500	368500	259000	498000	522900	298800	667400	717200	413400	946300	966200
		175	(12.1)	70500	103800	103800	96700	146600	155800	111000	150200	213200	128400	247700	298000	175200	350700	396300
150	(10.3)	200	(13.8)	99400	146300	146300	136200	206500	219400	156300	211600	300300	180900	348900	419800	246700	494000	558200
		250	(17.2)	141300	208000	208000	193700	293700	312000	222300	300800	427100	257200	496100	596900</			

**TABLE 14**  
**MODEL 8310 – “HP VARIATION”**  
**STEAM CAPACITY – LBS/HR**  
**S.G. = Actual T = Saturated F<sub>L</sub> = 0.88**  
**ALL Sizes – Metal Diaphragm**

Set Point Pressure - P2		Inlet Pressure		1-1/2" (Dn40) Body Droop			2" (DN50) Body Droop			2-1/2" (DN65) Body Droop			3" (DN80) Body Droop			4" (DN100) Body Droop		
psig	(Barg)	psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
10	(6.9)	25	(1.7)	120	252	450	156	378	540	180	408	630	240	450	720	300	660	1002
		50	(3.4)	207	435	776	269	652	932	311	704	1087	414	776	1242	518	1139	1729
		75	(5.2)	290	609	1087	377	913	1304	435	985	1522	580	1087	1739	725	1594	2420
		100	(6.9)	368	773	1380	479	1160	1656	552	1252	1933	736	1380	2209	920	2025	3074
		125	(8.6)	446	937	1673	580	1405	2007	669	1517	2342	892	1673	2676	1115	2453	3725
		150	(10.3)	524	1100	HI VEL	681	1650	2358	786	1781	2750	1048	1965	3143	1310	2881	4375
		175	(12.1)	602	1263	HI VEL	782	1895	2707	902	2045	3158	1203	2256	3609	1504	3309	5023
		200	(13.8)	679	1426	HI VEL	883	2140	3057	1019	2309	3566	1358	2547	4075	1698	3736	5672
		250	(17.2)	827	1737	HI VEL	1075	2606	HI VEL	1241	2812	4343	1654	3102	4963	2068	4550	6907
		300	(20.7)	991	HI VEL	HI VEL	1288	3120	HI VEL	1486	3368	HI VEL	1981	3715	5944	2477	5448	8272
15	(1.0)	25	(1.7)	160	426	639	213	490	772	266	596	878	319	666	1012	453	932	1251
		50	(3.4)	307	818	1228	409	941	1483	512	1146	1688	614	1279	1944	870	1790	2404
		75	(5.2)	435	1159	1739	580	1333	2101	725	1623	2391	869	1811	2753	1232	2536	3405
		100	(6.9)	552	1472	2209	736	1693	2669	920	2061	3037	1104	2301	3497	1564	3221	4325
		125	(8.6)	669	1784	HI VEL	892	2052	3234	1115	2498	3680	1338	2788	4238	1896	3903	5241
		150	(10.3)	786	2096	HI VEL	1048	2410	HI VEL	1310	2934	4322	1572	3274	4977	2227	4584	6156
		175	(12.1)	902	HI VEL	HI VEL	1203	2767	HI VEL	1504	3369	4963	1805	3760	5715	2557	5264	7068
		200	(13.8)	1019	HI VEL	HI VEL	1358	3125	HI VEL	1698	3804	HI VEL	2038	4245	6453	2887	5943	7981
		250	(17.2)	1241	HI VEL	HI VEL	1654	HI VEL	HI VEL	2068	4632	HI VEL	2482	5170	7858	3516	7238	9720
		300	(20.7)	1486	HI VEL	HI VEL	1981	HI VEL	HI VEL	2477	HI VEL	HI VEL	2972	6191	HI VEL	4210	8668	11640
25	(1.7)	50	(3.4)	726	1355	1840	842	1743	2566	968	2033	3030	1133	2295	3534	1791	3147	4647
		75	(5.2)	1055	1970	2673	1224	2533	3729	1407	2955	4404	1646	3335	5136	2603	4573	6754
		100	(6.9)	1380	2577	HI VEL	1601	3313	4877	1840	3865	5761	2153	4362	6718	3405	5982	8834
		125	(8.6)	1673	HI VEL	HI VEL	1940	4015	HI VEL	2230	4684	6981	2610	5286	8141	4126	7249	10706
		150	(10.3)	1965	HI VEL	HI VEL	2279	4715	HI VEL	2619	5501	HI VEL	3065	6208	9561	4846	8513	12574
		175	(12.1)	2256	HI VEL	HI VEL	2617	HI VEL	HI VEL	3008	6317	HI VEL	3519	7129	10979	5565	9776	14438
		200	(13.8)	2547	HI VEL	HI VEL	2955	HI VEL	HI VEL	3396	7132	HI VEL	3974	8049	HI VEL	6283	11038	16302
		250	(17.2)	HI VEL	HI VEL	HI VEL	3598	HI VEL	HI VEL	4136	HI VEL	HI VEL	4839	9802	HI VEL	7652	13442	HI VEL
		300	(20.7)	HI VEL	HI VEL	HI VEL	4309	HI VEL	HI VEL	4953	HI VEL	HI VEL	5795	HI VEL	HI VEL	9163	16098	HI VEL
		35	(2.4)	50	(3.4)	955	1635	2092	1162	2283	2964	1370	2681	3794	1552	3088	4624	2200
75	(5.2)			1574	2696	3449	1916	3764	4886	2258	4421	6255	2559	5091	7623	3627	7048	10771
