SERIES 73 TECHNICAL DATA

Actuator Series		S73-1	S73-3	S73-6
Torque Output	lb/in [Nm]	100 [11]	300 [34]	600 [68]
Motor Current Rating	VAC	120/220	120/220	120/220
	Hz	50-60	50-60	50-60
	Amps	0.4/0.2	0.9/0.4	1.1/0.6
Speed In Seconds 90° Operation		2/5/10	5/10/15	10/15/30/60
Ball Valve Sizes*		1/4" - 1"	1" - 2"	2" - 3"
Weights	lbs [kgs]	4.5 [2.04]	5.8 [2.63]	6.1 [2.77]

Note: All motors are single phase and UL listed. Current Rating is at all speeds. The duty cycle for intermittent On-Off operation is 25%.

12 & 24 VDC motors are available as an option, please consult your Flow-Tek representative.

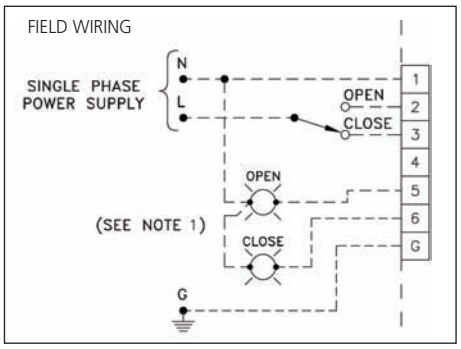
*Depending on service conditions and restricted port or full port valves.

TEMPERATURE RANGE

-40°F (-40°C) to +150°F (+65°C)

CUSTOMER WIRING DIAGRAM

STANDARD ON-OFF Service



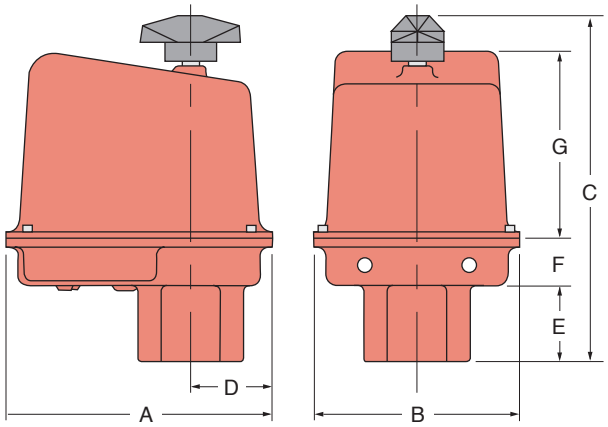
Notes:

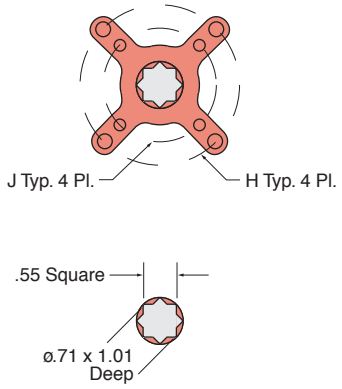
1) Remote position indicator devices must be rated at the same supply potential as the motor supply.
2) Optional max. 2 switches - voltage free travel limit switches are available for remote indication if required.

Limit Switch Rating: 250 VAC, 10A, 1/2 HP
Terminal Strip Wiring: 14-28 AWG, 105°C, 300V minimum rated wire.

SERIES 73 DIMENSIONS

Actuator Series	A	B	C	D	E	F	G	H (UNC) x B.C.	J (UNC) x B.C.
S73-1	5.93 [151]	3.29 [84]	7.52 [191]	2.10 [53]	1.63 [41]	1.49 [38]	3.50 [89]	1/4-20 x ø1.97 [F05]	#10-32 x ø1.42 [F03]
S73-3	6.76 [172]	3.79 [96]	8.25 [210]	2.45 [62]	1.89 [48]	1.57 [40]	3.79 [96]	1/4-20 x ø1.97 [F05]	#10-32 x ø1.42 [F03]
S73-6	5.99 [152]	4.64 [118]	7.82 [199]	1.84 [47]	1.73 [44]	1.06 [27]	4.23 [107]	5/16-18 x ø2.76 [F07]	1/4-20 x ø1.97 [F05]

