



Hydrogen Peroxide Service

Hydrogen Peroxide is a colorless liquid that can be used for things such as disinfection and bleaching. Handled correctly, Hydrogen Peroxide can be safe. Handled incorrectly, however, it can be explosive and dangerous. A very clean and safe system is required for Hydrogen Peroxide service because of the dangers of this molecule. With this in mind, careful selection of materials of construction and makeup of Hydrogen Peroxide service valves is imperative. It is also important to know whether the system will have diluted concentrations of Hydrogen Peroxide (less than 50%) or higher concentrations (greater than 50%), and the temperature of the application.

Vented Ball

Hydrogen Peroxide is prone to decomposition into water and oxygen. This decomposition can increase pressure, even sometimes rapidly, in the enclosed cavity of the valve. A table showing the amounts of these decomposition products is shown on the next page. A-T Controls provides a means of relieving this pressure by venting the ball in the upstream direction. This limits the valve to one direction flow and an arrow on the valve shows which direction the valve should be installed. **A vented, upstream ball is required for Hydrogen Peroxide service.**

Preparation, Cleaning, and Lubrication

Valves used for Hydrogen Peroxide service are required to be passivated according to ASTM A380/A380M and ASTM A967/A967M before going into service. A-T Controls valves meet these requirements. An inert lubricant such as a fluorinated product is required for the construction of the valves. **A-T Controls thoroughly cleans all valve parts and lubricates the O-ring with a compatible lubricant. The valves are vacuum packed with desiccant and marked as cleaned for Hydrogen Peroxide Service.**

Standard Material

Please consult A-T Controls for material selection for your application. These parameters are guidelines, and customers are responsible for materials of construction and lubricants being compatible with their Hydrogen Peroxide application:

Auxiliary Stem Seal: Viton®, Grafoil® (satisfactory for diluted)

Body: ASTM A351 Grade CF8M (good for high concentrations), ASTM A351 Grade CF3M

Seats: TFM™-1600, RTFE, PTFE, 50/50 STFE, EPDM (low concentrations)

Trim: ASTM A351 Grade CF8M, 304 SST

Valve Packages

Series D9- Sizes ½"-6", 150# and 300# ANSI, Full Port Design, ISO5211 Actuator Mounting Pad, Anti-Static Device, Traceable Valve.

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Series 88- Sizes ¼"-4", Full Port, Direct Mounting Pad, Threaded, Socket Weld, or Butt Weld.

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Series 8R: Sizes ¼"-2-1/2", High Performance 3-Piece Design, Regular, Stainless Body, Threaded, Socket Weld, or Butt Weld.

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H2O2 Weight %	Mole Fraction H2O	Mole Fraction O2	Weight % H2O	Weight % O2
0	1	0	100	0
10	0.973	0.027	95.3	4.7
20	0.945	0.055	90.6	9.4
30	0.915	0.085	85.88	14.12
40	0.884	0.116	81.19	18.81
50	0.852	0.148	76.48	23.52
60	0.819	0.181	71.78	28.22
70	0.784	0.216	67.08	32.92
80	0.747	0.253	62.38	37.62
90	0.708	0.292	55.67	44.33
100	0.666	0.334	52.97	47.03