



tyco

Cash Valve

**MISCELLANEOUS
CONTROL VALVES**

**ISSUED - AUGUST 2000
CAVMC-0520-US-0208
ISO 9000 Certified**

CONTROL VALVES

D-53 TWO POSITION CONTROL VALVE

DESCRIPTION/APPLICATION

The Cash Valve Type D-53 valve is a pressure operated diaphragm type control valve. It is designed for use in systems where it is desirable to control the flow of a fluid or air by applying an independent pressure to the control valve diaphragm. The D-53 is available in two basic types (see features section):

- Normally open; closed by diaphragm pressure.
- Normally closed; opened by diaphragm pressure.

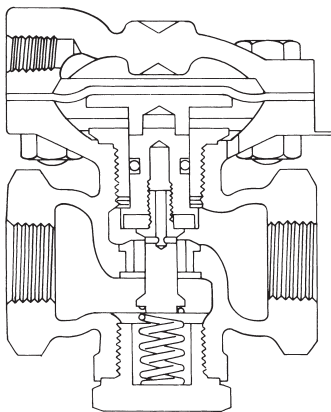
The basic Type D-53 valve is either completely closed or completely open; there are no intermediate positions.

The Type D-53 control valve is suitable for service with water, air, oil, or any non-corrosive fluid. It is designed for systems with inlet pressures up to 250 psi and temperatures to 180°F. The maximum diaphragm loading pressure must not exceed 300 psi. Typical Type D-53 installations include use as a cooling water control valve for water cooled air compressors, as an air compressor dump valve, as an explosive atmosphere valve, or as a substitute for expensive electric solenoids.

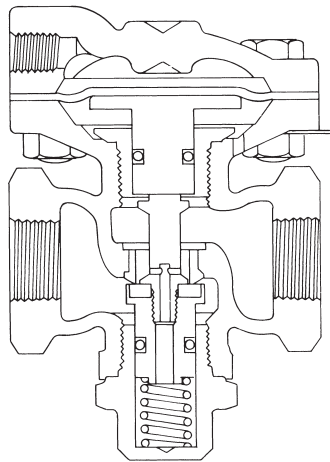


FEATURES

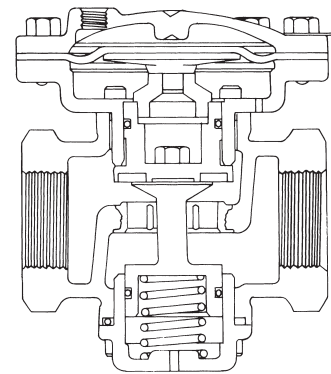
- Available in 1/2", 3/4", 1", 1 1/4", 1 1/2", and 2" sizes with threaded connections. Diaphragm connection is 1/8" on 1/2" and 3/4" valves and 1/4" on all other valves.
- Designed to be installed in any system where it is desirable to control the flow of a fluid or air by an independent pressure applied to the valve diaphragm.
- For maximum hookup flexibility, the diaphragm pressure connection may be indexed to any of four positions:
 - Over inlet
 - Over outlet
 - Over either side
- Full port diameter means full capacity and low pressure drop through the valve.
- Larger 1 1/2" and 2" sizes are constructed with a fully balanced inner valve for both inlet and outlet pressures up to 250 psi. Thus the operating pressure requirements are not changed by variations in the system pressure.
- Parts for larger 1 1/2" and 2" normally open and normally closed valves are interchangeable making it relatively easy to change from a normally open to a normally closed valve or vice versa.



3/4" TYPE D-53
NORMALLY OPEN



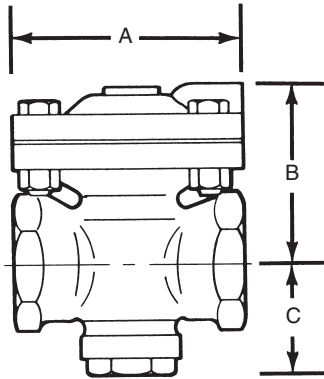
3/4" TYPE D-53
NORMALLY CLOSED



1 1/2", 2" TYPE D-53
NORMALLY OPEN

CONSTRUCTION/SPECIFICATIONS

The Type D-53 control valve is fitted with a bronze body, renewable 303 stainless steel plated valve seat of full port diameter, a renewable BUNA-N composition seat disc, a BUNA-N nylon diaphragm, and rust resistant steel bolts.



**TYPE D-53
NORMALLY CLOSED**

DIAPHRAGM PRESSURE REQUIREMENTS* (to fully open or fully close valve)		
INLET PRESSURE (psi)	NORMALLY CLOSED VALVE (Pressure to fully open [psi])	NORMALLY OPEN VALVE (Pressure to fully close [psi])
0	20	20
50	20	25
100	20	30
150	20	35
200	20	40
250	20	45

NOTE: Diaphragm pressure requirements for 1½" and 2" sizes are 20 psi to fully open a normally closed valve and 20 psi to fully close a normally open valve.

* Open for ½" thru 1¼" sizes.

SIZE	TOP CONNECTION*	DIMENSIONS				SHIP.WT. (lbs.)
		A	B**	C		
				N.O.	N.C.	
½"	⅛"	2⅞"	1⅕"	1⅞"	17/8"	3
¾"	⅛"	2⅞"	1⅕"	1⅞"	17/8"	3
1"	¼"	5⅞"	3½"	2⅞"	2⅞"	7
1¼"	¼"	5⅞"	3½"	2⅞"	2⅞"	7
1½"	¼"	5⅞"	4"	2⅞"	2⅞"	19
2"	¼"	5⅞"	4"	2⅞"	2⅞"	19

* Top connection extends vertically upward on 1" thru 2" body sizes.

** "B" dimension extends to the height of the top connection on 1" thru 2" body sizes.

CONTROL VALVES

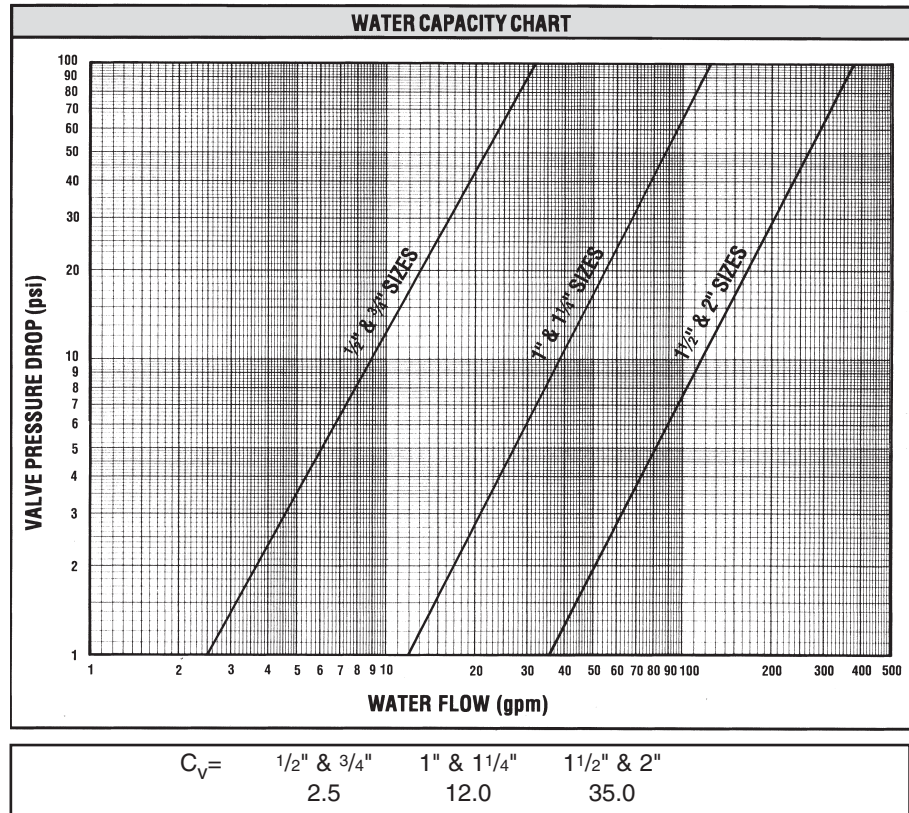
CAPACITY INFORMATION

HOW TO FIND WATER CAPACITY FOR CASH VALVE TYPE D-53

1. Determine the pressure drop (psi) across the valve (Inlet Pressure minus Outlet Pressure). Locate this valve on the pressure drop ordinate (see chart).
2. Locate the given gpm capacity on the water flow ordinate (see chart).
3. Draw a horizontal line from the pressure drop point and a vertical line from the flow capacity point. Mark their intersection. Select the diagonal valve sizing line to the right of this intersection point. Either of the two sizes is the correct valve for the given service conditions. Do not select a valve size to the left of an intersection point.

NOTES:

1. Consult the factory for valve sizing with pressure drops greater than 100 psi.
2. **MAXIMUM VALVE CAPACITY** of a selected valve size is found by drawing a horizontal line from the already determined intersection point to the valve sizing line. From this new point, draw a vertical line down to water flow ordinate. The maximum capacity of the valve is where this vertical line intersects the water flow ordinate.



EXAMPLE:

Given Inlet Pressure 20 psi, Outlet Pressure 10 psi, Flow 20 gpm.

- (1) Pressure Drop = 10 psi. Locate this point on the pressure drop ordinate.
- (2) Locate the 20 gpm point on the water flow ordinate.
- (3) The 10 psi horizontal pressure drop line and the vertical 20 gpm water flow line intersect between the 1/2" - 3/4" and 1" - 1 1/4" sizing lines. The closest valve size to the right of the intersection point is the 1" or 1 1/4" size. Select either of these two sizes.
- (4) Maximum valve capacity = 38 gpm.

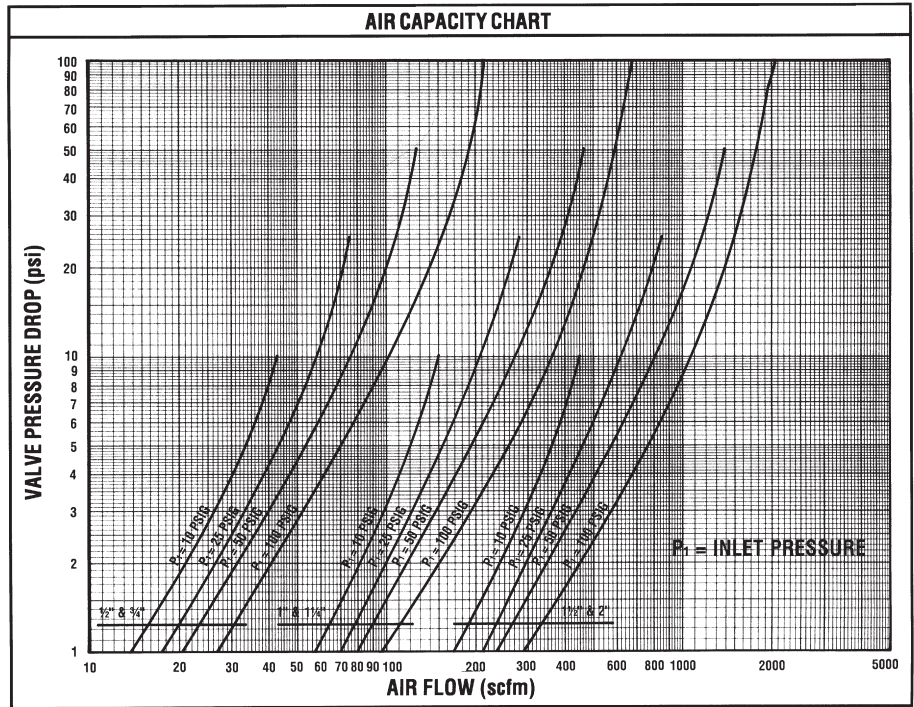
CAPACITY INFORMATION (Continued)

HOW TO FIND AIR CAPACITY FOR CASH VALVE TYPE D-53

1. Determine the pressure drop (psi) across the valve (Inlet Pressure minus Outlet Pressure). Locate this valve on the pressure drop ordinate (see chart).
2. Locate the given scfm capacity point on the air flow ordinate (see chart).
3. Draw a horizontal line from the pressure drop point and a vertical line from the flow capacity point. Mark their intersection. Select the group of curves to the right of the intersection point. The inlet pressure curve must always be to the right of the intersection point. If not, the valve size must be obtained from the next group of inlet pressure curves — to the right of the intersection point (see the example).

NOTES:

1. Consult the factory for valve sizing with pressure drops greater than 100 psi.
2. Inlet pressure curves for pressures other than 10, 25, 50 or 100 psi should be proportionately spaced and drawn parallel to the given higher and lower inlet pressure curves.
3. **MAXIMUM VALVE CAPACITY** is found by drawing a horizontal line from the intersection point to the valve size inlet pressure curve. From this new point draw a vertical line down to the air flow ordinate. The maximum capacity of the valve is where this vertical line intersects the air flow ordinate.



EXAMPLE:

Given Inlet Pressure 20 psi, Outlet Pressure 10 psi, Flow 200 scfm.

- (1) Pressure Drop is 10 psi. Locate this point on the pressure drop ordinate.
- (2) Locate the flow of 200 scfm on the air flow ordinate.

- (3) Mark the point where the 10 psi and 200 scfm lines intersect. Notice the intersection point is to the right of the inlet pressure curve of 20 psi. Therefore, a 1" or 1 1/4" valve should not be selected. Rather, a 1 1/2" or 2" valve should be chosen from the next group of inlet pressure curves — to the right of the intersection point.
- (4) Maximum valve capacity = 540 scfm.

HOW TO ORDER

To order, specify Cash Valve type by specific series designation. Also state the following:

1. State whether valve should be normally open or normally closed
2. Valve size
3. Service (water, air, oil, etc.)
4. Inlet pressure
5. Outlet or pressure range and setting
6. Maximum flow rate desired
7. System operating temperature
8. Loading pressure
9. Optional features, if any, as described for a specific valve.

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