

EPG 1724 Electric Actuator Installation

**On Detroit Diesel Single Block
V71 or V92 Engines**

**This kit may be used only on 8 and 12 cylinder V71
and on 6 and 8 cylinder V92 engines.**

Kit 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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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*.

EPG 1724 Installation Kit on Detroit Diesel V71 and V92 Single Block Engines

Introduction

These instructions apply to the EPG 1724 electric actuator manufactured by Woodward as installed on a single-block Detroit Diesel V71 (8 or 12 cylinder) or V92 (6 or 8 cylinder) engine. The mounting kit is Woodward part number 8924-863.

The 1724 actuator will provide excellent control of the specified engines. Use a 4024 EPG system to control larger V71 or V92 engine.

The kit does not include the actuator, the wiring harness, or the magnetic pickup utilized by the electronic control system. A bushing, Woodward part number 1219-357, is available to facilitate the installation of a magnetic pickup in the flywheel housing.

The actuator, when mounted on the engine, operates the control-link shaft, which extends from the control-link box on the front of the engine. The vertical link from the actuator will attach to the lever on the shaft.

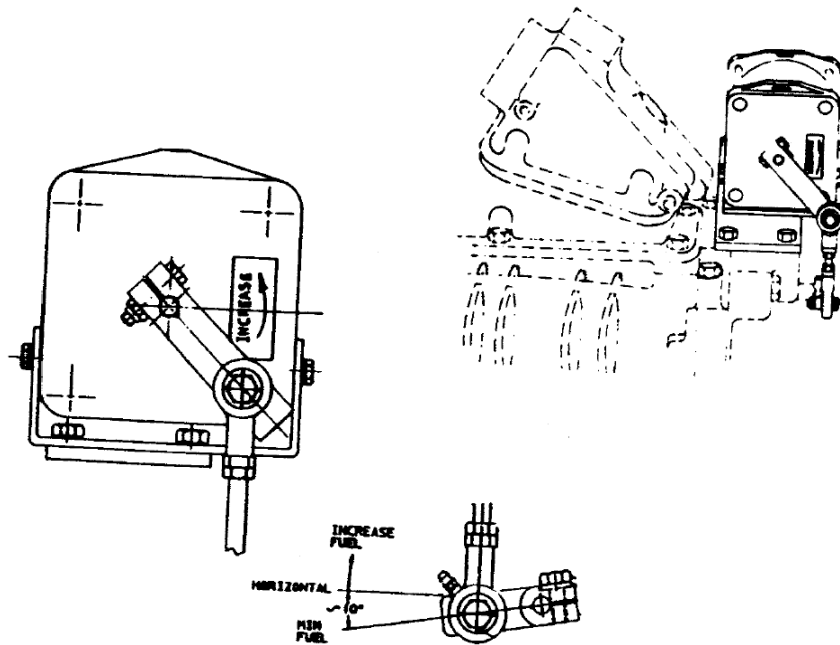


Figure 1. Linkage at Minimum Fuel

When the installation is completed, the linkage at minimum fuel should look about as it does in Figure 1. The actuator should be held about 2 degrees counterclockwise from minimum fuel by the linkage. The actuator must be able to rotate the shaft and attached racks to the maximum fuel stop, preferably about 2 degrees before the actuator will reach the maximum fuel stop. The length of the vertical link should be adjusted to supply the desired rotation of the shaft.

Rotating the actuator output against the actuator spring load will not damage the actuator.

Actuator Installation

1. Determine the governor-control-housing cover location at the front of the engine.

If the engine has a drive for a hydraulic governor: Remove the governor and associated oil reservoir. Remove the vertical and horizontal drive shafts according to Detroit Diesel's Service Manual.

NOTICE

Damage to the engine is possible if existing drive shafts are not removed from the governor-drive housing. Refer to the Detroit Diesel Service Manual for identification of the shafts to be removed and for the proper procedure.

Plug any holes in the governor-drive housing which can leak oil. Be sure that any engine-oil connections loosened or left open by the removal of the hydraulic governor are adequately plugged.

