

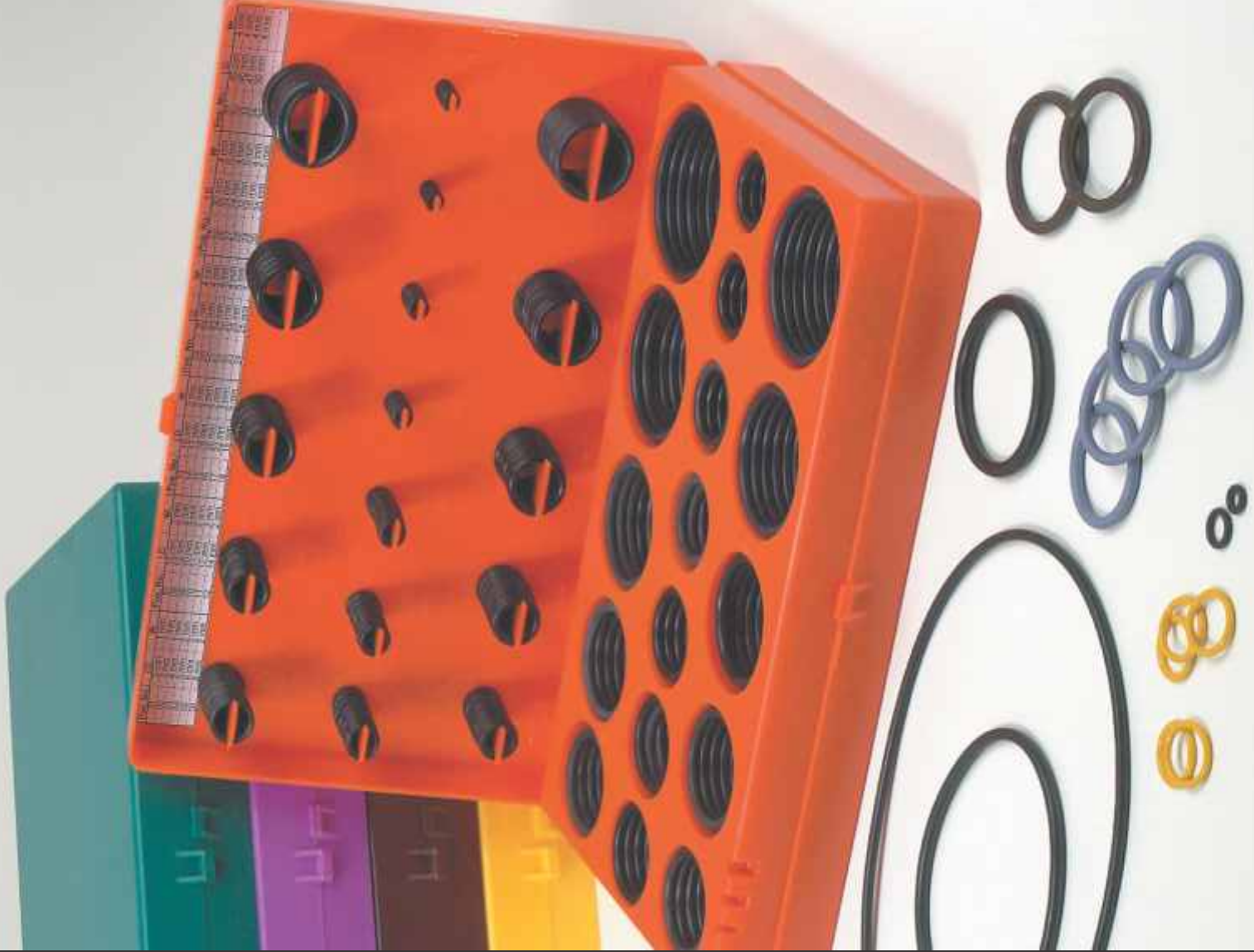


O-RING

Product Overview

BEE4
EMPOWERING SUPPLIER

SANS	ISO 9001
SANS	ISO 14001
SANS	OHSAS 18001



O-ring catalogue

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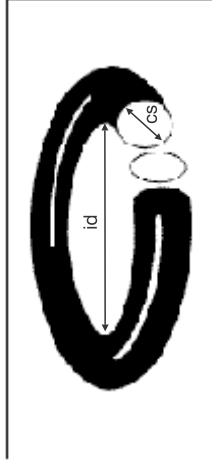
1. O-ring basics

O-rings are closed circular sealing elements. The way they work is based on deformation of the cross section. They are made through vulcanisation from form tools as a complete ring.

The simplicity of the shape of an O-ring and the reliability of its function are ingenious, and that is why they are the most frequently used type of seal. They are also economical to manufacture and easy to fit, which makes them unbeatable.

