BRITISH STANDARD

BS 4518:1982
+A2:2014

Specification for

Metric dimensions of toroidal sealing rings ('O'-rings) and their housings

ICS 21.140; 21.180

Cooperating organizations

The Mechanical Engineering Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following:

Associated Offices Technical Committee
Association of Consulting Engineers
Association of Hydraulic Equipment Manufacturers*
Association of Mining Electrical and Mechanical Engineers
British Compressed Air Society*
British Electrical and Allied Manufacturers' Association (BEAMA)
British Gas Corporation
British Gear Manufacturers' Association
British Internal Combustion Engine Manufacturers' Association
British Pump Manufacturers' Association
British Steel Corporation
British Steel Industry*
Chartered Institution of Building Services
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Department of the Environment (PSA)
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British Hydromechanics Research Association
British Rubber Manufacturers' Association
Hydraulic Press Manufacturers' Association
Society of British Aerospace Companies Limited

This British Standard, having been prepared under the direction of the Mechanical Engineering Standards Committee, was published under the authority of the board of BSI and comes into effect on
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Amendments/corrigenda issued since publication

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A2	September 2014	See Foreword

Contents

Foreword

This British Standard is published by BSI Standards Limited, under licence from the British Standards Institution, and came into effect on 30 April 1982.

This British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee. It revises and supersedes the 1974 edition which is now withdrawn.

BS 4518:1982+A2:2014 supersedes BS 4518:1982, incorporating Amendment No. 1:1984, which is withdrawn.

Text introduced or altered by Amendment No. 2 is indicated in the text by tags ▌A2〉 〈A2▐. Minor editorial changes are not tagged. Previous amendments are not indicated.

Amendment No. 2 introduces the following principal changes:

a) Standards references have been updated.

b) Some additional preferred sizes in accordance with BS ISO 3320 have been cross-referred to in Table 1, Table 7, Table 8 and Table B.1.

The first edition of the standard, published in 1969, introduced a new range of metric sizes for elastomeric toroidal sealing rings which were based upon European practices. In order to permit the introduction of additional sizes, a reference numbering system, based upon the "O"-ring internal diameter and section diameter, was adopted.

The first revision of the standard, published in 1974, introduced a further 4.1 mm diameter of "O"-ring section. The opportunity was also taken to improve the presentation of the information provided.

In this second revision, additional sizes have been introduced to cater for the preferred range of cylinder bores and piston rod diameters specified in BS ISO 3320. Groove dimensions for pneumatic applications have also been added. In addition, two charts have been included in Appendix A to aid selection of appropriate seals for given applications.

Previous editions of this standard contained information on the limits for surface imperfections of "O"-rings. These are now covered by BS ISO 3601-3.

Because of the lack of demand for the 4.1 mm section rings which were introduced in the 1974 edition, requirements for these rings are not included in this revision. However, details of the rings are given in Appendix B for information if required for replacement purposes.

It is stressed that the dimensions specified in this standard, although providing the necessary basis for standardization in the manufacture and application of "O"-rings, should not be regarded as providing all the information required for design purposes. Attention is drawn to the desirability of consultation between users and manufacturers of "O"-rings, when a particular application of this type of seal is being considered.

It is recognized that inch series "O"-rings will continue to be required. Requirements for such "O"-rings are specified in BS ISO 3601-1 and BS ISO 3601-2.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 28, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies the dimensions of elastomeric "O"-rings which are toroidal in shape and which are used for sealing components against ingress or egress of fluids under dynamic and static conditions.

The standard also specifies the shape and dimensions of five types of associated housing grooves for the rings when used at pressures not normally exceeding 100 bar[1)].

NOTE At pressures exceeding 100 bar, or when the diametral clearances of the grooves are in excess of those specified in this standard, it is recommended that these "O"-rings should be used in conjunction with anti-extrusion back-up rings. Spiral anti-extrusion back-up rings and their housings, the dimensions of which are specified in BS 5106, are suitable for pressures up to approximately 200 bar.

Two charts are provided in Appendix A to aid the selection of "O"-rings.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 "O"-rings

3.1 Dimensions. The dimensions and the tolerances of the "O"-rings shall be in accordance with Table 1 [A2] (see Figure 1) [A2].

3.2 Surface imperfections. The acceptable limits for surface imperfections shall be such that they do not affect the sealing properties of the sealing ring.

NOTE [A2] BS ISO 3601-3 [A2] specifies acceptable limits of defined and assessed imperfections on elastomeric toroidal sealing rings.

3.3 Material. "O"-rings shall be manufactured from elastomeric materials that are compatible with the fluid contained by the seal.

NOTE "O"-rings are normally supplied in nitrile rubber, but may also be produced in other elastomers, e.g. silicone, fluorocarbon.

3.4 Reference number. The "O"-rings shall be identified by a reference number consisting of the ring's inside diameter followed by its section diameter, with the decimal points omitted.

4 Housing grooves

4.1 General. The profile, dimensions and tolerances of the grooves shall be as specified in Table 1 and the following, according to type of sealing application:

a) *static diametral sealing, hydraulic and pneumatic,* Figure 2 and Table 2;

b) *static face sealing, hydraulic and pneumatic,* Figure 3 and Table 5;

c) *static triangular housing sealing, hydraulic and pneumatic,* Figure 4 and Table 6;

d) *dynamic diametral sealing, hydraulic only,* Figure 2 and Table 3;

e) *dynamic diametral sealing, pneumatic only,* Figure 2 and Table 4.

4.2 Tolerance of nominal housing diameter. The tolerance associated with diameter d_1 or D_1[2)] (Table 1) shall be chosen with respect to the tolerance specified for radial depth F (Table 2, Table 3 and Table 4) and an achievable tolerance for groove diameter d_3 or D_3, in accordance with Figure 2.

4.3 Extrusion gap. To ensure that an acceptable extrusion gap is maintained the tolerance of the cylinder or shaft mating part diameter, d_2 or D_2, shall be selected with respect to the tolerance of the nominal housing diameter, d_1 or D_1, chosen in accordance with **4.2**, and the maximum total diametral clearance G (Table 2, Table 3, Table 4 and Table 6), in accordance with Figure 2 and Figure 4.

4.4 Lead-in chamfer. To facilitate assembly and to prevent damage to "O"-rings, components over which the "O"-ring passes during fitting shall incorporate an adequate smooth lead-in chamfer. All associated corners shall be radiused.

Details are shown in Figure 2 and dimensions in Table 2, Table 3 or Table 4.

[1)] 1 bar = 10^2 kPa.

[2)] [A2] ISO 4394-1 [A2] specifies tolerances and classes of surface texture for the inside diameter of tubular steel cylinder barrels.

4.5 Surface texture. The surface texture of the housing groove and associated surfaces[3)] shall not exceed the values given below and shown in Figure 2, Figure 3 and Figure 4.

Dynamic sealing surfaces, 0.4 µm R_a[3)]

Static sealing surfaces, 0.8 µm R_a[3)]

Non-sealing surfaces, 1.6 µm R_a[3)]

A2 NOTE Further information on recommendations for "O"-ring housing surface finishes can be found in BS ISO 3601-2. A2

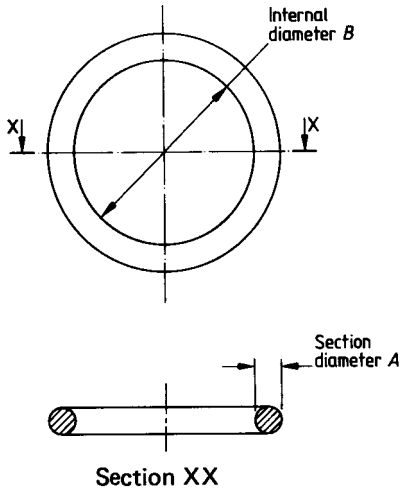


Figure 1 — Toroidal sealing ring ("O"-ring)

[3)] Surface texture in accordance with A2 BS 1134. A2

Table 1 — Dimensions of "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no (see note)	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and **4.1**)	
	Internal diameter B	Internal diameter tolerance	Section diameter A	Section diameter tolerance	Shaft diameter d_1	Cylinder diameter D_1
0031-16	3.1		1.6		3.5	6
0041-16	4.1		1.6		4.5	7
0051-16	5.1	± 0.15	1.6	± 0.08	5.5	8[b]
0061-16	6.1		1.6		6.5	9
0071-16	7.1		1.6		7.5	10[b]
0081-16	8.1		1.6		8.5	11
0091-16	9.1		1.6		9.5	12[b]
0101-16	10.1		1.6		10.5	13
0111-16	11.1		1.6		11.5	14
0121-16	12.1		1.6		12.5	15
0131-16	13.1	± 0.2	1.6	± 0.08	13.5	16[b]
0141-16	14.1		1.6		14.5	17
0151-16	15.1		1.6		15.5	18
0161-16	16.1		1.6		16.5	19
0171-16	17.1		1.6		17.5	20[b]
0181-16	18.1		1.6		18.5	21
0191-16	19.1		1.6		19.5	22
0221-16	22.1	± 0.25	1.6	± 0.08	22.5	25[b]
0251-16	25.1		1.6		25.5	28
0271-16	27.1		1.6		27.5	30
0291-16	29.1		1.6		29.5	32[b]
0321-16	32.1		1.6		32.5	35
0351-16	35.1	± 0.3	1.6	± 0.08	35.5	38
0371-16	37.1		1.6		37.5	40[b]
0036-24[a]	3.6		2.4		4[b]	8[b]
0046-24[a]	4.6		2.4		5[b]	9
0056-24[a]	5.6	± 0.15	2.4	± 0.08	6[b]	10[b]
0066-24[a]	6.6		2.4		7	11
0076-24[a]	7.6		2.4		8[b]	12[b]
0086-24[a]	8.6		2.4		9	13
0096-24[a]	9.6		2.4		10[b]	14
0106-24[a]	10.6		2.4		11	15
0116-24[a]	11.6		2.4		12[b]	16[b]
0126-24[a]	12.6		2.4		13	17
0136-24[a]	13.6	± 0.2	2.4	± 0.08	14[b]	18
0146-24[a]	14.6		2.4		15	19
0156-24[a]	15.6		2.4		16[b]	20[b]
0166-24[a]	16.6		2.4		17	21
0176-24[a]	17.6		2.4		18[b]	22
0186-24	18.6		2.4		19	23
0196-24	19.6		2.4		20[b]	24
0206-24	20.6	± 0.25	2.4	± 0.08	21	25[b]
0216-24	21.6		2.4		22[b]	26
0246-24	24.6		2.4		25[b]	29
0276-24	27.6		2.4		28[b]	32[b]
0296-24	29.6		2.4		30	34

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.

[a] [A2] Recommended for dynamic sealing. [A2]

[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 1 — Dimensions of "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no (see note)	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and **4.1**)	
	Internal diameter B	Internal diameter tolerance	Section diameter A	Section diameter tolerance	Shaft diameter d_1	Cylinder diameter D_1
0316-24	31.6		2.4		32[b]	36
0346-24	34.6		2.4		35	39
0356-24	35.6		2.4		36[b]	40[b]
0376-24	37.6		2.4		38	42
0396-24	39.6	± 0.3	2.4	± 0.08	40[b]	44
0416-24	41.6		2.4		42	46
0446-24	44.6		2.4		45[b]	49
0456-24	45.6		2.4		46	50[b]
0476-24	47.6		2.4		48	52
0496-24	49.6		2.4		50[b]	54
0516-24	51.6		2.4		52	56
0546-24	54.6		2.4		55	59
0556-24	55.6		2.4		56[b]	60[b]
0576-24	57.6		2.4		58	62
0586-24	58.6		2.4		59	63[b]
0596-24	59.6	± 0.4	2.4	± 0.08	60	64
0616-24	61.6		2.4		62	66
0626-24	62.6		2.4		63[b]	67
0646-24	64.6		2.4		65	69
0676-24	67.6		2.4		68	72
0696-24	69.6		2.4		70[b]	74
0195-30[a]	19.5		3.0		20[b]	25[b]
0215-30[a]	21.5		3.0		22[b]	27
0225-30[a]	22.5		3.0		23	28
0245-30[a]	24.5	± 0.25	3.0	± 0.1	25[b]	30
0255-30[a]	25.5		3.0		26	31
0265-30[a]	26.5		3.0		27	32[b]
0275-30[a]	27.5		3.0		28[b]	33
0295-30[a]	29.5		3.0		30	35
0315-30[a]	31.5		3.0		32[b]	37
0325-30[a]	32.5		3.0		33	38
0345-30[a]	34.5		3.0		35	40[b]
0355-30[a]	35.5		3.0		36[b]	41
0365-30[a]	36.5	± 0.3	3.0	± 0.1	37	42
0375-30[a]	37.5		3.0		38	43
0395-30[a]	39.5		3.0		40[b]	45
0415-30[a]	41.5		3.0		42	47
0425-30[a]	42.5		3.0		43	48
0445-30[a]	44.5		3.0		45[b]	50[b]
0495-30	49.5		3.0		50[b]	55

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.

[a] Recommended for dynamic sealing.

[b] Preferred size in accordance with BS ISO 3320.

Table 1 — Dimensions of "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no (see note)	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and **4.1**)	
	Internal diameter *B*	**Internal diameter tolerance**	**Section diameter** *A*	**Section diameter tolerance**	**Shaft diameter** d_1	**Cylinder diameter** D_1
0545-30	54.5		3.0		55	[A2] 60[b] [A2]
0555-30	55.5		3.0		56[b]	61
0575-30	57.5		3.0		58	63[b]
0595-30	59.5		3.0		60	65
0625-30	62.5	± 0.4	3.0	± 0.1	63[b]	68
0645-30	64.5		3.0		65	70
0695-30	69.5		3.0		70[b]	75
0745-30	74.5		3.0		75	80[b]
0795-30	79.5		3.0		80[b]	85
0845-30	84.5		3.0		85	90
0895-30	89.5		3.0		90[b]	95
0945-30	94.5		3.0		95	100[b]
0995-30	99.5		3.0		100[b]	105
1045-30	104.5	± 0.5	3.0	± 0.1	105	110
1095-30	109.5		3.0		110[b]	115
1145-30	114.5		3.0		115	120
1195-30	119.5		3.0		120	125[b]
1245-30	124.5		3.0		125[b]	130
1295-30	129.5		3.0		130	135
1345-30	134.5		3.0		135	140
1395-30	139.5		3.0		140[b]	145
1445-30	144.5		3.0		145	150
1495-30	149.5	± 0.6	3.0	± 0.1	150	155
1545-30	154.5		3.0		155	160[b]
1595-30	159.5		3.0		160[b]	165
1645-30	164.5		3.0		165	170
1695-30	169.5		3.0		170	175
1745-30	174.5		3.0		175	180
1795-30	179.5		3.0		180[b]	185

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.
[a] [A2] Recommended for dynamic sealing. [A2]
[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 1 — Dimensions of "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no (see note)	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and **4.1**)	
	Internal diameter B	**Internal diameter tolerance**	**Section diameter** A	**Section diameter tolerance**	**Shaft diameter** d_1	**Cylinder diameter** D_1
1845-30	184.5		3.0		185	190
1895-30	189.5		3.0		190	195
1945-30	194.5		3.0		195	200[b]
1995-30	199.5		3.0		200[b]	205
2095-30	209.5	± 0.8	3.0	± 0.1	210	215
2195-30	219.5		3.0		220[b]	225
2295-30	229.5		3.0		230	235
2395-30	239.5		3.0		240	245
2445-30	244.5		3.0		245	250[b]
2495-30	249.5		3.0		250[b]	255
0443-57[a]	44.3		5.7		45[b]	55
0453-57[a]	45.3	± 0.3	5.7	± 0.12	46	56
0493-57[a]	49.3		5.7		50[b]	[A2] 60[b] [A2]
0523-57[a]	52.3		5.7		53	63[b]
0543-57[a]	54.3		5.7		55	65
0553-57[a]	55.3		5.7		56[b]	66
0593-57[a]	59.3		5.7		60	70
0623-57[a]	62.3	± 0.4	5.7	± 0.12	63[b]	73
0643-57[a]	64.3		5.7		65	75
0693-57[a]	69.3		5.7		70[b]	80[b]
0743-57[a]	74.3		5.7		75	85
0793-57[a]	79.3		5.7		80[b]	90
0843-57[a]	84.3		5.7		85	95
0893-57[a]	89.3		5.7		90[b]	100[b]
0943-57[a]	94.3		5.7		95	105
0993-57[a]	99.3		5.7		100[b]	110
1043-57[a]	104.3	± 0.5	5.7	± 0.12	105	115
1093-57[a]	109.3		5.7		110[b]	120
1143-57[a]	114.3		5.7		115	125[b]
1193-57[a]	119.3		5.7		120	130
1243-57[a]	124.3		5.7		125[b]	135
1293-57[a]	129.3		5.7		130	140
1343-57	134.3		5.7		135	145
1393-57[a]	139.3		5.7		140[b]	150
1443-57[a]	144.3		5.7		145	155
1493-57	149.3		5.7		150	160[b]
1543-57	154.3	± 0.6	5.7	± 0.12	155	165
1593-57	159.3		5.7		160[b]	170
1643-57	164.3		5.7		165	175
1693-57	169.3		5.7		170	180
1743-57	174.3		5.7		175	185
1793-57	179.3		5.7		180[b]	190

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.

[a] [A2] Recommended for dynamic sealing. [A2]

[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 1 — Dimensions of "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no (see note)	**"O"-ring dimensions**				**Nominal housing dimensions** (see Figure 2 and **4.1**)	
	Internal diameter *B*	**Internal diameter tolerance**	**Section diameter** *A*	**Section diameter tolerance**	**Shaft diameter** d_1	**Cylinder diameter** D_1
1843-57	184.3		5.7		185	195
1893-57	189.3		5.7		190	200[b]
1943-57	194.3		5.7		195	205
1993-57	199.3		5.7		200[b]	210
2093-57	209.3	± 0.8	5.7	± 0.12	210	220
2193-57	219.3		5.7		220[b]	230
2293-57	229.3		5.7		230	240
2393-57	239.3		5.7		240	250[b]
2493-57	249.3		5.7		250[b]	260
2593-57	259.3		5.7		260	270
2693-57	269.3		5.7		270	280
2793-57	279.3	± 1.0	5.7	± 0.12	280[b]	290
2893-57	289.3		5.7		290	300
2993-57	299.3		5.7		300	310
3093-57	309.3		5.7		310	320[b]
3193-57	319.3		5.7		320[b]	330
3393-57	339.3		5.7		340	350
3593-57	359.3	± 1.5	5.7	± 0.12	360[b]	370
3793-57	379.3		5.7		380	390
3893-57	389.3		5.7		390	400[b]
3993-57	399.3		5.7		400[b]	410

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.

[a] [A2] Recommended for dynamic sealing. [A2]

[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 1 — Dimensions of "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

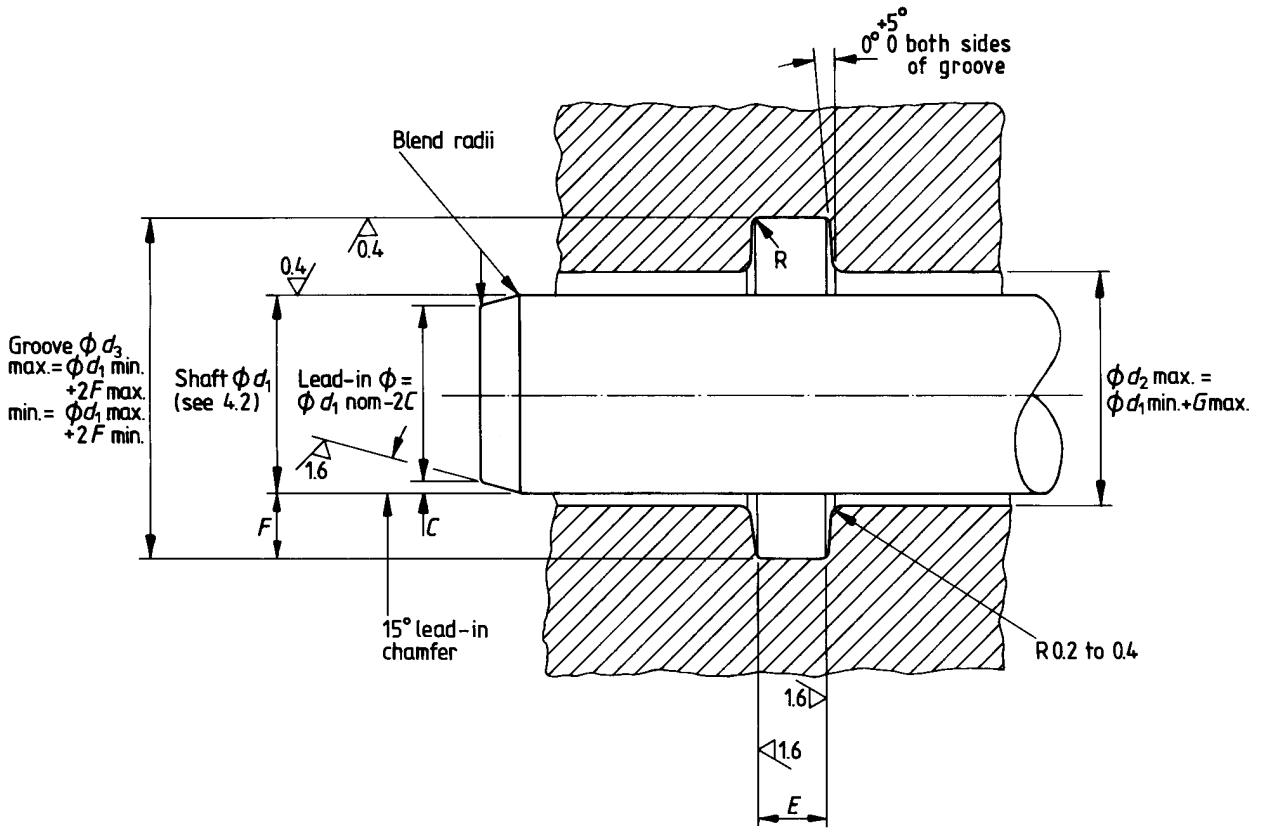
All dimensions in millimetres

"O"-ring ref. no (see note)	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and **4.1**)	
	Internal diameter B	**Internal diameter tolerance**	**Section diameter** A	**Section diameter tolerance**	**Shaft diameter** d_1	**Cylinder diameter** D_1
4193-57	419.3		5.7		420	430
4393-57	439.3		5.7		440	450
4593-57	459.3	± 2.0	5.7	± 0.12	460	470
4793-57	479.3		5.7		480	490
4893-57	489.3		5.7		490	[A2] 500[b] [A2]
4993-57	499.3		5.7		500	510
1441-84[a]	144.1		8.4		145	160[b]
1491-84[a]	149.1		8.4		150	165
1541-84[a]	154.1		8.4		155	170
1591-84[a]	159.1	± 0.6	8.4	± 0.15	160[b]	175
1641-84[a]	164.1		8.4		165	180
1691-84[a]	169.1		8.4		170	185
1741-84[a]	174.1		8.4		175	190
1791-84[a]	179.1		8.4		180[b]	195
1841-84[a]	184.1		8.4		185	200[b]
1891-84[a]	189.1		8.4		190	205
1941-84[a]	194.1		8.4		195	210
1991-84[a]	199.1		8.4		200[b]	215
2041-84[a]	204.1		8.4		205	220
2091-84[a]	209.1	± 0.8	8.4	± 0.15	210	225
2191-84[a]	219.1		8.4		220[b]	235
2291-84[a]	229.1		8.4		230	245
2341-84[a]	234.1		8.4		235	250[b]
2391-84[a]	239.1		8.4		240	255
2491-84[a]	249.1		8.4		250[b]	265

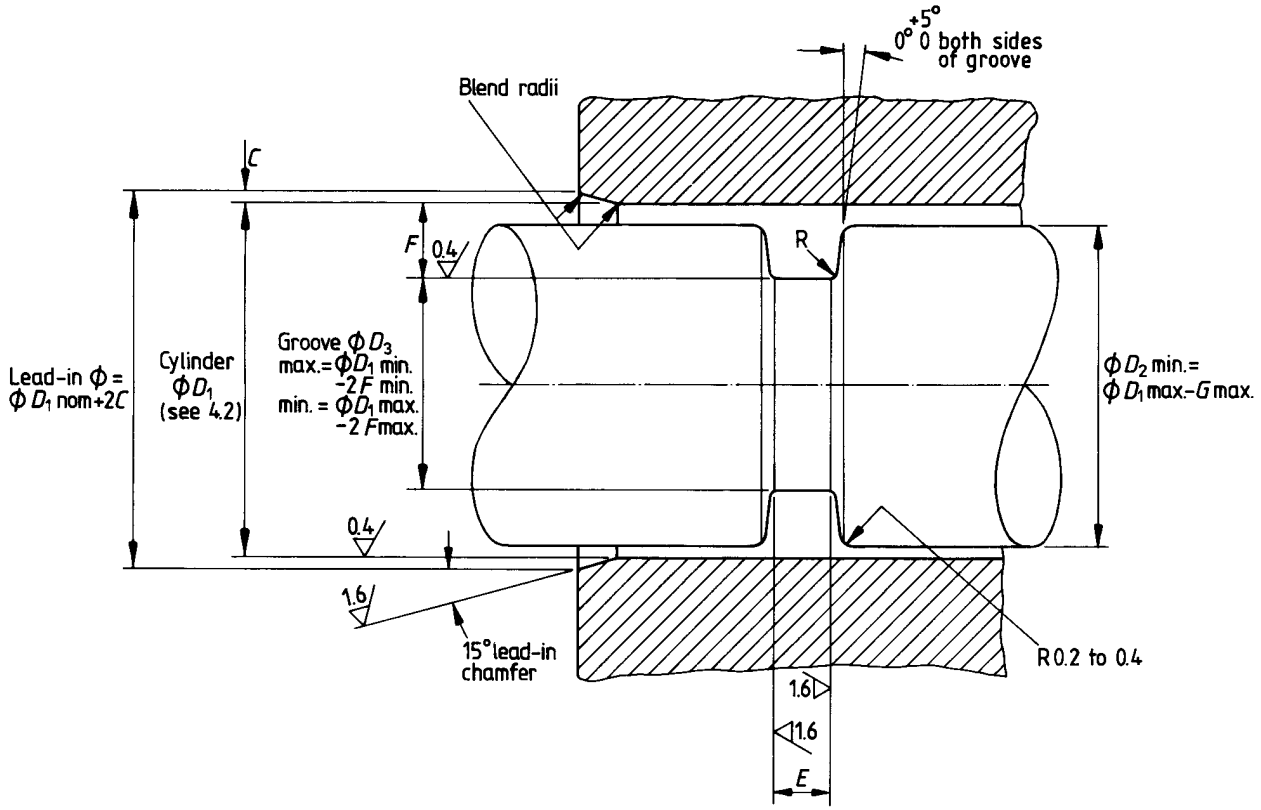
NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.

[a] [A2] Recommended for dynamic sealing. [A2]

[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].



(a) Groove in cylinder



(b) Groove in piston

All dimensions are in millimetres

Figure 2 — Groove for diametral sealing

Table 2 — Groove dimensions for static diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	Cross section diameter *A*	Radial depth *F*		Groove width $E^{+0.2}_{0}$	Total diametral clearance *G* (max.)	Lead-in chamfer *C*	Max. radius *R*
		max.	min.				
0031-16 to 0371-16	1.6	1.25	1.18	2.3	0.12	0.6	0.5
0036-24 to 0696-24	2.4	1.97	1.84	3.1	0.14	0.7	0.5
0195-30 to 2495-30	3.0	2.50	2.35	3.7	0.15	0.8	1.0
0443-57 to 4993-57	5.7	4.95	4.70	6.4	0.18	1.2	1.0
1441-84 to 2491-84	8.4	7.50	7.20	9.0	0.20	1.5	1.0

Table 3 — Groove dimensions for dynamic diametral sealing in hydraulic applications (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	Cross section diameter *A*	Radial depth *F*		Groove width $E^{+0.2}_{0}$	Total diametral clearance *G* (max.)	Lead-in chamfer *C*	Max. radius *R*
		max.	min.				
0036-24 to 0176-24	2.4	2.09	1.97	3.2	0.14	0.6	0.5
0195-30 to 0445-30	3.0	2.65	2.50	4.0	0.15	0.7	1.0
0443-57 to 1443-57	5.7	5.18	4.95	7.5	0.18	1.0	1.0
1441-84 to 2491-84	8.4	7.75	7.50	11.0	0.20	1.2	1.0

Table 4 — Groove dimensions for dynamic diametral sealing in pneumatic applications (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	Cross section diameter *A*	Radial depth *F*		Groove width $E^{+0.2}_{0}$	Total diametral clearance *G* (max.)	Lead-in chamfer *C*	Max. radius *R*
		max.	min.				
0036-24 to 0176-24	2.4	2.20	2.13	3.2	0.14	0.6	0.5
0195-30 to 0445-30	3.0	2.77	2.70	4.0	0.15	0.7	1.0
0443-57 to 1443-57	5.7	5.38	5.22	7.5	0.18	1.0	1.0
1441-84 to 2491-84	8.4	7.96	7.75	11.0	0.20	1.2	1.0

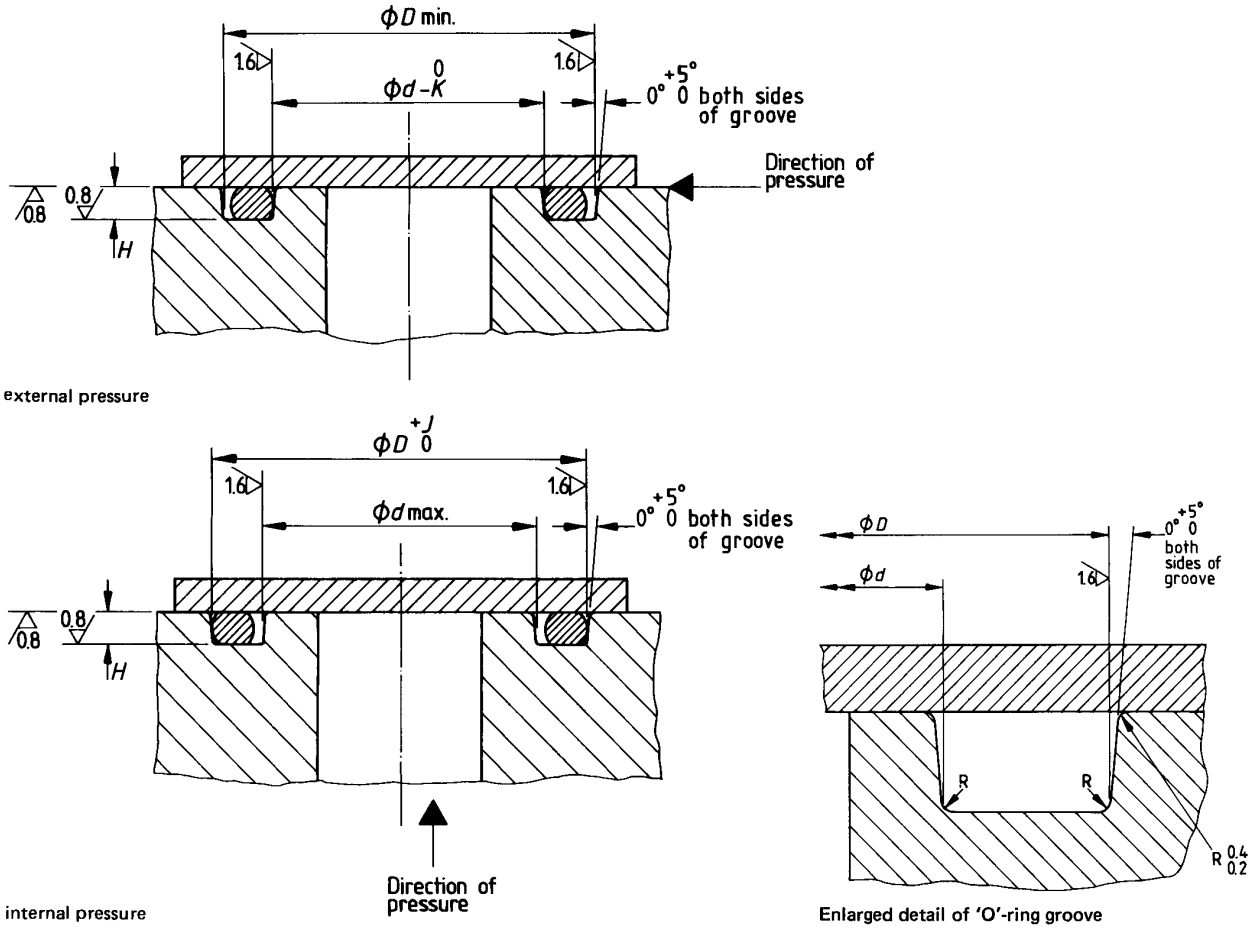


Figure 3 — Groove for static face sealing

Table 5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure		J	External pressure			H	R
	d (max.)	D		D (min.)	d	K		(max.)
0031-16	1.0	6.3		7.5	3.5			
0041-16	2.3	7.3		8.5	4.5	0.075		
0051-16	3.3	8.3	0.09	9.5	5.5			
0061-16	4.3	9.3		10.5	6.5			
0071-16	5.8	10.3		11.5	7.5			
0081-16	6.8	11.3		12.5	8.5	0.09		
0091-16	7.8	12.3		13.5	9.5			
0101-16	8.8	13.3		14.5	10.5			
0111-16	9.8	14.3	0.11	15.5	11.5			
0121-16	10.8	15.3		16.5	12.5			
0131-16	11.8	16.3		17.5	13.5			
0141-16	12.8	17.3		18.5	14.5	0.11		
0151-16	14.0	18.3		19.5	15.5		$1.2^{+0.1}_{0}$	0.2
0161-16	15	19.3		20.5	16.5			
0171-16	16	20.3		21.5	17.5			
0181-16	17	21.3	0.13	22.5	18.5			
0191-16	18	22.3		23.5	19.5			
0221-16	21	25.3		26.5	22.5			
0251-16	24	28.3		29.5	25.5	0.13		
0271-16	26	30.3		31.5	27.5			
0291-16	28	32.3		33.5	29.5			
0321-16	31	35.3	0.16	36.5	32.5			
0351-16	34	38.3		39.5	35.5	0.16		
0371-16	36	40.3		41.5	37.5			
0036-24	—	8.4		10	4			
0046-24	1.0	9.4	0.09	11	5	0.075		
0056-24	2.5	10.4		12	6			
0066-24	4.0	11.4		13	7			
0076-24	5.0	12.4		14	8			
0086-24	6.4	13.4		15	9	0.09		
0096-24	7.4	14.4		16	10			
0106-24	8.4	15.4		17	11			
0116-24	9.5	16.4	0.11	18	12			
0126-24	10.5	17.4		19	13			
0136-24	11.5	18.4		20	14	0.11		
0146-24	12.5	19.4		21	15			
0156-24	13.5	20.4		22	16			
0166-24	14.5	21.4		23	17			
0176-24	15.5	22.4		24	18			
0186-24	16.5	23.4		25	19			
0196-24	17.5	24.4	0.13	26	20			
0206-24	18.5	25.4		27	21			
0216-24	19.5	26.4		28	22	0.13		
0246-24	22.5	29.4		31	25		$1.7^{+0.1}_{0}$	0.5
0276-24	25.5	32.4		34	28			
0296-24	27.5	34.4	0.16	36	30			

Table 5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure		*J*	External pressure			*H*	*R* (max.)
	d (max.)	*D*		*D* (min.)	*d*	*K*		
0316-24	29.5	36.4		38	32			
0346-24	32.5	39.4		41	35			
0356-24	33.5	40.4		42	36			
0376-24	35.5	42.4	0.16	44	38			
0396-24	37.5	44.4		46	40			
0416-24	39.5	46.4		48	42	0.16		
0446-24	42.5	49.4		51	45			
0456-24	43.5	50.4		52	46			
0476-24	45.5	52.4		54	48			
0496-24	47.5	54.4		56	50			
0516-24	49.5	56.4		58	52			
0546-24	52.5	59.4		61	55			
0556-24	53.5	60.4		62	56			
0576-24	55.5	62.4		64	58			
0586-24	56.5	63.4		65	59			
0596-24	57.5	64.4	0.19	66	60			
0616-24	59.5	66.4		68	62	0.19		
0626-24	60.5	67.4		69	63			
0646-24	62.5	69.4		71	65			
0676-24	65.5	72.4		74	68			
0696-24	67.5	74.4		76	70			
0195-30	17	25		28	20			
0215-30	19	27	0.13	30	22			
0225-30	20	28		31	23			
0245-30	22	30		33	25			
0255-30	23	31		34	26	0.13		
0266-30	24	32		35	27			
0275-30	25	33		36	28			
0295-30	27	35		38	30			
0315-30	29	37		40	32			
0325-30	30	38		41	33			
0345-30	32	40	0.16	43	35			
0355-30	33	41		44	36		$2.2^{+0.1}_{0}$	1.0
0365-30	34	42		45	37			
0375-30	35	43		46	38	0.16		
0395-30	37	45		48	40			
0415-30	39	47		50	42			
0425-30	40	48		51	43			
0445-30	42	50		53	45			
0495-30	47	55		58	50			
0545-30	52	60	0.19	63	55			
0555-30	53	61		64	56	0.19		
0575-30	55	63		66	58			

Table 5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure		*J*	External pressure			*H*	*R*
	d (max.)	*D*		*D* (min.)	*d*	*K*		(max.)
0595-30	57	65		68	60			
0625-30	60	68	0.19	71	63			
0645-30	62	70		73	65			
0695-30	67	75		78	70	0.19		
0745-30	72	80		83	75			
0795-30	77	85		88	80			
0845-30	82	90		93	85			
0895-30	87	95		98	90			
0945-30	92	100		103	95			
0995-30	97	105	0.22	108	100	0.22		
1045-30	102	110		113	105			
1095-30	107	115		118	110		$2.2^{+0.1}_{0}$	1.0
1145-30	112	120		123	115			
1195-30	117	125		128	120			
1245-30	122	130		133	125			
1295-30	127	135		138	130			
1345-30	132	140		143	135			
1395-30	137	145		148	140			
1445-30	142	150		153	145			
1495-30	147	155	0.25	158	150			
1545-30	152	160		163	155	0.25		
1595-30	157	165		168	160			
1645-30	162	170		173	165			
1695-30	167	175		178	170			
1745-30	172	180	0.25	183	175			
1795-30	177	185		188	180	0.25		
1845-30	182	190		193	185			
1895-30	187	195		198	190			
1945-30	192	200		203	195			
1995-30	197	205		208	200		$2.2^{+0.1}_{0}$	1.0
2095-30	207	215	0.29	218	210	0.29		
2195-30	217	225		228	220			
2295-30	227	235		238	230			
2395-30	237	245		248	240			
2445-30	242	250		253	245			
2495-30	247	255		258	250			
0443-57	41	55		59	45			
0453-57	42	56		60	46	0.16		
0493-57	46	60		64	50			
0523-57	49	63		67	53			
0543-57	51	65		69	55			
0553-57	52	66	0.19	70	56			
0593-57	56	70		74	60			
0623-57	59	73		77	63	0.19		
0643-57	61	75		79	65			
0693-57	66	80		84	70			

Table 5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure		*J*	External pressure			*H*	*R* (max.)
	d (max.)	*D*		*D* (min.)	*d*	*K*		
0743-57	71	85		89	75			
0793-57	76	90		94	80			
0843-57	81	95		99	85			
0893-57	86	100		104	90			
0943-57	91	105	0.22	109	95			
0993-57	96	110		114	100			
1043-57	101	115		119	105	0.22		
1093-57	106	120		124	110			
1143-57	111	125		129	115			
1193-57	116	130		134	120			
1243-57	121	135		139	125			
1293-57	126	140		144	130			
1343-57	131	145		149	135			
1393-57	136	150	0.25	154	140			
1443-57	141	155		159	145			
1493-57	146	160		164	150	0.25		
1543-57	151	165		169	155		$4.4^{+0.1}_{0}$	1.0
1593-57	156	170		174	160			
1643-57	161	175		179	165			
1693-57	166	180		184	170			
1743-57	171	185		189	175			
1793-57	176	190		194	180			
1843-57	181	195		199	185			
1893-57	185	199		204	190			
1943-57	190	204		209	195			
1993-57	195	209	0.29	214	200			
2093-57	205	219		224	210	0.29		
2193-57	215	229		234	220			
2293-57	225	239		244	230			
2393-57	235	249		254	240			
2493-57	245	259		264	250			
2593-57	255	269		275	261			
2693-57	265	279		285	271			
2793-57	275	289	0.32	295	281	0.32		
2893-57	285	299		305	291			
2993-57	295	309		315	301			
3093-57	305	319		325	311			
3193-57	315	329		335	321			
3393-57	335	349	0.36	355	341	0.36		
3593-57	355	369		375	361			
3793-57	375	389		395	381			
3893-57	385	399	0.40	405	391	0.40		
3993-57	395	409		415	401			

Table 5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure		J	External pressure			H	R
	d (max.)	D		D (min.)	d	K		(max.)
4193-57	415	429		436	422			
4393-57	435	449		456	442			
4593-57	455	469	0.40	476	462	0.40	$4.4^{+0.1}_{0}$	
4793-57	475	489		496	482			
4893-57	485	499		506	492			
4993-57	495	509		516	502			
1441-84	140	160		165	145			
1491-84	145	165		170	150			
1541-84	150	170	0.25	175	155			
1591-84	155	175		180	160			
1641-84	160	180		185	165	0.25		
1691-84	165	185		190	170			
1741-84	170	190		195	175			
1791-84	175	195		200	180			
1841-84	180	200		205	185		$6.6^{+0.1}_{0}$	1.0
1891-84	185	205		210	190			
1941-84	190	210		215	195			
1991-84	195	215	0.29	220	200			
2041-84	200	220		225	205			
2091-84	205	225		230	210	0.29		
2191-84	215	235		240	220			
2291-84	225	245		250	230			
2341-84	230	250		255	235			
2391-84	235	255		260	240			
2491-84	245	265	0.32	270	250			

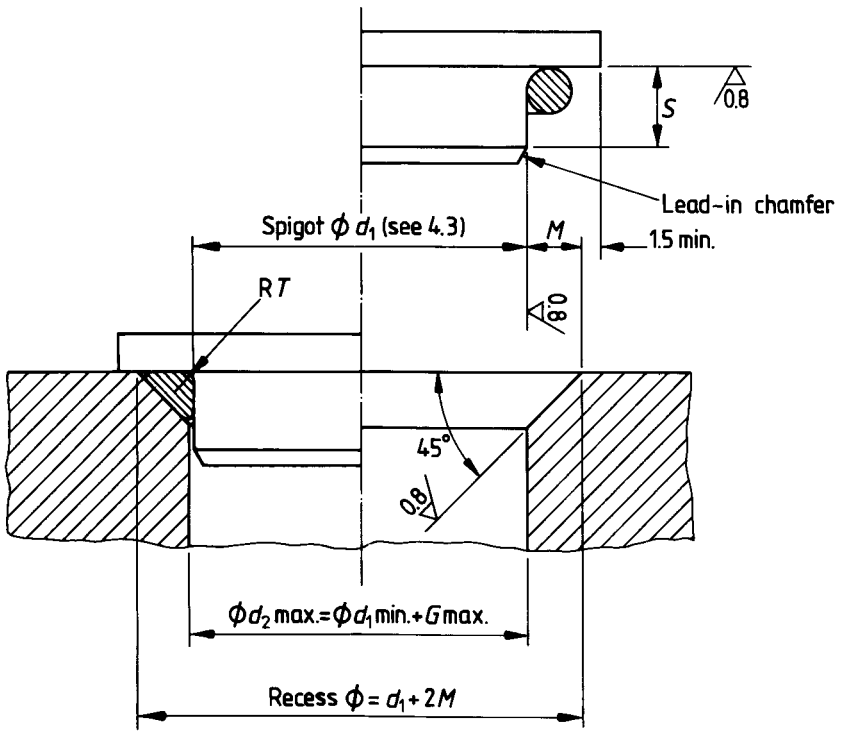


Figure 4 — Triangular housing profile for static sealing

Table 6 — Dimensions of triangular housing for static sealing (see Figure 4)

All dimensions in millimetres

"O"-ring		Spigot diameter d_1	Total diametral clearance G (max.)	Chamfer $M^{+0.12}_{0}$	Maximum radius on spigot T	Spigot length S (min.)
Ref. no.	Cross section diameter A					
0031-16 to 0371-16	1.6	As in Table 1, column 6	0.12	2.20	0.8	4.0
0036-24 to 0696-24	2.4		0.14	3.30	1.3	5.0
0195-30 to 2495-30	3.0		0.15	4.20	2.0	6.0
0443-57 to 4993-57	5.7		0.18	7.80	3.0	10.0
1441-84 to 2491-84	8.4		0.20	11.50	4.0	14.0

Appendix A "O"-ring selection charts

The following tables are intended to aid selection of appropriate seals for given applications.

Table 7 — "O'-ring reference numbers for nominal cylinder diameters

Nominal cylinder diameter	Section diameter				
	1.6 mm	2.4 mm	3.0 mm	5.7 mm	8.4 mm
mm					
6	0031-16				
7	0041-16				
8[b]	0051-16	0036-24[a]			
9	0061-16	0046-24[a]			
10[b]	0071-16	0056-24[a]			
11	0081-16	0066-24[a]			
12[b]	0091-16	0076-24[a]			
13	0101-16	0086-24[a]			
14	0111-16	0096-24[a]			
15	0121-16	0106-24[a]			
16[b]	0131-16	0116-24[a]			
17	0141-16	0126-24[a]			
18	0151-16	0136-24[a]			
19	0161-16	0146-24[a]			
20[b]	0171-16	0156-24[a]			
21	0181-16	0166-24[a]			
22	0191-16	0176-24[a]			
23		0186-24			
24		0196-24			
25[b]	0221-16	0206-24	0195-30[a]		
26		0216-24			
27			0215-30[a]		
28	0251-16		0225-30[a]		
29		0246-24			
30	0271-16		0245-30[a]		
31			0255-30[a]		
32[b]	0291-16	0276-24	0265-30[a]		
33			0275-30[a]		
34		0296-24			
35	0321-16		0295-30[a]		
36		0316-24			
37			0315-30[a]		
38	0351-16		0325-30[a]		
39		0346-24			
40[b]	0371-16	0356-24	0345-30[a]		
41			0355-30[a]		
42		0376-24	0365-30[a]		
43			0375-30[a]		
44		0396-24			
45			0395-30[a]		
46		0416-24			
47			0415-30[a]		
48			0425-30[a]		
49		0446-24			
50[b]		0456-24	0445-30[a]		

[a] Recommended for dynamic sealing.
[b] Preferred size in accordance with 〈A2〉 BS ISO 3320 〈A2〉.

Table 7 — "O"-ring reference numbers for nominal cylinder diameters

Nominal cylinder diameter	Section diameter				
	1.6 mm	2.4 mm	3.0 mm	5.7 mm	8.4 mm
mm					
52		0476-24			
54		0496-24			
55			0495-30	0443-57[a]	
56		0516-24		0453-57[a]	
59		0546-24			
[A2] 60[b] [A2]		0556-24	0545-30	0493-57[a]	
61			0555-30		
62		0576-24			
63[b]		0586-24	0575-30	0523-57[a]	
64		0596-24			
65			0595-30	0543-57[a]	
66		0616-24		0553-57[a]	
67		0626-24			
68			0625-30		
69		0646-24			
70			0645-30	0593-57[a]	
72		0676-24			
73				0623-57[a]	
74		0696-24			
75			0695-30	0643-57[a]	
80[b]			0745-30	0693-57[a]	
85			0795-30	0743-57[a]	
90			0845-30	0793-57[a]	
95			0895-30	0843-57[a]	
100[b]			0945-30	0893-57[a]	
105			0995-30	0943-57[a]	
110			1045-30	0993-57[a]	
115			1095-30	1043-57[a]	
120			1145-30	1093-57[a]	
125[b]			1195-30	1143-57[a]	
130			1245-30	1193-57[a]	
135			1295-30	1243-57[a]	
140			1345-30	1293-57[a]	
145			1395-30	1343-57[a]	
150			1445-30	1393-57[a]	
155			1495-30	1443-57[a]	
160[b]			1545-30	1493-57	1441-84[a]
165			1595-30	1543-57	1491-84[a]
170			1645-30	1593-57	1541-84[a]
175			1695-30	1643-57	1591-84[a]
180			1745-30	1693-57	1641-84[a]
185			1795-30	1743-57	1691-84[a]
190			1845-30	1793-57	1741-84[a]
195			1895-30	1843-57	1791-84
200[b]			1945-30	1893-57	1841-84[a]

[a] Recommended for dynamic sealing.
[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 7 — "O'-ring reference numbers for nominal cylinder diameters

Nominal cylinder diameter	Section diameter				
	1.6 mm	2.4 mm	3.0 mm	5.7 mm	8.4 mm
mm					
205			1995-30	1943-57	1891-84[a]
210				1993-57	1941-84[a]
215			2095-30		1991-84[a]
220				2093-57	2041-84[a]
225			2195-30		2091-84[a]
230				2193-57	
235			2295-30		2191-84[a]
240				2293-57	
245			2395-30		2291-84[a]
250[b]			2445-30	2393-57	2341-84[a]
255			2495-30		2391-84[a]
260				2493-57	
265					2491-84[a]
270				2593-57	
280				2693-57	
290				2793-57	
300				2893-57	
310				2993-57	
320[b]				3093-57	
330				3193-57	
350				3393-57	
370				3593-57	
390				3793-57	
400[b]				3893-57	
410				3993-57	
430				4193-57	
450				4393-57	
470				4593-57	
490				4793-57	
[A2] 500[b] [A2]				4893-57	
510				4993-57	

[a] Recommended for dynamic sealing.
[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 8 — "O"-ring reference numbers for nominal shaft diameters

Nominal shaft diameter	Section diameter				
	1.6 mm	2.4 mm	3.0 mm	5.7 mm	8.4 mm
mm					
3.5	0031-16				
4[b]		0036-24[a]			
4.5	0041-16				
5[b]		0046-24[a]			
5.5	0051-16				
6[b]		0056-24[a]			
6.5	0061-16				
7		0066-24[a]			
7.5	0071-16				
8[b]		0076-24[a]			
8.5	0081-16				
9		0086-24[a]			
9.5	0091-16				
10[b]		0096-24[a]			
10.5	0101-16				
11		0106-24[a]			
11.5	0111-16				
12[b]		0116-24[a]			
12.5	0121-16				
13		0126-24[a]			
13.5	0131-16				
14[b]		0136-24[a]			
14.5	0141-16				
15		0146-24[a]			
15.5	0151-16				
16[b]		0156-24[a]			
16.5	0161-16				
17		0166-24[a]			
17.5	0171-16				
18[b]		0176-24[a]			
18.5	0181-16				
19		0186-24			
19.5	0191-16				
20[b]		0196-24	0195-30[a]		
21		0206-24			
22[b]		0216-24	0215-30[a]		
22.5	0221-16				
23			0225-30[a]		
25[b]		0226-24	0245-30[a]		
25.5	0251-16				
26			0255-30[a]		
27			0265-30[a]		
27.5	0271-16				
28[b]		0276-24	0275-30[a]		
29.5	0291-16				
30		0296-24	0295-30[a]		

[a] Recommended for dynamic sealing.
[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table 8 — "O"-ring reference numbers for nominal shaft diameters

Nominal shaft diameter	Section diameter				
	1.6 mm	2.4 mm	3.0 mm	5.7 mm	8.4 mm
mm					
32[b]		0316-24	0315-30[a]		
32.5	0321-16				
33			0325-30[a]		
35		0346-24	0345-30[a]		
35.5	0351-16				
36[b]		0356-24	0355-30[a]		
37			0365-30[a]		
37.5	0371-16				
38		0376-24	0375-30[a]		
40[b]		0396-24	0395-30[a]		
42		0416-24	0415-30[a]		
43			0425-30[a]		
45[b]		0446-24	0445-30	0443-57[a]	
46		0456-24		0453-57[a]	
48		0476-24			
50[b]		0496-24	0495-30	0493-57[a]	
52		0516-24			
53				0523-57[a]	
55		0546-24	0545-30	0543-57[a]	
56[b]		0556-24	0555-30	0553-57[a]	
58		0576-24	0575-30		
59		0586-24			
60		0596-24	0595-30	0593-57[a]	
62		0616-24			
63[b]		0626-24	0625-30	0623-57[a]	
65		0646-24	0645-30	0643-57[a]	
68		0676-24			
70[b]		0696-24	0695-30	0693-57[a]	
75			0745-30	0743-57[a]	
80[b]			0795-30	0793-57[a]	
85			0845-30	0843-57[a]	
90[b]			0895-30	0893-57[a]	
95			0945-30	0943-57[a]	
100[b]			0995-30	0993-57[a]	
105			1045-30	1043-57[a]	
110[b]			1095-30	1093-57[a]	
115			1145-30	1143-57[a]	
120			1195-30	1193-57[a]	

[a] Recommended for dynamic sealing.
[b] Preferred size in accordance with 〈A2〉 BS ISO 3320 〈A2〉.

Table 8 — "O"-ring reference numbers for nominal shaft diameters

Nominal shaft diameter	Section diameter				
	1.6 mm	2.4 mm	3.0 mm	5.7 mm	8.4 mm
mm					
125[b]			1245-30	1243-57[a]	
130			1295-30	1293-57[a]	
135			1345-30	1343-57[a]	
140[b]			1395-30	1393-57[a]	
145			1445-30	1443-57[a]	1441-84[a]
150			1495-30	1493-57	1491-84[a]
155			1545-30	1543-57	1541-84[a]
160[b]			1595-30	1593-57	1591-84[a]
165			1645-30	1643-57	1641-84[a]
170			1695-30	1693-57	1691-84[a]
175			1745-30	1743-57	1741-84[a]
180[b]			1795-30	1793-57	1791-84[a]
185			1845-30	1843-57	1841-84[a]
190			1895-30	1893-57	1891-84[a]
195			1945-30	1943-57	1941-84[a]
200[b]			1995-30	1993-57	1991-84[a]
205					2041-84[a]
210			2095-30	2093-57	2091-84[a]
220[b]			2195-30	2193-57	2191-84[a]
230			2295-30	2293-57	2291-84[a]
235					2341-84[a]
240			2395-30	2393-57	2391-84[a]
245			2445-30		
250[b]			2495-30	2493-57	2491-84[a]
260				2593-57	
270				2693-57	
280[b]				2793-57	
290				2893-57	
300				2993-57	
310				3093-57	
320[b]				3193-57	
340				3393-57	
360				3593-57	
380				3793-57	
390				3893-57	
[A2] 400[b] [A2]				3993-57	
420				4193-57	
440				4393-57	
460				4593-57	
480				4793-57	
490				4893-57	
500				4993-57	

[a] Recommended for dynamic sealing.
[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Appendix B Obsolete series of "O"-ring

See foreword. The relevant dimensions are recorded for information in the following tables which are numbered to correspond to those in the body of the standard.

Table B.1 — Dimensions of 4.1 mm section diameter "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and **4.1**)	
	Internal diameter B	Internal diameter tolerance	Section diameter A	Section diameter tolerance	Shaft diameter d_1	Cylinder diameter D_1
0294-41[a]	29.4		4.1		30	37
0314-41[a]	31.4		4.1		32[b]	39
0324-41[a]	32.5		4.1		33	40[b]
0344-41[a]	34.4		4.1		35	42
0354-41[a]	35.4		4.1		36[b]	43
0364-41[a]	36.4		4.1		37	44
0374-41[a]	37.4	± 0.3	4.1	± 0.12	38	45
0394-41[a]	39.4		4.1		40[b]	47
0414-41[a]	41.4		4.1		42	49
0424-41[a]	42.4		4.1		43	50[b]
0444-41[a]	44.4		4.1		45[b]	52
0454-41[a]	45.4		4.1		46	53
0494-41[a]	49.4		4.1		50[b]	57
0524-41[a]	52.4		4.1		53	[A2] 60[b] [A2]
0544-41[a]	54.4		4.1		55	62
0554-41[a]	55.4		4.1		56[b]	63[b]
0594-41[a]	59.4		4.1		60	67
0624-41[a]	62.4		4.1		63[b]	70
0644-41[a]	64.4	± 0.4	4.1	± 0.12	65	72
0694-41[a]	69.4		4.1		70[b]	77
0724-41[a]	72.4		4.1		73	80[b]
0744-41[a]	74.4		4.1		75	82
0794-41[a]	79.4		4.1		80[b]	87
0844-41[a]	84.4		4.1		85	92
0894-41[a]	89.4		4.1		90[b]	97
0924-41[a]	92.4		4.1		93	100[b]
0944-41[a]	94.4		4.1		95	102
0994-41[a]	99.4		4.1		100[b]	107
1044-41	104.4	± 0.5	4.1	± 0.12	105	112
1094-41	109.4		4.1		110[b]	117
1144-41	114.4		4.1		115	122
1174-41	117.4		4.1		118	125[b]
1194-41	119.4		4.1		120	127

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.

[a] [A2] Recommended for dynamic sealing. [A2]

[b] Preferred size in accordance with [A2] BS ISO 3320 [A2].

Table B.1 — Dimensions of 4.1 mm section diameter "O"-rings (see Figure 1) and related nominal housing diameters for diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	"O"-ring dimensions				Nominal housing dimensions (see Figure 2 and 4.1)	
	Internal diameter B	Internal diameter tolerance	Section diameter A	Section diameter tolerance	Shaft diameter d_1	Cylinder diameter D_1
1244-41	124.4		4.1		125[b]	132
1294-41	129.4		4.1		130	137
1344-41	134.4		4.1		135	142
1394-41	139.4		4.1		140[b]	147
1444-41	144.4		4.1		145	152
1494-41	149.4		4.1		150	157
1524-41	152.4	± 0.6	4.1	± 0.12	153	160[b]
1544-41	154.4		4.1		155	162
1594-41	159.4		4.1		160[b]	167
1644-41	164.4		4.1		165	172
1694-41	169.4		4.1		170	177
1744-41	174.4		4.1		175	182
1794-41	179.4		4.1		180[b]	187
1844-41	184.4		4.1		185	192
1894-41	189.4		4.1		190	197
1924-41	192.4		4.1		193	200[b]
1944-41	194.4		4.1		195	202
1994-41	199.4		4.1		200[b]	207
2094-41	209.4		4.1		210	217
2124-41	212.4	± 0.8	4.1	± 0.12	213	220
2194-41	219.4		4.1		220[b]	227
2294-41	229.4		4.1		230	237
2394-41	239.4		4.1		240	247
2424-41	242.4		4.1		243	250[b]
2494-41	249.4		4.1		250[b]	257
2594-41	259.4		4.1		260	267
2694-41	269.4		4.1		270	277
2724-41	272.4	± 1.0	4.1	± 0.12	273	280
2794-41	279.4		4.1		280[b]	287
2894-41	289.4		4.1		290	297
2994-41	299.4		4.1		300	307

NOTE Reference number consists of ring internal diameter followed by ring section diameter with decimal points omitted.
[a] A2 Recommended for dynamic sealing. A2
[b] Preferred size in accordance with A2 BS ISO 3320 A2.

Table B.2 — Groove dimensions for static diametral sealing (see Figure 2)

All dimensions in millimetres

"O"-ring ref no.	Cross section diameter A	Radial depth F		Groove width $E^{+0.2}_{0}$	Total diametral clearance G (max.)	Lead-in chamfer C	Max. radius R
		max.	min.				
0294-41 to 2994-41	4.1	3.45	3.30	5.0	0.16	1.0	1.0

Table B.3 — Groove dimensions for dynamic diametral sealing in hydraulic applications (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	Cross section diameter *A*	Radial depth *F*		Groove width $E^{+0.2}_{0}$	Total diametral clearance *G* (max.)	Lead-in chamfer *C*	Max. radius *R*
		max.	min.				
0294-41 to 2944-41	4.1	3.67	3.50	5.5	0.16	0.8	1.0

Table B.4 — Groove dimensions for dynamic diametral sealing in pneumatic applications (see Figure 2)

All dimensions in millimetres

"O"-ring ref. no.	Cross section diameter *A*	Radial depth *F*		Groove width $E^{+0.2}_{0}$	Total diametral clearance *G* (max.)	Lead-in chamfer *C*	Max. radius *R*
		max.	min.				
0294-41 to 2944-41	4.1	3.82	3.73	5.5	0.16	0.8	1.0

Table B.5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure			External pressure			*H*	*R* (max.)
	d (max.)	*D*	*J*	*D*	*d*	*K*		
0294-41	26.5	37		40.5	30			
0314-41	28.5	39		42.5	32			
0324-41	29.5	40		43.5	33			
0344-41	31.5	42		45.5	35			
0354-41	32.5	43		46.5	36			
0364-41	33.5	44	0.16	47.5	37			
0374-41	34.5	45		48.5	38	0.16		
0394-41	36.5	47		50.5	40			
0414-41	38.5	49		52.5	42			
0424-41	39.5	50		53.5	43			
0444-41	41.5	52		55.5	45			
0454-41	42.5	53		56.5	46			
0494-41	46.5	57		60.5	50			
0524-41	49.5	60		63.5	53			
0544-41	51.5	62		65.5	55			
0554-41	52.5	63	0.19	66.5	56			
0594-41	56.5	67		70.5	60			
0624-41	59.5	70		73.5	63			
0644-41	61.5	72		75.5	65	0.19		
0694-41	66.5	77		80.5	70			
0724-41	69.5	80		83.5	73			
0744-41	71.5	82		85.5	75			
0794-41	76.5	87		90.5	80			
0844-41	81.5	92		95.5	85			
0894-41	86.5	97		100.5	90			
0924-41	89.5	100	0.22	103.5	93			
0944-41	91.5	102		105.5	95			
0994-41	96.5	107		110.5	100			
1044-41	101.5	112		115.5	105	0.22		
1094-41	106.5	117		120.5	110			

Table B.5 — Groove dimensions for static face sealing (see Figure 3)

All dimensions in millimetres

"O"-ring ref. no.	Internal pressure			External pressure			H	R (max.)
	d (max.)	D	J	D	d	K		
1144-41	111.5	122		125.5	115			
1174-41	114.5	125		128.5	118		$3.1^{+0.1}_{0}$	1.0
1194-41	116.5	127		130.5	120			
1244-41	121.5	132		135.5	125			
1294-41	126.5	137		140.5	130			
1344-41	131.5	142		145.5	135			
1394-41	136.5	147		150.5	140			
1444-41	141.5	152	0.25	155.5	145			
1494-41	146.5	157		160.5	150			
1524-41	149.5	160		163.5	153	0.25		
1544-41	151.5	162		165.5	155			
1594-41	156.5	167		170.5	160			
1644-41	161.5	172		175.5	165			
1694-41	166.5	177		180.5	170			
1744-41	171.5	182		185.5	175			
1794-41	176.5	187		190.5	180			
1844-41	181.5	192		195.5	185			
1894-41	186.5	197		200.5	190			
1924-41	189.5	200		203.5	193			
1944-41	191.5	202		205.5	195			
1994-41	196.5	207	0.29	210.5	200			
2094-41	206.5	217		220.5	210			
2124-41	209.5	220		223.5	213	0.29		
2194-41	216.5	227		230.5	220			
2294-41	226.5	237		240.5	230			
2394-41	236.5	247		250.5	240			
2424-41	239.5	250		253.5	243			
2494-41	246.5	257		260.5	250			
2594-41	256.5	267		270.5	260			
2694-41	266.5	277		280.5	270			
2724-41	269.5	280	0.32	283.5	273			
2794-41	276.5	287		290.5	280	0.32		
2894-41	286.5	297		300.5	290			
2994-41	296.5	307		310.5	300			

Table B.6 — Dimensions of triangular housing for static sealing (see Figure 4)

All dimensions in millimetres

"O"-ring		Spigot diameter d_1	Diametral clearance G (max.)	Chamfer $M^{+0.12}_{0}$	Maximum radius on spigot T	Spigot length S (min.)
Ref. no.	Cross section diameter A					
0294-41 to 2994-41	4.1	As in Table B.1, column 6	0.16	5.60	2.5	8.0

Publications referred to

[A2] BS 1134, *Assessment of surface texture — Guidance and general information.*

BS 5106, *Specification for dimensions of spiral anti-extrusion back-up rings and their housings.*

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

BS ISO 3601-1, *Fluid power systems — O-rings — Part 1: Inside diameters, cross-sections, tolerances and designation codes.*

BS ISO 3601-2, *Fluid power systems — O-rings — Part 2: Housing dimensions for general applications.*

BS ISO 3601-3, *Fluid power systems — O-rings — Part 3: Quality acceptance criteria.*

ISO 4394-1, *Fluid power systems and components — Cylinder barrels — Part 1: Requirements for steel tubes with specially finished bores.* [A2]

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