

# PRODUCT OVERVIEW





## Safety Focus

For almost half a century, ROSS® has developed industry-leading safety solutions, originally with pneumatics, hydraulics and more recently with electrical isolation devices and systems. Our safety solutions can be classified in: Safe Energy Isolation Lockout Valves and Systems, Safe Exhaust (Dump) Valves, Safe Return Valves, Safe Cylinder Control Valves, Hazardous Location Valves, and Hydraulic Safe Valve Systems.



## Rugged & Robust Designs

Since 1921, ROSS has designed and manufactured pneumatic valves for automation. Our product line includes directional control valves, manual valves, mechanical valves, flow control valves, and air preparation solutions to complement the safety products mentioned above.



## Problem Solvers

In addition to standard products, ROSS/FLEX® service and technology is a unique resource for a total system solution. Our ROSS/FLEX® engineering team can design and build custom solutions specific to client application requirements. Customized unique systems designed to meet the needs of industry applications.



Learn more about ROSS fluid power solutions at [www.rosseuropa.com](http://www.rosseuropa.com).

## Automatic Valve™

Automatic Valve specializes in world class fluid power solutions, delivering high quality yet cost-effective pneumatic valves and systems for the process, transportation, automotive and automation industries. Since 1945, Automatic Valve has been serving customers with sustainable engineered solutions specialized to their pneumatic needs and requirements.

Learn more about Automatic Valve products at [www.automaticvalve.com](http://www.automaticvalve.com).



## pneumatrol

ROSS Pneumatrol designs and manufactures engineered pneumatic solutions for use within hazardous and non-hazardous locations. For over 50 years, Pneumatrol's pneumatic and electro-pneumatic solutions have served the Process, Rail, Energy and Automation Industries. Our technical and manufacturing expertise, along with our in-depth experience across various industries, allows Pneumatrol to design both standard and custom solutions that meet the needs of our customers and conform to industry specifications.

Learn more about our engineered solutions at [www.pneumatrol.com](http://www.pneumatrol.com).



## Decco®

ROSS DECCO specializes in industrial solenoid products and pneumatic valve pilots. DECCO has been a leading American brand of high-quality coils and solenoids for over 100 years. Serving a broad range of industries, ROSS DECCO brings industrial solenoid technology to customers worldwide to help increase productivity and deliver flexibility in manufacturing.

Learn more about DECCO® solenoids and solutions at [www.rossdecco.com](http://www.rossdecco.com).



## manufactIS

manufactIS GmbH is a complete IS-machine support service taking care of consulting, development, design, spare parts, and on-site service. As new technology regulations are added, and safety continues to gain focus, keeping up and implementing changes can be a challenge. manufactIS GmbH can help with all necessary changes for a more productive machine with consistent output.

Learn more about manufactIS services at [www.manufactis.net](http://www.manufactis.net).



# Safe Exhaust

## Valves without Monitoring

### Single Valves with Soft-Start EEZ-ON® MDC1 Series

- In-line mounted 3/2 valves, single poppet construction
- 3/8" – 1-1/4" ports, flow up to 4.0 C<sub>v</sub>
- CAT-1, PL c



## Valves for External Monitoring

### Single Valves with Soft-Start EEZ-ON® MDC2 Series

- In-line mounted 3/2 valves, single poppet construction
- 3/8" – 1-1/4" ports, flow up to 4.0 C<sub>v</sub>
- Valve is equipped with a solid state pressure sensor for external monitoring
- CAT-2, PL c



### Double Valves with or without Soft-Start EEZ-ON® M35 Series

- In-line mounted 3/2 valves, dual poppet construction
- 1/2" & 3/4" ports, flow up to 4.3 C<sub>v</sub>
- Pressure sensors provide monitoring feedback
- LED indicators - aids troubleshooting



### Double Valves RSe Series

- Base mounted 3/2 valves, dual spool construction
- 1/8" – 1/2" ports, flow up to 1.9 C<sub>v</sub>
- Position sensors provide monitoring feedback



## Valves with Internal Monitoring





### Double Valves DM<sup>1</sup> & DM<sup>2</sup>® Series C

- Base mounted 3/2 valves, dual poppet construction
- 1/4" – 1-1/2" ports, flow up to 20 C<sub>v</sub>
- Self-contained dynamic monitoring system
- Without memory and automatic reset upon de-actuation (DM<sup>1</sup> Series C) or with dynamic memory with electrical or pneumatic reset (DM<sup>2</sup> Series C)
- Status indicator switch for valve condition (ready to run) feedback

*Explosion proof solenoid pilot valves for Hazardous Locations available.*



## PRODUCT CREDENTIALS

Safety Category <i>Up to</i>	DGUV (German Social Accident Insurance)	Declaration of Conformity			ISO Standard	CSA Certificate of Compliance	CRN Certification	SISTEMA Library
		CE	UKCA	EAC				
<b>Cat. 4</b> <b>PL e</b>					ISO 13849-1:2015		Available for appropriately tested valves, see ROSS' website.	Data available, see ROSS' website.
								

