

TECH TIP

Group:	0-General
Bulletin No:	TT-16-003
Issue Date:	10-18-2016
Reference:	HMM-160128-J1

DEF PUMP DIAGNOSTIC TIPS

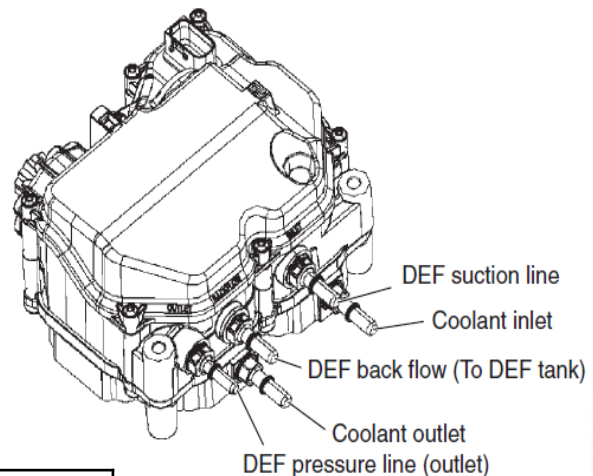
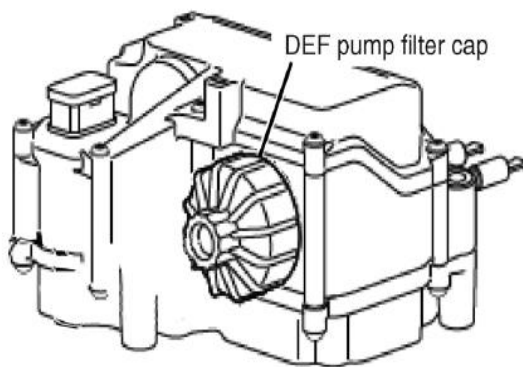
Supersedes TT-15-025 Def Pump Diagnostic Tips

SUBJECT VEHICLES: 2011MY-2017MY Hino Conventional Trucks equipped with a J08 engine and 2013MY-2017MY Hino COE Trucks equipped with a J05 engine

Note: This technical tip is provided as technical information and is not authorization for a warrantable repair.

OVERVIEW:

Subject vehicles may exhibit a MIL lamp on with reduced engine power due to a fault within the SCR (Selective Catalytic Reduction) system. If DTC's (Diagnostic Trouble Codes) related to the DEF (Diesel Exhaust Fluid) pump set, it will be helpful to follow the latest diagnostic troubleshooting procedures published in the **2015MY OR LATER** online Workshop Manual found on Hinonet. Hino has found that the majority of DEF pumps returned through warranty function properly and did not require replacement. The DEF pump has a serviceable inlet connector (which has a filter screen), a serviceable backflow connector, and a serviceable DEF filter. Failure to follow the published diagnostic procedure may result in warranty chargeback, if the pump assembly is replaced when not required. Please review the diagnostic tips below regarding the DEF pump.



PARTS:

PART NUMBER	PART DESCRIPTION	QUANTITY
S17K0E0011	DEF Pump Filter	As Required
S17M0E0010	Inlet Connector	As Required
S17M0E0032	Backflow Connector	As Required



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DIAGNOSTIC TIPS

Leaks Around Filter Cap

The DEF pump has a serviceable filter. If the filter cap is improperly torqued, a leak around the filter cap, as depicted on the right, may occur. **DO NOT** replace the DEF pump for this condition. This is not a leak from the pump housing. If a leak occurs within the DEF pump, DEF will first come out of the electrical connector. The crystallized DEF can be scraped off and/or dissolved with water. Replace the DEF filter (which includes a new seal) to address this condition.



DTC P20E8- DEF System Pressure Low

This DTC sets when low DEF pressure is detected by the DCU (Dosing Control Unit). Low DEF pressure may be caused by a restriction on the DEF sensor pickup tube, a restriction in the DEF pump lines, a restriction in the DEF pump inlet connector. Restrictions in the system may occur due to contamination entering the DEF tank during a refill. Low DEF pressure may also be caused by an external leak in one of the DEF lines or DEF injector. These items need to be inspected and/or addressed prior to replacement of the DEF pump.

