SpaceLogic MG350V

Globe Valve Actuator



E9429

Product Description

MG350V globe valve actuators are non-spring return electromechanical actuators for the control of two-way and three-way globe valves for fan coils, unit ventilators, reheat, cooling units, perimeter heating, and other applications.

Proportional, Floating, and Pulse Width Modulated (PWM) models are available for direct mounting on 1/2" … 2" VB-7000 globe valves. The MG350V actuators are also compatible with older field-installed 1/2" … 1-1/4" VB-9000 globe valves as well as other valves (with the addition of AV-800 Globe Valve Adapters).

Features

- Bi-color LED status indication for motion indication, auto-calibration, and alarm notification
- Auto-calibration provides precise control by scaling the input signal to match the exact travel of the valve stem
- Proportional models with and without a position output signal with field selectable 2 … 10 Vdc and 0 … 10 Vdc input signals and selectable input signal action (reverse or direct acting)
- Floating and two-position models available with and without a position output signal
- Pulse width modulated (PWM) models with field selectable 0.59 … 2.93 sec and 0.1 … 25.5 sec input signal ranges with a position output signal
- Stall protected throughout stroke
- Manual override with automatic release
- Position feedback output signal models include field selectable 2 … 10 Vdc or 0 … 5 Vdc output signal
- Removable wiring screw terminal with 1/2" conduit opening
- Integral linkage and self-adjusting valve position indicator

Specifications

Input Power and Ratings

Part Number	Input Signal	Position Feedback Output Signal	Approx. Timing in Seconds for 1/2" (12.7 mm) Stroke	Max. Stroke in inch (mm)	Force lbf (N)
MG350V-24F	Three-Wire Floating[1]	-	102	21/32 (16.5)	78 (350)
MGF350V-24FP	Three-Wire Floating, PWM [1, 2]	2 … 10 Vdc, 0 … 5 Vdc[3]	51	21/32 (16.5)	67 (300)
MG350V-24M	2 … 10 Vdc, 0 … 10 Vdc[4]	-	102	21/32 (16.5)	78 (350)
MGF350V-24MP	2 … 10 Vdc, 0 … 10 Vdc, 4 … 20 mA	2 … 10 Vdc, 0 … 5 Vdc[3]	51	21/32 (16.5)	67 (300)

1 - Also compatible with two-position Form A 24 Vac/Vdc input signals.
2 - Field-selectable 0.59 … 2.93 sec and 0.1 … 25.5 sec PWM ranges.
3 - Field selectable. The 2 … 10 Vdc output signal range also includes an alarm signal (see the MGF350V-24FP, MG350V-24M, and MGF350V-24MP Alarm LED Operation table).
4 - Field Selectable.

*The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

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Electrical Connections

Power input, running with full load	MGF350V-24FP, MG350V-24M, MGF350V-24MP	24 Vac, ±20% (Class 2 power supply), 50/60 Hz, 7.2 VA, 20 … 29 Vdc, 3.5 W
	MG350V-24F	24 Vac, ±20% (Class 2 power supply), 50/60 Hz, 5 VA, 20 … 29 Vdc, 3.5 W
Power input, holding	MGF350V-24FP, MG350V-24M, MGF350V-24MP	24 Vac, ±20% (Class 2 power supply), 50/60 Hz, 1.2 VA (24FP 0.7W, 24M 0.4W, 24MP 0.5W)
	MG350V-24F	Actuator is unpowered when it is holding
Internal power supply type	MGF350V-24FP, MG350V-24M, MGF350V-24MP	half wave
	MG350V-24F	full wave
Input signal impedance (MG350V-24M, MGF350V-24MP)	MG350V-24M and MGF350V-24MP	2 … 10 Vdc and 0 … 10 Vdc >100 kOhms
	MGF350V-24MP	4 … 20 mA, 500 Ohms
Input Signal Auto Calibration (MGF350V-24FP, MG350V-24M, MGF350V-24MP)	Automatic span calibration to precisely match the stroke length of the valve (with a minimum stroke of 1/8" (3.2 mm) and a maximum stroke of 21/32" (16.5 mm).	
Floating Control Signal (MG350V-24F, MGF350V-24FP)	SPST center off (floating) control contacts or one or two SPST control contacts, minimum rating of 250 mA at 24 V or one or two triacs must be able to switch 250 mA at 24 Vac, 1,100 Ohms input impedance	
Floating Input Signal Minimum Pulse Width (MG350V-24F)	100 msec	
Position Feedback Output Signal (MGF350V-24FP, MGF350V-24MP)	2 … 10 Vdc and 0 … 5 Vdc, 0.5 mA (field selectable)	
Conduit Connection	Removable 1/2" conduit opening plate	
Electrical Connections	Removable terminal block, AWG 12 … 24, meets the requirements of cUL without the need of an electrical earth ground connection	

Mechanical

Linkage	Linkage for 1/2" … 2" VB-7000 and 1/2" … 1-1/4" obsolete VB-9000 Globe Valves included with actuator
Manual Override	3 mm hex wrench (not included with actuator), "tee" handle style recommended
Mechanical Valve Position Indicator	Graduated position indicator showing open to close with end point indicators
Electrical Valve Status Indication	Bi-color LED status indication for motion indication, calibration, and alarm notification MG350V-24F does not include the calibration and alarm indication
Speed	MG350V-24 and MG350V-24M: 0.295" (7.5 mm) per minute
	MGF350-24FP and MGF350V-24MP: 0.59" (15 mm) per minute
Force	MG350V-24F and MG350V-24M: 78 lbf (350 N) force
	MGF350-24FP and MGF350V-24MP: 67 lbf (300 N) force
Enclosure	Plenum rated per UL 2043
Yoke	Rugged die cast aluminum
Weight	1.6 lbs.