*These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.*

## Lockout-Tagout Valves

### Manual Lockout L-O-X® Valves 15 Series

- In-line mounted 3/2 valves, spool construction
- Cast aluminum construction
  - » 1/4" – 2" ports, flow up to 40 C<sub>v</sub>
- 316 stainless steel construction
  - » 1/4" – 2" ports, flow up to 39 C<sub>v</sub>
- Integrated sensing port for pressure verification or visual indicator
- Fluorocarbon slipper seals for easy shifting
- Lockable only in the OFF position



### Valves with Manual Lockout L-O-X® Control 27 & L-O-X® Series

- In-line mounted 3/2 valves, poppet and spool construction
- 1/4" – 3" ports, flow up to 140 C<sub>v</sub>
- Solenoid pilot or pressure controlled models
- Integrated sensing port for pressure verification or visual indicator
- Fluorocarbon slipper seals for easy shifting
- Lockable only in the OFF position



### Manual Lockout L-O-X® Valves with Soft-Start EEZ-ON® 15 & 27 SERIES

- In-line mounted 3/2 valves, spool construction
- 1/4" – 1-1/2" ports, flow up to 30 C<sub>v</sub>
- Integrated sensing port for pressure verification or visual indicator
- Fluorocarbon slipper seals for easy shifting
- Lockable only in the OFF position



### Valves with Manual Lockout L-O-X® Control with Soft-Start EEZ-ON® 27 Series

- In-line mounted 3/2 valves, poppet and spool construction
- 1/4" – 1-1/2" ports, flow up to 34 C<sub>v</sub>
- Solenoid pilot or pressure controlled models
- Integrated sensing port for pressure verification or visual indicator
- Fluorocarbon slipper seals for easy shifting
- Lockable only in the OFF position



## Soft-Start Valves

### Soft-Start EEZ-ON® Valves 27 Series

- In-line mounted 2/2 and 3/2 valves, poppet construction
- 1/4" – 1-1/2" ports, flow up to 30 C<sub>v</sub>
- Solenoid pilot or pressure controlled models



#### PRODUCT CREDENTIALS

##### CRN Certification

Available for appropriately tested valves, see ROSS' website.

##### SISTEMA Library

Data available, see ROSS' website.

*Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.*

# Safe Return

## Valves for External Monitoring

### Safe Return / Return Dual Pressure / Pressure Select Double Valves RSe Series

- Base mounted 5/2 valves, dual spool and sleeve construction
- 1/8" – 1/2" ports, flow up to 2.07 C<sub>v</sub>
- Position sensors provide monitoring feedback
- Additional safe return functions available
  - » Safe Pressure Select
  - » Safe Return Dual Pressure



## Valves with Internal Monitoring

### Safe Return Double Valves CROSSMIRROR® CM Series

- Base mounted 5/2 valves, dual spool and sleeve construction
- 1/4" & 1/2" ports, flow up to 3 C<sub>v</sub>
- Solenoid pilot or pressure controlled models
- Self-contained dynamic monitoring system
- Valve fault requires a reset
- Status indicator switch for valve condition (ready to run) feedback



*Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.*

### Safe Return Double Valves CROSSMIRROR® 77 Series

- Base mounted 5/2 valves, dual spool and sleeve construction
- 1/2" – 3/4", SAE12 ports, flow up to 3.2 C<sub>v</sub>
- Solenoid pilot or pressure controlled models
- Self-contained dynamic monitoring system senses asynchronous inputs via status indicator switch
- Valve fault with automatic reset upon de-actuation
- Status indicator switch for valve condition (ready to run) feedback



*Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.*

## PRODUCT CREDENTIALS

Safety Category	DGUV (German Social Accident Insurance)	Declaration of Conformity			ISO Standard	CSA Certificate of Compliance	CRN Certification	SISTEMA Library
Up to <b>Cat. 4 PL e</b> <b>SIL 3</b> Functional Safety		CE	UKCA	EAC	ISO 13849-1:2015		Available for appropriately tested valves, see ROSS' website.	Data available, see ROSS' website.

*These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.*

# Safe Control & Safe Load Holding

## Valves for External Monitoring

### Safe Control & Load Holding Double Valves CC4 Series

- Sub-base mounted 4/3 valves, poppet construction
- 1/4" & 3/4" ports, flow up to 1.7 C<sub>v</sub>
- Redundant control with position feedback
- Mid-position sensing - for detection of safe, closed center position
- LED indicators on solenoids - aids troubleshooting
- External monitoring - allows full safety control and feedback monitoring of cylinder control circuit



### Safe Load Holding Pilot Operated Check Valves with Sensing SV27 Series

- In-line mounted 2/2 valves, poppet construction
- 1/2" – 1-1/2" ports, flow up to 33 C<sub>v</sub>
- Solenoid pilot or pressure controlled models
- Directly operated safety-rated force-guided positive-break status switch (DPST)
- Single (CAT-2, PL c) or redundant (CAT-3, PL e applications)



#### PRODUCT CREDENTIALS

Safety Category <i>Up to</i>	DGUV (German Social Accident Insurance)	Declaration of Conformity			ISO Standard	CSA Certificate of Compliance	CRN Certification	SISTEMA Library
		CE	UKCA	EAC				
 					ISO 13849-1:2015		Available for appropriately tested valves, see ROSS' website.	Data available, see ROSS' website.

