# D-316 SERIES




VERSA®



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# D-316 Family

## Overview

D-316 Family of valves, available in DSM side ported, DMAP manifold, and NAMUR mount models, are high performance, high flow, direct acting solenoid valves. Designed as a 3-way (3/2), it is a true multipurpose/universal flow, "bubble tight" valve. Suitable for air, natural gas and hydraulic media.

High performance stainless steels make the D-316 Series an ideal choice for the harshest environments and can be configured for full NACE compliance. The 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.
Unique to the D-316 family of valves the solenoid housing can be rotated 360° without need for tools, disassembly or valve re-adjustment, facilitating the efficient electrical connections. The D-316 high performance valve can be mounted in any orientation for simplified installation and connection.

The solenoid is available in two versions with world wide approvals and options for M20 or 1/2" NPT conduit connection.

The encapsulated class H coil offers high temperature ratings for long product life in the most severe environments where moisture resistants and enhanced heat dissipation is an added value. A low watt option (-LLP) is also available for the 12 & 24 volt coils requiring only 1.0 watts of power.
Designed for ease of installation and field serviceability, the D-316 is an ideal choice for most applications.

## **DSM D-316** Side Ported

The DSM is a 1/4" NPT (G1/4"), side ported 3-Way (3/2), direct acting, solenoid/spring return, internally vented valve with universal flow that provides NO or NC in one valve.

The DSM can be mounted in any orientation and solenoid housing can be rotated 360° for ease of conduit connection. 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.

## **DSM 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. The valve can be mounted in four orientations. The vertical and horizontal options allow for NC or NO operation based on the mounting.
ReBreather
The D-316 NAMUR 3-way version's 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.

## **DSM 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.

Air Prep Module
This module is based on the high-flow AR-316 filter-regulators. It comes with a special adapter plate with options for pressure relief and reliability accessories.
The regulator may also be customized to meet your needs with options like an auto drain, pressure adjust know and tamper-proof adjustment locknut. See Versa's air preparation catalog for more details.

Control Valve Module
This module is based on the same proven design of the side-ported model with the same options and versatility available.



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# 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)<br>-40°F to 194°F (-40°C to 90°C), low temp Buna option -44<br>-61°F to 194°F (-52°C to 90°C) Fluorosilicone option -T40 |
| Port size: | ¼" npt |

DSM-3301-316-M5R-XDDT-D024

## Solenoid

| | |
|---|---|
| Coil class: | H Class |
| Surge protection: | None, standard<br>Diode, suffix -303D. DC only<br>Metal-oxide varistor (MOV), suffix -303. AC or DC |
| Connections: | ½" NPT or M20 conduit hub |
| Ingress protection: | IP66/67/68 & NEMA 4X & 6P |

DSM-3301-316-XDDT-356BN-D024†

### Materials of construction*

| | |
|---|---|
| Body: | 316L Stainless Steel |
| Poppet: | 316L Stainless Steel |
| Coil Housing: | 316L Stainless Steel |
| Coil: | Epoxy molded |
| Seals: | FKM standard. Low-temp Buna and fluorosilicone options available. |

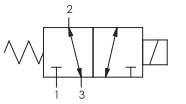
*All valve components comply with NACE MR0175 except for main spring which is 316 stainless steel.
All wetted parts are NACE Compliant. For full NACE compliance, add option -NA for Inconel spring.

## Voltage/Power

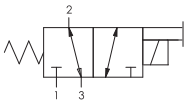
| Voltage | Power | Ordering code | | |
|---|---|---|---|---|
| | | DC | AC 60 Hz | AC 50 Hz |
| 12 VDC*<br>24 VDC*<br>48 VDC<br>110 VDC<br>125 VDC | 2.6 watts | -D012<br>-D024<br>-D048<br>-D110<br>-D125 | – | – |
| 110/120 VAC<br>220/240 VAC | 3.1 watts | – | -A120<br>-A240 | -E110<br>-E220 |

