



Toyota Land Cruiser 70 Series

Direction-Plus™ Fuel Manager Post-Filter & ProVent Ultimate Catch Can Installation Guide

This document is to be used as a guide for the installation of the Direction-Plus™ Land Cruiser 70 Series ProVent® 200 and Fuel Manager FM100 Post-filter to a 2007+ Toyota Land Cruiser 70 Series V8 Diesel. It is recommended that the installation of the product be carried out by a competent qualified mechanic.

Important Before Starting

- Ensure you have the correct tools to complete the fitment
- Read the instructions in full and familiarize yourself with the installation, before commencing any work

Maintenance / servicing

- It is recommended to drain the Post-Filter element every 5,000 – 10,000km
- Post-Filter element is to be replaced every 40,000km or as per your vehicles service interval
- It is recommended to drain the ProVent Ultimate Catch can every 5,000
- ProVent Ultimate Catch can element is to be replaced every 40,000km

Included in the kit



1x Mann + Hummel ProVent® 200	1x Mounting Bracket	1x 850mm of 16mm Hose
1x 750mm of 16mm Hose	1x 60mm of 16mm Hose	4x 16mm 90° Joiners
8x 16mm Hose Clamps	2x 25mm Hose Clamps	2x 16mm to 25mm Hose Coupler
8x Cable Ties	2x M8x25 Bolts	1x M8x16 Bolt
5x M8 Flat Washers	3x M8 Spring Washers	2x M8 Nuts
1000mm of 12mm Hose ProVent® Drain	1x Drain Tap assembly 1 x 12mm Hose Clamp	1x FM100 assembly
2x M10 Bolts	4x M10 Washers	2x M10 Nyloc Nuts
2x M6x16 Bolts	4x M6 Flat Washers	2x M6 Nyloc Nuts
2x NPT Adapter	1x Thread sealant	2x 12mm Straight Push Lock Hose Fitting
1x 3m Length of 12mm Fuel Hose	2x 1.5m Length of 35mm Heat Sleeve	2x 12mm Fuel Hose Clamps
2x NPT Plug		

**Kit contents are subject to change based on component availability and/or refinement*

Mounting Location



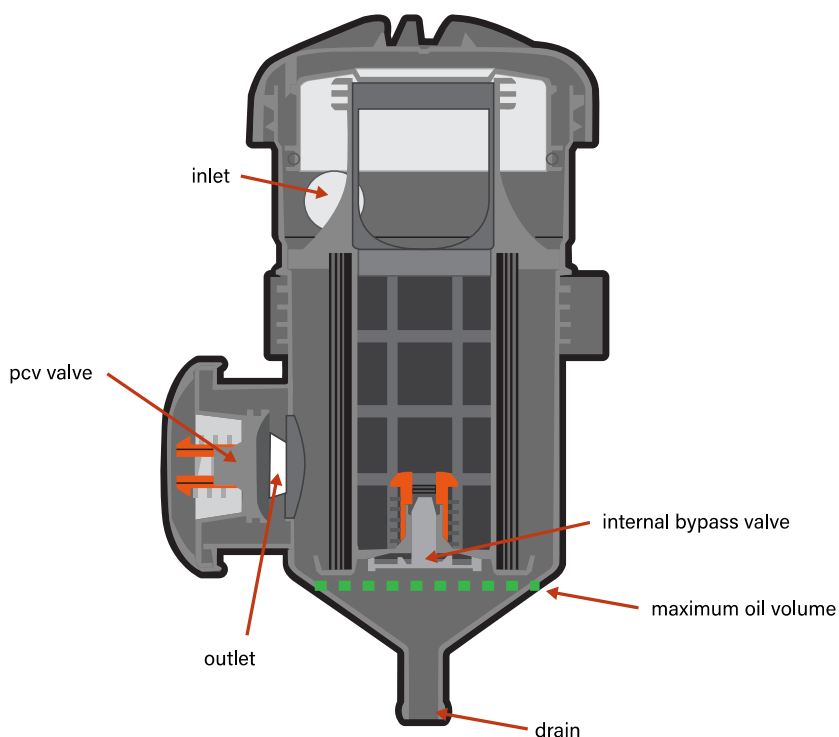
PROVENT ULTIMATE CATCH CAN

SERVICING / MAINTENANCE:

In addition to regular monitoring, the following maintenance is required:

- Drain every 5,000km or earlier.
- Replace element every 40,000km or when oil wetting appears around the catch can by-pass valve.

