ISO 15086-2:2025-02 (E)

Hydraulic fluid power - Determination of the fluid-borne noise characteristics of components and systems - Part 2: Measurement of the speed of sound in a fluid in a pipe

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Symbols 2

5 Instrumentation 3
5.1 Static measurements 3
5.2 Dynamic measurements 3
5.3 Frequency analysis of pressure ripple 3

6 Hydraulic noise generator 4
6.1 General 4
6.2 Generator vibration 4

7 Test conditions 4
7.1 General 4
7.2 Fluid temperature 4
7.3 Fluid density and viscosity 4
7.4 Mean fluid pressure 4
7.5 Mean flow measurement 5

8 Test rig 5
8.1 General 5
8.2 Thermal insulation 5
8.3 Method 1: Three-transducer method 5
8.4 Method 2: Antiresonance method 6
8.5 Calibration of pressure transducers 8

9 Test procedure for Method 1 9

10 Test procedure for Method 2 10

11 Test report 11
11.1 General information 11
11.2 Test data 11
11.3 Test results 12

12 Identification statement (Reference to this part of ISO 15086) 12

Annex A (normative) Errors and classes of measurement of mean value 13

Annex B (normative) Errors and classes of dynamic measurement 14

Annex C (informative) Data reduction algorithms 15

Annex D (informative) Example of speed of sound calculation in MATLAB® language using three pressure transducers in a pipe (Method 1) 19

Annex E (informative) Example of speed of sound calculation in MATLAB® language using two pressure transducers in a closed-end pipe (Method 2) 22

Bibliography 24