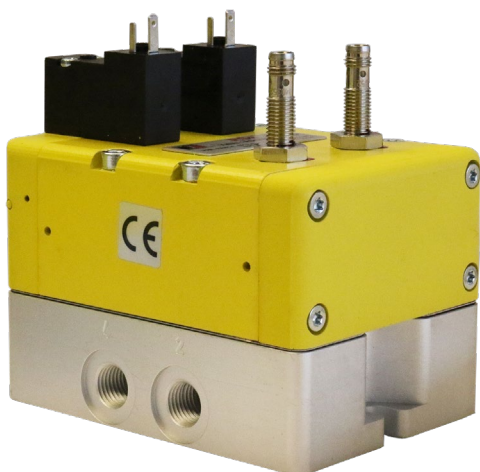




# SAFE EXHAUST RSe SERIES VALVES

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## PRODUCT CATALOG

# 3/2 Control Reliable Double Valves RSe Series

## Product Overview

### Safe Exhaust Safety Function

The RSe Series valve safety function is to shut off supply or pneumatic energy and to exhaust any pneumatic energy from downstream of the valve.



Illustration example.

The 3/2 RSe Series valve is designed to supply air to a zone or entire machine/system until signaled to shut off and exhaust residual downstream pneumatic energy from the machine. Thus, reducing the hazards associated with the presence of residual energy during employee access and/or minor servicing. The safety function of the 3/2 RSe Series valve is to shut off supply of pneumatic energy and to exhaust any pneumatic energy from downstream of the valve. Note: The 3/2 RSe Series valve cannot exhaust pneumatic energy from downstream of obstructions such as check valves and closed center function valves.

The RSe Series valves are designed for external monitoring for safe, redundant operation of the valves. The RSe Series valves are constructed of redundant, 3/2 spool type valves, and have an overall function of a single solenoid pilot-operated, spring return valve. Each single valve in the RSe Series is equipped with a PNP proximity sensor. Monitoring both of these sensors on each actuation and de-actuation of the RSe Series valve provides a diagnostic coverage of 99%. Monitoring of these sensors is to be done by an external monitoring system.

### VALVE FEATURES

|                     |                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Redundant Control   | Redundant control can achieve Category 4, PL e, when used with proper safety controls                                                                                                                                                                                                          |
| External Monitoring | Each single valve in the RSe Series is equipped with a PNP proximity sensor. Monitoring both of these sensors on each actuation and de-actuation of the RSe Series valve provides a diagnostic coverage up to 99%. Monitoring of these sensors is to be done by an external monitoring system. |
| Spool Type Design   | Redundant spool type valve with two operating solenoids that must be operated simultaneously in order to actuate the valve. In addition each valve element has a single, proximity sensor that is wired as a PNP type sensor for position sensing.                                             |
| Valve Reset         | Automatic reset by de-energizing the solenoids                                                                                                                                                                                                                                                 |
| Mounting            | Base mounted – with NPT or G pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included). Captive valve-to-base mounting screws.                                                                                                          |
| SISTEMA Library     | Available for download                                                                                                                                                                                                                                                                         |

*These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM<sup>®</sup> Series D double valves for mechanical power press applications.*

### PRODUCT CREDENTIALS

|                                                                                                                                  |                                                                                                                                    |                                                                                             |                                                                                                                                                                                                        |                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Performance Level<br>Per ISO 13849-1:2015<br> | Safety Integrity Level<br>Per IEC 2061:2001<br> | DGUV<br> | Declaration of Conformity<br>  | Certificate of Compliance<br> |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|

