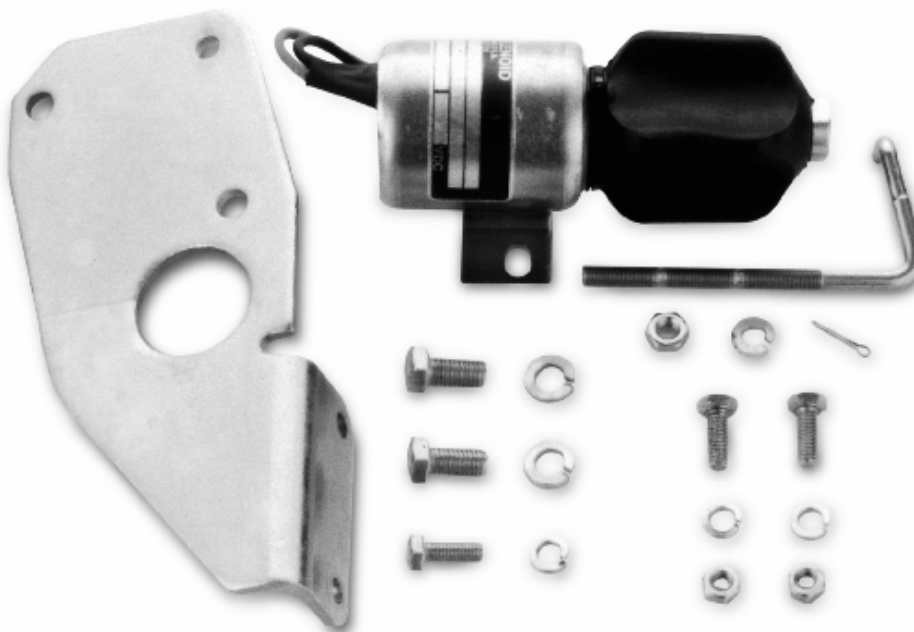




## Installation Instructions



### **Kubota Kit 1A Engine Shutdown System for Kubota 62.2mm Series Engines with 1753 & 1753ES Solenoids**

**Manual 36707**  
(Replaces SE-3029 Rev B)

## WARNING—DANGER OF DEATH OR PERSONAL INJURY



### WARNING—FOLLOW INSTRUCTIONS

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.



### WARNING—OUT-OF-DATE PUBLICATION

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, be sure to check the Woodward website:

[www.woodward.com/pubs/current.pdf](http://www.woodward.com/pubs/current.pdf)

The revision level is shown at the bottom of the front cover after the publication number. The latest version of most publications is available at:

[www.woodward.com/publications](http://www.woodward.com/publications)

If your publication is not there, please contact your customer service representative to get the latest copy.



### WARNING—OVERSPEED PROTECTION

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—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.

## CAUTION—POSSIBLE DAMAGE TO EQUIPMENT OR PROPERTY



### CAUTION—BATTERY CHARGING

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.



### CAUTION—ELECTROSTATIC DISCHARGE

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.

## IMPORTANT DEFINITIONS

- A **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- A **CAUTION** indicates a potentially hazardous situation which, if not avoided, could result in damage to equipment or property.
- A **NOTE** provides other helpful information that does not fall under the warning or caution categories.

**Revisions**—Text changes are indicated by a black line alongside the text.

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

# Contents

<b>ELECTROSTATIC DISCHARGE AWARENESS .....</b>	<b>II</b>
<b>CHAPTER 1. GENERAL INFORMATION.....</b>	<b>1</b>
Description.....	1
Kit Components .....	1
<b>CHAPTER 2. INSTALLATION.....</b>	<b>2</b>
Install Bracket/Fuel Hose .....	2
Install & Adjust Solenoid.....	3
Solenoid Wiring .....	5
Checking the Installation .....	5
<b>CHAPTER 3. SERVICE OPTIONS .....</b>	<b>6</b>
Product Service Options.....	6
Returning Equipment for Repair.....	7
Replacement Parts .....	8
How to Contact Woodward.....	8
Engineering Services .....	9
Technical Assistance.....	10

## Electrostatic Discharge Awareness

All electronic equipment is static-sensitive, some components more than others. To protect these components from static damage, you must take special precautions to minimize or eliminate electrostatic discharges.