The O-ring designation is given from the dimension of the cross section thickness and its inner diameter in mm as well as the name of the material.

E.g. OR1.5X25-VF



id = inner diameter
cs = cross section

Mode of operation

The sealing function of the installed O-ring is achieved by compression between two or more elements in the sealing gland groove.

When ready to operate, the medium pressure promotes the deformation and increases the sealing affinity. If the pressure drops to "zero" the deformation reverts almost to the fitted state. See figures 1-4 and 1-5.

Excessive pressures can lead to the O-ring being extruded. See figures 1-6 and 1-7. This is the most common failure and can be eliminated by using harder compounds and or back-up rings.

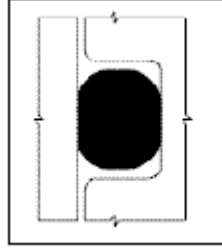


Figure 1-4: O-ring Installed

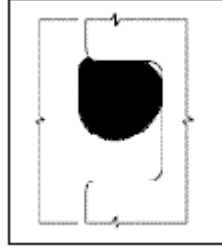


Figure 1-5: O-ring Under Pressure

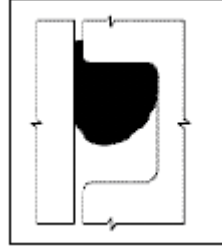


Figure 1-6: O-ring Extruding

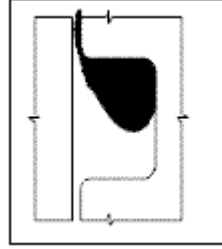


Figure 1-7: O-ring Failure

Applications

We differentiate between the static sealing of non-moving or dynamic sealing in moving machine elements. You will find further details under the design layout section.

Part numbering and identification

The prefix OR is used to identify the article as an O-ring followed by the cross section X inside diameter. A suffix is added for specific materials and non standard hardness's. Refer to the table below -

Examples:

Nitrile O-ring 70 Shore - OR3X10

Viton O-ring 80 Shore - OR2X80-VF

Suffix	Material	Shore hardness
None	Nitrile	70
-90	Nitrile	90
-ACM	Polyacrylate	70
-AFL	Atlas®	80
-EP	EPDM	70
-EPP	EPDM peroxide cured	70
-FEP	PTFE encapsulated	80
-KAL	Kalrez®	80
-PU	Polyurethane	90
-SIL	Silicone	70
-VF	Viton	80

Back-up rings

Back-up rings are used to prevent O-rings from gap extrusion. In the case of the combination of rising pressures and large sealing gaps there is a risk that the O-ring material will be forced into the sealing gap on the low pressure side. If this is repeated several times and the pressure keeps rising the O-ring can be damaged irreversibly and finally completely destroyed.

Back-up rings do not provide any sealing function. By reducing the sealing gap on the low pressure side the ring ensures that the O-ring can fulfill its function without being damaged.

Standard back-up rings are manufactured from PTFE, 90 Shore Nitrile and Polyurethane. Back-ups are available for both imperial and metric O-rings

O-ring cord

O-ring cord is available in various sizes and different materials. Note that the tolerance on the cross sectional diameter of O-ring cord is much bigger than for moulded O-rings.

Standard materials available is Nitrile (70 shore), Viton (80 shore) and Silicone (60 shore). A list of sizes can be found under the section sizes.