Environmental

Operating Temperature Range	For fluid temperatures up to 266 °F (130 °C): 23 … 131 °F (-5 … 55 °C) For fluid temperatures up to 281 °F (138 °C): 23 … 127 °F (-5 … 53 °C) For fluid temperatures up to 340 °F (171 °C): 23 … 115 °F (-5 … 46 °C) For fluid temperatures up to 400 °F (204 °C): 23 … 102 °F (-5 … 39 °C)
Shipping and Storage Temperature Range	-40 … 158 ˚F (-40 … 70 ˚C)
Operating Humidity Range	5 … 95% non condensing
Location	NEMA 2 (IP 53) with proper mounting orientation
Noise Level	≤30 dB (A) @ 1 meter

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Agency Listings

North America	cUL-us LISTED mark (xapx & xapx7), per UL 60730-1 and -2-14 and CAN/CSA E60730-1 and -2-14 Automatic Electric Controls, NEMA 2, NEC class 2 FCC part-15 class B, Canadian ICES-003, and ESA registered. Plenum rated per UL 2043.
European Community	CE mark, LVD directive [2014/35/EU) per EN IEC 60730-1 and -2-14 Automatic Electric Controls, protection class III SELV, EMC directive [2014/30/EU] per EN IEC 61000-6-2 and -6-3, IP53 Ingress Protection per EN IEC 60529 (properly mounted), RoHS2 directive [2011/65/EC] and REACH directive [2006/1907/EC].
Australia, New Zealand	RCM, Regulatory Conformance Mark, per ACMA (Australia) and RSM (New Zealand).
Russia, Kazakhstan, Belarus	EAC, EurAsian Conformity Mark.

Accessories

AM-708 500 Ohm resistor for connection to 4 … 20 mA input signals for MG350V-24M (not required for MGF350V-24MP)

Precautions

Use multi-conductor twisted shielded cable if installing the input, common, and feedback signal leads in the same conduit as power wiring or when RFI/EMI generating devices are near.

If the controller uses a full-wave power supply and does not provide isolated outputs, a separate transformer may be required. The total length of power and control wire must not exceed the values indicated in the Maximum Wire Length section of this document. Wiring cable strain relief is required if conduit is not used.

Installation

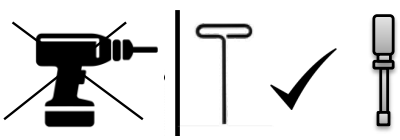
The stem adapter and stem adapter jam nut are included with the actuator. Inspect the package for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.

Requirements (not provided with actuator)

- 3 mm hex wrench, “Tee” handle style recommended
- M-370, 1-5/8” open end narrow frame wrench
- 5/16” and 7/16” open end wrenches
- Appropriate screwdriver(s), measuring scale, and misc. tools
- Job wiring diagrams
- Conduit connector, flexible conduit, wiring

Mounting

The actuator enclosure is NEMA Type 2 rated in accordance with NEMA 250-2003 when mounted in any of the mounting orientations shown below. For IEC 60529 the actuator is IP51 compliant when mounted down to 85˚ from vertical or IP53 compliant when mounted down to 60˚ from vertical. Allow 8” (203 mm) minimum clearance above the actuator valve assembly for removal and reattachment of the actuator to the installed valve and for removal of the electrical access compartment cover.



⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK

- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Use a properly rated voltage sensing device to confirm power is off.

DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION

Failure to follow these instructions will result in death or serious injury.

A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved. NEC2011 Article 100

No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

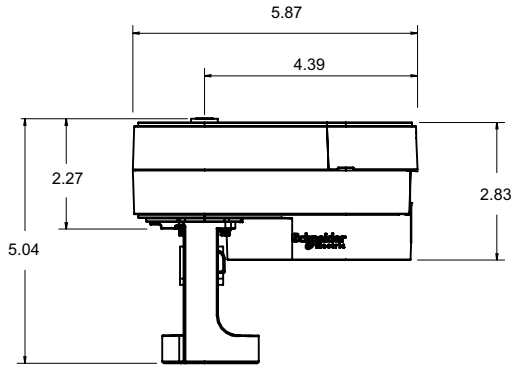
NOTICE

RISK OF EQUIPMENT DAMAGE

- Properly mount the MG350 Actuator on a valve before applying power.
- Avoid electrical noise interference.
- Do not install near large contactors, electrical machinery, or welding equipment.
- Only use manual override when power is off.
- Do not use manual override with actuators mounted in tandem.

