

**NEW**

# PRODUCT DATA SHEET INFORMATION



## M35 Series Double Valves

**Modular Safety Exhaust (Dump) Valve  
with or without EEZ-ON® (Soft Start) Module**

**Designed for External Monitoring**

**Port Size 1/2 & 3/4**

up to  
CAT 4, PL e  
(certification pending)



### FEATURES & BENEFITS:

- Proven ROSS SERPAR® Crossflow technology - control-reliable, Category 4, PL e applications, shuts-off and exhausts even when faulted
- Pressure sensors - allows for external monitoring of valve state
- Modular or threaded port connection - allows modular connection to air entry system (Lockout Valve, Filter, Regulator, Lubricator)
- Integrated EEZ-ON® (soft start) module option - allows slower build-up of pressure during start-up (does not increase width of unit)
- LED indicators - aids troubleshooting (power on main solenoids, feedback pressure sensors, and fault/no fault condition)
- Includes high-flow, clog-resistant silencer - reduces actuation/de-actuation noise and no back pressure from clogging
- 3/2 Normally Closed function - shuts off pneumatic energy supply and exhausts (dumps) downstream pressure

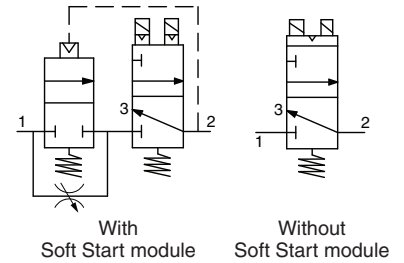


### HOW TO ORDER

(Choose your options (in red) to configure your valve model number.)

<b>M35</b>	<b>S</b>	<b>40</b>	<b>G</b>	<b>A</b>	<b>E</b>	<b>X</b>	<b>DB</b>	<b>G</b>	<b>A</b>	Revision Level
Series	Soft Start Function	Thread	Monitoring	Communication	Pin Configuration Combinations*	Pressure Gauge				
	With Soft Start <b>S</b>	BSPG <b>G</b>	External <b>E</b>	None <b>X</b>	Solenoid	With Gauge <b>G</b>				
	No Soft Start <b>X</b>	NPT <b>N</b>			Sensor	No Gauge <b>X</b>				
	Port Size	Voltage			D	B	<b>DB</b>			
	Inlet	24 volts DC <b>A</b>			A	B	<b>AB</b>			
	Outlet				A	C	<b>AC</b>			
	1/2				C	C	<b>CC</b>			
	3/4				D	C	<b>DC</b>			
					A	A	<b>AA</b>			
					*Pinouts details, see page 3.					

### Simplified Schematics



Port Size	Basic Size	Soft Start	Cv		Weight lb (Kg)
			1-2	2-3	
1/2	8	With	4.1	7.5	6.5 (2.9)
1/2	8	Without	4.3	7.5	4.2 (1.9)
3/4	8	With	4.1	7.5	6.5 (2.9)
3/4	8	Without	4.3	7.5	4.2 (1.9)

**APPLICATIONS:** Category 4 applications - e.g., Pneumatic Control, Air Dump/Release.

### Standard Specifications

**Design:** Redundant, 3/2 Normally Closed, Dual Poppet.  
**Actuation:** Solenoid pilot operated with air assisted spring return. One solenoid per valve element (2 total) – both to be operated synchronously.  
**Mounting Type:** Inline mounted - modular/threaded.  
**Mounting Orientation:** Any, preferably vertical.  
**Flow Media:** Compressed air according to ISO 8573-1:2010 [7:4:4].  
**Inlet Pressure:** 30 to 150 psig (2 to 10 bar).  
**Ambient Temperature:** 40° to 120°F (4° to 50°C).  
**Media Temperature:** 40° to 175°F (4° to 80°C).  
 For temperatures below 40°F (4°C), the compressed air must be dried according to ISO 8573-3, class 7.  
**Standard Voltages:** 24 volts DC.  
**Pilot Solenoids:** According to VDE 0580. Rated for continuous duty.