| STANDARD SPECIFICATIONS                                                                                      |                             |                                                                                      |                                                                                                                                                                              |                                    |                                   |
|--------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------|
| GENERAL                                                                                                      | Function                    |                                                                                      | 3/2 Valve                                                                                                                                                                    | Normally Closed                    |                                   |
|                                                                                                              | Construction Design         |                                                                                      | Dual Spool and Sleeve                                                                                                                                                        |                                    |                                   |
|                                                                                                              | Actuation                   | Electrical                                                                           | Solenoid Pilot Controlled                                                                                                                                                    |                                    |                                   |
|                                                                                                              |                             |                                                                                      | Solenoid pilot operated with air assisted spring return<br>One solenoid per valve element (2 total) – both to be operated synchronously                                      |                                    |                                   |
|                                                                                                              | Mounting                    |                                                                                      | Type                                                                                                                                                                         | Base                               |                                   |
|                                                                                                              |                             |                                                                                      | Orientation                                                                                                                                                                  | Any, preferably vertical           |                                   |
|                                                                                                              | Connection                  |                                                                                      | Threaded Port                                                                                                                                                                | NPT                                |                                   |
|                                                                                                              |                             |                                                                                      |                                                                                                                                                                              | G                                  |                                   |
|                                                                                                              | Monitoring                  | External                                                                             | Dynamic, cyclical, with customer supplied equipment; monitoring should check state of both valve position sensors with any and all changes in state of valve control signals |                                    |                                   |
| Minimum Operation Frequency                                                                                  |                             | Once per month, to ensure proper function                                            |                                                                                                                                                                              |                                    |                                   |
| Maximum Recommended Allowable Discordance Time                                                               |                             | 250 msec                                                                             |                                                                                                                                                                              |                                    |                                   |
| OPERATING CONDITIONS                                                                                         | Temperature                 |                                                                                      | Ambient                                                                                                                                                                      | 40° to 120°F (4° to 50°C)          |                                   |
|                                                                                                              |                             |                                                                                      | Media                                                                                                                                                                        |                                    |                                   |
|                                                                                                              | Flow Media                  |                                                                                      | Compressed air according to ISO 8573-1 Class 7:4:4                                                                                                                           |                                    |                                   |
|                                                                                                              | Pilot Supply                |                                                                                      | Internal or External                                                                                                                                                         |                                    |                                   |
|                                                                                                              | Operating Pressure          | With Internal Pilot Supply                                                           |                                                                                                                                                                              | 43 to 145 psig (3 to 10 bar)       |                                   |
|                                                                                                              |                             | With External Pilot Supply                                                           |                                                                                                                                                                              | 0 to 145 psig (0 to 10 bar)        |                                   |
|                                                                                                              | Pilot Supply Pressure       | Internal                                                                             |                                                                                                                                                                              | Must be minimum operating pressure |                                   |
| External                                                                                                     |                             | Must be equal to or greater than inlet pressure, and meet minimum operating pressure |                                                                                                                                                                              |                                    |                                   |
| ELECTRICAL DATA                                                                                              | Solenoids                   |                                                                                      | Current Flow                                                                                                                                                                 | Operating Voltage                  | Power Consumption (each solenoid) |
|                                                                                                              |                             |                                                                                      | DC                                                                                                                                                                           | 24 volts                           | 1.5 watts                         |
|                                                                                                              |                             |                                                                                      | Rated for continuous duty                                                                                                                                                    |                                    |                                   |
|                                                                                                              |                             |                                                                                      | Design according to VDE 0580                                                                                                                                                 |                                    |                                   |
|                                                                                                              |                             |                                                                                      | Enclosure Rating                                                                                                                                                             |                                    | DIN 400 50 IP 65                  |
|                                                                                                              |                             |                                                                                      | Electrical Connection                                                                                                                                                        | DIN EN 175301-803                  | Form C                            |
|                                                                                                              | Pressure Sensors            |                                                                                      | PNP solid state                                                                                                                                                              |                                    |                                   |
|                                                                                                              |                             |                                                                                      | Current Consumption (each sensor)                                                                                                                                            |                                    | <23mA (each without contacts)     |
| Electrical Connection                                                                                        |                             |                                                                                      | M8                                                                                                                                                                           |                                    |                                   |
| CONSTRUCTION MATERIAL                                                                                        | Valve Body                  |                                                                                      | Cast Aluminum                                                                                                                                                                |                                    |                                   |
|                                                                                                              | Spool                       |                                                                                      | Stainless Steel                                                                                                                                                              |                                    |                                   |
|                                                                                                              | Seals                       |                                                                                      | Buna-N                                                                                                                                                                       |                                    |                                   |
| SAFETY DATA                                                                                                  | Functional Safety Data      |                                                                                      | Category                                                                                                                                                                     | CAT 4, PL e                        |                                   |
|                                                                                                              |                             |                                                                                      | B <sub>10D</sub>                                                                                                                                                             | 20,000,000                         |                                   |
|                                                                                                              |                             |                                                                                      | PFH <sub>D</sub>                                                                                                                                                             | 7.71×10 <sup>-9</sup>              |                                   |
|                                                                                                              |                             |                                                                                      | MTTF <sub>D</sub>                                                                                                                                                            | 301.9 (n <sub>op</sub> : 662400)   |                                   |
|                                                                                                              | Vibration/Impact Resistance |                                                                                      | Tested to DIN EN 60068-2-6                                                                                                                                                   |                                    |                                   |
| IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover. |                             |                                                                                      |                                                                                                                                                                              |                                    |                                   |

