SERVICE BULLETIN

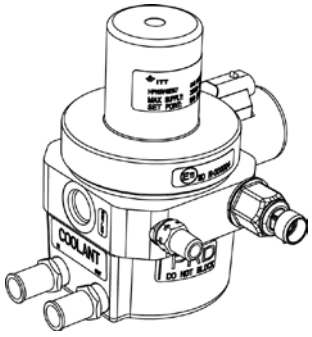
TECHNICAL SERVICE BULLETIN

Bulletin No.: **TSB-019**

Date: **March 9, 2016**

Subject: **ITT Regulator Replacement**

Models: **All Quantum Fuel Storage Modules with ITT Regulators**



Background
Some Quantum fuel storage modules (FSMs) are built and supplied with ITT pressure regulators as part of the fuel storage module.

Condition
In some cases, the High Pressure Regulator (HPR) may experience gas leakage which can be observed escaping through the vent hole on the regulator.

Cause
Contaminates within the fuel may attack the diaphragm in the regulator which may result in a fuel leak.

Correction
Replacement regulators have diaphragms with new material which is designed to be more resistant to oil and contaminates which may be present in the fuel.

Labor Time

Gen 1 BOC Units:	Labor Time – 1.1 Hours, Labor Operation BM1001
Gen 2 BOC Units:	Labor Time – 1.4 Hours, Labor Operation BM2001
Gen 1, 2 Frame Units:	Labor Time – 1.8 Hours, Labor Operation FM1001
Gen 3 Frame Units:	Labor Time – 1.3 Hours, Labor Operation FM3001

Contact Information:
E-Mail: QTService@qtww.com
Phone: 800.816.8691
Fax: 949.930.3401

TECHNICAL SERVICE BULLETIN

Parts Information

Application	Old Regulator #	New Regulator #
BOC Gen 1	HPNGV48357 (116607) HPNGV48362-2 (117100) HPNGV48362-4 (117216)	HPNGV48362-5 (117649) New HPNGV48362-8 (117645) Reman
BOC Gen 2	HPNGV48362-1 (116533)	HPNGV48362-6 (117644) New HPNGV48362-9 (117650) Reman
Frame Gen 1, 2	HPNGV48357 (116607) HPNGV48362-2 (117100) HPNGV48362-4 (117216)	HPNGV48362-5 (117649) New HPNGV48362-8 (117645) Reman
Frame Gen 3	HPNGV48362-3 (115917)	HPNGV48362-7 (117643) New HPNGV48362-8 (117645) Reman

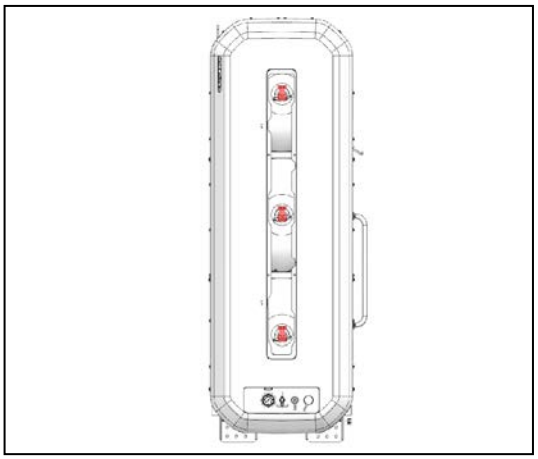
TECHNICAL SERVICE BULLETIN

Removal Procedure

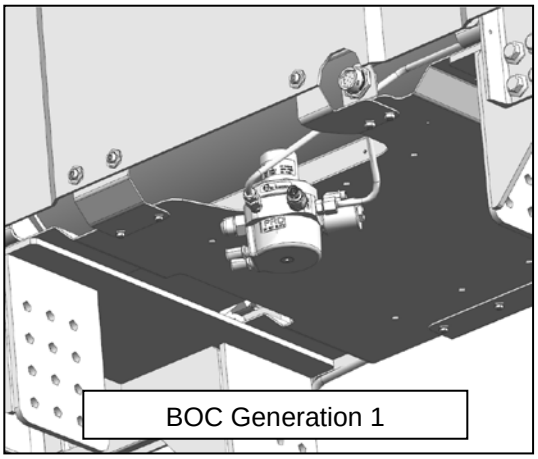
⚠WARNING

CNG is extremely flammable. If something ignites it, you could be severely burned.
Keep sparks, flames and ignition sources a minimum of 5 meters from CNG.
Ensure work area is well ventilated.
Always wear proper eye and hearing protection when working with pressurized gas.
Use explosion proof drop lights when working on gaseous fueled systems.
Failure to follow these basic safety guidelines could result in death or serious injury.

