



**Product Manual 54006**  
**(Revision A)**  
Original Instructions

## **EGB-2P Governor/Actuator Installation on the Detroit Diesel V-149 Engine**

**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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## 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.

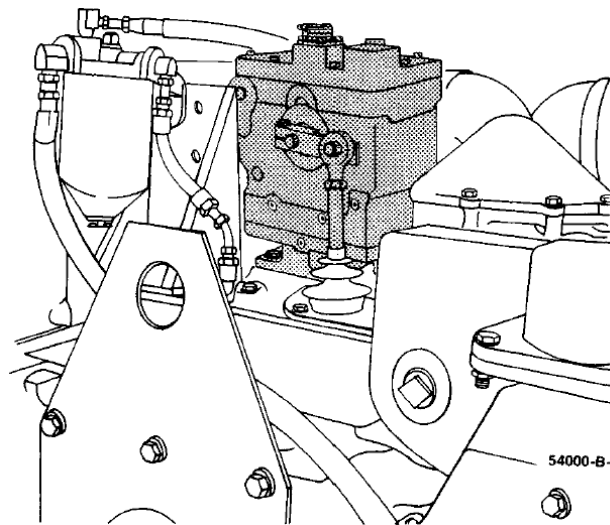
# EGB-2P Governor/Actuator Installation on the Detroit Diesel V-149 Engine

## Introduction

These instructions are for the conversion from the Woodward SG governor to the Woodward EGB-2P governor actuator.

For information concerning electric controls, see specific manuals:

25070, Electronic Control Installation Guide  
82570, EGB-2P Governor Actuator  
82510, Magnetic Pickup for Electric Governors  
82575, Product Specification - EGB-2P Governor Actuator



## Parts List

The installation kit is for use on the Detroit Diesel V-149 engine with drive designed for the Woodward SG governor. The parts are sold in kit number 8956-165 which includes items 1 through 8. Items may be purchased separately.

When ordering installation replacement parts, give the following information:

- Manual number 54006
- Part reference number, name of part, description of part

Ref. No.	Part Name .....	Quantity
54006-1	Nut - 0.312-24 Hex.....	1
54006-2	Washer - 0.312 Hi Collar Lock .....	2
54006-3	Screw 0.312-24 x 1.250 Hex Hd. Cap.....	1
54006-4	Lever - 1.125 Radius.....	1
54006-5	Washer - Helical Spring Lock 0.250 .....	1
54006-6	Screw - 0.250-28 x 0.750 Hex Hd. Cap.....	1
54006-7	Plate Assy. - Control Rod.....	1
54006-8	Drain Adapter Gasket.....	1

**IMPORTANT**

Items 9 through 17 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	DDAD Part No.	Quantity
54006-9	Gasket - Control Rod Assembly	3224773	1
54006-10	Rod End - Size 5 L.H.	5127470	1
54006-11	Jam Nut - 0.312-24 L.H.	121928	1
54006-12	Rubber Accordion Boot	5121385	1
54006-13	Rod - 0.312-24 x 5.500 Long (R.H. & L.H.)	5121986	1
54006-14	Jam Nut - .312-24 RH	122193	1
54006-15	Rod End - Size 5 RH	5120472	1
54006-16	Screw and Washer - 1/4-20 x 1.000	273084	2
54006-17	Screw and Washer - 1/4-20 x 3/4	271468	2
54006-18-23	NOT USED		

### Optional Parts Available from Woodward

Ref. No.	Part Name	Quantity
54006-24	Kit - Connector Assembly, 2 Pin Straight	1
	Kit includes the following parts:	
54006-25	Plug - Electric Conn. Size 12-5 Straight	1
54006-26	Cable Clamp - MS 3057-4A	1
54006-27	Cable Clamp Bushing - MS 3420-4	1

Ref. No.	Part Name	Quantity
54006-28	Kit - Connector Assembly Clamp & 2 Pin 90°	1
	Kit includes the following parts:	
54006-29	Plug - 2 Contact (socket) 90°	1
54006-30	Cable Clamp - MS 3057-4A	1
54006-31	Cable Clamp Bushing - MS 3420-4	1

Ref. No.	Part Name	Quantity
54006-32	Magnetic Pickup Assembly	1
	Includes the following parts which may be ordered separately:	
54006-33	Plug - MS 3106-A 105-L-45	1
54006-34	Clamp - MS 3057-4A Cable	1
54006-35	Bushing - MS 3420-4 Cable Clamp	1
54006-36	Magnetic Pickup	1

### Actuator Installation

See Figure 1 to install the EGB-2P governor actuator on the engine.

