

APECS 0225 Linear Actuators



APPLICATIONS

APECS 0225 linear actuators provide proportional fuel control for construction, industrial, and agricultural equipment.

- Speed governing
- Generator sets
- Forklift trucks
- Power carts
- Off-road vehicles
- Pump sets
- Pleasure boats
- Wood chippers

DESCRIPTION

APECS 0225 linear actuators deliver precise positioning and form the foundation of a full electronic governing system. Many of the moving parts normally associated with electric actuators are eliminated, prolonging the MTBF (mean time between failure).

The actuator design employs the principle of variable reluctance for consistent force over the entire stroke. This simple design of a proportional electric linear actuator utilizes a sliding armature whose magnetic force is proportional to the input coil current.

These actuators are easy to install by mounting near the fuel system and direct connecting to the fuel control rod or lever. In most installations, the normal rotary-to-rotary connection is eliminated, resulting in a more trouble-free and accurate control system.

APECS 0225 actuators are suitable for installation on diesel, gasoline, or natural gas engines with fuel system force requirements of less than 6 pounds (26.7 N) of force.

- Ball bearing design for reduced friction, resulting in more precise engine control
- Fast response
- Designed to minimize heat buildup, resulting in consistent force and improved position repeatability
- Small & compact
- Push or pull actuation
- Spring return to minimum fuel
- Mounts in any position
- Precise repeatability
- Meets INR & EMP for moderate tactical battlefield environment
- 2-hole, 4-hole, and base mount flanges for drop-in replacement of DYNA 2000 actuators

SPECIFICATIONS

Electrical

Input Voltage Range:	12 Vdc	24 Vdc
Nominal Steady State Current:	2.5 A	1.0 A
Maximum At Stall		
@ 75°F (24°C):	5.4 A	3.0 A
@ 250°F (125°C):	3.9 A	2.0 A

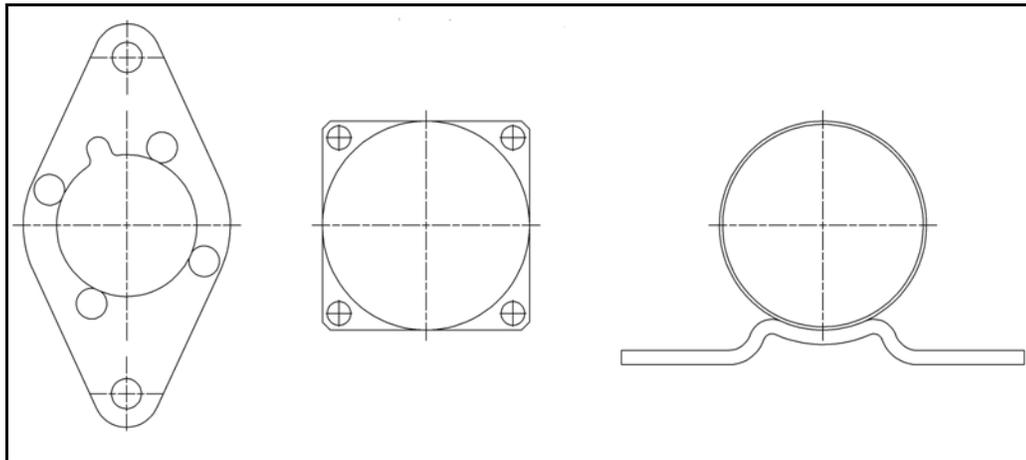
Performance

Resistance	
12 Vdc:	1.8 Ohm
24 Vdc:	7.2 Ohm
Force w/o Internal Spring:	6.5 lbf (28.9 N)
Work w/o Spring:	0.54 ft-lb (0.734 N*m)
Shaft Travel:	0.975-1.025" (24.76-26.03 mm)
Response Time	0.05 sec ON Time
Nominal for 63% of Stroke:	0.035 sec OFF Time

Environmental

Operating Temperature:	-65°F to +250°F (-55°C to +125°C)
Vibration:	5 to 500 Hz Curve L per Mil-Std 810C
Case:	Corrosion resistant, plated steel housing and mounting base/flange
Sealing:	Oil, water, and dust resistant
Weight:	2.7 lbs (1.22 kg)

MOUNTING OPTIONS



2-Hole Flange
[A]

4-Hole Flange
[D]

Base Mount
[E]

