

January 2019

Introduction

This installation guide provides instructions for installation, startup and adjustment. To receive a copy of the instruction manual, contact your local Sales Office or view a copy at www.fisher.com. For further information refer to: Y696VR Series Instruction Manual, D102662X012.

PED/PE(S)R Categories

This product may be used as a safety accessory with pressure equipment in the following categories. It may also be used outside of these Directives using Sound Engineering Practice (SEP) per table below. For information on the current PED/PE(S)R revision, see Bulletin: D103053X012.

PRODUCT SIZE	CATEGORIES	FLUID TYPE
DN 40 and 50 / NPS 1-1/2 and 2	I	1

Specifications

Body Sizes and End Connection Styles⁽¹⁾

See Table 1

Maximum Allowable Emergency Inlet (Casing) Pressure⁽²⁾

±1.03 bar / ±15 psig

Maximum Allowable Pressure Without Internal Parts Damage⁽²⁾

±0.55 bar / ±8 psig

Maximum Downstream Pressure⁽²⁾

Full Vacuum

Vacuum Control Pressure Ranges⁽²⁾

See Table 2

Wide-Open Flow Coefficients

C_g: 515

C_v: 14.7

C₁: 35

IEC Sizing Coefficients

XT: 0.78;

FD: 0.67;

FL: 0.89

Spring Case Connection

3/4 NPT

1. End connections for other than U.S. standards can usually be provided; consult the local Sales Office.

2. The pressure/temperature limits in this installation guide and any applicable standard or code limitation should not be exceeded.

Control Line Connection

1/2 NPT

Gauge Tap Connection

1/4 NPT

Pressure Registration

Type Y696VR: Internal

Type Y696VRM: External

Material Temperature Capabilities⁽²⁾

Nitrile (NBR): -40 to 82°C / -40 to 180°F

Fluorocarbon (FKM): 4 to 149°C / 40 to 300°F

Ethylenepropylene (EPR): -29 to 135°C /

-20 to 275°F

Perfluoroelastomer (FFKM): -18 to 149°C /

0 to 300°F

Silicone (VMQ): -40 to 204°C / -40 to 400°F

Approximate Weights

Cast Iron: 20 kg / 45 lbs

Steel, Stainless steel, or Hastelloy[®]C:

26 kg / 57 lbs

Installation



WARNING

Only qualified personnel shall install or service a vacuum regulator. Vacuum regulator should be installed, operated and maintained in accordance with international and applicable codes and regulations and Emerson Process Management Regulator Technologies Inc. (Emerson) instructions.

If using a vacuum regulator on a hazardous or flammable fluid service, personal injury and property damage could occur due to fire or explosion of vented fluid that may have accumulated. To prevent such injury or damage, provide piping or tubing to vent the fluid to a safe, well ventilated area or containment vessel. Also, when venting a hazardous fluid, the piping or tubing should be located far enough away from any buildings or windows so to not create a further hazard and the vent opening should be protected against anything that could clog it.

Y696VR Series

Table 1. Body Sizes and End Connection Styles

BODY SIZE, DN / NPS	CONSTRUCTION MATERIAL AND END CONNECTION STYLE		
	Cast Iron	Steel or Stainless Steel ⁽¹⁾	Hastelloy® C ⁽¹⁾
40 and 50 / 1-1/2 and 2	NPT	NPT, SWE, ANSI CL150 RF, CL300 RF or PN 16/25/40	ANSI CL150 RF

1. All flanges are welded on to the body and have a face-to-face dimension of 356 mm / 14 in..

Table 2. Vacuum Control Pressure Ranges and Spring Part Numbers

VACUUM CONTROL PRESSURE RANGE ⁽¹⁾		CHANGE IN VACUUM CONTROL PRESSURE TO REACH WIDE-OPEN		SPRING PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER	
mbar	In. w.c.	mbar	In. w.c.			mm	In.
2 to 7 ⁽²⁾	1 to 3 ⁽²⁾	4	1.5	1D892527022	Brown	2.8	0.109
4 to 12 ⁽²⁾	1-1/2 to 5 ⁽²⁾	5	2	1D7654000A2	Unpainted	3.1	0.120
7 to 20 ⁽²⁾	3 to 8 ⁽²⁾	7	3	0B0197000A2	Purple	3.8	0.148
20 to 40	8 to 16	10	4	1B766627062	Gray	4.0	0.156
40 to 80	16 to 32	17	7	1B883327022	Unpainted	4.8	0.187
17 to 207	0.25 to 3 psig	83	1.2 psig	1A630627022	Black	7.0	0.275

1. Pressure ranges are based on the spring case pointing up. Pointing the spring case down increases the pressure range 4 mbar / 1.7 in. w.c..

