

柴油商業車輛技術講座系列



日期: 2017年6月16日

課程目錄

1. HINO型號簡介
2. 建議使用的引擎機油
3. 柴油碳微粒濾清器 (DPR) 、選擇性催化還原器 (SCR)
及 廢氣再循環系統 (EGR)
4. 維修及保養分享

HINO型號簡介及建議使用的引擎機油

Photo(s)	Emission Standard	Hino Series	Vehicle Model	GVW	Engine Description	Exhaust After-Treatment	Engine Oil Specification
	Euro4 / Euro 5	300	XZU	5.5 / 8.5 Tons	4,009 c.c. Diesel Engine, L4, Turbo with Intercooler, Exhaust Gas Recirculation (EGR)	Diesel Particulate Filter (DPF)	API : CD*2·CE*2·CF·CH-4·CI-4或CJ-4*1 JASO : DH-1或DH-2*1 ACEA : E-3·E-4·E-5或E-6*1
		500	FD	10.4 Tons	7,684 c.c. Diesel Engine, L6, Turbo with Intercooler, Exhaust Gas Recirculation (EGR)	Diesel Particulate Filter (DPF)	
			FE	14 Tons			
			FG	15.1 Tons			
			GH	16 Tons			
		700	FS (Cargo / Dumper)	24 Tons	12,913 c.c. Diesel Engine, L6, Turbo with Intercooler, Exhaust Gas Recirculation (EGR)	Selective Catalytic Reduction (SCR)	
			FY (Cargo / Dumper)	30 Tons			
			SH	38 Tons			
			SS	44 Tons			
 				FY (Mixer)	30 Tons	8,866 c.c. Diesel Engine, L6, Turbo with Intercooler, Exhaust Gas Recirculation (EGR)	

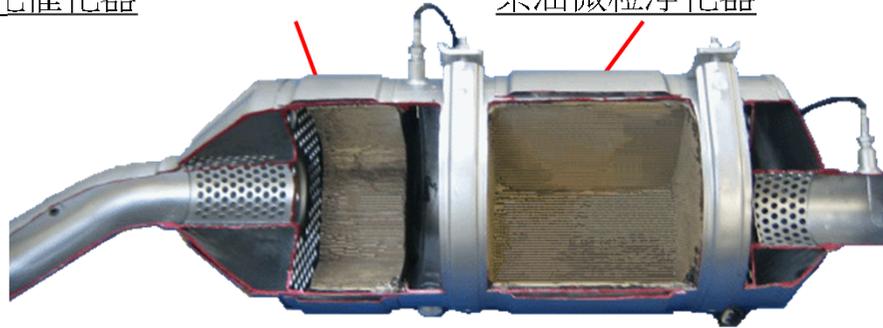
DPR (Diesel Particulate Reduction) 柴油微粒淨化系統

1. 柴油微粒淨化器 (DPR)

1) 甚麼是柴油微粒淨化器？

氧化催化器

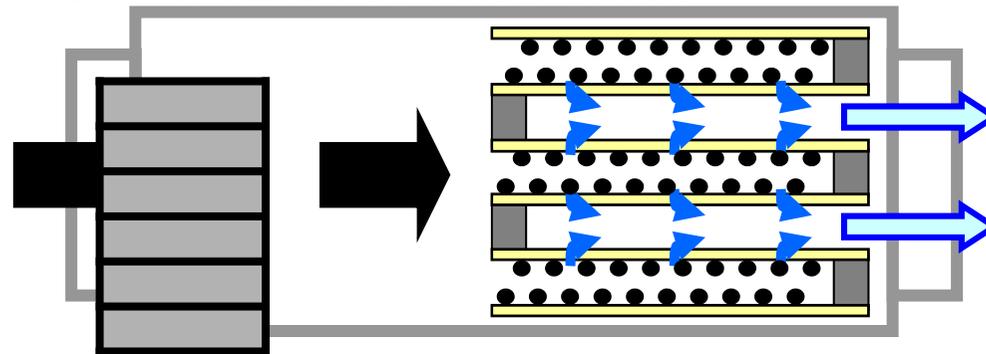
柴油微粒淨化器



DPR

柴油微粒淨化系統 DPR(Diesel Particulate Reduction) 用於收集並燃燒廢氣中的碳顆粒。當系統中的碳顆粒累積到一定程度時，系統會將累積的碳顆粒燃燒掉。此系統能夠減少廢氣碳顆粒排放達95%。

氧化催化器及燃燒時產生的高溫把累積的碳顆粒燃燒掉



1-1) 柴油微粒淨化器 (DPR)

2) 柴油微粒淨化器 (DPR)再生模式 (燒碳)

當系統中的碳顆粒累積到一定程度時，系統會將累積的碳顆粒燃燒掉。此程序叫作 '再生'。再生分別有兩種形式—自動再生及手動再生。

<自動再生>

當自動再生運行中時，你可以如常駕駛日野 300 系列輕型貨車。

<手動再生>

若果自動再生模式並不能夠完全燒掉累積的碳顆粒，便需要執行手動再生。

“當DPR系統手動再生開關掣上的橙色燈閃動及DPR系統警告燈亮起時，請執行手動再生”

請注意

- 引擎怠速會輕微增加，但此屬正常現象
- 若踏下離合器或油門時，自動再生會暫停運作



DPR系統手動再生開關掣

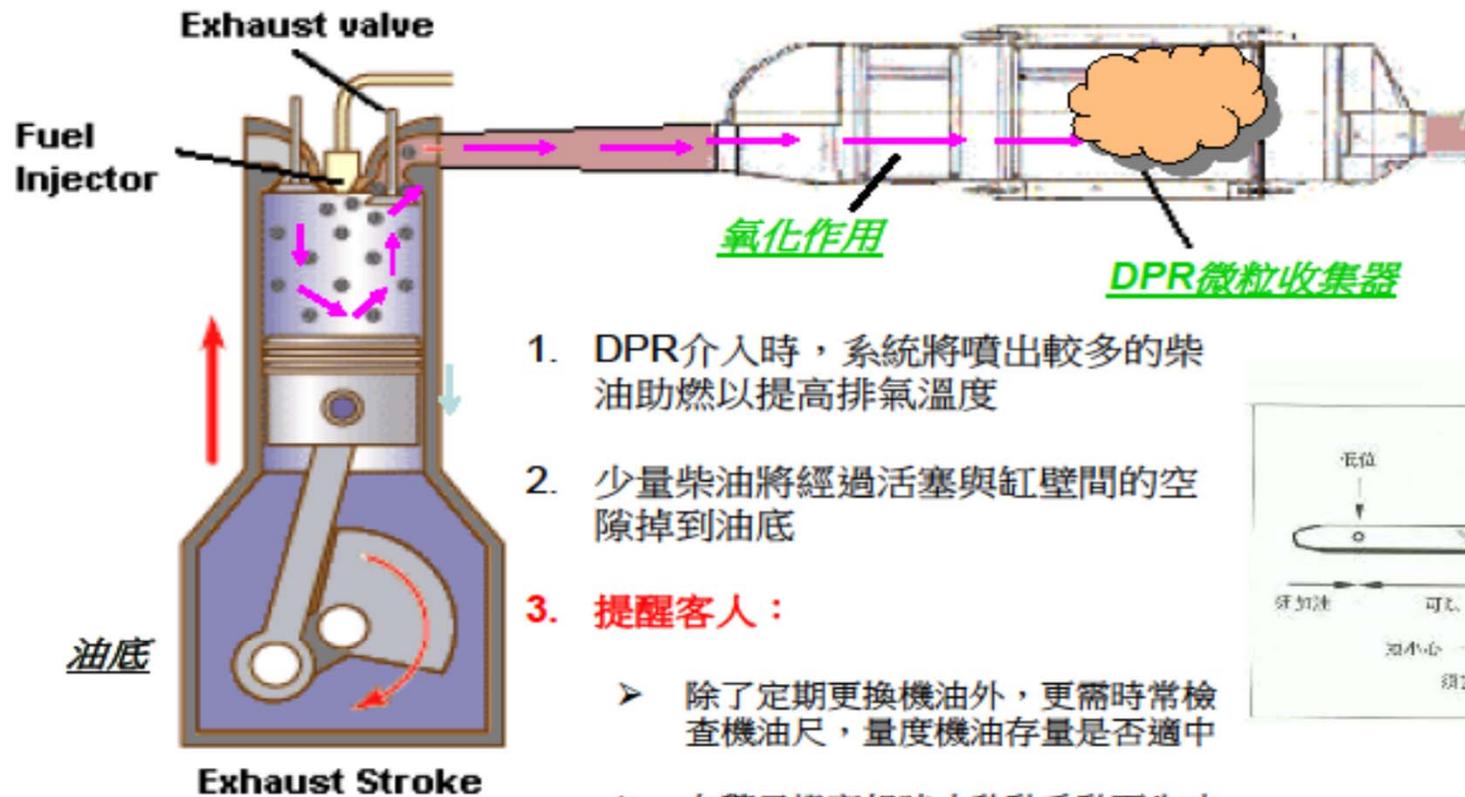


DPR系統警告燈

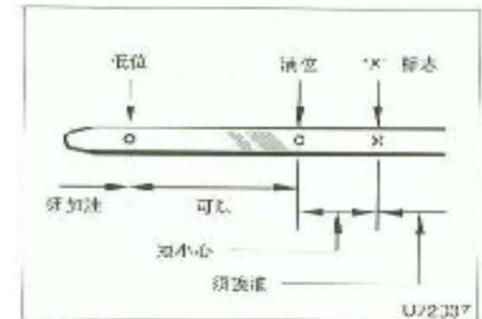
請注意

- 如在未完成手動再生時駕駛車輛，DPR系統警告燈會保持亮起
- 如在此情況下持續駕駛車輛並不執行手動再生，一定時間後引擎警告燈便會亮起

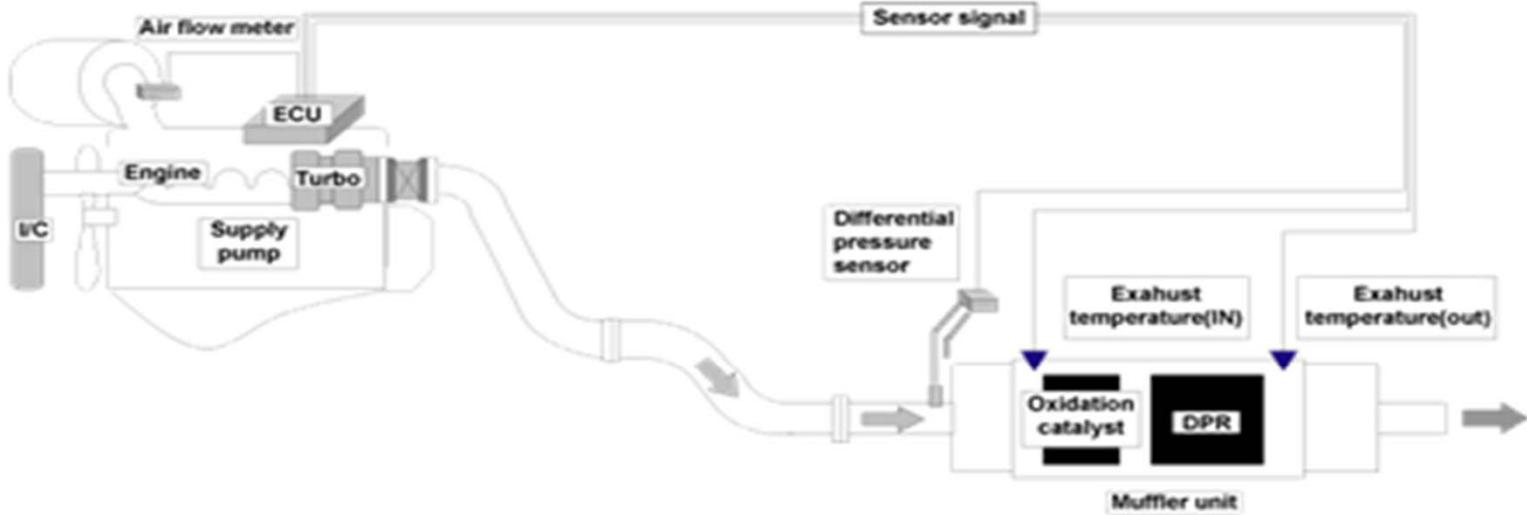
DPR排放系統



1. DPR介入時，系統將噴出較多的柴油助燃以提高排氣溫度
2. 少量柴油將經過活塞與缸壁間的空隙掉到油底
3. **提醒客人：**
 - 除了定期更換機油外，更需時常檢查機油尺，量度機油存量是否適中
 - 在警示燈亮起時才啟動手動再生功能，以免在不當使用下有過多的柴油掉落油底

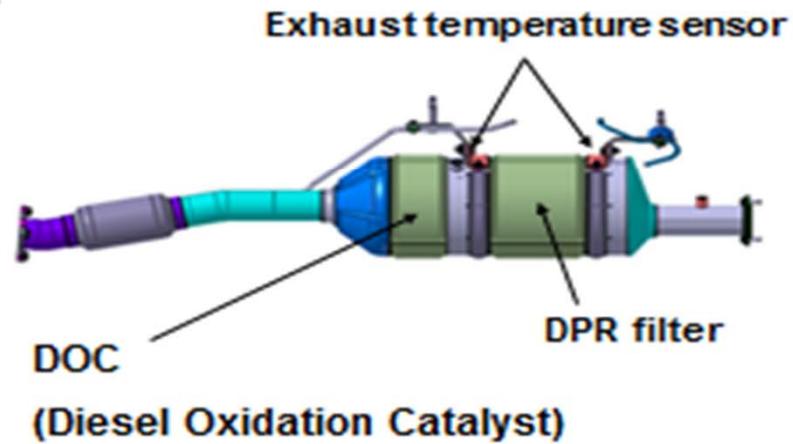
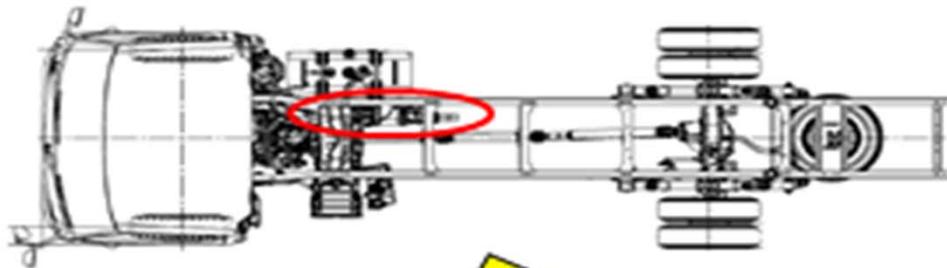


