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AN INDUSTRY STANDARD FOR FLUID POWER

Hydraulic fluid power – Systems standard for stationary industrial machinery – Supplement to ISO 4413:1998 – Hydraulic fluid power – General rules relating to systems

To be used in conjunction with ISO 4413:1998

Descriptors: fluid power hydraulic equipment stationary

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Foreword

This Foreword is not part of National Fluid Power Association *Hydraulic fluid power — Systems standard for stationary industrial machinery — Supplement to ISO 4413:1998 — Hydraulic fluid power — General rules relating to systems*, NFPA/T2.24.1 R1-2000 (Proposed revision to ANSI/(NFPA)T2.24.1-1991).

At the 17 September 1996 Hydraulic Systems Technology Committee meeting, it was recommended that the ANSI/(NFPA)T2.24.1-1991 standard be revised. Jerry Carlin (Eaton Corp.) agreed to serve as project Chairman. On 5 December 1996, the NFPA Technical Board approved the Title Scope and Purpose (TSP). Draft No. 1 was reviewed at the 20 May 1997 meeting of T2.24. Draft No. 2 was reviewed at the 16 September 1997 meeting of T2.24. Draft No. 3 was reviewed at the 10 February 1998 meeting of T2.24.

The document was put into the new ISO template format and a new version of the document, labeled Draft No. 1, was reviewed at the 19 May 1998 T2.24 meeting. At this meeting, it was decided to put the document into supplement format following the NFPA Style Guide. This is when the document was changed, so that it should be used in conjunction with the ISO 4413:1998 document. The document was updated and Draft No. 2 was reviewed at the 29 September 1998 meeting to be voted on for possible General Review.

Draft No. 2 was reviewed at the T2.24 Hydraulic Systems Technology Committee 29 September 1998 meeting. A motion was made to approve the document for general review, incorporating changes discussed at the 29 September 1998 meeting. On 19 November 1998, the Technical Board approved NFPA/T2.24.1 for general review ballot. On 13 January 1999, the general review ballot was mailed to members of all NFPA technical committees except NFPA Pneumatic valve and conditioning section, T3.21, members of the Technical Board, members of U.S. TAG to ISO/TC 131/SC 9 and representatives of AMT, FIEI, SAE, and SME.

At the 18 may 1999 NFPA/T2.24 meeting, a draft copy, including changes discussed at the February 1999 NFPA/T2.24 meeting, was circulated for review. Discussion of combining the paragraphs listing “See ISO 4413” was presented at the Technical Board April 1999 meeting. The Technical Board advises keeping sections as a guide to what the standard includes. Discussion of the document resulted in revisions to 6.3.6, 8.2.2.8 and 8.3.1. It was noted that subclause 8.3 of ISO 4413 is titled “Filters and fluid conditioning”, but it addresses only filtration. That should be discussed at the five-year review of ISO 4413. Because some of the revisions to the NFPA supplement document have removed specific recommendations, it was pointed out that such data and general guidance could be developed as an information report. A motion was approved to recommend to the Technical Board final ballot circulation of NFPA/T2.24.1 R1-2000, pending sign-off on comments received from the general review. The final ballot was circulated 31 August 1999.

At the 21 September 1999 NFPA/T2.24 meeting, committee members discussed the comments received from the final ballot circulated 31 August 1999 and made changes to the document. Mr. Wilcox’s comments were addressed and he revised his submitted ballot from “disapproval” to “approval, with changes made at the 21 at the September 1999 meeting.” Members moved to publish NFPA/T2.24.1 R1-2000, subject to receipt of no negative ballots (ballot closed 30 September 1999) and resolution of all comments.

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Introduction

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

The application of hydraulic fluid power systems requires a thorough understanding and precise communication between supplier and purchaser. This standard was prepared to assist that understanding and communication and to document many of the good practices learned from experience with hydraulic systems.

Use of this standard assists:

a) the identification and specification of requirements for hydraulic systems and components;

b) the identification of respective areas of responsibility;

c) the design of systems and their components to comply with specific requirements;

d) understanding of the safety requirements of a hydraulic system.

General rules given in this standard have no legal status except those paragraphs that are included in contractual agreements between purchasers and suppliers. Deviation from those parts of this standard included in contractual agreements shall also be agreed to in writing by the purchaser and supplier. Attention shall be drawn by the purchaser and/or supplier to applicable national or local codes or laws.

General rules that contain the verb “shall” are counsels of good engineering practice, universally applicable with rare exception. Use of the word “should” in the document is not an indication of choice but an indication that the desirable engineering practices described may have to be modified due to the peculiarities of certain processes, environmental conditions or equipment size.

Since this is a supplement document, several clauses of ISO 4413:1998 apply in their entirety. That text is not reprinted in this document. For those clauses in which it states “See ISO 4413”, the reader of the document should refer to the same clause number in ISO 4413 for the needed text.

Hydraulic fluid power – Systems standard for stationary industrial machinery – Supplement to ISO 4413:1998 – Hydraulic fluid power – General rules relating to systems

1 Scope

This standard provides general rules relating to hydraulic systems on machinery used in industrial manufacturing processes. It is intended as a guide for both suppliers and purchasers, with a view to ensuring:

a) safety;

b) uninterrupted system operation;

c) ease and economy of maintenance;

d) long life of the system.

This standard parallels and supplements ISO 4413. The requirements and provisions of ISO 4413 apply, except where modified, altered, or augmented by the provisions contained in this standard.

2 Normative references

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

ANSI/(NFPA)T2.13.1 R3-1997, *Recommended practice – Hydraulic fluid power – Use of fire resistant fluids in industrial systems.*

ANSI/(NFPA)T3.16.2 R1-1997, *Hydraulic fluid power – Design for nonintegral industrial reservoirs*.

ISO 4413:1998, *Hydraulic fluid power – General rules relating to systems*.

ISO 7241-1:1987, *Hydraulic fluid power – Quick-action couplings – Part 1: Dimensions and requirements*.

ISO 7241-2:1986, *Hydraulic fluid power – Quick-action couplings – Part 2: Test methods.*

ISO 7789:1998, *Hydraulic fluid power – Two-, three- and four-port screw-in cartridge valves – Cavities.*

ISO 10763:1994, *Hydraulic fluid power – Plain end, seamless and welded precision steel tubes – Dimensions and nominal working pressures.*