



Caterpillar Gas Engine Actuator Service Bulletin

Engines Affected

All Woodward ProAct Digital Plus actuators on all Caterpillar G3500C/E (NG & Landfill) and G3520B (Petro) engines.

Issue

Separation of the electronics housing from the main actuator housing leading to loss of accurate position control and instability.

Description

The ProAct actuators used for both the throttle valve and turbo compressor bypass valve on all Caterpillar G3500C, G3500E, and G3520B Petro engines have on-board electronic circuit boards. These boards are located in the aluminum housings on the back end of the actuator and are isolated from the main actuator housing to protect the electronics from engine vibration. Over time, the isolation system will break down and degrade to the point of failure. This is due to engine vibration and temperature levels generated by these engines that exceed the design intent of the actuators. See photos for examples.



Corrective Action

Woodward has developed a new actuator, the ProAct ISC, that should be used in place of the original ProAct Digital Plus units. The design increases the actuator's robustness and ability to resist elevated temperature and vibration in these on-engine environments. The new actuator addresses the issue in three ways:

1. The electronics have been redesigned from two circuit boards down to one. As a result, the new actuator is physically shorter on the back end which reduces the amount of mass hanging on the isolation system.
2. The electrical connector has been changed eliminating the aluminum block on the actuator cover (throttle only). This also reduces the mass and strain on the isolation system.
3. The isolation system itself has been improved to include larger isolators and bushings

Caterpillar Factory Authorized Solution

Note this replacement is Woodward factory designed and Caterpillar factory approved. The Caterpillar factory has implemented the new actuators on all new engine builds.



Part Numbers Affected

	Upper-Level P/N	Actuator P/N	Replacement Actuator
Throttle Valve	204-9415	8404-016	8404-214 (and CAT harness P/N 305-0580)
Bypass Valve	220-2957 250-6149 285-4138	Woodward: 8404-036 Caterpillar: 223-1179	8404-204 (and CAT harness P/N 305-0581)
	233-6618	233-6676	

Valve Binding

If your valve is binding or sticking, it is possible that only the actuator needs replaced, the complete valve assembly does not necessarily need to be changed. In most cases of valve binding or sticking, the binding is usually internal to the actuator not the valve. The valve should free up when decoupled from the actuator. For this reason, only replacement actuators are listed in the above table. If your valve is still binding after decoupling from the actuator, contact GCS for further instruction.

Electrical Connector Change

As mentioned, the electrical connector on the ProAct ISC is different than the connector on the ProAct Digital Plus. As a result, an adapter harness will also be required when changing actuators. These harnesses are available through your local Caterpillar dealer and Caterpillar part numbers are listed in the table above. Alternatively, GCS can provide adapter harnesses if desired.

Configuration Parameters

The ProAct ISC actuators need to be loaded with the Caterpillar specific factory configuration settings in order for them to communicate with the ADEM III ECM. GCS has these settings on file and can load them into the actuators prior to shipment. Please contact GCS for further information.

Valve Calibration

After installation of a new actuator onto an existing valve, the valve position needs to be properly calibrated. With the bypass valve, this calibration is relatively straight-forward, but with the throttle valve this calibration is more critical. Contact GCS for proper calibration procedures.

Inquiries

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