DETROIT DIESEL

A DaimlerChrysler Company

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TO: All Distributors and Dealers – U.S. and Canada

ATTN: Service Managers

FROM: Jack Evanoff

SUBJECT: **New Version of VCU Software for MBE On-Highway Engines**

A new version of VCU software (version 13) will be included in all MBE on-highway vehicles beginning January of 2004. This letter provides a brief synopsis of the electronic diagnostic tools available to service the new version of software.

I. Detroit Diesel Diagnostic Link 6.0 – This version of DDDL was released in December of 2003 and is currently available. In addition to the MBE features supported in DDDL 5.0 the new version includes support for the following features:

1. VCU password protection feature

2. There are an expanded number of changeable parameters for VCU 13 modules. Changeable parameters for VCU 12 modules will remain as they were in DDDL 5.0. The attachments to this letter that show exactly what parameters may be changed with DDDL for version 12 and 13 VCU software.

3. Support for MBE backdoor password feature

There is a great deal of additional material on the DDDL CD to assist users in understanding the changes that were made to the parameter groupings in version 13.

New copies may be ordered through your local Detroit Diesel Distributor. Please contact them for pricing on the DDDL CD only or the cost of a complete kit containing DDDL 6.0 software and all the necessary cables to connect to a vehicle. As with past releases DDC is offering an upgrade program for current users. Current users may obtain an upgrade by contacting SPX Kent-Moore directly at (800) 328-6657.

Available from SPX Kent-Moore	**Part Number**	**Price**
Upgrade from DDDL 2.x - 4.x to 6.0	J-DDDL-6.0UP2	$250.00 USD
Upgrade from DDDL 5.0 to 6.0	J-DDDL-6.0UP	$75.00 USD

II. MBE 900/4000 PCMCIA Card for the Pro-Link Reader (P/N 802031) – This version of the card is now available to support VCU 13. In addition to the features supported in version 1.0 the new card supports:

1. The VCU 13 password protection feature.

2. The MBE backdoor password function.

3. An expanded list of parameters that may be changed in VCU modules containing software version 13.

4. If you purchased the MBE Pro-Link 1.0 through the essential tool program, you are eligible for a free upgrade to this new version of software. The details of this program are outlined in a separate technical service letter. If you'd like to purchase a new card, it may ordered through your local Detroit Diesel Distributor.

III. Minidiag Assistant Software CD, Version 2.99 (P/N 23533898) – This CD will allow the Minidiag owners to upgrade the operating system to support VCU 13 software. It includes the following:

1. Support for the following software levels for the PLD, VCU, and ADM2
Module Type / Diagnosis Versions Supported (Corresponding software level in parenthesis)

PLD	VCU	ADM2
3 (sw 50)	150 (sw 10.0/11.03)	202
4 (sw 51)	151 (sw 12.xx)	203
5 (sw 53)	152 (sw 13.xx)	204
6 (sw 56)		
7 (sw 57)		
8 (sw 58)		
9 (sw 59)		

2. This version of Minidiag Assistant software contains a fix for earlier versions that returned a "communications error" when running certain diagnostic routines on the MBE 4000 engine.

3. The CD contains a great deal of additional documentation on using your Minidiag tool with both on-highway and off-highway vehicles. Several new items have been included:

- The identification of parameter groups and their positions with each group has changed completely in version 13. Documentation on the new group numbering system and a comparison with the old numbering system is included on the CD.

- VCU 13 is the first version of software to support parameter password protection for all VCU parameters. Documentation on using the password protection feature is also provided on the CD.

- Several new diagnostic routines have been added for VCU with version 13 software to assist in the troubleshooting process. Please refer to the document on routines that describes what is available.

- The Minidiag remains the only tool that supports MBE off-highway applications. The CD contains additional information for working with off-highway vehicles.

4. You may use this release to update VCU's that contain either version 11.03 or any version of 12 VCU software with your Minidiag. You will need to use your Minidiag and the VCU on-vehicle flash cable (P/N 23530553) to update these modules. The CD contains a detailed document that spells out the process for a successful upgrade to version 13.

