

## Solenoid Valve ESV Series



Engineered for  
actuators with  
onboard reservoirs

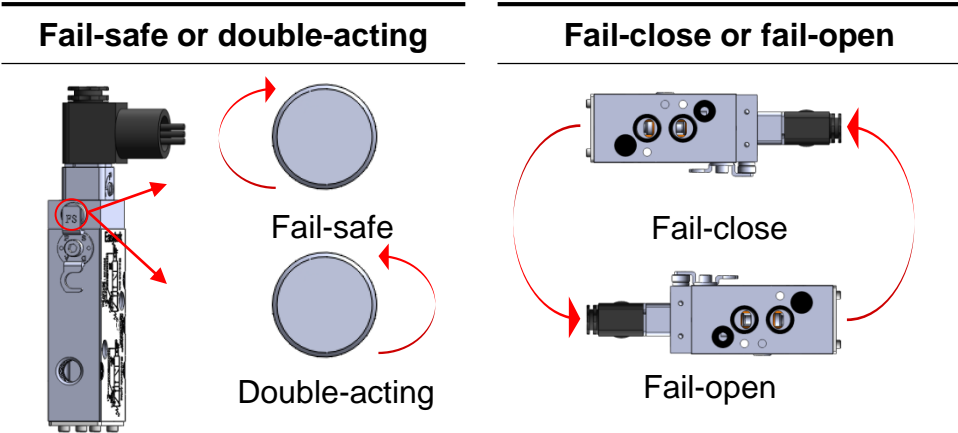
# Easytork Solenoid Valve (“ESV”)

ESV is Easytork’s NAMUR compliant solenoid valve to allow users to easily integrate air reservoir fail-safe systems. ESV complies with almost all any electrical specification requirement and is a 5/2 design valve (four-way, two-position).

## ESV benefits that improve your OPERATIONS

### ESV + Easytork actuator reduces your SKU by a factor of 67x

A singular ESV alters the function of an Easytork actuator between double-acting or fail-safe (open or close). In addition, all coil and conduit types are modular to the ESV.



## ESV benefits that improve your SYSTEMS

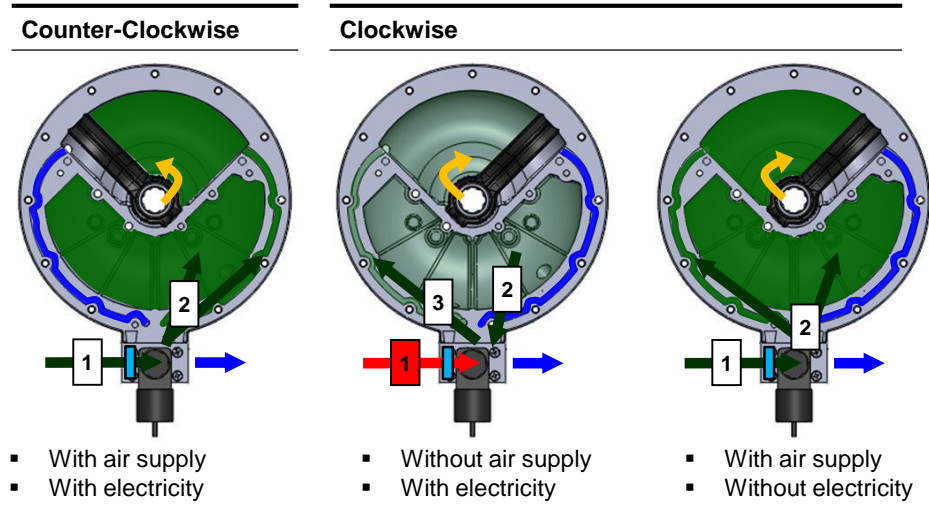
### Specification friendly

Compliant with nearly all electrical specification and conduit requirement. NEMA 4, Ex-Proof and ATEX EX from ¼” NPT conduit to strain relief among many other options are available.

### Ideal for corrosive / dirty environment

In fail-safe, environment air never enters the ESV through vacuum which is associated with other spring-return actuators. As seen on the right, coupled with the Easytork actuator, the system is always pushing instrument air out as the system has no spring to pull environment air in.