Follow these precautions when working with or near the control.

1. Before doing maintenance on the electronic control, discharge the static electricity on your body to ground by touching and holding a grounded metal object (pipes, cabinets, equipment, etc.).
2. 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.
3. Keep plastic, vinyl, and Styrofoam materials (such as plastic or Styrofoam cups, cup holders, cigarette packages, cellophane wrappers, vinyl books or folders, plastic bottles, and plastic ash trays) away from the control, the modules, and the work area as much as possible.
4. 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.

**CAUTION**

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*.

# Chapter 1.

## General Information

### Description

The Woodward Kubota Shutdown Kit 1A is designed for Kubota 62.2mm series engines. The solenoid included in the kit is either the 1753ES externally switched (3 wire) solenoid or the 1753 internally switched solenoid. It is also available as a hardware kit without the solenoid.

PART NO.	SOLENOID MODEL	VOLTAGE
SA-4268-12	1753	12 Vdc
SA-4269-12	1753ES	12 Vdc
SA-4270	—	—

### Kit Components

REF NO.	DESCRIPTION	QTY.
1	Bracket	1
2	Solenoid Assembly	1
3	Linkage Rod	1
4	1/4-28 Hex Jam Nut	1
5	1/4 Split Lockwasher	1
6	Cotter Pin	1
7	M6 x 16mm Screw	3
8	M6 Split Lockwasher	3
9	M8 x 16mm Screw	2
10	5/16 Split Lockwasher	2
11	M6 x 1 Hex Nut	2

