ISO 5011:2025-09 (E)

Inlet air cleaning equipment for internal combustion engines and compressors - Performance testing

Contents

Page

Foreword v

1 Scope 1

2 Normative references 1

3 Terms,definitionsandsymbols 1
3.1 Terms and definitions 1
3.2 Symbols 3

4 Measurementaccuracyandstandardconditions 4
4.1 Measurement accuracy and precision 4
4.2 Standard conditions 4

5 Test materials and test conditions 4
5.1 Test dust 4
5.1.1 Grade 4
5.1.2 Preparation 5
5.2 Test oil for oil bath air cleaners 5
5.3 Absolute filter materials 5
5.3.1 Filter media 5
5.3.2 Validation of absolute filter media efficiency, Ea 5
5.4 Absolute filter mass 6
5.4.1 Validation of the absolute filter weighing method 6
5.5 Temperature and humidity 6

6 Testprocedurefordry-typesingle-stageaircleaners 6
6.1 General 6
6.2 Test equipment 6
6.3 Restriction and differential pressure test 8
6.4 Efficiency test 8
6.4.1 Purpose 8
6.4.2 Types 8
6.4.3 Test procedure -- Absolute filter method 9
6.4.4 Test procedure -- Direct weighing method 10
6.5 Capacity test 10
6.6 Filter element pressure collapse test 11
6.7 Variable airflow test 11
6.8 Presentation of data 12

7 Testprocedurefordry-typemultistageaircleaners 12
7.1 General 12
7.2 Test equipment 12
7.3 Restriction and differential pressure test 13
7.4 Initial efficiency test procedure -- Absolute filter method 13
7.5 Full-life efficiency and capacity test 14
7.5.1 Air cleaner dust capacity 14
7.5.2 Test procedure -- Absolute filter method 14
7.5.3 Test procedure -- Direct weighing method 15
7.6 Presentation of data 16
7.7 Variations for scavenged airflow performance testing 16

7.7.1 General 16
7.7.2 Additional equipment 16
7.7.3 Restriction and differential pressure test 17
7.7.4 Full-life efficiency and capacity test 17
7.7.5 Presentation of data 17
7.8 Precleaner performance test 17
7.8.1 Precleaner dust removal 17
7.8.2 Precleaner efficiency 18
7.8.3 Presentation of data 18

7.9 Secondary element test procedure 18
7.9.1 General 18
7.9.2 Specific efficiency test 18
7.9.3 Expression of results 19

8 Test procedure for oil bath air cleaners 19
8.1 General 19
8.2 Test equipment and conditions 19
8.3 Restriction and differential pressure test 20
8.4 Oil carry-over test 20
8.5 Full life efficiency and capacity test 20
8.6 Recovery test 21
8.7 Presentation of data 21

Annex A (normative) Explanation of restriction, differential pressure and pressure loss of an air cleaner 22

Annex B (normative) Test equipment 24

Annex C (informative) Report sheet on performance testing of air cleaner equipment according toISO5011--Dry-typesingle-stageaircleaners 36

Annex D (informative) Report sheet on performance testing of air cleaner equipment according toISO5011--Dry-typemultistageaircleaners 38

Annex E (informative) Presentation of results -- Air cleaner restriction/differential pressure versusflow 40

Annex F (informative)Presentationofresults--Aircleanercapacity 41

Annex G (normative)Airflowandresistancecorrectionstostandardconditions 42

Annex H (normative)Penetrationsensitivity 43

Bibliography 50