

**Diesel Particulate Filter
(DPF)
Information Booklet**



TOYOTA MOTOR CORPORATION AUSTRALIA LIMITED

A.B.N. 64 009 686 097

© 2021 TOYOTA MOTOR CORPORATION AUSTRALIA LIMITED

All rights reserved. This material may not be reproduced or copied, in whole or part, without the written permission of Toyota Motor Corporation Australia Limited, 155 Bertie Street, Port Melbourne, Victoria.

Contents

Glossary of Terms	2
DPF System Introduction	3
DPF System – Driver Information.....	5
Manual Regeneration Operation	6
Hilux / Fortuner – GD Engine (up to May 2020 Production)	
Prado – GD Engine (up to July 2020 Production)	8
Hilux / Fortuner – GD Engine (May 2020 Production onwards)	
Prado – GD Engine (August 2020 Production onwards)	12
Land Cruiser 70 Series – VD Engine	15
Land Cruiser 200 Series – VD Engine	18
Hiace and Granvia – GD Engine.....	21
Hiace – KD Engine	24
Coaster Bus – N04C Engine	27
Off Road / Rural Use – Cleaning Procedure	29
Questions and Answers	31
DPF Warnings	33

Glossary of Terms

Auto Regeneration: When PM (soot) collected by the DPF reaches a certain level, it triggers a process of fuel injection which increases exhaust temperature. This way, even if the vehicle is not travelling at high speed, the exhaust becomes hot enough to burn off the PM (soot) collected in the DPF.

CO: Carbon monoxide.

DOC: Diesel Oxidation Catalyst.

DPF: Diesel Particulate Filter.

ECM: Engine Control Module.

HC: Hydrocarbons.

Limp Mode: “Limp Mode” occurs when the ECM detects a problem with the vehicle. When a signal value sent by a sensor to the ECM is not within a specified range, the vehicle will switch to “limp mode” as a precautionary measure. The vehicle can still be driven safely, although at a lower speed and the vehicle should be inspected by a Toyota dealer immediately. The driver will experience a gradual reduction in maximum power output and limited gear selection (automatic vehicles only). The vehicle may be less responsive to acceleration and gear changes may become more pronounced.

Manual Regeneration: Regeneration is initiated by the driver using a DPF switch fitted in the vehicle. In order for manual regeneration to occur, the driver must push the DPF switch when the vehicle is stationary with the engine running. Engine RPM will increase until the exhaust becomes hot enough to burn off the PM (soot) collected in the DPF.

MID: Multi Information Display.

MIL: Malfunction Indicator Lamp.

Non-MID: Vehicles without Multi Information Display.

PM: Particulate Matter; also referred to as “soot” in this DPF Information Booklet.

PPE: Personal Protection Equipment.

Regeneration: A regeneration is a cycle completed within the DPF to clean the filter of accumulated PM (soot).

RPM: Engine speed (Revolutions Per Minute).

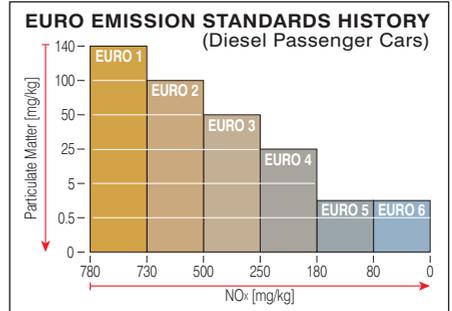
W/: With.

W/O: Without.

DPF System Introduction

Background

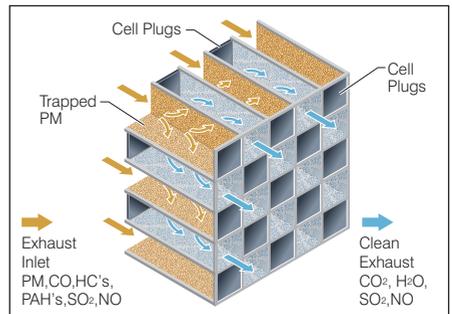
This vehicle is equipped with a DPF. In 2011, Australian regulations adopted the EURO 5 vehicle emissions standards which require all registered diesel vehicles to be equipped with an emission reduction device. Toyota Australia has adopted the DPF system to meet emission targets.



How a DPF System Works

The DPF is a filter system that processes exhaust gas through a combination of filtration, thermal and chemical reactions. DPF systems are designed to reduce the emission of hydrocarbons (HC), carbon monoxide (CO) and PM (soot).

The DPF is housed in a unit which also contains the DOC. Using a porous ceramic monolith wall-flow filter, and chemical reactions, the DOC enables the oxidation of engine emissions into carbon dioxide and water, which then pass through the DPF to the exhaust. The DPF captures and oxidises PM (soot), which is emitted through the exhaust as carbon dioxide.

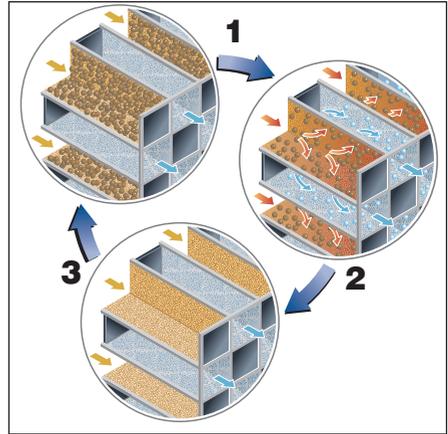


DPF System Introduction

DPF System Auto Regeneration Operation

The regeneration process occurs automatically. During regeneration the ECM injects small quantities of fuel into the exhaust after combustion, increasing the temperature within the exhaust system and creating an environment where it is possible to burn off the accumulated PM (soot).

In some cases, the regeneration process may not occur or may be interrupted by certain operating conditions such as low speed, prolonged idling and engine stop / start, etc.



1: PM (soot) threshold met

2: DPF regeneration

3: Clean DPF

If the process does not occur or is interrupted, the ECM is programmed to recommence the regeneration process again when the vehicle is in motion or the engine is restarted, and the requisite temperature has again been reached.

The above mentioned operating conditions may sometimes not allow the DPF to reach the optimum temperature to complete auto regeneration. If this occurs, manual intervention may be required using the DPF switch.

DPF System – Driver Information

This vehicle is equipped with a DPF system that is designed to reduce Particulate Matter (PM) (soot) in diesel engine exhaust gases by trapping the PM in the DPF. This system performs automatic regeneration to burn off the PM absorbed by the DPF when it reaches a predetermined volume. However, in some situations of low engine temperatures and / or engine speeds, the system will request the driver to perform Manual Regeneration by pressing the DPF switch to perform a specific ❶ or ❷ drive cycle. Refer to the quick reference guide below and the relevant section in the Owners' Manual.

DPF WARNING LAMP CONDITION		ACTION REQUIRED
WITHOUT Multi-Information Display	WITH Multi-Information Display	
<p>❶</p>  <p>ON</p>	 <p>DPF Full See Owner's Manual</p>	 <p>+</p>  <p>OR</p> <p>20-30 mins</p> <p>+</p>  <p>+</p>  <p>+</p> <p>Press DPF Switch 20-30 mins</p> 
<p>❷</p>  <p>FLASHING</p>	 <p>ON* (if equipped)</p> <p>+</p>  <p>DPF Full Engine Service Required</p>	 <p>+</p>  <p>+</p>  <p>+</p> <p>Press DPF Switch 20-30 mins</p> <p>Driver action required. STOP vehicle in a safe place and perform Manual Regeneration or go to the nearest Toyota Dealer for assistance.</p>
<p>❸</p>  <p>FLASHING</p> <p>+</p>  <p>ON</p> <p>+</p>  <p>ON* (if equipped)</p> <p>+</p>  <p>ON</p> <p>+</p>  <p>+</p>  <p>Call Assistance</p> <p>+</p>  <p>TOYOTA Dealer</p>		<p>Reduced engine power. Driver action is not possible and vehicle will need to be towed to the nearest Toyota Dealer for assistance.</p>

* A warning buzzer/chime sounds when symbol first appears.

Manual Regeneration Operation

Manual Regeneration Operation

All Toyota Diesel models built from June 2018 are equipped with a manual regeneration switch. When activated, this will force regeneration of the DPF.

Provided there is sufficient PM (soot) in the DPF, manual regeneration can be activated when a driver chooses to do so. It may also become necessary in circumstances including the following:

Note: During manual regeneration engine speed will increase and drivers will notice a higher rpm.

Auto Regeneration was Unsuccessful

Under certain operating conditions, regeneration may not be completed for some time. At this point, the DPF will become saturated with PM (soot) and a DPF warning lamp will illuminate, or a notification will be displayed on the MID to indicate to the driver to take corrective measures. Further details can be found in the Owner's Manual and this Information Booklet.

Driving in Long Grass / Vegetation

It is recommended that drivers perform a manual regeneration prior to operating the vehicle in long grass and vegetation.

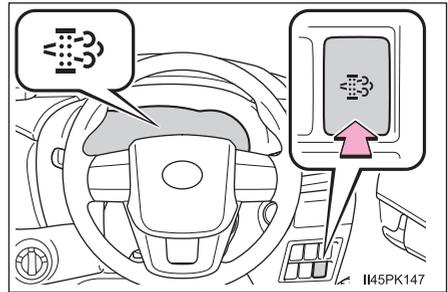
Method for Performing Manual Regeneration

Step 1: Park the vehicle safely in a well-ventilated open space, free of any flammable material (including long grass and vegetation). Shift the transmission into "Park" with the engine running and apply the parking brake.

Step 2 for:

- Land Cruiser 70 / 200 Series
- Coaster
- Prado (up to July 2020 Production)
- Hiace (KD Engine)
- Hilux and Fortuner (up to May 2020 Production)

Press the DPF Switch.



Manual Regeneration Operation

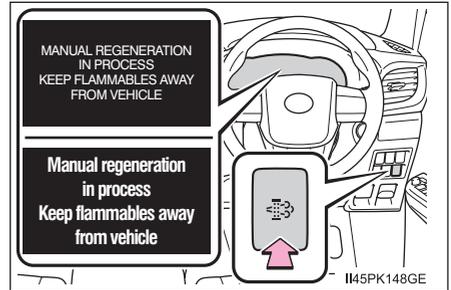
Step 2 for:

- Hiace and Granvia (GD Engine)
- Hilux and Fortuner (May 2020 Production onwards)
- Prado (August 2020 Production onwards)

Press and **hold** the DPF Switch.

Step 3: The DPF system warning lamp flashes or a warning notification MANUAL REGENERATION IN PROCESS is displayed and the engine idling speed will increase.

Step 4: Manual regeneration can take up to 30 minutes to complete. Once completed the warning notification or DPF lamp will turn off and the engine's idling speed returns to normal.



Caution:

- **DO check underside of vehicle and remove any accumulated vegetation before performing manual regeneration.**
Refer to "Off Road / Rural Use – Cleaning Procedure" on page 29.
- **DO NOT perform manual regeneration in long grass or vegetation.**
- **DO NOT press the accelerator pedal during manual regeneration, as this will cancel the manual regeneration process.**

Note: Image is for illustration purposes only and the notifications displayed will vary depending upon the vehicle model.

Hilux / Fortuner – GD Engine (up to May 2020 Production)

Prado – GD Engine (up to July 2020 Production)

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 250 to 300 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

- Idle speed increase to 1200 rpm (M/T) / 900 rpm (A/T) when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation matter. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 1200 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

Automatic Regeneration

Automatic regeneration will start at a pre-determined level. However, if the operating conditions are not ideal, the ECM will continue to attempt to complete the regeneration until DPF warning message “DPF Filter Partially Full” is displayed.

Default DPF Switch operation

The Driver can use the DPF switch to perform the following function:

- 1. To Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration, this function will be available when either of the following messages are displayed (See “Warning Notification Matrix” on page 11);
 - a. Vehicles without MID** - DPF light will flash at 0.5 second intervals;
 - b. Vehicles with MID** - DPF warning message “DPF Filter Partially Full” will be displayed.

Custom Mode Manual Regeneration

By having the system set to custom mode, manual regeneration can be started by pressing the DPF switch when there is a much lower level of PM (soot) in the DPF. This enables the driver more flexibility as to when manual regeneration can be activated.

DPF Switch Operation with Custom Mode Installed

The Driver can use the DPF switch to perform the following function:

- 1. Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration, this function will be available when either of the following messages are displayed (See “Warning Notification Matrix” on page 11);
 - a. Vehicles without MID** - DPF Light illuminates for 5 seconds on vehicle start up;
 - b. Vehicles with MID** - DPF warning message ‘DPF Manual Regeneration available’ will display for 5 seconds on vehicle start up.

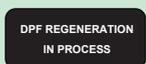
Hilux / Fortuner – GD Engine (up to May 2020 Production)
Prado – GD Engine (up to July 2020 Production)

DPF PM Level	Automatic Regeneration	Manual Regeneration Available	
		Without Custom Mode	With Custom Mode
Low  Full	–	–	–
	–	–	●
	–	–	●
	●*	–	●
	●	–	●
	●	–	●
	●	●	●
	–	●	●
	–	●	●
	–	–	–

Legend: * Auto Regeneration Start Point

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” on the next page.

Warning Notification Matrix

		Instrument Cluster Type	Warning Description	Warning Notification Image	Driver Action If Required
Normal Operation	Manual Regeneration Available Notification on Start-Up	Without MID	DPF Light illuminates for 5 seconds		No driver action required – normal operation
		With MID	DPF Notification appears for 5 seconds		
	Automatic Regeneration Warning Notification	Without MID	DPF Light will flash at 1 second intervals for approx. 20-30 min		
		With MID	DPF Notification appears for 20-30 min		
Driver Intervention Required	DPF Filter Partially Full – Requires Driver Intervention	Without MID	DPF Light will illuminate		Drive vehicle at over 60 km/h for approx 30 min until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
		With MID	DPF Notification will appear		
	DPF Filter Full – Requires Driver Intervention Urgently	Without MID	DPF Light will flash at 0.5 second intervals		STOP in a safe location and perform a manual regeneration
		With MID	DPF Warning Notification will appear		
Dealer Intervention Required ASAP	DPF Filter Full Requires Dealer	Without MID	DPF Light and MIL will illuminate	Flashing  ON 	Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer
		With MID	DPF Warning Notification will appear and MIL will illuminate	 	

Note: To confirm instrument cluster type please refer to your vehicle Owner's Manual.

Note: Warning notifications can be customised to alert the driver when regeneration is occurring or available. This can be enabled by any Toyota Dealer.

If the malfunction indicator lamp (MIL) illuminates and you continue driving while the DPF system warning light is on or flashing, as a precaution, the ECM may activate limp mode and reduce engine power.

Hilux / Fortuner – GD Engine (May 2020 Production onwards)

Prado – GD Engine (August 2020 Production onwards)

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 250 to 300 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

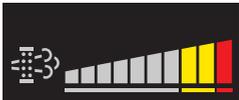
- Idle speed increase to 1200rpm (M/T) / 900rpm (A/T) when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation matter. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 1200 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

DPF PM (Soot) Indicator

Location	DPF PM Indicator Level
Odometer	

Note: Press the DPF switch to display the DPF PM Indicator.

Automatic Regeneration

Automatic regeneration will start at PM Level 4. However, if the operating conditions are not ideal, the ECM will continue to attempt to complete the regeneration up to PM Level 7.

Default DPF Switch Operation

The Driver can use the DPF switch to perform the following 2 functions:

- 1. Display DPF PM Indicator Level:** Short press of DPF switch to display DPF PM Indicator Level;
- 2. Initiate Manual Regeneration:** Press and **hold** the DPF switch to start manual regeneration, this function will only be available at DPF PM Indicator Level 7 to Level 9.

Custom Mode Manual Regeneration

By having the system set to customise mode, manual regeneration can be started by pressing the DPF switch when there is a much lower level of PM (soot) in the DPF. This enables the driver more flexibility as to when manual regeneration can be activated.

DPF Switch Operation with Custom Mode Installed

The Driver can use the DPF switch to perform the following;

- 1. Display DPF PM Indicator Level:** Short press of the DPF switch to display DPF PM Indicator Level;
- 2. Initiate Manual Regeneration:** Press and **hold** the DPF switch to start manual regeneration. This function will be available at DPF PM Indicator Level 2 to level 9.

DPF PM Indicator Level	Automatic Regeneration	Manual Regeneration Available	
		Without Custom Mode	With Custom Mode
0	–	–	–
1	–	–	–
2	–	–	●
3	–	–	●
4*	●	–	●
5	●	–	●
6	●	–	●
7	●	●	●
8	–	●	●
9	–	●	●
10	–	–	–

Legend: * Auto Regeneration Start Point

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” below.

Warning Notification Matrix

		Warning Description	Warning Notification Image	Driver Action If Required
Normal Operation	Manual Regeneration Available Notification on Start-Up	DPF Notification appears for 5 seconds		No driver action required – normal operation
	Automatic Regeneration Warning Notification	DPF Notification appears for 20-30 min		
Driver Intervention Required	DPF Filter Partially Full – Requires Driver Intervention	DPF Notification will appear		Drive vehicle at over 60 km/h for approx 30 min until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
	DPF Filter Full – Requires Driver Intervention Urgently	DPF Warning Notification will appear		STOP in a safe location and perform a manual regeneration
Dealer Intervention Required ASAP	DPF Filter Full Requires Dealer	DPF Warning Notification will appear and MIL will illuminate		Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer

Note: To confirm instrument cluster type please refer to your vehicle Owner’s Manual.

Note: Warning notifications can be customised to alert the Driver when regeneration is occurring or available. This can be enabled by any Toyota Dealer.

If the malfunction indicator lamp (MIL) illuminates and you continue driving while the DPF system warning light is on or flashing, as a precautionary measure, the ECM may activate limp mode and reduce engine power.

Land Cruiser 70 Series – VD Engine

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 100 to 150 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

- Idle speed increase to 750 rpm when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation matter. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 750 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes, or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

DPF PM (Soot) Indicator

Location	DPF PM Indicator Level
Odometer	<i>DPF 3</i>

Land Cruiser 70 Series – VD Engine

Automatic Regeneration

Automatic regeneration will start at PM Level 4. However, if the operating conditions are not ideal, the ECM will continue to attempt to complete the regeneration up to PM Level 7.

Default DPF Switch operation

The Driver can use the DPF switch to perform the following function;

- 1. Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration, this function will only be available at DPF PM Indicator Level 7 to Level 9.

Custom Mode Manual Regeneration

By having the system set to customise mode, manual regeneration can be started by pressing the DPF switch when there is a much lower level of PM (soot) in the DPF. This enables the driver more flexibility as to when manual regeneration can be activated

DPF Switch Operation with Custom Mode Installed

The Driver can use the DPF switch to perform the following function:

- 1. Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration. This function will be available at DPF PM Indicator Level 2 to Level 9.

DPF PM Indicator Level	Automatic Regeneration	Manual Regeneration Available	
		Without Custom Mode	With Custom Mode
0	–	–	–
1	–	–	–
2	–	–	●
3	–	–	●
4*	●	–	●
5	●	–	●
6	●	–	●
7	●	●	●
8	–	●	●
9	–	●	●
10	–	–	–

Legend: * Auto Regeneration Start Point

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” on the next page.

Warning Notification Matrix

		Instrument Cluster Type	Warning Description	Warning Notification Image	Driver Action If Required
Driver Intervention Required	DPF Filter Partially Full – Requires Driver Intervention	All	DPF Light will illuminate. DPF level meter = 7		Drive vehicle at over 60 km/h for approx 30 min until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
	DPF Filter Full – Requires Driver Intervention Urgently		DPF Light will flash. DPF level meter = 9		STOP in a safe location and perform a manual regeneration
Dealer Intervention Required ASAP	DPF Filter Full Requires Dealer	All	DPF Light and MIL will illuminate. DPF level meter = 10		Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer

Note: Warning notifications can be customised to alert the driver when regeneration is occurring or available. This can be enabled by any Toyota Dealer.

If the malfunction indicator lamp (MIL) illuminates and you continue driving while the DPF system warning light is on or flashing, as a precautionary measure, the ECM may activate limp mode and reduce engine power.

Land Cruiser 200 Series – VD Engine

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 100 to 150 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

- Idle speed increase to 750 rpm when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation matter. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 750 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

DPF PM (Soot) Indicator

Location	DPF PM Indicator Level
GX – Odometer	
Location	DPF PM Indicator Level
GXL, VX, & Sahara – MID	

Note: DPF PM Indicator Level can be accessed by scrolling through the menus on the Odometer / MID.

Automatic Regeneration

Automatic regeneration will start at PM Level 3. However, if the operating conditions are not ideal, the ECM will continue to attempt to complete the regeneration up to PM Level 8.

Default DPF Switch Operation

The Driver can use the DPF switch to perform the following function:

- 1. Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration. This function will only be available at DPF Indicator PM Level 4 to PM Level 9.

DPF PM Indicator Level	Automatic Regeneration	Manual Regeneration Available	
		Without Custom Mode	With Custom Mode
0	–	–	–
1	–	–	–
2	–	–	–
3*	●	–	–
4	●	●	–
5	●	●	–
6	●	●	–
7	●	●	–
8	●	●	–
9	–	●	–
10	–	–	–

Legend: * Auto Regeneration Start Point

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” on the next page.

Land Cruiser 200 Series – VD Engine

Warning Notification Matrix

		Instrument Cluster Type	Warning Description	Warning Notification Image	Driver Action If Required
Driver Intervention Required	DPF Filter Partially Full – Requires Driver Intervention	Without MID	DPF Light will illuminate and DPF Notification will appear. DPF level meter = 7		Drive vehicle at over 60 km/h for approx 30 min until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
		With MID			
	DPF Filter Full – Requires Driver Intervention Urgently	Without MID	DPF Light will flash and DPF Warning Notification will appear. DPF level meter = 9		STOP in a safe location and perform a manual regeneration
		With MID			
Dealer Intervention Required ASAP	DPF Filter Full Requires Dealer	Without MID	DPF Light will flash and MIL will illuminate. DPF level meter = 10	 + 	Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer
		With MID	DPF Warning Notification will appear, DPF light will flash and MIL will illuminate	 +  + 	

Note: To confirm instrument cluster type please refer to your vehicle Owner’s Manual.

If the malfunction indicator lamp illuminates and you continue driving while the DPF system warning light is on or flashing, as a precautionary measure, the ECM may activate limp mode and reduce engine power.

Hiace and Granvia – GD Engine

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 200 to 400 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

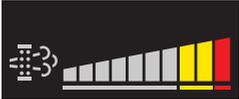
- Idle speed increase to 1200 rpm when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation particles. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 1200 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

DPF PM (Soot) Indicator

Location	DPF PM Indicator Level
Odometer	

Note: Press the DPF switch to display the DPF PM Indicator.

Hiace and Granvia – GD Engine

Automatic Regeneration

Automatic regeneration will start at PM Level 4. However, if the operating conditions are not ideal, the ECM will continue to attempt to complete the regeneration up to Level 7.

Default DPF Switch operation

The Driver can use the DPF switch to perform the following 2 functions:

- 1. Display DPF PM Indicator Level:** Short press of the DPF switch to display the DPF PM (Soot) Indicator Level;
- 2. Initiate Manual Regeneration:** Press and **hold** the DPF switch to start manual regeneration. This function will only be available at DPF PM Indicator Level 7 to Level 9.

Custom Mode Manual Regeneration

By having the system set to customise mode, manual regeneration can be started by pressing the DPF switch when there is a much lower level of PM (soot) in the DPF. This enables the driver more flexibility as to when manual regeneration can be activated.

DPF Switch Operation with Custom Mode Installed

The Driver can use the DPF switch to perform the following 2 functions:

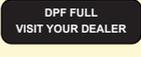
- 1. Display DPF PM Indicator Level:** Short press of the DPF switch to display DPF PM (Soot) Indicator Level;
- 2. Initiate Manual Regeneration:** Press and **hold** the DPF switch to start manual regeneration, this function will be available at DPF PM Indicator Level 2 to Level 9.

DPF PM Indicator Level	Automatic Regeneration	Manual Regeneration Available	
		Without Custom Mode	With Custom Mode
0	–	–	–
1	–	–	–
2	–	–	●
3	–	–	●
4*	●	–	●
5	●	–	●
6	●	–	●
7	●	●	●
8	–	●	●
9	–	●	●
10	–	–	–

Legend: * Auto Regeneration Start Point

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” below.

Warning Notification Matrix

		Instrument Cluster Type	Warning Description	Warning Notification Image	Driver Action If Required
Normal Operation	Manual Regeneration Available Notification on Start Up	All	DPF Notification appears for 5 seconds		No driver action required, normal operation.
	Automatic Regeneration Warning Notification		DPF Notification appears for 20-30 minutes		
Driver Intervention Required	DPF Filter Partially Full – Requires Driver Intervention	All	DPF Notification will appear		Drive vehicle at over 60 km/h for approx 30 mins until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
	DPF Filter Full – Requires Driver Intervention Urgently		DPF Warning Notification will appear		STOP in a safe location and perform a manual regeneration
Dealer Intervention Required ASAP	DPF Filter Full Requires Dealer	All	DPF Warning Notification will appear and MIL will illuminate		Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer

Note: Warning notifications can be customised to alert the driver when regeneration is occurring or available. This can be enabled by any Toyota Dealer.

If the malfunction indicator lamp (MIL) illuminates and you continue driving while the DPF system warning light is on or flashing, as a precautionary measure the ECM may activate limp mode and reduce engine power.

Hiace – KD Engine

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 150 to 200 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

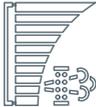
- Idle speed increase to 1050 rpm (M/T) / 750 rpm (A/T in drive) / 1050 rpm (A/T in neutral) when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation particles. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 750 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

DPF PM (Soot) Indicator

Location	DPF PM Indicator Level
Instrument Cluster	

Note: DPF PM Indicator Level can be accessed by scrolling through the menus on the Odometer / MID.

Automatic Regeneration

Automatic regeneration will start at PM Level 4. However, if the operating conditions are not ideal, the ECM will continue to attempt to complete the regeneration up to Level 7.

Default DPF Switch operation

The Driver can use the DPF switch to perform the following function:

- 1. Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration. This function will only be available at DPF Indicator PM Level 7 to Level 9.

DPF PM Indicator Level	Automatic Regeneration	Manual Regeneration Available	
		Without Custom Mode	With Custom Mode
0	–	–	–
1	–	–	–
2	–	–	–
3	–	–	–
4*	●	–	–
5	●	–	–
6	●	–	–
7	●	●	–
8	–	●	–
9	–	●	–
10	–	–	–

Legend: * Auto Regeneration Start Point

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” on the next page.

Warning Notification Matrix

		Instrument Cluster Type	Warning Description	Warning Notification Image	Driver Action If Required
Driver Intervention Required	DPF Filter Partially Full – Requires Driver Intervention	All	DPF Light will illuminate. DPF level meter = 7		Drive vehicle at over 60 km/h for approx 30 min until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
	DPF Filter Full – Requires Driver Intervention Urgently		DPF Light will flash. DPF level meter = 9		STOP in a safe location and perform a manual regeneration
Dealer Intervention Required ASAP	DPF Filter Full Requires Dealer	All	DPF Light and MIL will illuminate. DPF level meter = 10		Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer

If the malfunction indicator lamp illuminates and you continue driving while the DPF system warning light is on or flashing, as a precautionary measure, the ECM may activate limp mode and reduce engine power.

Coaster Bus – N04C Engine

How Often Will an Automatic Regeneration Occur?

Automatic regeneration will occur approximately every 200 to 250 km depending on vehicle operation.

How Long Does an Automatic Regeneration Take?

Automatic regeneration can take up to 30 minutes depending on vehicle operation.

Characteristics of a DPF Regeneration

The DPF system may have the following characteristics during regeneration:

- Idle speed increase to 1200 rpm when stationary;
- Noticeably different exhaust smell when compared to a conventional diesel smell;
- A small amount of white smoke may be emitted from the exhaust tail pipe during regeneration. However, this does not indicate a malfunction;
- It is possible that a small amount of smoke may be emitted from the underside of the vehicle due to small trapped grass / vegetation matter. Refer to “Off Road / Rural Use – Cleaning Procedure” on page 29.

Note: If automatic regeneration operates during engine idle (i.e. vehicle stationary) the engine rpm will be increased up to 1200 rpm. If the vehicle continues to idle without the engine ECM receiving a vehicle speed signal for approximately 5 minutes or the engine is switched off, the automatic regeneration will be postponed until a vehicle speed signal (i.e. without vehicle driving / moving off again) is received, at which point automatic regeneration will resume.

DPF System Operation

When the system is using the default manufacturer setting, manual regeneration cannot be started by pressing the DPF switch unless the PM (soot) in the DPF has reached a particular level.

Default DPF Switch operation

The Driver can use the DPF switch to perform the following function:

1. **Initiate Manual Regeneration:** Press the DPF switch to start manual regeneration, this function will be available when the following message is displayed (See “Warning Notification Matrix” on the next page);
- DPF Light will flash for more than 10 seconds.

Coaster Bus – N04C Engine

A warning notification will illuminate to alert the driver of the following stages. See “Warning Notification Matrix” below.

Warning Notification Matrix

	Warning Description	Warning Notification Image	Driver Action If Required
Driver Intervention Required	DPF Light will flash for more than 10 seconds		Drive vehicle at over 60 km/h for approx 30 min until DPF lamp or notification in Multi Information Display extinguishes (if equipped)
	DPF Light will flash with Warning buzzer		STOP in a safe location and perform a manual regeneration
Dealer Intervention Required ASAP	MIL will illuminate and limp home mode is activated		Driver action is not possible and vehicle will need to be inspected by the nearest Toyota Dealer

If the malfunction indicator lamp illuminates and you continue driving while the DPF system warning light is on or flashing, as a precautionary measure, the ECM may activate limp mode and reduce engine power.

Off Road / Rural Use – Cleaning Procedure

Under Vehicle Cleaning Procedure

This customer information is prepared for Toyota commercial vehicle owners and drivers that may operate their vehicle in long grass / vegetation environments.

- If driving in long grass / vegetation environments, vegetation may accumulate at the vehicle's under-body in the vicinity of the exhaust.
- The exhaust / DPF system operates at high temperature during the regeneration cycle. If operating the vehicle in long grass / vegetation is unavoidable, the driver should periodically inspect the under-body of the vehicle and remove accumulated grass / vegetation prior to the regeneration cycle.

Additional information is available in the vehicle's Owner's Manual.

Cleaning Procedure

Personal Protective Equipment (PPE)

- Safety Glasses
- Gloves (heat resistant)
- Ground Sheet

Preparation Prior to Cleaning

Park vehicle on a hard level environment clear of any obstructions / traffic.

- Wait for a minimum of 1 hour to allow vehicle to cool down.
- Ensure the vehicle is in the following condition:
 - Engine: Off
 - Parking Brake: On
 - Chock wheels
 - Correct gear position:
 - Automatic transmission: Park position
 - Manual transmission: Neutral position

Off Road / Rural Use – Cleaning Procedure

Inspection / Cleaning Procedure

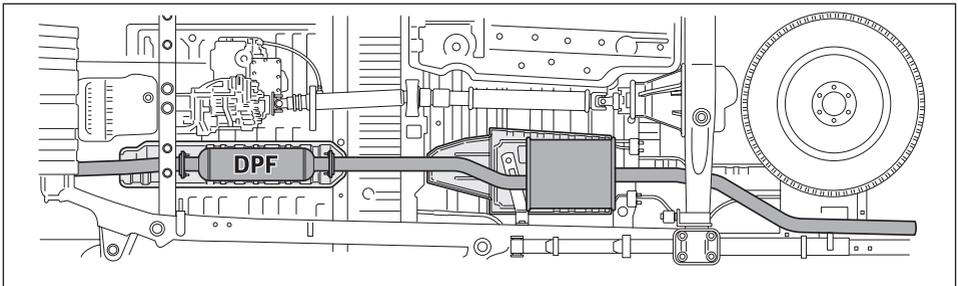
- Wear the correct PPE
- Place ground sheet under the vehicle if required
- Inspect the underside of vehicle for accumulation of grass / vegetation near or around the vehicle's exhaust system. See example on the next page
- Remove any grass / vegetation that has accumulated from near or around the vehicle's exhaust system

CAUTION:

Be careful of sharp edges around the vehicle's under-body components such as exhaust heat shields.

Be careful of the vehicle's under-body components that may have a high temperature, such as the exhaust system.

Note: Ensure all foreign material (including grass / vegetation) has been removed prior to driving the vehicle.



Questions and Answers

What Engine oil should I use?

Toyota recommends using Genuine Low-Ash engine oil.

Vehicle	Oil Grade	Viscosity
All Vehicles equipped with DPF*	ACEA C2	SAE 0W-30
Coaster (Euro 5)	API CH-4 / CJ-4	SAE 15W-30
Hilux and Fortuner May 2020 production onwards	ACEA C5	SAE 0W-20
Prado August 2020 production onwards	ACEA C5	SAE 0W-20

***Note:** Only applicable for Hilux and Fortuner up to May 2020 production.
Only applicable for Prado up to July 2020 production.

What type of diesel is most suitable?

Ensure only low sulphur diesel is used (Sulphur content 10 ppm or lower).

Do I need to replace the diesel particulate filter during normal servicing?

DPFs do have a capacity limit and can become full. Unlike traditional air, oil or pollen filters that need to be replaced at regular intervals, the DPF filter has a much longer service life and is designed to regenerate to restore its performance.

The vehicle's ECM is programmed to do this automatically, neutralising the PM (soot) by burning it off at high temperatures within the exhaust system while the vehicle is running.

How can I ensure the DPF regeneration process is completed successfully?

- For vehicles where custom mode has not been enabled, drive the vehicle continuously at a sustained speed (e.g. around 60 km/h or above for up to 30 minutes).
- For vehicles where custom mode has been enabled, an indicator will inform the driver that regeneration is being performed. Drive the vehicle continuously at a sustained speed (e.g. around 60 km/h or above for up to 30 minutes until the indicator is extinguished).

What if the auto regeneration process has been unsuccessful?

The DPF will continue to accumulate PM (soot) and a DPF warning lamp or notification will be displayed on the MID to indicate to the driver to take corrective measures. Further details can be found in the relevant vehicle model page of this DPF Information Booklet.

If further assistance is required, please contact any Toyota Dealer.

Questions and Answers

What will happen if I don't do anything about the DPF warning light / notifications not going out?

The warning light / notifications are there to either notify you to keep driving until regeneration is achieved, or to warn you the vehicle is not able to complete automatic regeneration. If you continue driving, the DPF will continue to fill with PM (soot) and limp mode may be activated as a precautionary measure. Automatic and manual regeneration will no longer be available at this point and you will need to present your vehicle to any Toyota Dealer.

Will my DPF cause a fire?

The regeneration process will not cause a fire if the operation is done in a safe manner as per the DPF warnings. Move the vehicle to a safe place before manual regeneration is performed. Refer to "DPF Warnings" on page 33.



DPF Warnings

Observe the following warnings. Failure to do so may result in serious injury such as burns caused by the hot exhaust pipe and gases or may cause a fire.

General Warnings

- Do not drive the vehicle over, or stop the vehicle near, flammable materials. The exhaust system and exhaust gases can be extremely hot. These hot components may cause a fire if there is any flammable material nearby.
- Keep people and combustible materials away from the exhaust pipe while the engine is running. The exhaust gas is very hot.
- Do not idle or park the vehicle where flammable materials such as grass, leaves, paper or rags might burn easily.
- Do not pull- or push-start the vehicle, it may damage the vehicle or cause a collision when the engine starts. The catalytic converter may overheat and become a fire hazard.
- Do not use fuel and engine oil other than the specified / recommended type.
- Do not modify the vehicle exhaust.
- Remove grass / vegetation from the underside of the vehicle, following the removal procedure. Refer to "Off Road / Rural Use – Cleaning Procedure" on page 29.
- Ensure the engine has been turned off and cooled down before performing any maintenance work.



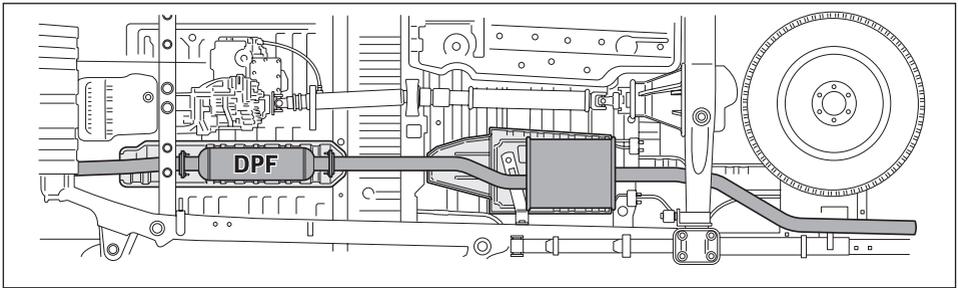
DPF Warnings

Manual Regeneration Warnings

- Do not perform regeneration when the vehicle is in an enclosed area, such as a garage, etc.
- Do not touch the exhaust pipe and exhaust gases during manual regeneration.
- The DPF switch may not operate when the vehicle is higher than 4000 m (13,123 ft) above sea level.
- Do not drive for long periods of time while the following are illuminated and have your vehicle inspected immediately by your Toyota Dealer:
 - **W/ MID:** DPF system warning notification “DPF FULL Visit Your Dealer” appears on the display.
 - **W/O MID:** DPF indicator malfunction light is flashing and / or accompanied with the malfunction indicator lamp (MIL).
- Remove grass / vegetation from the underside of the vehicle by following the removal procedure. Refer to “Off Road / Rural Use – Cleaning Procedure” page 29.

Off Road and Rural Use

The exhaust / DPF system operates at high temperature during regeneration. If operating the vehicle in long grass / vegetation is unavoidable, the driver should periodically inspect the under-body of the vehicle and remove accumulated grass / vegetation prior to the regeneration cycle.





This DPF Information Booklet covers models:
Fortuner / Hilux / Prado with 1GD-FTV diesel engine,
Hilux with 2GD-FTV diesel engine,
Land Cruiser 200 & 70 Series with 1VD-FTV diesel engine,
Hiace and Granvia with 1GD-FTV diesel engine,
Hiace with 1KD-FTV diesel engine,
Coaster Bus with N04C diesel engine.

Part Number: TSO2021
Issue: 2103-01