PROVENT ULTIMATE CATCH CAN (PV200) INTERNAL BYPASS VALVE SECTIONAL DIAGRAM



Due to the way the internally vented PV200 works, the PV200 must be drained regularly to ensure correct operation of the internal bypass valve. Failure to regularly draining/servicing the Catch Can may cause engine damage due to over pressurisation of the crankcase ventilation system.

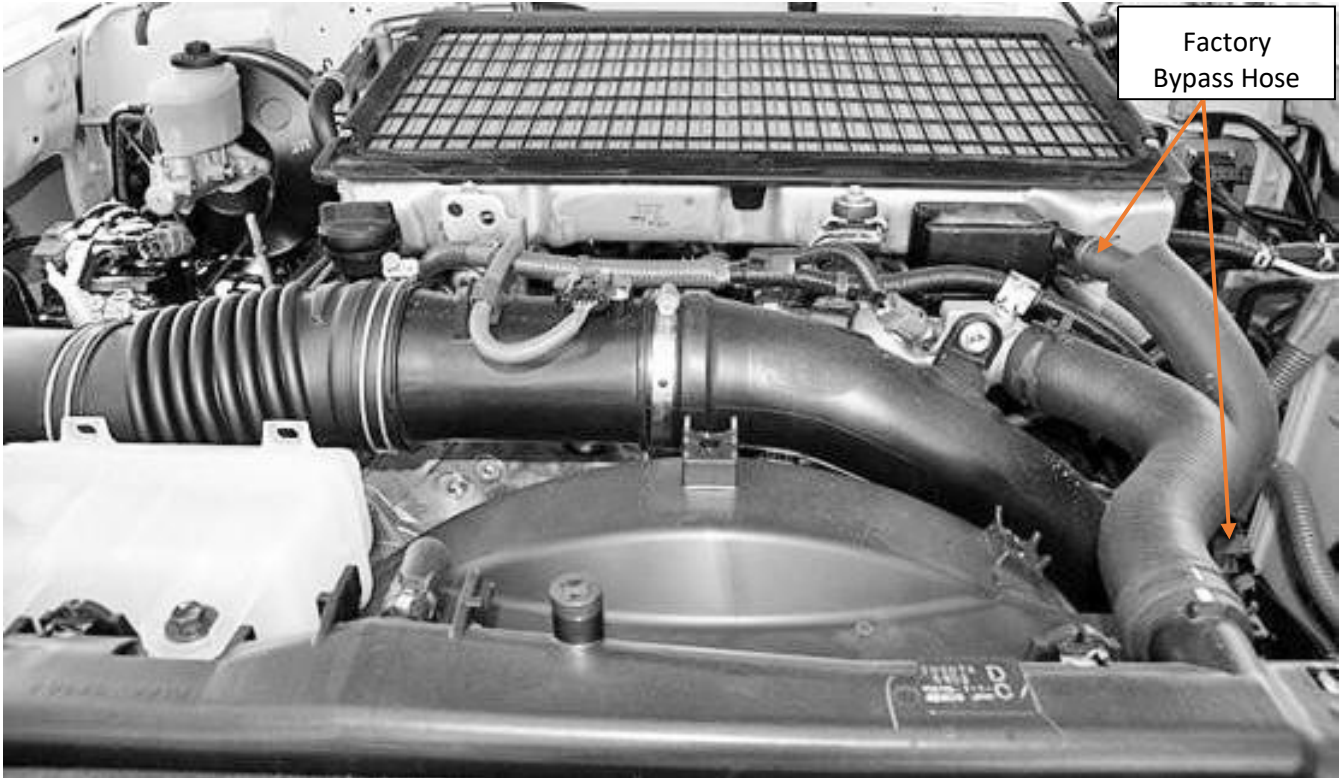
The ■ ■ ■ in the diagram indicates the maximum permissible oil level. For the PV200 internal bypass valve to correctly operate the internal oil volume **MUST NOT** exceed the level indicated by the ■ ■ ■ shown in the diagram.

If the internal oil volume is to exceed the level indicated by the ■ ■ ■ shown in the diagram, the internal bypass valve cannot operate as designed due to it being submerged. This condition is likely to cause over pressurisation of the crankcase ventilation system and damaging the engine.

WARNING: Colder climates can cause increased condensation inside the Catch Can. This will fill the reservoir quicker than oil and will need to be drained regularly. Failure to do so could & can damaged the Catch Can or vehicle.