Example: 2 to 7 mbar / 1 to 3 in. w.c. changes to 7 to 12 mbar / 2.7 to 4.7 in. w.c..

2. Do not use Fluorocarbon (FKM) diaphragm with these springs at diaphragm temperatures lower than 4°C / 40°F.

Personal injury, equipment damage or leakage due to escaping fluid or bursting of pressure-containing parts may result if this vacuum regulator is overpressured or is installed where service conditions could exceed the limits given in the Specifications section or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the vacuum regulator could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the vacuum regulator in a safe location

Equipment operation within ratings does not preclude the possibility of damage from debris in the lines or from external sources. This equipment should be inspected for damage after any overpressure condition.

This equipment may be installed in any position as long as the flow through the body is in the direction indicated by the arrow cast on the body. If continuous operation is required during inspection or maintenance, install a three-valve bypass around the equipment.

Startup and Adjustment

To place the vacuum regulator in operation, slowly introduce inlet or vacuum pressure. The unit takes control when vacuum is established. This unit operates within the pressure range stamped on the closing cap.

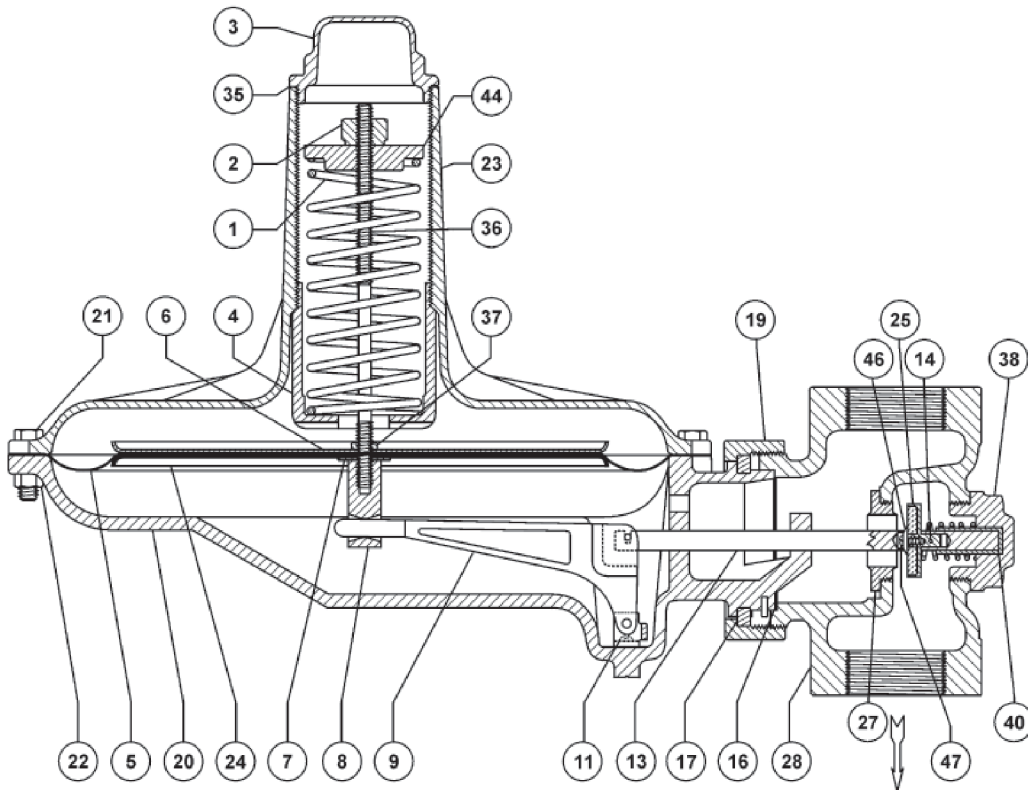
Taking Out of Service (Shutdown)



