



INSTALLATION INSTRUCTIONS

DIRECT MOUNT REGULATOR (DMR)

Document# 19-0108

Support: info@radiumauto.com

- 1x DMR Assembly:
 - Billet Aluminum Body
 - Billet Aluminum Cap
 - Orifice
 - Spring, Grounded
 - Spring Hat
 - Diaphragm
 - Vacuum Barb
 - Set Screw, Stainless
 - Jam Nut, Stainless
 - 5 Cap Bolts, Stainless
- 1x Fitting, 6AN ORB Plug
- 1x Fitting, 6AN Male
- 1x Interchangeable Orifices
- 1x Retaining Tab, Stainless
- 2x Bolt, Stainless
- 1x Adapter (varies with kit)



WARNING! Exercise extreme **CAUTION** when working with fuel systems. Do not smoke or expose the working area to any spark or flame. Work in a well-ventilated area. Clean up all spilled fuel immediately and dispose cleaning materials in a sealed metal trash container. Relieve fuel pressure prior to working on the fuel system. **To prevent failure, all O-ring fittings MUST be lubricated prior to assembly.**

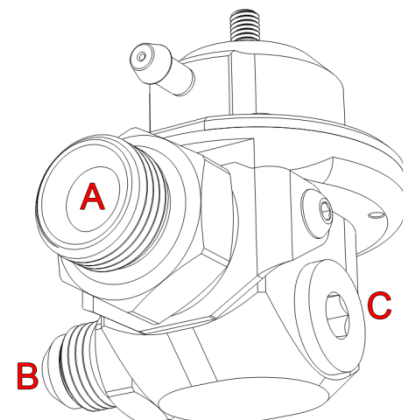
The DMR is a high flowing Radium Engineering fuel pressure regulator that mounts directly to a fuel rail. The fuel rail adapter features a unique O-ring design that permits the entire unit to swivel when installed (Port A). For ideal hose routing, either of the two opposing 6AN ORB (9/16"-18 threaded) female ports (B and C) can be used for the fuel return connection. The unused return port should be plugged using the included fitting.

FITTINGS AND PORTS

- A** Pressure regulated inlet port from fuel rail, via adapter.
- B** Return outlet port, 6AN ORB (9/16"-18). Can be swapped with C.
- C** Return outlet port, 6AN ORB (9/16"-18). Can be swapped with B.

!!DO NOT INSTALL A PRESSURE GAUGE INTO PORTS B or C!!

These ports are for fuel return back to the fuel tank and not for pressure reading.



INSTALLATION

The DMR should be mounted on the fuel rail outlet. The DMR inlet adapter fitting must match the fuel rail outlet port. The adapter by itself can be installed to the fuel rail first, or the complete assembly can be installed at once.

If installing into an ORB (O-ring boss), make sure there is chamfer on the port for properly seating the O-ring. When installing an ORB adapter, first lubricate the O-ring and then tighten it into port.

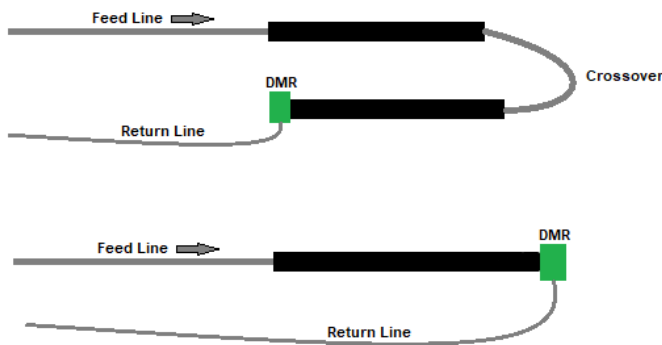
With the adapter installed in the fuel rail and the O-ring lubricated on the adapter, push the DMR onto the adapter until fully seated. Slide the metal retaining bracket into place (reference diagram on previous page). Next, line up the bracket to the 2 mounting holes. Apply a medium strength thread-locker to the 2 included stainless steel bolts. Secure using a 2.5mm Allen wrench.



NOTE: Once installed, the DMR can be rotated in any direction including upside down, if required.

PLUMBING

DO NOT plumb the fuel pump feed line into one of the DMR return ports (B or C). The return line back to the fuel tank (or surge tank) can attach to either port B or C. Plug whichever port is not used. Do not install a pressure gauge into ports B or C. See below for examples of fuel line routing on in-line (single fuel rail) or V/H engines (dual fuel rails):



"V" or "H" Engine Fuel Line Routing

In-line Engine Fuel Line Routing

VACUUM REFERENCE

The 3/16" (5mm) vacuum barb on the regulator is used if a 1:1 vacuum reference is required. This maintains a constant ratio between fuel pressure and intake manifold pressure for consistent fuel delivery. If the OEM pressure regulator used a vacuum hose, route this to the barb on the DMR (5/32" ID vacuum hose is recommended). NOTE: the billet cap can be clocked to point the barb fitting in 5 different directions. See the servicing information below for more details.

