



EPG Electrically Powered Governor

Models 1712/1724 and 512/524
without Position Feedback

Installation and Troubleshooting 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 Out-of-date translations are marked with .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.

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.

Contents

| | |
|--|------------|
| WARNINGS AND NOTICES | II |
| ELECTROSTATIC DISCHARGE AWARENESS | III |
| CHAPTER 1. GENERAL INFORMATION..... | 1 |
| Introduction..... | 1 |
| Associated Publications..... | 1 |
| EPG Models | 1 |
| CHAPTER 2. INSTALLATION AND TROUBLESHOOTING | 8 |
| Installation | 8 |
| Installation Check and Troubleshooting | 10 |
| CHAPTER 3. PRODUCT SUPPORT AND SERVICE OPTIONS..... | 14 |
| Product Support Options | 14 |
| Product Service Options..... | 14 |
| Returning Equipment for Repair..... | 15 |
| Replacement Parts | 15 |
| Engineering Services..... | 16 |
| Contacting Woodward's Support Organization | 16 |
| Technical Assistance..... | 17 |
| REVISION HISTORY..... | 18 |
| DECLARATIONS..... | 19 |

Illustrations and Tables

| | |
|---|---|
| Figure 1-1a. EPG Control and Actuators..... | 2 |
| Figure 1-1b. EPG Control Faceplate | 4 |
| Figure 1-2. Wiring Diagram (Isochronous EPG)..... | 5 |
| Figure 1-3. Wiring Diagram (EPG with Droop)..... | 5 |
| Figure 1-4. Wiring Diagram (EPG Models 8290-191, -192)..... | 5 |
| Figure 2-1. Actuator Linkages | 9 |

Warnings and Notices

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

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.

**Battery Charging
Device**

Electrostatic Discharge Awareness

NOTICE

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

**Electrostatic
Precautions**

- 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

Each Woodward Electrically Powered Governor (EPG) system includes three basic parts:

- A magnetic pickup (MPU) which senses engine speed from an engine-driven gear.
- A speed control which receives the speed signal from the MPU, compares it to a reference signal, and generates a control signal which the control sends to the actuator.
- An actuator which receives the signal from the control and positions its output shaft according to this signal. The output shaft is linked to the fuel control.

There are two EPG models:

- The isochronous speed control, which is available with start-fuel limit or dual dynamics;
- The droop speed control, which includes a load sensor and provides droop control for generator sets.

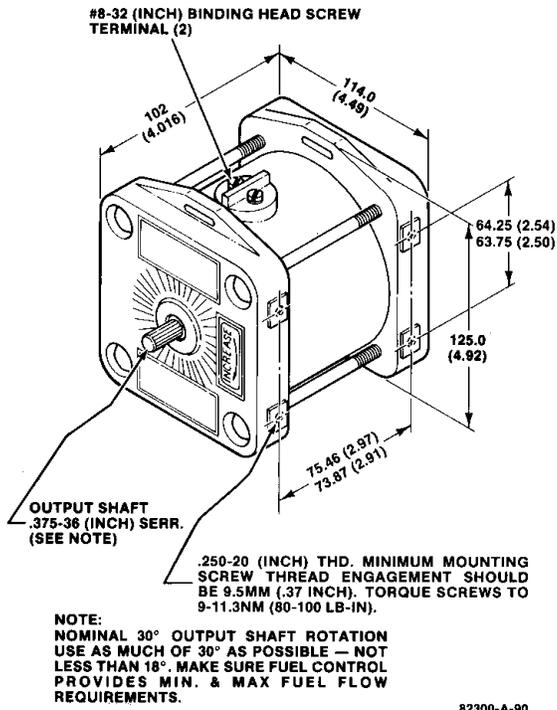
Different actuator sizes are available for different work output requirements. Models are available for either 12 or 24 volt systems.