100	(6.9)			2057	3524	HI VEL	2504	4919	HI VEL	2951	5778	8175	3345	6654	9963	4740	9212	14078
125	(8.6)			2565	HI VEL	HI VEL	3123	6134	HI VEL	3680	7204	HI VEL	4171	8297	12423	5910	11486	17553
150	(10.3)			3012	HI VEL	HI VEL	3667	HI VEL	HI VEL	4322	8461	HI VEL	4898	9744	HI VEL	6942	13490	20615
175	(12.1)			3459	HI VEL	HI VEL	4211	HI VEL	HI VEL	4963	HI VEL	HI VEL	5625	11189	HI VEL	7971	15490	23672
200	(13.8)			HI VEL	HI VEL	HI VEL	4755	HI VEL	HI VEL	5604	HI VEL	HI VEL	6351	12634	HI VEL	9000	17490	HI VEL
250	(17.2)			HI VEL	HI VEL	HI VEL	5790	HI VEL	HI VEL	6824	HI VEL	HI VEL	7734	HI VEL	HI VEL	10960	21300	HI VEL
300	(20.7)			HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	8173	HI VEL	HI VEL	9262	HI VEL	HI VEL	13126	HI VEL	HI VEL
50	(3.4)			75	(5.2)	752	1419	2025	885	1795	2668	970	2037	3056	1152	2304	3480	1576
		100	(6.9)	1073	2025	2891	1264	2562	3808	1385	2908	4362	1645	3289	4968	2250	4639	6838
		125	(8.6)	1339	2527	3607	1577	3196	4751	1728	3628	5442	2052	4103	6198	2808	5788	8531
		150	(10.3)	1582	2985	4260	1862	3775	5612	2041	4286	6428	2423	4847	7321	3316	6836	10076
		175	(12.1)	1865	3519	HI VEL	2196	4452	6617	2406	5053	7580	2857	5715	8633	3910	8061	11881
		200	(13.8)	2106	3974	HI VEL	2479	5026	7472	2717	5706	8558	3226	6453	9747	4415	9102	13415
		250	(17.2)	2564	4839	HI VEL	3019	6121	HI VEL	3309	6948	10423	3929	7858	11870	5377	11084	16337
		300	(20.7)	3071	HI VEL	HI VEL	3616	7331	HI VEL	3963	8321	HI VEL	4705	9411	14215	6439	13274	19565
		100	(6.9)	1203	2194	2972	1415	2873	4104	1585	3326	4953	1840	3821	5732	2547	5166	7883
		75	(5.2)	125	(8.6)	1706	3111	4215	2007	4074	5820	2248	4717	7025	2609	5419	8129	3613
150	(10.3)			2111	3849	5214	2483	5041	7201	2781	5835	8691	3228	6704	10056	4469	9063	13830
175	(12.1)			2471	4507	6106	2908	5903	8432	3257	6833	10177	3780	7851	11776	5234	10613	16196
200	(13.8)			2809	5122	HI VEL	3305	6708	9583	3701	7766	11566	4296	8922	13384	5948	12062	18407
250	(17.2)			3516	6411	HI VEL	4136	8396	HI VEL	4632	9720	14476	5377	11167	16751	7445	15096	23037
300	(20.7)			4210	HI VEL	HI VEL	4953	10055	HI VEL	5548	11640	HI VEL	6439	13373	20060	8916	18079	27589
125	(8.6)			1385	2865	3374	1671	3342	4695	1910	3788	5730	2180	4329	6573	2976	5968	8992
150	(10.3)			1958	4052	4772	2364	4727	6640	2701	5357	8104	3084	6123	9297	4209	8441	12718
175	(12.1)			2412	4991	5878	2911	5822	8179	3327	6599	9981	3798	7541	11450	5185	10397	15665
200	(13.8)			2811	5816	6850	3393	6786	9532	3877	7690	11632	4427	8789	13345	6042	12117	18256
100	(6.9)	250	(17.2)	3497	7236	HI VEL	4221	8441	11858	4824	9567	14471	5507	10934	16602	7517	15074	22712
		300	(20.7)	4284	HI VEL	HI VEL	5170	10340	HI VEL	5909	11719	17726	6746	13393	20335	9207	18464	27819
		150	(10.3)	1260	2158	2800	1458	2917	3908	1750	3360	5017	1983	3792	5985	2742	5215	8283
		175	(12.1)	2346	4018	5213	2715	5430	7276	3258	6256	9340	3692	7059	11143	5104	9709	15422
		200	(13.8)	3072	5262	6826	3555	7111	9528	4266	8192	12231	4835	9244	14591	6684	12714	20195
		250	(17.2)	4162	7129	9249	4817	9634	12909	5780	11098	16570	6551	12524	19769	9056	17225	27360
		300	(20.7)	5151	8824	HI VEL	5962	11924	15979	7155	13737	20510	8109	15502	24469	11209	21321	33866
		175	(12.1)	2160	3694	4736	2614	5134	6725	3069	6043	8525	3505	6877	10514	4736	9605	14493
		200	(13.8)	3049	5215	6686	3691	7248	9494	4333	8531	12035	4948	9708	14843	6686	13559	20459
		150	(10.3)	250	(17.2)	4300	7356	9431	5206	10223	13392	6111	12034	16975	6979	13693	20936	9431
300	(20.7)			5391	9222	11823	6526	12816	16789	7661	15086	21282	8749	17167	26247	11823	23977	36179
250	(17.2)																	