The Minidiag Assistant CD will be available on January 12th. To order it, please contact your local Detroit Diesel Distributor**.**

IV. MBE Functionality for the Detroit Diesel Reprogramming Station – In April of 2004 there will be an update to the DDC Programming station that will allow users to program both VCU and PLD modules locally. The application will also allow users to change all the parameters currently accessible with the Minidiag. A DDC Multi-link translator must be used for the MBE features along with a hardware kit upgrade. Further details will be announced later in the 1st quarter of 2004.

Jack Evanoff
Power Service

VCU/PLD Calibration Parameter List (changeable highlighted for DDDL 5 and 6)Sample Calibration File VCU 12

PLD Group 0 - Engine Serial Number

0	Engine Serial Number	

PLD Group 1 - Engine Identification

1	Engine Number	1792
2	Manual/Automatic transmission	Manual
3	Starter type (Control over PLD or externally)	Starter Activated Directly via Terminal 50(KB)

PLD Group 2 - CAN Configuration

1	Engine Contrl Via CAN	Switch ON
2	CAN One Wire Capability	Active
3	CAN Extended	11 Bit ID

PLD Group 3 - Proportional Valves

1	Proportional Valve 1	boost control
2	Proportional Valve 2	decompression valve
3	Proportional Valve 3	fan step
4	Proportional Valve 4	fan step
5	Proportional Valve 5	no function
6	Proportional Valve 6	no function

VCU Group 1 - Starter Lockout

1	Enable Starter Lockout	Disabled

VCU Group 2 - Idle/PTO Shutdown

1	Enable Idle Shutdown	Disabled
2	Idle Shutdown Time	60 s
3	Enable PTO Shutdown	Disabled
4	PTO Shutdown Time	60 s
5	Maximum Engine Load for PTO Shut Down	100 Nm
6	Time for CEL before Idle/PTO Shutdown	20 s
7	Time for SEL before Idle/PTO Shutdown	10 s
8	Minimum Coolant Temperature for Idle Shutdown	-10 °C
9	Enable Idle/PTO Shutdown Override	Enabled

VCU Group 3 - Engine Protection

1	Enable Engine Protection Shutdown on Coolant Temp	Enabled
2	Enable Engine Protection Shutdown on Coolant Level	Enabled
3	Enable Engine Protection Shutdown on Oil Pressure	Enabled
4	Enable Engine Protection Shutdown on Oil Level	Disabled
5	Engine Protection Shutdown Time, Except Oil Pressure	60 s
6	Engine Protection Shutdown Time on Oil Pressure	30 s
7	Counter of Engine Protection Shutdown Override	0
8	Time CEL before on Engine Protection Shutdown	20 s
9	Time SEL before on Engine Protection Shutdown	10 s

VCU Group 4 - RQV

10	Enable Limiting Torque Ramp Increment	Disabled
11	Limiting Torque Ramp Increment	3 Nm/10ms
15	Ramp Up Rate	160 rpm/sec
16	Minimum Engine Torque	25 %

VCU Group 5 - Engine Brake

1	Mininum Engine Speed for Engine Brake	1100 rpm

2	Maxinum Throttle position for Engine Brake	3.5 %
3	Enable Engine Brakes on Service Brake	Disabled
4	Minimum Engine Brakes Road Speed Limit	0 km/h
5	Enable Engine Brakes on Cruise Control	Disabled
6	Maximum Cruise Control Over-Speed for Engine Brake L	5.0 km/h
7	Minimum Cruise Control Over-Speed for Engine Brake L	2.0 km/h
8	Maximum Cruise Control Over-Speed for Engine Brake H	8.0 km/h
9	Minimum Cruise Control Over-Speed for Engine Brake H	5.0 km/h
10	Road Speed Limit Over-Speed for Automatic Engine Brake	0.0 km/h
11	Engine Brake Configuration	Turbo Brake
12	Engine Brake Stage 1 Mask	stage 1
13	Engine Brake Stage 1 Factor	100 %
14	Engine Brake Stage 2 Mask	stage 3
15	Engine Brake Stage 2 Factor	50 %
16	Engine Brake Stage 3 Mask	stage 3
17	Engine Brake Stage 3 Factor	100 %
18	Engine Brake Transmission Mask	stage 3
19	Engine Brake Transmission Factor	100 %

