



Product Manual 36052
(Revision A)
Original Instructions

Magnetic Speed Pickup
for PG, UG-8, and UG-40 Governors

Installation and Operation Manual

IMPORTANT



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.

DEFINITIONS

- **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

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.



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.



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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.

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.

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*.

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Magnetic Speed Pickup for PG, UG-8, and UG-40 Governors

General

The magnetic speed pickup used in the PG-PL, PG-PH, UG-8, and UG-40 governors is a device used to obtain an indication of engine speed without providing an additional drive pad on the engine. The pickup is installed with the pole piece 0.003 to 0.007 inch (0.08 to 0.18 mm) from the outside diameter of the governor ballhead drive gear. As each gear tooth moves past the pole piece, the external magnetic field produced by the pickup is interrupted momentarily by the tooth. In the coil of the pickup, this action generates an alternating voltage with a frequency proportional to the ballhead speed. This variable frequency voltage may be used in an electrical circuit with a frequency meter or other device to produce an output indicative of governor or engine speed. Two models of magnetic pickups are available, "regular" and "explosion proof".

The two models have an external 5/8"-18 thread which installs in a mating tapped hole in the PG, UG-8, and UG-40 case. It is necessary to use an adapter to install the optional 3/4"-20 explosion proof speed pickup on the UG-40 case. The left side of the PG-PL column is drilled and tapped for a left-hand installation of the 5/8"-18 magnetic pickup. Right hand installation must be requested.

By rotating the pickup in the tapped hole in the PG column or UG case, the position of the pickup is adjusted relative to the ballhead drive gear teeth. Jam nuts are provided to lock the pickup securely in position. Seals are used to prevent governor oil leakage past the threads of the pickup and the adapter.

NOTICE

Use care when installing connectors to the magnetic pickup. It is factory preset 0.003 to 0.007 inch (0.08 to 0.18 mm) from the ballhead gear. Changing this setting may damage the gear and/or pickup, causing governor malfunction. Do not install junction boxes on explosion proof pickups.

Because of the machining required on the governor before installation of the magnetic pickup, the governor should be ordered with the magnetic pickup installed. For retrofit of governors not previously machined for magnetic pickups, return the governor to Woodward.

The mating connector for the standard magnetic pickup is MS-3106A-10SL-4S and is supplied by Woodward. The explosion proof magnetic pickup does not use a mating connector. It is designed with a 1/2 inch internal pipe thread for a conduit connection and has two 10 foot (3.0 m) 18 AWG (0.8 mm²) leads attached.

Installation

If the speed pickup is installed in the governor while in the field, it must be assembled with clearance between the pole piece and the ballhead drive gear teeth of 0.003 to 0.007 inch (0.08 to 0.18 mm). The output of the pickup varies inversely with the clearance. Hence for maximum output, use the smallest clearance possible. The recommended procedure is to turn the pickup clockwise until it touches the highest gear tooth (ballhead must be stopped), and then turn the pickup counterclockwise by a known amount. One turn of the pickup produces a movement of 0.0555" (1.410 mm) for the 5/8-18 thread and 0.050" (1.27 mm) for the 3/4-20 thread.

Figure 1 shows the pickup as installed in a typical PG governor.



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.

Pickup Output Frequency

In the PG or UG governors, the ballhead drive gear rotates at the same speed as the governor drive shaft. However, the output signal of the magnetic pickup will vary in different governors because the gears do not have the same number of teeth. The number of gear teeth is as follows:

UG-8 Governor	17
UG-40 Governor	28
PGA, PG-PL, or PG-PH Governor.....	72

Governor speed should not be confused with engine speed. Drive ratio between the engine and governor must be considered.

