International Standard 6547

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Hydraulic fluid power — Cylinders — Piston seal housings incorporating bearing rings — Dimensions and tolerances

Transmissions hydrauliques — Vérins — Logements de joints d'étanchéité à bagues de guidage pour pistons — Dimensions et tolérances

First edition — 1981-08-15

UDC 621.226 : 62-762.6 **Ref. No. ISO 6547-1981 (E)**

Descriptors : fluid power, hydraulic fluid power, hydraulic cylinders, pistons, piston rings, housings, seals (stoppers), dimensions, dimensional tolerances.

Price based on 3 pages

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 6547 was developed by Technical Committee ISO/TC 131, *Fluid power systems and components*, and was circulated to the member bodies in February 1980.

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

Australia	Finland	Norway
Austria	France	Poland
Belgium	Germany, F. R.	Romania
Brazil	Hungary	South Africa, Rep. of
Canada	India	Spain
China	Italy	Sweden
Czechoslovakia	Japan	USA
Egypt, Arab Rep. of	Netherlands	USSR

The member body of the following country expressed disapproval of the document on technical grounds :

United Kingdom

Printed in Switzerland

Hydraulic fluid power — Cylinders — Piston seal housings incorporating bearing rings — Dimensions and tolerances

0 Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Sealing devices are used to contain the pressurized fluid within components having elements with relative motion, for example, a linear movement within hydraulic cylinders. These sealing devices are used with both cylinder rod and piston seal housings.

ISO 5597/1 provides details of seal housings of a purely rectangular profile. However, where it is the practice to employ a design of piston-head seal that incorporates bearing rings, the profile of the housing is basically of "T" form. This International Standard specifically relates to such applications.

1 Scope and field of application

1.1 This International Standard establishes the dimensions and associated tolerances for a series of housings for hydraulic cylinder piston seals that incorporate bearing rings.

1.2 It specifies the dimensions for a range of seal housings for cylinders of 25 to 500 mm.

1.3 It is not the intention of this International Standard to set forth details of seal design, since the manner of construction of seals varies with each manufacturer. The design and material of the seal and the incorporated bearing rings are determined by conditions such as temperature and pressure.

1.4 It applies to piston-heads that may be either assembled from a number of components or made in one piece.

2 References

ISO 3320, *Fluid power cylinders — Cylinder bore and piston rod diameters — Metric series.*

ISO 4394/1, *Fluid power systems and components — Cylinder barrels — Part 1 : Requirements for steel tubes with specially finished bores.*

ISO 5597/1, *Hydraulic fluid power — Cylinder rod and piston seals for reciprocating applications — Dimensions and tolerances of housings — Part 1 : Normal series.*

ISO 5598, *Fluid power systems and components — Glossary.* [1]

3 Definitions

For definitions of terms used, see ISO 5598.

4 Symbols

Symbols used in this International Standard are as follows :

D = outside diameter (bore diameter or rod seal groove diameter) of the seal housing

S = radial width of the seal housing

d_1 = inside diameter (rod diameter or piston seal groove diameter) of the seal housing

L_1 = axial length (seal groove length) of the seal ring

L_2 = axial length of the bearing ring

L_3 = overall axial length of seal and bearing ring (reference only)

d_2 = inside diameter of the bearing ring

d_3 = piston clearance diameter

C = axial length of the lead-in chamfer

r = corner radii.

1) At present at the stage of draft.

5 Seal housings

5.1 The figure illustrates a typical housing covered in this International Standard.

NOTE — The figure is diagrammatic only and does not represent recommendations for housing design.

5.2 Remove all sharp edges and burrs from corners of supporting surfaces keeping in mind that these surfaces are required to provide maximum support against extrusion.

5.3 Consult the seal manufacturer for details of housing design which are not specified in this International Standard.

6 Dimensions and tolerances[1)]

Housing dimensions and tolerances are given in the table.

7 Surface finish

The requirements for the surface finish of the component in contact with the seal are dependent on the application and its life requirements and should be subject to agreement between manufacturer and user.

8 Lead-in chamfer

8.1 To prevent seal damage and to facilitate assembly, provide for a lead-in chamfer on relevant components.

8.2 Have the chamfer make an angle, that is shown in the figure, of between 20° and 30° with the axis.

8.3 Ensure that the length of the chamfer is not less than that shown in the table.

8.4 In the case of one-piece pistons, provide a radius or lead-in chamfer on the ends of the piston to assist fitting of the seal.

9 Identification statement (Reference to this International Standard)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this International Standard :

"Dimensions and tolerances for housings for hydraulic piston seals and bearing rings selected in accordance with ISO 6547, Hydraulic fluid power — Cylinders — Piston seal housings incorporating bearing rings — Dimensions and tolerances."

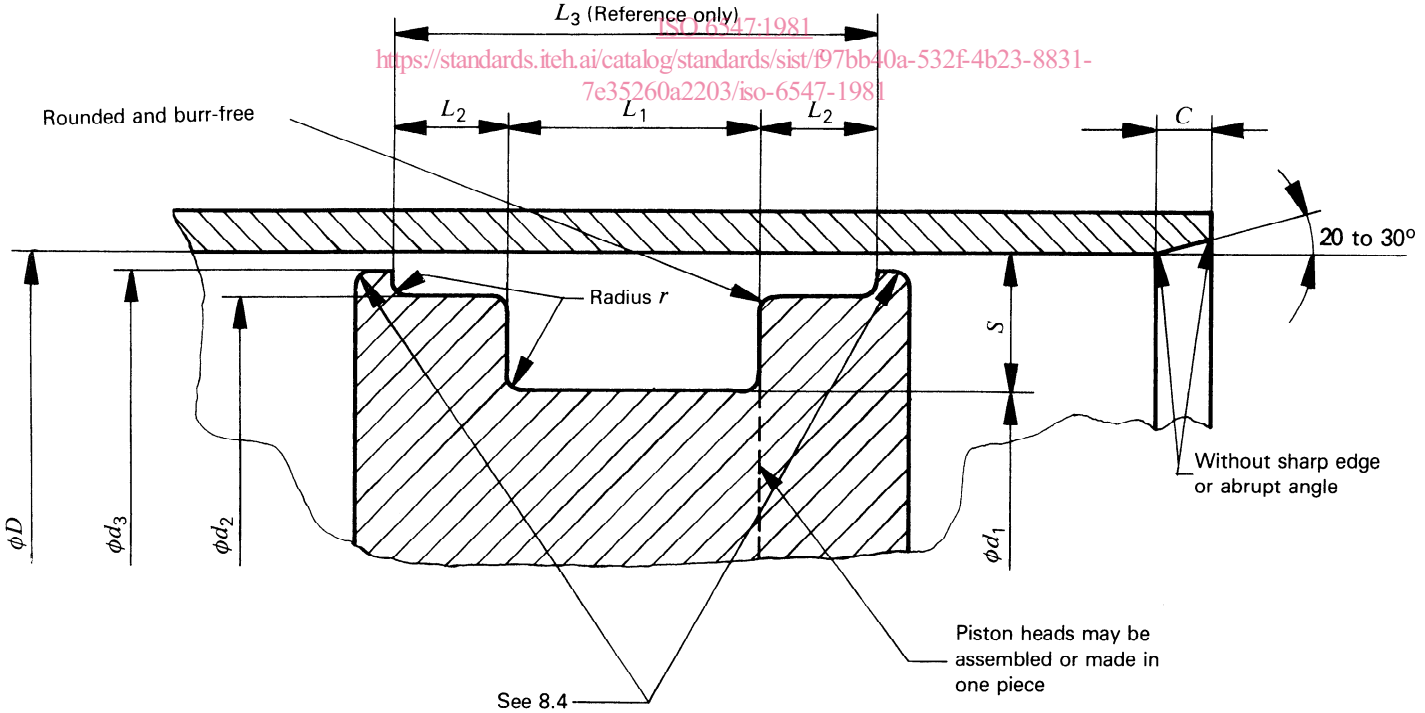

Figure — Example of housing

1) See ISO 3320 and ISO 4394/1.

Table — Housing dimensions

Dimensions in millimetres

Bore diameter D[1] H9[2]	Nominal radial section S	Seal groove diameter d_1 h9	Seal groove length L_1 + 0,35 + 0,1	Bearing ring length L_2 + 0,1 0	Overall length (for reference only) L_3	Bearing ring diameter d_2 h9	Piston diameter d_3 h11	Radius r	Chamfer C min.
25	4	17	10	4	18	22	24	0,4	2
	5	15	12,5	4	20,5	22	24	0,4	2,5
32	4	24	10	4	18	29	31	0,4	2
	5	22	12,5	4	20,5	29	31	0,4	2,5
40	4	32	10	4	18	37	39	0,4	2
	5	30	12,5	4	20,5	37	39	0,4	2,5
50	5	40	12,5	4	20,5	47	49	0,4	2,5
	7,5	35	20	5	30	46	48,5	0,4	4
63	5	53	12,5	4	20,5	60	62	0,4	2,5
	7,5	48	20	5	30	59	61,5	0,4	4
80	7,5	65	20	5	30	76	78,5	0,4	4
	10	60	25	6,3	37,6	75	78	0,8	5
100	7,5	85	20	5	30	96	98,5	0,4	4
	10	80	25	6,3	37,6	95	98	0,8	5
125	10	105	25	6,3	37,6	120	123	0,8	5
	12,5	100	32	10	52	119	123	0,8	6,5
160	10	140	25	6,3	37,6	155	158	0,8	5
	12,5	135	32	10	52	154	158	0,8	6,5
200	15	170	36	12,5	61	192	197	0,8	7,5
250	15	220	36	12,5	61	242	247	0,8	7,5
320	15	290	36	12,5	61	312	317	0,8	7,5
400	20	360	50	16	82	392	397	1,2	10
500	20	460	50	16	82	492	497	1,2	10

1) See ISO 3320.

2) Tolerance H11 on bore diameter D may be used except when using smaller radial section seals for diameters of 25 mm to 160 mm inclusive.

Bibliography

The following documents served as references in the preparation of ISO 6547 and will be helpful in the utilization of the standard :

ISO 286, *ISO system for limits and fits — Part 1 : General, tolerances and deviation.**

ISO 468, *Surface roughness — Parameters, their values and general rules for specifying surfaces.***

* At present at the stage of draft. (Revision of ISO/R 286-1962.)

** At present at the stage of draft. (Revision of ISO/R 468-1966.)

This page intentionally left blank

This page intentionally left blank

This page intentionally left blank