
International Standard



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Fluid power systems and components — Cylinder barrels — Part 1 : Requirements for steel tubes with specially finished bores

Transmissions hydrauliques et pneumatiques — Tubes pour vérins — Partie 1 : Caractéristiques des tubes en acier à alésage de finition spéciale

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4394/1 was developed by Technical Committee ISO/TC 131, *Fluid power systems and components*, and was circulated to the member bodies in April 1977.

It has been approved by the member bodies of the following countries :

Australia	Finland	Romania
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Belgium	Hungary	Spain
Brazil	India	Sweden
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The member bodies of following countries expressed disapproval of the document on technical grounds :

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Fluid power systems and components — Cylinder barrels —

Part 1 : Requirements for steel tubes with specially finished bores

0 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 which converts power into linear mechanical force and motion. It consists of a movable element, i.e. a piston and piston rod, operating within a cylindrical bore.

This part of ISO 4394 covers only one specific type of steel tubing suitable for fluid power cylinders. Other parts of the same International Standard will be prepared to cover the requirements of cylinder tubes in other materials commonly used in the hydraulic and pneumatic industries.

1 Scope and field of application

1.1 This part of ISO 4394 specifies the mechanical properties, dimensional tolerances, surface finishes and technical delivery conditions for round steel tubes, seamless or welded type, hot or cold worked condition, with plain ends and having specially finished bores with or without metal removal.

1.2 The tubes defined by this part of ISO 4394 are intended for use as barrels in a wide variety of fluid power cylinders.

NOTE — Steel should not be considered as the only material suitable for such applications.

1.3 This part of ISO 4394 defines the tube dimensions by inside diameter and thickness, or inside diameter and outside diameter.

1.4 Annex A specifies the tolerances on outside diameters for cold finished or machined tubes.

1.5 Annex B establishes a range of preferred thicknesses for metric bore sizes for fluid power cylinders. Tables of thicknesses are included for both cold finished and hot finished steel tubes.

1.6 Annex C provides a recommended method of ordering.

2 References

ISO 64, *Steel tubes — Outside diameters.*

ISO/R 286, *ISO system of limits and fits — Part 1 : General, tolerances and deviations.*

ISO 404, *Steel and steel products — General technical delivery requirements.*¹⁾

ISO/R 486, *Surface roughness.*

ISO 1302, *Technical drawings — Method of indicating surface texture on drawings.*

ISO 2937, *Plain end seamless steel tubes for mechanical application.*

ISO 3304, *Plain end seamless precision steel tubes — Technical conditions for delivery.*

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

ISO 3320, *Fluid power systems and components — Cylinder bores and piston rod diameters — Metric series.*

ISO 6506, *Metallic materials — Hardness test — Brinell.*²⁾

1) At present at the stage of draft. (Revision of ISO/R 404-1964.)

2) At present at the stage of draft.