Multi-Voltage Electric Actuators

12 to 240V

177-752 in lbs (20-85 Nm)

SERIES
5610
5615

Features

- Quarter turn (90°) operation
- Long life brushless motor
- Multi-voltage capable (*5610 models only*) with auto-voltage sensing
- External LED multi-color diagnostic light
- IP67 weatherproof enclosure, UV resistant
- ISO5211 multi-flange valve mounting pad
- Thermostatically controlled anti-condensation heater
- Manual override
- Highly visual valve position dome style indicator
- Auxiliary limit switches to confirm valve open/closed positions
- DPS Digital Positioner option
- BSR Battery Backup/Failsafe option
- Nominal life >60,000 cycles

Applications

Multi-voltage electric actuators are typically used to automate quarter turn ball valves, butterfly valves and dampers. The 5610/5615 series actuators are quick and easy to install with standard ISO5211 multi-flange mounting and a double square output drive.

Operation

Electric actuator uses power-to-open and power-to-close, stays in the last known position with power failure. On receipt of a continuous voltage signal, the motor runs and via a flat gear system rotates the output drive 90º. The motor is automatically stopped by internal cams striking limit switches. On receipt of a reversing continuous signal, the motor turns in the opposite direction reversing the output drive position.

Construction

Enclosure	Anti-corrosive polyamide, weatherproof IP67
Electrical Connections	DIN 43650/ ISO4400 plug connectors, cable entry
Output Drive	Zamac, female double square
Valve Position Indicator	Clear polycarbonate dome with polyamide indicator
Manual Override	Polyamide knob
Gears	Steel and polyamide
Main External Shaft	Polyamide
Fasteners	Stainless steel

Description

Feature packed electric actuators take the valve automation industry to the next level. Features include a LED status indicator, manual override for emergency hand operation, visual valve position indicator and electronic over-torque protection. Easy wiring via DIN plug connectors eliminate the need to remove the cover, saving time and money. Two auxiliary dry contact limit switches are supplied to confirm valve open and closed position. Standard anti-condensation heater will help protect against condensation build-up inside the actuator.

Optional Functions

BSR: Battery Spring Return - actuator fails to a safe position with loss of power

DPS: Digital Positioning System - valve position controlled by either a 4-20mA or 0-10V control signal

Approvals

CE

- CE mark, conforming to:
  - 2006/42/EC Machinery Directive
  - 2006/95/EC Low Voltage Directive
  - 2004/108/EC EMC Compatibility
- ISO5211 Compliance
- IP67 weatherproof enclosure

Construction Features

- Manual override
- Weatherproof enclosure rated IP67
- Electrical connections via standard DIN style plug connectors
- Corrosion resistant polyamide enclosure with UV protection
- Auto-Manual selector lever
- Highly visual dome position indicator
- Auxiliary limit switches to confirm open and closed position
- External LED diagnostic light
- Thermostatically controlled anti-condensation heater
- Heavy Duty brushless motor
- ISO5211 International standard multi-flange valve mounting pad

Typical Applications

Multi-Voltage Electric Actuator Models

24 to 240 Volt AC or 24-135 Vollt DC
177-752 in lbs (20-85 Nm)

Specifications

Stock Number	561020E	561055E	561085E
Voltage Range AC or DC Auto-Voltage Sensing (1ph,50/60Hz), - 0/+5%	24-240V AC or 24-135 V DC	24-240V AC or 24-135 V DC	24-240V AC or 24-135 V DC
Cycle Time - Seconds/0-90° (no load)	9 sec	13 sec	29 sec
Maximum Run Torque	177 in lbs 20 Nm	486 in lbs 55 Nm	752 in lbs 85 Nm
Maximum Break Torque	221 in lbs 25 Nm	530 in lbs 60 Nm	796 in lbs 90 Nm
Duty Cycle	75%		
Over-load Protection	Electronic over-torque with LED status light		
Enclosure	Anti-corrosive polyamide with UV protection		
Enclosure Rating	IP67 weatherproof		
Working Angle (rotation)	90 degrees		
Temperature Range	-4~+158° F (-20~+70° C)		
Motor Switches	2 x SPST limit switches		
Position Confirmation Switches	2 x SPST limit switches, 3A @125/250VAC, 30VDC resistive load		
Anti-condensation Heater	4 watts		
Electrical Connections	Plug connectors per DIN EN175301-803, cable entry, screw terminals		
Current (Full Load Amps) 24VDC	0.97A	1.63A	1.22A
24VAC	1.28A	1.98A	1.50A
110VAC	0.30A	0.43A	0.33A
240VAC	0.16A	0.21A	0.18A
Valve Mounting Interface per ISO5211	F03, F04, F05	F05, F07	F05, F07
Output Drive - Female Double Square	11mm	14mm	17mm
Weight	4.0 lbs (1.8 kg)	5.3 lbs (2.4 kg)	6.2 lbs (2.8 kg)

