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# PA-01

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## User Manual

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# SAFETY PRECAUTIONS

When installing and using your Progressive Automations linear actuator, basic safety precautions should always be followed. Please read all safety precautions thoroughly and be familiar with all functions of the product before use. Apply all other relevant precautions when operating electrical and moving mechanical devices.

## DANGER

To reduce the risk of electrical shock and injuries:

- Do not attempt to modify or repair the actuator.
- Avoid using the actuator in environments with explosive gases or flammable materials.
- Avoid using the actuator beyond its specified Ingress Protection rating.
- Make sure that the power source is properly grounded. Neglecting proper grounding can result in a dangerous electrical hazard.

## WARNING

To reduce personal harm and injury:

- Follow recommended load ratings and specifications for the actuator.
- Avoid leaving the actuator unattended during operation.
- Avoid operating the actuator in areas with high levels of airborne contaminants.
- Ensure a clear path for full extension and retraction of the actuator.
- Keep hands and body parts clear of the actuator while it is in motion.
- Exercise caution around pinch points and moving components during the actuator's operation.
- Keep all loose clothing, jewelry, and personal items away from the actuator's moving parts.

## OPERATING NOTES

### Warranty

Any attempts to disassemble or tamper with the actuator's internal components or operation outside of the advertised usage limitations will result in voiding the product's warranty. For more information on our warranty terms, visit:

<https://www.progressiveautomations.com/pages/warranty-terms>

### Force Restrictions

Linear actuators must be used within the specified force rating outlined in this documentation. Load must be evenly distributed. Exceeding the recommended force rating may result in failure of the linear actuator. It may also damage the product and void the warranty. Please note that the weight of the load does not always equal the total force due to mechanical advantage, wherein the force may increase or decrease depending on the application.

### Operation Time

Linear actuators must be operated within the specified operation time and frequency. Exceeding the duty cycle rating can significantly reduce the actuator's expected lifespan and will void the warranty.

# SPECIFICATIONS

## RATED LOAD CONFIGURATIONS

Rated Load (lbs)		12 VDC Current (A)		24 VDC Current (A)		12 VDC Speed <sup>1</sup> (inch/sec)		24 VDC Speed <sup>1</sup> (inch/sec)	
Dynamic	Static	No Load	Full Load	No Load	Full Load	No Load	Full Load	No Load	Full Load
16	16	1.5	4.0	0.8	2.0	3.54	2.66	3.54	2.95
28	28	1.5	4.0	0.8	2.0	1.89	1.38	1.89	1.50
56	56	1.5	4.0	0.8	2.0	1.38	1.02	1.38	1.14
112	112	1.5	4.0	0.8	2.0	0.94	0.67	0.94	0.71
169	169	1.5	4.0	0.8	2.0	0.39	0.30	0.39	0.31
225	225	1.5	4.0	0.8	2.0	0.28	0.20	0.28	0.20

<sup>1</sup>Speed specifications have a  $\pm 10\%$  tolerance.

