



What Will Be Covered:					
PCM Control					
Sensors					
Fuel Trim					
Fuel Trim Reset					
Case Study					















Sensors

HO2S (Heated Oxygen Sensor) can respond to a sudden change in fuel delivery. The PCM responds to O2 sensor extremes with a modulated correction that brings the corrected fuel command delivery into the stochiometric air fuel ratio window Of rich lean operation for peak converter efficiency. The front (upstream before the converter) HO2S is mainly used for fuel control (fuel delivery – more or less fuel to Be delivered) while the rear HO2S is used for catalytic converter efficiency and at times for some fuel control.



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Fuel Trim Cheat Sheet						
Lambda - Actual A/F Ratio	PCM Response STFT + LTFT	O₂ Sensor mV	Things to check first			
(rich) less than 0.97	positive- greater than +10%	(rich) greater than 450mV	Incorrect PCM response to O2 sen- sor; check for codes, check PCM ground and power; PCM high bias voltage fault			
(lean) greater than 1.03	positive- greater than +10%	(lean) less than 450mV	Normal PCM response to lean con- dition Check for low fuel pressure; contaminated MAF; large vacuum leak; clogged injectors			
rich or lean	zero- no fuel trim correction	rich or lean	Open loop; limp-in mode Check for codes, including transmission			
(rich) less than 0.97	negative- less than -10%	(rich) greater than 450mV	Normal PCM response to rich condition; Check for high fuel pres- sure; leaking injector(s); restricted exhaust (MAP system); EVAP purge fault			
(lean) greater than 1.03	negative- less than -10%	(lean) less than 450mV	Incorrect PCM response. PCM is receiving the correct O ₂ signal but is still subtracting fuel; PCM fault; check for multiple codes; check PCM ground and power; check TSBs			
(lean) greater than 1.03	negative- less than -10%	(rich) greater than 450mV	O ₂ sensor signal shorted to voltage, commonly to the sensor heater.			

































Fuel Trim Tip And Tricks Other Tests Select: Min Air Idle Test Do not forget to reset Fuel Trim / EMR Lamp Reset Adaptive Fuel before sending the Set Sync Mode vehicle out the door, when doing a Reset Adaptive Fuel fuel trim related repair, such as a Reset Flex Fuel clogged fuel filter or defective fuel Reset IAC pump. If not, the engine may not Reset Minimum TPS idle correctly or properly perform. Enable Door Locks Disable Door Locks

	Fuel Trim Case Studies				
For	rd Expedition 5.4L with Lean Codes				
So, cod Ha	we had a Ford Explorer with a P0171 Lean Bank # 1 and a P0174 Lean Bank # 2 le. We started with our most important tools: Brain, Ears, Eyes, Nose, and nds—the tools God gave us.				
We rub the	e did no fancy diagnostics. Our eyes caught sight of the EGR vacuum supply line ober elbow. This line connects to the intake manifold that is located in the back of intake manifold, just below the IAC motor.				

