Series DCV/RDCV Diaphragm Valves

Specifications - Installation and Operating Instructions

DCV62T1D

DCV20C1D

RDCV62T

RDCV20C

The **Series DCV/RDCV Diaphragm Valves** are ideal for use with the Series DCT1000 and Series DCT500 duct collection timer boards. Both the Series DCV and RDCV have the option for either coupling or NPT connections. The coupling connection allows for a quick and simple installation. Only the stub pipe and blowtube need to be cleaned and deburred before the valve is fit into position. The "T" Series DCV has female threaded connections. Both the "C" and "T" versions have a 90° angle between the inlet and outlet the most suitable configuration for pulse valve applications. The design offers not only ease of installation, but also minimal airflow restriction for an exceptional cleaning pulse. The valves are offered in both integrated and remote coil configurations.

MODEL CHART

Model	Size	Solenoid	Connection	Number of Diaphragms	Cv Factor (gal/min)
RDCV20T	3/4″	Remote	NPT	1	14
RDCV20C	3/4″	Remote	Coupling	1	14
DCV20T1D	3/4″	Integral*	NPT	1	14
DCV20C1D	3/4″	Integral*	Coupling	1	14
RDCV25T	1″	Remote	NPT	1	23
RDCV25C	1″	Remote	Coupling	1	23
DCV25T1D	1″	Integral*	NPT	1	23
DCV25C1D	1″	Integral*	Coupling	1	23
RDCV35T	1-1/2″	Remote	NPT	1	42
RDCV35C	1-1/2″	Remote	Coupling	1	42
DCV35T1D	1-1/2″	Integral*	NPT	1	42
DCV35C1D	1-1/2″	Integral*	Coupling	1	42
RDCV45T	1-1/2″	Remote	NPT	2	51
RDCV45C	1-1/2″	Remote	Coupling	2	51
DCV45T1D	1-1/2″	Integral*	NPT	2	51
DCV45C1D	1-1/2″	Integral*	Coupling	2	51
RDCV50T	2″	Remote	NPT	2	106
DCV50T1D	2″	Integral*	NPT	2	106
RDCV62T	2-1/2″	Remote	NPT	2	136
DCV62T1D	2-1/2″	Integral*	NPT	2	136
RDCV76T	3″	Remote	NPT	2	167
DCV76T1D	3″	Integral*	NPT	2	167

*110 VAC with DIN Connector.

SPECIFICATIONS

Service: Compatible gases, filtered and oil free.
Wetted Materials: Body: aluminum; Trim: 304 SS; Diaphragm and seals: NBR; Diaphragm disc: Polyamide.
Other Materials: Cover: Aluminum; Body bolts and spring: 304 SS.
Pressure Limits: Minimum of 4.4 psi (0.3 bar), maximum of 124.7 psi (8.6 bar).
Temperature Limits: Ambient: -4 to 140°F (-20 to 60°C) for RDCV models, -4 to 122°F (-20 to 50°C) for DCV models; Operating: -4 to 185°F (-20 to 85°C).
Power Requirements: 110 VAC, 220 VAC, or 24 VDC for DCV models.
Power Consumption: 12 W, inrush: 17 VA; holding: 14.5 VA for DCV models.
Electrical Connection: DIN connection for DCV models.
Enclosure Rating: NEMA 4X (IP65) for DCV models.
Process Connection: See model chart.
Mounting Orientation: Any position.

MODEL CHART

Construction	DCV RDCV					Integrated coil Remote coil
Size		20 25 35 45 50 62 76				3/4″ 1″ 1-1/2″ 1-1/2″ (2 diaphragms) 2″ 2-1/2″ 3″
Connection			T C			NPT Coupling (up to 1-1/2″ only)
Voltage				1 2 3		110 VAC (for integrated coil only) 220 VAC (for integrated coil only) 24 VDC (for integrated coil only)
Electrical Connections					D	DIN (for integrated coil only)

