



Subject: Transmission Low Air Pressure and/or Clutch Temperature Display Messages
– Endurant Transmissions

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Issue Description:

Customers may experience a low transmission air pressure and/or clutch temperature message during low speed maneuvering or stop and go traffic situations.

- **Low transmission air pressure message:** This issue may be induced by a vehicle air system not functioning properly resulting in the inability to achieve or maintain operating air pressure. Low air pressure may be induced by excessive use or cycling of the service brake, exhausting the vehicle air supply.
- **Clutch temperature message:** This issue may be induced by “two footing” the service brake and accelerator pedal simultaneously causing the clutch not to fully close, inducing a clutch slip and increasing clutch temperature.

Fault codes that may set during these events:

- Transmission Air Supply Pressure: FC215 SPN 37 FMI 18
- Clutch Temperature: FC815 SPN 5939 FMI 15 and/or 16

Containment/Corrective Action:

Driver recommendations:

- Ensure the vehicle air system is operating per OEM requirements.
- Allow the vehicle air system to reach normal operating range, 99 (106 at the Air Brake Tanks for Navistar) to 130 PSI (6.8 to 9.0 Bar), prior to selecting a gear from neutral.
- Avoid “two footing” the service brake and accelerator pedal.
- Avoid using the accelerator pedal to hold the vehicle on a hill - depress and hold the service brake until movement is required.
- During operation on a grade, rely on Hill Start Aid (HSA) when transitioning from the service brake pedal to the accelerator pedal.
- During low speed maneuvering, select the lowest available start gear (1st or R1) and rely on Urge to Move and Creep Mode to assist in moving the vehicle at engine idle without having to apply the accelerator pedal.

Note: For additional information on how to operate the transmission refer to [Driver Instructions TRDR0950](#) and [GET 2 KNOW videos](#) .

Recommendations when messages are displayed:

- **Low transmission air message** - allow the vehicle air system to reach normal operating range (100 PSI or above / 106 at the Air Brake Tanks for Navistar) and then continue operation. For optimal performance, the transmission requires 99 to 130 PSI (6.8 to 9.0 Bar).

Note: Transmission software version 5516024 includes enhancements that prevent Fault Code 215 from setting while transmission is in Neutral mode.

- **Non-Navistar Chassis:** With software version 5516024 and above, if the driver attempts to select a non-neutral mode before transmission air pressure reaches 80 psi, the transmission will prevent gear engagement and Fault Code 215 will set Active.
- **Navistar Chassis:** At initial key on with software version 5516024 and above, if a driver attempts to select a non-neutral mode before transmission air pressure reaches 90 psi, and the air brake tanks reach 106 psi, the transmission will prevent gear engagement. The 106 psi minimum on a Navistar chassis matches the tractor protection valve (OEM Requirement). If chassis air pressure falls below 106 psi (Key on normal operation) the transmission will continue to shift until a minimum of 75 psi is reached (see Item A / Degraded Performance).

Note: Transmission and Air Brake Tanks can be monitored in SR4 / Data Monitor:

| Link | Source | Parameter | Description | Value |
|-------|-----------------|-----------|--------------------------|---------------|
| J1939 | Body Controller | 117 | Brake primary pressure | 117 |
| J1939 | Body Controller | 118 | Brake secondary pressure | 116 |
| J1939 | Transmission | 520524 | Line Pressure Feedback | 130.68 |

- **Clutch temperature message** - safely and immediately discontinue the operation that is being performed which is causing the clutch to overheat. Depress and hold the service brake or set vehicle parking brake and idle the engine until the message is no longer indicated and then continue normal operation. Ensure the engine is allowed to idle, shutting off the engine prolongs the condition.

Note: Transmission software version 5516024 includes enhancements that allow the transmission to continue operation when Fault Code 815 sets. Fallback mode of the Fault Code will still disable some transmission functionality such as launching in a higher start gear and Urge to Move. The driver will continue to be notified of a Clutch Abuse event via a dash message and audible tone. A software update to 5516024 for Fault Code 815 is considered a non-warrantable issue.

NOTICE: In most cases the transmission will recover from the induced events outlined above and towing of the vehicle is not required. In extreme cases depending on truck operation, the air system requirement for air consumption may be higher than the standard compressor (18.7 CFM) can produce. In those cases, a higher CFM (37.4) compressor is available for aftermarket purchase (customer pay) or as an option in the OEM Databook. See your Navistar representative for details.