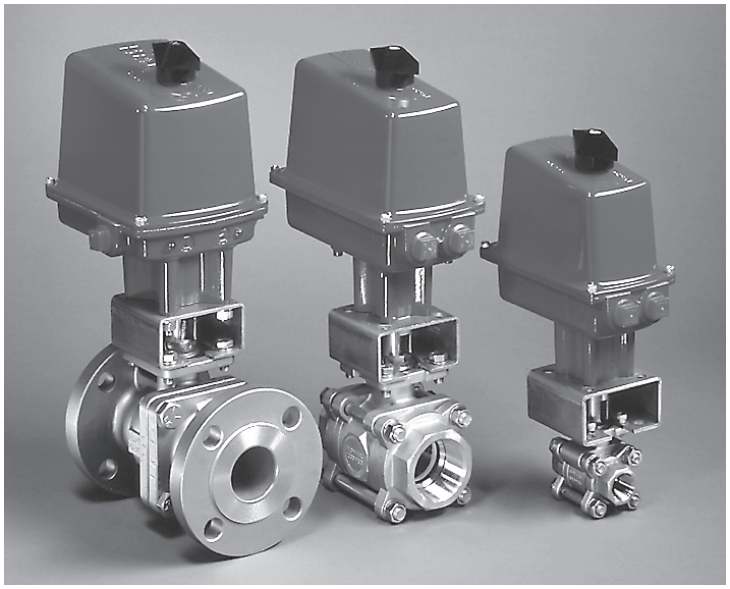




Double Square (Star)

SERIES 73 MATERIALS OF CONSTRUCTION

Enclosure	Die Cast Aluminum, polyester coated
Position Indicator	ABS
Spur Gear System	Heat Treated Alloy Steel
Indicator Shaft	Stainless Steel



The Series 73 Electric Actuator – Series 73-6 on F15 flanged ball valve, Series 73-3 and 73-1 on Series 7000 3-piece ball valves.

SERIES 70 DIMENSIONS WATERPROOF ENCLOSURE

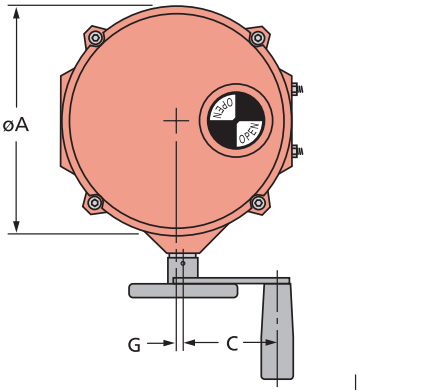
Actuator Series	A	B	C	D	E	F	G	H	J	K (UNC) x B.C.	M (UNC) x B.C.	N	P	Q	Weight lbs [kgs]
S70-003 S70-005	7.5 [191]	5.6 [142]	3.0 [76]	5.1 [130]	1.9 [48]	1.94 [49.3]	.19 [4.8]	1/2 ‡	2.0 [51]	5/16-18 x ø2.76 [F07]	—	.71 [20]	.55 [14]	1.47 [37]	12 [6]
S70-008 S70-012 S70-020	10.1 [257]	7.8 [198]	3.7 [94]	6.5 [165]	2.5 [64]	2.69 [68.3]	.56 [14.2]	3/4 ‡	2.6 [66]	5/16-18 x ø2.76 [F07]	1/2-13 x ø4.92 [F12]	.87 [22]	.67 [17]	1.82 [46]	28 [13]
S70-030 S70-050 S70-065	12.1 [307]	9.5 [241]	5.6 [142]	7.2 [183]	2.9 [74]	3.19 [81]	.56 [14.2]	3/4 ‡	3.1 [79]	1/2-13 x ø4.92 [F12]	3/4-10 x ø6.50 [F16]	1.42 [36]	1.06 [27]	1.82 [46]	48 [22]

