

# **PGA Governor**

# **Pressure Compensated Mechanical Governor**

## **Applications**

The PGA Governor controls speed or power output of prime movers used for propulsion, power generators, and propeller pitch on marine applications, locomotives, and off-road vehicles.

A wide variety of limiters and other accessories makes the PGA governor extremely versatile. The pneumatic speed reference setting makes the governor economical to install and easy to maintain.

The self-contained hydraulic oil supply makes the governor easily maintained in almost any installation environment.

### **Pneumatic Speed Setting**

Standard system uses a 690 kPa (100 psi) system. A 1379 kPa (200 psi) system is optional.



# Bellows Selection

	400 mm <sup>2</sup>	194 mm²	77 mm <sup>2</sup>
Bellows	(0.62 in <sup>2</sup> )	(0.3 in <sup>2</sup> )	(0.12 in <sup>2</sup> )
Max			
signal	138	138–345	345–827
pressure	(20)	(20–50)	(50–120)
kPa (psig)			
Min			
signal	21	48	69
pressure	(3)	(7)	(10)
kPa (psig)			

# **Description**

The PGA is a pressure compensated, hydraulic governor that uses an air signal to establish the engine speed setting of the governor.

An internal oil pump, relief-valve, and accumulator system controls governor operating pressure. A self-contained sump stores oil and reduces the possibility of contamination from outside sources.

Oil flow to and from the governor power cylinder assembly is controlled by a centrifugal flyweight and pilot-valve assembly. The power cylinder (servomotor) positions the fuel racks, fuel valve or steam valve of the engine or turbine.

A pneumatic signal operates a bellows (direct or reverse) to change the engine speed setting of the governor. Manual speed adjustment may be made with a knob on the governor. An adjustable compensation system provides stability.

- Isochronous or droop control
- 16 to 678 J (12 to 500 ft-lb) output capacities
- Rotary or linear output
- Integral power servos
- Pneumatic or manual speed setting
- Self-contained sump

### **Optional Features**

Optional features are used to adapt the PGA governor to most operating conditions and to control loads according to operating conditions.

#### **Heat Exchanger**

A heat exchanger helps maintain governor temperature below 200 °F. Governor temperature depends on ambient temperature, governor drive speed, operating internal pressure, etc.

#### Shutdown Devices

Lubricating oil pressure failure shutdown devices and air, oil, or water shutdown devices (either high or low pressure) can provide engine protection. An energize or de-energize solenoid shutdown device is also available.

#### **Booster Servomotor**

A booster servomotor, mounted externally, uses start air to supply immediate oil pressure to the governor as an aid for quick starts.

#### **Starting Fuel Limiter**

A starting fuel limiter limits fuel flow to the engine during starting.

#### Air Pressure Fuel Limiter

A manifold air pressure bias fuel limiter for turbocharged engines limits engine fuel during acceleration as a function of manifold air pressure. It reduces smoke and improves efficiency during acceleration.

#### **Load Control**

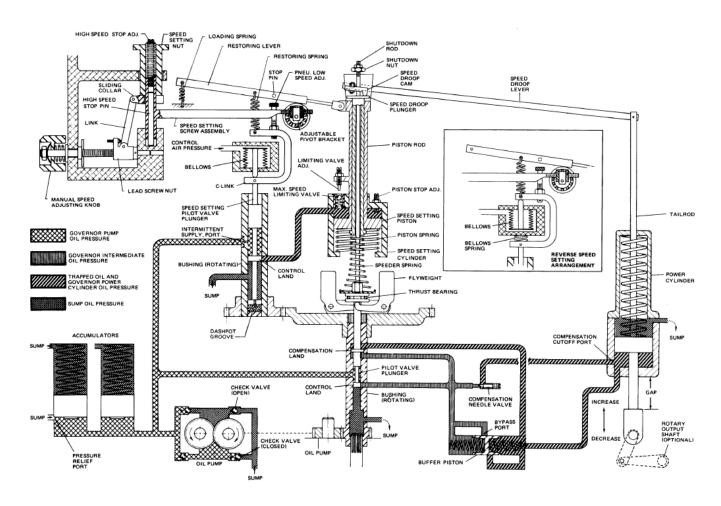
A load control system provides a definite fuel or governor output position for each specific governor speed setting and in turn controls the engine power output. Used in many marine applications.

