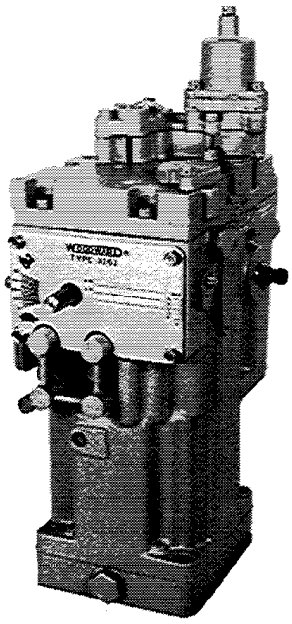
WOODWARD

Product Manual 03108
(Revision B)
Original Instructions



3161 Governor

Air Pressure Fuel Limiter

Operation Manual

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

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 *publications page* on the Woodward website:
www.woodward.com/publications
The current revision and distribution restriction of all publications are shown in manual *26311*.

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.

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

This manual describes the operation, repair, and calibration of the Air Pressure Fuel Limiter that is available for the 3161 governor. This device is installed and calibrated at the factory.

Description

The Air Pressure Fuel Limiter limits fuel in proportion to air pressure from the air manifold or air box.

⚠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.

References

03101	3161 Governor
03102	3161 Governor product specification
03103	3161 Governor, Manual Shutdown Device
03104	3161 Governor, Pressure Shutdown Device
03105	3161 Governor, Electric Shutdown Device
03106	3161 Governor, Pneumatic Speed Setting Device
03107	3161 Governor, Speed Adjusting Motor with Manual Speed Adjust
03109	3161 Governor, Load Limit Control
25075	Commercial Preservation Packaging for Storage of Mechanical-Hydraulic Controls

