

# UG-25<sup>+</sup>

## Governor

### Description

The Woodward UG-25<sup>+</sup> governor is a microprocessor-controlled, mechanical-hydraulic amplified, governor for controlling diesel, gas, and dual fuel engines, and steam turbines.

The UG-25<sup>+</sup> offers enhanced control capabilities, such as start fuel and boost limiting schemes. The additional transient fuel limiting (jump-rate) improves the engine load acceptance and reduces transient emissions significantly.

The UG-25<sup>+</sup> concept offers a fast-acting and high-work-output governor, without the need for any auxiliary devices such as a start booster. Two work output versions are available.

The UG-25<sup>+</sup> offers speed control with software-selectable speed set points, dynamics, fuel limiting, and start behavior. All it takes is a PC to adjust and download configuration data.

Front panel and external speed settings make synchronization and load sharing easy for generator applications. A 4–20 mA speed setting is available for variable speed applications.

Adjustable droop permits load division and balancing among parallel operated prime movers. Droop can be set with a knob on the front panel between 0–10%. The load limiter knob allows you to limit the governor output manually.

The UG-25<sup>+</sup> uses a 1034 kPa (150 psi) internal operating pressure with an internal oil pump driven from the governor's drive shaft. Oil pressure is maintained by a relief valve system with a drain to an internal oil sump.

Control features:

- State-of-the-art speed sensing and control algorithms
- Enhanced PID dynamics
- Configurable speed settings and adjustment rates
- Multiple fuel limiting algorithms, such as jump-rate, boost pressure, and start fuel limiting
- Comprehensive diagnostics for easy troubleshooting
- End-of-line programmability simplifies inventory

The UG-25<sup>+</sup> combines all the advantages of a traditional mechanical governor with the state-of-the-art control algorithms for optimal engine operation. To learn more about the new UG-25<sup>+</sup> governor, contact Woodward today.

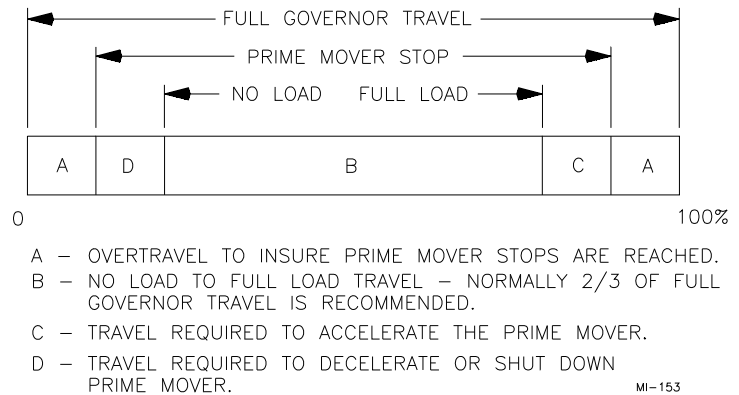
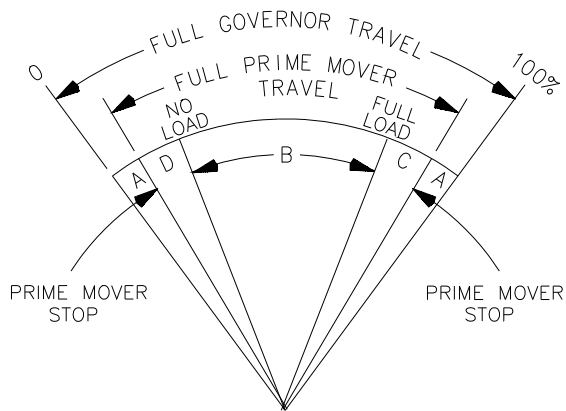


- Suitable for gasoline, gaseous, and diesel fueled engines
- Convenient front panel adjustments
- Speed setting with standard 4–20 mA signal or using raise/lower commands
- Easy setup and tuning using PC-based Service Tool
- Discrete output driver for status indication
- Isochronous or droop control
- Marine Listed

## Specifications

### Governor

Power Supply	18 to 32 Vdc, dual inputs
Power Consumption	Reverse polarity protection, 32 W max
Torque/Work Output (minimum):	
standard version	47.0 N·m (34.6 lb-ft) torque; 34.1 J (25.1 ft-lb) of work over 42 degrees
increased output version	57.4 N·m (42.3 lb-ft) torque; 41.6 J (31.6 ft-lb) of work over 42 degrees
Max. Continuous Speed	1700 rpm (gov. shaft) max (small pump); 1200 rpm (gov. shaft) (large pump)
Ramp-up Rate	configurable from 0.2 to 200 rpm/s (gov. shaft)
Steady State Speed Band	±0.25% of rated speed (under normal operating conditions)
Weight	26 kg (58 lb), dry weight
Customer Connector	30-pin Cinch connector (581-01-30-029S)
Mating Connector Kit	6995-1092