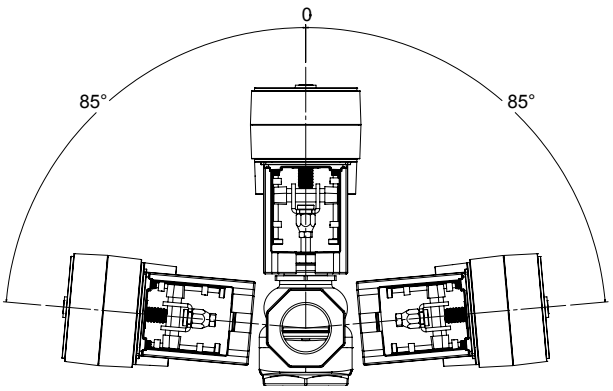
Failure to follow these instructions will result in damage to the gear train or other mechanical damage.

Dimensions (inches)

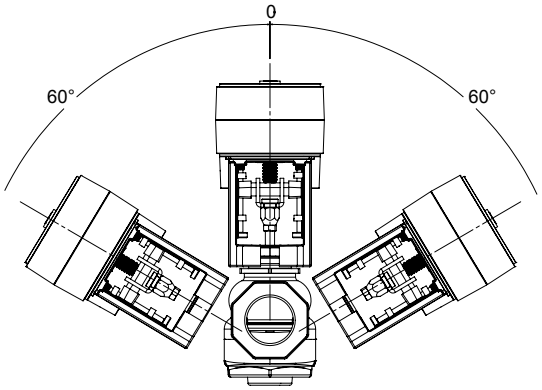


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IP51 and NEMA Type 2 Allowable Mounting Orientation



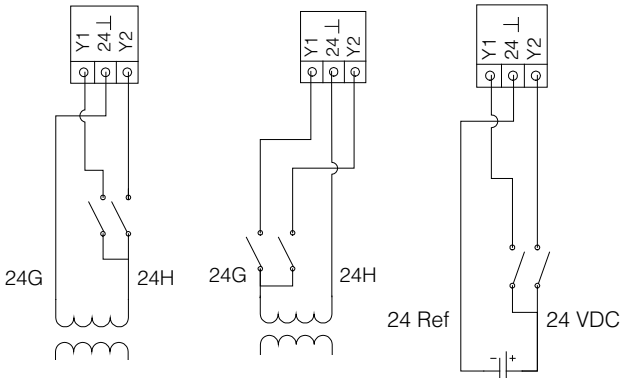
IP53 and NEMA Type 2 Allowable Mounting Orientation



Wiring

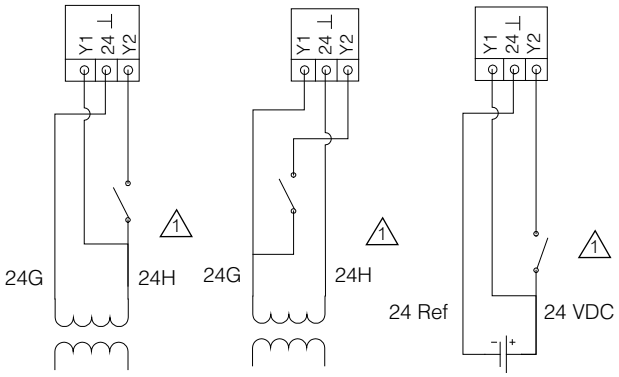
MG350V-24F Three Wire Floating Wiring

24 VAC Floating Sourcing | 24 VAC Floating Sinking | 24 VDC Floating Sourcing



MG350V-24F Two Position (On/Off) Wiring

24 VAC Two Position Sourcing | 24 VAC Two Position Sinking | 24 VDC Two Position Sourcing



1 With a two-position (on/off) wire connection Y2 closed (powered) retracts the linkage and raises the valve stem. Y2 open (unpowered) extends the linkage and lowers the valve stem.

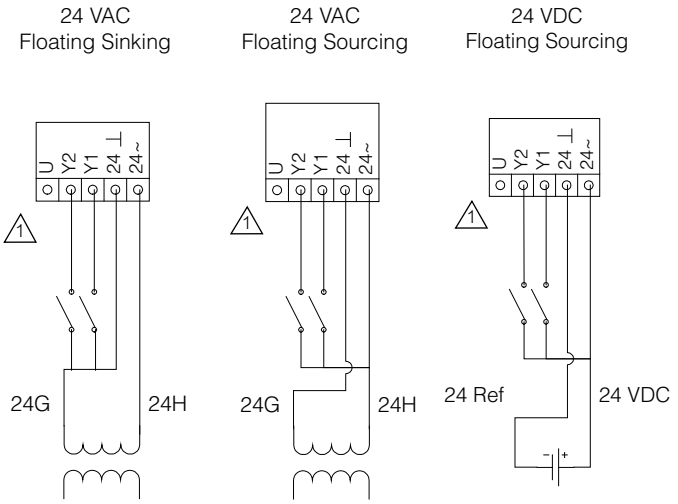
MG350V-24F Terminals

Y1	24 ⊥	Y2
Extends the actuator linkage and lowers the valve stem	24 Vac neutral or 24 Vdc common (Ref) for 24 Vac sourcing and 24 Vdc, 24 Vac hot for 24 Vac sinking	Retracts the actuator linkage and raises the valve stem

NOTE: The MG350V-24F actuator is powered by Y1 and/or Y2. If both Y1 and Y2 are powered at the same time, then the actuator retracts linkage and raises the stem.