### Fail-Safe with ESV + Easytork Actuator



# Easytork Solenoid Valve ("ESV")

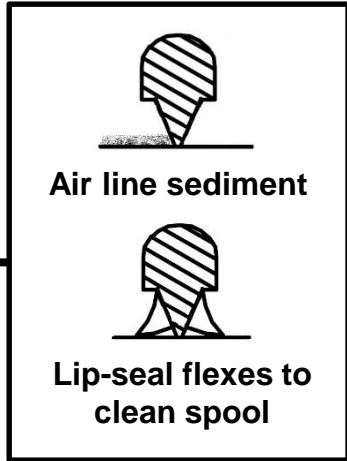
**Design features that further reduce maintenance**

### Improved resistance against poor instrument air

Dynamic sealing does not rely on O-rings. Instead, ESV utilizes bi-directional tapered lip-seal that wipes air line sediment and keeps spool surface clean. A high CV 1750l/min (Cv=1.8) further helps remove sediments.

This design also eliminates sticking problems and avoids spiral twist associated with O-rings.

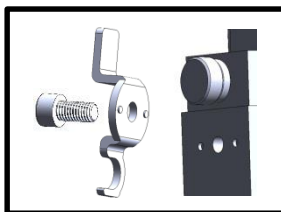
ESV Spool



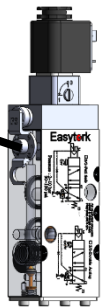
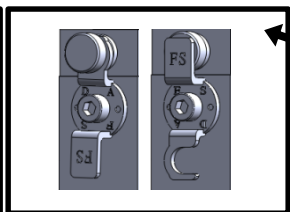
### Anti-tampering device

ESV design incorporates a lock to prevent third parties from accidentally changing the intended ESV's functionality.

Anti-tamper device



DA FS



**ESV reduces costs associated with utilizing air reservoir**



### Easy air reservoir integration

Traditional actuators with air reservoirs require costly external piping and pilot valves that ultimately make it more costly than spring-return actuators. ESV removes the need for external piping or pilot valves, resulting system in most instances to be more economical than spring-return actuators.

<b>Patents:</b>	
USA	US9,546,737B1
Taiwan	M514532, M515055, M425965
China	ZL2015 2 0641475.9.7 ZL2015 2 0872022.7 2264921

# Coil Options

Standard, Ex-Proof and ATEX EX coils utilize the same ESV body, so coils are interchangeable.

## Standard Series



Same ESV body for standard, Ex-Proof, and ATEX EX coil.

## Ex-Proof Series



Same ESV body for standard, Ex-Proof, and ATEX EX coil.

## ATEX EX Series



Same ESV body for standard, Ex-Proof, and ATEX EX coil.

## Intrinsically-Safe Series



I/S ESV body only good for I/S coil.

## Low Temperature Series



Low temp. ESV body only good for low temp. coil.