AVAILABLE MODELS

APECS 0225 Linear Actuators

PART NO.	ACTUATION		VOLTAGE		MOUNTING STYLE			PLUNGER TYPE	TERMINATION	RETURN SPRING*
	Push	Pull	12 V	24 V	2-Hole Flange	4-Hole Flange	Base	External M-6 Thread	Connector	S3
†	[P]		[12]	[24]	[A]	[D]	[E]	[3]	[C]	[S3]
8225-1001	•		•			•		•	•	•
8225-1002	•			•		•		•	•	•
8225-1003		•	•				•	•	•	•
8225-1004		•		•			•	•	•	•
8225-1005	•		•				•	•	•	•
8225-1006	•			•			•	•	•	•
8225-1007		•	•		•			•	•	•
8225-1008		•		•	•			•	•	•
8225-1009	•		•		•			•	•	•
8225-1010	•			•	•			•	•	•
8225-1011		•	•			•		•	•	•
8225-1012		•		•		•		•	•	•

† Copy in brackets [] is model number description. For example: Part No. 8225-1001 is Model Number 0225P-12D3CS3.

* Spring Chart

SPRING TYPE	PART NO.	DE-ENERGIZED SPRING FORCE	ENERGIZED SPRING FORCE	SPRING RATE
S3	1520-1120	1 lb (4.45 N)	7.8 lbs (34.7 N)	6.85 lb/in (0.126 kg/mm)