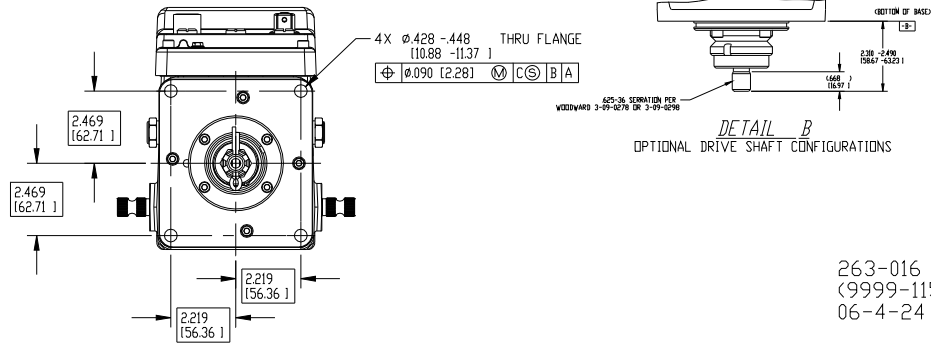
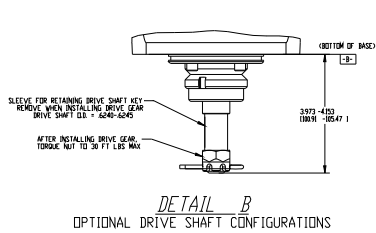
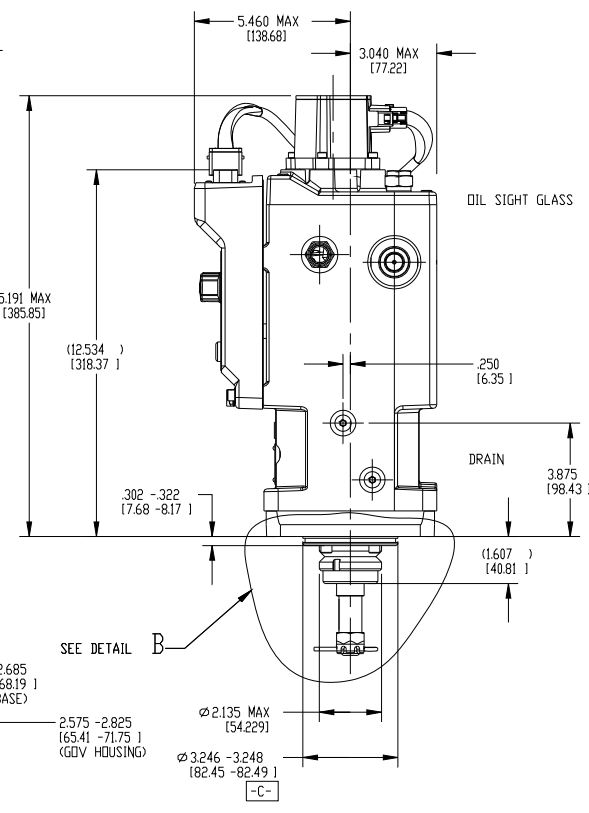
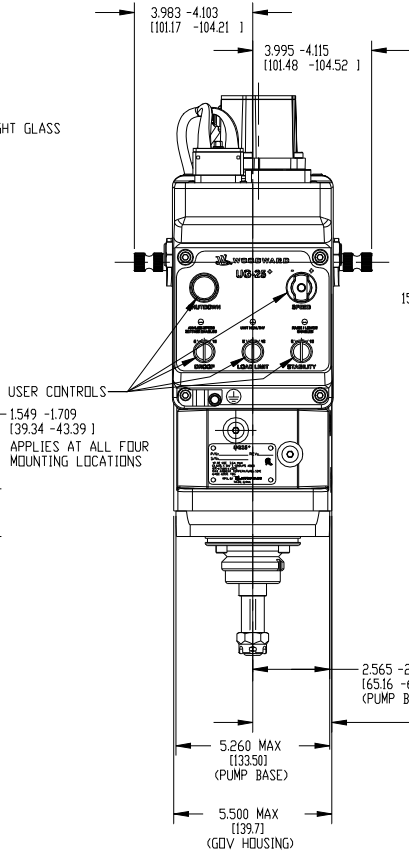
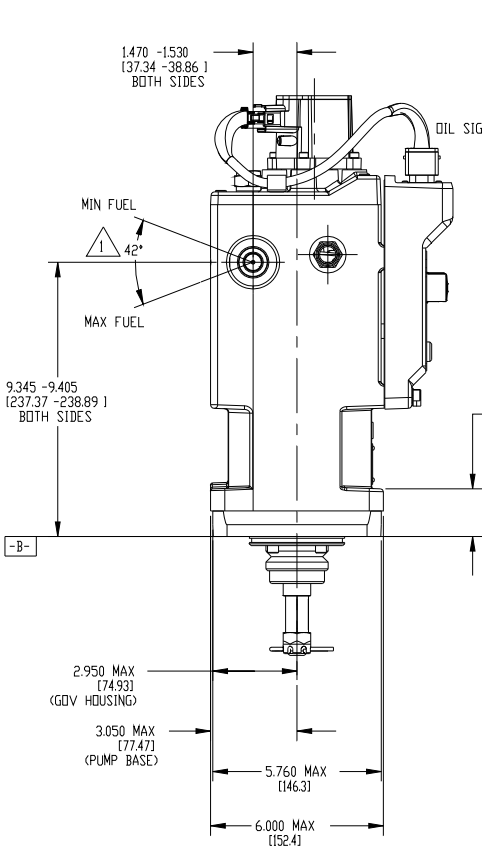
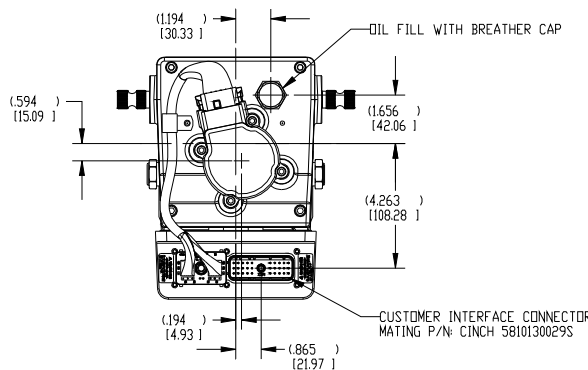
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### Governor Drive / Hydraulic System