**Pilot Solenoids Power Consumption** (each solenoid): 1.2 watts.  
**Enclosure Rating:** According to DIN 400 50 IP 65.  
**Electrical Connections:** Two 5-pin M12 connectors. Enclosure rating according to DIN 400 50 IP 65.  
**Pressure Sensors** (2 per valve): Solid state.  
**Pressure Sensors Current Consumption** (each sensor): <23mA (each without contacts).  
**Monitoring:** Dynamic, cyclical, external with customer supplied equipment. Monitoring should check state of both valve pressure sensors with any and all changes in state of valve control signals.  
**Minimum Operation Frequency:** Once per month, to ensure proper function.  
**Functional Safety Data:** Pending.

*This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM2® series D for mechanical power press applications.*

# Modular Safety Exhaust (Dump) Valve with or without Soft Start Operation Overview

The M35 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 M35 Series valve is to shut off supply of pneumatic energy and to exhaust any pneumatic energy from downstream of the valve. *Note that the M35 Series valve cannot exhaust pneumatic energy from downstream of obstructions such as check valves and closed center function valves.*

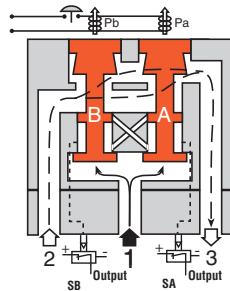
The M35 Series valves are designed for external monitoring for safe, redundant operation of the valves. The M35 Series valves are constructed of redundant, 3/2 poppet type valves, and have an overall function of a single solenoid pilot-operated, spring return valve. Each single valve in the M35 Series valve is equipped with a solid state pressure sensor. Monitoring both of these sensors on each actuation and de-actuation of the M35 valve provides a diagnostic coverage of 99%. Monitoring of these sensors is to be done by an external monitoring system.

The function of the optional EEZ-ON® (soft start) module is to, on energization, allow outlet pressure to increase at a slower than normal rate until it reaches approximately 50% of inlet pressure, at which point the valve will then open fully to finish filling the system at full flow rate. This feature can be used to lessen the shock of sudden, rapid pressurization of cylinders, and to gradually refill the system.

## VALVE OPERATION

### Conditions at Start:

Inlet 1 is closed to outlet 2 by both valve elements A and B. Outlet 2 is open to exhaust 3. Pressure signals at both sensors SA and SB are exhausted. Sensors outputs SA and SB are on.

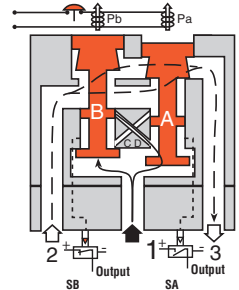


### Completion of Normal Cycle:

Simultaneously de-energizing both solenoids returns the valve to the "Conditions at Start" described at left.

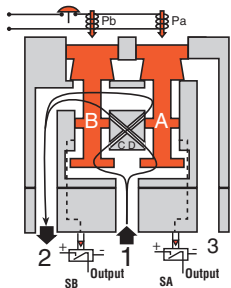
### Detecting a Malfunction:

A malfunction in the system or the valve itself could cause one valve element to be open and the other closed. Air then flows past the inlet poppet on valve element A, into crossflow passage D, but is substantially blocked by the spool portion of element B. The large size of the open exhaust passage past element B keeps the pressure at the outlet port below 2% of inlet pressure. Full sensing air pressure from side A goes to sensor SA, and a reduced pressure goes to sensor SB. This full pressure signal causes sensor outputs SA to turn off. Sensor outputs SB, with a reduced pressure signal, does not turn on. An external monitoring system can detect the malfunction by monitoring the condition of the sensors SA and SB. The external monitoring system may then react accordingly by shutting down the power to the valve solenoids and any other components deemed necessary to stop the machine.



