



DIESEL ENGINE EXHAUST SMOKE EMISSIONS FUEL TECHNOLOGY RECOMMENDED TEST PROCEDURE

Introduction

The purpose of this bulletin is to detail a recommended procedure for smoke emissions testing on mobile equipment, using the Bosch Smoke Meter (with ETD 020.00 sampling pump and ETD 020.50 evaluating instrument).

Procedure

1. The engine should be in reasonable mechanical condition, with no mechanical defects that may interfere with test results. New or rebuilt engines should be run in for not less than 240 kilometres.
2. Any orifice which would permit air to be drawn into the exhaust system should be blocked.
3. The engine should be run up to within normal operating temperatures prior to, and maintained during the test.
4. Ensure cold starting devices are not, and cannot be, brought into operation during normal engine operation.
5. For the test to be valid in accordance with ADR 30/00 clause 30:3.1.6, the factor F shall be between the range $0.98 \leq F \leq 1.02$. Calculate by:

$$F = \frac{(100)^{0.65}}{(H)} \times \frac{(T)^{0.5}}{(298)}$$

Where: T = the absolute temperature of the inlet air, measured within 150 mm \pm 10 mm of the point of entry to the engine system, expressed in degrees Kelvin.

H = the atmospheric pressure expressed in KPa.

Treated Test

1. Prior to the treated test the engine should be operated on the FTC catalyst treated fuel for a conditioning period of approximately 200-300 hours. From previous experience it has been observed that during the early stages of using FTC catalyst treated fuel, the soot emissions tend to increase prior to reducing. A possible explanation for this trend is that an attrition process takes place on exiting soot particulates which accumulate in the engine while being operated on untreated fuel.
2. The treated test should be carried out in the same manner as per the base tests.

Evaluation

Evaluation of the darkened filter paper disks with the diesel smoke evaluator, should be carried out according to the manufacturer's operating instructions.

General Comments

1. The aforementioned procedure has been compiled to maintain general conformity (where practical) with the Australian Design Rule ADR30/00 diesel engine exhaust smoke emissions (currently under review), and the Bosch smoke meter operating instructions.
2. Consideration should also be given to any vehicle manufacturers operational requirements or limitations.

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