



# Safety Check Valve

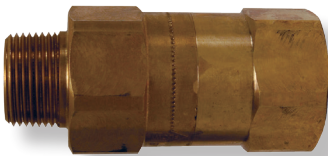
*Prevents dangerous hose whip on portable air compressors*

## Application:

- used in temporary plant/factory air lines, construction sites, shipyards or utilities
- not for use in applications where 100% of the available air is required, i.e. sand blast, pile driving rigs, expansion joint blow down pipes, etc.

## Features:

- high flow valve provides optimum performance
- controls excess air flow (SCFM) in only one direction
- automatically senses change in air flow and shuts off the flow in the event of a surge in excess of valve flow rating thus preventing hose whip
- solid brass body and valve
- stainless steel spring and roll pin
- maximum operating pressure: **250 PSI**
- maximum temperature: **250°F**
- does not prevent backflow

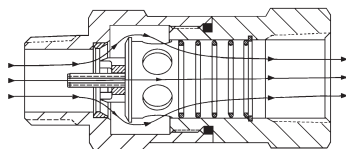


## Specification:

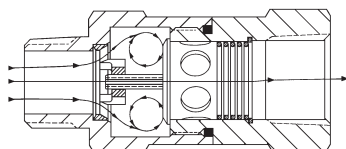
- conforms to OSHA regulation 1926.302 (b) (7) requiring a safety device at the source of the air supply and at branch air lines

## How It Works:

- Safety check valves utilize the pressure differential across the valve to operate the valve and spring assembly. The pressure differential is directly related to the flow of air (SCFM) through the valve.
- When the pressure differential is within the operating limits - below the cutoff flow - of the unit, the force on the valve exerted by the spring is greater than that caused by the pressure differential (see "Open Position" graphic above). The valve remains open and normal operation continues.
- When the pressure differential is above the cutoff limit, the force on the valve exerted by the pressure differential is greater than the force exerted by the spring, and the valve closes (see the "Closed Position" graphic above).
- After the repair is made, normal operation is automatically enabled when pressure across the valve equalizes through the bleeder hole.
- The valve spring size can be specified by determining the air flow during normal operation and by estimating the air flow if a failure or rupture occurs.



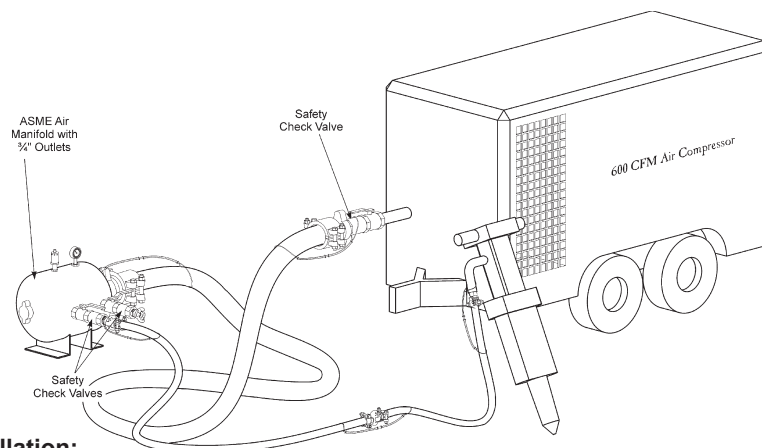
Check Valve In Open Position



Check Valve In Closed Position

## Questions to ask when selecting a safety shut-off valve:

1. What is the hose ID size you are using?
2. What is the operating pressure of the compressor, in PSI?
3. What is the SCFM of your compressor? (printed on the side of most air compressors)
4. How much air flow, in SCFM, does the tool(s) require?
5. What is the maximum air flow possible, in SCFM, through your air hose, at the end of the length of the hose? Contact Dixon for recommendations if the hose length is over 100'.



## Installation:

A safety shut-off valve should be placed immediately after the air control valve and before the hose on a compressor, and after each discharge port on a manifold (see drawing above).

