WOODWARD

Product Manual 54050
(Revision NEW)
Original Instructions

8924-606 Installation Kit

for EPG 1712/1724 Electric Actuator on the Cummins VT/VTA-1710 GS Engines

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.

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www.woodward.com/publications

The current revision and distribution restriction of all publications are shown in manual *26311*.

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.

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*.

8924-606 Installation Kit for EPG 1712/1724 on the Cummins VT/VTA-1710 GS Engines

Introduction

These instructions apply to the EPG model 1712/1724 (12 or 24 V) electric actuator manufactured by Woodward, as mounted on the Cummins VT/VTA-1710 GS engine.

The mounting kit is Woodward part number 8924-606. The kit does not include the actuator, wiring from the speed control, or the magnetic pickup. (A Woodward EPG (Electric Powered Governor) speed control is usually used to drive the electric actuator.)

The following Woodward parts normally are used with this kit:

- Actuator, 12 V, part number 8256-017
- Actuator, 24 V, part number 8256-016
- Speed control, 12 V, part number 8290-040
- Speed control, 24 V, part number 8290-038
- Wiring harness, 15 ft (4.6 m), part number 8924-621
- Wiring harness, 25 ft (7.6 m), part number 8924-620
- Magnetic pickup, part number 5430-929

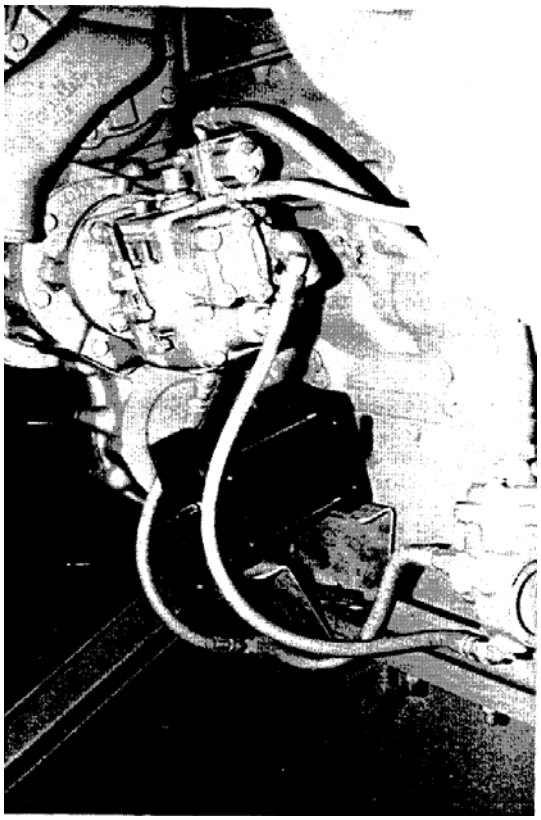

Figure 1. Actuator Installed on VT/VTA-1710 GS Engine

The 1712/17214 actuator, as mounted on the diesel engine, operates the Cummins fuel pump speed setting shaft. No modification of the fuel pump is required unless a lever must be removed from the serrated shaft.

If the engine is equipped with a PSG governor and drive, remove the PSG and PSG drive adapter from the engine. Install the fuel pump on the drive pad after the drive adapter is removed.

In operation, the 1724 actuator and the speed control will give acceptable isochronous control of the engine, holding speed at rated ±1/4 of 1 percent.

Actuator Mounting

1. Attach the two mounting brackets (Numbers 8 and 17, Figure 2) with the appropriate washers and lock washers. Notice the location of the two 1/14-inch-thick spacers which go on top of the mounting area and below the inside bracket. ***Do not tighten the mounting bolts***.

2. Attach the actuator to the mounting brackets with four 0.250-20 x 0.625 hex-head screws and lock washers. The actuator shaft to be used must turn counterclockwise to increase fuel. The other shaft on the actuator will not be used. The electrical connection should be put where it is protected while the engine is being serviced.

3. Torque the 0.250-20 screws to 80 to 100 lb-in (9.0 to 11.3 N·m). Torque the 0.500-13 bolts to 450 to 510 lb-in ().

14. Assemble the rod ends on the two levers supplied. The rod end goes in the last hole in the long lever. Use the 0.250-28 x 1.250 hex-head screw through the lever, a split lock washer, the rod end, a second splitlock washer and the 0.250-28 elastic stop nut for the installation. (See Figure 2, View A.)

