
**Diesel engines — Procedure for checking
the dynamic timing of diesel fuel injection
equipment —**

**Part 3:
Validation of timing measurement
devices**

*Moteurs diesels — Procédure pour contrôler le calage dynamique de
l'équipement d'injection de combustible diesel —*

Partie 3: Validation des dispositifs de mesurage du calage



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Contents

Page

| | |
|--|----|
| Foreword..... | iv |
| 1 Scope..... | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions..... | 1 |
| 4 Test rig | 2 |
| 5 Validation procedure | 8 |
| 6 Recording and evaluation of test results | 10 |
| 7 Allowed deviation of the device signal..... | 10 |
| Annex A (informative) Description of the electronic system (typical) | 11 |
| Bibliography | 13 |

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13555-3 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 7, *Injection equipment and filters for use on road vehicles*.

ISO 13555 consists of the following parts, under the general title *Diesel engines — Procedure for checking the dynamic timing of diesel fuel injection equipment*:

- *Part 1: Preconditioning*
- *Part 2: Test method*
- *Part 3: Validation of timing measurement devices*

Diesel engines — Procedure for checking the dynamic timing of diesel fuel injection equipment —

Part 3: Validation of timing measurement devices

1 Scope

This part of ISO 13555 specifies a test rig and reference method for the validation of timing measurement devices which, by application of the pressure-sensing principle on the high-pressure fuel injection pipe, are used for checking the dynamic setting of fuel injection equipment fitted to diesel engines. (In order to produce a realistic measurement situation, the test rig allows the addition of vibrational excitation of the high-pressure fuel injection pipe — deemed a primary source of signal corruption when used on running diesel engines.) The validation procedure can be used either in the initial approval of a timing measurement device or the verification of its proper functioning when already in use. The aim is to ensure that the devices supplied by different manufacturers provide comparable measurement results.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8535-1, *Compression-ignition engines — Steel tubes for high-pressure fuel injection pipes — Part 1: Requirements for seamless cold-drawn single-wall tubes*

ISO 8535-2, *Compression-ignition engines — Steel tubes for high-pressure fuel injection pipes — Part 2: Requirements for composite tubes*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE All rig angles are given in terms of engine crankshaft angles (crank angles).

3.1

test rig

test device which consists of an operable fuel injection system of conventional type (pump–pipe–injector) and means for the evaluation of sensed signals according to the specified procedure

3.2

clip-on transducer

sensor that can be clamped onto the high-pressure fuel injection pipe to detect dynamic pipe dilations

3.3

top dead centre

TDC

dead centre when the piston is farthest from the crankshaft

[ISO 2710-1:2000, definition 10.1.4.2]