

Safety Exhaust (Dump) Double 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.*

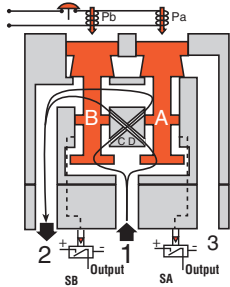
The M35 Series valves are designed for external monitoring for safe, redundant operation of the valves. The M35 Series valves are constructed of redundant, 3/2 poppet type valves, and have an overall function of a single solenoid pilot-operated, spring return valve. Each single valve in the M35 Series 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

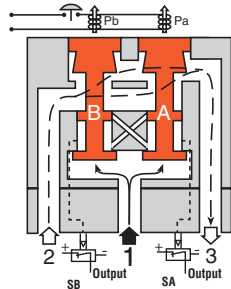
Conditions at Start:

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.



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.

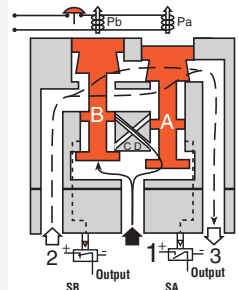


Completion of Normal Cycle:

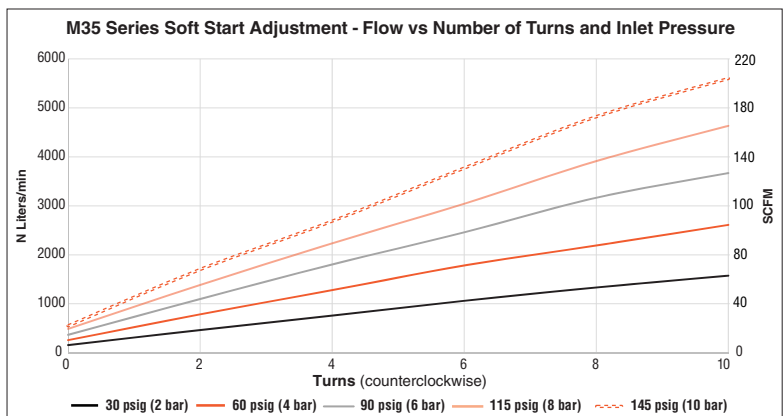
Simultaneously de-energizing both solenoids returns the valve to the "Conditions at Start" described at left.

Detecting a Malfunction:

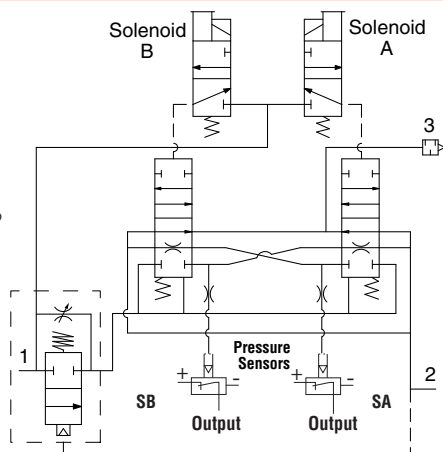
A malfunction in the system or the valve itself could cause one valve element to be open and the other closed. Air then flows past the inlet poppet on valve element A, into crossflow passage D, but is substantially blocked by the spool portion of element B. The large size of the open exhaust passage 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.



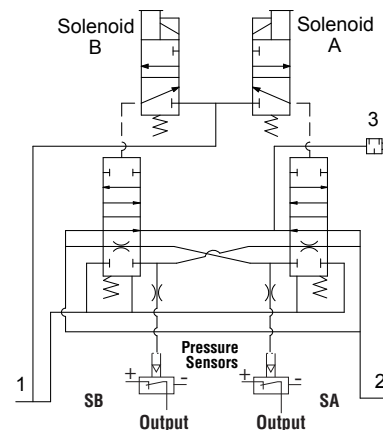
Exhaust Time – Normal and Faulted Conditions (s)							
Volume ft³ (L)	Normal or Faulted	Operating Pressure					
		30 psig (2 bar)		90 psig (6 bar)		145 psig (10 bar)	
		to 15 psig (1 bar)	to 7 psig (0.5 bar)	to 15 psig (1 bar)	to 7 psig (0.5 bar)	to 15 psig (1 bar)	to 7 psig (0.5 bar)
0.071 (2)	N	0.055	0.071	0.094	0.112	0.120	0.135
	F	0.072	0.098	0.147	0.183	0.200	0.247
0.035 (10)	N	0.131	0.208	0.317	0.393	0.424	0.507
	F	0.185	0.301	0.533	0.710	0.789	1.024
0.71 (20)	N	0.226	0.379	0.597	0.746	0.804	0.971
	F	0.326	0.555	1.016	1.368	1.526	1.997
1.41 (40)	N	0.416	0.721	1.155	1.451	1.564	1.899
	F	0.608	1.063	1.983	2.685	3.000	3.941
5.30 (150)	N	1.462	2.604	4.227	5.326	5.743	7.006
	F	2.160	3.855	7.298	9.929	11.107	14.635



