WOODWARD

Component Maintenance Manual
Bronze Level

Product Name: GSOV80

FOR GENERAL DISTRIBUTION

Printed Copies of this Procedure are Uncontrolled

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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. The latest version of most publications is available on the Woodward website.

http://www.woodward.com

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.

1 GENERAL INFORMATION

INTRODUCTION

This Component Maintenance Manual is intended to be used by customers and Woodward authorized service centers for repair or service of the GSOV80. Bronze level service is preventative and routine maintenance requiring little to no specialized tooling, testing, or calibration procedures to maintain product between standard overhaul intervals. This manual is written with the assumption that the reader has access to the product manual and other Woodward literature referenced within this document.

1.1 Regulatory Compliance

The GSOV80 is subject to safety regulatory certifications. See product manuals **35091** or **35189** (extended temperature range version) for additional details. The service center performing the work on the GSOV80 must not alter the construction such that the certifications are invalidated.

⚠WARNING **Explosion Hazard — Do not connect or disconnect while circuit is live unless area is known to be non-hazardous.**

Substitution of components may impair suitability for Class I, Division 1 or 2 or Zone 2 applications.

1.2 Safety Symbols

	Direct Current
	Alternating Current
	Both Alternating and Direct Current
	Caution, risk of electrical shock
	Caution, refer to accompanying documents
	Protective conductor terminal
	Frame or chassis terminal

1.3 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

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

Disconnect Power Supply

Before performing maintenance, always disconnect power and any hazardous voltages that may be connected. Follow all appropriate lockout-tagout procedures.

⚠WARNING

Hazards due to insufficiently qualified personnel!

If unqualified personnel perform work on or with the product, hazards may arise which can cause serious injury and substantial damage to property. Therefore, all work must be carried out by appropriately qualified personnel.

⚠WARNING

Remove pressure before servicing. Failure to do so may damage the GSOV80 and/or cause injury.

1.4 Definitions and Used Abbreviations

CMM – Component Maintenance Manual
GSOV80 – *Gas Shutoff Valve - 3 inch (80 mm)*
CCW – *Counterclockwise*

1.5 List of Woodward Literature

Product Manual 35091 –	Gas Shutoff Valve GSOV80 - 3 in (80 mm) Installation and Operation Manual
Product Manual 35189 –	Gas Shutoff Valve GSOV80 - 3 in (80 mm) Installation and Operation Manual

Download Woodward Material: (www.woodward.com).

Required Documents		Reference Kit Number
Installation Drawing **9999-1776**	VALVE - INSTALLATION OF GSOV80	N/A
Installation Drawing **9999-1927**	VALVE - INSTALLATION OF GSOV80 H2 WITH FLYING LEADS	N/A
Installation Drawing **9999-1789**	GSOV80, KITS LIST	N/A
Installation Drawing **9999-1789-1**	Kit, GSOV80, SOLENOID (24 VDC)	8923-2544
	Kit, GSOV80, SOLENOID (125 VDC)	8923-2993
Installation Drawing **9999-1789-5**	Kit, GSOV80, FLYING LEADS – SOLENOID REPLACEMENT KIT (24 VDC)	8923-3273
	KIT, GSOV80, FLYING LEADS – SOLENOID REPLACEMENT KIT (125 VDC)	8923-3274
Installation Drawing **9999-1789-2**	Kit, GSOV80, PROXIMITY SWITCH	8923-2545
Installation Drawing **9999-1789-6**	GSOV80, FLYING LEADS – PROXIMITY SWITCH REPLACEMENT KIT	8923-3275
Installation Drawing **9999-1789-3**	Kit, GSOV80, ELECTRICAL CONNECTOR	8923-2546
Installation Drawing **9999-1789-4**	Kit, GSOV80, FILTER AND BREATHER	8923-2548

If unable to access Woodward documentation, refer to contact list at the end of this manual.

1.6 Woodward Required Software

Software is not required.

1.7 List of Required Hardware or Materials

Special Tool(s)	• N/A
Torque Wrenches	• Torque wrench(es) to cover 20 – 120 LBIN (2.0 – 13.6 Nm) • 5 - 40 LBFT (6.7 – 54 Nm) torque range
Wrench(es)	• Flat Wrench; Size from ⅛ to 1 ¼ inch • Flat Wrench; Size from 6 to 36 mm • Allen Hex Key; Size from ⅛ to ½ inch • Allen Hex Key; Size from 4 to 12 mm • Socket Wrench ¾ inch
Screwdriver(s)	• Type: Phillips; Screwdriver Sets • Type: Slotted; Screwdriver Sets
Basic Tools/Lubricants	• Screwdriver, Slotted • Diagonal Cutting Pliers • Wire Lug Crimping Tool • Isopropyl Alcohol • Loctite 246 (locking and sealing of threaded fasteners) • Loctite 592 Slow Cure Thread Sealant • Parker Super O-lube for O-ring lubrication • Dry Lubricant MS-143H (optional) • GN Paste (Molykote DX paste or similar)
Measuring Equipment	• Two Digital Voltmeters • HIPOT test device
NOTICE **Tools are not contained within the replacement kit. Please order separately.**	

General Instructions

- Lifting:
  - For proper and safe lifting instructions and diagrams, see product manual **35091** or **35189**.
- Review the CMM and installation drawing before starting the replacement to be sure that all necessary tools are available, and instructions are clear.
- Check the replacement parts kit to verify all replacement parts listed in the installation drawing are present. For questions, contact Woodward.
- Sort all parts for easy assembly.
- If all parts are not used, the unit or units must be inspected for completeness.
- Contact Woodward if an error is found during replacement process.
- Clean the exterior of the GSOV80 by hand prior to disassembly to prevent dirt and debris from contaminating the interior.
- O-rings:
  - Use the correct tool to install or remove O-rings. If using a protective cone on small O-rings, lubricate the O-ring and slide it onto the part, ensuring it does not twist.
  - If a cone is not used on large O-rings, carefully use a dull pick or probe under the O-ring to lift it onto the part until it is in the desired location.
- Retaining Rings:
  - During installation, be careful not to over-extend or over-compress a retaining ring. All retaining rings should be installed with the sharp edge away from the pressure. Inspect all installed retaining rings to be sure they have been properly seated, fit snugly, and do not rotate freely on the parts they are installed on or in.
- Helical Inserts:
  - To prevent damage to mid-grip helical insert, install screws at a slow speed. **DO NOT USE A HIGH SPEED TOOL**. Stainless steel screws **MUST** be lubricated with an anti-seize lubricant before turning them into mid-grip helical insert or aluminum parts.
- Disassembly:
  - Parts that have been disassembled and will be reused must be inspected closely for damage and replaced if necessary. Parts that have been disassembled should be kept in a clean container such that they can be readily identified against this procedure, reference drawings or visual aids for proper reassembly.
- Screws:
  - All screws loosen with counterclockwise direction. In other situations, the direction will be specified.

2 SOLENOID REPLACEMENT

2.1 GSOV80 Connector Version Solenoid Replacement Kit Description

The purpose of this procedure is to show the correct sequence and method of solenoid replacement.

KIT P/N	KIT Description	Installation Drawing
8923-2544	GSOV80 – Solenoid Replacement Kit: (24 VDC)	**9999-1789-1**
8923-2993	GSOV80 – Solenoid Replacement Kit: (125 VDC)	

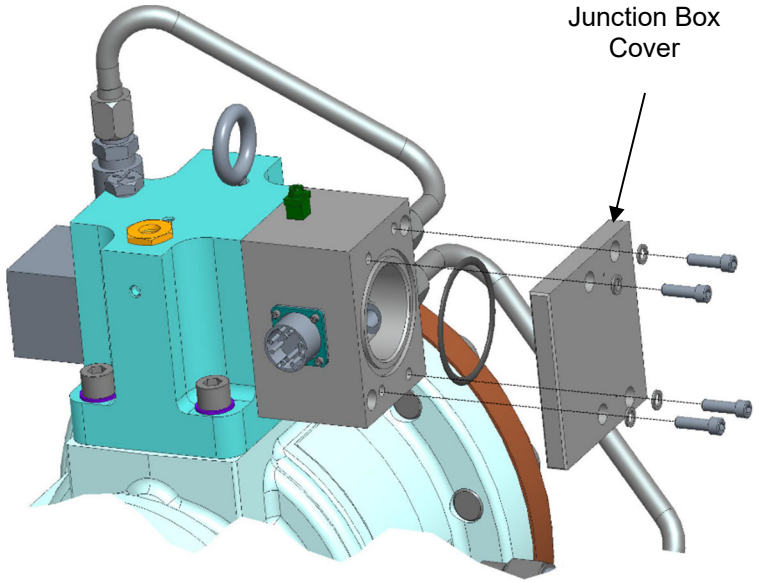
NOTICE

Review this CMM and installation drawing before starting the replacement procedure to be sure that all necessary tools are available, and everything is clear. For any questions, contact Woodward.

2.1.1 Disassembly Procedure

⚠CAUTION **Disconnect power supply before doing any maintenance or replacement. Always disconnect power and any hazardous voltages that may be connected. Follow all appropriate lockout/lockdown procedures.**

A. Remove actuation air inlet pressure (see valve installation drawing).
B. Remove fuel inlet pressure (see valve installation drawing).
C. Remove and scrap two screws holding the name plate (name plate will be reused during assembly process).
D. Disassemble the cover from the junction box. Remove four screws and washers (screws and washers will be reused during assembly process).
E. Remove and scrap the cover O-ring.



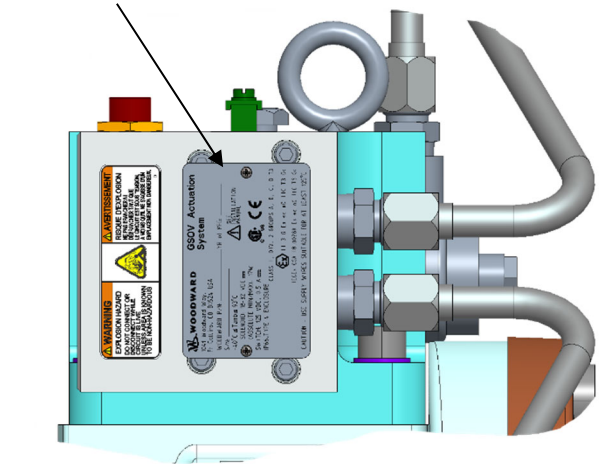


Figure 2-1. Disassemble the Name Plate and Cover

F. Remove and scrap four screws of electric connector.

NOTICE

Take special care of wires during disassembly process to prevent isolation stripping and too much bending or breakage.

G. Remove the electric connector collar (collar will be reused during assembly process).
H. Gently remove the electric connector from the junction box housing.

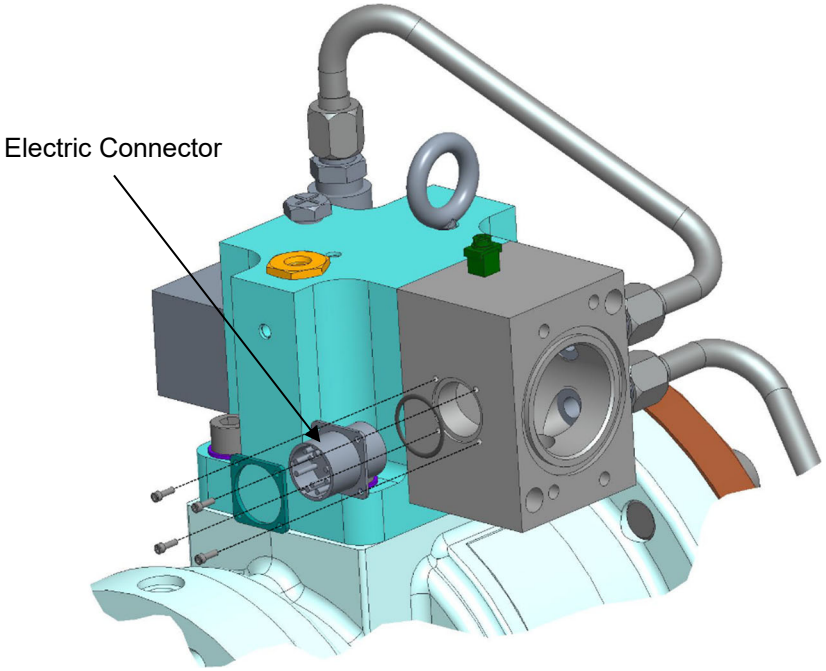
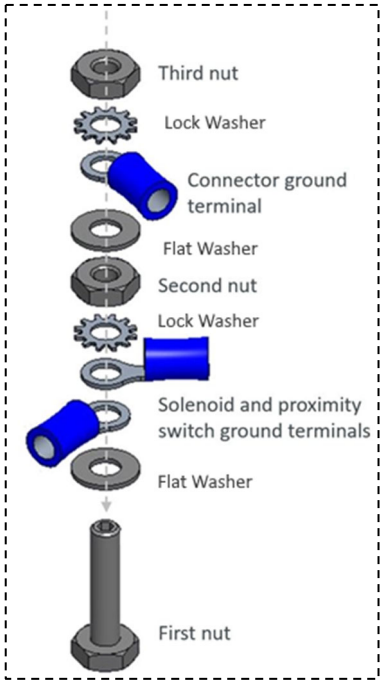
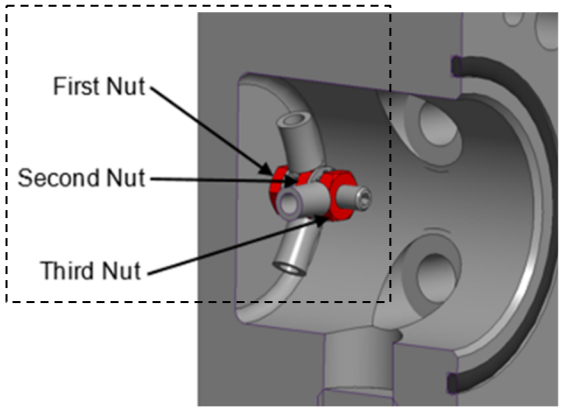
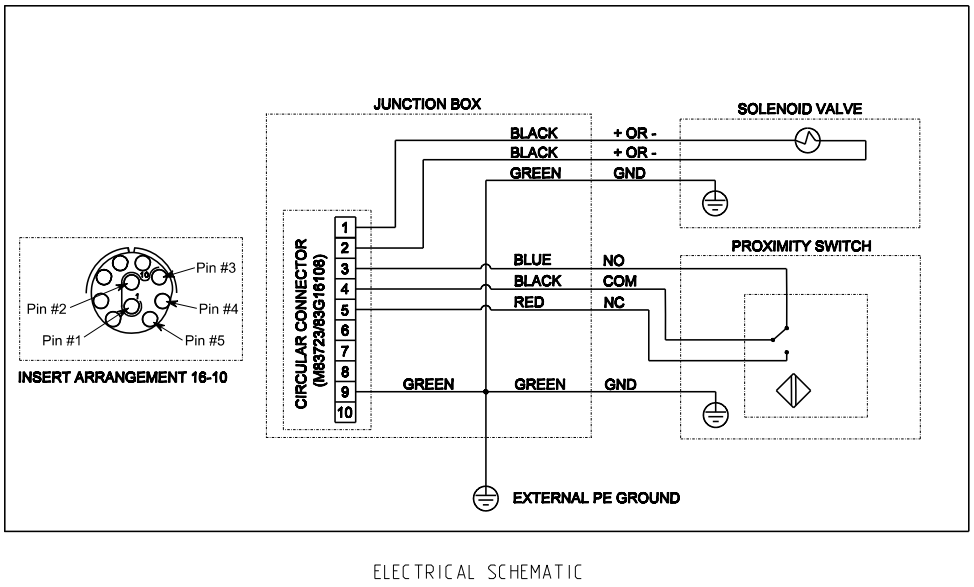


Figure 2-2. Remove Electric Connector

I. Disconnect all ferrules/pins from the electric connector. Use standard plastic removal tool (AWG 16) (tool P/N 8996-2388 from the replacement kit) to remove ferrules from the connector.
J. Remove and scrap connector O-ring.
K. Disconnect solenoid ground from the chassis by removing the third and second grounding nuts (nuts and flat washers will be reused during assembly process).







ELECTRICAL SCHEMATIC

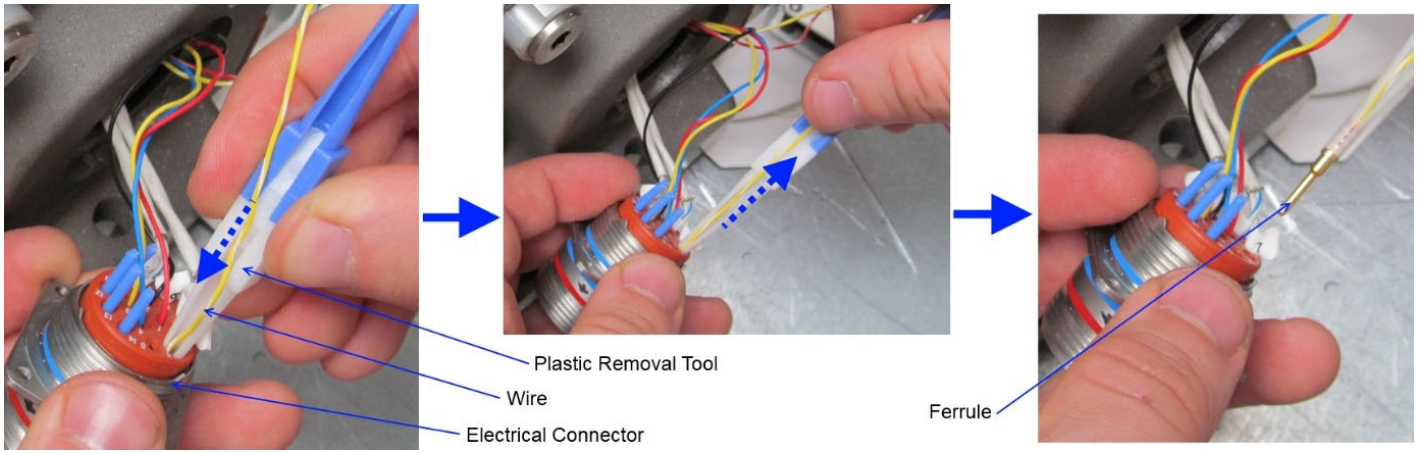


Figure 2-3. Disconnect Ferrules from Electric Connector

L. Disassemble the solenoid conduit (conduit will be reused during assembly process).
M. Carefully pull out the solenoid wires from the conduit.
N. Remove the fitting from the solenoid (fitting will be reused during assembly process).

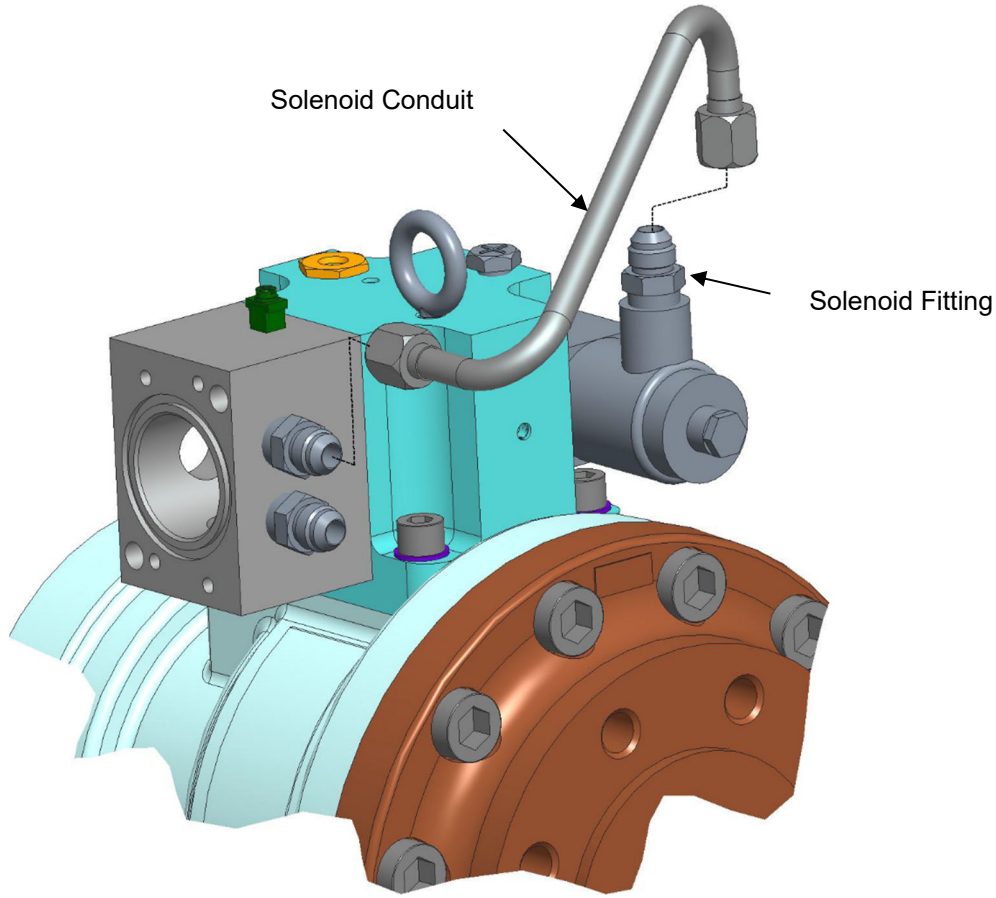


Figure 2-4. Remove Conduit and Fitting

O. Remove the two bolts and washers holding the solenoid valve (bolts and washers will be reused during assembly process).

P. Remove and scrap three sealing O-rings.

Q. Clean sealing surfaces using Isopropyl Alcohol.

R. Visually inspect all connection surfaces. Make sure there is no damage to sealing surfaces, or corrosion that is not easily removed with 30 Micron lapping film or chemical cleaning. Inspect all threads for damage or galling.

