



Installation & Operation Manual



Commitment to Quality

ESD Valves features custom and standard engineered products. We utilize state of the art equipment in our manufacturing facilities. ESD's key focus is commitment to quality, customer satisfaction and continuous improvement.

ESD Butterfly Valve

SAFETY NOTICE

PLEASE READ THIS ENTIRE MANUAL BEFORE YOU INSTALL AND USE YOUR ESD BUTTERFLY VALVE.

FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY/EQUIPMENT DAMAGE, BODILY INJURY, OR EVEN DEATH.

ALL APPLICATIONS MUST BE DISCUSSED WITH ESD VALVES PRIOR TO PURCHASE OR USE.

CAREFULLY FOLLOW INSTALLATION INSTRUCTIONS.

ESD VALVES ACCEPTS NO LIABILITY FOR IMPROPER INSTALLTION, USE OR IMPROPER MAINTENANCE OF PRODUCTS.

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Houston, Texas

Toll Free: 888-644-3521

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SERVICE APPLICATIONS & SPECIFICATIONS

ESD butterfly valves have been designed for installation on diesel engines to stop air flow to the intake manifold and therefore, prevent a runaway condition that can occur in externally enriched hydrocarbon environments (Gas or Dust).

A few examples where our valves can be used are shown below.



LIGHTING TOWERS



STATIONARY GENERATORS



DIESEL POWERED PUMPS



CONSTRUCTION EQUIPMENT



FORKLIFT TRUCKS



VACUUM TRUCKS

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ENGINEERING INTEGRITY

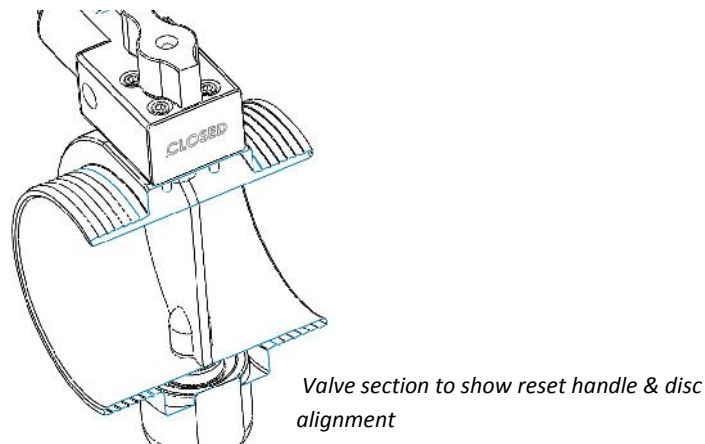
ESD Butterfly valves are tested to MIL standards to validate engineered robustness and reliability.

- Vibration tested to MIL standard 167-1A in 100°C agree chamber
- 100 hours salt spray test to ASTM B117-07
- 2000 actuation cycles

If manufacturers prefer to test a valve on a specific engine application or specific standard, please contact technical sales.

VALVE OPERATION - Reset & Actuation

The butterfly disc must be in the closed position before installation of the valve in the air intake system of a diesel engine. This is done to protect the disc seating edge during assembly and prevent personal injury, as seen below the reset handle will be at 90° to the bore. The valve may be installed with the air flow in either direction, see below.



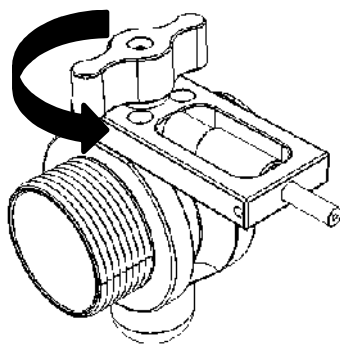
If the butterfly disc is in the open position, the following steps are to be taken to actuate and set the valve disc in the closed position.



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1. Manual actuation – Ensuring no body parts are in the disc area of the valve, pull the cable end to actuate. The disc will shut under torsion spring force.

