MERCURY MerCruiser service bulletin

No. 99-2

☐ WARRANTY INFORMATION ☑ SERVICE INFORMATION

▲ = Revised July 1999

V6 and V8 305/350 cid Engines with MEFI-3

▲Models

All MCM V6 Sterndrive Engines: S/N 0L360000 and above.

All MCM V8 305/350 cid Sterndrive Engines: S/N 0L331599 and above.

MIE 350 Mag MPI Ski Engines: S/N 0L304600 and above.

MIE Black Scorpion Ski Engines: S/N 0L304550 and above.

MIE 350 Mag MPI Inboard Engines: S/N 0L302200 and above.

MIE 350 Mag MPI Horizon Inboard Engines: S/N 0L304700 and above.

NOTE: *Black Scorpion Ski engines use the Delco EST ignition system.*

Ignition System

These MEFI-3 EFI and MPI engines use the same Mercury distributor and ignition coil that is used on the carbureted engines with the Thunderbolt V ignition system. Replacement parts are the same for both systems.

A revised MEFI-3 troubleshooting chart for these engines is in this service bulletin.

Two New Sensors

Intake Air Temperature (IAT): Mounted near the flame arrestor on EFI models and in the intake manifold on MPI models. The IAT sensor signal is used by the ECM to adjust fuel and spark timing based on incoming air density.

Fuel Pressure Sensor: It is in the Throttle Body Unit on EFI models and on the port fuel rail toward the rear of the engine on MPI models. The purpose of this sensor is to help the ECM control fuel system delivery by monitoring pressure.

Moving Desired RPM Mode

A Moving Desired RPM mode has been added to the MEFI-3 ECM. This mode will increase the desired idle rpm to a calibrated set point according to the throttle position. When the Throttle Position (TP) sensor is at the closed throttle setting, the ECM will use Idle Air Control (IAC) and Ignition Control (IC) to maintain the calculated ‘desired rpm.’ This will make the transition from idle (closed throttle) to higher throttle settings smoother. It will also help maintain constant low engine speeds from 700 to 1200 rpm. At 5% or greater TP sensor setting, the Moving Desired RPM mode is not active.

IMPORTANT: An improperly adjusted throttle cable can cause the engine idle rpm to be higher than the normal 600 rpm even though the control throttle lever is back to the idle rpm position.

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MIE Inboards Only

Load Anticipation Mode:

The Load Anticipation mode is on MIE inboard and ski engines only. The function is used to help inboard engines during shifting. An electrical signal from the neutral safety switch (on the transmission) goes to the ECM on J2-20. This signal tells the ECM if the switch is closed or open. In neutral gear, the neutral safety switch is closed (signal grounded). When shifting into gear, the switch opens (signal open).

When the transmission is shifted into gear, the open signal causes the ECM to add a calibrated amount of bypass air with the IAC. This is done to increase the load handling capability of the engine when going into gear on larger boats. When shifting back into neutral gear, the additional IAC bypass air is removed in an attempt to limit engine rpm flares. The amount of IAC air used is constantly monitored by the ECM. After the transmission is shifted, and the engine has stabilized, the ECM calculates an 'error band' from the Moving Desired RPM mode and adjusts the Load Anticipation mode IAC count accordingly. This allows the ECM to 'learn' the best IAC bypass air position to use for shifting each particular boat.

