WOODWARD

Product Manual 03047
(Revision D, 3/2014)
Original Instructions

UG-8/UG-40 Governors

4–20 mA Speed Setting System for UG Governors

Installation and Operation Manual

General Precautions

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.

Practice all plant and safety instructions and precautions.

Failure to follow instructions can cause personal injury and/or property damage.

Revisions

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, check manual *26311* , *Revision Status & Distribution Restrictions of Woodward Technical Publications*, on the *publications page* of the Woodward website:

www.woodward.com/publications

The latest version of most publications is available on the *publications page*. If your publication is not there, please contact your customer service representative to get the latest copy.

Proper Use

Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.

Translated Publications

If the cover of this publication states "Translation of the Original Instructions" please note:

The original source of this publication may have been updated since this translation was made. Be sure to check manual *26311* , *Revision Status & Distribution Restrictions of Woodward Technical Publications*, to verify whether this translation is up to date. Out-of-date translations are marked with ⚠. Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions—Changes in this publication since the last revision are indicated by a black line alongside the text.

Manual 03047

Contents

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Important Definitions

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

- **DANGER**—Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**—Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION**—Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE**—Indicates a hazard that could result in property damage only (including damage to the control).
- **IMPORTANT**—Designates an operating tip or maintenance suggestion.

⚠WARNING

Overspeed / Overtemperature / Overpressure

The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage.

The overspeed shutdown device must be totally independent of the prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.

⚠WARNING

Personal Protective Equipment

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:

- **Eye Protection**
- **Hearing Protection**
- **Hard Hat**
- **Gloves**
- **Safety Boots**
- **Respirator**

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

⚠WARNING

Start-up

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.

⚠WARNING

Automotive Applications

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

NOTICE

Battery Charging Device

To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.

Electrostatic Discharge Awareness

NOTICE

Electrostatic Precautions

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:

- **Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).**
- **Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.**
- **Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.**

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual *82715*, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Follow these precautions when working with or near the control.

1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
   - Do not touch any part of the PCB except the edges.
   - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
   - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

Chapter 1.
General Information

Introduction

This manual contains information on installation, operation, adjustment, and troubleshooting for the 4–20 mA speed setting system for UG-8/UG-40 governors. The manual does not describe the operation of the UG-8D/UG-40D (dial) governors. For complete operation of the UG dial governors, see manual 03040.

Description

The speed setting system consists of an electronic control amplifier which accepts the 4–20 mA signal and drives a stepper motor, which is mounted on the cover of the UGD governor. This unit in turn rotates the speeder rod which sets the speed of the UGD governor. Chapter 4 contains a detailed description of operation. The control amplifier is housed in a small cast aluminum case (see Figure 1-3). The stepper motor and the feedback potentiometer are mounted in the aluminum cover which is part of the UGD governor (see Figures 1-1 and 1-2).

Applications

The speed setting system is designed around a UGD type of governor to enable its speed to be set from a remote location using a 4–20 mA current loop.

Its principal aim is to meet the need for remote control of engine speed in marine applications using milliamp signals instead of the more traditional pneumatic pressure signal. It can, however, be used in other situations where a UGD governor is applicable.

Some of the UG auxiliary functions (such as solenoid shutdown) can be incorporated. Please consult Woodward about new applications.

Reference Publications

The following publications contain additional product and installation information relating to this system.

Manual	Title
03040	UG Dial Governor
03013	Shutdown Solenoid for UG Governors
25071	Oils for Hydraulic Controls
36052	Magnetic Speed Pickup for PG and UG Governors
36684	Booster Servomotor
56103	UG Dial Repair

Product Spec.	Title
03029	UG-8 Governor
03048	UG MAS Governor with Milliamp Speed Setting

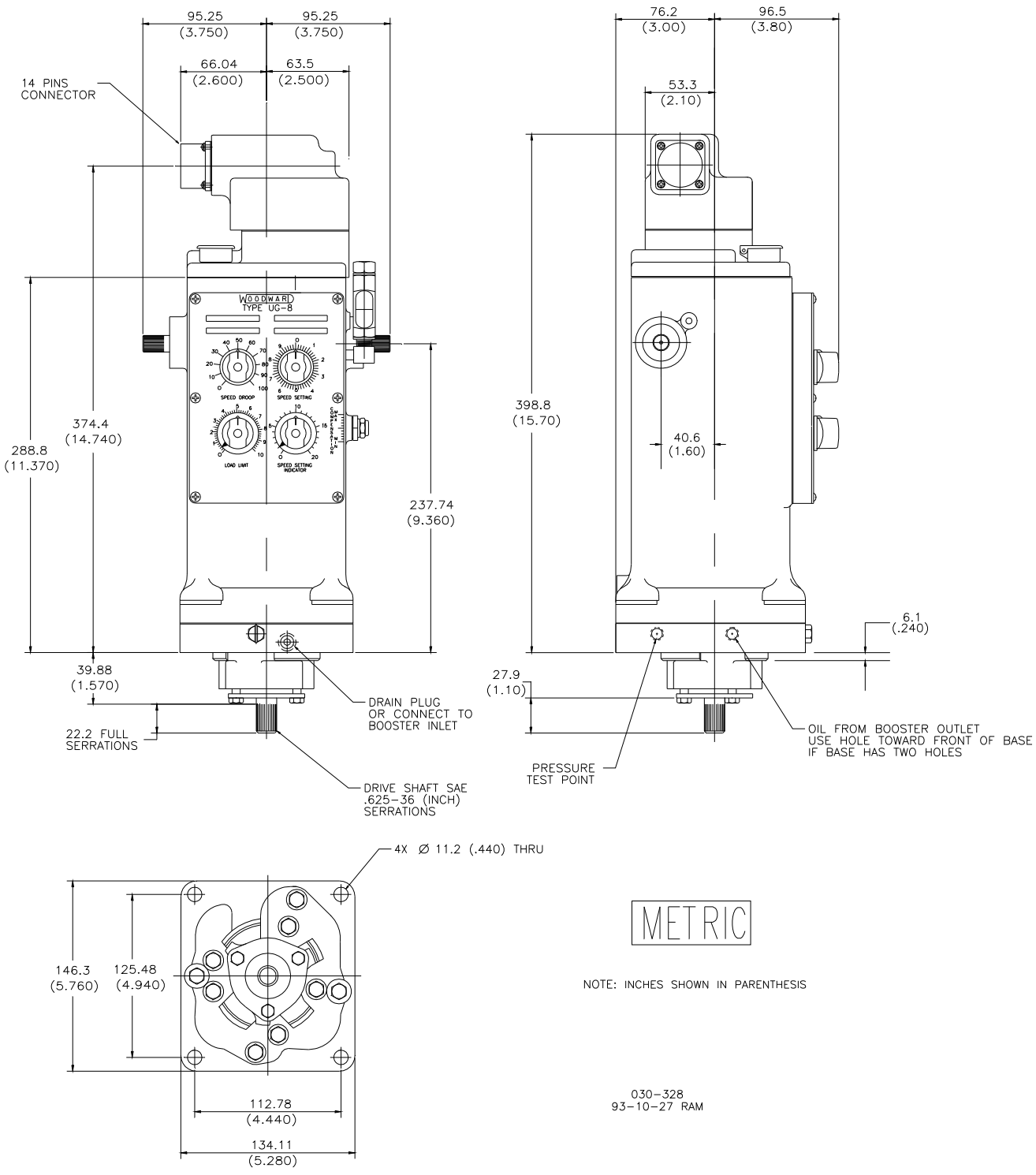

Figure 1-1. Typical Outline Drawing of UG-8D MAS Governor

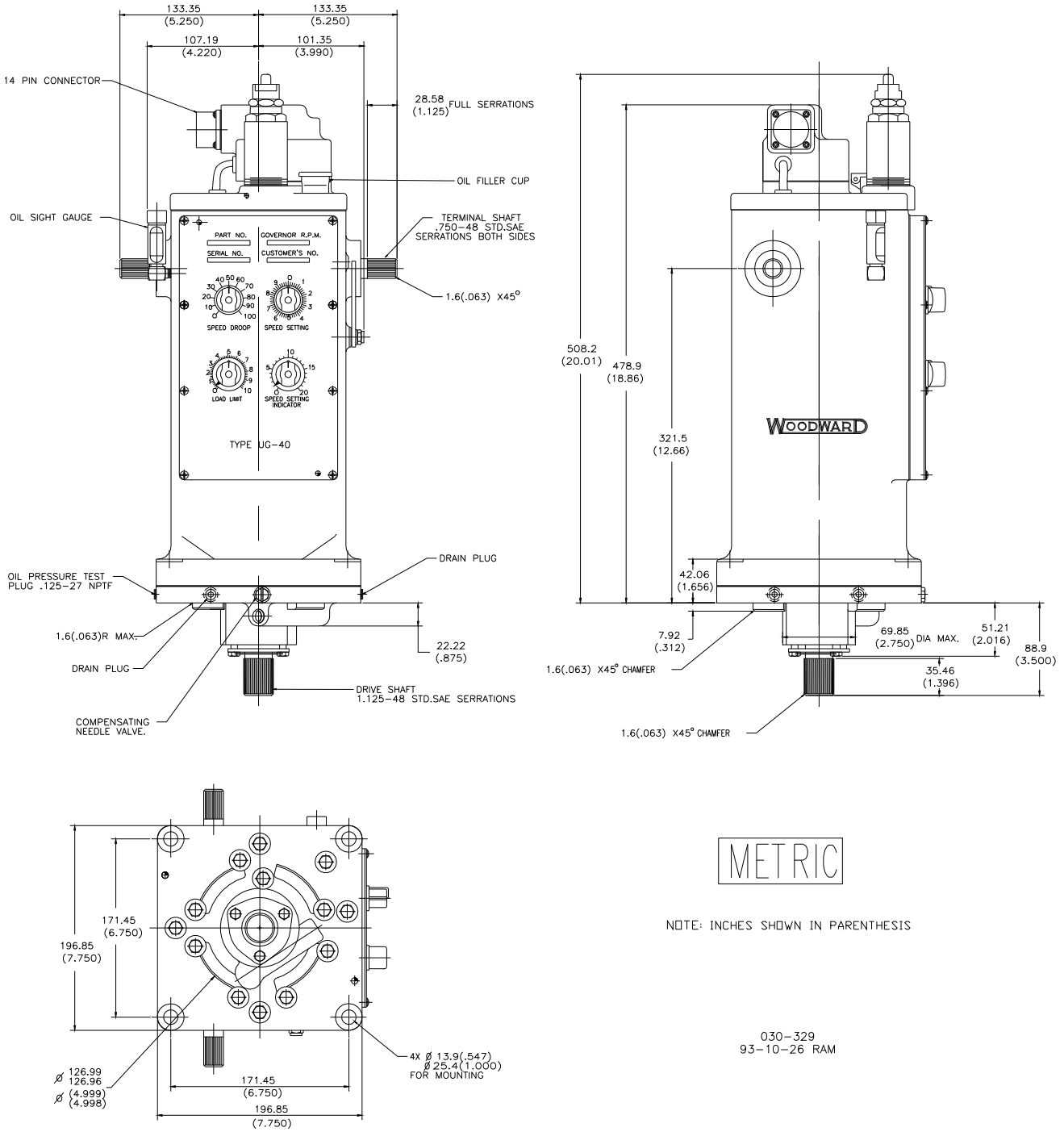

Figure 1-2. Typical Outline Drawing of UG-40D MAS Governor

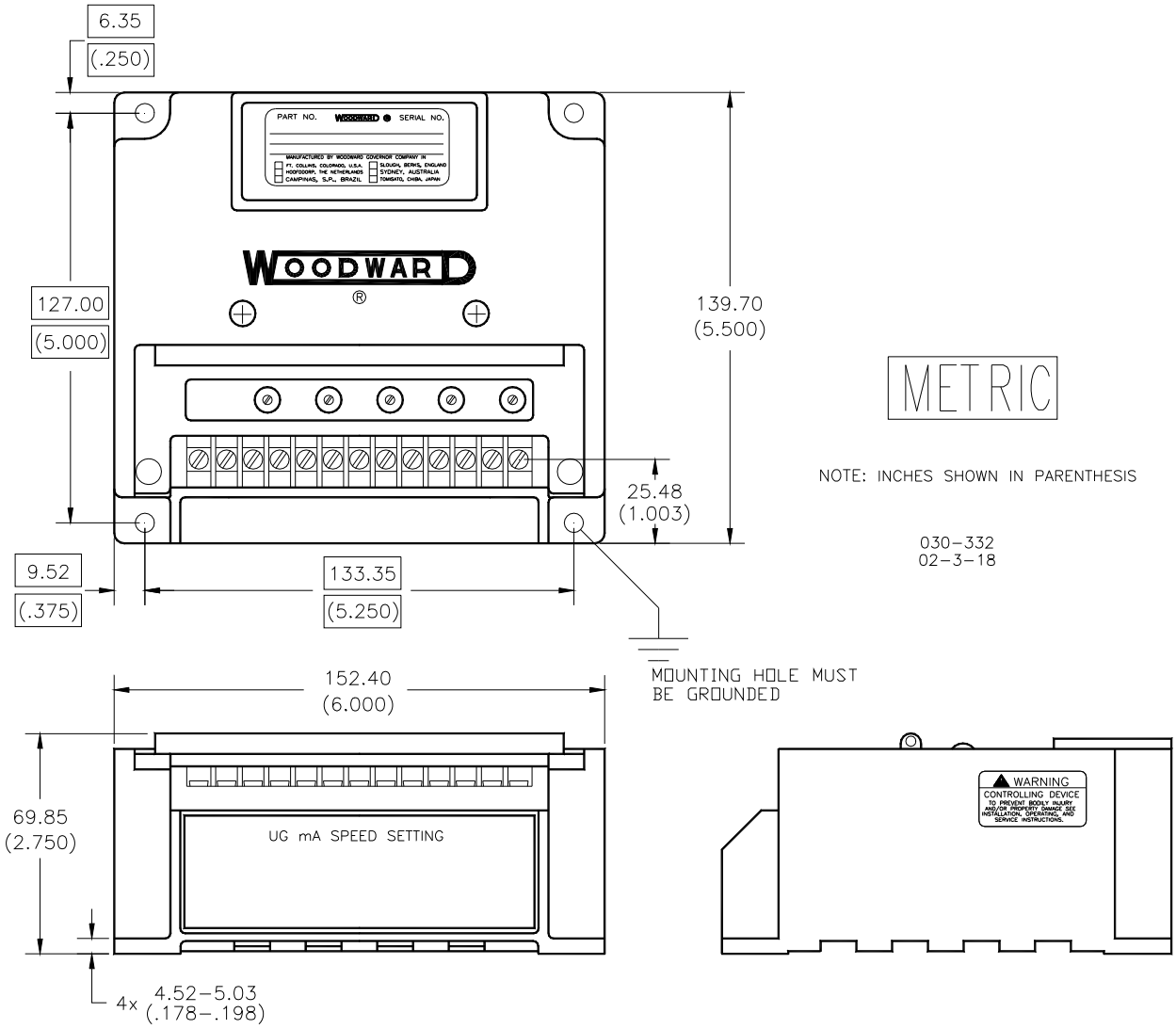

Figure 1-3. Outline Drawing of UG MAS Driver Box

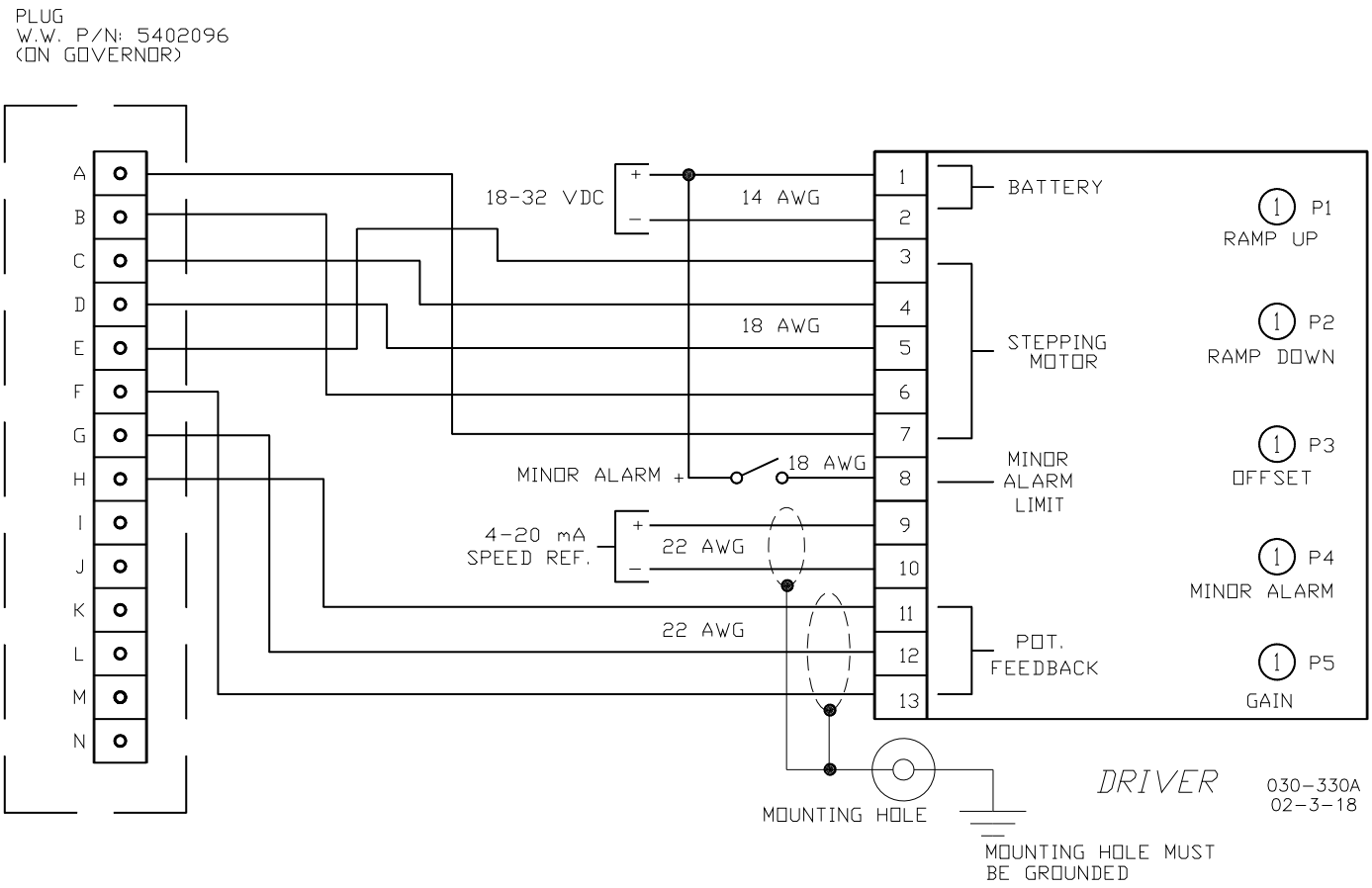

Figure 1-4. Plant Wiring Diagram

Chapter 2.
Installation

Introduction

The milliamp speed setting consists of two items: the electronic control and the cover assembly. The electronic control is contained in a separate box from the UG governor. The cover assembly mounts on top of the UG governor. This chapter covers mounting, connecting, and power requirements for these items.

Unpacking

Before handling the electronic control, read the electrostatic discharge awareness information on page ii. Check all items for damage or for loose or broken parts. If any damage is found, notify the shipper immediately.

Power Requirements

The electronic control requires a voltage source of 18 to 40 Vdc for operating power. If a battery is used for operating power, an alternator or other battery-charging device is necessary to maintain a stable supply voltage.

NOTICE

To prevent damage to the control, make sure that the alternator or other battery-charging device is turned off or disconnected before disconnecting the battery from the control.

Location Considerations

Consider these requirements when selecting the mounting location for the electronic control unit:

- Adequate ventilation for cooling
- Space for servicing and repair
- Protection from direct exposure to water or to a condensation-prone environment
- Protection from high voltage or high current devices, or devices which produce electromagnetic interference
- Avoidance of vibration
- Selection of a location that will provide an operating temperature range of –40 to +85 °C (–40 to +185 °F).

The control must NOT be mounted on the engine, but as close to the UG governor as possible. Try to avoid connections in excess of 10 m (33 ft).

Electrical Connections

External wiring connections and shielding requirements for a typical control installation are shown in the plant wiring diagram (Figure 1-4). These wiring connections and shielding requirements are explained in the balance of this section.

Shielded Wiring

All shielded cable must be twisted conductor pairs. Do not attempt to tin (solder) the braided shield. All signal lines should be shielded to prevent picking up stray signals from adjacent equipment. Connect the shields to the control terminals as shown in Figures 1-3 and 1-4. Wire exposed beyond the shield should be as short as possible, not exceeding 50 mm (2 inches). The other end of the shields must be left open and insulated from any other conductor. Do not run shielded signal wires with other wires carrying large currents.

Where shielded cable is required, cut the cable to the desired length and prepare the cable as instructed below:

1. Strip outer insulation from BOTH ENDS, exposing the braided or spiral wrapped shield. DO NOT CUT THE SHIELD.

2. Using a sharp, pointed tool, carefully spread the strands of the shield.

3. Pull inner conductor(s) out of the shield. If shield is the braided type, twist to prevent fraying.

4. Remove 6 mm (¼ inch) of insulation from the inner conductor(s).

5. Connect wiring and shield to the terminals.

In installations with severe electromagnetic interference (EMI), additional precautions may be required, such as shielded wire run in conduit, double shielded wire, or other precautions. Contact Woodward for more information.

Power Supply

Connect the 24 volt power supply leads to terminals 1 and 2 of the control amplifier, positive to terminal 1, as shown in Figure 1-4.

At 24 Vdc, current is approximately 0.8 A when the motor is stationary and approximately 2.0 A when changing the motor position. The peaks at the moment the motor starts are slightly higher than 2 A.

At 18 Vdc, fuse at 4 A to 5 A.

Milliamp Input Signal

The milliamp speed setting signal from the remote location should be connected to terminals 9 and 10, positive to 9. This should be a twin screened cable, and the screen should be connected to a secure ground. If the control is mounted on a grounded metal chassis or fixture, the mounting screws of the control may be used for this purpose. The screen should be grounded at one end only, preferably at the control end.

Stepper Motor

A total of five wires are required between the control and the stepper motor. Each wire should be 0.8 mm² (18 AWG) or larger. The cable can be a five-core screened cable or separate one- or two-core screened cable. Shielding is optional, but if used, all screens must be terminated at the control amplifier end only. The connections between the amplifier and the governor pins are:

Pin	Terminal
A	to 7
B	to 6
C	to 4
D	to 5
E	to 3

The connections are shown in Figure 1-4.

Feedback Potentiometer

The feedback potentiometer must be wired to the amplifier using screened one-, two-, or three-core cable. Each wire should be 0.3 mm² (22 AWG) or larger. All screens must be terminated at the control amplifier end only. The connections between the amplifier and the governor pins are:

Pin	Terminal
F	to 13
G	to 12
H	to 11

Minor Alarm Contact

If the minor alarm function is used, amplifier contact 8 must be wired to the alarm device so that in case of a minor alarm (such as low oil pressure or high water temperature), 24 volts is supplied to terminal 8. The supply 24 Vdc should be used to feed terminal 8 (see Figure 1-4).

Chapter 3.
Operation and Adjustment

Normal Operation

Once the milliamp speed setting system has been properly connected, the engine may be started, stopped, and controlled according to the engine operators instructions. The milliamp system is self starting on engine cranking, provided the nominal 24 volt supply is switched on to the control amplifier.

In the event of a fault in the control amplifier or loss of its 24 volt supply, the governor will continue to run at the last speed level. The speed can then be changed by turning the manual speed setting knob on the front panel of the governor.

When installing or first starting a milliamp speed setting system, follow the procedures in this chapter.

Initial Start-up

The speed setting system (consisting of a UG governor and a driver amplifier) should be adjusted on the engine to the required speed range and ramp speeds.

If the system is already adjusted and only needs to be checked for proper operation, skip the Initial Setup and Control Adjustments sections and follow the Starting Procedure section.

When the system is not yet adjusted or a replacement control amplifier has been installed, skip the Initial Setup section and follow the Control Adjustments and Starting Procedure sections.

Where replacement items have been fitted in the UG governor assembly (such as new cover assembly, potentiometer, or stepper motor), begin with the Initial Setup section and continue through the end of the chapter.

Initial Setup

Where replacement items have been fitted in the UG governor assembly (such as new cover assembly, potentiometer, or stepper motor), follow this procedure and the remaining sections of the chapter.

1. Disconnect the 24 Vdc supply power from the driver.
2. Take the complete cover off the governor.
3. Measure the resistance of the feedback potentiometer between points 12 and 13 on the driver or between pins G an F on the connector. Rotate the shaft of the stepper motor until the measured value is 3.2 kΩ.
4. Run the engine at the middle of the required speed range by rotating the manual speeds setting knob.
5. Mount the cover on the governor while keeping the shaft of the stepper motor and the speed setting knob on the governor at the positions just determined in steps 3 and 4.
6. Connect the driver to the governor as shown in the plant wiring diagram (Figure 1-4).
7. Continue with the next section.

Control Adjustments

In order to achieve the best results, follow the order of adjustments as given in this section.

If the required speed ranges cannot be achieved with the potentiometer ranges of the control amplifier, try resistance values other than 3.2 kΩ.

Set the mechanical endstops out of the way by turning them about five turns counterclockwise (see Figure 1-1 for the location of the mechanical endstops).

Idle Speed Adjustment

This pot modifies the speed setting for a given milliamp input signal. It is normally adjusted at the low speed end of the range.

Set the input signal to 4 mA and adjust the IDLE SPEED pot for the desired minimum controlled speed.

Rated Speed Adjustment

This pot determines the speed change over the 4 to 20 mA input signal range. It should be adjusted at the upper end of the speed range.

Set the input signal to 20 mA and adjust the RATED SPEED pot for the desired maximum controlled speed.

Repeat the Idle Speed and Rated Speed Adjustments until no further adjustment is necessary.

Mechanical Endstops

The mechanical endstops limit the speed range in case of failure of the milliamp speed setting system in order to protect the engine from running at speeds either too low or too high.

1. Run the engine at 25 rpm below the normal idle speed. Rotate the left mechanical endstop clockwise until it hits the speed indicator gear. Lock the screw with the lock nut.

2. Run the engine at 25 rpm above the normal rated speed. Rotate the right mechanical endstop clockwise until it hits the speed indicator gear. Lock the screw with the lock nut.

IMPORTANT

If the motor and the coupling are connected incorrectly, the motor will not stop, but the speed setting will not be changed.

Be sure that the stepper motor does not hit against the endstop under normal operation within the 4 to 20 mA range.

Minor Alarm Adjustment

This pot permits the operator to limit the maximum speed of the governor in case of problems such as low lube oil pressure or high cooling water temperature.

1. Run the engine at rated speed using the milliamp speed setting system.

2. Apply 24 Vdc to terminal 8.

3. Rotate the MINOR ALARM pot until the speed of the engine is at the required level.

4. Remove the 24 Vdc from terminal 8.

The engine should now ramp up to the rated speed.

Ramp Rates

The UP RATE and DOWN RATE pots set the minimum time period in which the engine can go from idle to rated and from rated to idle. Rotating the pot counterclockwise will make the engine react more quickly, and rotating the pot clockwise will make the engine react more slowly.

Starting Procedure

Before starting the engine, apply power to the control amplifier (terminals 1 and 2).

The following adjustments can only be made with the engine running under the control of the UG governor as described below.

1. Study the instructions and safety precautions in the engine manufacturer's manual and the Woodward UG Governor manual (number 03040).

2. Remove the 24 Vdc from the control amplifier.

⚠WARNING **Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.**

3. Start the engine. BE PREPARED TO SHUT DOWN IN CASE OF OVERSPEED.

4. Verify that the engine speed is under control of the UG governor by raising and lowering the mechanical speed setting knob on the UG governor. Set the engine speed to the idle speed level.

5. Set the remote milliamp signal to 4 mA.

6. Restore the 24 Vdc supply to the control amplifier. The engine should now run at the adjusted low speed level.

7. Set the remote signal to 20 mA. The engine should now run at the adjusted high speed level.

If the above steps have been completed successfully, the engine is ready for normal operation with the milliamp speed setting system.

If the milliamp levels do not correspond with the demanded speed levels, repeat the procedures under the Control Adjustments section.

Chapter 4.
Description of Operation

The system consists of a UG governor fitted with a special cover and a separate driver (Figures 1-1 and 1-2).

The cover includes a stepper motor that is connected directly to the speeder screw in the governor. On top of the stepper motor, the position of the motor shaft is measured with a potentiometer connected with a worm and gear.

In operation, the driver compares the milliamp input signal with the voltage signal derived from the potentiometer and runs the stepper motor to the position in which the milliamp signal corresponds with the feedback signal. This results in a speed setting proportional to the milliamp signal.

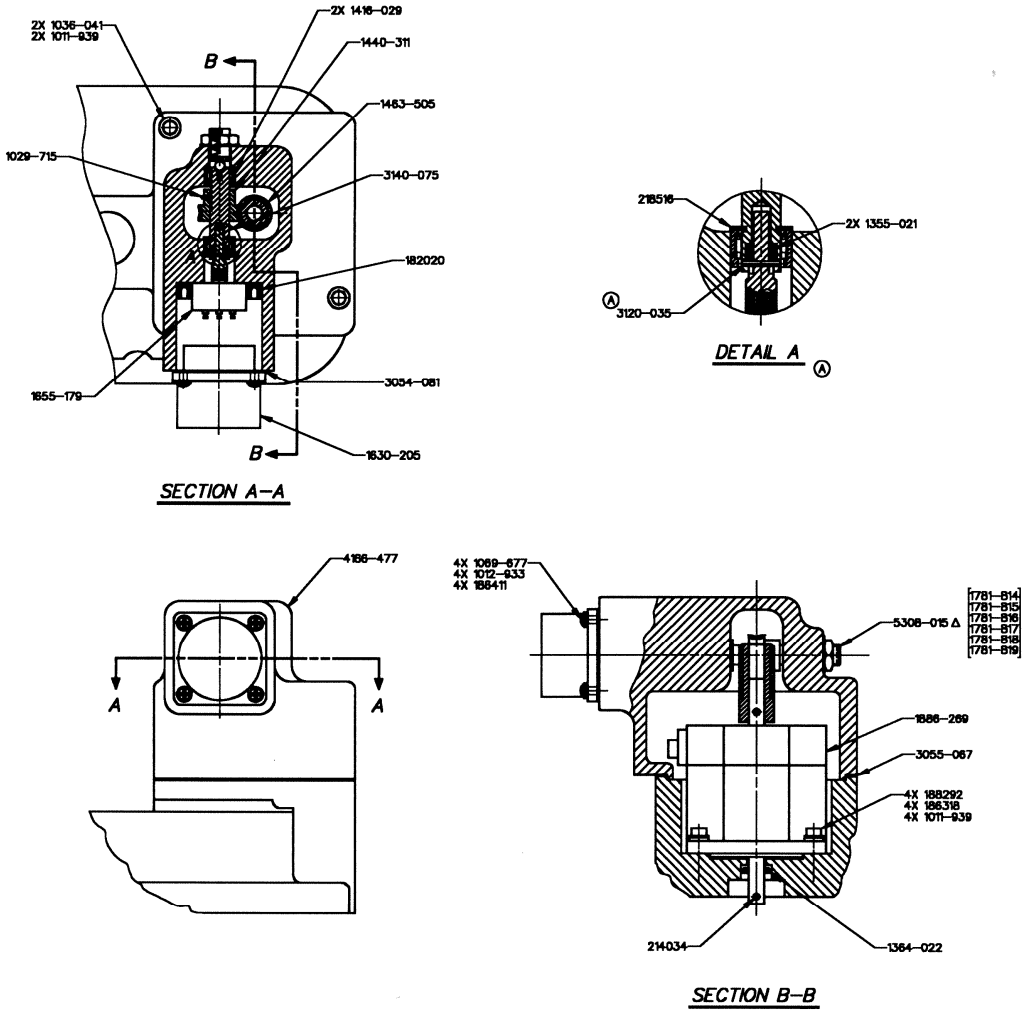

Figure 4-1. Cover Assembly

Chapter 5. Troubleshooting

Indicated Faults

The following fault conditions will result in a system malfunction:

- dc power supply below 18 Vdc
- break in connection to the potentiometer
- failure of the potentiometer or loss of supply to the pot
- open circuit of the stepper motor or break in connection to the motor

If a problem or failure of the milliamp speed setting system is detected, stop the engine and do the following tests:

1. Measure and record the supply voltage on terminals 1 and 2. If voltage is absent or less than 18 Vdc, the supply is insufficient and should be investigated.

2. If the supply voltage is good, remove the connection from terminals 11 and 13, and measure the voltage between these terminals. The voltage should be 5.0 Vdc. If the voltage is wrong, replace the driver. Check the resistance of the feedback pot (10 kΩ) connected to pins F, G, and H of the governor.

3. If no fault is found in steps 1 and 2, check the milliamp signal which is supplied to the control on terminal 9 and 10. The signal must be between 4 and 20 mA.

4. If no fault has been found, measure the resistance over the following pins: A–E, B–E, C–E, and D–E of the governor. These should all be between 1.3 and 1.7 Ω. If not, the stepper motor or the stepper motor wires are broken.

5. If no fault can be determined by the previous steps, return the control unit to Woodward for further investigation/repair.

Fault Chart

This table lists some of the possible fault symptoms and their causes and remedies.

Symptom	Possible Cause	Remedy
Engine starts, but will not run above idle speed. Stepper motor makes sound.	Loss of milliamp input signal	Check for voltage across terminals 9 and 10 (0.6 Vdc for 4 mA). See the Control Adjustments section of Chapter 3.
	Broken pot or pot wire	Repair wires or change pot.
	IDLE SPEED and RATED SPEED pots are adjusted wrong	Follow the Control Adjustments procedure in Chapter 3 to adjust the system.
Engine starts, but only runs at idle speed. Stepper motor makes no sound.	No voltage supplied to the driver	Check the voltage on terminals 1 and 2.
Engine runs well only until a certain speed lower than the rated speed.	Voltage supplied to MINOR ALARM terminal 8	Remove voltage signal on terminal 8.
Stepper motor does not stop, and the speed setting cannot be changed by the motor.	Motor roll pin is disconnected from the coupling, or the roll pin is damaged	Contact Woodward.

Chapter 6.
Product Support and Service Options

Product Support Options

IMPORTANT **UG governors have the same overhaul interval as the prime mover.**

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

1. Consult the troubleshooting guide in the manual.
2. Contact the **OE Manufacturer or Packager** of your system.
3. Contact the **Woodward Business Partner** serving your area.
4. Contact Woodward technical assistance via email (**EngineHelpDesk@Woodward.com**) with detailed information on the product, application, and symptoms. Your email will be forwarded to an appropriate expert on the product and application to respond by telephone or return email.
5. If the issue cannot be resolved, you can select a further course of action to pursue based on the available services listed in this chapter.

