

DLE Metering Skid
Isolation Valve Positioner Replacement Guide



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 **B51554**, *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 **B51554**, *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 Out-of-date translations are marked with ⚠.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.

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Warnings and Notices

Important Definitions



This is the safety alert symbol 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.

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 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.

Chapter 1.

General Information

Isolation valve positioners installed on Woodward DLE Fuel Skids may be replaced in the field. Take special care to ensure that no damage to the valves, positioners, and skid occurs during the replacement. This guide serves to help an operator through the process of replacing the isolation valve positioners.

This guide is not intended to replace any site-specific instructions or safety procedures



EXPLOSION HAZARD—Do not remove covers or connect/disconnect electrical connections unless power is off and the area is non-hazardous.



Carry out all work should under safe conditions. Be sure gas is not present and the environment is safe to work on electrical components. Ensure all power is removed from the fuel skid and surrounding equipment.

Chapter 2.

Isolation Valve Positioner Removal

LM2500 SAC/DLE Skid

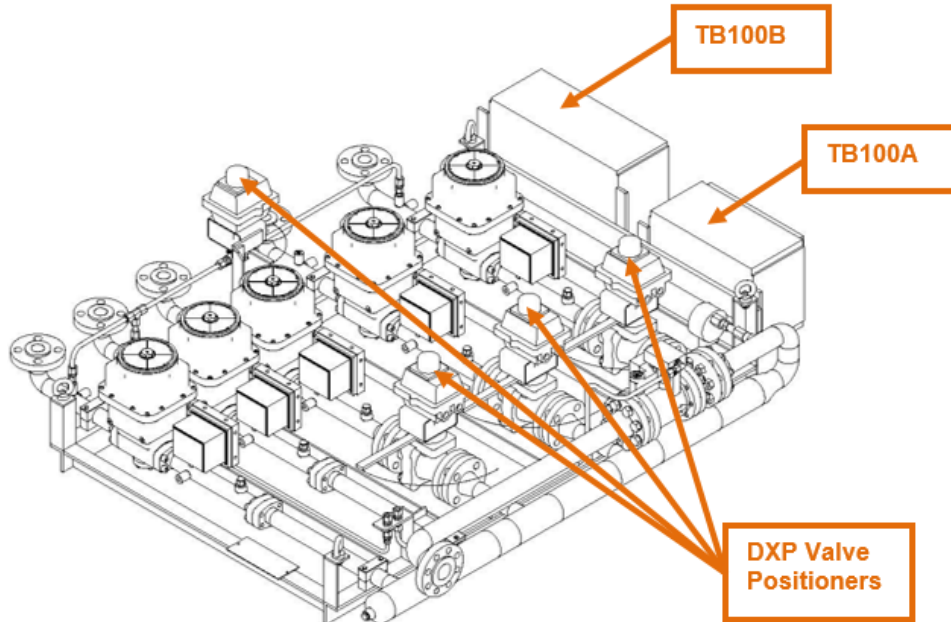


Figure 2-1. GE LM2500 SAC/DLE Skid with Isolation Valves and Valve Positioners

Figure 2-1 shows the isolation valve positioner locations on the skid. Actual skid configuration may vary.

Tools and Parts List

Required Tools:

- Channel Locks
- Wire Cutters
- Needle Nose Pliers
- Philips and Flat Head Screwdrivers
- Combination wrenches

Table 2-1. Kit Components:

COMPONENT	QTY
Topworx DXP Positioner (DXP-L22GMEB)	1 ea.
Liquidtight 90° 3/4" conduit fitting	2 ea.
TITAN Type HC 3/4" Flex Conduit	15 ft.
Tefzel Grounding Wire	15 ft.
TEW&C 14AWG, 2 conductor cable	45 ft.
Tefzel Cable Ties - 14 inch	5 ea.
Tefzel Cable Ties - 7 inch	15 ea.
Isolation Valve Positioner Replacement Guide	1 ea.