1. DPR outline

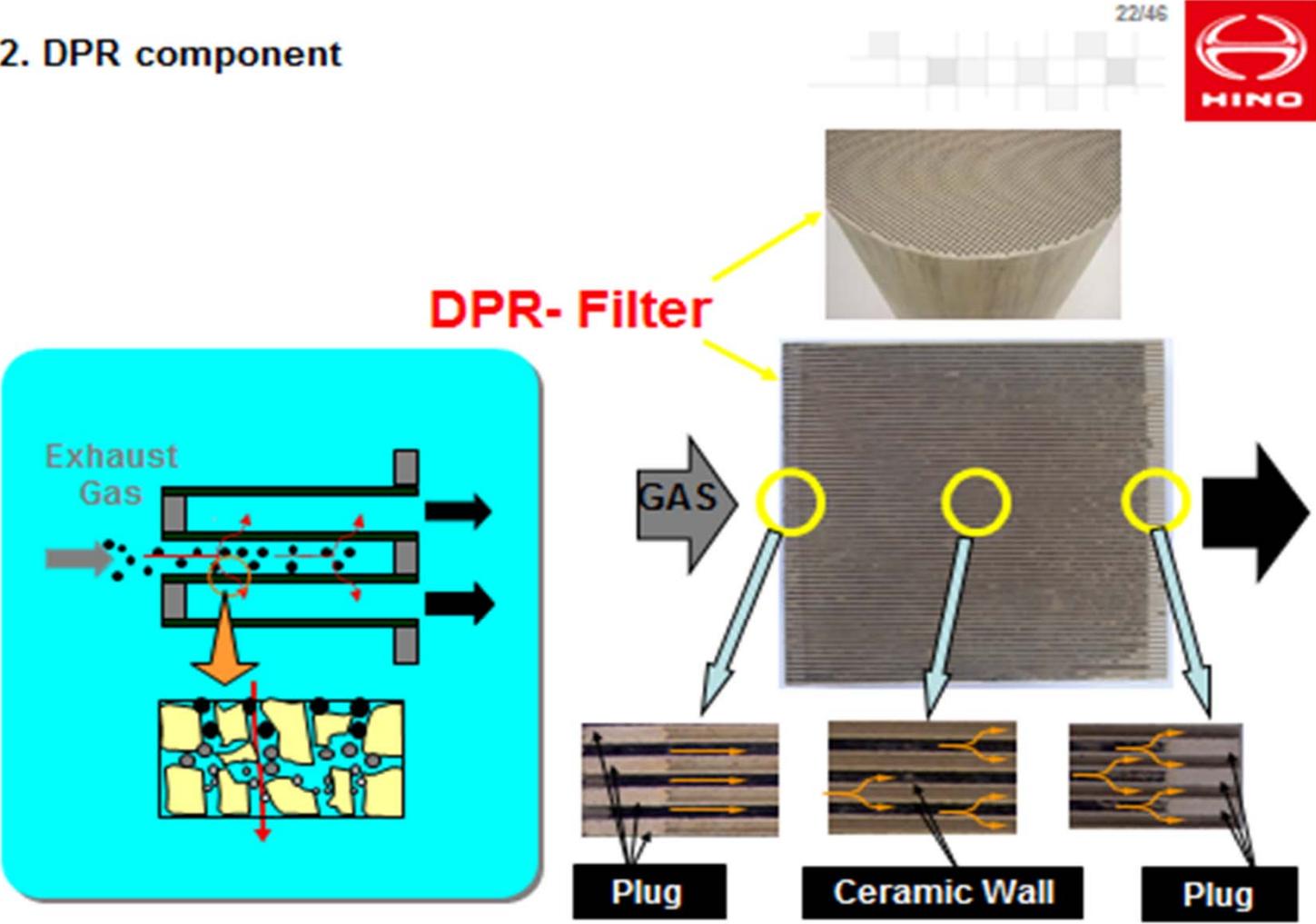


2. DPR component

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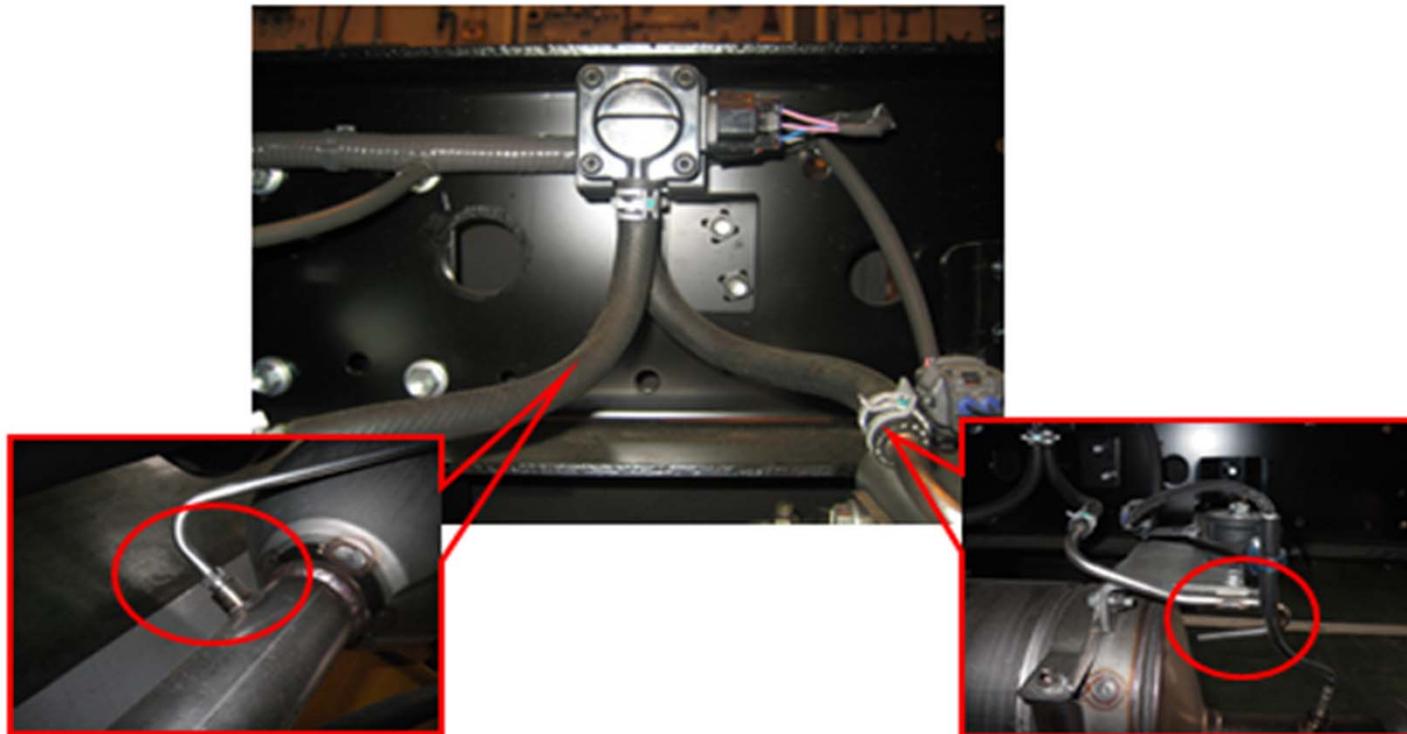