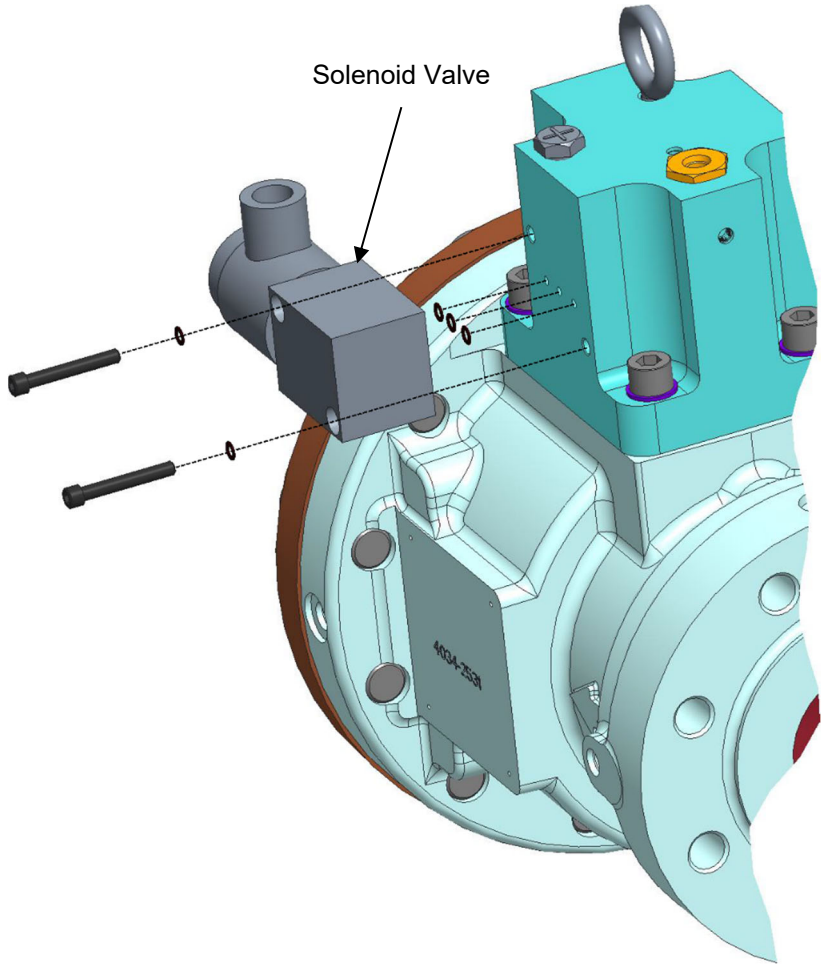


Figure 2-5. Remove Solenoid

2.1.2 Assembly Procedure

A. Lubricate the solenoid valve's three new O-rings (P/N 1355-1082 - contained within the replacement kit) with Parker Super O-lube and install into the three face grooves of the solenoid.
B. Apply G/N paste to the threads of two screws.
C. Position the new solenoid (P/N 1311-933 – 24 VDC version, P/N 1311- 1006 – 125 VDC version, contained within the replacement kit) to the side of the second stage housing with the coil end of the solenoid oriented towards the outlet end of the valve housing.
D. Install two screws with washers into the solenoid valve and torque to 81 ± 4 LBIN (9.2 ± 0.5 Nm).
E. Clean the old sealant from the solenoid fitting threads.
F. Feed the solenoid wires through the solenoid fitting.
G. Apply Loctite 592 thread sealant to the threads of the solenoid fitting.
H. Install the fitting into the solenoid. Torque the fitting to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

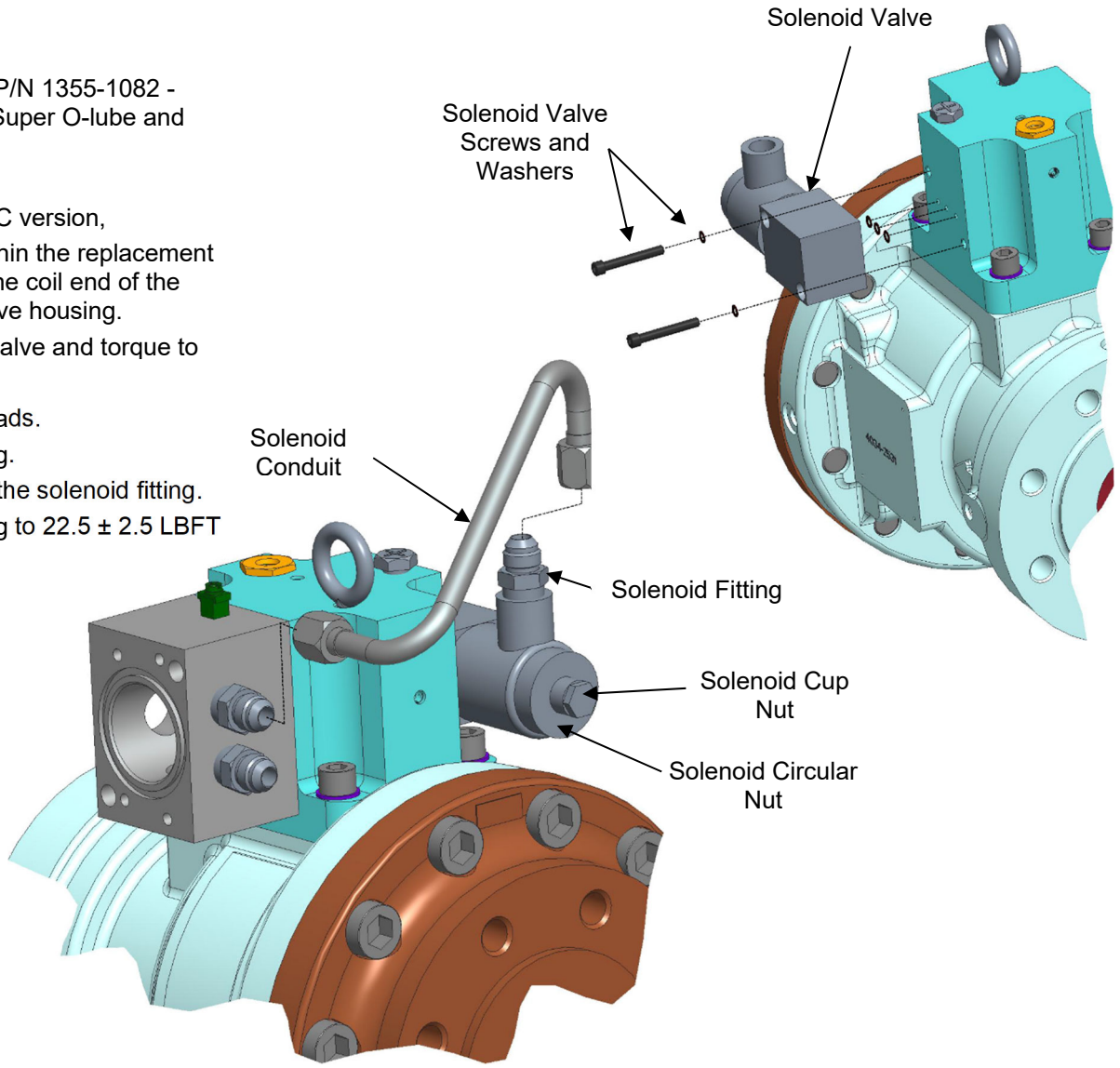


Figure 2-6. Install Solenoid Valve and Fitting

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping and too much bending or breakage.

I. Gently feed the solenoid wires into the junction box through the conduit.

J. If required, the position of the solenoid coil may be rotated to the desired position. To rotate the coil housing, remove the cap nut and loosen the circular nut (outside cup). Rotate the coil housing to the desired position and tighten the circular nut snug (hand tight). Re-install and tighten the cap nut to 13.5 ± 1.5 LBFT (18.3 ± 2.0 Nm).

K. Torque the conduit nuts to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

L. Cut the solenoid wires to the appropriate length. Ground wire to 3-inch length and other wires to 5-inch length.

M. Strip the insulation from the ground wire end (approx. 0.3 INCH / 8mm) and install the ring tongue terminal (P/N 203821 - contained within the replacement kit).

N. Strip the insulation from the end of the other wires (approx. 0.3 INCH / 8mm) and crimp the connector's contact pins to the wires (P/N 1608-1048 - contained within the replacement kit).

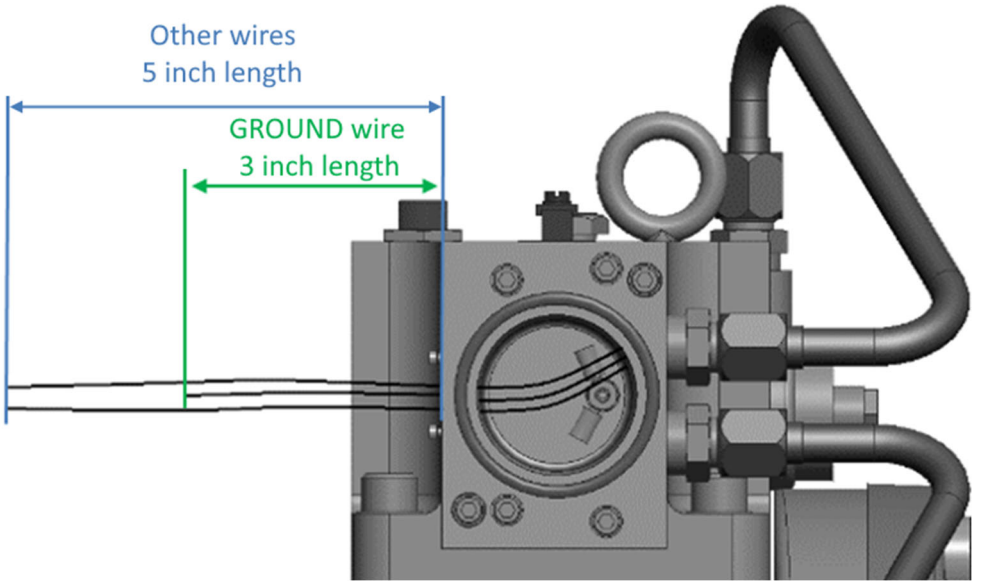


Figure 2-7. Cut Wires to Appropriate Length

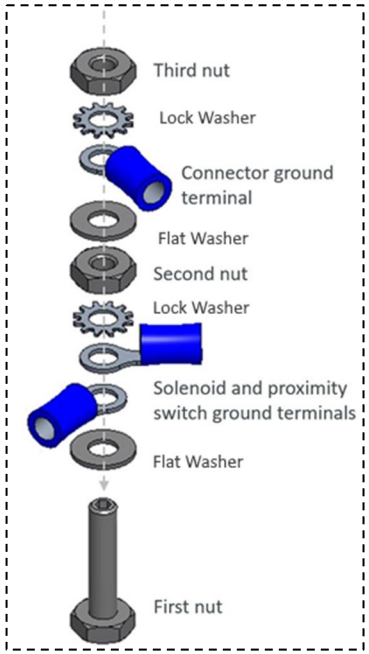
O. Torque the first nut to 34 ± 2 LBIN (3.8 ± 0.2 Nm).

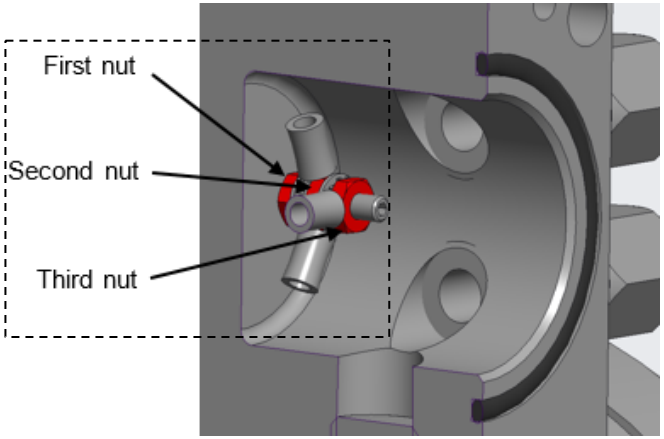
P. Connect the solenoid ground to the chassis according to the stack shown. Use new lock washers during installation process (P/N 1012-923, contained within the replacement kit).

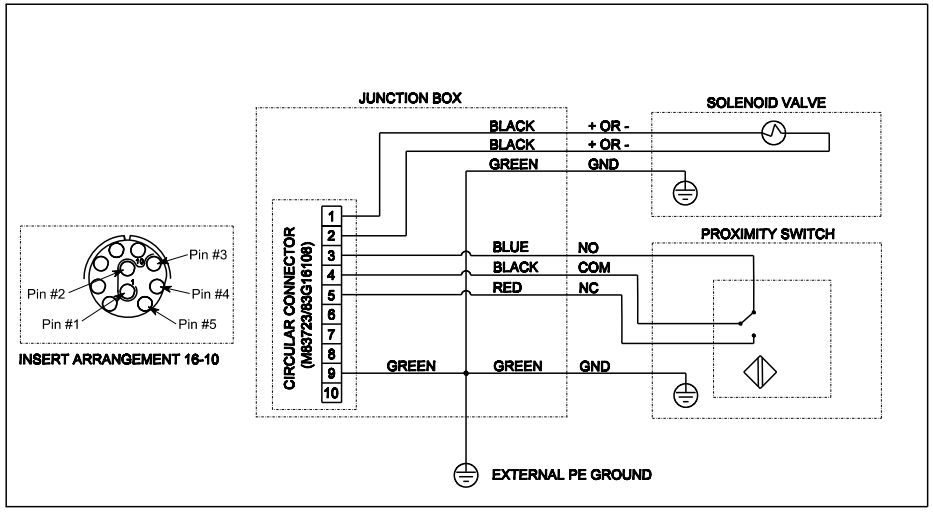
Q. Torque second and third nut to 22 ± 2 LBIN (2.5 ± 0.2 Nm).

R. Lubricate the new O-ring for the connector (P/N 1355-1737, contained within the replacement kit) with Parker Super O-lube and install into the flange of the connector.

S. Install the new pins with wires to the appropriate sockets of the connector per the wiring diagram.







ELECTRICAL SCHEMATIC

Figure 2-8. Install Connector Pins

NOTICE

Take special care of wires during assembly process to prevent isolation stripping and too much bending or breakage.

T. Install the wires into the junction box. Orient the connector with the master keyway oriented up and install onto the junction box.

U. Install the collar on the connector flange.

V. Install four new screws (P/N 1037-617, contained within the replacement kit) through the flange of the connector into the junction box. Torque the four screws to 7 ± 1 LBIN (0.8 ± 0.1 Nm).

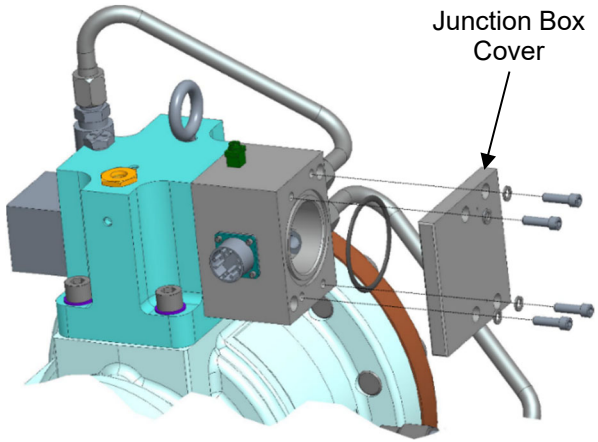
W. Lubricate the new O-ring for the junction box cover (P/N 1355-1582, contained within the replacement kit) with Parker Super O-lube and install into the face groove of the junction box.

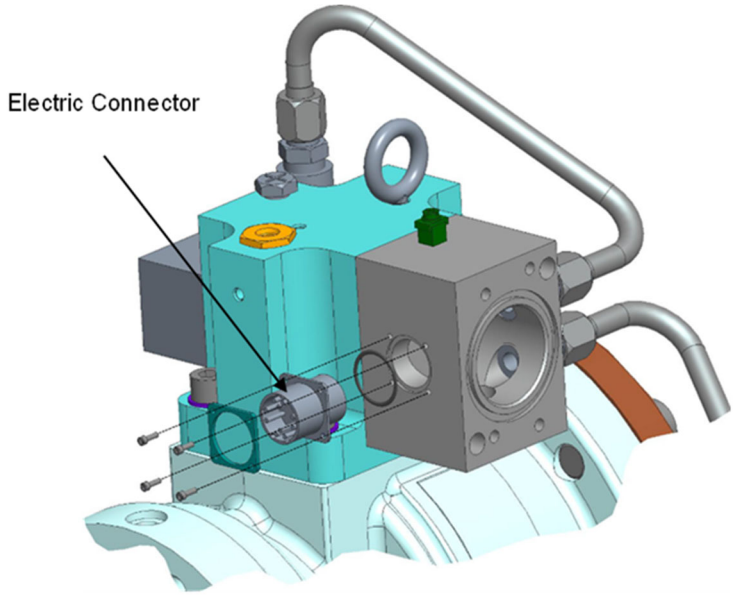
X. Install the junction box cover. Torque the four screws to 81 ± 4 LBIN (9.2 ± 0.5 Nm).

Y. Install the nameplate with new screws (P/N 1069-505, contained within the replacement kit). Torque both screws to 7 ±1 LBIN (0.8 ± 0.1 Nm).

Z. Connect the actuation air source (see valve installation drawing).

AA. Proceed to the Verification & Calibration section.





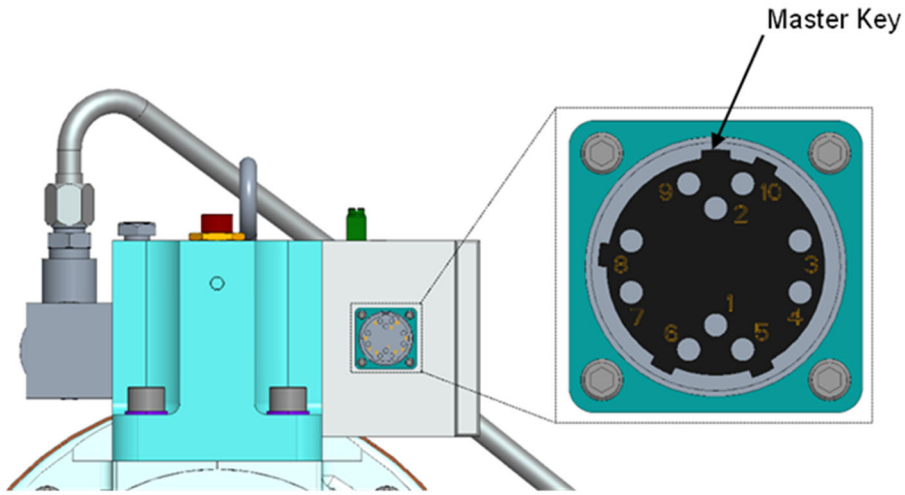


Figure 2-9. Install Electric Connector and Junction Box Cove

2.2 GSOV80 Flying Leads Version Solenoid Replacement Kit Description

The purpose of this procedure is to show the correct sequence and method of solenoid replacement.

KIT P/N	Kit Description	Installation Drawing
8923-3273	GSOV80, FLYING LEADS – Solenoid Replacement Kit (24 VDC)	**9999-1789-5**
8923-3274	GSOV80, FLYING LEADS – Solenoid Replacement Kit (125 VDC)	

NOTICE

Review this CMM and installation drawing before starting the replacement procedure to be sure that all necessary tools are available, and everything is clear. For any questions, contact Woodward.

2.2.1 Disassembly Procedure

⚠CAUTION

Disconnect the power supply before doing any maintenance or replacement. Always disconnect power and any hazardous voltages that may be connected and follow all appropriate lockout/lockdown procedures.

A. Remove actuation air inlet pressure (see valve installation drawing).
B. Remove fuel inlet pressure (see valve installation drawing).
C. Disconnect solenoid valves wires (in external customer electrical junction box)
D. Disassemble the solenoid conduit (part of customer external installation – not provided within installation kit).
E. Carefully pull out the solenoid wires from the conduit.
F. Remove the fitting from the solenoid housing (part of customer external installation – not provided within installation kit).

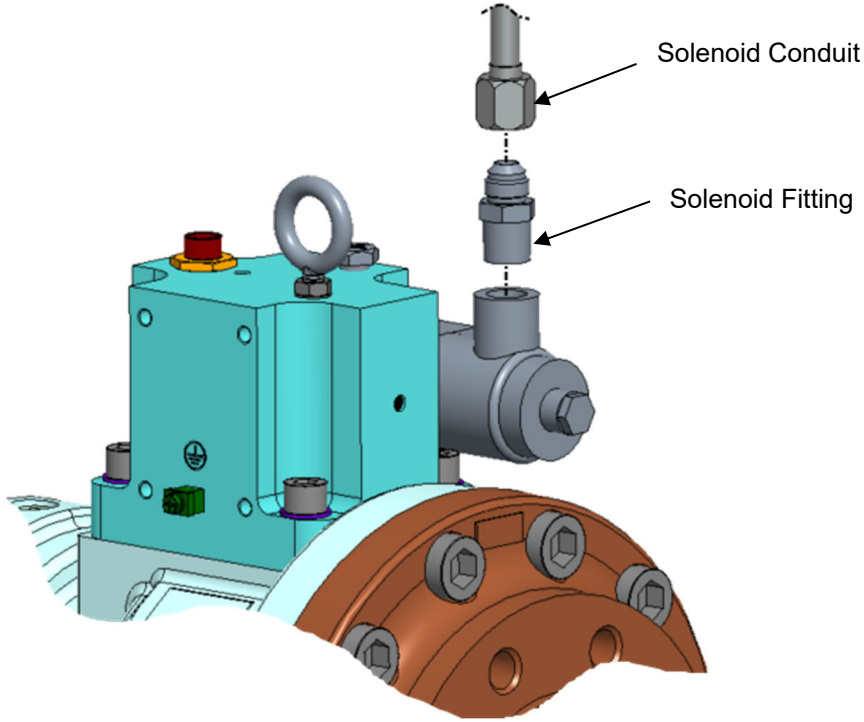


Figure 2-10. Remove Conduit and Fitting

G. Remove the two bolts and washers holding the solenoid valve (bolts and washers will be reused during the assembly process).