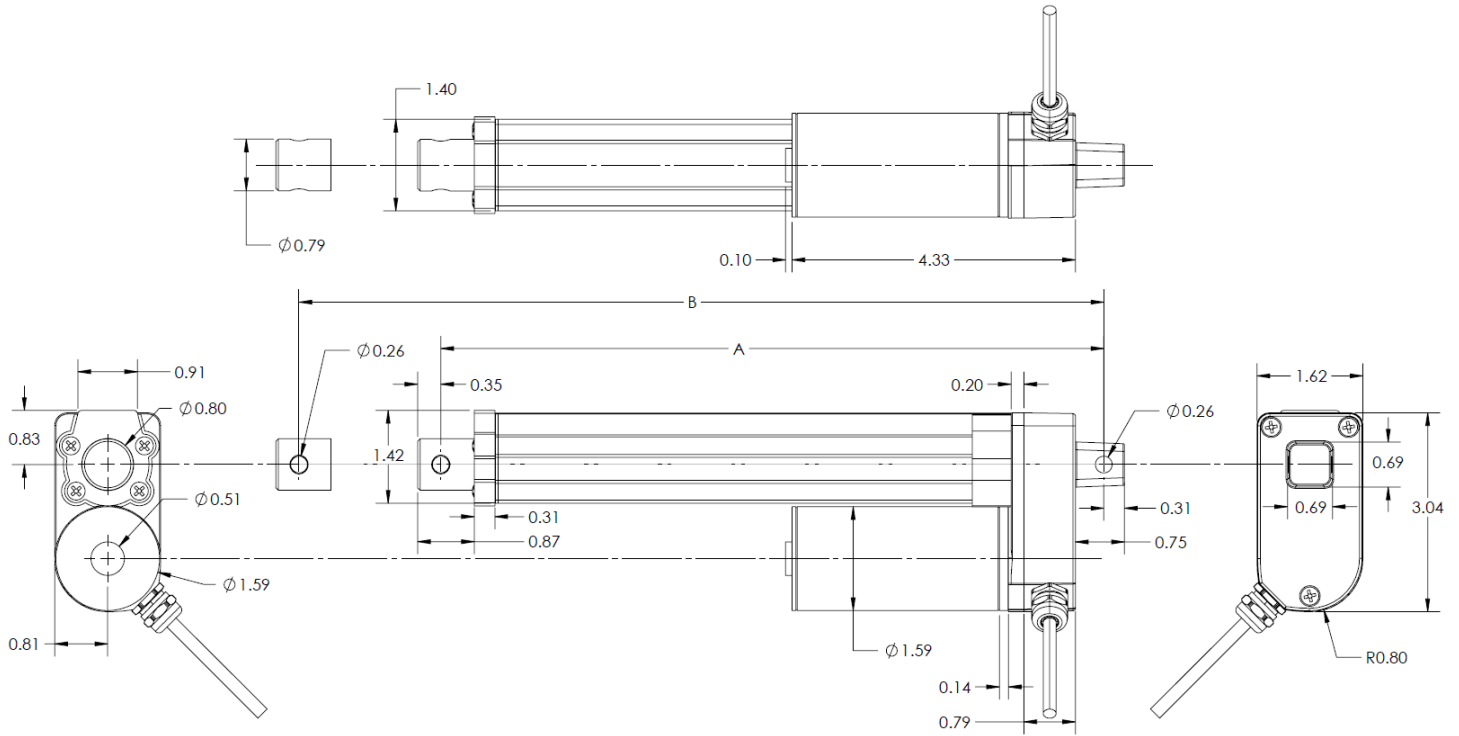
## SPECIFICATIONS

<b>Input Voltage</b>	12 VDC or 24 VDC
<b>Stroke</b>	1.0" to 40.0"
<b>Feedback</b>	None, Hall Effect Sensor
<b>Duty Cycle</b>	25% (5 minutes on, 15 minutes off)
<b>Weather Protection</b>	IP65
<b>Operational Temperature</b>	5°C to 40°C (41°F to 104°F)
<b>Operating Noise</b>	≤45 dBA from 5 ft. at no load. ≤50 dBA from 5 ft. at full load
<b>Limit Switch</b>	Built-In (Non-Adjustable)
<b>Cable Length</b>	40" (Customizable)
<b>Connector</b>	Molex Mini-Fit Jr 2-Pin (Standard), Molex Mini-Fit Jr 6-Pin (Hall Effect Sensor)
<b>Front Mounting Hole Size</b>	0.25"
<b>Rear Mounting Hole Size</b>	0.25"
<b>Actuator Type</b>	Mini
<b>Motor Type</b>	Brushed DC Motor
<b>Screw Type</b>	ACME
<b>Stroke Rod Material</b>	Stainless Steel
<b>Housing Material</b>	Aluminum Alloy 6062
<b>Gear Material</b>	Polyformaldehyde or Powder Metallurgy Steel Alloy (Customizable)
<b>Compatible Mounting Brackets</b>	BRK-14

# DIMENSIONS

**Note:** All dimensions are listed in inches.

## DIAGRAM



## HOLE TO HOLE LENGTH

Stroke Length	1"	2"	3"	4"	6"	8"	9"	10"	12"	18"	24"	30"	40"
<b>A (Fully Retracted)</b>	5.13	6.13	7.13	8.13	10.13	12.13	13.13	14.13	16.13	22.13	28.13	34.72	45.51
<b>B (Fully Extended)</b>	6.13	8.13	10.13	12.13	16.13	20.13	22.13	22.13	28.13	40.13	52.13	64.72	85.51

### 1" ≤ Stroke Length ≤ 24"

A (Fully Retracted) = Stroke Length + 4.13"

B (Fully Extended) = Stroke Length x 2 + 4.13"

### 24" < Stroke Length ≤ 30.12"

A (Fully Retracted) = Stroke Length + 4.72"

B (Fully Extended) = Stroke Length x 2 + 4.72"