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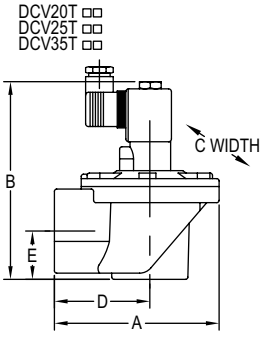
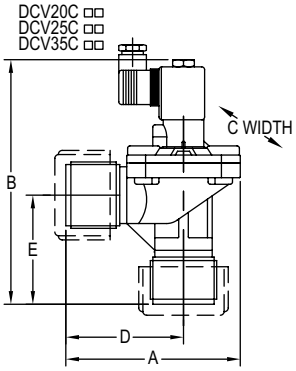
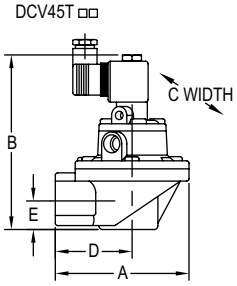
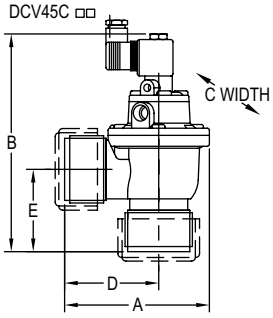
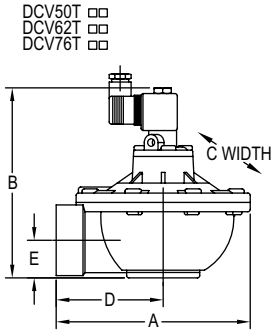


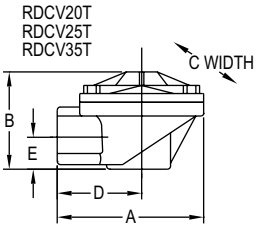


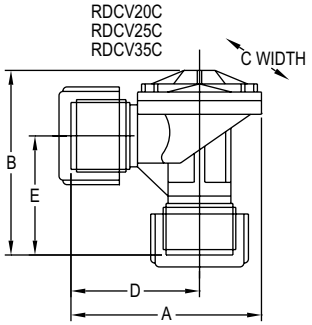


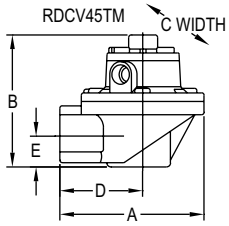


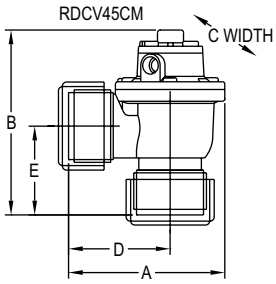


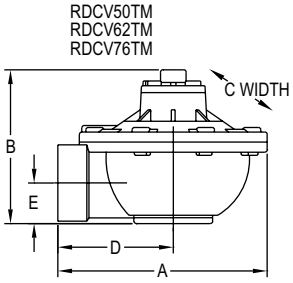
DCV DIMENSIONAL CHART											
Connection	Model						A [A mm]	B [B mm]	C [C mm]	D [D mm]	E [E mm]
	DIN Electrical Connection			Lead Wires Electrical Connection							
NPT	**DCV20T1D**	**DCV20T2D**	**DCV20T3D**	**DCV20T1L**	**DCV20T2L**	**DCV20T3L**	3-15/16″ [100]	4-13/16″ [122]	3-7/16″ [87]	2-3/16″ [56]	25/32″ [20]
NPT	**DCV25T1D**	**DCV25T2D**	**DCV25T3D**	**DCV25T1L**	**DCV25T2L**	**DCV25T3L**	4-1/8″ [105]	4-31/32″ [126]	3-1/4″ [83]	2-1/2″ [64]	7/8″ [22]
NPT	**DCV35T1D**	**DCV35T2D**	**DCV35T3D**	**DCV35T1L**	**DCV35T2L**	**DCV35T3L**	5-1/8″ [130]	6-1/16 [154]	4-3/8″ [111]	4-1/2″ [114]	1-9/32″ [33]
NPT	**DCV45T1D**	**DCV45T2D**	**DCV45T3D**	**DCV45T1L**	**DCV45T2L**	**DCV45T3L**	5-1/8″ [130]	7-7/32″ [183]	4-3/8″ [111]	4-1/2″ [114]	1-9/32″ [33]
NPT	**DCV50T1D**	**DCV50T2D**	**DCV50T3D**	**DCV50T1L**	**DCV50T2L**	**DCV50T3L**	8-1/16″ [205]	7-29/32 [201]	7-1/4″ [184]	4-15/32″ [113]	1-9/16″ [40]
NPT	**DCV62T1D**	**DCV62T2D**	**DCV62T3D**	**DCV62T1L**	**DCV62T2L**	**DCV62T3L**	8-9/32″ [210]	8-3/4″ [222]	7-1/4″ [184]	4-21/32″ [118]	1-29/32″ [48]
NPT	**DCV76T1D**	**DCV76T2D**	**DCV76T3D**	**DCV76T1L**	**DCV76T2L**	**DCV76T3L**	8-19/32″ [218]	9-7/8″ [251]	7-7/8″ [200]	4-21/32″ [118]	2-1/2″ [63]
Coupling	**DCV20C1D**	**DCV20C2D**	**DCV20C3D**	**DCV20C1L**	**DCV20C2L**	**DCV20C3L**	4-13/32″ [112]	5-27/32″ [148]	3-7/16″ [87]	2-5/8″ [67]	1-25/32″ [45]
Coupling	**DCV25C1D**	**DCV25C2D**	**DCV25C3D**	**DCV25C1L**	**DCV25C2L**	**DCV25C3L**	4-5/8″ [117]	6-21/32″ [177]	3-1/4″ [83]	3″ [76]	2-3/4″ [70]
Coupling	**DCV35C1D**	**DCV35C2D**	**DCV35C3D**	**DCV35C1L**	**DCV35C2L**	**DCV35C3L**	5-13/16″ [147]	7-21/32″ [194]	4-3/8″ [111]	3-5/8″ [91]	3″ [76]
Coupling	**DCV45C1D**	**DCV45C2D**	**DCV45C3D**	**DCV45C1L**	**DCV45C2L**	**DCV45C3L**	5-25/32″ [147]	8-27/32″ [224]	4-3/8″ [111]	3-5/8″ [91]	3″ [76]











RDCV DIMENSIONAL CHART						
Connection	Model	A [A mm]	B [B mm]	C [C mm]	D [D mm]	E [E mm]
NPT Coupling	**RDCV20T**	3-15/16″ [100]	2-31/32″ [75]	3-7/16″ [87]	2-3/16″ [56]	25/32″ [20]
NPT Coupling	**RDCV25T**	4-1/8″ [105]	3″ [76]	3-1/4″ [83]	2-1/2″ [64]	7/8″ [22]
NPT Coupling	**RDCV35T**	5-1/8″ [130]	4-29/32″ [125]	4-3/8″ [111]	4-1/2″ [114]	1-9/32″ [33]
NPT Coupling	**RDCV45T**	5-25/32″ [147]	5-5/32″ [131]	4-3/8″ [111]	3-5/8″ [91]	3″ [76]
NPT Coupling	**RDCV50T**	8-1/16″ [205]	5-7/8″ [149]	7-1/4″ [184]	4-15/32″ [113]	1-9/16″ [40]
NPT Coupling	**RDCV62T**	8-9/32″ [210]	6-11/16″ [170]	7-1/4″ [184]	4-21/32″ [118]	1-29/32″ [48]
NPT Coupling	**RDCV76T**	8-19/32″ [218]	7-27/32″ [199]	7-7/8″ [200]	4-21/32″ [118]	2-1/2″ [63]
NPT Coupling	**RDCV20C**	4-13/32″ [112]	4″ [102]	3-7/16″ [87]	2-5/8″ [67]	1-25/32″ [45]
NPT Coupling	**RDCV25C**	4-5/8″ [117]	5″ [127]	3-1/4″ [83]	3″ [76]	2-3/4″ [70]
NPT Coupling	**RDCV35C**	5-13/16″ [147]	5-15/32″ [139]	4-3/8″ [111]	3-5/8″ [91]	3″ [76]
NPT Coupling	**RDCV45C**	5-25/32″ [147]	6-25/32″ [172]	4-3/8″ [111]	3-5/8″ [91]	3″ [76]

OPERATION

⚠ WARNING When working on the Actuator/Valve assembly, disconnect the air or power supply to the actuator. Spring return actuators/valves may change position if power fails or is removed. Never insert any object or body part into the valve body. Severe injury may occur.

Series DCV includes an integral solenoid and Series RDCV needs to be used with a remote pilot solenoid valve. Both are normally closed valves. When the remote pilot solenoid valve or integral solenoid opens, pressure is released (exhausted) from the top of the diaphragm in the pulse valve. This allows the line pressure on the bottom of the diaphragm to push the diaphragm up and open the main orifice of the pulse valve. When the solenoid then closes the pressure on the bottom and the top of the diaphragm equalize closing the main orifice of the pulse valve.

⚠ WARNING Before installation make sure all air pressure has been released, electric power has been turned off, and air pressure source has been closed. Turn power on and increase pressure only after installation is complete.

LOCATION

Select a location that will not exceed the ambient temperature specifications of the valve. The system must be located in an enclosure that meets relevant safety standards and electrical codes of the environment.

MOUNTING

The DCV/RDCV can be mounted in any position. For optimum life and performance it is recommended that the unit be mounted vertically and upright to reduce the chance of foreign matter accumulating in the valve. For DCV in weatherproof applications it is recommended that the cable gland be positioned face down to avoid possible rainfall or water from entry.

PROCESS CONNECTIONS

For DCV/RDCV with coupling connections:

1. Connect piping so that pneumatic input is the bottom connection and the outlet is the side connection at 90°.
2. Stub pipe (blow tube) must be free of burrs, rust, oil, and other debris.
3. Disassemble compression fittings and place the retaining nut, retainer, and gasket onto the piping. Make sure that the beveled edge of the gasket faces the valve body.
4. Connect fittings to the valve body. Make sure that the pipe is inline with the valve ports. Nut and seals are for connection only and should not be used for support purposes.

Notes:

- Make sure pipes are anchored securely to avoid separation from the valve.
- Do not use the valve for leverage when connecting piping.
- Do not over-tighten retaining nut or valve damage may result. Tighten retaining nuts just sufficiently for sealing to prevent leakage. This is a gasket seal and does not require excessive turning of the nut.

For DCV/RDCV with NPT connections:

1. Connect piping so that pneumatic input is the bottom connection and the outlet is the side connection at 90°.
2. Stub pipe (blow tube) must be free of burrs, rust, oil, and other debris.
3. Thread piping into the valve body. Make sure that the pipe is inline with the valve ports. If using tape or pipe compound, apply to the male piping threads and use sparingly as it may come loose and affect valve operation. Do not apply tape or pipe compound directly to the female valve body threads.

Notes:

- Make sure pipes are anchored securely.
- Do not use the valve for leverage when connecting piping.

Pressure Connection from Remote Pilot Solenoid Valve (For RDCV units):

The RSV, remote pilot solenoid valve, should be mounted as close as possible to the RDCV pulse valve. The maximum distance is 9.8 ft (3 m). Tubing from the remote solenoid valve is connected to the exhaust port on the top of the RDCV pulse valve. If using tape or pipe compound, apply to the male piping threads and use sparingly as it may come loose and affect valve operation. Do not apply tape or pipe compound directly to the female valve body threads.

Wiring Connections (For DCV units):

Wire in accordance with the National Electrical Code and local regulations. To aid in wiring the solenoid on the DCV may be rotated 360°. It is recommended to use 18 AWG copper wire rated at 90°C or greater.

Wiring the DCV with DIN connector

1. Remove center screw and pull connector cover from the body.
2. Remove gasket and place small screwdriver in slot to pry out the terminal block from the cover.
3. Thread wire through the gland nut, gland gasket, washer and connector cover.
4. Connect wires to proper terminals on the terminal block.
5. Snap terminal block back into the cover. The connector cover may be rotated in 90° increments to position the cable entry as needed for the application. Reinstall the center screw and screw back into the solenoid body.

MAINTENANCE

⚠ WARNING To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize system and unit, and vent fluid to a safe area before servicing.

The DCV/RDCV should be cleaned periodically. The amount of time between cleanings depends on the application. Preventive Maintenance includes keeping media clean of material and oil free, and periodic testing to ensure proper operation and to look for wear or damage. Replacement diaphragm assemblies are available from the factory.

Solenoid Valve Troubleshooting

Problem	Possible Cause	Action Required
No pulse	• No supply air • Air pressure is too high • No voltage to RSV • Solenoid is damaged	• Check whether the air compressor and valve have been turned on • Check the pressure of the air supply • Check supply voltage • Send back for evaluation
Leakage in outlet port	• Improper installation of inlet port	• Check the pipe connections between the inlet and outlet
Low pulse	• Low air pressure	• Check air supply pressure • Verify that the air supply was distributed properly
Shaking noise	• Valve screws are loose	• Tighten the loose screws
Solenoid noise	• Solenoid mounting screws are loose	• Tighten the loose screws

WARRANTY

The Series DCV/RDCV is not field serviceable and should be returned if repair is needed (field repair should not be attempted an may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

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