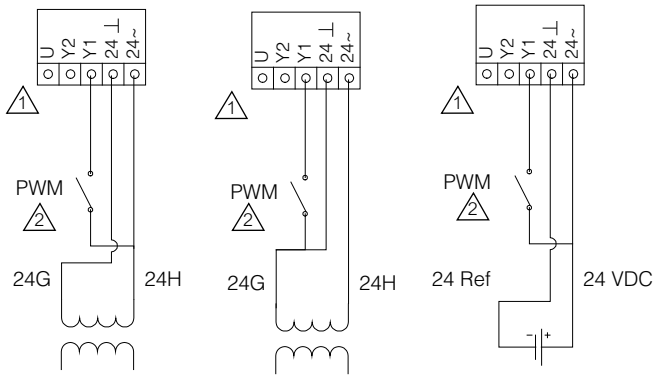
MGF350V-24FP Three Wire Floating with Position Output Signal Wiring

24 VAC Floating Sinking | 24 VAC Floating Sourcing | 24 VDC Floating Sourcing



MGF350V-24FP PWM with Position Output Signal Wiring

24 VAC Modulating PWM Sourcing | 24 VAC Modulating PWM Sinking | 24 VDC Modulating PWM

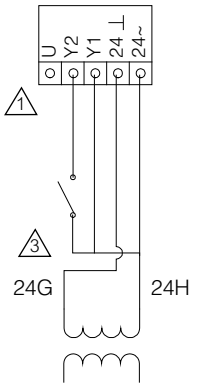


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MGF350V-24FP Two Position (On/Off) with Position Output Signal Wiring

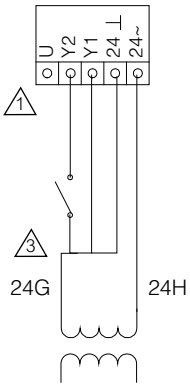
24 VAC Two Position Sourcing

MGF350V-24FP



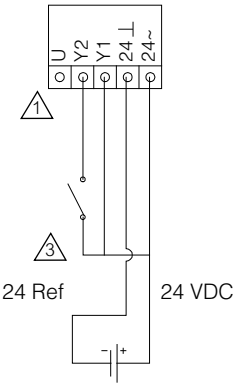
24 VAC Two Position Sinking

MG350V-24FP



24 VDC Two Position Sourcing

MGF350V-24FP



1 U provides 2 … 10 Vdc or 0 … 5 Vdc position feedback output signal (range selected by DIP switch 2).

2 Move DIP switch 4 up to select PWM input signal and use DIP switch 3 to select the PWM input signal range (switch 3 up for 0.1 … 25.5 sec, down for 0.59 … 2.93 sec.). Move DIP switch 4 down to select the three-wire floating mode.

3 With a two position (on/off) wire connection, Y2 closed (powered) retracts the linkage and raises the valve stem. Y2 open (unpowered) extends the linkage and lowers the valve stem. If both Y1 and Y2 are powered, then the actuator retracts linkage and raises the stem.

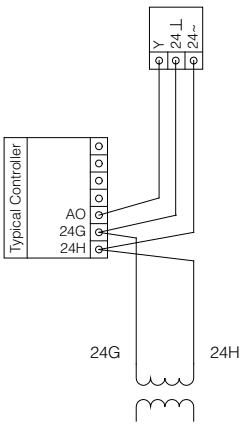
MGF350V-24FP Terminals

U	**Y2**	**Y1**	**24 ⊥**	**24 ~**
Position feedback output signal; Use DIP switch 2 to select output signal 2 … 10 Vdc (switch 2 down) or 0 … 5 Vdc (switch 2 up).	Retracts the actuator linkage and raises the valve stem	Extends the actuator linkage and lowers the valve stem	24 Vac neutral or 24 Vdc common (Ref)	24 Vac hot or 24 Vdc positive

See the DIP Switch Settings section for complete DIP switch setting information.

MG350V-24M Proportional Wiring

Modulating Analog



MG350V-24M Terminals

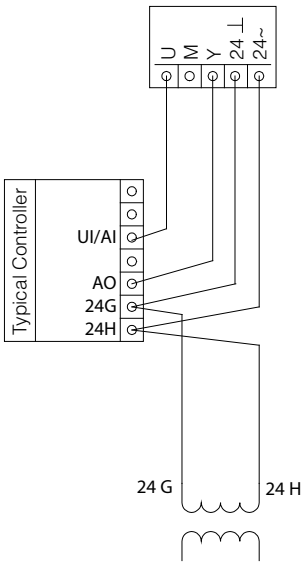
Y	**24 ⊥**	**24 ~**
Input signal: Use DIP switch 4 to select 0 … 10 Vdc (switch 4 down) or 2 … 10 Vdc (switch 4 up) input signal (4 … 20 mA input signal requires a AM-708 500 Ohm resistor and DIP switch 4 up to select a 2 … 10 Vdc input signal)	24 Vac neutral or 24 Vdc common	24 Vac hot or 24 Vdc positive

DIP switch 3 establishes the input signal action: up for reverse acting and down for direct acting. See the DIP Switch Settings section for complete DIP switch setting information.