### **Speed Setting Fuel Limiter**

A speed setting fuel limiter linkage limits the maximum fuel setting to the engine as a function of governor speed setting.

#### **Torque Limit Control**

Torque limit control limits fuel as a function of engine speed. Available in standard and vibration resistant designs.



## **Specifications**

**Speed Setting** 

Manual Control knob on governor

Pneumatic Available in direct or reverse type. 21 kPa (3 psi) minimum and 690 kPa (100 psi) maximum control air pressure. Ratio of high to low air control

signal to be greater than 2.5 to 1 but less than 10 to 1. Typical ranges are

21 to 103 kPa (3 to 15 psi) and 69 to 414 kPa (10 to 60 psi).

Speed Band Steady state speed control at 0.25% of rated under normal operating

conditions.

**Governor Drive** 

1.125"-18 serrated or keyed

Recommended Speed Range 250 to 1000 drive rpm. Maximum speed range is 200 to 1600 rpm. Speeds

in excess of 1000 rpm require single direction rotation. Oil coolers may be

required.

Power Drive power for different types of PG governors will vary depending upon

speed, internal pump pressure, pump volumetric displacement, pump efficiency, and oil viscosity. Contact Woodard if further information is

required.

Direction of Rotation Fixed clockwise, fixed counterclockwise, or reversible

Output

Governor Output can be located in most configurations

Linear Output of 1 inch (25 mm) maximum, push or pull to minimum fuel Rotary Output 30° maximum travel. Use 2/3 of the available governor travel

between no load and full load.

Work Capacity Rotary output available from 16 to 678 N·m (12 to 500 lb-ft). 271, 407, and

678 N·m (200, 300, and 500 lb-ft) units have different governor outlines. Linear output available in 16 and 38 J (12 and 28 ft-lb) output only.

**Hydraulic System** 

Sump Capacity about 1.4 L (1.5 qt). Uses SAE 10 to 50 oil, depending on operating

temperature. 100 to 200 SUS recommended under normal operating

conditions.

Operating Pressure 690 kPa (100 psi) normal, 1379 kPa (200 psi) optional

Construction

Weight 39 to 54 kg (85 to 120 lb) for standard PGA governors, depending on

optional features.

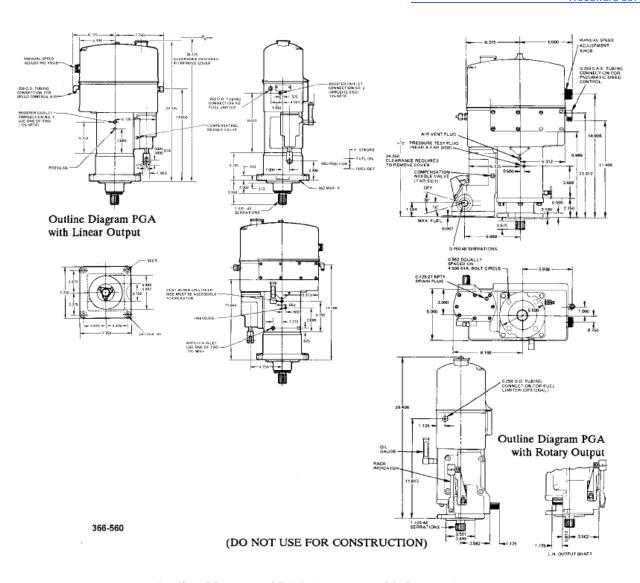
Case and Base Cast iron, column is aluminum. Special pilot valve porting is available for

difficult control conditions.

References

**Publication** Title 36604 PGA Governor manual

36010 *PG Governor* product specification 36619 *PG 200 Governor* product specification 36634 *PG 500 Governor* product specification



### **Outline Diagram of PGA Governor with Rotary Output**

(Do not use for construction)



PO Box 1519, Fort Collins CO, USA 80522-1519 1000 East Drake Road, Fort Collins CO 80525 Tel.: +1 (970) 482-5811 • Fax: +1 (970) 498-3058 www.woodward.com

#### **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.

This document is distributed for informational purposes only. It is not to be construed as creating or becoming part of any Woodward contractual or warranty obligation unless expressly stated in a written sales contract.

Copyright © Woodward 1974–2012, All Rights Reserved

For more information contact: