NFPA/T2.12.1 R1-2002 (R2014)
Second edition
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AN INDUSTRY STANDARD FOR FLUID POWER

Hydraulic fluid power – Systems and products – Method of measuring average steady-state pressure [to be used in conjunction with NFPA/T2.12.10]

(Revision and redesignation of ANSI/(NFPA)T2.12.1-1993)

Descriptors: average steady-state pressure fluid power systems hydraulic measurement transducers snubber static symmetry test tare differential

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Foreword

The foreword is not part of the American National Standard *Hydraulic fluid power – Systems and products – Method of measuring average steady-state pressure,* ANSI/(NFPA)T2.12.1 R1-2002.

At the NFPA/T2.12 meeting on 19 May 1998, Mr. John Montague (Bosch Automation Technology) reviewed his proposal to retain ANSI/(NFPA)T2.12.1-1993 as an NFPA document instead of withdrawing it to draft an ISO document. Mr. Montague provided written justification to the Technical Board to obtain their approval to retain this document.

At the 29 September 1998 NFPA/T2.12 meeting, members reviewed and approved the Title, Scope and Purpose (TSP), with changes to the co-ordination section. Members approved a recommendation to submit the TSP to the Technical Board for approval.

At the 9 February 1999 NFPA/T2.12 meeting, a revised TSP was reviewed and a motion was approved to submit the TSP to the Technical Board for approval. A copy of the proposed revisions to the document were distributed and discussed. A motion was made to recommend submission of the revised practice for general review, contingent upon Technical Board approval of the TSP.

At the 8 April 1999 Technical Board meeting, members approved the NFPA/T2.12 recommendation for approval of the NFPA/T2.12.1 R1-200x TSP, concurrent with submission of a new work item to the U.S. TAG to ISO/TC 131/SC 8.

At the 8 February 2000 project group meeting, members reviewed the comments received from the general review ballot, circulated 18 November 1999 and closed on 18 December 1999, and made changes to the document. Members approved a recommendation to final ballot, pending completion of commentator approval letters.

At the 16 May 2000 project group meeting, members were informed that the circulation of NFPA/T2.12.1 R1-200x for final ballot had not been completed because Technical Board members tabled the NFPA/T2.12 recommendation of final ballot approval, due to unavailability of feedback from project group members. Members reviewed and made corrections to draft no. 3 of NFPA/T2.12.1 R1-200x. Mr. Montague had prepared a proposal for revision of ISO 9110-1:1990 and ISO 9110-2:1990, and had been asked to attend the August 2000 Technical Board meeting as a representative for NFPA/T2.12.1 R1-2000. Members would review the ballot tally and comments received from the final ballot at the 19 September 2000 meeting.

The final ballot was circulated 14 August 2000 and comments received were addressed at the 18 September 2000 project group meeting. At the 18 September 2000 NFPA/T2.12 meeting, members recommended that NFPA/T2.12.1 R1-200x be published.

Project group members who developed this standard:

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/jw

On 19 March 2003, ANSI/(NFPA)T2.12.1 R1 was submitted to ANSI Accredited Standards Committee B93 (ASC B93) for ballot. On 19 November 2004, ANSI/(NFPA)T2.12.1 R1 was submitted to ASC B93 for a follow-up ballot. Balloting closed with no negative comments.

ANSI/(NFPA)T2.12.1 R1 was approved by ANSI's Board of Standards Review on 19 February 2004.

The membership roster of ASC B93 at the time of ballot:

Jack C. McPherson
Chairman

Karen Boehme
Secretary and Staff Liaison

American Society of Agricultural Engineers
Scott Cedarquist

The Association for Manufacturing Technology
Paul Warndorf

Compressed Air & Gas Institute
John Addington

Fluid Controls Institute
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Fluid Power Distributors Association
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/jw

Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit.

Pressure is the most commonly measured parameter in fluid power systems. There are perhaps as many techniques used to measure pressure as there are devices for its measurement.

The usual method for measuring pressure is by secondary measurements, using instruments such as a pressure gage or a pressure transducer. The various devices available for pressure measurement are not addressed in this standard.

Universal and standardized techniques for the measurement of pressure are required for accurate and repeatable evaluation of fluid power systems. The purpose of this standard is to present recommended practices for the measurement of average steady-state pressure in hydraulic fluid power systems. This standard is intended for use in conjunction with NFPA/T2.12.10 R1-2002, *Recommended practice – Hydraulic fluid power – Systems and products – Testing general measurement principles and tolerances.*

Hydraulic fluid power – Systems and products – Method of measuring average steady-state pressure

1 Scope

This standard is limited to the measurement of average steady-state static pressure in a closed conductor that meets the following criteria:

— must be transmitting hydraulic fluid power;

— average fluid velocities are less than 25 meters per second (82 ft/sec);

— average steady-state static pressure is less than 70 Mpa (10,000 psi);

— inside diameters are greater than 3.0 millimeters (0.120 in);

— sensor is not flush-mounted with, or an integral part of, the closed fluid conductor wall.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this NFPA document. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this NFPA document are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referenced applies. NFPA maintains registers of currently valid NFPA and ANSI/(NFPA) Standards. Standards development organization contact information and links can be found on the NFPA website **(www.nfpa.com).**

IEEE/ASTM SI 10 *(latest edition)*, *Standard for Use of the International System of Units (SI): The Modern Metric System.*

ISO Guide to the Expression of Uncertainty in Measurements – 1993, ISBN 92-67-10188-9ISO.

1000 *(latest edition)*, *SI units and recommendations for the use of their multiples and of certain other units.*

ISO 5598 *(latest edition)*, *Fluid power systems and components – Vocabulary.*

NFPA/T2.12.10 *(latest edition)*, *Recommended practice – Hydraulic fluid power – Systems and products – Testing general measurement principles and tolerances.*

NFPA/T2.12.2 *(latest edition)*, *Hydraulic fluid power – Systems and products – Method of reporting traceability of measurement.*