Single Voltage Electric Actuator Models

12 Volt AC/DC
177-752 in lbs (20-85 Nm)

Specifications

Stock Number	**561520**	**561555**	**561585**
Voltage Range AC or DC Auto-Voltage Sensing (1ph,50/60Hz), - 0/+5%	12v AC or DC	12v AC or DC	12v AC or DC
Cycle Time - Seconds/0-90° (no load)	9 sec	13 sec	29 sec
Maximum Run Torque	177 in lbs 20 Nm	486 in lbs 55 Nm	752 in lbs 85 Nm
Maximum Break Torque	221 in lbs 25 Nm	530 in lbs 60 Nm	796 in lbs 90 Nm
Duty Cycle	75%		
Over-load Protection	Electronic over-torque with LED status light		
Enclosure	Anti-corrosive polyamide with UV protection		
Enclosure Rating	IP67 weatherproof		
Working Angle (rotation)	90 degrees		
Temperature Range	-4~+158° F (-20~+70° C)		
Motor Switches	2 x SPST limit switches		
Position Confirmation Switches	2 x SPST limit switches, 3A @125/250VAC, 30VDC resistive load		
Anti-condensation Heater	4 watts		
Electrical Connections	Plug connectors per DIN EN175301-803, cable entry, screw terminals		
Current (Full Load Amps) 12VDC 12VAC	1.95A 2.28A	3.42A 3.78A	2.28A 2.65A
Valve Mounting Interface per ISO5211	F03, F04, F05	F05, F07	F05, F07
Output Drive - Female Double Square	11mm	14mm	17mm
Weight	4.0 lbs (1.8 kg)	5.3 lbs (2.4 kg)	6.2 lbs (2.8 kg)

Optional DPS - Digital Positioner System

The DPS Digital Positioner System is available as a factory installed option for Valworx 5610/5615 series electric actuators. Installing the DPS kit will change a standard On-Off type electric actuator to modulating or proportional control. This will allow positioning of the actuator output drive anywhere between 0 and 90° using either a 4-20mA or 0-10vdc input command signal. When using an electric actuated valve with DPS option, the output flow can be adjusted anywhere between 0-100%.

The DPS kit contains a microprocessor based control board and mounting hardware. The control board continuously monitors the analog input and output signals and compares them to the actual physical position of the output drive. An electric motor/gear drive moves the actuator output drive as required to balance the signals and find the desired position. The digital microprocessor ensures highly sensitive and repeatable control. The DPS is factory installed inside the actuator, under the red cover.

The DPS system provides an accurate valve positioning function whereby the movement of the actuator is controlled by either a 4-20mA or 0-10vdc control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator (valve).

The DPS positioner has auto-calibration, no need to adjust zero and span settings. An output monitoring signal, in the same format as the input signal is also provided to confirm the output drive position (ex: 4-20mA input, 4-20mA output).

The standard DPS actuator will fail closed with loss of the control signal. Actuator can also be setup reverse-acting (4ma or 0v= open) and fail open with loss of the control signal. The 5610/5615 series electric actuator will fail in place with loss of external power.

Kit Stock No.	Input Signal	For Actuators
561101E	4-20mA	5610 (design series E), 5615
561102E	0-10VDC	5610 (design series E), 5615

• DPS kits are a factory installed option

Rotation	0-90°
Input Signal	4-20mA or 0-10vdc
Output Signal	4-20mA or 0-10vdc
Accuracy	3% Full Scale
Linearity	2% Full Scale
Hysteresis	3% Full Scale
Steps	4/20mA: Min. 150 steps, 0-10V: Min. 98 steps/ 90°
Impedance 4-20mA	100 Ohms
Impedance 0-10vdc	25K Ohms

Note: Overall accuracy of a valve assembly will vary depending on the type of valve selected and how the valve is mounted to the actuator. Output signals will be in the same format as input signal (ex: 4-20mA input, 4-20mA output).