2. Locate the cover plate (DD5109149 or equivalent) with gasket (portion of DD3224773) over the governor-control housing. (Guide pins on the governor drive housing may be pulled before installation of the cover blank.) Locate the EPG mounting bracket over the cover plate as shown. The bracket has a notch for the linkage. This notch must be over the control-shaft lever.
3. Install the gasket, cover plate, and mounting plate with six 0.312-18 x 0.750 inch hex head cap screws.
4. The actuator fits in the bracket with the rotation arrow on the actuator terminal shaft to be used going counterclockwise. Install the actuator in the bracket with four 0.250-20 x 0.625 inch hex head cap screws and 0.064 thick flat washers. Torque the screws to 25 lb-in (2.8 N·m).
5. Assemble the left- and right-hand threaded jam nuts on the actuator rod.
6. Attach the left hand threaded rod end to the control-shaft lever (DD5127422). Attach with a 0.312-18 x 1.000 inch screw. Use a hi-collar lock washer on each side of the rod-end ball. Attach the lever/rod end assembly to the control shaft at about 8 o'clock with screw (DD179796) and washer (DD103319).
7. Assemble the right-hand threaded rod end to the operating lever. Use a hi-collar lock washer on both sides of the rod end ball. Attach with a 0.312-24 x 1.000 inch hex head cap screws and a 0.312-24 elastic lock nut.
8. Add the operating lever to the actuator as shown. Holding the control shaft to minimum fuel, place the lever on the operating shaft at about 5 o'clock, (45 degrees CW from horizontal). Attach the lever to the actuator shaft with 0.250-28 x 1.000 hex head cap screw, two flat washers and a 0.250-28 elastic lock nut.

9. Install the threaded rod between the rod ends. Adjust the length of the rod by threading it into the rod ends until the lever locations are as shown in Figure 1.

IMPORTANT

If properly attached, the actuator shaft will move counterclockwise at least 25 degrees (preferably more than 30 degrees) between the minimum-and maximum-fuel stops, which are determined by the engine, not the actuator. Check the installation to make sure the fuel-setting rod moves from minimum- to maximum-fuel stops without binding.

10. Tighten the jam nuts on the threaded rod. Do not cause the rod ends to bind when tightening the jam nuts.

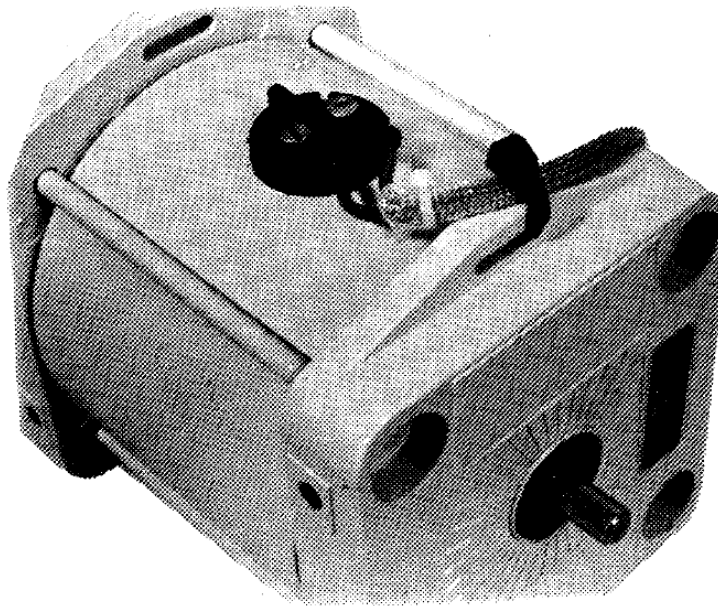


Figure 2. Actuator with Wiring Attached
(Note the tie of the actuator wire to the slot in the side of the actuator.)

Wiring Suggestions

Use a minimum of 14 AWG (2.0 mm²), stranded, insulated wire from the battery to the control box to the actuator.

The 24 volt actuator will allow the maximum distances to be 35 ft (10.7 m) between the control box and the actuator for 14 AWG (2.0 mm²) wire and a total of 140 ft (43 m) in the system. Using 12 AWG (3.0 mm²) wire with the 24 volt actuator will permit 70 ft (21 m) between the control box and the actuator and 280 feet in the circuit.

The feed from the battery to the control box must be direct, 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.

Parts List for Kit 8924-863

Ref. No.	Part Name.....	Quantity
54117-1	Screw, .312 x 18 x .750 cap	6
54117-2	Bracket, EPG to DD V71/V92	1
54117-3	Screw, .250-20 x .625 cap	4
54117-4	Washer, .265 x .500 x .064	6
54117-5	Washer, .312 hi collar lock	4
54117-6	Rod End assem., size 5, left hand	1
54117-7	Nut, .312-24 Jam, left hand	1
54117-8	Rod, .312-24 x 3.875 inch	1
54117-9	Nut, .312-24 Jam	1
54117-10	Rod End assembly, size 5	1
54117-11	Lever	1
54117-12	Screw, .312-18 x 1.000 cap	1
54117-13	Screw, .312-24 x 1.000 cap	1
54117-14	Nut, .312-24 Elastic lock	1
54117-15	Screw, .250-28 x 1.000 cap	1
54117-16	Nut, .250-28 Elastic lock	1

Detroit Diesel Parts Needed for Installation

3224773	Gasket	1
5109149	Plate	1
179796	Screw	1
103319	Washer	1
5127422	Lever	1
103320	Lock Washer	1

IMPORTANT

The rod end assembly will be about 5.688 inches (144.48 mm) between centerlines of the rod ends.