Component Reference



Figure 2-2. Topworx DXP Isolation Valve Positioner

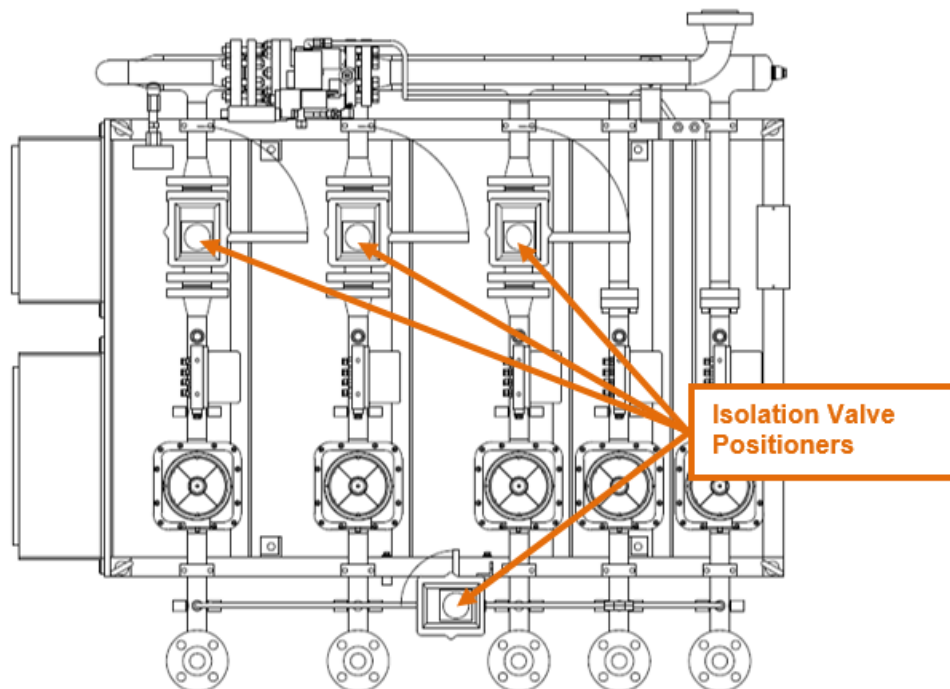


Figure 2-3. Isolation Valve Positioner Locations

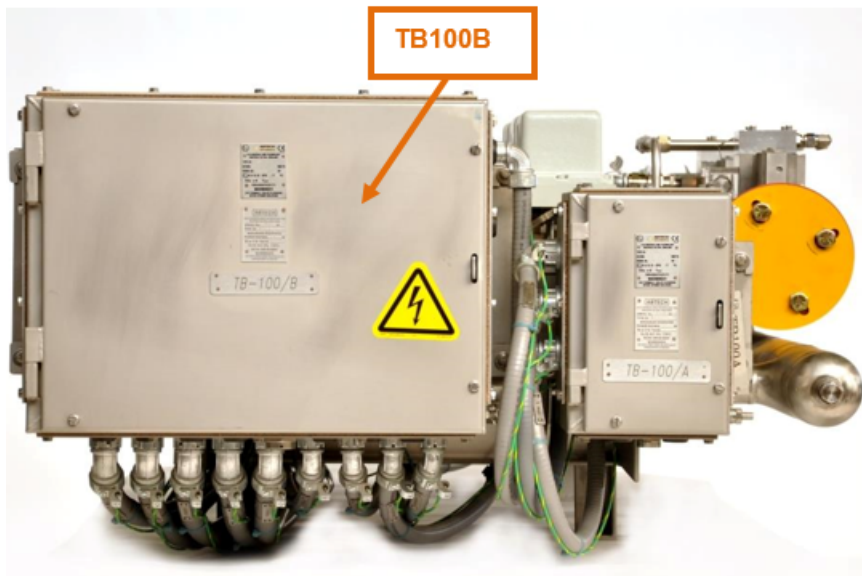


Figure 2-4. Example Junction Box

Isolation Valve Positioner Conduit and Wiring Removal

1. Ensure that all electrical circuits are de-activated
2. Disconnect the green/yellow external ground wire connected to the DXP positioner body.
3. Remove the conduit nut at the conduit fitting on the positioner, use caution to not damage the wiring within the conduit when removing. See Figure 2-5 below.