## Valves without Monitoring

### Safe Load Holding Pilot Operated Check Valves 19 & 27 Series

- In-line mounted 2/2 valves, poppet construction
- 1/4" – 1-1/2" ports, flow up to 29 C<sub>v</sub>
- Single or dual solenoid pilot or pressure controlled models
- Automatic or manual trapped pressure release



### Safe Load Holding Right-Angle Pilot Operated Check Valves 19 Series

- Port mounted 2/2 valves, poppet construction
- 1/8" – 1/2" threaded ports, flow up to 2.3 C<sub>v</sub>
- Right-angle design for easy positioning of pipe or tubing
- Models with Threaded Banjo and Push-to-Connect fitting
- Optional manual trapped pressure release



## Safe Air Entry

### Safe Air Entry Assemblies

- Pre-engineered assembly design with Energy Isolation manual lockout L-O-X® valve, Air Preparation "FRL", and Safe Exhaust valve
  - » Assembly with Control Reliable Safe Exhaust double valve (Cat 4, PL d)
  - » Assembly with Safe Exhaust single valve (Cat 2, PL c)
- Modular or direct piping; with or without mounting plate
- Drip Leg option available
- Custom assembly options available



#### PRODUCT CREDENTIALS

Safety Category

Up to

**Kat. 4**  
**PL e**

**SIL 3**  
Functional Safety

Declaration of Conformity

CE

UKCA

## Safe Redundant Systems

### Redundant Valve Manifold Systems PA1 Series

- Base mounted
- Port Size 1/4"
- Compact manifold designs
- Uses a Fail-safe trip system with 2oo3 and 3oo4 voting logic for energizing and de-energizing signals.
- Interchangeable CNOMO interface coil units, including various hazardous area options
- Solenoid Operator: SIL 2 on energizing, SIL 3 on de energizing
- ATEX, IECEx, GOST CUTR and NEPSI coil certification
- Individual pneumatic visual indication for each solenoid and for the input to and output from the whole system
- Individual solenoid isolation allows any solenoid to be serviced while the other solenoids can continue to operate normally; thus, solenoids can be maintained without interrupting the operation of the manifold system



## High Flow Directional Control Valves

### 2/2, 3/2, and 4/2 High-performance Valves HV Series

- Inline mounted
- Port Size 1/4" through 2-1/2", flow up to 70 C<sub>v</sub>
- Proven poppet technology
- Fastest response times
- Maximum shifting forces eliminates valve sticking problems
- Withstands dirt, debris, water and air quality deficiencies
- SIL 2 certified
- Safety solenoid pilot options with standard CNOMO Interface



## NAMUR Interface

### 3/2, and 5/2 NAMUR Interface Valves P Series

- NAMUR Interface
- Top face air connection
- Port size 1/4" inlet, 1/8" exhaust ports, flow up to 0.7 C<sub>v</sub>
- Spool construction
- Single coil spring return function or double coil stay put function
- Pilot exhaust dust caps fitted as standard
- Integrated Exhaust to Sprint (ETS) feature in 3/2 position
- Built in 3/2 to 5/2 function conversion facility for spring return and double acting actuators respectively
- SIL 2 or SIL 3 capable when used in 3/2 mode
- Global certification Atex, IECEx, FM, CCCex, Exia, Exd & Exm and other hazardous area coils



## Valves for External Monitoring

### Block & Bleed Safety Valve Systems HBB Series

- Base mounted valves, body size D03, D05, and D07
- SAE-8, SAE-12 port, and 1-1/4" Code 62 Flange, flow up to 50 gpm
- Redundant safety valve system, blocks hydraulic supply pressure and bleeds downstream pressure back to tank
- Tamper-resistant design



### Dual Block & Stop Safety Valve System HDBH Series

- Sandwich style mounting between manifold and directional valve, body size D03
- ISO 4401-03-02-0-05 (NG 6 or D03), flow up to 5 gpm (10 gpm with single line configuration)
- Redundant safety valve system, momentarily stops normal actuator motion when commanded by the safety controls or when there is a fault in the HDBH system
- Tamper-evident design



### Block & Stop Safety Valve Systems HBH Series

- Base mounted valves, body size D25 and D32
- 1-1/2" and 2" port, flow up to 145 gpm
- Control reliable redundant valve system, momentarily stops normal actuator motion when commanded by the safety controls or when there is a fault in the HBH system
- Tamper-resistant design



#### PRODUCT CREDENTIALS

Safety Category



Declaration of Conformity



# Electrical Energy Isolation

## Electrical Isolation Devices

### e L-O-X®

- Electrical isolation device especially useful in situations where the distance to the main electrical disconnect is excessive and causes extra downtime traveling back and forth between the main disconnect and the machine when performing Lockout/Tagout.
- Wall mounted
- Up to 600 VAC 3 phase
- Available in 30 Amp, 60 Amp, 100 Amp, and 200 Amp
- Compact panel design
- Local start/stop(test) button
- Lockable disconnect switch (load-rated – in case machine is still running when power is disconnected)
- 3-phase power indicator - Indicates voltage presence on all phases and, also, if phases are out of balance.