2. Design recommendations

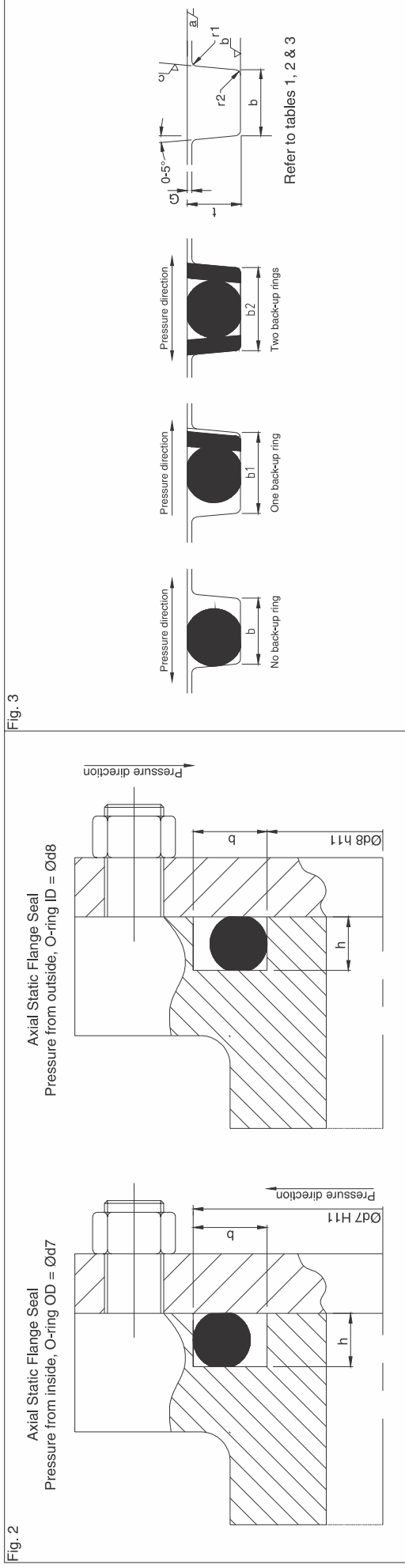


Fig. 3

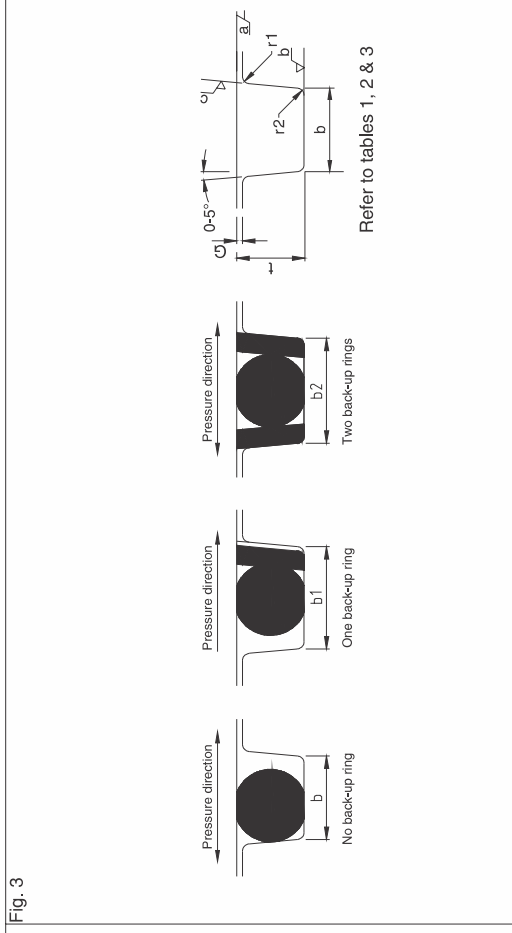


Fig. 4

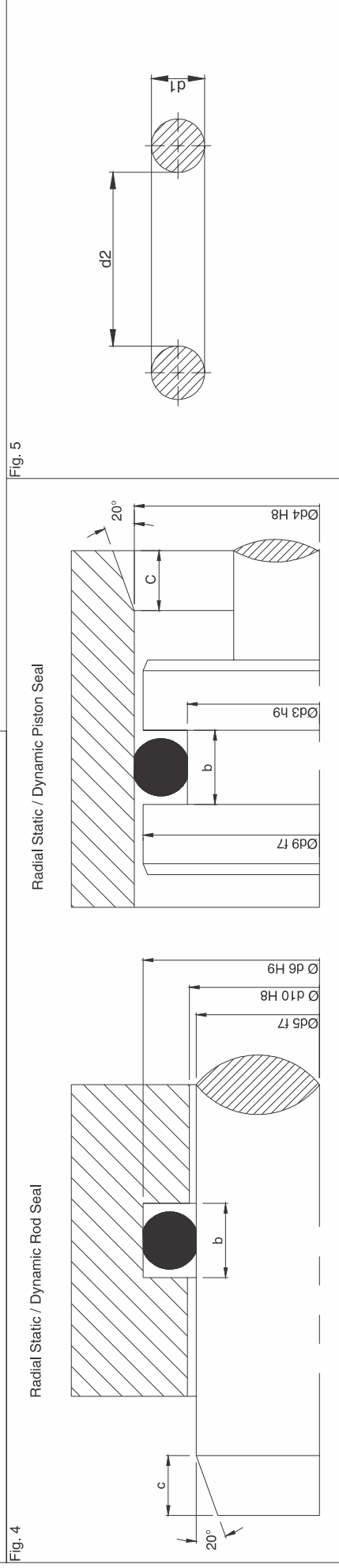


Fig. 5

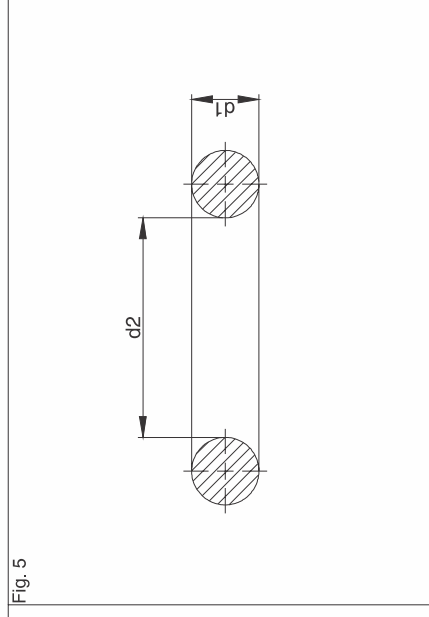


Table 1

Radial and lead in chamfers – r1, r2 & c	r1	r2	c
1.00 - 1.90	0.1	0.3	1.5
2.00 - 2.80	0.2	0.3	2.0
3.00 - 3.70	0.2	0.5	2.5
4.00 - 5.30	0.2	0.6	3.0
5.33 - 6.00	0.2	0.6	3.5
6.50 - 8.00	0.2	0.8	4.0
8.40 - 9.50	0.2	1.0	4.5
10.00 - 15.00	0.2	1.0	5.0

Table 2

Application	Surface qualities – a, b & c				
	Surface	Pressure	R _a (µm)	R _s (µm)	R _{max} (µm)
Static – Radial & Axial	a - Sealing surface	Non pulsating	≤ 1.6	≤ 1.2	≤ 1.6
	b - Groove base		≤ 3.2	≤ 3.2	≤ 6.3
	c - Groove flanks		≤ 6.3	≤ 6.3	≤ 10.0
	a - Sealing surface	Pulsating	≤ 0.8	≤ 6.3	≤ 10.0
	b - Groove base		≤ 1.6	≤ 10.0	≤ 12.5
	c - Groove flanks		≤ 3.2	≤ 12.5	≤ 16.0
Dynamic - Radial	a - Sealing surface		≤ 0.8	≤ 1.6	≤ 3.2
	b - Groove base		≤ 1.6	≤ 3.2	≤ 6.3
	c - Groove flanks		≤ 3.2	≤ 6.3	≤ 10.0

Table 3

Application	Sealing gap - G		Material hardness (Shore A)	
	Pressure (bar)		70.00	80.00
Static	≤ 60		0.20	0.25
	60 - 100		0.10	0.20
	100 - 160		0.05	0.10
	160 - 250		0.05	0.10
Dynamic	250 - 350			0.05
	≤ 30		0.20	0.30
	30 - 60		0.10	0.20
	60 - 80		0.10	0.15
	80 - 100			0.10
	> 100			Use back-up rings