**TABLE 15**  
**MODEL 8310 - "LP VARIATION"**  
**AIR CAPACITY - SCFH**  
**S.G. = 1.0 T = 60°F F<sub>L</sub> = 0.88**

All Sizes - **Composition Diaphragm Only**

Set Point Pressure - P2		Inlet Pressure		1-1/2" (DN40) Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body		
				Droop			Droop			Droop			Droop			Droop		
psig	(Barg)	psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
2	(1.4)	25	(1.7)	21400	32700	33400	28000	45700	50000	32200	58800	67200	36900	74300	93200	51600	103400	126000
		50	(3.4)	34900	53300	54400	45600	74500	81500	52500	95900	109500	60200	121200	151900	84000	168500	205400
		75	(5.2)	48300	SONIC	SONIC	63300	103300	SONIC	72800	132900	151900	83400	168000	210600	116500	233600	284800
		100	(6.9)	61800	SONIC	SONIC	80900	SONIC	SONIC	93100	SONIC	SONIC	106700	214800	SONIC	149000	298700	364100
		125	(8.6)	SONIC	SONIC	SONIC	98600	SONIC	SONIC	113300	SONIC	SONIC	129900	SONIC	SONIC	181400	363800	SONIC
		150	(10.3)	SONIC	SONIC	SONIC	SONIC	SONIC	SONIC	SONIC	133600	SONIC	SONIC	153200	SONIC	SONIC	213900	SONIC
5	(3.4)	25	(1.7)	17800	30000	33400	22900	41900	48400	26900	52500	63700	30600	60700	85300	42100	84700	120200
		50	(3.4)	29000	49000	54400	37300	68300	78800	43800	85500	103700	49800	99000	139000	68700	138000	195900
		75	(5.2)	40300	67900	75400	51800	94600	109300	60700	118500	143800	69000	137200	192700	95200	191300	271500
		100	(6.9)	51500	SONIC	SONIC	66200	121000	SONIC	77600	151500	SONIC	88300	175400	246400	121700	244600	347200
		125	(8.6)	62700	SONIC	SONIC	80600	SONIC	SONIC	94500	SONIC	SONIC	107500	213700	SONIC	148300	297900	422900
		150	(10.3)	73900	SONIC	SONIC	95100	SONIC	SONIC	111400	SONIC	SONIC	126800	251900	SONIC	174800	351200	SONIC
10	(6.9)	25	(1.7)	7000	13700	19700	8000	16500	25400	9900	19400	28800	11200	34800	33500	15500	30400	46400
		50	(3.4)	11400	22400	32200	13100	27000	41500	16200	31700	47100	18300	56800	54800	25300	49600	75700
		75	(5.2)	15800	31100	44600	18100	37400	57500	22400	44000	65300	25300	78800	75900	35100	68700	105000
		100	(6.9)	20200	39700	57000	23200	47800	73600	28700	56300	83500	32400	100800	97100	44900	87900	134300
		125	(8.6)	24600	48400	69400	28200	58200	89600	34900	68500	101700	39400	122700	118300	54700	107100	163500
		150	(10.3)	29000	57000	81900	33300	68700	105600	41200	80800	119900	46500	144700	139400	64400	126200	192800
15	(1.0)	25	(1.7)	8900	16700	23800	10600	21400	44400	12500	25200	38500	14500	28800	43800	20100	39500	60400
		50	(3.4)	15600	29000	41500	18500	37300	77400	21800	44000	67000	25300	50200	76400	35100	68900	105200
		75	(5.2)	21600	40300	57500	25600	51800	107300	30200	61000	92900	35100	69600	105900	48600	95500	145800
		100	(6.9)	27600	51500	73600	32700	66200	137200	38600	78000	118800	44900	89000	135400	62200	122100	186500
		125	(8.6)	33600	62700	89600	39900	80600	167100	47000	95000	144700	54700	108400	164900	75700	148700	227100
		150	(10.3)	39600	73900	105600	47000	95100	SONIC	55500	112000	170600	64400	127800	194400	89300	175300	267800
20	(1.4)	25	(1.7)	9500	26400	22500	11600	22600	31500	13100	26400	39800	15400	30600	46400	21100	42100	64500
		50	(3.4)	20700	57500	49100	25300	49300	68500	28600	57500	86700	33500	66700	101000	46000	91700	140600
		75	(5.2)	28800	80000	68200	35100	68500	95200	39700	80000	120500	46600	92600	140400	63900	127400	195300
		100	(6.9)	36800	102300	87200	44900	87500	121700	50800	102300	154100	59600	118400	179500	81700	162900	249700
		125	(8.6)	44800	124500	106200	54700	106600	148300	61800	124500	187700	72600	144300	218600	99500	198500	304200
		150	(10.3)	52800	SONIC	125200	64400	125700	174800	72900	146800	221300	85600	170100	257700	117300	234000	358600
25	(1.7)	50	(3.4)	27000	45300	53200	34300	63300	75500	40000	76700	98000	45700	88700	109000	63300	122400	183700
		75	(5.2)	38300	64100	75400	48600	89700	107000	56700	108700	138900	64700	125700	154500	89700	173500	260300
		100	(6.9)	48900	82000	96400	62200	114800	136800	72500	139000	177700	82800	160700	197500	114800	221800	332900
		125	(8.6)	59600	99900	117400	75700	139800	166700	88300	169300	216400	100800	195800	240600	139800	270100	405400
		150	(10.3)	70200	117800	138400	89300	164800	196500	104000	199600	255100	118800	230800	283600	164800	318500	478000
30	(2.1)	50	(3.4)	34000	50100	50800	45600	70800	76300	52800	91800	104000	61500	118900	145500	84000	167100	193600
		75	(5.2)	50200	74000	75200	67400	104700	112800	78100	135700	153800	91000	175900	215200	124300	247100	286400
		100	(6.9)	64400	94900	96400	86400	134300	144600	100000	174000	197200	116600	225500	275900	159300	316700	367100
		125	(8.6)	78400	115600	117400	105300	163500	176100	121900	211900	240100	142000	274600	336000	194000	385700	447100
		150	(10.3)	92400	136300	138400	124100	192800	207600	143700	249800	283100	167400	323800	396100	228700	454700	527100