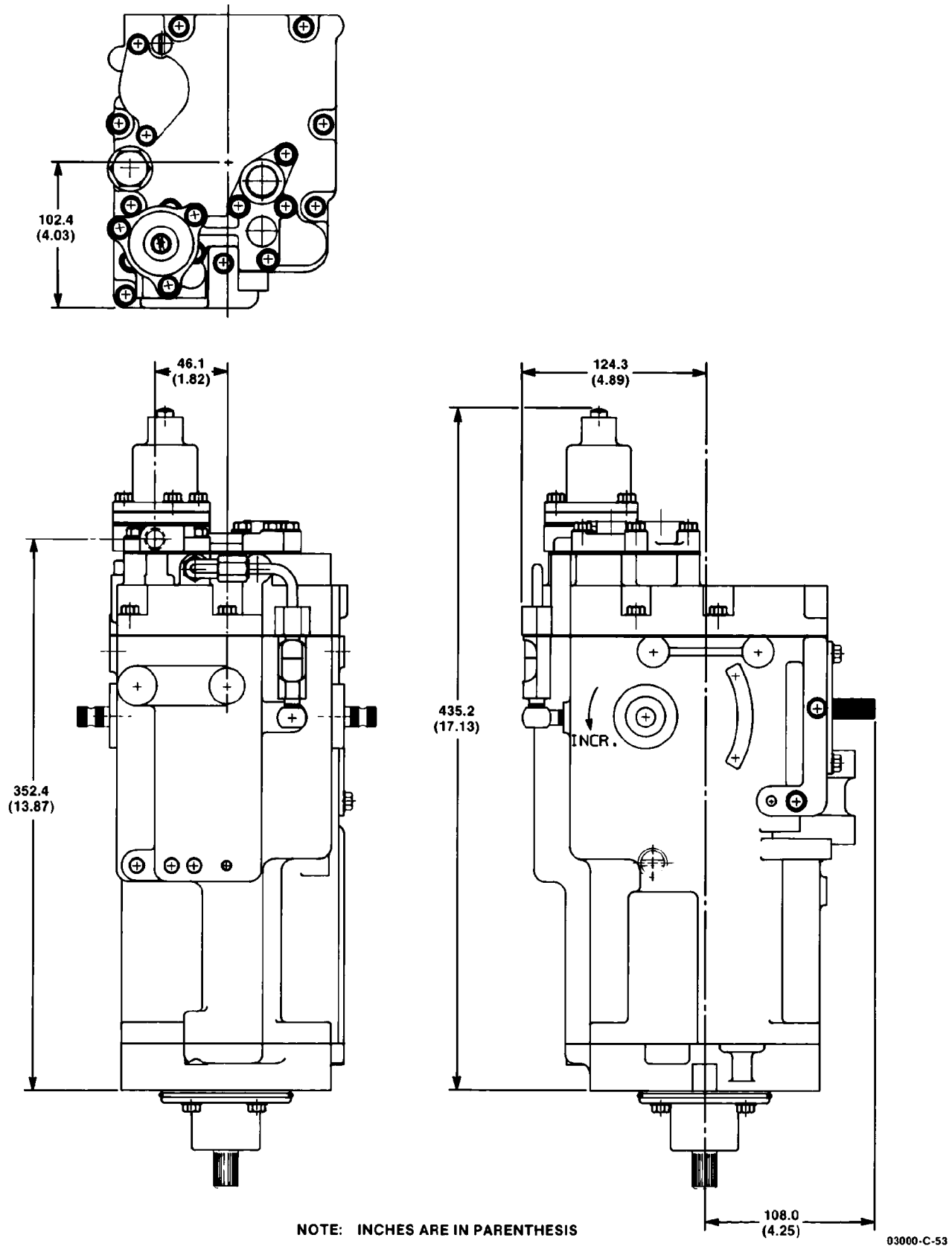


Figure 1-1. Outline Drawing of 3161 Governor with Air Pressure Fuel Limiter

Chapter 2.
Principles of Operation

The Air Pressure Fuel Limiter is designed to allow adjustment to permit full fuel or fuel limiting to the engine during cranking and start-up. If the adjustment has been made for full fuel, the fuel limiter is inoperative until the engine has started (see Figure 2-1).

If the limiter has been adjusted for full fuel on start-up, as speed or load is increased to the prime mover, air pressure increases, raising the rolling diaphragm assembly, compressing the limiter spring. As the rolling diaphragm assembly moves up, the fuel limit plunger also moves up and closes off the port in the limiter piston, trapping the supply oil. The trapped oil increases in pressure until it is high enough to overcome the limiter spring and push the limiter piston down. The lower edge of the fuel limit plunger uncovers the port in the limiter piston, allowing supply oil to go to drain. The limiter is now “armed” and operational.

If the limiter is calibrated to limit fuel on start-up, the arming adjustment screw has been backed out (turned counterclockwise) to allow the fuel limit plunger to move up and close off the port in the limiter piston, trapping the supply oil. The trapped oil increases in pressure until it is high enough to overcome the limiter spring and push the limiter piston, limiter output rod, limit lever, limit rod, and limit/shutdown pilot valve plunger down. When the limit/shutdown pilot valve moves down, governor control oil is allowed to drain back to sump, thus limiting fuel.

If additional load is applied and pressure from the air manifold is increased further, the rolling diaphragm assembly again moves up, raising the fuel limit plunger. Pressure on the limiter piston drops due to the opening of the port, and the limiter piston moves up until the port is closed again. As described, limiter piston position is proportional to air manifold pressure.

The limit/shutdown pilot valve is activated through the action of the limit/shutdown rod, limit rod, limit floating lever, limiter cam, limit lever, and limiter output rod.

The limit range is determined by the positioning of the limit cam on the limit lever. Moving the cam away from the shutdown rod lengthens the limiting range, and moving it closer to the shutdown rod shortens the limiting range.

Assume the prime mover is running on speed with the limiter armed. Load is applied to the engine and speed starts to decrease. The governor calls for an increase in fuel, the power piston moves up and rotates the output shaft in the increase direction. As the output shaft rotates, the right end of the limit floating lever is raised, and because the limit floating lever is fixed to a pivot (positioned by the fuel limiter), the left end of the lever pushes the limit/shutdown rod down. The limit/shutdown pilot valve plunger closes off governor control oil to the servo, limiting servo travel.

As the engine picks up load, air pressure increases to the fuel limiter. The rolling diaphragm assembly moves up, raising the fuel limit plunger which uncovers the limiter piston. Oil pressure on the limiter piston is lowered, letting the limit servo spring raise the piston and output rod, allowing the limit/shutdown pilot valve to raise. Fuel limit level is then increased.

