Date	Group	No.	Supp.	Page
12.96	**38**		**01**	1(4)

This Service Bulletin is a supplement to Service Manual, Group 38, Instrumentation, VNL, VNM.

Instrumentation

Troubleshooting Supplement

VNL, VNM

Instrumentation Troubleshooting

(Effective 12/96)
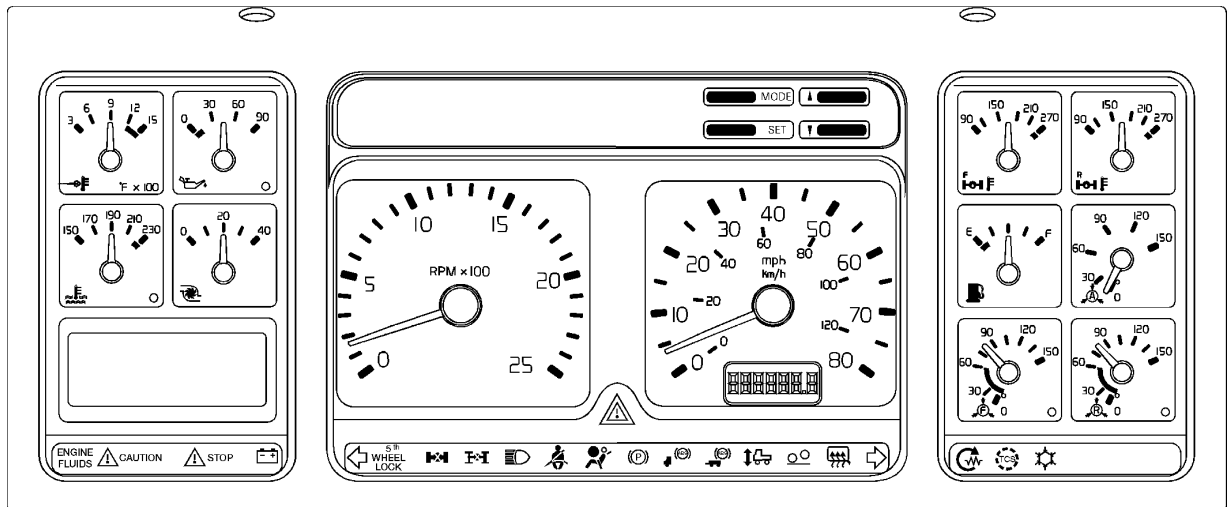
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Information published in the *VNL, VNM Instrumentation* service manual on troubleshooting with the MPSI Pro-Link 9000 and Volvo cartridge has changed, due to a new Volvo cartridge being released.

This service bulletin provides updated information for troubleshooting VN instrumentation using the Pro-Link and Volvo cartridge (Pro-Link is a registered trademark of MPSI).

Troubleshooting

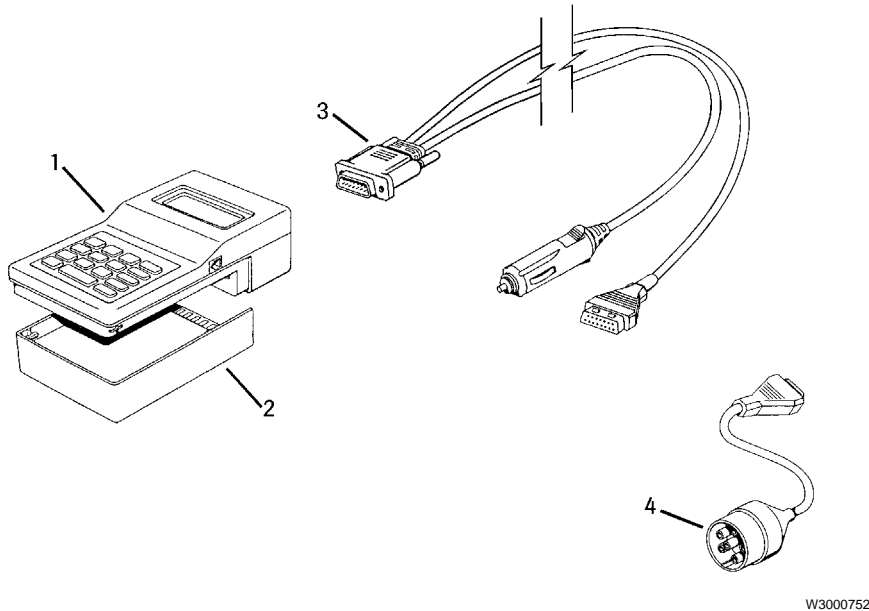## Instrumentation Troubleshooting

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Fig. 1: MPSI Pro-Link 9000

The Pro-Link 9000 with the VOLVO cartridge is available from Kent-Moore at 1–800–328–6657.

1 MPSI Pro-Link 9000
(Kent-Moore P/N J-38500–1)

2 VOLVO Cartridge
(Kent-Moore P/N J-38500–2000)

3 Power/Data Cable
(Kent-Moore P/N J-38500–2)

4 Diagnostic Adaptor Cable
(Kent-Moore P/N J-38500–60A)

The MPSI Pro-link 9000 with the Volvo cartridge provides special tests and reprogramming capability for the instrument cluster, as shown below (as well as easy diagnosis of faults generated by the VE D12 engine, Data Concentrator and SRS system). The Pro-Link and Volvo cartridge are required for clearing fault codes generated by the vehicle systems.

View ECU Information

This shows the software information for the instrument cluster:

S/W ID   IC   6.70

Note that IC stands for Instrument Cluster, and the displayed number is the revision level of the instrument cluster software.

Special Tests

The following tests require the Pro-Link 9000 and the Volvo cartridge.

Note: The tachometer will move to the 600 RPM mark during Special Tests. In vehicles with a Volvo engine, it is normal for an audible beeping to occur during certain Special Tests. The engine must not be running during any Special Tests, or the tests will not function.

Gauge Tests
These gauges can be individually driven.

Note: Gauge accuracy must be measured at room temperature (20–25 °C). The analog gauges have magnetic characteristics which may change accuracy slightly over a long period of time.

- **Speedometer**: The speedometer gauge can be driven in steps of ± 5 mph, from 0–80 mph. Gauge tolerance = +3 / –0 mph (Below 5 mph, tolerance = ± 3 mph).

- **Tachometer**: The tachometer gauge can be driven in steps of ±100 RPM, from 0–2500 RPM. Gauge tolerance = ± 50 RPM.

- **Engine Oil Pressure**: The engine oil pressure gauge can be driven in steps of ± 15 psi, from 0–90 psi. Gauge tolerance = ± 3 psi.

- **Engine Oil Temperature**: The engine oil temperature gauge can be driven in steps of ± 10 °F, from 80 to 270 °F. For this test to work, the gauge must be in the graphic display window. (See note [1].) Gauge tolerance: Via data link = ± 0.5 °F Via sensor = ± 4 °F

- **Turbo boost**: The turbo boost pressure gauge can be driven in steps of ± 5 psi, from 0–30 psi. Gauge tolerance = ± 3 psi.

- **Coolant temp.**: The coolant temp gauge can be driven in steps of ± 20 °F, from 150–230 °F. Gauge tolerance: Above 190 °F = ± 3.5 °F Below 190 °F = ± 9 °F

Lamp Circuitry Tests
The following tests check the function of the telltale lamp circuitry.

- **High Coolant Temperature** (tests LED on gauge)

- **Low Engine Oil Pressure** (tests LED on gauge)

- **High Engine Oil Temperature (Caution)** telltale lamp (see note [1])

- **Low Coolant Level (Stop)** telltale lamp

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[1]When this gauge is requested, if the message "Cannot execute test, Gauge input = sensor" is displayed, the source for the engine oil temp. signal must be changed to data link. With a Volvo engine, the source for the engine oil temp. signal is set to sensor (is set by the factory on original equipment). For other engines, the source is data link.

View EEPROM

Clock Mode 12 or 24 hour mode

Turbo Gauge indicates whether the turbo gauge is installed

Voltmeter indicates whether the voltmeter display is enabled or disabled

Eng Oil Temp indicates whether the engine oil temperature display is enabled or disabled

Trans Temp indicates whether the transmission oil temp. is enabled or disabled

Fuel Econ indicates whether the fuel economy feature is enabled or disabled

Eng Oil °F Src indicates the signal source for the engine oil temperature from data bus (Caterpillar, Cummins or Detroit Diesel) or sensor (VE D12 engine)

Hourmeter This displays the hourmeter total shown in the instrument cluster.

> **Actual** This displays the actual hourmeter total for that particular instrument cluster. If the instrument cluster has been reprogrammed to display a different total, this will show the actual total for that instrument cluster — not the reprogrammed total.

Odometer This displays the odometer total shown in the instrument cluster.

> **Actual** This displays the actual odometer total for that particular instrument cluster. If the instrument cluster has been reprogrammed to display a different total, this will show the actual total for that instrument cluster — not the reprogrammed total.

The last line of the View EEPROM menu will show the serial number of the last MPSI tool used to reprogram the instrument cluster.

Reprogram EEPROM

Note: When the Reprogram mode is entered, the serial number of the MPSI tool in use is recorded in the instrument cluster memory.

Note: There are no password-protected read/write functions

Clock Mode set 12 or 24 hour mode

Turbo Gauge enable or disable

Voltmeter enable or disable

Eng Oil Temp enable or disable

Trans Temp enable or disable

Fuel Econ enable or disable

Eng Oil °F Src Allows setting the engine oil temperature signal source to the data bus (Caterpillar, Cummins, Detroit Diesel engines) or to a sensor (Volvo engine). The default setting is sensor. If installing a new cluster into a vehicle with a Caterpillar, Cummins, or Detroit Diesel engine, this variable must be changed.

Hourmeter This allows the hourmeter total to be changed. It is used when installing a new instrument cluster into a vehicle which already has miles on the engine.

Odometer This allows the odometer total to be changed. It is used when installing a new instrument cluster into a vehicle which already has miles on it.