



**Product Manual 54003**  
**(Revision A)**  
Original Instructions

## **EG-3P Actuator Installation on Detroit Diesel V-71 & V-92 Engines**

**Kit Installation Manual**



### General Precautions

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.



### Revisions

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### Proper Use

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.



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## Warnings and Notices

### Important Definitions



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.

- **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**

**Overspeed /  
Overtemperature /  
Overpressure**

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.

#### **WARNING**

**Personal Protective  
Equipment**

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:

- Eye Protection
- Hearing Protection
- Hard Hat
- Gloves
- Safety Boots
- Respirator

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

#### **WARNING**

**Start-up**

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.

#### **WARNING**

**Automotive  
Applications**

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

**NOTICE****Battery Charging  
Device**

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.

## Electrostatic Discharge Awareness

**NOTICE****Electrostatic  
Precautions**

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:

- Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).
- Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.
- Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.

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*.

Follow these precautions when working with or near the control.

1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
  - Do not touch any part of the PCB except the edges.
  - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
  - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

# EG-3P Actuator Installation on Detroit Diesel V-71 & V-92 Engines

## Introduction

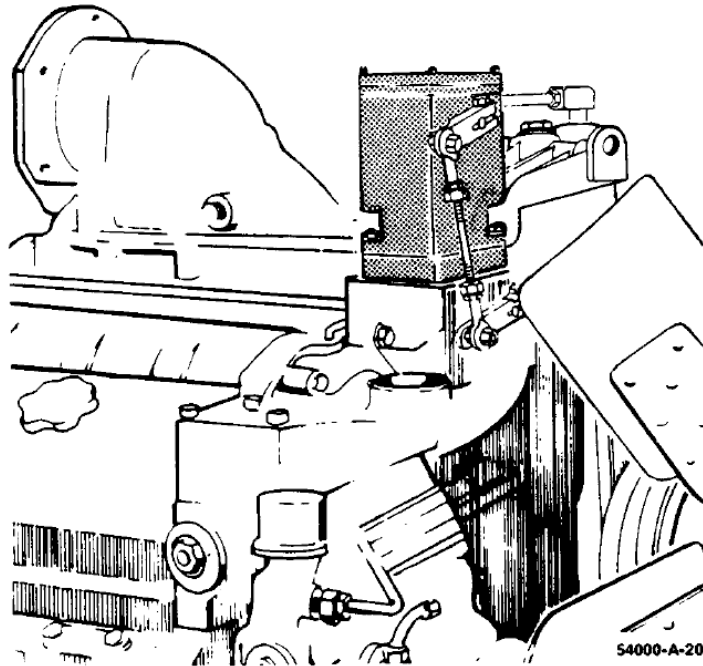
These instructions are for the conversion from the Woodward SG governor to the Woodward EG-3P actuator.

For information about electric controls, see specific manuals:

25070, Electronic Control Installation Guide

82510, Magnetic Pickups and Proximity Switches for Electronic Controls

82560, EG-3P Actuator



## Parts List

The installation kit is for use on the Detroit Diesel V-71 and V-92 engines with drives designed for the Woodward SG governor. The parts are sold in kit number 8956-143 which includes item 1 through 6. Items may be purchased separately.

When ordering installation replacement parts, give the following information.

- Manual Number 54003
- Part reference number, name of part, or description of part

Ref. No.	Part Name .....	Quantity
54003-1	Stud - 0.312 x 2.500 Body.....	2
54003-2	Nut 0.312-24 Hex (.434 A/F) .....	2
54003-3	Washer - 0.312 Helical Spring Lock ....	2
54003-4	Drain Adapter Gasket.....	1
54003-5	Rod - 0.312-24 x 6.875 (LH & RH) .....	1
54003-6	Bushing - Magnetic Pickup.....	1

**IMPORTANT**

Items 7 through 16 are not made available by Woodward. They are normally included by the engine manufacturer as part of the SG governor installation arrangement.