1/4 Turn counter-clockwise to reset valve to open position

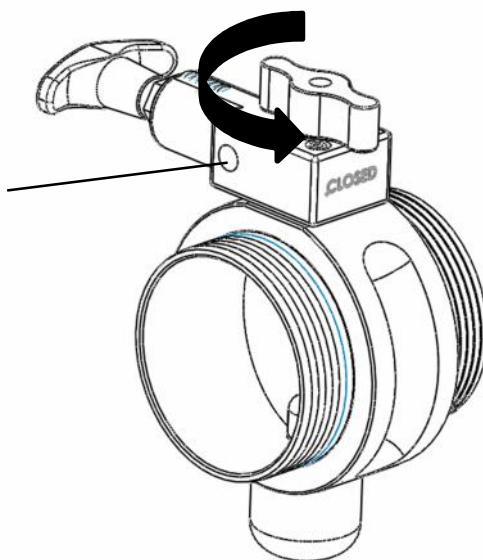


Note: When the reset handle is positioned in line with the bore of the valve, the valve is in the **Open** position. When the length of the reset handle is perpendicular to bore of the valve, the valve is in the closed position. The closed status is also indicated by the arrow aligning to the **CLOSED** text.

In order to reset the valve to the **OPEN** position (engine run), first pull the handle on the cable to release the closed position (backfire protection) latch, release the cable once the reset handle begins to turn counter-clockwise and allow the pin to latch. Turn reset handle clockwise and counter-clockwise to ensure pin has latched fully.

2. Pneumatic actuation - Ensuring no body part are in the disc area of the valve pull the handle to actuate. The disc will shut under spring force. Pneumatic air should also be used to actuate, moisture filtered air at a minimum of 50 PSI is required, connected via 1/8" NPT male fitting.

1/8" NPT connection

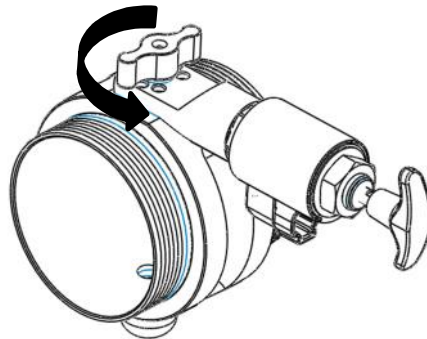




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In order to reset the valve to the **OPEN** position, first pull the handle to release the **CLOSED** position (backfire protection) latch, release the pull handle and then turn the reset handle counter-clockwise and allow the pin to latch. Turn reset handle clockwise and counter-clockwise to ensure pin has latched fully.

3. Electric actuation – Ensuring no body parts are in the disc area of the valve supply 12vDC or 24vDC depending on the options purchased. The solenoid must **NOT** be powered 'ON' for more than **2 seconds at a time** (Excessive 'ON' time will cause damage to the solenoid). Use Deutsch connector (if purchased) or refer to part numbers below:
 - a. Mating connector required – DT06-2S



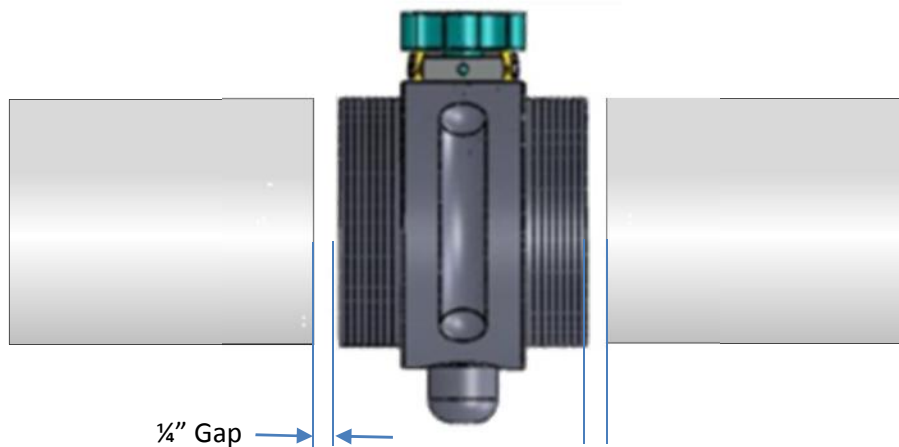
In order to reset the valve to the **OPEN** position, pull the manual override handle to release from back fire protection position, turn the reset handle counter-clockwise, once moving release manual override handle and allow the pin to latch in the **OPEN** position. Turn reset handle clockwise and counter-clockwise to ensure pin has latched fully.



