



DYNA 8000 and DYNA 8400 Series Hazardous Duty Actuators

General

The Hazardous Duty DYNA 8000 and DYNA 8400 actuators provide units that are UL listed for Class I, Division 2, Group D, Hazardous Duty applications. The hazardous duty actuators can be used to provide an engine governor for speed and power control of piston and gas turbine engines.

The hazardous duty actuator is a standard DYNA 8000 and DYNA 8400 actuator packaged to meet the UL, Hazardous Duty, Class I, Division 2, Group D requirements that are often encountered in the petroleum or chemical industries.

Typical Applications

- Speed Governing
- Remote Throttle Control
- Generator Sets
- Pump Sets
- Power Carts
- Test Stands

Standard Features

- UL approval, Hazardous Duty, Class 1, Division 2, Group D
- All-electric
- All-engine compatibility
- Mounts in any position
- Engine-mounted (actuator only)
- High reliability due to few moving parts
- Proportional actuator
- No hydraulic or oil line
- No special maintenance
- Spring returns output shaft to minimum position on removal of power or loss of magnetic pickup signal
- Precise repeatability



Specifications

Actuator

- **Operating Voltage:**
DYNA 8000 Units: 12 or 24 VDC, $\pm 20\%$
DYNA 8400 Units: 24 VDC, $\pm 20\%$
- **Sealed Unit:** Oil, water and dust tight
- **Connection:** Terminal strip inside cast iron junction box
- **Actuator Ambient Operating Temperature:** -65° to $+255^{\circ}$ F (-55° to $+125^{\circ}$ C)
- **Mechanical Vibration:** 5 to 500 Hz, Curve F, per Mil-Std. 810C, Method 514-2

Controller

- **Operating Voltage:** 12 or 24 VDC, $\pm 20\%$
- **Circuit Boards:** Covered with a heavy conformal coating for moisture and vibration protection
- **Connection:** Terminal strip
- **Controller Ambient Operating Temperature:** -40° to $+180^{\circ}$ F (-40° to $+85^{\circ}$ C)
- **Temperature Stability:** Better than $\pm 0.5\%$ over a temperature range of -40° to $+167^{\circ}$ F (-40° to $+75^{\circ}$ C)
- **Steady State Speed Band:** $\pm 0.25\%$
- **Adjustments:** Speed, Gain, Integral and Droop
- **Mechanical Vibration:** Withstands the following vibration without failure or degraded performance: 0.06 inch double amplitude at 5 to 18 Hz; 1 G at 18 to 30 Hz; 0.02 inch double amplitude at 30 to 48 Hz; 2.5 G at 48 to 70 Hz

Available Models

Actuators: Hazardous Duty DYNA 8000

Standard mounted units:

- DYNC-11020-400-0-12 Standard clockwise output shaft rotation
DYNC-11020-400-0-24
- DYNC-11021-400-0-12 Same as DYNC-11020 except top cover rotated 180°
DYNC-11021-400-0-24
- DYNC-11022-400-0-12 Same as DYNC-11020 except top cover rotated 90° CCW
DYNC-11022-400-0-24
- DYNC-11024-400-0-12 Standard counterclockwise output shaft rotation
DYNC-11024-400-0-24
- DYNC-11025-400-0-12 Same as DYNC-11024 except top cover rotated 90° CW
DYNC-11025-400-0-24
- DYNC-11026-400-0-12 Same as DYNC-11024 except top cover rotated 180°
DYNC-11026-400-0-24

Side mounted units:

- DYNC-11020-401-0-12 Standard clockwise output shaft rotation
DYNC-11020-401-0-24
- DYNC-11021-401-0-12 Same as DYNC-11020 except top cover rotated 180°
DYNC-11021-401-0-24
- DYNC-11022-401-0-12 Same as DYNC-11020 except top cover rotated 90° CCW
DYNC-11022-401-0-24
- DYNC-11024-401-0-12 Standard counterclockwise output shaft rotation
DYNC-11024-401-0-24
- DYNC-11025-401-0-12 Same as DYNC-11024 except top cover rotated 90° CW
DYNC-11025-401-0-24
- DYNC-11026-401-0-12 Same as DYNC-11024 except top cover rotated 180°
DYNC-11026-401-0-24