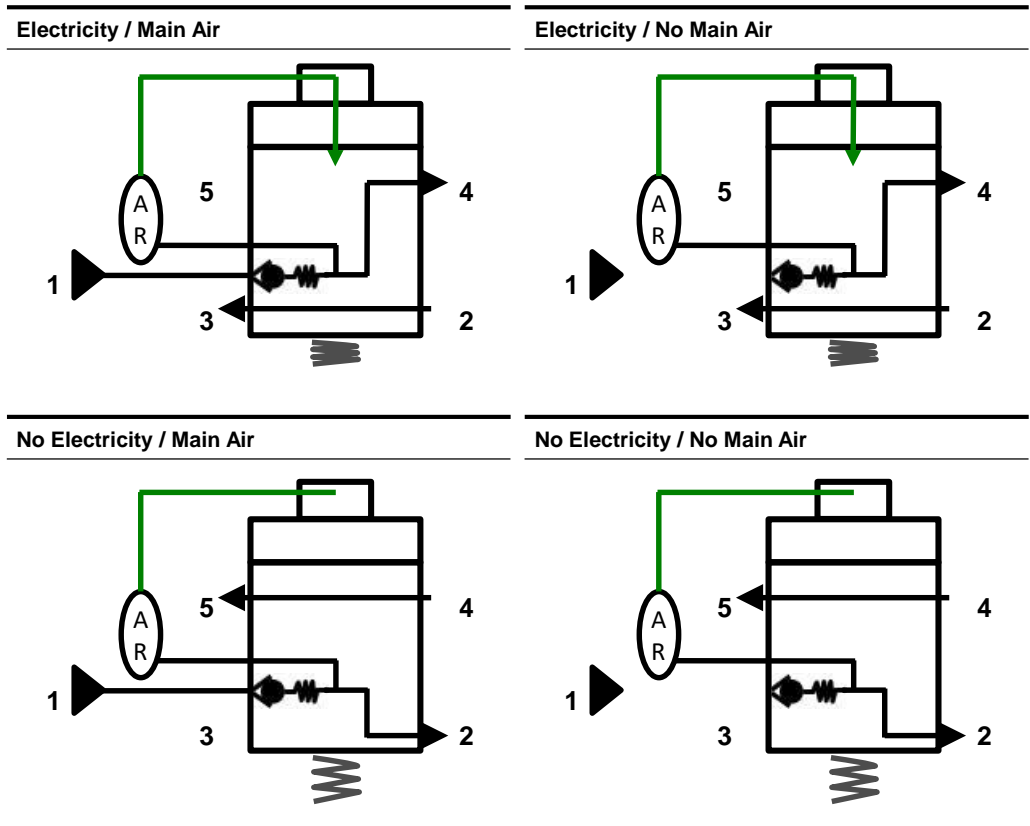
## Low Power Series



Low power ESV body only good for low power coil.

