



### Plus 1 or Plus 4 Actuator

#### General

The DYNA Plus 1 or Plus 4 actuator can be operated with any of the DYNA controllers to provide an engine governor for speed and power control of piston and gas turbine engines or steam and water turbines. The actuators can also be used in remote positioning and load control systems.

The actuator is basically a simple, proportional electric solenoid having a sliding armature whose magnetic force is proportional to input coil current. Balanced between the force of its return spring and the magnetic force, the armature glides on anti-friction bearings, providing a hysteresis-free linear movement. Linear motion is converted to an output shaft rotation by a bell crank.

#### Typical Applications

- Speed governing
- Tandem engine governing
- No-break engine governing
- Fuel, smoke, torque limiting
- Tailshaft governing
- Remote throttle control
- Test stand throttle control
- Remote valve control
- Remote damper control
- Remote propeller pitch control



#### Standard Actuator Features

- All-electric
- All engine compatibility
- Mounts in any position
- Engine mounted
- 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

#### Available Actuator Models

- **Plus 1 units with clockwise output shaft rotation:**  
DYNC 11000 Standard  
DYNC 11001 Actuator head rotated 180°  
DYNC 11002 Actuator head rotated 90° counterclockwise
- **Plus 1 units with counterclockwise output shaft rotation:**  
DYNC 11004 Standard  
DYNC 11005 Actuator head rotated 90° clockwise  
DYNC 11006 Actuator head rotated 180°
- **Plus 4 unit with through output shaft:**  
DYNC 14000



## Specifications

- **Operating Voltages**

Plus 1: 12, 24 or 32 VDC; +20%.

Plus 4: 24 or 32 VDC; +20%.

- **Ambient Operating Temperature**

-65°F (-55°C) to +255°F (+125°C).

- **Mechanical Vibration**

Tested 5 to 500 Hz @ 25G's.

- **Sealing**

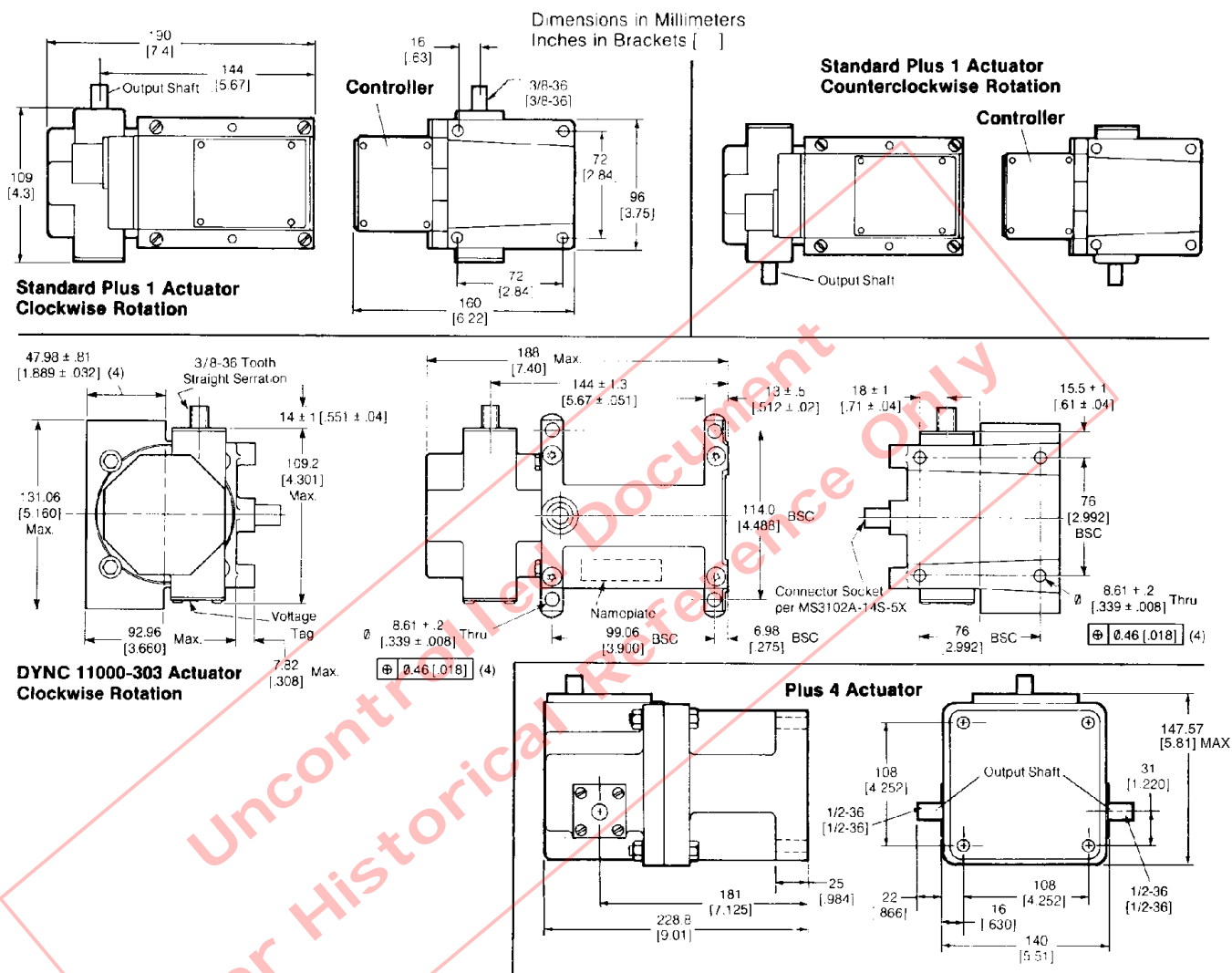
Unit is oil, water and dust tight.