**NOTE:** Where "SONIC" is indicated within the above capacity tables, outlet velocity with Schedule 40 pipe has reached sonic velocity of 1118 fps. Additional flow cannot be obtained, and pipeline velocity is in excess of customary pipe velocity design limits. Flow will be approximately the last indicated value in the column above "SONIC".

**METRIC CONVERSION FACTORS:** SCFH ÷ 35.31 = Sm<sup>3</sup>/HR  
 SCFH ÷ 37.32 = Nm<sup>3</sup>/HR

**TABLE 16**  
**MODEL 8310 - "LP VARIATION"**  
**STEAM CAPACITY - LBS/HR**  
**S.G. = Actual T = Saturated F<sub>L</sub> = 0.88**  
**All Sizes - Metal Diaphragm**

Set Point Pressure - P2	Inlet Pressure		1-1/2" DN40 Body			2" (DN50) Body			2-1/2" (DN65) Body			3" (DN80) Body			4" (DN100) Body			
	psig	(Barg)	Droop			Droop			Droop			Droop			Droop			
		psig	(Barg)	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%	10%	20%	30%
5	(0.34)	10	(.69)	262	466	694	315	608	922	370	706	1156	429	805	1329	586	1113	1844
		25	(1.7)	539	957	1425	646	1248	1894	760	1451	2376	881	1654	2731	1204	2287	3789
		50	(3.4)	897	HI VEL	HI VEL	1076	2078	HI VEL	1266	2416	HI VEL	1466	2753	4546	2004	3808	6308
		75	(5.2)	1231	HI VEL	HI VEL	1477	HI VEL	HI VEL	1738	3317	HI VEL	2013	3780	HI VEL	2752	5229	8661
		100	(6.9)	HI VEL	HI VEL	HI VEL	1879	HI VEL	HI VEL	2210	HI VEL	HI VEL	2560	4807	HI VEL	3500	6649	HI VEL
		125	(8.6)	HI VEL	HI VEL	HI VEL	2276	HI VEL	HI VEL	2678	HI VEL	HI VEL	3102	HI VEL	HI VEL	4240	8057	HI VEL
		150	(10.3)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	3142	HI VEL	HI VEL	3639	HI VEL	HI VEL	4974	9451	HI VEL
		175	(12.1)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	4181	HI VEL	HI VEL	5715	HI VEL	HI VEL
		200	(13.8)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	4667	HI VEL	HI VEL	6379	HI VEL	HI VEL
		250	(17.2)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	7930	HI VEL	HI VEL
300	(20.7)	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	9411	HI VEL	HI VEL		
10	(0.69)	25	(1.7)	174	336	601	198	402	721	234	451	793	276	523	961	378	721	1304
		50	(3.4)	300	579	1034	341	693	1241	403	776	1365	476	900	1655	652	1241	2244
		75	(5.2)	420	811	1448	478	970	1738	565	1086	1912	666	1260	2317	912	1738	3143
		100	(6.9)	534	1031	1842	608	1234	2210	718	1381	2431	847	1602	2947	1160	2210	3997
		125	(8.6)	647	1250	HI VEL	736	1495	2678	870	1674	2946	1027	1942	3571	1406	2678	4843
		150	(10.3)	759	1466	HI VEL	864	1754	3142	1021	1964	3456	1204	2278	4189	1649	3142	5681
		175	(12.1)	872	1684	HI VEL	993	2015	HI VEL	1173	2256	3970	1384	2617	4813	1895	3609	6527
		200	(13.8)	974	1880	HI VEL	1108	2250	HI VEL	1309	2518	HI VEL	1544	2921	5372	2115	4029	7286
		250	(17.2)	1210	HI VEL	HI VEL	1377	2796	HI VEL	1628	3130	HI VEL	1920	3631	6678	2629	5008	9057
		300	(20.7)	1436	HI VEL	HI VEL	1635	HI VEL	HI VEL	1932	3715	HI VEL	2278	4309	HI VEL	3120	5944	10748
15	(1.0)	25	(1.7)	224	437	666	256	533	853	293	613	959	362	704	1119	432	954	1519
		50	(3.4)	429	838	1278	491	1022	1635	562	1175	1840	695	1349	2146	828	1829	2913
		75	(5.2)	608	1188	1811	695	1448	2317	797	1666	2607	985	1912	3042	1173	2593	4128
		100	(6.9)	774	1510	2302	884	1842	2947	1013	2118	3315	1252	2431	3868	1492	3297	5249
		125	(8.6)	937	1830	HI VEL	1071	2232	3571	1227	2567	4017	1518	2946	4687	1808	3995	6361
