

Product Data Sheet

This Light Duty series of actuators provides improved IP rating and high stroke speed for more demanding applications.



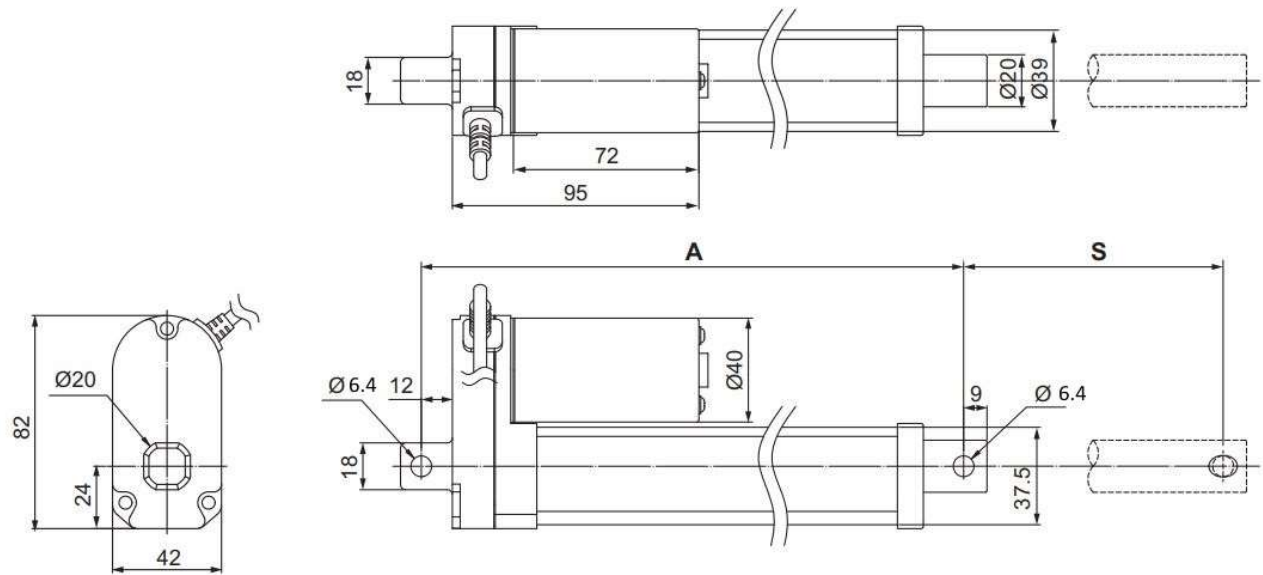
Standard Features:

- Compact design
- All aluminum frame and extension tube
- Available in 12VDC or 24VDC operating voltages
- Nominal stroke lengths: 2" [50mm], 4" [100mm], 6" [150mm], 8" [200mm], 10" [250mm], 12" [300mm]
- Standard gear ratio: 20:1 [other ratios available]
- Dynamic load range: 27 lbs. [120 Newtons] –to– 180 lbs. [800 Newtons]
- Maximum current draw: 2.4 Amps @ 12 VDC
- Typical speed at no load: 0.55 in/sec [14.0 mm/sec] –to– 3.3 in/sec [84.3 mm/sec]
- Typical speed at full load: 0.49 in/sec [12.4 mm/sec] –to– 2.9 in/sec [74.6 mm/sec]
- Built-in and preset limit switches to automatically halt motion at each end of stroke
- Mounting hole diameter (both ends): 1/4" [6.4mm] (other options available)
- Typical lead wire length: 35" [900mm]
- Duty cycle: 25%, maximum 1 minute continuous operation in 4 minutes
- Working temperature: -13°F [-25°C] –to– +149°F [+65°C]
- Noise level: ≤60dB
- IP rating: IP69K
- Certified: CE Marking, Electromagnetic Compatibility Directive 2014/30/EU

Available accessories:

