



Installation Manual

8924-607 Installation Kit

**for EPG 1712/1724 Electric Actuator on the
Cummins KT/KTA-2300 GS and KTA 3067 GS Engines**

Manual 54091

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*.

8924-607 Installation Kit for EPG 1712/1724 on the Cummins KT/KTA-2300 GS and KTA 3067 GS Engines

Introduction

These instructions apply to the EPG 1712/1724 (12 or 24 V) electric actuator manufactured by Woodward as mounted on a Cummins KT/KTA-2300 GS or KTA 3067 GS engine driving a generator set. The mounting kit is Woodward part number 8924-607.

The kit does not include the actuator, the wiring harness, or the magnetic pickup utilized by the electronic control system.

The actuator, when mounted on the engine, operates the Cummins fuel (shutdown) shaft, a part of the mechanical governor. The mechanical speed setting is placed in a maximum position allowing full control of engine speed and load through the shutdown lever. The mechanical governor should not be altered.

Avoid pressure washing the EPG actuator, particularly the counterclockwise end of the actuator as water can enter the actuator through the sealed bearing.

Actuator Mounting

(The following information should be used with Figure 2 to provide satisfactory installation of the actuator.)

Attach the actuator to the bracket as shown in the illustration. No gasket or washer is used between the actuator and the bracket surface. Torque the screws to 80 to 100 lb-in (9.0 to 11.3 N·m). Attach the mounting bracket and actuator assembly to the engine as shown. **Note the direction of the rotation arrow.**

Linkage Instructions

Assemble the rod ends and jam nuts on the 0.250-28 threaded rod. Do not tighten the jam nuts at this time. The rod does not work as a turnbuckle and it is necessary to turn a rod end for final adjustment of the length.

The actuator will be at the minimum-fuel position. Attach the lever to the actuator shaft as shown (between 11 and 12 o'clock). Attach the new lever to the shutdown shaft. If manual or emergency shutdown systems are removed from the shutdown shaft to permit the electric actuator installation, they must be provided in other ways. Set the mechanical speed setting at maximum, high enough to allow the engine to operate at maximum load.

The actuator lever should move a minimum of 25 degrees between minimum and maximum fuel (30 degrees will provide better stability). Response can be delayed if too little shaft movement is used, as this creates a deadband in the electronic control between the electrical signal and actual location of the actuator. If less than optimal rotation of the actuator shaft must be used, locate the lever so the actuator shaft approaches maximum-fuel stop on maximum-fuel signal. Adjust the shaft length and the rod end location in the two levers so the linkage lays about 10 degrees from flat at minimum fuel (shutdown).

When establishing the final length of the threaded rod, be sure about the same amount of rod is threaded into each rod end. At least five full threads of the threaded rod should be engaged in each rod end. Do not cause the rod ends to bind when tightening the jam nuts after establishing the proper rod length.



The threaded rod could thread out of a rod end if it is not locked. Since the rod could move without changing speed control or stability until it comes loose, it is extremely important that the Jam nuts on the threaded rod be kept tight.

Wiring Suggestions

If possible use 12 AWG (3.0 mm²), stranded, insulated wire in the circuit from the battery to the control and from the control to the actuator. 14 AWG (2.0 mm²) wire can be used but distances in the circuit must be shortened. Wires from the control to the actuator must be shielded. Use either shielded wire or twisted, three-conductor wire **grounded at the control end only**.

Using 12 AWG (3.0 mm²) wire in the circuit for the 12 V actuator allows a maximum distance of 35 ft (11 m) from the control box to the actuator and 35 ft (11 m) from the battery to the control box. If 14 AWG (2.0 mm²) wire is used, the maximum distances are 10 ft (3 m) from the control box to the actuator and 10 ft (3 m) from the battery to the control box.

The 24 V actuator will allow a maximum distance of 75 ft (23 m) from the control box to the actuator and 75 ft (23 m) from the battery to the control box. If 14 AWG (2.0 mm²) wire is used in the 24 V system, the maximum distance will be 35 ft (11 m) from the control box to the actuator and 35 ft (11 m) from the battery to the control box.

The wire from the battery to the control must be direct from the battery posts to the control, not through a distribution point.

The wire used must not be kinked, and ties should be of a non-conducting material. Use only new, well insulated, stranded wire in the installation. The wire is not supplied in the mounting kit, but special harnesses are available from Woodward.

Wiring Terminal Fittings

Attach AMP 52941 or AMP 52961 crimp-on number 6, slotted, insulated terminals, or equivalent on the control-box end of 12 AWG (3.0 mm²) wires from the actuator and the battery. If 14 AWG (2.0 mm²) wire is used, attach AMP 52935 or AMP 52955 crimp-on slotted, number 6, insulated terminals or equivalent.

The actuator end of the wires should be fitted with a number 8 ring terminal, AMP 35108 or equivalent for 12 AWG (3.0 mm²) wire, or AMP 32236 or equivalent for 14 AWG (2.0 mm²) wire.

Polarity of the actuator connections is not important and the wires can be interchanged.

Protect the actuator electrical connections from accidental damage while servicing the engine.

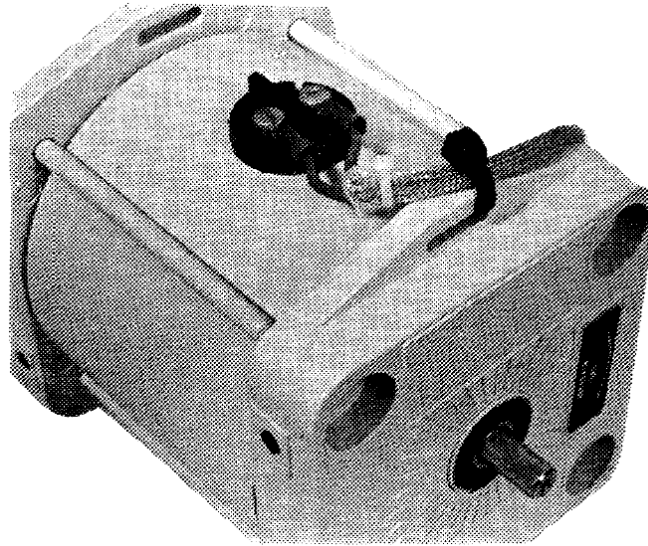
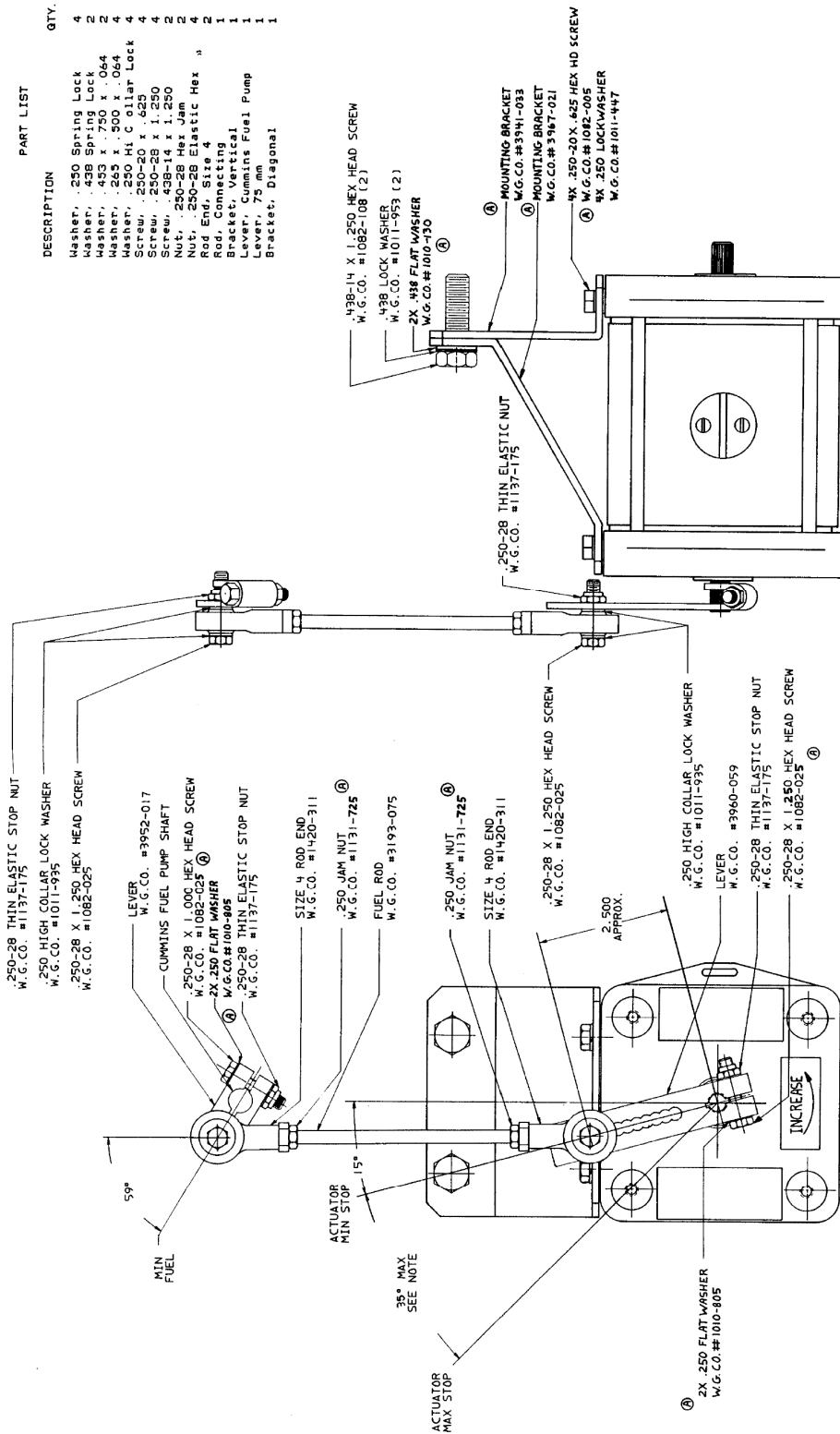


Figure 1. Actuator with Wiring Attached
(Note the tie of the actuator wire to the slot in the side of the actuator. The high-temperature tie included with the actuator should be used.)

DESCRIPTION	QTY.
Washer, .250 Spring Lock	4
Washer, .438 Spring Lock	2
Washer, .453 x .750 x .064	2
Washer, .265 x .500 x .064	4
Washer, .250 Hi Collar Lock	4
Screw, .250-20 x .625	4
Screw, .438-14 x 1.250	4
Nut, .250-28 Hex Jam	2
Nut, .250-28 Elastic Hex	2
Rod End, Size 4	2
Rod, Connecting	1
Bracket, Vertical	1
Lever, Cummins Fuel Pump	1
Bracket, Diagonal	1



NOMINAL 35° OUTPUT SHAFT ROTATION. USE AS MUCH OF 35° AS POSSIBLE. CONTROL PROVIDES MIN AND MAX FUEL FLOW REQUIREMENTS. AT MINIMUM FUEL STOP ACTUATOR LEVER (3960-059) MUST BE FULLY EXTENDED FROM LAYING FLAT AS SHOWN. ACTUATOR ROTATION TOWARDS MAX FUEL IS CCW. PARTS WITH W.G.CO. #'S ARE WOODWARD GOVERNOR PARTS AVAILABLE IN THE 8924-607 MOUNTING KIT.

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Figure 2. Wiring Schematic

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Please reference publication **54091**.



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