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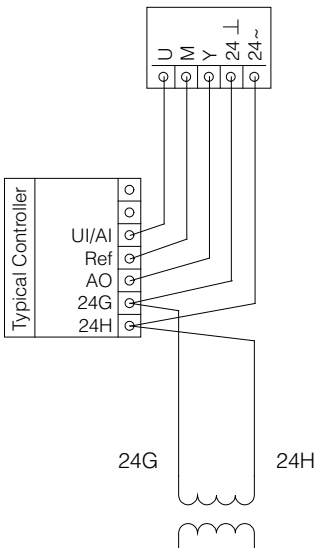
MGF350V-24MP Proportional with Position Output Signal Wiring

Modulating Analog



Modulating Analog

MG350V-24MP



MGF350V-24MP Terminals

U	M	Y	24	24 ~
Position feedback output signal; Use DIP switch 2 to select output signal 2 … 10 Vdc (switch 2 down) or 0 … 5 Vdc (switch 2 up).	Input signal reference ground (optional ground connection (Ref); provides greater tolerance to ground loops and electrical noise)	Input signal: use DIP switch 4 to select input signal range 0 … 10 Vdc (switch 4 down), 2 … 10 Vdc (switch 4 up), or 4 … 20 mA (4 … 20 mA input signal requires that DIP switch 1 is up)	24 Vac neutral or 24 Vdc common	24 Vac hot or 24 Vdc positive

Wire Gauge	Max. Wire Length ft (m)
20	246 (75)
22	155 (47)
24	97 (30)

DIP switch 3 establishes the input signal action: up for reverse acting and down for direct acting. See the DIP Switch Settings section for complete DIP switch setting information.

Wire Gauge	Max. Wire Length ft (m)
12	1575 (480)
14	990 (302)
16	623 (190)
18	392 (119)

Maximum Wire Length

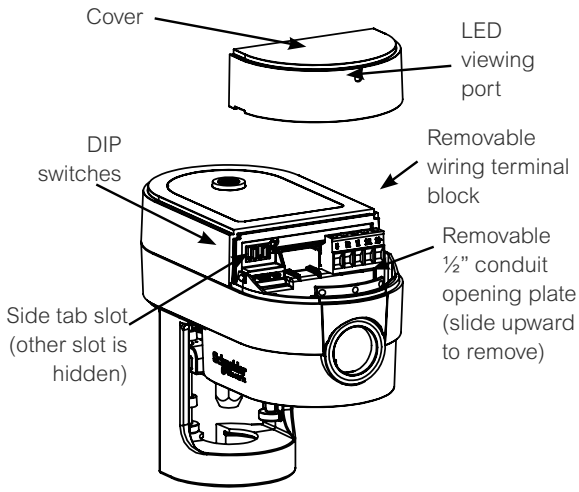
The maximum rating for a Class 2 step-down transformer is 100 VA. Determine the supply transformer VA rating by summing the VA ratings of all actuators and all other components used. If more than one actuator is powered from the same wire run, divide the allowable maximum wire length by the number of actuators to determine the maximum run to any single actuator. Example: If connecting two actuators on a single run, using 18 AWG wire: 392 ft max. length ÷ 2 Actuators = 196 ft max. wire run per actuator.

Electrical Compartment Access

Access the electrical compartment by inserting a a small blade screwdriver between the cover and the split line (side tab slot) and twisting the screwdriver handle until the cover tabs release. If necessary, repeat on the side tab slot on the other side of the actuator until it is loose, then pull the cover straight upward to remove. When installing the cover, line up the flat end of the cover with the guides in the actuator base (near the DIP switches and removable wiring terminal block) before sliding in place.

The electrical compartment contains the wiring compartment, which consists of the removable terminal block and the conduit plate. The conduit plate can slide upward out of the actuator body, if desired, to aid in the installation process. The electrical compartment also contains the DIP switches for the MGF350V-24FP, MG350V-24M, and MGF350V-24MP actuators.

The recommended wire conductor insulator strip length is 5/16" (8 mm) for insertion into the removable wiring terminal block. The recommended cable jacket insulator strip length is 2" … 2-1/2" (51 … 64 mm).



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DIP Switch Settings

MGF350V-24FP

	Switch 1	Switch 2	Switch 3	Switch 4
Function	Not Used	Position Feedback Output Signal Selection	PWM Input Signal Range Selection, only valid if Switch 4 is ON	Floating or PWM Input Selection
ON Position (Switch up)	Not Used	0 … 5 Vdc Output Signal	0.1 … 25.5 sec[1]	PWM Input Signal
OFF Position (Switch down)	Not Used	2 … 10 Vdc Output Signal	0.59 … 2.93 sec[1]	Floating Input Signal

1 - The PWM input signal configuration responds to a timed pulsed signal (consisting of a leading and trailing edge) with a period between the minimum pulse width setting (0.1 or 0.59 sec depending upon the setting of switch 3) and the maximum pulse width setting (25.5 or 2.93 sec depending upon the setting of switch 3). The actuator responds to the width of the pulse relative to the pulse width span selected by switch 3. For example, if switch 3 is OFF, the actuator proportionally responds to pulses between 0.59 sec and 2.93. sec. Thus, if the actuator receives a pulse consisting of a leading and trailing edge for 1.37 sec, the actuator positions the valve stem to 33.3% because 1.37 sec is 33.3% between 0.59 and 2.93 sec. When setup for the PWM mode, the actuator responds to the last pulse signal received even if the actuator is moving when the pulse is received.