3. Recommended groove dimensions

d1	Radial -Static				Axial - Static				Hydraulic - Dynamic				Pneumatic - Dynamic		
	Groove depth $t^{d1.05}$	Groove width			Groove depth $h^{d1.05}$	Groove width			Groove depth $t^{d1.05}$	Groove width			Groove depth $t^{d1.05}$	Groove width $b^{d1.25}$	
		No backup $b^{d1.25}$	One backup $b1^{d1.25}$	Two backups $b2^{d1.25}$		No backup $b^{d1.25}$	One backup $b1^{d1.25}$	Two backups $b2^{d1.25}$		No backup $b^{d1.25}$	One backup $b1^{d1.25}$	Two backups $b2^{d1.25}$			
1.00	0.75	1.30		0.75	1.40			1.00	0.85	1.30			1.00	0.90	1.20
1.20	0.90	1.60		0.90	1.60			1.20	1.00	1.60			1.20	1.05	1.50
1.25	0.95	1.70		0.95	1.70			1.25	1.04	1.70			1.25	1.10	1.50
1.30	1.00	1.70		1.00	1.70			1.30	1.08	1.70			1.30	1.15	1.60
1.50	1.15	2.00	3.00	1.10	2.10	4.00		1.50	1.25	2.00	3.00	4.00	1.50	1.35	1.80
1.60	1.20	2.10	3.10	1.20	2.20	4.10		1.60	1.35	2.10	3.10	4.10	1.60	1.45	1.90
1.78	1.35	2.40	3.80	1.30	2.50	5.20		1.78	1.50	2.40	3.80	5.20	1.78	1.55	2.20
1.90	1.45	2.50	3.90	1.40	2.70	5.40		1.90	1.60	2.50	3.90	5.40	1.90	1.70	2.30
2.00	1.50	2.60	4.10	1.50	2.80	5.50		2.00	1.68	2.60	4.10	5.50	2.00	1.80	2.40
2.20	1.65	3.00		1.60	3.10			2.20	1.87	3.00			2.20	2.00	2.60
2.40	1.80	3.20	4.60	1.80	3.30	6.00		2.40	2.05	3.20	4.60	6.00	2.40	2.15	2.90
2.50	1.90	3.30	4.70	1.90	3.50	6.10		2.50	2.15	3.30	4.70	6.10	2.50	2.25	3.00
2.62	2.00	3.50	5.00	1.95	3.70	6.40		2.62	2.25	3.50	5.00	6.40	2.62	2.35	3.10
2.70	2.10	3.60		2.10	3.80			2.70	2.32	3.60			2.70	2.45	3.30
2.80	2.20	3.70		2.10	4.00			2.80	2.42	3.70			2.80	2.55	3.40
3.00	2.30	3.90	5.40	2.30	4.10	6.80		3.00	2.58	3.90	5.40	6.80	3.00	2.70	3.60
3.10	2.40	4.10	5.60	2.40	4.20	7.30		3.10	2.70	4.10	5.60	7.30	3.10	2.80	3.70
3.53	2.70	4.70	6.20	2.70	4.90	7.60		3.53	3.08	4.70	6.20	7.60	3.53	3.20	4.30
3.60	2.80	4.80		2.80	5.10			3.60	3.12	4.80			3.60	3.30	4.30
3.70	2.90	4.90		2.90	5.20			3.70	3.22	4.90			3.70	3.40	4.40
4.00	3.20	5.20	6.90	3.10	5.50	8.60		4.00	3.50	5.20	6.90	8.60	4.00	3.70	4.80
4.30	3.40	5.60		3.30	5.90			4.30	3.78	5.60			4.30	4.00	5.10
4.50	3.60	5.80		3.50	6.10			4.50	3.95	5.80			4.50	4.20	5.40
5.00	4.00	6.50	8.30	4.00	6.70	10.00		5.00	4.42	6.50	8.30	10.00	5.00	4.65	5.90
5.33	4.30	7.10	8.80	4.20	7.30	10.50		5.33	4.70	7.10	8.80	10.50	5.33	4.95	6.40
5.50	4.50	7.20		4.50	7.40			5.50	4.88	7.20			5.50	5.15	6.50
5.70	4.60	7.60	8.90	4.60	7.60	10.60		5.70	5.05	7.60	8.90	10.60	5.70	5.35	6.80
6.00	4.90	7.90	9.10	4.80	8.10	10.80		6.00	5.30	7.90	9.10	10.80	6.00	5.60	7.20
6.50	5.40	8.40		5.30	8.60			6.50	5.75	8.40			6.50	6.10	7.80
6.99	5.80	9.40	12.00	5.70	9.70	14.50		6.99	6.20	9.20	12.00	14.50	6.99	6.55	8.40
7.50	6.30	9.80		6.20	10.10			7.50	6.65	9.80			7.50	7.10	8.90
8.00	6.70	10.50	12.30	6.60	10.70	14.80		8.00	7.10	10.50	12.30	14.80	8.00	7.60	9.50
8.40	7.10	10.90	12.50	7.10	11.10	15.00		8.40	7.50	10.90	12.50	15.00	8.40	7.90	10.10
8.50	7.20	11.00		7.20	11.30			8.50	7.60	11.00			8.50	8.00	10.20
9.00	7.70	11.70		7.60	12.00			9.00	8.05	11.70			9.00	8.50	10.80
9.50	8.20	12.30		8.10	12.50			9.50	8.50	12.30			9.50	9.00	11.40
10.00	8.60	13.00		8.50	13.60			10.00	9.00	13.00			10.00	9.50	12.00
10.50	9.00	13.80		8.90	14.00			10.50	9.50	13.80			10.50	10.00	
11.00	9.50	14.30		9.40	14.70			11.00	9.90	14.30			11.00	11.00	
12.00	10.50	15.60		10.40	15.70			12.00	10.90	15.60			12.00	12.00	
15.00	13.20	19.20		13.20	19.40			15.00	13.70	19.20			15.00	15.00	

