NO: 03 TS - 50
October 24, 2003

TO: All Distributors – U.S., Canada and Mexico

ATTN: Service Managers and Parts Managers

FROM: Daniel J. Snook, Alex Kalachyk

SUBJECT: Off-Highway Mercedes-Benz Engine Series 900-457-500
Starter Actuation via PLD / Direct Actuation.

There has been some warranty claims with high labor times for diagnosis of starter problems. This letter is to inform of the starter wiring configurations available on the Mercedes-Benz Electronic Control (MBEC) systems.

Engine start and stop

There are two basic types of starter control (starter types) listed below. A selection is made with the corresponding configuration by parameter changes in the ADM.

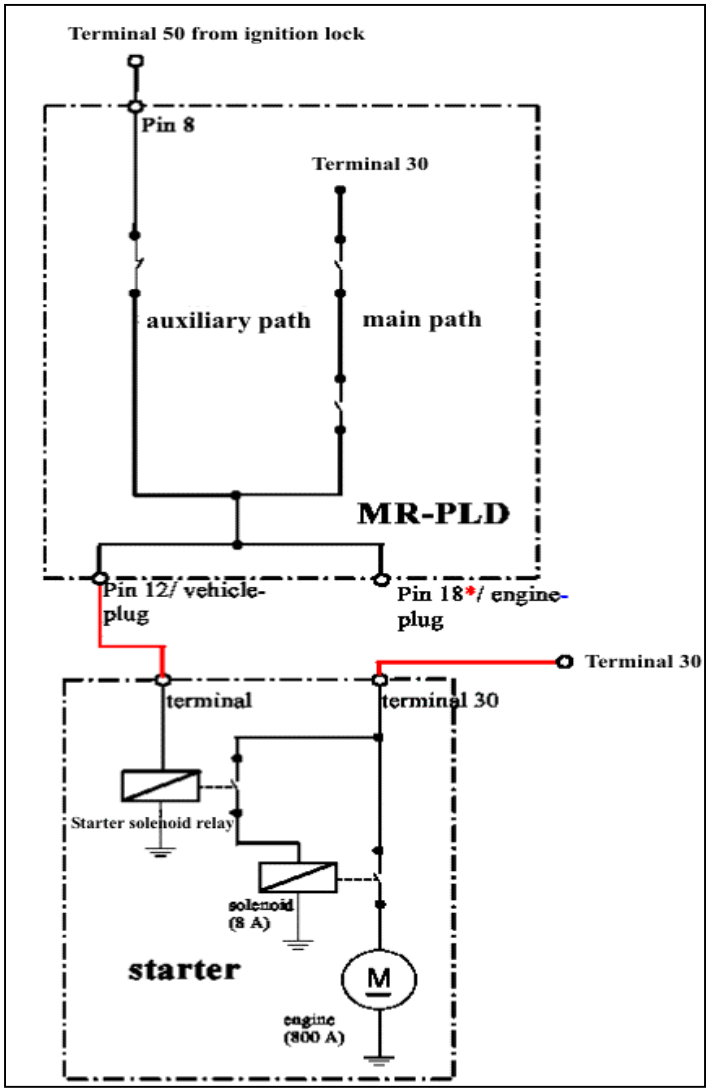
• **Start via MR-PLD** (standard setting / **JE**-Starter) with external starter solenoid relay.
• **External start** (not via MR-PLD / **KB**-Starter) with and without external starter solenoid relay.
Additional information can be found in PLD operating manual on DDC Extranet (visit: http://www.detroitdiesel.com/cust/MB/inst.asp).

Wiring legend:

Description or designation	Type	Abbreviation
Terminal 30 - Battery supply voltage	Battery positive	KL 30
Terminal 31 - Ground	Battery negative	KL 31
Terminal 50 - Start signal	Signal	KL 50
Ignition Terminal 15	Ignition	KL 15

JE-starter

Two control paths are provided for the starter, so that the starter can still be operated via a parallel path in the case of a failure of one of the power stages (emergency syndrome).
As the engine series are delivered with the parameters set on „JE-starter“ (control via the MR-PLD).
Principle block diagram for control unit (JE-mode/**parameter = 0**)



Redundancy through two control paths for the starter

Notes:

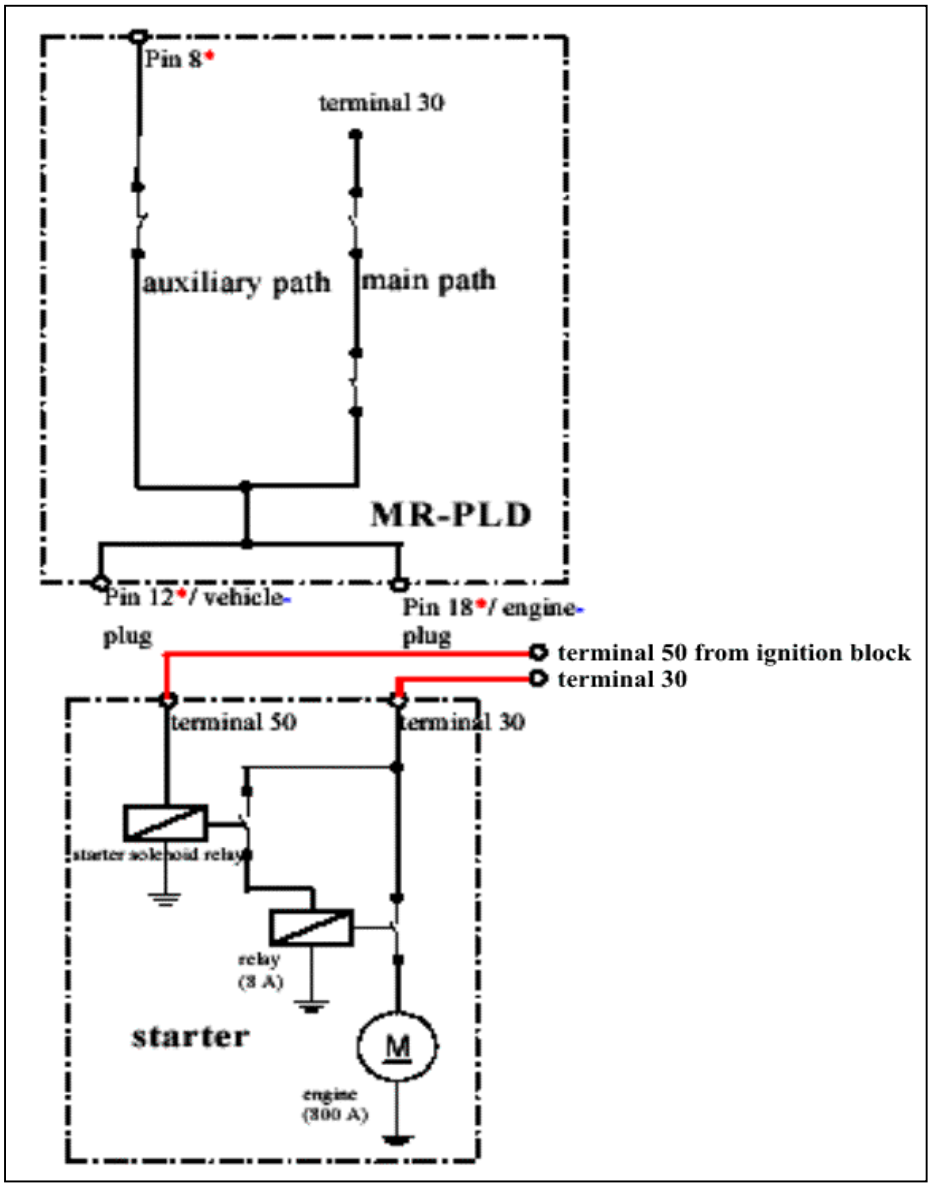
- The connection at the starter (input) KL 50 has to be implemented at the vehicle plug (pin 12) of the MR-PLD control unit. Also used at the engine connector (pin 18) for special configurations.
- KL 50 from the ignition lock is connected to the MR-PLD (pin 8).
- The Starter solenoid must be switched with a relay.
- Set starter type calibration parameter “JE” to “0”.
- The PLD will not activate the starter if the calibration starter type is “KB” but the starter is wired for the type “JE”. However fuel injection will occur for cranking speeds above 300 RPM.

KB-starter

For the application of the engine as e.g. stationary machine/aggregate the parameters of the MR-PLD control unit are set on KB-starter. This enables the direct start (without MR-PLD) from the outside.