2. DPR component



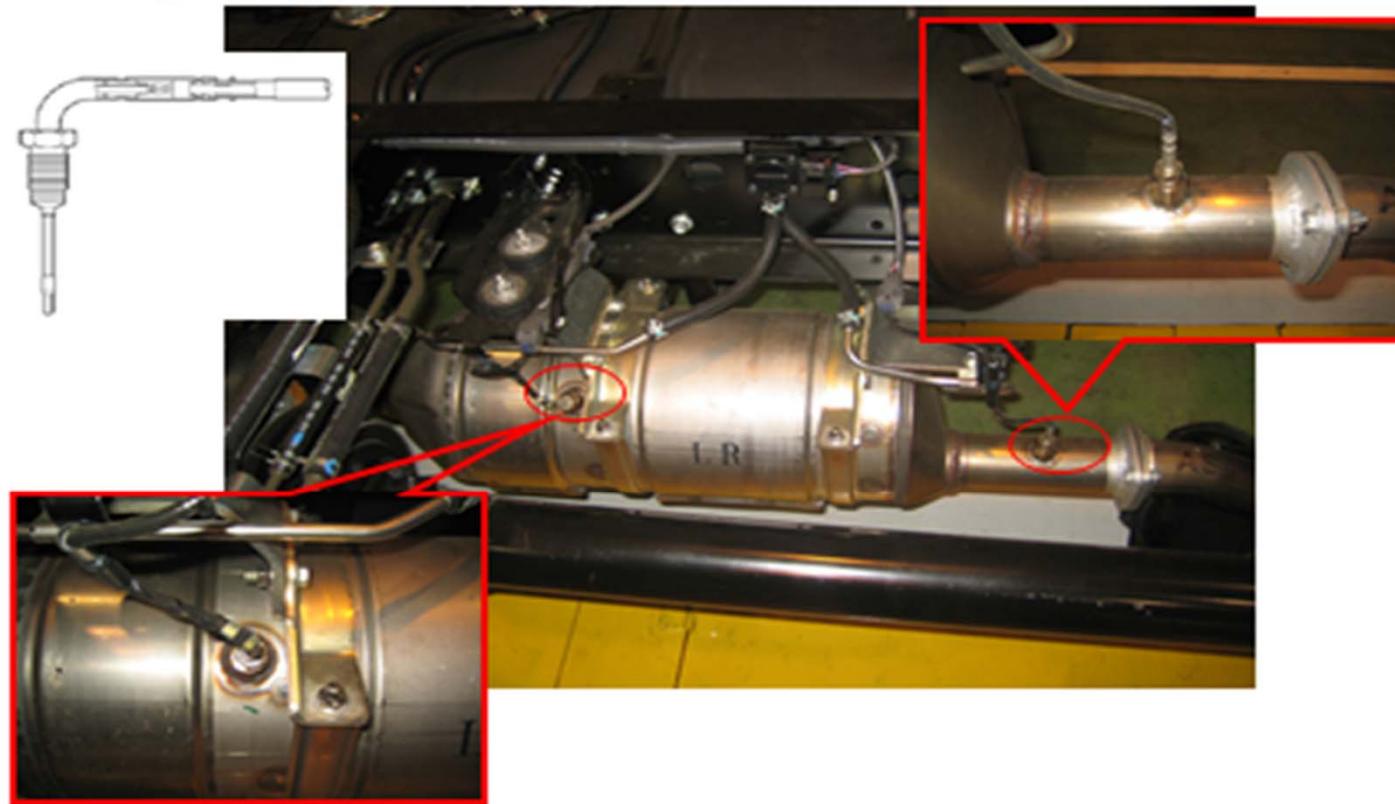
2. DPR component

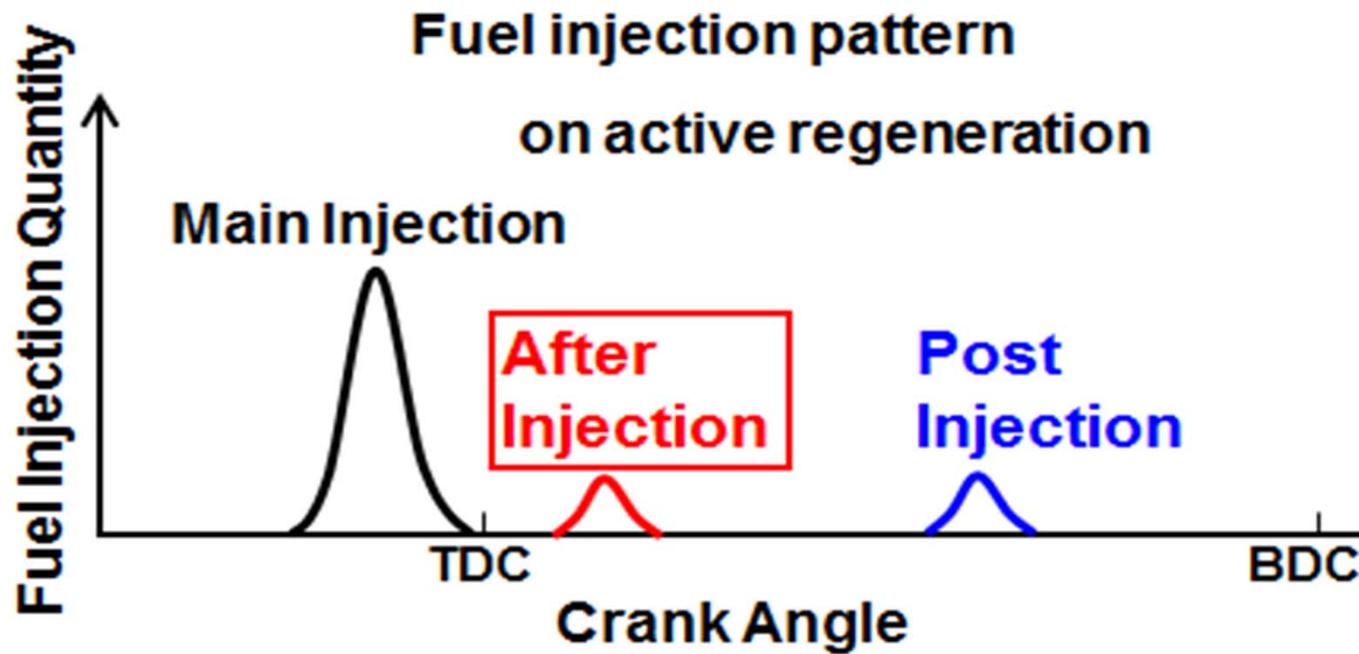
Differential pressure sensor



2. DPR component

Exhaust gas temperature sensor

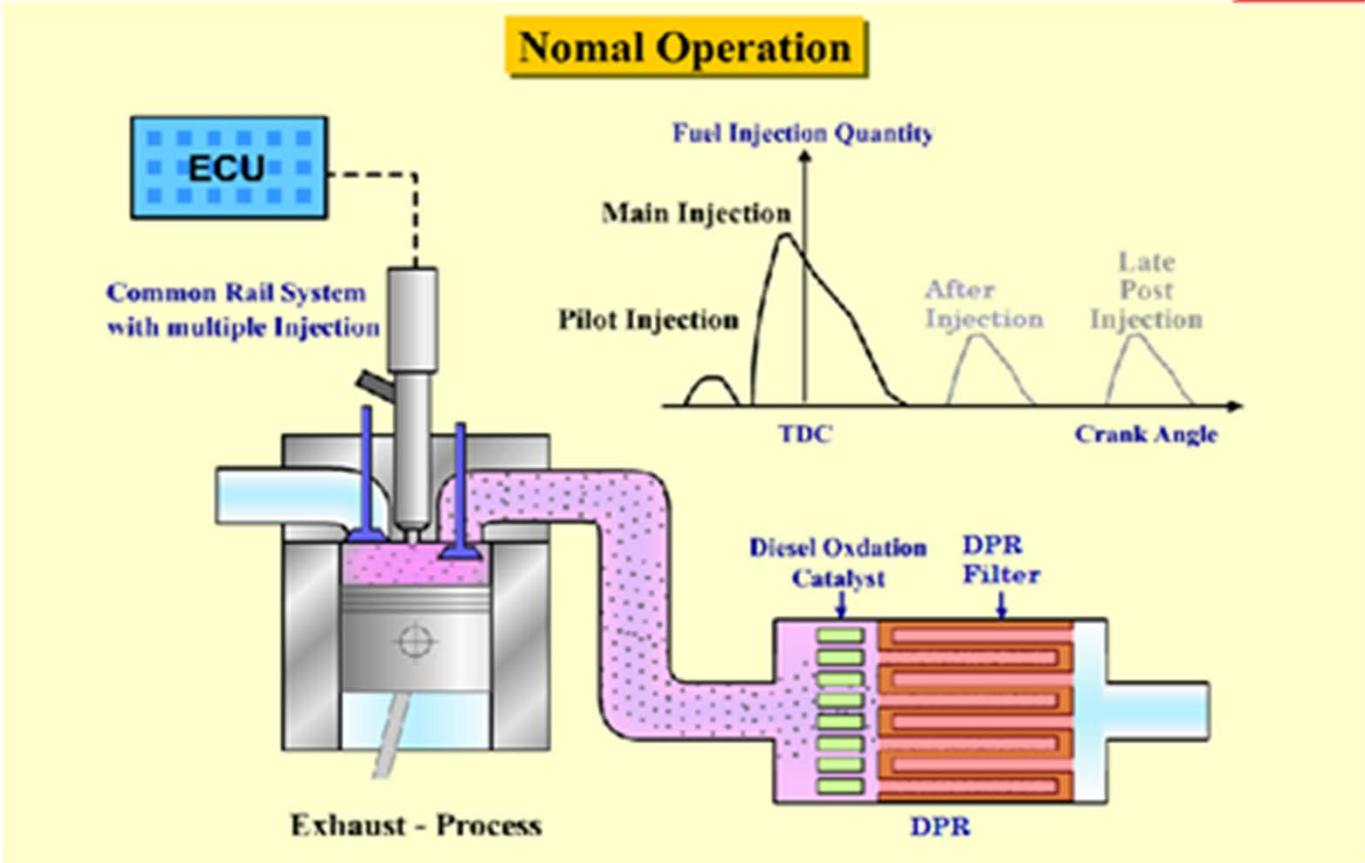




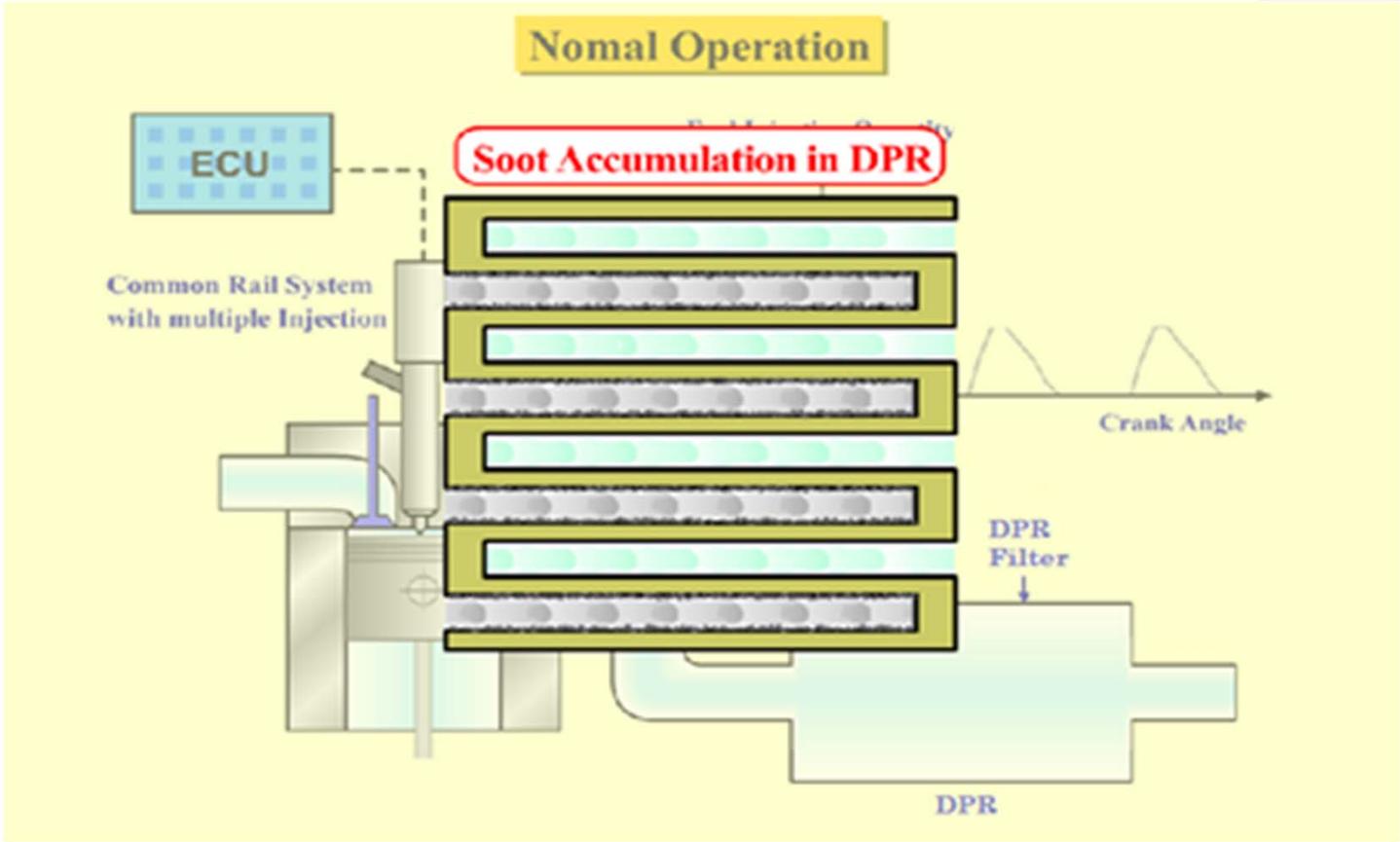
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Nomnal Operation



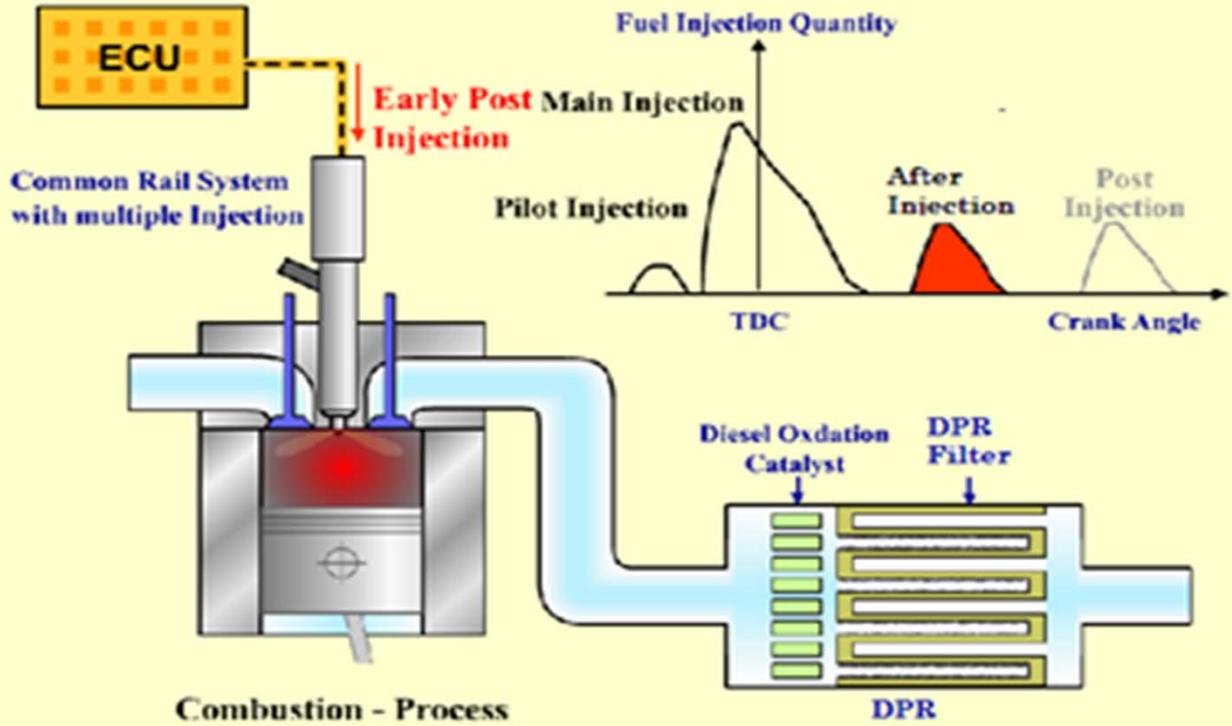
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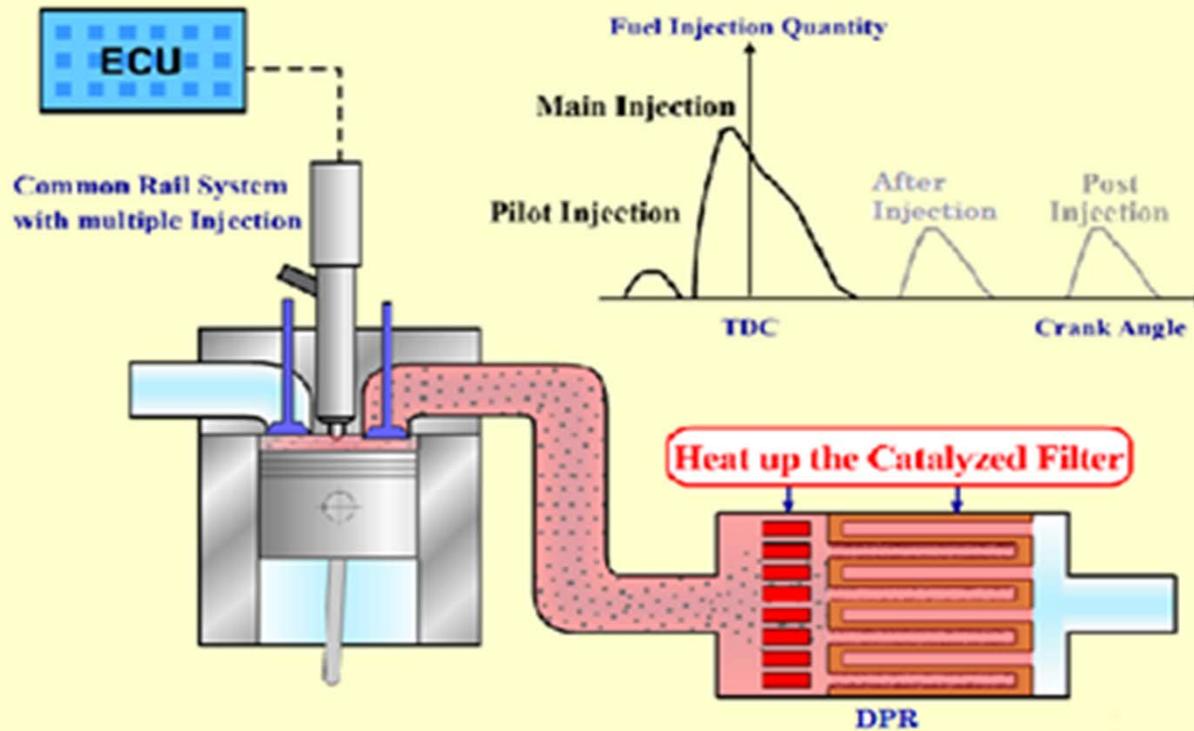


Heat up the DPR





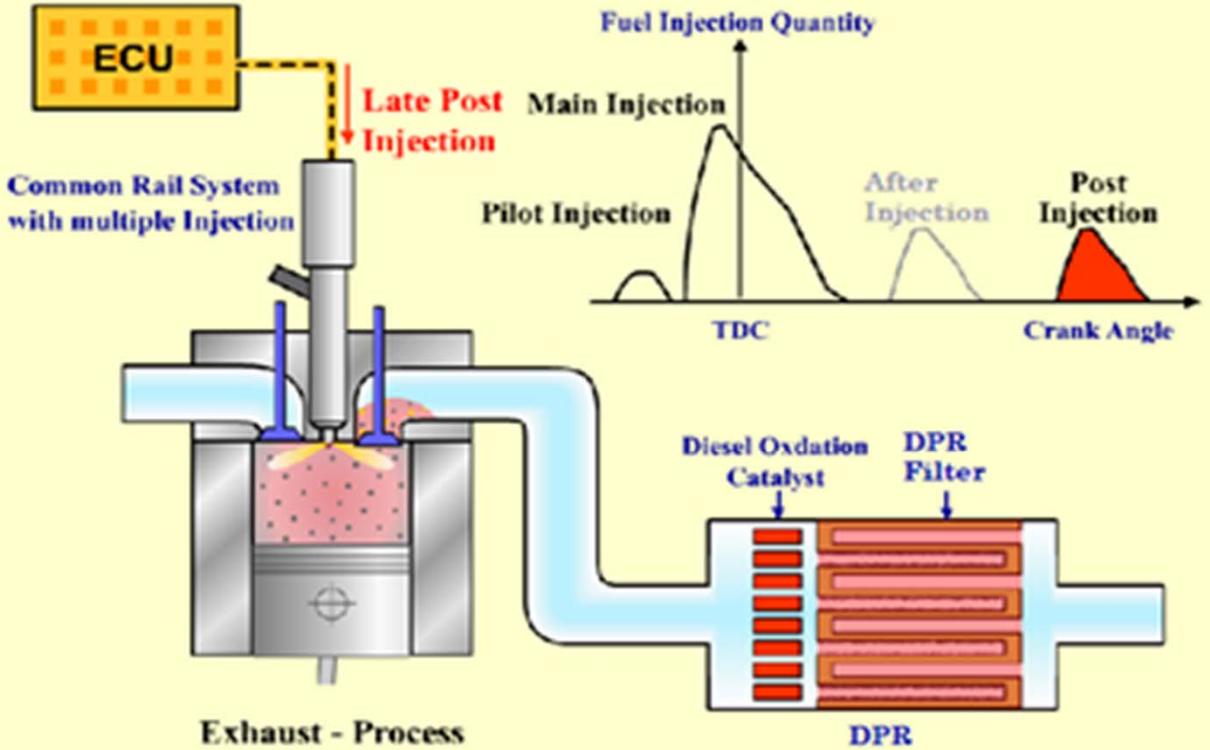
Heat up the DPR



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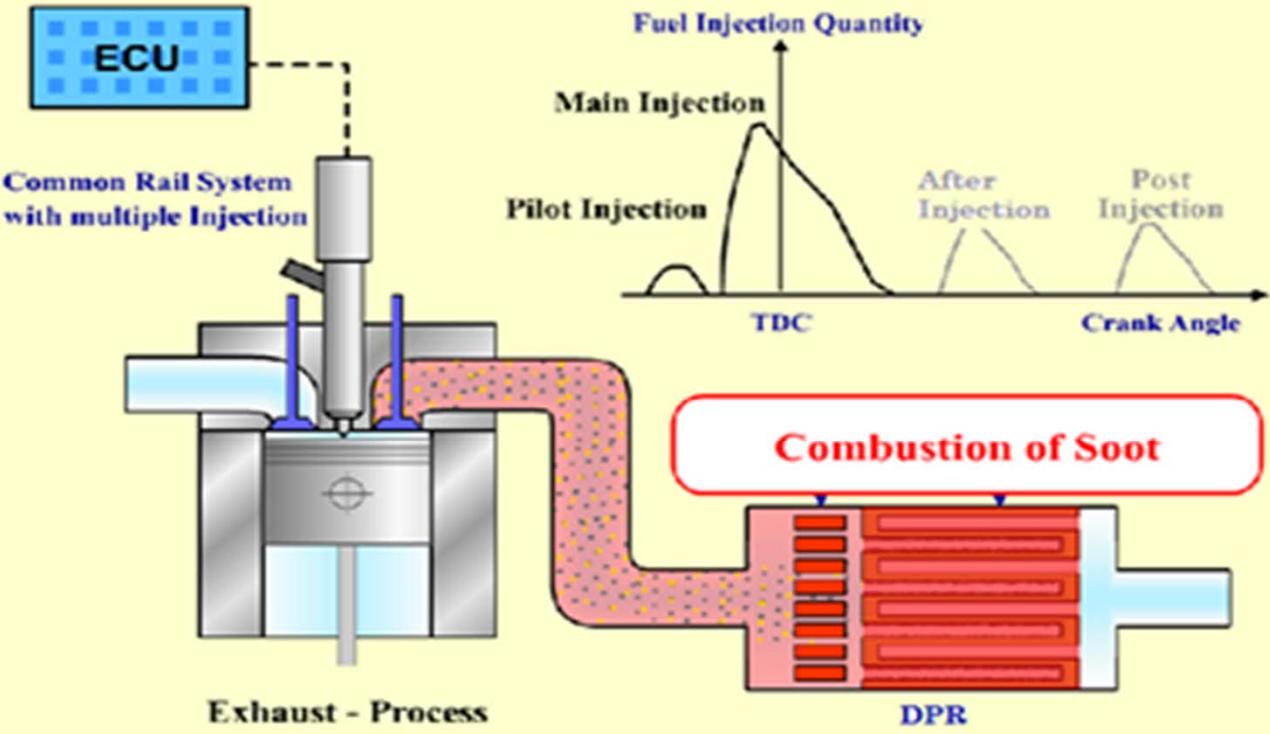


Regenerate the DPR

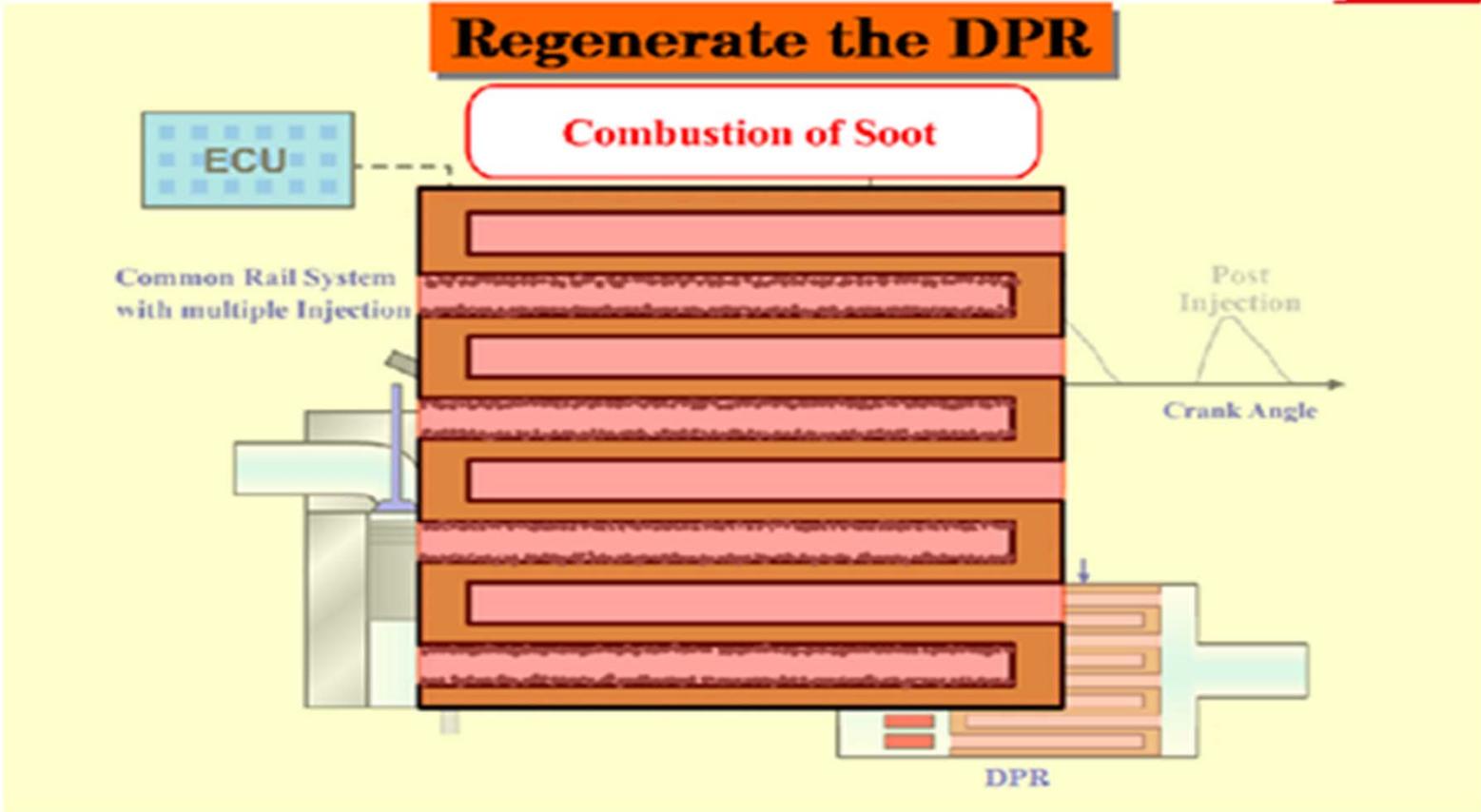




Regenerate the DPR

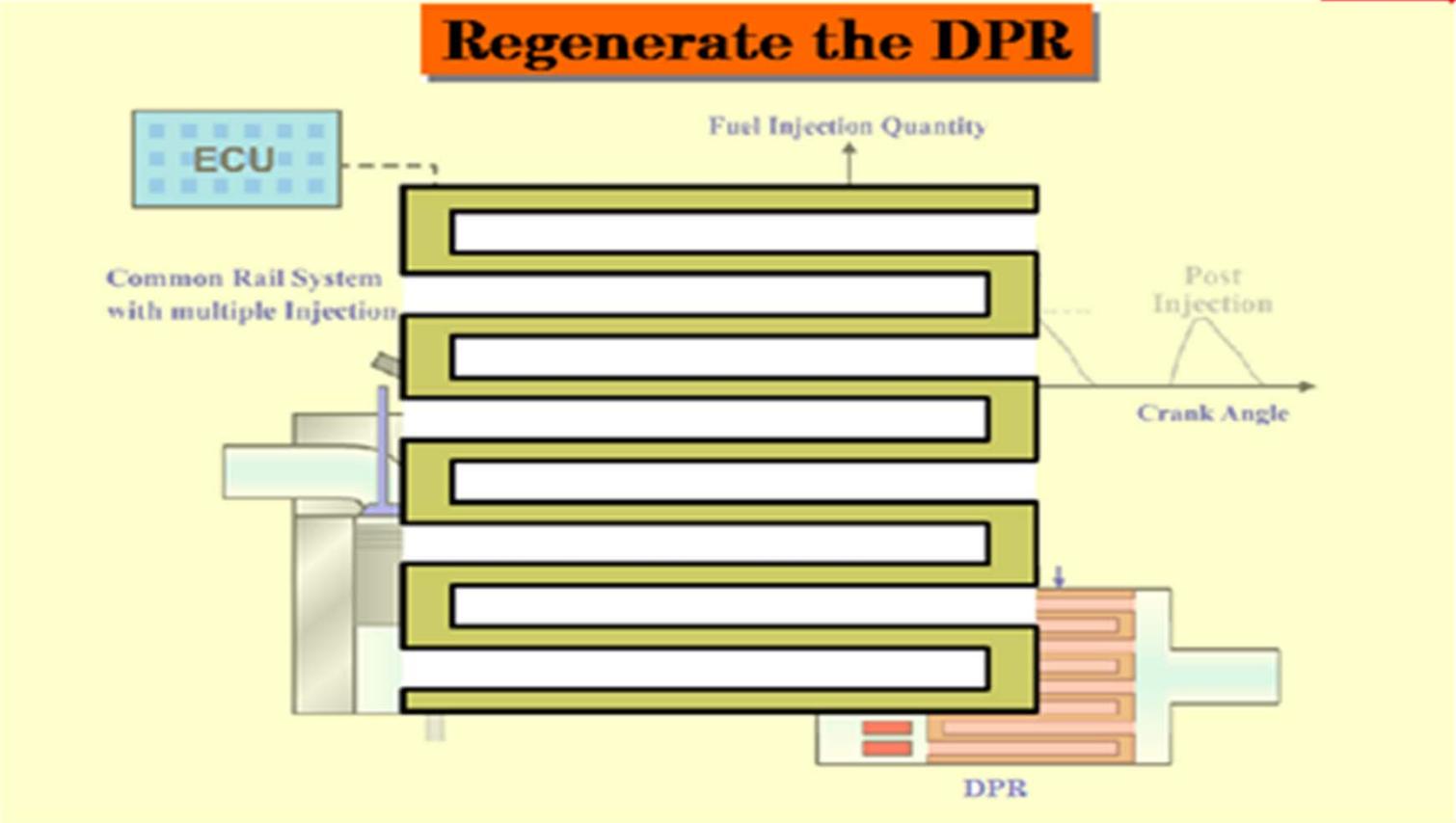


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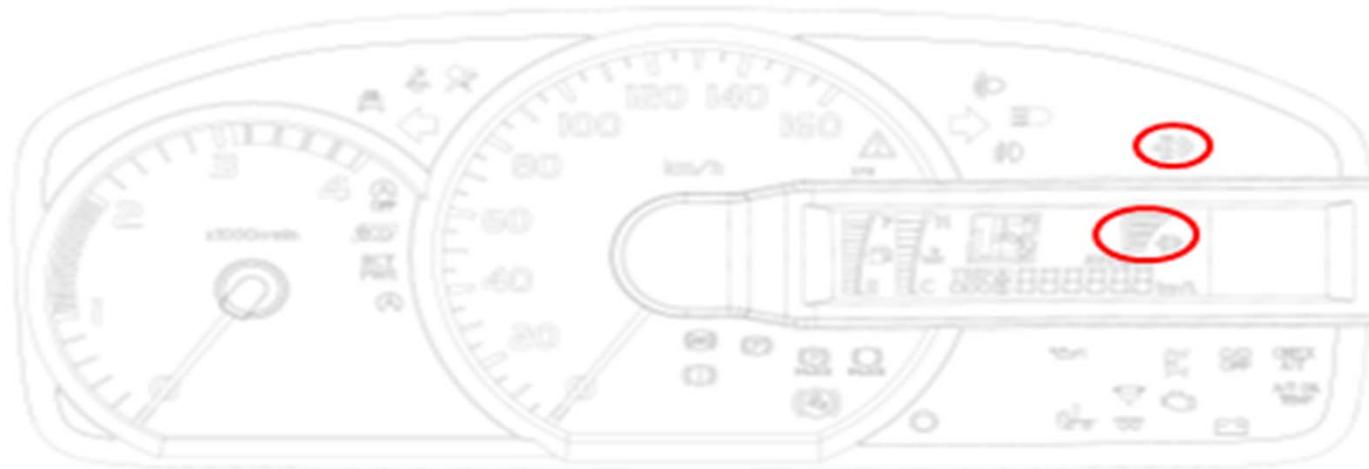




Regenerate the DPR



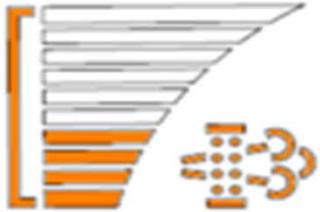
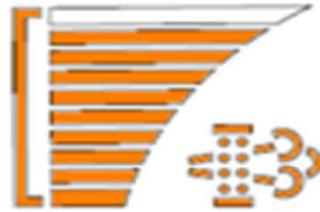
3. Indicator & Multi information



4. Regeneration

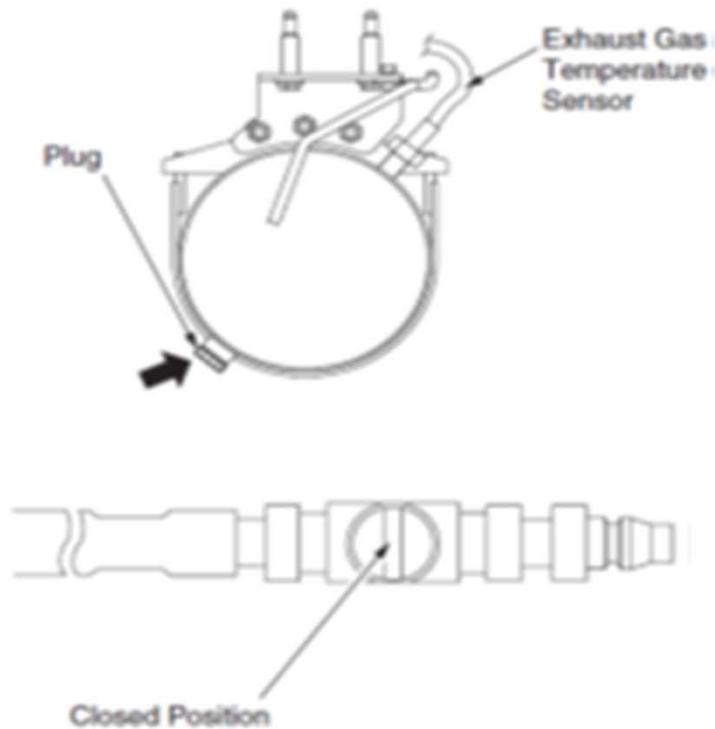
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Lamp condition	Comment
	堆積量: 1.5g / l インジケータ点灯レベル: 3~4本 この状態では自動再生を行う
	堆積量: 2.5 g / l インジケータ点灯レベル: 5~9本 この状態では手動再生を行う必要がある
	堆積量: 5 g / l インジケータ点灯レベル: 10本 この状態では強制再生を行う必要がある

5. Maintenance

Air blowing work



1. IN CASE OF COMPRESS AIR METHOD

- (1) Remove the plug near the center of the center pipe.

- (2) Remove the exhaust gas temperature sensor installed near the center of the center pipe. (Close the boss hole of the sensor with packing tape or similar.)

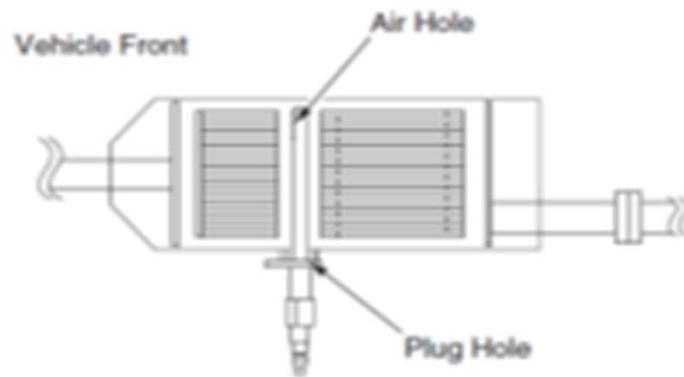
- (3) Perform air blowing.
 - a. (Set the air valve of the SST to the closed position.)

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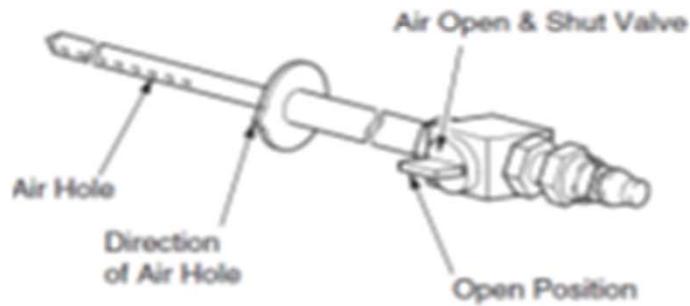


5. Maintenance

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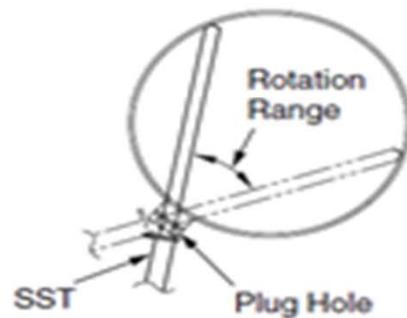
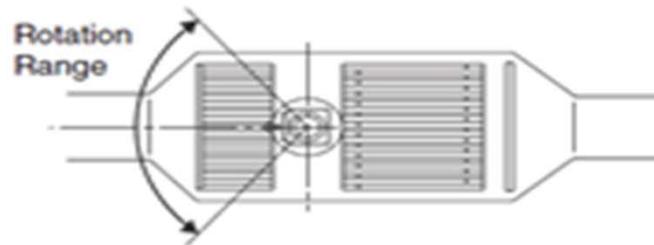
- b. Insert the air hole of the SST into the plug hole in the direction towards the vehicle front.



5. Maintenance



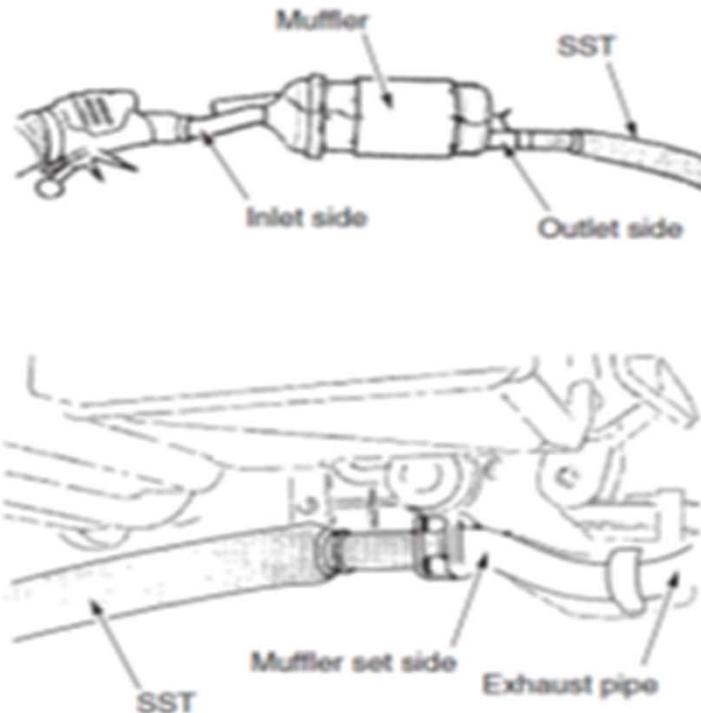
Vehicle Front



- c. Open the air valve, move the SST in the indicated range while keeping the tip in contact with the inner wall of the DPR, and perform air blowing repeatedly for approximately five minutes. Close the valve after completion of air blowing.
 - d. Remove the SST.
 - e. Disconnect the air hose.
- (4) Install the plug.
- (5) Remove the rubber tape from the sensor boss hole, remove any foreign matter from inside the boss, and install the exhaust gas temperature sensor.

5. Maintenance

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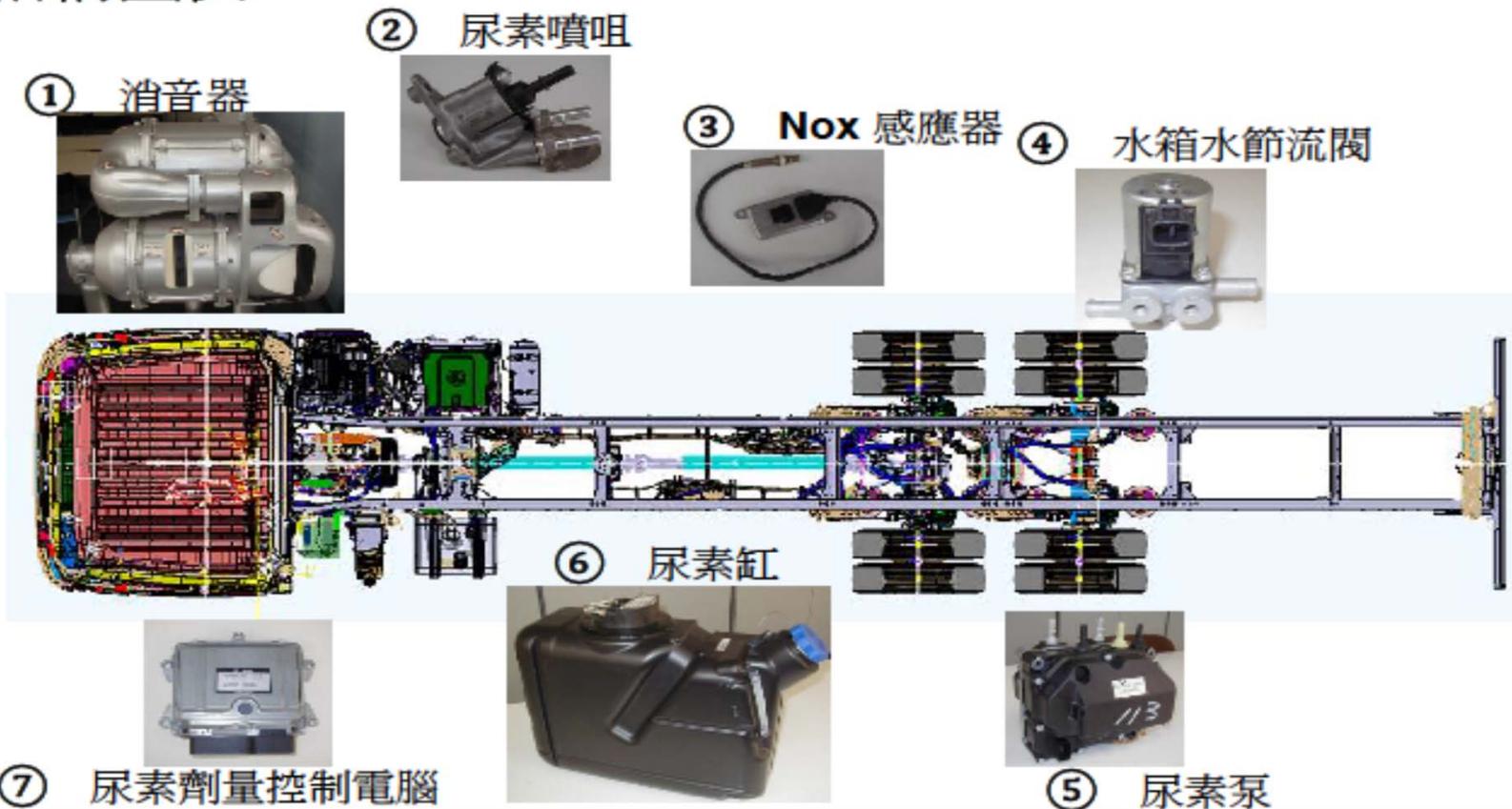


2. IN CASE OF BACKFLOW METHOD

- (1) Remove the muffler, turn it back to front and attach the SST to the outlet side of muffler.
- (2) Check that there is no black smoke at the engine idling revolution.
- (3) Attach the SST to the muffler setting place of exhaust pipe.
- (4) Blow exhaust gas into backside of muffler by depressing accelerator (5 to 10 times) in order to blow out the carbon soot from inlet side of muffler.

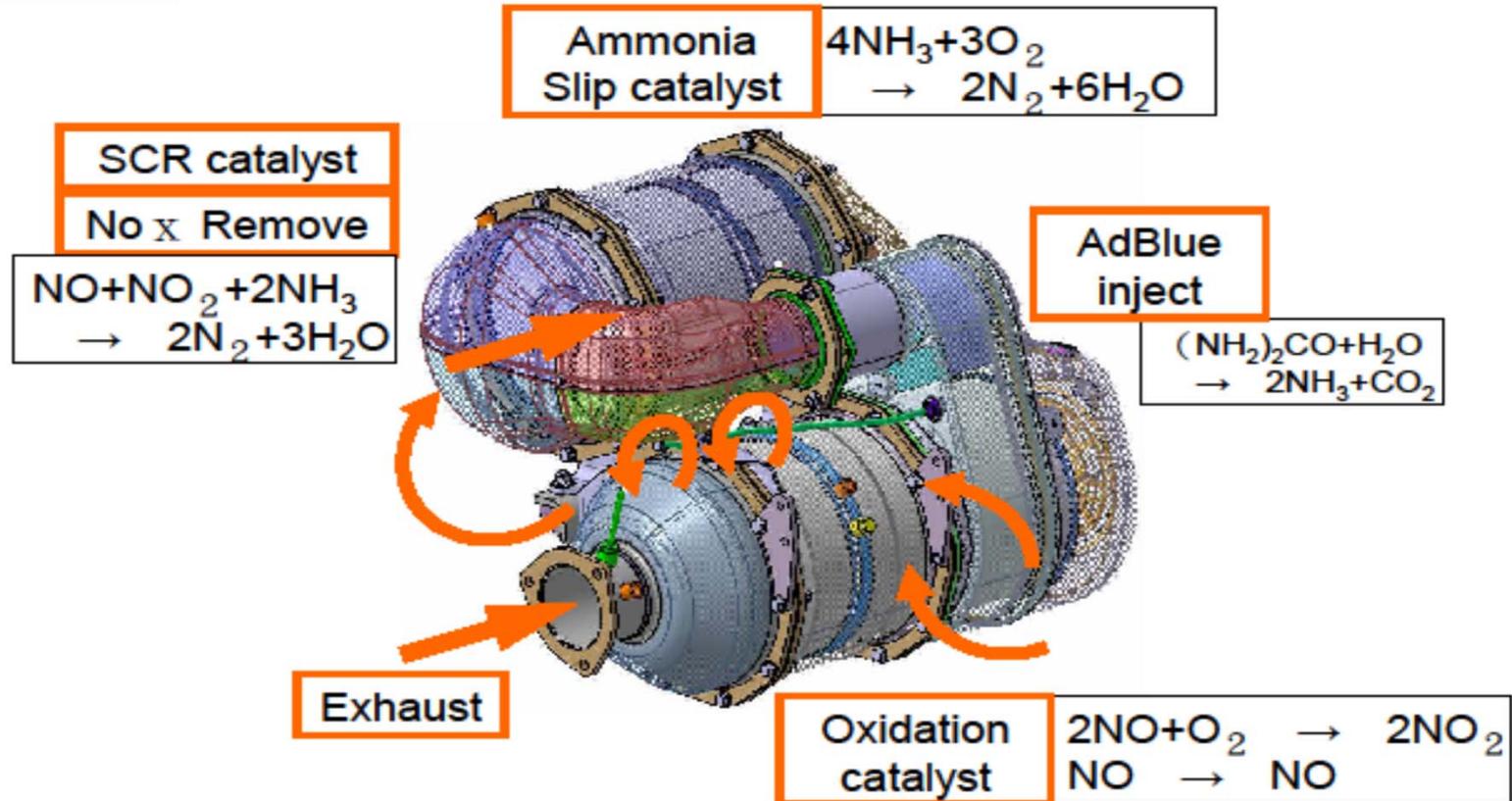
SCR 系統

結構圖表



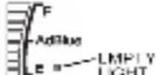
SCR 系統

Muffler unit



SCR 系統

SCR system indicator (AdBlue Level Warning)