4. Materials

Elastomer	Abbreviation DIN ISO 1629	Standard hardness (Shore A)	Temp. range (°C)		Usage
			Low	High	
Nitrile	NBR	70	-30	100	<p>Recommended for</p> Mineral gear oil & grease ISO 6743-4 Hydraulic oil Silicon oil & grease Cold water & air HFA, HFB & HFC fluids up to 60°C <p>Not recommended for</p> Super fuel Brake fluids HFDR fluids Strong acids, MEK, Acetone
Fluororubber (Viton®)	FPM	80	-15	200	<p>Recommended for</p> Mineral & silicone oil & grease ISO 6743-4 Hydraulic oil Diesel & fuel HFA & HFB fluids Hot water & air <p>Not recommended for</p> Brake fluid HFC fluid MEK, Acetone
Ethylene propylene	EPDM	70	-45	130	<p>Recommended for</p> Brake fluid Hot water & steam (130°C) HFC & HFDR fluids MEK, Acetone, Alcohol Dilute acids & alkalis Silicone oil & grease <p>Not recommended for</p> Mineral gear oil and grease ISO 6743-4 Hydraulic oil Diesel & petrol HFA & HFB fluids
Silicone	VMQ	60	-55	200	<p>Recommended for</p> Dry heat Water Food & pharmaceutical applications <p>Not recommended for</p> Mineral gear oil & grease ISO 6743-4 Hydraulic oil Silicon oil & grease Diesel & fuel
Polyacrylate	ACM	70	-20	150	<p>Recommended for</p> Diesel & fuel Automatic transmission fluid Power steering fluid Hot water & steam (175°C) Same as EPDM <p>Not recommended for</p> Brake fluid HFC fluid, Alkalis Alcohol, MEK, Acetone
Peroxide cured EPDM	EPP	70	-45	175	<p>Recommended for</p> Hot water & steam (175°C) Same as EPDM <p>Not recommended for</p> Same as EPDM
Hydrogenated Nitrile	HNBR	70	-30	150	<p>Recommended for</p> Higher temperature applications same as Nitrile <p>Not recommended for</p> Same as Nitrile
Chloroprene	CR	70	-30	100	<p>Recommended for</p> Mineral gear oil & grease Cooling agents Weather and ozone applications <p>Not recommended for</p> Strong acids, MEK, Acetone
Polyurethane	AU	90	-40	100	<p>Recommended for</p> Mineral gear oil & grease ISO 6743-4 Hydraulic oil Water & HFC fluid <p>Not recommended for</p> Brake fluid Acids Alkalis
Perfluororubber (Kalrez®)	FFPM	70	-20	300	<p>Recommended for</p> Specialised applications <p>Not recommended for</p> Brake fluid Acids Alkalis
Tetrafluoro-ethylene (Aflas®)	TFE/P	70	0	230	<p>Recommended for</p> Specialised applications <p>Not recommended for</p> Brake fluid Acids Alkalis
Encapsulated rubber	FEP	80	-55	200	<p>Recommended for</p> PTFE jacketed fluororubber Specialised applications <p>Not recommended for</p> Brake fluid Acids Alkalis

Material datasheets - For material datasheets please enquire from your Bearing Man representative.