## ElectroGuard® Plus Energy Isolation

### Low Voltage Lockout System – Electric, Pneumatic, Hydraulic

#### Single-zone ElectroGuard® Plus System Overview

Single-zone ElectroGuard® Plus systems can isolate up to six energy sources (any combination of electrical, pneumatic, & hydraulic), and can utilize as many as thirteen remote lockout stations (RLS).

Potential capacity could be:

- 1 zone
- Up to 6 RLS Stations or up to 13 with external RLS Interface Panel (RIP)
- Controls up to 6 Energy Sources (combination of EIP, PIP, & HIP)

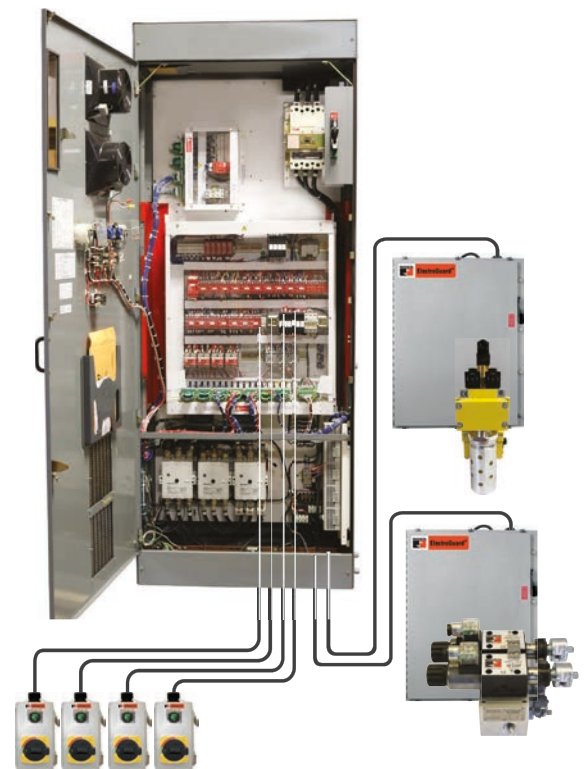
#### Multi-Zone ElectroGuard® Plus System Overview

##### (8 Zones, 69 Remote Lockout Stations, and 32 Energy Sources)

The ElectroGuard® Plus main Control Panel can be extended to include an 8 port or 16 port Ethernet Switch to expand system capacity.

Potential capacity could be:

- 8 zones (Base + 7 remote)
- 69 RLS Stations (Base + 7 RIP)
- 32 Energy Sources (Base + 8 OCP)



PRODUCT CREDENTIALS

Safety Category



CE Conformity Declaration



# Press Clutch/Brake Control

## Valves for External Monitoring

### Double Valves for External Monitoring with or without Pressure Switches 35 Series

- In-line mounted 3/2 valves, dual poppet construction
- 1/4" – 1-1/2" port, flow up to 43 C<sub>v</sub> to exhaust
- Designed to enable users to comply with current safety regulations
- External monitoring systems can provide lockout inhibiting further machine operation until controls system reset



## Valves with Internal Monitoring

### Double Valves with Internal Dynamic Monitoring and Memory DM<sup>2</sup>® Series D

- Base mounted 3/2 valves, dual poppet construction
- 1/4" – 1-1/2" port, flow up to 54 C<sub>v</sub> to exhaust
- Control reliable double valves; self-contained dynamic monitoring system
- Dynamic memory of abnormal function retains lockout condition and prevents unintentional reset through reapplication of air or electricity; electrical, pneumatic, or manual reset available
- Status indicator switch feedback for valve condition (ready to run or faulted)



### Double Valves with Internal Monitoring and Reset 35 Series

- In-line mounted 3/2 valves, dual poppet construction
- 3/8" – 2" port, flow up to 43 C<sub>v</sub> to exhaust
- Internal monitoring – pneumatic (L-G), solenoid (E-P), or dry contact (D-S) reset options; no undesired automatic reset upon removal of electrical or pneumatic energy sources
- Automatic lock-out to inhibit further operation



## PRODUCT CREDENTIALS

Safety Category	DGUV (German Social Accident Insurance)	Declaration of Conformity			ISO Standard	CSA Certificate of Compliance	CRN Certification	SISTEMA Library
Up to <b>Cat. 4</b> <b>PL e</b>		<b>CE</b>	<b>UKCA</b>	<b>EAC</b>	ISO 13849-1:2015		Available for appropriately tested valves, see ROSS' website.	Data available, see ROSS' website.
<b>SIL 3</b> Functional Safety								

