

# *Service Letter*

## **Service Letter No. 400 August, 1994**

**SUBJECT: Jake Brake® Usage with Detroit Diesel® DDEC III® Electronics**

**MODELS AFFECTED: 71/92A/750/760A/765**

In late 1993, Detroit Diesel Corporation began offering engines electronically controlled by DDEC III, Detroit Diesel's next generation of electronics. This service letter is written in question and answer format to answer many questions you may have regarding DDEC III/Jake Brake operation and is meant to better familiarize service outlets with the interaction between the Jake Brake engine retarder and DDEC III.

**Q:** What are the main differences between DDEC II and DDEC III as they relate to engine brakes?

**A:** Related to engine braking, the biggest change DDEC III represents is the complete operation of the engine brake, thus offering the end user some new engine/engine brake features (such as progressive engine braking with cruise control) which enhance the driveability of the vehicle. Formerly, Jacobs and/or the vehicle OEM had to provide a separate ECM (Jake Brake Control Module) or relay to activate the Jake Brake retarder with DDEC II by providing an engine brake enable signal. With DDEC III, there is no need for a relay or Jake Brake Control Module.

**Q:** Does this mean that all engines are engine-brake ready even if they leave the factory without a Jake Brake retarder?

**A:** No. Since DDEC III offers so many end user specified options, Detroit Diesel programs each DDEC III module at the factory to the specifications of the individual customer. If the customer specifies that he wants an engine without an engine brake, the ECM is programmed with the engine brake option inactive.

**Q:** What happens if an end user decides to add an engine brake later?

**A:** If an end user later decides to add an engine brake, the ECM must be reprogrammed to recognize that an engine brake option is active. This reprogramming event takes place to assure proper engine brake operation and integration with other engine ECM-driven systems such as ABS.

**Q:** If I want to add an engine brake later, where can I get my ECM reprogrammed?

**A:** Consult your authorized Detroit Diesel Series 60 service facility.

**Q:** What else needs to be done to install a Jake Brake retarder in the aftermarket?

**A:** In addition to reprogramming the DDEC III module, a non-factory installed engine brake does not have the necessary wire harnesses to connect the Jake Brake retarder to the DDEC III ECM. Jacobs has available an engine control group with installation instructions and wiring diagram for each Jake Brake model which will allow the Jake Brake housings to be properly wired to the ECM. Attached to this service letter is the wiring diagram for the Jake Brake retarder for the Series 60 engine. If the vehicle cab is not already wired for an engine brake, Jacobs also has available a cab control group which includes switches and wire harnesses from the cab to the DDEC III ECM.

**Q:** In the past I also had to add a Jacobs clutch switch group, do I need this with DDEC III?

**A:** Probably not. While the Jake Brake retarder requires a clutch input signal to know when the clutch becomes disengaged, in all likelihood, the clutch switch is already in the vehicle and active in DDEC III. All DDEC III engines are wired for cruise control, which already requires the use of a clutch switch.

(continued)

Q: How do I know if the vehicle has DDEC II or DDEC III?

A: Different vehicle OEMs began using DDEC III at different times during late 1993, so it's difficult to get an exact starting serial number or date to determine if the vehicle has DDEC III. For the most part, any Series 60 engine built after January 1, 1994 and shipped to a customer in the United States or Canada has DDEC III. Physically, the DDEC III ECM looks different than a DDEC II module. The DDEC III module is smaller in size, only 2 inches thick (dimension from engine block to ECM) versus 4 inches thick for DDEC II. The DDEC III ECM also differs from DDEC II in color: DDEC III is silver versus bronze/gold for DDEC II.

Q: What if I find my engine still has DDEC II?

A: No problem! Jacobs will continue to have available the necessary groups to retrofit a DDEC II engine with Jake Brake/DDEC control group, engine control group and clutch switch group.

Q: How does the Jake Brake retarder work with ABS and DDEC III?

A: The logic inside DDEC III automatically tells the Jake Brake retarder to stop during an ABS braking event. This is built into the software and another reason why reprogramming the DDEC III module for engine brake usage is necessary.

Q: What Detroit Diesel engines are available with a Jake Brake engine retarder and DDEC III?

A: While most of these questions and answers have been targeted at a Series 60 operation, the same answers also apply to the Series 50 and Series 71/92 engines. Consult your Jacobs distributor or dealer for the proper part number control groups for any Jake Brake application with DDEC III.