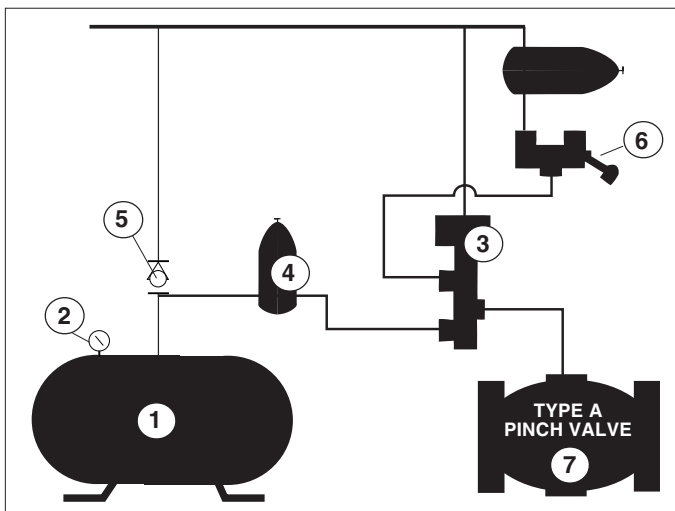




Pinch Valve Technical Information

Fail Safe Air Package

Red Valve Company has designed a fail-safe air package for the Red Valve jacketed product line. The fail safe air package is a stand by system designed to actuate the pinch valve closed in the event of plant air failure. This system sold by Red Valve has sufficient storage capacity in the reserve air tank to close a Red Valve Pinch Valve in the event of air or electrical failure.



1. Air storage tank
2. Pressure gauge
3. 3-way solenoid valve or 3-way pilot valve (opens upon power failure)
4. Pressure reducing valve complete with gauge showing pressure delivered to Red Valve
5. Check valve on intake line of air tank
6. Pressure switch and/or 3-way valve can be furnished at additional cost
7. Type A Pinch Valve

Operation

The fail safe air package does not replace any Red Valve operating components. It is simply an isolated stand-by reserve air supply. Air is locked into the tank and stored until plant air failure. Upon failure of plant air or electricity the fail safe will “trip” and allow air to close the Red Valve. Air pressure is admitted to the Red Valve through a 3-way pilot valve or a solenoid valve depending on which type of failure mode is desired and ordered.

The normal air line used to transport plant air to the Red Valve is repiped through the fail safe pilot valve or solenoid valve. Only two connections are required. The Red Valve will still function normally except air will be rerouted to pass through the pilot or solenoid valve. Upon tripping, the normal air path is blocked and the isolated fail safe air passes to the Red Valve. If plant air or electric is restored, the pilot or solenoid resets, flow path is restored and the volume tank gradually fills with air which is locked in with a check valve.

Connecting the fail safe solenoid valve or pilot valve correctly is critical. The Red Valve should be connected to the “cyl” ports. Actuation air from a booster relay, 3-way valve, regulator, etc. is connected to the “NC” (normally closed) ports. The “NC” will be open when electric is applied to the solenoid or supply air is supplied to the solenoid or supply air is supplied to the pilot valve.

The chart on this page is provided as a guide in selecting the proper size tank for a specific size valve. All tanks are oversized to allow for leakage, temperature changes and condensation. It is advisable that charging air pressures be at least twice the required valve closing pressure to insure sufficient volume to close the valves. This is calculated by the Gas Law $P_1 \bullet V_1 = P_2 \bullet V_2$. $P_1 \bullet V_1$ is the initial charge tank, volume and pressure, and $P_2 \bullet V_2$ are the final volume and pressure of the charge tank and valve combined.

Specifications Fail Close Air Package

VALVE SIZE	RECOMMENDED PACKAGE	TANK AIR CAPACITY				VALVE AIR CONSUMPTION			
		GALLONS CAPACITY	CU. IN. CAPACITY	MAX. TANK PRESSURE	WEIGHT OF SYSTEM (LBS.)	DIAMETER & LENGTH	VOLUME (In. ³) TO FILL VALVE	VOLUME (In. ³) TO CLOSE	VOLUME(In. ³) TOTAL
1"	700-3	3	669	165	20	6-1/2" x 25"	3.6	3.1	6.7
1-1/4"	700-3	3	669	165	20	6-1/2" x 25"	5.4	5.9	11.3
1-1/2"	700-3	3	669	165	20	6-1/2" x 25"	11.3	9.9	21.2
2"	700-3	3	669	165	20	6-1/2" x 25"	25.7	22.6	48.3
3"	700-12	12	2700	165	40	12" x 37"	69.3	67.8	137
4"	700-12	12	2700	165	40	12" x 37"	161	126	287
6"	700-30	30	6800	200	100	16" x 40"	462	452	914
8"	700-30	30	6800	200	100	16" x 40"	900	884	1,784
10"	700-60	60	13700	200	190	20" x 51"	1,650	1,507	3,137
12"	700-60	60	13700	200	190	20" x 51"	2,111	2,352	4,463
14"	700-80	80	18400	200	300	20" x 63"	3,011	3,694	6,705
16"	700-80	80	18400	200	300	20" x 63"	5,900	5,469	11,396
18"	700-120	120	27600	200	400	24" x 69"	8,311	7,939	16,250
20"	700-120	120	27600	200	400	24" x 69"	9,930	10,807	20,737
24"	2-700-120	240	55200	200	800	24" x 69"	16,304	18,457	34,761
30"	3-700-120	360	82800	200	1200	24" x 69"	29,710	33,929	63,639