H. Remove and scrap three O-rings.

I. Clean sealing surfaces using isopropyl alcohol.

J. Visually inspect all surfaces. Make sure there is no damage to sealing surfaces, or corrosion that is not easily removed with 30 Micron lapping film or chemical cleaning. Inspect all threads for damage or galling.

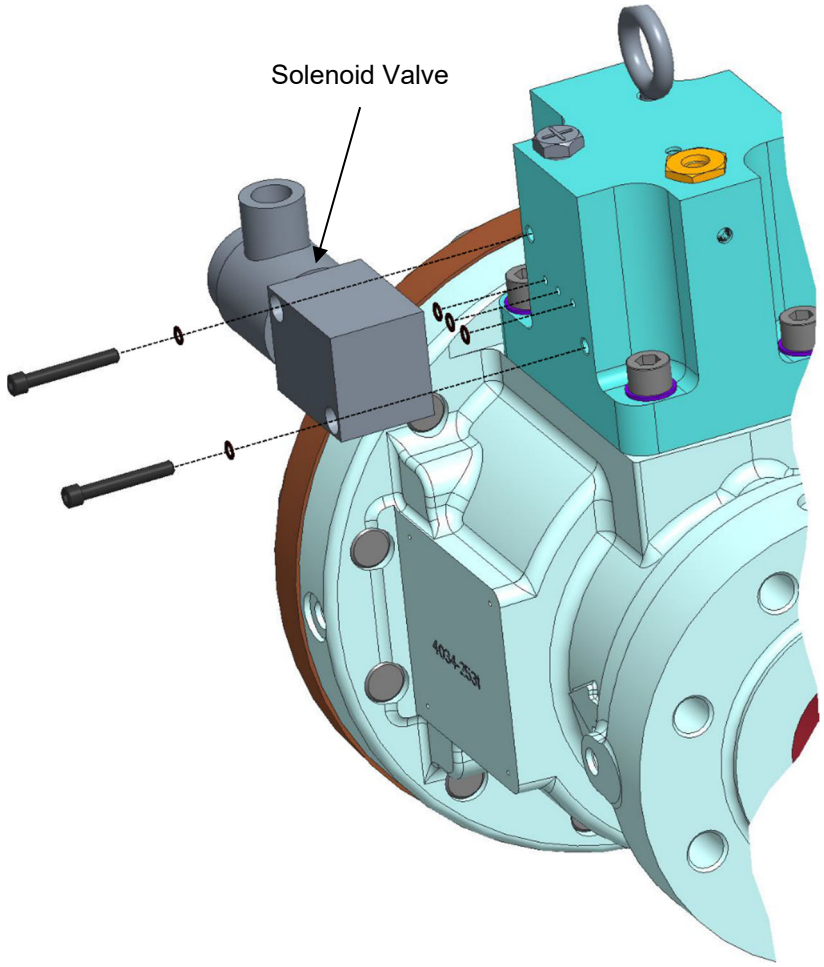


Figure 2-11. Remove Solenoid Valve

2.2.2 Assembly Procedure

A. Lubricate the three new O-rings for the solenoid valve (P/N 1355-1082, contained within the replacement kit) with Parker Super O-lube and install into the solenoid's three face grooves.

B. Apply G/N Paste to the threads of two screws.

C. Position the new solenoid (P/N 1311-933, 24 VDC version; P/N 1311- 1006, 125 VDC version; contained within the replacement kit) to the side of the second stage housing with the coil end of the solenoid oriented towards the outlet end of the valve housing.

D. Install two screws with washers and torque to 81 ± 4 LBIN (9.2 ± 0.5 Nm).

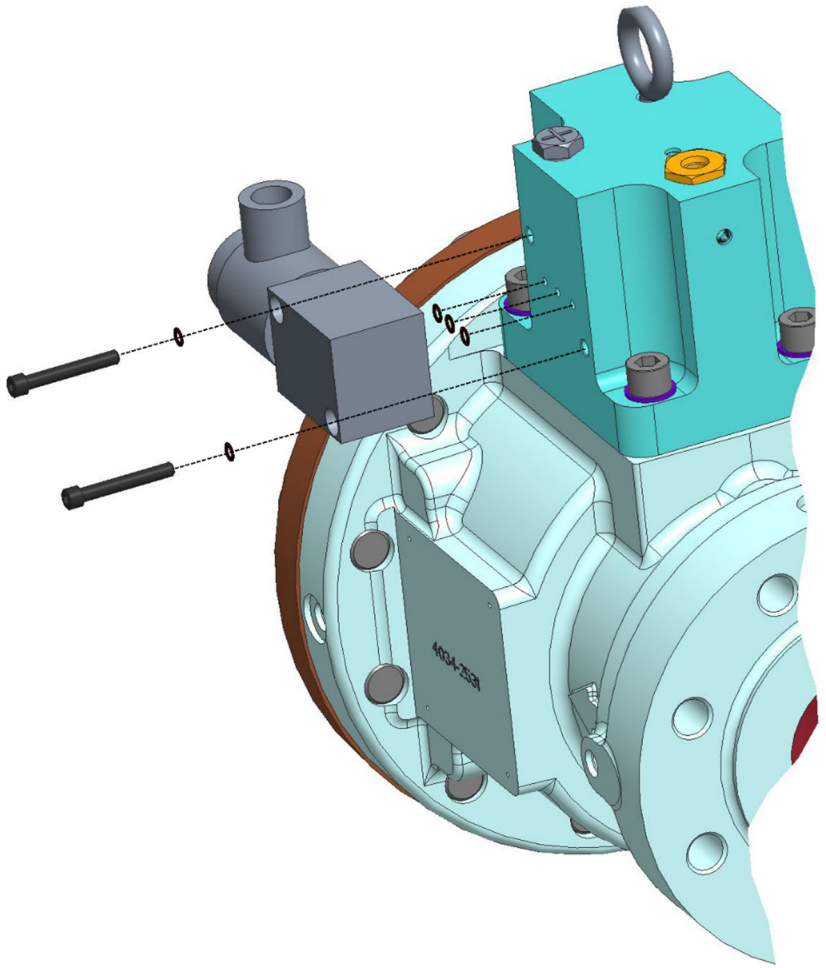


Figure 2-12. Install Solenoid

E. Clean the old sealant from the solenoid's fitting threads.

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping and too much bending or breakage.

F. Gently feed the solenoid wires through the solenoid fitting.
G. Apply Loctite 592 thread sealant to the solenoid fitting's threads.
H. Install the fitting into the solenoid. Torque the fitting to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).
I. If required, the solenoid coil position may be rotated to desired position. To rotate the coil housing, remove the cap nut and loosen the circular nut (outside cup). Rotate the coil housing to the desired position and tighten the circular nut snug (hand tight). Re-install and tighten the cup nut to 13.5 ± 1.5 LBFT (18.3 ± 2.0 Nm).
J. Connect all solenoid valves wires inside external electrical junction box (customer installation).

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping and too much bending or breakage.

K. Gently feed the solenoid wires through the solenoid conduit (part of customer external installation – not provided within installation kit).
L. Connect the actuation air source (see valve installation drawing).
M. Proceed to Verification & Calibration section.

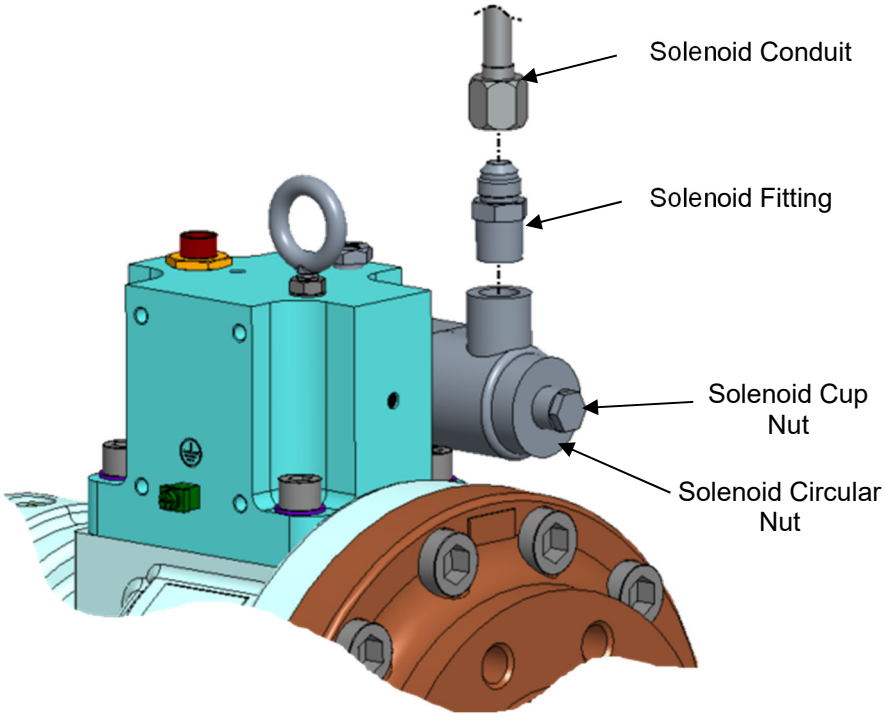
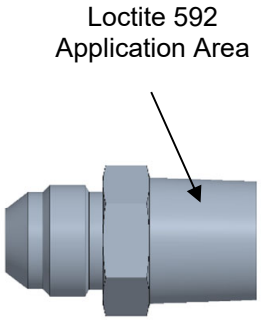


Figure 2-13. Install Solenoid Fitting and Conduit



2.3 Verification & Calibration 24 VDC (GSOV80 Connector Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the solenoid valve circuits.

B. Connect the positive lead of the HIPOT test device to Pins #3, #4, and #5 of the electric connector. Be very cautious not to allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

C. Apply 500 VAC voltage for 60 seconds.

D. Record the HIPOT tester leakage current reading, which shall be less than 5 mA.

E. Remove the HIPOT tester.

F. Connect the positive lead of the HIPOT test device to both the Pin #1 and #2 of the electric connector. Be very cautious not to allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

G. Apply 500 VAC voltage for 60 seconds.

H. Record the HIPOT tester leakage current reading, which should be less than 5 mA.

I. Remove the HIPOT tester and connect a power supply capable of 1 Amp of current at 24 VDC and adjustable between 0 and 24 VDC.

J. Connect the pressure source to actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.

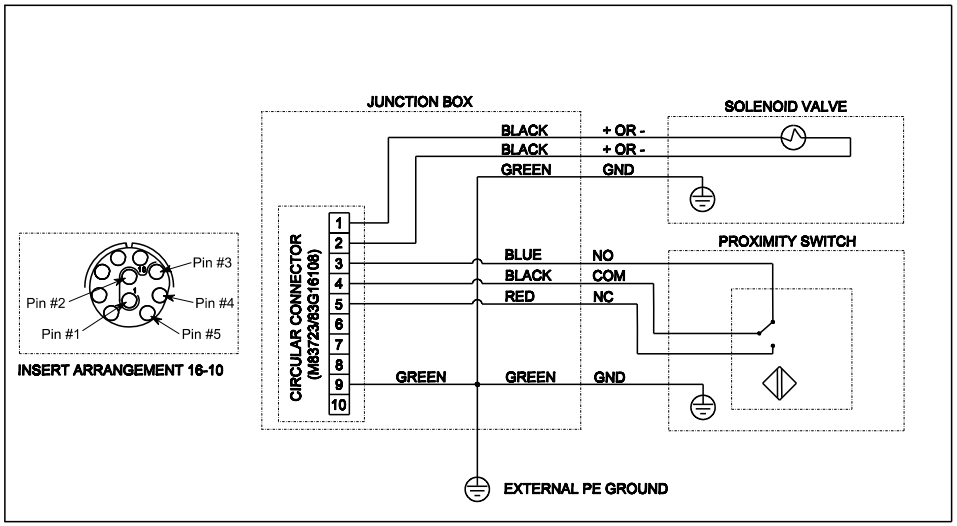
K. Apply electrical power to the solenoid.

L. Using the proximity switch output signals, verify if the valve is opening and closing smoothly.

M. Open and close the valve several times to be sure that everything is operating correctly.

N. Electrical Checks:

1. Set actuation air to maximum allowed (140 PSIG).
2. Pull-in Voltage:
    a. With the valve closed, ramp up voltage until the proximity switch indicates open position. Voltage shall be lower than 18 VDC.



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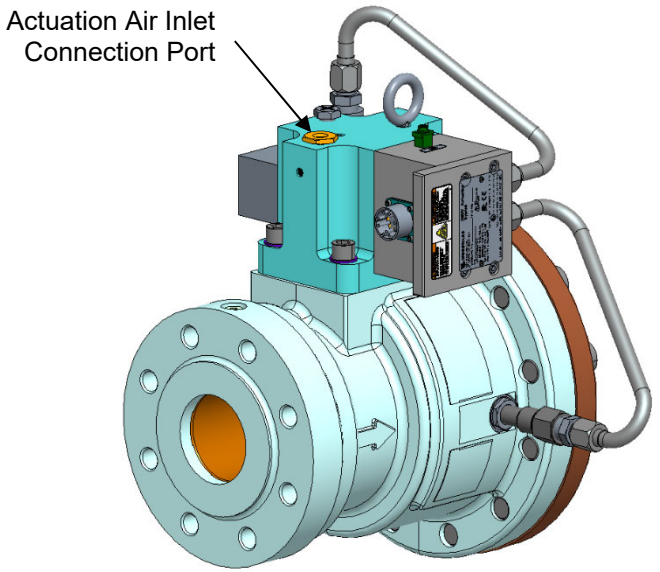


Figure 2-14. GSOV80 Valve

3. Steady State Current:
    a. Apply nominal solenoid voltage. Measure current draw. Shall be less than 625 mA.
4. Drop-Out Voltage:
    a. With valve open, ramp down voltage until the proximity switch indicates valve closed position. Voltage shall be higher than 0.5 VDC.

2.4 Verification & Calibration 125 VDC (GSOV80 Connector Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the solenoid valve circuits.

B. Connect the positive lead of the HIPOT test device to Pins #3, #4, and #5 of the electric connector. Be very cautious not to allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

C. Apply 500 VAC voltage for 60 seconds.

D. Record the HIPOT tester leakage current reading, which shall be less than 5 mA.

E. Remove the HIPOT tester.

F. Connect the positive lead of the HIPOT test device to both Pin #1 and #2 on the electric connector. Be very careful to not allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

G. Apply 1500 VAC voltage for 60 seconds.

H. Record the HIPOT tester leakage current reading, which should be less than 5 mA.

I. Remove the HIPOT tester and connect a power supply capable of 0.5 Amp of current at 125 VDC and adjustable between 0 and 125 VDC.

J. Connect the pressure source to the actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.

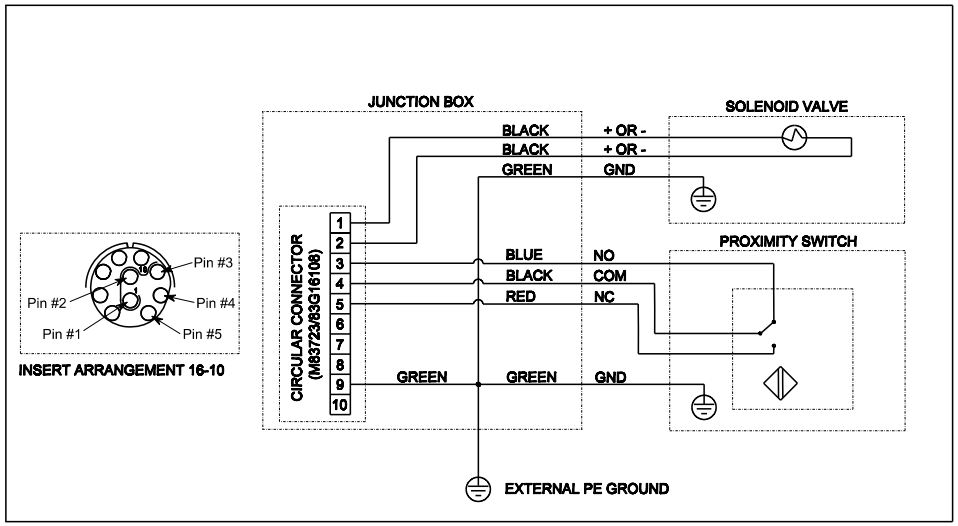
K. Apply electrical power to solenoid.

L. Using the proximity switch output signals, verify if the valve is opening and closing smoothly.

M. Open and close the valve several times to be sure that everything is operating correctly.

N. Electrical Checks:

1. Set actuation air to maximum allowed (140 PSIG).
2. Pull-in voltage:



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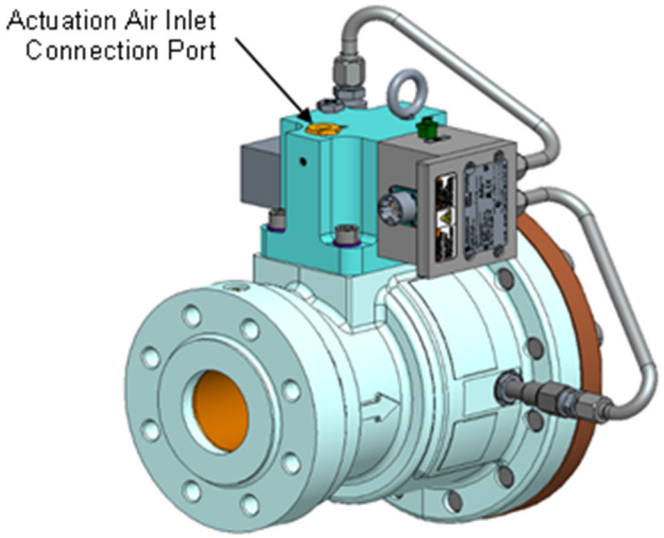


Figure 2-15. GSOV80 Valve

a. With the valve closed, ramp up voltage until the proximity switch indicates it is in the open position. Voltage shall be lower than 88 VDC.

3. Steady State Current:
   a. Apply nominal solenoid voltage. Measure current draw, which should be less than 625 mA.
4. Drop-out Voltage:
   a. With the valve open, ramp the voltage down until the proximity switch indicates the valve is in the closed position. Voltage shall be lower than 8 VDC.

2.5 Verification & Calibration 24 VDC (GSOV80 Flying Leads Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the solenoid valve circuits.

B. Connect the positive lead of the HIPOT test device to both **BLACK** wires of the solenoid valve. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

C. Apply 500 VAC voltage for 60 seconds.

D. Record the HIPOT tester leakage current reading, which should be less than 5 mA

E. Remove the HIPOT tester and connect a power supply capable of 1 Amp of current at 24 VDC and adjustable between 0 and 24 VDC.

F. Connect the pressure source to the actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.

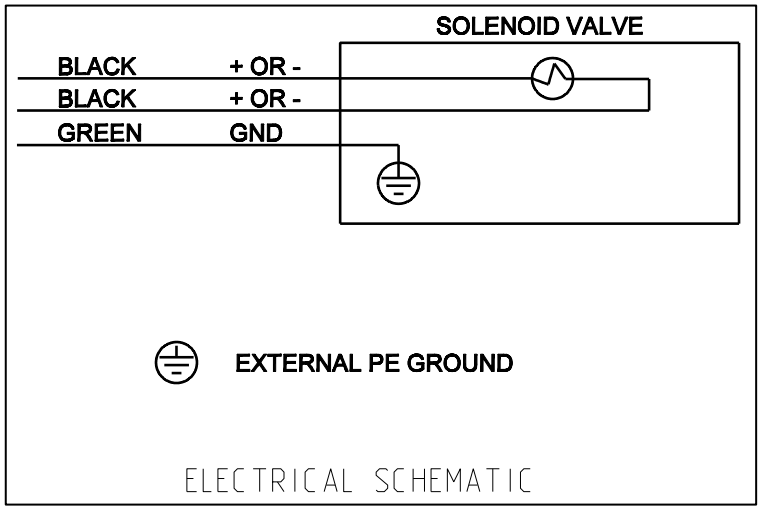
G. Apply electrical power to the solenoid.

H. Using the proximity switch output signals, verify if the valve is opening and closing smoothly

I. Open and close the valve several times to be sure that everything is operating correctly.

J. Electrical Checks:

1. Set actuation air to maximum allowed (140 PSIG).
2. Pull-in Voltage:
   a. With the valve closed, ramp up voltage until the proximity switch indicates it is in the open position. Voltage shall be lower than 18 VDC.
3. Steady State Current:
   a. Apply nominal solenoid voltage. Measure current draw, which shall be less than 625 mA.
4. Drop-out Voltage:
   a. With the valve open, ramp down voltage until the proximity switch indicates the valve is in the closed position. Voltage shall be higher than 0.5 VDC.



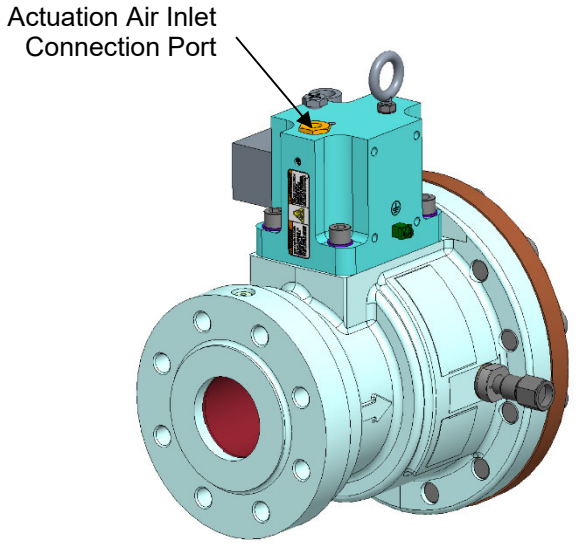


Figure 2-16. GSOV80 Valve

2.6 Verification & Calibration 125 VDC (GSOV80 Flying Leads Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the solenoid valve circuits.