MG350V-24M

	Switch 1	Switch 2	Switch 3*	Switch 4
Function	Not Used	Not Used	Input Signal Action	Voltage Input Signal Range
ON Position (Switch up)	Not Used	Not Used	Reverse Acting - a decrease in input signal extends the valve linkage and lowers the valve stem	2 … 10 Vdc
OFF Position (Switch down)	Not Used	Not Used	Direct Acting - an increase in input signal extends the valve linkage and lowers the valve stem	0 … 10 Vdc

MGF350V-24MP

	Switch 1	Switch 2	Switch 3 *	Switch 4
Function	Selects internal 500 Ohm resistor for 4 … 20 mA input signals, this also selects a 2 … 10 Vdc input signal (overriding switch 4 when it is in the ON position)	Position Feedback Output Signal Selection	Input Signal Action	Voltage Input Signal Range, only valid if Switch 1 is OFF
ON Position (Switch up)	Internal 500 Ohm resistor connected for 4 … 20 mA input signal	0 … 5 Vdc Output Signal	Reverse Acting - a decrease in input signal extends the actuator linkage and lowers the valve stem	2 … 10 Vdc
OFF Position (Switch down)	Internal 500 Ohm resistor not connected	2 … 10 Vdc Output Signal	Direct Acting - an increase in input signal extends the actuator linkage and lowers the valve stem	0 … 10 Vdc

* Switch 3: Direct Acting: 0% (0 Vdc (0...10 mode), or 2 Vdc (2...10 mode) = fully Retracted. 100% (10 Vdc) = fully Extended.
Reverse Mode: 0% (0 Vdc (0...10 mode), or 2 Vdc (2...10 mode) = fully Extended 100% (10 Vdc) = fully Retracted.

DIP Switch Operation

The MGF350V-24FP, MG350V-24M, and MGF350V-24MP actuators have a DIP switch block located under the cover to the left of the wiring terminal. The MG350V series actuators are shipped with all their DIP switches in the OFF (down) position. If any DIP switch is changed while the actuator is unpowered, it recognizes the DIP switch change the next time the actuator is powered, initiates its calibration sequence, and then controls according to the latest DIP switch setting. If a DIP switch is changed while the actuator is powered, it recognizes the DIP switch change, initiates its calibration sequence after 15 seconds, and then controls according to the latest DIP switch setting.

Auto-Calibration Operation

MGF350V-24FP, MG350V-24M (no position output signal), MGF350V-24MP actuators with DIP switches have an auto-calibration program. Auto-calibration occurs the first time the actuator is mounted to the valve and powered, as well as any time a DIP switch is changed. During the auto-calibration procedure, the actuator strokes the valve full stem down (actuator linkage extended) to full stem up (actuator linkage retracted) in order to identify the two end of travel points. The input signal is then spanned to match this travel distance. The valve calibration data is stored in permanent memory, and the actuator resumes normal operation from its input signal.

NOTICE

RISK OF EQUIPMENT DAMAGE

- Properly mount the MG350 Actuator on a valve before applying power.

Failure to follow these instructions will result in damage to the gear train or other mechanical damage.

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During the calibration process, the actuator's LED provides indication of calibration status, and the actuator's position output signal indicates that it is in calibration mode. See the LED Operation section for more details. If the actuator is unable to calibrate, it provides an LED status error. After the actuator has calibrated and is powered after a power failure, the actuator strokes the valve full stem up (actuator linkage retracted), and then responds to its control signal.

The auto-calibration process can also be manually initiated by changing any DIP switch. If a DIP switch is changed while the actuator is unpowered, it recognizes the DIP switch change the next time the actuator is powered, initiates its calibration sequence, and then controls according to the latest DIP switch setting. If a DIP switch is changed while the actuator is powered it recognizes the DIP switch change, initiates its calibration sequence after 15 seconds, and then controls according to the latest DIP switch setting.

Power Up Operation

The MGF350V-24FP, MG350V-24M, and MGF350V-24MP actuators remain in their last commanded position with no power applied. When power is applied, the actuator strokes the valve stem full up (actuator linkage retracted). While the actuator is retracting to its retracted position, its position feedback output signal (for MGF350V-24FP and MG350V-MP models only) remains at 0.4 Vdc (if Switch 2 is OFF) or 0 Vdc (if Switch 2 is ON). After the valve stem reaches its full up position (actuator linkage retracted), the actuator then positions the valve in accordance to its control input signal and the position output signal indicates the valve stem position.

The MG350V-24F actuators remains in their last commanded position with no power applied. When power is applied, the actuator operates in accordance to its input control signals to retract or extend the valve stem.

Positioning and Sensitivity

The MG350 series actuators include a built-in microprocessor that provides accurate motor control and overload protection at all of its stroke positions. The microprocessor constantly monitors the rotation of the stepper motor and stops the pulses to the motor when it senses a stall condition. The proportional MG350V-24M and MGF350V-24MP actuators include a 1% positioning sensitivity and "a change of direction" algorithm with a wider 2.5% sensitivity to accurately follow the proportional control signal while not responding unnecessarily to electric noise and control input instability. The floating MGF350V-24FP accumulates repeated small drive open and drive closed commands and positions the valve when the commands are consistently in the same direction to provide accuracy while not responding unnecessarily to electric noise and control input instability.

Manual Override Operation

Use the manual override to manually position the actuator when it is not powered. The actuator stays in the selected position until powered. After power is applied, the actuator strokes the valve full stem up (actuator linkage retracted), then positions the valve according to its control input signal. The manual override accepts a 3 mm allen wrench. Press firmly (depressing the wrench downward approximately 1/8" (3 mm) into the actuator) and continue to hold the wrench in the depressed position, then turn the wrench CCW to extend the actuator spindle, lowering the valve stem, or CW to retract the actuator spindle, raising the valve stem. It takes approximately 3 … 3-1/2 manual override wrench turns to fully stroke the valve stem (each manual override turn moves the valve stem about 5/32" (4 mm).

Note: If the allen wrench is not seated properly or if the user does not press firmly downward, it will not engage, and the wrench may spin inside the nut.

LED Operation

MGF350V-24FP, MG350V-24M, and MGF350V-24MP Normal Operation LED Status

LED Blinking Pattern	LED Color			Function	Description
	Orange	Green	Red		
Orange Green Red	Cycles on for 1/3 sec	Cycles on for 1/3 sec	Cycles on for 1/3 sec	Auto-Calibration Mode [1]	During calibration, the three LED colors flash until the calibration is complete (orange, green, red, repeated). The actuator's position output signal is 0.4 Vdc during the calibration process (MGF350V-24FP and MGF350V-24MP models only).
Orange	Blinks once every sec	-	-	Indicates the actuator linkage is extending, which lowers the valve stem	Blinks every second when the actuator is moving
Green	-	Blinks once every sec		Indicates the actuator linkage is retracting, which raises the valve stem	

1 - See the Auto-Calibration Operations section for a complete explanation on the Auto-calibration process

MG350V-24F Normal Operation LED Status

LED Blinking Pattern	LED Color			Function	Description
	Orange	Green	Red		
Orange	Blinks once every sec	-	-	Indicates the actuator linkage is extending, which lowers the valve stem	Blinks every second when the actuator is moving
Green	-	Blinks once every sec	-	Indicates the actuator linkage is retracting, which raises the valve stem	

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MGF350V-24FP, MG350V-24M, and MGF350V-24MP Alarm LED Operation

LED Blinking Pattern	LED Color	Description	Recommended Actions	Alarm Type [1]	Position Feedback Output Signal Override Voltage [2]
Each color cycles on for 1/3 sec	Orange Green Red	During calibration the three LED colors flash until the calibration is complete (orange, green, red, repeated). The actuator's position output signal is 0.4 Vdc during the calibration process (MGF350V-24FP and MGF350V-24MP models only).	Wait for the calibration process to finish	Auto-Calibration [3] Mode	0.4 Vdc
Solid	Red	Travel during calibration revealed inadequate output stroke.	Check freedom of valve stem movement and proper linkage connection, replace actuator if necessary	Critical [1]	0.7 Vdc
3 seconds On, 1 second Off	Red	Unexpected stalling	Check for freedom of valve stem movement and proper linkage connection, possible debris on the valve body, and for proper DIP switch setup	Maintenance	1.0 Vdc
6 seconds On, 1 second Off	Red	Out of range 2 … 10 Vdc/4 … 20 mA input signal	Check the input signal range: underrange (below 2 Vdc) for MG350V-24M, and MGF350V-24MP when configured for a 2 … 10 Vdc input signal (DIP switch 4 ON)	Low Priority	1.3 Vdc
Solid	Red	Actuator fault	Replace actuator	Critical [1]	1.6 Vdc

1 - The actuator does not move the valve stem when a Critical Alarm is present. It does continue to position the valve if a Maintenance or Low Priority Alarm is present.
2 - The Position Feedback Output Signal Override Voltage is valid for the MGF350V-24FP and MGF350V-24MP models only when configured for a 2 … 10 Vdc position output signal (DIP switch 2 OFF). The Position Feedback Output Signal Override Voltage overrides the normal 2 … 10 Vdc output voltage that indicates the valve stem position. The Position Feedback Output Signal Override Voltages do not occur when the position output signal is configured for 0 … 5 Vdc output range (DIP switch 1 OFF).
3 - See the Auto-Calibration Operations section for a complete explanation on the Auto-Calibration process.

Actuator Installation

Required Tools for Installation on 1/2" - 2" VB-7000 or obsolete 1/2" … 1-1/4" VB-9000 globe valves: M-370 1-5/8" narrow width open end wrench, 7/16" open end wrench, 5/16" open end wrench, 3 mm allen wrench, and ruler.