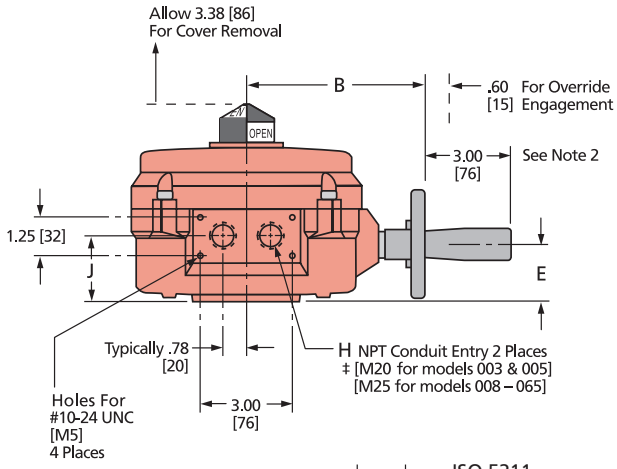
WATERPROOF / EXPLOSION PROOF ENCLOSURE

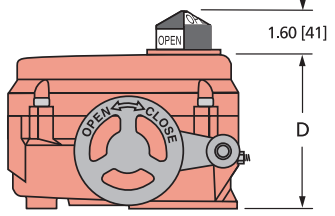
S70-708 S70-712 S70-720	12.5 [317]	8.0 [203]	3.7 [94]	7.2 [183]	2.5 [64]	2.69 [68.3]	.56 [14.2]	3/4 ‡	2.6 [66]	5/16-18 x ø2.76 [F07]	1/2-13 x ø4.92 [F12]	.87 [22]	.67 [17]	1.82 [46]	34 [16]

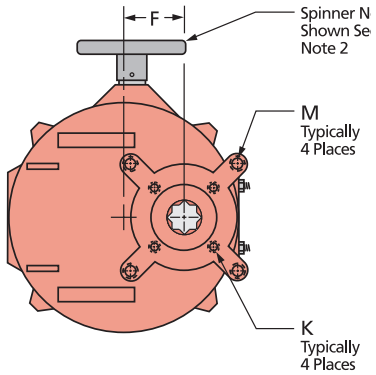
NOTE:

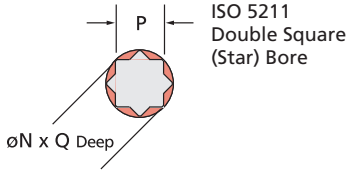
1) Dimensions are in Inches, [Millimeters in brackets].
2) Handwheel Spinner shown in drawing is available as an option.
3) K & M dimensions are also available in M8, M12 and M20.



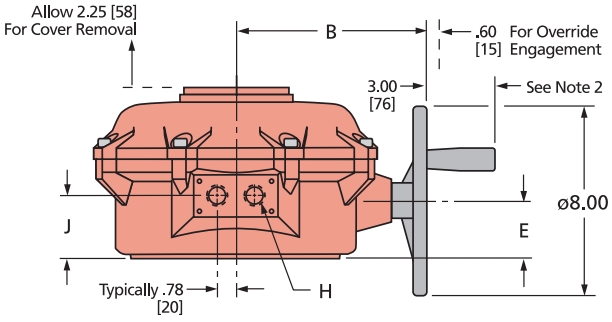


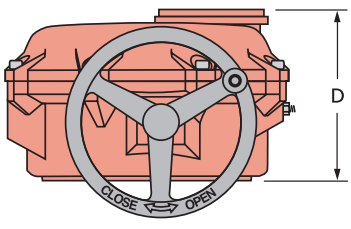






WATERPROOF / EXPLOSION PROOF ENCLOSURE





Actuator Series	Torque Output lb/in [Nm]	Single Phase Motors Current Rating (Amps) At All Speeds (locked rotor)			Speed For 90° Operation In Seconds / Total Gear Ratio						Rim Pull lbs [kgs]
					On-Off Intermittent‡			Modulating Continuous‡		Manual Override	
		VAC	Hz	Amps	Optional Speeds		Standard Speeds	Optional Speeds			
S70-003	300	120	50/60	0.8		8 sec.	15 sec.	30 sec.	60 sec.		11.4
	[34]	220	50/60	0.5		1,392:1	2,413:1	5,070:1	11,200:1	30:1	[5]
S70-005	500	120	50/60	1.4			15 sec.	30 sec.	60 sec.		19.0
	[57]	220	50/60	0.6			2,413:1	5,070:1	11,200:1	30:1	[9]
S70-008	800	120	50/60	2.1	6 sec.	10 sec.	15 sec.	30 sec.			13.0
S70-708	[90]	220	50/60	0.9	681:1	1,080:1	1,640:1	3,340:1		30:1	[6]
S70-012	1200	120	50/60	2.1		10 sec.	15 sec.	30 sec.			20.0
S70-712	[136]	220	50/60	0.9		1,080:1	1,640:1	3,340:1		30:1	[9]
S70-020	2000	120	50/60	2.1			15 sec.	30 sec.			33.0
S70-720	[226]	220	50/60	0.9			1,640:1	3,340:1		30:1	[15]
S70-030	3000	120	50/60	3.0			18 sec.	30 sec.			33.0
	[339]	220	50/60	1.4			2,080:1	3,340:1		30:1	[15]
S70-050	5000	120	50/60	3.0			18 sec.	30 sec.			55.0
	[565]	220	50/60	1.4			2,080:1	3,340:1		30:1	[25]
S70-065	6500	120	50/60	3.0				30 sec.			72.0
	[734]	220	50/60	1.4				3,340:1		30:1	[33]