1. Close the fuel cylinder valves on all fuel storage modules (FSMs).



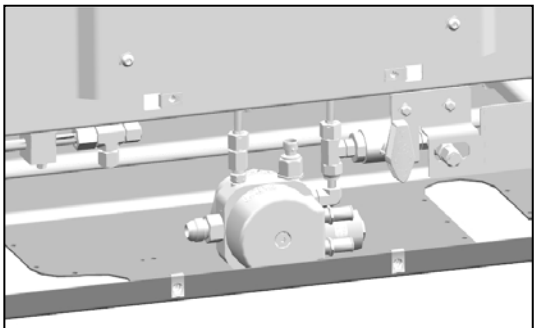
2. Remove any covers, as needed, to access the HPR assembly in the fuel storage module:
   a. BOC Gen 1 – the HPR is accessible from the bottom of the unit.



BOC Generation 1

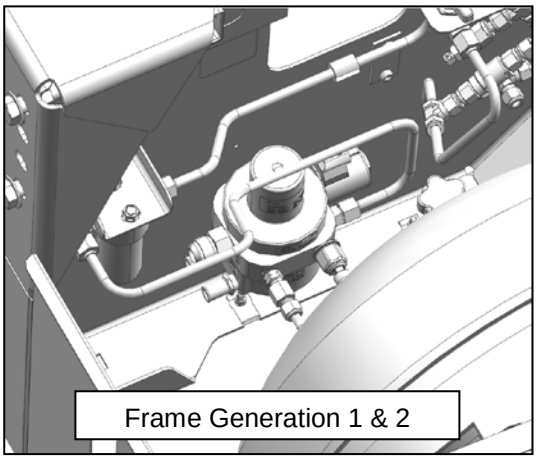
TECHNICAL SERVICE BULLETIN

b. BOC Gen 2 – the rear lower service panel must be removed for access.



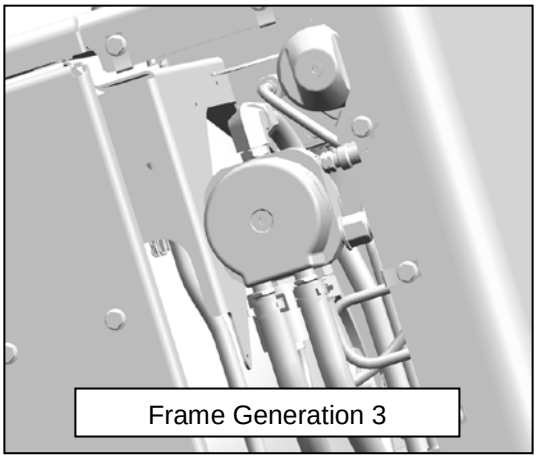
BOC Generation 2

c. Frame Mount Gen 1 & 2 – the top cover must be removed for access.



Frame Generation 1 & 2

d. Frame Mount Gen 3 – remove the lower service access panel.



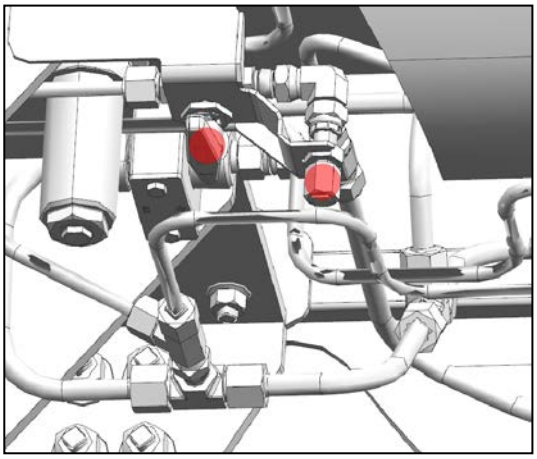
Frame Generation 3

TECHNICAL SERVICE BULLETIN

⚠CAUTION

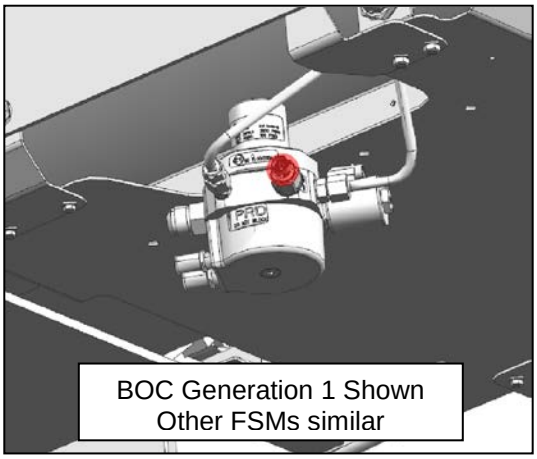
Vent the fuel system pressure to atmospheric levels before servicing. Failure to relieve system pressure may result in serious personal injury and / or system damage.