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VALVE INSTALLATION

Hose Mounted System - When installing ESD Valves cut the original air intake pipe connecting the air filter box and intake manifold. The opening should be cut $\frac{1}{2}$ " larger than the overall valve length, to allow $\frac{1}{4}$ " gap either side of the valve when installed. At minimum single ply reinforcement hose should be utilized.



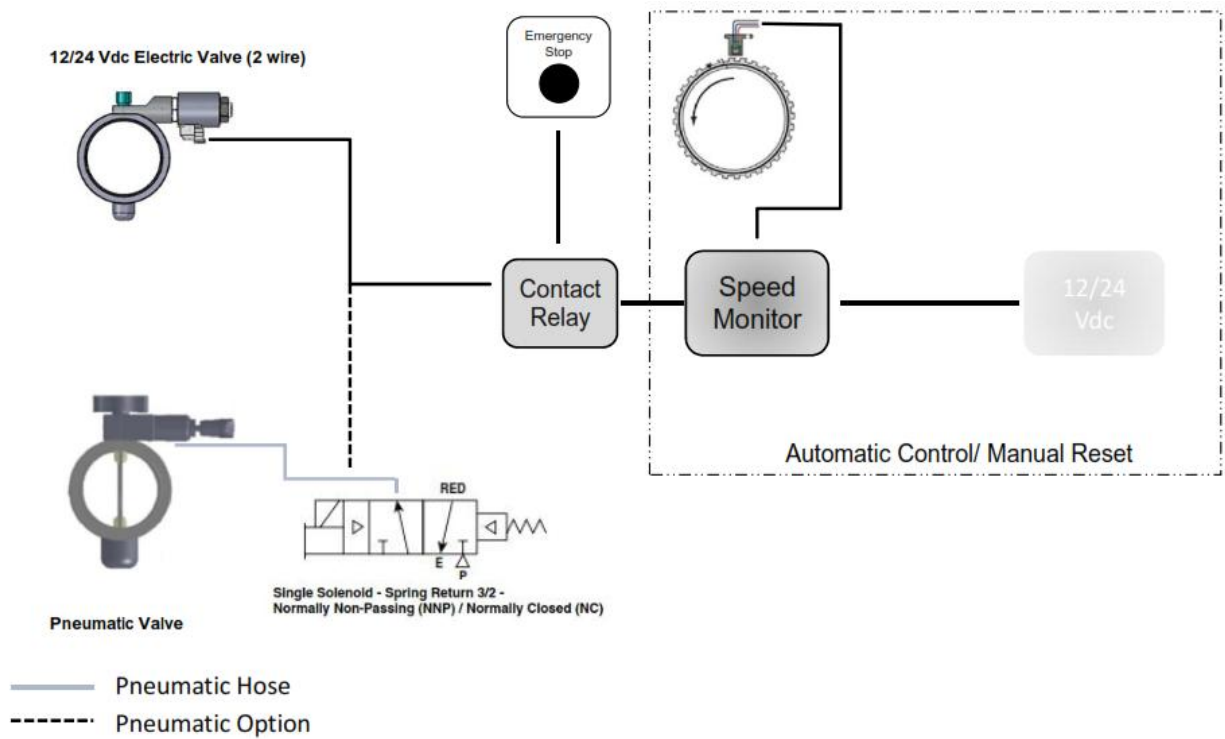
- Ensure intake pipes and valve bores are free of debris. Connect parts using appropriate hose and constant torque clamps.
- Ensure all wiring or pneumatic hoses (depending on actuation method) are secured firmly to reduce opportunity for chafing.
- Ensure the reset handle is free and clear of obstruction to avoid actuation and closure malfunction.
- Valves are designed for pre-turbo installation (post air filter), temperatures should not exceed 100°C (212°F) both ambient and intake air temperatures.
- In the event 2 valve are used in a V arrangement engine, ensure closure signals are common to both valve actuators (pneumatic or electric), test and ensure valves close simultaneously.

Maintenance & Operation – ESD recommends regular (once/ day) testing of valve operation is conducted via the controlling device or emergency stop button, trip 2-3 times ensuring repeated effectiveness. If for unknown reasons the valve is not operating as intended, return the valve to ESD valves for evaluation.