## Automatic Counterbalance

### Automatic Counterbalance Pressure Control

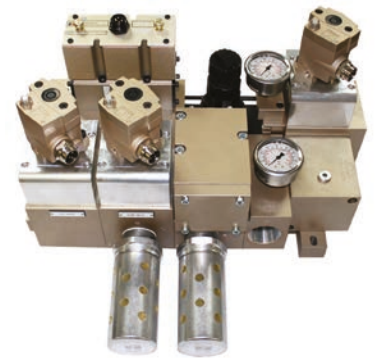
- Fill-Dump with Auto-Manual Select and Parallel Manual Circuit
- Interfaces with controls to monitor/maintain correct counterbalance pressure
- Built-in check valve functions meet all ANSI B11.1 requirement



## Automatic Die Cushion

### Automatic Die Cushion Control Systems

- Valve and regulator assembly
- Fill/Dump valves interfaces with controls to monitor/maintain correct die cushion pressures



## Air Distribution

### Air Distribution Assemblies for Main Air Panel Applications

- 2-station and 3-station manifold assemblies or modules
- Stations or modules that can be stacked to fit any application
- Custom options available



# Directional Control Valves

## Base Mounted Poppet Valves and Manifolds

### Dale Valves and Valve Manifolds CP & CX Series

- Manifordable base mounted 2/2 and 3/2 valves, poppet construction
- 1/4" – 2-1/2" port, flow up to 108 C<sub>v</sub>
- Solenoid pilot or pressure controlled
- Port pressure independent
- Leak tight valves (Series CX)



### Dale Valves LF & LX Series

- Base mounted 3/2 valves, poppet construction
- 3/8" – 2-1/2" port, flow up to 62.7 C<sub>v</sub>
- Solenoid pilot or pressure controlled
- Speed Control - fast shift or controlled shift in both ways, to eliminate hammering
- Leak tight valves (Series LX)



### Dale Valve Manifolds LT Series

- Base mounted 3/2 valves, poppet construction
- 1/4" port, flow up to 0.9 C<sub>v</sub>
- Multi solenoid pilot controlled
- Leak test or leak tight valve manifolds; often used for the fill, isolate, and test functions



## In-line Poppet Valves

### Headline Valves

- In-line mounted 2/2, 3/2, and 4/2 valves, poppet construction
- 1/4" – 2-1/2" port, flow up to 72 C<sub>v</sub>
- Solenoid pilot or pressure controlled
- CRN certified valves available

*Explosion proof solenoid pilot valves for Hazardous Locations available.*

#### 27 Series

- » Buna-N seals
- » Direct solenoid control option

#### 21 Series

- » High and low temperature service options
- » Vacuum and full vacuum valves options

#### High Temperature Service

- » Fluorocarbon seals
- » Ambient Temperature: Solenoid pilot controlled models up to 250°F (122°C)  
Pressure controlled models up to 300°F (150°C)
- » Media Temperature: 0° to 300°F (-17° to 150°C)

#### Low Temperature Service

- » Buna-N seals
- » Ambient Temperature: Down to -40°F (-40°C)
- » Media Temperature: -40° to 175°F (-40° to 80°C)



# Directional Control Valves

## Spool and Sleeve Valves

### 95 Series

- In-line or manifold mounted 3/2 and 5/2 valves, spool and sleeve construction
- 1/8" – 1/2" port, flow up to 4.5 C<sub>v</sub>
- Solenoid pilot or pressure controlled



## NAMUR Valves

### NAMUR Interface Valves

#### 95 Series

- NAMUR interface 5/2 valves, spool and sleeve construction
- 1/4" port, flow up to 1.3 C<sub>v</sub>
- Solenoid pilot control

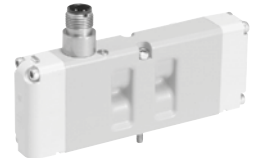


## ISO Valves

### ISO 15047-1 & 15047-2 Valves

#### W66 Series

- Single sub-base and manifold base mounting 5/2 and 5/3 valves, spool and sleeve construction
- ISO Size 02 (18mm) & 01 (26mm) valves – 1/8" & 1/4" port, flow up to 1.1 C<sub>v</sub>
- 5/2 single or double, and 5/3 double solenoid pilot controlled
- 4-pin M12 connectors (ISO 15047-1), Serial Bus Communication compatible (ISO 15047-2)



### ISO 5599-1 Valves

#### W60 & W64 Series

- Single base and manifold base mounting 5/2 and 5/3 valves, spool and sleeve construction (W60 Series) or poppet construction (W64 Series)
- ISO Size 1, 2, & 3 – 1/8" & 3/4" port, flow up to 4 C<sub>v</sub>
- 5/2 single or double, and 5/3 double solenoid pilot or pressure controlled
- Buna-N and Fluoroelastomer seals



### ISO 5599-2 Valves

#### W65 Series

- Sub-base and manifold base mounting 5/2 and 5/3 valves, spool and sleeve construction
- ISO Size 1, 2, & 3 – 1/4" & 3/4" port, flow up to 3.4 C<sub>v</sub>
- 5/2 single or double, and 5/3 double solenoid pilot or pressure controlled
- Serial Bus Communication compatible