		150	(10.3)	1100	2147	HI VEL	1257	2618	HI VEL	1440	3011	4712	1780	3456	5498	2121	4686	7461
		175	(12.1)	1263	HI VEL	HI VEL	1444	3008	HI VEL	1654	3459	HI VEL	2045	3970	6317	2436	5384	8572
		200	(13.8)	1410	HI VEL	HI VEL	1612	3358	HI VEL	1847	3861	HI VEL	2283	4432	7051	2720	6010	9569
		250	(17.2)	1753	HI VEL	HI VEL	2003	HI VEL	HI VEL	2295	4800	HI VEL	2838	5509	HI VEL	3381	7471	11895
		300	(20.7)	2080	HI VEL	HI VEL	2378	HI VEL	HI VEL	2724	HI VEL	HI VEL	3368	6538	HI VEL	4012	8866	14116
20	(1.4)	25	(1.7)	248	468	655	289	574	891	330	671	1038	387	773	1180	533	1074	1656
		50	(3.4)	612	1153	1615	712	1414	2196	812	1655	2557	953	1905	2908	1314	2648	4082
		75	(5.2)	863	1626	2277	1004	1994	3097	1146	2334	3606	1344	2687	4101	1853	3734	5756
		100	(6.9)	1124	2118	HI VEL	1308	2597	4034	1492	3039	4697	1750	3500	5342	2413	4863	7497
		125	(8.6)	1361	2567	HI VEL	1585	3147	HI VEL	1808	3682	5691	2120	4240	6472	2924	5892	9083
		150	(10.3)	1597	HI VEL	HI VEL	1859	3691	HI VEL	2121	4320	HI VEL	2487	4974	7592	3430	6912	10655
		175	(12.1)	1835	HI VEL	HI VEL	2136	4241	HI VEL	2436	4963	HI VEL	2857	5715	8723	3940	7941	12242
		200	(13.8)	2048	HI VEL	HI VEL	2384	HI VEL	HI VEL	2720	5540	HI VEL	3190	6379	HI VEL	4398	8864	13665
		250	(17.2)	2546	HI VEL	HI VEL	2963	HI VEL	HI VEL	3381	HI VEL	HI VEL	3965	7930	HI VEL	5467	11018	HI VEL
		300	(20.7)	HI VEL	HI VEL	HI VEL	3517	HI VEL	HI VEL	4012	HI VEL	HI VEL	4705	9411	HI VEL	6489	13076	HI VEL
25	(1.7)	50	(3.4)	783	1422	2099	948	1809	2911	1122	2128	3482	1277	2418	4101	1741	2902	5561
		75	(5.2)	1139	2067	HI VEL	1378	2630	4233	1631	3094	5063	1856	3516	5963	2531	4219	8087
		100	(6.9)	1492	2708	HI VEL	1805	3444	HI VEL	2137	4052	6631	2431	4605	7810	3315	5526	10591
		125	(8.6)	1808	HI VEL	HI VEL	2187	4173	HI VEL	2589	4910	HI VEL	2946	5580	9463	4017	6695	12833
		150	(10.3)	2121	HI VEL	HI VEL	2566	4896	HI VEL	3037	5760	HI VEL	3456	6545	11101	4712	7854	15054
		175	(12.1)	2436	HI VEL	HI VEL	2948	HI VEL	HI VEL	3489	6617	HI VEL	3970	7520	HI VEL	5414	9024	17295
		200	(13.8)	2720	HI VEL	HI VEL	3290	HI VEL	HI VEL	3895	HI VEL	HI VEL	4432	8394	HI VEL	6044	10073	HI VEL
		250	(17.2)	HI VEL	HI VEL	HI VEL	4090	HI VEL	HI VEL	4841	HI VEL	HI VEL	5509	10434	HI VEL	7512	12521	HI VEL
		300	(20.7)	HI VEL	HI VEL	HI VEL	4854	HI VEL	HI VEL	5746	HI VEL	HI VEL	6538	HI VEL	HI VEL	8916	14859	HI VEL
		30	(2.1)	50	(3.4)	993	1659	2142	1203	2287	2971	1413	2661	3737	1631	3053	4265	2233
75	(5.2)	1518		2534	3273	1838	3495	4540	2158	4066	5710	2493	4665	6517	3412	6392	9052	
100	(6.9)	1956		3266	HI VEL	2368	4504	HI VEL	2781	5239	7357	3212	6011	8397	4396	8236	11663	
125	(8.6)	2433		HI VEL	HI VEL	2946	5602	HI VEL	3459	6517	HI VEL	3995	7477	10445	5468	10244	14507	
150	(10.3)	2854		HI VEL	HI VEL	3456	HI VEL	HI VEL	4058	7645	HI VEL	4686	8770	12252	6414	12017	17017	
175	(12.1)	3279		HI VEL	HI VEL	3970	HI VEL	HI VEL	4662	HI VEL	HI VEL	5384	10076	HI VEL	7369	13806	19551	
200	(13.8)	HI VEL		HI VEL	HI VEL	4432	HI VEL	HI VEL	5204	HI VEL	HI VEL	6010	11248	HI VEL	8226	15411	HI VEL	
250	(17.2)	HI VEL		HI VEL	HI VEL	5509	HI VEL	HI VEL	6469	HI VEL	HI VEL	7471	HI VEL	HI VEL	10225	19157	HI VEL	
300	(20.7)	HI VEL		HI VEL	HI VEL	HI VEL	HI VEL	HI VEL	7677	HI VEL	HI VEL	8866	HI VEL	HI VEL	12135	HI VEL	HI VEL	