Associated Publications

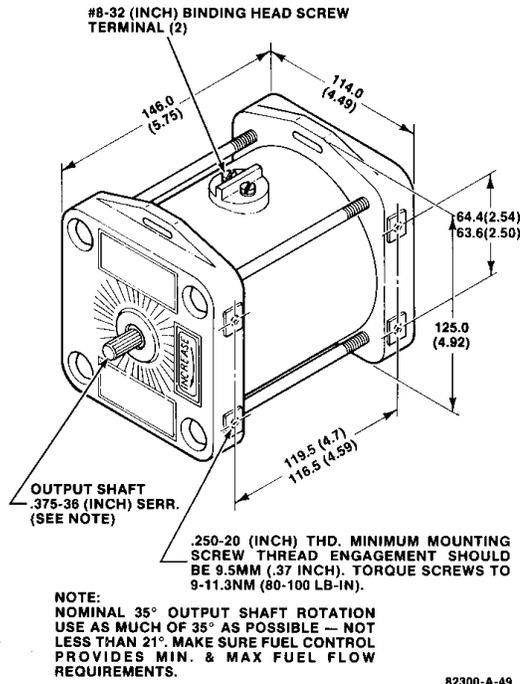
| Manual | Title |
|----------------------|--|
| 82313 | <i>Generator Load Sensor</i> |
| 25070 | <i>Electronic Control Installation Guide</i> |
| 82510 | <i>Magnetic Pickups & Proximity Switches for Electronic Controls</i> |
| 82493 | <i>Isochronous EPG</i> |
| 82327 | <i>EPG with Droop</i> |
| 82476 | <i>Ramp Generator</i> |
| Product Spec. | Title |
| 04106 | <i>EPG Electrically Powered Governors</i> |
| 82314 | <i>Generator Load Sensor</i> |

EPG Models

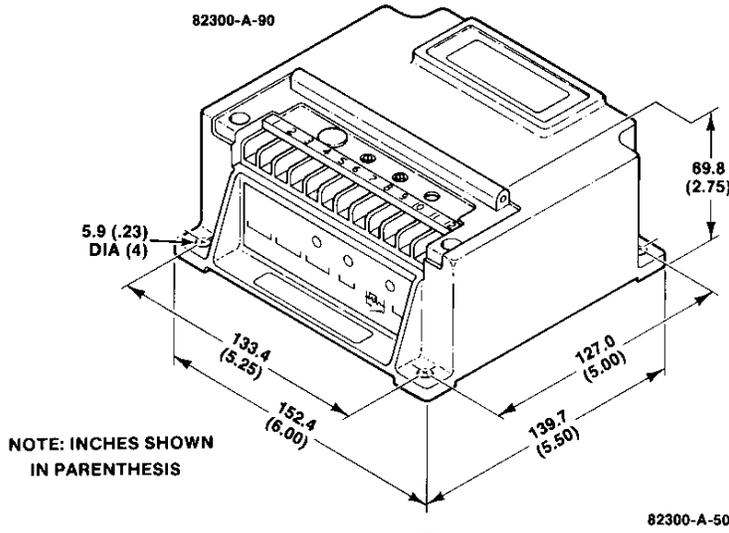
| Model | Battery Voltage | Work Output |
|--------------|------------------------|--------------------|
| 512 | 10–16 V | 0.7 J (0.5 ft-lb) |
| 524 | 20–32 V | 1.0 J (0.75 ft-lb) |
| 1712 | 10–16 V | 1.6 J (1.2 ft-lb) |
| 1724 | 20–32 V | 2.3 J (1.7 ft-lb) |



512/524 Actuator



1712/1724 Actuator



Control

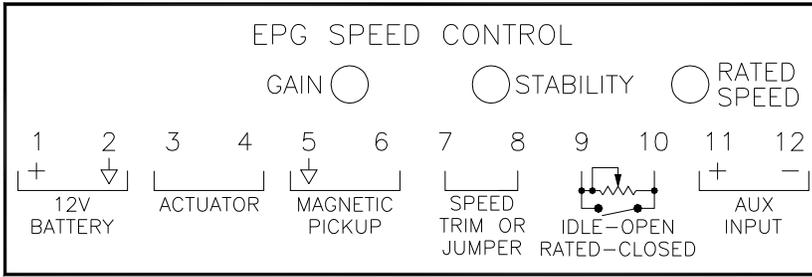
Figure 1-1a. EPG Control and Actuators

MOUNTING SCREWS

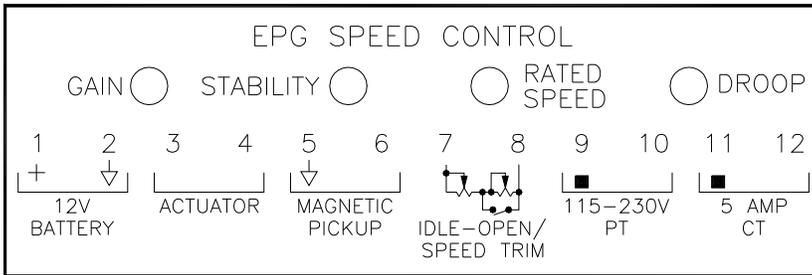
0.250-20 (inch) thread. Minimum mounting screw engagement should be 9.5 mm (0.375 inch). Torque screws to 9–11 N·m (80–100 lb-in).

