**DESCRIPTION**

The PG Actuator converts a given electrical input signal to a proportional hydraulic output-shaft position to control engine-fuel flow. The actuator provides the muscle for Woodward LEC and CLC™ locomotive controls, as well as the 2301A series, 500-series, and 700-series controls.

The PG Actuator provides a maximum work capacity of 25.4 N·m (18.7 lb-ft) in the increase direction and 20.2 N·m (14.9 lb-ft) in the decrease direction, over 30 degrees of rotary output or 25 mm (1 inch) of linear output.

A magnetic pickup (MPU) may be easily installed in the actuator to make retrofit of engines from mechanical to electronic control easier. A PG drive in good mechanical condition makes an excellent MPU signal source.

The actuator oil pump is the proven high-output Gerotor, designed to provide long life with minimal maintenance. The actuator uses standard PG rod ends, output shafts, power levers, and piston links. The base is designed to fit exactly any drive designed for a PGE locomotive governor or PGA with 12 ft-lb power cylinder. Maintenance procedures are similar to those needed with a PG governor.

The actuator's electric-to-hydraulic transducer uses a Woodward-built torque motor which converts the 0–200 mA control signal to a given output position.

**APPLICATION**

The PG Actuator is used on diesel engines to replace PGA/PGE-type governors, providing the advantages of electronic control with the convenience of the existing PG-type drive and linkage. An LVDT is available to provide voltage feedback proportional to fuel-rack position. We recommend the PG Actuator for installation involving unattended starts.

The actuator has its own 6.0 L (6.3 qt) oil sump and does not need a separate oil supply.

The actuator operates with drive speeds from 200 to 1200 rpm. Applications with a high drive speed or high ambient temperatures may require a cooler.

The availability of a self-contained MPU will simplify the conversion of a PG-controlled engine to an electronically controlled engine. A gear which has been specifically designed to operate the MPU means that the electronic control will receive sharp, clean speed signals. Low speed applications may require override of the control's failsafe during startup.
**Control Qualities**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Hysteresis</td>
<td>Within 3% of maximum travel when measured over full travel. Within 0.5% of maximum travel when measured over 4% of full travel at 0.1 Hz.</td>
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<tr>
<td>Temperature Drift</td>
<td>Nominally ±1 degree per 38 °C (100 °F)</td>
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<tr>
<td>Time Constant</td>
<td>65 to 85 ms for ±50 mA step with 1379 kPa (200 psi) actuator oil pressure and 80 SUS viscosity oil</td>
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<tr>
<td>Linearity</td>
<td>within 2.5% of full travel</td>
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**Work Output**

- **Stall Torque**: 48.5 N·m (35.8 lb-ft) in the increase direction or 38.8 N·m (28.6 lb-ft) in the decrease direction
- **Work Over Full Stroke**: 25.4 N·m (18.7 lb-ft) in the increase direction or 20.2 N·m (14.9 lb-ft) in the decrease direction
- **Construction**: Base and power block are cast iron. Column is aluminum. Internal parts are case-hardened steel.
- **Pump**: Gerotor. Relief valve set at 1379 kPa (200 psi).
- **Output Shaft**: 0.750-48 inch serrated or 0.500 inch diameter rod end. In same location relative to drive as PGE Governor.
- **Drive Shaft**: 1.125-48 serration is standard
- **Weight**: 34 kg (75 lb), dry weight
- **Vibration Resistance**: Vibration tested to US MIL-STD 810C, Curve D (10 G to 2000 Hz; in Y-axis, parallel to drive shaft, 8 G maximum)

**Drive/Hydraulic Specifications**

- **Drive Speed and Rotation**: 200 to 1200 rpm. Drive operates in one direction only. Drive reversible by indexing pump housing 180°.
- **Drive Power Requirement**: Drive will use a maximum of 375 W (0.5 hp)
- **Hydraulic Supply**: Self-contained sump, 6.0 L (6.3 qt) capacity. See Woodward Manual 25071, *Oils for Hydraulic Controls*, for specific recommendations. In most cases, the same type and weight of oils used in the engine can be used in the governor.
- **Ambient Temperature Range**: –29 to +93 °C (–20 to +200 °F)
- **Operating Temperature**: –29 to + 104 °C (–20 to +220 °F), within the limits of the oil being used in the governor

**Electrical Specifications**

- **Electrical Connector**: 11 pin, US MIL-STD 3440H-18-11P, located in column
- **Coil Resistance**: 23–26 W at 20 °C
- **Technical Manual**: 37517
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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