

Typical Diagnostic Reference Values

Notes:

Footnotes are referenced throughout the Typical Diagnostic Reference Value Charts. A letter in parentheses next to a value indicates supplemental information is available.

An attempt is made to provide as much information as possible. Some vehicles may not display all input and output signals.

The Typical Diagnostic Reference Value Charts do not display fault parameter identifications (PIDs). These are PIDs which indicate a hard fault with the circuit. They display a value of FAULT or NO FAULT and are PIDs ending with the letter F.

Reference values may vary 20% depending on operating conditions, altitude, and other factors. The RPM values are axle and tire dependent.

Values are taken at an altitude of approximately 189 meters (620 ft) above sea level with the engine at normal operating temperature and accessories off.

Refer to the Introduction Section, Acronyms and Definitions for technical terms applicable to Ford Motor Company products.

Refer to Section 2, [Parameter Identification \(PID\)](#), for PID descriptions.

For detailed transmission diagnostics, refer to the Workshop Manual. Transmission signals may be referred to in either alpha or numeric form. For example, 1=A, 2=B, 3=C.

- A/C on.
 - Cooling fan on (low or high speed).
 - Heated oxygen sensors (HO2S) should switch from rich to lean at least once every 3 seconds. HO2S voltage should toggle above and below 0.450 DCV and never be a negative value. Valid HO2S switching occurs only during closed loop fuel control operation.
 - Downstream oxygen sensors stay close to a constant voltage when the catalyst monitor is off (positive value only). When the catalyst monitor is on, the HO2S switches from rich to lean above and below 0.450 DCV and should never be a negative value. For downstream oxygen sensors (12, 22) greater activity results when the catalyst monitor is active.
 - Brake pedal applied.
 - The electric vapor management valve (VMV) commanded current varies from 0 mA - 1000 mA depending on the powertrain control module (PCM) command to purge the evaporative emission (EVAP) system.
 - While pressing the transmission control switch (TCS) or switching to manual drive mode.
 - Value depends on fuel tank level. Typical operating range is 15% (empty) to 90% (full).
 - Value is not useful under this condition.
 - The normal operation value is from -1.5 to 3.5 degrees.
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