Actuators: Hazardous Duty DYNA 8400

- DYNC-14800-400-0-24 Through output shaft making available CW and CCW output

Controllers: Speed Input Signal Frequency

- DYN1 -10652-000-0-12
DYN1 -10652-000-0-24 250 - 1200 Hz
- DYN1 -10653-000-0-12
DYN1 -10653-000-0-24 1200 - 2500 Hz
- DYN1 -10654-000-0-12
DYN1 -10654-000-0-24 2500 - 5000 Hz
- DYN1 -10656-000-0-12
DYN1 -10656-000-0-24 5000 - 9500 Hz
- DYN1 -10652-001-0-12*
DYN1 -10652-001-0-24* 250 - 1200 Hz
- DYN1 -10653-001-0-12*
DYN1 -10653-001-0-24* 1200 - 2500 Hz
- DYN1 -10654-001-0-12*
DYN1 -10654-001-0-24* 2500 - 5000 Hz
- DYN1 -10656-001-0-12*
DYN1 -10656-001-0-24* 5000 - 9500 Hz

* CE

Input Signal Frequency

$$\text{Input Signal Frequency In Hertz} = \frac{\text{Engine RPM} \times \text{Number of Gear Teeth on Flywheel}}{60 \text{ Seconds}}$$

DYNA 8000 & 8400 Actuators

8000 8400

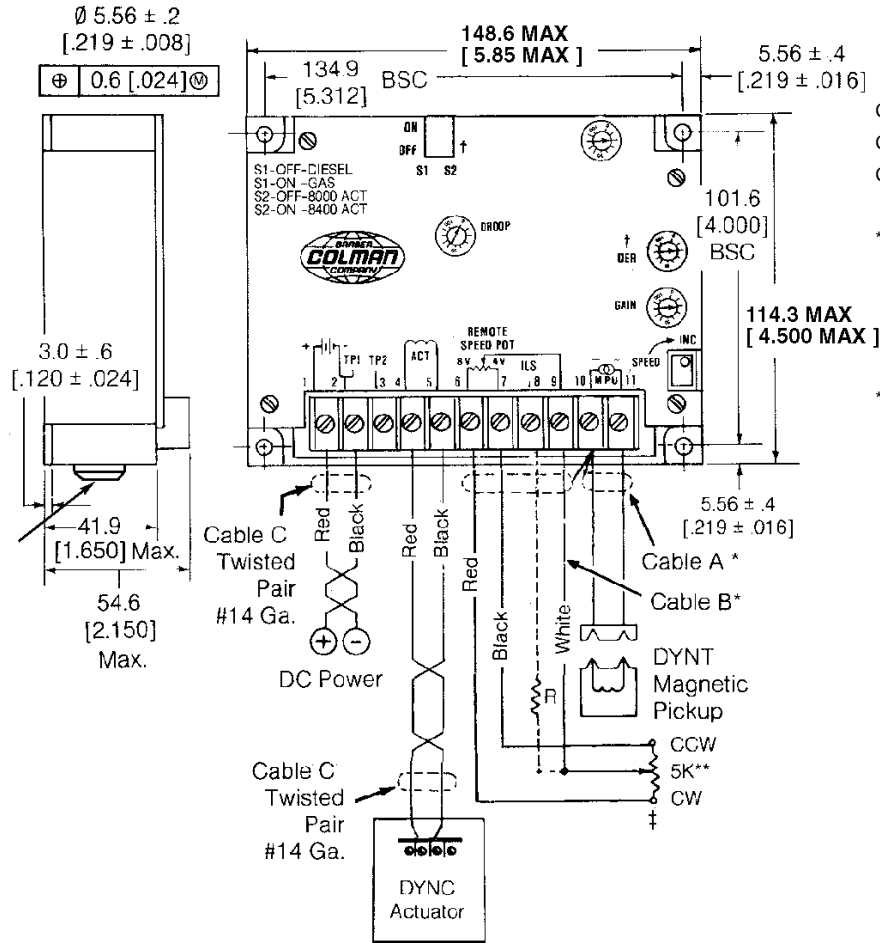
Work	Joules	1.2	5.8
	Foot-Pounds	.9	4.3
Torque	Newton Meters	1.4	7.3
	Pound-Foot	1.0	5.4
Output	Rotary	35°	46°
Weight	Kilograms	5	12.2
	Pounds	11.0	27
Current @ 12 VDC	Maximum Amperes @ Stall	12.5	—
	Nominal Steady State Amperes	3.5	—
Current @ 24 VDC	Maximum Amperes @ Stall	9.5	13.0
	Nominal Steady State Amperes	2.5	5.4
Nom. Response Time for 63% of Stroke (Sec)		0.030	0.104