Waterproof (NEMA 4, 4x)120 VAC intermittent and continuous duty single phase units are UL and CSA certified. 120 & 220 VAC intermittent and continuous duty single phase units conform to CE standards and have been certified by an independent lab. Waterproof/ Explosion Proof (NEMA 4, 4x, 7, 9) 120 VAC intermittent and continuous duty single phase units are UL certified. Each actuator carries all applicable agency markings.

12 VDC, 24 VDC and 3-Phase AC units are available as an option, please consult your Flow-Tek representative or the factory.

‡ The duty cycle for intermittent on-off operation is 25%. The continuous duty actuator with Servo is rated for 100% modulating operation.

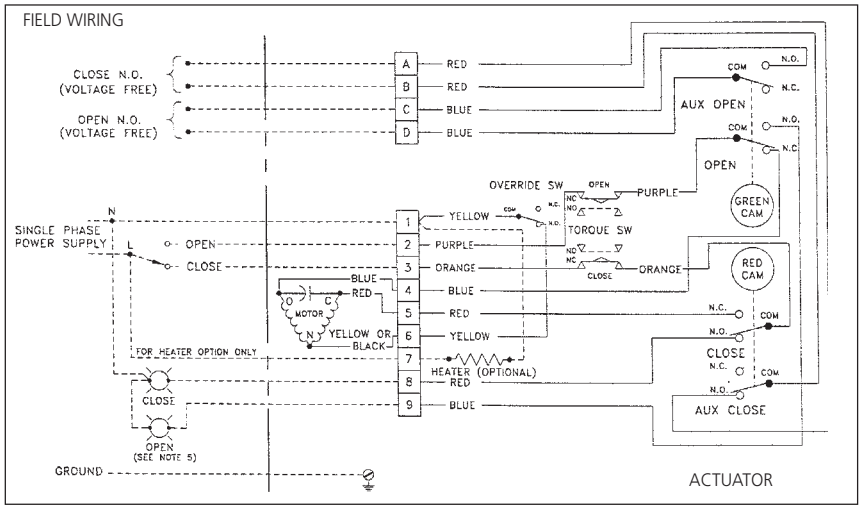
SERIES 70 MATERIALS OF CONSTRUCTION

Enclosure	Die Cast Aluminum, polyester coated	Output Shaft	Aluminum Bronze
Status Display	Polycarbonate	Travel Stops	Stainless Steel
Gear Train	Heat Treated Alloy Steel	Cover Bolts	Stainless Steel

