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Bore and rod size combinations and rod end configurations for cataloged square head industrial fluid power cylinders

(Revision and redesignation of NFPA/T3.6.4-1967)

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Suggestions for improvement gained in the use of this standard will be welcome. They should be sent to the American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036-8002.

Any part of this standard may be quoted. Credit lines should read: Extracted from American National Standard Bore and rod size combinations and rod end configurations for cataloged square head industrial fluid power cylinders, ANSI/B93.8-1968 (R1988) (NFPA/T3.6.4-1967).

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Foreword

Because of the rapidly increasing use of fluid power in military, industrial and mobile application, the National Fluid Power Association was formed as an educational and standards producing organization. Within the standards producing activity the necessity that fluid power components be interchangeable became apparent. This document applied to square head cylinder rod end dimensions that affect interchangeability, and correlates rod sizes with cylinder bore sizes as they are commonly portrayed in catalogs published by manufacturers of industrial square head cylinder catalogs.

The information included was obtained by surveying approximately forty cylinder manufacturers. The data obtained was collated by the Cylinder Section of NFPA and was presented to the manufacturers who participated in the survey. Wherever conflicts or objection existed, they were arbitrated and resolved.

This document presents the approved recommended practice for bore and rod size combinations and rod end configurations for cataloged square head industrial fluid power cylinders as derived by the preceding method.

All effort available was used to eliminate instances in which a manufacturer's parented configuration would be jeopardized by the application of standards dimensions. It is a stated tenet of the National Fluid Power Association that matters affecting patents or actions deleterious to design innovation shall be avoided.

The first formal ballot by the section resulted in one negative vote. Editorial revisions involving the application of Reference #4 resulted in the withdrawal of the negative ballot. The ballot was approved on October 25, 1967, and the project was approved as a NFPA Recommended Standard on November 12, 1967.

The ballot of USASI Standard Committee B93 was completed on January 26, 1968 and was reviewed at the committee's meeting of January 29, 1968, and as a result of actions authorized that day a unanimously approved draft was achieved.

On January 29, 1968, Standards Committee B93 was comprised of the following:

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U.S. Dept. of Defense
C. A. Nazian
Jack T. Stevenson

References

1. *Dimension Identification Code for Fluid Power Cylinders.* — USA STD B93.1-1964

2. *Fluid power systems and products — Glossary* — USA STD B93.2-1986

3. *Cylinder Bore & Piston Rod Sizes for Fluid Power Cylinders* — USA STD B93.3-1965

4. *Decimal Inch* — USA STD B87.1-1965

5. *Preferred Numbers* — USA STD Z17.1-1958

Bore & Rod Size Combinations and Rod End Configurations for Cataloged Square Head Industrial Fluid Power Cylinders

1 Introduction

Fluid power systems are those that transmit and control power through the use of a pressurized fluid (liquid or gas) within an enclosed circuit.

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

The square head industrial cylinder is a specific design developed for industrial (in plant) use. It is manufactured and sold as an interchangeable component by a majority of suppliers. Recognition of this interchangeability is one of the purposes of this document.

For definitions of terms not defined herein, consult United States Standard Glossary of Terms for Fluid Power, B93.2-1965 (Ref. 2): also identified as NFPA Recommended Standard STD T3.1.64.1, 4th Edition - 1964. Two definitions important to this document are:

piston rod: The fluid power cylinder element which transfers mechanical force from the cylinder piston externally to a working device. Piston rod cross sectional areas are generally less than half of the cylinder bore area.

square head cylinder: A device which converts fluid power into linear mechanical force and motion, consisting of a movable element such as a piston and piston red, operating within a cylindrical bore crapped at each end by square end closures secured by tie rods extending along the exterior of the device.

2 Scope

The information contained in this document portrays the commonly cataloged dimensions for piston rod end configurations and cylinder bore and piston rod combinations used with square head industrial fluid power (pneumatic and hydraulic) cylinders as provided by the majority of manufacturers in the United States.

3 Purpose

The information contained in this document is presented for the purpose of recognizing, generating and insuring the maximum in standardization and interchangeability of square head industrial fluid power (pneumatic and hydraulic) cylinders.

4 Rod end styles

4.1 Coding & nomenclature

The coding and nomenclature for the six basic rod ends is as follows:

Coding	Nomenclature
PL	Plain (no attachment)
SM	Small male (Threaded)
IM	Intermediate male (Threaded)
FM	Full male (threaded)
SF	Short female (Threaded)
LF	Long female (Threaded)