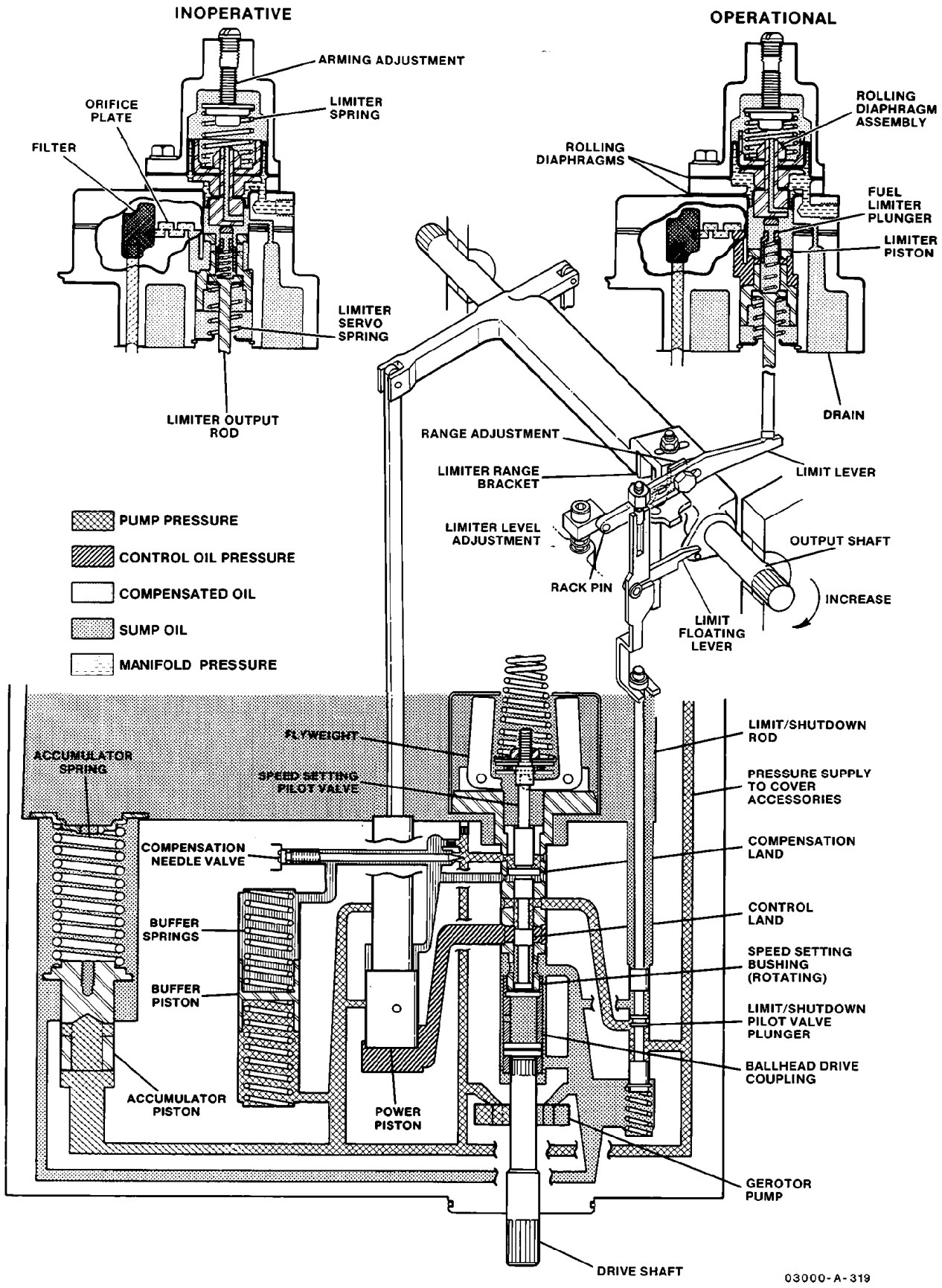


Figure 2-1. Schematic of Air Pressure Fuel Limiter on the 3161 Governor

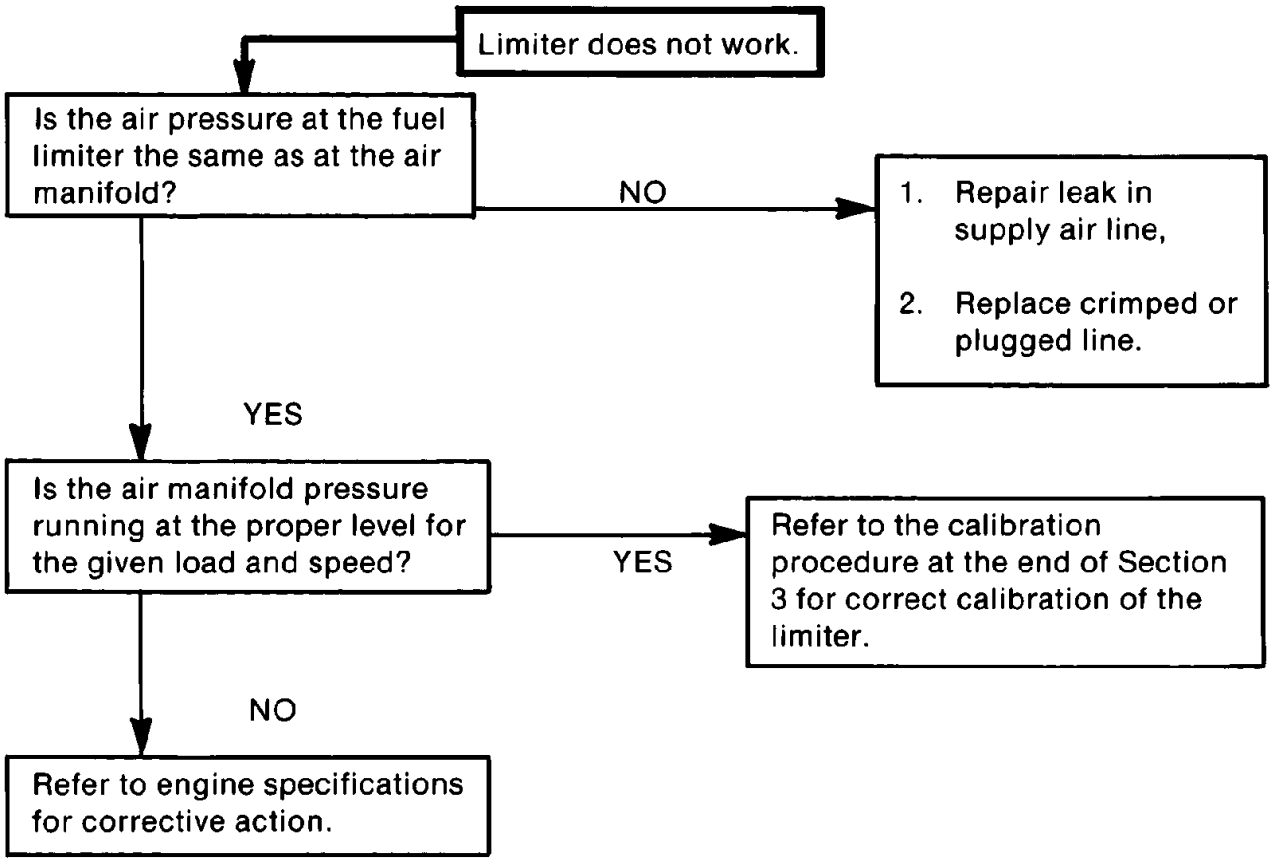
Chapter 3.
Troubleshooting, Repair, and Calibration