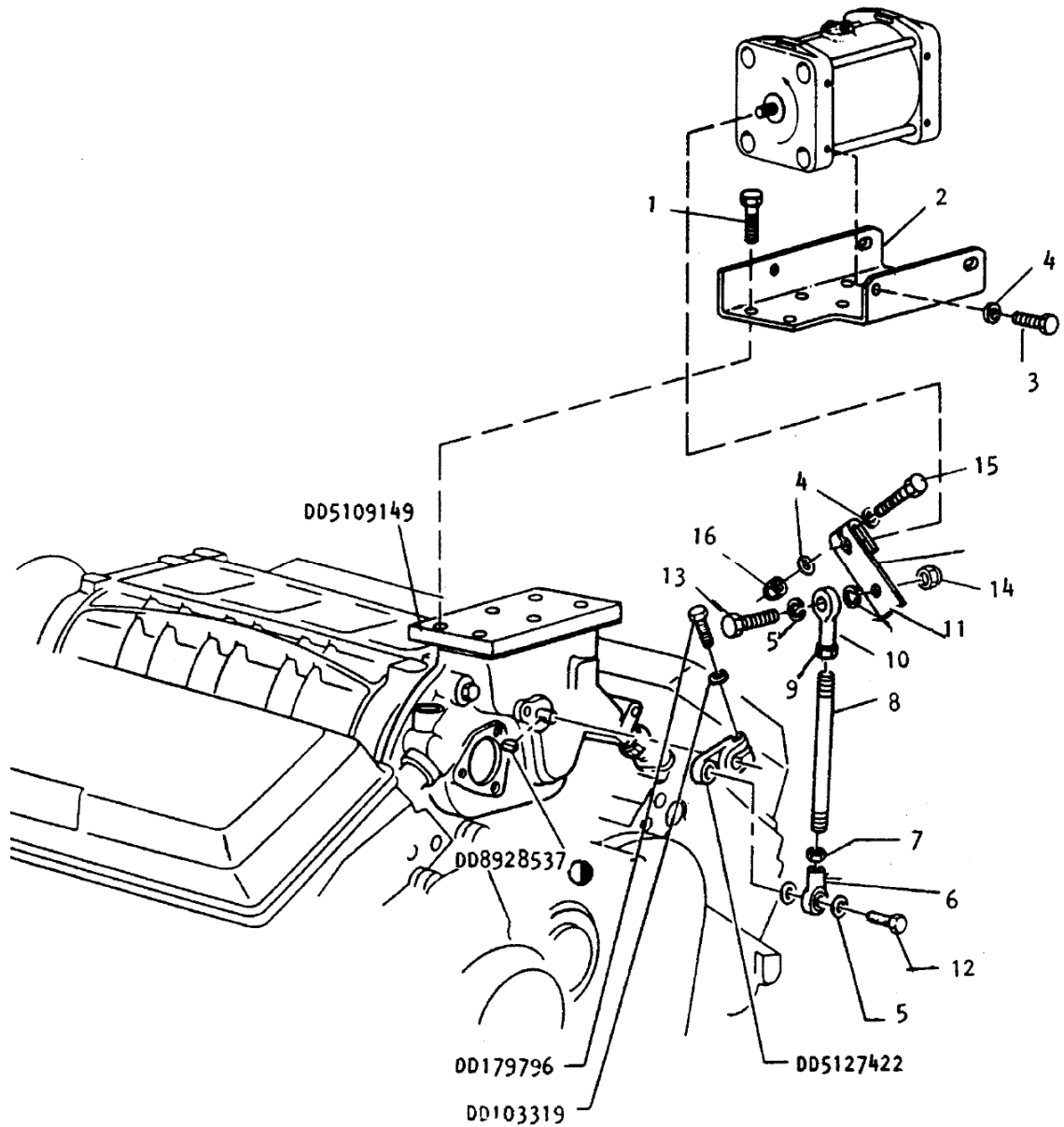


Figure 3. EPG 1724 Actuator on DD V71 or V92 Engine

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Please reference publication 54117A.



PO Box 1519, Fort Collins CO 80522-1519, USA
1000 East Drake Road, Fort Collins CO 80525, USA
Phone +1 (970) 482-5811 • Fax +1 (970) 498-3058

Email and Website—www.woodward.com

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