5. Assemble the two 0.250-28 lock nuts on the operating rod and assemble the rod into each rod end about one-half inch. Do not tighten the lock nuts at this time.

6. Attach the actuator-rod-lever assembly to the actuator and fuel pump as shown in view B of Figure 2. The angular relationships, with both the actuator and the fuel pump at minimum fuel, are important. When properly installed, the actuator lever and the fuel rod should be about 10 degrees from laying flat. The actuator will be at minimum fuel with no power input.

7. Use as much of the actuator-shaft rotation as possible, not less than 25 degrees. (30 degrees or more is preferred.) The fuel control must move from minimum to maximum fuel within the movement of the actuator. (Both minimum and maximum fuel stops should be on Cummins fuel control, not the actuator.)

8. Tighten the actuator and fuel-control levers to the shafts with 0.250-28 x 1 inch cap screws, washers and elastic stop nuts. Torque to 73 to 87 lb-in (8.2 to 9.8 N·m).

9. Tighten the jam nuts on the connecting rod. Make sure both levers are tight on the shafts.

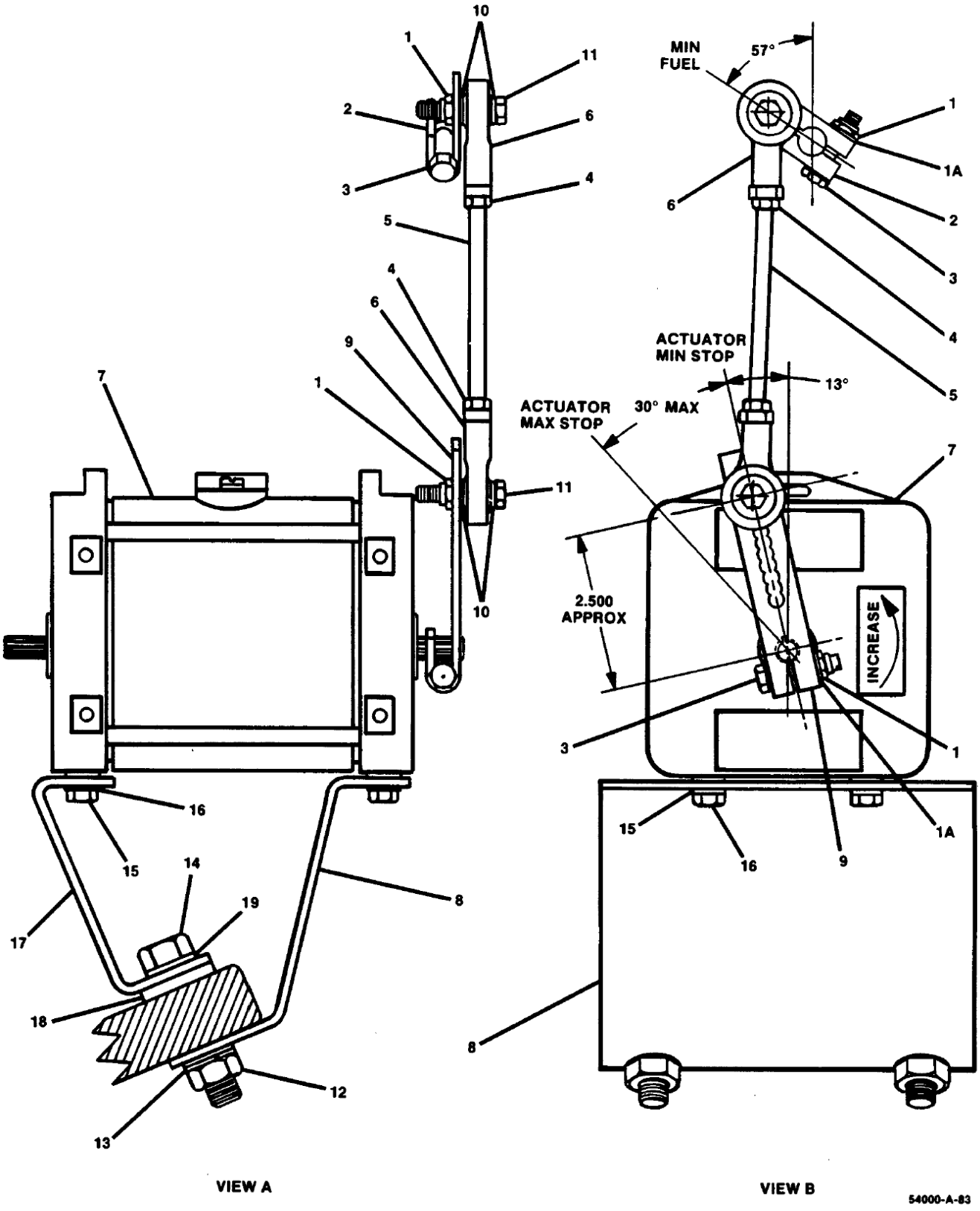

Figure 2. Installation of the Actuator and Bracket

10. Attach electrical connections from the speed control to the number 8 screws on the actuator. No polarity is involved in this connection. The wire may be attached to the two screws without notice of the wire color. (See wiring suggestions.)

11. Run wires to the side of the actuator and attach to the wiring rib with the high temperature (blue) cable tie provided with the actuator. This provides stress relief to the wire connection at the actuator.

12. Check the assembly to be sure the connecting linkage does not bind and the actuator will rotate the attached lever counterclockwise toward increased fuel.

Wiring Suggestions

Use a minimum of 14 AWG (2.0 mm²), stranded, insulated wire from the battery to the control to the 1724 actuator. Using 14 AWG (2.0 mm²) wire, the 24 V actuator will operate with a maximum of 35 ft (11 m) between the speed control and the actuator. The total distance in the wiring circuit from the battery to the speed control to the actuator must not exceed 140 ft (43 m).