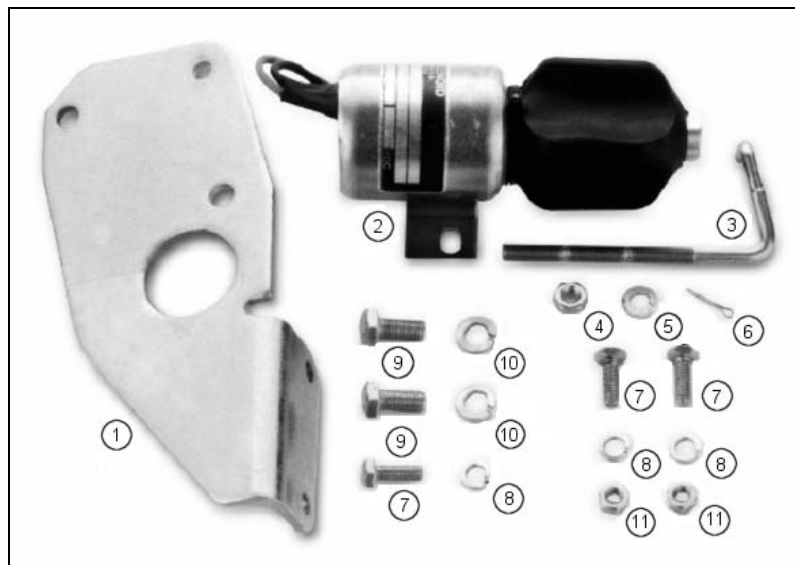


Figure 1. Kit Components

## Chapter 2. Installation



## NOTE

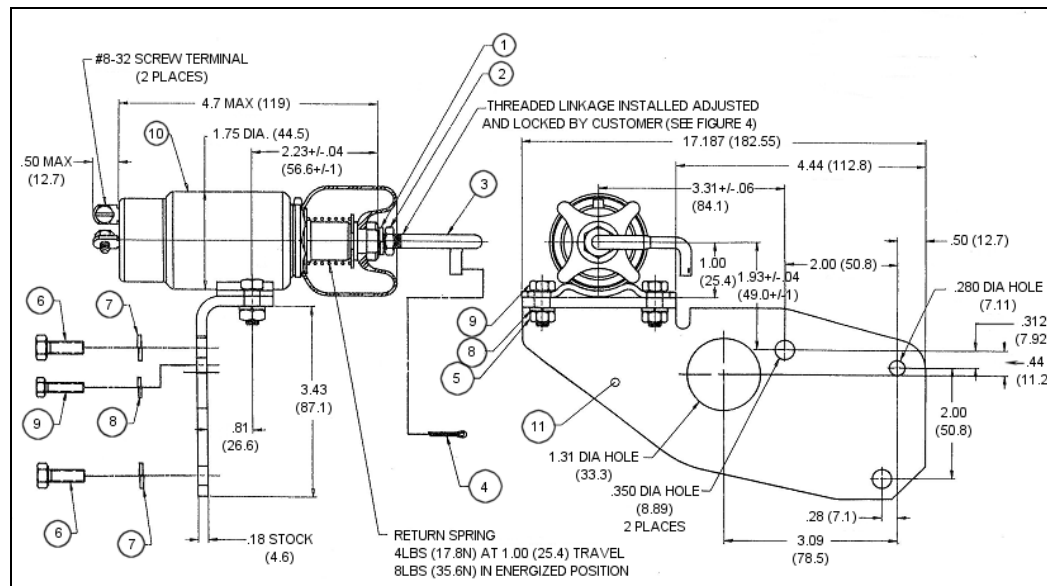
**Before removing old parts or installing new ones, ensure that the engine is turned off and the battery is disconnected. Always use proper tools for the installation.**

## Install Bracket/Fuel Hose

INTERNALLY SWITCHED SOLENOID / Refer to Figure 2.

EXTERNALLY SWITCHED SOLENOID / Refer to Figure 3.

1. Remove the three bolts from the fuel pump cover plate located on the back of the pump and discard bolts. Loosen screw and disconnect fuel hose from bleed valve. Remove hose clamp. (You only need to remove one screw and hose clamp.)
2. Attach bracket (11) to back of pump by sliding hose through hole in bracket and fastening bracket over existing pump cover plate with M6 bolt (9), lockwasher (8), two M8 bolts (6), and lockwashers (7).
3. Replace clamp on hose, reconnect hose, and tighten screw.



### Figure 2. Installation with 1753 Internally Switched Solenoid

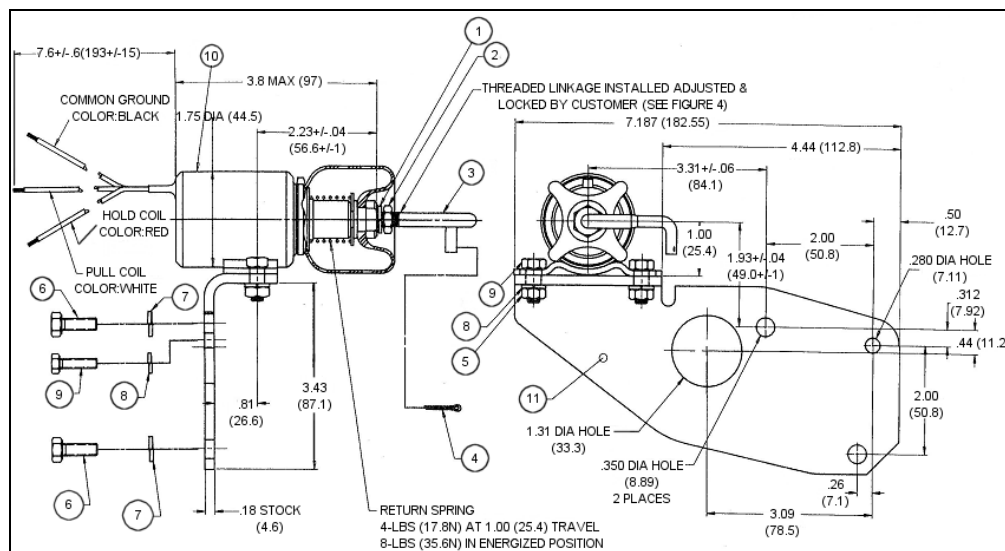


Figure 3. Installation with 1753ES Externally Switched Solenoid

## Install & Adjust Solenoid

INTERNALLY SWITCHED SOLENOID / Refer to Figure 2.