Ordering Information

MODEL NUMBER CONFIGURATOR

3-Way 2-Position Valves

RSe

3

E

N

A10

A

3

1

P

Series

Valve Function

Monitoring

Port Thread

Base Port Size

Sensor

Feedback

Reset Type

Voltage

3/2

External

NPT

G

N

D

In-Out

Exhaust

1/8

1/4

1/2

1/8

1/4

1/2

A10

B20

B40

Sensor Output PNP

Sensor

Automatic

24 V DC

Model Number examples: RSE3ENA10A31P, RSE3EDB40A31P.

| Size      |        | Flow<br>C <sub>v</sub> (NI/min) |             | ≈ Weight<br>lb (kg) | Simplified Schematic |
|-----------|--------|---------------------------------|-------------|---------------------|----------------------|
| Port 1, 2 | Port 3 | 1-2                             | 2-3         |                     |                      |
| 1/8       | 1/8    | 0.63 (620)                      | 1.03 (1000) | 2.9 (1.3)           |                      |
| 1/4       | 1/4    | 0.85 (840)                      | 1.75 (1700) | 3.7 (1.7)           |                      |
| 1/2       | 1/2    | 1.96 (1900)                     | 5.27 (5200) | 6.6 (3.0)           |                      |

Solenoid & Sensor Pinouts

Solenoid

DIN EN 175301-803 Form A

1 - Positive

2 - Negative

3 - Ground

Sensor

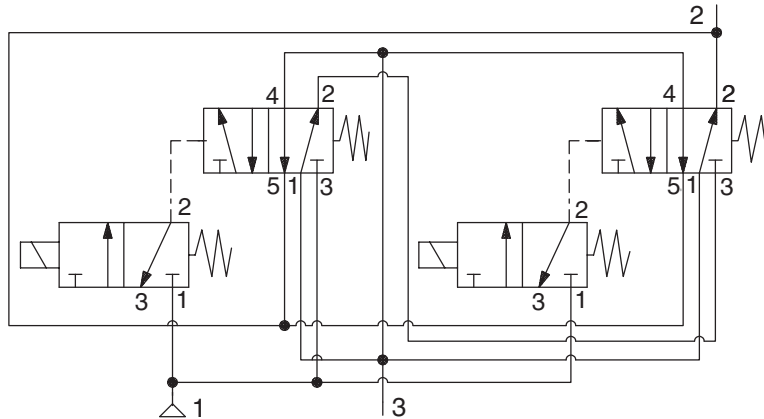
M8

1 - Common

2 - Normally Closed

3 - Not Used

## Valve Schematic



Exhaust Time – Normal and Faulted Conditions (s)