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INTEGRATION



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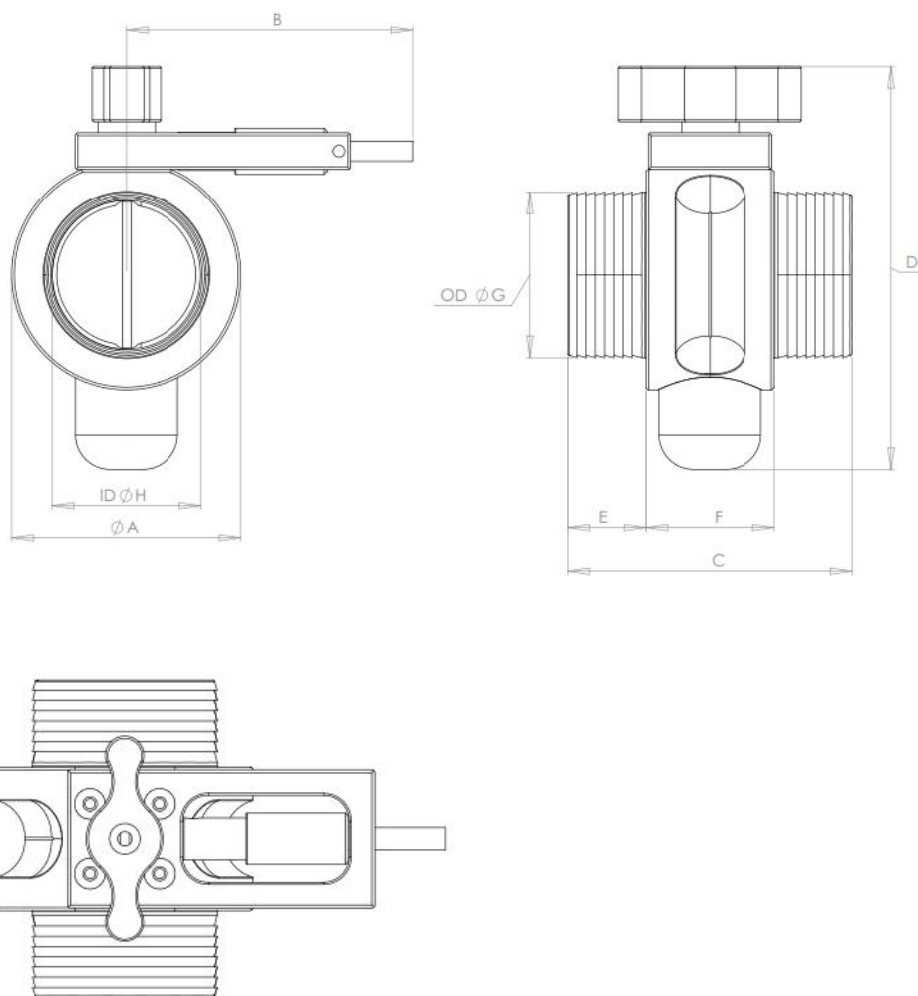
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DIMENSIONAL DATA – MANUAL ACTUATION



DIMENSIONS (Inches)									
SIZE		A	B	C	D	E	F	G	H
Inches	Prefix								
1.75	175	2.4	3.1	3.1	4.4	0.8	1.4	1.8	1.6
2.00	200	3.0	3.1	3.1	4.4	0.8	1.4	2.8	1.9
2.25	225	3.0	3.1	3.1	4.4	0.8	1.4	2.8	2.2
2.75	275	3.7	3.1	3.1	4.4	0.8	1.4	2.9	2.6
3.0	300	3.7	3.1	3.2	4.4	0.8	1.5	3.0	2.9
4.0	400	4.7	3.1	4.0	4.4	1.0	2.0	4.0	3.8
5.00	500	5.75	5.8	5.0	7.6	1.4	2.3	5.0	4.8
6.00	600	6.75	5.9	6.0	8.6	1.7	2.7	6.0	5.8

