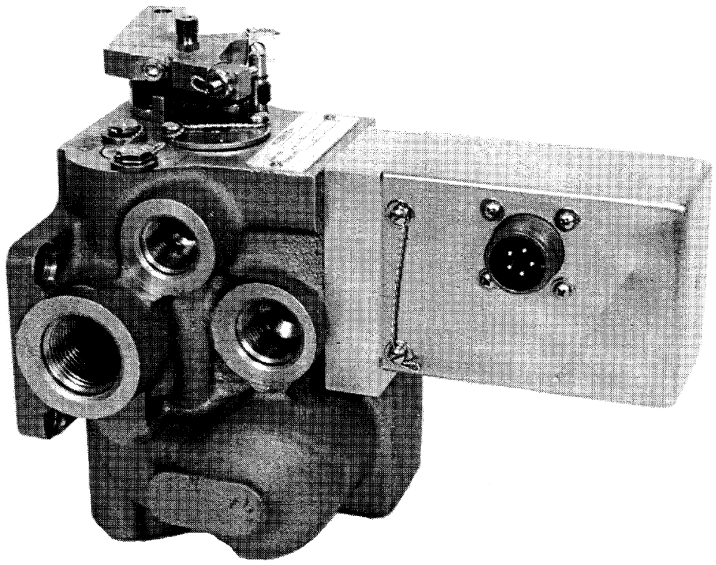
WOODWARD

Installation and Operation Manual



1907 Liquid Fuel Valve with LVDT Position Feedback

Manual 40131

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.

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

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

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

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*.

Contents

Illustrations and Tables

Chapter 1.
General Information

Introduction

The 1907 liquid fuel valve meters fuel to gas turbines under all operating conditions. The fuel valve is mechanically linked to and operated by a governor/actuator, which determines the amount of fuel flow required for any gas turbine mode of operation.

Description

The 1907 Liquid Fuel Valve with LVDT consists of three sections: a fuel-metering valve, a bypass valve, and an LVDT (linear variable differential transformer) which provides a position feedback to the electronic control.

The fuel-metering-valve section consists of a hollow plunger, housed within a ported sleeve. A spring holds the end of the plunger in contact with the input lever. The size and shape of the metering port is determined by the turbine fuel-flow requirements.

A rod, threaded into the hollow plunger, controls the location of the core in the LVDT. The LVDT then provides an electronic signal proportional to the precise position of the fuel valve.

The bypass-valve section consists of a spring-loaded rolling diaphragm, which senses both fuel inlet and outlet pressure, to control the position of a bypass-valve plunger in a ported sleeve. An adjustment is provided for positioning the bypass-valve sleeve.

Specifications

Outside dimensions and installation data are provided in Figure 2-1. Fuel types and flow specifications are provided below.

Fuel Types	aviation gasoline, JP-4, JP-5, or diesel fuel
Specific Gravity	0.70 to 0.85
Fuel Flow	100 to 3120 lb/h (45 to 1415 kg/h)
Fuel Pressures:	
Inlet	950 psig (6550 kPa) maximum
Outlet	900 psig (6206 kPa) maximum
CDP	155 psig (1069 kPa) maximum
Static Test	1400 psig (9653 kPa)