*Reduced power option (-LLP) 12 &24 VDC only

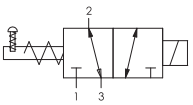
## Flow Symbol



DSM-3301-316-XDD_-Volt



DSM-3301-316-M-XDD_-Volt
DSM-3301-316-M5R-XDD_-Volt



DSM-3301-316-XDD_-356BN-Volt

## Solenoid Type

| Solenoid Type | Suffix Number | Conduit Connection | Hazardous Location Rating | | Additional Certificates |
|---|---|---|---|---|---|
| | | | ATEX and IECEx | $_{c}CSA_{US}$ | |
| World Solenoid | -XDDS | M20 | Ex II 2 G D<br>Ex d IIC T4 Gb<br>Ex tb IIIC IP66 T135°C Db | CI, I Zn 1, A/Ex d e IIC<br>CI, II, Zn 21, AEx tD A21, T4 °C | CCC<br>INMETRO<br>KC<br>NEPSI<br>PESO<br>TR-CU<br>TS OSHA |
| World Solenoid with North American rating | -XDDT | ½" NPT | CI, I Zn 1, A/Ex d IIC T4 Gb<br>Zn 21, AEx tb IIIC T135 Db | CI I Div 1, Grps B, C & D<br>CI II Div 1 Grps E, F & G<br>CI III<br>CI I Div 2, Grps A, B, C & D | |

For other "T" ratings consult factory

For ATEX Certificate Scan or Click Here

For IECEx Certificate Scan or Click Here

For CSA Certificate Scan or Click Here

# Options

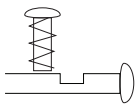
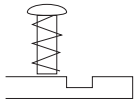
## Overrides Options

| Sufffix | Description |
|---|---|
| -G | A non-locking, guarded override; push to actuate |
| -G5R | A locking, guarded manual override with screwdriver slot for turning |
| -M | A non-locking unguarded manual override; push to actuate |
| -M5R | An unguarded, locking manual override with screwdriver slot; push to actuate, turn to lock. |

## Electrical Options

| Suffix | Description |
|---|---|
| -303 | Suppression Varistor used to neutralize voltage peaks over 250 volts. |
| -303D | Free wheeling diode used to absorb inductive kick when the coil is de-energized. |
| -303T | Transient voltage suppressor used to absorb inductive kick when the coil is de-energized. |
| -LLP | A Low watt power controller that reduces the total electrical load on a DC solenoid to 1.0 Watts. |

## Latch Options

| Suffix | Description | Latch Schematic |
|---|---|---|
| -356B | Latches automatically when valve plunger is shifted away from button cap side. Use -M manual override. |  |
| -356BR | Same as -356B, but with latch rotated 180°. Use -M manual override | |
| -356BN | Latches automatically when valve plunger is shifted away from button cap side. No button is provided and rod does not protrude. |  |
| -356BNR | Same as -356BN, but with latch rotated 180°. No button is provided and rod does not protrude. | |



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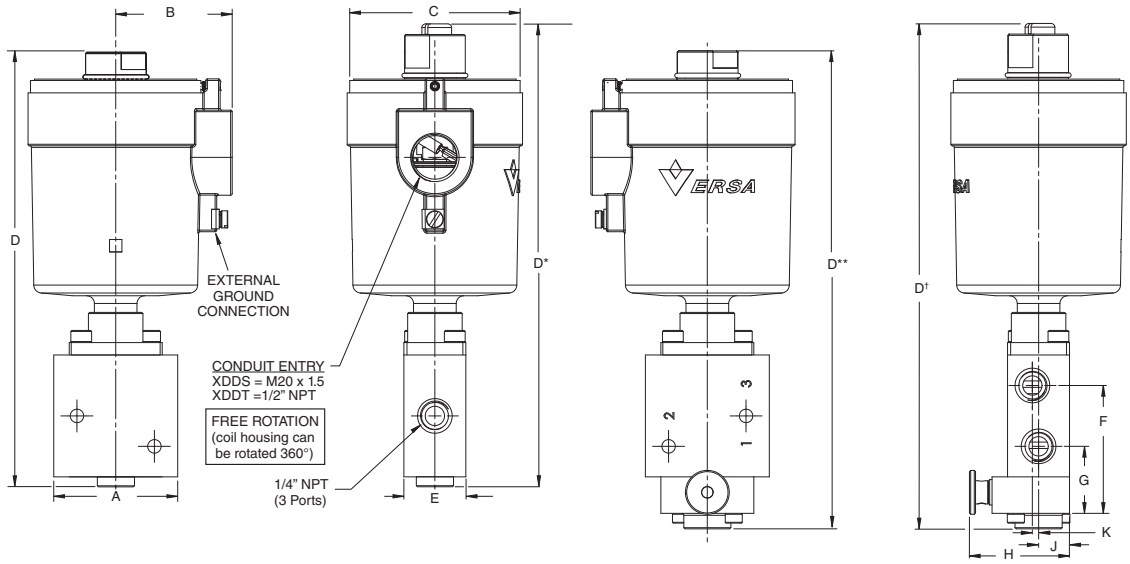
# D-316 Side Ported