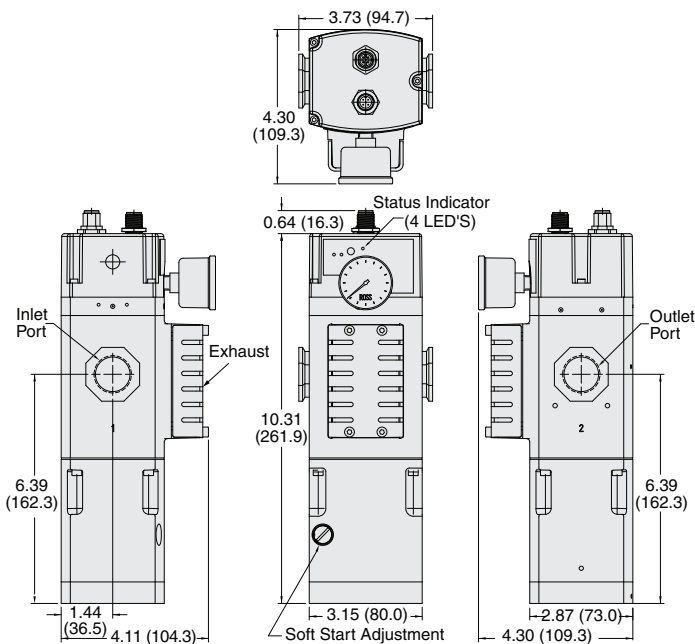
### Normal Operation:

Simultaneously energizing both solenoids actuates both pilots and causes valve elements A and B to shift. Inlet 1 is then connected to outlet 2 via crossflow passages C and D. Exhaust 3 is closed. Sensing pressure signals go to each pressure sensor and become equal to inlet pressure. Sensors outputs SA and SB are off.

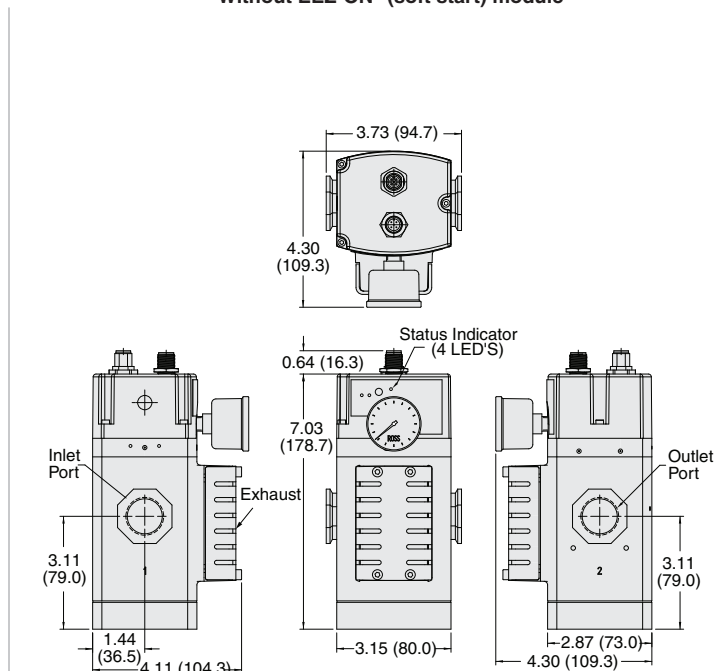


## Valve Dimensions – inches (mm)

### With optional EEZ-ON® (soft start) module



### Without EEZ-ON® (soft start) module

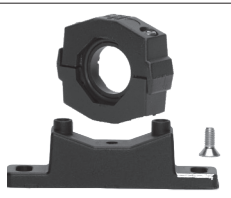




## Mounting Accessories

M35 Series valves have both modular receptacles for piping and female threaded ports inside receptacles, which allows either modular connection or direct piping. Mounting accessories listed below are used for modular connection to ROSS MD series filter-regulator units.

### Mounting Brackets & Clamp for Module Connections



Description	Model Number
Bracket and Screw	R-A118-103
Clamp	R-A118-105
Bracket, screw, and Clamp	R-118-1065M

