

Listing of Diagnostic Trouble Codes (DTCs)

NOTE: Not all of these codes are used in all engine applications. Code descriptions will be different for SPNs 28, 29 and 91 depending on whether the engine was manufactured before or after January 2000.

DIAGNOSTIC TROUBLE CODES (DTCs)			
SPN	FMI	2-Digit Code	Description
28	3	13	Analog Throttle (B) Input High- ECUs (-Jan00)
28	4	14	Analog Throttle (B) Input Low- ECUs (-Jan00)
29	3	11	Analog Throttle (A) Input High- ECUs (-Jan00)
29	4	12	Analog Throttle (A) Input Low- ECUs (-Jan00)
28	3	115	Multi-state Throttle Input High- ECUs (Jan00-)
28	4	116	Multi-state Throttle Input Low- ECUs (Jan00-)
29	3	13	Analog Throttle (B) Input High- ECUs (Jan00-)
29	4	14	Analog Throttle (B) Input Low- ECUs (Jan00-)
91	3	11	Analog Throttle (A) Input High- ECUs (Jan00-)
91	4	12	Analog Throttle (A) Input Low- ECUs (Jan00-)
97		N/A ^a	Water in Fuel Continuously Detected
	16	N/A ^a	Water in Fuel Detected
	31	N/A ^a	Water in Fuel Detected
100	1	64, 65	Engine Oil Pressure Extremely Low
	3	23	Engine Oil Pressure Input Voltage High
	4	24	Engine Oil Pressure Input Voltage Low
	18	64	Engine Oil Pressure Moderately Low
105		47	Derated Torque Curve Selected
	3	25	Manifold Air Temperature Input Voltage High

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	4	26	Manifold Air Temperature Input Voltage Low
	9	26	Manifold Air Temperature Invalid
	16	66	Manifold Air Temperature Moderately High
107		N/A ^a	Air Filter Restriction High
110		62, 63	Engine Coolant Temperature Extremely High
	3	18	Engine Coolant Temperature Input Voltage High
	4	19	Engine Coolant Temperature Input Voltage Low
	9	19	Engine Coolant Temperature Invalid
	16	62	Engine Coolant Temperature Moderately High
111	1	61	Engine Coolant Level Low
158	2	54, 41	Intermittent Loss of ECU Power Supply
160	2	88	Wheel Speed Input Noise
171	3	16	Ambient Air Temperature Input Voltage High
	4	17	Ambient Air Temperature Input Voltage Low
174		81	See SPN 174 FMI 16
	3	37	Fuel Temperature Input Voltage High
	4	38	Fuel Temperature Input Voltage Low
	16	81	Fuel Temperature Moderately High
177	2	94	Transmission Oil Temperature Erratic
	9	93	Transmission Oil Temperature Invalid
189		69	Engine Speed Derate
190		42	Engine Overspeed Extreme
	2	39	On 644 Loaders, see SPN 191 FMI 2.

^aN/A = Not applicable

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SPN	FMI	2-Digit Code	Description
	2	44	Engine Speed Input Noise
	3	87	Engine Speed Input Voltage High
	4	86	Engine Speed Input Voltage Low
	5	85	Engine Speed Circuit Open
	14	45	Engine Speed/Pump Speed Out of Sync
	16	42	Engine Overspeed Moderate
191	2	39	Pump Speed Input Noise
	14	45	See SPN 190 FMI 14
	16	42	See SPN 190 FMI 0
620	3	21	Sensor Supply Voltage High
	4	22	Sensor Supply Voltage Low
629	13	28	ECU Error
632	11	48	Fuel Shut-off Circuit Fault
638	2	53	See SPN 834 FMI 2
	7	34	See SPN 834 FMI 7
639		55	See SPN 639 FMI 13
	2	55	See SPN 639 FMI 13
	13	55	CAN Error
640	11	49	See SPN 970 FMI 11.
	31	52	See SPN 970 FMI 0.
723	2	44	See SPN 190 FMI 2
733	2	31	See SPN 833 FMI 2
	3	35	See SPN 833 FMI 3
	4	36	See SPN 833 FMI 4
833		253	See SPN 833 FMI 7

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	1	251	See SPN 833 FMI 7
	2	31	Rack Position Error with Engine Off
	3	35	Rack Position Voltage High
	4	36	Rack Position Voltage Low
	7	79	Rack Position Calibration Error
	15	254	See SPN 833 FMI 7
	17	252	See SPN 833 FMI 7
834	2	53	Rack Instability
	3	77	Rack Actuator Circuit Shorted to Power
	5	75	Rack Actuator Circuit Open
	6	76	Rack Actuator Circuit Grounded
	7	34	Rack Position Error
898	9	194	Vehicle Speed Invalid
970		52	See SPN 970 FMI 31
	11	49	Engine Shutdown Signal Invalid
	31	52, 83	Auxiliary Engine Shutdown Switch Active
1041	2	0, 41	Start Signal Missing
	3	46	Start Signal Always Active
1069	9	96	Tire Size Invalid
	31	89	Tire Size Error
1082	9	95, 195	Engine Coolant Load Increase Invalid
1109	14	67	See SPN 1110 FMI 31
1110	31	67	Engine Shutdown
1568	2	29	Torque Curve Selection Invalid
	9	196	Torque Curve Selection Invalid
1569	31	68, 47	Fuel Derate
1639	1	56	Fan Speed Input Missing
	2	59	Fan Speed Input Noise

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SPN	FMI	2-Digit Code	Description
	16	58	Fan Speed Higher than Expected
	18	57	Fan Speed Lower than Expected
2000	13	78	Security Violation

NOTE: The Diagnostic Gauge on the electronic instrument panel can have communication problems that result in Error Codes being shown on its LCD display window. The following Error Codes all indicate that there is a Diagnostic Gauge communication error with the ECU. Contact your servicing dealer for help in correcting these codes:

<i>EE - Error</i>	<i>XXXXXX - EP</i>
	<i>No Data</i>
<i>ACP - Err</i>	<i>XXXXXX - BO</i>
<i>No Addr</i>	<i>No Data</i>
<i>ACP - Err</i>	<i>XXXXXX - BR</i>
<i>BUS - EP</i>	<i>No Data</i>