# Easytork Solenoid Valve Operation

## Double-acting principle



ESV Internal Air Pilot



ESV Spool Chamber



EVA Air Reservoir



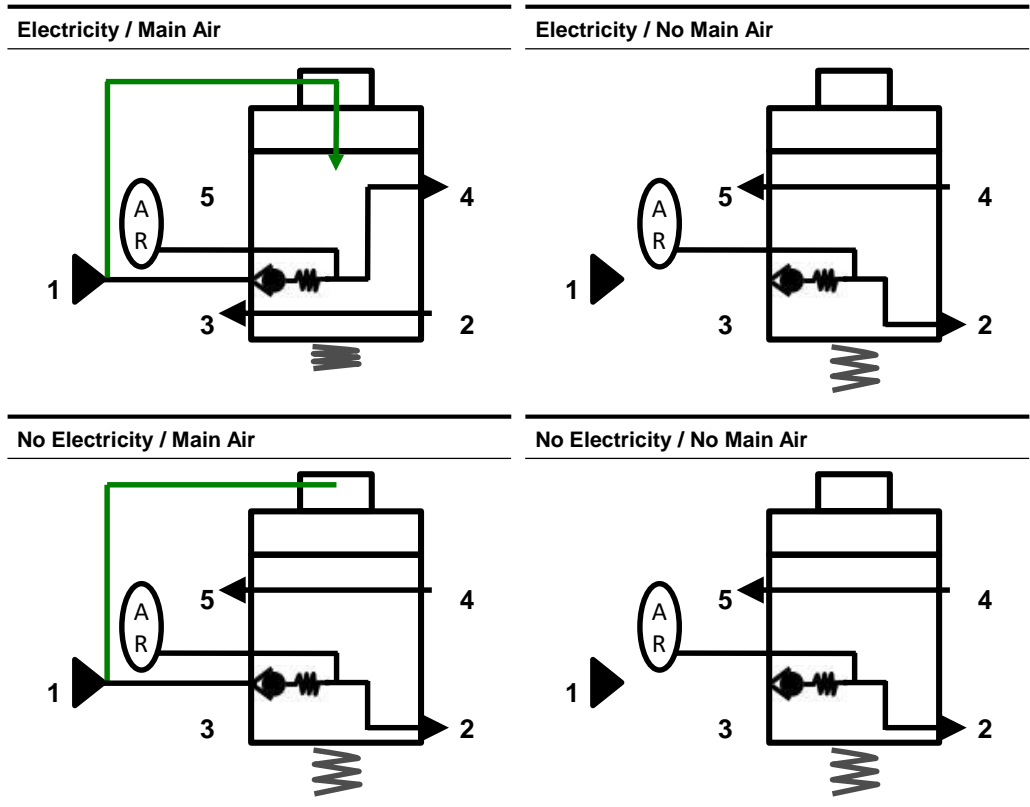
Main Air Supply



ESV Internal Check Valve



## Fail-safe principle



# Technical Data

## ESV specifications

### Technical Specification

<b>Operating pressure</b> <sup>(1)(2)</sup>	2 - 10 bar (30 - 150 psi)
<b>Operating medium</b>	Air (dry or lubricated)
<b>Flow l/min (Cv)</b>	Port size: 1/4" 1750 l/min (Cv = 1.8)
<b>ESV body standard temp. range (NBR)</b> <sup>(3)</sup>	-20°C to 80°C (-4°F to 176°F)

**Note (1):** For Intrinsically-Safe and Low Power version, 2 - 8 bar (30 - 120 psi).

**Note (2):** If required, consult factory for minimum pressure setting for over 2 bar (30 psi).

**Note (3):** Temperature range for all series besides Wide Temperature version. Refers only to ESV body temperature rating. Coil temperature rating is separate, refer to coil specifications.