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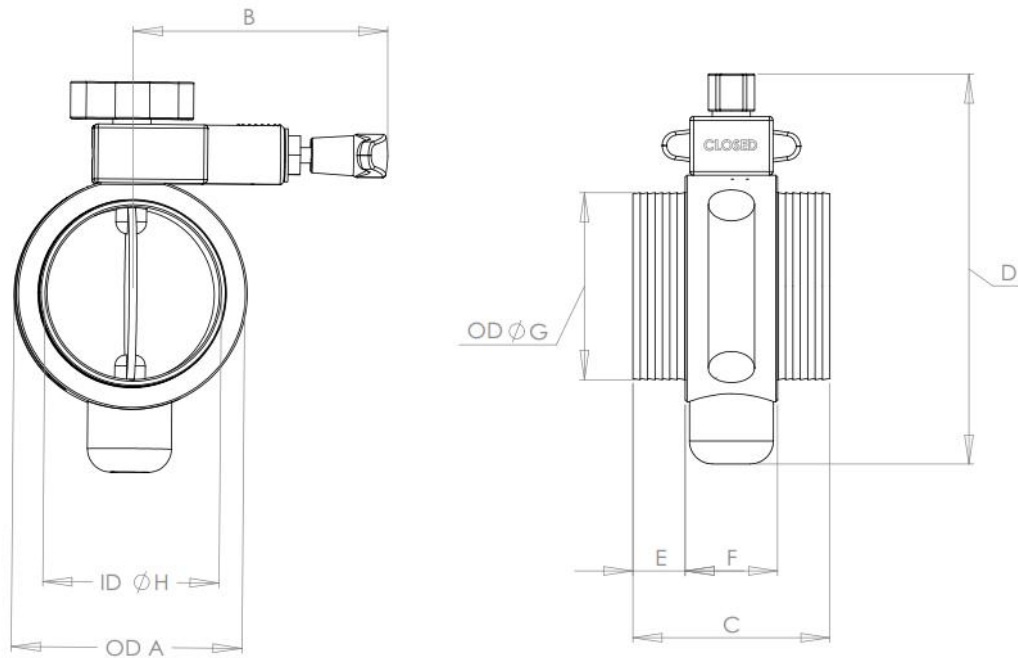
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DIMENSIONAL DATA – PNEUMATIC ACTUATION



DIMENSIONS (Inches)									
SIZE		A	B	C	D	E	F	G	H
Inches	Prefix								
1.75	175	2.4	3.1	3.1	4.4	0.8	1.4	1.8	1.6
2.00	200	3.0	3.1	3.1	4.4	0.8	1.4	2.8	1.9
2.25	225	3.0	3.1	3.1	4.4	0.8	1.4	2.8	2.1
2.75	275	3.7	3.1	3.1	4.4	0.8	1.4	2.9	2.6
3.00	300	3.7	3.1	3.2	6.3	0.8	1.5	3.0	2.9
4.00	400	4.7	3.1	4.0	6.5	1.0	2.0	4.0	3.8
5.00	500	5.75	5.8	5.0	7.6	1.4	2.3	5.0	4.8
6.00	600	6.75	5.9	6.0	8.6	1.7	2.7	6.0	5.8

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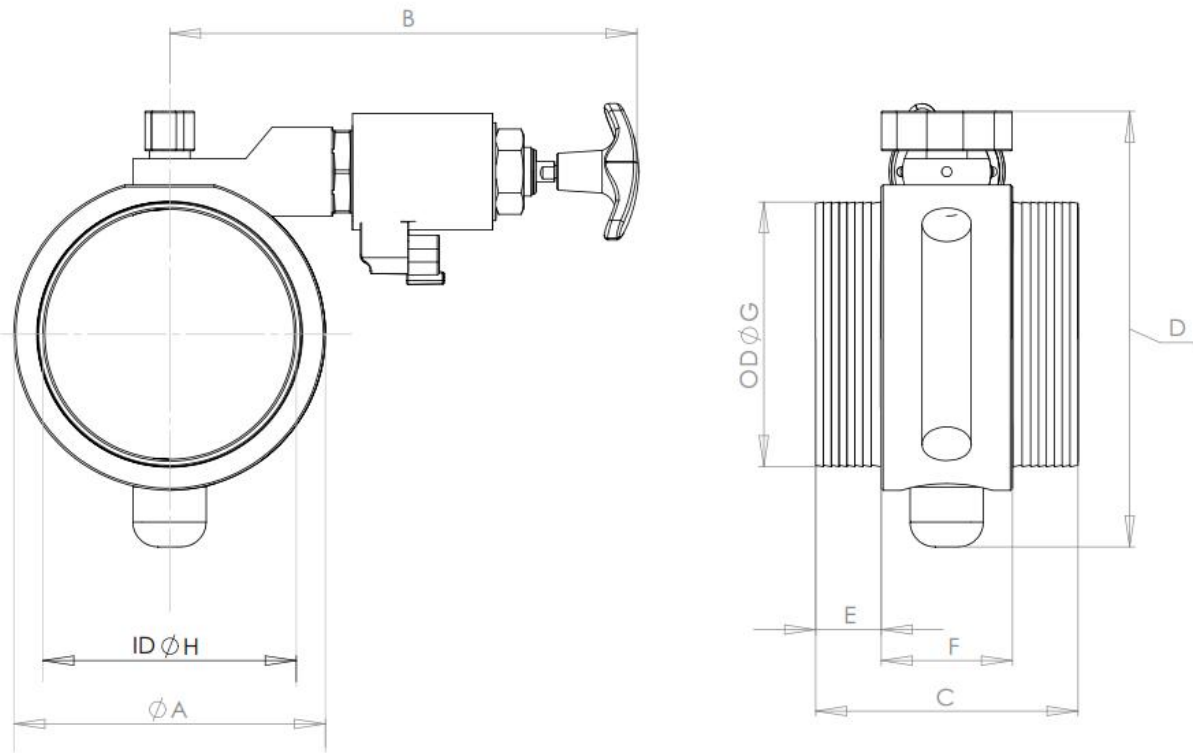
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DIMENSIONAL DATA – SOLENOID ACTUATION/ Optional Manual override



