H200 Series External Relief Valves

⚠ WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or fire causing property damage and personal injury or death.

Fisher™ relief valves must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies Inc. (Emerson) instructions.

A person should never stand directly over or in front of or look directly into a relief valve when the tank is pressurized. The relief valve could suddenly "pop" open blowing gas, dirt and other debris into the person's face and eyes.

Call a qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified person may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Only a qualified person shall install or service the relief valve.

Introduction

Scope of the Manual

This manual provides specifications, installation, maintenance instructions and parts ordering information for the H200 Series.

Only personnel qualified through training or experience should install, operate and maintain this relief valve. If there are any questions concerning these instructions, contact your local Emerson Impact Partner Office before proceeding.

Figure 1. *H200 Series Relief Valve*

Product Description

The H200 Series Pop™ relief valves, Figures 1 and 2, are self-operated relief valves with preset and pinned spring retainers. The inlet pressure registers directly on a spring opposed poppet assembly which includes a Nitrile (NBR) disk. When the inlet gas pressure increases above the spring setting, the poppet and disk assembly is pushed away from the orifice. Springs are available that provide any relief pressure setting from 25 to 300 psig / 1.7 to 20.7 bar.

With this simple operation and wide spring setting selection, the H200 Series Pop relief valves may be used where venting to atmosphere is acceptable, where the process gas is compatible with the Nitrile (NBR) disk, where its relief capacity is adequate and where some pressure relieving tolerance is acceptable. Common applications include use on pneumatic control lines of air drills, jackhammers and other similar equipment and on farm tap installations. The H200 Series is comprised of the Types H202 and H203 relief valves with the difference being in the inlet connection size.

Specifications

This section lists the specifications for H200 Series external relief valves. Factory specifications are engraved on the body of the relief valve at the factory.

Available Configuration and End Connections
Type H202: 3/4 NPT connection
Type H203: 1 NPT connection

Maximum Allowable Relief (Inlet) Pressure(1)
400 psig / 27.6 bar

Relief Pressure Ranges(1)
See Tables 1 and 2

Flow Capacity
See Table 2

Construction Materials
Body, Poppet and Spring Retainer: Brass
Disk: Nitrile (NBR)
Spring: 302 Stainless steel

Temperature Capabilities(1)
-20 to 160°F / -29 to 71°C

Approximate Weight
0.5 lbs / 0.2 kg

Option
Type P145 raincap

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

Table 1. *Relief Pressure Spring Ranges*

RELIEF PRESSURE SETTINGS		SPRING PART NUMBER	SPRING COLOR	RELIEF SETTING TOLERANCE	
psig	bar			psig	bar
25 to 30	1.7 to 2.1	1H485637022	Pink	±5	±0.34
31 to 55	2.1 to 3.8	1J152137022	White		
56 to 70	3.9 to 4.8	1P391137022	Blue	±8	±0.55
65 to 95	4.5 to 6.5	T1049037022	Plain		
90 to 130	6.2 to 9.0	1F791337022	Purple		
131 to 160	9.0 to 11.0	1F7912T0012	Yellow	±15	±1.03
161 to 190	11.1 to 13.1	T12699T0012	Green		
191 to 235	13.2 to 16.2	1F790937022	Brown		
236 to 300	16.3 to 20.7	1E954637052	Plain		

Table 2. *Relief Set Pressures and Capacities*

RELIEF SET PRESSURE(1)		SET PRESSURE PLUS BUILD-UP		FLOW CAPACITY(2)	
psig	bar	psig	bar	SCFH	Nm^3/h
25	1.7	50	3.4	34,200	916
50	3.4	75	5.2	47,400	1270
75	5.2	100	6.9	60,000	1608
100	6.9	120	8.3	69,600	1865
125	8.6	150	10.3	83,400	2235
150	10.3	180	12.4	100,500	2693
175	12.1	210	14.5	117,600	3152
200	13.8	240	16.5	132,000	3538
225	15.5	270	18.6	150,000	4020
250	17.2	300	20.7	165,000	4422
275	19.0	330	22.7	180,000	4824
300	20.7	360	24.8	195,000	5226

1. This is the initial leak point, the point at which the relief valve begins to discharge.
2. 0.6 Specific Gravity Gas. To convert to equivalent capacities of other gases, multiply the table values by 0.775 for air or 0.789 for nitrogen. Multiply the flow obtained by 0.0268 to convert to (Nm^3/h) at 0°C and 1.01 bar.

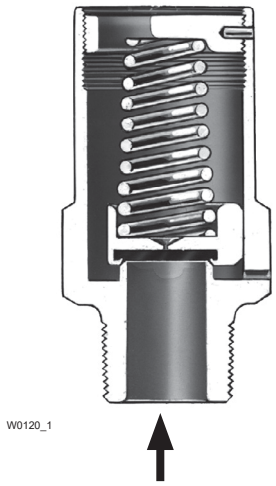

Figure 2. *H200 Series Operational Schematics*

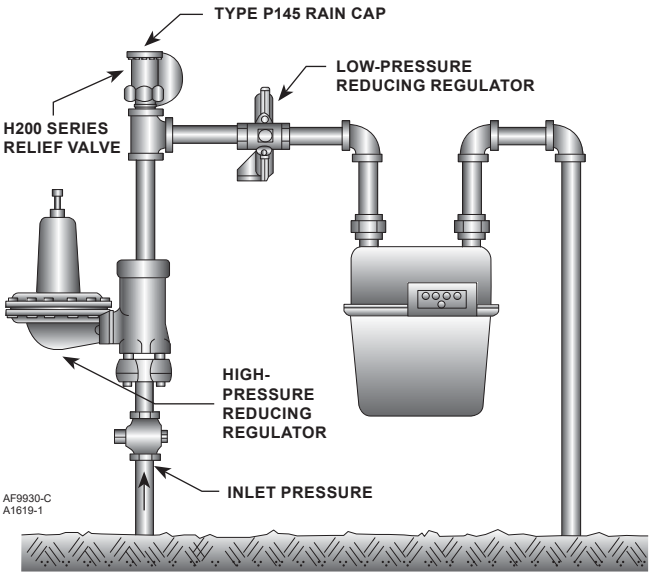

Figure 3. *Typical Farm Tap Installation*

Principle of Operation

The relief valve (See Figure 1) is held close by the spring force seating the rubber valve disc against the orifice.

When the tank pressure exceeds the spring force, the valve disc lifts off the orifice allowing gas to discharge through the valve to the air.

Gas discharge initially may be small producing only seepage and a light “hissing” sound. As pressure increases and gas volume discharge continues, a “popping” condition occurs with large volumes of gas discharge and a loud “hissing or roaring” sound.

When the tank pressure decreases enough, the spring force closes the valve disc back against the orifice stopping further discharge

Installation

WARNING

Vapor relief valves must be installed only in the vapor space to provide relief capacity for the tank.

This relief valve may be installed in any position but must be oriented so that gas discharged from the valve does not create a fire, toxic or explosion hazard. The relief valve should be protected from material and conditions that could clog the outlet side of the valve and affect the venting of gas.

A typical installation is shown in Figure 3. A Type P145 raincap is recommended for use with any H200 Series relief valve.

The relief valve and installation should be checked for compliance with all applicable codes.

Maintenance

Safety relief valves are non-repairable valves and cannot be adjusted in the field.

WARNING

Any valve that has fully opened “popped” should be tested to see if it is within the allowable start-to-discharge pressure setting. If it is not within the correct range, it must be replaced. Relief valve start-to-discharge and reseat pressures may be lower if the valve has fully opened (popped).

It is recommended that all relief valves be regularly inspected for visible damage, dirt, corrosion, missing raincaps, paint inside outlet, tampering, etc. If any of the preceding is evident or questionable, the valve should be re-tested or replaced immediately.

The discharge side of the relief valve body must be kept free of dirt, water and other foreign matter which can damage the valve seat or “weld” some “wing style” poppets to the valve body. This can prevent the valve from opening. Replace valves when this occurs.

Parts Ordering

When corresponding with your local Sales Office about this relief valve, include the type number, serial number and other information stamped on the nameplate.

When ordering replacement parts, reference the key number of each needed part and specify the eleven character part number as found in the following parts list.

Parts List

Key	Description	Part Number
1	Body	
2	Spring Retainer	
3	Groove Pin	
4*	Spring	
5	Poppet Assembly	

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

Asia Pacific
Singapore 128461, Singapore
T +65 6777 8211

Europe
Bologna 40013, Italy
T +39 051 419 0611

Middle East and Africa
Dubai, United Arab Emirates
T +971 4 811 8100

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