3. Vent the fuel system. Refer to the System Venting procedure in the maintenance manual for this module.



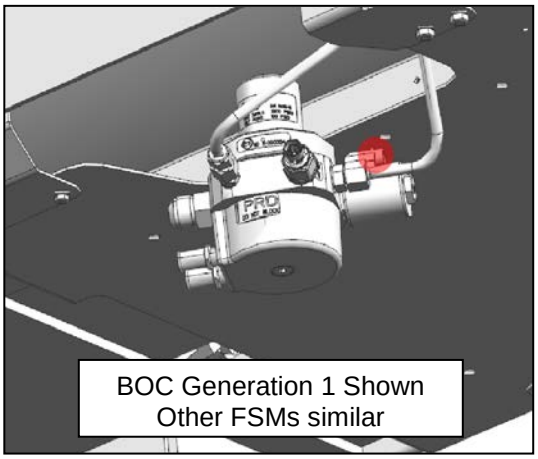
4. Purge the fuel system. Refer to the Fuel System Purge procedure in the maintenance manual for this module.

5. Disconnect the electrical connector from the pressure sensor.



BOC Generation 1 Shown
Other FSMs similar

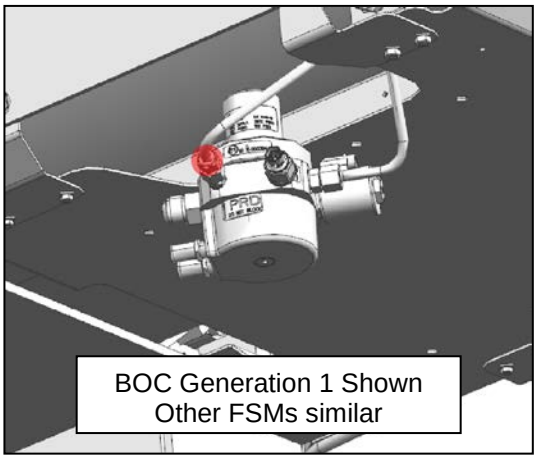
6. Disconnect the electrical connector from the shutoff valve.



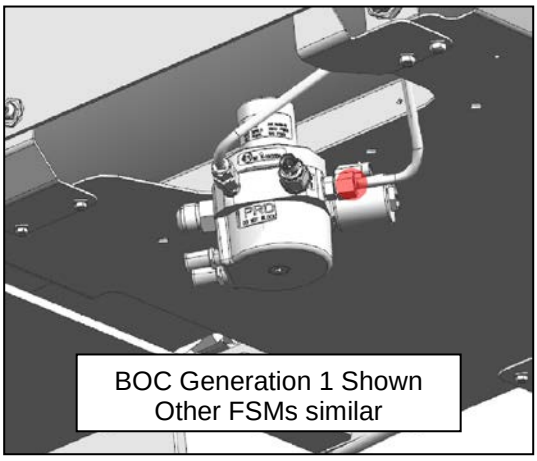
BOC Generation 1 Shown
Other FSMs similar

TECHNICAL SERVICE BULLETIN

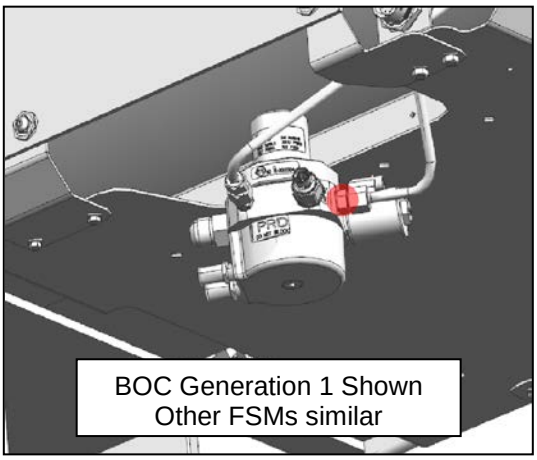
7. Using a back-up wrench, disconnect the PRD vent line from the fitting on the regulator.