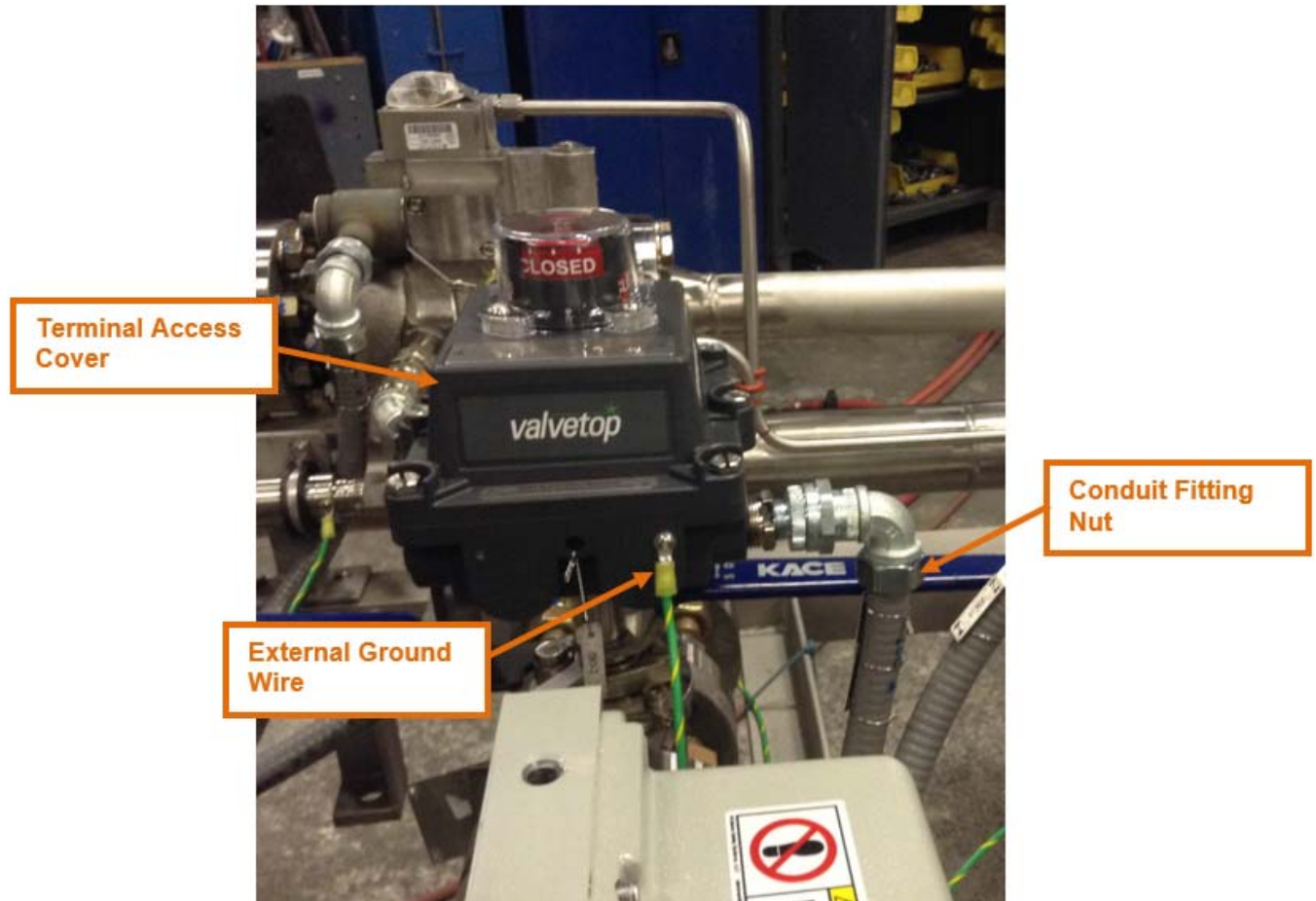


Figure 2-5. Isolation Valve Positioner Conduit Fitting and Ground Wire

4. Remove the six hex head bolts from the DXP positioner cover to gain access to the terminal block connections. See Figure 2-5 above.
5. Disconnect terminal block connections inside the DXP positioner. See Figure 2-6 below for connection schematic.
6. Disconnect terminal block connections inside TB100B on terminal strip TB-ISO-SW. See Figure 2-6 below for connection schematic.

