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## NRF WEEKLY TECHNICAL POST

# NRF EXPANDS TEST FACILITY WITH FAN CLUTCH TEST EQUIPMENT >

The fan clutch is an essential part to regulate the engine operating temperature. NRF offers more than 200 unique fan clutches for truck, earth moving and agricultural applications. As a leading aftermarket supplier, NRF offers fan clutches of the highest quality and durability. To guarantee the high quality standards, NRF now invested in a specialized fan clutch test bench. The fan clutch test bench is used to validate new-to-range parts to ensure matching quality and performance. Furthermore the equipment will be used to invest fan clutches in case of warranty returns.

**NRF GUARANTEES HIGH QUALITY DUE TO EXTENSIVE VALIDATION AND TEST PROCEDURES.**

### THE FUNCTION A FAN CLUTCH >

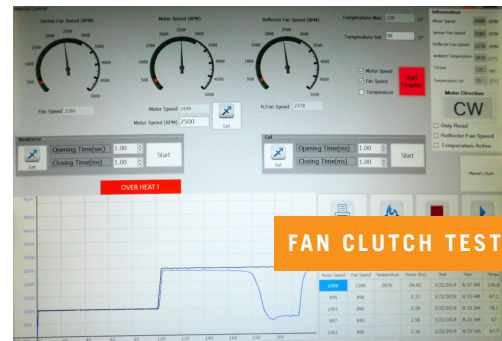
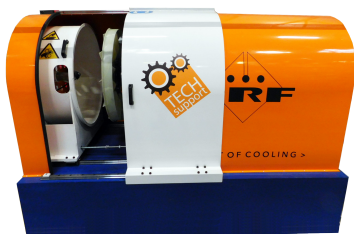
The fan clutch is an essential part of the cooling system, turning the engine fan on and off when needed. The attached fan helps to keep engines within the set operating temperature. The end result is lower fuel consumption, faster response at upper and lower temperature thresholds, lower engine noise level and improved A/C efficiency.

Electronically controlled viscous clutches are more and more used for truck applications. This kind of fan clutch is operated by controlled silicon oil between the rotors. The amount of oil flow through the intake port is controlled by a solenoid valve, operated by Pulse Width Modulated signal (PWM). Additionally this type of clutch controlling itself rotation by Hall effect sensor.

### The fan is controlled by various information:

- Engine coolant temperature
- Engine oil temperature
- A/C refrigerant pressure
- Ambient air temperature
- Vehicle speed
- Signal from Hall sensor (fan rotation)

Because the fan clutch is such an advanced part, it needs to be correctly validated before sales. For this reason NRF expanded their test facility with a fan clutch test bench. It's exactly the same as truck producers are using.



**NEW TEST EQUIPMENT - FAN CLUTCH TEST BENCH >** NRF invested in a specialized fan clutch test bench. The fan clutch test bench is used to validate new-to-range parts to ensure matching quality and performance. Furthermore the equipment will be used to invest fan clutches in case of warranty returns. NRF can do quick function tests, but also long performance tests, simulating truck driving at different road conditions.

### NRF is testing the fan clutches at 3 different criteria:

- Temperature
- Engine RPM
- Fan RPM

### These criteria are tested in different stages:

- Startup phase
- Regulation phase
- Decoupling phase
- Coupling phase

### UNIQUE TEST REPORT PER FAN CLUTCH >

Each test results in a detailed test report. On this test report a unique test chart is included. Furthermore NRF shows if each phase has been successfully completed. All this is summarized in a total functionality check.

### NRF RANGE >

The total range consists of more than 200 high quality fan clutches for all common truck brands: DAF, IVECO, MAN, MERCEDES, RENAULT TRUCKS, SCANIA and VOLVO.