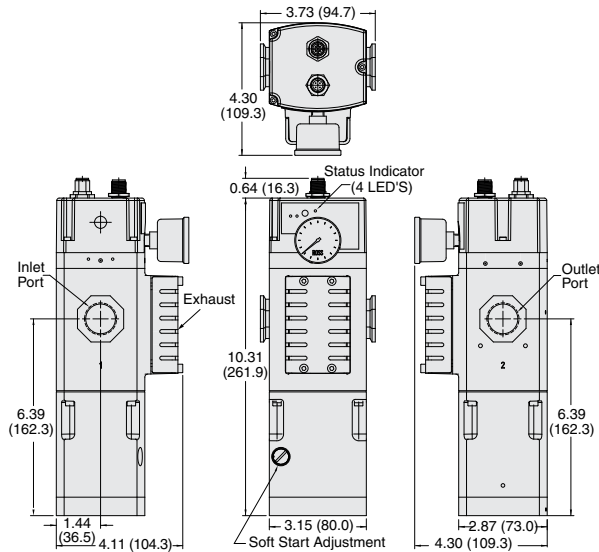
With optional EEZ-ON® (soft start) module



Without EEZ-ON® (soft start) module

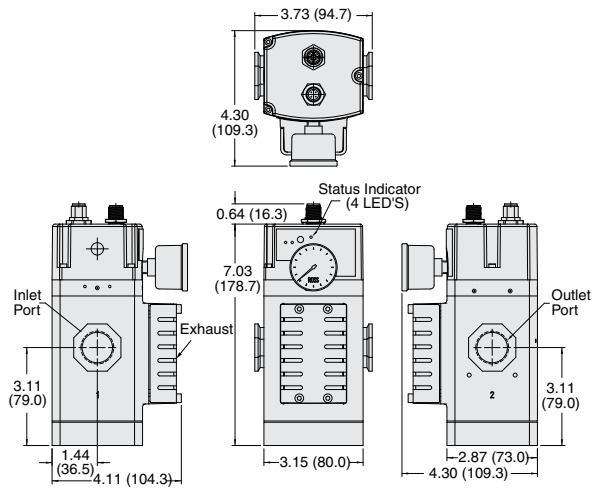


With optional EEZ-ON® (soft start) module



Valve Dimensions – inches (mm)

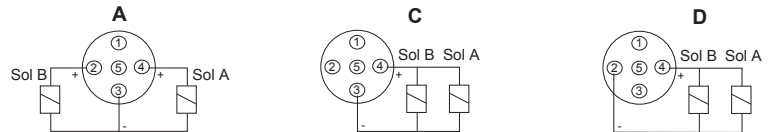
Without EEZ-ON® (soft start) module



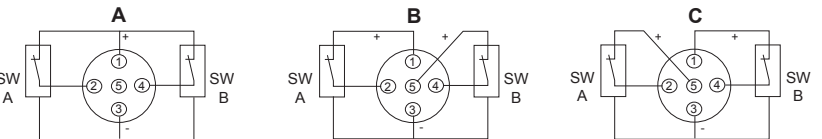
Solenoids & Pressure Sensors Pinouts

Pin Configuration Combinations		
Solenoid	Sensor	
D	B	DB
A	B	AB
A	C	AC
C	C	CC
D	C	DC
A	A	AA

