



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

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, check manual **26311**, *Revision Status & Distribution Restrictions of Woodward Technical Publications*, on the *publications page* of the Woodward website:

www.woodward.com/publications

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.



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.



Translated Publications

If the cover of this publication states "Translation of the Original Instructions" please note:

The original source of this publication may have been updated since this translation was made. Be sure to check manual **26311**, *Revision Status & Distribution Restrictions of Woodward Technical Publications*, to verify whether this translation is up to date. Out-of-date translations are marked with . Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions—Changes in this publication since the last revision are indicated by a black line alongside the text.

Woodward reserves the right to update any portion of this publication at any time. Information provided by Woodward is believed to be correct and reliable. However, no responsibility is assumed by Woodward unless otherwise expressly undertaken.

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.

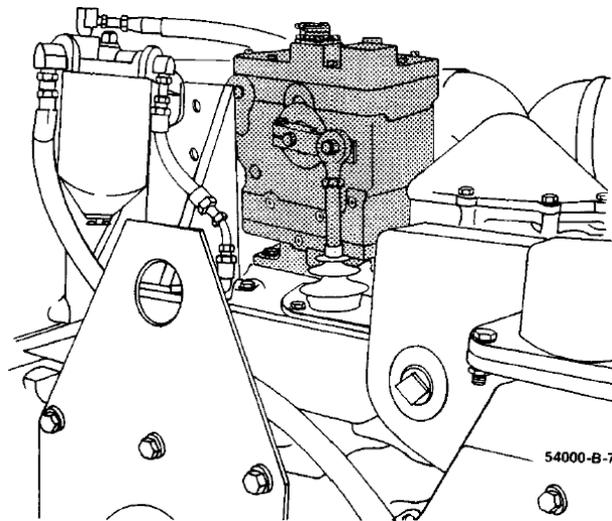
EGB-2P Governor/Actuator Installation on the Detroit Diesel V-149 Engine

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

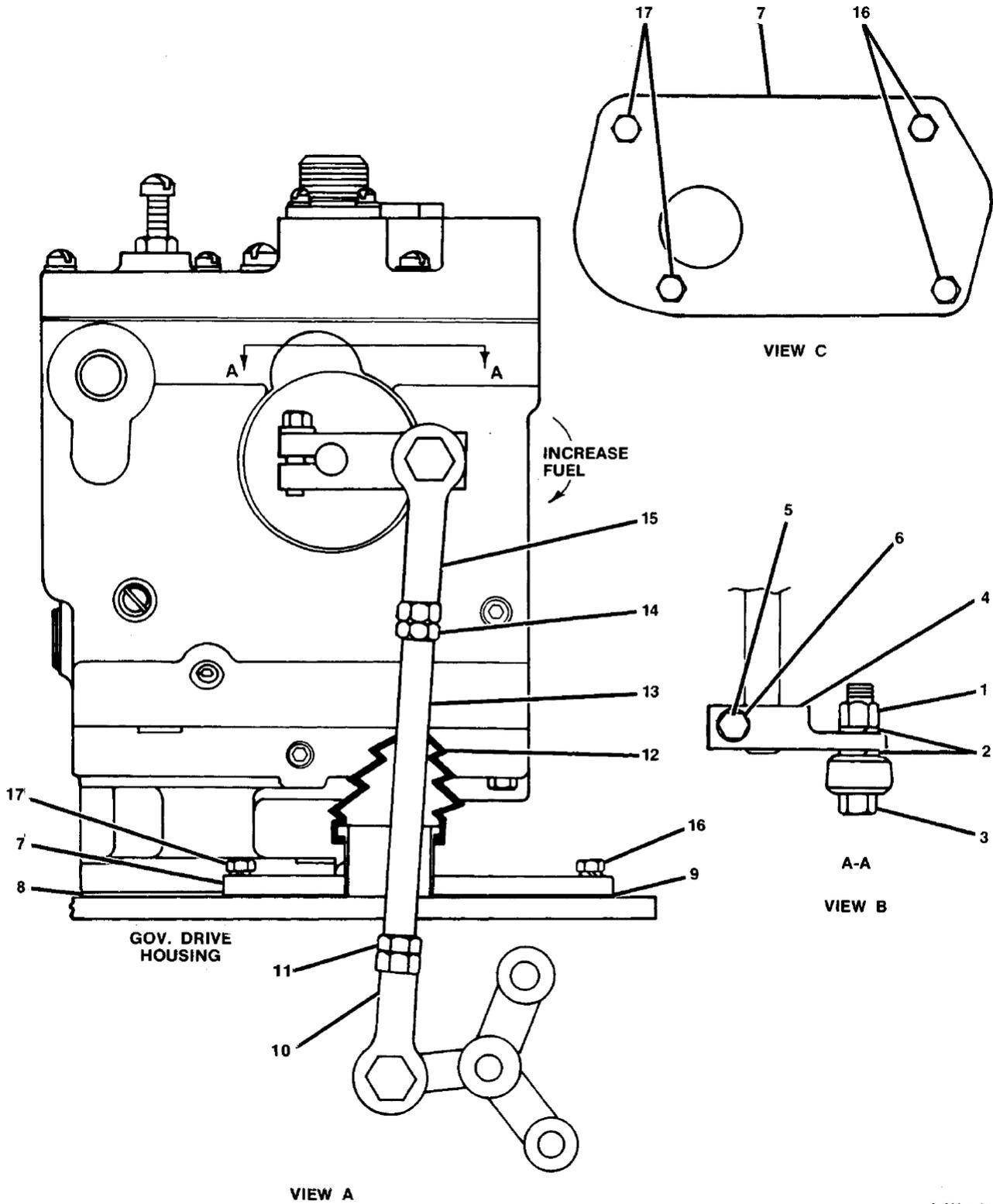
1. Install the magnetic pickup in the flat surface used for the engine support bracket on the right side of the engine. Drill an access hole in the engine support bracket and flywheel housing to accommodate the magnetic pickup. See Figure 5, Views A and B, for the location and dimensions of the magnetic 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).