**IMPORTANT**

When converting from the SG governor to the EGB-2P governor actuator, it is necessary to change to a longer vertical drive. See Detroit Diesel Service Bulletin 22-D-75.

1. Remove the SG governor from the engine.
2. Install new control rod plate assembly (7).
3. Install new terminal lever (4) on control rod (13).
4. Install drain adapter gasket (8).
5. Install the EGB-2P governor actuator on the engine. Linkage must move freely.

6. Attach terminal lever (4) to actuator terminal shaft and adjust travel.

**IMPORTANT**

Use approximately 21° actuator output shaft travel from no fuel to full fuel. Adjust linkage so the maximum stop of the actuator will prevent the fuel rack from traveling beyond the full fuel position. The fuel injectors must move freely.

7. Install the oil line from the oil reservoir to either of two 1/8" pipe tapped inlet holes in the base of the actuator. A minimum of 5 psi (34 kPa) oil supply pressure is needed. The supply should be filtered engine oil.
8. Include overspeed shutdown equipment separate from the speed control governor.

## Magnetic Pickup Installation

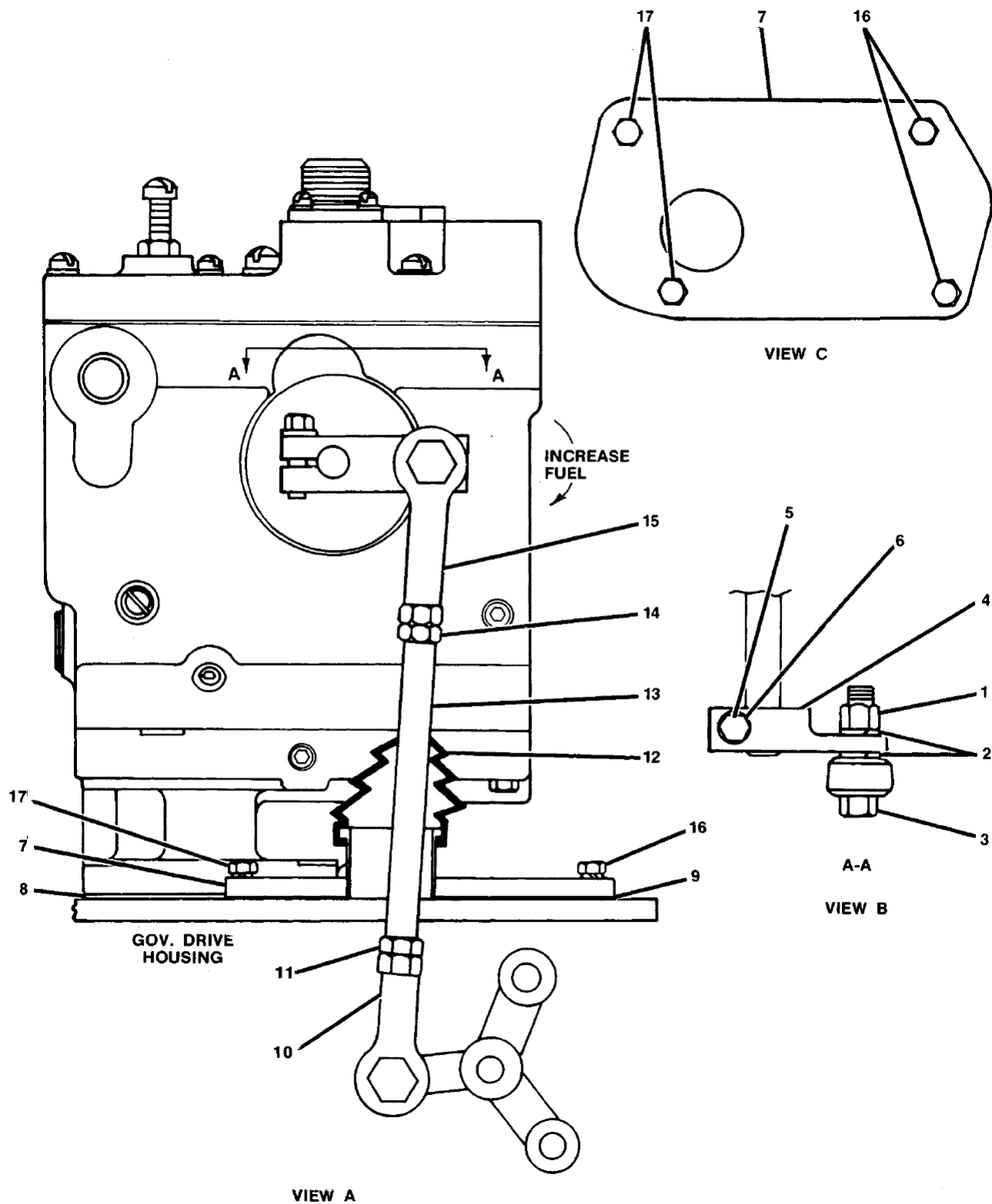
1. Install the magnetic pickup in the flat surface used for the engine support bracket on the right side of the engine. Drill an access hole in the engine support bracket and flywheel housing to accommodate the magnetic pickup. See Figure 5, Views A and B, for the location and dimensions of the magnetic pickup hole. The magnetic pickup is listed in the optional parts list.
2. 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 one full turn of the flywheel.

**IMPORTANT**

Determine 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 mm] per one 360° turn ccw).

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

Figure 1, Views A and B, shows the recommended linkage connections and part reference numbers. Figure 1, View C, shows the control rod plate assembly. Figures 2 and 3 show the 90° connector assembly and straight connector assembly. Figure 4 shows the magnetic pickup assembly. Figure 5 shows the recommended location of magnetic pickup and dimensions for drill and tap.



54000-A-21

Figure 1. Linkage Connections on the EGB-2P Governor Actuator



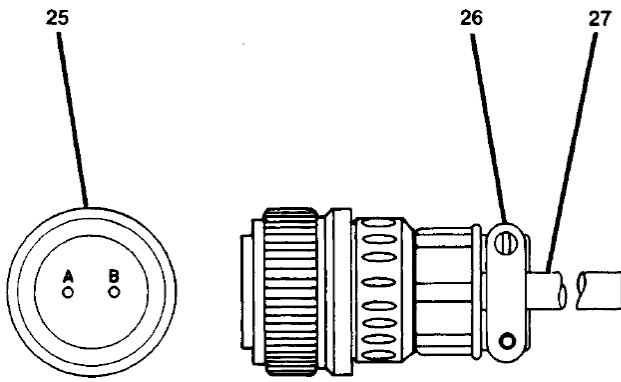
**24-ASSEMBLY**

Figure 2. Straight Connector Assembly

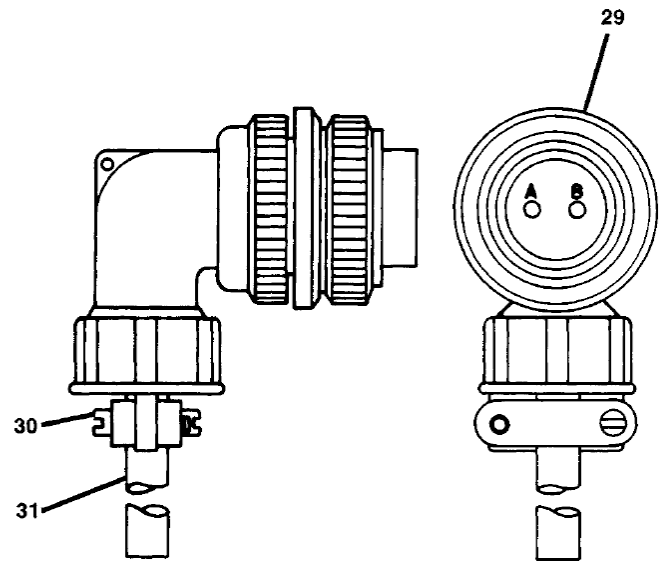