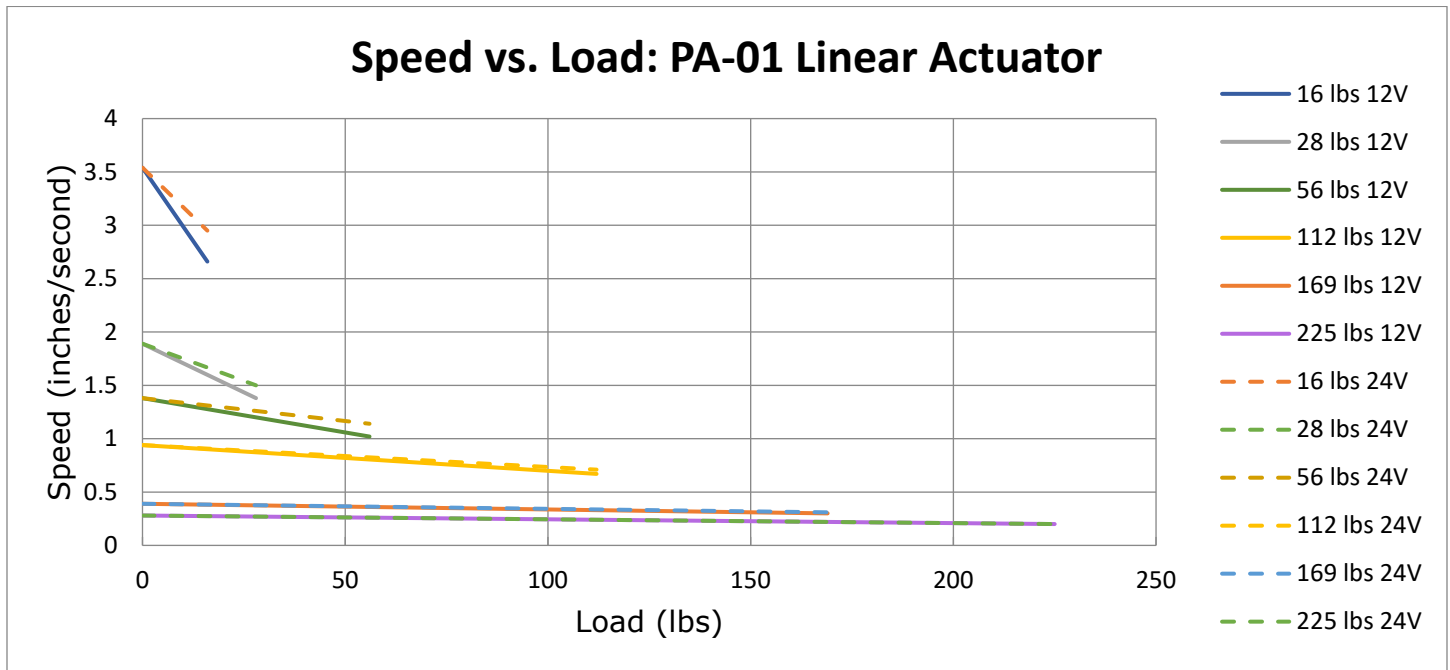
### 30.12" < Stroke Length ≤ 40"

A (Fully Retracted) = Stroke Length + 5.51"