Select your controller for the correct input signal frequency range generated by the magnetic pickup at the maximum engine operated (RPM) speed

DYNA 8000 & 8400 Controllers

Output Current @ 12 VDC	Nominal Quiescent Current	80 mA
	Maximum Amperes @ Stall	13 amps
Output Current @ 24 VDC	Nominal Quiescent Current	80 mA
	Maximum Amperes CiZ Stall	13 amps
Weight	Kilograms	0.863
	Pounds	1.9

Dimensions - DYNA 8000 Series Controller



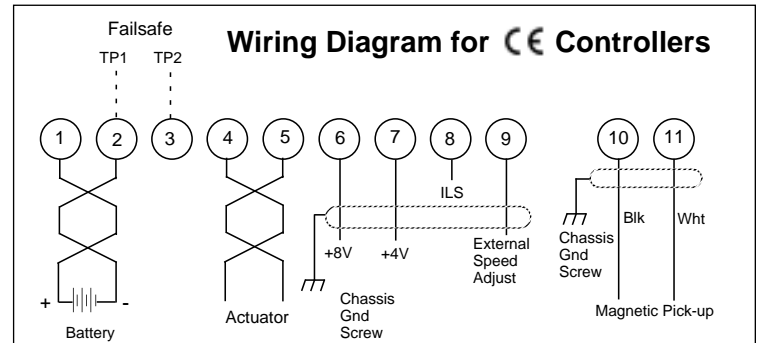
- Cable A -- DYNK-44-XX (specify length) (90° connector)
- Cable B -- E26-22 (specify length)
- Cable C -- DYNZ-70-4 (specify length) (terminal strip)

* Shielded cable -- Should be purchased from Barber-Colman or customer should purchase a cable with a wrapped mylar supported aluminum foil shield with a drain wire.

** Remote speed potentiometer and 499K ohm resistor is B-C P/N (DYNS-10000).

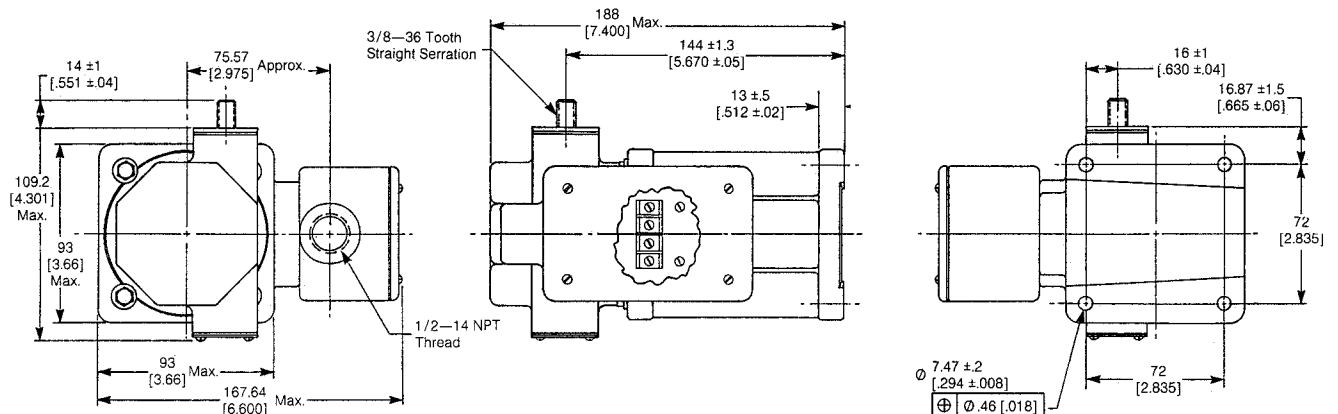
† The 5K remote speed potentiometer can be wired two different ways:

1. As shown by the solid line from the wiper of the 5K potentiometer and then connected to terminal #9 (no resistor required). Adjustable range is approximately ±5% at 1800 RPM.
2. As shown by the dashed line from the wiper of the 5K potentiometer through resistor R and then connected to terminal #8. Reducing the value of R increases the remote adjustable speed range.