B. Connect the positive lead of the HIPOT test device to both **BLACK** wires of the solenoid valve. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

C. Apply 1500 VAC voltage for 60 seconds.

D. Record the HIPOT tester leakage current reading, which should be less than 5 mA.

E. Remove the HIPOT tester and connect a power supply capable of 0.5 Amp of current at 125 VDC and adjustable between 0 and 125 VDC.

F. Connect the pressure source to the actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.

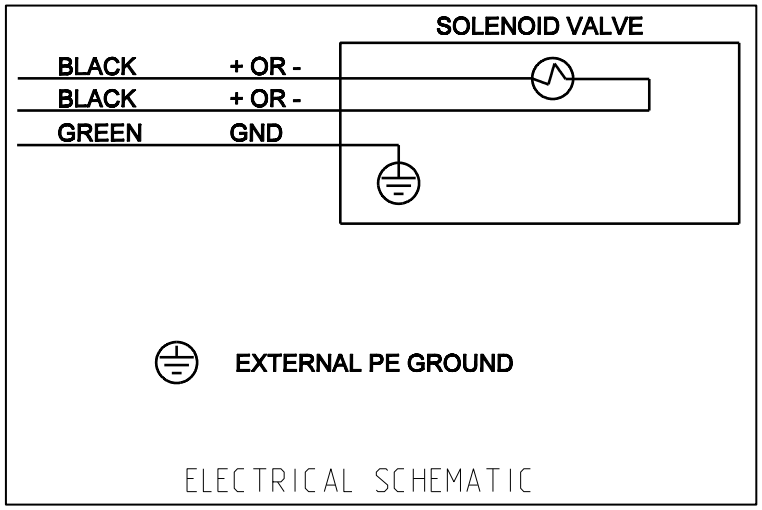
G. Apply electrical power to the solenoid.

H. Using the proximity switch output signals, verify if the valve is opening and closing smoothly.

I. Open and close the valve several times to be sure that everything is operating correctly.

J. Electrical Checks:

1. Set actuation air to maximum allowed (140 PSIG).
2. Pull-in Voltage
   a. With valve closed, ramp up voltage until proximity switch indicates it is in the open position. Voltage shall be lower than 88 VDC.
3. Steady State Current:
   a. Apply nominal solenoid voltage. Measure current draw, which shall be less than 625 mA.
4. Drop-Out Voltage:
   a. With the valve open, ramp the voltage down until the proximity switch indicates the valve is in the closed position. Voltage shall be lower than 8 VDC.



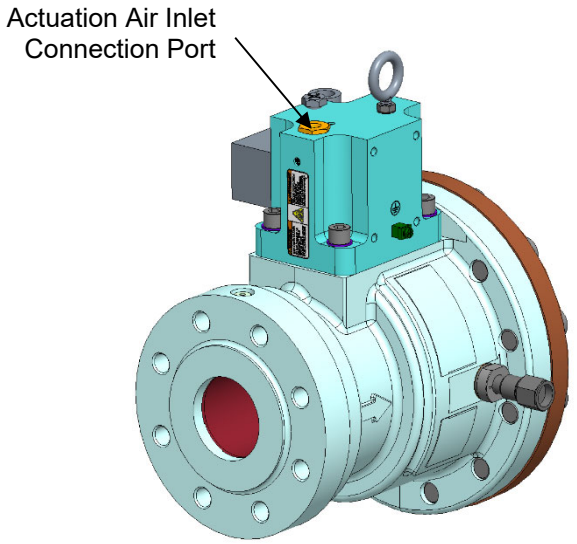


Figure 2-17. GSOV80 Valve

3 PROXIMITY SWITCH REPLACEMENT

3.1 GSOV80 Connector Version Proximity Switch Replacement Kit Description

The purpose of this procedure is to show the correct sequence and method of proximity switch replacement.

KIT P/N	Description	Installation Drawing
8923-2545	GSOV80 – Proximity Switch Replacement Kit	**9999-1789-2**

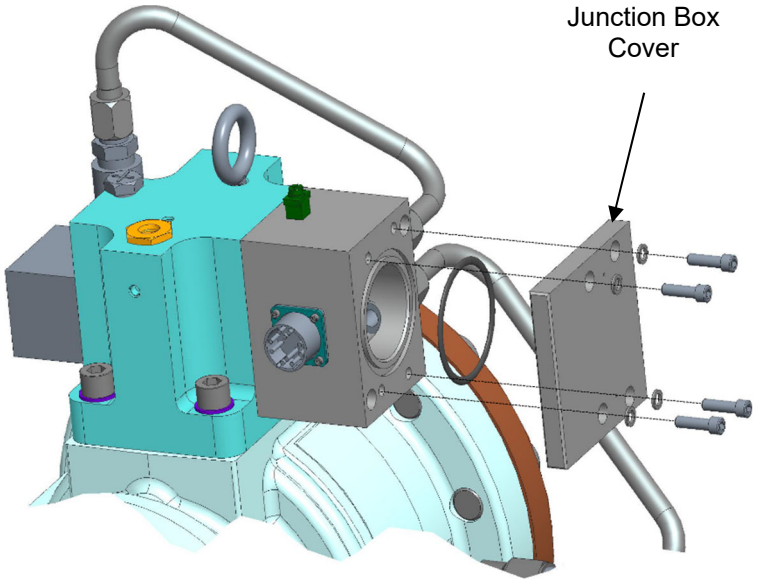
NOTICE

Review this CMM and installation drawing before starting the replacement procedure to be sure that all necessary tools are available, and everything is clear. For any questions, contact Woodward.

3.2 Disassembly Procedure

⚠CAUTION **Disconnect the power supply before doing any maintenance or replacement. Always disconnect power and any hazardous voltages that may be connected and follow all appropriate lockout/lockdown procedures.**

A. Remove the actuation air inlet pressure (see valve installation drawing).
B. Remove the fuel inlet pressure (see valve installation drawing).
C. Remove and scrap the two screws holding the name plate (name plate will be reused during assembly process).
D. Disassemble the cover from the junction box. Remove four screws and washers (screws and washers will be reused during assembly process).
E. Remove and scrap the cover O-ring.



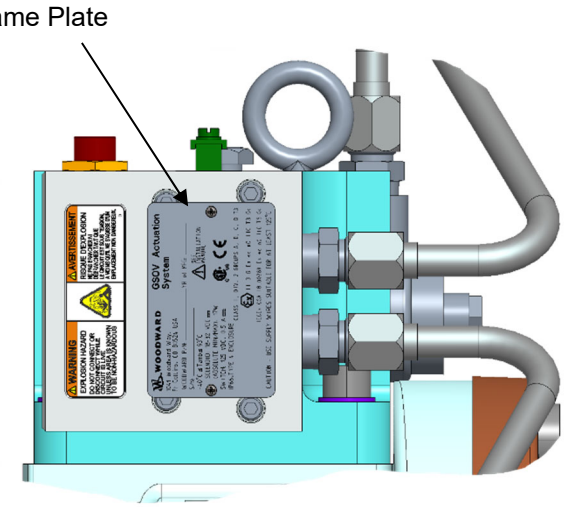


Figure 3-1. Disassemble the Name Plate and Cover

F. Remove and scrap four screws from the electric connector .

NOTICE

Take special care of wires during disassembly process to prevent isolation stripping and too much bending or breakage.

G. Remove the electric connector collar (collar will be reused during the assembly process).
H. Gently remove the electric connector from the junction box housing.

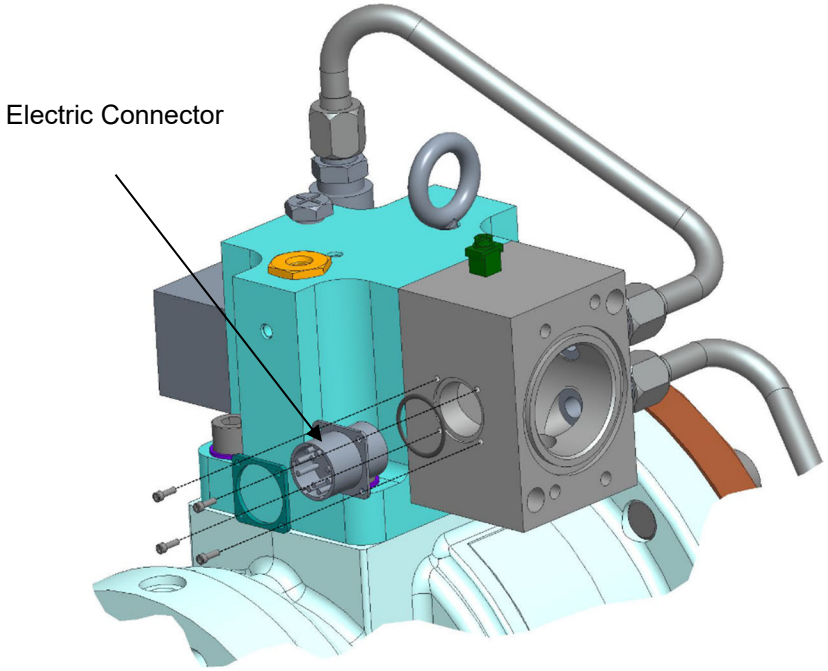
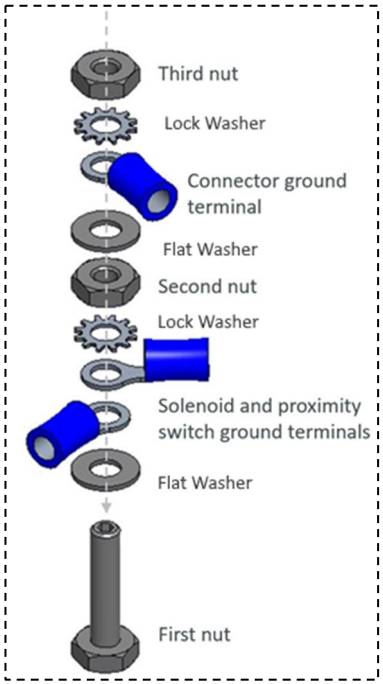


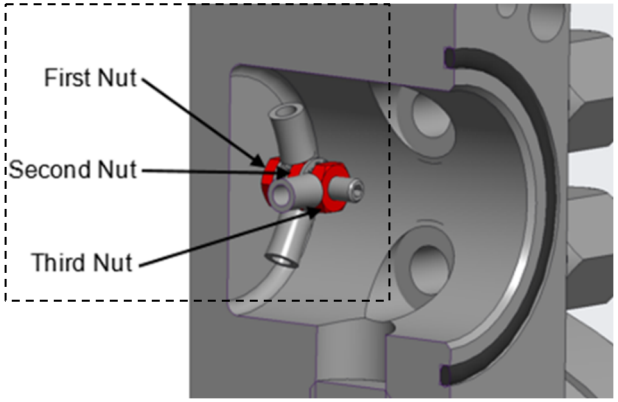
Figure 3-2. Remove Electric Connector

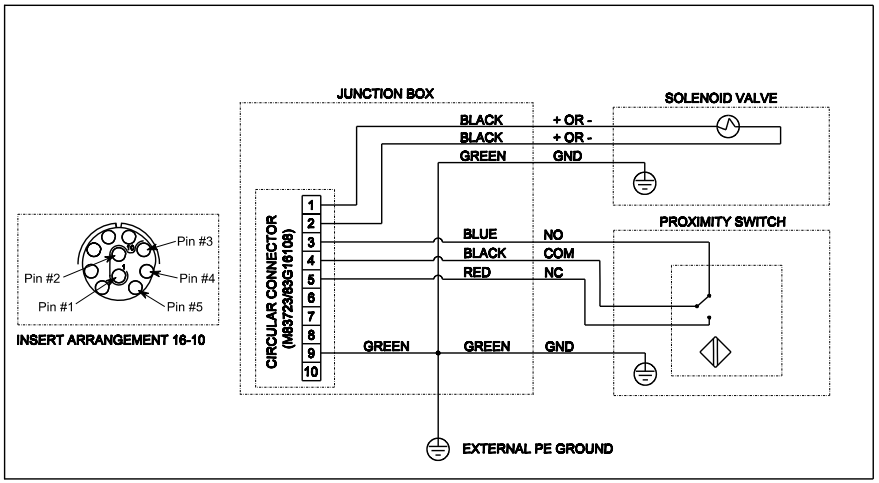
I. Disconnect all ferrules/pins from the electric connector. Use standard plastic removal tool (AWG 16) (P/N 8996-2388 - contained within the replacement kit) to remove ferrules from the connector.

J. Remove and scrap connector O-ring.

K. Disconnect the solenoid ground from the chassis by removing first and second grounding nut (nuts and flat washers will be reused during assembly process).







ELECTRICAL SCHEMATIC

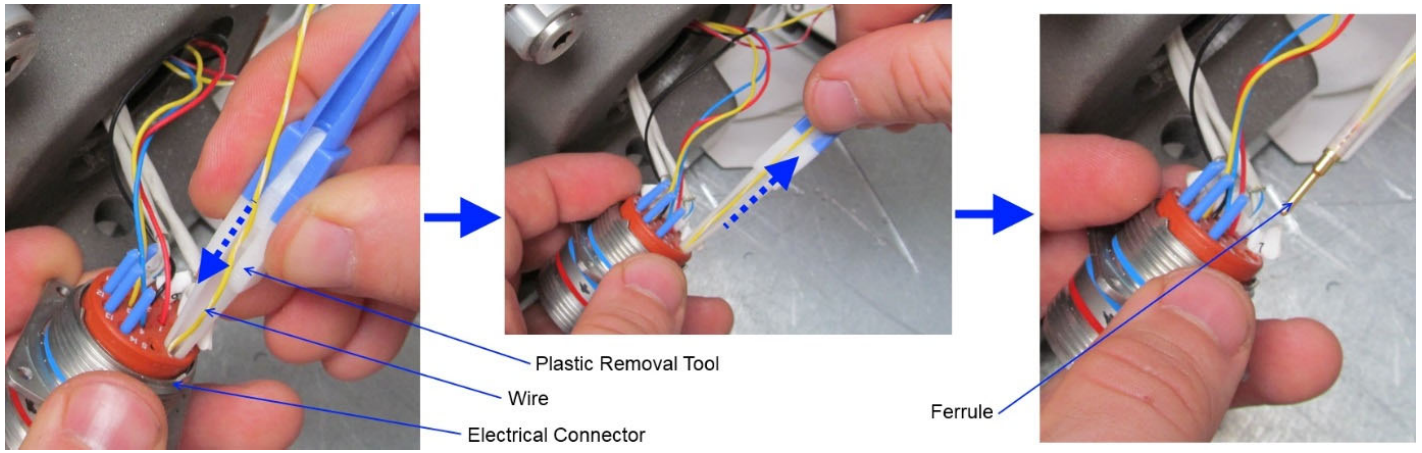


Figure 3-3. Disconnect Ferrules from Electric Connector

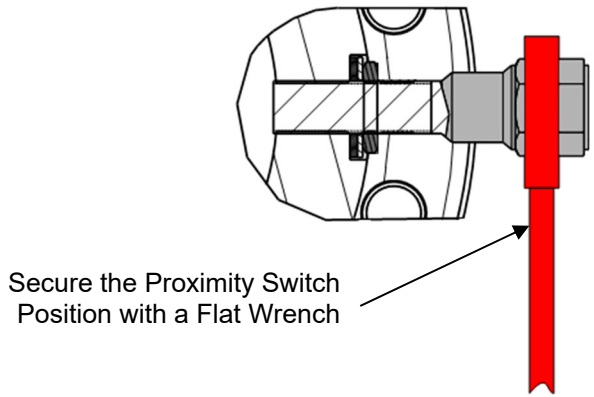
L. Disassemble the proximity switch (conduit will be reused during assembly process).

NOTICE

Take special care of wires during the disassembly process to prevent isolation stripping and too much bending or breakage.

M. Carefully pull out the proximity switch wires from the conduit.

N. Hold the proximity switch with a wrench and remove fitting from assembly (fitting will be reused during assembly process).



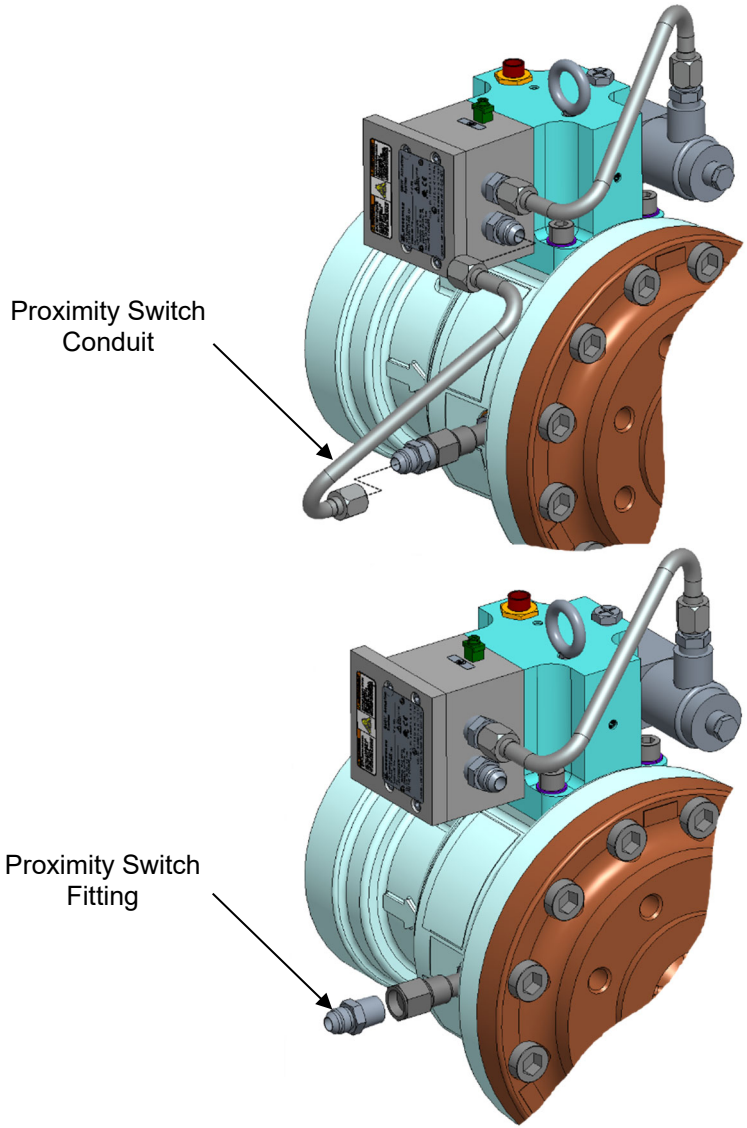


Figure 3-4. Remove Conduits and Fitting

O. Hold the proximity switch with a wrench. Loosen the proximity switch counter nut.

P. Unscrew the proximity switch assembly including nuts, washer, and seal from the valve housing. Scrap the proximity switch, seal washer, flat washer, and nut.

NOTICE

During the valve cleaning process, pay special attention to not allow removed residuals to fall into the valve interior.

Orient the valve with the proximity switch mounting hole pointed downwards if possible.

Q. Clean machined sealing surfaces using Isopropyl Alcohol .

R. Carefully clean Loctite residue from valve housing internal threads.

S. Visually inspect all surfaces. Make sure there is no damage to sealing surfaces, or corrosion that is not easily removed with 30 Micron lapping film or chemical cleaning. Inspect all threads for damage or galling.

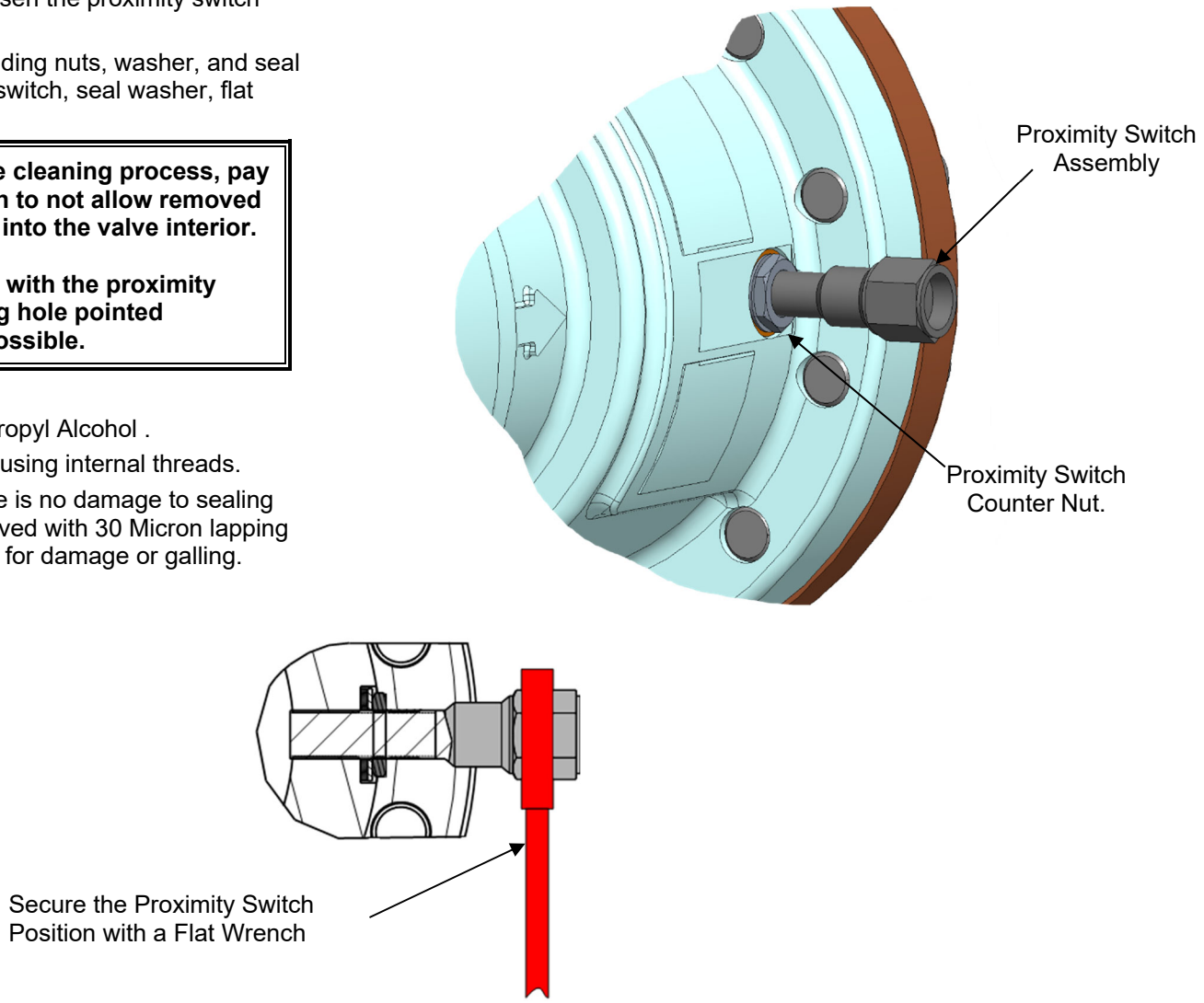


Figure 3-5. Remove Proximity Switch

3.3 Assembly Procedure

A. Unpack the proximity switch assembly (P/N 1711-1365, contained within the replacement kit) and remove one of the two vendor supplied nuts.
B. Thread remaining vendor supplied nut up to the collar of the proximity switch assembly.
C. Install the lock washer (P/N 1012-969 contained within the replacement kit) onto the switch assembly below the nut.
D. Install the flat washer (P/N 1010-5014 contained within the replacement kit) onto the switch assembly up to the lock washer.
E. Install the seal washer (P/N 3051-1009 contained within the replacement kit) onto the proximity switch assembly up to the flat washer.
F. Apply Loctite 246 to the threads of the proximity switch assembly below the seal washer.
G. Gently thread-in the proximity switch assembly into the valve housing until the switch contacts the piston.
H. Back the switch assembly out ½ to ⅝ of a turn. Make a mark on the hex portion of the proximity switch to identify the 12 o'clock position of the switch.
I. Hold the switch assembly in position and thread the nut and washers up to the valve housing.
J. While holding the switch assembly with a wrench, to maintain the 12 o'clock rotational orientation of the mark on the switch, torque the switch nut to 16 ± 1 FTLB (21.5 ± 1.4 Nm).

