

ISO 15619:2025-12 (E)

Reciprocating internal combustion engines - Measurement method for exhaust silencers - Sound power level of exhaust noise and insertion loss using sound pressure and power loss ratio

Contents		Page
Foreword	v
Introduction	vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Test environment	6
4.1	General	6
4.1.1	Engineering method	6
4.1.2	Survey method	6
4.2	Criteria for background noise	7
4.2.1	Engineering method relative criteria	7
4.2.2	Absolute criteria	7
4.2.3	Statement of non-conformity with criteria	7
4.2.4	Survey method	8
4.3	Criterion for acoustic adequacy of test environment	8
4.3.1	Engineering method	8
4.3.2	Survey method	9
5	Instrumentation	9
5.1	General	9
5.2	Calibration	9
5.3	Use	10
6	Installation and operation of noise source under test for laboratory measurement	10
6.1	General	10
6.2	Source location	10
6.2.1	Engineering method	10
6.2.2	Survey method	11
6.3	Installation requirements	11
6.3.1	General	11
6.3.2	Straight transition pipe	11
6.3.3	Bent transition pipe	12
6.3.4	Exhaust emission control systems and devices	12
6.4	Operation condition	12
7	Measurement	12
7.1	General	12
7.2	Measurement uncertainty	13
7.2.1	Engineering method	13
7.2.2	Survey method	13
7.3	Laboratory measurement	14
7.3.1	Microphone arrays	14
7.3.2	Determination of engine power	18
7.4	Site measurement	19

8	Calculation	22
8.1	General	22
8.2	Calculation of sound power level of exhaust noise	22
8.2.1	Calculation of mean time-averaged sound pressure levels	22
8.2.2	Corrections for background noise	22
8.2.3	Corrections for environment	23
8.2.4	Calculation of surface time-averaged sound pressure levels	23
8.2.5	Calculation of sound power levels	23
8.3	Calculation of insertion loss	24
8.4	Calculation of power loss ratio	24
9	Information to be recorded	24
9.1	General	24
9.2	Description of the tested exhaust silencer and substitution pipe	24
9.3	Description of the engine on which the exhaust silencer is installed	24
9.4	Acoustic environment	24
9.5	Description of instrumentation	25
9.6	Acoustical data	25
10	Test report	25
Annex A (normative) Qualification procedures for the acoustic environment		26
Annex B (informative) Measurement procedure for pressure loss		31
Annex C (informative) Calculation of A-weighted sound power levels from frequency band levels ..		32
Annex D (normative) Sound power level under reference meteorological conditions		34
Bibliography		36