# Directional Control Valves

## ANSI Valves

### ANSI Valves W70 & W74 Series

- Single sub-base and manifold base mounting 5/2 & 5/3 valves
- Spool and sleeve construction (W70 Series), poppet construction (W74 Series)
- ANSI Sizes 1, 2.5, 4, 10 and 20 – 1/4" to 1-1/2" port, flow up to 22 C<sub>v</sub>
- Single or double direct pilot or solenoid pilot controlled
- CRN certified valves available



## SAE Valves

### SAE Valves 80 & 84 Series

- Single sub-base and manifold base mounting 5/2 and 5/3 valves
- Spool and sleeve construction (80 Series), poppet construction (84 Series)
- SAE Size 125, 250, and 500 – 1/4" – 1" port, flow up to 8.2 C<sub>v</sub>
- Single or double solenoid pilot controlled



## Coaxial Valves

### Coaxial High Pressure Valves Series

- In-line mounted, single base and manifold base mounting 2/2 valves
- 1" port, high pressure applications, up to 1450 psig (100 bar)
- Electromagnetic or pneumatic integrated actuator; electrical impulse or pressure controlled
- Fluoroelastomer seals
- Suitable for control of liquid, vacuum and gaseous media; high viscosity and contaminated media



## Pinch Valves

### Pinch Valves for shut-off and control flow rate of liquids, gases, slurries and solids

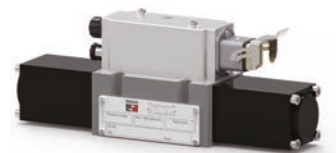
- Compact design, enables energy savings of up to 40%
- Long Service Life
- Threaded or flanged versions
- Light-weight housing (aluminium or plastics)
- Stainless steel version available
- Cross section of passage equals nominal diameter
- Straight flow pattern, no restrictions, no clogged areas in the valve
- Various sleeve qualities
- Optimum price/performance ratio



## Proportional Valves

### Proportional Valves Series

- Base mounted 3/2 valves, poppet construction, "Plug-and-play" concept design
- 3/8" – 2-1/2" port, flow up to 8.7 C<sub>v</sub>
- Force-balanced valve elements
- Proportional pressurizing and exhausting
- Digital control; self-adjusting zero-point



# Manual & Mechanical Valves

## Manual Valves

### Pendant Valves 20 & 39 Series

- In-line mounting 2/2 dual, and 3/2 single, dual or triple valves, poppet construction
- 1/8" – 1/4" port, flow up to 0.73 C<sub>v</sub>
- With or without lever/handle, with or without protective cover



### Palm Button, Push Button, Selector Switch Valves 11 & 12 Series

- Panel mount in-line 3/2 valves, spool & sleeve construction
- Heavy-Duty flange mount in-line 2/2 and 3/2 valves, poppet construction
- 1/8 & 1/4", flow up to 0.9 C<sub>v</sub>



### Toggle Lever, Hand Lever Valves 11, 31 Series

- Side and bottom mounting flanges 2/2 and bottom mounting flanges 4/3 Open or Closed Center valves, poppet construction
- 1/4" – 1-1/4" port, flow up to 14 C<sub>v</sub>
- 4/3 valves with horizontal and vertical lever



### Lever, Pedal, Treadle, Foot Pedal with Guard Valves RM & 36 Series

- In-line mounting 3/2, 4/2, and 5/2 valves, poppet construction
- 1/4" port, flow up to 1.2 C<sub>v</sub>
- Valve with protective guard designed to meet OSHA 1910.217 Mechanical Power Presses
- Heavy-Duty actuator options



## Mechanical Valves

### Cam Roller, Plunger Valves 11 Series

- Side and bottom mounting flanges 2/2 and 3/2 valves, poppet construction
- 1/4" port, flow up to 0.5 C<sub>v</sub>
- Cam roller valves with 1-direction and 2-direction roller



# Flow Control Valves

## Flow Control & Check Valves

### Flow Control, Check Valves 19 Series

- In-line mounting 2/2 valves, poppet construction
- 1/8" to 2-1/2" port, flow up to 50 C<sub>v</sub>



## Shuttle Valves

### Shuttle Valves 19 Series

- In-line mounting 3/2 valves, poppet construction
- 1/8" to 3/8" port, flow up to 3 C<sub>v</sub>



## Quick Exhaust Valves

### Quick Exhaust Valves 18 Series

- In-line mounting 3/2 valves, poppet construction
- 3/8" – 1" port, flow up to 7.2 C<sub>v</sub>



# Pneumatic Cylinder

## Pneumatic Cylinders ISO 15552

### Pneumatic Cylinders ISO 15552 High Precision and Performance

- Single/double rod cylinder or tandem
- Piston rod CK45 steel, chrom-plated / Inox AISI 303
- Extended stroke up to 3000 mm
- Suitable for oil-free operation



## PowerPak Cylinders

### PowerPak Cylinder Package for forming and other applications (0.6 to 100 tons)

- High precision & high cycle frequency
- No hydraulic power unit needed
- Cost-efficient & easy integration into automation system
- Fast cylinder movements
- Flexible stroke adjustment
- Low noise, low maintenance
- Easy control adjustment
- Easy assembly