WARNING

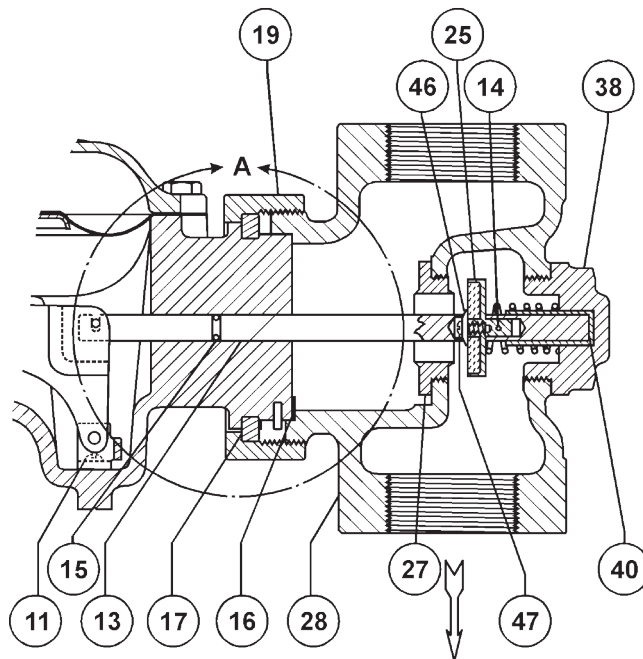
To avoid personal injury resulting from sudden release of pressure, isolate the vacuum regulator from all pressure before attempting disassembly.

To shut down the unit, close the upstream shut-off valve, and then close the downstream shut-off valve to vent the equipment properly. Next, open the vent valve between the equipment and the downstream shut-off valve nearest to it. All pressure between these shut-off valves is released through the open vent valve.



A7175

TYPE Y696VR ASSEMBLY



A7176

TYPE Y696VRM BODY AND STEM ASSEMBLY DETAIL

Figure 1. Types Y696VR and Y696VRM Vacuum Regulator Assemblies

Y696VR Series

Parts List

Key Description

1	Spring
2	Adjusting Nut
3	Closing Cap
4	Lower Spring Seat
5*	Diaphragm
6	Upper Diaphragm Head
7*	Diaphragm Head Gasket
8	Pusher Post
9	Lever Assembly
11	Machine Screw (2 required)
13	Valve Stem
14	Cotter Pin
15*	O-ring (Stem Seal for Type Y696VRM only)
16*	Body Gasket
17	Split Ring
19	Union Nut
20	Diaphragm Casing
20	Diaphragm Casing (continued)
21	Cap Screw (12 required)
22	Hex Nut (12 required)
23	Spring Case

Key Description

24	Lower Diaphragm Head
25	Disk Holder Assembly
27	Orifice
28	Body
29	Pipe Plug (not shown), use with Y696VR
35*	Closing Cap Gasket
36	Adjusting Stem
37	Diaphragm Hex Nut
38	Body Cap Assembly
40	Disk Stem
41	Valve Spring
44	Upper Spring Seat
46	Valve Disk Washer
47	Machine Screw
50	Nameplate (not shown)
51	Drive Screw (not shown)
56	Vent Assembly (not shown), Y602-11
71	Pipe Bushing (not shown)
95	NACE Tag (not shown)
96	Tag Wire (not shown)

✉ Webadmin.Regulators@emerson.com

🔍 Fisher.com

📘 Facebook.com/EmersonAutomationSolutions

🌐 LinkedIn.com/company/emerson-automation-solutions

🐦 Twitter.com/emr_automation

Emerson Automation Solutions

Americas

McKinney, Texas 75070 USA
T +1 800 558 5853
+1 972 548 3574

Europe

Bologna 40013, Italy
T +39 051 419 0611

Asia Pacific

Singapore 128461, Singapore
T +65 6777 8221

Middle East and Africa

Dubai, United Arab Emirates
T +971 4 811 8100

D102662X014 © 2023 Emerson Process Management Regulator Technologies, Inc. All rights reserved. 09/23.

The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are the property of their prospective owners.

Fisher™ is a mark owned by Fisher Controls International LLC, a business of Emerson Automation Solutions.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

Emerson Process Management Regulator Technologies, Inc does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Emerson Process Management Regulator Technologies, Inc. product remains solely with the purchaser.



For further information on the current PED/PE(S)R revision see Bulletin: [D103053X012](#) or scan the QR code.