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

## Dimensions




DSM-3301-316-XDD_ | DSM-3301-316-M-XDD_ | DSM-3301-316-356BN-XDD_ | DSM-3301-316-356B-XDD_

| Dimensions | A | B | C Ø | D | D* | D** | D† | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DSM-3301-316-XDD_-Volts | 2.00<br>50.8 | 1.87<br>47.5 | 2.83<br>71.9 | 7.06<br>177.8 | – | – | – | 1.00<br>25.4 | 1.47<br>7.4 | 0.49<br>12.5 | – | 0.50<br>12.7 | 0.10<br>2.54 |
| DSM-3301-316-G-XDD_-Volts | 2.00<br>50.8 | 1.87<br>47.5 | 2.83<br>71.9 | – | 7.31<br>185.7 | – | – | 1.00<br>25.4 | 1.47<br>7.4 | 0.49<br>12.5 | | 0.50<br>12.7 | 0.10<br>2.54 |
| DSM-3301-316-M-XDD_-Volts | 2.00<br>50.8 | 1.87<br>47.5 | 2.83<br>71.9 | – | 7.48<br>190.0 | – | – | 1.00<br>25.4 | 1.47<br>7.4 | 0.49<br>12.5 | – | 0.50<br>12.7 | 0.10<br>2.54 |
| DSM-3301-316-XDD_-356B-Volts | 2.00<br>50.8 | 1.87<br>47.5 | 2.83<br>71.9 | – | – | 7.70<br>196.0 | – | 1.00<br>25.4 | 1.47<br>7.4 | 0.49<br>12.5 | 1.62<br>41.0 | 0.50<br>12.7 | 0.10<br>2.54 |
| DSM-3301-316-XDD_-356BN-Volts | 2.00<br>50.8 | 1.87<br>47.5 | 2.83<br>71.9 | – | – | – | 8.16<br>207.3 | 1.00<br>25.4 | 1.47<br>7.4 | 0.49<br>12.5 | 1.62<br>41.0 | 0.50<br>12.7 | 0.10<br>2.54 |