Note: If the transmission low air and/or clutch temperature condition no longer exists some OEM displays may require the driver to manually clear the message with older cluster software versions. Refer to OEM guidelines regarding the display message reset procedure.

Navistar is offering a dash cluster software update with 6024 transmission SW update that has changed the warning displays. Reference Navistar iKNow article (IK0800550).

- Transmission Air Supply Low – Least Severe:
 - Requirements to set dash response: Engine Running, Trans Current Gear Neutral, Shift device Neutral, Vehicle Not Moving, and Transmission Air Pressure < 90 psi or Brake Tank Pressure < 106 psi.
 - Dash response was: “Transmission Air Pressure Low Warning” with driver acknowledgment now “System Air Pressure Low” and does not require the driver to manually clear the message
- Transmission Air Supply Low – Moderately Severe Level:
 - Requirements to set dash response: Vehicle Stopped, Neutral Mode, Shift Device Not Neutral, and Trans Air Pressure <90 psi or Brake Tank Pressure <106 psi or Vehicle moving and Trans Air Tank Pressure < 85 psi or Trans in Non-Neutral Mode and Trans Air Pressure < 85 psi
 - New dash response “System Air Pressure Low Gear Change Not Allowed”
- Transmission Air Supply Low – Most Severe Level:
 - Requirements to set dash response: Engine Running, Vehicle Moving, and Trans Air Pressure < 75 psi
 - New dash response: System Air Pressure Low Transmission Disabled
- Clutch Abuse – Moderately Severe Level:
 - Requirements to set dash response: Clutch plate temperature estimated > 210 C
 - Dash response was: “Clutch Temp High – Function Limited” now “Clutch Temp High”
- Clutch Abuse – Most Severe Level:
 - Requirements to set dash response: Clutch plate temperature estimated > 235 C
 - Dash response was: “Clutch Temp Over Limit Allowed” now “Clutch Overheated Allow Clutch to Cool”

Refer to OEM guidelines regarding the display message reset procedure.

Affected Models/Population:

- Endurant Transmissions

Warranty Information:

Informational only.

Item A:

Endurant Installation Guide [link](#), go to Section 6: Pneumatic System Requirements.

Section 6: Pneumatic System Requirements

Supply Pressure

WARNING: This is a safety requirement. To maintain transmission functionality, the vehicle system shall have the air compressor OFF set no higher than 130psig (9.0bar). Failure to limit transmission air supply pressure below 130psig (9.0bar) has the potential to increase vehicle stopping distance due to the transmissions inability to disengage the driveline, which may result in serious injury or death.

WARNING: This is a safety requirement. To prevent transmission damage the vehicle system shall have a pressure relief valve in the supply system set no higher than 150psig (10.3bar). Failure to limit transmission air supply pressure below 150psig (10.3bar) has the potential to increase vehicle stopping distance due to the transmissions inability to disengage the driveline, which may result in serious injury or death.

For optimal performance, the Eaton Endurant transmission requires a nominal air supply operating range between 99 psi (6.8 bar) and 130 psi (9.0 bar). Air supply outside this range can result in degraded or complete loss of transmission shift capabilities. The following figure summarizes the significant thresholds for various air supply pressures.

NOTICE: Actions taken by the Endurant transmission in response to air supply pressures are not symmetrical and vary depending on if air supply pressure is increasing or decreasing such as transmission functionality allowed above 90 psi (5.9 bar) but not degraded until below 80 psi (5.5 bar).

| Pressure Range Description | Bar | Ref. PSI | Response |
|-----------------------------------|-----|----------|---|
| Transmission Function Permitted | 5.9 | 90 | System Low Air Warning turns off. Gear engagement permitted. |
| Lower Operating Range | 6.8 | 99 | |
| Upper Operating Range | 9.0 | 130 | |
| Transmission Low Air Notification | 5.5 | 80 | (SPN-37 FMI-18): Transmission low pressure warning turns ON. Transmission remains functional at degraded performance (e.g. Non-N modes prohibited and upshifts not allowed; downshifts will continue) |
| Transmission Low Air Warning | 5.2 | 75 | (SPN-37 FMI-1): Transmission low pressure warning continues, system will then attempt to disengage driveline when or if it becomes appropriate. |

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