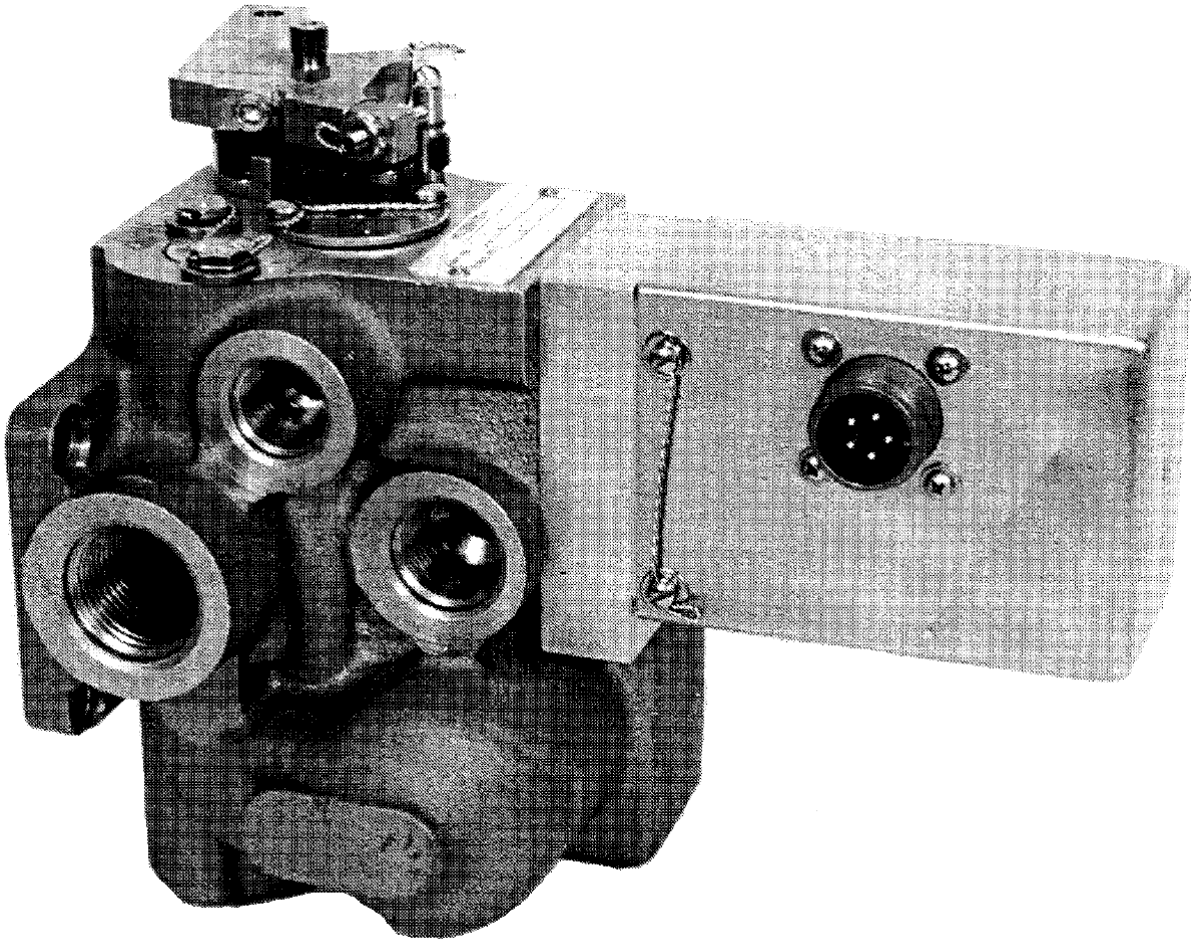


Figure 1-1. 1907 Fuel Valve with LVDT

Chapter 2. Installation

Installation

Install the fuel valve square with the governor/actuator linkage to prevent binding. The actuator should use about two-thirds of the available output between minimum and maximum. The remainder of the actuator travel should be split between the maximum and minimum ends to assure positive position for shutdown and for maximum fuel. The final minimum and maximum fuel flows will be set on the fuel valve. The linkage should be designed to provide linear connection between the actuator and the fuel valve. (A given movement of the actuator output will cause an equal movement of the fuel valve.)

This unit is calibrated before shipment and a minimum use of adjustments is recommended. If adjustments are needed, refer to Figure 2-1 for adjustment location and then follow the procedures listed below.

Adjustments

1. The minimum-fuel stop screw increases the minimum-fuel setting when turned clockwise.

2. The maximum-fuel stop screw increases the maximum-fuel setting when turned counterclockwise.

3. The specific-gravity adjustment changes the pressure drop across the metering port. It is set by loosening the two screws holding the plate and turning the socket-head screw, aligning its scribe mark with the desired specific-gravity mark on the plate.

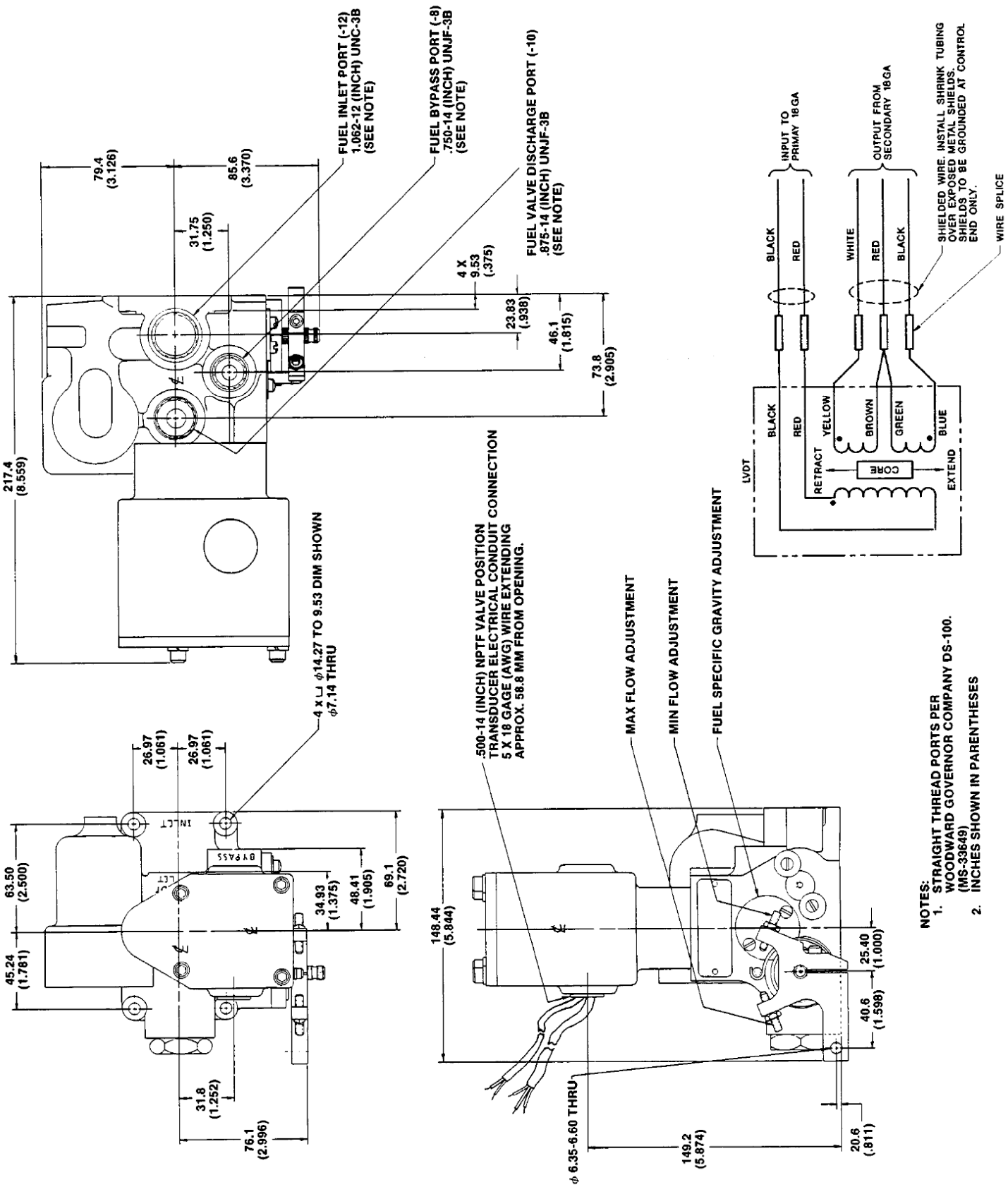


Figure 2-1. Outline Drawing and Adjustment Locations
(Do not use for construction.)

Chapter 3.
Principles of Operation

General

The fuel valve is used in conjunction with a governor/actuator. Fuel is metered to the turbine for starting, acceleration, steady-state operation, and deceleration. Fuel flow is controlled by the mechanical linkage from the governor/actuator.

Starting

The electronic control determines the start position of the fuel valve with the LVDT signal used to determine the starting position. Fuel from the fuel pump enters the inlet port (P_1) where it is directed through the metering port to the discharge port (P_2) and then to the engine. Excess fuel is returned to the pump inlet through the bypass valve.

Acceleration

As the gas turbine reaches ignition speed, the governor/actuator rotates the governor connecting lever to the fuel position required by the load/speed factors and moves the input lever clockwise, away from the metering piston. The piston-loading spring moves the metering piston upward, allowing more fuel to flow. Following ignition, the gas turbine accelerates toward the governor speed setting. This action continues until the turbine reaches the preset governor speed.

Steady State

When the turbine has accelerated to the governor preset speed, the governor rotates the governor/actuator connecting lever counterclockwise to decrease fuel. In this condition, fuel flow is regulated by the governor.

Deceleration

During large reductions in load or speed setting, the governing system will reduce fuel flow to the turbine by moving the fuel valve. The minimum-fuel adjustment limits the movement of the throttle shaft to provide the minimum fuel flow necessary to sustain combustion and prevent flameout.

Bypass Feature

A constant pressure drop is maintained across the metering port to allow the port opening to accurately meter fuel flow. Inlet pressure (P_1) is applied to one side of the bypass diaphragm and outlet pressure (P_2) to the opposite side. The bypass piston is positioned by the force exerted by (P_2) plus the spring force acting on the bottom side of the diaphragm and by the force (P_1) exerted on the top side. With these forces in balance, the spring force against the diaphragm determines the pressure drop (P_1 minus P_2) across the fuel metering port. The diaphragm positions the bypass-valve plunger with respect to the bypass port, thereby controlling the amount of fuel returned to the pump inlet (P_0). The bypass control provides a constant differential pressure across the metering valve, regardless of variations in flow or pressure level.

An increase in outlet flow increases P_2, unbalancing the forces acting across the diaphragm. The diaphragm then moves up to reduce bypass flow, causing pressure P_1 to increase until the forces acting across the diaphragm are again balanced and movement stops.

A decrease in outlet flow decreases P_2, unbalancing the forces acting across the diaphragm. The diaphragm then moves down to increase bypass flow, causing pressure P_1 to decrease until the forces acting across the diaphragm are again balanced and movement stops.

Failsafe Feature

The bypass valve includes a failsafe disc to prevent excessive fuel flow to the turbine, should the bypass-valve diaphragm rupture. The area of the disc is greater than the effective area of the diaphragm. This compensates for the leakage past the diaphragm and disc in the event of a rupture. The failsafe feature has no function if the diaphragm is in good condition.

Input Shaft Torsion Spring

The input-shaft torsion spring, shown in Figure 3-2, forces the governor connecting link to the minimum fuel-stop position, if a connecting link should break or become disconnected.

Relief Valve

A spring-loaded, poppet-type relief valve protects the system from excessive pressure. Shims are used to adjust the pressure at which the valve will dump fuel to bypass (P_0).

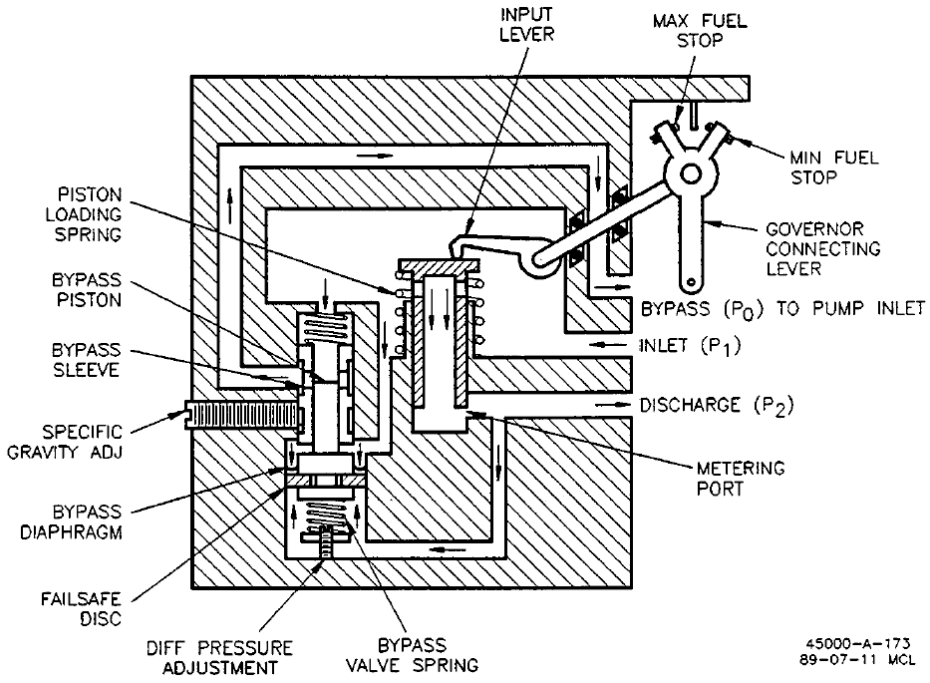


Figure 3-1. Schematic Diagram of 1907 Liquid Fuel Valve

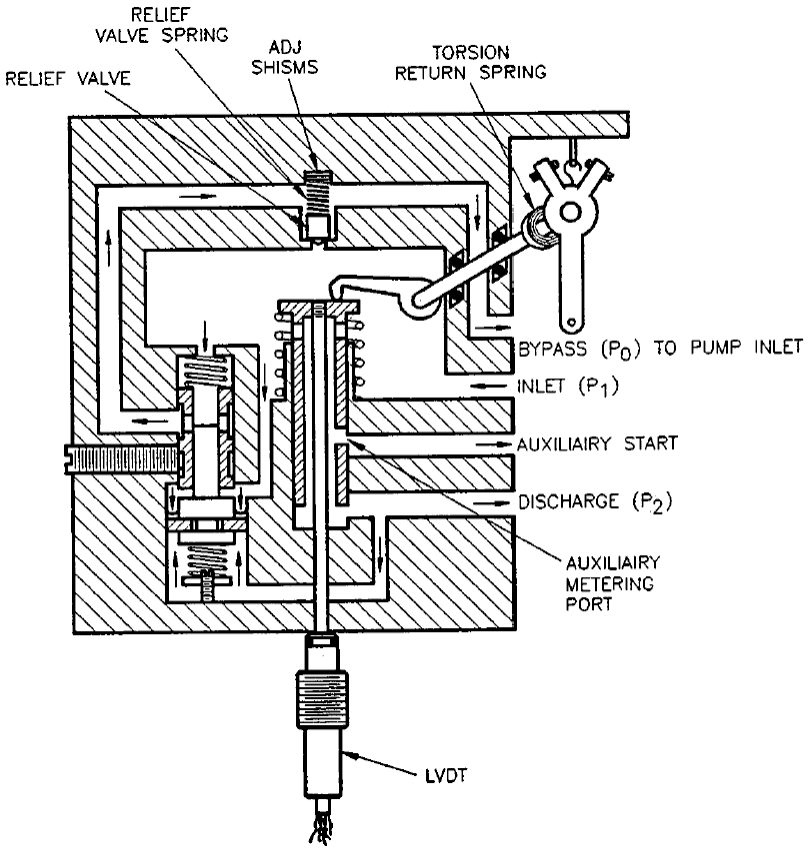


Figure 3-2. Schematic of 1907 Liquid Fuel Valve with Auxiliary Features

Chapter 4. Maintenance

Troubleshooting

Faults in the governing system are usually revealed in speed variations of the turbine, but it does not necessarily follow that such speed variations indicate governing system faults.

When improper speed variations appear, check all components, including the turbine and fuel supply, for proper operation. Refer to the governor system manuals for assistance in isolating the trouble.

The following steps describe troubles relating to the fuel valve.

IMPORTANT **Refer to Figure 2-1 for location of adjustment screws identified in the following steps.**

1. Check the linkage between the actuator and the fuel valve to make certain there is no binding or lost motion. Disconnect the actuator linkage and check that the valve input shaft can be rotated between stops without excessive torque.

2. During cranking (before ignition speed), the actuator should rotate the valve input shaft to the start fuel position. If this does not occur, the actuator oil supply and the linkage should be checked again. If possible, substitute a spare actuator to determine if the fault is with the governor or actuator.

3. If the actuator moves the fuel-valve input shaft to the start-fuel position during cranking, but ignition does not occur, suspect the fuel supply or the turbine.

4. If acceleration to rated speed does not occur with the governor speed setting properly adjusted, it may be due to the maximum-fuel stop being set too low.

5. If the load carried by the turbine is limited by the maximum-fuel adjustment, increase this adjustment, being careful not to exceed any of the operating conditions recommended by the turbine manufacturer.

6. If any valve malfunction is indicated, refer to disassembly, cleaning, inspection, and assembly procedures for repairing the unit.

Disassembly

When disassembling the fuel valve follow the sequence of index numbers assigned to Figure 5-1.

1. Clean exterior surface of valve.

2. Discard all gaskets, O-rings, seals, retaining rings, cotter pins, clips, and lock nuts, removed in the process of disassembly.

3. Do not remove press-fit components unless replacement is necessary. Removal of these components may necessitate replacement.

4. Do not turn screw 15 in spring seat 14. If screw must be removed, make necessary measurements so it can be replaced in its original position.

5. Record position of eccentric 31 before removing it.

6. Mark shaft 56 at a point parallel to the slot in the throttle stop (2).

7. The position feedback setting of the LVDT is critical. Carefully record the position before starting disassembly. The core will separate from the coil of the LVDT. Be careful not to disturb the setting of either the core or coil unless test stand facilities are available to reset the LVDT.

8. To remove the bypass-valve sleeve (33), insert your finger (or wooden dowel) in cover end of bypass-valve bore and push sleeve out of body through diaphragm end of the bore. Do not remove the sleeve through the cover end of the bypass-valve bore.

9. Pull throttle shaft (56) out of body, removing input lever (55) and bearing (57) in the process.

Cleaning

Immerse all metal parts in cleaning solvent and wash ultrasonically or by agitation. Use a non-metallic brush or jet of compressed air to clean slots, holes, or apertures.

Dry all cleaned parts with clean, dry compressed air.

Inspection

1. Visually inspect all parts for wear or damage.

2. Inspect bearings in accordance with standard shop practice. Replace bearings when there is any detectable roughness.

3. All pistons, valves, plungers, and rods should move freely, without excessive play. Do not lap parts if possible to free by other means. Carefully inspect any bores which contained damaged pistons.

4. Polish slightly corroded, scored, or nicked parts with crocus cloth and oil. Discard parts with excessive wear or pitting.

Assembly

Assemble the fuel valve in reverse order of index numbers assigned to Figures 5-1, following the special instructions below. A dust-free area is recommended.

Obtain new gaskets, O-rings, seals, retaining rings, cotter pins, etc., to replace those discarded during disassembly.

1. Lubricate O-rings and channel seals with petroleum jelly or light lubricating oil before installation. Lubricate rolling diaphragm (21) with Molykote before installation. Lubricate metal parts lightly with oil.

2. Assemble one O-ring (34) in groove at outer end of bypass-valve sleeve (33). Do not install second O-ring (34) at this time. Insert sleeve in body from side opposite cover (25) until outer land of O-ring grove is flush with bottom of diaphragm counter bore in body. Assemble O-ring (32) on eccentric (31) and insert it into body, turning as required so the eccentric pin projects into the relieved center section of the sleeve. Install adjustment plate (30). Install second O-ring (34) on shouldered end of sleeve (33) from cover end of bore. Carefully assemble remaining parts in sequence.

3. Insert sleeve (35) into body with metering port facing toward the outlet port.

4. Assemble rolling diaphragm (21) on bypass-valve plunger (23). The bead on the outer flange of the diaphragm must face outward. Support outer flange of the diaphragm and push piston into diaphragm, rolling diaphragm back over piston for about 1/3 of the length of the piston. Insert piston end of assembly into sleeve (16) from large end, working rolled section of diaphragm into the relieved port of the sleeve ID between sleeve and piston. Hold sleeve and piston so failsafe disc (19) is about 1/8 inch from outer end of sleeve and seat diaphragm bead in the groove in the large end of the sleeve. Carefully insert assembled parts into body, making sure diaphragm bead is not dislodged. Test action of plunger and diaphragm.

Testing and Calibration

Test and calibration specifications are available from Woodward upon request. Be sure to specify the part number and serial number of the fuel valve.

Chapter 5.
Parts Information

When ordering replacement parts it is essential that the following information be given.

- Fuel valve serial number and part number (as shown on nameplate)
- Manual number (this is manual 40131)
- Part reference number in parts list and description of part or part name

The illustrated parts breakdown (Figure 5-1) shows and lists all replacement parts of the basic 1907 Fuel Valve. Index numbers are assigned in disassembly sequence.

IMPORTANT

Index numbers are used, not Woodward part numbers. When replacement parts are ordered, the specific parts list that matches the serial number of the individual fuel valve is compared with the index number to supply the correct part. The serial number must be supplied along with the parts order.

Ref. No.	Part Name	Quantity
40131-1	Screw	1
40131-2	Governor connecting lever	1
40131-3	Nut, hex	2
40131-4	Set screw	2
40131-5	Spring, torsion (optional)	1
40131-6	Spring, seat collar (optional)	1
40131-7	Screw	5
40131-8	Lockwasher	4
40131-9	Plate	1
40131-10	LVDT Case	1
40131-11	Cover, bypass valve	1
40131-12	Packing, preformed (O-ring)	1
40131-13	Spring, bypass valve	1
40131-14	Seat, assy., bypass valve spring	1
40131-15	Set screw	1
40131-16	Sleeve, diaphragm clamping	1
40131-17	Nut, hex, self locking	1
40131-18	Seat, bypass valve spring	1
40131-19	Disc, failsafe	1
40131-20	Piston, diaphragm	1
40131-21	Diaphragm, bypass rolling	1
40131-22	Clamp, diaphragm	1
40131-23	Plunger, bypass valve	1
40131-24	Screw	3
40131-25	Cover, bypass valve	1
40131-26	Packing, preformed (O-ring)	1
40131-27	Spring, bypass valve	1
40131-28	Seat, loading spring	1
40131-29	Screw	2
40131-30	Plate, bypass valve adjustment	1
40131-31	Eccentric, spring gravity	1
40131-32	Packing, preformed (O-ring)	1
40131-33	Sleeve, bypass valve	1
40131-34	Packing, preformed (O-ring)	2
40131-35	Sleeve, fuel metering valve	1
40131-36	Packing, preformed (O-ring)	1
40131-37	Packing, preformed (O-ring)	1
40131-38	Spring, fuel metering valve	1
40131-39	Plunger, metering valve	1

Ref. No.	Part Name	Quantity
40131-40	O-ring	1
40131-41	LVDT	1
40131-42	Packing, preformed (O-ring)	1
40131-43	Wire Clamp	1
40131-44	Wire Clamp Screw	1
40131-45	Screw	5
40131-46	Washer	5
40131-47	Thread Seal	5
40131-48	Wire Guard	1
40131-49	Set Screw	1
40131-50	Plug and bleeder	1
40131-51	Packing, preformed (O-ring)	1
40131-52	Pin, spring	1
40131-53	Screw	3
40131-54	Plate, retainer	1
40131-55	Lever, input	1
40131-56	Shaft, throttle	1
40131-57	Bearing, ball	1
40131-58	Packing, preformed (O-ring)	2
40131-59	Screw	2
40131-60	Washer, flat, CRES, 13/64 ID x 5/8 OD x 1/16	2
40131-61	Plug, relief valve	1
40131-61A	Retainer Ring	1
40131-62	Packing, preformed (O-ring)	1
40131-63	Valve Case	1
40131-64	Torsion Spring Pin	1
40131-65	Nameplate	1
40131-66	Drive Screw	6
40131-67	Nameplate	1
40131-68	Wire Splice	5
40131-69	5-Conductor Cable	1
40131-70	Torsion Spring Retainer	1

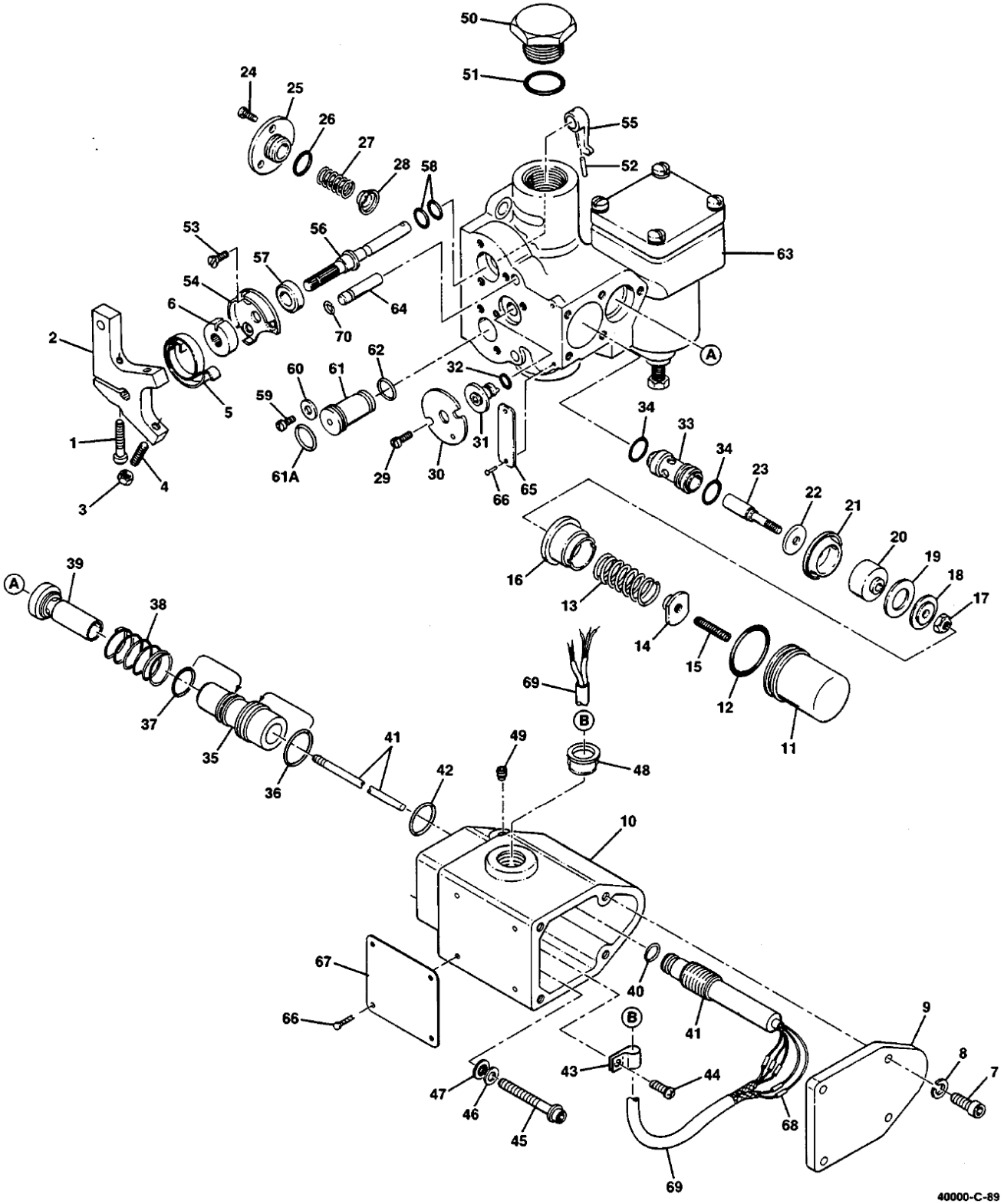


Figure 5-1. Exploded View of Fuel Valve

Chapter 6.
Service Options

Product Service Options

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

- Consult the troubleshooting guide in the manual.
- Contact the manufacturer or packager of your system.
- Contact the Woodward Full Service Distributor serving your area.
- Contact Woodward technical assistance (see "How to Contact Woodward" later in this chapter) and discuss your problem. In many cases, your problem can be resolved over the phone. If not, you can select which course of action to pursue based on the available services listed in this chapter.

OEM and Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

- A **Full Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.
- An **Authorized Independent Service Facility (AISF)** provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.
- A **Recognized Engine Retrofitter (RER)** is an independent company that does retrofits and upgrades on reciprocating gas engines and dual-fuel conversions, and can provide the full line of Woodward systems and components for the retrofits and overhauls, emission compliance upgrades, long term service contracts, emergency repairs, etc.
- A **Recognized Turbine Retrofitter (RTR)** is an independent company that does both steam and gas turbine control retrofits and upgrades globally, and can provide the full line of Woodward systems and components for the retrofits and overhauls, long term service contracts, emergency repairs, etc.

A current list of Woodward Business Partners is available at **www.woodward.com/support**.

Woodward Factory Servicing Options

The following factory options for servicing Woodward products are available through your local Full-Service Distributor or the OEM or Packager of the equipment system, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is originally shipped from Woodward or a service is performed:

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

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 a flat-rate program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call your Full-Service Distributor 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 Full-Service Distributor.

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 within 60 days, a credit for the core charge will be issued.

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 for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

When shipping the item(s), attach a tag with the following information:

- return number;
- 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.

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.

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*.

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.

Engineering Services

Woodward offers various Engineering Services for our products. For these services, you can contact us by telephone, by email, or through the Woodward website.

- Technical Support
- Product Training
- Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact. Emergency assistance is also available during non-business hours by phoning Woodward and stating the urgency of your problem.

Product Training is available as standard classes at many of our worldwide locations. 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.

Field Service engineering on-site support is available, depending on the product and location, from many of our worldwide locations or from one of our Full-Service 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 information on these services, please contact us via telephone, email us, or use our website and reference **www.woodward.com/support**, and then ***Customer Support***.

How to Contact Woodward

For assistance, call one of the following 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.

Electrical Power Systems

Facility	Phone Number
Australia	+61 (2) 9758 2322
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany:	
Kempen	+49 (0) 21 52 14 51
Stuttgart	+49 (711) 78954-0
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
Poland	+48 12 618 92 00
United States	+1 (970) 482-5811

Engine Systems

Facility	Phone Number
Australia	+61 (2) 9758 2322
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany:	
Stuttgart	+49 (711) 78954-0
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
United States	+1 (970) 482-5811

Turbine Systems

Facility	Phone Number
Australia	+61 (2) 9758 2322
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
United States	+1 (970) 482-5811

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

For the most current product support and contact information, please refer to the latest version of publication **51337** at **www.woodward.com/publications**.

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

Please reference publication 40131.

WOODWARD

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.

2009/4/Fort Collins