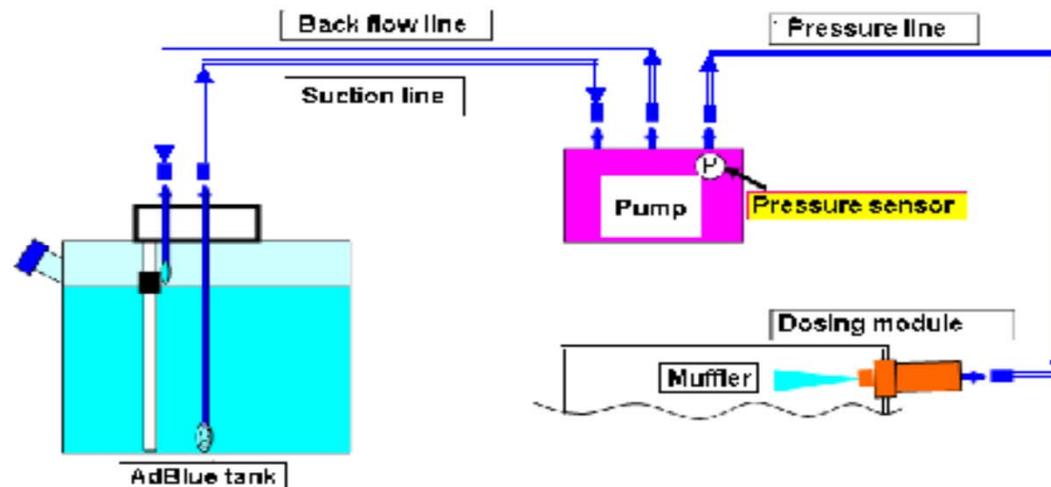
Level of AdBlue remaining	AdBlue gauge	Warning information		Restriction
		Indicator lamp	Warning buzzer	
10% and more		—	—	—
Less than 10%		AdBlue light ON 	Sound 1 sec. (only one time)	—
Less than 5%		AdBlue		—
0%		AdBlue light ON + MIL lamp blink  	Sounds continuously (only one time)	After the vehicle stopped, 60% of maximum torque



SCR 系統

注意事項：

- 停車熄匙後，尿素泵會繼續運行20秒把多餘尿素泵回 尿素缸以免塞尿素喉
- 如車裝有CUT 電系統(如危險品車) 須更加留意!!

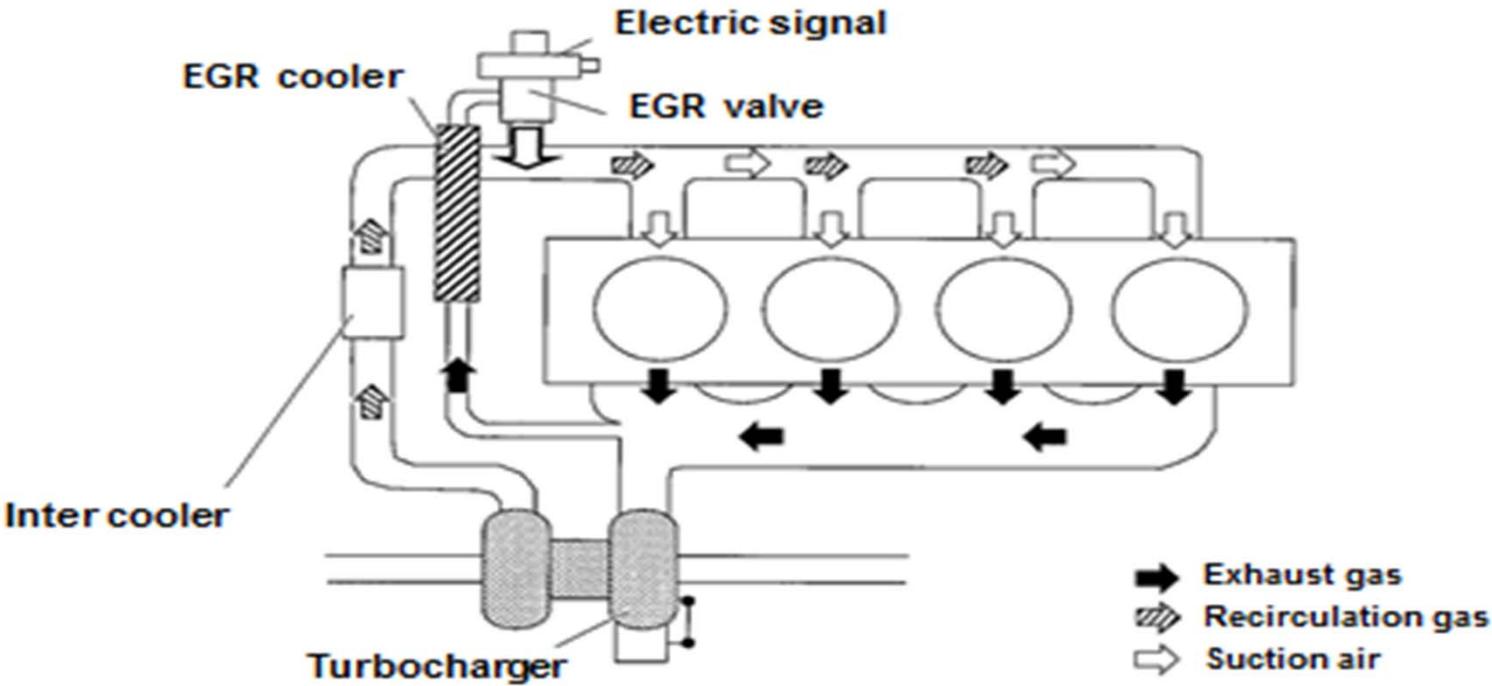




1. EGR system

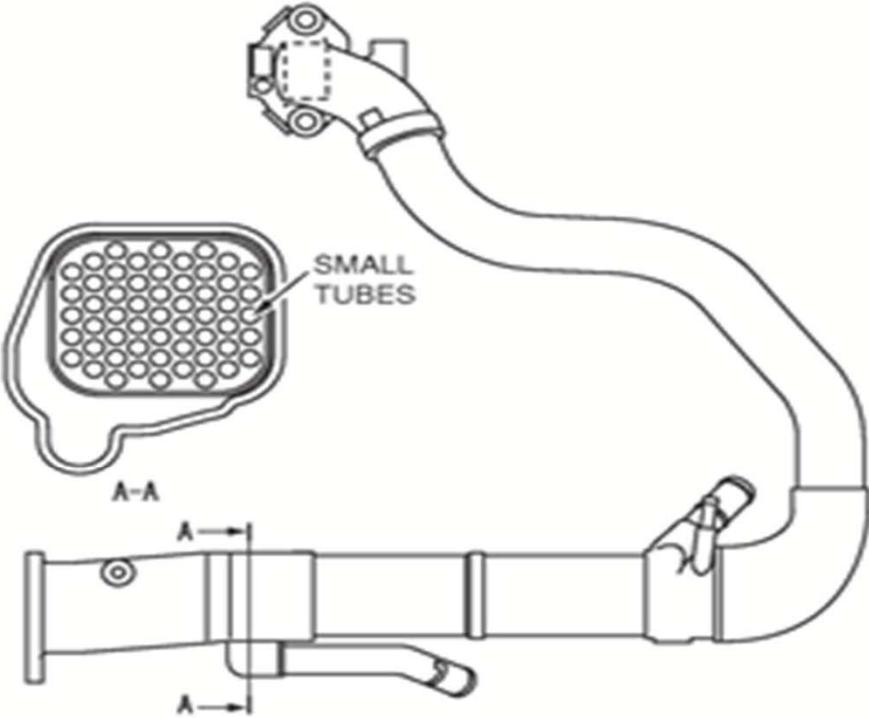
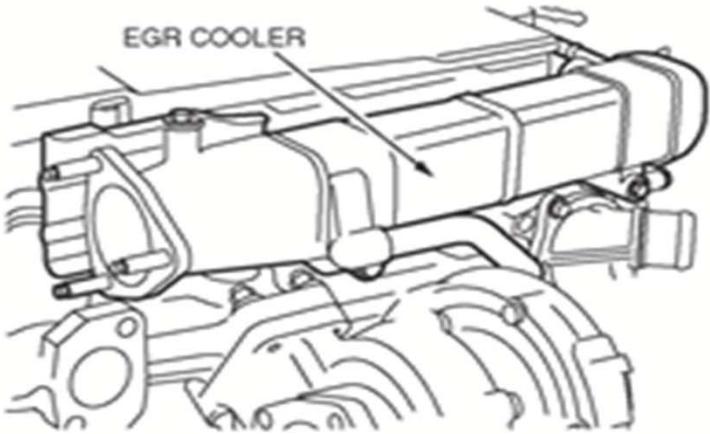
1. EGR outline

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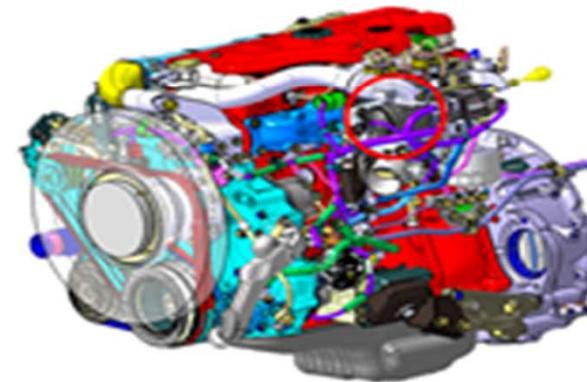
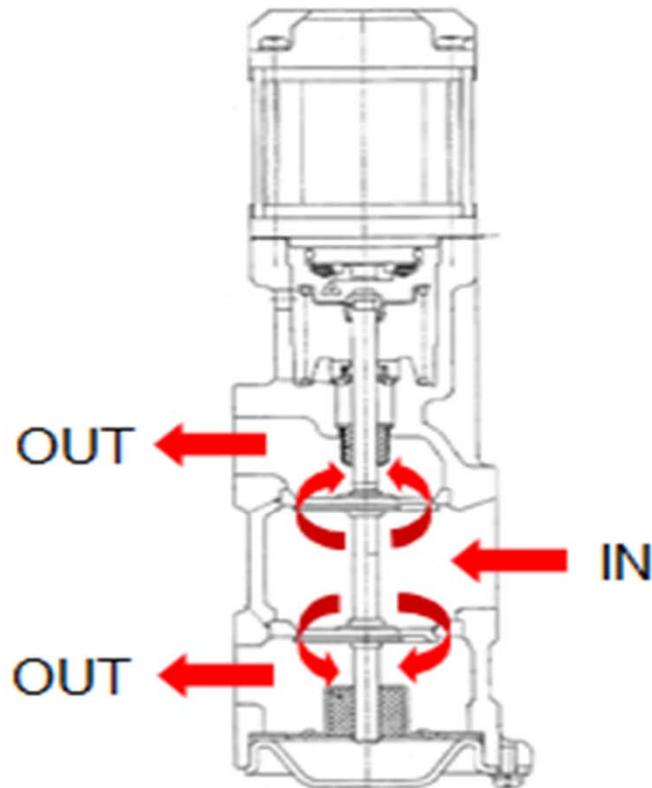
2. EGR component

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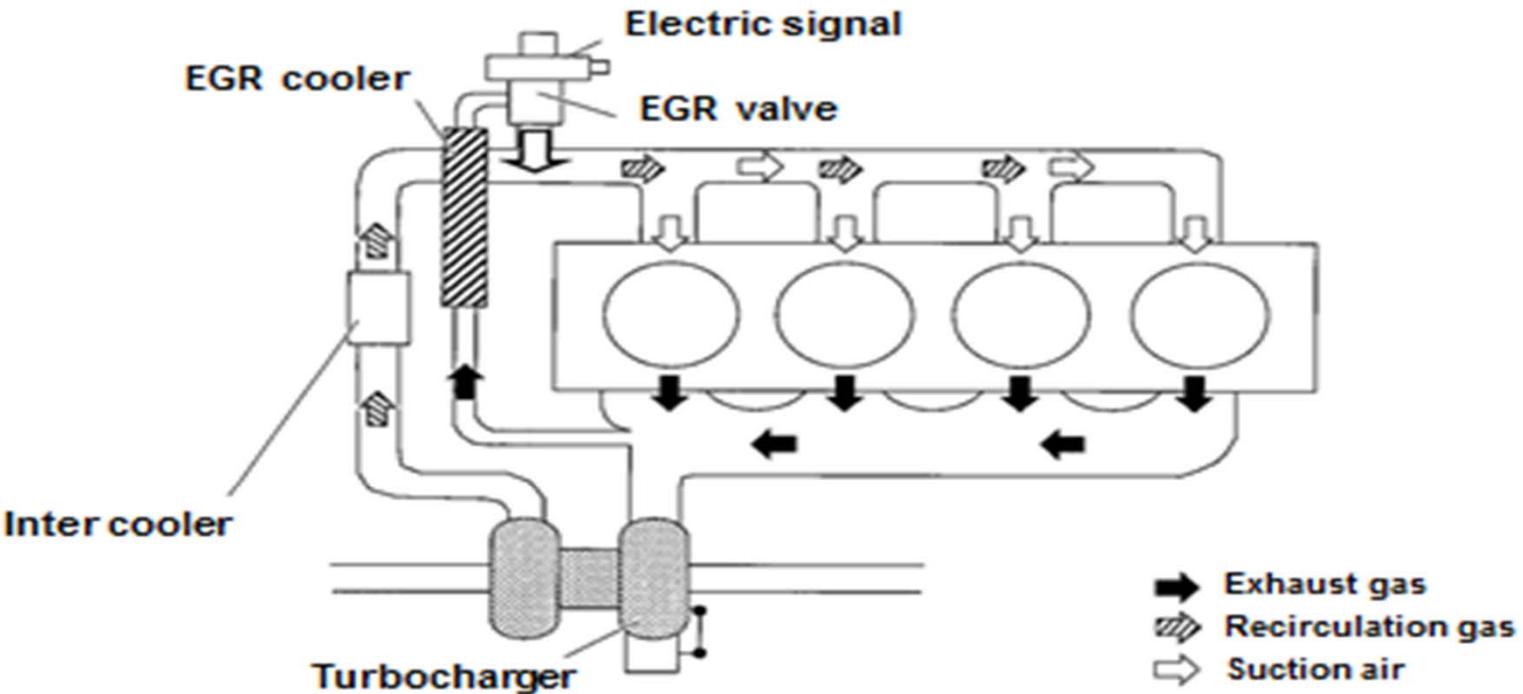
2. EGR component