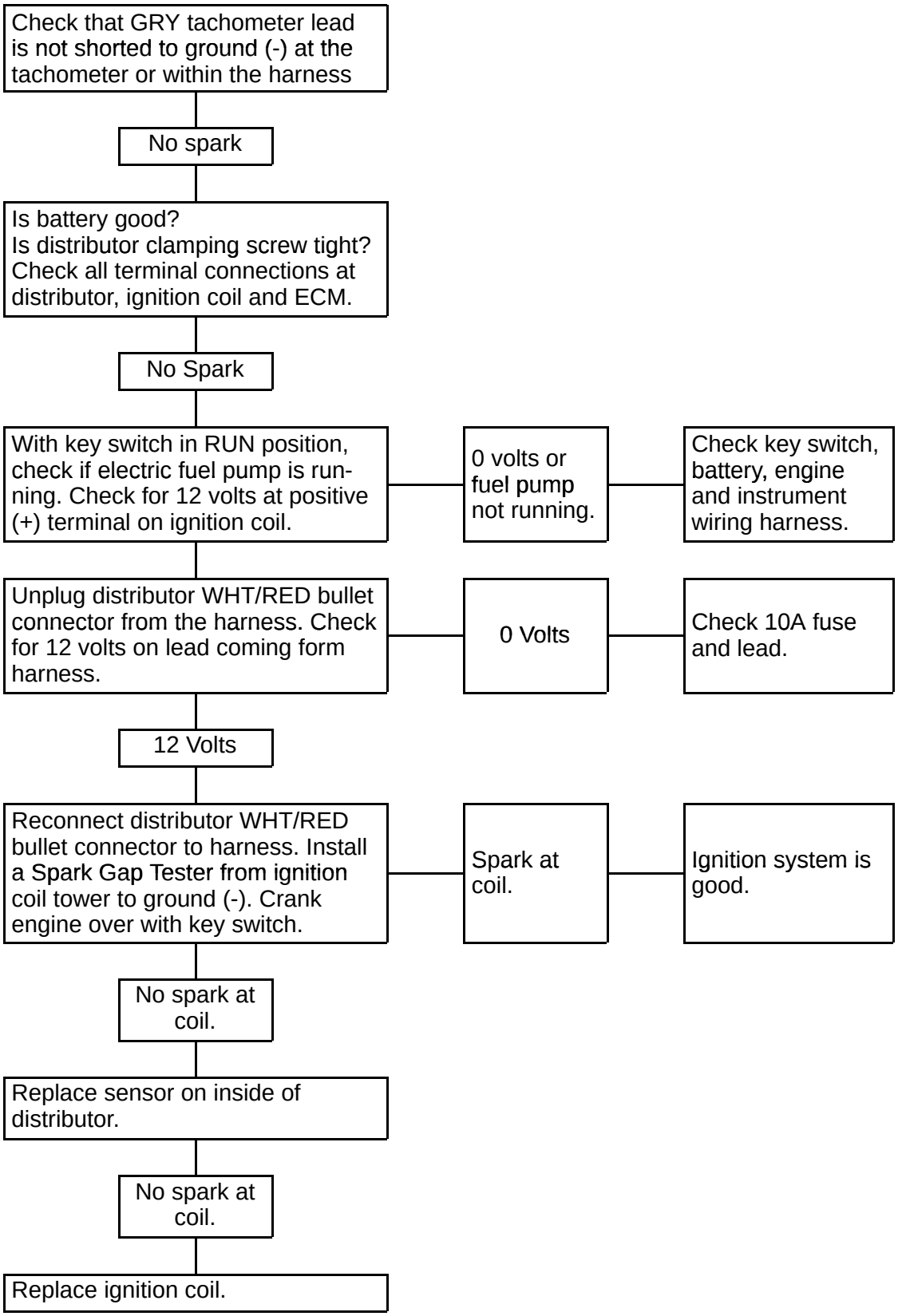
NOTE: *The Load Anticipation mode is on MIE 454/502 cid inboard engines also.*

Shift Switch

The Shift Switch shown in the wiring diagram is used on Alpha models only. The switch is normally 'closed' completing a circuit from the ECM's J2-9 terminal through the shift switch, to ground. When shifting, the switch will 'open' the J2-9 wire between the ECM and ground. This will cause the ECM to go lower the IAC motor count and retard the ignition timing to help the shifting. When the shift switch is back in the normal position, ignition timing and IAC motor count are restored.

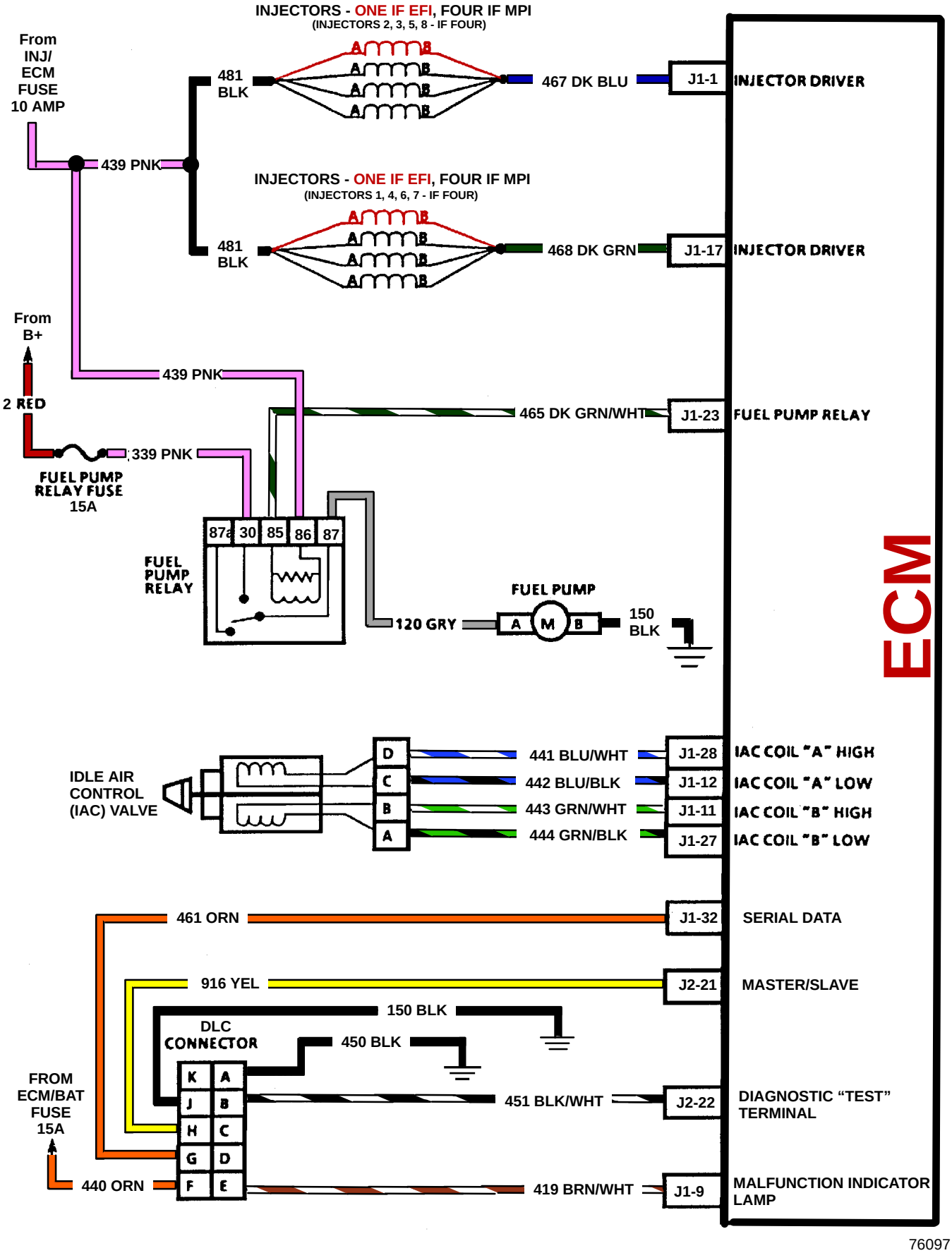
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Troubleshooting Chart



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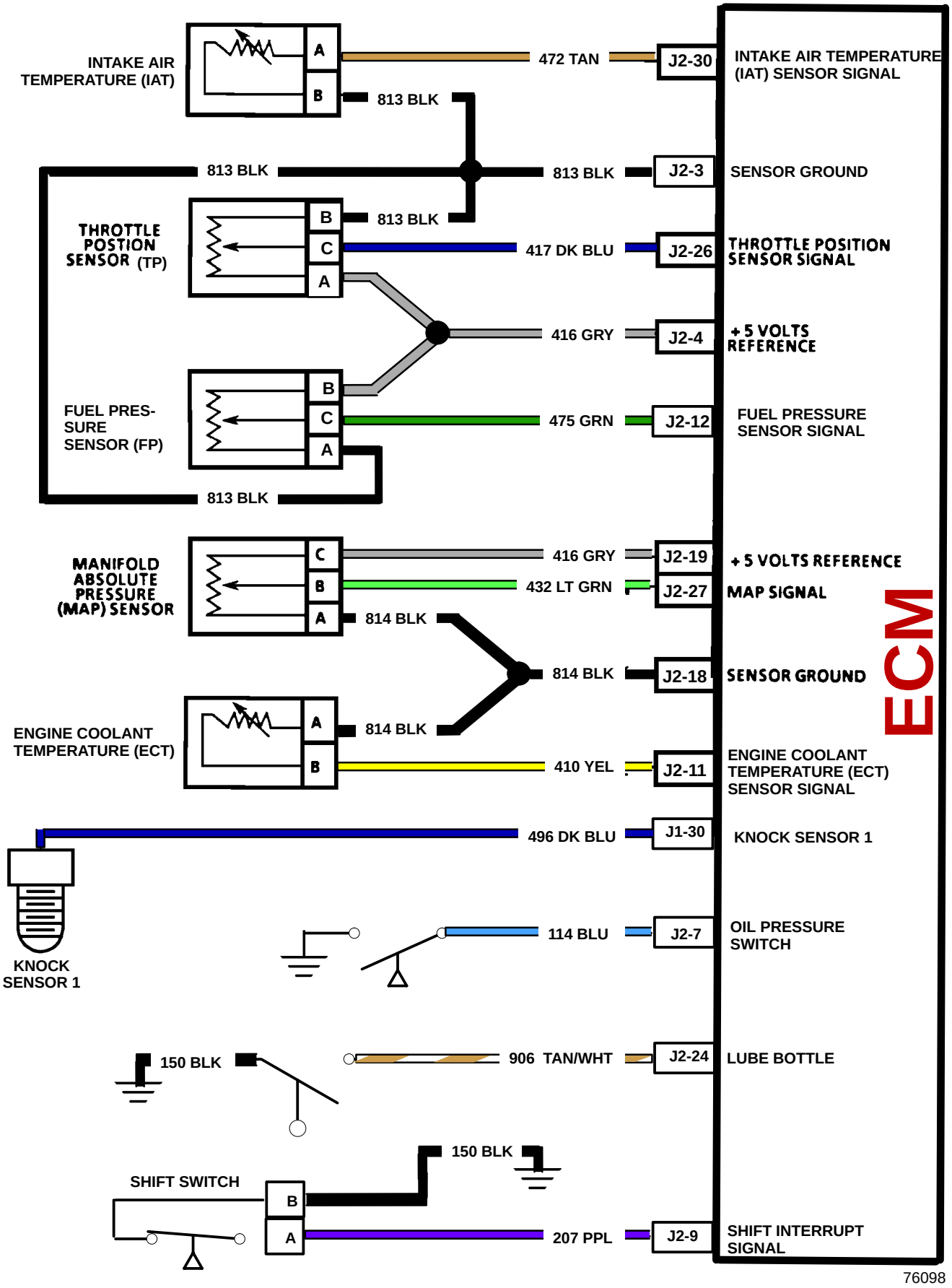