8. Using a back-up wrench, disconnect the high pressure inlet line from the fitting on the regulator.

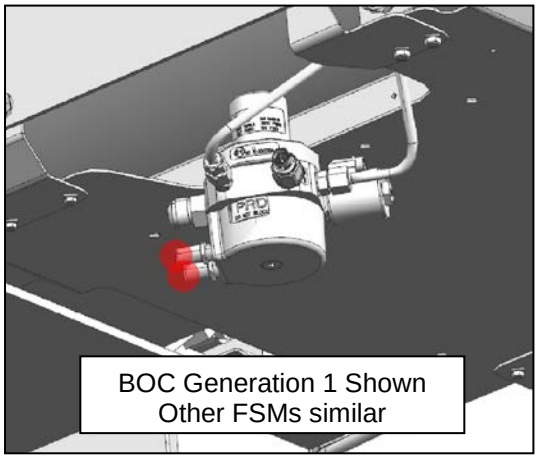


9. **BOC Gen 2 – Go to next step.**
Remove and retain the high pressure inlet fitting. Remove and discard the O-Rings.

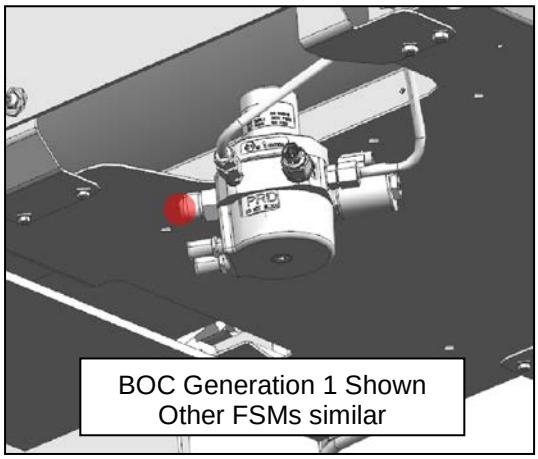


TECHNICAL SERVICE BULLETIN

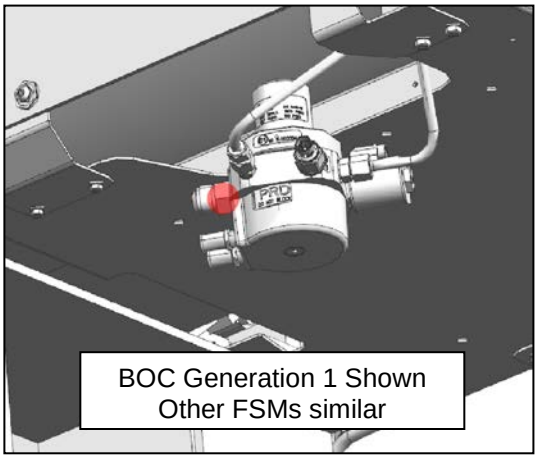
10. Using hose clamp pliers, pinch both coolant lines. Disconnect both coolant lines from the regulator.