Pickup Data

Regular

Impedance: 260 Ω \pm 20% at 1000 Hz
Suitable for temperatures up to 250 °F (121 °C)

Explosion-proof

Impedance: 205 Ω \pm 10% at 1000 Hz
Suitable for temperatures up to 200 °F (93 °C)

UL Listed and CSA certified for:

- Class I, Groups A, B, C, and D
- Class II, Groups E, F, and G

Parts Replacement

When requesting additional information concerning magnetic pickups or governor operation or when ordering parts, the following information must accompany the request:

- Governor serial number (shown on nameplate)
 - Manual number (this is manual 36052)
- Part reference number, name of part, or description of part

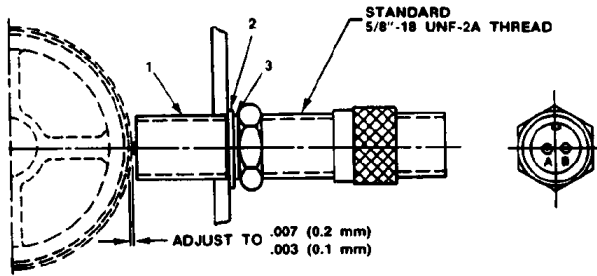


Figure 1. Standard 5/8" Speed Pickup for PG Column

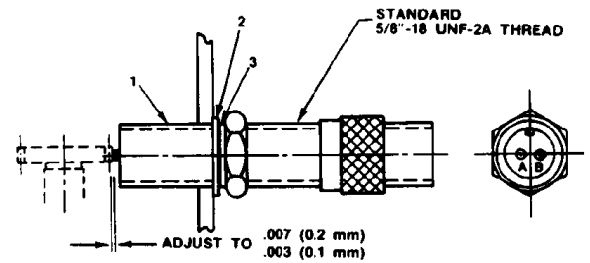


Figure 2. Standard 5/8" Speed Pickup for UG-8 and UG-40 Case

Parts for Figures 1 and 2

Ref. No.	Name of Part	Quantity
36052-1	Magnetic Pickup 5/8"-18 Thread	1
36052-2	5/8" Nitrite Thread Seal	1
36052-3	Washer - .656 ID	1

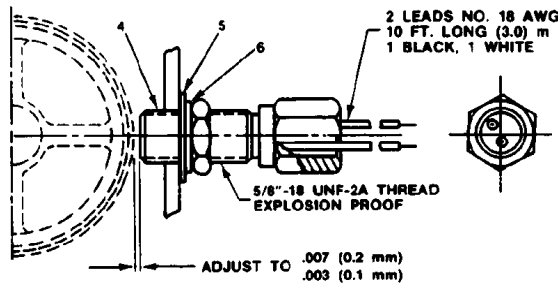


Figure 3. Explosion Proof 5/8"-18 Speed Pickup for PG Column

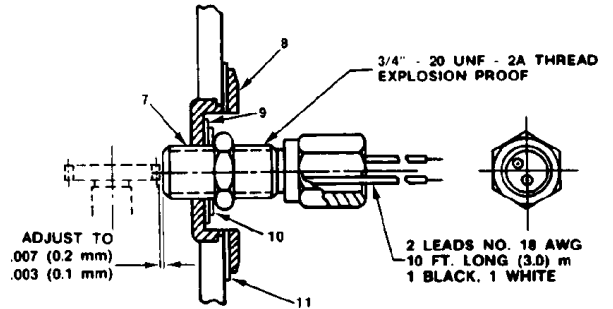


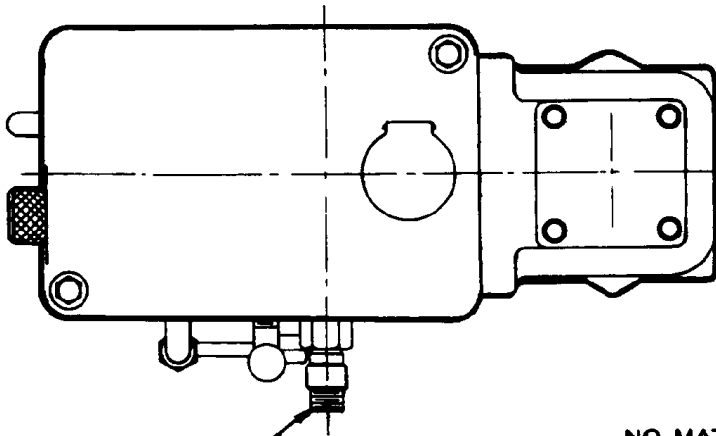
Figure 4. Explosion Proof 3/4"-20 Speed Pickup and Adapter for UG-40

Parts for Figure 3

Ref. No.	Name of Part	Quantity
36052-4	Magnetic Pickup - 5/8"-18 Thread	1
36052-5	5/8 Nitrite Thread Seal	1
36052-6	Washer - .656 ID	1

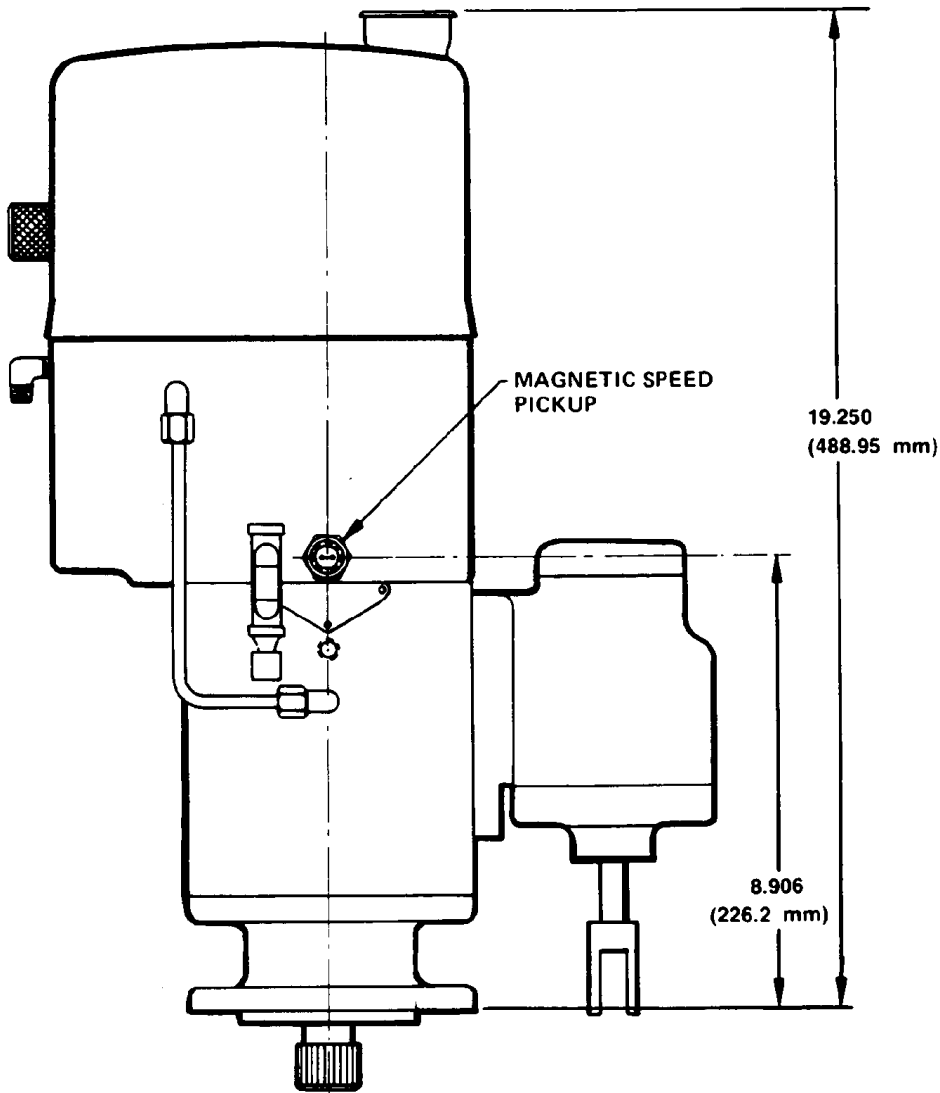
Parts for Figure 4

Ref. No.	Name of Part	Quantity
36052-7	Magnetic Pickup - 3/4"-20 Thread	1
36052-8	Mounting Nut	1
36052-9	Thread Seal	1
36052-10	Washer - 1.125	1
36052-11	Washer - 1.625 x 2.000 Copper	1



MS 3106A-10SL-4S MATING PLUG
USED WITH STANDARD PICK-UP.

NO MATING CONNECTOR REQUIRED
FOR EXPLOSION PROOF PICK-UP.
PICK-UP FURNISHED WITH
10 FT. LONG (3.0 m) NO. 18 AWG LEADS
AND A 1/2" N.P.T. INTERNAL THREAD.



36000-A-61

Figure 5. Pickup Installed in Typical PG Governor

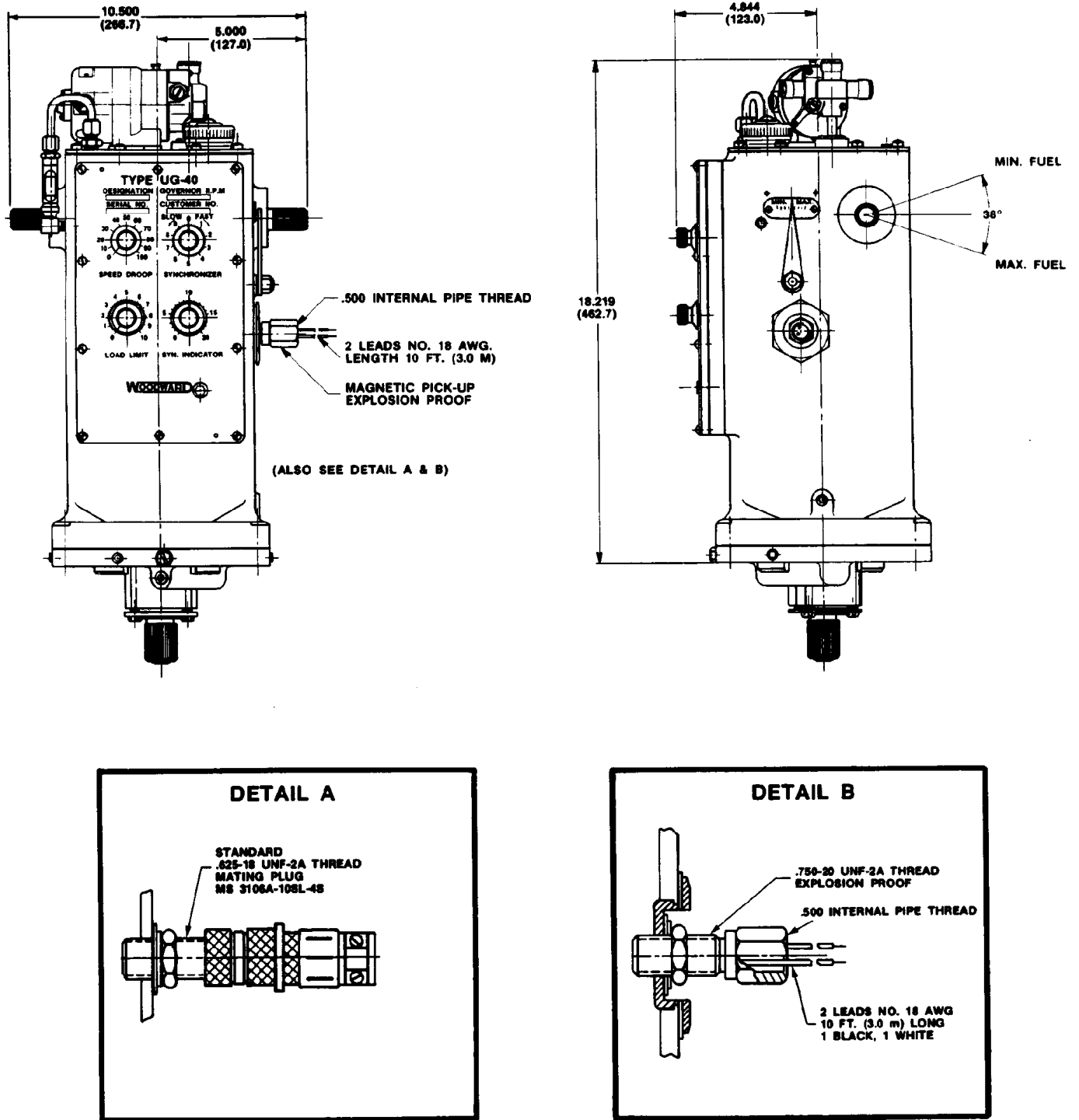


Figure 6. Outline Drawing, UG-40D with Magnetic Pickup