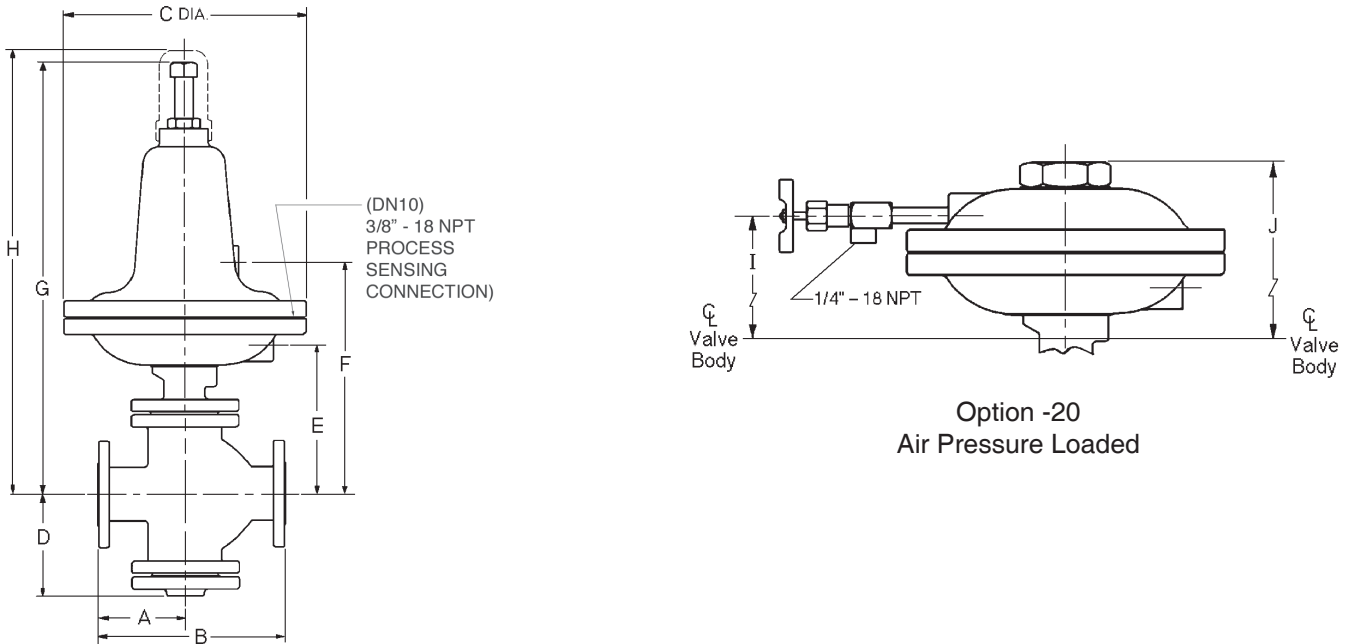
**NOTE:** Where "HI VEL" is indicated, the flow has reached or exceeded a velocity of Mach 0.35, an accepted limit for expanded steam on the downstream side. Use of higher velocities normally generate excessive noise levels.