The speed control is designed to operate within a temperature range of –40 to +75 °C (–40 to +167 °F). Mount the control in a location with space for adjustment and wiring access. If mounted on the prime mover, do not expose the speed control to sources of radiant heat such as exhaust manifolds or turbochargers. Also choose a protected location so that the control won't be damaged when moving the prime mover or when equipment is moving nearby. Mount the control close to the actuator and battery to meet the wire length requirements. Allow for adequate ventilation.

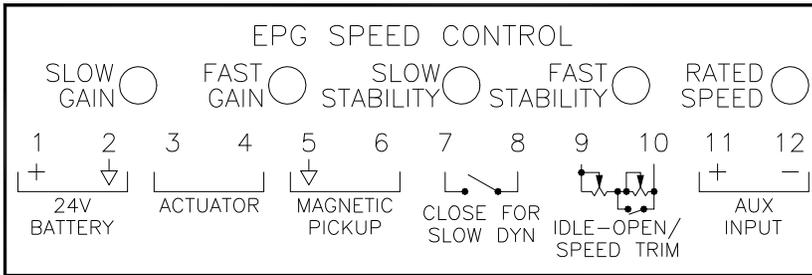
The EPG speed control must be mounted on a metal plate that is at the same ground potential as the case. The case and mounting plate must be grounded to either the protective earth of the building or, if no protective earth is available, the frame ground of the engine/skid.



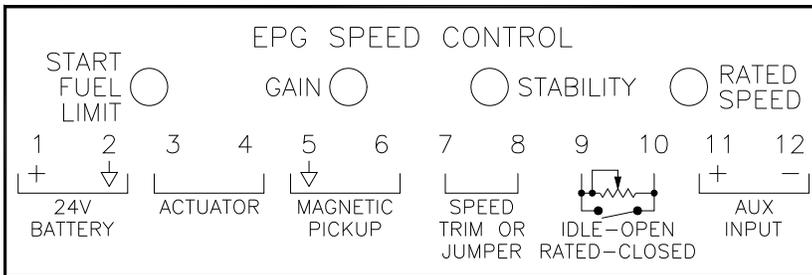
STANDARD EPG (WITHOUT DROOP)



STANDARD EPG (WITH DROOP)



DUAL DYNAMICS CONTROL



START FUEL LIMIT CONTROL

823-656
06-3-17

Figure 1-1b. EPG Control Faceplate

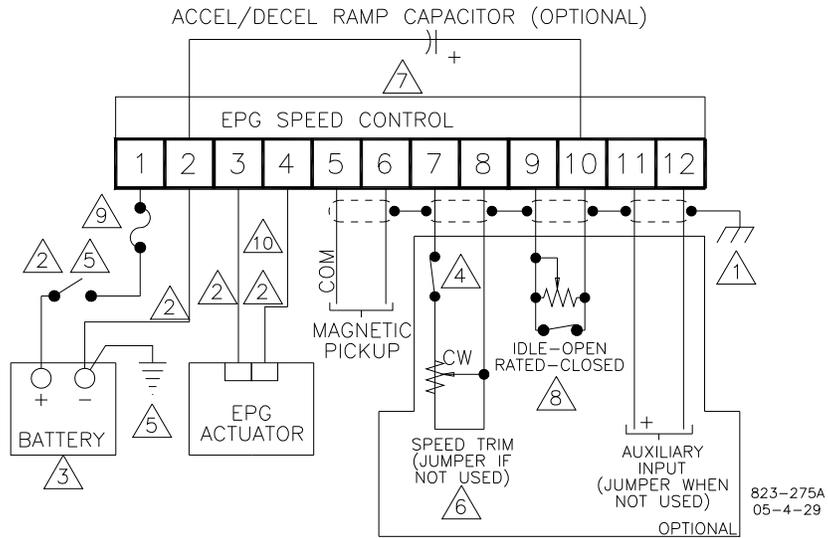


Figure 1-2. Wiring Diagram (Isochronous EPG)

