

## STEP 1 PRE-FITMENT DIAGNOSIS

Figure 1.

### Possible causes:

01. Driving style (Constant short trips will cause damage)
02. Engine Oil (Ensure low ash is being used and dilution level is not excessive)
03. Additives (Ensure cleaning additives have not been used)
04. Tuning (Check the vehicle isn't chip tuned)
05. Adblue level is correct
06. Fault scan the vehicle and confirm the fault codes have not been triggered by a faulty sensor (O2, Pressure, temperature, etc.)
07. Check EGR valve is operating correctly
08. Check EGR pipes are not blocked
09. Pressure pipes condition (No damage)
10. Turbo operation (No oil leaks)
11. Fuel system pressure within specification
12. Operation of the injectors (No leaks)
13. Glow plugs working correctly
14. Air flow meter is functioning properly
15. Intake pipes condition (cracks, leaking)
16. DPF reset process followed as per manufactures recommendation.

\* Note on some models it is required to carry out a complete burn cycle right after fitting a new unit to reset the ECU.

If you do not read all the procedures or correctly identify why the DPF needs replacement the new DPF could block within the first 5 kms and it will not be able to regenerate.

Loss of engine power and/or MIL light on?

YES

NO

Connect a scan tool to the vehicle and investigate the cause before fitting new DPF.

The DPF may not need to be replaced. Further fault diagnosis needs to be investigated, see Figure 1.

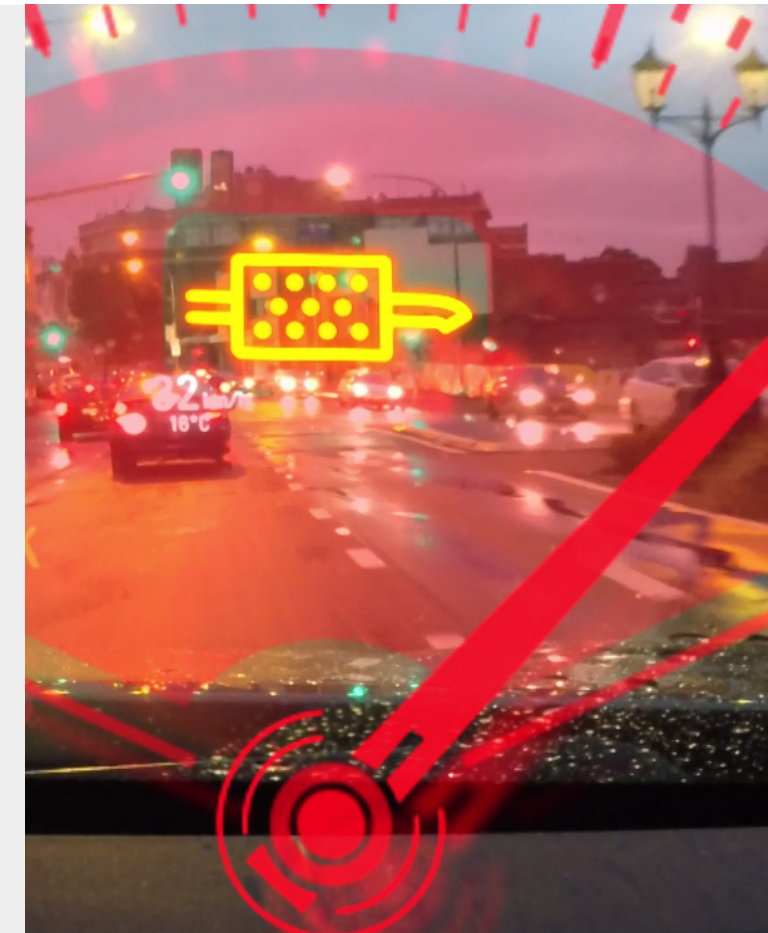
Check all faults and clear. See Figure 1.

Can you regenerate old DPF?

YES

NO

Then the old unit has reached capacity and a new Ryco DPF should be fitted. See step 2.



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## STEP 2 FITTING NEW UNIT

Fit New DPF

Connect scan tool reset ECU as per manufacturers procedure. Some vehicle models could require a force regeneration to be performed in order to reset the ECU.

Start the vehicle and allow the new DPF to warm up to working temperature and check for any leaks.

## RYCO DPF INSTRUCTION SHEET

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**READ BEFORE FITTING A NEW DPF**  
**A full fault diagnosis must be carried out by a fully trained technician with appropriate diagnostic equipment to establish if the DPF needs to be replaced. This is critical as any unrectified upstream faults will result in the DPF failing prematurely.**

**How do DPFs work?**

The DPF acts as a soot trap that collects particulates from the exhaust emissions. The exhaust gasses escape through the porous media walls, while particulate matter is trapped within the DPF. The DPF self-cleans during a process called "regeneration" whereby the ECU will add in extra fuel to generate temperatures inside the DPF (600°C and higher), in order to burn particulates into ash which is then expelled through the exhaust.

**Why do DPFs Fail?**

The most common reason for a DPF failure is that the unit has become blocked enough to impact the engines performance. Do not assume that age has caused the failure and by simply replacing the DPF will cure the issue.

**Initial Investigation**

Start with the vehicle's driver. The information they provide can be invaluable in identifying the fault.

**What type of driving do they do?**

Constant short trips or city driving can mean the DPF has not reached the temperature required to regenerate and has become blocked. Alternatively, constant highway driving where the vehicle maintains low cruising revs often results in low exhaust temperature meaning regeneration cannot occur.

**How long has the DPF Warning Light been illuminated?**

Many DPF problems are exasperated because the driver has ignored the DPF warning light instructing them to perform an Active (Dynamic) regeneration. The ECM makes adjustments to the fuel management system adding extra fuel to increase the exhaust temperature and burn off the particulates.

Stop/start driving may not allow regeneration conditions to be met and the warning light will be illuminated indicating a partial blockage. It should be possible to clear the warning light by driving at speeds greater than 70 kmph for approximately 10 minutes, although times will vary depending on vehicle.

If the warning light continues to be ignored or conditions for regeneration are not met the level of soot in the DPF will continue to increase. After the DPF becomes 75% blocked, the DPF must be regenerated by a workshop using a scan tool. At 90-95% blocked, the vehicle will drop into limp home mode to avoid engine damage. At this point regeneration cannot occur and replacement is necessary.

**Has the engine oil been changed recently?**

If so, confirm the correct low ash oil was used. Using the incorrect oil can lead to problems during the regeneration process.

**Does it use an additive?**

Where the vehicle uses an additive (Adblue) system to aid regeneration, the additive level must be checked. Fill additive and clear any stored ECM codes before attempting regeneration or DPF replacement.

**Diagnostic Checks**

Before fitting a new DPF, diagnostic checks should be carried out with an appropriate scan tool to establish any codes held within the ECM. Visual inspections of the components listed in the diagnostic flow chart (overleaf) also require thorough investigation to eliminate them as a cause of the DPF failure.

**DPF Pressure Pipes and Sensor(s)** - ensure all pipes are free from blockages and the pressure sensors are operating correctly.

**Oil Level** - failed regeneration attempts will result in fuel getting past the rings and into the sump. The extra fuel required to raise the DPF temperature can contaminate the oil and even cause engine dieseling in severe cases.

**Oil Specification** - check the correct low ash oil has been used

**Fuel Additive (where applicable)** - check the level of the fuel additive and fill the additive tank as required. Follow the log book procedure and ensure to reset the additive level in the ECM.

**Sensor Checks** - check all temperature and emission sensors are operating correctly.

**EGR System** - check EGR valve operation and ensure EGR and Pipes are free of carbon.

Other components to be checked:

- ✓ Turbo variable vane system working correctly and no wear to mechanism
- ✓ Fuel Pressure
- ✓ Leaking Injectors
- ✓ Heater Plug/Glow Plug
- ✓ Worn Engine
- ✓ ECU Fault
- ✓ DPF Fitting

If vehicle manufactures procedure is adhered to and other checks have been done then fitting the new DPF will work the same as the OEM it has replaced. If you do not perform all the procedures listed in this diagnostic guide, your new DPF could block within the first 5 kilometres and no regeneration will be possible.

This is only a guide and each vehicle presents its own different faults and procedures which must be followed.

Need help? Contact our DPF Technical Support on:  
 Australia 1800 804 541 or New Zealand 0800 838 222

**Correct Diagnosis Imperative**

Correct diagnosis of the DPF failure is imperative before replacement with a new unit.

If the vehicle has not been properly diagnosed, the new DPF could block prematurely in as little as 5km, will not be able to regenerate and cause significant unnecessary cost. A scan tool won't give you all the answers. Use the check list to assist your diagnosis.

**CHECK LIST**  /

- Driving style (Constant short trips will cause damage)
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