

VAREC 180 SERIES DOUBLE PORT PRESSURE REGULATORS

The 180 Series Regulators are designed for use on vapor recovery systems where sensitive control at low pressures is required.



Introduction

Models include the 180, 181, 186 and 187 regulators for upstream and downstream control.

Flow curves are provided to help you select the proper size for your vapor recovery requirements. Additionally, Varec's applications engineering staff and factory trained representatives are always available to assist you.

Features

The family of 180 Series Regulators utilizes a large diaphragm and a unique "double port" design to achieve a sensitivity of less than 5%.

- Set pressure is controlled by a weighted lever for settings below 1" [25 mm] WC, and combination weighted lever and spring for settings up to 20" [50 mm] WC.
- The design of the double port regulator adds a dampening effect to the valve's action, allowing it to smoothly seek the set pressure, unlike single port regulators which typically exhibit a pop acting tendency.
- The rotary linkage design eliminates friction and drag which are often encountered in regulators with packing seals. Diaphragm chamber and valve body are completely isolated so there is no possibility of leakage between the two.
- Because the valve can be affected by temperature changes, it is not recommended for gas tight shut-off applications.

Operation

The 180 and 186 Series Regulators are designed for upstream control, regulating gas in lines going from tanks to vapor recovery compressors.

Upstream pressure sensed through control line piping is applied to one side of the diaphragm. The pressure acts against the weighted lever arm, moving the diaphragm linkage. The movement positions the valve to regulate gas flow. As the upstream pressure of the valve increases, the linkage opens the valve, allowing a greater flow capacity.

As the pressure is relieved, the valve throttles toward its closed position. The 181 and 187 Series Regulators are designed for downstream control, including tank blanketing applications. Downstream pressure sensed through the control line piping is applied to one side of the diaphragm. The pressure acts against the weighted lever arm, moving the diaphragm linkage. The movement positions the valve to regulate gas flow. As the downstream pressure of the valve decreases, the linkage opens the valve, causing an increase in flow capacity. As the pressure increases, the valve throttles toward its closed position.

Technical data

- Large diaphragm for sensitive operation.
- Double port design for sensitive control.
- Wide range of materials for service in most applications.
- Easily adjustable setting for fine tuning in the field.
- Settings down to -0.4".
- Can be set as close as 0.4" wc apart (blanket and recovery).

VAREC 180 SERIES

DOUBLE PORT PRESSURE REGULATORS

Specifications

Sizes

1", 2", 3", 4", 6", 8"

Materials

Body

Aluminum

Carbon Steel

Trim

304 Stainless Steel

Diaphragm Housing

180/181: Galvanized Steel

186/187: Cast Aluminum

Diaphragm

Nylon reinforced BUNA-N

Fiberglass reinforced Teflon®

Fiberglass reinforced Viton®-A

Connections

1" Size: NPT Threaded

2" to 8" Size:

Aluminum: Drilled to ANSI 150# FF

Steel: Drilled to ANSI 150# RF

Pressure Sensing Line

180/181: 2" Male NPT Connection

186/187: 1" Female NPT Connection

Settings

180/181:

0.4" [10 mm] WC vacuum to 1" [25 mm] WC
1" [25 mm] WC to 1.5" [38 mm] WC

186/187:

2" [50 mm] WC to 10" [250 mm] WC
10" [250 mm] WC to 20" [500 mm] WC

Downstream Vacuum (Models 180 and 186)

Must remain between atmospheric and 4.91 psig [0.34 barg] vacuum

Upstream Pressure (Models 181 and 187)

Must remain between atmospheric and 20 psig [1.38 barg].

Pressure Differential for Full Flow

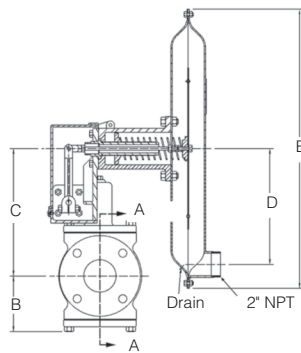
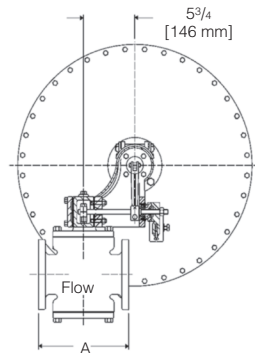
180/181: 0.4" [10 mm] WC

186/187: 1.5" [38 mm] WC

Repeatability

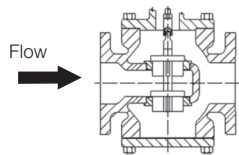
Will maintain pressure within 0.1" [2.5 mm] WC of set point.