11. Using a back-up wrench, disconnect the low pressure outlet line from the fitting on the regulator.

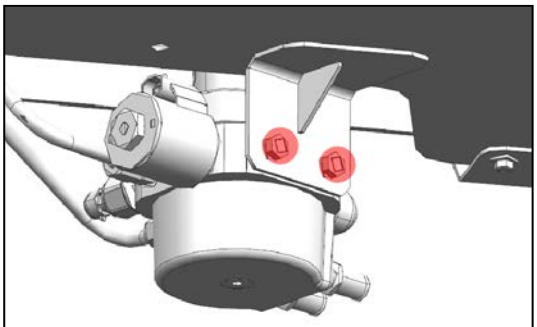


12. Remove and retain the low pressure outlet fitting. Remove and discard the O-Ring.



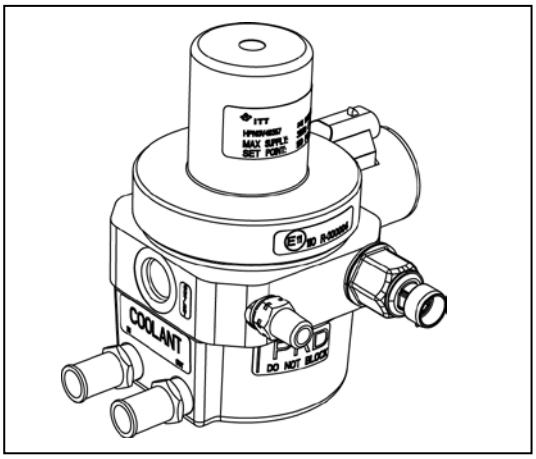
TECHNICAL SERVICE BULLETIN

13. Remove and retain two regulator mount bolts.

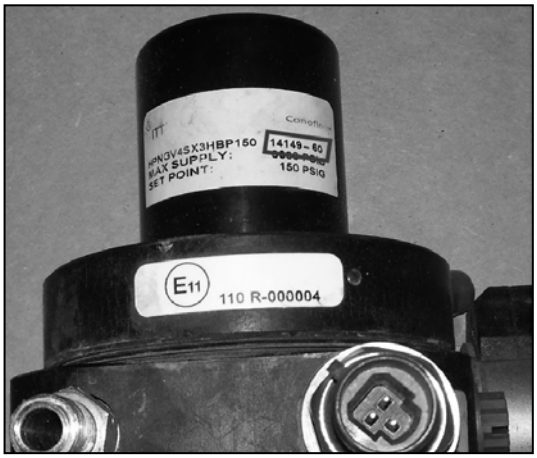


BOC Generation 1 Shown
Other FSMs similar

14. Remove the regulator.



15. Record the serial number of the removed unit and the new unit on the invoice.



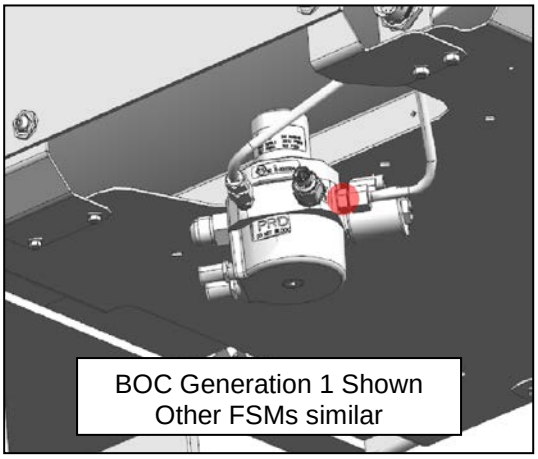
TECHNICAL SERVICE BULLETIN

Installation Procedure

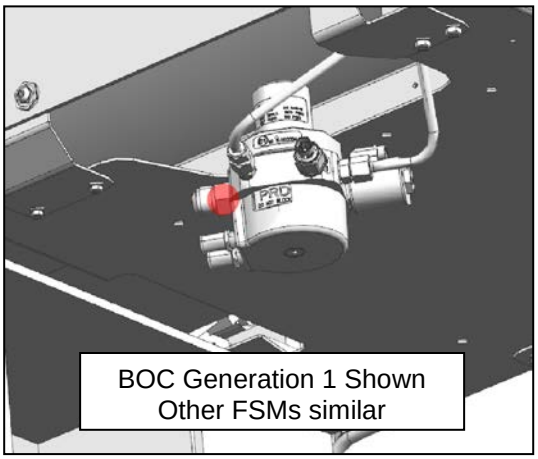
⚠ WARNING

CNG is extremely flammable. If something ignites it, you could be severely burned.
Keep all sparks, flames, and ignition sources a minimum of 5 meters from CNG.
Ensure work area is well ventilated.
Always wear proper eye and hearing protection when working with pressurized gas.
Use explosion proof drop lights when working on gaseous fueled systems.
Failure to follow these basic safety guidelines could result in death or serious injury.

1. **BOC Gen 2 – Go to next step.**
   Apply lubricant to the new O-Ring and install the O-Ring to the SAE side of the high pressure inlet fitting. Install the high pressure inlet fitting onto the replacement regulator and tighten to 22 lb-ft (30 N.m).

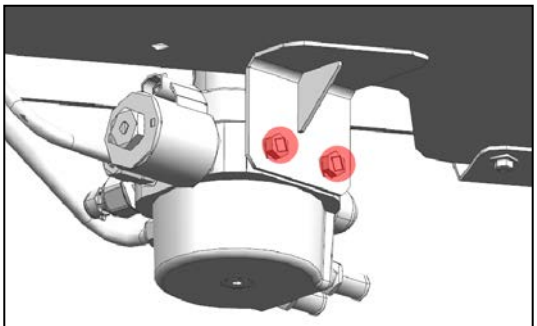

BOC Generation 1 Shown
Other FSMs similar

2. Apply lubricant to the new O-Ring and install the O-Ring to the SAE side of the low pressure outlet fitting. Install the low pressure outlet fitting onto the replacement regulator and tighten to 40 lb-ft (55 N.m).