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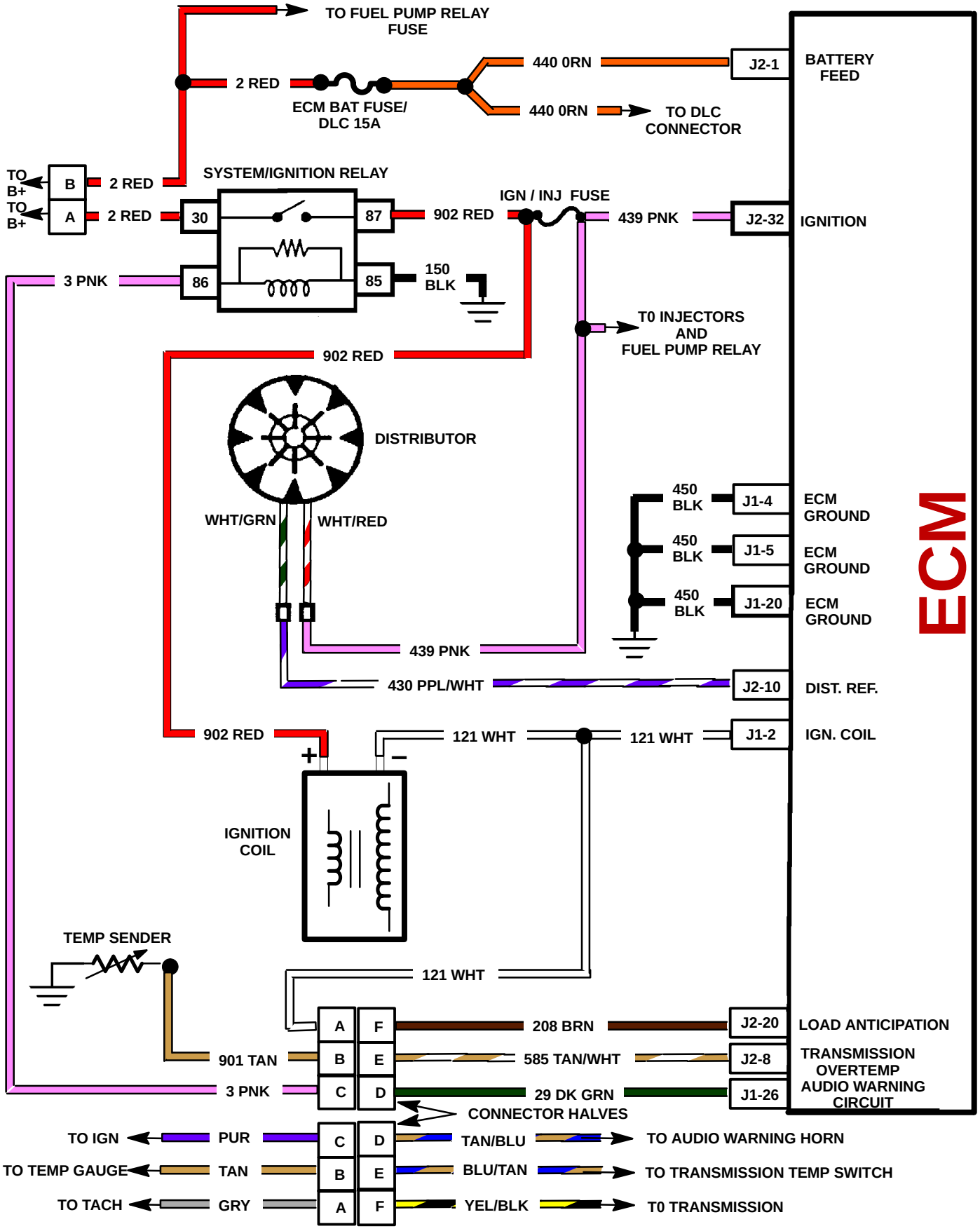
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