⚠WARNING

The switch must be held in the factory installed position to ensure that it is not inadvertently moved while the conduit nut is tightened to maintain the proper gap between the proximity switch and the piston.

An absence of a gap between the proximity switch and the piston can cause the valve to malfunction or become inoperable.
Carefully review Figure 3-6. Use a wrench to maintain the rotational orientation of the proximity switch during field conduit installation.

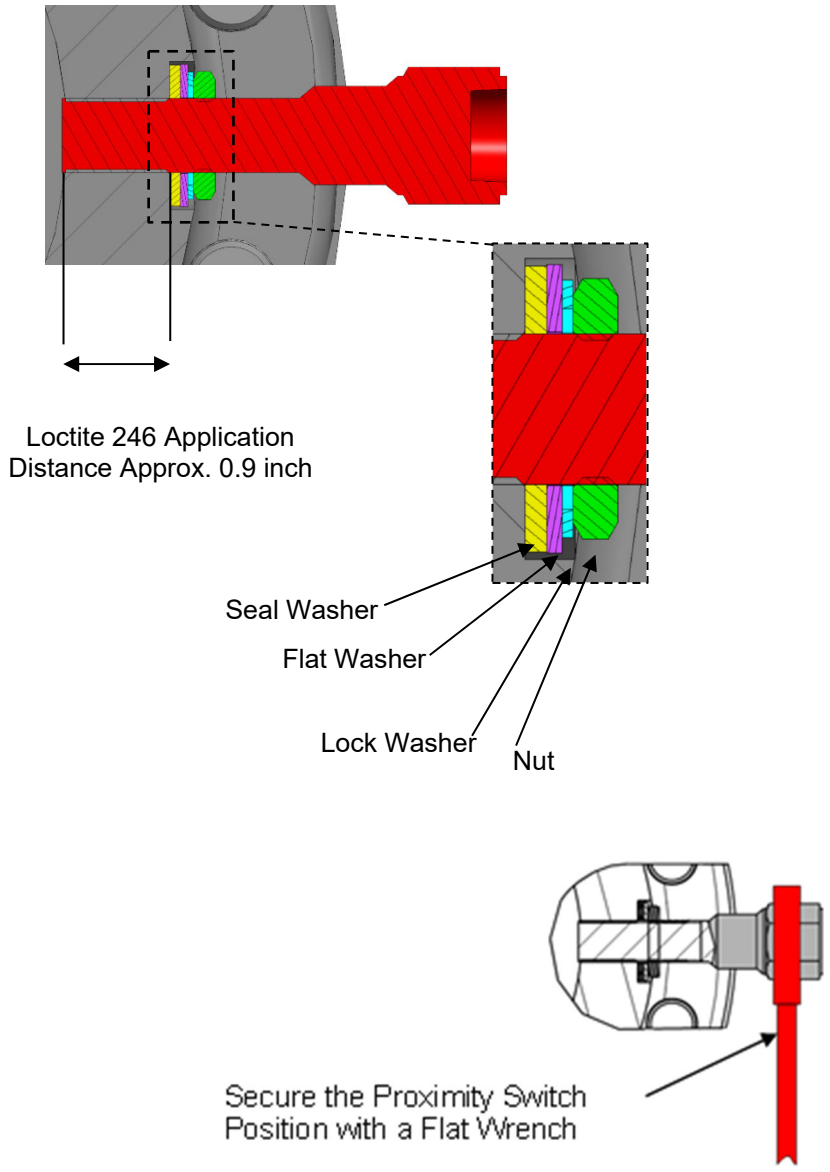


Figure 3-6. Install Proximity Switch

K. Apply Loctite 592 thread sealant to the threads of the proximity switch fitting.

L. While holding the switch assembly with a wrench, to maintain the 12 o'clock rotational orientation of the mark on the switch, install the fitting into the proximity switch. Torque the fitting to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping, and too much bending or breakage.

M. Gently feed the switch wires into the junction box through the conduit.

N. While holding the switch assembly with a wrench, to maintain the 12 o'clock rotational orientation of the mark on the switch, torque the proximity conduit nut to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

O. Torque the junction box conduit nut to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

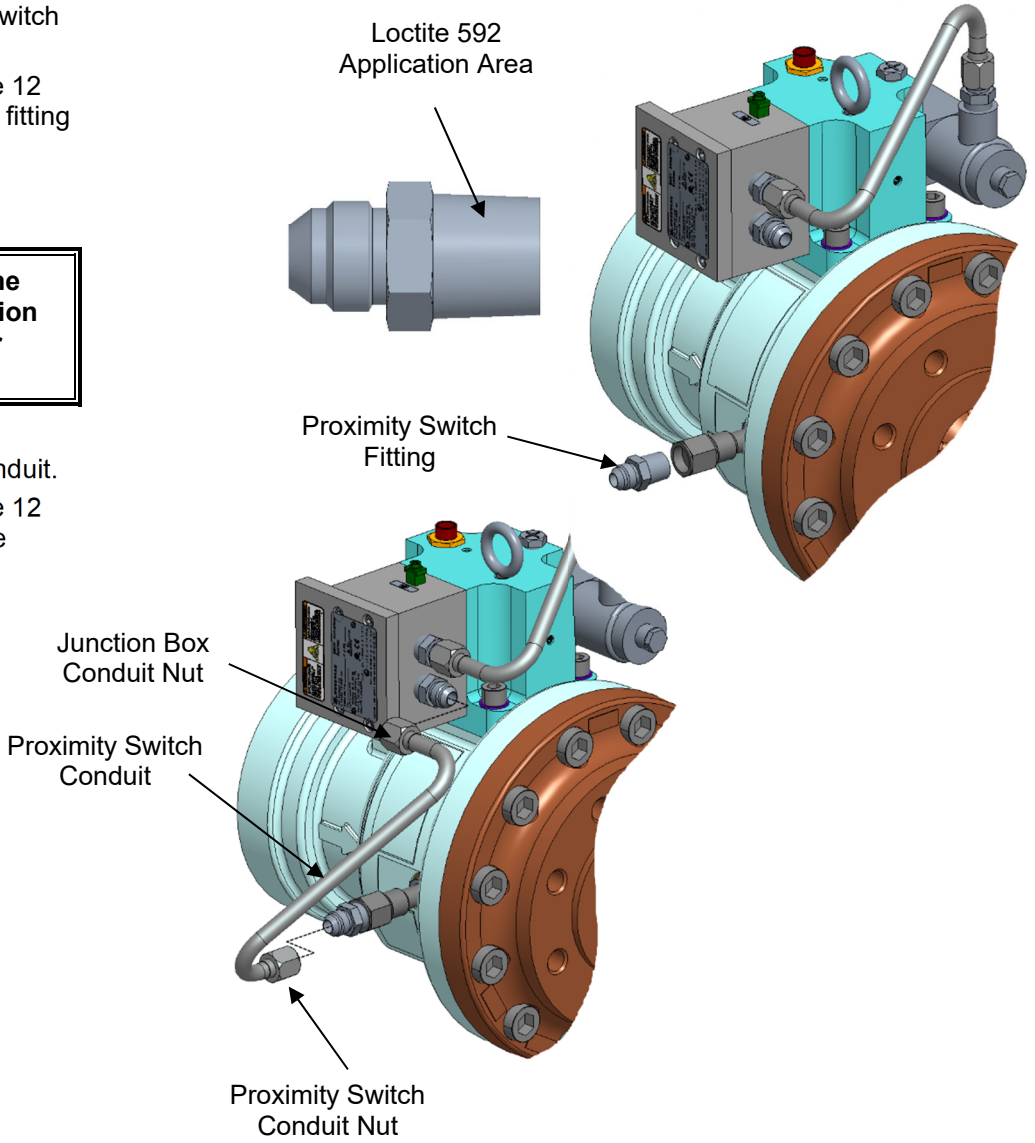


Figure 3-7. Install Conduit

P. Cut switch wires to appropriate length. Ground wire to 3-inch length and other wires to 5-inch length.

Q. Strip the insulation from the ground wire end (approx. 0.3 INCH / 8mm) and install ring tongue terminal.

R. Strip the insulation from the other wires end (approx. 0.3 INCH / 8mm) and crimp the contact pins to the wires (P/N 1608-1048 - contained within the replacement kit).

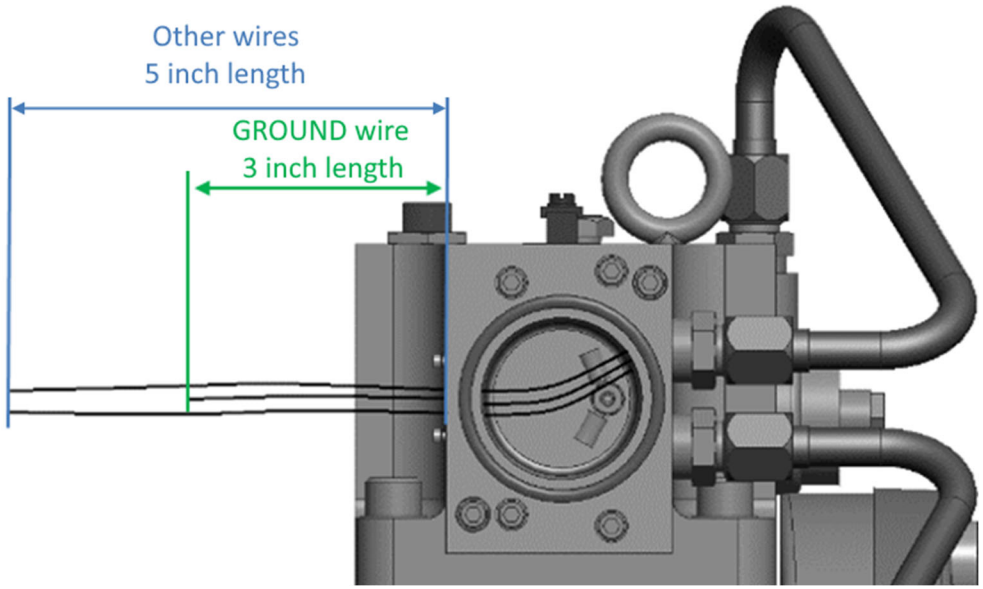


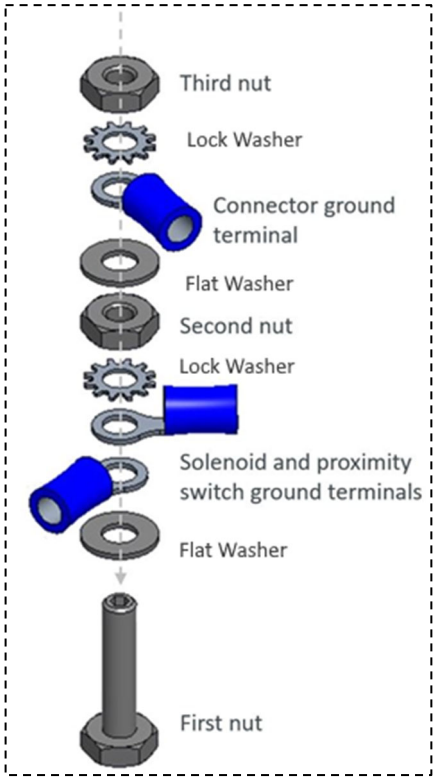
Figure 3-8. Cut Switch Wires and Connect to Contact Pins

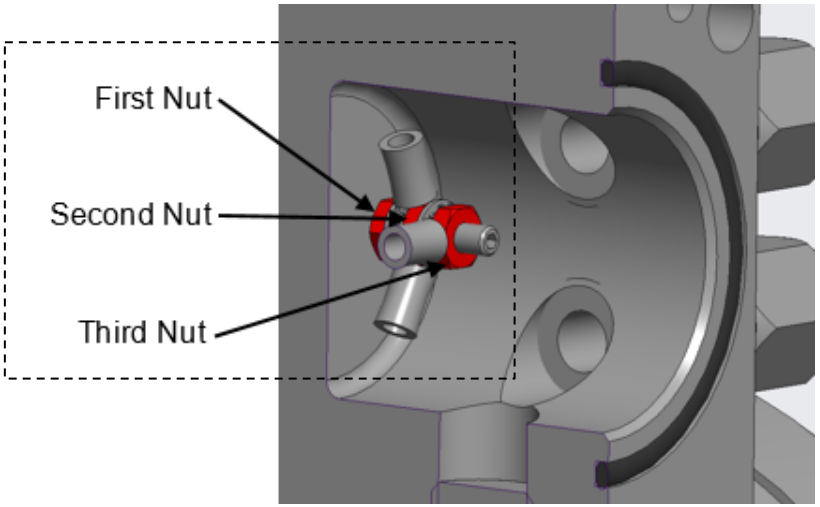
S. Torque the first nut to 34 ± 2 LBIN (3.8 ± 0.2 Nm).

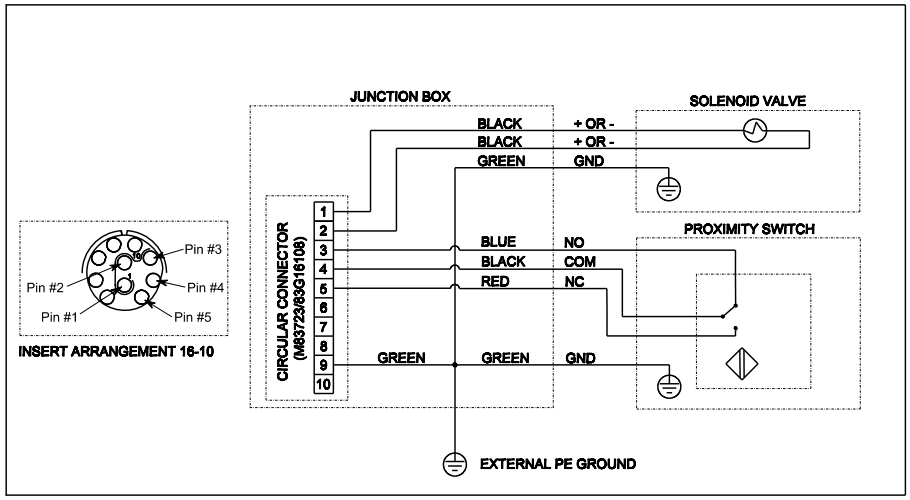
T. Connect switch ground to chassis according to the stack shown. Torque second and third nut to 22 ± 2 LBIN (2.5 ± 0.2 Nm).

U. Lubricate the new O-ring for the connector (P/N 1355-1737, contained within the replacement kit) with Parker Super O-lube and install into the flange of the connector.

V. Install the new connector pins with wires to the appropriate sockets of the connector per the wiring diagram.







ELECTRICAL SCHEMATIC

Figure 3-9. Install Ground Wires Inside Electric Junction Box and Connector Pins

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping, and too much bending or breakage.

W. Install the wires into the junction box and orient the connector with the master keyway of the connector oriented up and install onto the junction box.

X. Lubricate the connector O-ring with Parker Super O-lube grease.

Y. Install the collar on the connector flange.

Z. Install four new screws (P/N 1037-617, contained within the replacement kit) through the flange of the connector into the junction box. Torque the four screws to 7 ± 1 LBIN (0.8 ± 0.1 Nm).

AA. Lubricate the new O-ring in the the junction box cover (P/N 1355-1582, contained within the replacement kit) with Parker Super O-lube and install into the face groove of the junction box.

BB. Install the junction box cover. Torque the four screws to 81 ±4 LBIN (9.2 ± 0.5).

CC. Install the nameplate with new screws (P/N 1069-505, contained within the replacement kit). Torque both screws to 7 ±1 LBIN (0.8 ± 0.1 Nm).

DD. Connect the actuation air source (see valve installation drawing).

EE. Proceed to the Verification & Calibration section.

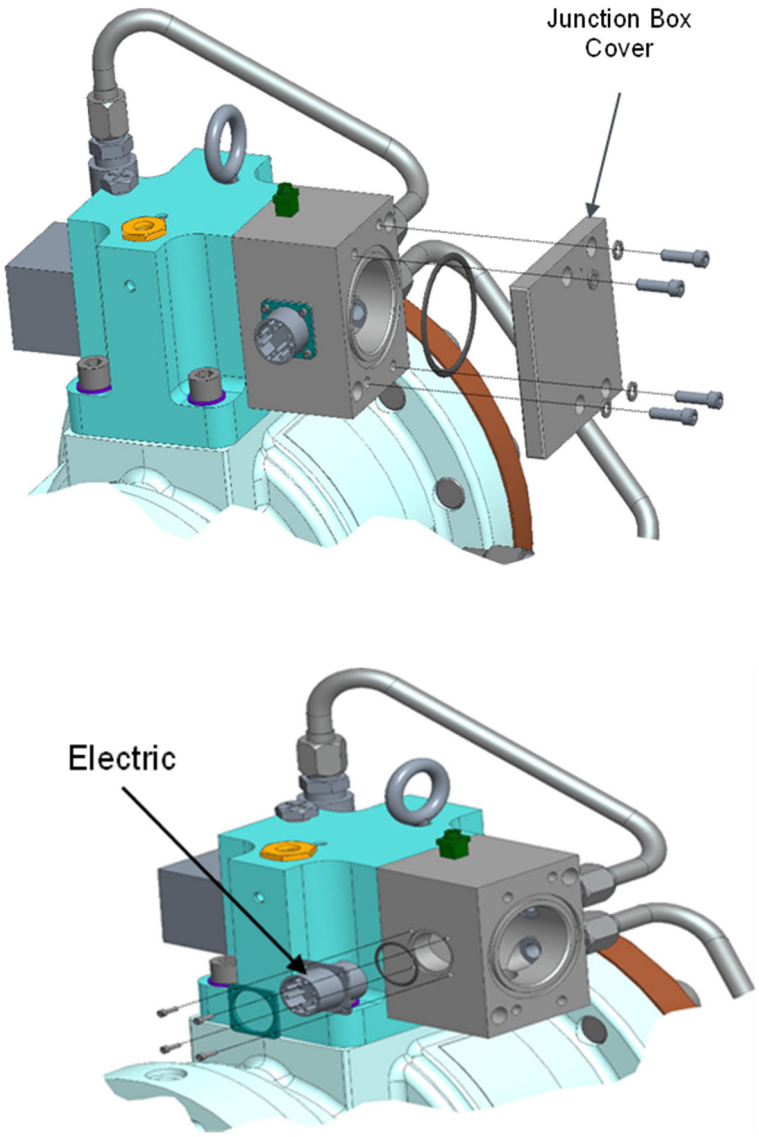


Figure 3-10. Install Electric Connector

3.4 GSOV80 Flying Leads Version Proximity Switch Replacement Kit Description

The purpose of this procedure is to show the correct sequence and method of proximity switch replacement.

KIT P/N	Description	Installation Drawing
8923-3275	GSOV80, FLYING LEADS – Proximity Switch Replacement Kit	**9999-1789-6**

NOTICE

Review this CMM and installation drawing before starting the replacement procedure to be sure that all necessary tools are available, and everything is clear. For any questions, contact Woodward.

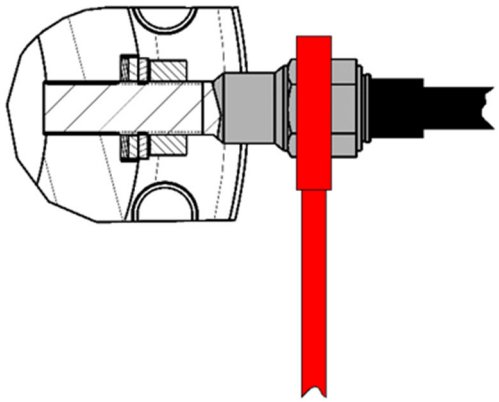
3.5 Disassembly Procedure

⚠CAUTION **Disconnect the power supply before doing any maintenance or replacement. Always disconnect power and any hazardous voltages that may be connected and follow all appropriate lockout/lockdown procedures.**

A. Remove actuation air inlet pressure (see valve installation drawing).
B. Remove fuel inlet pressure (see valve installation drawing).
C. Disconnect proximity switch wires (in external customer electrical junction box).
D. Hold the proximity switch with a wrench and remove the proximity switch conduit (customer external installation).
E. Carefully pull out the proximity switch wires from the conduit.

NOTICE **Take special care of wires during the disassembly process to prevent isolation stripping and too much bending or breakage.**

F. Hold the proximity switch with a wrench and remove the proximity switch fitting (customer external installation).



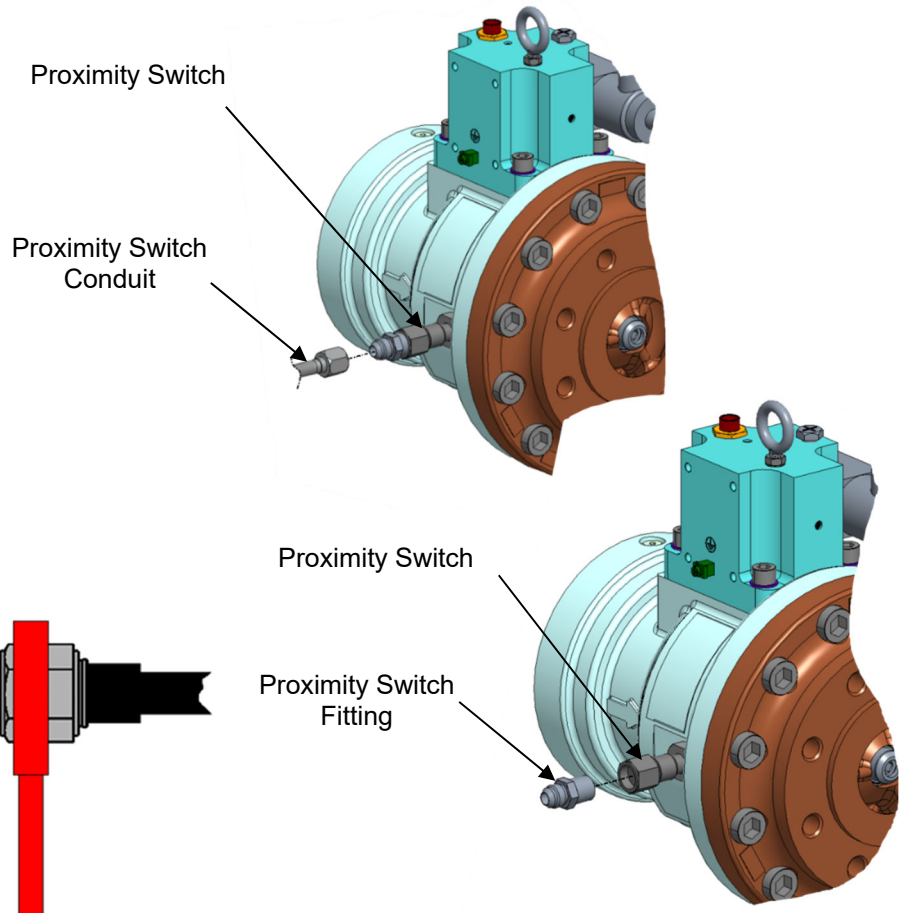


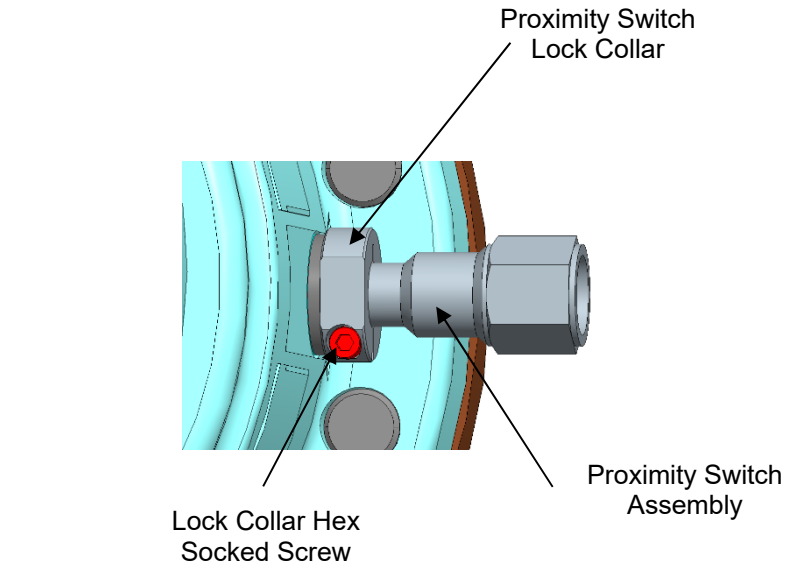
Figure 3-11. Remove Conduits and Fitting

G. Loosen the proximity switch lock collar hex socket screw.
H. Hold the proximity switch with a wrench and loosen the lock collar.
I. Unscrew the proximity switch assembly from the valve housing.
J. Remove the proximity switch with the lock collar, two flat washers, and sealing washer (scrap sealing washer; lock collar and two flat washers will be reused during assembly process).

NOTICE

During the valve cleaning process, pay special attention to not allow removed residuals to fall into the valve interior

K. Clean sealing surfaces using Isopropyl Alcohol.
L. Carefully clean Loctite residue from housing internal threads.
M. Visually inspect all surfaces. Make sure there is no damage to sealing surfaces, or corrosion that is not easily removed with 30 Micron lapping film or chemical cleaning. Inspect all threads for damage or galling.



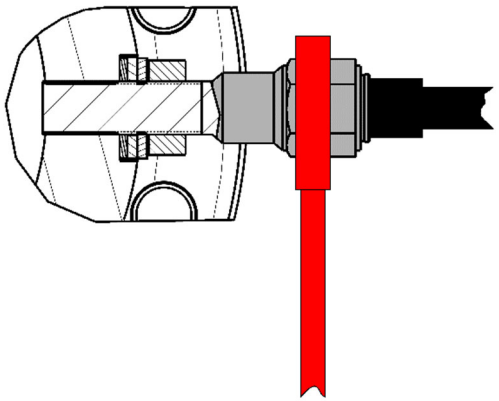


Figure 3-12. Remove Proximity Switch

3.6 Assembly Procedure

A. Unpack proximity switch assembly kit and remove two vendor supplied nuts.
B. Thread the lock collar nut up to the collar of the proximity switch.
C. Install two flat washers onto the proximity switch below the lock collar.
D. Install the seal washer (P/N 3051-1009 contained within the replacement kit) onto the proximity switch assembly up to the flat washer.
E. Apply Loctite 246 to the threads of the proximity switch assembly below the seal washer.
F. Gently thread-in the proximity switch assembly into the valve housing until the switch contacts the piston.
G. Back the switch assembly out 1/2 to 5/8 of a turn. Make a mark on the hex portion of the proximity switch to identify the 12 o'clock position of the switch.
H. Hold the switch assembly in position and thread the nut and washers up to the valve housing.
I. While holding the switch assembly with a wrench, to maintain the 12 o'clock rotational orientation of the mark on the switch, torque the switch lock collar to 28 ± 3.0 FTLB (38.0 ± 4.0 Nm).
J. Torque the lock collar locking screw to 33.0 ± 3.0 FTLB (3.7 ± 0.4 Nm). **Note:** If the lock screw isn't accessible when the proximity switch and collar are snugged, it may need to be flipped 180 degrees.

WARNING

The switch must be held in the factory installed position to ensure that it is not inadvertently moved while the conduit nut is tightened to maintain the proper gap between the proximity switch and the piston.

An absence of a gap between the proximity switch and piston can cause the valve to malfunction or become inoperable.

Carefully review Figure 3-13. Use a wrench to maintain the rotational orientation of the proximity switch during field conduit installation.

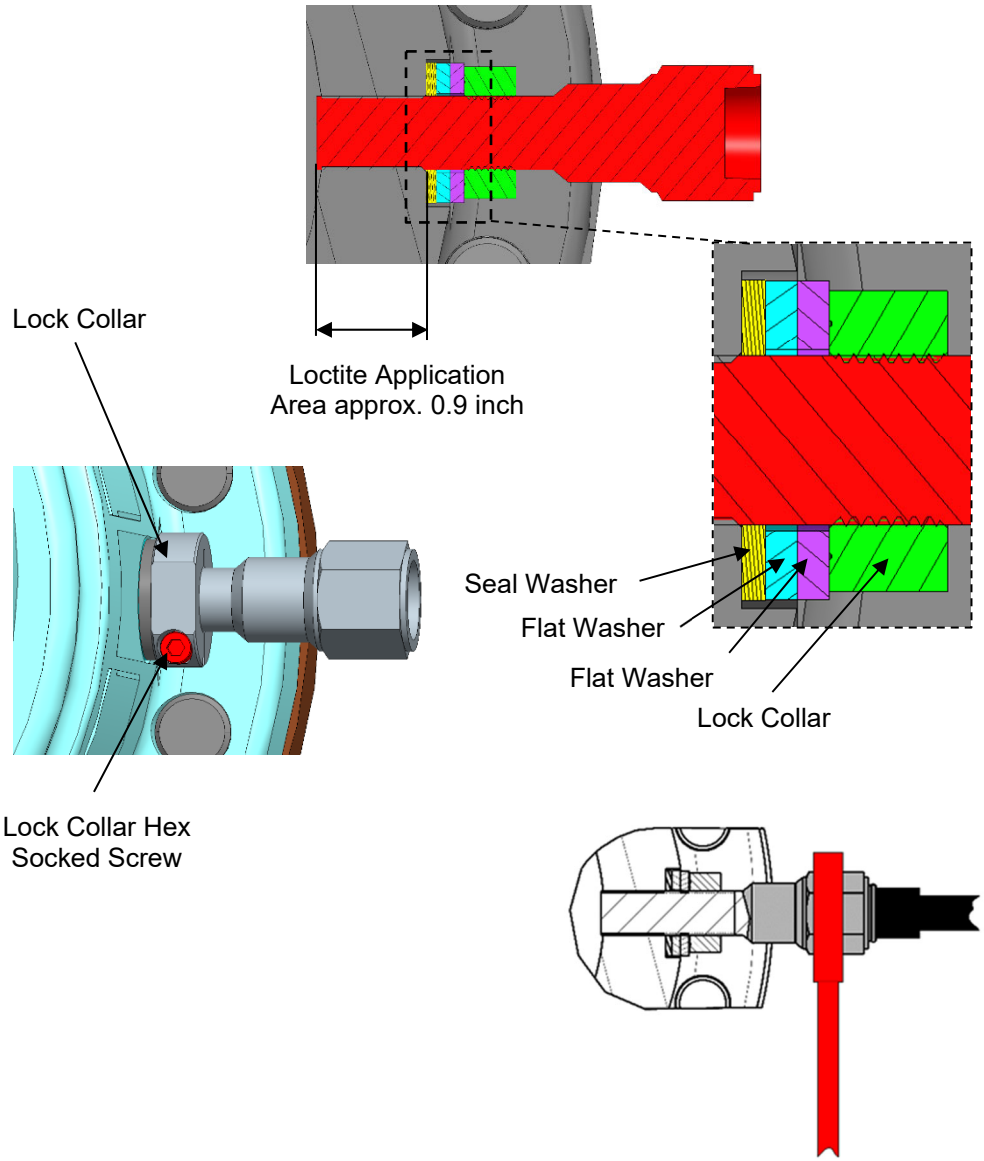


Figure 3-13. Install Proximity Switch

K. Apply Loctite 592 thread sealant to the threads of the proximity switch fitting.

L. While holding the switch assembly with a wrench, to maintain the 12 o'clock rotational orientation of the mark on the switch, install fitting into the proximity switch. Torque the fitting to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping and too much bending or breakage.

M. Remove the plastic bushing (wire protector) provided with the proximity switch replacement kit.

N. Gently feed the proximity switch wires into the junction box through the conduit (external customer installation).

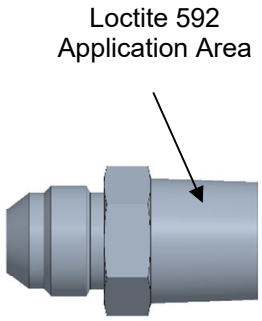
O. While holding the switch assembly with a wrench, to maintain the 12 o'clock rotational orientation of the mark on the switch, torque the proximity conduit nut to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

P. Torque the proximity switch conduit nut to 22.5 ± 2.5 LBFT (30.5 ± 3.5 Nm).

Q. Connect all proximity switch wires inside the external electrical junction box (customer installation).

R. Connect the actuation air source (see valve installation drawing).

S. Proceed to the Verification & Calibration section.



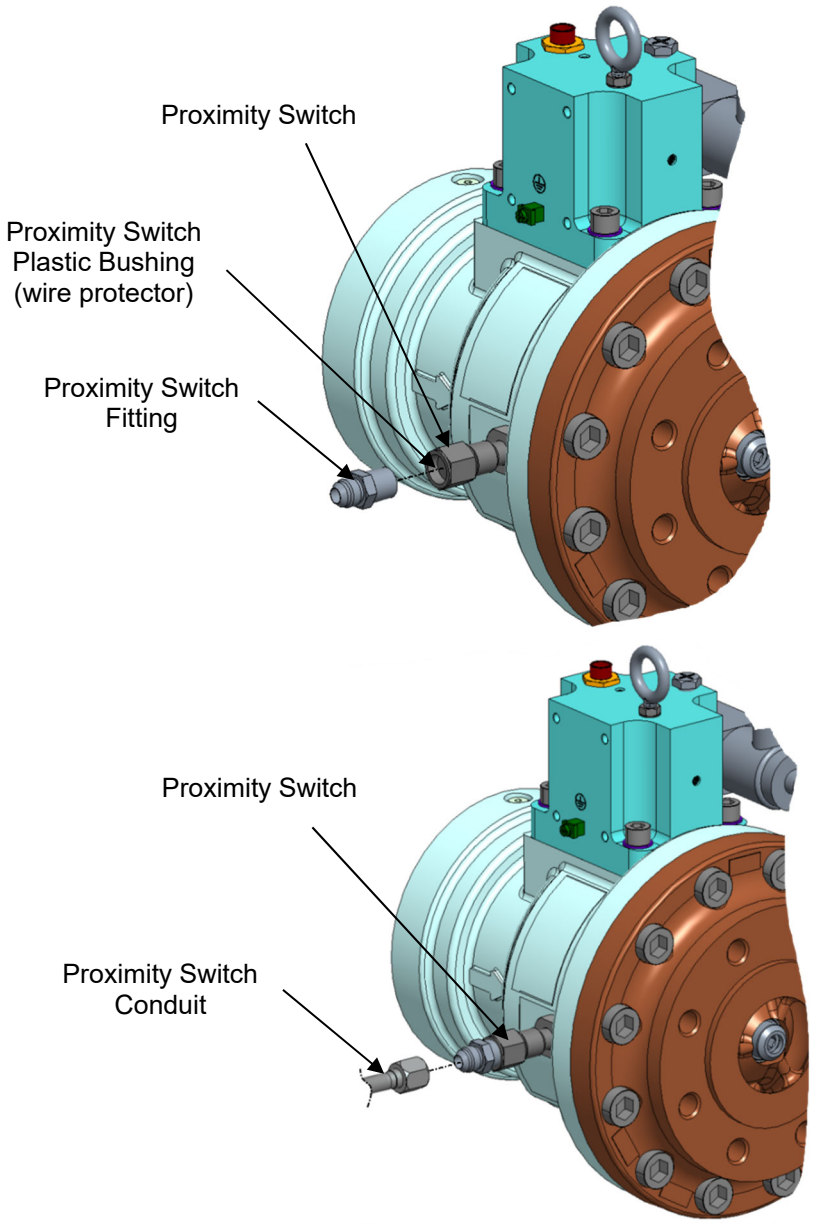


Figure 3-14. Install Solenoid Fitting and Conduit

3.7 Verification & Calibration 24 VDC (GSOV80 Connector Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the solenoid valve circuits.

B. Connect the positive lead of the HIPOT test device to the Pins #3, #4 and #5 of the electric connector. Be very cautious not to allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

C. Apply 500 VAC voltage for 60 seconds.

D. Record the HIPOT tester leakage current reading, which shall be less than 5 mA.

E. Remove the HIPOT tester.

F. Connect the positive lead of the HIPOT test device to both the Pin #1 and #2 of the electric connector. Be very cautious not to allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

G. Apply 500 VAC voltage for 60 seconds.

H. Record the HIPOT tester leakage current reading, which should be less than 5 mA.

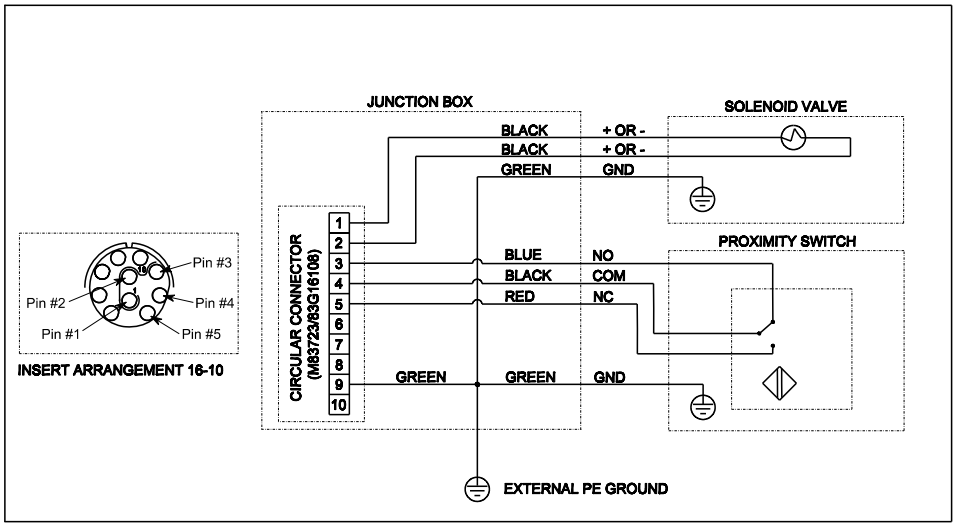
I. Remove the HIPOT tester and connect a power supply capable of 1 Amp of current at 24 VDC and adjustable between 0 and 24 VDC.

J. Connect the pressure source to actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.

K. Apply electrical power to the solenoid.

L. Using the proximity switch output signals, verify if the valve is opening and closing smoothly.

M. Open and close the valve several times to be sure that everything is operating correctly.



ELECTRICAL SCHEMATIC

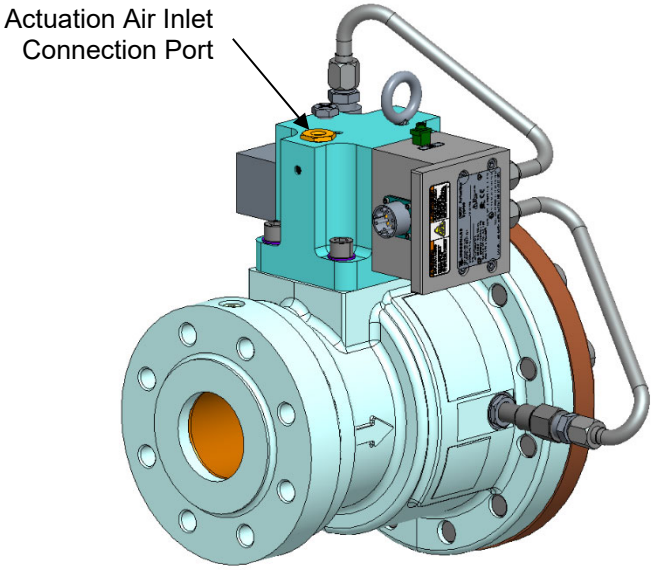


Figure 3-15. GSOV80 Valve

N. Electrical Checks:

1. Set actuation air to maximum allowed (140 PSIG).
2. Pull-in Voltage:

    a. With the valve closed, ramp up voltage until the proximity switch indicates open position. Voltage shall be lower than 18 VDC.

3. Steady State Current:

    a. Apply nominal solenoid voltage. Measure current draw. Shall be less than 625 mA.

4. Drop-Out Voltage:

    a. With valve open, ramp down voltage until the proximity switch indicates valve closed position. Voltage shall be higher than 0.5 VDC.

3.8 Verification & Calibration 125 VDC (GSOV80 Connector Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the proximity switch circuits.

B. Connect the positive lead of the HIPOT test device to Pins #3, #4, and #5 of the electric connector. Be very cautious not to allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

C. Apply 500 VAC voltage for 60 seconds.

D. Record the HIPOT tester leakage current reading, which shall be less than 5 mA.

E. Remove the HIPOT tester.

F. Connect the positive lead of the HIPOT test device to both Pin #1 and #2 on the electric connector. Be very careful to not allow the positive lead to touch the backshell of the electric connector. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.

G. Apply 1500 VAC voltage for 60 seconds.

H. Record the HIPOT tester leakage current reading, which should be less than 5 mA.

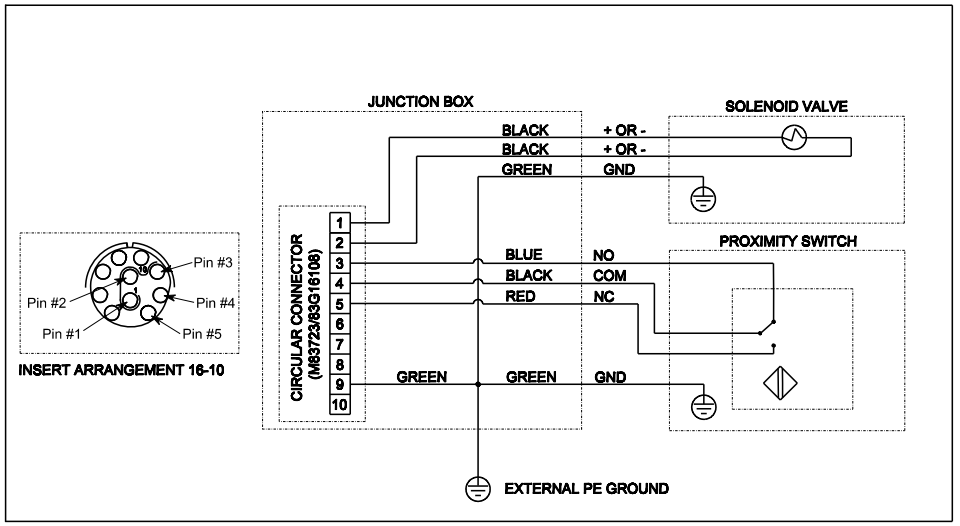
I. Remove the HIPOT tester and connect a power supply capable of 0.5 Amp of current at 125 VDC and adjustable between 0 and 125 VDC.