DIMENSIONS (Inches)									
SIZE		A	B	C	D	E	F	G	H
Inches	Prefix								
1.75	175	2.4	6.1	3.1	4.4	0.8	1.4	1.8	1.6
2.00	200	3.0	6.1	3.1	4.4	0.8	1.4	2.8	1.9
2.12	225	3.0	6.1	3.1	4.4	0.8	1.4	2.8	2.1
2.50	250	3.0	6.1	3.1	4.4	0.8	1.4	2.6	2.1
2.75	275	3.7	6.3	3.1	4.4	0.8	1.4	2.9	2.6
3.00	300	3.7	6.9	3.2	6.6	0.8	1.5	3.0	2.9
4.00	400	4.75	6.9	4.0	6.6	1.0	2.0	4.0	3.9
5.00	500	5.75	7.1	5.0	7.6	1.4	2.3	5.0	4.8
6.00	600	6.75	7.2	6.0	8.6	1.7	2.7	6.0	5.8

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TECHNICAL DATA

Valve Body	Billet Aluminum 6061 T6 (Hard Anodized)
Pneumatic Actuator Body	Aluminum 6061 T6 (Hard Anodized)
Solenoid Bracket	Aluminum 6061 T6 (Hard Anodized)
Disc	Aluminum 6061 T6 (Hard Anodized)
Disc Shafts	Bronze
O-rings	Viton
Piston	300 series Stainless Steel
Maximum Airflow Temperature	100°C

APPENDIX 1

Solenoid Data

NOMINAL VOLTAGE VDC	NOMINAL WATTAGE WATTS	VOLTS DC MIN	VOLTS DC MAX	OHMS AT 25°C	MAX AMPS AT MAX VOLTS AT -40°C	TEST CURRENT: AMPS (MIN VOLTS / NOM OHMS AT MAX TEMPERATURE)	FORCE PER NOTE 1 (LBS)
24	120	21.1	29.6	4.32 - 5.28	9.14	3.17	12.0
12	120	10.5	14.8	1.08 - 1.32	18.28	6.32	12.0

NOTES

1. FORCE (PULL) = (SEE CHART) MINIMUM OVER INTERNAL RETURN SPRING AT .125 INCH STROKE AT TEST CURRENT (SEE CHART)
2. FORCE (RETURN SPRING) 5.0 ± .5 LB AT .125 INCH STROKE (MEASURED LOOSE AND SEPARATE)
3. AMBIENT OPERATING TEMPERATURE = -40°C TO 125°C
4. DUTY = PULSE 10% MAX ON TIME SHALL NOT EXCEED 60 SECONDS. ALLOW TO COOL 9X ON TIME BETWEEN PULSES.
5. DESIGNED FOR IP 67 RATING WHEN USED WITH SEALED CONNECTOR

Disclaimer: ESD Valves accepts no responsibility or liability for improper installation or maintenance. Any modifications to valves will void the warranty.