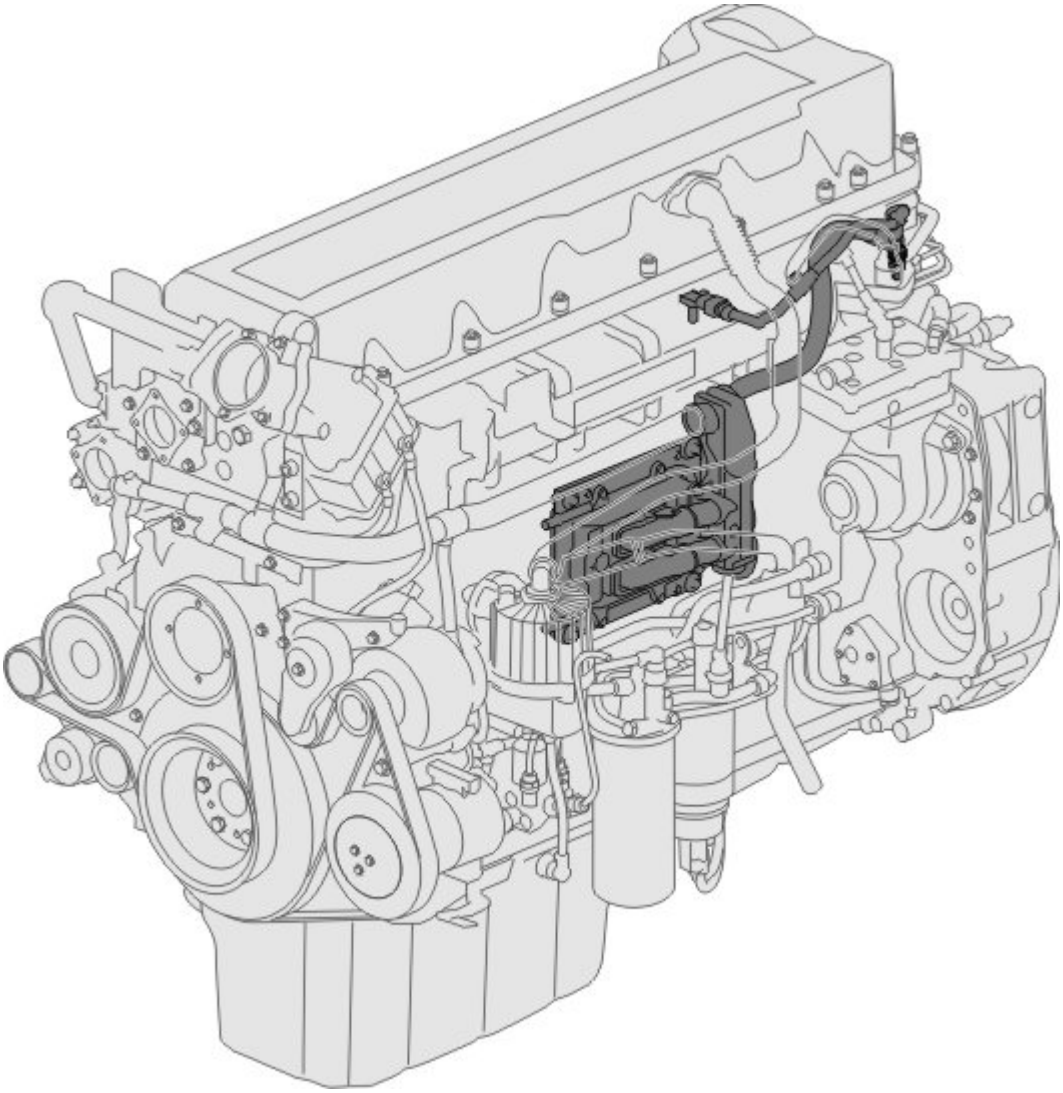


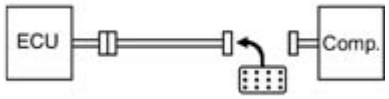
Fault type	Condition for Fault	Observable Symptoms	Possible cause
P0299 FTB 00	• Charge pressure low	• High soot level • Low power	• Turbocharger. • Charge air cooler with connections. • Charge air pipe • Air filter