**28-ASSEMBLY**

Figure 3. 90° Connector Assembly

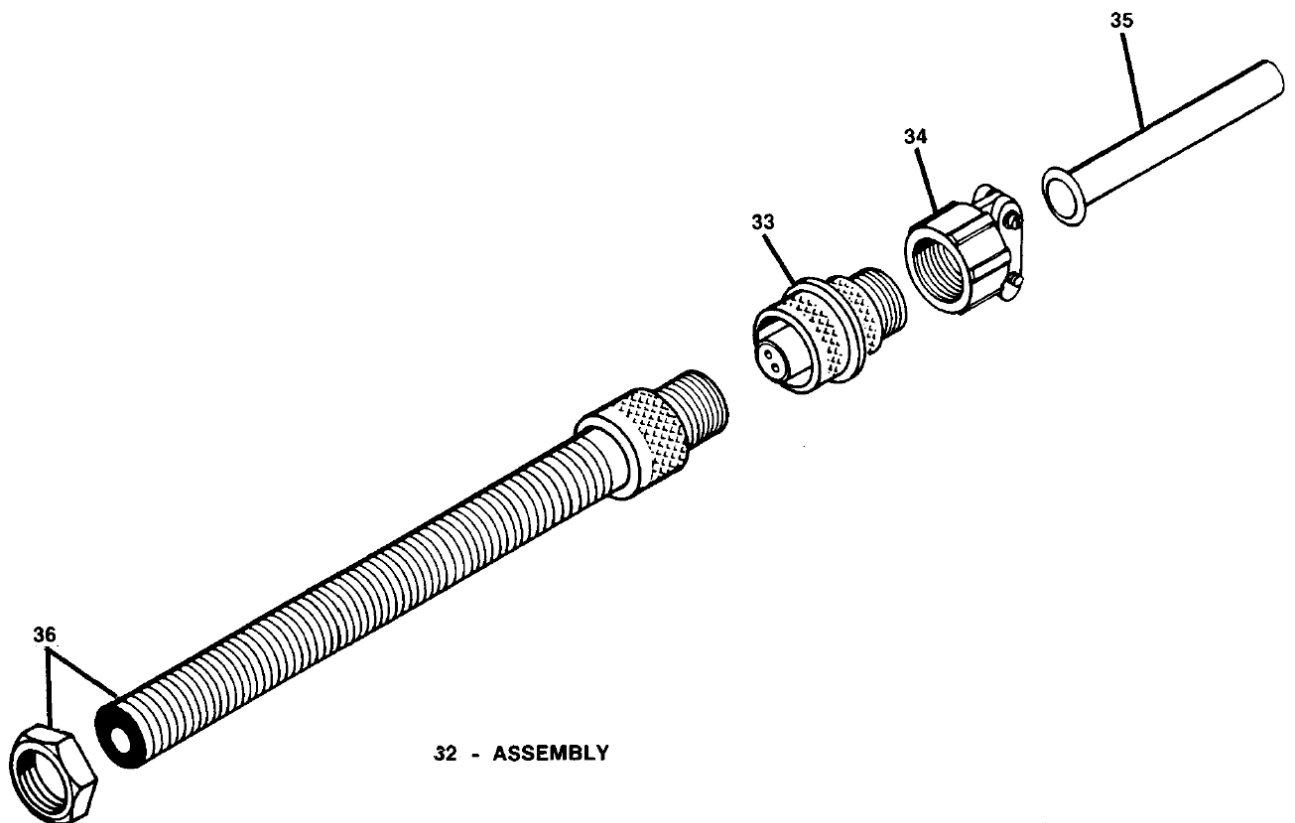
**32 - ASSEMBLY**

Figure 4. Magnetic Pickup Assembly

54000-A-17

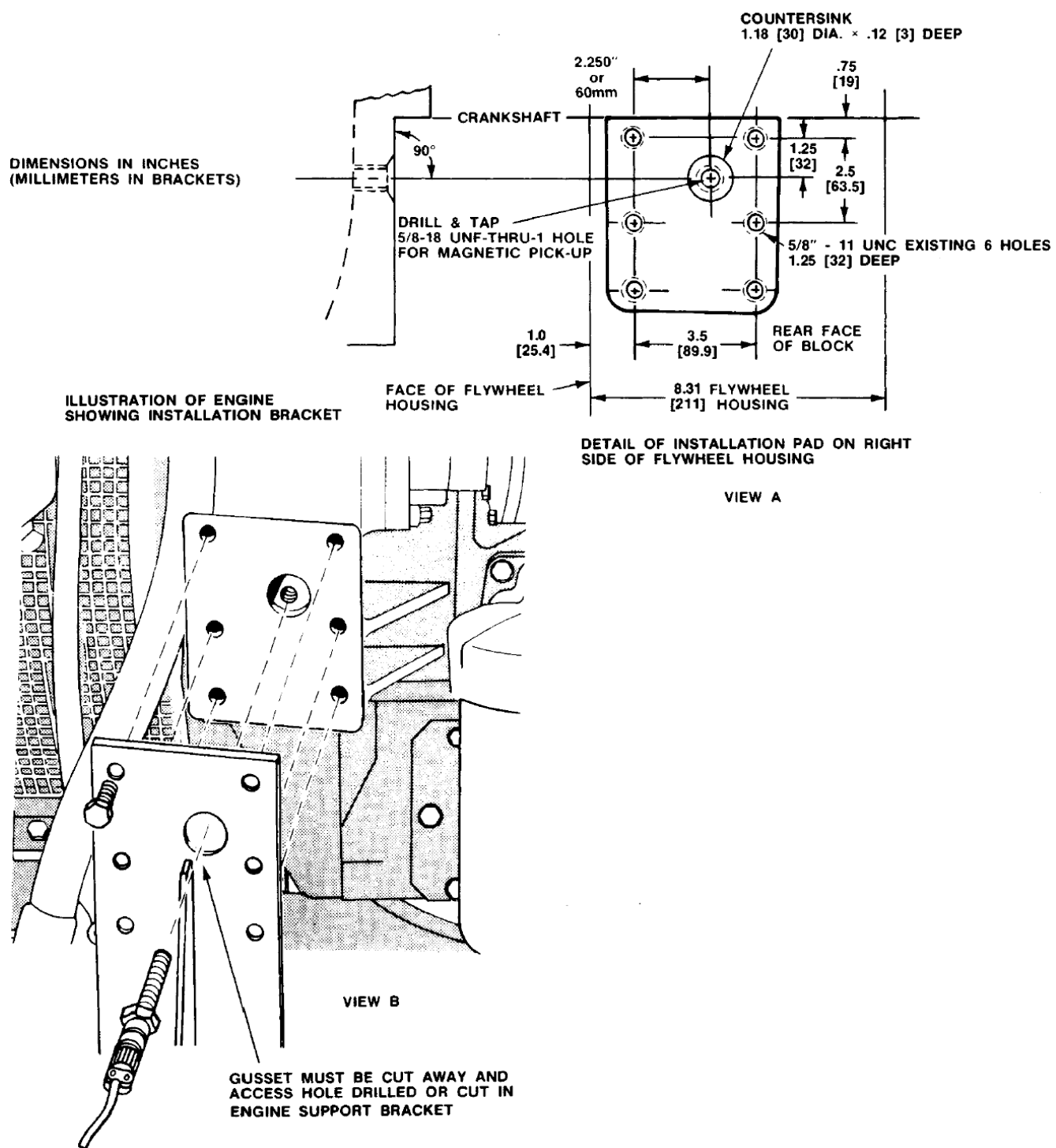


Figure 5. Magnetic Pickup Installation



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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

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