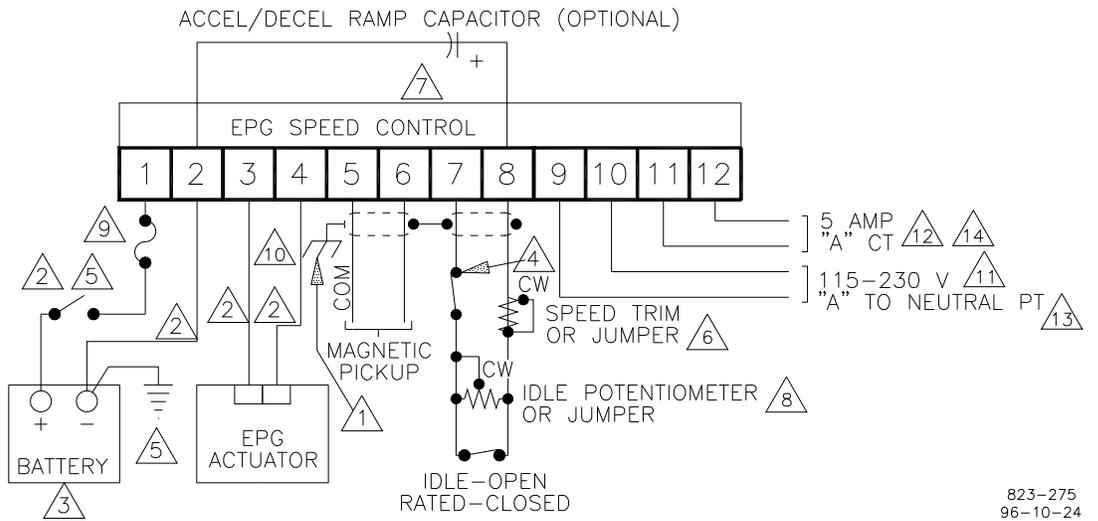


Figure 1-3. Wiring Diagram (EPG with Droop)

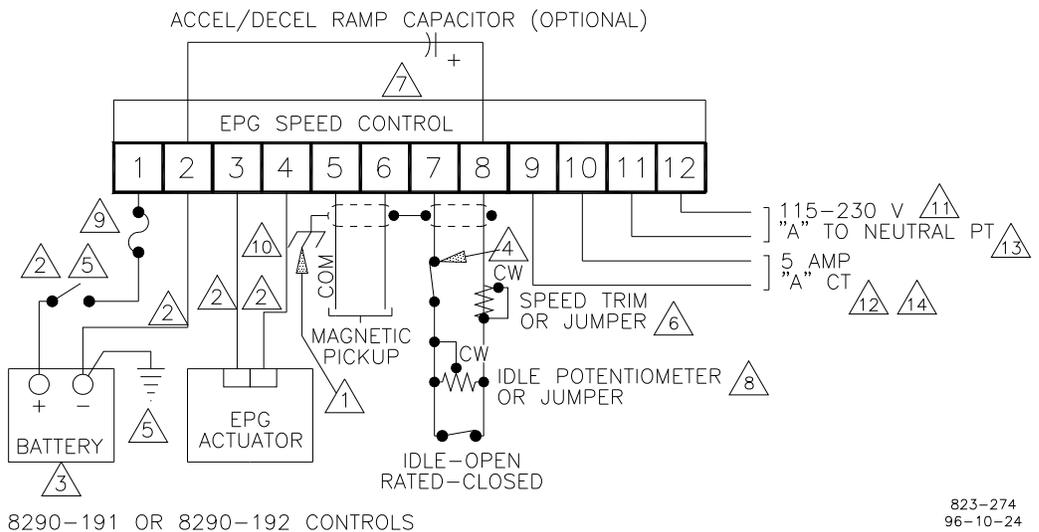


Figure 1-4. Wiring Diagram (EPG Models 8290-191, -192)

Wiring Diagram Notes

1. Shielded wires to be twisted pairs or twisted 3-conductor, grounded at one end only.
2. 4 or 2 mm² (12 or 14 AWG) stranded wire, must be as short as possible and routed as a pair ≤10 mm apart. Total of distance from battery to control, and from control to actuator, to be as short as possible (see maximum length in chart).