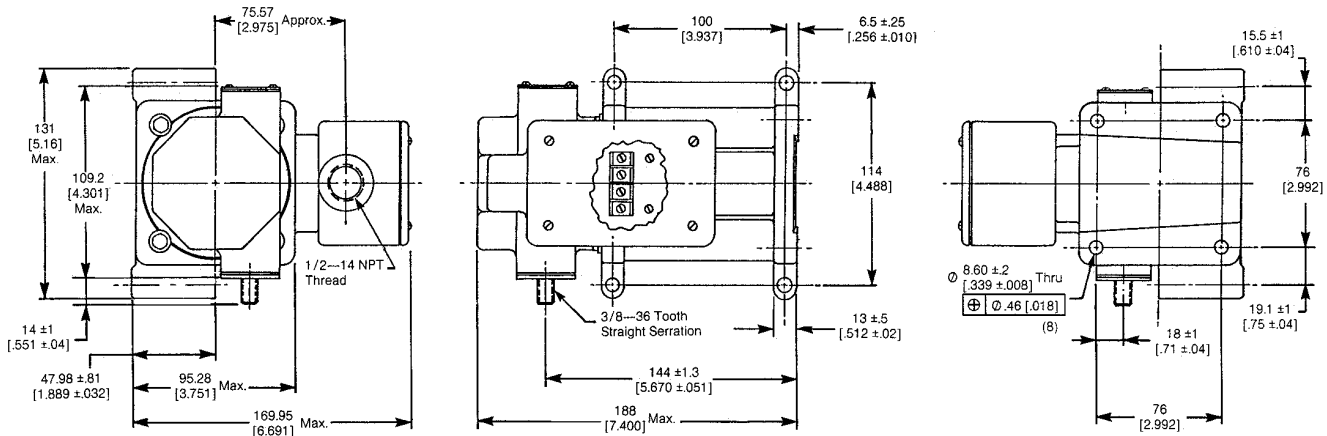


Installation

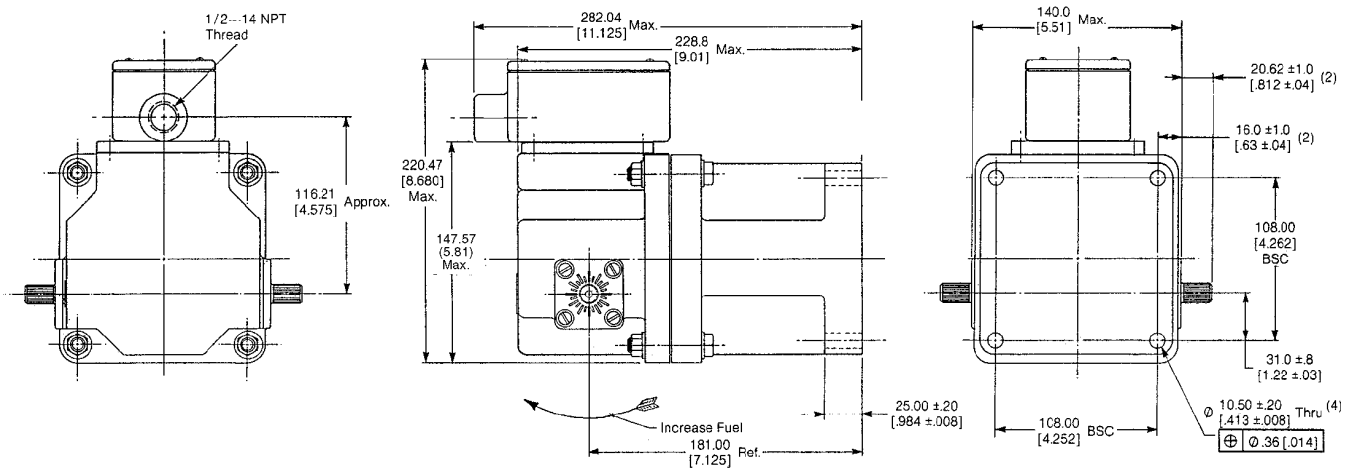
DYNC-11020-401 - Standard Clockwise Unit



DYNC-11024-401 - Standard Counterclockwise Unit



DYNC-14800-400



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NOTE

Barber-Colman believes that all information provided herein is correct and reliable and reserves the right to update at any time. Barber-Colman does not assume any responsibility for its use unless otherwise expressly undertaken.

CAUTION

As a safety measure, the engine should be equipped with an independent overspeed shutdown device in the event of failure which may render the governor inoperative.