Using 12 AWG (3.0 mm²) wire in the circuit allows these maximum distances to be doubled to 70 ft (21 m) from the speed control to the actuator and a total of 280 ft (85 m) in the circuit.

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 wiring harnesses are available from Woodward.

Attach AMP 529141 or AMP 52961 crimp-on, number 6, slotted, insulated terminals or equivalent on the speed control 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.

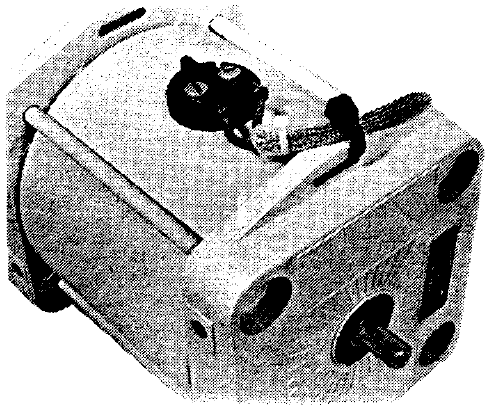

Figure 3. 1724 Actuator with Wiring Attached
(Note the tie of the actuator wire to the slot in the side of the actuator.)

Parts List

The parts in the installation kit 8924-606 are for use on the Cummins VT/VTA-1710 GS engine. Items in the kit may be purchased separately. When ordering installation replacement parts, give the following information:

- Manual number (this is manual 54050)
- Part reference number, name of part, or description of part

Ref. No.	Part Name ..... Quantity
54050-1	Nut, 0.250-28, elastic hex (thin) 4
54050-1A	Washer, 0.264 0.500 x 0.064 4
54050-2	Lever, Cummins 1
54050-3	Screw, 0.250-28 x 1.250 Hex Hd Cap 2
54050-4	Nut, Hex, 0.250-28 2
54050-5	Connecting Rod 1
54050-6	Rod End, Size 14 2
54050-7	1712-1724 Actuator, not part of kit
54050-8	Mounting Bracket 3975-023 1
54050-9	Lever, 75 mm 1
54050-10	Washer, 0.250 Hi Collar Lock.....4
54050-11	Screw, 0.250-28 x 1.250, Hex Hd Cap 2
54050-12	Nut, 0.500-13 Hex 2
54050-13	Washer, Spring Lock, 0.500 ID 2
54050-14	Screw, 0.500-13 x 2.250 Hex Hd Cap 2
54050-15	Screw, 0.250-20 x 0.625 Hex Hd Cap 4
54050-16	Washer, Spring Lock, 0.250 4
54050-17	Mounting Bracket, 3966-017 1
54050-18	Spacer, 0.500 x 1.250 x 0.250 Thick.....2
54050-19	Washer, 0.500 x 0.875 x 0.064 4

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Send comments to: icinfo@woodward.com

Please reference publication 54050.

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