Installation Guide – ProVent Ultimate Catch Can

1. Begin by locating the factory bypass hose which runs from the black box in the front of the intercooler on the passenger side of the vehicle to the intake pipe just under the top radiator hose in front of it, the hose is only about 200mm in length and shaped like an “L”. Once located, this hose needs to be removed. Retain the spring clamps for reuse.



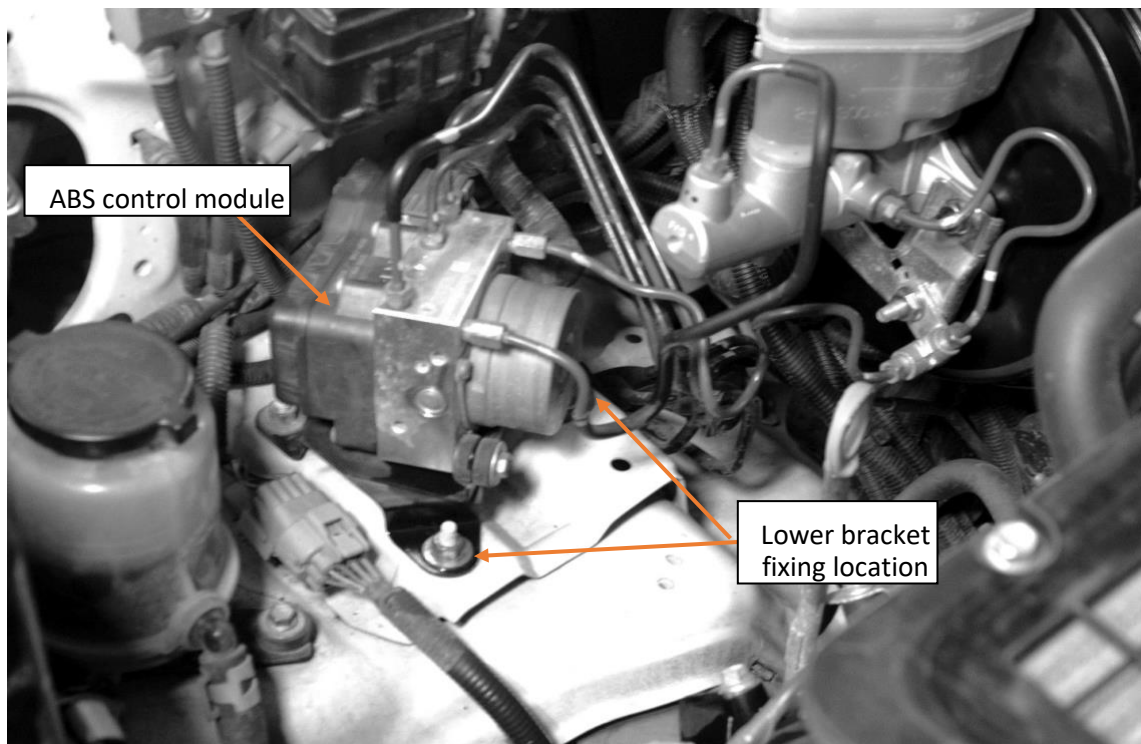
Land Cruiser 70 series engine bay

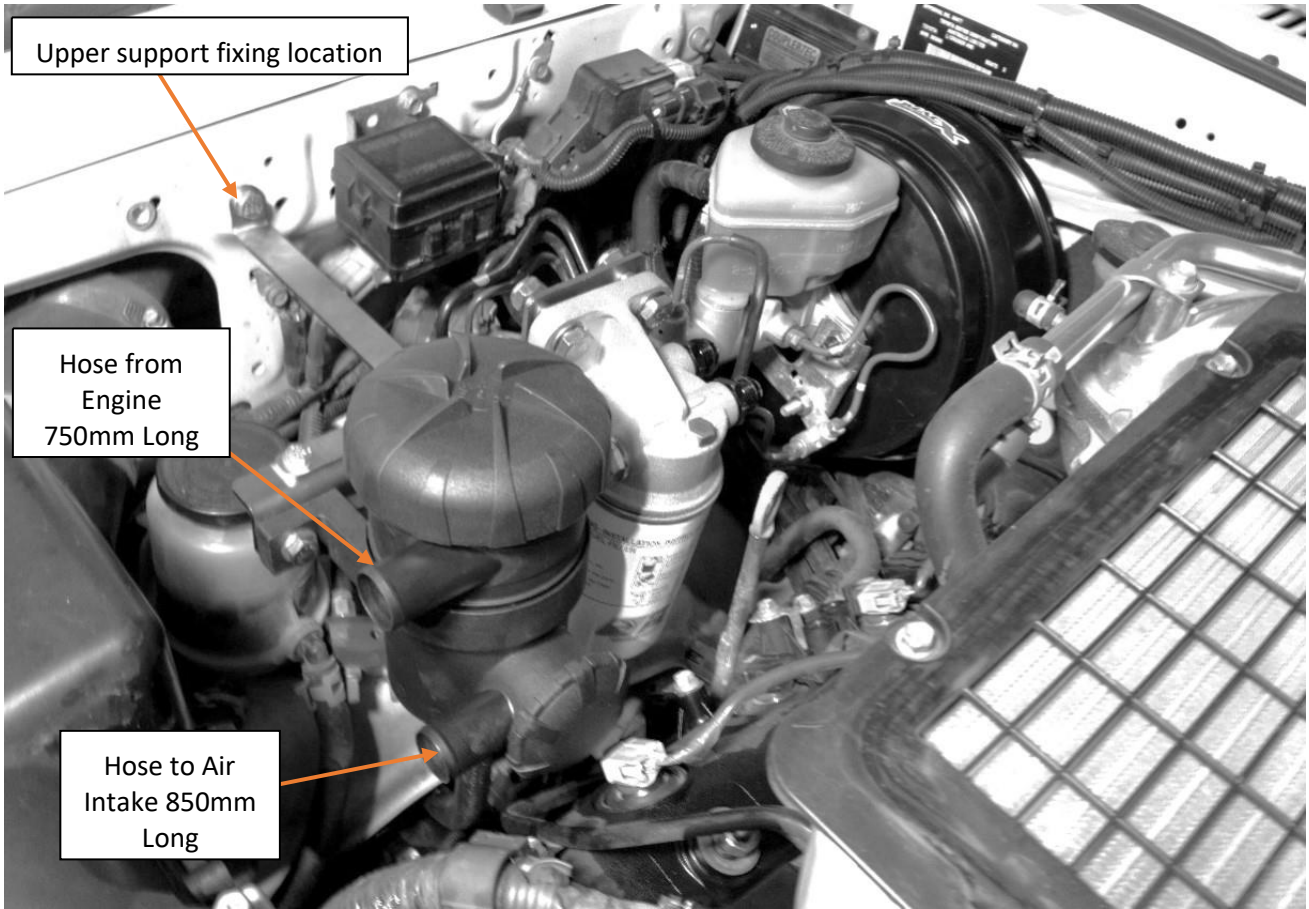
2. Connect each of the 60mm long 16mm hoses to the ports the factory bypass hose was just removed from. Use a light coat of rubber care or WD-40 to help get them on. Secure in place with the factory spring clamps.
3. Insert a 16mm 90° joiner fitting into each of the hoses, using a 16mm spring clamp to secure them in place.
4. Connect the 12mm Hose to the underside of the catch can and use a 12mm spring clamp to secure it in place.



Provent® 200 with 12mm hose connected and secured with 12mm spring clamp

5. On the ABS control unit, remove the nut closest to the engine and the nut closest to the rear of the vehicle. Install the bracket on top of the ABS control unit mounting bracket, loosely securing reusing the original nuts. Next, bolt the ProVent® 200 to the bracket using the supplied bolts and washers.
6. Using 1x M8x16 bolt and 2x M6x16 bolts and nuts, loosely install the upper reinforcing brace.
7. Adjust bracket as required and tighten all nuts and bolts securing the bracket





Pre-assembled ProVent® 200 with Land Cruiser 70 series dual bracket

8. Feed the 12mm Hose down under the vehicle to an out of the way location, making sure it is clear of any suspension, driveline and exhaust components, fit the Tap hose tail into the hose.
9. Install the ProVent® as pictured above