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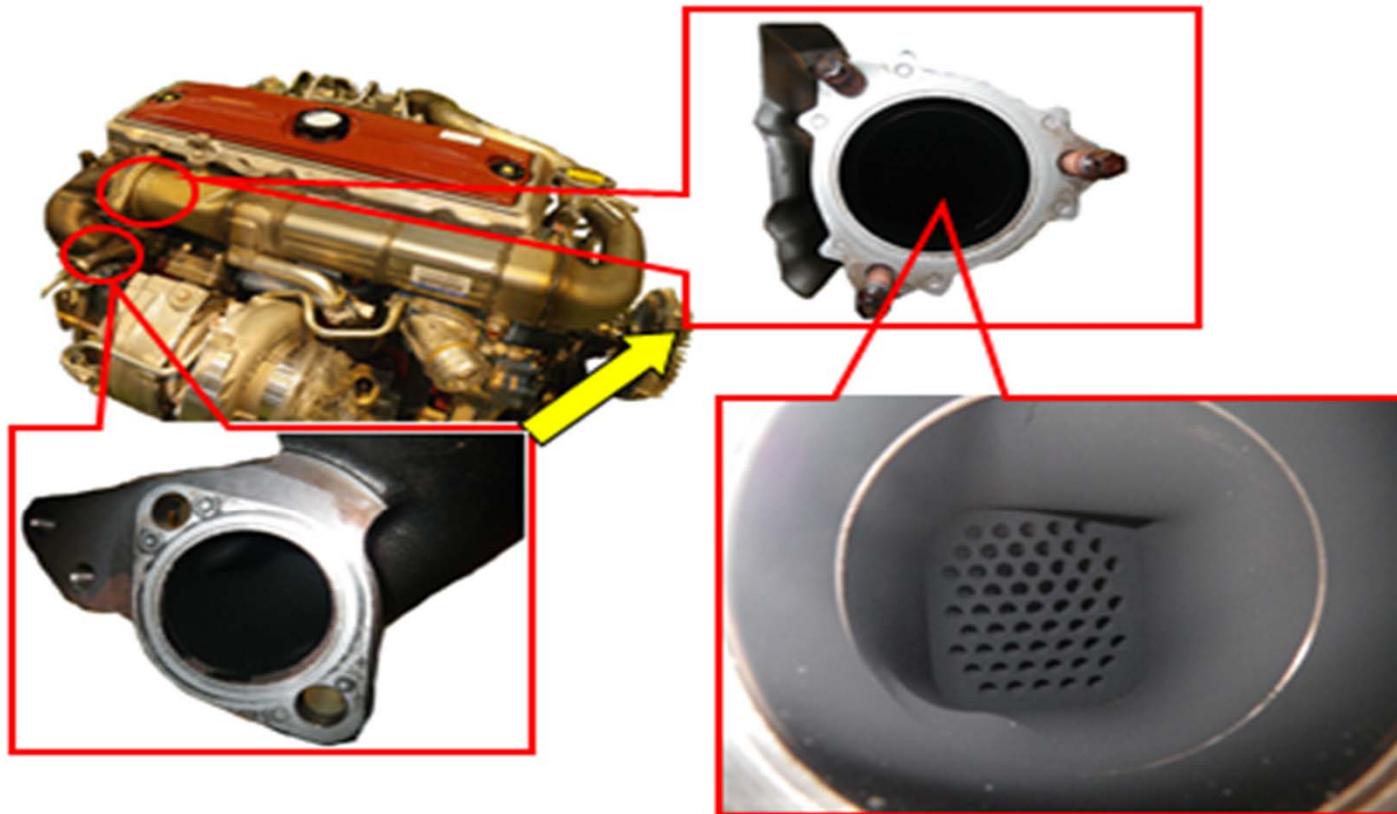
3. Operation

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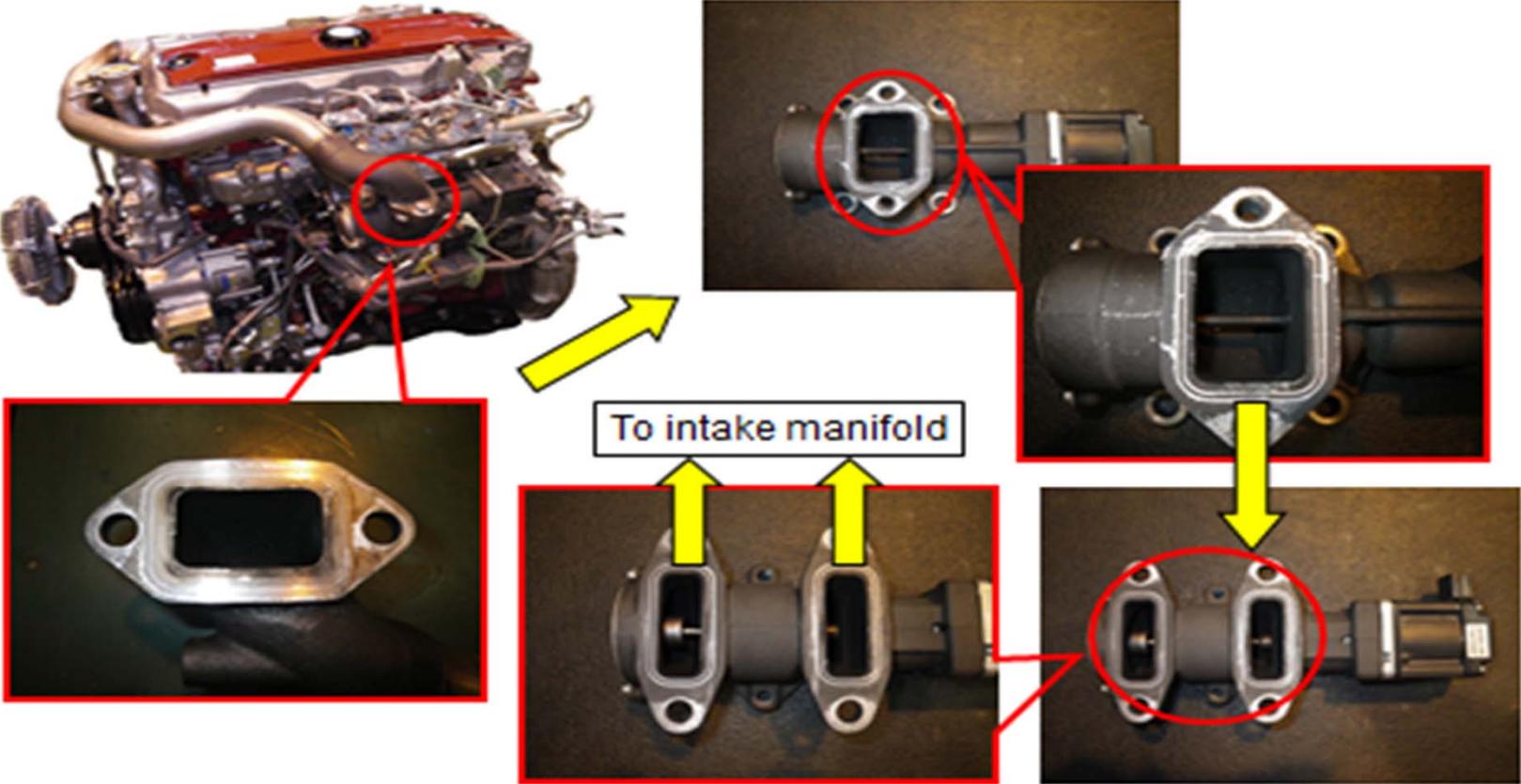
3. Operation

Exhaust gas flow



3. Operation

Exhaust gas flow



保養需知

定期保養有助於

- 節省燃油
- 延長車輛壽命
- 確保安全
- 確保車輛符合法例要求

“Outstanding Durability” “Assured Technology”

“Hino Genuine Parts”



LT06-001A



保養需知

保養週期表

保養作業：

A = 檢查和 / 或視需要調整；R = 更換、變更或潤滑；C = 清潔；
I = 檢查且視需要校正或更換；L = 潤滑；T = 旋緊到規定扭力。

保養週期： (里程表讀數或使用月數， 以先到者為主。)	里程讀數 x 1000 公里	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	月數
	x 1000 英里	0.6	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	

引擎基本元件

1 汽門間隙										A									A	48
2 驅動皮帶				A		A		A		A		A		A		A		A		12
3 引擎機油和濾清器 << 請參閱 1 >> (使用日野原廠機油) < 類型 1 >																				
4 冷氣和暖氣系統 << 請參閱 2 >>																			I	24

註：

- 關於類型 1/ 類型 2 的詳細內容，請參閱第 218 頁的「定期保養項目」。
- 檢查水箱、冷凝器和中冷器是否被樹葉、污垢或昆蟲等堵塞，如果堵塞請進行清潔。檢查水管連接的安裝情況，是否有腐蝕等。



保養需知

引擎潤滑油

油量 (視放再添加) *

公升 (qt., Imp. qt.) :

含濾清器	6.5 (6.9, 5.7)
不含濾清器	5.2 (5.5, 4.6)

您的愛車添加「日野原廠機油」。請使用日野認證的「日野原廠機油」或同級品，以符合下列的等級和黏度。

API : CD¹、CE²、CF、CH-4、CI-4 或 CJ-4¹

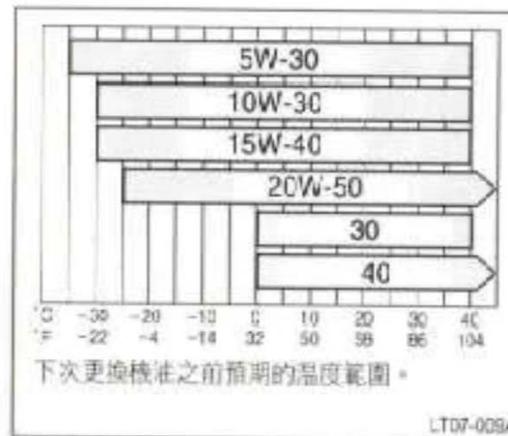
JASO : DH-1 或 DH-2¹

ACEA : E-3、E-4、E-5 或 E-6¹

¹: 日野建議在實行 EURO4/EPA07 法規的國家使用這些機油，並且只可使用超低硫燃油。

²: 這些機油等級不符合最新排氣 (EURO4/EPA07/EURO5 等) 法規，日野不建議使用這些機油等級。

建議機油黏度 (SAE) :



關於詳細說明，請洽詢任何授權的日野經銷商、保養廠，或其他合格且設備齊全的專業人士。

冷卻系統

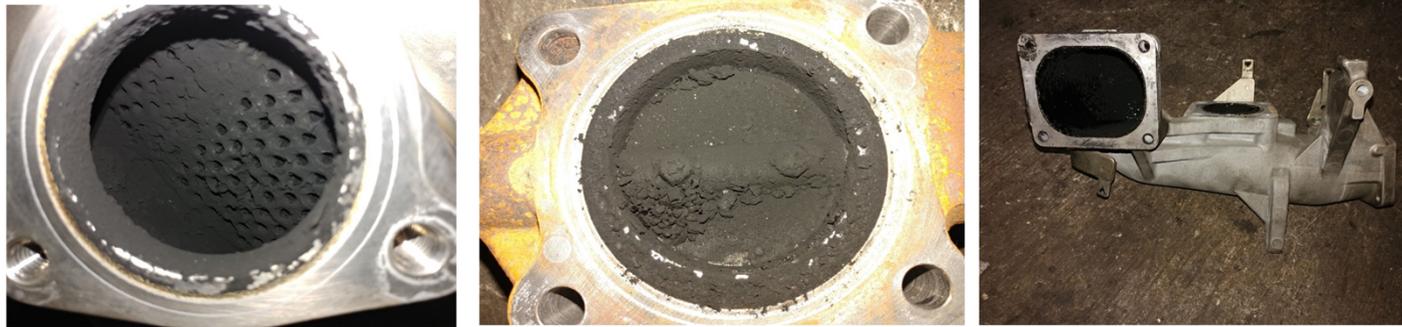
總容量 * 公升 (qt., Imp. qt.) :

手排變速箱車型 ^{1,2}	14.2 (3.75, 3.12)
自排變速箱車型 ^{1,2}	14.1 (3.72, 3.10)