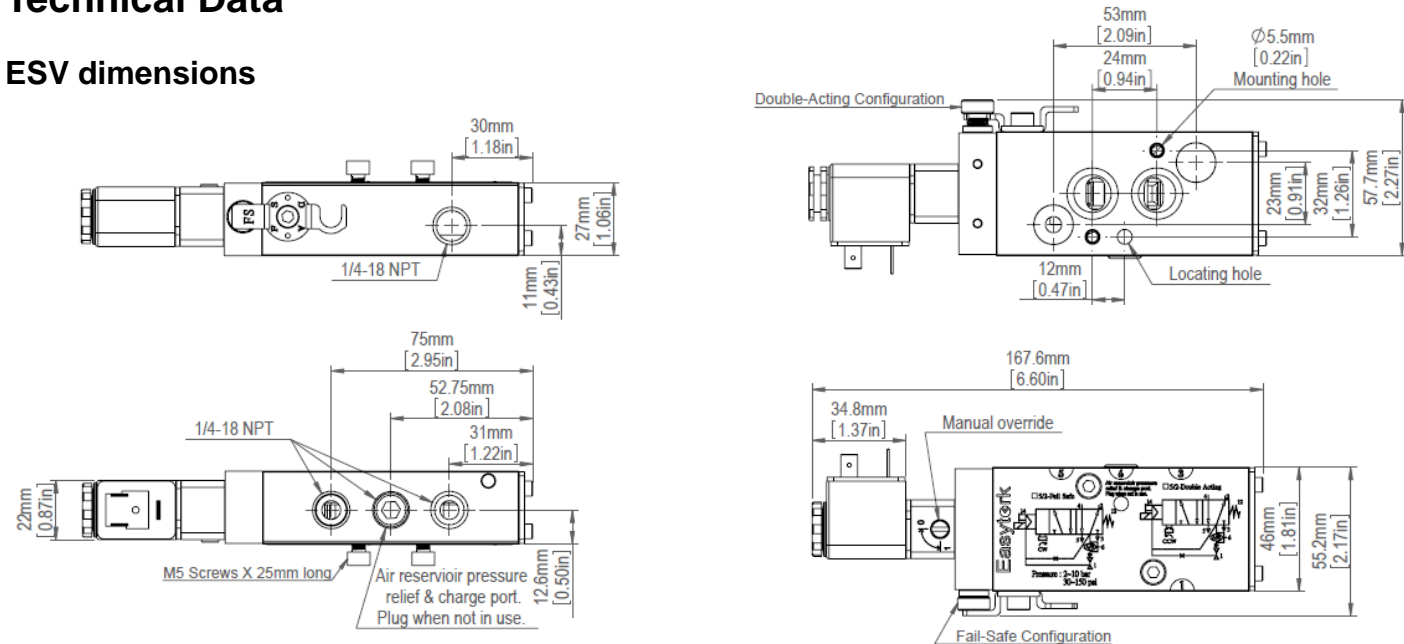
## Coil specifications

Coil	Connection	Note	Width (mm)
<b>Standard</b>	DIN 43650 industrial form B connection or 1/2" conduit with 18" leads	NEMA 4X	22
<b>Explosion Proof</b>	1/2" conduit with 24" leads	NEMA 4, 4X, 7C, 7D, 9 CSA & FM Approved CL. I; Zone1 Ex m II T4; AEx m II CL. I; Div.1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta=-20°C to +60°C	36
<b>ATEX EX</b>	3m cable & strain relief	Ex m II T5 PTB 03 ATEX 2018 X Ex II 2 G EEx m II T5 Ex II 2 D IP65 T95°C	22
<b>Intrinsically-Safe</b>	EN175301-803-A/ISO4400	Exia CL. I; GR. A, B, C, D CL. II; GR. E, F, G CL. III; Div. 1; T5	30
<b>Low Temperature</b>	DIN 43650 industrial form B connection or 1/2" conduit with 18" leads	NEMA 4X	22
<b>Low Power (1.1W)</b>	DIN 43650 industrial form B connection or 1/2" conduit with 18" leads	NEMA 4X	22

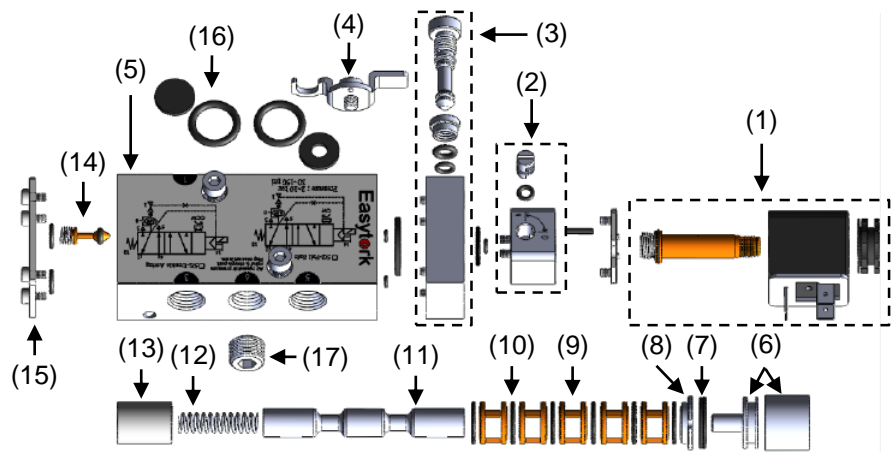
Coil	Voltage Tolerance	Ambient Temp.	Duty Cycle	Voltage	Frequency (Hz)	Output	Max. Pressure
<b>Standard</b>	+/- 10%	-20°C to 50°C (-4°F to 122°F)	100%	24 DC	-	2.0 W	10 bar (150 psi)
				110 AC	50	4.1 VA	10 bar (150 psi)
				110 AC	60	3.3 VA	10 bar (150 psi)
				230 AC	50	3.9 VA	10 bar (150 psi)
				230 AC	60	3.2 VA	10 bar (150 psi)
<b>Explosion Proof</b>	+/- 10%	-20°C to 60°C (-4°F to 140°F)	100%	24 DC	-	4.6 W	10 bar (150 psi)
				120 AC	60	6.8 VA	10 bar (150 psi)
				230 AC	50	7.5 VA	10 bar (150 psi)
<b>ATEX EX</b>	+/- 10%	-20°C to 50°C (-4°F to 122°F)	100%	24 DC	-	5.0 W	10 bar (150 psi)
				110 AC	50/60	3.8 VA	10 bar (150 psi)
				230 AC	50/60	5.1 VA	10 bar (150 psi)
<b>Intrinsically-Safe</b> (Barrier not included)		-40°C to 50°C (-40°F to 122°F)	100%	24 DC Current > 37 mA	-		8 bar (120 psi)
<b>Low Temperature</b>	+/- 10%	-40°C to 50°C (-40°F to 122°F)	100%	24 DC	-	2.0 W	10 bar (150 psi)
				110 AC	50	4.1 VA	10 bar (150 psi)
				110 AC	60	3.3 VA	10 bar (150 psi)
				230 AC	50	3.9 VA	10 bar (150 psi)
				230 AC	60	3.2 VA	10 bar (150 psi)
<b>Low Power</b> (1.1W, 22mm coil)	+/- 10%	-20°C to 50°C (-4°F to 122°F)	100%	24 DC	-	1.1 W	8 bar (120 psi)