Note: In expensive AC to DC Battery chargers used for maintaining the battery charge allow moderate surges from the AC mains to couple to DC power: To protect the EPG a surge arrestor of at least the energy & voltage capability of a V47ZA7 MOV should be placed from battery minus to battery plus terminals.

3. See EPG Models above for source voltages.
4. Open for minimum fuel. Do not use either the minimum fuel option, or disconnect the actuator leads, or disconnect the power to the control as part of any emergency stop sequence.
5. For positive ground systems, switch and fuse to be located in series with battery (-) and terminal 2. Positive (+) terminal becomes chassis ground. Leads from battery to terminals 1 and 2 must be direct and not pass through distribution points.
6. Approximate speed change with trim potentiometer:
±2.5% using a 1 kΩ potentiometer
±5% using a 2 kΩ potentiometer
7. About one second ramp time per 50 μF. Capacitor specification: 200 μF maximum, 15 W minimum, less than 30 μAdc leakage current over temperature range.
8. Idle range about 25% to 200% of rated, using 50 k potentiometer. For fixed idle, calculate the value of the resistor:

$$R = 17 \text{ k}\Omega \left(\frac{\text{Rated Speed}}{\text{Idle Speed}} - 1 \right)$$

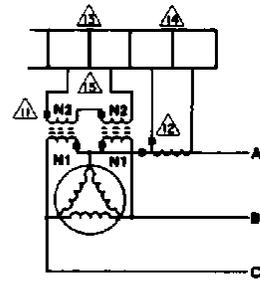
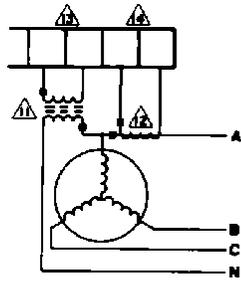
9. 512/24 and 1712/24 use a 10 A fuse.
10. Polarity not important.
11. With a balanced load and unity power factor (PF=1), the current transformer should be wired in the correct potential leg, and must be phased at the control so the potential at terminal 9 to 10 is in phase with the CT from terminal 11 to 12.
12. Power source current transformers should be sized to produce a 5 A secondary current, with maximum generator current. CT burden is essentially 0 VA.
13. Absolute minimum signal must be 95 Vrms. Absolute maximum signal must be 260 Vrms. Potential transformer burden is 20 VA.
14. This control contains an internal current transformer. This transformer must be connected across the power source transformer whenever the unit is running to prevent lethal high voltage from developing on leads to these terminals.
15. On systems without a neutral, the voltage at terminal 9 to 10 is 1.73 times N2/N1 times the line-to-line voltage.

Maximum Wiring Length Chart

| System | Maximum Wire Length | |
|-----------------|-------------------------------|-------------------------------|
| | 2 mm ² (14 AWG) | 4 mm ² (12 AWG) |
| 12 V (512/1712) | 3 m (10 ft) | 6 m (20 ft) |
| 24 V (524/1724) | 11 m (35 ft) | 23 m (75 ft) |

Wire Harness Part Numbers

| Harness Part Number | Harness Lengths | | |
|------------------------|-----------------|---------------|---------------|
| | MPU | Actuator | Battery |
| 8924-621 | 10 ft (3 m) | 15 ft (4.6 m) | 15 ft (4.6 m) |
| 8924-620 | 10 ft (3 m) | 25 ft (7.6 m) | 25 ft (7.6 m) |



Chapter 2. Installation and Troubleshooting

Installation

Speed Control

The speed control box should be mounted on the control panel, often on the same skid as the engine. It is not designed for installation on the engine. Provide space for adjustment, wiring access, and ventilation. Choose a location that protects the control from being bumped and that the wiring harness will reach. The installation should allow for adequate air circulation to the control box and have an ambient temperature of -40 to $+75$ °C (-40 to $+167$ °F).

Actuator

Install the actuator solidly, and install a linkage with the correct configuration to provide an almost linear relationship between change of actuator position and change in engine power output. In most cases use about 2/3 of the actuator rotation between minimum and maximum fuel. The engine fuel control usually provides the minimum and maximum stops. The minimum and maximum stops on the actuator may be used, if necessary (see Figure 2-1). If the actuator is controlling the speed-setting shaft of a mechanical governor, use the actuator stops to limit the travel of the linkage. Set the minimum stop for 5% below rated speed at no load, and set the maximum stop for rated speed plus 3% more than the droop of the governor. The actuator is designed to operate in ambient temperatures of -40 to $+82$ °C (-40 to $+180$ °F). Installation should avoid sources of excessive heat.