Introduction

Use the following troubleshooting guide to troubleshoot the Air Pressure Fuel Limiter.

If the Air Pressure Fuel Limiter is disassembled and repaired, it will require calibration before being returned to service on the prime mover. Refer to the Calibration Procedures at the end of this chapter to calibrate the Air Pressure Fuel Limiter. Refer to manual 03101 to calibrate the governor.

⚠WARNING **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.**



Governor allows too much fuel on cranking of engine. (This applies only if limiting on start-up is required).

1. Arming adjustment is set incorrectly.
2. Fuel limit level is set incorrectly. (Refer to the limiter calibration procedure at the end of Section 3).

Governor does not allow enough fuel to start engine.

1. If the governor is equipped with shutdown devices, be sure they are not activated or in any way causing shutdown.
2. Is linkage from the engine to the governor output shaft installed correctly? (Refer to engine specifications for linkage installation).
3. Arming adjustment screw may be set incorrectly. (Refer to limiter calibration procedures at the end of Section 3).
4. Fuel limit level is set incorrectly. (Refer to the limiter calibration procedure at the end of Section 3).

Engine is slow on acceleration.

1. Inadequate manifold pressure.
2. Restricted air line or leaky air line connections.
3. Fuel limit level is set incorrectly. (Refer to limiter calibration procedure at the end of Section 3).
4. Is linkage from engine to the governor installed correctly? (Refer to the engine specifications for linkage installation).

Excessive smoke during acceleration and when load is applied to the engine.

1. Fuel limit level is set too high. Adjust to engine manufacturers specification.
2. Arming adjustment is set incorrectly. (Refer to the limiter calibration procedure at the end of Section 3).

Disassembly

Remove the Governor from the prime mover.

NOTICE

This governor is a precision device and should be treated as such. Set the governor upright on wooden blocks to protect the drive shaft. Do not drop or set the governor on the drive shaft as this may cause damage to the drive shaft, bearings, seals, and other parts inside the governor.

Do not disassemble the device any further than necessary. All disassembly and repair should be done by personnel experienced in repair and calibration of precision controls. In all repair work, it is essential that tools, the work area, and parts be kept clean.

⚠ CAUTION

Wear approved eye protection to prevent possible eye injury during disassembly, cleaning, and assembly of parts.

Disassemble the device according to the following instructions. Reference numbers in parentheses are assigned to each part in the exploded view (Figure 4-1).

1. Remove three screws (1) from limiter cover(5). Carefully separate cover (5) from bellofram spacer (25).

2. Remove upper spring seat (6) and limiter spring (7). Lift off the bellofram assembly and remove bellofram guide (8).

3. Hold screw (23) with a 3/32 inch pin punch while removing 7/16 inch nut (29) (Figure 3-1).

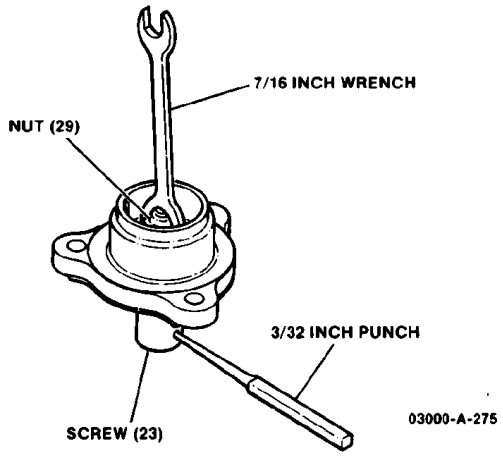


Figure 3-1. Disassembly of Bellofram Assembly

4. Remove bellofram piston (28) and upper rolling bellofram (27).

5. Remove screw (23), lower rolling bellofram (24), bellofram guide (25), and spacer (26).

6. It is not necessary to remove plug (2), O-ring (3), or screw (4) unless limiter cover (5) has to be replaced.

7. Carefully remove fuel limit plunger (10) and plunger return spring (11).

8. Remove seven screws (22) from orifice plate cover (21).

NOTICE **Be careful not to damage orifice plate (19) when removing upper gasket (20) and lower gasket (18).**

9. Turn cover (17) over. Remove retaining ring (16).

10. Remove lower spring seat (15), limiter return spring (14), output rod (13), and limiter piston (12) from cover (17).

Cleaning

Clean parts with solvent and a stiff brush to remove foreign particles.