**METRIC CONVERSION FACTOR: LBS/HR x 0.4536 = KG/HR**

**DIMENSIONS AND WEIGHTS – ENGLISH UNITS**

Size Inches	End Conn	Dimensions - inches											Approximate Ship Weight lbs.	
		A	B	C		D	E	F	G	H	I	J	"LP"	"HP"
				"LP"	"HP"									
1-1/2" *	NPT	3.69	8.00	14.00	11.25	4.75	6.89	11.12	20.25	20.50	8.00	9.81	121	100
	125/150# Flgd.	4.06	8.75										127	106
	250/300# Flgd.	4.31	9.25										135	114
2" **	NPT	4.25	9.26	14.00	11.25	6.38	8.44	12.69	21.50	22.00	10.94	12.75	161	140
	125/150# Flgd.	4.62	10.00										173	152
	250/300# Flgd.	4.88	10.50										177	156
2-1/2"	125/150# Flgd.	5.06	10.88	14.00	11.25	6.38	8.44	12.69	21.50	22.00	10.94	12.75	201	180
	250/300# Flgd.	5.38	11.50										206	185
3"	125/150# Flgd.	5.50	11.75	14.00	11.25	7.69	9.74	14.00	22.75	23.50	11.25	13.06	226	205
	250/300# Flgd.	5.88	12.50										234	213
4"	125/150# Flgd.	6.56	13.88	14.00	11.25	7.69	9.74	14.00	22.75	23.50	11.25	13.06	251	230
	250/300# Flgd.	6.88	14.50										269	248

\* 1-1/2" Size CS body material with Opt-34: "A" dim. = 7.31" & "B" dim = 14.00"  
 \*\* 2" Size CS body material with Opt-34: "A" dim. = 7.38" & "B" dim = 14.00"



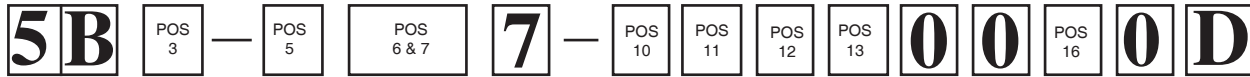
**DIMENSIONS AND WEIGHTS – METRIC UNITS**

Size (DN)	End Conn	Dimensions (mm)											Approximate Ship Weight (kg)	
		A	B	C		D	E	F	G	H	I	J	"LP"	"HP"
				"LP"	"HP"									
(40) *	NPT	94	203	356	286	121	175	283	514	521	203	249	54.88	45.35
	125/150# Flgd.	103	222										57.60	48.07
	250/300# Flgd.	110	235										61.23	51.70
(50) **	NPT	108	235	356	286	162	214	322	546	559	278	324	73.02	63.49
	125/150# Flgd.	117	254										78.46	58.94
	250/300# Flgd.	124	267										80.27	70.75
(65)	125/150# Flgd.	129	276	356	286	162	214	322	546	559	278	324	91.16	81.63
	250/300# Flgd.	137	292										93.42	83.90
(80)	125/150# Flgd.	140	298	356	286	195	247	356	578	597	286	332	102.50	92.97
	250/300# Flgd.	149	318										106.12	96.60
(100)	125/150# Flgd.	167	352	356	286	195	247	356	578	597	286	332	113.83	104.31
	250/300# Flgd.	175	368										122.00	112.47

\* DN40 Size CS body material with Opt-34: "A" dim. = 185mm & "B" dim = 356mm.  
 \*\* DN50 Size CS body material with Opt-34: "A" dim. = 187mm & "B" dim = 356mm.

# MODEL 8310LP PRODUCT CODER

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



POSITION 3 - SIZE		
Size		CODE
in	(DN)	
1-1/2"	(40)	8
2"	(50)	9
2-1/2" *	(65)	A
3" *	(80)	B
4" *	(100)	C
* Flanged Only.		