EXTERNALLY SWITCHED SOLENOID / Refer to Figure 3.

1. Permanently disconnect external spring located between throttle advance and shutdown lever.
2. Connect solenoid (10) to holes on top of mounting bracket (11) with the remaining M6 bolts (9), lockwasher (8), and nuts (5).
3. Fit the threaded linkage rod (3) depending upon engine model:
  - **Engine Model Z400**  
Remove the last two threaded linkage sections by cutting through tapered hacksaw blade guide number 1 as shown in **Figure 4**.
  - **Engine Model D600**  
Remove the last threaded linkage section by cutting through tapered hacksaw blade guide number 2 as shown in **Figure 4**.
  - **Engine Model V800**  
Use part as provided.
4. Energize solenoid to make final adjustment of linkage rod. Use a power supply with 1A or greater, or use a battery. Use extreme caution with cables, clips, etc.



### **WARNING—INTERNALLY SWITCHED SOLENOIDS (Switch Cap with Terminals)**

Attach power to terminals. Plunger must be allowed to fully pull in and bottom to switch OFF high current pull coil. If plunger is restricted, solenoid may overheat and be damaged. If the plunger has pulled in and fully bottomed, only the low current hold coil is ON and the solenoid may be energized continuously for this

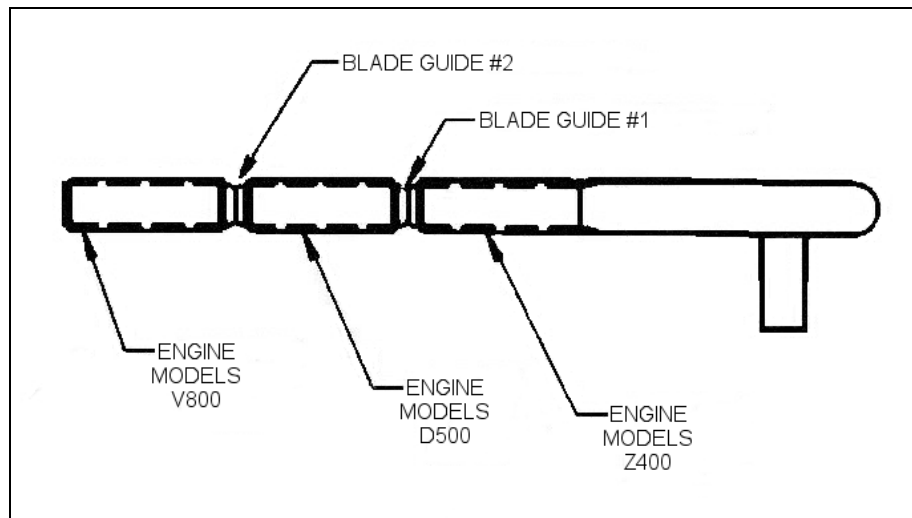
adjustment.



**WARNING—EXTERNALLY SWITCHED SOLENOIDS  
(3 Lead Wires)**

Attach power to the red (hold) and black (common) wires. This is the low current hold in coil and may be energized continuously during this adjustment. Push the plunger in by hand until it magnetically holds in. Do not energize the white (pull) wire at this time.

5. With solenoid in energized position (plunger bottomed), thread jam nut (2) and lockwasher (1) onto threaded linkage rod. Thread the rod into plunger until it lines up with hole in shutdown lever. Back linkage rod off two or three rotations so lever is within 1/16" of the full run position. Connect linkage rod to lever with cotter pin (4). Open ears on cotter pin to hold in place. Tighten jam nut and lockwasher against solenoid plunger to lock linkage in place.
6. With the solenoid de-energized, move the lever manually to check that everything moves freely. *If not*, review all of the steps above and realign until linkage moves freely.



**Figure 4. Fitting Threaded Linkage Rod**



## Solenoid Wiring

Wire solenoid to system using wiring instructions provided with solenoid.

**NOTE / EXTERNALLY SWITCHED SOLENOIDS**

For detailed wiring and installation instructions refer to Manual 36542 *Externally Switched Dual Coil Solenoid Wiring Guide* available on [www.woodward.com](http://www.woodward.com).

**NOTE / INTERNALLY SWITCHED SOLENOIDS**

For detailed wiring and installation instructions refer to Manual 36575 *Internally Switched Dual Coil Solenoid Wiring Guide* available on [www.woodward.com](http://www.woodward.com).

## Checking the Installation

**NOTE**

For detailed troubleshooting information on the solenoid refer to Manual 36541 *Solenoid Troubleshooting Guide* available on [www.woodward.com](http://www.woodward.com).

Start and stop the engine to check for proper operation of the shutdown system.

## Chapter 3. Service Options

### Product Service Options

The following factory options are available for servicing Woodward equipment, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is purchased from Woodward or the service is performed:

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

If you are experiencing problems with installation or unsatisfactory performance of an installed system, the following options are available:

- Consult the troubleshooting guide in the manual.
- Contact Woodward technical assistance (see “How to Contact Woodward” later in this chapter) and discuss your problem. In most cases, your problem can be resolved over the phone. If not, you can select which course of action you wish to pursue based on the available services listed in this section.

### Replacement/Exchange

Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime. This is also a flat rate structured program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Woodward facility as explained below (see “Returning Equipment for Repair” later in this chapter).

Charges for the Replacement/Exchange service are based on a flat rate plus shipping expenses. You are invoiced the flat rate replacement/exchange charge plus a core charge at the time the replacement unit is shipped. If the core (field unit) is returned to Woodward within 60 days, Woodward will issue a credit for the core charge. [The core charge is the average difference between the flat rate replacement/exchange charge and the current list price of a new unit.]

**Return Shipment Authorization Label.** To ensure prompt receipt of the core, and avoid additional charges, the package must be properly marked. A return authorization label is included with every Replacement/Exchange unit that leaves Woodward. The core should be repackaged and the return authorization label affixed to the outside of the package. Without the authorization label, receipt of the returned core could be delayed and cause additional charges to be applied.

## Flat Rate Repair

Flat Rate Repair is available for the majority of standard products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be. All repair work carries the standard Woodward service warranty (Woodward Product and Service Warranty 5-01-1205) on replaced parts and labor.

## Flat Rate Remanufacture

Flat Rate Remanufacture is very similar to the Flat Rate Repair option with the exception that the unit will be returned to you in “like-new” condition and carry with it the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205). This option is applicable to mechanical products only.

## Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned to Woodward for repair, please contact Woodward in advance to obtain a Return Authorization Number. When shipping the item(s), attach a tag with the following information:

- name and location where the control is installed;
- name and phone number of contact person;
- complete Woodward part number(s) and serial number(s);
- description of the problem;
- instructions describing the desired type of repair.



### CAUTION

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*.

## Packing a Control

Use the following materials when returning a complete control:

- protective caps on any connectors;
- antistatic protective bags on all electronic modules;
- packing materials that will not damage the surface of the unit;
- at least 100 mm (4 inches) of tightly packed, industry-approved packing material;
- a packing carton with double walls;
- a strong tape around the outside of the carton for increased strength.

## Return Authorization Number

When returning equipment to Woodward, please telephone and ask for the Customer Service Department [1 (800) 523-2831 in North America or +1 (970) 482-5811]. They will help expedite the processing of your order through our distributors or local service facility. To expedite the repair process, contact Woodward in advance to obtain a Return Authorization Number, and arrange for issue of a purchase order for the item(s) to be repaired. No work can be started until a purchase order is received.



