



**NFPA Recommended Standard**  
**NFPA/T3.6.8 R2-2005**  
Third edition  
23 March 2005

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**AN INDUSTRY STANDARD FOR FLUID POWER**

## **Fluid power systems – Cylinders – Dimensions for accessories for cataloged square head industrial types**

**(Revision of NFPA/T3.6.8 R1-1984)**

Descriptors: dimensions mounting accessories cylinder pressure rating square head fluid power square tie rod

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**NATIONAL FLUID POWER ASSOCIATION, INC.**

3333 N. Mayfair Road / Milwaukee, WI 53222-3219 USA  
PHONE: +1 414 778 3344 / FAX: +1 414 778 3361 / E-mail: [nfpa@nfpa.com](mailto:nfpa@nfpa.com)

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## Foreword

This Foreword is not part of National Fluid Power Association (NFPA) Recommended Standard *Fluid power systems – Cylinders – Dimensions for accessories for cataloged square head industrial types*, NFPA/T3.6.8 R2-2005. This third edition replaces NFPA/T3.6.8 R1-1984 in its entirety.

This document was initiated on 10 February 1999 at the NFPA/T3.6 meeting, at which it was decided that ANSI/B93.29M-1986, which was the adoption of NFPA/T3.6.8 R1-1984, would be revised to add nomenclature levels. A new project number of NFPA/T3.6.8 R2-200x was assigned. The Technical Board approved the Title, Scope and Purpose (TSP) on 8 April 1999. Lido Boni (Parker Hannifin) agreed to serve as Project Chair.

Draft no. 1 of NFPA/T3.6.8 R2-200x was circulated to NFPA/T3.6 on 30 August 1999, for discussion at a meeting on 22 September 1999. At this meeting, Mr. Boni indicated that the group should notify him, no later than 15 January 2000, if they do not agree to the document in its revised form. The group agreed that if there were no changes after this date, Mr. Boni would submit the document to Headquarters for first draft review circulation.

On 14 December 2004, Mr. Boni, the Project Chair, e-mailed updated figures and tables to Headquarters, for inclusion in the document. Draft no. 2 was circulated with the 9 February 2000 meeting minutes.

At the 17 May 2000 meeting of NFPA/T3.6, the group reviewed draft no. 2 and suggested additional changes, which included 1) the deletion of "and the following apply. 3.1x:x" from clause 3, Definitions; and 2) the deletion of "7" next to "EK," and changing "Mm" to "mm" in the table in figure 1, AA4: Pivot pin, plan (retainer ring or cotter pin type). The group approved a recommendation to circulate the updated draft for general review.

NFPA/T3.6.8 R2-200x was circulated for general review on 14 July 2000 to NFPA/T3.6, U.S. TAG SC 3 and the Technical Board; the ballot closed on 14 August 2000 with 15 votes of approval, zero disapprovals, two abstentions and 28 no replies.

At the 20 September 2000 meeting of NFPA/T3.6, the group reviewed the results of the general review ballot, resolved the comments from the general review, and suggested additional changes. The group approved a recommendation to circulate the updated draft for final ballot, pending the receipt of a technical auditor report.

The technical auditor submitted his approval to headquarters on 20 October 2000, agreeing that all comments had been resolved, but that two misspellings were found in the draft and should be corrected. At its 30 November 2000 meeting, the Technical Board approved the technical auditor's suggestion to correct these misspellings and NFPA/T3.6's recommendation to submit the document for final ballot.

NFPA/T3.6.8 R2-200x was circulated for final ballot on 15 December 2000 to NFPA/T3.6, U.S. TAG SC 3 and the Technical Board; the ballot closed on 18 January 2001 with 13 votes of approval, zero disapprovals, three abstentions and 25 no replies.

At the 7 February 2001 meeting of NFPA/T3.6, the group reviewed the results of the final

ballot and resolved the comments from the final ballot. The group approved a recommendation to make the requested changes to the document and recommend to the Technical Board that the document be approved for publication.

