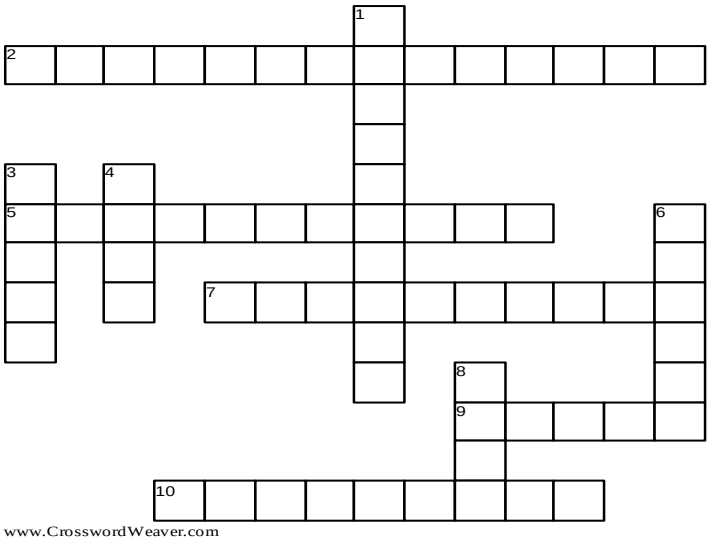
HALDERMAN
WWW.JAMESHALDERMAN.COM

Advanced Engine Performance Diagnosis 8th Edition

Chapter 20

Fuel Trim Diagnosis



ACROSS

2 The ideal air–fuel mixture where all the fuel is burned with the exact amount of oxygen, typically 14.7:1 for gasoline engines.

5 _____ ratio: The inverse of lambda, representing the ratio of the actual air–fuel mixture to the stoichiometric air–fuel mixture. A value below 1 indicates a rich mixture, while a value above 1 indicates a lean mixture.

7 _____-_____ fuel trim: A more immediate fuel trim adjustment made by the PCM in response to rapid changes in the air–fuel mixture, based on oxygen sensor feedback.

9 A term used to represent fuel trim in some vehicles, particularly Nissan, where it indicates how much fuel the Powertrain Control Module (PCM) is adding or subtracting.

10 _____-_____fuel trim: A fuel trim adjustment that represents the PCM's response to longer-term trends in the air–fuel mixture, typically adjusting fuel delivery over time to correct for system discrepancies.

DOWN

1 _____ efficiency: A measure of how effectively the engine draws in air, compared to its theoretical maximum. It helps diagnose engine performance issues, with typical engines operating at 75-90% VE.

3 Fuel trim _____: A series of predefined operating conditions that help the PCM determine how to adjust fuel trim based on varying loads and speeds.

4 _____ Trim: Adjustments made by the PCM to the base pulse width of the fuel injectors, based on feedback from the oxygen sensors, to maintain the proper air–fuel mixture.

6 A Greek letter used to represent the air–fuel ratio. A lambda value of 1.0 corresponds to a stoichiometric ratio (14.7:1), while values above or below 1.0 represent lean or rich mixtures, respectively.

8 _____ pulse width: The amount of time an injector stays open during a fuel injection event, calculated based on various sensor inputs, excluding oxygen sensors.