Bray COMMERCIAL

GA(S) Series
Linear Valve Actuators

- **Non-Spring Return - GA24-562**
- **Spring Return - GASRE24-450**
- **Spring Return - GASEX24-450**

10/01/19

The GA(S) Series is a direct mount line of linear motor actuators to be used primarily on PIC and globe valves. The patented drive-valve coupling allows the drive to be connected to the valve automatically as soon as the power is applied to the actuator. An external crank handle enables the desired position to be set manually as well. Microprocessor technology enables the actuator to identify the functions required and to adapt itself automatically to the control valve properties.

These actuators operate on 24V AC or DC, and all input signals- 0-10V or 4-20mA modulating output, or On/Off (2-point) or Floating (3-point) control. The actuator automatically detects the control signal applied via a 2 LED display.

These actuators operate both 2 and 3-way valves and are available in non-spring return and spring return versions. The GA(S) series is bi-directional, selectable via screw terminals.

Features and Benefits

- Easy Assembly with Valve
  Stem connection takes place automatically after application of control voltage
- Works with Bray Simple Set Max and Most Globe Valve Brands
  Multiple adaptors allow assembly on third-party valves
  Spring return versions allow for fail-open or fail-closed configurations
- Automatic Adaptation to Valve Stroke
  Built-in intelligence matches the actuator to the valve stroke.
- Easy Configurability
  Meets the requirements of virtually any heat exchanger control application.
- Spring Return Models
  Available "fail up/retracted" and "fail down/extended"

GA(S) Series - Actuator Specifications

Technical Specifications

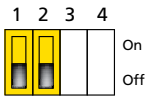
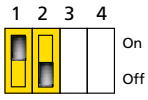
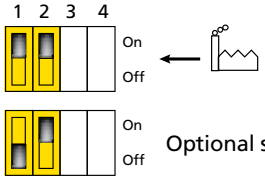
Non-Spring Return	**GA24-562**	On/Off, Floating and Modulating
Spring Return	**GASRE24-450**	On/Off, Floating and Modulating, Shaft Normally Retracted
	GASEX24-450	On/Off, Floating and Modulating, Shaft Normally Extended
Power Requirements	**On/Off, Floating and Modulating**	24 VAC (±20%) at 50/60 Hz or 24 VDC (±15%)
Positioner[1]	**Control Signal 1**	0 to 10 V, Ri> 100 kΩ
	Control Signal 2	4 to 20 mA, Ri = 50Ω
	Position Feedback Signal	0 to 10 V, Load >2.5 kΩ
Action		Direct or Reverse Acting
Switching Range		300 mv
Power Consumption[2]	**Non-Spring Return** **Spring Return**	10W, 18VA 7.5W, 20VA
Force	**Non-Spring Return** **Spring Return**	562 lbs. (2,500 N) 450 lbs. (2,000 N) Power stroke and spring stroke
Stroke		0" to 1.93" (0-49mm)
Max. Temperature of Medium[3]		266˚F (130˚C)
Ambient Conditions	**Temperature**	14˚F to 131˚F (-10˚ to 55˚C)
	Humidity	0 to 95% RH without condensation
Level of Protection		IP 66. Not intended for outdoor use without additional protection.
Enclosure		Self-extinguishing plastic
Gear Materials	**Gears & Gearbox** **Mounting Column** **Mounting Bracket**	Steel Stainless Steel Cast Light Alloy
Electrical Connection		13 AWG (2.5 mm²) with screw terminals. Three knock-out cable entries for M20×1.5 (2×) and M16×1.5
Motor Run Time sec. per in. (mm)		51 (2), 102 (4), 153 (6), Dip Switch Adjustable
Spring Run Time[4]		15… 30 seconds
Number of Spring Returns		> 40,000
Response Time - 3-Point		200 ms
Weight	**Spring Return** **Non-Spring Return**	12.3 lbs. (5.6 kg) 9.1 lbs. (4.1 kg)
UL Listed		Temperature-Indicating and Regulating Equipment, XAPX, XAPX7. File E366456

[1] Also for On/Off (2-point) or Floating (3 point) depending on the connection for 24V~
[2] Design the transformers for this value, otherwise functional faults may occur.
[3] An intermediate piece is required for medium temperatures between 266˚F (130˚C) and 464˚F (240˚C)
[4] The return time corresponds to a stroke of 0.55 in. (14 mm) to 1.58 in. (40 mm) and does not depend on the set run time.

Disclaimer - *The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*

GA(S) Series - Stroke times

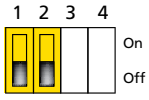
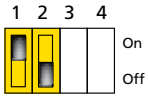
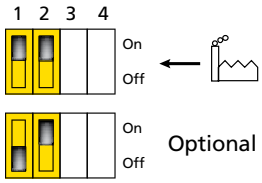
SSM Valve Stroke Times GA(S) Total Stroke = 1.93" (49mm)

Size / Valve Stroke		Switch Coding	2.5" & 3" .79" (20mm)	4" & 5" 1.58" (40mm)	6" & 8" 1.69" (43mm)	10" & 12" 1.89" (48mm)
GA(S) Stroke Time	51 s/in. (2s/mm)*	 Default setting for Simple Set Max	40 Sec.	80 Sec.	86 Sec.	96 Sec.
	102 s/in. (4s/mm)	 Optional setting	80 Sec.	160 Sec.	172 Sec.	192 Sec.
	153 s/in. (6s/mm)	 Optional setting	120 Sec.	240 Sec.	258 Sec.	288 Sec.

* Default

= Stand Alone GA Actuator Default Setting

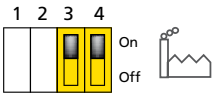
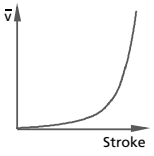
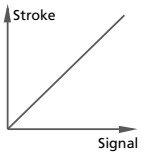
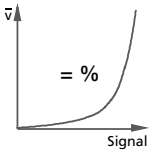
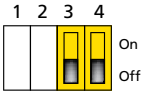
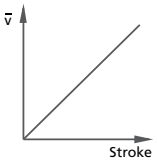
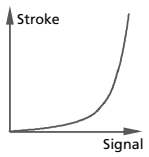
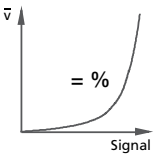
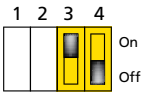
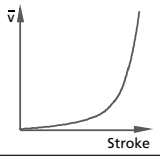
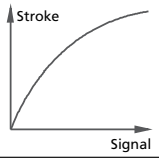
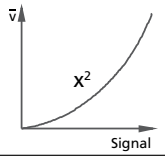
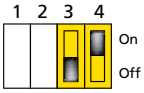
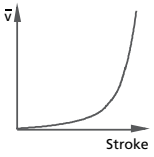
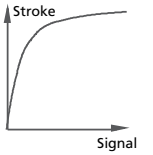
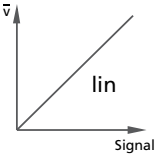
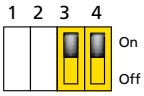
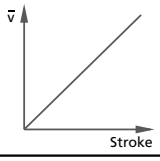
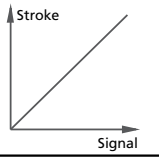
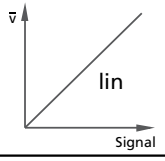
DG Valve Stroke Times GA(S) Total Stroke = 1.93" (49mm)

Size / Valve Stroke		Switch Coding	2.5" & 3" .75" (19mm)	4" & 6" 1.5" (38mm)
GA(S) Stroke Time	51 s/in. (2s/mm)*	 Default setting for Globe Valves	38 Sec.	76 Sec.
	102 s/in. (4s/mm)	 Optional setting	76 Sec.	152 Sec.
	153 s/in. (6s/mm)	 Optional setting	114 Sec.	228 Sec.