DIMENSIONS

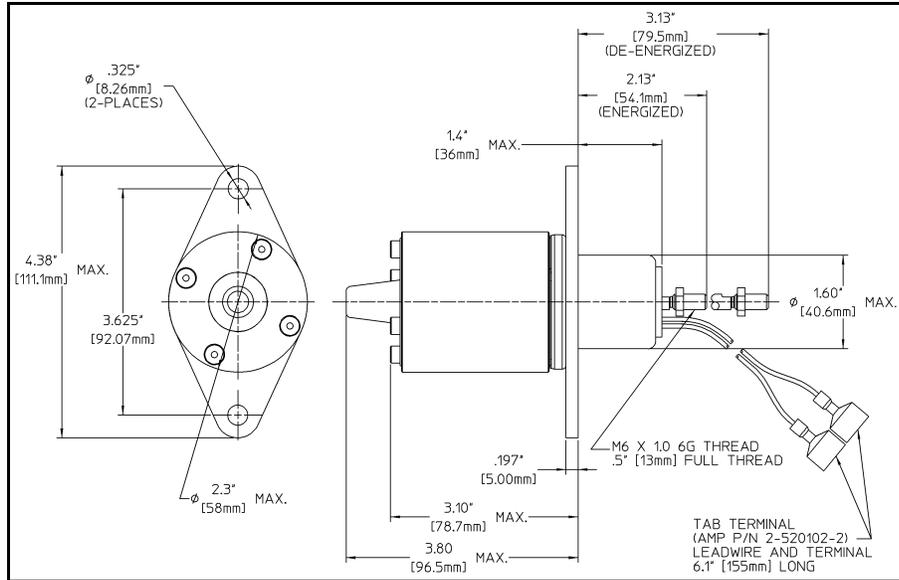


Figure 1. Two-Hole Flange Pull Type Actuator

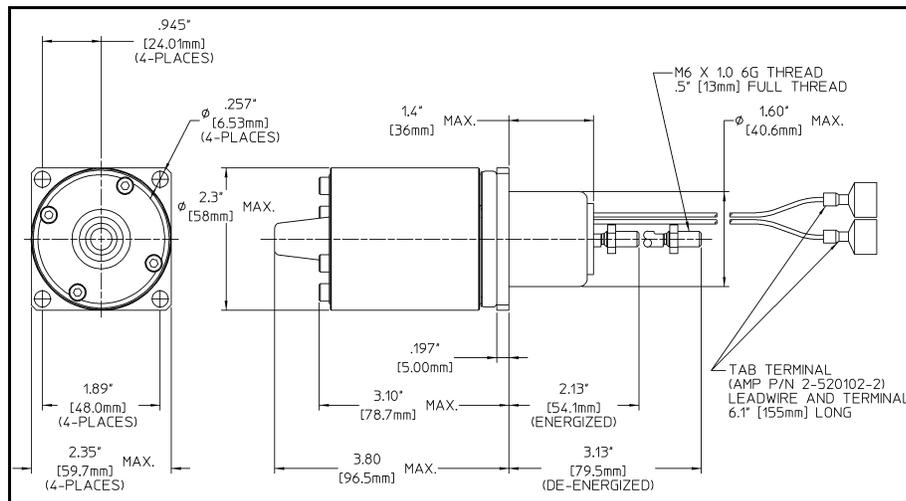


Figure 2. Four-Hole Flange Pull Type Actuator

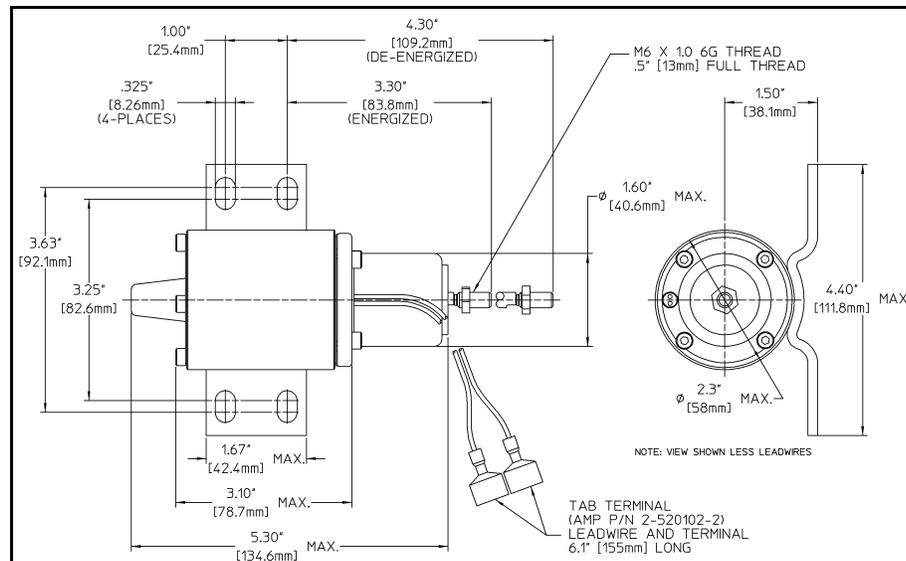


Figure 3. Base Mount Pull Type Actuator

DIMENSIONS

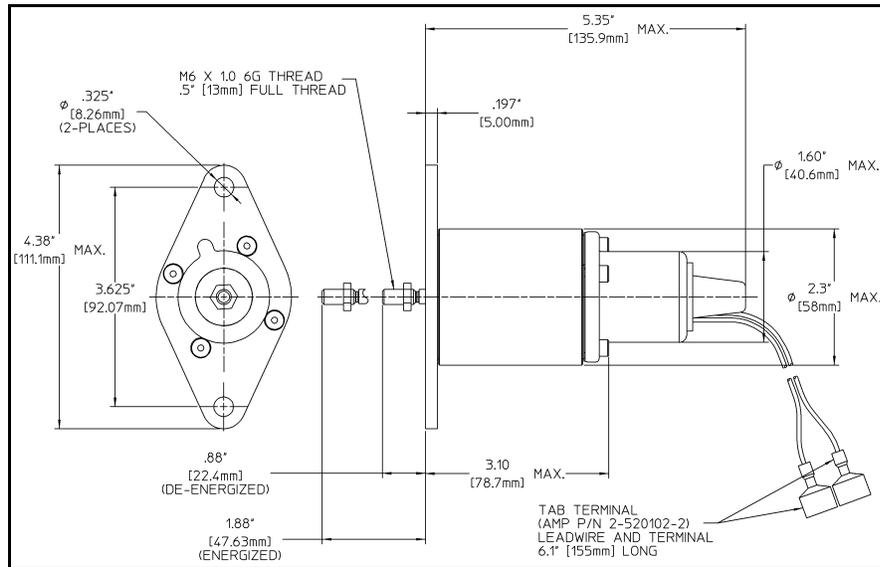


Figure 4. Two-Hole Flange Push Type Actuator

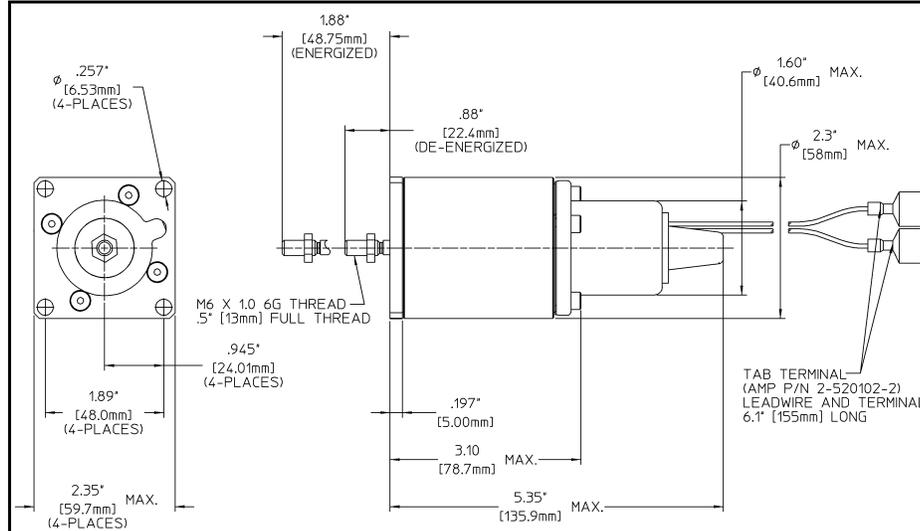


Figure 5. Four-Hole Flange Push Type Actuator

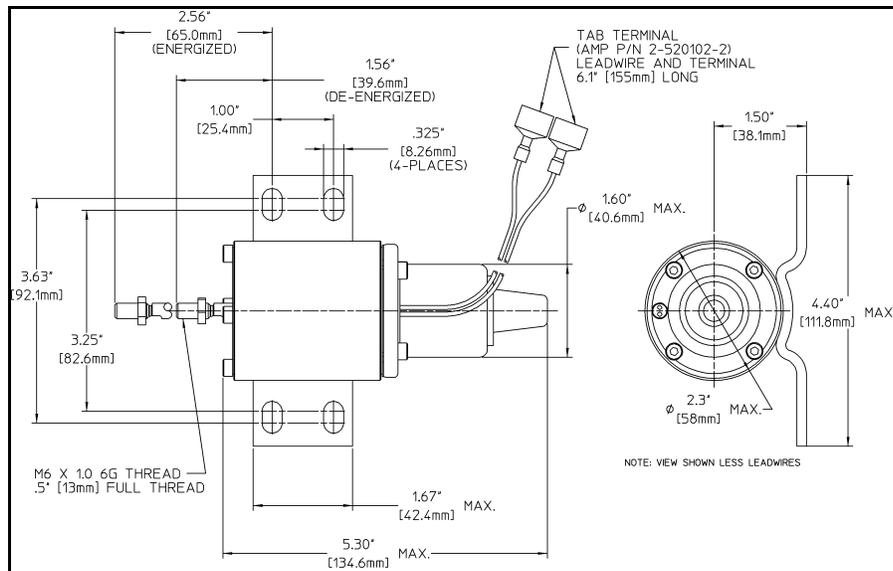


Figure 6. Base Mount Push Type Actuator

Distributors & Service
Woodward has an international network of distributors and service facilities. For your nearest representative, call the Fort Collins plant or see the Worldwide Directory on our website.

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Installation