At its 5 April 2001 meeting, the Technical Board approved NFPA/T3.6's recommendation to publish NFPA/T3.6.8 R2-200x, pending the technical auditor's report.

On 24 September 2001, Headquarters sent a copy of the publication draft of NFPA/T3.6.8 R2-200x to the project chair, who suggested a few changes and approved the publication of this document.

Headquarters submitted a PINS form to ANSI on 24 September 2003. At this point, it was unclear whether the document had been approved for publication at the NFPA level, the ANSI level, or both.

In the interim, on 21 March 2003, ANSI/B93.29M-1986 (R1992) was administratively withdrawn on the ANSI level. On 11 November 2003, NFPA/T3.6.8 R1-1984 was republished to replace it, until NFPA/T3.6.8 R2-200x was published.

On 28 June 2004, Dr. Ronald Zielinski provided a technical auditor's report from the final ballot of this document.

At the 22 September 2004 joint meeting of NFPA/T3.4 and NFPA/T3.6, the group approved a recommendation to be submitted to the Technical Board that the document should be promulgated as an American National Standard (ANS).

At its 11 January 2005 meeting, the Technical Board approved the submission of NFPA/T3.6.8 R2-200x for adoption as an American National Standard.

On 10 March 2005, the project chair clarified that the standard would be first published as an NFPA standard, and then submitted for adoption as an American National Standard (ANS) at the ANSI level.

Project group members who developed this standard:

**Lido Boni**  
Project Chair  
Parker Hannifin Corporation

**June VanPinsker\***  
Technical Coordinator  
National Fluid Power Association

**Don Blackman\***  
Technology Committee Chair  
Miller Fluid Power Corporation

**Jenna Wetzel**  
Standards Development Coordinator  
National Fluid Power Association

**Douglas Miller**  
Project Vice Chair  
HYDRO-LINE, Inc.

**Matt Boswell\***  
Bosch Automation Technology

**Ronald E. Zielinski**  
Technical Auditor  
PolyMod® Technologies Inc.

**Pete Molloy**  
SMC Corporation of America

**Don Zahrobsky\***  
Balluff, Inc.

\* No longer with the company.

/jw

## **Introduction**

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within an enclosed circuit.

One component of such systems is the fluid power cylinder. This is a device that converts fluid power into linear mechanical force and motion. It consists of a movable element, such as a piston and piston rod, plunger or ram, operating within a cylindrical bore.

The square head cylinder is a specific design initially developed for industrial (in plant) use. Dimensions for these cylinders are standardized in ANSI/(NFPA)T3.6.7 R2. The square head cylinder is manufactured and sold as an interchangeable component by a majority of suppliers. In addition to the basic cylinder, many of the mounting accessories are also considered to be interchangeable. Recognition of this interchangeability is one of the purposes of this document.

# Fluid power systems – Cylinders – Dimensions for accessories for cataloged square head industrial types

## 1 Scope

### 1.1 This standard includes

- nominal dimensions of accessories for cataloged industrial square head fluid power cylinders. Such accessories include pivot pins, female eyes, female clevis and eye brackets [basic cylinder dimensions are standardized in ANSI/(NFPA)T3.6.7 R2];
- dimensional identification code for envelope and mounting dimensions not already set forth in ISO 6099;
- dimensions for simplification of variety and dimensional interchangeability purposes only. This document is in no way intended to imply suitability of dimensioned components for any particular service or application. A method to determine load ratings will be handled through subsequent documents;
- dimensions for mounting accessories that will have a load rating compatible to that of the cylinder pressure rating for which the accessory is intended.

### 1.2 This standard

- simplifies varieties of sizes and configurations;
- promotes accessory interchangeability by establishing uniform mounting dimensions;
- allows manufacturers freedom of design and still provides basic guidelines necessary for component interchangeability.

### 1.3 This standard provides

- common language for dimension identification;
- a simplified pattern for dimension presentation.