# Technical Data

## ESV dimensions



## Bill of material



Ref No	Description	Standard Version	Chemical Version	Quantity
1	Coil & Armature System	Polyamide 6.6 / Brass	Polyamide 6.6 / Stainless Steel	1
2	Pilot System	Polyamide 6.6	Stainless steel (SS303)	1
3	DA / FS switch system	Nickel-plated steel + aluminum	Stainless steel (SS303)	1 set
4	Anti-tamper system	Nickel-plated steel	Stainless steel (SS303)	1 set
5	Valve body*	Aluminum	Stainless steel (SS303)	1
6	Piston sleeve* / piston	Aluminum	Aluminum	1
7	Piston seal*	NBR	NBR	1
8	Retainer	Aluminum	Aluminum	1
9	Spacer	Brass	Brass	5
10	Lip seal*	NBR	NBR	6
11	Spool*	Stainless Steel	Stainless Steel	1
12	Spring	Stainless steel (SS304)	Stainless steel (SS304)	1
13	Sleeve	Aluminum	Aluminum	1
14	Internal check valve	Brass w/ stainless steel spring	Brass w/ stainless steel spring	1
15	All bolting / plate	Stainless steel (SS304)	Stainless steel (SS304)	1 lot
16	O-ring and seal plate	NBR	NBR	
17	Plug	Nickel-plated steel	Nickel-plated steel	

Note (\*): Items marked with an asterisk require thin film of lubricant.

# Ordering Codes

## Easytork Solenoid Valve

Prefix	Product Type	Model Number	Coil Attributes				ESV Attributes					
			Coil Type	Voltage	Solenoid Valve Seal (Temp. Rating of ESV) <sup>(1)</sup>	# of Coils	ESV Body Material (Corrosion Rating)	Thread				
<b>C</b>	-	<b>S</b>	-	<b>X</b>	-	<b>X</b>	-	<b>X</b>	-	<b>X</b>	<b>X</b>	<b>X</b>
C: Complete product	S: Solenoid valve	1: ESV - Easytork solenoid valve  1E: ESV - Easytork solenoid valve with external port (for EVA-1646)	1: Standard 2: ATEX 3: Ex-Proof 4: I-Safe 5: Low Temp 7: Low Power (1.1W)	1: 24VDC 2: 110VAC 3: 230VAC 0: Other (specify)	1: NBR seal (for all coils besides low temp coil, -20°C to 80°C or -4°F to 176°F) 3: Wide temp seal (compatible with low temp coil, -40°C to 120°C / -40°F to 248°F)	1: Single coil	1: Standard version 2: Chemical resistant version	1: Imperial 2: Metric				
				X: None	X: None	X: None	X: None	X: None				X: None
			If ordering ESV body only, X out this section			If ordering coil only, X out these sections						
			Note (1): Refers only to ESV body temperature rating. Coil temperature rating is separate, refer to coil specifications.									

### Examples

Ex-Proof 24VDC ESV

C - S - 1 - 2 1 - 1 - 1 1

ESV body only (Standard, ATEX, and Ex-Proof Series are interchangeable)

C - S - 1 - 1 X - 1 - 1 1

Coil only (for I-Safe 24VDC)

C - S - 1 - 4 1 - X - X X X

<p><b>About</b></p> <p>We believe in selling “easy”. Easytork brings differentiating features and benefits to the process control industry through our focus on innovation and quality. Easytork has been awarded numerous awards including:</p> <p>2013 – Arch Grants Recipient</p> <p>2015 – Accelerate St. Louis</p> <p>2017 – Frost &amp; Sullivan Product Innovation Award</p>	<p><b>Global Headquarters</b></p> <p>2505 Metro Blvd, Suite A / B Maryland Heights, MO 63043 USA</p> <p>Main Tel: +1-314-266-6880</p> <p>info@easytork.com www.easytork.com</p>
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