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Hydraulic fluid power systems — Methods to improve sealing reliability

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Foreword

This Foreword is not part of American National *Standard Hydraulic fluid power systems — Methods to improve sealing reliability*, ANSI/(NFPA)T2.24.2-1997.

The NFPA Technical Board requested that the Hydraulic Systems Technology Committee expedite the development of leakage prevention recommended practices. A TSP was prepared by the T2.24.2 project group on 18 March 1986. The NFPA Technical Board approved the TSP on 8 May 1986.

Draft No. 1 was reviewed and revised by the project group on 30 September 1986, 20 October 1987 and 15 March 1988.

Draft No. 2 was reviewed by the project group on 14 June 1988 and changes were incorporated into the draft. The project group recommended that the document be submitted to NFPA's Headquarters for General Review. NFPA's Technical Staff prepared the document for General Review on 2 October 1988.

Draft No. 3 was prepared as a result of the General Review of 2 October 1988. Draft No. 3 was sent out on 2 August 1990. It resulted in sections 5, 6 and 7 all being rewritten and changes in several figures.

NFPA's Technical Staff prepared the document for Second General Review on 12 July 1991. The Second General Review closed with comments from many companies. Project Co-Chairman Gies updated the document from the comments received from the Second General Review and suggested that a few of the figures should be clearer.

The Project Group reviewed the document at their 17 August 1993 meeting. The project group agreed that the document was ready for a Third General Review. The document was prepared for the Third General Review with the knowledge that a few of the figures would be made clearer after the document was sent out. This was done in order to be able to send the document out in time to have the comments back by the November 1993 meeting.

The document was sent out for Third General Review on 9 September 1993. The Third General Review closed with comments from six companies. These comments were incorporated into the document at the 16 November 1993 T2.24 meeting. It was agreed upon at this meeting to submit the document to the Technical Board for approval to Ballot when all the changes had been incorporated. Project Co-Chairman Pesch wrote to the commentators and Project Co-Chairman Gies worked on revising the document and updating the graphics. Several typographical and editorial changes were made to the document.

At the 20 January 1994 Technical Board meeting, approval to Ballot was granted. When the document was ready for Balloting, the document was reviewed again for editorial changes to save time at the Ballot stage. The document was send out for Balloting on 3 May 1994. Balloting closed with negative votes from three companies and approval votes with comments from 10 companies. The Project Group met on 19 September 1995 and worked on some of the comments.

On 4 January 1996 Headquarters received, from Committee Chairman Jerry Carlin, a marked up copy of the document and sign off letters to nine companies. When the Committee met on 13 February 1995 to continue work on the document seven companies had signed off on their comments.

On 29 February 1996 Headquarters received the revised document with the final changes. Although the changes were editorial, there were many revisions made. The document was sent to the Project Group for a two week review before being put on the 11 April 1996 Technical Board meeting for final approval. As a result of the Project Group review, a few editorial changes were received from Jerry Carlin. The document was granted final approval at the 11 April 1996 Technical Board meeting contingent upon receiving a favorable report from the Technical Auditor. A report granting final approval was received from Logan Mathis, the Technical Auditor, on 2 May 1996.

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On 4 September 1996, ANSI/(NFPA)T2.24.2 was submitted to ANSI Committee B93 for Ballot. Balloting closed with no negative comments. Final approval was granted to this document on 7 April 1997.

The membership roster of Standards Committee B93 at the time of Ballot:

Jack C. McPherson
Chairman

Daniel B. Shore
Vice Chairman

Shirley C. Seal
Secretary

American Society of Agricultural Engineers
W. L. Snyder

Compressed Air & Gas Institute
John Wiskamp
John Addington (alternate)

Fluid Controls Institute, Inc.
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Introduction

This recommended practice is intended to promote the sealing reliability of hydraulic systems through the identification of sources and causes of external leakage and the recommendation of corrective measures. Use of these practices will improve the acceptance of hydraulic systems in industry. External leaks are costly, unsightly, potentially hazardous, and damaging to the environment.

Hydraulic fluid power systems — Methods to improve sealing reliability

1 Scope

This recommended practice applies to industrial and mobile hydraulic systems. The guidelines are intended to provide assistance to system designers, product designers, installation personnel and maintenance personnel by outlining established methods for minimizing external leakage.

2 Normative references

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

ANSI/B93.2-1986, *Fluid power systems and products — Glossary.*

ANSI/(NFPA)T2.24.1-1990, *Hydraulic fluid power — Systems standard for stationary industrial machinery*.

ANSI/IEEE 268-1992, *Metric Practice*.

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units*.

ISO 3305:1985, *Plain end welded precision steel tubes — Technical conditions for delivery*.

ISO 6149-1:1993, *Connections for fluid power and general use — Ports and stud ends with ISO 261 threads and O-ring sealing — Part 1: Port with O-ring seal in truncated housing*.

ISO 6149-2:1993, *Connections for fluid power and general use — Ports and stud ends with ISO 261 threads and O-ring sealing — Part 2: Heavy duty (S series) stud ends — Dimensions, design, test methods and requirements*.

ISO 6149-3:1993, *Connections for fluid power and general use — Ports and stud ends with ISO 261 threads and O-ring sealing — Part 3: Light duty (L series) stud ends — Dimensions, design, test methods and requirements*.

ISO 6162:1994, *Hydraulic fluid power — Four-screw split- flange connections for use at pressure of 2,5 MPa to 40 MPa (25 bar to 400 bar) — Type 1 metric series and type II inch series*.

ISO 6164:1994, *Hydraulic fluid power — Four-screw, one piece square flange connections for use at pressures of 25 MPa and 40 MPa (250 bar and 400 bar).*

ISO 8434-1:1994, *Metallic tube connections for fluid power and general use — Part 1: 24° compression fittings*.

ISO 8434-2:1994, *Metallic tube connections for fluid power and general use — Part 2: 37° flared fittings*.

ISO 8434-3:1995, *Metallic tube connections for fluid power and general use — Part 3: O-ring face seal fittings*.