



## Series CRDV/S

Plug-N-Play Closed Loop  
Compressor Drain Valve

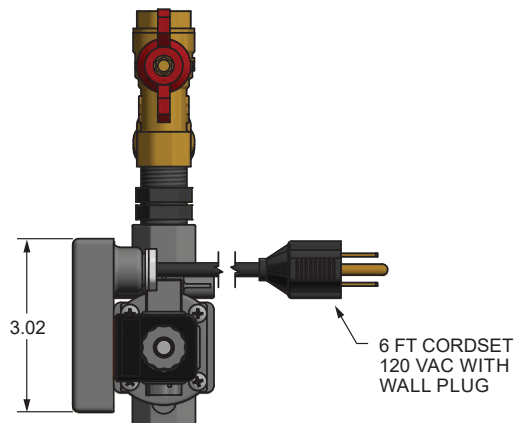
The Spartan Scientific Series CRDV/s Condensate Removal Drain Valve with optional Wi-Fi keeps your air compressor tank and air lines free of moisture automatically by coupling a state of the art, closed loop sensing system with a robust high flow diaphragm solenoid valve. As a constant sentinel, the CRDV/s protects your expensive equipment against premature failure, reducing rust and clogged air components while increasing compressor life, facilitating proper maintenance, proper cycling and machine life. The CRDV/s features a self-cleaning cycle every 24 hours, status indicator lights, environment resistant design and once setup, is truly plug and play. As water/effluent enters the CRDV/s, the self-learning mode opens the valve more often or less often based on the sensing of the water and demand. The CRDV/s drains the water, only when necessary with no loss of compressed air. Spartan Scientific offers a simple app for connecting the unit to the internet by use of a secure internet connection. Available for IOS, Android or desktop web site, the app allows the user real-time, data logged statistics on water removal, temperature, cumulative and daily cycling data. Upon connection, the user can set up alerts for alarm conditions that come in the form of texts or emails. More importantly, the user can see daily trends and have access everywhere. The options, utility, size, ease of installation and price rival the cost of conventional timed electric drains that have none of these features.

### Dimensional Data

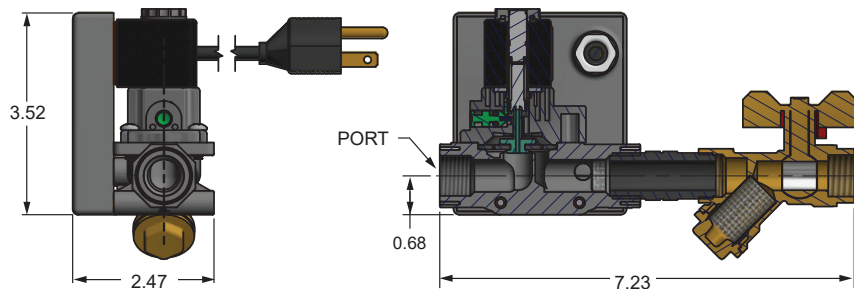
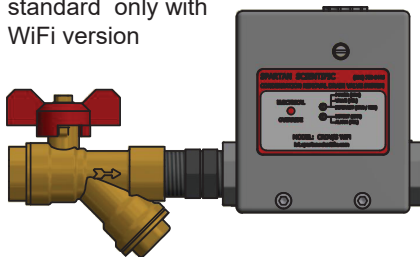
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED



NOW WITH OPTIONAL  
WI-FI FEATURE

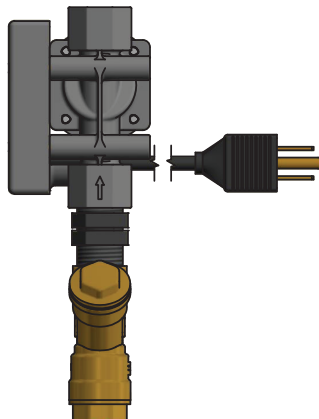


\*NOTE: Y-Strainer  
standard only with  
WiFi version

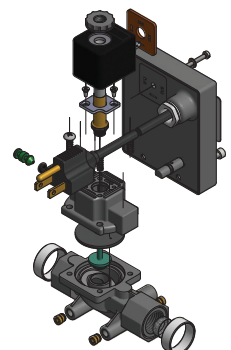


### FEATURES

- Wi-Fi app helps with preventative maintenance
- Mobile and PC interfaces for drain history
- Temperature monitoring
- Alert sent to your phone via text or e-mail
- Time sensitive alarms