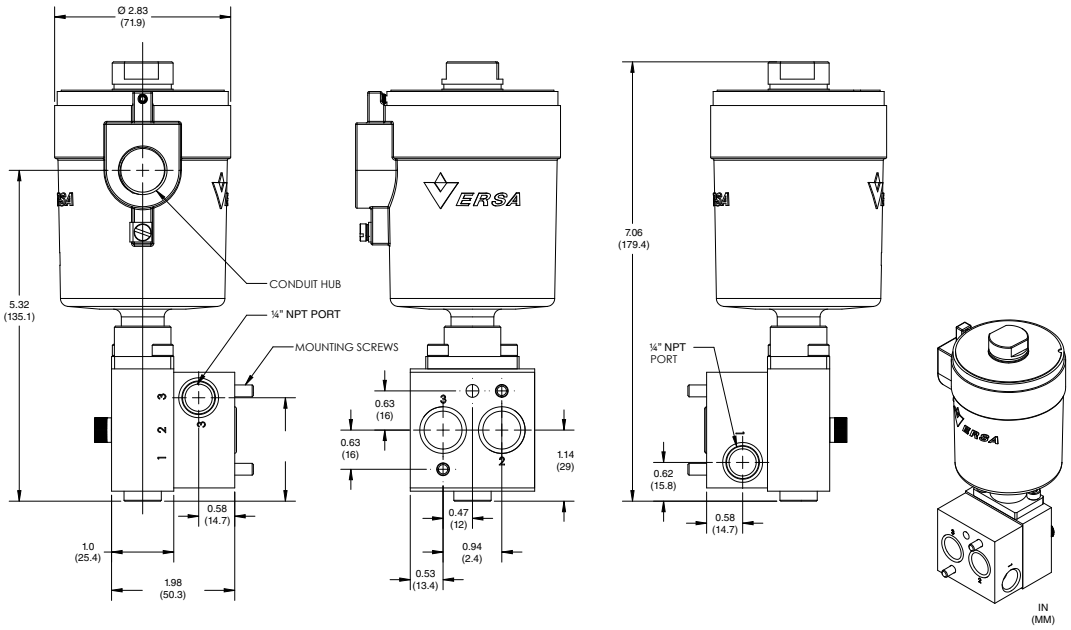
## NAMUR

| Valve Type & Options | Part Number | Weight |
|---|---|---|
| Solenoid Operated-Spring Return | DSM-3311-316-NE*-XDD**-(†) | 5.1 lbs (2.3 kg) |
| Solenoid Operated-Spring Return with Non-locking Override | DSM-3311-316-NE*-M-XDD**-(†) | 5.2 lbs (2.4 kg) |
| Solenoid Operated-Spring Return with Locking Override | DSM-3311-316-NE*-M5R-XDD**-(†) | 5.2 lbs (2.4 kg) |

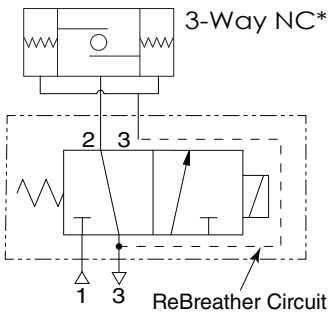
**Select Suffix Number; XDDS for M20 conduit hub or XDDT for ½" NPT conduit hub. See "Solenoid Type" on page 4
†Select voltage (see "Ordering Code" Page 4).

| | Orientation | Mounting screws* | | | NC Function | NO Function |
|---|---|---|---|---|---|---|
| | | 10-24 | 10-32 | M5 | | |
| NE1 | Vertical | X | | | Mount Upright | Mount downward |
| NE2 | Vertical | | X | | | |
| NE3 | Vertical | | | X | | |
| NE6 | Vertical | X | X | X | | |
| NEH1 | Horizontal | X | | | Mount left | Mount right |
| NEH2 | Horizontal | | X | | | |
| NEH3 | Horizontal | | | X | | |
| NEH6 | Horizontal | X | X | X | | |