NOTICE

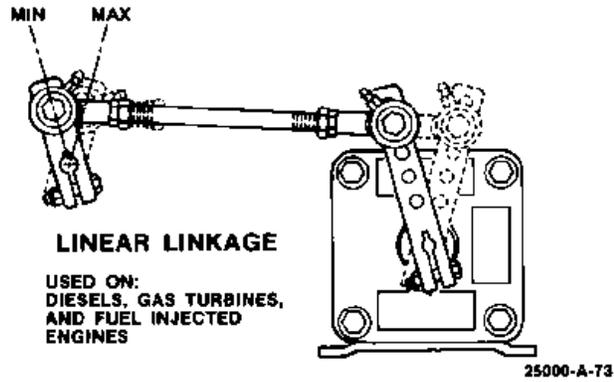
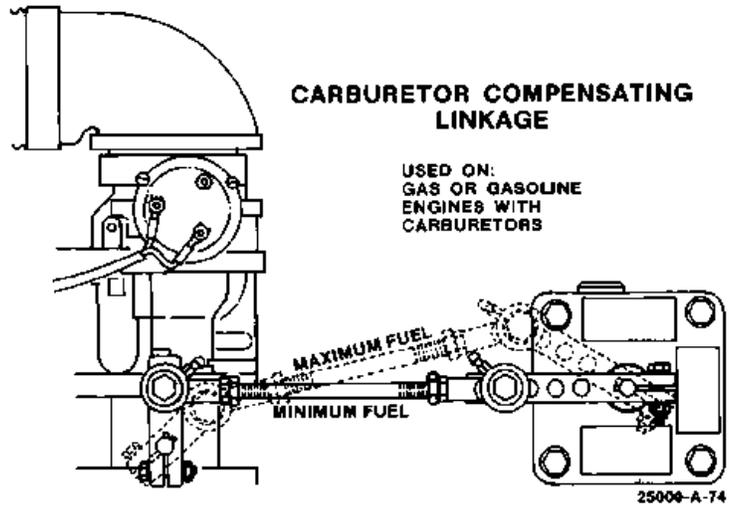
Do not pressure wash sealed bearings—you may force dirt inside them, shortening their life. If the actuator is exposed to weather, mount it with the clockwise end higher, if possible.

Magnetic Pickup (MPU)

Install the magnetic pickup on a rigid bracket or housing so its tip is near an engine-driven gear. This gear must be made of a ferrous material that reacts to a magnetic field. Adjust the MPU for 0.25 to 1.0 mm (0.010 to 0.040 inch) between the gear and the MPU at the closest point.

Electrical Connections

Connect the system as shown in the appropriate wiring diagram (Figures 1-2, 1-3, 1-4). See the appropriate manual for wiring of accessories. Connect the speed control to system ground.



CONTROLLING A MECHANICAL GOVERNOR

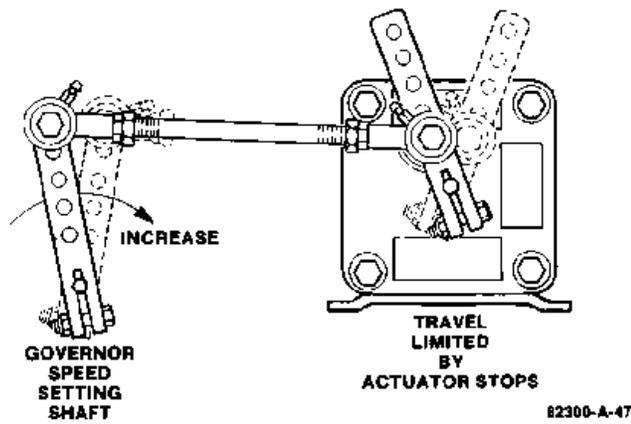


Figure 2-1. Actuator Linkages

Shields

Use twisted-pair, shielded wire where the wiring diagram shows. Each shield must be grounded only at the end nearest the control. Do not ground both ends of a shield. Tie all shields to the same ground point. When passing a shield through a terminal block, connect the shield to its own terminal. Do not ground the shield at the terminal block. Do not solder to braided shields.

NOTICE

Damage to the speed control will occur if the battery is disconnected while the alternator or battery charging device is energized and connected to the control.