### EXPLODED VIEW



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A56-1283 Rev.07



# Series CRDV/S

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Compressor Drain Valve

## Technical Data

**Function:** 2-Way, 2-Position; Inlet Pilot Diaphragm;  
Normally Closed

**Port Size:** 1/2" NPT

**Orifice Sizes /  
Flow Factor:** 12.5mm /  
2.45 Cv

**Pressure Range:** 0 to 180 psi

**Temp. Range:** Fluid Max.: +60°C  
Dry Range: Ambient +10° to +50°C  
Note: This device is not recommended for  
use in below freezing temperatures

**Response Time:** 20 to 80 ms Complete Cycle

**Media:** Air, emulsion, gas, water  
(contact factory for compatibilities)

**Environment  
Protection:** IP65 (IEC 144), NEMA 4  
Dust-tight and water resistant  
(with electrical connector)

**Mounting:** On pipe or #8 - 32 mounting holes on  
valve base

**Wetted Materials:** Elastomers: FKM  
(others available on request)  
Manual Override: Polypropylene  
Operator: 400 Series Stainless Steel and Brass  
Orifice Insert: Polypropylene  
Shading Ring: Copper (AC Only)  
Springs: 300 Series Stainless Steel  
Valve Body: Glass-Filled Nylon

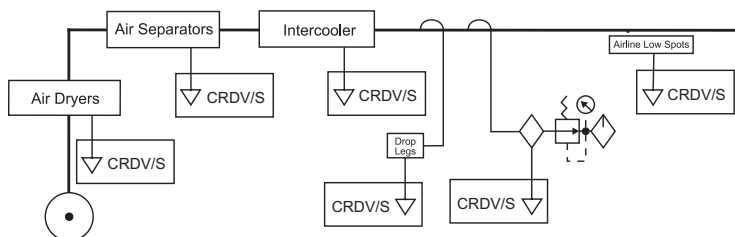
**Coil Data:** Duty Cycle: Continuous  
(within specifications)  
Encapsulation: Glass-Filled Nylon  
Insulation: Class F  
Power Rating: 8.5 VA  
Voltage: 120 VAC 50/60 Hz  
Voltage tolerance: +/- 10% Nominal  
Winding: Class H

**Transient  
Suppression:** MOV

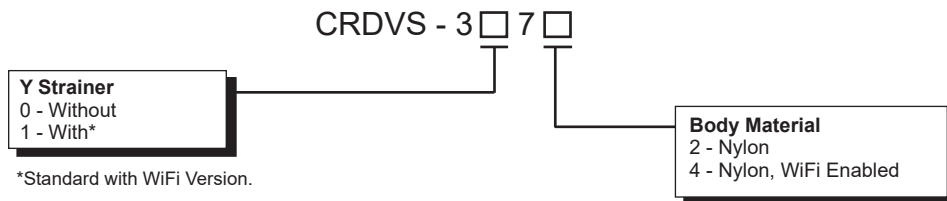
**Cable:** 6 ft. Cord with grounded wall plug

**Packaged Weight:** 1.1 lbs.

## Applications



## How To Order



**Y Strainer**  
0 - Without  
1 - With\*

\*Standard with WiFi Version.

**Body Material**  
2 - Nylon  
4 - Nylon, WiFi Enabled

**Repair Kit**  
Kit includes: Solenoid Coil, Solenoid  
Operator Assembly & Viton Diaphragm

Specify Part Number  
CRDVS-RK

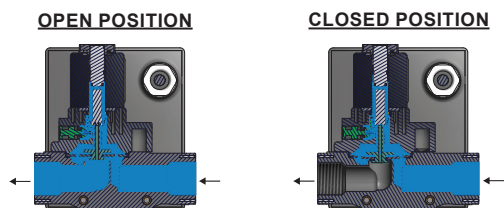
Order Example: CRDVS-3072  
Without Y strainer, Nylon.



## Series CRDV/S Wi-Fi

### Application and Installation Guide

#### How It Works



#### Maintenance

- Always remove electrical power and shut the ball valve, bleeding any residual air pressure from the CRDV/S Wi-Fi by use of the override prior to doing any maintenance.** It is best to shut down the compressor also during this step.
- In many installations there will be rust and scale particles in the air receiver if there was no drain valve/strainer present. Such debris can clog your new ball valve strainer and inhibit water from reaching the CRDV/S. It is best if you are able to bleed your system prior to attaching your CRDV/S. If a clog occurs, the CRDV/S Wi-Fi will send you alerts as directed by you in Wi-Fi setup.
- It is suggested to check the strainer soon after installation and then once a month or if an alert occurs.
- Cleaning the Y-Strainer: Shut down the compressor, close the ball valve on the strainer and bleed any residual air from the system by over-riding the CRDV/S. Once pressure is purged from the system, open the strainer by unscrewing the strainer plug and check for debris in the strainer (Fig. 1). Water rinse clean and reinstall the strainer, open the ball valve slowly. The CRDV/S has a large  $\frac{1}{2}$ " orifice but particles can still clog the unit if large enough. Failure to use a strainer could result in premature failure of your drain valve.

**NOTE:** This unit is equipped with both Mechanical and Electrical Overrides. The push button override can also be used to verify valve operation in the initial setup before any power has been supplied.

#### FCC Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**Manu.** Spartan Scientific  
**Model** Model CRDVS

**Device complies with**  
**CAN ICES-3 (A)/NMB-3(A)**

#### Caution

Excessive use of pipe sealant can cause clogging and leakage. Please follow ASME standards for applying pipe sealant and tape. Do not use media, voltage or pressures other than that recommended by Spartan Scientific Inc. as valve malfunction could result. Misuse or misapplication of Spartan solenoid valves could cause serious bodily injury or property damage.

#### Warranty Information

Solenoid valves and all other products manufactured by Spartan are warranted by Spartan to be free from defects in material and workmanship for a period of 1 year from the date of purchase. Spartan's obligation under this warranty is limited to repair or replacement of the defective product or refund of the purchase price paid solely at the discretion of Spartan and provided such defective product is returned to Spartan freight prepaid and upon examination by Spartan such product is found defective. This warranty shall be void in the event that the product has been subject to misuse, misapplication, improper maintenance, modification or tampering. This warranty is expressed in lieu of all other warranties, expressed or implied from Spartan Scientific, Inc., Representatives or employees.

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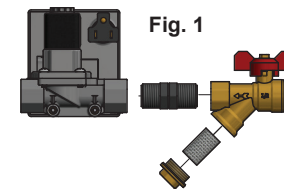
## Series CRDV/S Wi-Fi

### Application and Installation Guide

#### Installation

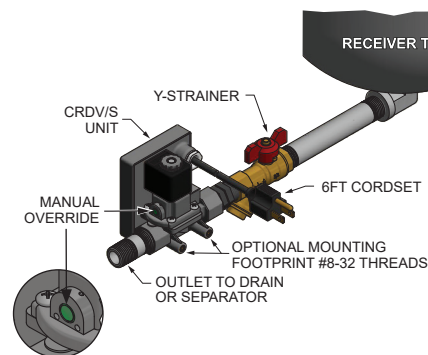
#### Model CRDVS-3174

- The CRDV/S is an automatic device and will cycle with the presence of water at the inlet and one time initially to indicate that it is working. It is important to make all pressure connections prior to making electrical connections as the CRDV/S automatically cycles without warning.
- Drain the tanks, dryers, coolers or any device that is the producer of the condensate of any water and air pressure prior to CRDV/S installation.
- It is necessary to mount the CRDV/S below the vessel it is draining, as the condensate is gravity fed to the inlet port of the CRDV/S.
- Included in your package is a ball-valve strainer designed to facilitate installation of your CRDV/S Wi-Fi. Please note the orientation of both the ball valve strainer and your CRDV/S Wi-Fi following the illustrations below.
- Connect Y-Strainer / Ball Valve to CRDV/S. The flow arrow indicates direction of flow and should face toward inlet port. (See Fig.1)
- Connect the outlet port to an air-oil separator or equivalent device.
- Once all fluid connections are made, go to [iot.spartanscientific.com](http://iot.spartanscientific.com) on your desktop computer or download the app from the store for your Android / iOS, follow the instructions for adding a profile.

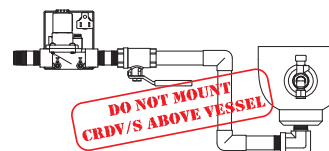
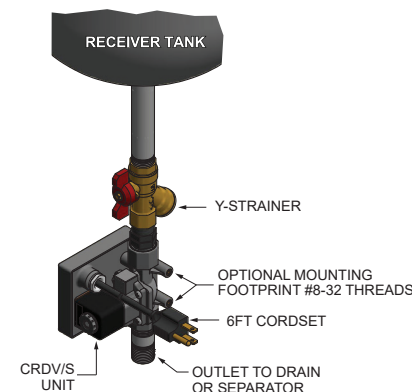


**NOTE:** Spartan Scientific strongly recommends the use of a strainer prior to the inlet of the CRDV/S to filter out any particulate. If no strainer is used particulate build up may occur causing a minor leak. To remedy this condition, it is necessary to apply a sustained purge of 5 to 10 seconds to clear the debris.

