D-316 Family

Overview

D-316 Family of valves, available in side ported, DMAP manifold, and NAMUR mount, are a high performance, high flow, direct acting solenoid valve. Designed as a 3-way (3/2), it is a true multipurpose/universal flow, "bubble tight" valve throughout its complete operating range and cycle life. Suitable for air, natural gas and hydraulic media. High performance stainless steels make the D-316 Series an ideal choice for the harshest environments. The D-316 can be configured for full NACE compliance. Designed for ease of installation and field serviceability make the D-316 the choice for all applications.

Valve/Conduit Positioning
Solenoid housing rotates 360° without need for tools, disassembly or valve re-adjustment. The D-316 high performance valve can be mounted in any orientation for simplified installation and connection. Reduced installed cost/labor.

Encapsulated Class H Coil
Offer Moisture resistant and enhanced heat dissipation. Standard Class H coil offers high temperature ratings for long product life in the most severe environments.

Direct Acting Solenoid Design
The D-316 solenoid valves utilize a high performance direct acting solenoid for the perfect balance of flow, power and size.

Poppet
Universal high flow balanced poppet design is maximized through a unique sealing design. The balanced design assures no false shifts due to pressure spikes regardless of application pressures. Universal flow provides all functions in one valve.

No External Vent
The valve internals are sealed, providing protection from harsh environmental conditions.

Optimized Coil Design
The D-316 high performance coil allows maximum pull in force vs low power consumption.

Integral Junction Box
'O' Ring sealing for solenoid enclosure. Fully weather protected integral junction box for IP66/67/68 rating and NEMA 6P prolonged submersibility. Assures long trouble-free life in wet environments. High temperature rated terminal strip is included, simplifying wiring, mounting, installation and serviceability.

O Ring Poppet Sealing
Positive “Bubble Tight” sealing via standard ‘O’ rings. No custom or flat gaskets required, only readily available standard FKM ‘O’ rings. A variety of seal materials are available offering media and temperature flexibility.

Corrosion Resistant Materials
Standard materials are 316L stainless steel for compatibility with the widest range of media in almost any service.

Simple Maintenance
Replace coil and or seals without removing the valve from system tubing/piping.

Agency Approvals
The D-316 Series meets worldwide hazardous area regulations and standards.

D-316 Shut Off Valve (SOV) 1oo2

The SOV option provides a series pilot control circuit that requires two coils, a primary and a secondary, to be energized in order for the actuator to shift. Conversely if the electrical signal to either coil is removed the actuator will return to the de-energized position. This function can be considered as a 1oo2 where the primary coil is wired to the control system and the secondary, shut down coil, is wired to various sensors (e.g., temperature - pressure).

Consult factory for ordering information.

FLOW SCHEMATIC
DMAP D-316 Series Modular Air Package

Modular Concept
The basic DMAP system is made of two configurable modules. Module one is the air preparation module consisting of filter/regulators, gauges and drains. Module two is the control valve module, a solenoid operated, direct acting, 3-way control valve.

The Air Prep Module
Is based on Versa’s AR-316 FRL Series. This proven design is small, high flow, simple and configurable. Regulators can supplied with tamper proof adjustment locknut, an auto drain or a hand knob for pressure adjustment as options.

The Control Valve Module
is Versa’s D-316 Series solenoid operated, direct acting valve. This proven design is small, yet yields high flow. D-316 valves are also simple and configurable in design. The D-316 Series has become a leader in the ¼” size control package market. Furthermore, the D-316 Series is available with our World Solenoid with global agency approvals.

Valve/Conduit Positioning
Like all D-316 Family of valves the solenoid housing rotates 360° without need for tools, disassembly or valve re-adjustment. The D-316 high performance valve can be mounted in any orientation for simplified installation and connection.

NAMUR D-316 Series Direct Actuator Mount

Direct Acting Solenoid Design
The D-316 NAMUR mount valve is designed for single acting, spring return actuators.

Poppet
Universal high flow balanced poppet design has a unique sealing arrangement that assures no false shifts due to pressure spikes regardless of application pressures. Universal flow provides both 3-Way NO or NC in one valve.

ReBreather
The D-316 NAMUR valve is available as a 3-way. An internal drilling provides an integral ReBreather function. ReBreathers are used on single acting actuators to utilize air from the exhaust cycle of the piston side to fill the spring side of actuator, preventing corrosive external atmosphere from entering the spring side.