Principle block diagram for starter control (KB-mode/**parameter=1)**

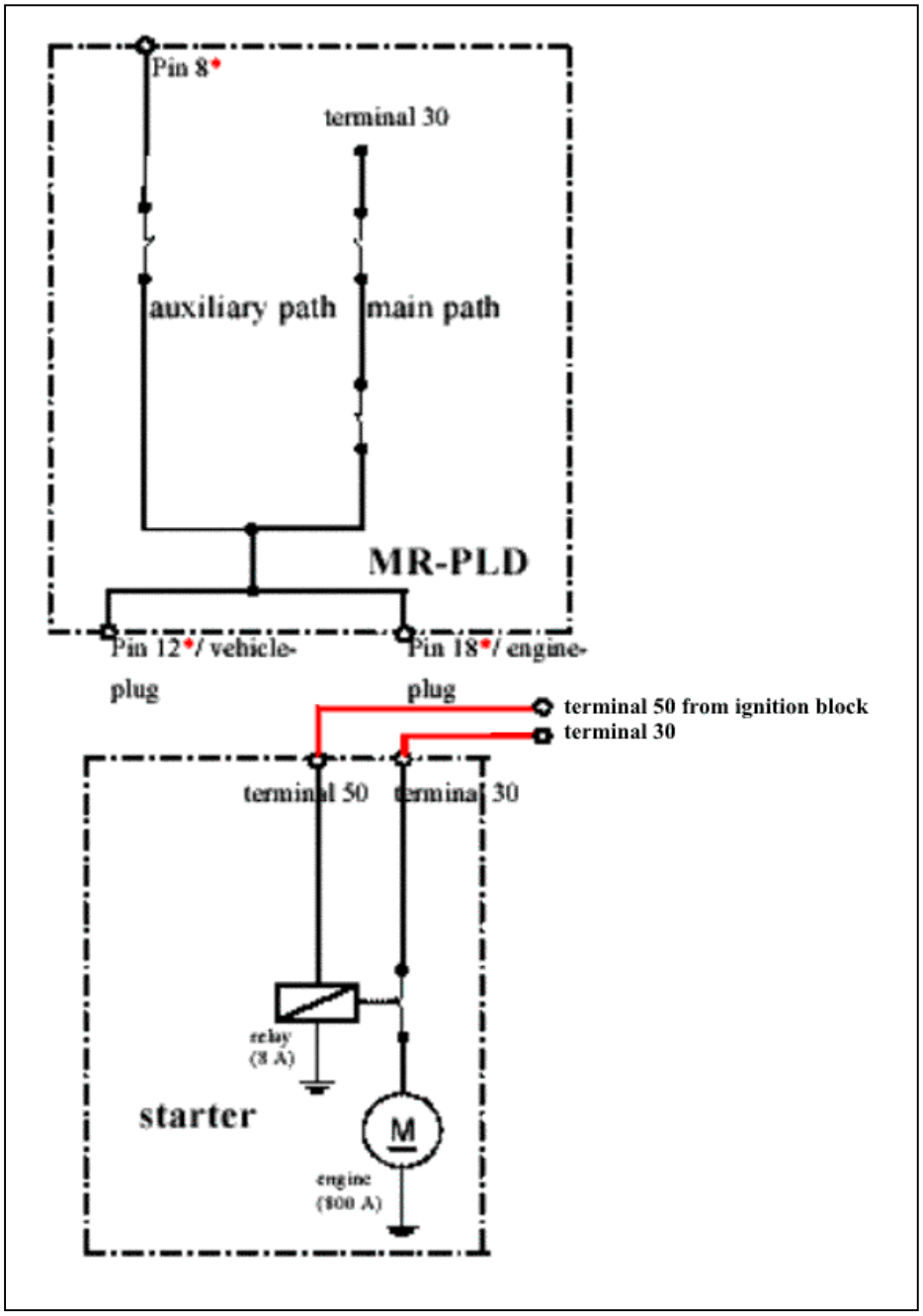
KB-starter with starter solenoid relay (2 A)



Notes:

- Terminal 50 from ignition switch is directly connected to the input of the starter (terminal 50)
- In the case of KB-starter type the MR-PLD must not be connected.
- A starter solenoid relay is required.
- Set Starter Type calibration parameter “KB” to “1”
- If the calibration starter type is set to “JE” and the starter is wired for “KB”, the starter motor will be activated by the ignition switch, but the engine will not start

KB-starter without Starter Solenoid Relay



Notes:

- Terminal 50 from ignition switch is directly connected to the input of the starter (terminal 50).
- In the case of KB-starter type the MR-PLD **must not** be connected.
- The wiring must not include a starter solenoid relay.
- Set Starter Type calibration parameter “KB” to “1”
- If the calibration starter type is set to “JE” and the starter is wired for “KB”, the starter motor will be activated by the ignition switch, but the engine will not start.