5. Size listing

5.1. European metric sizes

d1	d2	European	d1	d2	European	d1	d2	European	d1	d2	European	d1	d2	European	d1	d2	European	d1	d2	European	d1	d2	European
1.0	1.2	201-110	1.5	43.0	206-043	1.5	84.0	206-084	1.6	29.1	202-527	2.0	28.0	204-028	2.0	69.0	204-069	2.4	10.3	202-612			
1.5	3.0	206-003	1.5	44.0	206-044	1.5	85.0	206-085	1.6	32.1	202-528	2.0	29.0	204-029	2.0	70.0	204-070	2.4	11.3	202-613			
1.5	4.0	206-004	1.5	45.0	206-045	1.5	86.0	206-086	1.6	35.1	202-529	2.0	30.0	204-030	2.0	71.0	204-071	2.4	12.3	202-614			
1.5	5.0	206-005	1.5	46.0	206-046	1.5	87.0	206-087	1.6	37.1	202-530	2.0	31.0	204-031	2.0	72.0	204-072	2.4	13.3	202-615			
1.5	6.0	206-006	1.5	47.0	206-047	1.5	88.0	206-088	1.78	9.5	201-128	2.0	32.0	204-032	2.0	73.0	204-073	2.4	14.3	202-616			
1.5	7.0	206-007	1.5	48.0	206-048	1.5	89.0	206-089	1.9	2.4	201-112	2.0	33.0	204-033	2.0	74.0	204-074	2.4	15.3	202-617			
1.5	8.0	206-008	1.5	49.0	206-049	1.5	90.0	206-090	1.9	2.6	201-001	2.0	34.0	204-034	2.0	75.0	204-075	2.4	16.3	202-618			
1.5	9.0	206-009	1.5	50.0	206-050	1.5	91.0	206-091	1.9	3.4	201-002	2.0	35.0	204-035	2.0	76.0	204-076	2.4	17.3	202-619			
1.5	10.0	206-010	1.5	51.0	206-051	1.5	92.0	206-092	1.9	4.2	201-003	2.0	36.0	204-036	2.0	77.0	204-077	2.4	18.3	202-620			
1.5	11.0	206-011	1.5	52.0	206-052	1.5	93.0	206-093	1.9	4.9	201-004	2.0	37.0	204-037	2.0	78.0	204-078	2.4	19.3	202-621			
1.5	12.0	206-012	1.5	53.0	206-053	1.5	94.0	206-094	1.9	5.7	201-005	2.0	38.0	204-038	2.0	79.0	204-079	2.4	20.3	202-622			
1.5	13.0	206-013	1.5	54.0	206-054	1.5	95.0	206-095	1.9	6.4	201-105	2.0	39.0	204-039	2.0	80.0	204-080	2.4	21.3	202-623			
1.5	14.0	206-014	1.5	55.0	206-055	1.5	96.0	206-096	1.9	7.2	201-006	2.0	40.0	204-040	2.0	81.0	204-081	2.4	22.3	202-624			
1.5	15.0	206-015	1.5	56.0	206-056	1.5	97.0	206-097	1.9	8.0	201-106	2.0	41.0	204-041	2.0	82.0	204-082	2.4	23.3	202-625			
1.5	16.0	206-016	1.5	57.0	206-057	1.5	98.0	206-098	1.9	8.9	201-007	2.0	42.0	204-042	2.0	83.0	204-083	2.4	25.0	201-139			
1.5	17.0	206-017	1.5	58.0	206-058	1.5	99.0	206-099	1.9	16.0	201-132	2.0	43.0	204-043	2.0	84.0	204-084	2.4	25.3	202-626			
1.5	18.0	206-018	1.5	59.0	206-059	1.5	100.0	206-100	2.0	3.0	204-003	2.0	44.0	204-044	2.0	85.0	204-085	2.4	27.3	202-627			
1.5	19.0	206-019	1.5	60.0	206-060	1.6	2.2	201-111	2.0	4.0	204-004	2.0	45.0	204-045	2.0	86.0	204-086	2.4	30.3	202-628			
1.5	20.0	206-020	1.5	61.0	206-061	1.6	2.75	201-121	2.0	5.0	204-005	2.0	46.0	204-046	2.0	87.0	204-087	2.4	33.3	202-629			
1.5	21.0	206-021	1.5	62.0	206-062	1.6	3.1	202-505	2.0	6.0	204-006	2.0	47.0	204-047	2.0	88.0	204-088	2.5	4	206-104			
1.5	22.0	206-022	1.5	63.0	206-063	1.6	4.1	202-506	2.0	7.0	204-007	2.0	48.0	204-048	2.0	89.0	204-089	2.5	5	206-105			
1.5	23.0	206-023	1.5	64.0	206-064	1.6	5.1	202-507	2.0	8.0	204-008	2.0	49.0	204-049	2.0	90.0	204-090	2.5	6	206-106			
1.5	24.0	206-024	1.5	65.0	206-065	1.6	6.1	202-508	2.0	9.0	204-009	2.0	50.0	204-050	2.0	91.0	204-091	2.5	7	206-107			
1.5	25.0	206-025	1.5	66.0	206-066	1.6	7.1	202-509	2.0	10.0	204-010	2.0	51.0	204-051	2.0	92.0	204-092	2.5	8	206-108			
1.5	26.0	206-026	1.5	67.0	206-067	1.6	8.1	202-510	2.0	11.0	204-011	2.0	52.0	204-052	2.0	93.0	204-093	2.5	9	206-109			
1.5	27.0	206-027	1.5	68.0	206-068	1.6	9.1	202-511	2.0	12.0	204-012	2.0	53.0	204-053	2.0	94.0	204-094	2.5	10	206-110			
1.5	28.0	206-028	1.5	69.0	206-069	1.6	10.1	202-512	2.0	13.0	204-013	2.0	54.0	204-054	2.0	95.0	204-095	2.5	11	206-111			
1.5	29.0	206-029	1.5	70.0	206-070	1.6	11.1	202-513	2.0	14.0	204-014	2.0	55.0	204-055	2.0	96.0	204-096	2.5	12	206-112			
1.5	30.0	206-030	1.5	71.0	206-071	1.6	12.1	202-514	2.0	15.0	204-015	2.0	56.0	204-056	2.0	97.0	204-097	2.5	13	206-113			
1.5	31.0	206-031	1.5	72.0	206-072	1.6	13.1	202-515	2.0	16.0	204-016	2.0	57.0	204-057	2.0	98.0	204-098	2.5	14	206-114			
1.5	32.0	206-032	1.5	73.0	206-073	1.6	14.1	202-516	2.0	17.0	204-017	2.0	58.0	204-058	2.0	99.0	204-099	2.5	15	206-115			
1.5	33.0	206-033	1.5	74.0	206-074	1.6	15.1	202-517	2.0	18.0	204-018	2.0	59.0	204-059	2.0	100.0	204-100	2.5	16	206-116			
1.5	34.0	206-034	1.5	75.0	206-075	1.6	16.1	202-518	2.0	19.0	204-019	2.0	60.0	204-060	2.2	6.0	201-126	2.5	17	206-117			
1.5	35.0	206-035	1.5	76.0	206-076	1.6	17.1	202-519	2.0	20.0	204-020	2.0	61.0	204-061	2.2	9.0	201-127	2.5	18	206-118			
1.5	36.0	206-036	1.5	77.0	206-077	1.6	18.1	202-520	2.0	21.0	204-021	2.0	62.0	204-062	2.4	3.3	202-605	2.5	19	206-119			
1.5	37.0	206-037	1.5	78.0	206-078	1.6	19.1	202-521	2.0	22.0	204-022	2.0	63.0	204-063	2.4	4.3	202-606	2.5	20	206-120			
1.5	38.0	206-038	1.5	79.0	206-079	1.6	20.1	202-522	2.0	23.0	204-023	2.0	64.0	204-064	2.4	5.3	202-607	2.5	21	206-121			
1.5	39.0	206-039	1.5	80.0	206-080	1.6	21.1	202-523	2.0	24.0	204-024	2.0	65.0	204-065	2.4	6.3	202-608	2.5	22	206-122			
1.5	40.0	206-040	1.5	81.0	206-081	1.6	22.1	202-524	2.0	25.0	204-025	2.0	66.0	204-066	2.4	7.3	202-609	2.5	23	206-123			
1.5	41.0	206-041	1.5	82.0	206-082	1.6	25.1	202-525	2.0	26.0	204-026	2.0	67.0	204-067	2.4	8.3	202-610	2.5	24	206-124			
1.5	42.0	206-042	1.5	83.0	206-083	1.6	27.1	202-526	2.0	27.0	204-027	2.0	68.0	204-068	2.4	9.3	202-611	2.5	25	206-125			