Hose tail and tap assembly inserted into 12mm hose, hose clamp not required

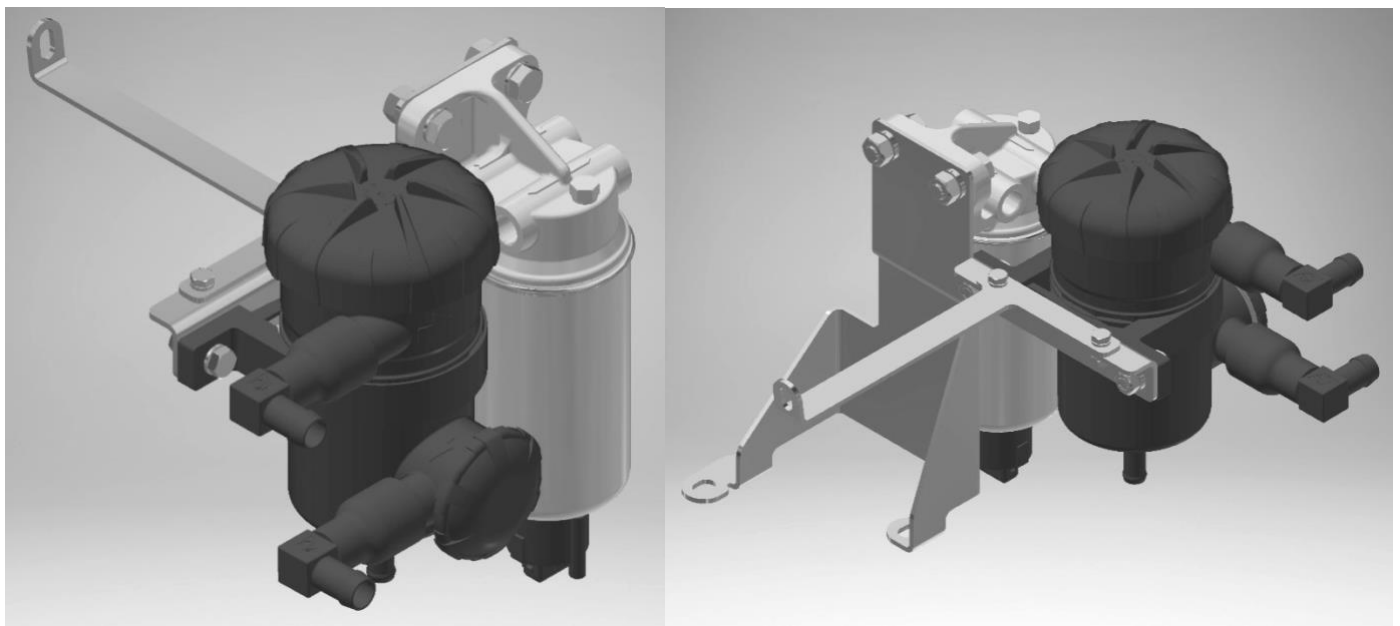
10. Use the supplied cable ties to secure the 12mm hose into the location required to prevent movement, just leave a slight amount of slack in the line where the body and chassis join to prevent stretching the hose.
11. Make sure the tap position is closed and avoid placing the tap in a location in which it will fill with dirt and mud.



Left image – Tap Open.