## High Speed Cylinders (HSC)

### High Speed Cylinders for Machine Counterbalance to accelerate process dynamic of vertical axes on tooling machines

- Operating pressure up to 16 bar
- Design in accordance with the following standards: ISO 15552 & ISO 6022 (cylinders are usable up to 20 bar). The user has to make sure that the pressure equipment directive is observed.
- Max. acceleration 20 m/s<sup>2</sup> (special versions 30 m/s<sup>2</sup>)
- Max. traversing speed 4 m/s
- In case of oscillating movements, admissible work frequency up to 15 Hz
- Friction-optimized material pairing
- A number of customer-specific cylinder fixations is available
- High-temperature tolerance of the seals (up to 150°C)
- A variety of integrated lubrication systems



## Filters

### Filters

- Modular or in-line mounting, sintered or fiber construction
- High-strength polycarbonate plastic bowl or metal bowl
- Internal automatic, manual, external automatic, or electronic drain

#### General Filters

- » 1/8" – 2" port, flow up to 30000 l/min
- » 5- $\mu$ m or 40- $\mu$ m filter element

#### Coalescing Filters

- » 1/8" – 2" port, flow up 24000 l/min
- » 0.3- $\mu$ m or 0.01- $\mu$ m filter element
- » Differential pressure gauge

#### Adsorbing Filters

- » 1/8" – 3/4" port, flow up to 28000 l/min
- » Filter cartridge contains activated carbon

#### Clean Air Package

- » 1/4" – 3/4" port, flow up to 28000 l/min
- » Assembly with general purpose, coalescing, and adsorbing filter



## Regulators

### Regulators

- Modular or in-line mounting, diaphragm or piston-type design
- Self-relieving or non-relieving

#### General Regulators

- » 1/8" – 2" port, flow up 50000 l/min

#### Precision Regulators

- » 1/8" – 2" port, flow up 50000 l/min

#### Remote Pilot Regulators

- » 1/8" to 3" port, flow up to 113000 l/min

#### In-line Relief Valves

- » 1/8" – 1" port, flow up to 22600 l/min



## Integrated Filter/Regulators

### Integrated Filter/Regulators

- Modular or in-line mounting filter and regulator consolidated in one assembly
- 1/8" – 1" port size, and quick-connect fittings for tubing from 1/4 up to 10 mm, flow up to 15000 l/min
- High-strength polycarbonate plastic filter bowl or metal bowl
- 5-, 20-, 40- $\mu$ m rated polyethylene filter element
- Internal automatic or manual drain; self-relieving or non-relieving piston-type regulator



## Lubricators

### Lubricators

- Modular or in-line mounting, wick-feed and sight-feed design
- 1/8" to 2" port size
- Flow up to 25000 l/min
- High-strength polycarbonate plastic bowl or metal bowl



## Combinations

### Air Preparation Combinations

- Filter, Regulator Plus Lubricator
- Integrated Filter/Regulator Plus Lubricator
- Filter and Regulator, Filter and Lubricator

- Modular or in-line mounting
- 1/8" – 2" port size, flow up 30000 l/min



## Systems

### ROSS® Integrated Systems

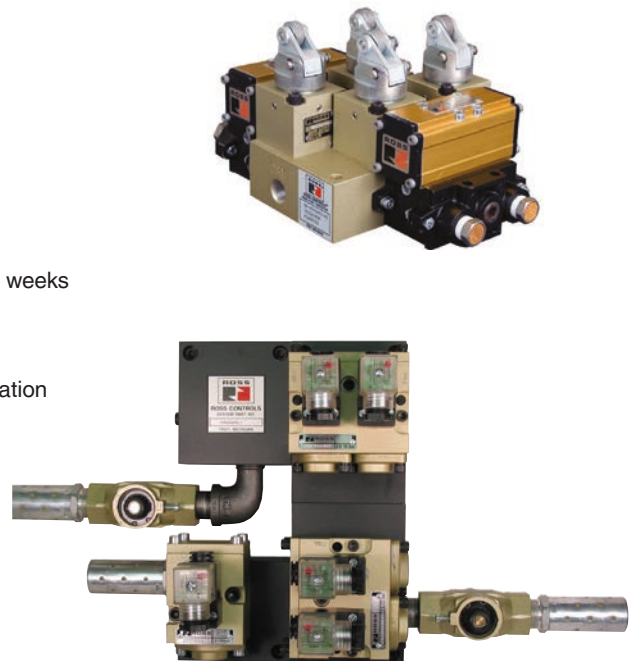
- Customized unique systems designed to meet the needs of industry applications
- Multiple products combined into one streamlined unit with only one inventory part number
- Saves client time and money by eliminating project management, administration, research, design, or assembly
- Available with locking cabinets for restricted areas



## ROSS/FLEX®

### ROSS/FLEX® Process

- Proven existing products repackaged to create a custom-designed solution, manufactured to your requirements, and developed in days, rather than weeks or months
- Reduced engineering costs, procurement costs
- Improved appearance
- Efficient use of space, ease and speed of installation
- Energy savings
- Simplified troubleshooting
- Reduced downtime in the event of failure