### NOTE

**We highly recommend that you make arrangement in advance for return shipments. Contact a Woodward customer service representative at 1 (800) 523-2831 in North America or +1 (970) 482-5811 for instructions and for a Return Authorization Number.**

## Replacement Parts

When ordering replacement parts for controls, include the following information:

- the part number(s) (XXXX-XXXX) that is on the enclosure nameplate;
- the unit serial number, which is also on the nameplate.

## How to Contact Woodward

In North America use the following address when shipping or corresponding:

Woodward Governor Company  
PO Box 1519  
1000 East Drake Rd  
Fort Collins CO 80522-1519, USA

Telephone—+1 (970) 482-5811 (24 hours a day)  
Toll-free Phone (in North America)—1 (800) 523-2831  
Fax—+1 (970) 498-3058

For assistance outside North America, call one of the following international Woodward facilities to obtain the address and phone number of the facility nearest your location where you will be able to get information and service.

<u>Facility</u>	<u>Phone Number</u>
Brazil	+55 (19) 3708 4800
India	+91 (129) 4097100
Japan	+81 (476) 93-4661
The Netherlands	+31 (23) 5661111

You can also contact the Woodward Customer Service Department or consult our worldwide directory on Woodward's website (**[www.woodward.com](http://www.woodward.com)**) for the name of your nearest Woodward distributor or service facility.

## Engineering Services

Woodward Industrial Controls Engineering Services offers the following after-sales support for Woodward products. For these services, you can contact us by telephone, by email, or through the Woodward website.

- Technical Support
- Product Training
- Field Service

Contact information:

Telephone—+1 (970) 482-5811

Toll-free Phone (in North America)—1 (800) 523-2831

Email—[icinfo@woodward.com](mailto:icinfo@woodward.com)

Website—[www.woodward.com](http://www.woodward.com)

**Technical Support** is available through our many worldwide locations or our authorized distributors, depending upon the product. This service can assist you with technical questions or problem solving during normal business hours. Emergency assistance is also available during non-business hours by phoning our toll-free number and stating the urgency of your problem. For technical support, please contact us via telephone, email us, or use our website and reference **Customer Services** and then **Technical Support**.

**Product Training** is available at many of our worldwide locations (standard classes). We also offer customized classes, which can be tailored to your needs and can be held at one of our locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability. For information concerning training, please contact us via telephone, email us, or use our website and reference **Customer Services** and then **Product Training**.

**Field Service** engineering on-site support is available, depending on the product and location, from one of our many worldwide locations or from one of our authorized distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface. For field service engineering assistance, please contact us via telephone, email us, or use our website and reference **Customer Services** and then **Technical Support**.

## Technical Assistance

If you need to telephone for technical assistance, you will need to provide the following information. Please write it down here before phoning:

### General

Your Name \_\_\_\_\_  
Site Location \_\_\_\_\_  
Phone Number \_\_\_\_\_  
Fax Number \_\_\_\_\_

### Prime Mover Information

Engine/Turbine Model Number \_\_\_\_\_  
Manufacturer \_\_\_\_\_  
Number of Cylinders (if applicable) \_\_\_\_\_  
Type of Fuel (gas, gaseous, steam, etc) \_\_\_\_\_  
Rating \_\_\_\_\_  
Application \_\_\_\_\_

### Control/Governor Information

Please list all Woodward governors, actuators, and electronic controls in your system:

Woodward Part Number and Revision Letter \_\_\_\_\_

Control Description or Governor Type \_\_\_\_\_

Serial Number \_\_\_\_\_

Woodward Part Number and Revision Letter \_\_\_\_\_

Control Description or Governor Type \_\_\_\_\_

Serial Number \_\_\_\_\_

Woodward Part Number and Revision Letter \_\_\_\_\_

Control Description or Governor Type \_\_\_\_\_

Serial Number \_\_\_\_\_

*If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.*



**We appreciate your comments about the content of our publications.**

**Send comments to: [icinfo@woodward.com](mailto:icinfo@woodward.com)**

**Please include the manual number from the front cover of this publication.**



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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