* Default

= Stand Alone GA Actuator Default Setting

GA(S) Series - Curve Characteristic Switch Settings

Desired Characteristic Curve	Switch Coding	Characteristic Curve for Valve	Characteristic Curve for Drive	Effective on Valve
Equal Percentage	 Default setting for Globe Valves			
Equal Percentage	 Default setting for Simple Set Max			
Quadratic	 Optional setting			
Linear	 Optional setting			
Linear	 Optional setting			

= Stand Alone GA Actuator Default Setting

GA(S) Series - LED Display

LED Display

The display consists of two dual-color LEDs (red/green).

Both LEDs flashing red: calibration procedure

Upper LED lit red: upper limit stop or shaft is fully retracted

Lower LED lit red: lower limit stop or shaft is fully extended

Upper LED flashing green: drive running, moving towards shaft retracted

Upper LED lit green: drive stationary, last direction of running was shaft was retracting.

Lower LED flashing green: drive running, moving towards shaft extended.

Lower LED lit green: drive stationary, last direction of running shaft extending

Both LEDs lit green: waiting time after switching on or after spring return- Spring Return Only.

No LED lit: no power supply (GAS Spring Return models, terminal 21

(GA Non-Spring return moldels, terminals 2a or 2b)

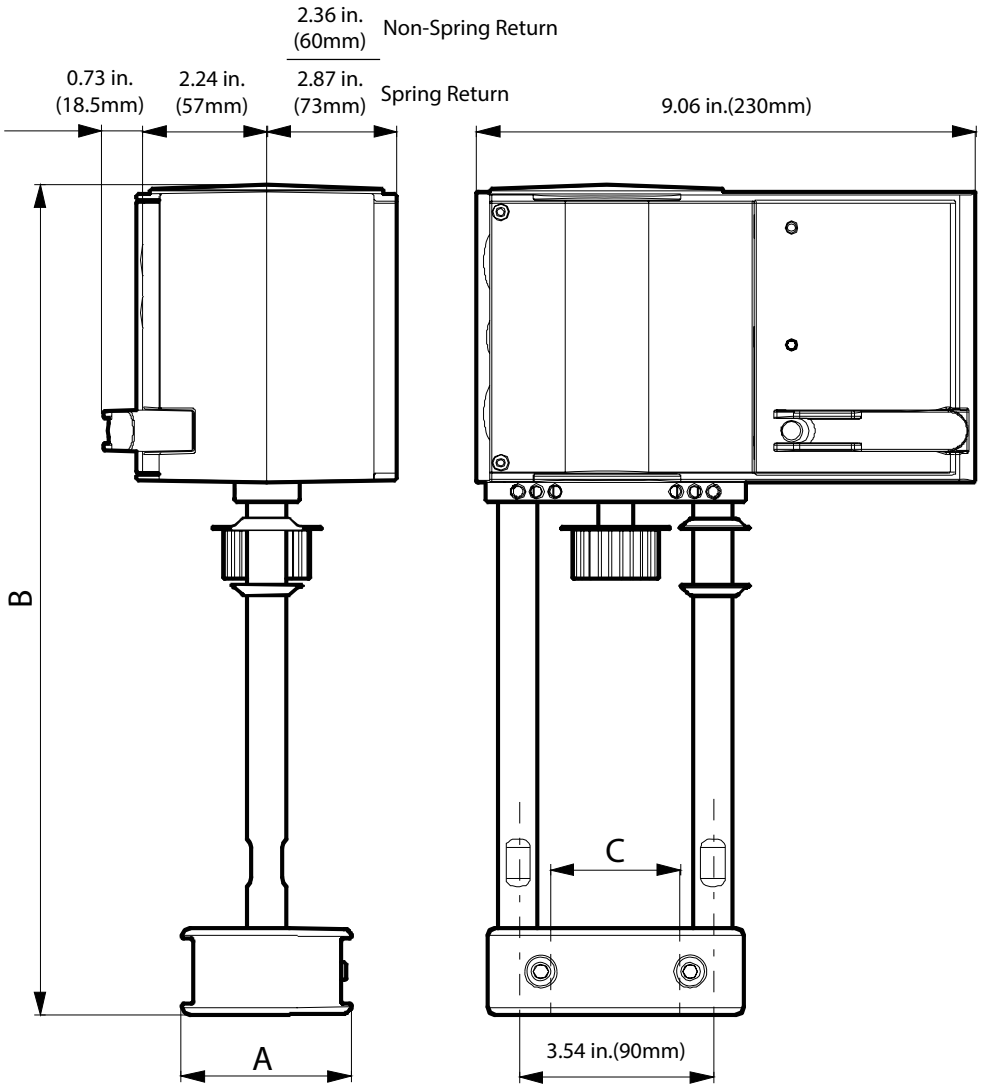
Both LEDs are flashing red and green: drive is in manual mode