Solenoids



Pressure Sensors



Air Entry Packages with Control Reliable Energy Isolation

- Pre-engineered panel mountable design with manual Lockout L-O-X® valve, air entry via a filter and regulator “FR”, or filter, regulator and lubricator “FRL”, and M35 Series Double Valve with or without Soft Start function
- Applications include Pneumatic Control and Air Dump/Release

Pneumatic Energy Isolation (LOTO)
(certification pending)

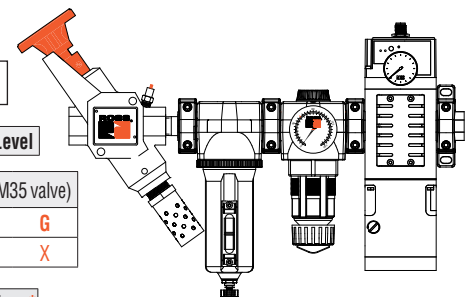


HOW TO ORDER

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

M35	S	L	R	1	40	G	A	E	X	DB	G	A
Series												
M35 Valve												
With Soft Start	S											
No Soft Start	X											
Lockout Valve Type*												
L-O-X®	L											
Modular L-O-X®	M											
No L-O-X®	X											
* Silencer included.												
Filter, Regulator, Lubricator												
Integrated Filter/Regulator	F											
Filter and Regulator	R											
Filter, Regulator, and Lubricator	L											
No Filter, Regulator, or Lubricator	X											
Port Size												
Inlet	1/2											
Outlet	1/2											
40												
3/4												
50												
Extra Port (in relation to M35 valve)												
Location												
Upstream	1/4											
Upstream	3/8											
Upstream	1/2											
Downstream	1/4											
Downstream	3/8											
Downstream	1/2											
None	NA											
None	X											
Voltage												
24 volts DC	A											
Thread												
BSPP	G											
NPT	N											
Monitoring												
External	E											
Communication												
None	X											
Revision Level												
Pressure Gauge (for M35 valve)												
With Gauge	G											
No Gauge	X											
Pin Configuration Combinations*												
Solenoid												
D	B											
A	B											
A	C											
C	C											
D	C											
A	A											

*Pinouts details, see page 3.



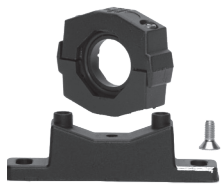
These systems are not designed for controlling clutch/brake mechanisms on mechanical power presses.

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-A118-105M



Extra Port Blocks

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



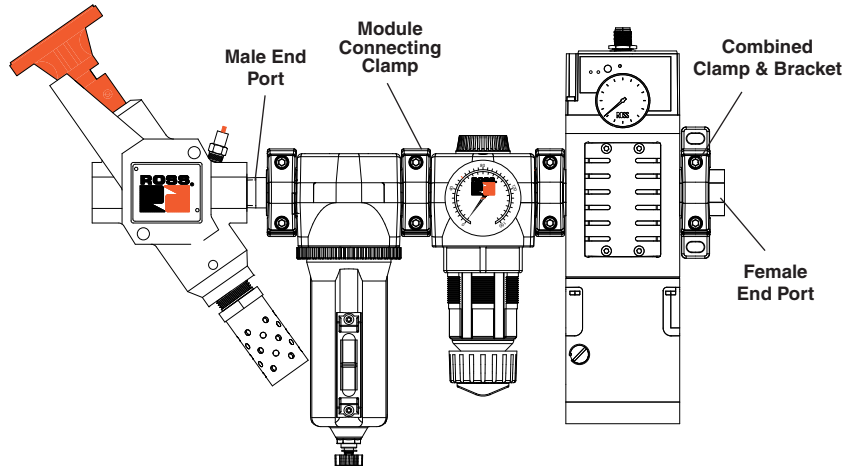
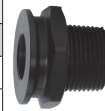
Female End Ports

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



Male End Ports

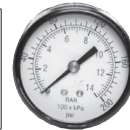
Port Size	Model Number	
	NPT Threads	BSPF Threads
1/2	R-118-109-4F	R-118-109-4FW
3/4	R-118-109-6F	R-118-109-6FW



Pressure Gauge

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

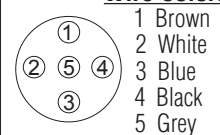
* Center back mounting; male pipe threads.



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)

Wire Colors



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.

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

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