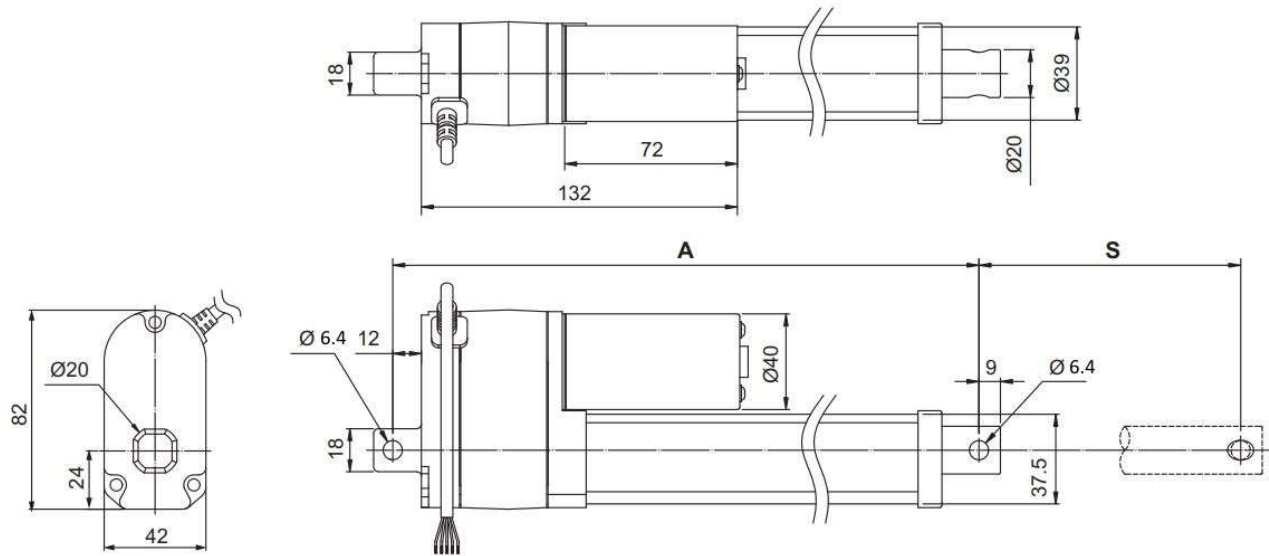
- Mounting brackets
- Direction reversing switches
- Wired and wireless controllers
- Direction reversing relays

Dimensions – Standard (Without Hall effect sensors or potentiometer)



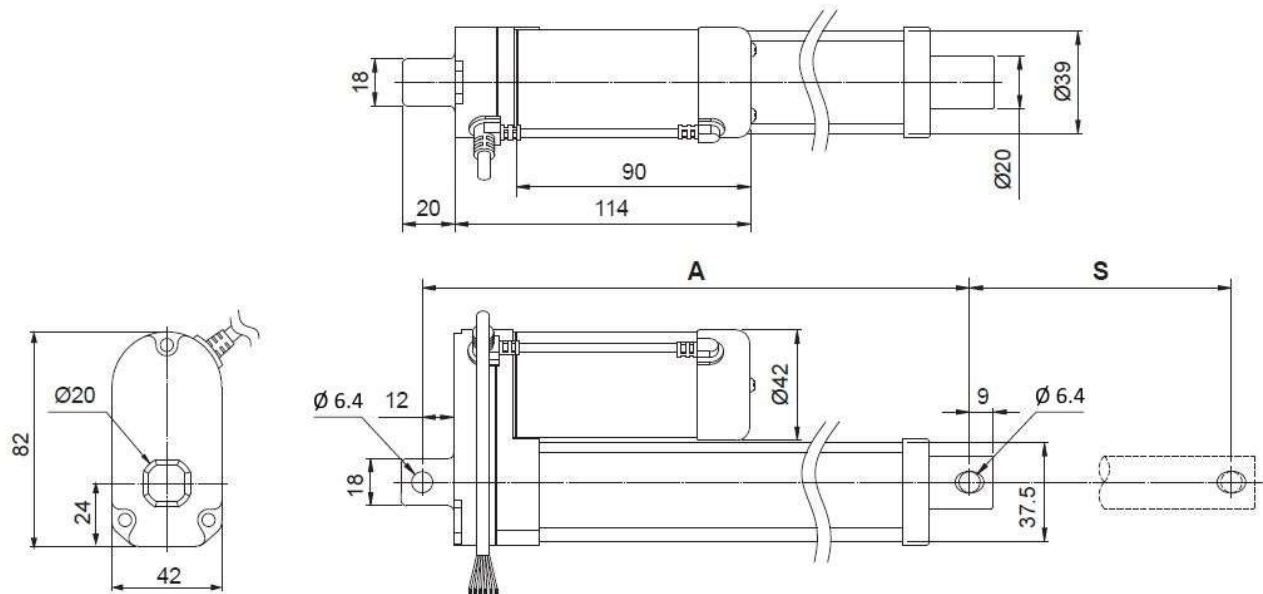
Nominal Stroke	2"		4"		6"		8"		10"		12"	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
Actual Stroke	1.97	50	3.94	100	5.91	150	7.87	200	9.84	250	11.81	300
Retracted Length (A)	6.22	158	8.23	209	10.24	260	12.24	311	14.25	362	16.26	413
Extended Length (S)	8.19	208	12.17	309	16.14	410	20.12	511	24.09	612	28.07	713

Dimensions – with potentiometer



Nominal Stroke	2"		4"		6"		8"		10"		12"	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
Actual Stroke	1.97	50	3.94	100	5.91	150	7.87	200	9.84	250	11.81	300
Retracted Length (A)	7.68	195	9.69	246	11.69	297	13.70	348	15.71	399	17.72	450
Extended Length (S)	9.65	245	13.62	346	17.60	447	21.57	548	25.55	649	29.53	750

Dimensions – With Hall effect sensors



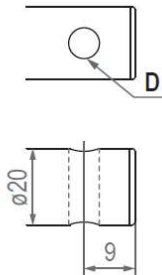
Nominal Stroke	2"		4"		6"		8"		10"		12"	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
Actual Stroke	1.97	50	3.94	100	5.91	150	7.87	200	9.84	250	11.81	300
Retracted Length (A)	6.22	158	8.23	209	10.24	260	12.24	311	14.25	362	16.26	413
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Custom extension rod and base stud offerings

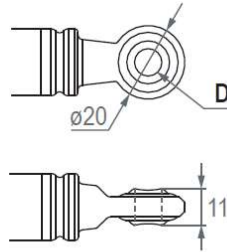
Contact Concentric International sales for these options and ordering details

Extension rod options:

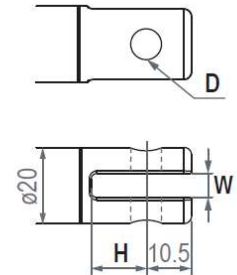
Drilled hole
(standard)



Spherical rod eye



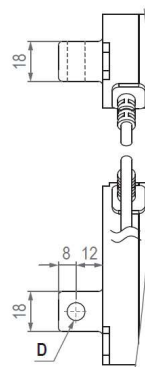
Plastic slot



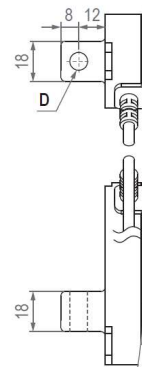
Rod Option	Diameter (D) (w/o Bushing)	Slot width (W)	Slot Depth (H)
Drilled hole	6.4mm(std)	n/a	n/a
	8mm	n/a	n/a
	10mm	n/a	n/a
Spherical rod eye	8mm	n/a	n/a
Plastic slot	8mm or 10mm	6mm	15mm

Base stud options:

Zinc alloy clevis, 0°



Zinc alloy clevis, 90°

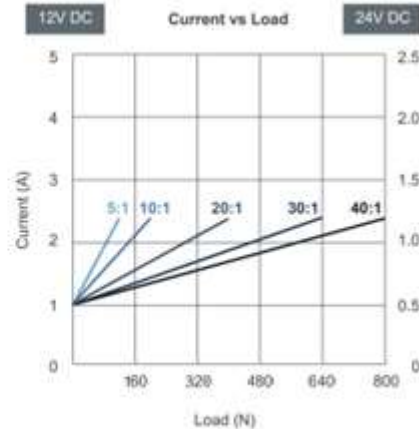
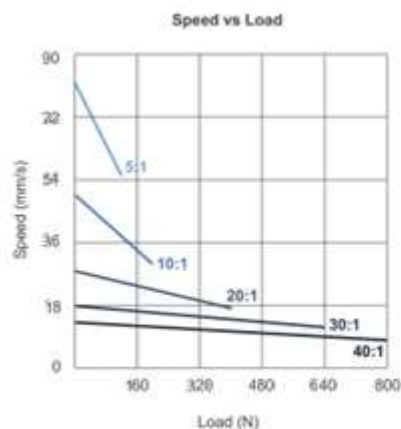


Note: Options for base stud hole size (D) are the same as for the Extension Rod Options

Performance Data

Gear Ratio	Max Load/Dynamic		Self-Locking Ability		Speed/No Load		Speed/Max Load	
	lb _f	Newtons	lb _f	Newtons	inches/sec	mm/sec	inches/sec	mm/sec
5:1	27	120	56	250	3.3	84.3	2.9	74.6
10:1	45	200	76	340	2.2	56.5	1.8	44.9
20:1	90	400	153	680	1.1	28.8	0.92	23.31
30:1	144	640	229	1020	0.74	18.8	0.63	16.1
40:1	180	800	344	1530	0.55	14	0.49	12.41

Gear Ratio	Current (A)			
	No Load		Full Load	
	12 VDC	24 VDC	12 VDC	24 VDC
5:1	1.0	0.5	2.4	1.2
10:1	1.0	0.5	2.4	1.2
20:1	1.0	0.5	2.4	1.2
30:1	1.0	0.5	2.4	1.2
40:1	1.0	0.5	2.4	1.2

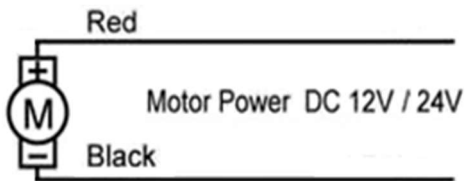


Notes:

The typical speed and typical current are the average values – not the upper or lower limit. The performance curves are made with typical values.

Electrical

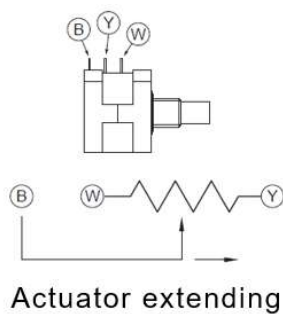
Actuators with no feedback and actuators with hall effect sensor(s) are shipped with flying leads



Red + // Black - : Extend
Red - // Black + : Retract

With potentiometer this functionality is reversed:

Red + // Black - : Retract
Red - // Black + : Extend

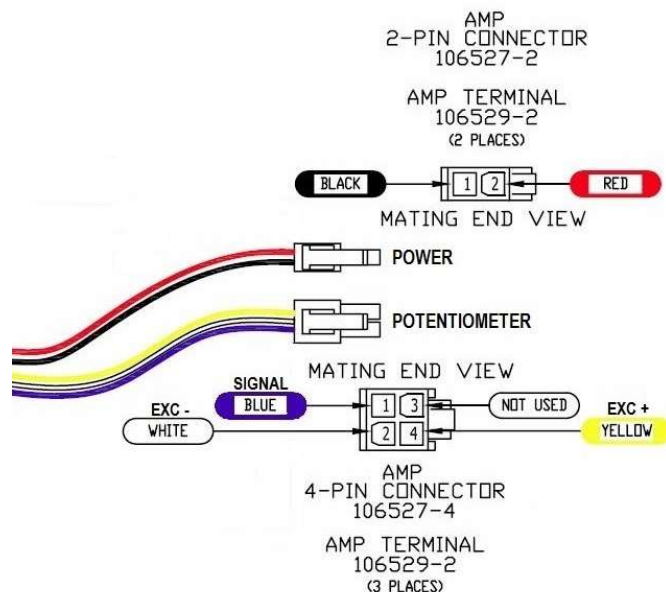


Potentiometer Notes:

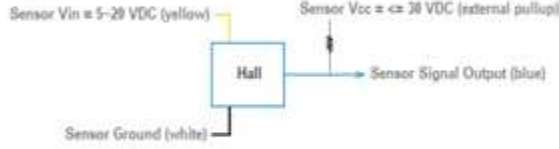
When fully retracted, the potentiometer reading between the blue and white wires will be in or near the range of 0 - 600Ω. When fully extended, this potentiometer reading will be in or near the range of 4.5 KΩ - 5KΩ.

Stroke Length	Typical potentiometer range (+/- 300Ω)
2	300Ω - 4.8KΩ
4	300Ω - 5.0KΩ
6	300Ω - 4.5KΩ
8	300Ω - 4.9KΩ
10	300Ω - 4.8KΩ
12	300Ω - 4.8KΩ

Connector wiring (actuators with potentiometer)



Electrical with single Hall effect sensor

	Wire color	Definition	Descriptions
Motor Power	Red	DC power	Connect red wire to "Vdc +" & black wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		
Signal wires	Yellow	Vin	Voltage input range: 5 ~ 20V
	Blue	Hall output	The signal wire output should connect the pull-up resistor to the operating voltage (Vcc) of the system. (10KΩ resistor is recommended) Wiring:  High= Determined by Vcc and the pull-up resistor. Low= GND Hall signal data: 
	White	GND	

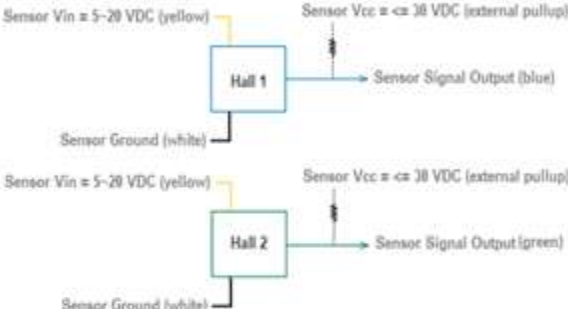
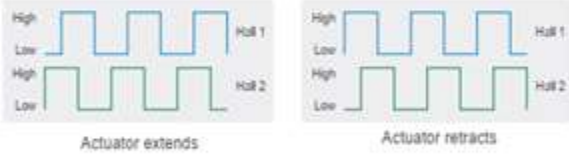
Gear Ratio	Signal Resolution	
	Pulses / inch	Pulses / mm
5:1	28.83	1.14
10:1	45.97	1.81
20:1	87.12	3.34
30:1	134.24	5.5
40:1	181.23	7.25

Electrical with single Hall effect sensor



Signal		
White	Yellow	Blue
GND	Vin	Data 1

Electrical with dual Hall effect sensor:

	Wire color	Definition	Descriptions												
Motor Power	Red	DC power	Connect red wire to "Vdc +" & black wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.												
	Black														
Signal wires	Yellow	Vin	Voltage input range: 5 ~ 20V												
	Blue	Hall 1 output	The signal wires output should connect the pull-up resistor to the operating voltage (Vcc) of the system. (10KΩ resistor is recommended) Wiring:  High= Determined by Vcc and the pull-up resistor. Low= GND Hall signal data: - A type  - B type  Hall effect sensor phasing: <table><tr><th>Gear ratio:</th><th>Hall signal data type</th></tr><tr><td>5:1</td><td>B type</td></tr><tr><td>10:1</td><td>A type</td></tr><tr><td>20:1</td><td>A type</td></tr><tr><td>30:1</td><td>A type</td></tr><tr><td>40:1</td><td>B type</td></tr></table>	Gear ratio:	Hall signal data type	5:1	B type	10:1	A type	20:1	A type	30:1	A type	40:1	B type
	Gear ratio:	Hall signal data type													
	5:1	B type													
10:1	A type														
20:1	A type														
30:1	A type														
40:1	B type														
Green	Hall 2 output														
White	GND														

Electrical With dual Hall effect sensors continued:

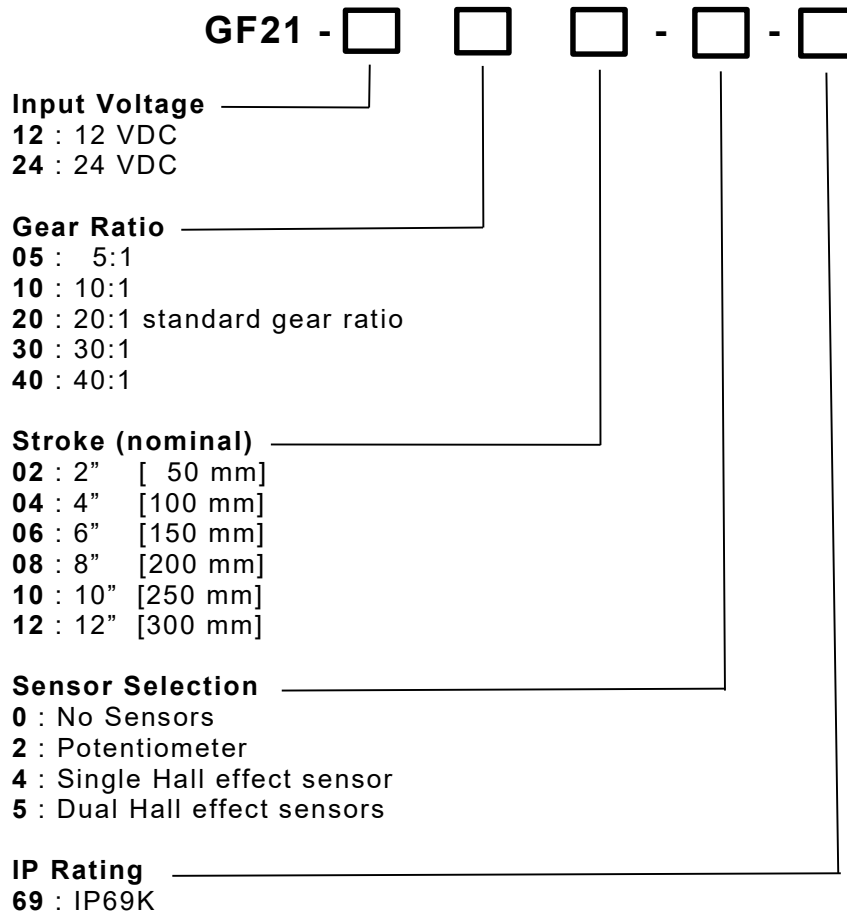
Electrical with dual Hall effect sensors:



Signal			
White	Yellow	Blue	Green
GND	Vin	Data 1	Data 2

Gear Ratio	Signal Resolution	
	Pulses / inch	Pulses / mm
5:1	28.83	1.14
10:1	45.97	1.81
20:1	87.12	3.34
30:1	134.24	5.5
40:1	181.23	7.25

Ordering Key



- Not all combinations stocked

Other actuator customizations are available for OEM clients. These include, and are not limited to, options in extension rod ends, base stud details, custom wire harnesses and lengths, as well as varieties of electrical connector combinations. Contact Concentric International sales for design consultation and ordering details.

Certifications

The GF21 actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

Emission	Immunity
EN 55014-1:2006+A1:2009+A2:2011	EN 55014-2:1997+A1:2001+A2+:2008 Category I

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