

PM Speed Adjusting Motor for UG-8 Governors

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

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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:

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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**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.

PM Speed Adjusting Motor for UG-8 Governors

Description

PM Motor

The PM (permanent magnet) motor provides a means of remote speed adjustment for the Woodward UG-8 governor. Alternator frequencies can be matched, or when operating in droop mode, load distribution may be changed as required remotely.

The PM motor is mounted on top of the UG-8 governor. It is coupled to the governor's speed setting mechanism through a friction clutch. Should the operator run the speed adjustment to its limit, the clutch is set to slip, and, therefore, protect the speed adjusting motor.

A circuit board mounted internally provides easy access to the plug-in wiring. The permanent magnet motor operates on dc power. However, diodes are mounted on the circuit board when it is required to rectify ac to provide dc. The circuit board also contains a dropping resistor which reduces the voltage from 115 V to 24 V. Different voltage drops are possible by using different resistors. In some cases, the circuit board is modified for using dc power supply.

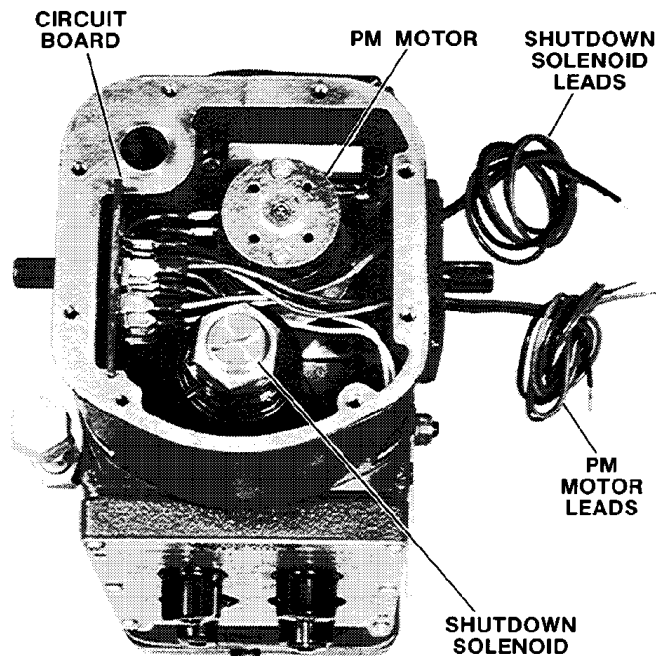


Figure 1. Top View of Housing with PM Motor and Shutdown Solenoid

The housing is tapped for conduit connections, or in some cases, it is fitted with pin-type connectors.

At rest, the permanent magnet motor acts as a brake to resist speed changes due to vibrations.