Installation Check and Troubleshooting

All Units

To verify correct system operation after installation and any time trouble occurs, do the following checks in the order given. Disconnect all accessories. Leave the IDLE/RATED switch or jumper connected. On isochronous EPGs, jumper terminal 7 to terminal 8, and terminal 11 to terminal 12. On EPGs with droop, leave terminals 9, 10, 11, and 12 disconnected with CT and PT wires properly secured for safety. On EPGs with dual dynamics, leave terminals 7 and 8 open to select primary (fast) dynamics.

If the system does not respond as indicated, find the fault and correct it.

1. Check electrical connections:
Correct?
Tight?
2. Magnetic Pickup:
Correctly adjusted?
Tight?
Resistance of 50–350 Ω ?
3. Close the IDLE/RATED switch (or install a jumper).
4. Turn the governor power on: (Do not start the engine or turbine.)
Fuse OK?
Actuator shaft settles in minimum fuel position?
5. Battery Voltage:
10 to 16 Vdc for model 512, 1712?
20 to 32 Vdc for model 524, 1724?

Gain and Stability

6. Set the IDLE potentiometer (pot) (if used) to mid-position.
7. Set the RATED speed pot fully counterclockwise (to minimum speed setting).
8. Set the GAIN and STABILITY pots to mid-position.
9. Set START FUEL LIMIT clockwise (if applicable).
10. Start the engine or turbine, following manufacturer's instructions.



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.

Verify:

- MPU voltage between terminals 5 and 6 at least 1.5 Vrms while cranking? (For small gears, it may be necessary to decrease the MPU clearance). Do not decrease below 0.25 mm (.010 inches).
- Actuator should go to maximum fuel position when the starter turns engine or turbine. (If applicable, Start Fuel Limit must be fully clockwise.)
- When the engine or turbine starts and comes to speed, the actuator arm should move toward minimum-fuel position.

11. Adjust the GAIN pot to the stable region between low-frequency and high-frequency oscillation.
12. If there is a low-frequency oscillation which does not stop when the GAIN pot is adjusted, turn the STABILITY pot slightly clockwise and try the GAIN pot adjustment again. Continue adjusting the STABILITY pot slightly clockwise, then readjusting the GAIN pot, until the engine runs at a steady speed.

If there is a high-frequency oscillation which will not stop, even when the GAIN pot is fully counterclockwise, adjust the STABILITY pot slightly counterclockwise until the high-frequency oscillation stops.

Speed Settings

13. Adjust the RATED SPEED pot for the desired rated speed.
14. Set the IDLE SPEED pot for the desired idle speed.
15. Close the IDLE/RATED switch.
16. Adjust transient response. Simulate a transient by manually bumping the linkage.

To decrease settling time (may increase ringing) after a transient, turn the GAIN pot clockwise slightly, then turn the STABILITY pot as required to eliminate oscillation and to obtain desired response. Repeat if necessary.

To decrease ringing (will increase settling time) after a transient, turn the GAIN pot counterclockwise slightly, then turn the STABILITY pot as required to eliminate oscillation and obtain desired response. Repeat if necessary.

17. Select alternate dynamics and alternate fuel, if applicable. Repeat this step as necessary.

This completes the check of units without droop. For units with droop, do the following additional steps.

Droop Adjustment (only for units with droop)

IMPORTANT

The EPG Load Sensor Module cannot be used with the EPG model that has internal droop.

For Isolated Load:

1. Connect the PT wires to terminals 9 and 10 and the CT wires to terminals 11 and 12. Verify correct polarity (see the wiring diagram).
2. Adjust the RATED SPEED pot for rated speed with no load.
3. Apply 100% rated load or available load.

WARNING

If engine speed increases when load is applied, there is danger of death, personal injury, or damage to equipment. Be prepared to control the engine or turbine manually by forcing the actuator arm toward the minimum-fuel position. If engine speed does increase with load, reverse either the PT or CT input wires.

4. Adjust the DROOP pot to give a speed of:

$$\text{Rated Speed} - \frac{\% \text{Droop} \times \text{Rated Speed}}{100\%} \times \frac{\% \text{Load}}{100\%}$$

Example 1:

The generator set is a 60 Hz unit with an isolated load. If the desired droop is 5% and the generator set can be run at 100% load, then the speed at full load would be 57 Hz.