## Proportional Pressure Control Valves 4.0

### Proportional Pressure Control Valves – Industry 4.0

For Plunger up, Plunger-Cooling/Counterblow and Final Blow/Settle Blow/Finish Cooling

- The valve continuously monitors its own performance and the external supply in order to compensate automatically compensates for disturbances and inform the user as well as the control system about the process sequence
- Adaptive disturbance control
- Analysis & communication functions
- LED signaling
- Fast & precise regulation
- Dirt-resistant poppet design



## Diagnostics-Tablet for Proportional Pressure Control Valves

### Diagnostics Tablet & Software License – Industry 4.0

For Diagnostics and Monitoring of Valves and Processes

- Monitoring and optimization of forming processes in real-time
- Allows predictive maintenance without unplanned section stops
- Software as a license (without tablet) available



## Diagnostics & Test Unit for Proportional Pressure Control Valves

### Diagnostics & Test Unit

For graphical evaluation of the functional and control behavior of Proportional Pressure Control Valves

- Diagnostics and test unit incl. tablet with diagnostics and monitoring software
- Connection to pressure control valve on machine with monitoring/recording of all process variables
- User-friendly operation via tablet touch interface
- Supports all ROSS® proportional pressure control valves
- Complete signal processing for valves



## Test Rig for Proportional Pressure Control Valves

### Test Rig for Proportional Pressure Control Valves

- The ROSS® test rig, in conjunction with the diagnostics and test unit for proportional pressure control valves, facilitates the comprehensive pneumatic testing of all ROSS® proportional pressure control valves to ensure their proper operation.



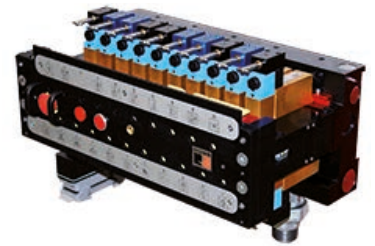
# Products for the Glass Industry

## 21-Valve Block

### 21-Valve Block

Compact and Reliable Solution: Minimizing Machine Downtime with Fast, Precise Valve Replacement Customizable Construction

- Quick-and-easy valve exchange
- Very precise air return poppet
- Highly reliable, accurate switching
- Rugged manual actuators involved
- All valves with indicator lights
- High flow characteristics
- Construction: poppet valves
- Optional with safety features
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



## Cartridges for 21-Valve Block

### Easy-to-Service Cartridges

Robust & Dirt-resistant and Long Service-Life

- Poppet valve construction
- Minimal friction – low hausing wear – constant response times

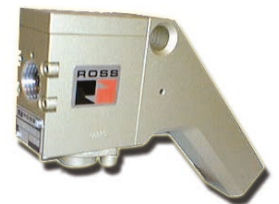


## Blow Pistol

### Blow Pistol

Series 21, ROSS/FLEX®

- Poppet valve construction
- High flow, low pressure
- Integrated handle



## Counterblow Vacuum or High-Low Pressure Valve

### Counterblow Vacuum or High-Low Pressure Valve

Series 21, ROSS/FLEX®

- 3/2 way poppet valve construction
- Flexibility in installation
- Space-saving design
- High flow, constant response and long service-life
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery

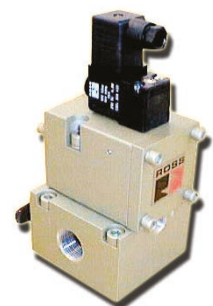


## Final Blow, Settle Blow, Finish Cooling, Blow Off

### Final Blow, Settle Blow, Finish Cooling, Blow Off

Series 21, ROSS/FLEX®

- 3/2 way poppet valve construction
- High-speed and constant repeatability
- Specialised low-wear body-coating
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



# Products for the Glass Industry

## Blow Mold Vacuum Valve

### Blow Mold Vacuum Valve

Series 21, ROSS/FLEX®

- 3/2 way poppet valve construction
- Specialised low-wear body-coating
- Integrated handle & build-in steel filter
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



## Plunger up or down, cooling

### Plunger up or down, cooling

Series 21, ROSS/FLEX®

- 3/2 way poppet valve construction
- Solenoid, remote pilot options
- Specialised low-wear body-coating
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



## Pusher-Valve

### Pusher-Valve

Series 21, ROSS/FLEX®

- 5/2 way poppet valve construction
- Solenoid, remote pilot options
- Specialised low-wear body-coating
- Dual pressure options
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



## Mold open/close Valve

### Mold open/close Valve

Series 21, ROSS/FLEX®

- 3/2 way poppet valve construction
- Blowhead compatible
- Built in flow controls, shut-off and pressure booster
- Specialised low-wear body-coating
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



## Kick-Off Valve

### Kick-Off Valve

Series 21, ROSS/FLEX®

- 3/2-Way space-saving poppet valve construction
- Robust and long-lasting
- ROSS/FLEX® Solution: design can be customized according to customer requirements and machinery



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