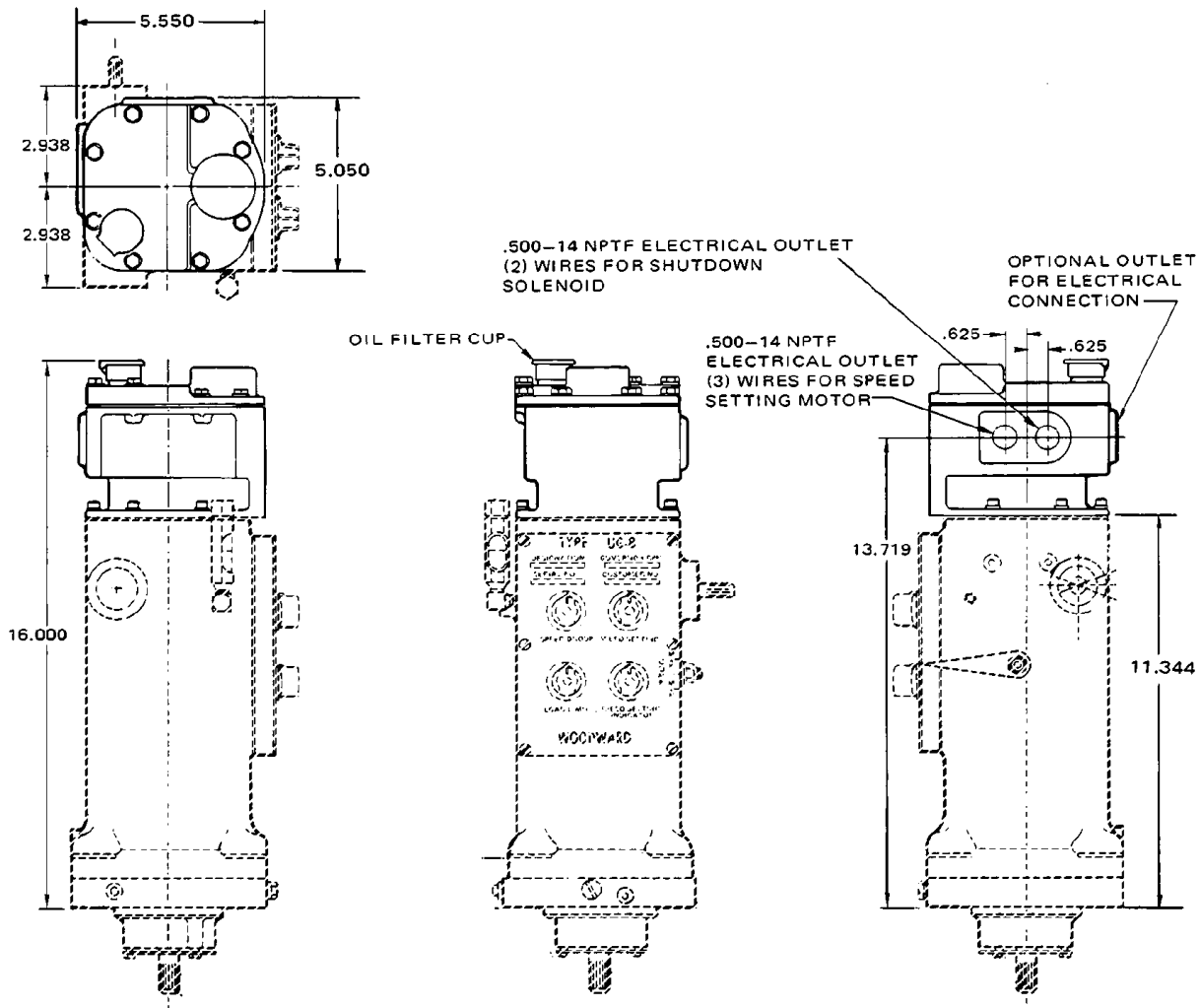


Figure 2. Outline of UG-8 Governor with PM Motor
(Do not use for construction.)

Shutdown Solenoid

For a solenoid-operated shutdown and to prevent discharging batteries (that power an energized-to-shutdown solenoid) due to unproductive operation, or premature component failure, we recommend providing a delay that shuts off power to the solenoid after 2 or 3 minutes.

There are four different shutdown solenoids that can be used:

- Energize to shutdown with latch
- Energize to shutdown without latch
- De-energize to shutdown with latch
- De-energize to shutdown without latch

References

Product Specification 03029, UG-8 Governor
Manual 03040, UG-8 Dial Governor

Installation and Adjustments

Introduction

This section provides information for initial installation and adjustments (if voltage changes are required).



WARNING

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.

Installation

Installation requires the connection of three wires for the PM motor and two wires for the shutdown solenoid. The wiring diagrams in this manual provide the necessary information.

If the housing is ordered separately for use on an existing governor, all that is required is the removal of the old cover before setting this assembly in place on the governor. The plunger on the solenoid must contact the shutdown strap in the governor. Some adjustment for mounting may be necessary. Loosen the screws holding the PM motor in place and align the motor shaft with the clutch. Retighten the screws.

PM Motor Adjustments

There are no adjustments available for the PM motor. However, the connections on the circuit board may be changed to conform with the input voltage, which can be either 115 Vac, or 24 and 32 Vdc. Wiring diagrams are shown for the different voltages. A wiring diagram is also provided underneath the cover of the governor.

The toggle switches shown are a suggested way of connecting the leads. The switches are normally not supplied by Woodward.

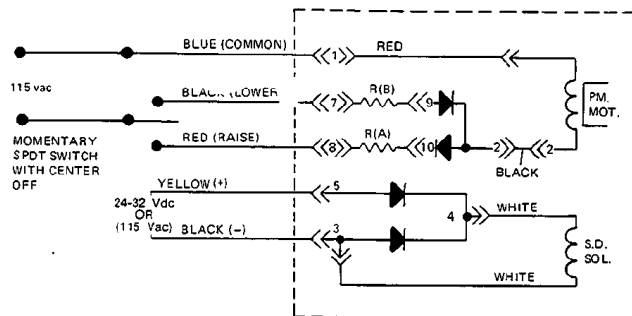


Figure 3. 115 Vac Motor Wiring Schematic

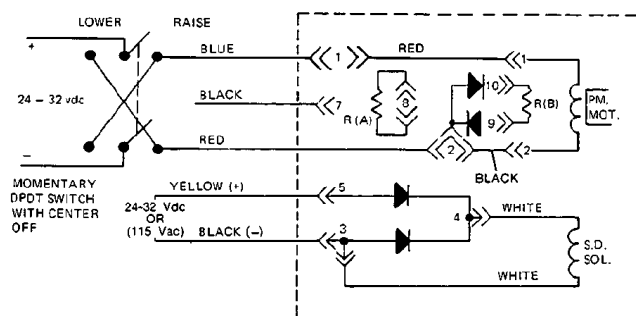


Figure 4. 24-32 Vdc Motor Wiring Schematic

Replacement Parts Information

When ordering replacement parts, include the following information:

- Governor serial number and part number shown on the nameplate
- Manual number (this is manual 03035)
- Parts reference number in parts list and description of part or part name

