WOODWARD

Product Manual 54063
(Revision A)
Original Instructions

8924-612 Installation Kit

for EPG 1712/1724 Electric Actuator on the John Deere 6466A Engine

Installation 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.

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, be sure to check the *publications page* on the Woodward website:

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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*.

Revisions—Text changes are indicated by a black line alongside the text.

8924-612 Installation Kit for EPG 1712/1724 on the John Deere 6466A Engine

Introduction

This manual outlines the use of the actuator mounting kit Woodward part number 8924-612, for installation of a Woodward EPG 1712/1724 electric actuator on a John Deere 6466A engine. The kit does not include wiring harnesses for the magnetic pickup or the electronic control.

The 1712/1724 electric actuator is connected to the shutdown lever of the engine's Bosch RSV400 mechanical governor. The Woodward Electrically Powered Governor (EPG) senses engine speed and sends a correcting signal to the electric actuator. The actuator adjusts the Bosch pump, when necessary, to maintain engine speed at a desired rpm. In event of a loss of control signal, the actuator returns to the minimum-fuel position.

To the best of our knowledge this kit will fit the engine for which it is designed. However, engine manufacturers may make changes and add engine options without notifying us. If problems arise call our Technical Assistance Group, phone 800-523-2831 or +1 (970) 482-5811 and we will try to help.

Actuator Mounting

IMPORTANT **Prior to beginning installation procedure, be sure that the Bosch pump's mechanical governor speed setting is set as high as possible.**

1. Attach the mounting bracket to the electric actuator with four 0.250-20 x .625 hex head cap screws. Ensure that the actuator is placed on the bracket so the counterclockwise end-cap faces toward the rear of engine. Torque screws to 80 to 100 lb-in (9.0 to 11.3 N·m). Figure 1 illustrates actuator and control rod assembly.

2. Remove the upper and lower bolts from the left side of the front mounting skid. Remove the two drip pan bolts located adjacent the skid mounting area. Place a 0.765 ID washer on each of the skid bolts, and a 0.375 x 1.000 fender washer on each of the drip pan bolts.

3. Attach the mounting bracket/actuator assembly to the engine by placing the two skid bolt/washer assemblies in the mounting bracket holes. Finger tighten the bolts.

4. Place the two drip pan bolt/washer assemblies in the slotted holes located on the bottom of the bracket and finger tighten. Torque skid bolts to 30 to 100 lb-ft (41 to 136 N·m) and drip pan bolts to 400 to 500 lb-in (45 to 56 N·m). Figure 1 illustrates location of bracket on mounting skid.