### Sizing the safety shut-off valve:

1. The safety shut-off valve NPT size must be the same as the nominal I.D. size of the air line on which it is used. *Note: Never increase or decrease the hose size from the compressor to the tool or from the compressor to the manifold.*
2. One safety shut-off valve must be used on each hose outlet from the manifold.
3. To avoid nuisance cut-off's, the shut-off valve selected should have a cut-off range of 110% of the maximum anticipated air flow to the tool, or tools, to be used.
4. The maximum SCFM of the supply side air line must be above the cut-off range of the valve. The cut-off range of Dixon's shut-off valves is given at 90 PSI. To determine the cut-off range at other PSI's, use the formula or the sample numbers in the Cut-off Rate Chart below to find the flow rate multiplier. Multiply the flow rate multiplier by the numbers in the cut-off flow range column to find the cut-off range at your PSI.

$$\sqrt{\frac{\text{PSIG} + 14.7}{104.7}}$$

flow rate multiplier formula

### Operation:

Before starting the compressor the air control valve should be closed completely. When the compressor unloads, open the air control valve *very slowly*. Full port ball valves tend to work better than gate or butterfly type valves.

The air control valve must be fully open for the safety shut-off valve to work. Some portable air compressor manufacturers recommend start-up with the air control valve slightly open. In this case you may have to close the valve and reopen it slowly to the full open position, or wait for the safety shut-off valve to reset itself.

If the valve fails to operate despite meeting all conditions, check the hose line for obstructions or a hose mender restricting normal air flow.

### Safety Shut-off Valve Cut-off Rates at PSI's Other Than 90 PSI

Inlet pressure (PSI)	25	50	75	100	125
Flow rate multiplier	.62	.79	.93	1.05	1.16

NPT and Hose ID Size	Part #	Cut-off Flow Rate (SCFM at 90 PSI)
1/4"	<b>SCVL2</b>	23-29
3/8"	<b>SCVM3</b>	39-47
	<b>SCVS3</b>	52-65
1/2"	<b>SCVM4</b>	70-78
	<b>SCVS4</b>	80-96
3/4"	<b>SCVL6</b>	72-88
	<b>SCVM6</b>	92-108
	<b>SCVR6</b>	112-128
	<b>SCVJ6</b>	132-148
	<b>SCVS6</b>	160-180
1"	<b>SCVH6</b>	180-200
	<b>SCVL8</b>	165-195
	<b>SCVM8</b>	220-260
1 1/4"	<b>SCVS8</b>	280-320
	<b>SCVH8</b>	310-340
	<b>SCVL10</b>	260-290
	<b>SCVM10</b>	300-340
1 1/2"	<b>SCVS10</b>	440-500
	<b>SCVH10</b>	570-630
	<b>SCVL12</b>	300-360
	<b>SCVM12</b>	470-530
2"	<b>SCVS12</b>	640-720
	<b>SCVH12</b>	750-830
	<b>SCVL16</b>	510-590
	<b>SCVM16</b>	725-825
3"	<b>SCVS16</b>	900-1050
	<b>SCVH16</b>	1100-1200
	<b>SCVL24</b>	1200-1400
	<b>SCVS24</b>	2400-2700
	<b>SCVH24</b>	2850-3050

**Dixon**  
800 High Street  
Chestertown, MD 21620  
877.963.4966  
Fax: 800.283.4966  
**dixonvalve.com**



### SAFETY



Dixon's couplings and retention devices are designed to work safely for their intended use. The selection of the proper hose, coupling and retention device, and the proper application of the coupling to the hose are of utmost importance.

Users must consider the size, temperature, application, media, pressure and hose and coupling manufacturer's recommendations when selecting the proper hose assembly components. Dixon recommends that all hose assemblies be tested in accordance with the Association for Rubber Products Manufacturer's (ARPM) recommendations and be inspected regularly (before each use) to ensure that they are not damaged or have become loose. Visit [ARPMINC.com](http://ARPMINC.com) for more information.

Where safety devices are integral to the coupling, they must be working and utilized. The use of supplementary safety devices such as safety clips or safety cables are recommended.

If any problem is detected, couplings must be removed from service immediately.

Dixon is available to consult, train and recommend the proper selection and application of all fittings we sell. We strongly recommend that distributors and end users make use of Dixon's Testing and Recommendation Services. Call 877.963.4966 or click [dixonvalve.com](http://dixonvalve.com) to learn more.