Example 2:

It is again desired to set the droop of the same generator set to 5%, but this time the generator set cannot be run at 100% load. The generator set is therefore run at 50% load and the speed (in step 3) would be 58.5 Hz.

Example 3:

The generator set is a 60 Hz unit that will be paralleled with an infinite bus. If the desired droop is 5% and the generator set can be run at 100% load, the speed at which the generator is run (in step 2) would be 63 Hz.

Example 4:

It is again desired to set the droop of the same generator set to 5%, but this time the generator set cannot be run at 100% load. It has been decided to run the generator set at 50% load, so the speed (in step 2) at which the generator set is run would be 61.5 Hz. In step 7, the DROOP pot is then turned counterclockwise only until the load is 50%.

Paralleled with Infinite Bus:

1. Run the generator set unloaded at rated speed.
2. Adjust the RATED SPEED pot to give a speed of:

$$\text{Rated Speed} - \frac{\% \text{Droop} \times \text{Rated Speed}}{100\%} \times \frac{\% \text{Load}}{100\%}$$

3. Mark the position of the pot and return to rated speed.
4. Turn the DROOP pot fully clockwise (for maximum droop).
5. Synchronize the generator to, and parallel it with, the bus.
6. Return the RATED SPEED pot to the mark made in step 3.
7. Turn the DROOP pot counterclockwise (decreasing droop) until load is 100% (or the desired % of load).

Chapter 3.

Product Support and Service Options

Product Support Options

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 | Products Used In Engine Systems | Products Used In Industrial Turbomachinery Systems |
|--|--|---|
| <u>Facility</u> ----- <u>Phone Number</u> | <u>Facility</u> ----- <u>Phone Number</u> | <u>Facility</u> ----- <u>Phone Number</u> |
| Brazil -----+55 (19) 3708 4800 | Brazil -----+55 (19) 3708 4800 | Brazil -----+55 (19) 3708 4800 |
| China -----+86 (512) 6762 6727 | China -----+86 (512) 6762 6727 | China -----+86 (512) 6762 6727 |
| Germany: | Germany-----+49 (711) 78954-510 | India -----+91 (1294) 4399500 |
| Kempen----+49 (0) 21 52 14 51 | India -----+91 (1294) 4399500 | Japan-----+81 (43) 213-2191 |
| Stuttgart--+49 (711) 78954-510 | Japan-----+81 (43) 213-2191 | Korea-----+82 (51) 636-7080 |
| India -----+91 (1294) 4399500 | Korea-----+82 (51) 636-7080 | The Netherlands- +31 (23) 5661111 |
| Japan-----+81 (43) 213-2191 | The Netherlands- +31 (23) 5661111 | Poland-----+48 12 295 13 00 |
| Korea-----+82 (51) 636-7080 | United States----+1 (970) 482-5811 | United States----+1 (970) 482-5811 |
| 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 K—

- Updated Declaration of Conformity
- Added speed mounting control information
- Added Note to notes on page 6.

Declarations

DECLARATION OF CONFORMITY

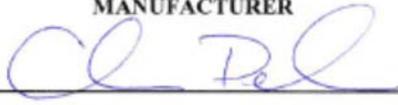
DoC No.: 00149-04-EUR-02-01.DOCX
Manufacturer's Name: WOODWARD INC
Manufacturer's Address: 1000 E. Drake Rd.
Fort Collins, CO, USA, 80525
Model Name(s)/Number(s): EPG 12V 8290-187 and Similar
EPG 24V 8290-185 and Similar

The object of the declaration described above is in conformity with the following Directives of the European Parliament and of the Council: 2014/30/EU COUNCIL DIRECTIVE of 26 February 2014 on the approximation of the laws of the Member States relating to electromagnetic compatibility and all applicable amendments.
Conformance to Directive(s):

Applicable Standards: EN 61000-6-2:2005 Electromagnetic Compatibility (EMC) -Part 6-2: Generic Standards - Immunity Standard for Industrial Environments
EN 61000-6-4:2011 Electromagnetic Compatibility (EMC) -Part 6-4: Generic Standards - Emission Standard for Industrial Environments

This declaration of conformity is issued under the sole responsibility of the manufacturer
We, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s).

MANUFACTURER



Signature

Full Name

Position

Place

Date

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication **82329K**.



B 8 2 3 2 9 : K



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

Email and Website—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.