#### HORIZONTAL MOUNTING



#### VERTICAL MOUNTING



**WARNING:** DO NOT Mount the CRDV/S unit higher than the vessel as water runs to the unit by gravity and cannot run uphill. An air lock could result in the unit and water might not be removed because it is never sensed. Rule of thumb is always mount the CRDV/S unit below the vessel being drained with a clear path for water to fall to the sensor in the inlet port.

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## Series CRDV/S Wi-Fi

Application and  
Installation Guide

### Wi-Fi Setup

To connect your Spartan Scientific product to the internet, you need a wireless non-proxy access point, knowledge of the pass phrase and a web-enabled device you will use for set up. Choose from the **Google Play Store**, **Apple App Store**, or go to **iot.spartanscientific.com** after downloading the Spartan Scientific app be prepared to create a new account where you will need a valid e-mail address and password (8 characters). Upon confirmation you are now ready to use your new account for product setup. Follow instructions in the app for setup of your new device.



### Indicator Light Chart

NO POWER when not lit		POWER (GRN)	= Electricity is connected to CRDV/S
		VALVE (YEL)	= Valve ON, Condensate is Purging
		INTERNET (GRN / RED)	= Internet connection, flashing
NO CONDENSATE DETECTED when not lit		DETECT (GRN)	= Condensate Detected
		ALARM (YEL)	= Alarm Mode



## Series CRDV/S Wi-Fi

Application and  
Installation Guide

### How It Works

#### Normal Mode:

When the CRDV/S is first connected to electricity, the unit goes into a one minute initialization mode during which the override button is non-functional and the following sequence occurs:

(Top) LED = Power (GRN) / Valve (YEL) / Internet, flashing (GRN/RED)  
(Bottom) LED = Detect (GRN) / Alarm (YEL)

(Top) RED/GRN	(Bottom) RED/GRN @ 1 Hz (chatter warning) for 10 seconds
(Top) RED/GRN	(Bottom) off @ 10 Hz and valve chatters for 2 seconds
(Top) GRN	(Bottom) off Pause for 3 seconds
(Top) YEL	(Bottom) off Valve on (short vapor purge) for 1 second
(Top) GRN//RED	(Bottom) off @ 1 Hz (sensor warm up) for 35 seconds
(Top) GRN	(Bottom) off – unit ready for /use

If the bottom LED continues to flash RED, the unit is awaiting setup to an access point.

After the initialization mode, the unit will immediately enter normal mode.

As condensate is generated, the water and effluent falls by gravity through the piping to the inlet of the CRDV/S. A short vapor purge occurs continually to insure there is no trapped air in the lines to prevent water from reaching the CRDV/S. The time interval between vapor purges is automatically adjusted based on the need and can vary between 2 minutes and 2 hours. Nothing else happens until the CRDV/S solid-state sensor senses the presence of condensate. At that time the electronics sends the signal to energize the solenoid valve, which opens and exhausts the condensate from the pneumatic system. After a 1 second purge interval the valve de-energizes and the sensor no longer senses water at the inlet port. The CRDV/S then goes dormant for a minimum of 35 seconds after which the unit will stand ready to purge condensate again, only when it is sensed. As condensate once again builds up, the sensor senses the presence of condensate and the purge cycle continues.

#### High Flow Mode:

If, during normal mode, there is a high production of condensate, the CRDV/S function will change to accommodate the increased need to remove water from the system. As in normal mode, the CRDV/S remains dormant, sensing for condensate. If there is a high amount of condensate at the inlet port, so much so that the 1 second purge will not remove it all from the port, the CRDV/S “learns” and opens for a 2 second purge interval. The unit then goes into a 35 second wait cycle after which the CRDV/S, if it continues to sense condensate, continues to re-cycle adding 1 second to the purge interval each time. The sensor goes into alarm mode when the purge interval gets to 6 seconds. During alarm mode the CRDV/S repeats the purge cycle adding 1 second to the purge interval each time until the sensor stops sensing condensate. When the sensor runs free of condensate the CRDV/S returns to normal mode. If during alarm mode the purge interval gets to 16 seconds, the unit will enter an emergency shut down mode to conserve air and will flash both LEDs at a 1 Hz rate until power is removed and reappplied.

#### Electrical and Manual Override:

The CRDV/S is equipped with both a manual override and an electrical override. The manual override is the green push button found on the side of the valve at the back of the unit. Pressing this button allows for drainage of the condensate line without the need for electricity. The electrical override is a button found at the front of the unit which energizes the solenoid and drains the condensate line. Both overrides are momentary contact, spring return.

#### One 1 second purge cycle every 24 hours

There is one 1 second purge/chatter cycle every 24 hours just to ensure that the condensate lines are clear and effluent is flowing to the CRDV/S.