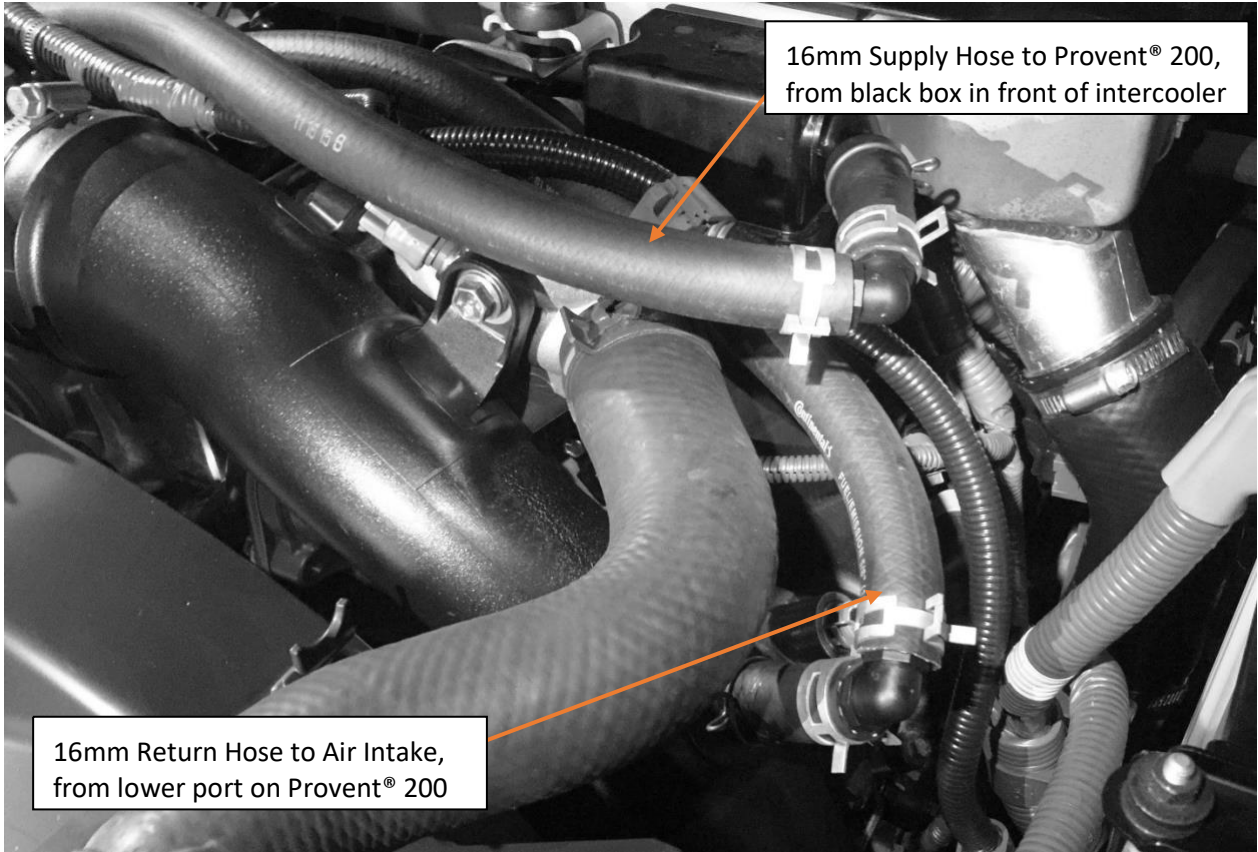


Right image – Tap Closed.



ProVent 200 Assembled onto LC70 Dual Bracket

12. Mount one end of the 850mm long 16mm hose to the lower 16mm 90° joiner fitting on the ProVent® 200. Use a 16mm spring clamp to secure it in place.
13. Mount the other end of the 850mm long 16mm hose to the 16mm 90° joiner fitting on the hose connected to the hose running to the black air intake pipe on the front passenger side, using a 16mm spring clamp to secure it in place.
14. Mount one end of the 750mm 16mm hose to the Upper 16mm 90° joiner fitting on the ProVent® 200. Use a 16mm spring clamp to secure it in place.
15. Mount the other end of the 750mm 16mm hose to the 16mm 90° joiner fitting on the hose connected to the hose running to the black box in front of the intercooler on the front passenger side, using a 16mm spring clamp to secure it in place.



Engine bay hose locations for Land Cruiser 70 series V8 diesel



ProVent 200

The housing can (prior to installation) be turned in the holder in 30° steps around the longitudinal axis.

This enables the position "Inlet and outlet fitting to flange" to be flexibly adjusted to the installation situation.

- Remove the retaining clip (1) upward from the groove and turn the holder into the desired position.
- Press the holder together somewhat in the desired position and engage the retaining clip in the groove again
- Mount the holder in the vertical position. Recommended tightening torque for M8 screws: 10 Nm.
- Ensure sufficient strength of the screw and nut material.
- Connect the hoses to the inlet, outlet and oil return fittings (make sure a sufficient length of hose is pushed on) and secure with hose clamps (see Chap.4.2 and 4.3).
- Connect the oil return hose (and non-return valve if necessary) to the oil sump.
- To ensure proper functioning, the ProVent should be protected against dirt (mount splash guards if necessary).

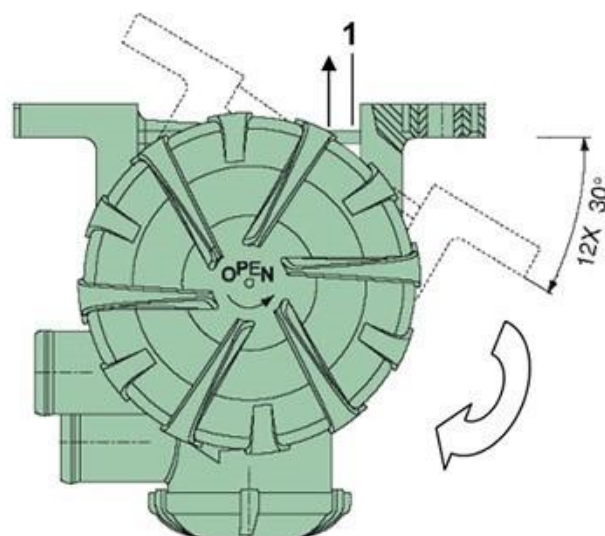


Fig. 5 Positions of outlet for ProVent 200

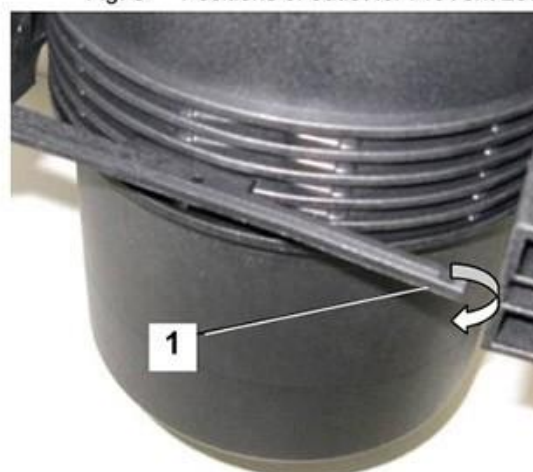
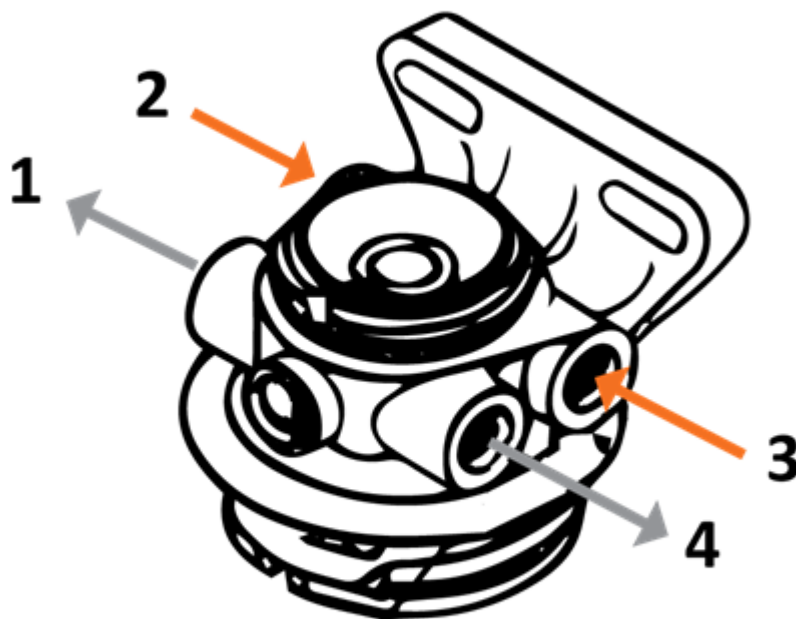