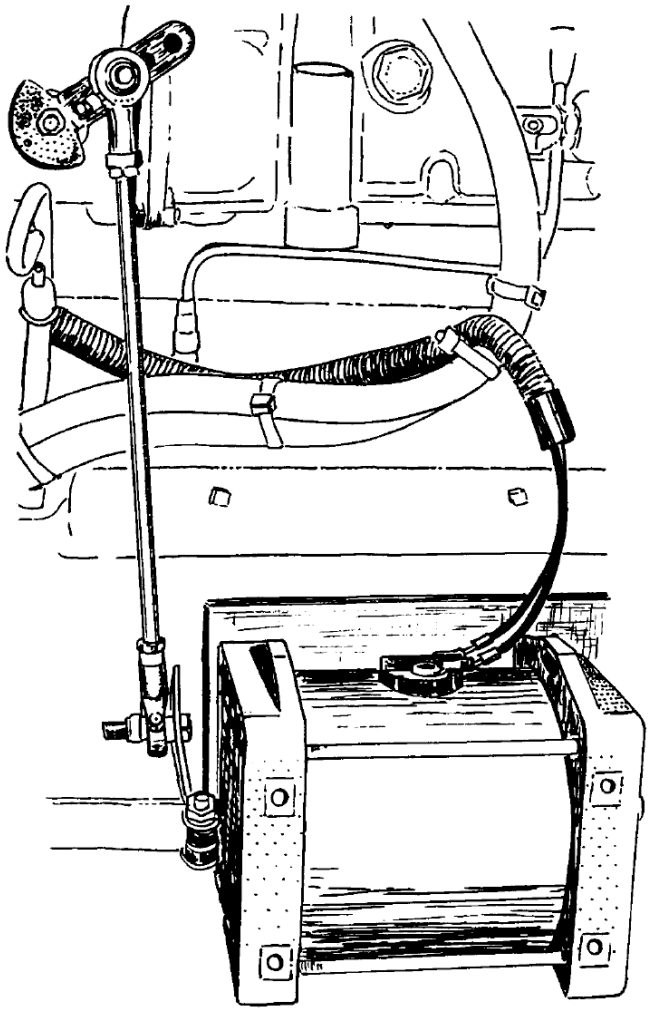

Figure 1. Actuator and Control Rod Assembly

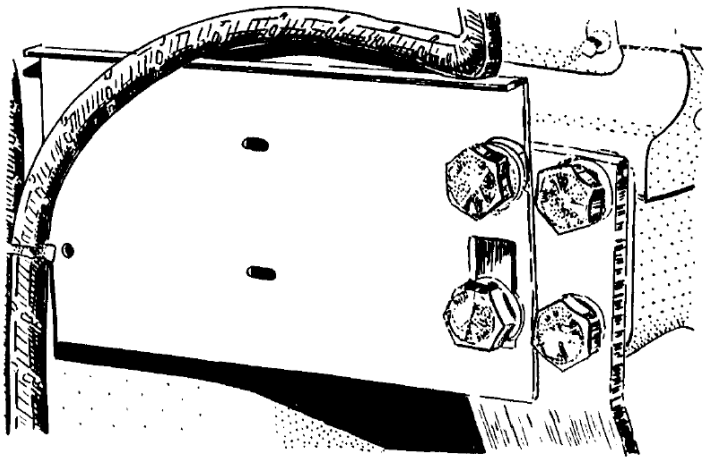

Figure 2. Location of Mounting Bracket

5. Assemble the 75 mm actuator lever to the actuator shaft located at the counterclockwise end of the actuator. Small side of the lever must face actuator.

6. Assemble a 0.250-28 x 1.250 hex head cap screw, with 0.250 flat washer located directly under the screw head. Head of screw must be placed on the side of the lever that faces the actuator. Place a 0.250 flat washer and a 0.250-28 elastic hex nut (thin) on the screw (Figure 3).

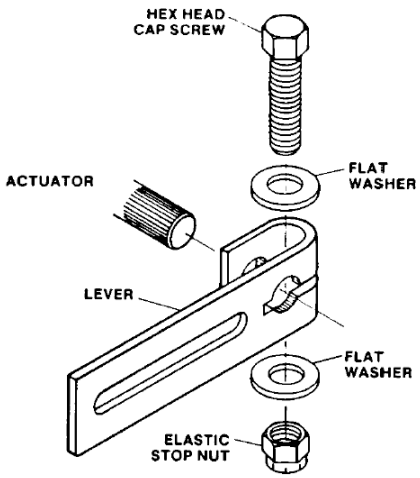

Figure 3. Actuator Lever Hardware Assembly

7. Actuator lever should be located above horizontal at minimum fuel position--approximately 30 degrees. Snugly tighten nut so that the actuator does not slip on shaft.

8. Place a 0.250-23 hex jam nut on each end of the control rod.

   Thread each nut approximately one inch onto rod. Assemble a size 4 rod end on each end of the control rod. Thread rod ends equally onto rod until a distance of about 10.00 inches (254.0 mm) between the rod-end centerlines is obtained, Snug jam nut to rod end, but do not tighten.

9. Use a 0.250-23 elastic hex nut (thin), two 0.250 hi collar lock washers, and a 0.250-28 x 1.250 hex head cap screw to assemble the control rod to actuator lever. Place the screw into the actuator lever hole located 6 holes from end of lever. Locate screw head on actuator side of lever. Hi collar lock washers must be placed on either side of the size 14 rod end (see Figure 14). Tighten the hex nut until lock washers collapse.

10. Remove the Bosch shutdown lever return spring by removing shutdown lever (spring may previously have been removed on units with a shutdown solenoid). Drill a 1/4-inch diameter hole in the shutdown lever. Locate the hole 1 1/8 inches (29 mm) from centerline of shutdown lever mounting screw hole.

11. Obtain a 0.250-28 elastic hex nut (thin), two hi collar lock washers, and a 0.250-28 x 1.250 hex head cap screw. Use these parts to assemble the control rod to the shutdown lever using the hole drilled in step 6. Place the hi collar lock washers on either side of the size 14 rod end. (see Figure 4). Screw head must be located toward engine. Tighten the hex nut until lock washers collapse.

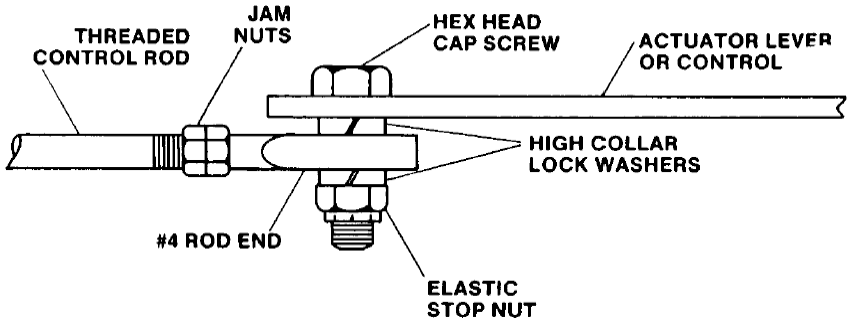

Figure 4. Control Rod Hardware Assembly

12. The actuator must overtravel the Bosch Shutdown Lever. This means the Bosch Shutdown Lever must reach its minimum-fuel and maximum-fuel positions before the actuator lever reaches either end of its limit of travel. The 1712/1724 actuators were designed to have a minimum shaft rotation of 21 degrees.

13. The actuator will operate most responsively if the shaft approaches—***but does not reach***—its travel limit (35 degrees) when the shutdown lever is at the maximum-fuel position (see Figure 5). Adjust control rod length to a dimension that will best allow these conditions to exist. Be sure that the actuator can move from minimum-fuel to maximum-fuel position without binding or exhibiting lost motion.

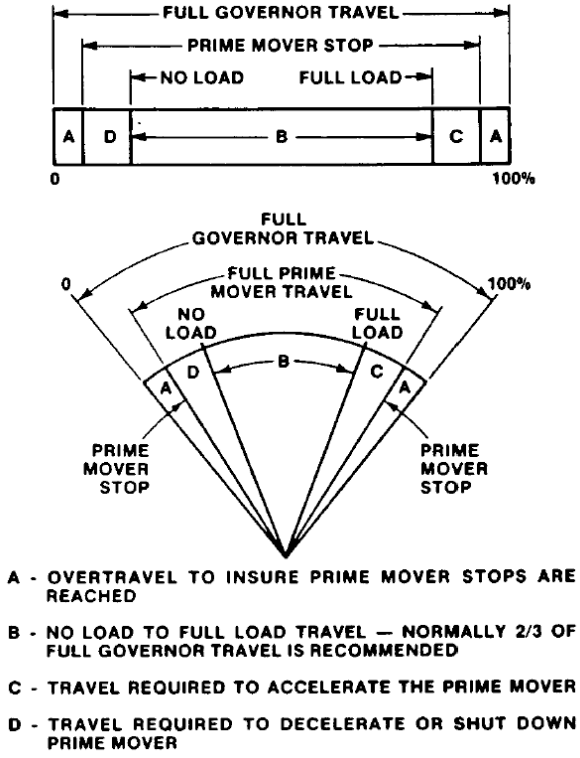

Figure 5. Actuator and Fuel Control Travel

14. After completing adjustment, tighten jam nuts to lock the rod ends in position, and tighten actuator retaining nut to 73 to 87 lb-in (8.2 to 9.8 N·m).

15. Connect control wires to the actuator terminals. Any wire may be placed on any terminal. Polarity is not important. If possible anchor the control wires to the actuator body to provide a method of strain relief.

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. If 14 AWG (2.0 mm²) wire is used, all circuit distances 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 in the 12 V system, 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 allows 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 when 12 AWG (3.0 mm³) wire is used. 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. Wire is not supplied in the kit, but harnesses are available.

Terminal Fitting for Wiring

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 when using 12 AWG (3.0 mm²) wire. Use AMP 32236 ring terminal or equivalent when using 14 AWG (2.0 mm²) wire.

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

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

Parts List

The parts contained in kit 8924-612 are for John Deere 6466A engines. These parts may be purchased in kit form or as individual parts.

When ordering individual parts, give this manual number (54063) and the part reference number, name of part, or description of part.

For more information on Woodward magnetic pickups, refer to Manual 82510.

Ref. No.	Part Name	Quantity
54063-1	Installation bracket	1
54063-2	0.250-20 x 0.625 hex head cap screw	4
54063-3	75 mm trim lever (actuator lever)	1
54063-4	0.750-10 x 1.5 hex head cap screws	4
54063-5	0.250-28 x 1.250 hex head cap screw	3
54063-6	0.250 flat washer	2
54063-7	0.250-28 elastic hex head nut (thin)	3
54063-8	0.250-28 hex head nut	2
54063-9	0.250 hi collar lock washer	4
54063-10	0.250-24 x 8.250 THD rod	1
54063-11	Size 4 rod end	2
54063-12	Washer	2
54063-13	Washer	2
54063-14	Adaptor (for MPU)	1

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 54063A.

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