INSTALLATION INSTRUCTIONS

FUEL PULSE DAMPER (FPD-R, FPD-XR)

IN-LINE AND DIRECT MOUNT CONFIGURATIONS

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CAUTION

This product is to be installed by persons with knowledge in the repair and modifcation of vehicle fuel systems and general vehicle modifications. Only a qualified technician who is aware of applicable safety procedures should peform the installation of this product.

Gasoline and other fuels are flammable and can be explosive.

Installation must be performed in a well ventilated location to minimize build up of fuel vapors. No sparks, open flames, smoking or other ignition sources are to be present. Draining and removal of all fuel from the fuel system is recommended. Proper eye and personal protection is required at all times during installation.

WARNING

The fuel system is under pressure! Do not loosen any connections until relieving the fuel system pressure. Consult a service manual for instructions on relieving fuel pressure safely. This product is designed for off-highway and racing use only. Fuel system component may not be legal for sale or use on emissions controlled motor vehicles. Consult local, state and federal laws.

Both Radium Engineering FPD-R (Fuel Pulse Damper-Range) and FPD-XR (Fuel Pulse Damper-Extra Range) are designed to attenuate harmonic fuel pulse resonance that occurs with fuel injection systems.

Fuel Pulse Damper Selection

(*Follow instructions below to determine the proper FPD for the application.)*

Determine Base Fuel Pressure: Measure and record fuel pressure when the fuel pump is running and NO vacuum line is connected to the fuel pressure regulator (FPR).

For **Constant Pressure** fuel systems (FPR is not vacuum referenced) and **Naturally Aspirated** applications, select the correct damper according to base pressure using the table at right.

MODEL	Fuel Pressure
FPD-R	40 to 70 PSI
FPD-XR	40 to 120 PSI

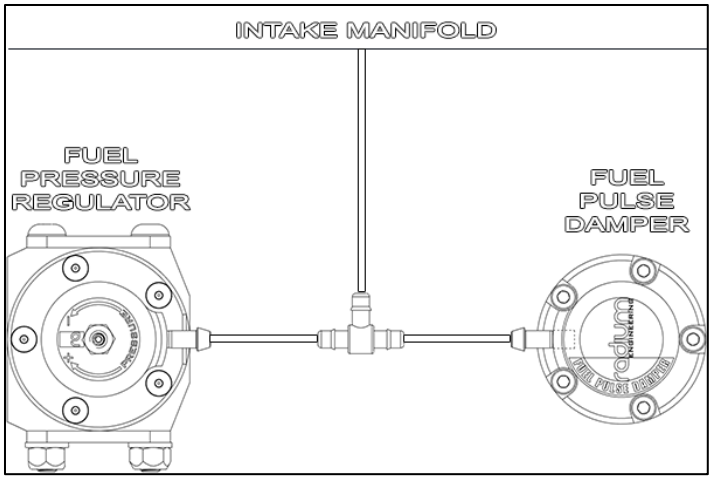
For **1:1 Rising Rate** fuel systems (FPR is vacuum referenced) and **Forced Induction** systems (turbocharged or supercharged), calculate combined maximum fuel pressure by adding the base fuel pressure to the maximum boost pressure. Select which damper to use based on the combined maximum fuel pressure and the table above.

Vacuum Port Connection

To determine if the vacuum port should be connected to the intake manifold vacuum, use the chart below. For instances where the vacuum port is not to be connected, run a vacuum hose from the vacuum port away from hot components such as the engine or exhaust system.

ENGINE TYPE	FUEL SYSTEM TYPE	
	Constant Pressure	1:1 Rising Rate
Naturally Aspirated	Do NOT use fuel pulse damper vacuum reference	Do NOT use fuel pulse damper vacuum reference
Forced Induction	Do NOT use fuel pulse damper vacuum reference	Vacuum reference if combined pressure exceeds FPD max pressure

If connecting the vacuum/boost reference line, it is recommended to use the same vacuum hose that is connected to the fuel pressure regulator, as shown in the diagram below.



Fuel Pulse Damper Plumbing

For optimal efficiency, all FPDs should be plumbed in the high-pressure fuel feed line as close to the fuel rail(s) as possible. Assuming they have the corresponding mating threads, direct mount FPDs should screw into the fuel rail(s).

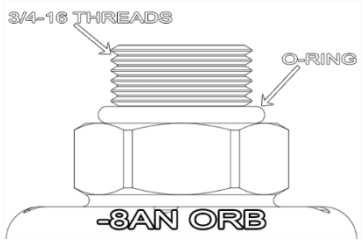
All FPDs can mount at any angle including upside down. Keep the FPD away from excessive temperature areas that could preheat the fuel or damage the internal components.

NOTE: The FPD top cap can be clocked to an alternative angle, but pay close attention to the diaphragm and make sure it is seated properly before reassembling. **Diaphragm damage from reassembly error voids the warranty.** Torque small screws to 40 to 45 in-lb in a gradual alternating pattern.

Installation, Direct Mount Dampers

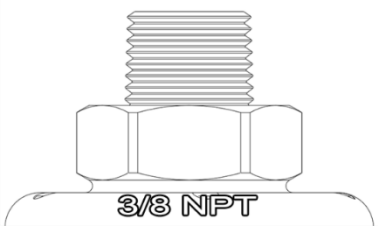
<u>P/N 20-0176 and 20-0177</u>

These direct mount fuel pulse dampers use standard 3/4-16 threads (-8AN ORB) and requires the included O-ring for sealing. The female mating port must be threaded with 3/4-16 female threads and feature a SAE J1926 chamfer for the O-ring to seat properly. **Lubricate the O-ring** with clean engine oil before installing. No thread sealant or PTFE is required.



<u>P/N 20-0178 and P/N 20-0179</u>

These direct mount fuel pulse dampers use tapered pipe threads. They require a 3/8” NPT female tapped mating hole. Threads should be tapped deep enough so at least 4 threads are engaged with the FPD. O-rings are not required because the seal is obtained from the threads meshing together. When installing, it is required to apply PTFE (Teflon) paste to the threads for proper lubrication and sealing. Screw the FPD finger tight and then tighten an additional 1.5 to 3 turns using a wrench.



Installation, In-Line Dampers

P/N 20-0199 and P/N 20-0200

The inline fuel pulse dampers have female ports that are threaded for -8AN ORB (3/4-16). Before installing the 2 provided adapter fittings, **lubricate both O-rings with clean engine oil.** The small port in the center can be used for a gauge or pressure sensor, or it can be plugged with the included 1/8" NPT hex plug. PTFE (Teflon) paste must be applied to NPT threads.

For mounting, make two holes on the mating face that are 1" (25.4mm) apart using a 17/64" (6.75mm) drill. Insert the included M6 bolts and tighten the M6 nuts using a 10mm socket wrench and 5mm Allen wrench.

The inline FPD kits do not include fuel hoses. Modification or replacement of the preexisting fuel hoses will be necessary. Re-route the primary fuel feed line to the inline FPD and use a second hose to route from the opposite FPD port to the inlet of the fuel rail(s). Note: The FPD is NOT flow direction specific.