OEM or Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

- A **Full-Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.
- An **Authorized Independent Service Facility (AISF)** provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.
- A **Recognized Engine Retrofitter (RER)** is an independent company that does retrofits and upgrades on reciprocating gas engines and dual-fuel conversions, and can provide the full line of Woodward systems and components for the retrofits and overhauls, emission compliance upgrades, long term service contracts, emergency repairs, etc.

A current list of Woodward Business Partners is available at **www.woodward.com/directory**.

Product Service Options

Depending on the type of product, the following options for servicing Woodward products may be available through your local Full-Service Distributor or the OEM or Packager of the equipment system.

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

Replacement/Exchange: Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime.

This option allows you to call your Full-Service Distributor in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Full-Service Distributor.

Flat Rate Repair: Flat Rate Repair is available for many of the standard mechanical products and some of the electronic products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be.

Flat Rate Remanufacture: Flat Rate Remanufacture is very similar to the Flat Rate Repair option, with the exception that the unit will be returned to you in "like-new" condition. This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

When shipping the item(s), attach a tag with the following information:

- return number;
- name and location where the control is installed;
- name and phone number of contact person;
- complete Woodward part number(s) and serial number(s);
- description of the problem;
- instructions describing the desired type of repair.

Packing a Control

Use the following materials when returning a complete control:

- protective caps on any connectors;
- antistatic protective bags on all electronic modules;
- packing materials that will not damage the surface of the unit;
- at least 100 mm (4 inches) of tightly packed, industry-approved packing material;
- a packing carton with double walls;
- a strong tape around the outside of the carton for increased strength.

NOTICE

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Replacement Parts

When ordering replacement parts for controls, include the following information:

- the part number(s) (XXXX-XXXX) that is on the enclosure nameplate;
- the unit serial number, which is also on the nameplate.

Engineering Services

Woodward's Full-Service Distributors offer various Engineering Services for our products. For these services, you can contact the Distributor by telephone or by email.

- Technical Support
- Product Training
- Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact.

Product Training is available as standard classes at many Distributor locations. Customized classes are also available, which can be tailored to your needs and held at one of our Distributor locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability.

Field Service engineering on-site support is available, depending on the product and location, from one of our Full-Service Distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface.

For information on these services, please contact one of the Full-Service Distributors listed at **www.woodward.com/directory**.

Contacting Woodward's Support Organization

For the name of your nearest Woodward Full-Service Distributor or service facility, please consult our worldwide directory published at **www.woodward.com/directory**.

You can also contact the Woodward Customer Service Department at one of the following Woodward facilities to obtain the address and phone number of the nearest facility at which you can obtain information and service.

Products Used In Electrical Power Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany:	
Kempen	+49 (0) 21 52 14 51
Stuttgart	+49 (711) 78954-510
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

Products Used In Engine Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (711) 78954-510
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
United States	+1 (970) 482-5811

Products Used In Industrial Turbomachinery Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

For the most current product support and contact information, please visit our website directory at **www.woodward.com/directory**.

Technical Assistance

If you need to contact technical assistance, you will need to provide the following information. Please write it down here before contacting the Engine OEM, the Packager, a Woodward Business Partner, or the Woodward factory:

General

Your Name _____

Site Location _____

Phone Number _____

Fax Number

Prime Mover Information

Manufacturer _____

Engine Model Number _____

Number of Cylinders _____

Type of Fuel (gas, gaseous, diesel, dual-fuel, etc.) _____

Power Output Rating _____

Application (power generation, marine, etc.)

Control/Governor Information

Control/Governor #1

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number

Control/Governor #2

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number

Control/Governor #3

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number

Symptoms

Description _____

_____

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.

Revision History

Changes in Revision D—

- Added overhaul interval information to Chapter 6

Changes in Revision C—

- Added fuse rating information for driver box (page 7)

Declarations

DECLARATION OF CONFORMITY
According to EN 45014

Manufacturer's Name:	WOODWARD GOVERNOR COMPANY (WGC) Industrial Controls Group
Manufacturer's Address:	1000 E. Drake Rd. Fort Collins, CO, USA, 80525
European Representative's Name	WOODWARD GOVERNOR NEDERLAND BV
European Representative's Address	Hoofdweg 601 P.O. Box 34 2130 AA Hoofddorp, The Netherlands
Model Name(s)/Number(s):	UG Milliamp Speed Setting (UG MAS) 8525-971 and similar
Conformance to Directive(s):	89/336/EEC COUNCIL DIRECTIVE of 03 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility as amended by 92/31/EEC and 93/68/EEC.
Applicable Standards:	EN50081-2, August 1993: EMC Generic Emissions Standard, Part 2 : Industrial Environment EN61000-6-2, April 1999: EMC Compatibility - Generic Standards: Immunity for Industrial Environment
3rd Party Certification:	

We, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s).

MANUFACTURER

Jennifer R Williams
Signature

Jennifer R. Williams
Full Name

Engineering Manager
Position

WGC, Fort Collins, CO, USA
Place

3-18-02
Date

Woodward Governor Company
Industrial Controls Group
Colorado, USA

ICG-1183
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We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 03047D.

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