Dimensions, inches and pounds [millimeters and kilograms]

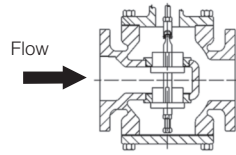


Size Code	01	02	03	04	06	08
Nominal Pipe Size	1 [25]	2 [50]	3 [80]	4 [100]	6 [150]	8 [200]
A	5 [127]	7 ¹¹ / ₁₆ [195]	10 [254]	12 [305]	15 [381]	17 ¹ / ₂ [445]
B	3 ¹ / ₈ [79]	4 ¹ / ₄ [108]	5 ¹ / ₈ [130]	5 ⁷ / ₈ [149]	7 ³ / ₄ [197]	8 ³ / ₄ [222]
C	10 ¹ / ₂ [267]	11 ¹ / ₈ [283]	12 ¹ / ₁₆ [306]	12 ¹¹ / ₁₆ [322]	14 ⁹ / ₁₆ [370]	15 ⁹ / ₁₆ [395]
D	10 ³ / ₄ [273]	10 ³ / ₄ [273]	10 ³ / ₄ [273]	10 ³ / ₄ [273]	13 ¹ / ₂ [343]	13 ¹ / ₂ [343]
E	26 [660]	26 [660]	26 [660]	26 [660]	32 [813]	32 [813]
Shipping Weight	85 [39]	120 [55]	150 [68]	180 [82]	210 [95]	260 [118]

Shipping weights are for aluminum construction.



**Section A-A
Model 180**
Back Pressure Type
(Upstream Control)



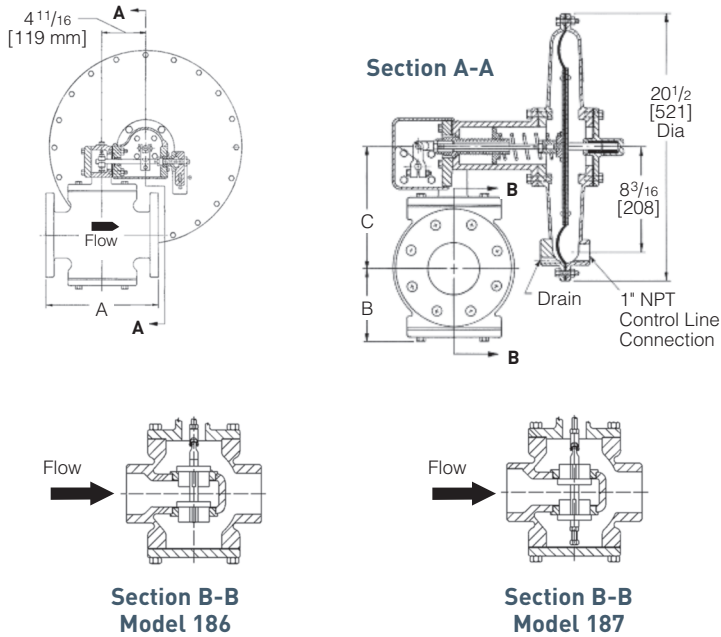
**Section A-A
Model 181**
Back Reducing Type
(Downstream Control)

Installation, mounting arrangement and dimensions are preliminary general information not to be used for construction. Certified drawings are available.

VAREC 180 SERIES
DOUBLE PORT PRESSURE REGULATORS

Specifications

Dimensions, inches and pounds [millimeters and kilograms]

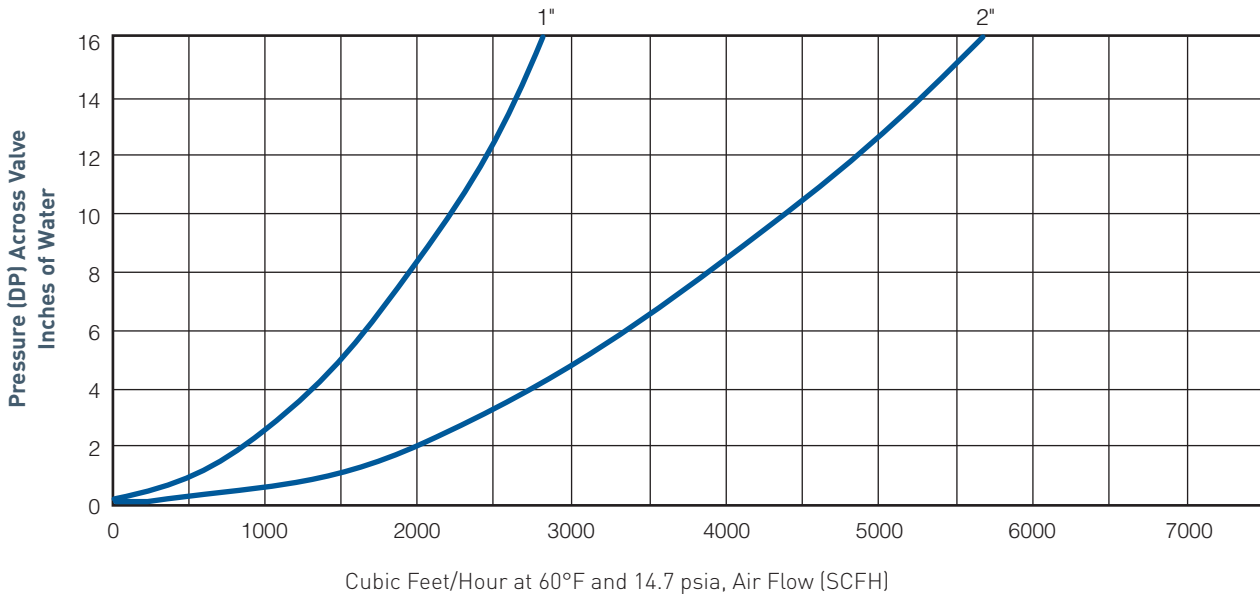


Size Code	01	02	03	04	06	08
Nominal Pipe Size	1	2	3	4	6	8
	[25]	[50]	[80]	[100]	[150]	[200]
A	5 [127]	7 11/16 [195]	10 [254]	12 [305]	15 [381]	17 1/2 [444]
B	3 1/8 [79]	4 1/4 [108]	5 1/8 [130]	5 7/8 [149]	7 3/4 [197]	8 3/4 [222]
C	7 [178]	7 5/8 [194]	8 9/16 [217]	9 3/16 [233]	11 1/16 [281]	12 1/16 [306]
Shipping Weight	85 [39]	120 [55]	150 [68]	180 [82]	210 [95]	260 [118]

Shipping weights are for aluminum construction.

Installation, mounting arrangement and dimensions are preliminary general information not be used for construction. Certified drawings are available.

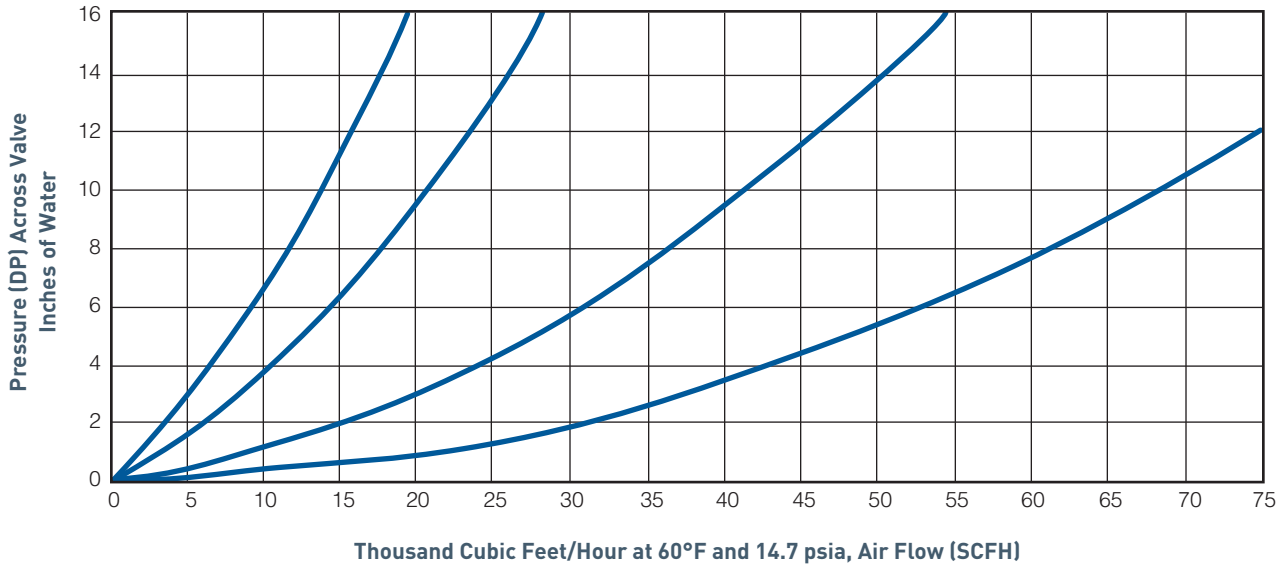
Flow Curves
180, 181, 186 and 187 Regulators