BOC Generation 1 Shown
Other FSMs similar

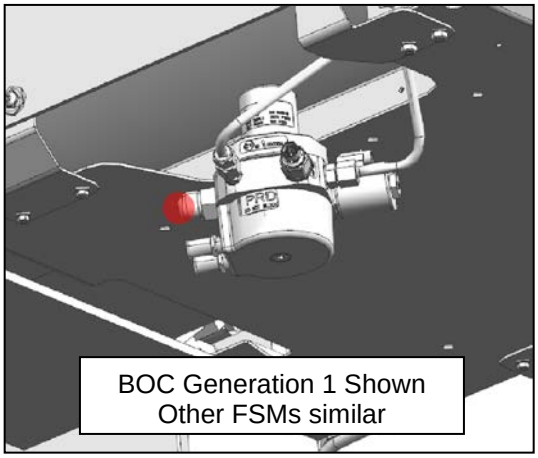
TECHNICAL SERVICE BULLETIN

3. Loose fit the regulator onto the fuel storage module (FSM).



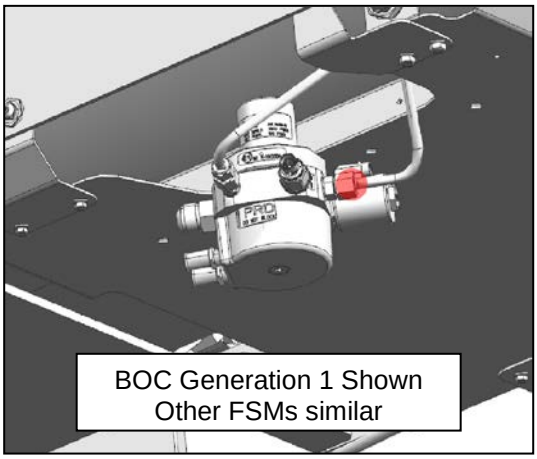
BOC Generation 1 Shown
Other FSMs similar

4. Loose fit the low pressure outlet line onto the low pressure outlet fitting on the regulator.



BOC Generation 1 Shown
Other FSMs similar

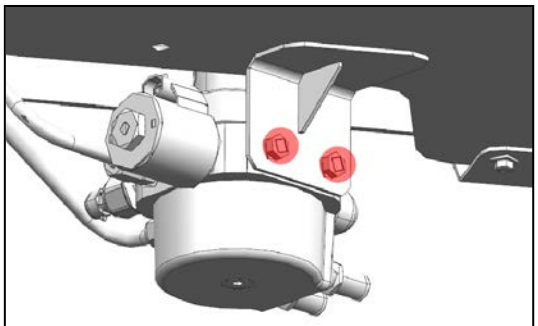
5. Apply lubricant to the new O-Ring and install the O-Ring to the ORFS side of the high pressure inlet fitting. Loose fit the high pressure inlet line onto the high pressure inlet line fitting on the regulator and tighten to finger tight.



BOC Generation 1 Shown
Other FSMs similar

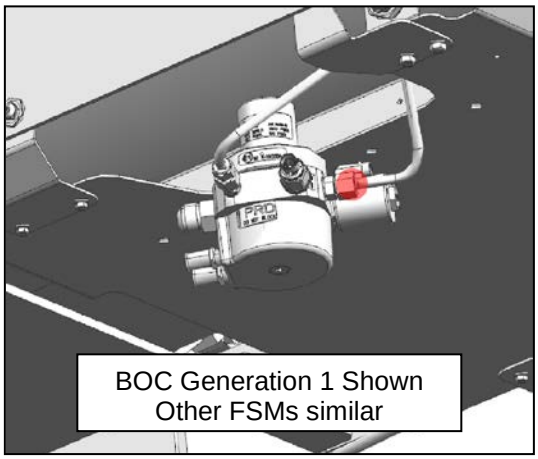
TECHNICAL SERVICE BULLETIN

6. Tighten the regulator mounting bolts to 14 lb-ft (19 N.m).



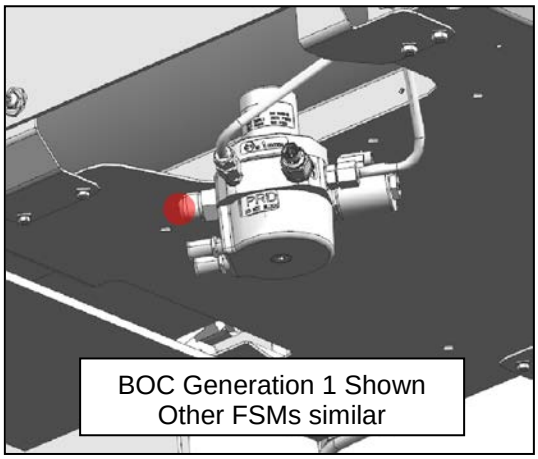
BOC Generation 1 Shown
Other FSMs similar