- **Position Feedback**

Non-contact resistive magnetic sensor.

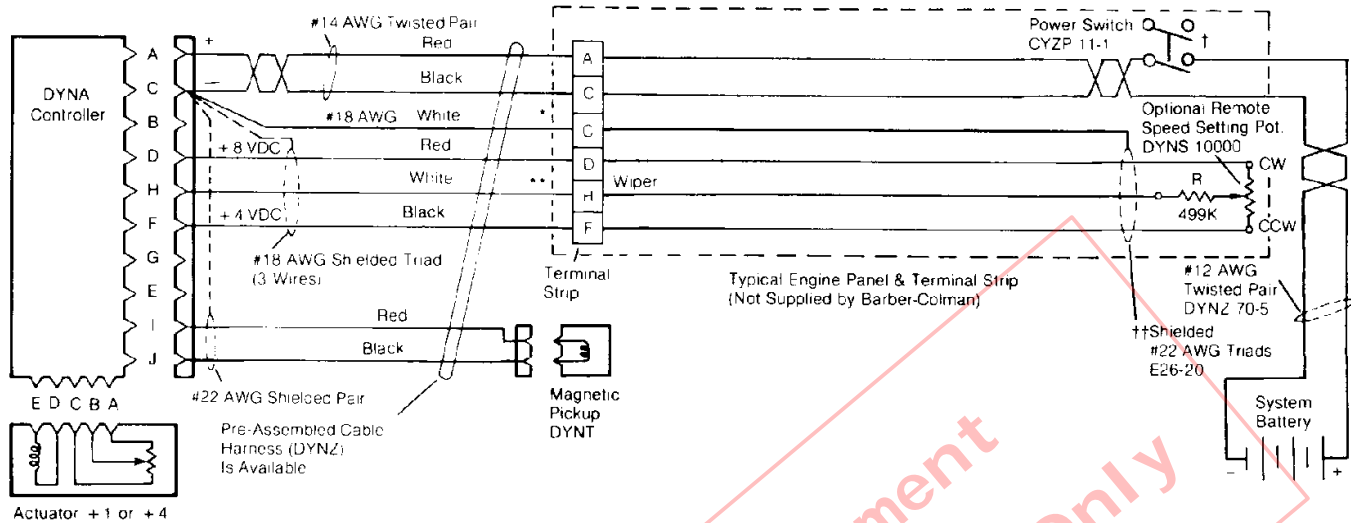
ACTUATOR		Plus 1	Plus 4
Work	Joules	1.6	5.8
	Foot-pounds	1.2	4.3
Torque	Newton-Meters	1.9	7.3
	Pound-foot	1.4	5.4
Output	Rotary	45°	45°
Weight	Kilograms	5	12.2
	Pounds	11.0	27
Current @ 12 Vdc	Maximum Amperes @ Stall	11.0	---
	Nominal Steady State Amperes	2.5	---
Current @ 24 Vdc	Maximum Amperes @ Stall	13.5	13.0
	Nominal Steady State Amperes	2.6	4.6
Current @ 32 Vdc	Maximum Amperes @ Stall	12.5	11.5
	Nominal Steady State Amperes	2.0	1.8
Nominal Response Time for 63% of Stroke (Seconds)		0.045	0.104

## Dimensions



## Electrical Schematic

### Typical +1 or +4 Basic Governor Wiring



\*The white wire from Pin C must not be connected to the same terminal as the black wire from Pin C.

† Power switch wiring is shown for a negative ground system. When a positive ground system is being wired, the installer should switch (break) both the positive and negative leads.

\*\*Wiring procedure when a remote speed setting potentiometer is not used.

1. If a terminal strip is not used, then isolate and tape the ends of the wires from Pin D, F and H to keep them from touching each other or other leads.

††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.

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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 undertaken.

#### CAUTION

As a safety measure, Barber-Colman Company recommends that all engines and turbines be equipped with an independent overspeed shutdown device.