⚠CAUTION **Observe manufacturer's instructions or restrictions regarding the use of solvents. If no instructions are available, handle with care. Use the cleaning solvent in a well ventilated area away from fires or sparks.**

Clean parts with clean, lint-free wipes, or blow dry with clean, dry air.

Handle parts that have been machined to a close tolerance carefully, to prevent damage caused by contact with other parts or objects.

Part Inspection

(Refer to Figure 4-1.)

Springs (7, 14,11)—Inspect springs for rust and corrosion and replace if any damage is found.

Limiter Piston (12)—Inspect limiter piston (12) for nicks and scratches on sharp corners.

Fuel Limit Plunger (10)—Inspect fuel limit plunger (10) for nicks and scratches. The plunger must slip freely In limiter piston (12).

Orifice Plate (19)—Inspect orifice plate (19) for plugged or damaged filter and orifices.

Assembly

To prepare to assemble the Air Pressure Fuel Limiter, lay the parts in an orderly fashion on a clean, dry work surface.

Use only new O-rings and gaskets. Careful, precise assembly methods will save time, and help to ensure correct calibration and operation of the device.

Torque all 1/4-20 screws to 10 N·m (90 lb-in).

Assembly Procedures

(Refer to Figures 3-1 and 4-1.)

1. Apply a light coat of white petroleum jelly on piston side of bellofram (24). Install bellofram clamp screw (23) in bellofram (24) against the surface marked “piston side”.

2. Place bellofram spacer (25) over bellofram (24). Lubricate both ends of bellofram inner spacer (26) with white petroleum jelly and install it on bellofram clamp screw (23).

3. Lubricate the bottom of bellofram piston (26) and install it In the side marked “piston side” on upper rolling bellofram (27). Place bellofram (27) and piston (26) on bellofram clamp screw (23).

4. Install nut (29) on bellofram clamp screw (23) (Figure 3-1).

NOTICE

DO NOT over-tighten nut (29). Turn nut down until it is snug, then turn 1/8 additional turn.

5. Place lower gasket (18), orifice plate (19), upper gasket (20), and orifice cover plate (21) on governor cover (17). (Observe “orifice plate side” on gaskets 18 and 20). Secure with seven screws (22).

6. Turn governor cover (17) with bottom side up. Install limiter piston (12), output rod (13), limiter return spring (14), and lower spring seat (15). Secure these parts in place with retaining ring (16).

7. Turn governor cover (17) top side up. Install plunger return spring (11) and fuel limit plunger (10) in limiter piston (12).

6. Place gasket (9) on the cover. Install the bellofram assembly (23 through 29) on the bellofram guide (8). Be sure the bellofram is not pinched.

9. Install the bellofram assembly (consisting of parts 23 through 29 and guide 6) on gasket (9).

10. Install limiter spring (7), upper spring seat (6), and limiter cover (5). Secure parts to cover with three screws (1).

Calibration Procedures

Before attempting to calibrate the Air Pressure Fuel Limiter, refer to the engine specifications and the governor test specifications for required speeds and air pressures.

Install the governor on the test stand. Be sure test stand drive rotation is the same as the governor pump rotation.

Fill the governor with 2.2 L (2.3 qt) of clean oil that has a viscosity of 100 to 300 SUS with an oil temperature for continuous governor operation of 66 to 82 °C (150 to 180 °F).

Install the cover on the governor. Remove the access plug over the fuel limit level adjustment (Figure 3-2). Turn the fuel limit level adjustment screw clockwise until it stops, then counterclockwise 10 full turns. Remove the access plug over the arming adjustment screw in the fuel limiter cap. Turn the arming screw clockwise five full turns.

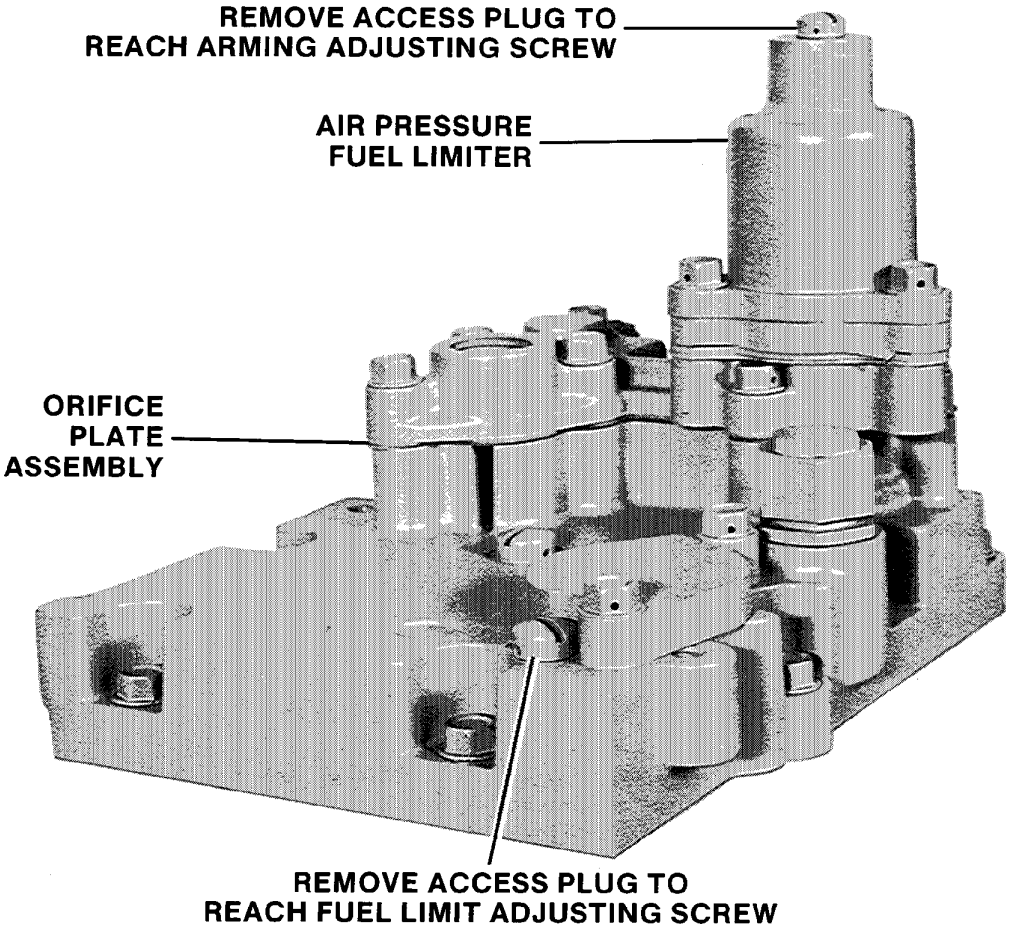


Figure 3-2. Air Pressure Fuel Limiter and Cover Assembly

1. With the speed setting shaft rotated to the high speed position, do the following:
   a. Run the test stand and allow the governor to reach the temperature of 54 to 66 °C (130 to 150 °F).
   b. Be sure the governor is functioning correctly and calibrated to governor specifications.
   c. Unhook feedback linkage to the test stand.
   d. Adjust the test stand to run the governor drive shaft at 500 rpm less than the designated high speed of the governor.
   e. Turn the limit level adjustment screw (Figure 3-3) to position the output shaft (terminal shaft) at 38 degrees travel.

2. Apply the specified arming air pressure to the limiter. (If the governor is to be armed at all times, use 0 kPa/psi).

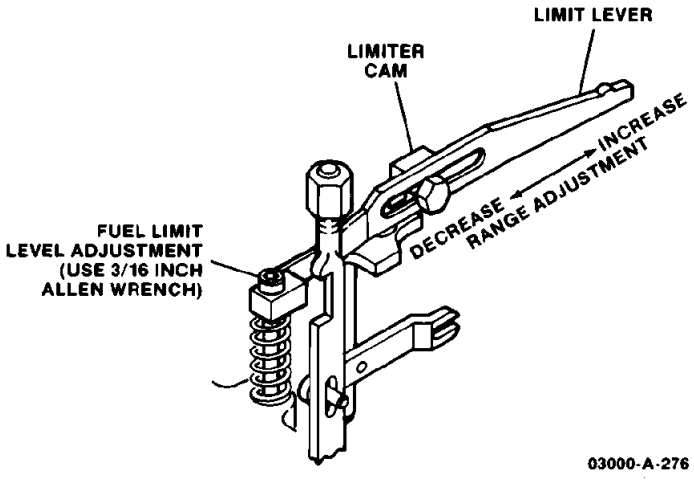


Figure 3-3. Fuel Limit Level and Range

3. Turn the arming adjustment screw counterclockwise until the output shaft suddenly drops towards minimum fuel. The governor is now armed. (If the governor is to be armed at all times, add two additional turns counterclockwise and go to step 7).

4. Reduce limiter arming air pressure to 0. Reduce the speed of the governor to 0. Wait one minute for governor oil pressure to bleed down.

5. To recheck arming point of the limiter:
   a. Adjust the test stand to run the governor drive shaft at 500 rpm less than the designated high speed of the governor.
   b. Set the output shaft at 38 degrees travel with the limit level adjustment.
   c. Apply specified arming air pressure to the limiter.
      (a) If the limiter arms (output shaft position drops quickly to a lower level) at less than specified minimum limit. turn the arming adjustment screw clockwise and repeat steps 4 and 5.
      (b) It the limiter arms at more than specified maximum limit, turn the arming adjustment screw counterclockwise and repeat steps 4 and 5.

6. Reduce limiter air pressure to 0. With the speed setting shaft at the maximum speed setting, run the governor at 500 rpm less than high speed. Turn the fuel limit level adjustment screw (Figure 3-3) to set the output shaft position at the specified degree of travel for 0 pressure.

7. Apply the specified maximum air pressure to the fuel limiter. If the governor output shaft rotates to a position that is higher than specified for that air pressure, reduce the test stand speed to 0. Wait one minute for the governor oil pressure to bleed down before removing the governor cover.

NOTICE

To prevent hot oil from spraying over the work area, do not remove the governor cover until the governor oil pressure has dropped to 0.

Remove the governor cover. Loosen the 7/16 hex head screw and move the limiter cam (range adjustment) towards the front of the governor. Retighten the screw. INSTALL THE GOVERNOR COVER and repeat steps 6 and 7.

If the governor output shaft rotates to a position that is lower than specified for that air pressure, reduce the test stand speed to 0. Wait one minute for the governor oil pressure to bleed down before removing the governor cover. Remove the governor cover. Loosen the 7/16 hex head screw and move the limiter cam (range adjustment) towards the back of the governor. Retighten the screw. INSTALL THE GOVERNOR COVER and repeat steps 6 and 7 until the position of the output shaft at maximum pressure is within tolerance.

8. Raise and lower the control air slowly between the specified minimum and maximum pressures. Output shaft position should respond to small changes and seek positions between minimum and maximum specifications proportional to the pressures applied.

9. Replace and tighten plugs over the level adjusting and arming adjusting screws.

Chapter 4.
Replacement Parts

When ordering replacement parts, include the following information:
1. Manual number (this is manual 03108).
2. Governor serial number and part number shown on the nameplate.
3. Part reference number and part name from parts list.

Ref. No.	Part Name	Quantity
03108-1	Screw .250-20 x 1.0	3
03108-2	Plug .250-28	1
03108-3	O-ring .176 ID x .070	1
03108-4	Screw .250-28 x 1.0	1
03108-5	Limiter cover	1
03108-6	Upper spring seat	1
03108-7	Limiter spring	1
03108-8	Bellofram guide	1
03108-9	Gasket	1
03108-10	Fuel limit plunger	1
03108-11	Plunger return spring	1
03108-12	Limiter piston	1
03108-13	Output rod	1
03108-14	Limiter return spring	1
03108-15	Lower spring seat	1
03108-16	Retaining ring	1
03108-17	Governor cover	1
03108-18	Lower gasket	1
03108-19	Orifice plate	1
03108-20	Upper gasket	1
03108-21	Orifice plate cover	1
03108-22	Screw .250-20 x 1.0	7
03108-23	Screw	1
03108-24	Lower rolling bellofram	1
03108-25	Bellofram spacer	1
03108-26	Spacer	1
03108-27	Upper rolling bellofram	1
03108-28	Bellofram piston	1
03108-29	Nut .250-28	1
03108-30	Pin .3135 Dia. x .515	1