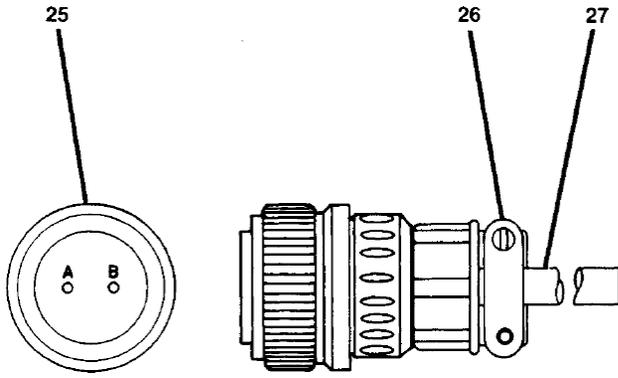
3. Tighten the jam nut. Be careful not to turn the magnetic pickup.

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.



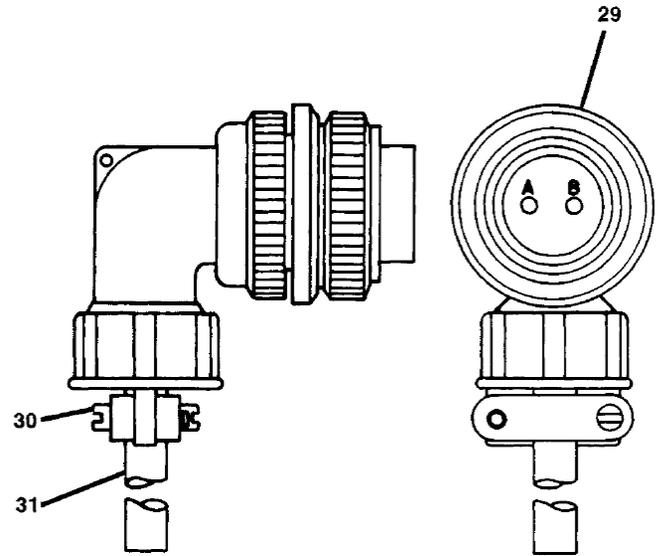
54000-A-21

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



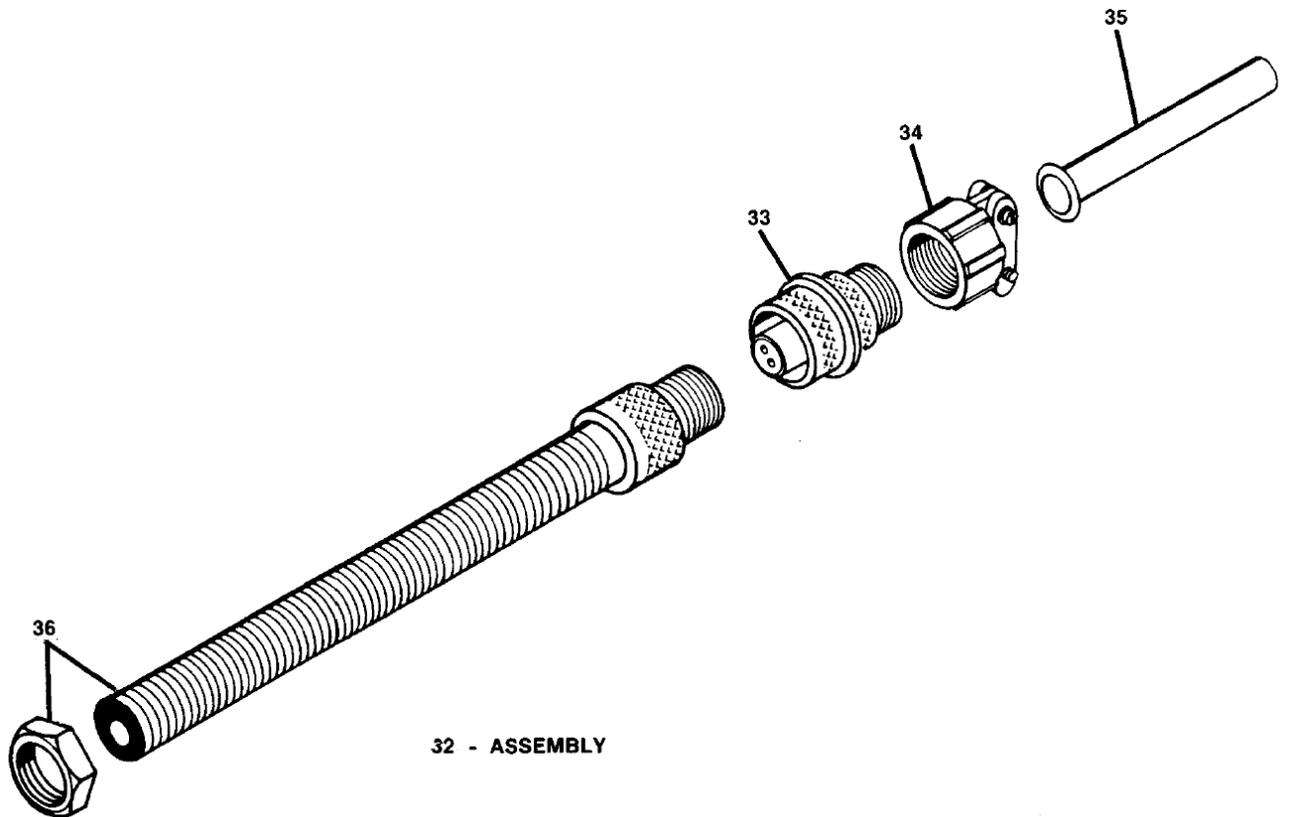
24-ASSEMBLY

Figure 2. Straight Connector Assembly



28-ASSEMBLY

Figure 3. 90° Connector Assembly



32 - ASSEMBLY

Figure 4. Magnetic Pickup Assembly

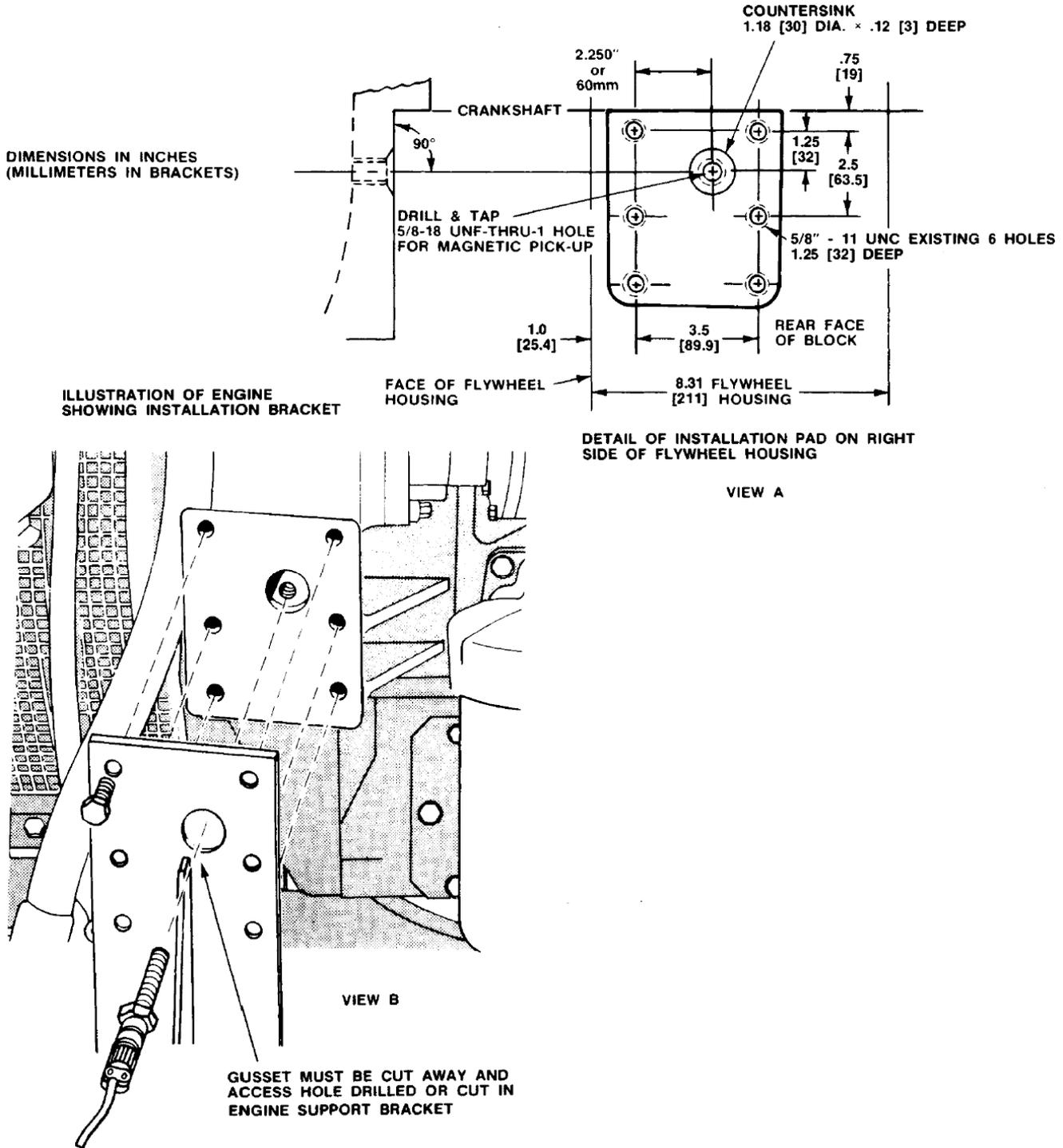


Figure 5. Magnetic Pickup Installation

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication **54006A**.



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

**Woodward has company-owned plants, subsidiaries, and branches,
as well as authorized distributors and other authorized service and sales facilities throughout the world.**

Complete address / phone / fax / email information for all locations is available on our website.