Groove dimensions for floating type metallic and non-metallic fluid power piston rings

(Revision and redesignation of NFPA/T3.19.11-1972)

A NATIONAL INDUSTRY STANDARD FOR FLUID POWER

Approved by Committee ASC B93, accredited by the American National Standards Institute (ANSI)

Descriptors: fluid power piston ring groove dimensions
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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, 1430 Broadway, New York, NY 10018.
FOREWORD

A meeting of the Sealing Devices Section was held on 3 February 1971. The importance of continuing efforts to establish standards of design in hydraulics was discussed, particularly due to pressure to establish standards acceptable to American manufacturers and to ISO. It was agreed that a study be made of the feasibility of establishing a standard for groove dimensions for floating type piston rings used in pumps, cylinders and valves. This type of ring includes metallic and non-metallic rings, both split and endless which are installed either with or without metallic internal expanding rings.

The "inch series" draft was prepared on 5 May 1971. At a meeting on 19 May 1971, that draft was reviewed. Modifications were made to the title and it was recommended that this document consider only the floating type piston rings. Additional names were also added to the Project Group. It was judged that a consensus existed and the Chairman was requested to prepare a General Review Draft.

The General Review Draft for Inch Series Rings was prepared on 1 October 1971. Following the General Review an Exact Metric Translation Draft was completed on 7 December 1971. The Ballot Draft was prepared on 21 March 1972 and the balloting closed on 13 July 1972.


Members of the NFPA Project Group preparing this standard are listed on page 4.

On 21 March 1973 the NFPA Standard was submitted to ANSI Standards Committee B93 for promulgation as an ANSI Standard. Favorable ballot was concluded on 14 June. Approval by the ANSI Board of Standards Review was granted on 5 December 1973.

The membership roster for Standards Committee B93 at the time of approval is listed on pages 4-6.
Piston Ring Groove Dimensions

this standard included:

Jorin, Ted  Project Chairman  Grover Piston Ring Co.
Flock, Henry  Section Chairman  Garlock, Inc.*
Morgan, James I.  Secretariat  National Fluid Power Association

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Scannell, J.  Parker Seal Co.
Smith, H.  U.S. Army - MERDC
Stucke, C.*  Parker Seal Co.
Wilcox, J.  National Seal Co.

On 21 March 1973 Standards Committee B93 was comprised of the following:

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  E. Loeffler (Alternate)

POWER CRANE AND SHOVEL ASSOCIATION
  W. M. Shook

- 5 -
REFERENCES


2. SI units and recommendations for the use of their multiples and of certain other units, ISO 1000-1973.

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GROOVE DIMENSIONS FOR FLOATING TYPE METALLIC AND NON-METALLIC FLUID POWER PISTON RINGS

INTRODUCTION

In fluid power systems, power is transmitted and controlled thru a fluid (liquid or gas) under pressure within an enclosed circuit. A piston ring is a sealing device installed on a piston to maintain a sealing fit with a cylinder bore. It is usually one of a series and is often split to facilitate expansion or contraction.

The type of piston ring covered in this proposal floats in the seal cavity and makes sealing contact on the side faces and outer surface only. Radial clearance must be provided between the groove diameter and the inner surface of the piston ring.

1. SCOPE

To include groove dimensions, tolerances and surface finish conditions for satisfactory performance of floating type piston rings in cylinders, pumps, and valves.

2. PURPOSE

2.1 To establish uniform guidelines to designers for correct design of piston ring grooves to insure proper performance of floating type piston rings.

2.2 To insure interchangeability of floating type piston rings without regard for material.

2.3 To provide an adequate listing of preferred ring groove widths.

3. TERMS AND DEFINITIONS

(For definition of terms used, see Reference No. 1.)