Parts List For Figure 5

Ref. No.	Part Name.....	Quantity
03035-21	Motor housing	1
03035-22	Soc. hd. cap screw. 10-32 x 0.625.....	8
03035-23	Lockwasher, #10-0.190 ID	8
03035-24	Cable assembly (P.C. Bd. to outside conn.) ..	1
03035-25	Potting stop.....	1
03035-26	Wire protector bushing.....	2
03035-27	Potting stop.....	1
03035-28	Cable assembly (P.C. Bd. to outside conn.) ..	1
03035-29	Motor gasket.....	1
03035-30	Motor	1
03035-31	Lockwasher, #6.....	4
03035-32	Cap screw, 0.312-18 x 0.875	4
03035-33	Resistor assembly	2
03035-34	Shakeproof washer #4	2
03035-35	Soc. hd. screw. 4-40 x 0.750	2
03035-36	Gasket	1
03035-37	Cover	1
03035-38	Oil cup	1
03035-39	Screw.....	4
03035-40	Screw, #10.....	4
03035-41	Pressure pad	1
03035-42	PC. board.....	1
03035-43	Housing gasket.....	1
03035-44	Cable assembly (P.C. Bd. to Sol.)	1
03035-45	Grommet.....	2
03035-46	Plug	1
03035-47	Wiring Harness (P.C. Bd. to motor)	1

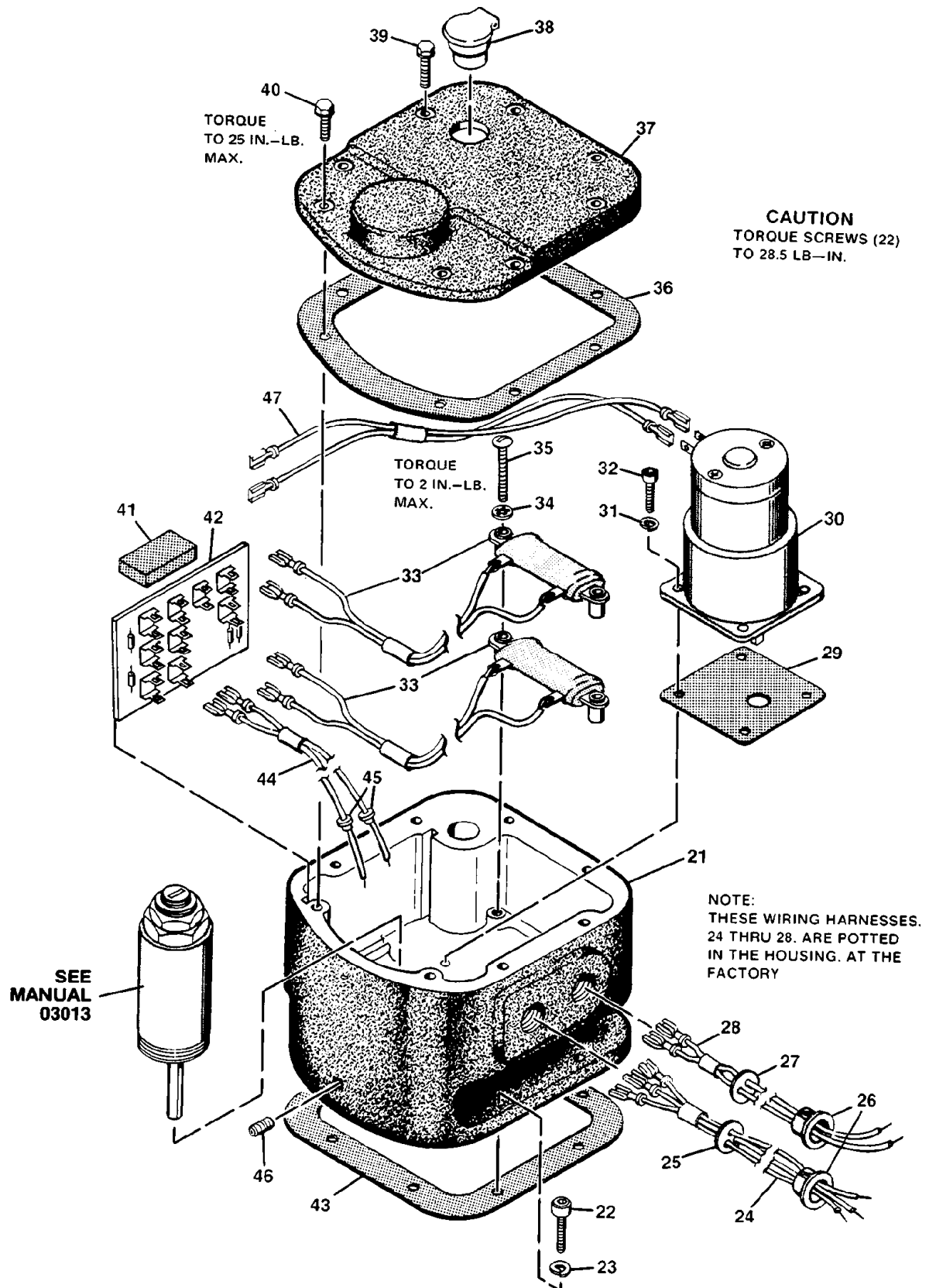


Figure 5. Exploded View of PM Motor Assembly

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Send comments to: icinfo@woodward.com

Please reference publication 03035D.



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