7. Using a back-up wrench, tighten the high pressure inlet line to 30 lb-ft (40 N.m).



BOC Generation 1 Shown
Other FSMs similar

8. Using a back-up wrench, tighten the low pressure outlet line to 89 lb-ft (120 N.m).

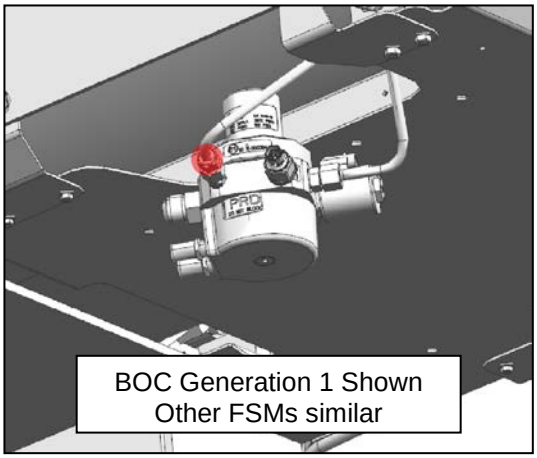


BOC Generation 1 Shown
Other FSMs similar

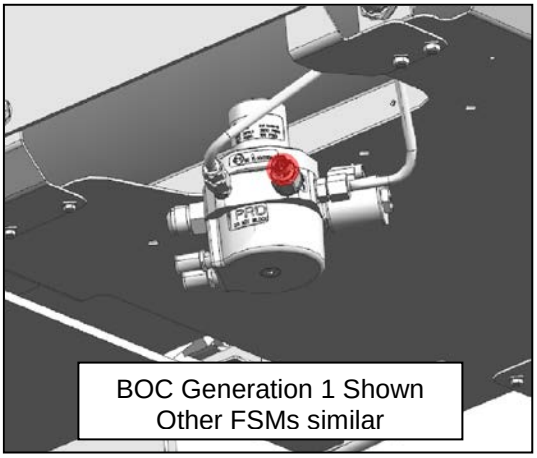
TECHNICAL SERVICE BULLETIN

9. Connect the PRD vent line fitting onto the PRD vent line fitting on the regulator and tighten to 1/4 to 1 turn from finger tight (TFFT).

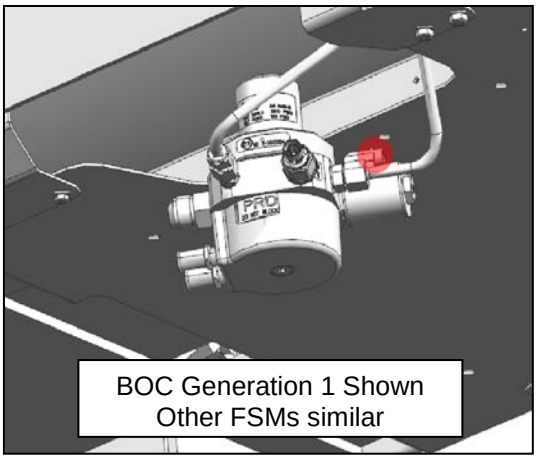
   If the PRD vent line fitting is equipped with an O-Ring, remove and discard the O-Ring. Apply lubricant to the new O-Ring and install the O-Ring to the ORFS side of the PRD vent line fitting.