J. Connect the pressure source to the actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.

K. Apply electrical power to solenoid.

L. Using the proximity switch output signals, verify if the valve is opening and closing smoothly.

M. Open and close the valve several times to be sure that everything is operating correctly.



ELECTRICAL SCHEMATIC

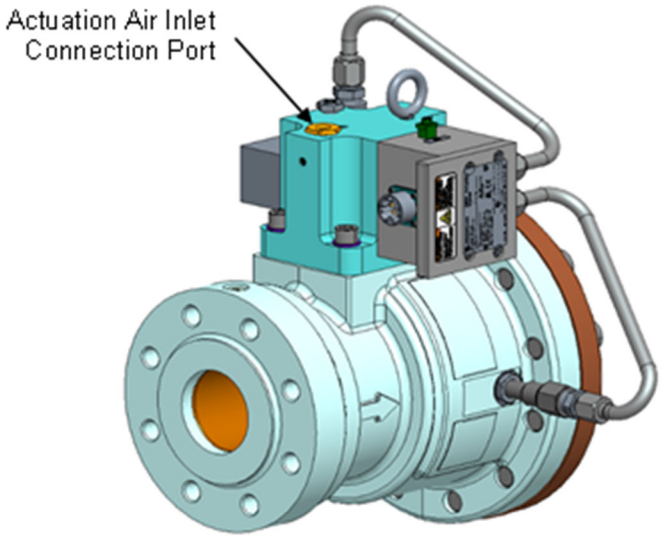
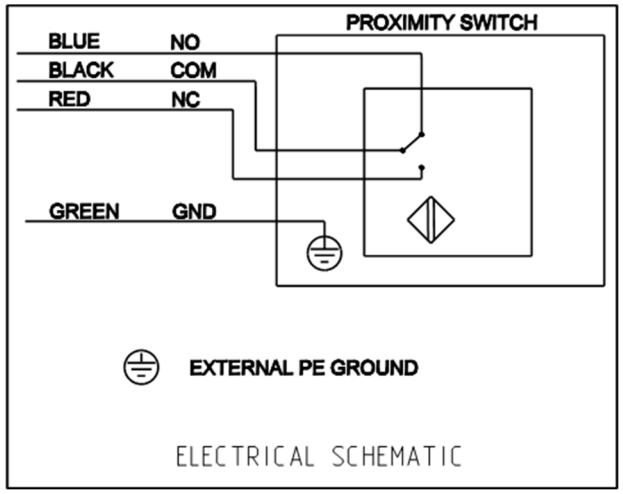


Figure 3-16. GSOV80 Valve

N. Electrical Checks:
   1. Set actuation air to maximum allowed (140 PSIG).
   2. Pull-in voltage:
      a. With the valve closed, ramp up voltage until the proximity switch indicates it is in the open position. Voltage shall be lower than 88 VDC.
   3. Steady State Current:
      a. Apply nominal solenoid voltage. Measure current draw, which should be less than 625 mA.
   4. Drop-out Voltage:
      a. With the valve open, ramp the voltage down until the proximity switch indicates the valve is in the closed position. Voltage shall be lower than 8 VDC.

3.9 Verification & Calibration (GSOV80 Flying Leads Version)

A. To ensure correct assembly and prevent damage to wire insulation, Woodward recommends performing a HIPOT test to the proximity switch circuits.
B. Connect the positive lead of the HIPOT test device to proximity switch wires: **BLUE, BLACK**, and **RED**. Connect the negative lead of the HIPOT test device to the chassis ground lug of the GSOV.
C. Apply 500 VAC voltage for 60 seconds.
D. Record the HIPOT test device leakage current reading, which shall be less than 5 mA.
E. Connect the pressure source to actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.
F. Apply electrical power to voltage range 18-32 VDC for 24 VDC solenoid or 90-140 VDC for 125 VDC solenoid.
G. Using the proximity switch output signals, verify if the valve is opening and closing. Open and close the valve several times to be sure that everything is operating repeatably.



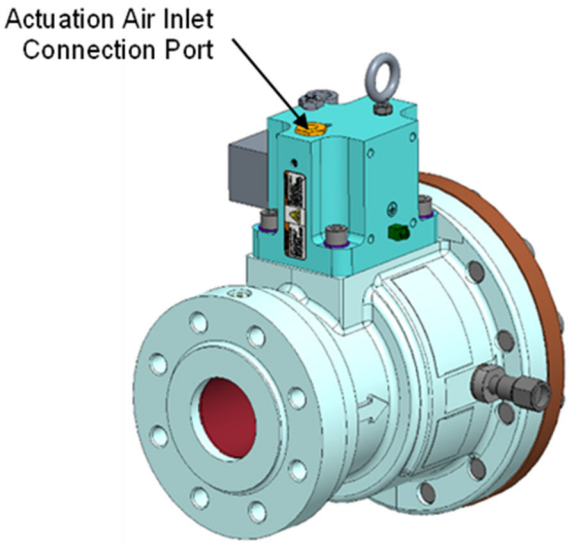


Figure 3-17. GSOV80 Valve

4 ELECTRIC CONNECTOR REPLACEMENT

4.1 Electric Connector Replacement Kit Description

The purpose of this procedure is to show the correct sequence and method of electric connector replacement.

KIT P/N	Description	Installation Drawing
8923-2546 GSOV80	Electric Connector Replacement Kit	**9999-1789-3**

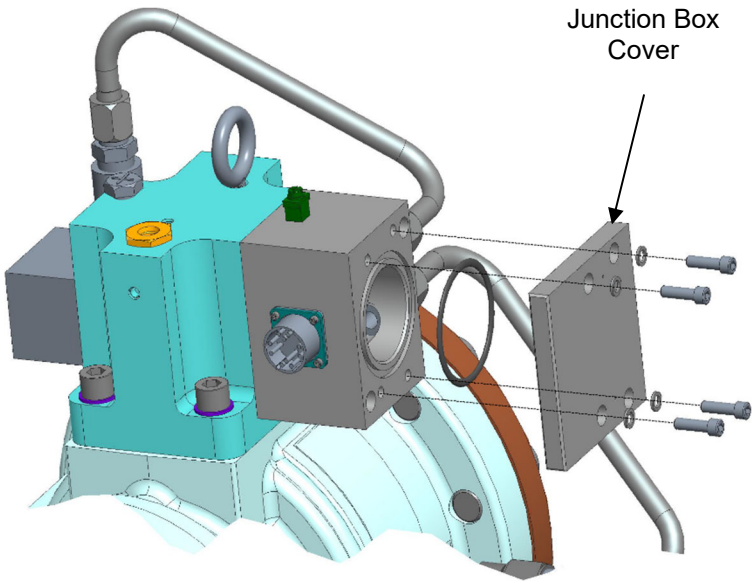
NOTICE

Review this CMM and installation drawing before starting the replacement procedure to be sure that all necessary tools are available, and everything is clear. For any questions, contact Woodward.

4.2 Disassembly Procedure

⚠CAUTION **Disconnect the power supply before doing any maintenance or replacement. Always disconnect power and any hazardous voltages that may be connected and follow all appropriate lockout/lockdown procedures.**

A. Remove actuation air inlet pressure (see valve installation drawing).
B. Remove fuel inlet pressure (see valve installation drawing).
C. Remove the name plate.
D. Disassemble the cover from the junction box.
E. Remove the cover O-ring.



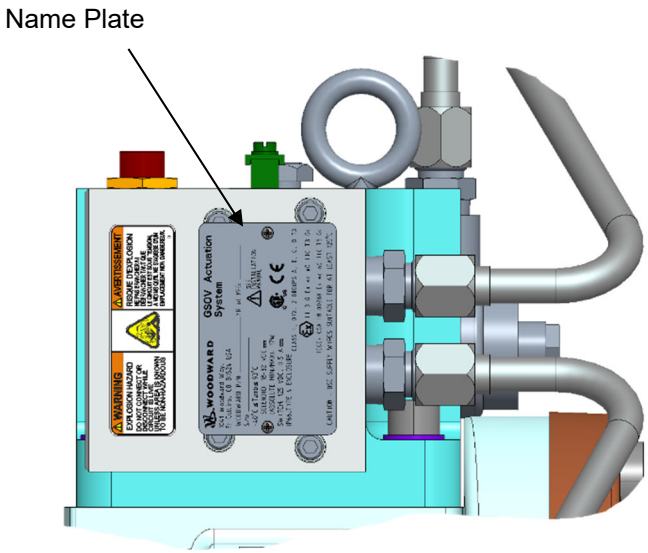


Figure 4-1. Disassemble the Cover

F. Remove four screws from the electric connector.
G. Remove the collar from the electric connector

NOTICE

Take special care of wires during the assembly process to prevent isolation stripping and too much bending or breakage.

H. Remove the electric connector collar (collar will be reused during assembly process).
I. Gently remove the electric connector from the housing.

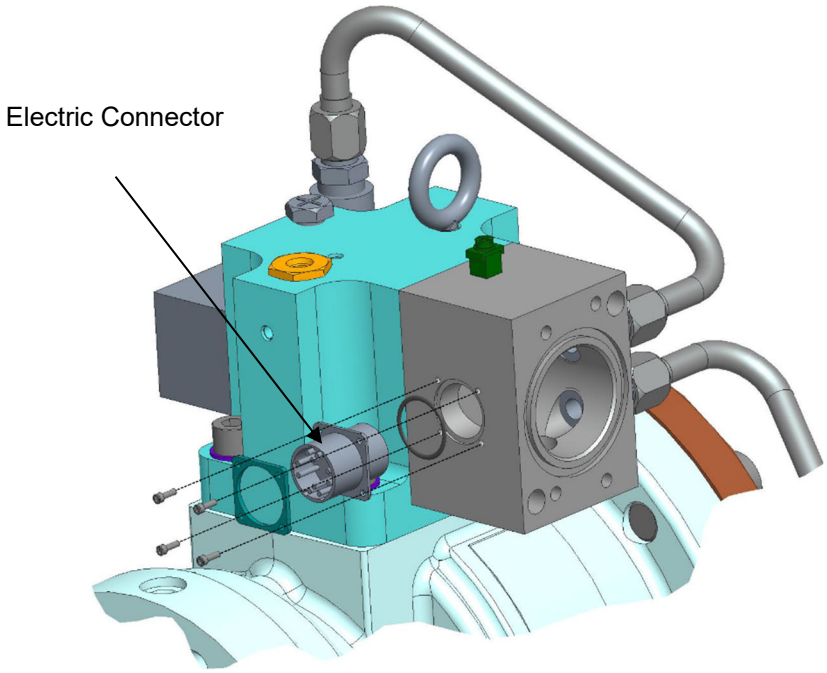
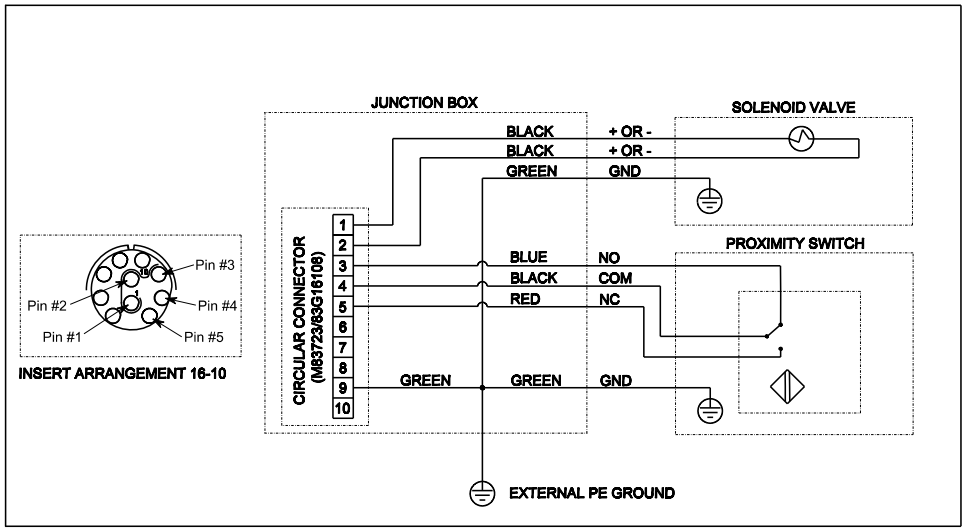


Figure 4-2. Remove Electric Connector

J. Disconnect ferrules/pins from the electric connector. Use standard plastic removal tool (AWG 16) (P/N 8996-2388 - contained within the replacement kit) to remove ferrules from the connector.
K. Remove and scrap the connector O-ring



ELECTRICAL SCHEMATIC

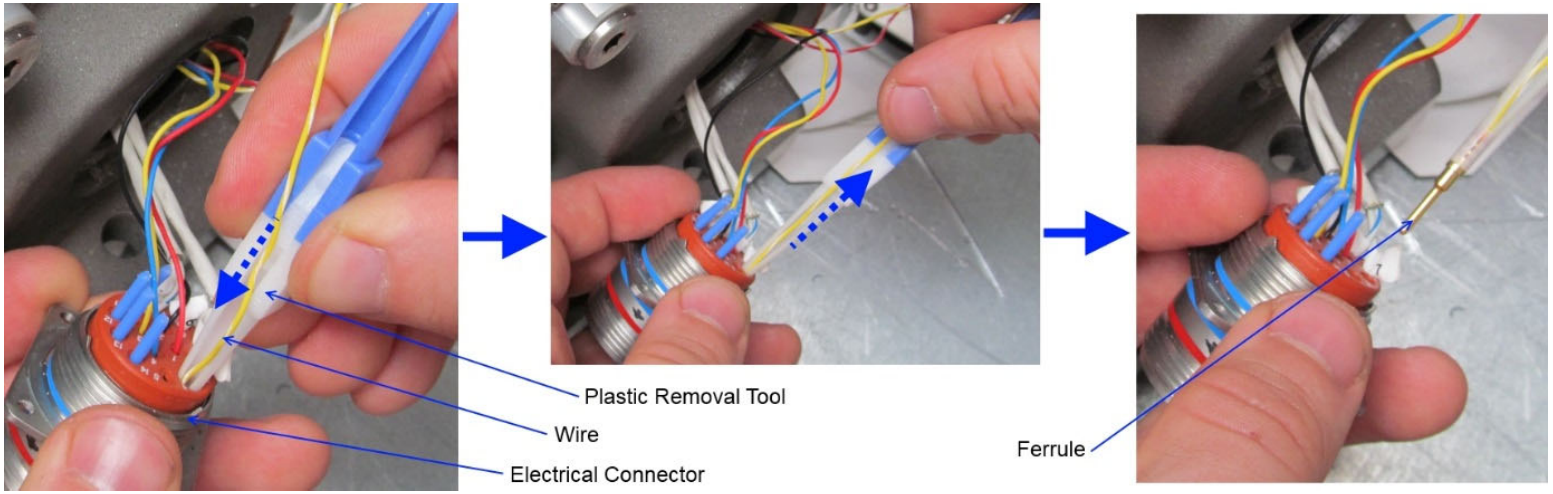


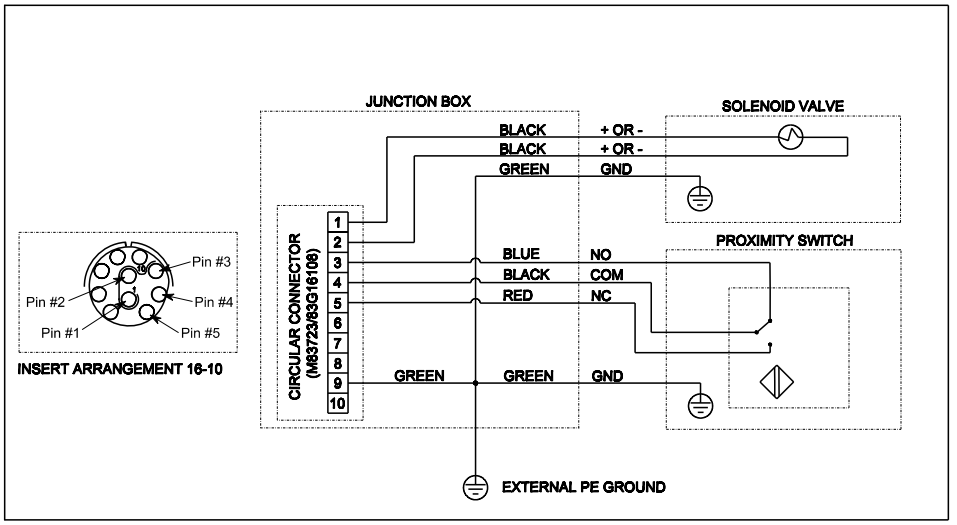
Figure 4-3. Disconnect Ferrules from Electric Connector

4.3 Assembly Procedure

A. Lubricate connector O-ring with Parker Super O-lube grease and install into the connector face groove of the junction box.

B. Install connector pins into the appropriate Connector sockets per the wiring diagram.

C. Verify the condition of the ground wire. Replace if needed.



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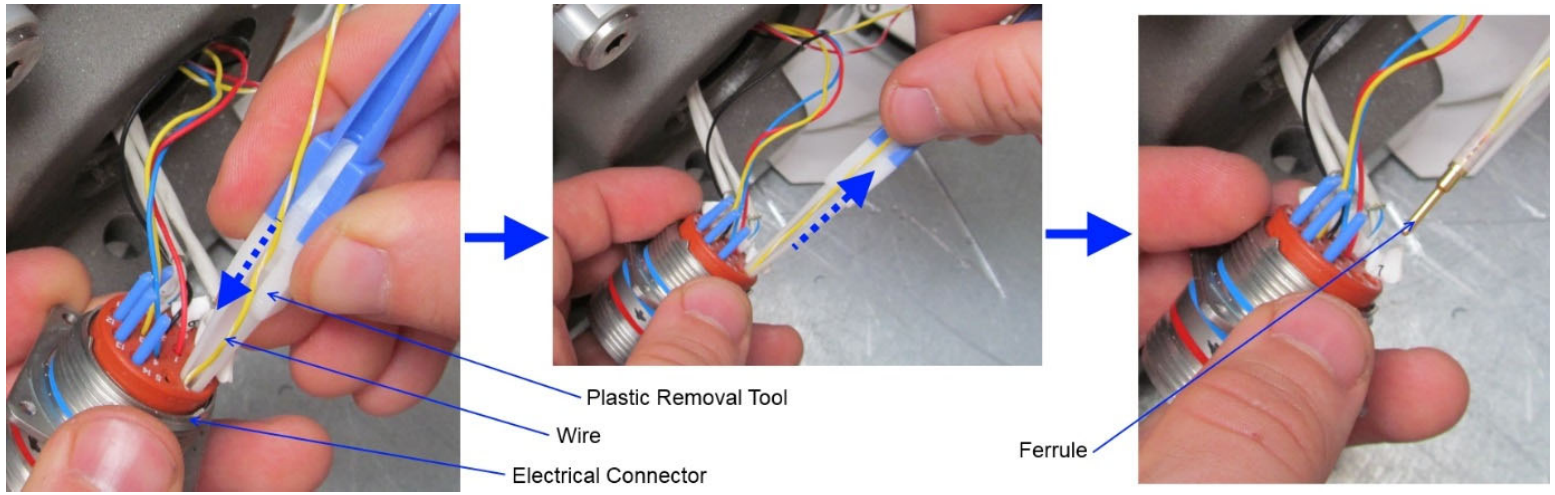


Figure 4-4. Install Connector Pins

D. Install the wires into the junction box and orient the connector with the master keyway of the connector oriented up and install onto the junction box.
E. Install the collar on the connector flange.
F. Install four screws through the flange of the connector into the junction box. Torque the four screws to 7 ±1 LBIN (0.8 ± 0.1 Nm).
G. Lubricate the junction box cover O-ring with Parker Super O-lube and install into the face groove of the junction box.