Actuator with DPS kit installed

Optional BSR - Battery Spring Return

The BSR–Battery Spring Return kit is available as a factory installed option for Valworx 5610/5615 series electric actuators. The BSR kit will work with both on-off models and actuators with DPS positioners. The battery failsafe system provides an alternative source of power to drive the actuator to a preset failsafe position in the event of an external power failure. The industrial quality battery is constantly trickle charged during normal operation to assure maximum charge when required. The battery kit is installed under the actuator cover. No separate modules or boxes are required.

In many applications, the BSR battery spring return function tends to be a very economical option when compared to the alternate true mechanical spring return actuator. Valworx actuators with the BSR option are much smaller, lighter and less expensive.

The installed BSR kit will provide enough power to move the actuator/valve to a failsafe position with loss of external power. The kit can be ordered as fail closed or fail open as required.

The actuator operates in the normal power open and power close mode while external power is available. Internal circuitry monitors the incoming main power and automatically switches within a few seconds to the battery backup with loss of external power. The battery will then provide enough power to move the actuator to a failsafe position. Under normal operation the external control power will trickle charge the battery and maintain a full charge.

In the normal mode of operation, an LED status light located on top of the actuator cover will be continuously lit. With a loss of power, the LED status light will blink slowly. On resumption of external power, conditional that the actuator control signal remained unchanged, the actuator will reset to the position it saw at the time of the main power failure.

Kit Stock Number	Description	For Actuators
561104E	5610 BSR Battery Spring Return Kit, Fail Closed	5610 (design series E), 5615
561105E	5610 BSR Battery Spring Return Kit, Fail Open	5610 (design series E), 5615

• BSR kits are a factory installed option

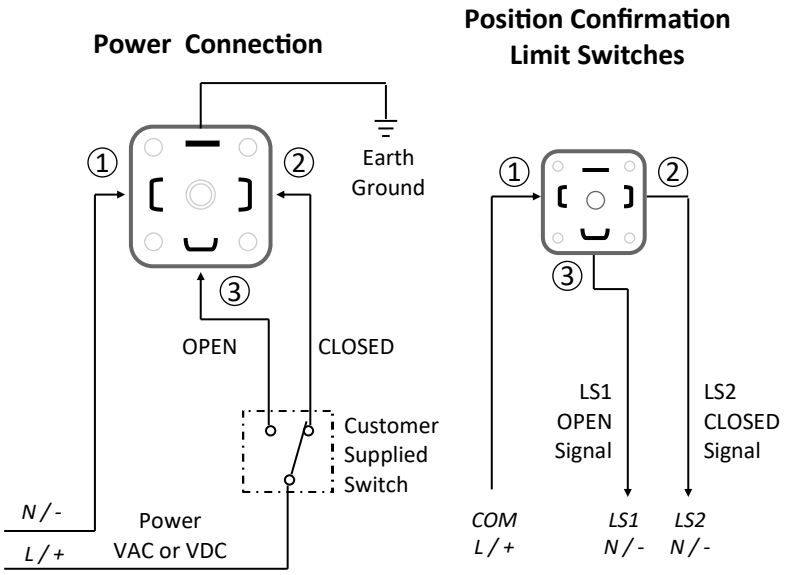
Valworx Actuator with BSR Option	561020E 561520	561055E 561555	561085E 561585
Working operations without recharge, with 100% initial battery charge	10	10	10
Recharge time per working operation	15 min	48 min	58 min
Full Charge Time 100%	28 h	28 h	28 h
Battery capacity +/-5%	2200 mA	2200 mA	2200 mA

BSR kit installed under red cover

Electrical Wiring for On/Off and BSR Battery Spring Return Versions

Voltage: 12 Volts AC/DC, 24 to 240 Volts AC, or 24-135 Volts DC , 1 ph

Auto-voltage sensing (multi-voltage models only)



Function: ON-OFF version

Power Connections

Power to PIN 1 and 2
- actuator CLOSED

Power to PIN 1 and 3
- actuator OPEN

Stays in last known position with loss of power.

Function: ON-OFF version with BSR option

Wiring is the same as standard ON-OFF version.

Power to open, power to close - maintain power to trickle charges battery system in either open or closed position.

Actuator sent by battery power to failsafe position with power failure.

Actuator returns to pre-failure position on power resumption.