The 0225 linear actuator mounts easily near the fuel system and direct connects to the fuel control rod or lever. Refer to **Figure 2** to install.

1. Use 5mm wrench flat (2) to hold shaft from turning during assembly.
2. Torque the M-6 shaft nut (1) 2 ft-lbs against mating linkage (3).
3. Be sure linkage is free from binds and interference.
4. Use properly designed hardware and brackets for your specific application. Use manufacturer's recommended crimper (AMP).

NOTE: AMP mating receptacle connector part numbers: 2-520184-2 or 3-350820-2

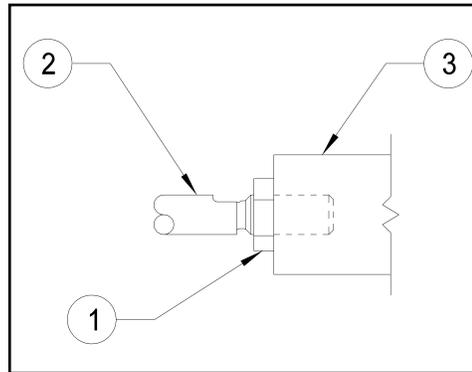


Figure 2



WARNING—OVERSPEED PROTECTION

An overspeed shutdown device, independent of the APECS system, should be provided to prevent loss of engine control that may cause personal injury or equipment damage.

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For more information contact: