

# HAYWARD INDUSTRIAL PRODUCTS, INC.

## INSTALLATION, OPERATION & MAINTENANCE OF RELIEF VALVES

**PLEASE READ THE FOLLOWING INFORMATION PRIOR TO INSTALLING AND USING HAYWARD VALVES, STRAINERS, FILTERS, AND OTHER ASSOCIATED PRODUCTS. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY.**

1. Hayward guarantees its products against defective material and workmanship only. Hayward assumes no responsibility for damage or injuries resulting from improper installation, misapplication, or abuse of any product.
2. Hayward assumes no responsibility for damage or injury resulting from chemical incompatibility between its products and the process fluids to which they are subjected. Compatibility charts provided in Hayward literature are based on ambient temperatures of 70 °F and are for reference only. Customer should always test to determine application suitability.
3. Consult Hayward literature to determine operating pressure and temperature limitations before installing any Hayward product. Note that the maximum recommended fluid velocity through any Hayward product is eight feet per second. Higher flow rates can result in possible damage due to the water hammer effect. Also note that maximum operating pressure is dependent upon material selection as well as operating temperature.
4. Hayward products are designed primarily for use with non-compressible liquids. They should NEVER be used or tested with compressible fluids such as compressed air or nitrogen.
5. Systems should always be depressurized and drained prior to installing or maintaining Hayward products.
6. Temperature effect on piping systems should always be considered when the systems are initially designed. Piping systems must be designed and supported to prevent excess mechanical loading on Hayward equipment due to system misalignment, weight, shock, vibration, and the effects of thermal expansion and contraction.
7. Because PVC and CPVC plastic products become brittle below 40 °F, Hayward recommends caution in their installation and use below this temperature.
8. Published operating torque requirements are based upon testing of new valves using clean water at 70 °F. Valve torque is effected by many factors including fluid chemistry, viscosity, flow rate, and temperature. These should be considered when sizing electric or pneumatic actuators.
9. Due to differential thermal expansion rates between metal and plastic, transmittal of pipe vibration, and pipe loading forces **DIRECT INSTALLATION OF METAL PIPE INTO PLASTIC CONNECTIONS IS NOT RECOMMENDED**. Wherever installation of plastic valves into metal piping systems is necessary, it is recommended that at least 10 pipe diameter in length of plastic pipe be installed upstream and downstream of the plastic valve to compensate for the factors mentioned above.

### **INSTALLATION:**

The valve should be installed as close as practical to the component requiring protection. The length of outlet piping should be kept to a minimum. Backpressure on the outlet should be avoided, as backpressure will effect the performance of the valve.

It is recommended that the desired relief pressure be preset before the valve is installed in the system.

A 1/4" NPT plastic pipe plug is installed in the valve body when shipped. Before pressurizing the system, this plug may be removed and replaced with a pressure gauge or combination gauge guard and gauge. **CARE MUST BE TAKEN TO AVOID OVER TIGHTENING A GAUGE IN THE RELIEF VALVE BODY AS THIS MAY INDUCE EXCESSIVE STRESS THAT COULD CAUSE BODY FAILURE.** A plastic nipple with a brass coupling can be used to avoid problems. The instrument can serve as a check of the system pressure, and helps to accurately set the desired relief pressure.

### **THREADED CONNECTION:**

Threaded end connections are manufactured to ASTM specifications D2464-88, F437-88 and ANSI B2.1. Wrap threads of pipe with Teflon tape of 3 to 3-1/2 mil thickness. The tape should be wrapped in a clockwise direction starting at the first or second full thread. Overlap each wrap by 1/2 the width of the tape. The wrap should be applied with sufficient tension to allow the threads of a single wrapped area to show through without cutting the tape. The wrap should continue for the full effective length of the thread. Pipe sizes 2" and greater will not benefit with more than a second wrap, due to the greater thread depth. To provide a leak proof joint, the pipe should be threaded into the end connection "hand tight". Using a strap wrench only, (never use a stillson type wrench) tighten the joint an additional 1/2 to 1-1/2 turns past hand tight. Tightening beyond this point may induce excessive stress that could cause failure.

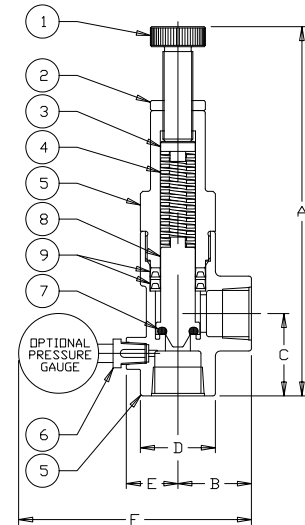
### **ADJUSTMENT:**

The relief valve is **NOT** factory set. To adjust the relief pressure, loosen the locknut, (see figure) and turn the adjustment screw counter clockwise to decrease the set relief pressure. Turn the adjustment screw clockwise to increase the set pressure. When the desired relief pressure has been set, tighten the locknut.

## OPERATION:

Hayward Relief valves are designed for use in piping systems where over pressure of the system may cause damage or failure to other components, such as filters, gauges, or tanks. As the line pressure in the system increases past the set relief pressure of the valve, the piston starts lifting off the seat. The higher the over pressure, the higher the piston lifts off the seat, the greater the flow rate through the valve. (See Chart)

It may be desirable to select a relief valve different in size from that of your piping system, or to install two relief valves in parallel, depending upon your requirements.



- 1 STEM
- 2 LOCK NUT
- 3 SPRING RETAINER
- 4 SPRING PVDf OR ELECTROFLUOR 615 COATED
- 5 BODY
- 6 PIPE PLUG
- 7 O-RING SEAL (EPDM/VITON)
- 8 PISTON
- 9 U-CUP SEALS (EPDM/VITON)

## PRESSURE RELIEF VALVE ASSEMBLY

RELIEF VALVE SELECTION CHART

SET RELIEF PRESSURE (PSI)	RELIEF VALVE SIZES (NPT)														
	1/2"			3/4"			1"			1-1/2"			2"		
	Overpressure (PSI)			Overpressure (PSI)			Overpressure (PSI)			Overpressure (PSI)			Overpressure (PSI)		
	+5	+10	+20	+5	+10	+20	+5	+10	+20	+5	+10	+20	+5	+10	+20
Flow Rate (GPM)	Flow Rate (GPM)			Flow Rate (GPM)			Flow Rate (GPM)			Flow Rate (GPM)			Flow Rate (GPM)		
10	.5	2.0	6.0	3.0	4.0	9.0	7.0	11.0	18.0	1.0	15.0	20.0	22.5	110.0	
20	1.0	3.0	7.0	4.0	6.0	15.0	8.0	14.0	24.0	1.5	30.0	33.0	40.0	125.0	
30	1.0	3.0	8.0	5.5	9.0	17.5	8.0	20.0	27.0	5.0	40.0	45.0	55.0	147.0	
40	1.0	3.0	8.0	9.0	13.0	19.0	8.0	27.5	30.0	8.0	47.5	51.0	75.0	160.0	
50	-	-	-	9.0	15.0	21.0	8.0	33.0	36.0	10.0	69.0	72.0	83.0	180.0	
75	-	-	-	9.0	18.0	20.0	8.0	40.0	48.0	10.0	90.0	96.0	92.0	180.0	

DIMENSIONS

SIZE	A	B	C	D	E	F	WEIGHT IN LBS
1/2"	6.75	1.38	1.50	1.38	1.38	5.19	0.50
3/4"	6.88	1.50	1.75	1.56	1.63	5.44	0.75
1"	8.75	1.63	2.06	1.88	1.88	4.75	1.00
1-1/2"	13.25	1.88	2.63	2.63	2.44	6.25	2.50
2"	15.50	2.13	3.00	3.13	2.88	6.69	3.50

Example: If your system must maintain a maximum working pressure of 35 PSI, and start to relieve pressure at 40 PSI your set pressure is 40 PSI. You would like to pass a minimum of 13 GPM at a maximum of 50 PSI, (10 PSI over pressure). The chart above indicates that a 3/4" relief valve will meet your requirements.