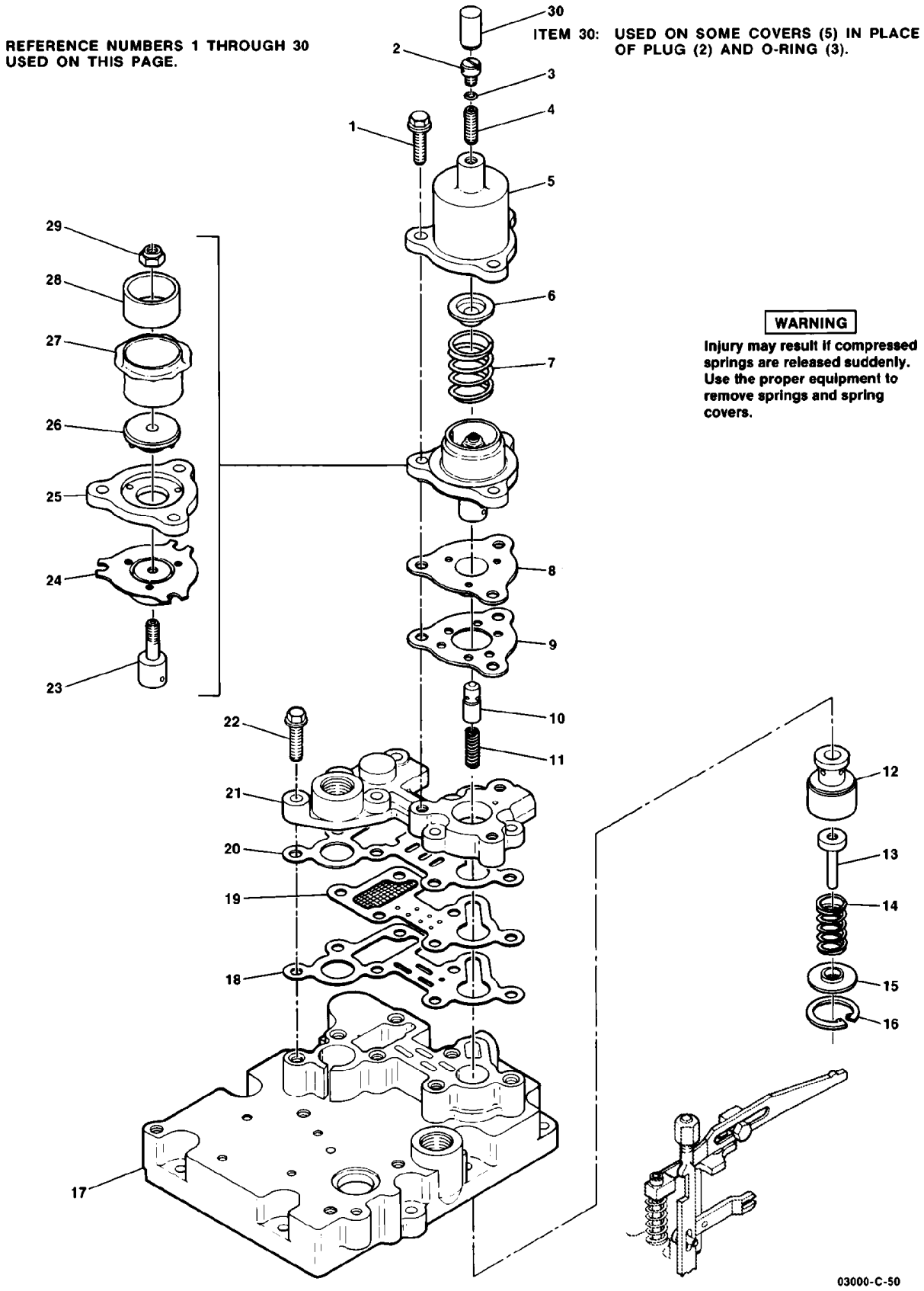


Figure 4-1. Exploded View of 3161 Air Pressure Fuel Limiter

Chapter 5.
Product Support and Service Options

Product Support Options

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

1. Consult the troubleshooting guide in the manual.
2. Contact the **OE Manufacturer or Packager** of your system.
3. Contact the **Woodward Business Partner** serving your area.
4. Contact Woodward technical assistance via email (**EngineHelpDesk@Woodward.com**) with detailed information on the product, application, and symptoms. Your email will be forwarded to an appropriate expert on the product and application to respond by telephone or return email.
5. If the issue cannot be resolved, you can select a further course of action to pursue based on the available services listed in this chapter.

OEM or 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 current list of Woodward Business Partners is available at **www.woodward.com/directory**.

Product Service Options

Depending on the type of product, the following options for servicing Woodward products may be available through your local Full-Service Distributor or the OEM or Packager of the equipment system.

- 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 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.

Flat Rate Repair: Flat Rate Repair is available for many of the standard mechanical products and some of the electronic 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.

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. 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's Full-Service Distributors offer various Engineering Services for our products. For these services, you can contact the Distributor by telephone or by email.

- 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.

Product Training is available as standard classes at many Distributor locations. Customized classes are also available, which can be tailored to your needs and held at one of our Distributor 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 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 one of the Full-Service Distributors listed at **www.woodward.com/directory**.

Contacting Woodward's Support Organization

For the name of your nearest Woodward Full-Service Distributor or service facility, please consult our worldwide directory published at **www.woodward.com/directory**.

You can also contact the Woodward Customer Service Department at one of the following Woodward facilities to obtain the address and phone number of the nearest facility at which you can obtain information and service.

Products Used In Electrical Power Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany:	
Kempen	+49 (0) 21 52 14 51
Stuttgart	+49 (711) 78954-510
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

Products Used In Engine Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (711) 78954-510
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

Products Used In Industrial Turbomachinery Systems

Facility	Phone Number
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
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

For the most current product support and contact information, please visit our website directory at **www.woodward.com/directory**.

Technical Assistance

If you need to contact technical assistance, you will need to provide the following information. Please write it down here before contacting the Engine OEM, the Packager, a Woodward Business Partner, or the Woodward factory:

General

Your Name _____

Site Location _____

Phone Number _____

Fax Number

Prime Mover Information

Manufacturer _____

Engine Model Number _____

Number of Cylinders _____

Type of Fuel (gas, gaseous, diesel, dual-fuel, etc.) _____

Power Output Rating _____

Application (power generation, marine, etc.)

Control/Governor Information

Control/Governor #1

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number

Control/Governor #2

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number

Control/Governor #3

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number

Symptoms

Description _____

_____

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 03108B.

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2012/9/Colorado