

# INTERNATIONAL STANDARD

**ISO**  
**9110-2**

First edition  
1990-11-01

---

---

## **Hydraulic fluid power — Measurement techniques —**

### **Part 2:**

Measurement of average steady-state pressure  
in a closed conduit

*Transmissions hydrauliques — Techniques de mesure —*

*Partie 2: Mesurage de la pression moyenne dans un conduit fermé en  
régime permanent*



Reference number  
ISO 9110-2:1990(E)

## 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.

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.

International Standard ISO 9110-2 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

ISO 9110 consists of the following parts, under the general title *Hydraulic fluid power — Measurement techniques*:

- *Part 1: General measurement principles*
- *Part 2: Measurement of average steady-state pressure in a closed conduit*

This document is a preview generated by EVS

## **Introduction**

ISO 9110-1 relates to general principles for the measurement of static or steady-state conditions. This part (ISO 9110-2) deals with the measurement of average steady-state pressure in a closed conduit and should be read in conjunction with ISO 9110-1.

Further parts will be published as technology develops.

This document is a preview generated by EVS

This page intentionally left blank

# Hydraulic fluid power — Measurement techniques —

## Part 2:

## Measurement of average steady-state pressure in a closed conduit

### 1 Scope

This part of ISO 9110 establishes procedures for measuring the average steady-state pressure in a hydraulic fluid power conduit.

It is applicable to the measurement of average steady-state pressure in closed conduits with inside diameters greater than 3 mm, transmitting hydraulic fluid power with average fluid velocities less than 25 m/s and average steady-state static pressures less than 70 MPa (700 bar).

It is not applicable to sensors which are flush mounted with, or are an integral part of, the closed fluid conduit wall.

It provides the formulae for estimating the total uncertainty in a given pressure measurement.

### 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 9110. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9110 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 9110-1:1990, *Hydraulic fluid power — Measurement techniques — Part 1: General measurement principles*.

### 3 Definitions

For the purposes of this part of ISO 9110, the definitions given in ISO 9110-1 and the following definitions apply.

**3.1 half-range uncertainty:** Half of the numerical value of an uncertainty. For example when a random uncertainty is  $\pm R$ , the half-range uncertainty is  $R$ .

**3.2 pulsation damper:** A device using a fixed or variable restrictor, inserted in the pipeline to a pressure-measuring instrument, to prevent damage to the instrument mechanism caused by fluctuations of fluid pressure.

**3.3 total uncertainty:** The range within which 95 % of the measurement values will be when a large number of measurements are taken of the same value under effectively identical conditions.

**3.4 working instrument:** A measuring instrument which has been calibrated against a reference standard.

### 4 Evaluation of the readability uncertainty of measuring instruments

#### 4.1 General

This clause describes the procedures for determining the uncertainty attributable to the inability of the observer to determine exactly the indicated value of a measured quantity.