Fig. 6 Holder for ProVent 200

End of ProVent® Installation Guide

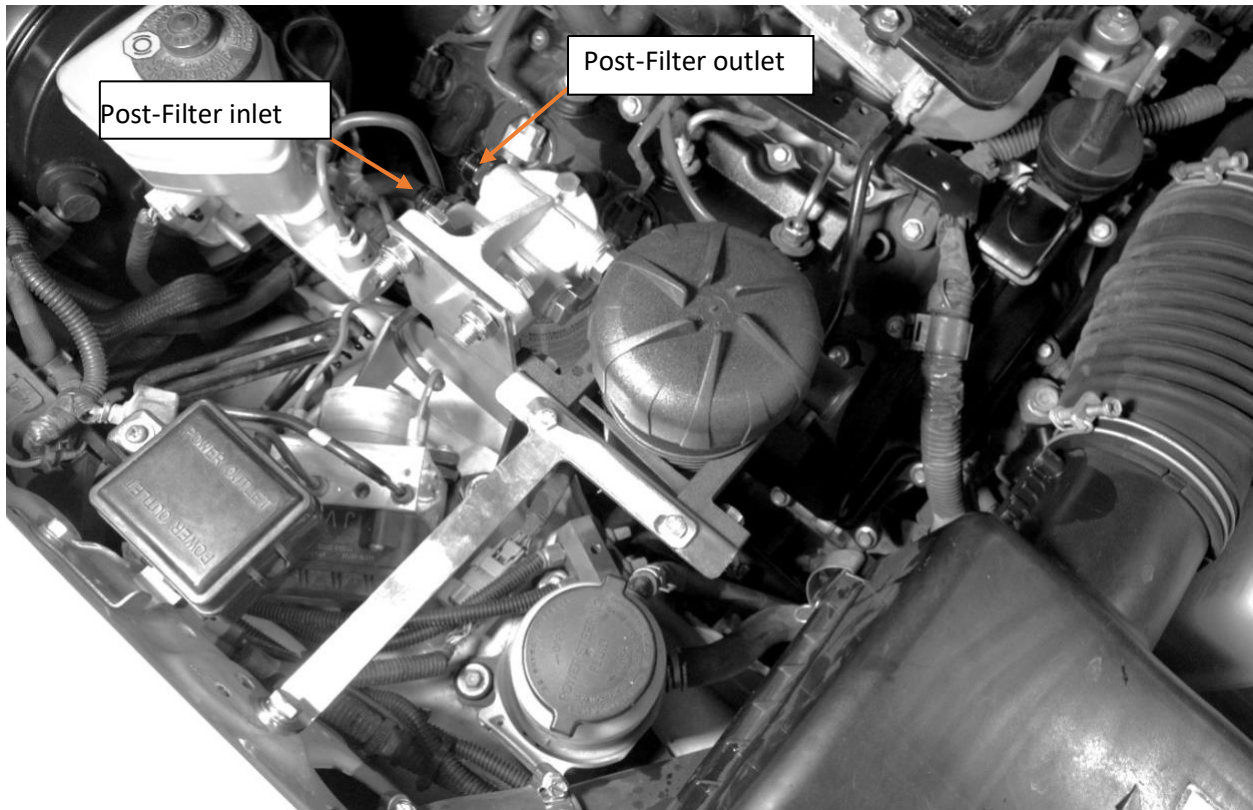
Go to next page for Fuel Manager Post-Filter installation Guide

Fuel Manager Post-Filter Normal Flow Header Connection



Ports 2 and 3 = INLET
Ports 1 and 4 = OUTLET

1. Using the supplied 10mm bolts, washers and nuts, mount the FM Post-filter assembly filter to rear mounting location of the bracket
2. Using a small amount of thread sealant Install the two NPT straight adapters to the filter head, so that when the filter is mounted on the bracket, they will both be facing toward the rear of the vehicle
3. Using a small amount of thread sealant install the two-blanking plug into the remaining ports



4. Lubricate the barbed end of one push-lock fitting and the inside portion of the hose to be fitted with a push-lock fitting with diesel fuel or WD40
5. Insert the barbed end of one push-lock fittings into the pre-lubricated end of the hose. Ensuring that the hose stops firmly against the inside of the bell cover.
6. Install a length of the supplied heat shield over the hose – trim to length if required
7. With the assembled hose, screw the push-lock fitting on to the inlet port of the Post-filter. Routing the hose along the firewall, Connect the other end of the same hose to the outlet of the factory fuel pump and secure using a supplied 12mm fuel hose clamp



8. Lubricate the barbed end of the remaining push-lock fitting and the inside portion of the remaining hose to be fitted with a push-lock fitting with diesel fuel or WD40
9. Insert the barbed end of the remaining push-lock fittings into the pre-lubricated end of the hose. Ensuring that the hose stops firmly against the inside of the bell cover
10. Install a length of the supplied heat shield over the hose – trim to length if required
11. With the now assembled hose, screw the push-lock fitting on to the outlet port of the Post-filter
12. Routing the hose, measuring the hose in place between the outlet port of Post-filter and the inlet of the common rail supply pump. Cut the hose to length
13. Connect the 12mm fuel hose to the inlet of the common rail supply pump and secure with a supplied 12mm fuel hose clamp
14. Using the supplied nylon cable ties, secure any loose hose from rubbing on any other components
15. Bleed the fuel system by pumping the hand primer on the factory filter until firm – **note it is easier to prime the system if the FM100 element is filled with clean diesel before using the hand primer.**
16. Start vehicle and run the vehicle, whilst checking all connections for leaks
17. Refer to supplementary instruction for water alarm connection

End of Installation Guide