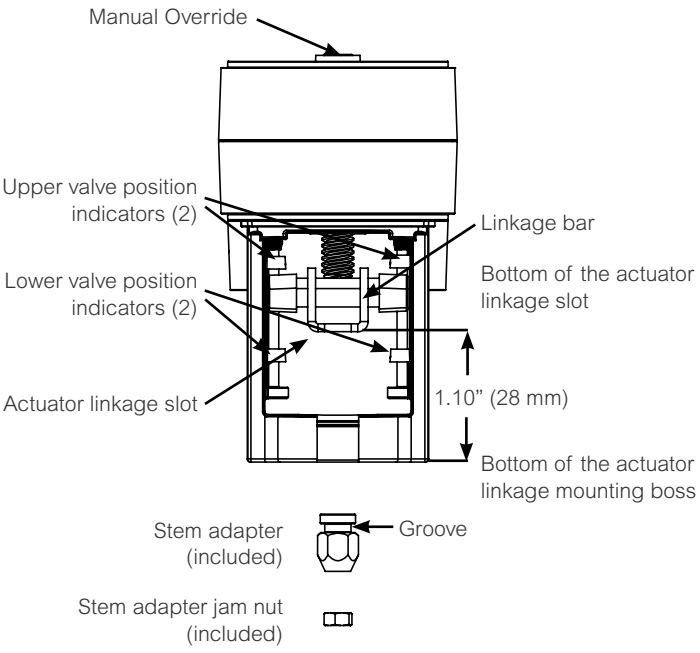
1. Confirm that the factory set dimension from the bottom of the actuator linkage slot to the bottom of the actuator linkage mounting boss is 1.1" or 1-7/64" +/-1/64" (28.0 mm +/- 0.5). If the actuator is not set at this dimension please adjust the actuator to obtain this dimension by manually overriding the actuator.
2. Fully pull up the valve stem.
3. Screw the stem adapter jam nut (provided with the actuator) to the bottom of the valve stem threads.
4. Screw the stem adapter (provided with the actuator) all the way on to the valve stem to the stem adapter jam nut, using the 5/16" and 7/16" open end wrenches and lock together.
5. Slide the groove of the stem adapter in to the actuator linkage slot and position the actuator on to the valve.
6. Engage the large valve nut one full turn on to the actuator yoke by hand (the valve stem may be pushed into the valve during this process). To create plug and seat clearance before final assembly tightening, manually position the actuator linkage by pressing firmly (depressing the allen wrench downward approximately 1/8" (3 mm) into the actuator) and continue to hold the allen wrench in the depressed position. Rotate 2 turns clockwise (looking from the top of the actuator). If you skip this step, you may have trouble getting the valve tight onto the actuator and risk damaging internal components of the valve and actuator.
7. Fully tighten the large valve nut to the actuator yoke using the M-370 1-5/8" open end wrench. The actuator typically is aligned with the valve's A and B ports, but can alternately be positioned in any other direction.
8. Push the two upper valve position indicators down to the top of the linkage bar and the two lower position indicators up to the bottom of the linkage bar. The MG350V-24F valve actuator is ready to be wired and powered. The MGF350V-24FP, MG350V-24M, and MGF350V-24MP valve actuator is ready to be wired, powered, and auto-calibrated.
9. It may be required at some future date to remove the actuator from the valve body. In this event, follow steps 7 through 5 in reverse order. First follow step 7 (loosen the valve nut), then step 6 (override the actuator 2 turns counterclockwise), and then step 5 (fully disengage the large valve nut).

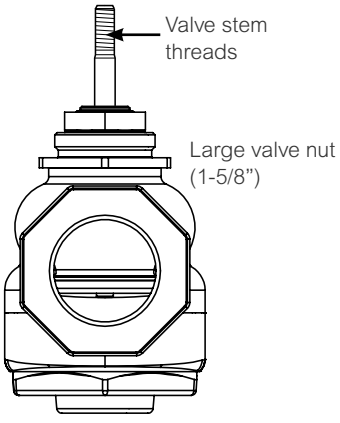
Maintenance and Field Repair

The actuator requires no maintenance. The main actuator cover (with the label) is not intended for field removal, and the actuator can be damaged if it is removed in the field. The actuator is not field repairable - replace an inoperative actuator with a functional unit.

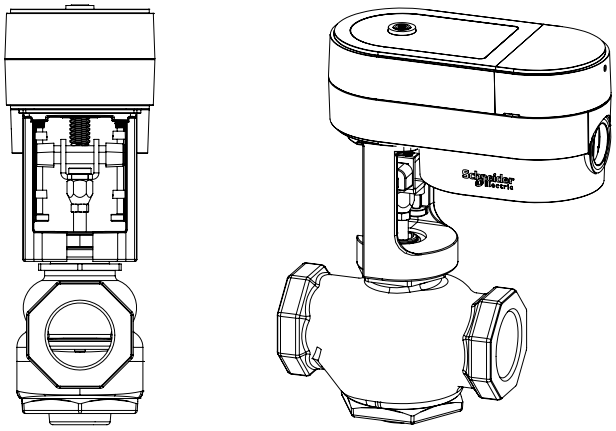
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VB-7000 valve body



End View Side View

MG350V Installed on a VB-7000 Globe Valve

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Commercial Reference	Range Brand	Product Description	
MXx350x-24XX	SMARTX LINEAR ACTUATORS	MXx350x FLOATING OR MODULATING LINEAR 350N ACTUATORS	
	有害物质 - Hazardous Substances		

部件名称 Part Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
属部件 Metal Parts	X	O	O	O	O	O
塑料部件 Plastic Parts	O	O	O	O	O	O
电子件 Electronic	X	O	O	O	O	O
触点 Contacts	O	O	O	O	O	O
线缆和线缆附件 Cable & Cabling Accessories	O	O	O	O	O	O

本表格依据 SJ/T11364 的规定编制。
O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。
（企业可在此处，根据实际情况对上表中打 "X" 的技术原因进行进一步说明。）

This table is made according to SJ/T 11364.
O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.
X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572

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