Function: Position confirmation limit switches

Dry contact 3A @ 125/250 VAC, 30VDC resistive load

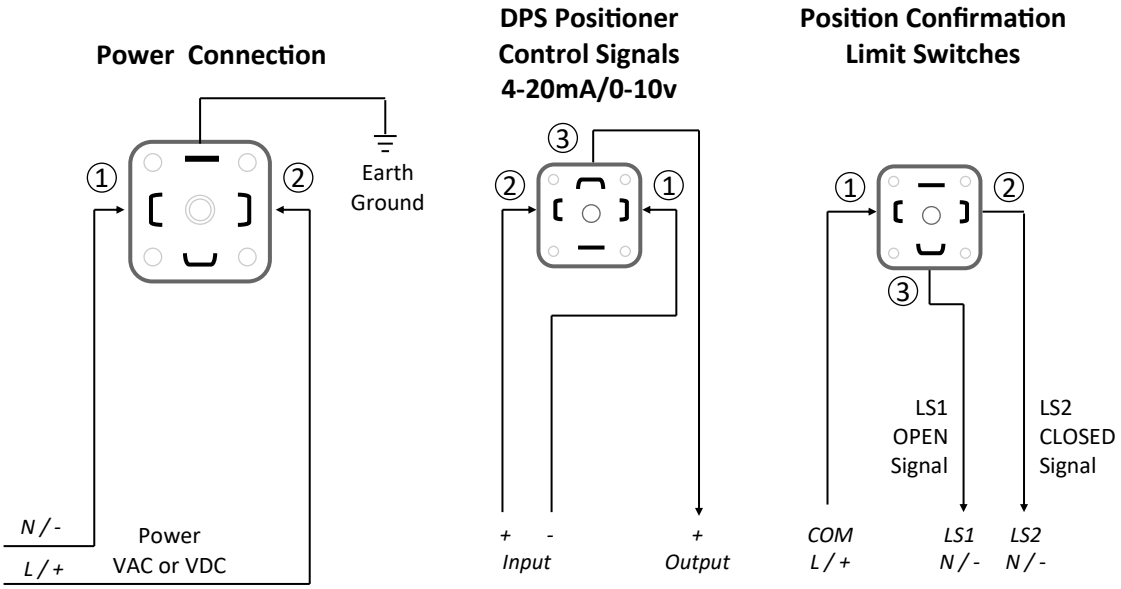
PIN 1 (COM) and 2 to confirm actuator is closed

PIN 1 (COM) and 3 to confirm actuator is open

Electrical Wiring for Actuators with DPS Digital Positioner Option

Voltage: 12 Volts AC/DC, 24 to 240 Volts AC, or 24-135 Volts DC (auto-voltage sensing on multi-voltage models only), 1 ph

Control Signal: 4-20mA or 0-10 VDC



Function: Actuators with DPS—Digital Positioner Option

Power open, power close - actuator movement controlled by 4-20mA or 0-10VDC input signal.

Standard operation: 4mA or 0V = actuator closed, 20mA or 10V = actuator open (can be setup reverse acting).

Actuator closes with loss of control signal, stays in last known position with loss of main power.

Output monitoring signal (in same format as supply signal) provided as standard.

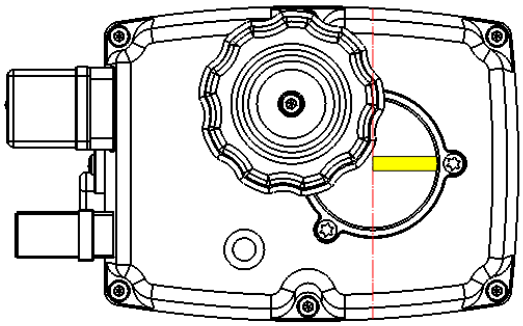
Function: Position confirmation limit switches

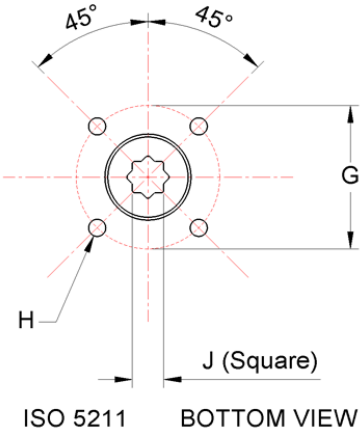
Dry contact 3A @ 125/250 VAC, 30VDC resistive load

