

- Low- and high-voltage models for flexible application
- Idle and rated speed settings allow reliable, precise references
- Idle to rated speed linear ramps decrease overshoot when ramping from idle to rated speeds
- Automatic start fuel limiting decreases overshoot during start process, resulting in cleaner, quicker starts
- Failed speed-sensor detector will shut engines down when speed sensor indicator is open or shorted
- UL- and CSA-listed to meet demanding specifications
- Isochronous and droop speed control for versatile applications
- Deceleration ramp available for simplified operation
- Wide dynamic adjustment range enables you to run fast or slow gas or diesel engines
- Isochronous load sharing allows combination of multiple engines for maximum generating output



## **Retrofitting UG-8 Controlled Engines**

**with 2301A  
Electronic Governing**

Woodward reserves the right to update any portion of this publication at any time. Information provided by Woodward is believed to be correct and reliable. However, no responsibility is assumed by Woodward unless otherwise expressly undertaken.

# Retrofitting UG-8 Controlled Engines with 2301A Electronic Governing

## Two Choices

There are two 2301A options to choose from when updating your control system to electronics: the simpler 2301A Speed Control or the 2301A Load Sharing and Speed Control, for electric generator systems that require load sharing ability.

The 2301A Speed Control maintains the speed or load of diesel or gas engines, or steam or gas turbines. It is compatible with Woodward SPM-A Synchronizers, Load Sensors, and other power generation controls. If you add a Generator Load Sensor or Digital Synchronizer and Load Control to the 2301A, you will gain all capabilities of the 2301A Load Sharing and Speed Control. These controls can be added to the system at any time, using the auxiliary or SPM inputs to the 2301A Speed Control.

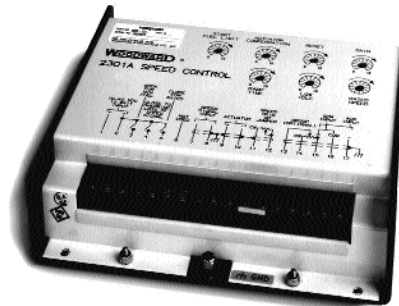
## Actuator Options

- UG-Actuator directly replaces UG-8 with no additional linkages
- EG-3P or EG-10P install easily on the drive pad

It's relatively easy to install either an EG-3P or EG-10P actuator in place of the UG-8 to position the fuel metering device. These actuators must be supplied with engine lube oil.

The most convenient and versatile actuator for the application however, is the UG-Actuator, since its oil supply is self-contained and it uses a UG case and drive for economical installation in such circumstances.

The UG-Actuator is a proportional electric/hydraulic model which works with all Woodward 20–160 mA output electronic controls. An integral magnetic pickup is also available.



*The electronic 2301A controls improve plant efficiency with automated start fuel limiting capability and other useful features.*

## Applications

It's advantageous to retrofit existing plants with 2301A electronic controls on engines which are using a UG-8 for mechanical-hydraulic governing. These controls typically improve transient load response and provide isochronous proportional load sharing with automatic, unattended operation.

On new installations of engines which have UG-8 governor drives, the 2301A offers the same advantages as at existing plants. The 2301A is compatible with Woodward SPM-A Synchronizers, Automatic Generator Loading Controls, Process Import/Export Controls, and Automatic Power Transfer and Load Controls.

## The Woodward Advantage

- Easy to install
- Improves transient load response
- Guaranteed by the leader in prime mover controls
- Worldwide service and technical support



*An excellent companion to 2301A electronic governing controls is the UG-Actuator. The standard version of this hydraulic-powered electric actuator produces 15 lb-ft of work over 42 degrees of rotary output. (See product specification 37511 for more details.)*

**We appreciate your comments about the content of our publications.**

**Send comments to: [icinfo@woodward.com](mailto:icinfo@woodward.com)**

**Please reference publication 51005E.**



PO Box 1519, Fort Collins CO 80522-1519, USA  
1000 East Drake Road, Fort Collins CO 80525, USA  
Phone +1 (970) 482-5811 • Fax +1 (970) 498-3058

**Email and Website—[www.woodward.com](http://www.woodward.com)**

**Woodward has company-owned plants, subsidiaries, and branches,  
as well as authorized distributors and other authorized service and sales facilities throughout the world.**

**Complete address / phone / fax / email information for all locations is available on our website.**