Input Shaft Options	0.625 keyed drive shaft with 0.625-18 threads or 0.625-36 serrated
Output	42 degrees rotary
Terminal Shaft Options	0.625-36 serration (standard), 0.750-36 serration (increased output version)
Drive Power Requirement	335 W (0.45 hp) max.
Internal Hydraulic Pressure	1034 kPa (150 psi)
Oil	Self-contained sump (2.2 qt/2.1 L capacity). See Woodward Manual 25071, <i>Oils for Hydraulic Controls</i> , for oil recommendations.
Drive Speed	Available with either high or low speed pump High-speed pump: 600 to 1700 rpm (gov. shaft) Low Speed pump: 375 to 1200 rpm (gov. shaft)
Drive Rotation	Pump can be configured to operate in CW or CCW direction

### Functions

Function Options	Start Fuel Limiter; Adjustable Max Fuel Stop; Jump and Rate Limiter; Position-based Gain curve; Manifold Air Pressure Biased Fuel Limiter, Analog set-point rate limit; separate Raise and Lower Rates; Start Gain
Programming Port	Programmable with Windows GUI software (9927-1366) and harness (8923-1061)
I/O	4-20 mA analog speed setting; Analog Speed Set-point selector Raise, Lower, and Stop discrete inputs Analog Speed Set Enable discrete input 4-20 mA boost fuel limiter input; Boost Input selector Unit Healthy discrete out
Front Panel Functions	Raise and Lower speed set-point commands Stop command; Droop adjustment; Stability adjustment, Fuel-Limit adjustment
Front Panel Indications	Unit Healthy status indication, Speed Set-point mode indications (Raise/Lower or Analog)



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UG-25+ Outline Drawing

## Specifications (continued)

### Environment

Ambient Operating Temperature	0 to +55 °C (32 to +131 °F)
Governor Case Temperature	100 °C (212 °F) maximum
Storage Temperature	-40 to +85 °C (-40 to +185 °F), limited by electronics
EMC	EN61000-6-2: Immunity for Industrial Environments EN61000-6-4: Emissions for Industrial Environments
Humidity	US MIL-STD 810E, Method 507.3, Procedure III
Shock	MS1-40G 11ms saw tooth
Vibration Qualification Test- Random	0.1 G <sup>2</sup> /Hz, 10–2000 Hz (12.8 Grms) 3 h/axis
Thermal Shock	SAE J1455, Paragraph 4.1.3.2
Ingress Protection	IP45 for entire unit. IP56 for front panel per EN60529

### Regulatory Compliance

CE	Compliant with EMC Directive 89/336/EEC
Marine	Det Norske Veritas American Bureau of Shipping Bureau Veritas Germanischer Lloyd Korean Register of Shipping Lloyd's Register Nippon Kaiji Kyokai Registro Italiano Navale
Other	Compliant as a component with Machinery Directive 98/37/EC

**Technical Manual**      26330



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#### 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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