| Volume (L) | Normal or Faulted | Port Size 1/8      |            |            |            |            |            | Port Size 1/4      |            |            |            |            |            | Port Size 1/2      |            |            |            |            |            |
|------------|-------------------|--------------------|------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|------------|
|            |                   | Operating Pressure |            |            |            |            |            | Operating Pressure |            |            |            |            |            | Operating Pressure |            |            |            |            |            |
|            |                   | 3 bar              |            | 6 bar      |            | 10 bar     |            | 3 bar              |            | 6 bar      |            | 10 bar     |            | 3 bar              |            | 6 bar      |            | 10 bar     |            |
|            |                   | to 1.0 bar         | to 0.5 bar | to 1.0 bar | to 0.5 bar | to 1.0 bar | to 0.5 bar | to 1.0 bar         | to 0.5 bar | to 1.0 bar | to 0.5 bar | to 1.0 bar | to 0.5 bar | to 1.0 bar         | to 0.5 bar | to 1.0 bar | to 0.5 bar | to 1.0 bar | to 0.5 bar |
| 2          | N                 | 0.206              | 0.292      | 0.391      | 0.497      | 0.554      | 0.647      | 0.159              | 0.222      | 0.299      | 0.364      | 0.400      | 0.463      | 0.163              | 0.184      | 0.242      | 0.270      | 0.331      | 0.356      |
|            | F                 | 0.233              | 0.342      | 0.428      | 0.540      | 0.610      | 0.721      | 0.190              | 0.257      | 0.340      | 0.424      | 0.458      | 0.539      | 0.169              | 0.198      | 0.252      | 0.283      | 0.347      | 0.377      |
| 10         | N                 | 0.892              | 1.280      | 1.761      | 2.272      | 2.498      | 2.912      | 0.589              | 0.894      | 1.202      | 1.512      | 1.706      | 2.001      | 0.373              | 0.470      | 0.538      | 0.676      | 0.788      | 0.906      |
|            | F                 | 1.002              | 1.535      | 1.895      | 2.436      | 2.759      | 3.285      | 0.722              | 1.038      | 1.390      | 1.816      | 1.959      | 2.345      | 0.389              | 0.531      | 0.582      | 0.735      | 0.832      | 0.972      |
| 20         | N                 | 1.750              | 2.516      | 3.474      | 4.490      | 4.927      | 5.744      | 1.127              | 1.733      | 2.331      | 2.947      | 3.339      | 3.924      | 0.635              | 0.826      | 0.907      | 1.183      | 1.359      | 1.594      |
|            | F                 | 1.963              | 3.027      | 3.728      | 4.806      | 5.445      | 6.490      | 1.388              | 2.015      | 2.702      | 3.555      | 3.836      | 4.603      | 0.664              | 0.947      | 0.994      | 1.300      | 1.437      | 1.715      |
| 40         | N                 | 3.465              | 4.988      | 6.901      | 8.927      | 9.785      | 11.408     | 2.202              | 3.411      | 4.590      | 5.816      | 6.604      | 7.769      | 1.159              | 1.539      | 1.646      | 2.198      | 2.502      | 2.969      |
|            | F                 | 3.885              | 6.010      | 7.396      | 9.546      | 10.817     | 12.900     | 2.719              | 3.968      | 5.326      | 7.033      | 7.589      | 9.118      | 1.213              | 1.781      | 1.818      | 2.429      | 2.648      | 3.201      |
| 150        | N                 | 12.898             | 18.581     | 25.746     | 33.327     | 36.508     | 42.557     | 8.116              | 12.642     | 17.011     | 21.600     | 24.561     | 28.918     | 4.041              | 5.459      | 5.711      | 7.778      | 8.785      | 10.531     |
|            | F                 | 14.458             | 22.419     | 27.566     | 35.614     | 40.361     | 48.155     | 10.041             | 14.712     | 19.758     | 26.162     | 28.230     | 33.952     | 4.234              | 6.364      | 6.351      | 8.640      | 9.309      | 11.373     |

An integration Guide for RSe Series 3/2 valves is available from ROSS to provide information such as operation, monitoring, and integration into users control circuits.

**Integration Guide - 3/2 RSe Series Safe Exhaust Double Valves**

# Valve Technical Data

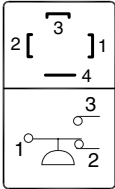
| DIMENSIONS                                                                                                                                                               |  |  | Inches (mm) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-------------|
| Port Size 1/8                                                                                                                                                            |  |  |             |
|                                                                                                                                                                          |  |  |             |
| Port Size 1/4                                                                                                                                                            |  |  |             |
|                                                                                                                                                                          |  |  |             |
| Port Size 1/2                                                                                                                                                            |  |  |             |
|                                                                                                                                                                          |  |  |             |
| Downloadable CAD models available.                                                                                                                                       |  |  |             |
| <div><div><p>Solenoid</p><p>Port 2 (Outlet)</p></div><div><p>Sensor</p><p>Port 1 (Inlet)</p><p>Port 3 (Exhaust)</p><p>External Pilot Supply<br/>1/8" NPT</p></div></div> |  |  |             |

ENERGY RELEASE VERIFICATION

| Pressure Switch                                                                   | Redundant Pressure Switch Assembly                                                  |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |

Illustration examples.

| Pressure Switch                       | Verification Type | Installation Location                  | Connector Type              | Model Number | Port Thread | Factory Preset<br>psi (bar) |
|---------------------------------------|-------------------|----------------------------------------|-----------------------------|--------------|-------------|-----------------------------|
|                                       | Electrical        | Pressure Sensing Port or<br>Downstream | DIN EN 175301-803<br>Form A | 586A86       | 1/8 NPT     | 5 (0.3) falling             |
| Redundant Pressure<br>Switch Assembly | Verification Type | Installation Location                  | Connector Type              | Model Number | Port Thread | Factory Preset<br>psi (bar) |
|                                       | Electrical (Dual) | Downstream                             | DIN EN 175301-803<br>Form A | RC026-13     | 3/8 NPT     | 5 (0.3) falling             |

| Pinout                                                                              |                                                                                 |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| DIN EN 175301-803 Form A                                                            |                                                                                 |
|  | 1 - Common<br>2 - Normally Closed<br>3 - Normally Open<br>4 - Ground (Not Used) |

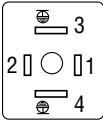
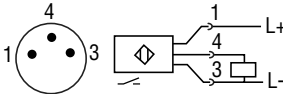
PREWIRED ELECTRICAL CONNECTORS

|                                                                                   |                                                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| DIN EN 175301-803                                                                 | M8                                                                                 |
|  |  |

Illustration examples.

| Prewired Connector Kit | Cable                    |              |            |                   |                      | Kit Number    |  |
|------------------------|--------------------------|--------------|------------|-------------------|----------------------|---------------|--|
|                        | End 1                    | End 2        | Connection | Quantity Included | Length meters (feet) | Without Light |  |
|                        | Connector                | Cord         |            |                   |                      | 2657B77       |  |
|                        | DIN EN 175301-803 Form C | Flying leads | Solenoid   | 2                 | 2 (6.5)              | 2657B77       |  |
|                        | M8                       | Flying leads | Sensor     | 2                 |                      |               |  |

| Prewired Connectors | Cable                    |              |            |                   |                      |                  | Model Number  |                     |
|---------------------|--------------------------|--------------|------------|-------------------|----------------------|------------------|---------------|---------------------|
|                     | End 1                    | End 2        | Connection | Quantity Included | Length meters (feet) | Cord Diameter mm | Without Light | Lighted Connector * |
|                     | Connector                | Cord         |            |                   |                      |                  |               | 24 V DC             |
|                     | DIN EN 175301-803 Form C | Flying leads | Solenoid   | 1                 | 3 (10)               | 8                | 2449K77       | 2450K77-W           |
|                     | M8                       | Flying leads | Sensor     | 1                 | 2 (6.5)              | —                | 249L74        | —                   |

| Connectors Pinout                                                                                                                                                                 |                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Solenoid                                                                                                                                                                          | Sensor                                                                                                                                              |
| DIN EN 175301-803 Form C                                                                                                                                                          | M8                                                                                                                                                  |
|  <div>1 - Brown<br/>2 - Blue<br/>3 - Green/Yellow (Ground)<br/>4 - Green/Yellow (Ground)</div> |  <div>1 - Common<br/>2 - Normally Closed<br/>3 - Not Used</div> |

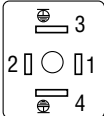
\* Lights in connectors with a translucent housing can be used as indicator lights to show when solenoids are energized.

## ELECTRICAL CONNECTORS

| Cable Grip                                                                        |                                                                                     |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Without Light                                                                     | With Light                                                                          |
|  |  |

Illustration examples.

| Connectors | Connector                |            |                    |                   |                  | Model Number  |                   |
|------------|--------------------------|------------|--------------------|-------------------|------------------|---------------|-------------------|
|            | Type                     | Connection | Fitting Connection | Quantity Included | Cord Diameter mm | Without Light | Lighted Connector |
|            |                          |            |                    |                   |                  |               | 24 V DC           |
|            | DIN EN 175301-803 Form C | Solenoid   | Cable grip         | 1                 | 8 to 10          | 2452K77       | 2453K77-W         |

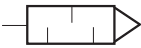
| Connectors Pinout                                                                 |                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| DIN EN 175301-803 Form C                                                          |                                                                                 |
|  | 1 - Brown<br>2 - Blue<br>3 - Green/Yellow (Ground)<br>4 - Green/Yellow (Ground) |

\* Lights in connectors with a translucent housing can be used as indicator lights to show when solenoids are energized.

EXHAUST SILENCERS



Illustration example.

| Silencers | SPECIFICATIONS |             | Silencer Material               |              | Pressure Range<br>psig (bar) |                           | Schematic                                                                           |                     |
|-----------|----------------|-------------|---------------------------------|--------------|------------------------------|---------------------------|-------------------------------------------------------------------------------------|---------------------|
|           |                |             | Aluminum                        |              | 0-290 (0-20) maximum         |                           |  |                     |
|           | Port Size      | Thread Type | Flow<br>C <sub>v</sub> (NI/min) | Model Number |                              | Dimensions<br>inches (mm) |                                                                                     | ≈ Weight<br>lb (kg) |
|           |                |             |                                 | NPT Thread   | R/Rp Thread                  | Length                    | Hex Size (D)                                                                        |                     |
|           | 1/8            | Male        | 1.3 (1300)                      | 5500A1003    | D5500A1003                   | 2.0 (5)                   | 0.81 (21)                                                                           | 0.07 (0.03)         |
|           | 1/4            | Male        | 2.3 (2300)                      | 5500A2003    | D5500A2003                   | 2.2 (6)                   | 0.81 (21)                                                                           |                     |
|           | 1/2            | Male        | 6.8 (6700)                      | 5500A4003    | D5500A4003                   | 3.6 (9)                   | 1.25 (32)                                                                           | 0.2 (0.1)           |

# CAUTIONS, WARNINGS And STANDARD WARRANTY



ROSS OPERATING VALVE, ROSS CONTROLS®, ROSS DECCO®, and AUTOMATIC VALVE INDUSTRIAL, collectively the “ROSS Global Family”.

## PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure all sources of energy are turned off, the entire pneumatic system is shut down and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).
2. All ROSS Global Family Products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any product can be tampered with and/or need servicing after installation, persons responsible for the safety of others or the care of equipment must check ROSS Global Family Products on a regular basis and perform all necessary maintenance to ensure safe operating conditions.
3. All applicable instructions should be read and complied with before using any fluid power system to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use. If you have any questions, call your nearest ROSS Global Family location.
4. Each ROSS Global Family Product should be used within its specification limits. In addition, use only ROSS Group components to repair ROSS Global Family Products.

### WARNINGS:

***Failure to follow these instructions can result in personal injury and/or property damage.***

## FILTRATION and LUBRICATION

1. Dirt, scale, moisture, etc., are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. The ROSS Global Family recommends a filter with a 5-micron rating for normal applications.
2. All standard ROSS Global Family filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do not expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition and hazardous leakage. Immediately replace crazed, cracked, or deteriorated bowls.
3. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum base oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with

phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks personal injury, and/or damage to property.

### WARNINGS:

***Failure to follow these instructions can result in personal injury and/or property damage.***

## AVOID INTAKE/EXHAUST RESTRICTION

1. Do not restrict air flow in the supply line. To do so could reduce the pressure of the supply air below minimum requirements for the valve and thereby causing erratic action.
2. Do not restrict a valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and must have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

### WARNINGS:

***Failure to follow these instructions can result in personal injury and/or property damage.***

## SAFETY APPLICATIONS

1. Mechanical Power Presses and other potentially hazardous machinery using a pneumatically controlled clutch and brake mechanism must use a press control double valve with a monitoring device. A double valve without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All double valve installations involving hazardous applications should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.
2. Safe Exhaust (dump) valves without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All Safe Exhaust valve installations should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.
3. Per specifications and regulations, the ROSS L-O-X® and L-O-X® with EEZ-ON®, N06 and N16 Series operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

**WARNINGS:** *Failure to follow these instructions can result in personal injury and/or property damage.*

## STANDARD WARRANTY

All products sold by the ROSS Global Family are warranted for a one-year period [with the exception of Filters, Regulators and Lubricators (“FRLs”) which are warranted for a period of seven (7) years] from the date of purchase. All products are, during their respective warranty periods, warranted to be free of defects in material and workmanship. The ROSS Global Family's obligation under this warranty is limited to repair, replacement or refund of the purchase price paid for products which the ROSS Global Family has determined, in its sole discretion, are defective. All warranties become void if a product has been subject to misuse, misapplication, improper maintenance, modification or tampering. Products for which warranty protection is sought must be returned to the ROSS Global Family freight prepaid.

THE WARRANTY EXPRESSED ABOVE IS IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES AND THE ROSS GLOBAL FAMILY EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE ROSS GLOBAL FAMILY MAKES NO WARRANTY WITH RESPECT TO ITS PRODUCTS MEETING THE PROVISIONS OF ANY GOVERNMENTAL OCCUPATIONAL SAFETY AND/OR HEALTH LAWS OR REGULATIONS. IN NO EVENT IS THE ROSS GLOBAL FAMILY LIABLE TO PURCHASER, USER, THEIR EMPLOYEES OR OTHERS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM A BREACH OF THE WARRANTY DESCRIBED ABOVE OR THE USE OR MISUSE OF THE PRODUCTS. NO STATEMENT OF ANY REPRESENTATIVE OR EMPLOYEE OF THE ROSS GLOBAL FAMILY MAY EXTEND THE LIABILITY OF THE ROSS GLOBAL FAMILY AS SET FORTH HEREIN.



GLOBAL LOCATIONS

|                                                                                     |                |                |                            |                           |                                                                          |
|-------------------------------------------------------------------------------------|----------------|----------------|----------------------------|---------------------------|--------------------------------------------------------------------------|
|  | AMERICAS       | USA            | <b>ROSS CONTROLS</b>       | Tel: +1-248-764-1800      | <a href="http://www.rosscontrols.com">www.rosscontrols.com</a>           |
|                                                                                     |                | Canada         | <b>ROSS CANADA</b>         | Tel: +1-416-251-7677      | <a href="http://www.rosscanada.com">www.rosscanada.com</a>               |
|                                                                                     |                | Brazil         | <b>ROSS BRASIL</b>         | Tel: +55-11-4335-2200     | <a href="http://www.rosscontrols.com.br">www.rosscontrols.com.br</a>     |
|                                                                                     | EUROPE         | Germany        | <b>ROSS EUROPA</b>         | Tel: +49 (0)6103-7597-100 | <a href="http://www.rosseuropa.com">www.rosseuropa.com</a>               |
|                                                                                     |                | France         | <b>ROSS FRANCE</b>         | Tel: +33(0)1-49-45-65-65  | <a href="http://www.rossfrance.com">www.rossfrance.com</a>               |
|                                                                                     |                | United Kingdom | <b>ROSS UK</b>             | Tel: +44 (0)1254 872277   | <a href="http://www.rossuk.co.uk">www.rossuk.co.uk</a>                   |
|                                                                                     | ASIA & PACIFIC | India          | <b>ROSS CONTROLS INDIA</b> | Tel: +91-44-2624-9040     | <a href="http://www.rosscontrolsindia.com">www.rosscontrolsindia.com</a> |
|                                                                                     |                | China          | <b>ROSS CONTROLS CHINA</b> | Tel: +86-21-6915-7961     | <a href="http://www.rosscontrolschina.com">www.rosscontrolschina.com</a> |
|                                                                                     |                | Japan          | <b>ROSS ASIA</b>           | Tel: +81-42-778-7251      | <a href="http://www.rossasia.co.jp">www.rossasia.co.jp</a>               |



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