GA(S) Series - Convenience Features

This Bray series of actuators is the most convenient retrofit actuator you can buy. This actuator calibrates itself automatically. As soon as voltage is applied to the drive for the first time, it moves to the lower limit stop on the valve, thus enabling automatic connection with the valve stem. Then it moves to the upper limit stop and the value is recorded and saved with the help of a path measurement system. The control signal and feedback signal are adjusted to this effective stroke. There is no re-calibration if the voltage is interrupted or the voltage supply is removed. The values remain saved.

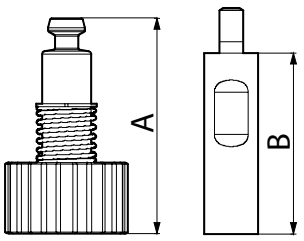
The patented drive-valve coupling automatically attaches to valve spindle and easily detaches when you simply grasp the coupling and push up. There are adapters available for assembly to most globe valve manufacturers. Furthermore, these actuators can be replaced while keeping the valve in-line for non-spring return and spring return version for both fail open and failed closed configurations.

GA(S) Series - Dimensions



Description	A	B	C
GA(S) Series	2.52 in. (64mm)	11.38 in. (289mm)	1.73 in. (44mm)

Adaptor for media temperatures between
266˚F (130˚C) and 464˚F (240˚C)

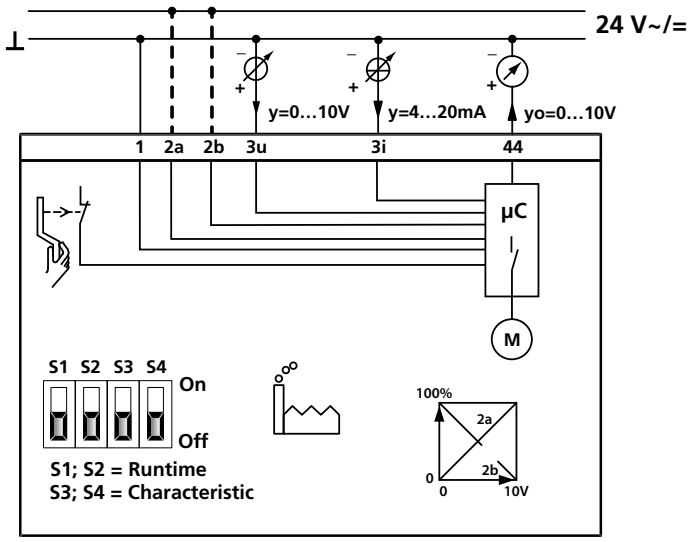


Part Number	A	B
0372336 240	4.31 in. (109.4mm)	3.94 in. (100mm)

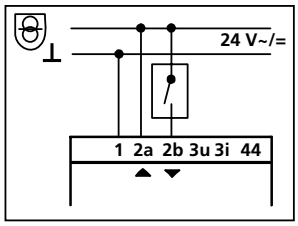
GA(S) Series - Wiring

Non-Spring Return

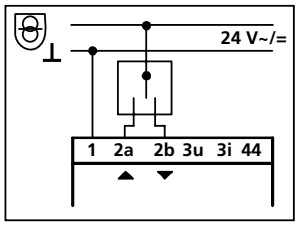
Modulating



On/Off (2 Point)



Floating (3 Point)

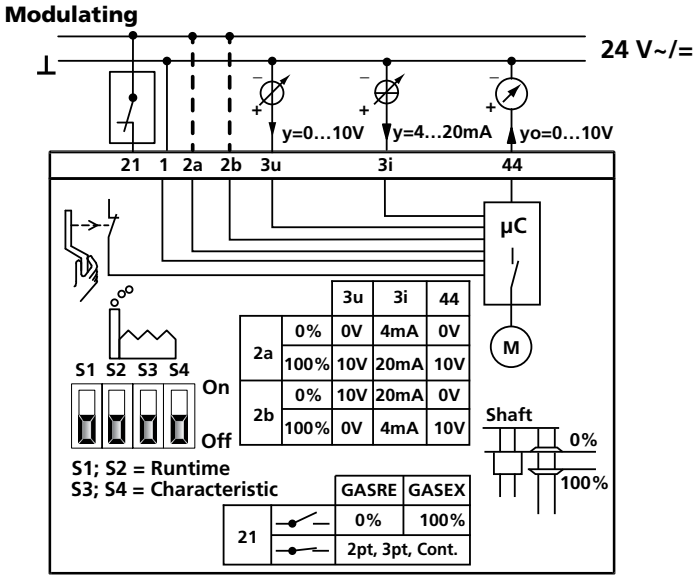


= Extra Low Voltage

Y = modulating signal
1= Neutral/Common for power and signal
2a/2b- These terminals determine forward acting/reverse acting. One should be powered with 24V.
2a = Extends. 0 volts = 0% extended. 10V = 100% extended
2b = Retracts. 0 volts = 100% extended. 10V = 0% extended
3u = 0 .. 10 V, in case of control by voltage
3i = 4 .. 20 mA, in case of control by current
44 = 0 .. 10 V Feedback, independent from the use of 3u or 3i

Spring Return

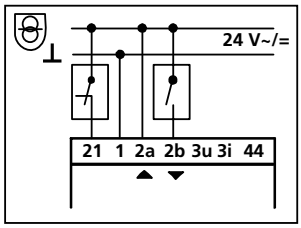
Modulating



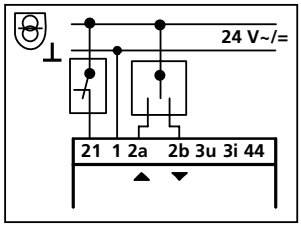
		3u	3i	44
2a	0%	0V	4mA	0V
	100%	10V	20mA	10V
2b	0%	10V	20mA	0V
	100%	0V	4mA	10V

		GASRE	GASEX
21		0%	100%
		2pt, 3pt, Cont.	

On/Off (2 Point)



Floating (3 Point)

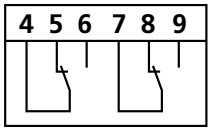


= Extra Low Voltage

Y = modulating signal
21= Latch voltage for the spring. Lose of power here causes the spring to drive to the fail position.
1= Neutral/Common for power and signal
2a/2b- These terminals determine forward acting/reverse acting. One should be powered with 24V.
2a = Extends. 0 volts = 0% extended. 10V = 100% extended
2b = Retracts. 0 volts = 100% extended. 10V = 0% extended
3u = 0 .. 10 V, in case of control by voltage
3i = 4 .. 20 mA, in case of control by current
44 = 0 .. 10 V Feedback, independent from the use of 3u or 3i

Options

0372333 001
0372333 002
(Auxillary Switches)



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Bray COMMERCIAL

Bray Controls Commercial Division
13788 West Road, Suite 200A
Houston, Texas 77041

BCDSales@Bray.com
Phone: 1-888-412-2729
Fax: 1-888-412-2720
www.braycommercialdivision.com