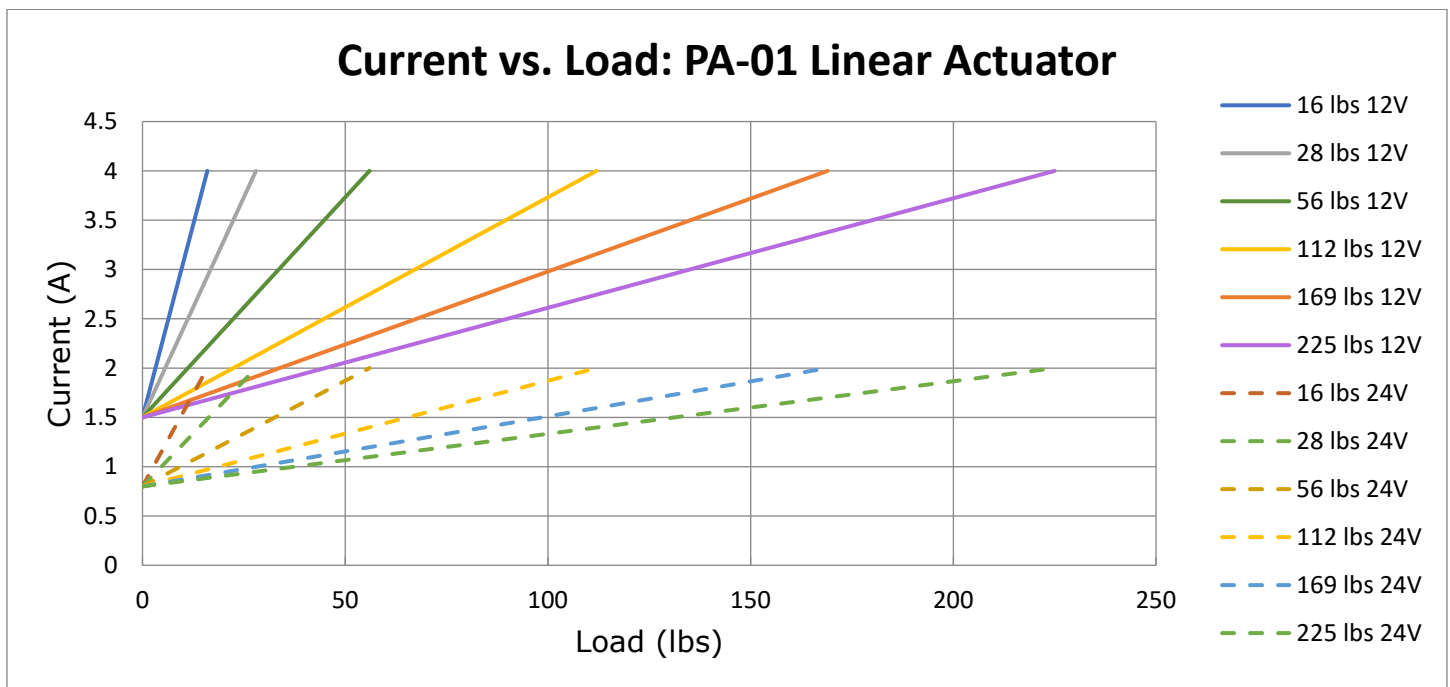
B (Fully Extended) = Stroke Length x 2 + 5.51"

# PERFORMANCE GRAPHS

## SPEED VS LOAD

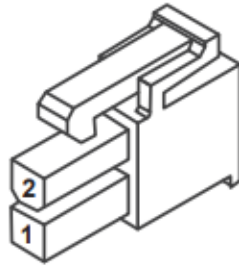


## CURRENT VS LOAD



# CONNECTORS

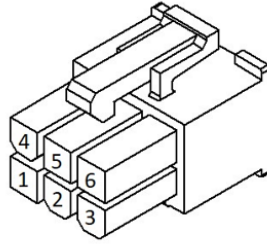
## STANDARD - 2-PIN CONNECTOR



Pin Location	1	2
<b>Function</b>	Motor - (Retract)	Motor + (Extend)
<b>Wire Color</b>	Black	Red
<b>Wire Gauge</b>	18 AWG	18 AWG

	Force (lbs)	Part Name	Part Number	Mating Part Number
<b>Housing</b>	All	Molex Mini-Fit Jr. Receptacle Housing, 2-Row	39-01-2025	39-01-3029 /39-01-2026
<b>Terminals</b>	All	Molex Mini-Fit Jr. Female Terminal, 18-24 AWG	39-00-0039 (Bag) 39-00-0038 (Reel)	39-00-0041 (Bag) 39-00-0040 (Reel)

## HALL EFFECT – 6-PIN CONNECTOR



Pin Location	1	2	3	4	5	6
<b>Function</b>	Hall Effect 2 - signal leads when extending	Hall Effect GND	Hall Effect 5V	Motor - (Retract)	Motor + (Extend)	Hall Effect 1 - signal leads when retracting
<b>Wire Color</b>	Orange	Black	Red	Black	Red	Yellow
<b>Wire Gauge</b>	22 AWG	22 AWG	22 AWG	18 AWG	18 AWG	22 AWG

Parts	Force (lbs)	Part Name	Part Number	Mating Part Number
<b>Housing</b>	All	Molex Mini-Fit Jr. Receptacle Housing, 2-Row	39-01-2060	39-01-3063
<b>Motor Terminals</b>	All	Molex Mini-Fit Jr. Female Terminal, 18-24 AWG	39-00-0039 (Bag) 39-00-0038 (Reel)	39-00-0041 (Bag) 39-00-0040 (Reel)
<b>Sensor Terminals</b>	All	Molex Mini-Fit Jr. Female Terminal, 22-28 AWG	39-00-0047 (Bag) 39-00-0046 (Reel)	39-00-0049 (Bag) 39-00-0048 (Reel)

<b>Force (lbs)</b>	16	28	56	112	169	225
<b>Hall Effect Resolution Per Channel (Pulses/Inch)</b>	51	102	152	203	381	533