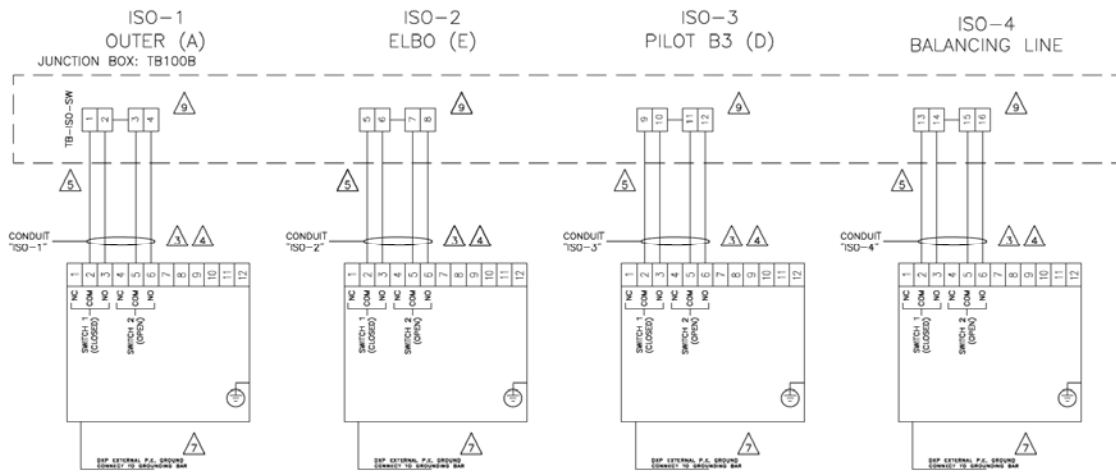


Figure 2-6. Isolation Valve Positioner and Junction Box Wiring

7. Remove any tie wraps retaining the DXP positioner wires inside of TB-100B.
8. Remove the conduit-fitting nut from the TB100B junction box hub.
9. Remove the wiring from the junction box by pulling on the at the previous conduit nut location. Keep the conduit and fittings in place or replace with the new conduit and fittings from the replacement kit.

Isolation Valve Positioner Removal

1. Remove the four mounting hardware bolts holding the DXP positioner to the mounting bracket. See figure below. The mounting bracket is part of the valve assembly; do not remove it from the valve.
2. Once disconnected, be sure to lift vertically to remove the DXP positioner to not bind or damage the NAMUR shaft coupling in any way.

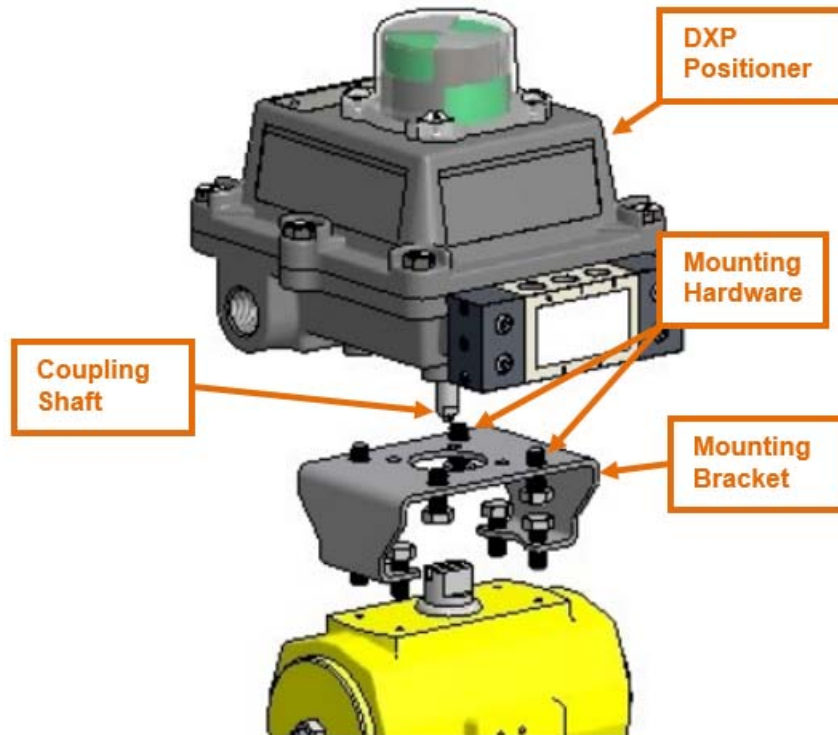


Figure 2-7. DXP Positioner and Mounting Hardware

Chapter 3.

Isolation Valve Positioner Re-installation Procedure

Isolation Valve Positioner Installation

1. Position the new DXP device in the same orientation as the removed device and install vertically onto the mounting bracket. Use caution to not allow undue axial load on the shaft while installing the device.
2. Attach the four mounting bolts to the mounting bracket and DXP positioner. Cycle the valve a couple of times prior to the final tightening of the hardware. This allows the shaft to self-center in the coupler. Torque the hardware to 10 ft-lbs.

Titan Flex Conduit

NOTICE

Flex conduit and cables have been supplied un-cut. It may be necessary for field installers to change the lengths of the cable slightly in order to adapt to the current site conditions. The lengths and route of the re-installed conduit/cable is at the discretion of the field installer in order to complete this task in the best way possible to meet the intention of this reinstallation.