10. Connect the pressure sensor electrical connector.

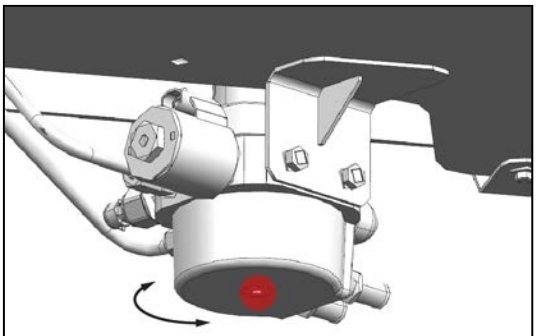


11. Connect the shutoff valve electrical connector.



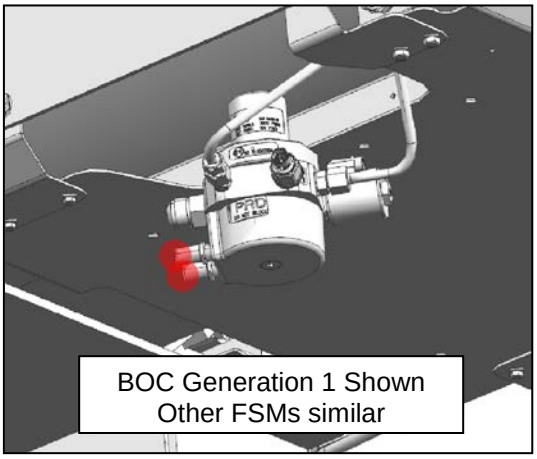
TECHNICAL SERVICE BULLETIN

12. If required, loosen the coolant bowl bolt. Rotate the coolant bowl as necessary. Then tighten to 120 lb-in (14 N.m).



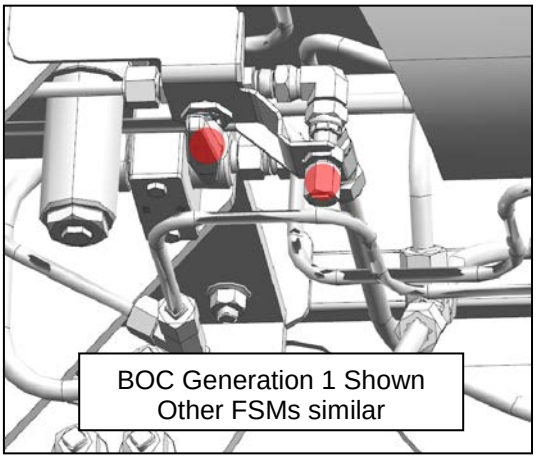
BOC Generation 1 Shown
Other FSMs similar

13. Connect both coolant lines onto the regulator and tighten to 18 lb-in (2 N.m). Remove hose clamp pliers from the hoses.



BOC Generation 1 Shown
Other FSMs similar

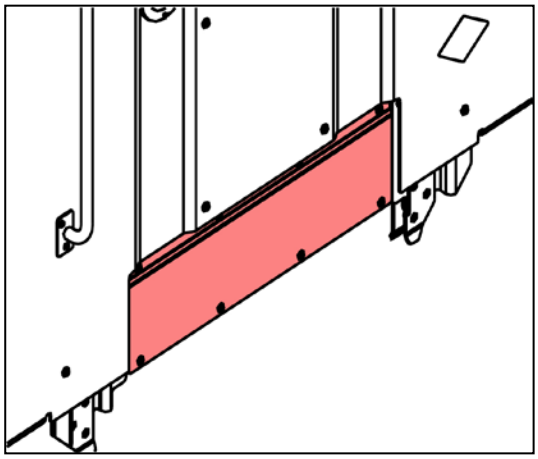
14. Close the system vent valve.
15. Install the vent valve cap (if applicable) and tighten to 22 lb-ft (30 N.m).
16. Open one of the cylinder valve(s).
17. Start the engine, then turn OFF.
18. Check all disturbed fittings for leaks.
19. Open remaining cylinder valves.



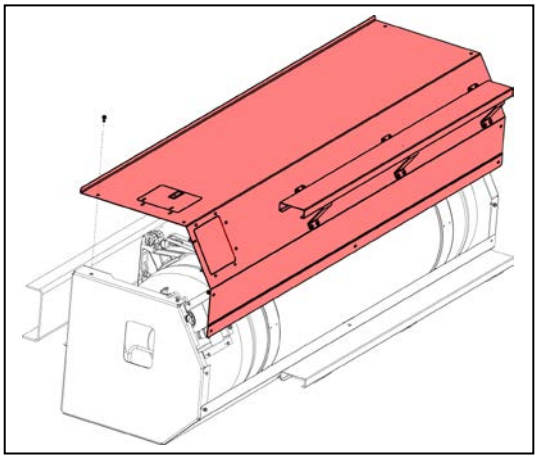
BOC Generation 1 Shown
Other FSMs similar

TECHNICAL SERVICE BULLETIN

20. Reinstall previously removed covers.
    HPR assembly in the fuel storage module:
    a. BOC Generation 1 – The HPR is accessible from the bottom of the unit. No covers to reinstall.
    b. BOC Generation 2 – Install the M8 bolts through the holes in the access panel. Tighten to 14 lb ft. (19 N.m).



    c. Frame Generation 1 & 2 – Place the fuel storage module upper cover in position and secure the cover bolts. Tighten to 25 lb ft. (34 N.m).



    d. Frame Generation 3 – Place the access panel in position and secure the bolts. Tighten to 14 lb ft. (19 N.m).