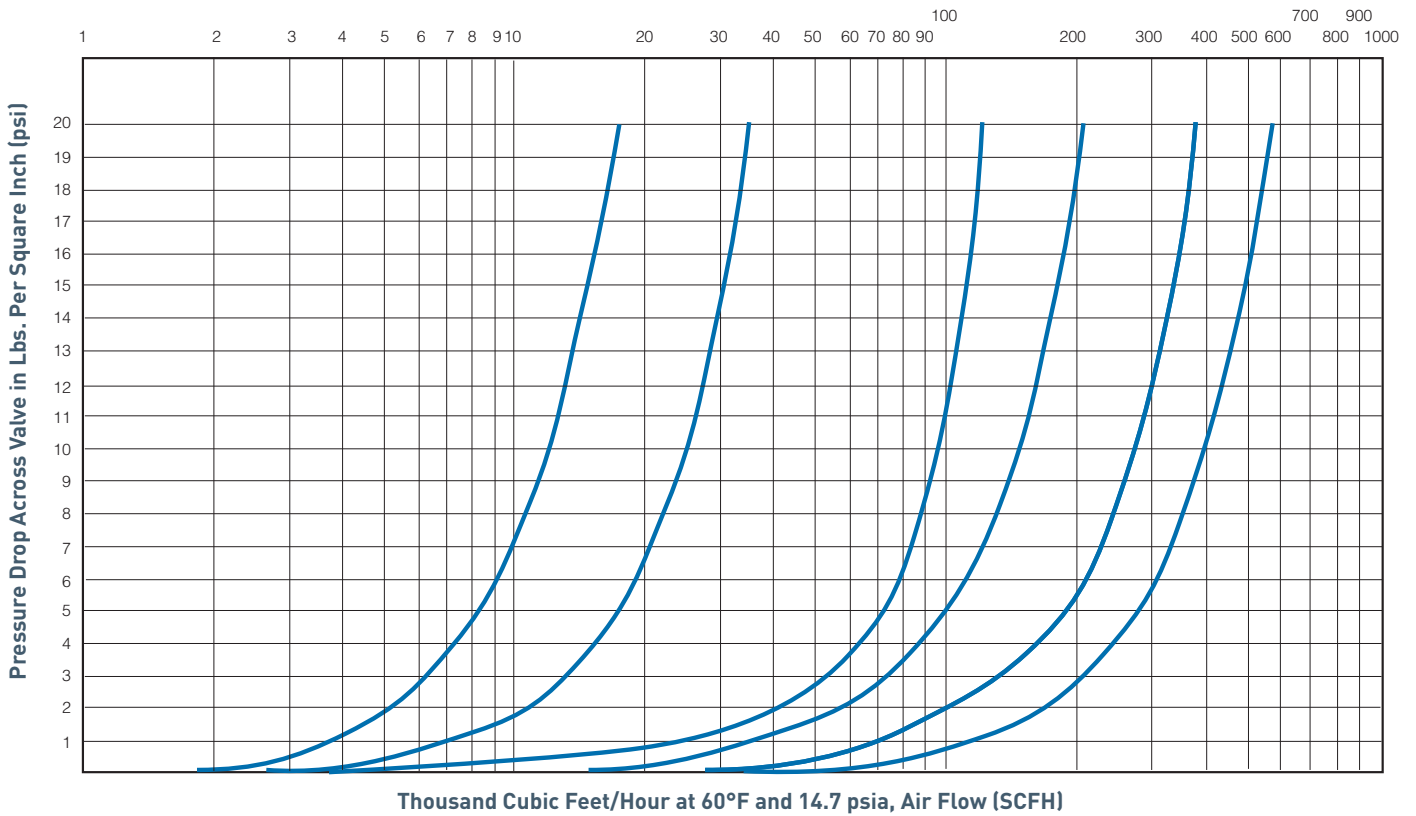
VAREC 180 SERIES
DOUBLE PORT PRESSURE REGULATORS

Flow Curves

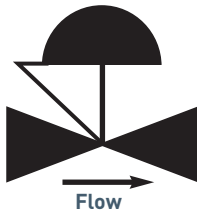
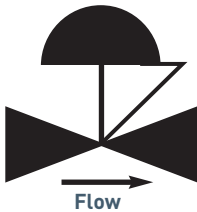
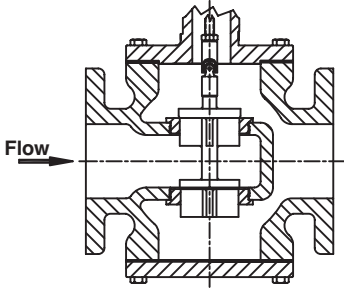
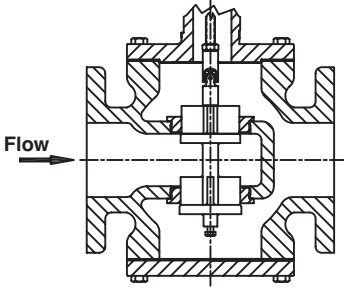
180, 181, 186 and 187 Regulators



180, 181, 186 and 187 Regulators

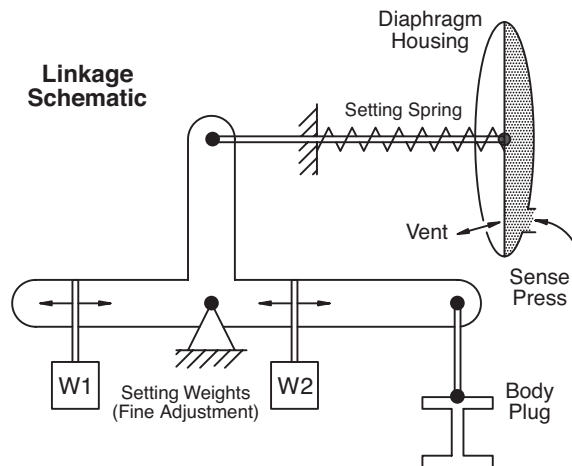


Varec Regulator Summary

Upstream Control (Back Pressure Regulator)		Downstream Control (Pressure Reducing Regulator)	
180	186	181	187
			
<p>Upstream</p> <p>Set Ranges Low: $-0.4 < 1''$ WC High: $1 < 1.5''$ WC</p> <p>Full Open Sense-Set $\geq 0.4''$ WC</p>	<p>Downstream</p> <p>Max Vacuum 4.91 psig</p>	<p>Upstream</p> <p>Max Pressure 20 psig</p>	<p>Downstream</p> <p>Set Ranges Low: $-0.4 < 1''$ WC High: $1 < 1.5''$ WC</p> <p>Full Open Set-Sense $\geq 0.4''$ WC</p>
<p>Body Cross Section Models 180/186</p> <p>As upstream pressure increases, the valve opens (lifts).</p> 		<p>Body Cross Section Models 181/187</p> <p>As downstream pressure increases, the valve closes (lifts).</p> 	

Functional Description

As the sense pressure increases, the linkage lifts the plug.
As the sense pressure decreases, the linkage lowers the plug.



Ordering Information

Model 18	Description Double Port Regulator
Code 0 1 6 7	Configuration (Select one) 0 Back Pressure (Upstream Control) - Settings up to 1.5" [38 mm] WC 1 Pressure Reducing (Downstream Control, including Tank Blanketing) - Settings up to 1.5" [38 mm] WC 6 Back Pressure (Upstream Control) - Settings up to 20" [500 mm] WC 7 Pressure Reducing (Downstream Control, including Tank Blanketing) - Settings up to 20" [500 mm] WC
Code L H	Setting Range (Select one) 180 and 181 -0.4" < 1" [-10 < 25 mm] WC 1" to 1.5" [25 - 38 mm] WC 186 and 187 2" < 10" [50 < 250 mm] WC 10" to 20" [250 - 500 mm] WC
Code 1 2 3 4 6 8	Size (Select one) 1 1" 2 2" 3 3" 4 4" 6 6" 8 8"
Code 1 3	Valve Body Material (Select one) 1 Aluminum 3 Cast Steel
Code B T V	Diaphragm Material (Select one) B BUNA-N T Teflon® V Viton®
18	1
L	2
1	1
B	Example

Example: 2" Pressure Reducing Double Port Regulator, aluminum body with BUNA-N diaphragm.