VCU Group 6 - ABS-Type

1	ABS Type	ABS Only

VCU Group 7 - Cruise Control

1	Minimum Road Speed for Cruise Control	48 km/h
2	Maximum Set Speed for Cruise Control	95 km/h
9	Enable Cruise Auto Resume	Disabled

VCU Group 8 - Limiters

1	Road Speed Limit	100 km/h
2	Second Road Speed Limit	152 km/h
3	Torque Factor Gear Down Protection	1.00
4	Gear Ratio for Gear Down Protection	0.010 km/h/rpm
5	Torque Factor for High Gear Power	1.00
6	Gear Ratio for High Gear Power	0.020 km/h/rpm
7	Torque Factor for Cruise Power	1.00
8	Maximum Engine Speed for Progressive Shifting	3000 rpm
9	Gears up to Gear Ratio for which Max Engine Speed applies	0.015 km/h/rpm
11	Power Rating Selection	0
12	Power Rating with Cruise Control	4

VCU Group 9 - Fan Configuration

1	Enable Automatic Fan Activation on Engine Brake	Disabled
2	Enable Automatic Fan Activation on Air Condition Input	Enabled
3	Enable Automatic Fan Activation on PTO	Disabled
4	Coolant Temperature Limit to Enable Automatic Fan.	-10 °C
5	Coolant Temperature Limit to Disable Automatic Fan.	-13 °C

VCU Group 10 - Fast Idle

1	Enable Fast Idle on Air Condition Input	Disabled
2	Fast Idle Speed	500 rpm
3	Desired Fast Idle Speed Ramp Rate	250 rpm/s
5	Desired Idle Speed Ramp Rate	100 rpm/s
6	Maximum Adjusted Idle Speed	500 rpm
7	Maximum Road Speed for Idle Increment/Decrement	9.6 km/h
8	Engine Speed Limit at Vehicle Standstill	3000 rpm
9	Low Idle Speed	600 rpm

10	Max Engine Speed	3000 rpm

VCU Group 11 - PTO Function

1	Enable PTO Function	Enabled
2	Maximum PTO Engine Speed	1200 rpm
3	Minimum PTO Engine Speed	600 rpm
4	Enable PTO Throttle Override	Disabled
5	Max Engine Speed for Throttle Override	1400 rpm
6	Enable PTO Dropout on Service Brake	Enabled
7	Enable PTO Dropout on Clutch	Enabled
8	Max Road Speed in PTO	9.7 km/h
9	PTO Set Speed with Cruise SET Switch	1000 rpm
10	Set PTO Governor Type	1
11	Set PTO Maximum Engine Torque	813 Nm
12	PTO Set Speed with Cruise RES Switch	950 rpm
13	RES PTO Governor Type	1
14	RES PTO Maximum Engine Torque	813 Nm
15	PTO Ramp Rate	200 rpm/s
16	Number of Remote PTO Speeds	1
17	PTO Speed #1	950 rpm
18	PTO Speed #1 Governor Type	1
19	PTO Speed #1 Maximum Engine Torque	600 Nm
20	PTO Speed #2	1250 rpm
21	PTO Speed #2 Governor Type	1
22	PTO Speed #2 Maximum Engine Torque	600 Nm
23	PTO Speed #3	1850 rpm
24	PTO Speed #3 Governor Type	1
25	PTO Speed #3 Maximum Engine Torque	600 Nm
26	Transmission Type	Automated Shift Transmission
27	Droop Control Mode Enable	Disabled
29	Droop Maximum Engine Torque	5000 Nm
30	Enable Park Brake with PTO	Disabled
31	Enable Park Brake with Logical PTO	Enabled

VCU Group 12 - Acc. Pedal

7	Idle Validation Switch Limp Home Engine Speed	1300 rpm
11	Remote Accelerator Pedal Idle Position	10.0 %
12	Remote Acceleration Pedal Wide Open Position	77.5 %