POSITION 5 - BODY / SPRING CHAMBER MATERIAL	
Body / Sp. Ch.	CODE
CI/CI	1
CS/CS	5

**NOTE:** See TB Table 2 for material limitations of Design Pressure Ratings.

POSITION 6 & 7 - TRIM	
Desig.	CODE
S1	S1
S5	S5
S40	40
S36	36
S36R	3R
S7	S7
S7R	SR
S3	S3

POSITION 10 - END CONNECTIONS	
Description	CODE
NPT - Screwed	1
-30 Opt. Integral Flanged	
125 LB Flgs CI Only	3
150 LB Flgs CS Only	6
250 LB Flgs CI Only	5
300 LB Flgs CS Only	7
-34 Opt. - 150 LB RF Flgs. 14" F to F Dimension (Sizes 1-1/2" & 2" only) *	V
-34 Opt. - 300 LB RF Flgs. 14" F to F Dimension (Sizes 1-1/2" & 2" only) *	W

\* CS body material only. Nipples & flanges of same material as body.

POSITION 11 - RANGE SPRINGS		
Steel Range Spring		CODE
psig	(Barg)	
1 - 4 *	(.07-.27)	5
3 - 10	(.21-.69)	6
8 - 30	(.55-2.1)	7

\* Composition Diaphragm Only.

POSITION 12 - TRIM VARIATIONS		
Description	Option	CODE
No Special Trim Variation	--	0
Stellited Seat Surface - S1 and S5 Trim Only.	-15	A
For Special Construction Contact Cashco for Special Product Code.	SPQ	X

POSITION 13 - FEATURE OPTIONS		
Description	Option	CODE
No Option	-	0
Closing Cap.	-1	1
T-Bar & Locking Lever.	-3	3

POSITION 16 - CERTIFICATE OPTIONS		
Description	Option	CODE
No Option	-	0
Special Cleaning: Per Cashco Spec #S-1542.	-56	N

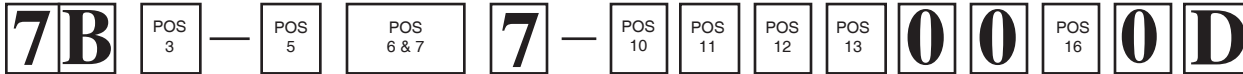
**\* For information on ATEX see pages 9 & 10 on the IOM.**

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# MODEL 8310HP PRODUCT CODER 07/20/21

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



POSITION 3 - SIZE		
Size		CODE
in	(DN)	
1-1/2"	(40)	8
2"	(50)	9
2-1/2" *	(65)	A
3" *	(80)	B
4" *	(100)	C

\* Flanged Only.

POSITION 5 - BODY / SPRING CHAMBER MATERIAL	
Body / Sp. Ch.	CODE
CI/DI	1
CS/CS	5

**NOTE:** See TB Table 1 for material limitations of Design Pressure Ratings.

POSITION 6 & 7 - TRIM	
Desig.	CODE
S1	S1
S5	S5
S40	40
S36	36
S36R	3R
S7	S7
S7R	SR
S3	S3

POSITION 10 - END CONNECTIONS	
Description	CODE
NPT - Screwed	1
-30 Opt. Integral Flanged	
125 LB Flgs CI Only	3
150 LB Flgs CS Only	6
250 LB Flgs CI Only	5
300 LB Flgs CS Only	7
-34 Opt. - 150 LB RF Flgs. 14" F to F Dimension (Sizes 1-1/2" & 2" only) *	V
-34 Opt. - 300 LB RF Flgs. 14" F to F Dimension (Sizes 1-1/2" & 2" only) *	W

\* CS body material only. Nipples & flanges of same material as body.

POSITION 11 - RANGE SPRINGS		
Steel Range Spring		CODE
psig	(Barg)	
10 - 40	(.69-2.8)	1
30 - 100	(2.1-6.9)	8
75 - 145	(5.2-10.0)	9
130 - 200 *	(9.0-13.8)	B
Option-20 Dome Loaded		A

\* Includes Opt-80 for High Outlet pressure construction.

POSITION 12 - TRIM VARIATIONS		
Description	Option	CODE
No Special Trim Variation	--	0
Stellited Seat Surface - S1 and S5 Trim Only.	-15	A
For Special Construction Contact Cashco for Special Product Code.	SPQ	X

POSITION 13 - FEATURE OPTIONS		
Description	Option	CODE
No Option	-	0
Closing Cap.	-1	1
T-Bar & Locking Lever.	-3	3

**\* For information on ATEX see pages 9 & 10 on the IOM.**

POSITION 16 - CERTIFICATE OPTIONS		
Description	Option	CODE
No Option	-	0
Special Cleaning: Per Cashco Spec #S-1542.	-56	N

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