## Dimensions

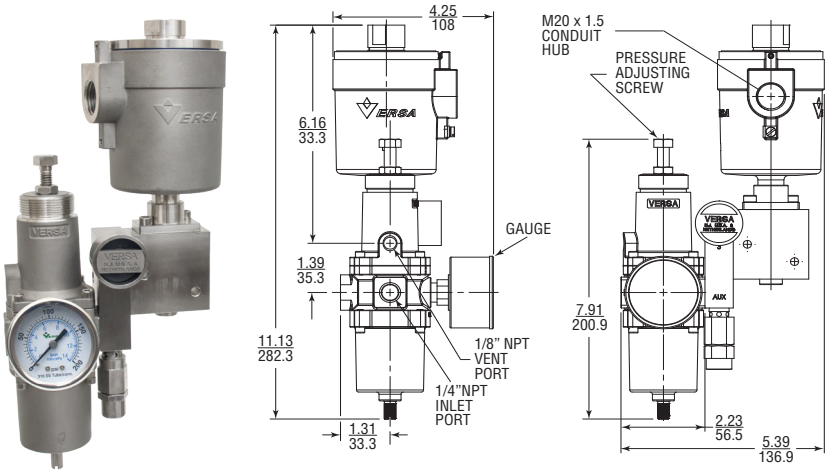



## Flow Symbol



# DMAP

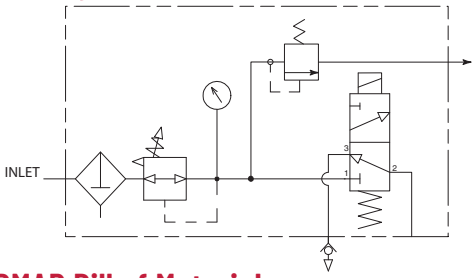
## Dimensions

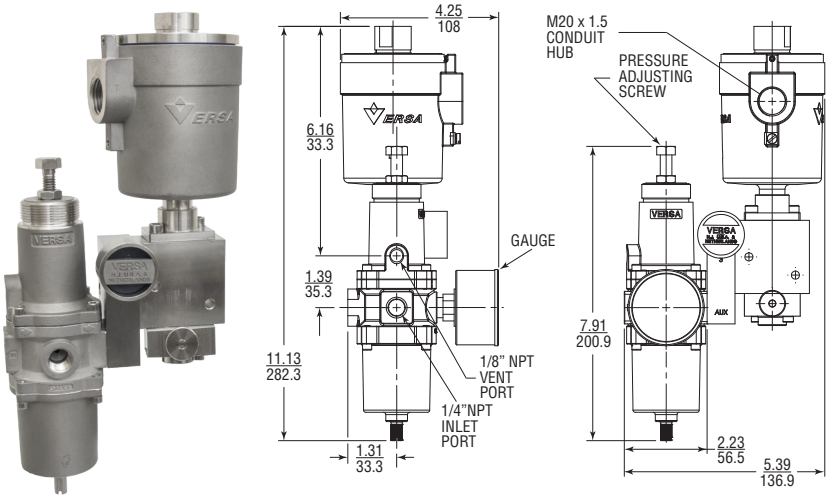



## DMAP Bill of Materials

| Description | Part Number |
|---|---|
| Regulator | ARFB-3112-316-DA3-GB |
| Valve | DSM-3301-316-DA3-XDDS-A120 |
| Dust Excluder | DE-3-316 |
| Relief Valve | RV-3-316-100 |

## Flow Symbol

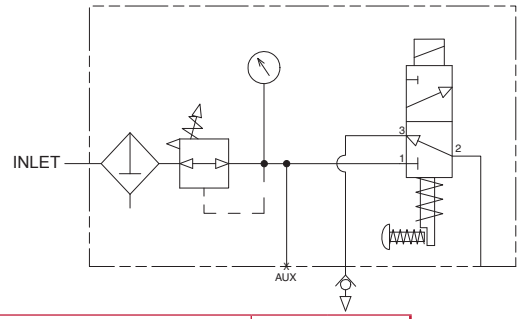



## DMAP Bill of Materials

| Description | Part Number |
|---|---|
| Regulator | ARFB-3112-316-DA3-GB |
| Valve | DSM-3301-316-DA3-XDDS-356BN-A120 |
| Dust Excluder | DE-3-316 |

## Flow Symbol




## Air Prep Selection

| | Description | Part Number 0-100 psi | Part Number 0-150 psi | Weights lbs | Weights kg |
|---|---|---|---|---|---|
| Regulator, Filter and manual drain* | No gauge | ARFB-3112-316-DA3 | ARFB-3111-316-DA3 | 2.7 | 1.22 |
| | 2" gauge liquid filled** | ARFB-3112-316-DA3-GBG | ARFB-3111-316-DA3-GBG | 2.9 | 1.32 |
| | 2 1/2" gauge liquid filled** | ARFB-3112-316-DA3-GAG | ARFB-3111-316-DA3-GAG | 2.9 | 1.32 |

*For Auto Drain change ARFB to ARDB **For non liquid filled gauges, replace GBG with GB or GAG with GA.

## Control Valve Selection

| Description | Part Number | Weight |
|---|---|---|
| Solenoid Operated-Spring return | DSM-3301-316-DA3-†-(††) | 5.1 lbs (2.3 kg) |
| Solenoid Operated-Spring return with Non-locking override | DSM-3301-316-DA3-M-†-(††) | 5.2 lbs (2.4 kg) |
| Solenoid Operated-Spring return with Locking override | DSM-3301-316-DA3-M5R-†-(††) | 5.2 lbs (2.4 kg) |
| Solenoid Operated-Spring return with Latching reset | DSM-3301-316-DA3-356BN-†-(††) | 5.4 lbs (2.4 kg) |
| Solenoid Operated-Spring return with Latching reset and manual button | DSM-3301-316-DA3-356B-†-(††) | 5.6 lbs (2.5 kg) |

†Select Suffix Number; XDDS for M20 conduit hub or XDDT for ½" NPT conduit hub. See "Agency Approvals" chart on front page.
††Select voltage from "Voltage/Code" chart right.

## Option Selection

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

†††Add relief valve pressure in psi.

| Voltage | Code |
|---|---|
| 12 VDC | D012 |
| 24 VDC | D024 |
| 48 VDC | D048 |
| 110 VDC | D110 |
| 125 VDC | D125 |
| 120 Volt 60 Hz | A120 |
| 110 Volt 50 Hz | E110 |
| 220 Volt 50 Hz | E220 |
| 240 Volt 60 Hz | A240 |



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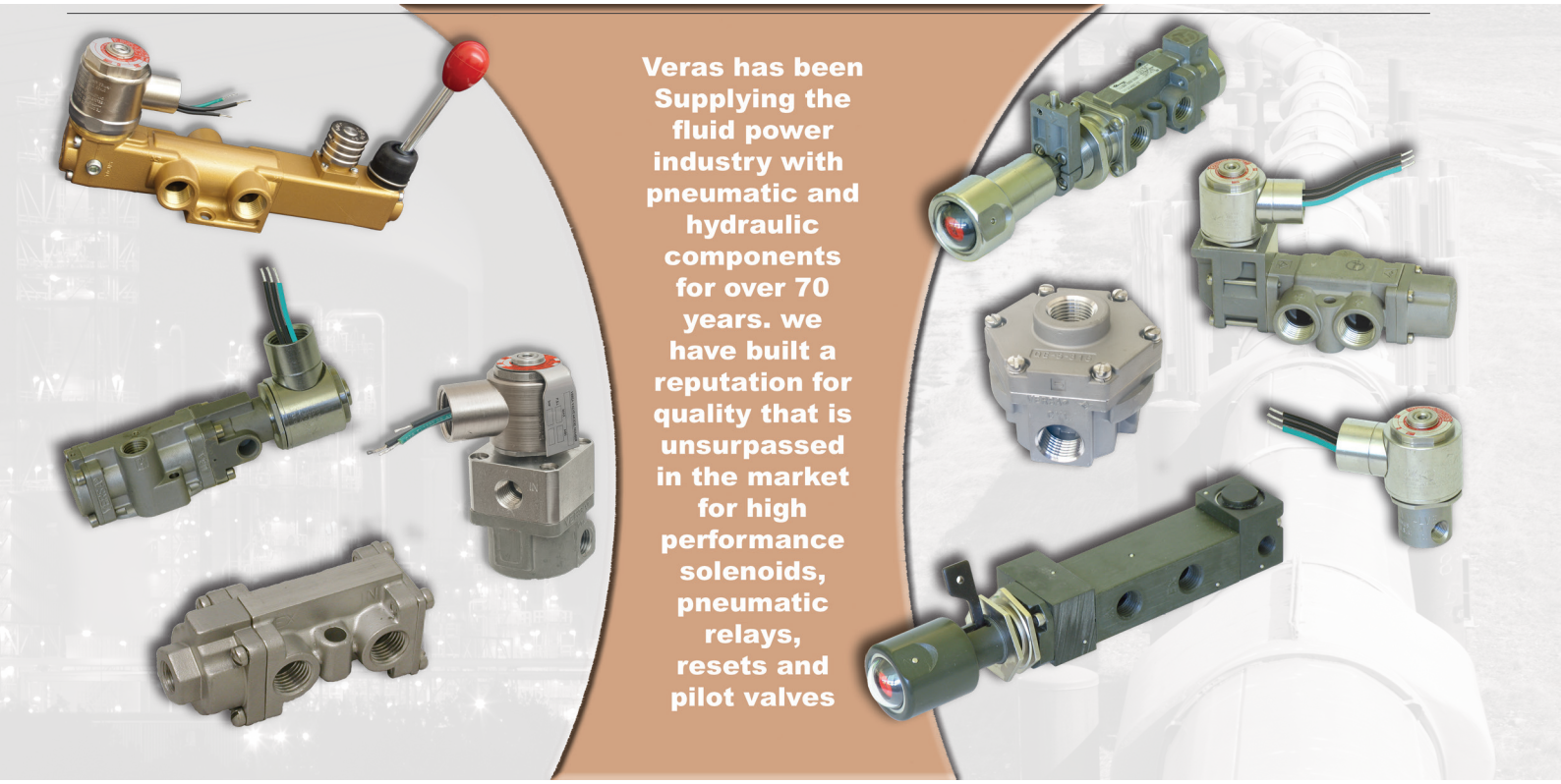


WARNINGS REGARDING THE DESIGN APPLICATION,
INSTALLATION AND SERVICE OF VERSA PRODUCTS

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.

VERSA

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