VCU Group 13 - Input Configuration

1	Enable Remote Accelerator Input	Disabled
2	Enable Coolant Level Input	Enabled
3	Enable Air Condition Input	Enabled
4	Enable Air Filter Input	Disabled
5	Enable Service Brake Input	Enabled
6	Enable Transmission Neutral Input	Disabled
7	Enable Park Brake Input	Disabled
8	VSS Input Configuration	Magnetic Pickup VSS
9	Axle Ratio	3.42
10	Number of Output Shaft Teeth	16
11	Tire Revolutions Per Km	347.1/kmh
12	Top Gear Ratio	0.74
13	Two Speed Axle - Second Axle Ratio	5.29
22	Configuration for CC Switch On/Off	HardWired
23	Configuration for CC Switch Set/Resume	HardWired
24	Configuration for CC Switch Pause	HardWired

25	Configuration for Service Brake Switch	HardWired
26	Configuration for Park Brake Switch	HardWired
27	Configuration for Clutch Switch	HardWired
28	Configuration for two speed Axle Switch	HardWired
29	Configuration for Engine Brake Switch	HardWired

VCU Group 16 - Fleet Management

1	Enable Fleet Management	Enabled
8	Second Highest Gear Ratio	2.55 RPM/RPM
9	Fuel Density	835 kg/m3

VCU Group 17 - CAN

1	Enable Can One Wire Capability on VCU	Enabled

VCU Group 18 - Vehicle Identification Number

0	VIN	1FVHA6CV84PM24263

VCU Group 20 - Cold Start Device

1	Cold Start Configuration	No Cold Temp Start Device

VCU/PLD Calibration Parameter List (changeable highlighted for DDDL 6) Sample Calibration File VCU 13

PLD Group 0 - Engine Serial Number

0	Engine Serial Number	

PLD Group 1 - Engine Identification

1	Engine Number	1792
2	Manual/Automatic transmission	Manual
3	Starter type (Control over PLD or externally)	Starter Activated Directly via Terminal 50(KB)

PLD Group 2 - CAN Configuration

1	Engine Contrl Via CAN	Switch ON
2	CAN One Wire Capability	Active
3	CAN Extended	11 Bit ID

PLD Group 3 - Proportional Valves

1	Proportional Valve 1	boost control
2	Proportional Valve 2	no function
3	Proportional Valve 3	fan step
4	Proportional Valve 4	fan step
5	Proportional Valve 5	no function
6	Proportional Valve 6	no function

VCU Group 1 - CAN Configuration

2	Engine CAN Limp Home Mode	3
3	SAE J1939 3. Source Address TSC1	231

VCU Group 2 - Vehicle Parameters I

1	Transmission Type	manual /clutch switch
2	ABS/ATC Type	no ABS
3	Configuration Relay 2	disabled
4	Hardware Type	12V 3 connectors
5	Engine brake outputs	MBR_BK and MBR_KD disabled
6	Grid heater	disabled
8	Configuration pin 15/6	MBR_BK/MBR_KD

VCU Group 3 - Common Limiters

1	Minimum Engine Speed	500 rpm
2	Maximum Engine Speed	3000 rpm
3	Maximum Road Speed (legal)	152 km/h
4	Maximum Engine Torque	5000 Nm
7	Engine Speed Limit while vehicle stop	3000 rpm
10	Maximum Adjusted Idle Speed	850 rpm
11	Max. Road Speed for Idle Inc./Dec.	10 km/h

VCU Group 5 - Limiters LIM0 and LIM1

1	Minimum Engine Speed LIMO enabled	500 rpm
2	Maximum Engine Speed LIMO enabled	4000 rpm
3	Maximum Road Speed LIMO enabled	152 km/h
4	Maximum Engine Torque LIMO enabled	5000 Nm
5	Minimum Engine Speed LIM1 enabled	500 rpm
6	Maximum Engine Speed LIM1 enabled	4000 rpm
7	Maximum Road Speed LIM1 enabled	152 km/h
8	Maximum Engine Torque LIM1 enabled	5000 Nm