Ref. No.	Part Name .....	Quantity
54003-7	Lever-Control Link Shaft .....	1
54003-8	Rod end LH .312-24 .....	1
54003-9	Nut-Jam LH Thread 0.312-24 .....	1
54003-10	Nut-Jam RH Thread 0.312-24.....	1
54003-11	Rod End RH 0.312-24 .....	1
54003-12	Lever.....	1
54003-13	Lockwasher.....	2
54003-14	Screw - Hex Head.....	2
54003-15	Screw -5/16 - 18 x 7/8.....	2
54003-16	Lockwasher.....	2
54003-17-20	NOT USED	

### Optional Parts Available from Woodward

Ref. No.	Part Name .....	Quantity
54003-21	Kit - EG-3P Connector Assembly.....	1
	Kit includes the following parts which may be ordered separately:	
54003-22	Plug - Elec Conn. Size 14.5 Straight...	1
54003-23	Clamp - MS 3057-6A Cable .....	1
54003-24	Bushing- MX 3420-6 Cable Clamp .....	1
54003-25-28	NOT USED	

Ref. No.	Part Name .....	Quantity
54003-29	Magnetic Pickup Assembly .....	1
	Kit includes the following parts which may be ordered separately:	
54003-30	Plug - MS 3106-A 105-L-45 .....	1
54003-31	Clamp - MS 30574A Cable .....	1
54003-32	Bushing - MS 3420-4 Cable Clamp ....	1
54003-33	Magnetic Pickup .....	1

Figure 1 shows linkage connections and part reference numbers. Figure 2 shows the connector assembly. Figure 3 shows the magnetic pickup assembly.

For proper hydraulic connections to the EG-3P, see manual 82560.

### Actuator Installation

See Figure 1 to install the EG-3P actuator on the engine.

1. Remove the SG governor from the engine.
2. Install the hold down studs (1) in the actuator pad.
3. Install drain adapter gasket (4) and EG-3P actuator on engine.
4. Install rod ends (8-11) and jam nuts (9-10) on new control rod (5).
5. Install the EG-3P "square" with the engine linkage. Linkage must move freely.
6. Attach rod end (11) to actuator output lever (12) (see Figure 1).

7. Attach output lever (12) to actuator and adjust travel.
8. Install oil line from the oil reservoir to either of two 1/8" pipe tapped inlet holes marked with an "S" on the base of the actuator. A minimum of 5 psi (34 kPa) oil supply pressure is needed. The supply should be filtered engine oil.
9. Include overspeed shutdown equipment separate from the speed control governor.

**IMPORTANT**

The travel of the actuator output shaft from no fuel to full fuel is approximately 30°. The travel of the engine fuel rack from no fuel to full fuel is approximately 25°. Adjust linkage so the maximum stop of the actuator will prevent the fuel rack from traveling beyond the fuel position. Fuel injectors must move freely. Rotation is either cw or ccw as marked on the actuator.

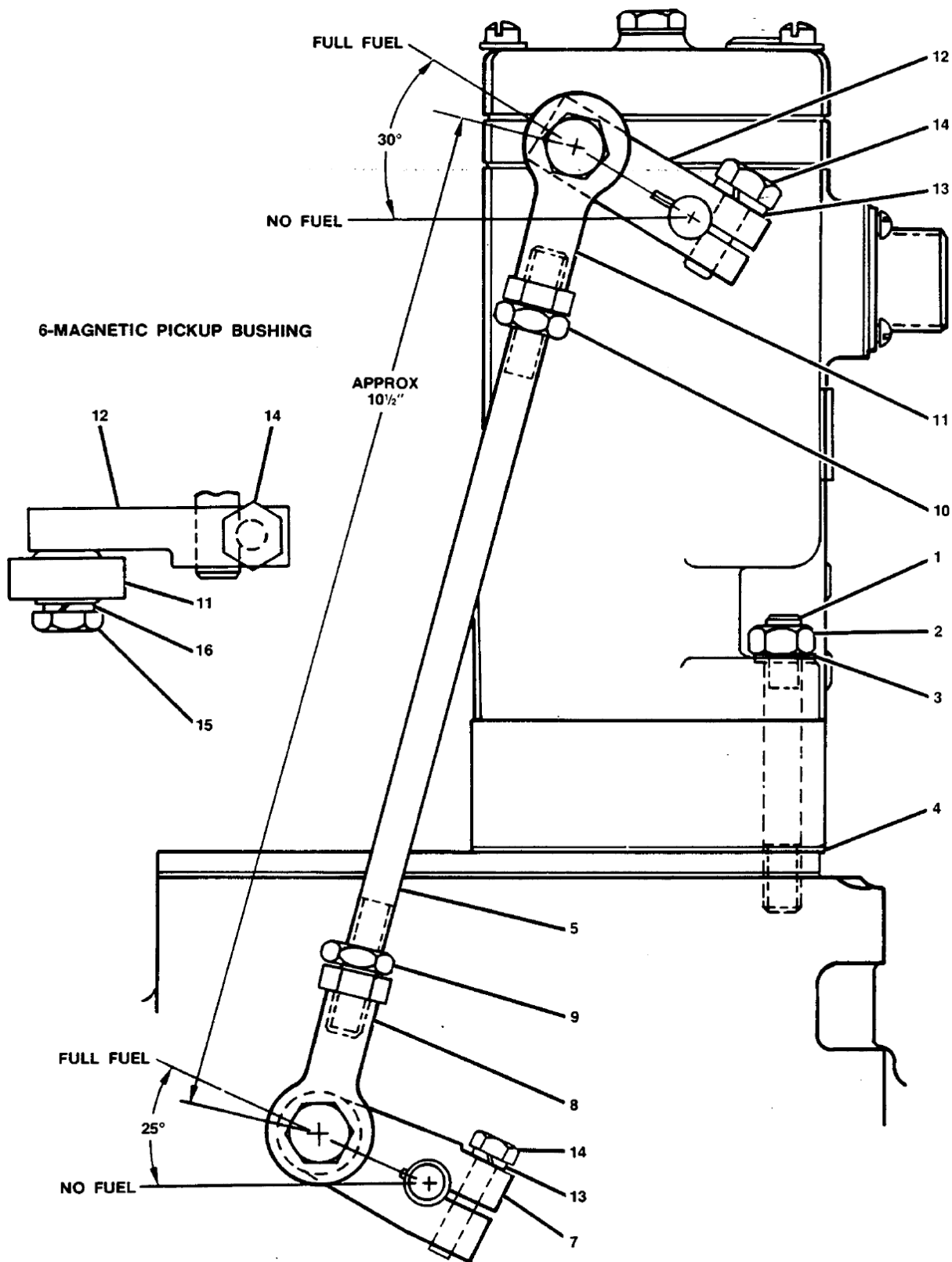
### Magnetic Pickup Installation

1. Remove the pipe plug in the flywheel housing adjacent to the flywheel teeth.
2. Install the 1.000-11 1/2 NPTF magnetic pickup bushing in the flywheel housing.
3. Install the magnetic pickup in the bushing. The magnetic pickup is listed in optional parts list.
4. The distance between the pickup and the outside diameter of the gear should be approximately 0.040" (1.02 mm) at the closest point. This clearance must be kept through the full turn of the flywheel.

**IMPORTANT**

Find the distance by turning the magnetic pickup in until it just touches the gear-tooth. Back it out about 3/4 turn (0.0555" [1.410] per one 360° turn ccw).