Supplemental Information:

Replacement of the DEF pump inlet connector (Part No. S17M0E0010) is **REQUIRED** during step 7 of the diagnostic procedure. If DEF pump pressure is normal after replacement of the inlet connector, no further repairs are needed. Warranty claims for DTC P20E8 will no longer be reimbursed if the DEF pump inlet connector is not first replaced prior to replacement of the pump assembly. An inlet connector must be charged out on the repair order.

If contamination is found inside of the DEF tank on step 6 of the diagnostic procedure, follow the recommended procedures in the Workshop Manual and also replace the DEF filter element (Part No. S17K0E0011) in the pump. Note that replacement of SCR system components due to fluid contamination is **NOT** a warrantable failure.

If the pump main filter is completely plugged, DTC P20E8 may set. The DEF pump filter has a 150,000 mile service interval. The filter may require replacement before 150,000 miles if contamination enters the DEF tank. Replacement of this filter is **NOT** covered under warranty for DTC P20E8 and it should only be replaced if the filter is completely plugged, or the vehicle has over 150,000 miles on the original filter. The filter may only be replaced under warranty for external leaks.



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DTC P20E9- DEF System Pressure High

This DTC sets when high pressure is detected within the DEF system. This DTC can set when there is a restriction in the backflow line between the DEF pump and the DEF tank sender, or a restriction in the DEF tank sender. This DTC may also be caused by a clogged backflow connector.

Supplemental Information:

Replacement of the backflow connector (Part No. S17M0E0032) is **REQUIRED** during step 3 of the diagnostic procedure. If DEF pump pressure is normal after replacement of the backflow connector, no further repairs are needed. Warranty claims for DTC P20E9 will no longer be reimbursed if the DEF pump backflow connector is not first replaced prior to replacement of the pump assembly. A backflow connector must be charged out on the repair order.

DTC P204B- DEF Pressure Sensor Rationality

DTC 20A1- Reverting valve for DEF pump stuck close

These DTC's can set when the DEF pressure is registering outside of the 0 +/- 7.3 PSI (50Kpa) threshold during the detection window when the pump is not running.

Supplemental Information:

Ensure the DCU has the latest software calibration. Refer to **SB-16-015** for Conventional trucks and **SB-16-016** for COE trucks. False detection of these DTC's can occur with older software versions.

This DTC can falsely set when an issue with the DEF injector is present. If the DEF injector is stuck closed, negative pressure can build during the after-run cycle resulting in DTC P204B setting after the pump shuts off. **IGNORE** this DTC if DEF Injector related DTC's such as P202E, P2047, P2048, or P2049 are present.

If no injector related DTC's are present, test the pump for normal operation. With the key on and engine off, wait 3 minutes to verify that the DEF pump pressure is near 0 (+/- 7.3 PSI / 50KPa). If the pressure is within this range, the DTC may have falsely set due to a fluctuation in battery voltage. Clear the DTC and validate it does not return. If the DTC does not return after a road test, validate the pressure is still near 0 (+/- 7.3 PSI / 50KPa) after 3 minutes with the key on and engine off. If ok, **DO NOT** replace the DEF pump, the system is operating normally.



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DTC P142A- DEF Pump Temperature Sensor Out of Range

DTC P142B- DEF Pump Temperature Sensor Rationality

These DTC's can set when the pump temperature sensor signal is out of the expected range when compared to other temperature inputs.

Supplemental Information:

Ensure the DCU has the latest software calibration. Refer to **SB-16-015** for Conventional trucks and **SB-16-016** for COE trucks. False detection of DTC P142A can occur with older software versions.

These DTC's can set erroneously due to a fluctuation in system voltage. It is recommended to follow the published diagnostic procedure in the workshop manual for the DTC. If no problems are found when following the diagnostic procedure, and there is no corrosion in the DEF pump connector, **DO NOT** replace the DEF pump. It is not likely that this DTC will return being cleared. Installing a new DEF pump will not correct the concern.

DTC P204F in Engine ECU With No DTC in DCU

If DTC P204F is present in the engine ECU, the DEF pump may fail to operate when performing the pump Leak Test or the Injector dosing test. To clear DTC P204F, perform the UREA SCR System Memory Reset. From the Engine ECU Data Monitor and Active Test menu, select Active Test Setting> UREA SCR Related Memory Reset> then follow the prompts to complete the reset. After performing the SCR reset, clear DTC P204F from the engine ECU, and cycle the ignition off for 60 seconds. Turn the ignition on, and then read out DTC's in the Engine ECU and DCU. If no DTC's are present, the DEF Pump tests can now be performed.



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