VCU Group 6 - Limiters AC/LIM2

1	Enable Fast Idle on Air Condition Input	enable LIM2 limiter (6/3..6/6)
2	Fast Idle Speed on Air Condition	600
3	Minimum Engine Speed LIM2 Enabled	500 rpm
4	Maximum Engine Speed LIM2 Enabled	4000 rpm
5	Maximum Road Speed LIM2 Enabled	152 km/h
6	Maximum Engine Torque LIM2 Enabled	5000 Nm

VCU Group 7 - PTO Control on PTO and CC pin

1	Configuration PTO Speed Control	disabled
2	Maximum PTO Speed with CC+ Switch	3000 rpm
3	Minimum PTO Speed with CC- Switch	500 rpm
4	PTO Throttle Override Enable	Enable engine speed in PTO mode to be increased with throttle input
5	Max. Engine Speed for Throttle Override	3000 rpm
6	PTO dropout on Service break or park brake enabled	Allows PTO to run independent of service brake or park brake position
7	PTO dropout on clutch enabled	Allows PTO to run independent of the clutch position
8	Maximum Road Speed in PTO Mode	10 km/h
9	PTO Set Speed with CC- Switch	500 rpm
10	PTO Governor Type with CC- Switch	1
11	Max. PTO Torque with CC- Switch	5000 Nm
12	PTO Set Speed with CC+ Switch	500 rpm
13	PTO Governor Type with CC+ Switch	1
14	Max. PTO Torque with CC+ Switch	5000 Nm
15	PTO Ramp Rate	1000 rpm/s
16	Number of Speeds via Remote PTO (Pin 18/10)	1
17	PTO Speed #1	950 rpm
18	PTO Speed #1 Governor Type	1
19	PTO Speed #1 Maximum Engine Torque	5000 Nm
20	PTO Speed #2	1250 rpm
21	PTO Speed #2 Governor Type	1
22	PTO Speed #2 Maximum Engine Torque	5000 Nm
23	PTO Speed #3	1850 rpm
24	PTO Speed #3 Governor Type	1
25	PTO Speed #3 Maximum Engine Torque	5000 Nm

VCU Group 8 - Vehicle Speed Sensor

1	Vehicle Speed Sensor	no vehicle sensor
3	Axle Ratio	5.290
4	Number of Output Shaft Teeth	16
5	Tire Revolutions per Kilometer	312.1/km/h
6	Top Gear Ratio	1.000
7	Second Highest Gear Ratio	2.550
8	Gear Ratio Tolerance	2.00
9	Two Speed Axle - Second Axle Ratio	5.290
10	Anti Tamper	disabled

VCU Group 10 - Engine Brake

1	Minimum Engine Speed for Engine Brakes	1100 rpm
2	Maximum Throttle Position for Engine Brakes	4 %
3	Enable Engine Brakes on Service Brake	disable
4	Minimum Road Speed for Engine Brake Operation.	0 km/h
5	Enable Engine Brake on Road Speed Limiter	5 km/h
6	Enable Engine Brakes on Cruise Control	disable
7	CC Eng. Brake 1 on	5 km/h
8	CC Eng. Brake 1 off	2 km/h

9	CC Eng. Brake 2 on	7 km/h
10	CC Eng. Brake 2 off	5 km/h
11	CC Eng. Brake 3 on	10 km/h
12	CC Eng. Brake 3 off	6 km/h
13	Engine Brake Configuration	MBR_KD MBR_BK
14	Engine Brake Stage 1 Mask	decompression valve only
15	Engine Brake Stage 1 Factor	100 %
16	Engine Brake Stage 2 Mask	decompression valve and exhaust flap
17	Engine Brake Stage 2 Factor	100 %
18	Engine Brake Stage 3 Mask	decompression valve and exhaust flap
19	Engine Brake Stage 3 Factor	100 %
20	Engine Brake Transmission Mask	decompression valve only
21	Engine Brake Transmission Factor	100 %

VCU Group 11 - Accelerator Pedal

3	Idle Validation Switch Limp Home Engine Speed	875 rpm
4	Limp Home Ramp Up on Idle Validation Switch	250 rpm/s

VCU Group 13 - Inputs

1	Coolant Level Sensor Input (KW_SE)	disable
3	Enable Air Filter Sensor Input	disable
4	Enable Service Brake Input	enable
5	Configuration Service Brake Switch	0
7	Enable Transmission Neutral Input (NE)	J1939 (ETC2) e.g. no switch
8	Enable Park Brake Input	disable
9	Configuration Park Brake Switch	0
11	Configuration CC switch ON/OFF	hardwired
12	Configuration CC set/resume	hardwired
13	Configuration CC Pause	disabled
14	Configuration 2nd axle speed switch	hardwired
15	Configuration clutch	hardwired
16	Configuration engine brake switch	hardwired

VCU Group 15 - Cruise Control I

1	Minimum Road Speed for Cruise Control	48 km/h
2	Maximum Set Speed for Cruise Control	152 km/h
7	Enable Cruise Auto Resume	disable

VCU Group 16 - Relay 1/Starter Lockout

1	Output Relay 1/Starter Lockout	disable

VCU Group 17 - Idle/PTO Shutdown

1	Enable Idle Shutdown	disable
2	Idle Shutdown Time	60 s
3	Enable PTO Shutdown	disable
4	PTO Shutdown Time	1000 s
5	Maximum Engine Load for PTO Shutdown	100 Nm
6	Time for CEL before Idle/PTO Shutdown	20 s
7	Time for SEL before Idle/PTO Shutdown	10 s
8	Minimum Coolant Temp	-10 °C
9	Enable Idle/PTO Shutdown Override	enable allows "Engine Check" switch (MABSCH_SP) to override engine idle/PTO shutdown

VCU Group 18 - Engine Protection Shutdown

1	Engine Protection Shutdown on Coolant Temperature	enable
2	Engine Protection Shutdown on Coolant Level	disable

3	Engine Protection Shutdown on Oil Pressure	enable
4	Engine Protection Shutdown on Oil Level	disable
5	Engine Protection Shutdown Time	60 s
6	Engine Protection Shutdown Time on Oil Pressure	30 s
7	Counter of Engine Protection Shutdown Overrides	0
8	Time for CEL before Engine Protection Shutdown	20 s
9	Time for SEL before Engine Protection Shutdown	10 s

VCU Group 19 - Automatic Fan Activation

1	Enable Automatic Fan Activation on Engine Brake	disable
3	Enable Automatic Fan Activation on Air Conditioner	disable
5	Enable Automatic Fan Activation on PTO	disable
8	Cool.Temp.at 0% Fan	80 °C
9	Cool.Temp.at100% Fan	100 °C

VCU Group 20 - Remote Accelerator Pedal

1	Enable Remote Accelerator Pedal Input	disable
5	Remote Accelerator Pedal Idle Position	20 %
6	Remote Accelerator Pedal Wide Open Position	78 %

VCU Group 21 - Droop Control Mode

1	Droop Control Mode	disable
2	Droop Control Governor Type	1
3	Droop Maximum Engine Torque	5000 Nm

VCU Group 23 - Limiters II

1	Torque factor gear down protection	1.00
2	Gear ratio for gear down protection	0.010 km/h/rpm
3	Torque factor high gear power	1.00
4	Gear ratio for high gear power	0.020 km/h/rpm
5	Torque factor for cruise power	1.00
6	Max engine speed for progressive shifting	3000 rpm
7	Gear Ratio for Progressive Shifting	0.015 km/h/rpm
8	Engine Speed Threshold	50 rpm
9	Min. Engine Speed Threshold	1200 rpm
10	Ramp up Rate	160 rpm/sec
11	Minimun Eng. Torque	100 %
12	Droop Parameter	3.0 Nm/rpm

VCU Group 26 - Vehicle Identification Number

0	VIN	00000000000000000

VCU Group 27 - Fleetmanagement

1	Enable Fleet Management	enabled
2	Enable Hard Brake Incident	enabled
3	Enable Service Interval Data	enabled
4	Enable Monthly Trip Data	enabled
5	Enable Detailed Allert Data	enabled
6	Enable Engine Usage Data	enabled
7	Fuel Density	835 kg/m3