5. Tighten the jam nut. Be careful not to turn the magnetic pickup.



54000-A-29

Figure 1. Linkage Arrangement and Setup for Installing the EG-3P Actuator



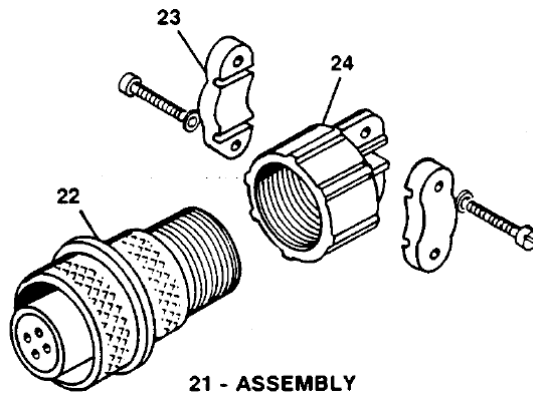


Figure 2. EG-3P Connector Assembly

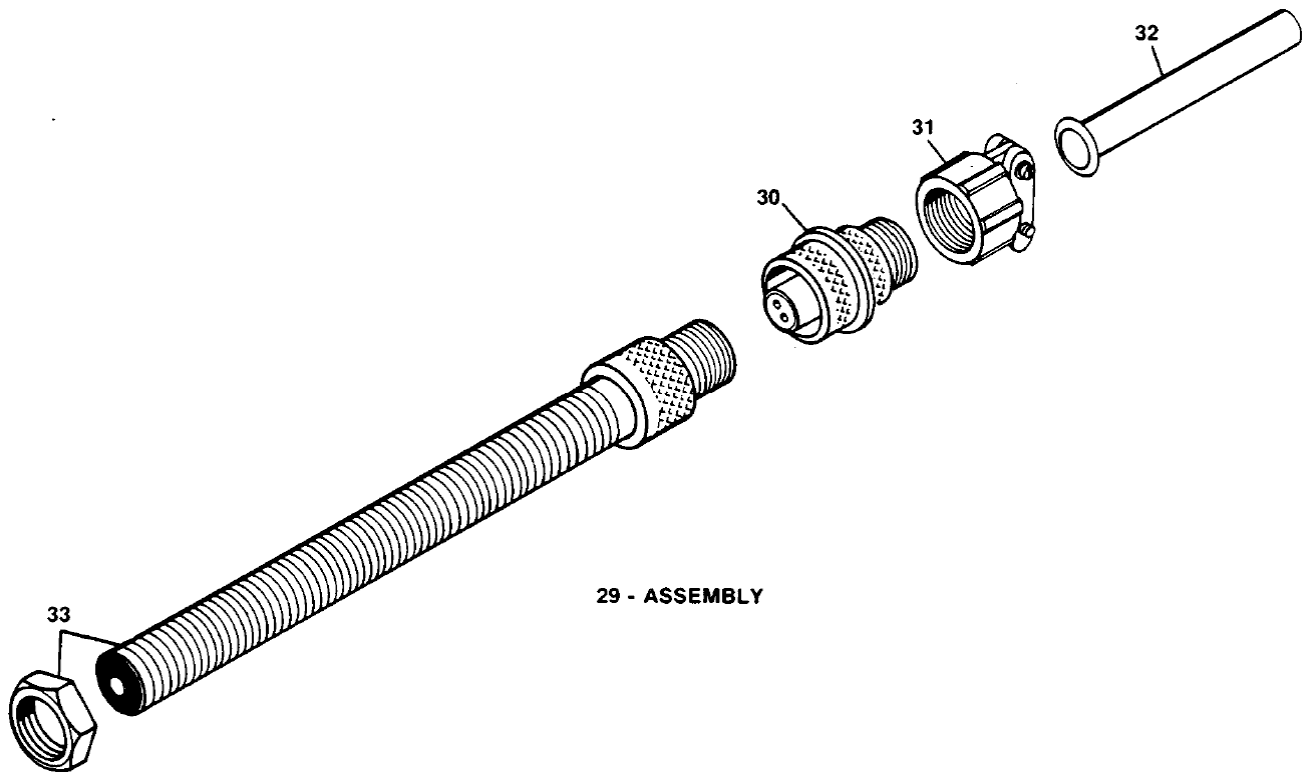


Figure 3. Magnetic Pickup Assembly

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