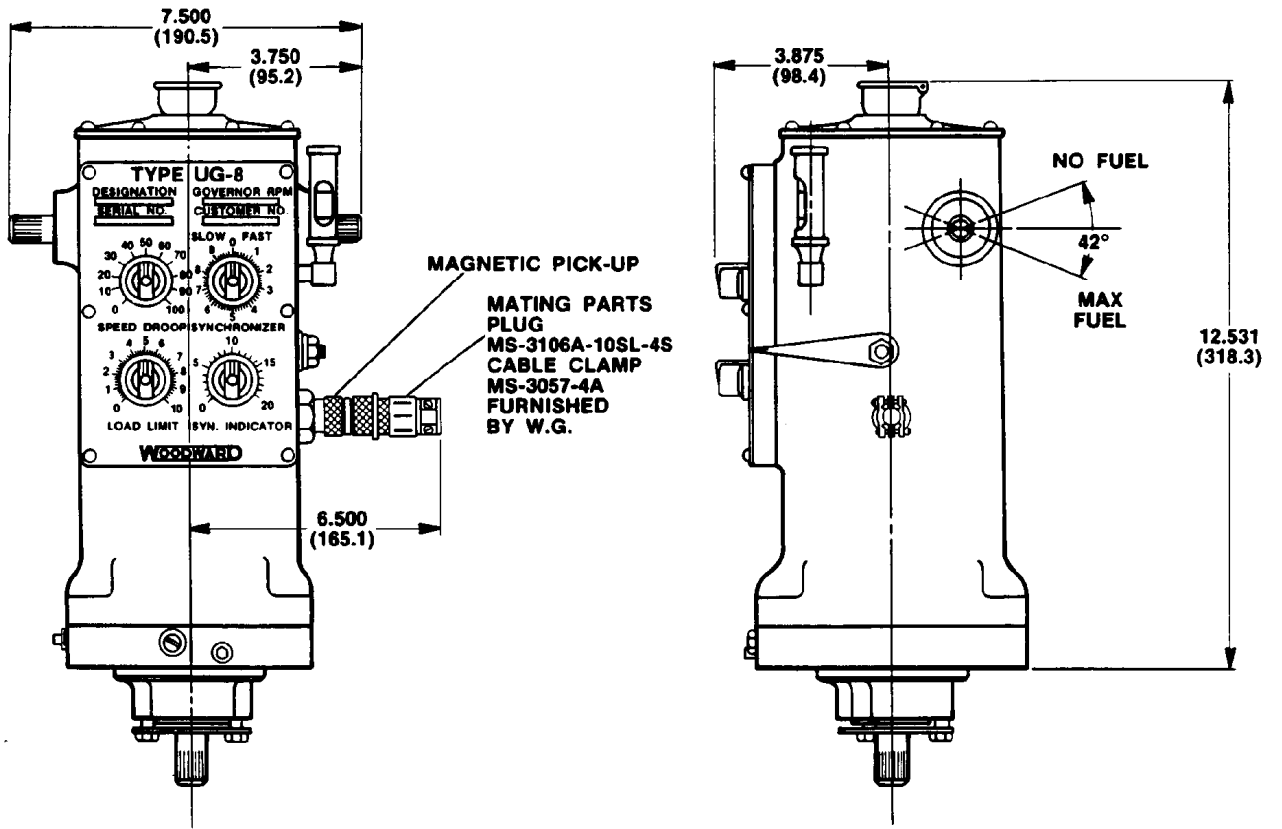


Figure 7. Outline Drawing, UG-8D with Magnetic Pickup

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Send comments to: icinfo@woodward.com

Please reference publication **36052A**.



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