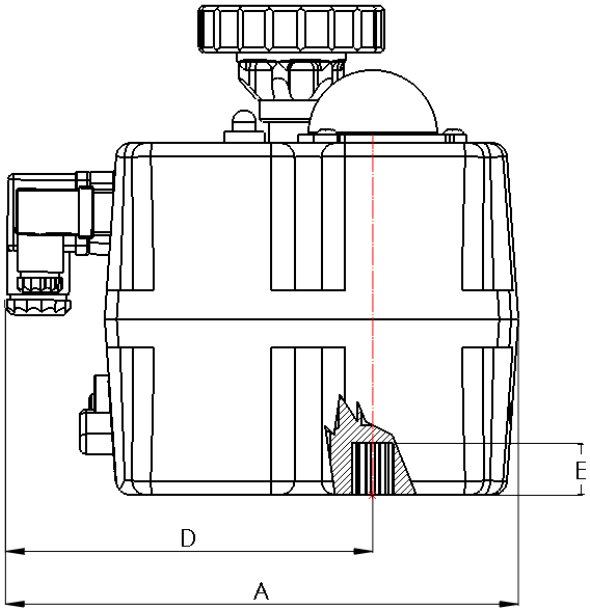
PIN 1 (COM) and 2 to confirm actuator is closed

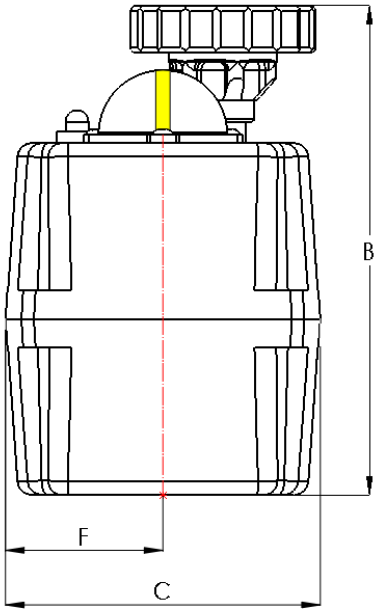
PIN 1 (COM) and 3 to confirm actuator is open