NOTICE

Only a competent person, well versed in the installation of electrical systems, shall install any of the required electrical devices or wiring runs. Install all conduit and wiring per the Woodward Control Wiring Diagram.

1. The Woodward Isolation Valve Positioner replacement kit provides all components needed to replace the conduit and fittings if desired. Reuse the original conduit if not damaged during removal of the positioner.
2. Determine the length of flex conduit:
 - a. Measure required distance of route needed to run flex conduit from the Isolation Valve Positioner conduit connection to the gland plate on the TB100B Junction Box. Be sure when measuring length of flex conduit that there is enough slack to not put tension on the run, but the conduit does not lie on the ground or interfere with other applications. If desired, cut the new conduit to the same length as the original conduit.
 - b. Cut the flex conduit supplied with this kit at specific length.
3. Install Liquid Tight conduit fittings (see figure 3-1)

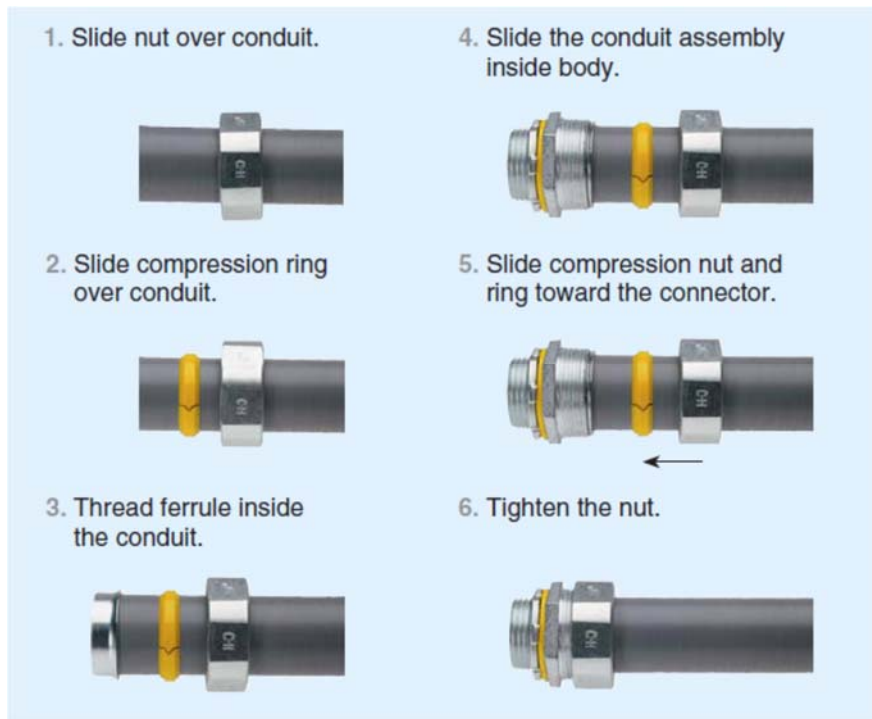


Figure 3-1. Liquid Tight Fitting Installation

4. After installation of the fittings, remove the stainless steel conduit tags from the previously installed conduit runs and replace them on the new conduit.
5. Install green/yellow ground wire:
 - a. Measure a length of green/yellow Tefzel grounding wire supplied with this kit, to the same length as the required flex conduit.
 - b. Run the wire along the flex conduit and fasten with supplied Tefzel cable ties (see figures below).



Figure 3-2. Tefzel Grounding Wiring Installation

Conduit Installation & Final Assembly

1. Route the component wires through the conduit to the TB100B junction box.
2. Reconnect the elbows and conduit to each other.
3. Connect all electrical connections to the TB100B junction box per the electrical schematic.
4. Attach the conduit ground wire to the Isolation Valve positioner.

Chapter 4. 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.

You can locate your nearest Woodward distributor, AISF, RER, or RTR on our website:

www.woodward.com/directory

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 authorization 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:

www.woodward.com.

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
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (0) 21 52 14 51
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

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

Turbine 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

You can also locate your nearest Woodward distributor or service facility on our website:

www.woodward.com/directory

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:

Your Name _____
 Site Location _____
 Phone Number _____
 Fax Number _____

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

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 _____

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 **B51554**.



PO Box 1519, Fort Collins CO 80522-1519, USA
1041 Woodward Way, Fort Collins CO 80524, USA
Phone +1 (970) 482-5811

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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.