### Extra Port Blocks

Port Size	Model Number	
	NPT Threads	BSPP Threads
1/2	R-118-106-4	R-118-106-4W



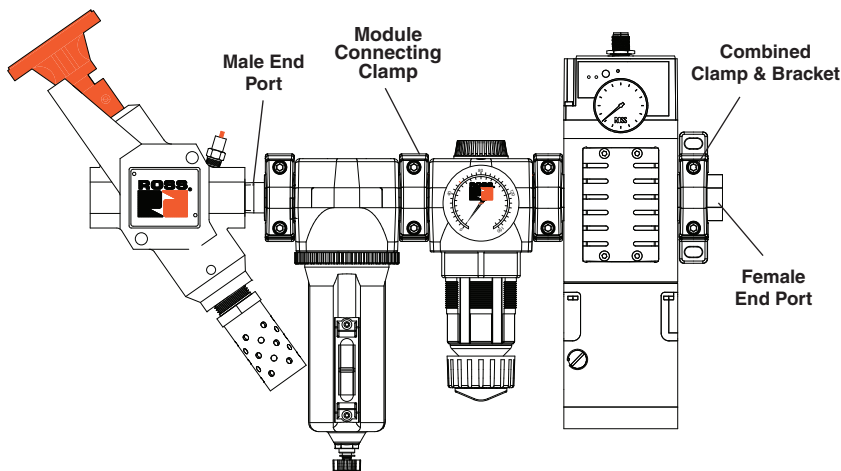
### Female End Ports

Port Size	Model Number	
	NPT Threads	BSPP Threads
1/2	R-118-100-4	R-118-100-4W
3/4	R-118-100-6	R-118-100-6E



### Male End Ports

Port Size	Model Number	
	NPT Threads	BSPP Threads
1/2	R-118-109-4F	R-118-109-4FW
3/4	R-118-109-6F	R-118-109-6FW



## Pressure Gauge

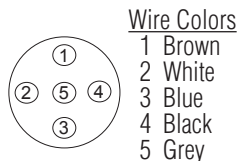
Port Size	Model Number*	Pressure Range psig (bar)	Case Diameter inches (mm)
1/8	5400A1002	0-160 (0-11)	1.5 (38)

\* Center back mounting; male pipe threads.



## Wiring Kits

Wiring Kit	Description	Kit Number	Number of Cables	Cord Length meters (feet)
M12 System Cables Connector - one end	Cords with female, 5-pin, straight, A-coded connector on one end and flying leads on the opposite end.	2644B77	2	5 (16.4)
M12 System Cables Connector - both ends	Cords with female, 5-pin, straight, A-coded connector on one end and male, 5-pin, straight, A-coded connector on the opposite end.	2645B77	2	5 (16.4)



### FLUID POWER PRODUCTS FOR PNEUMATIC SOLUTIONS:

- Base Mounted Valves and Sub-Bases
- Line Mounted Valves
- Manual & Mechanical Valves
- Flow Control Products
- Air Preparation Products (F-R-L's)
- Safety-Related Products
- ROSS/FLEX® Solution
- ROSS Integrated Systems

Your local ROSS distributor is:



### WARRANTY, CAUTIONS and WARNINGS

Standard ROSS warranty, cautions and warnings apply, available upon request or at [www.rosscontrols.com](http://www.rosscontrols.com).

ROSS CONTROLS	USA	Tel: 1-248-764-1800	web site: <a href="http://www.rosscontrols.com">www.rosscontrols.com</a>
ROSS EUROPA GmbH	Germany	Tel: 49-6103-7597-0	web site: <a href="http://www.rosseuropa.com">www.rosseuropa.com</a>
ROSS ASIA K.K.	Japan	Tel: 81-42-778-7251	web site: <a href="http://www.rossasia.co.jp">www.rossasia.co.jp</a>
ROSS UK Ltd.	UK	Tel: 44-1543-671495	web site: <a href="http://www.rossuk.co.uk">www.rossuk.co.uk</a>
ROSS SOUTH AMERICA Ltda.	Brazil	Tel: 55-11-4335-2200	email: <a href="mailto:vendas@rosscontrols.com">vendas@rosscontrols.com</a>
ROSS CONTROLS INDIA Pvt. Ltd.	India	Tel: 91-44-2624-9040	email: <a href="mailto:ross.chennai@rosscontrols.com">ross.chennai@rosscontrols.com</a>
ROSS CONTROLS (CHINA) Ltd.	China	Tel: 86-21-6915-7961	web site: <a href="http://www.rosscontrolschina.com">www.rosscontrolschina.com</a>
ROSS FRANCE SAS	France	Tel: 33-1-49-45-65-65	web site: <a href="http://www.rossfrance.com">www.rossfrance.com</a>
ROSS CANADA	Canada	Tel: 1-416-251-7677 (416-251-ROSS)	web site: <a href="http://www.rosscanada.com">www.rosscanada.com</a>

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