Dimensions: Models 561020E, 561520



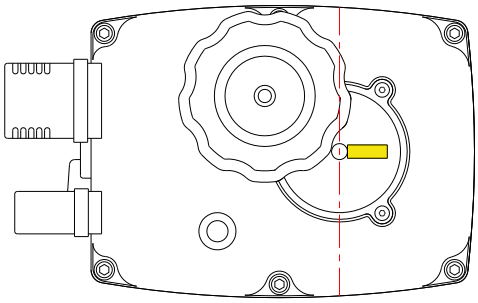


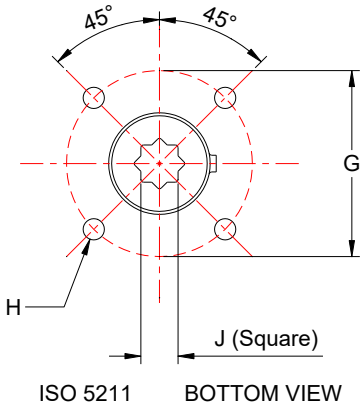


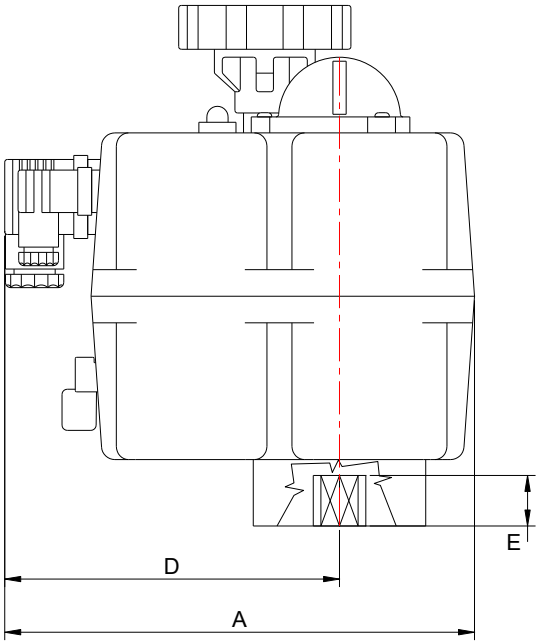


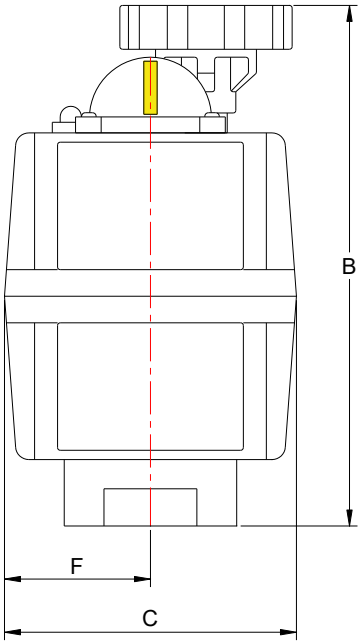
Stock Number		A	B	C	D	E	F	J	Valve Mounting ISO 5211	G	H	Weight
561020E 561520	inch	7.1	6.7	4.3	5.0	0.5	2.2	0.4	-	-	-	4.0 lb
	mm	179.0	171.0	110.0	126.0	12.5	55.0	11.0	F03 F04 F05	36 42 50	M5 x 9 depth M5 x 9 depth M6 x 9 depth	1.8 kg

Dimensions: Models 561055E, 561555



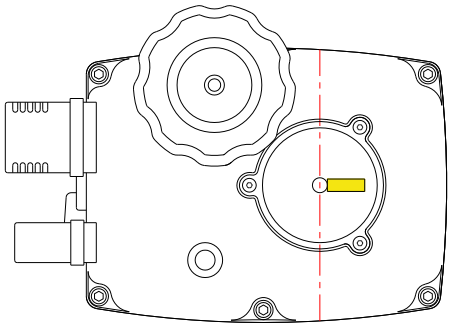


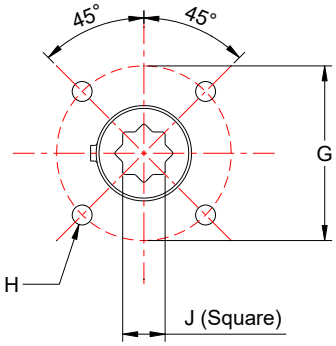




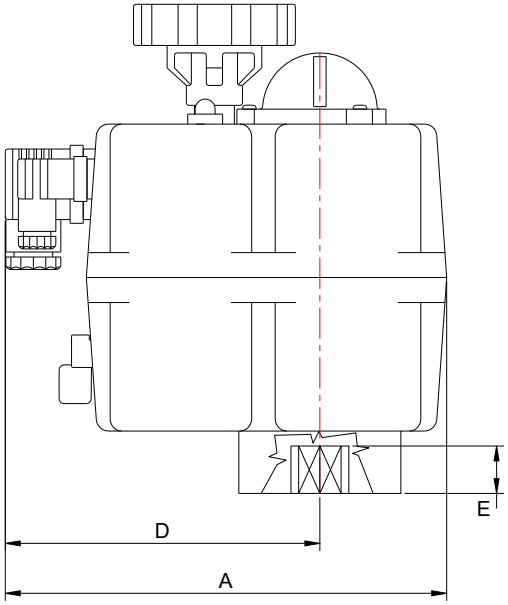
Stock Number		A	B	C	D	E	F	J	Valve Mounting ISO 5211	G	H	Weight
561055E 561555	inch	7.0	7.7	4.3	5.0	0.8	2.2	0.6	-	-	-	5.3 lb
	mm	177.0	196.0	110.0	126.0	19.0	55.0	14.0	F05 F07	50 70	M6 x 25 depth M8 x 25 depth	2.4 kg

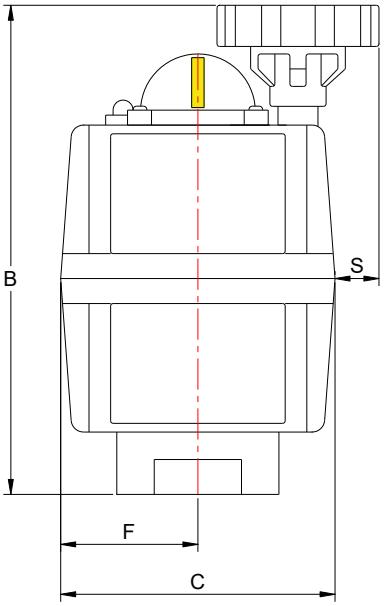
Dimensions: Models 561085E, 561585





ISO 5211 BOTTOM VIEW





Stock Number		A	B	C	D	E	F	J	S	Valve Mounting	G	H	Weight
561085E 561585	inch	7.0	7.7	4.3	5.0	0.8	2.2	0.7	0.7	-	-	-	6.2 lb
	mm	177.0	196.0	110.0	126.0	19.0	55.0	17.0	17.6	F05 F07	50 70	M6 x 25 depth M8 x 25 depth	2.8 kg