Voltage measurement

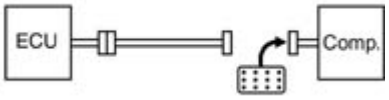


Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
		Breakout box	Wiring diagram			
Sensor signal – 0 kPa (0 psi)	On	1– 4	B37:1– B37:4	U = 0.5 V – 4.5 V		9990216, 88890074
Sensor signal – 50 kPa (7.25 psi)	On	1– 4	B37:1– B37:4	U = 0.5 V – 4.5 V		9990216, 88890074

Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
		Breakout box	Wiring diagram			
Sensor signal – 100 kPa (14.5 psi)	On	1– 4	B37:1– B37:4	U = 0.5 V – 4.5 V		9990216, 88890074
Sensor signal – 200 kPa (29 psi)	On	1– 4	B37:1– B37:4	U = 0.5 V – 4.5 V		9990216, 88890074
Voltage supply check	On	1– 3	B37:1– B37:3	U = 4.75 V – 5.25 V		9990216, 88890074
Open circuit check	On	1– 4	B37:1– B37:4	U = 0.5 V – 4.5 V		9990216, 88890074



Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
		Breakout box	Wiring diagram			
Voltage supply check	On	3 — Engine ground point	B37:3– Engine ground point	U = 4.75 V – 5.25 V		9990216, 88890074

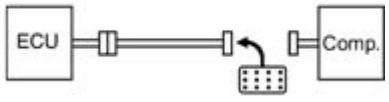


Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
		Breakout box	Wiring diagram			
Controller voltage check	On	7 — Engine ground point	A14.EA:7 – Engine ground point	U = 4.75 V – 5.25 V		9998699, 9990014, 88890074

Resistance measurement

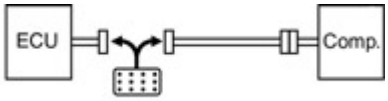


Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
		Breakout box	Wiring diagram			
Open circuit check	Off	22 – 4	A14.EA:22 – B37:4	R = 0 Ω – 5 Ω		9990216, 88890074, 9998699, 9990014
Short circuit between wires check	Off	22 – All other pins at connectors A14.EA and A14.EB	A14.EA:22 – All other pins at connectors A14.EA and A14.EB	R = Open circuit		88890074, 9998699, 9990014



Measuring	Key	Measurement points	Reference	Measured	Other (Special

Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
	position	Breakout box	Wiring diagram	value	value	tool No.)
Ground wire check	Off	1– Engine ground point.	B37:1 – Engine ground point.	R = 0 – 10 Ω		88890074, 9990216



Measuring	Key position	Measurement points		Reference value	Measured value	Other (Special tool No.)
		Breakout box	Wiring diagram			
Open circuit check	Off	11 – Engine ground point.	A14.EA:11 – Engine ground point.	R = 0 – 10 Ω		88890074, 9990014, 9998699

Visual checks:

- Check that the air filter is properly installed and seal on the air filter is undamaged.
- Check that the inlet pipe between the air intake and the air cleaner is undamaged.
- Check that the inlet pipe between air filter and turbocharger is undamaged.
- Check the charge air pipe and the charge air hose for cracks and external damage
- Check the charge air cooler for damage to tanks, cells and connections.
- Check the turbocharger for damages to the turbine rotor and see if the turbo is leaking oil in the turbine shaft seal.
- Check if the exhaust system is free from damage and modification obstructing the exhaust outlet.
- Check that the part number matches the part number for this vehicle in Impact.
- Check the turbo for damage to the compressor wheel and check the gasket for proper installation.
- Check the Turbo charger for proper functioning.
- Visual check the wiring harness and Charge air pressure and temperature sensor for loose connection and clogged.

Charge air cooler system, Pressure check:

Purpose:

Leakage check of Charge air cooler system.

Action:

- Remove the air inlet pipe between the turbocharger and the air filter housing.
- Fit adapter 88800186 on the turbocharger inlet side.
- Tighten the attaching arm lock nuts.
- The engine can not be started with the tool in place since the airflow to the engine is blocked.
- If the engine is rotated while the tool is in place it may stop with several valves open and that can prevent a leakage check from being performed.
- Connect manometer 9996662 to the pneumatic system in the workshop.
- Increase the pressure to 50 kPa, (7.25 psi) and Check that there is no leakage at the adapter.

Note: Ensure that the sealing surface is flat against the turbo flange for best air tightness.

- Some vehicles may have a hole drilled in the lower connection pipe to the charge air cooler and to perform the leakage test it must be plugged.
- If there is a large leak in the charge pressure system it can be difficult to build up and retain pressure in the system so that a leakage check can be performed. Listen for loud blowing sounds to localize the leakage .