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1. Engine Fan Control (General Overview)

The engine fan control feature is designed to allow configuration of the engine for the various fan control features on a particular vehicle application.

The primary purpose of the engine fan is to allow the engine to run at its regulated operating temperature; increasing engine performance. It is also used to assist in cooling the refrigerant for the A/C condenser.

Engine Fan Control is programmed to control the engine fan speed under many different operating conditions. This programmed fan control can reduce engine fan noise, fan loading on the engine and positively affect fuel economy in certain operating conditions.

Programmable parameters within the engine control module (ECM) provide engine fan control related options that can be adjusted to suit the customer’s needs. Choosing whether the fan is to be engaged during engine speed control (PTO) operation is an example.

The document will address unique engine fan control functionality for MaxxForce® 11 and 13 engines.

1.1. Feature Codes

Specifically, the following Fan configurations are available:

- 12THX – Variable Speed Fan
- 12THT – On/Off
- 12THJ – On/Off
- 12WBR – Manual Fan Override Switch

2. Definitions/Acronyms

The following terms are referenced in this document:

- **ECM** – Engine Control Module
- **ECT** – Engine Coolant Temperature

3. Description and Operation

The engine fan control feature operates automatically, and therefore; with the exception of the optional manual fan override switch, there are no operator interactions involved.

If the vehicle is equipped with a manual fan override switch, the operator may activate the fan at 100% fan speed at any time. The manual fan override switch is located in a switch pack.

There are 2 types of engine cooling fans which will be discussed in this document:

- ON/OFF Fans – The fan turns ON (100%) and OFF (0%).
- Variable Speed Fans – The engine fan speed is variable between engine speed of 600 rpm and 1700 rpm and will also be dependent on the cooling requirements of the engine.

3.1. Feature Interaction

The Engine Fan Control (EFC) feature interacts with the following engine features:

- Engine Retarder – The engine fan will be ON (100%) when the engine retarder is active if the engine retarder level selection switch is set to “level 3”.
- Engine Speed Control (PTO) – The engine fan will be ON (100%) when the engine speed control (PTO) feature is active and the “Force Fan On With PTO Active” (9007) parameter is set to (1) “Fan On with PTO”.

3.2. Feature Update – Variable Speed Fan

The Engine Fan Control (EFC) feature includes a variable fan speed program now built into the current ECM calibration:

- Engine Fan Control (EFC) – Engine fan speed is now variable between 600 rpm and 1700 rpm. This change will reduce fan noise, load on engine and positively affect fuel economy.

4. Programmable Parameters

The following programmable parameters are available for the engine fan control feature. These parameters should be programmed in a manner which best suits your particular vehicle application.

Parameters indicated as “Customer Programmable” can be adjusted differently than the production assembly plant setting to meet the customer’s needs. This adjustment can be done before or after the original sale. If the parameter is indicated as non-customer programmable, the parameter setting is preset from the factory and can’t be changed without dealer authorization.

Parameter Name	Description	Possible Values	Customer Programmable?	Recommended Setting
Engine Fan Control Mode (9000)	<p>This parameter determines the functionality of the engine fan control feature.</p> <p>If set to (1): – The feature includes:</p> <ul style="list-style-type: none"> Cooling fan turns ON at 100% and OFF based on engine coolant temperature. <p>If set to (2): – The feature includes:</p> <ul style="list-style-type: none"> Cooling fan turns ON at 100% and OFF based on engine coolant temperature. Cooling fan turns ON at 100% if the engine retarder level switch is set to level 3 AND the engine retarder is active (See Note 1). <p>If set to (3): – The feature includes:</p> <ul style="list-style-type: none"> Cooling fan varies its speed between 0% and 100% based on engine coolant temperature. Cooling fan turns ON at 100% if the engine retarder level switch is set to level 3 AND the engine retarder is active (See Note 1). <p>Note 1: While the engine cooling fan with retarder functionality is active, it is important to understand that although engine retarder performance will improve; fuel economy is decreased.</p>	<p>0: Disable</p> <p>1: Coolant Temp Control (ON/OFF fan)</p> <p>2: Coolant Temp Control w/Retarder (ON/OFF fan)</p> <p>3: Coolant Temp Control w/Retarder (Variable fan)</p>	NO	This parameter setting is chosen based on the fan type installed on the vehicle.
Force Fan On With PTO Active (9007)	<p>It may not be desirable to have the cooling fan cycling ON and OFF during engine speed control (PTO) operation; therefore this parameter can be used to keep the fan engaged at all times while PTO is active.</p> <p>This parameter could be useful, for example, if a hydraulic lift is used and engine cooling fan engagement may cause the boom to move.</p>	<p>0: Normal Coolant Temp Control</p> <p>1: Fan Always On with PTO</p>	YES	Customer Chosen

5. Parameter Setup

5.1. Possible Engine Fan Control Applications

This section describes possible applications of the feature and how the programmable parameters can be effectively configured for each application.

Engine Fan Control (EFC)

Please review the description and operation section and the programmable parameters for a better understanding of how the various engine fan control parameters might be best configured for your vehicle.

Possible applications for the fan include:

- Manual fan override – An additional manual fan override switch is required.
- Engine retarder assist – A programmable parameter allows the cooling fan to act as an additional retarder to assist in slowing down the vehicle.

(Example A) Basic Engine Fan Control Configuration for ON/OFF fans

In this example, the operator requires basic engine cooling fan control operation with an ON/OFF fan.

Adjust parameters as follows:

Parameter Name	Action Required
Engine Fan Control Mode (9000)	Set to 1: “Coolant Temp Control (ON/OFF fan)”
Force Fan On With PTO Active (9007)	Set to 0: “Normal Coolant Temp Control”

6. Frequently Asked Questions

Q: How will turning on the cooling fan help my engine retarder?

A: The engine cooling fan takes away horsepower while engaged. Turning on the fan during engine retarder operation helps the vehicle slow down faster.