INTERCHANGEABLE ORIFICE

The DMR is equipped with an interchangeable orifice inside the regulator. This part can be easily swapped out with a different size. These orifices have different inside flow diameters. This is required in order to match the pump(s) flow rate, fuel hose restrictions, and targeted base static fuel pressure. The DMR comes preassembled with the "silver" orifice, which is a good match for the vast majority of single and dual pump systems. However, several multiple high flow pumps are used in a low static pressure system, the "gold" orifice can be easily swapped in using common tools. See the servicing information below for more details.

Orifice Color	Manufacturer Rated Flow @ 43.5 psi
Silver Factory Installed	Up to 900 LPH total fuel pump flow
Gold	Up to 1500 LPH total fuel pump flow



**These recommendations are only general suggestions to get started. Backpressure created by return line system, operating voltage and line pressure drop will have an influence on the final static pressure and orifice selection.*

PRESSURE SENSOR/GAUGE

The DMR is NOT equipped with a port for pressure reading. Do not connect a sensor or gauge to ports B or C. If a pressure sensor or gauge is needed to monitor system pressure, it must be installed elsewhere in the system such as on the fuel rail or the feed line leading to the fuel rail. Radium offers a variety of adapter fittings to accomplish this.

START UP

NOTE: The DMR is not pre-set to any particular pressure setting out of the box.

- Reconnect the battery.
- Turn the ignition to the ON position to allow the fuel pump to prime the system (do not start the engine).
- Cycle the ignition power a few times and check for fuel leaks.
- If there are any leaks, they must be corrected before proceeding.
- Start the engine and recheck for leaks.
- Use a pressure gauge or sensor to adjust the fuel pressure according to the procedure below.

FUEL PRESSURE ADJUSTMENT

The DMR can be fine-tuned for the specific application using a fuel pressure sensor or gauge (mounted elsewhere in system). Determine what the target static fuel pressure setting should be before beginning this procedure. This target setting can be different for many vehicles. Consult with the EFI tuner, or match factory pressure setting specified by the manufacturer.

- To set static fuel pressure, disconnect the vacuum line from the DMR and temporarily plug the vacuum line to prevent a leak. During this test, leave the DMR barb open to atmosphere to allow venting.
- Activate the fuel pump by starting the engine or manually powering the pump.
- Loosen the jam nut on the top of the DMR using a 3/8" wrench.
- Using a 3/32" Allen wrench
 - a) Tighten the set screw (clockwise rotation) to increase fuel pressure.
 - b) Loosen the set screw (counter-clockwise rotation) to decrease fuel pressure.
- Once the fuel pressure is set at the target, tighten the jam nut.
- Turn OFF the engine and secure the vacuum hose on the DMR.

SERVICING

- Relieve fuel pressure.
- Use a 5/64" Allen wrench to gradually remove the 5 screws using an alternating cross-pattern sequence.
- Inspect the diaphragm for excessive wear and possible leaking.
- For replacement parts, please contact Radium Engineering.
- To change the orifice, use a 7/16" socket wrench.
- Reference diagram for reassembly. The diaphragm and seating surfaces MUST be clean for proper sealing.
- BE CAREFUL TO NOT INSTALL THE SPRING HAT UPSIDE DOWN
- Clock the billet cap to point the vacuum barb as needed.

- Tighten the 5 screws gradually in an alternating cross-pattern sequence.

Troubleshooting Guide

Symptom	Possible Causes	Solution
Pressure too high, despite adjustment screw fully backed out.	1. Orifice too small. 2. Restriction in return line.	1. Install next largest orifice. 2. Run a temporary hose from the regulator return port to a bucket and re-check pressure.
Fuel leaking from vacuum nipple or adjustment screw.	Torn or unseated diaphragm allowing fuel into vacuum chamber of regulator.	Remove regulator top cap and inspect diaphragm. If diaphragm is damaged or torn, contact Radium for a replacement. If diaphragm is unseated, contact Radium tech support for resolution.
Unstable pressure adjustment over 60psi.	Internal spring fully compressing.	Contact Radium for an updated replacement spring.
Fluttering noise from the regulator or fuel lines.	Orifice is too big for pump flow.	Install a smaller orifice.
Fuel leaking from between the top cap and regulator body.	Diaphragm has become unseated.	Contact Radium tech support for resolution.
Pressure spikes during on/off throttle driving.	Orifice may be too small.	Install next largest orifice.