¹: 加熱器較少的車型；較上述容量少 1 公升 (0.26 qt., 0.22 Imp. qt.)。

²: 雙排座椅車型的後加熱器；較上述容量多 1 公升 (0.26 qt., 0.22 Imp. qt.)。

維修個案分享 500系列



EGR摩打積碳嚴重會出P1458或P1459信號開唔晒或關唔晒

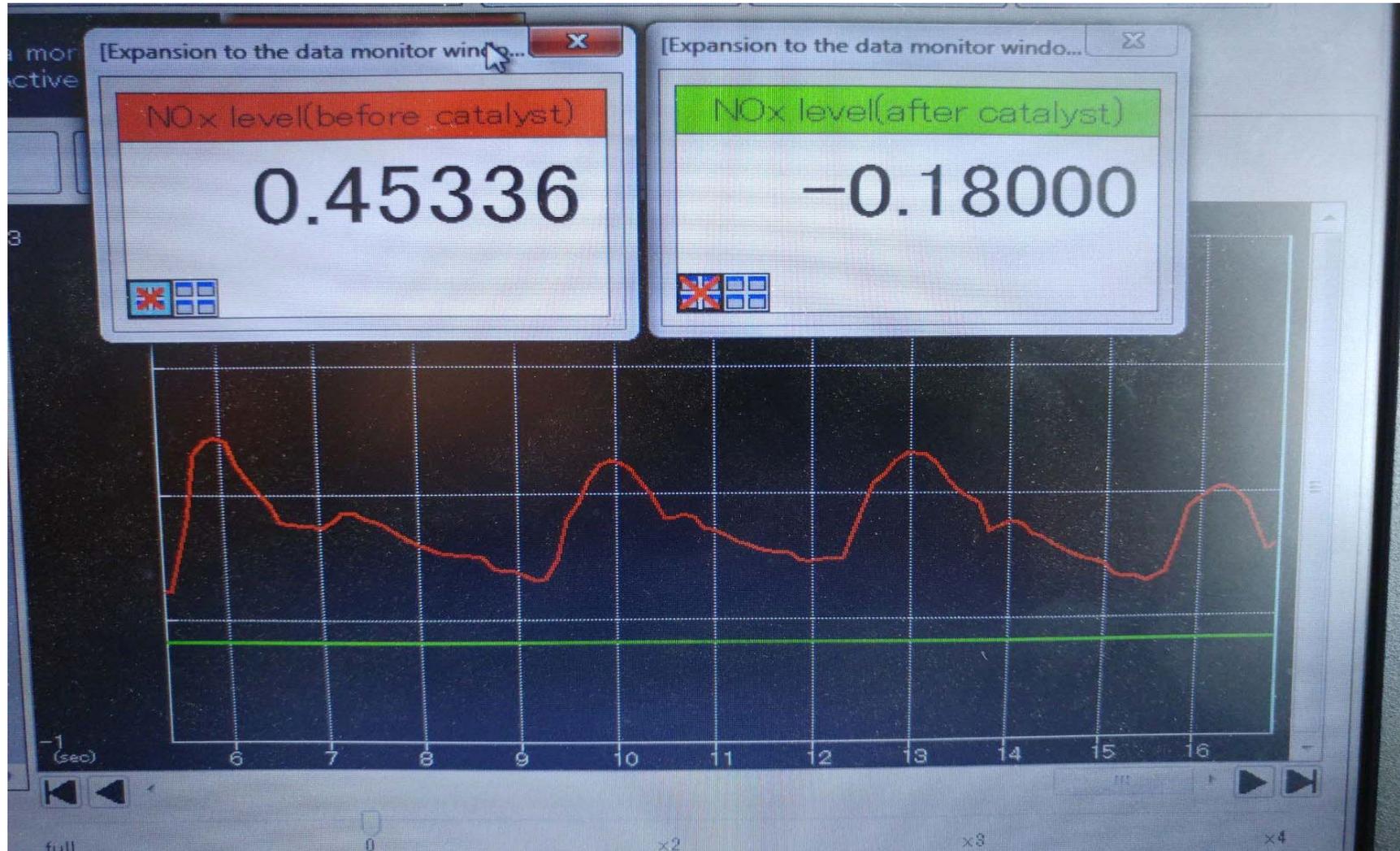


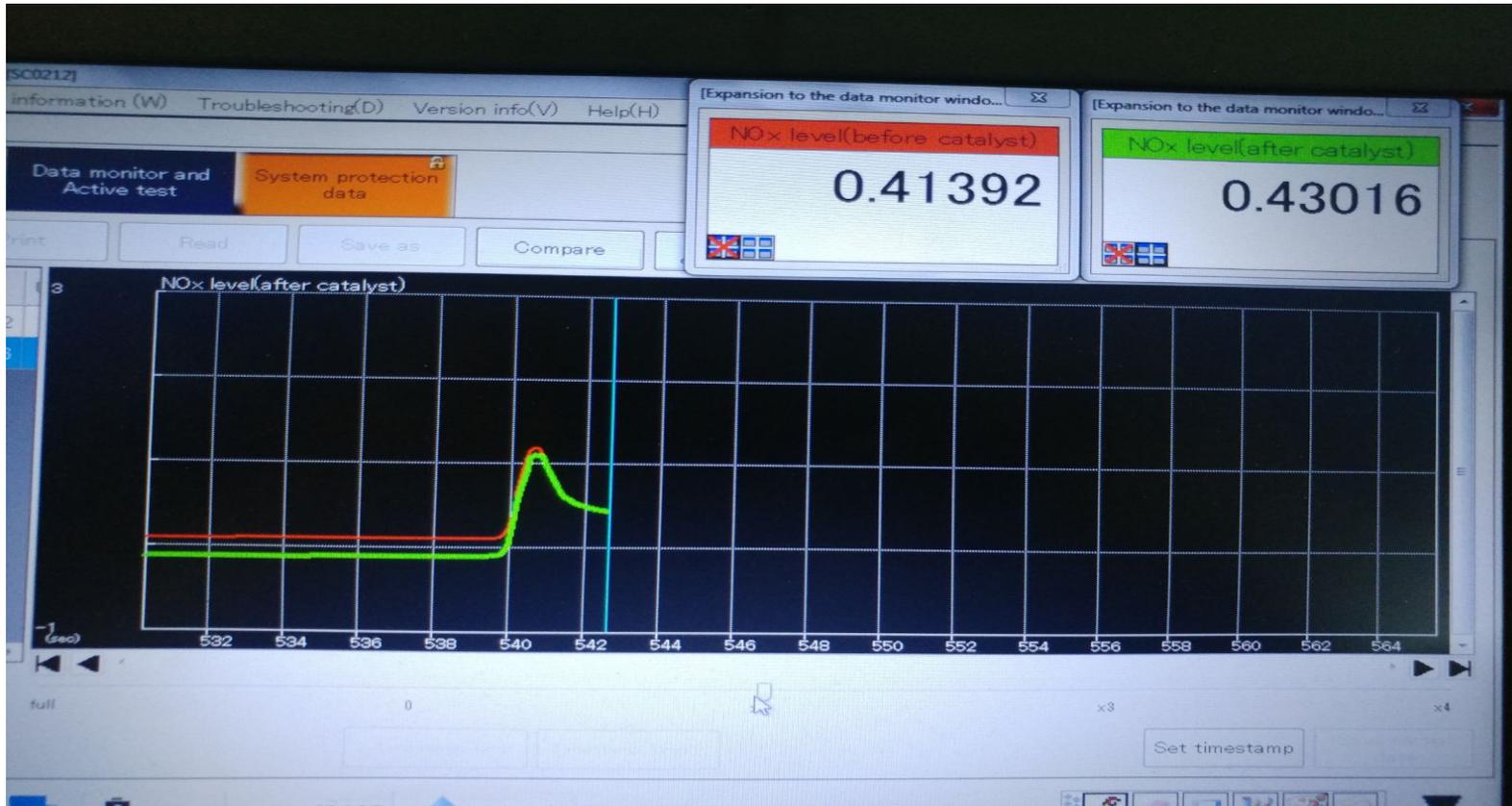
EGR cooler 因內部積碳嚴重 會引致出P0400信號,
會引致無力或熱到偏高, 解決方法需清洗EGR系統

700系列



回廠跟**ENGINE**燈著、噴霧燈著。
檢查發現**SCR**尾後**NOX SENSOR**連接唔到電腦
需更換**NOX SENSOR**。
換後**RESET**電腦 將尿素系統重新行一次
取消信號**ENGINE**燈後及噴霧燈熄滅,回復正常





NOX SENSOR 正常運作時圖表







完成後**ENGINE**燈、噴霧燈會熄滅

300系列



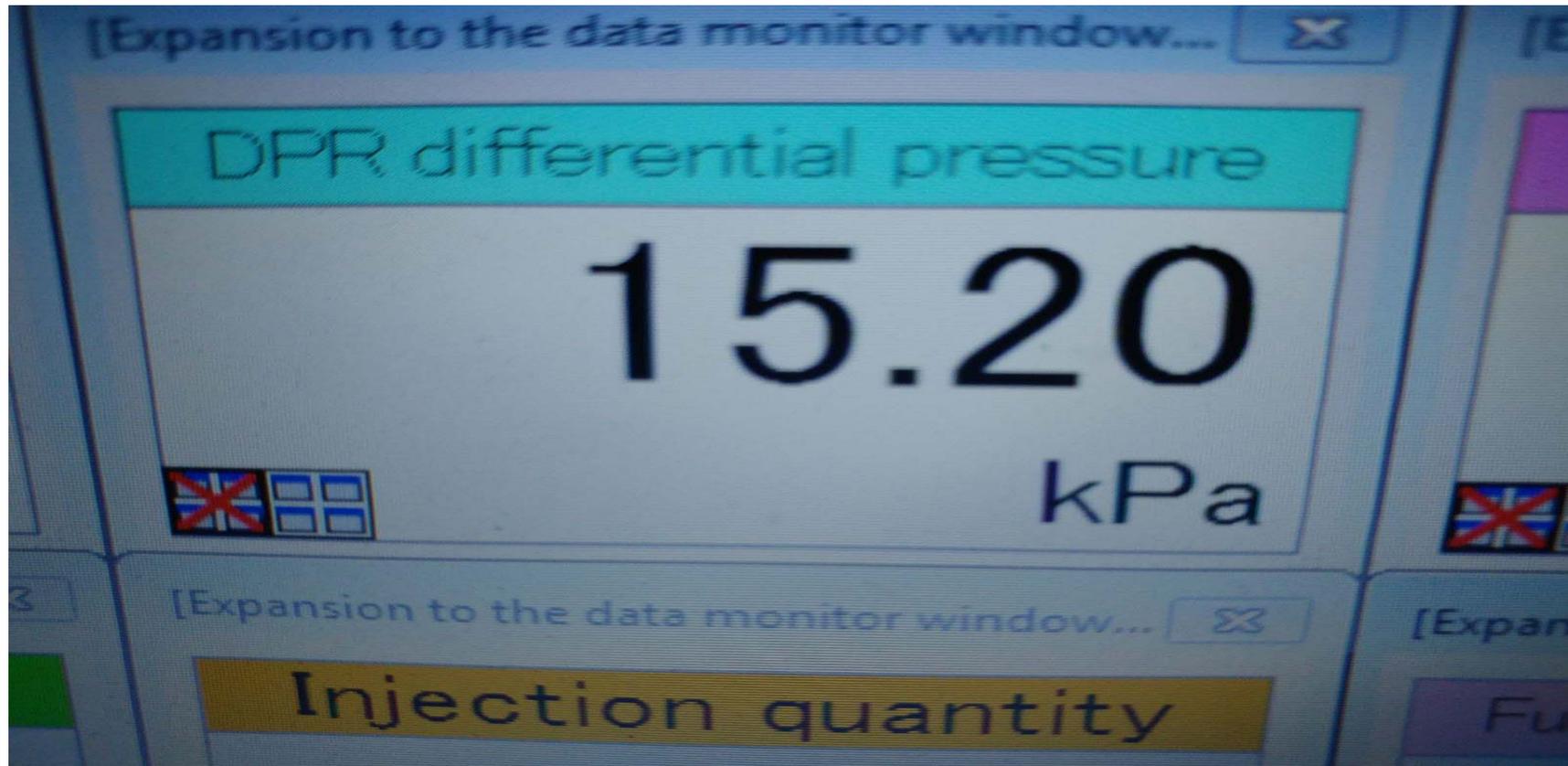
客人回廠時**ENGINE**燈著、燒碳燈格數十格(因客人著燈時沒有按燒碳掣燒碳引致)
CHECK電腦出P2463信號
現須將燒碳燈格數降低 再燒炭清除DPR內碳粒



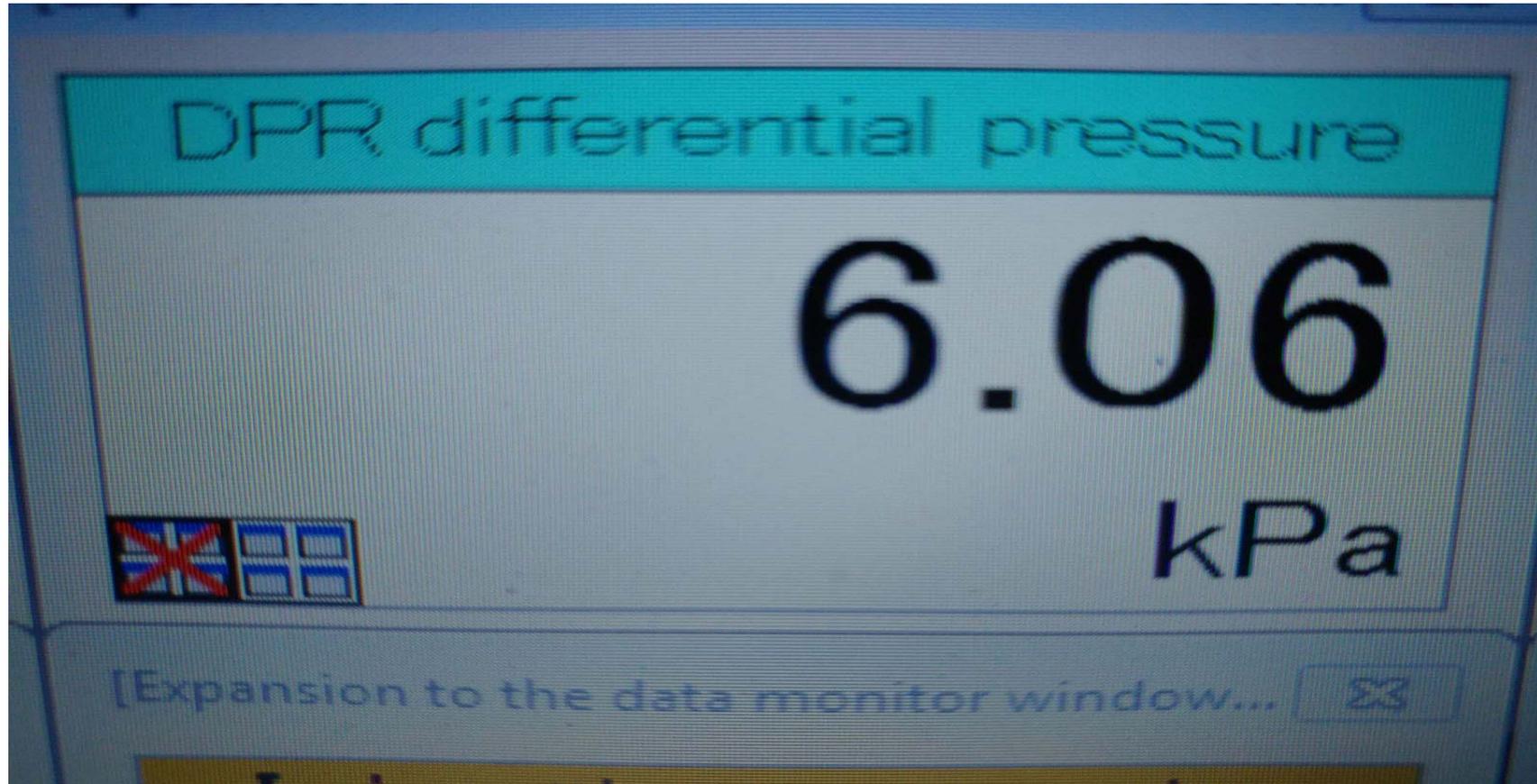
燒碳燈格數降低到九格再進行燒碳程序



燒碳完成後燒碳燈格數顯示無格數



燒碳前 DPR讀序量顯示**15.20kpa**, 如果再嚴重啲會去到**20到30kpa**都有,
需燒碳後踩油再評估
踩盡油睇 唔過**15kpa**都OK



燒碳後踩盡油顯示**6.06kpa** 表示正常



需留意燒碳時 DPR前後溫度
SENSOR須過500度先屬正常