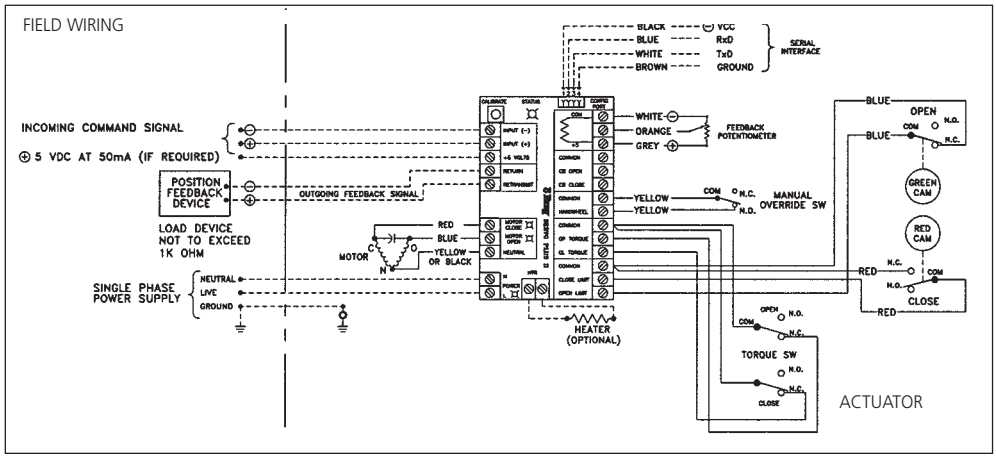
TYPICAL WIRING DIAGRAMS

ON–OFF
With Optional Torque Limit Switches, Auxillary Limit Switches and Heater

Wiring Diagrams are For Reference Only. Do NOT use for field wiring.



MODULATING – Servo Plus II
With Optional Torque Limit Switches and Heater



Notes:

1) Actuators are shown in closed position.
2) Manual Override is not engaged.
3) Actuators are shown with optional Torque Switches, AuxilliaryTravel Switches (not shown on Modulating unit) and Heater.
4) All switches are Single Pole, Double Throw.
5) Terminal block accepts field wiring from 10-22 AWG. 12-22 AWG for Servo.
6) Modulating Unit: Position Feedback Output is designed to drive an isolated 200 – 1k Ohm resistive load.

SERIES 73 SPECIFICATIONS

The electric actuator shall be compact and low–profile to greatly reduce space requirements. The actuator shall feature ease of access to field wiring and adjustment. The actuator shall be built to withstand line vibration and shock without failure.

MOTOR A single phase permanent split-capacitor reversible motor with voltages of 120 and 220 VAC 50/60 Hz shall be standard. Motor insulation shall be Class F or better. The UL listed motor shall contain a built-in thermal overload protector of a bi-metallic strip in windings set at 338°F (170°C) with automatic reset. DC motors shall be available upon request.

MOTOR BREAK All AC motors shall have an internal break to hold the valve in position if power is cut off from the actuator.

SPUR GEAR TRAIN SYSTEM The actuator shall have precision cut multi-staged gears and shafts of heat treated high alloy steel and will withstand locked rotor conditions. The spur gear train shall be permanently lubricated at the factory.

SWITCHES All travel switches shall be Single Pole, Double Throw 10A at 220 VAC, UL and CSA approved. Travel Limit switches shall limit actuator in both the open and closed position of valve travel.

CAMS Cams for each travel limit switch shall be infinitely adjustable by a Hex head/key with no special tools needs.

CONDUIT ENTRIES All units shall have 2 conduit entries, either 1/2" NPT or M20.

POSITION INDICATION Unit shall have a highly visible pointer with molded open and close lettering. Unit shall have LEDs to indicate open & close position with graphic icons molded in housing.

MANUAL OVERRIDE All units shall be equipped with a manual override system to rotate the valve without electrical power. The override assembly shall ensure positive and fast manual operation.

ENCLOSURE The die-cast aluminum enclosure shall be waterproof, designed to meet NEMA 4, 4X, IP 65, and high-quality polyester powder coated for exceptional corrosion, wear, impact and UV resistance. The enclosure cover shall have captive cover bolts preventing time consuming problems due to lost or misplaced bolts. The enclosure cover and base shall be sealed against moisture ingress by an O-ring.

MOUNTING Actuator shall comply with ISO 5211 standards for mounting of actuators to valves. A double square (star) bore shall be standard.

TEMPERATURE RATING Actuators shall be designed for temperature ranges of -40°F (-40°C) to +150°F (65°C).

SERIES 70 SPECIFICATIONS

The electric actuator shall be compact and low–profile to greatly reduce space requirements. The actuator shall feature ease of access to field wiring and adjustment. The actuator shall be built to withstand line vibration and shock without failure.

MOTOR A single phase permanent split-capacitor reversible motor with voltages of 120 and 220 VAC 50/60 Hz shall be standard. Motor insulation shall be Class F or better. The motor shall contain a built-in thermal overload protector of a bi-metallic strip in windings set at 338°F (170°C) with automatic reset. DC motors shall be available upon request.

DUTY CYCLE The duty cycle for intermittent on-off operation shall be 25%. The continuous duty actuator with Servo shall be rated for 100% modulating operation at an ambient temperature of 104°F (40°C).

SPUR GEAR TRAIN SYSTEM The actuator shall have a self-locking gear train consisting of a worm and worm gear output drive mechanism. The spur gear train shall have precision cut multi-staged gears which will withstand locked rotor conditions. The spur gear train shall be permanently lubricated at the factory. The gear train shall drive a chromemoly steel worm which drives the aluminum bronze segment gear/output shaft.

WIRING Actuator switches shall be pre-wired to a terminal block for ease of access. All internal wiring shall range from 10-22 AWG.

SWITCHES All travel switches shall be Single Pole, Double Throw Form C type 10A at 125/250 VAC, 1/2A at 125 VDC. UL and CSA approved. Travel Limit switches shall limit actuator in both the open and closed position of valve travel.

CAMS Cams for each travel limit switch shall be infinitely adjustable by finger touch or screw driver, as provided by Flow-Tek's patent.

CONDUIT ENTRIES All units shall have 2 conduit entries. Conduit entries for models 003 and 005 shall be either 1/2" NPT or M20. Entries for models 008 – 065 shall be either 3/4" NPT or M25.

MECHANICAL TRAVEL STOPS Mechanical stainless steel travel stops shall be located outside the actuator for ease of adjustment and contain stainless steel lock nuts with O-ring seals to hold the travel stops in place. Travel stops shall limit the movement to specific degrees of rotation.

MANUAL OVERRIDE All units shall be equipped with an aluminum manual override handwheel to rotate the valve without electrical power. The override assembly shall ensure positive and fast manual operation without the use of extra tools or levers.

EMERGENCY SHUT-OFF An automatic power cutout switch shall be provided to cut power to the motor when actuator handwheel is engaged for manual operation. This switch shall function as a safety emergency shutdown device.

ENCLOSURE The die-cast aluminum enclosure shall be certified to UL, CSA & CE waterproof standards (NEMA 4, 4X, IP 65), and high-quality polyester powder coated for exceptional corrosion, wear, impact and UV resistance. The enclosure cover shall have captive cover bolts preventing time consuming problems due to lost or misplaced bolts. A UL listed waterproof / explosion proof enclosure (NEMA 4, 4X, 7, 9) shall be available.

VALVE STATUS DISPLAY The actuator shall have a highly visible clear polycarbonate display prominently labeled and color coded to indicate valve position throughout the full range of travel.

TEMPERATURE RATING Actuators shall be designed for temperature ranges of -40°F (-40°C) to +150°F (65°C).

OPTIONAL EQUIPMENT

TORQUE LIMITING SYSTEM with 2 SPDT mechanical switches and 2 factory calibrated adjusting screws – the green adjusts the limit in the open direction, the red adjusts the limit in the closed direction. The worm shaft is driven against the torque disc springs in response to the output torque. The switches contact the worm shaft groove in response to predetermined loads and interrupt the electrical power to the motor. Switches can operate at any point of actuator travel.

HEATER with self-regulating temperature control to prevent condensation buildup. The heater is pre-wired to the terminal block. Rated output is 15 W at 120 or 220 VAC.

SERVO A microprocessor controlled Servo shall be available for precise modulating control of valve position in response to an analog input signal. The Servo shall have an analog output signal proportional to actual valve position as standard. This analog signal shall be configurable to either current or voltage output. The Servo shall have a specially engaged potentiometer gear which prevents damage due to over rotation. The Servo shall have voltage spike protection on all input terminals. Adjustments are provided for both open and closed Speed Control of the actuator.
Input Signals: 4-20 mADC into 250 Ohm, 0-10 VDC, 0-5 VDC, 135 Ohm or greater potentiometer.
10k Ohm Potentiometer is used for internal feedback.
DeviceNet Servos shall be available.

CONTROL STATION for manual local electrical operation of the actuator. The Control Station flush mounts to the actuator and features a local and remote control switch, an open–stop–close switch, and two lights which locally indicate open and closed valve position. The enclosure is aluminum and waterproof (NEMA 4, 4X, IP 65).

FLOW-TEK, Inc.
8323 N. Eldridge Pkwy #100
Houston, Texas 77041
Tel: 832.912.2300
Fax: 832.912.2301
www.flow-tek.com