Valve/Conduit Positioning
Like all D-316 Family of valves the solenoid housing rotates 360° without need for tools, disassembly or valve re-adjustment. The D-316 high performance valve can be mounted in any orientation for simplified installation and connection.
D-316 Family

Specifications

Valve
Actuation: Solenoid actuated, spring return
Function: 3/2, 3-Way, 2 Position, universal flow
Media: Pneumatic, Air/Inert gas and Hydraulic
Pressure: vac to 175 psi (vac to 12 bar)
Flow: 0.8 Cv
Temperature: +4°F to 194°F (-20°C to 90°C)
-40°F to 194°F (-40°C to 90°C), low temp Buna option -44
-62°F to 194°F (-52°C to 90°C) Fluorosilicone option -T40
Port size: ¼” npt

Solenoid
Coil class: H Class
Surge protection: None, standard
Diode, suffix -303D, DC only
Metal-oxide varistor (MOV), suffix -303. AC or DC
Connections: ½” NPT or M20 conduit hub
Ingress protection: IP66/67/68 & NEMA 4X & 6P
Materials of construction*:
- Body: 316L Stainless Steel
- Poppet: 316L Stainless Steel
- Coil Housing: 316L Stainless Steel
- Coil: Epoxy molded
- Seals: FKM: Fluorocarbon, standard

*All valve components comply with NACE MR0175 except for main spring which is 316 stainless steel.
All wetted parts are NACE Compliant.
For full NACE compliance, add option -NA for Inconel spring.

Voltage/Power:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VDC</td>
<td></td>
<td>-D012</td>
</tr>
<tr>
<td>24 VDC</td>
<td>2.6 Watt</td>
<td>-D012</td>
</tr>
<tr>
<td>125 VDC</td>
<td></td>
<td>-D012</td>
</tr>
<tr>
<td>110/120 VAC</td>
<td>2.74 VA</td>
<td>-D024</td>
</tr>
<tr>
<td>220/240 VAC</td>
<td>3.11 VA</td>
<td>-D125</td>
</tr>
</tbody>
</table>

Solenoid Type

<table>
<thead>
<tr>
<th>Solenoid Type</th>
<th>Suffix Number</th>
<th>Agency Rating</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Solenoid</td>
<td>-XDDS</td>
<td>ATEX IECEx, cCSAUs</td>
<td>M20</td>
</tr>
<tr>
<td>World Solenoid with North American rating</td>
<td>-XDDT</td>
<td>Cl I, Zn 1 AEx d IIC T4 Gb, Zn 21 AEx tb IIC T135 Db</td>
<td>½” NPT</td>
</tr>
</tbody>
</table>

For other “T” ratings consult factory

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D-316 Family

**D-316 Side Ported**

<table>
<thead>
<tr>
<th>Valve Type &amp; Options</th>
<th>Part Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid Operated-Spring return</td>
<td>DSM-3301-316-XDD*-(**)</td>
<td>5.1 lbs (2.3 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Non-locking override, unguarded</td>
<td>DSM-3301-316-M-XDD*-(**)</td>
<td>5.2 lbs (2.4 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Locking override, unguarded</td>
<td>DSM-3301-316-M5R-XDD*-(**)</td>
<td>5.2 lbs (2.4 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Non-locking override, guarded</td>
<td>DSM-3301-316-G-XDD*-(**)</td>
<td>5.2 lbs (2.4 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Locking override, guarded</td>
<td>DSM-3301-316-G5R-XDD*-(**)</td>
<td>5.2 lbs (2.4 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Latching reset</td>
<td>DSM-3301-316-XDD*-356BN-(**)</td>
<td>5.4 lbs (2.4 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Latching reset and manual button</td>
<td>DSM-3301-316-XDD*-356B-(**)</td>
<td>5.6 lbs (2.5 kg)</td>
</tr>
</tbody>
</table>

**Dimensions**

**Flow Symbol**

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**Air Prep Selection**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
<th>Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator, Filter and manual drain</td>
<td><strong>ARFB-3112-316-CA3</strong></td>
<td>2.7 1.22</td>
</tr>
<tr>
<td><strong>ARFB-3111-316-CA3</strong></td>
<td></td>
<td>2.9 1.32</td>
</tr>
<tr>
<td>2&quot; gauge liquid filled**</td>
<td><strong>ARFB-3112-316-CA3-GB</strong></td>
<td>2.9 1.32</td>
</tr>
<tr>
<td>2 1/2&quot; gauge liquid filled**</td>
<td><strong>ARFB-3112-316-CA3-GAG</strong></td>
<td>2.9 1.32</td>
</tr>
</tbody>
</table>

*For Auto Drain change ARFB to ARDB  **For non liquid filled gauges use -GA or -GB

**Control Valve Selection**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid Operated-Spring return</td>
<td>DSM-3301-316-DA3</td>
<td>5.1 lbs</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Non-locking override</td>
<td>DSM-3301-316-DA3-M</td>
<td>5.2 lbs</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Locking override</td>
<td>DSM-3301-316-DA3-MSR</td>
<td>5.2 lbs</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Latching reset</td>
<td>DSM-3301-316-DA3-356BN</td>
<td>5.4 lbs</td>
</tr>
<tr>
<td>Solenoid Operated-Spring return with Latching reset and manual button</td>
<td>DSM-3301-316-DA3-356BN-††</td>
<td>5.6 lbs</td>
</tr>
</tbody>
</table>

†Select Suffix Number; XDDS for M20 conduit hub or XDDT for 1/2" NPT conduit hub. See "Agency Approvals" chart on front page.

**Option Selection**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
<th>Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting bracket</td>
<td>Add 4302-99-316-DA3 to bill of Material</td>
<td>0.5 0.23</td>
</tr>
<tr>
<td>Relief Valve (also specify Aux port plate)</td>
<td>Add RV-3-316 to bill of Material</td>
<td>0.2 0.09</td>
</tr>
<tr>
<td>Speed Control, close only</td>
<td>Add suffix -BC3 to Control Valve p/n</td>
<td>0.1 0.05</td>
</tr>
<tr>
<td>Speed Control, both open closed</td>
<td>Add FCV-3-316</td>
<td>0.5 0.23</td>
</tr>
<tr>
<td>Exhaust Dust Excluder</td>
<td>Add DE-3-316 to bill of Material</td>
<td>0.2 0.09</td>
</tr>
</tbody>
</table>

†††Add relief valve pressure in psi.
### Valve Type & Options

<table>
<thead>
<tr>
<th>Valve Type &amp; Options</th>
<th>Part Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid Operated-Spring Return</td>
<td>DSM-3311-316-NE*-XDD**-(†)</td>
<td>5.1 lbs (2.3 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring Return with Non-locking Override</td>
<td>DSM-3311-316-NE*-M-XDD**-(†)</td>
<td>5.2 lbs (2.4 kg)</td>
</tr>
<tr>
<td>Solenoid Operated-Spring Return with Locking Override</td>
<td>DSM-3311-316-NE*-M5R-XDD**-(†)</td>
<td>5.2 lbs (2.4 kg)</td>
</tr>
</tbody>
</table>

*For mounting screw selection use: NE1 = 10-24, NE2 = 10-32, NE3 = M5.
**Select Suffix Number; XDDS for M20 conduit hub or XDDT for ½” NPT conduit hub. See “Solenoid Type” on page 4
†Select voltage (see “Ordering Code” Page 4)

### Dimensions

![Diagram of valve dimensions]

### Flow Symbol

![Diagram of flow symbol]

**3-Way NC**

*For Normally Open (NO) rotate valve 180°and pipe inlet port to “3” port.

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WARNINGS REGARDING THE DESIGN APPLICATION, INSTALLATION AND SERVICE OF VERSA PRODUCTS

The warnings below must be read and reviewed before designing a system utilizing, installing, servicing, or removing a Versa product. Improper use, installation or servicing of a Versa product could create a hazard to personnel and property.

DESIGN APPLICATION WARNINGS

Versa products are intended for use where compressed air or industrial hydraulic fluids are present. For use with media other than specified or for non-industrial applications or other applications not within published specifications, consult Versa.

Versa products are not inherently dangerous. They are only a component of a larger system. The system in which a Versa product is used must include adequate safeguards to prevent injury or damage in the event of system or product failure, whether this failure be of switches, regulators, cylinders, valves or any other system component. System designers must provide adequate warnings for each system in which a Versa product is utilized. These warnings, including those set forth herein, should be provided by the designer to those who will come in contact with the system.

Where questions exist regarding the applicability of a Versa product to a given use, inquiries should be addressed directly to the manufacturer. Confirmation should be obtained directly from the manufacturer regarding any questioned application prior to proceeding.

INSTALLATION, OPERATION AND SERVICE WARNINGS

Do not install or service any Versa product on a system or machine without first depressurizing the system and turning off any air, fluid, or electricity to the system or machine. All applicable electrical, mechanical, and safety codes, as well as applicable governmental regulations and laws must be complied with when installing or servicing a Versa product.

Versa products should only be installed or serviced by qualified, knowledgeable personnel who understand how these specific products are to be installed and operated. The individual must be familiar with the particular specifications, including specifications for temperature, pressure, lubrication, environment and filtration for the Versa product which is being installed or serviced. Specifications may be obtained upon request directly from Versa. If damages should occur to a Versa product, do not Operate the system containing the Versa product. Consult Versa for technical information.

LIMITED WARRANTY DISCLAIMER AND LIMITATION OF REMEDIES

Versa’s Series products are warranted to be free from defective material and workmanship for a period of ten years from the date of manufacture, provided said products are used in accordance with Versa specifications. Versa’s liability pursuant to that warranty is limited to the replacement of the Versa product proved to be defective provided the allegedly defective product is returned to Versa or its authorized distributor. Versa provides no other warranties, expressed or implied, except as stated above. There are no implied warranties of merchantability or fitness for a particular purpose. Versa’s liability for breach of warranty as herein stated is the only and exclusive remedy and in no event shall Versa be responsible or liable for incidental or consequential damages.