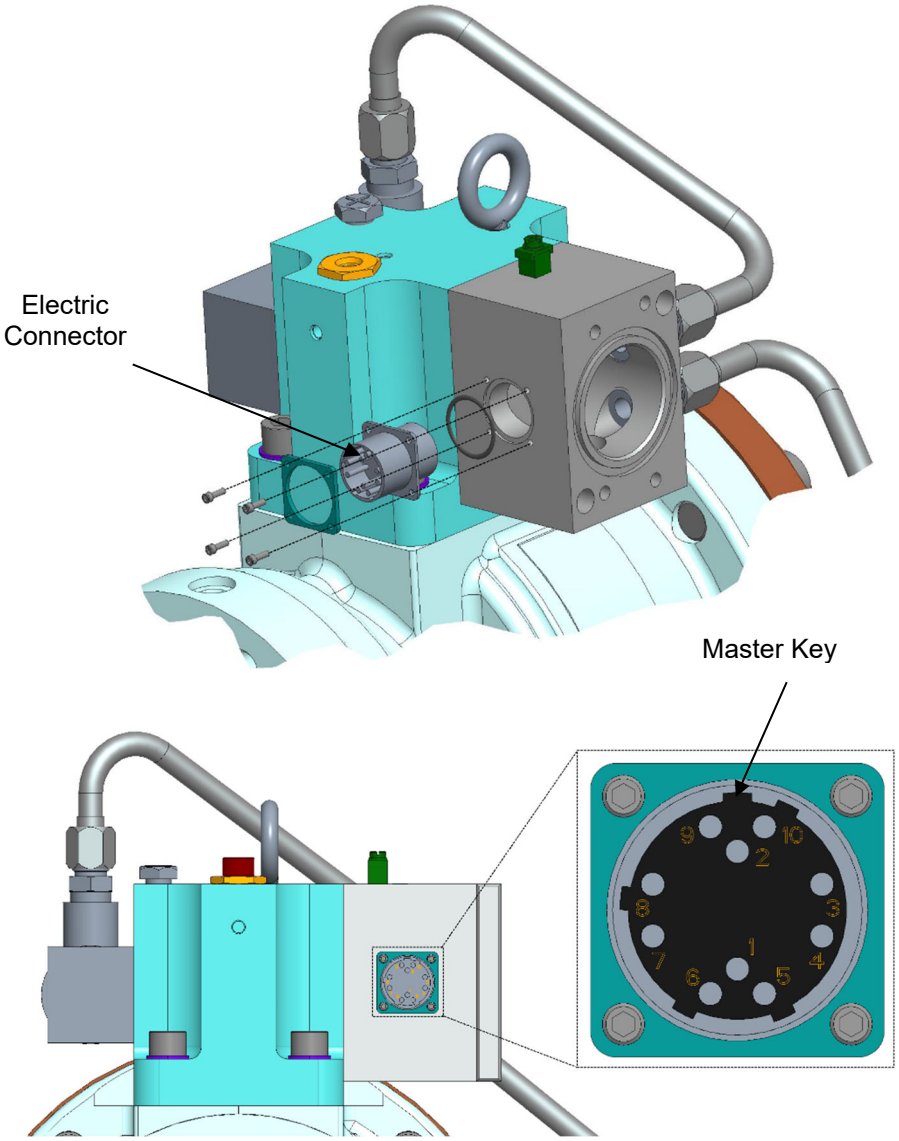


Figure 4-5. Install Electric Connector

H. Install the junction box cover. Torque the four screws to 81 ±4 LBIN (9.2 ± 0.5 Nm).

I. Install the nameplate. Torque both screws to 7 ±1 LBIN (0.8 ± 0.1 Nm).

J. Connect the actuation air source (see valve installation drawing).

K. Proceed to the Verification & Calibration section.

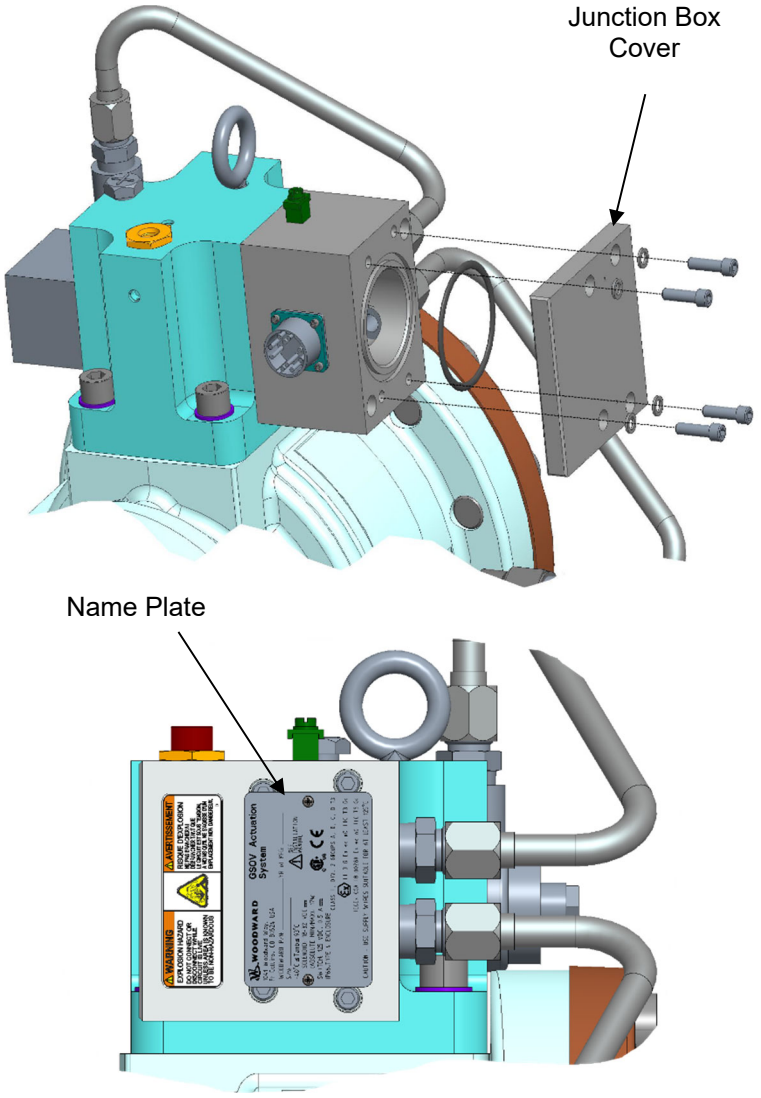
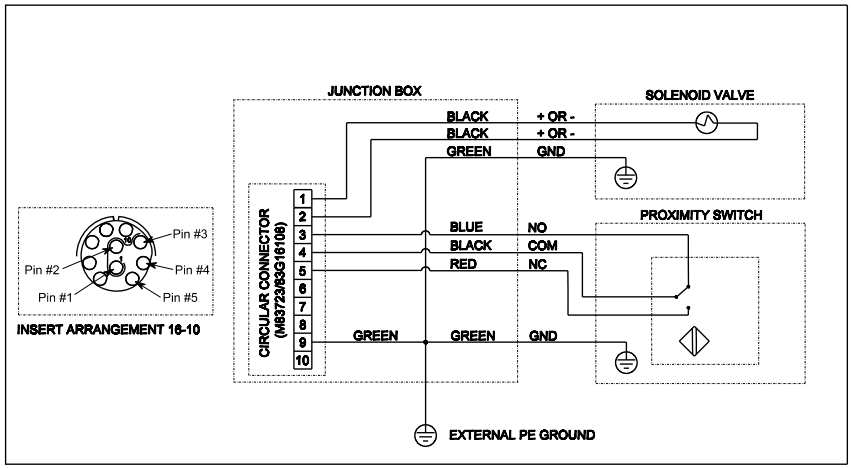


Figure 4-6. Assemble the Cover

4.4 Verification

A. Install the electric plug. Connect the solenoid and proximity switch.
B. Connect the pressure source to the actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.
C. Use two digital voltmeters, set to measure continuity. Connect the leads across the proximity switch normally open and common connector pins. Connect another digital voltmeter across the normally closed and common connector pins.
D. Apply electrical power to solenoid.
E. Verify that when the solenoid is energized:
   1 There is no continuity across the normally closed contacts.
   2 There is continuity between the normally open contacts.
F. Open and close the valve several times to be sure that everything is operating repeatably.



ELECTRICAL SCHEMATIC

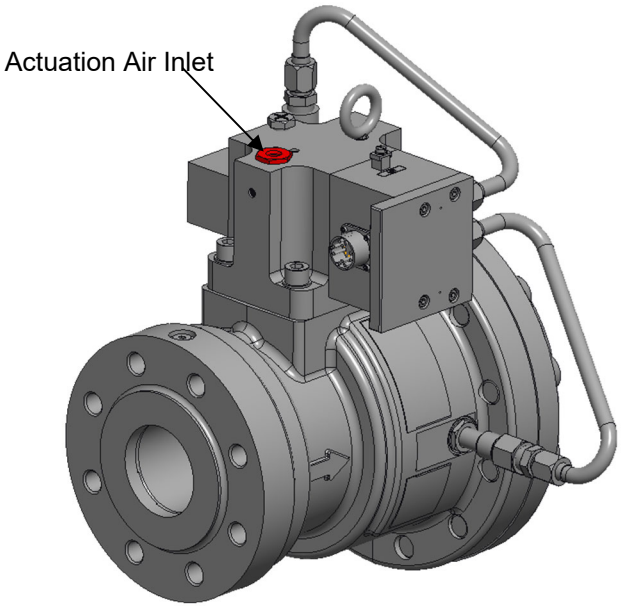


Figure 4-7. GSOV80 Valve

5 FILTER AND BREATHER REPLACEMENT

5.1 Filter and Breather Replacement Kit Description

The purpose of this procedure is to show the correct sequence and method of filter and breather replacement.

KIT P/N	Description	Installation Drawing
8923-2548	Filter and Breather Replacement Kit	**9999-1789-4**

NOTICE

Review this CMM and installation drawing before starting the replacement procedure to be sure that all necessary tools are available, and everything is clear. For any questions, contact Woodward.

5.2 Disassembly Procedure

Note: If the filter is found assembled, proceed directly to step E. If not, follow the steps below.

A. Remove actuation air inlet pressure (see valve installation drawing).

B. Loosen and carefully unscrew the filter.

C. Remove plug from the filter.

Visually inspect all surfaces. Make sure there is no damage to sealing surfaces, or corrosion that is not easily removed with 30 micron lapping film or chemical cleaning. Inspect all threads for damage or galling.

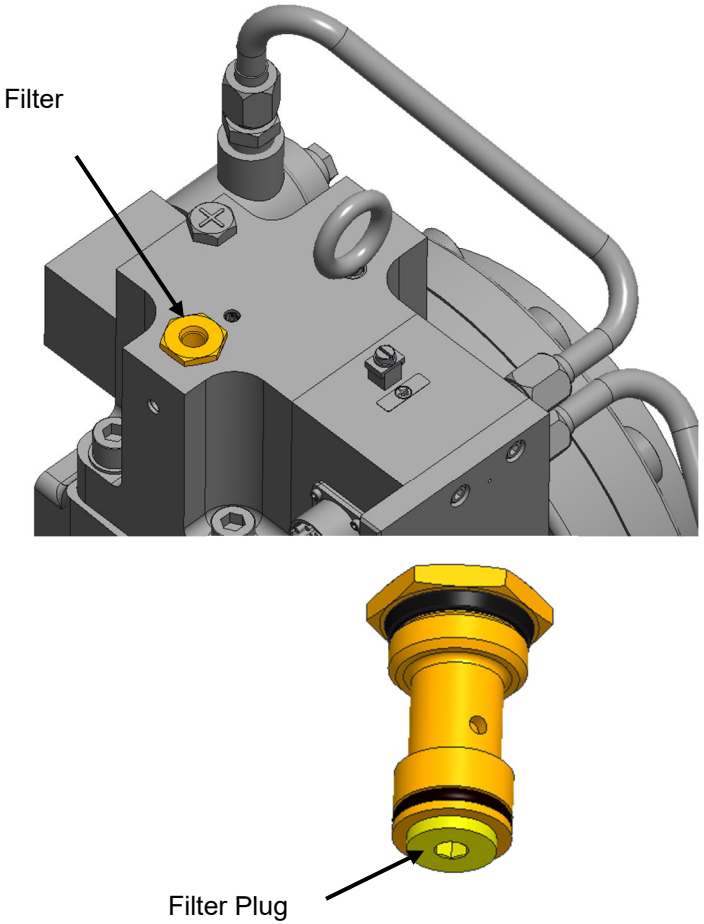


Figure 5-1. Remove the Filter

D. Remove the breather. Use a socket wrench.

Visually inspect all surfaces. Inspect thread for damage or galling.

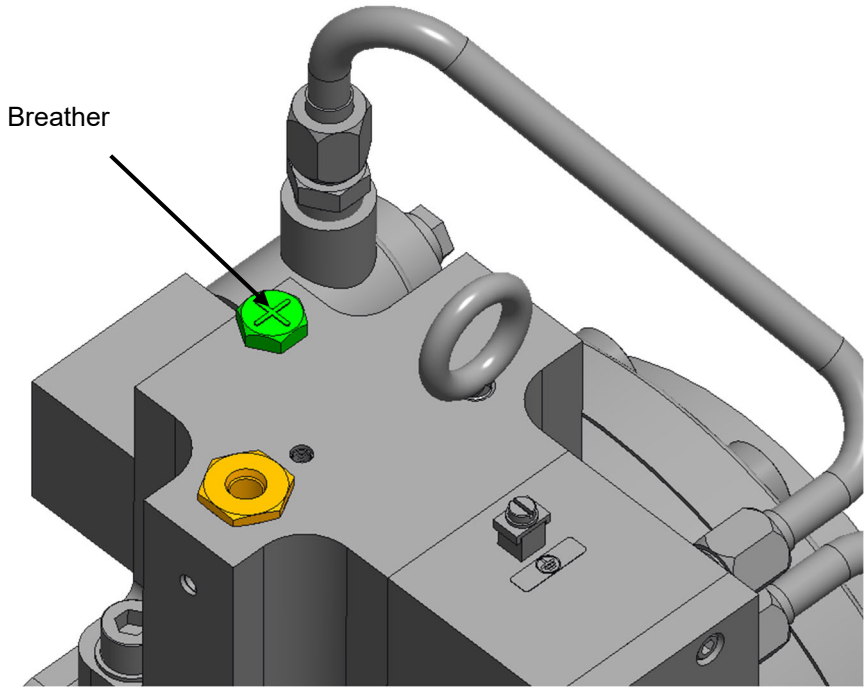


Figure 5-2. Remove the Breather

5.3 Assembly Procedure

A. Lubricate O-ring with Parker Super O-lube and install onto plug.
B. Install plug into bottom of filter and torque to 40 ± 2 LBIN (4.5 ± 0.2 Nm).
C. Lubricate O-ring with Parker Super O-lube and install into lower OD groove closest to the hex head of the filter plug.
D. Lubricate O-ring with Parker Super O-lube and install into the upper OD groove of the filter plug.
E. Install the filter assembly into the housing and torque filter to 200 ± 5 LBIN (22.6 ± 0.5 Nm).

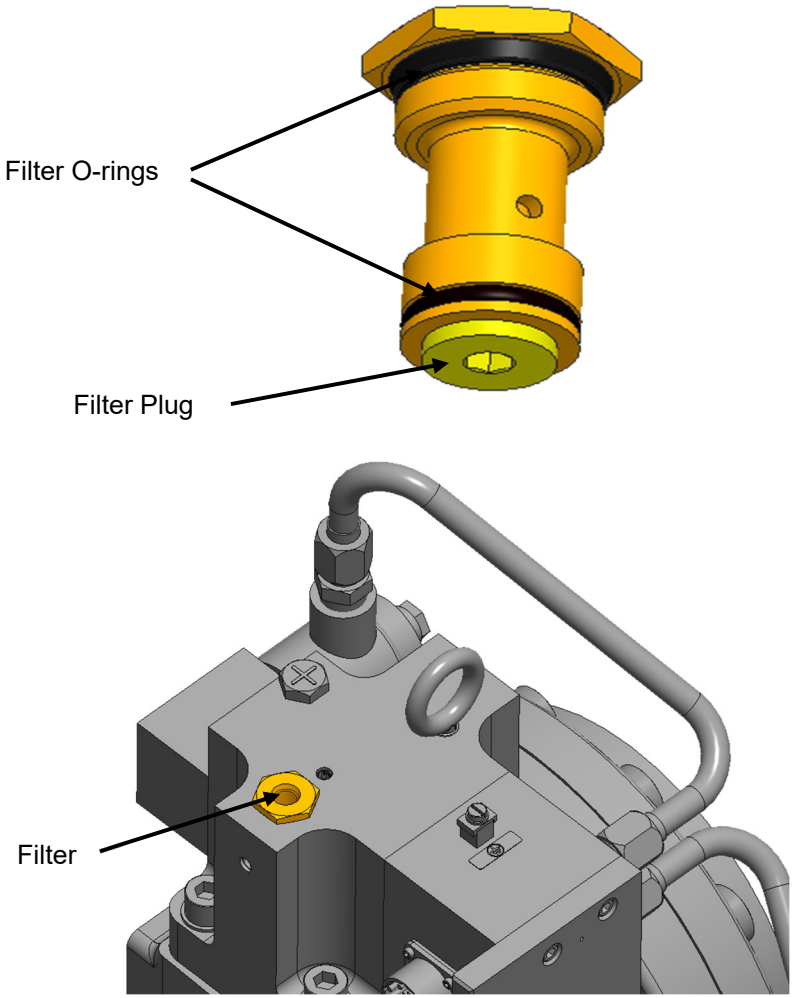


Figure 5-3. Install Filter

F. Lubricate the threads of the breather with G/N Paste and install into the port on the top of the housing.
G. Torque breather to 100.0 ± 5 LBIN (11.2 ± 0.5 Nm).
H. Install actuation air inlet pressure (see valve installation drawing).
I. Proceed to Verification & Calibration section.

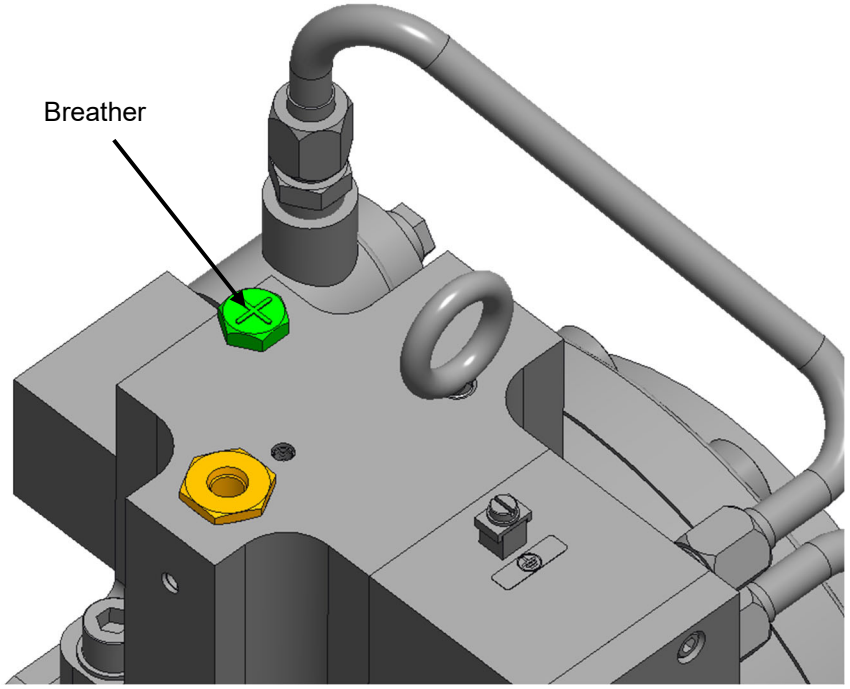
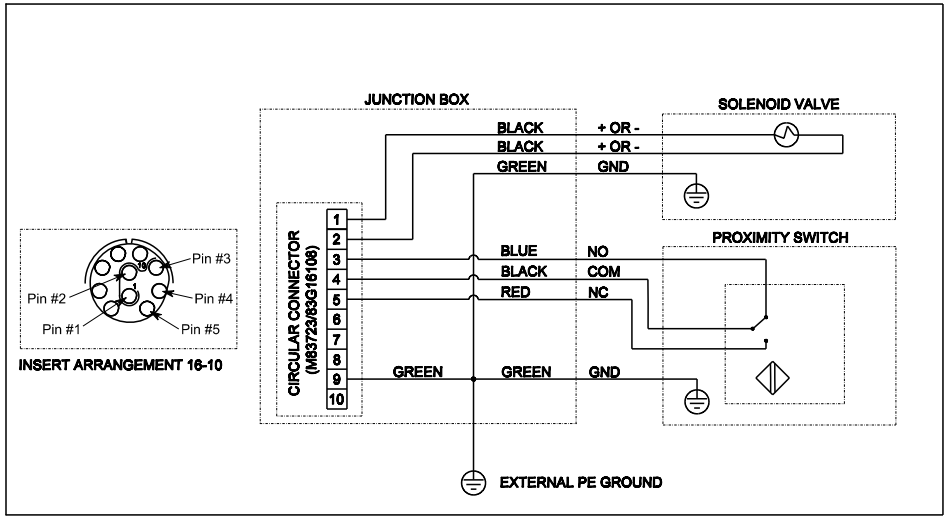


Figure 5-4. Install Breather

5.4 Verification

A. Install the electric plug (GSOV80 connector version). Connect the solenoid and proximity switch.
B. Connect the pressure source to actuation air inlet connection: 80 PSIG minimum - 140 PSIG maximum.
C. Apply electrical power to solenoid.
D. Using the proximity switch output signals, verify if the valve is opening and closing within the required time.
E. Open and close the valve several times to be sure that everything is operating repeatably.



ELECTRICAL SCHEMATIC

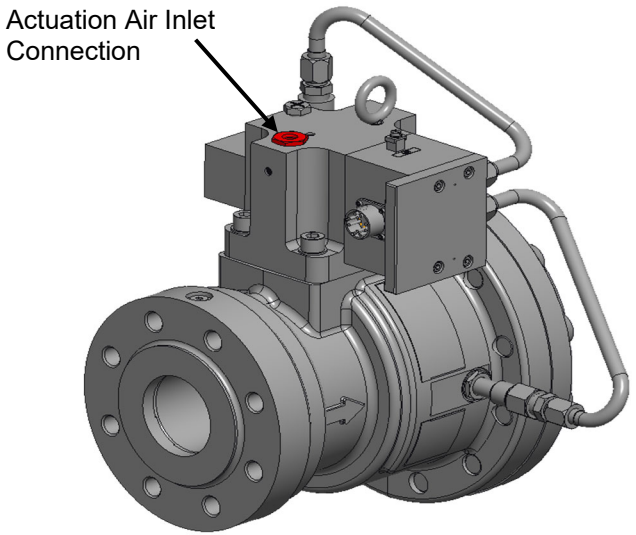


Figure 5-5. GSOV80 Valve

6 REVISION HISTORY

REVISION DATE	REVISION LETTER	DESCRIPTION OF CHANGE	PAGE #
July 2021	50	Released for 24 VDC and 125 VDC versions of GSOV80.	ALL
July 2023	-	Added GSOV80 Flying Leads version.	ALL

PO Box 1519, Fort Collins CO 80522-1519, USA
1041 Woodward Way, Fort Collins CO 80524, USA
Phone +1 (970) 482-5811
Email and Website—www.woodward.com

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