d1	d2	French
5.33	97.79	R47
5.33	100.97	R48
5.33	104.14	R49
5.33	107.32	R50
5.33	110.49	R51
5.33	113.67	R52
6.99	113.67	R53
6.99	116.84	R54
6.99	120.02	R55
6.99	123.19	R56
6.99	126.37	R57
6.99	129.54	R58
6.99	132.72	R59
6.99	135.89	R60
6.99	139.07	R61
6.99	142.24	R62
6.99	145.42	R63
6.99	148.59	R64
6.99	151.77	R65
6.99	158.12	R66
6.99	164.47	R67
6.99	170.82	R68
6.99	177.17	R69
6.99	183.52	R70
6.99	189.87	R71
6.99	196.22	R72
6.99	202.57	R73
6.99	215.27	R74
6.99	227.97	R75
6.99	240.67	R76
6.99	253.37	R77
6.99	266.07	R78
6.99	278.77	R79
6.99	291.47	R80
6.99	304.17	R81
6.99	316.87	R82

d1	d2	French	Japanese
6.99	329.57	R83	G125
6.99	342.27	R84	G130
6.99	354.97	R85	G135
6.99	367.67	R86	G140
6.99	380.37	R87	G145
6.99	393.07	R88	G25
3.1	24.4	G30	G30
3.1	34.4	G35	G35
3.1	39.4	G40	G40
3.1	44.4	G45	G45
3.1	49.4	G50	G50
3.1	54.4	G55	G55
3.1	59.4	G60	G60
3.1	64.4	G65	G65
3.1	69.4	G70	G70
3.1	74.4	G75	G75
3.1	79.4	G80	G80
3.1	84.4	G85	G85
3.1	94.4	G95	G95
3.1	98.4	G90	G90
3.1	99.4	G100	G100
3.5	21.7	P22A	P22A
3.5	22.1	P22,4	P22,4
3.5	23.7	P24	P24
3.5	24.7	P25	P25
3.5	25.2	P25,5	P25,5
3.5	25.7	P26	P26
3.5	27.7	P28	P28
3.5	28.7	P29	P29
3.5	29.2	P29,5	P29,5
3.5	29.7	P30	P30
3.5	30.7	P31	P31
3.5	31.2	P31,5	P31,5
3.5	31.7	P32	P32
3.5	33.7	P34	P34
3.5	34.7	P35	P35

d1	d2	Japanese
3.5	35.2	P35,5
3.5	35.7	P36
3.5	37.7	P38
3.5	38.7	P39
3.5	39.7	P40
3.5	40.7	P41
3.5	41.7	P42
3.5	43.7	P44
3.5	44.7	P45
3.5	45.7	P46
3.5	47.7	P48
3.5	48.7	P49
3.5	49.7	P50
5.7	101.6	P102
5.7	104.6	P105
5.7	109.6	P110
5.7	111.6	P112
5.7	114.6	P115
5.7	119.6	P120
5.7	124.6	P125
5.7	129.6	P130
5.7	131.6	P132
5.7	134.6	P135
5.7	139.6	P140
5.7	144.6	P145
5.7	149.3	G150
5.7	149.6	P150
5.7	154.3	G155
5.7	159.3	G160
5.7	164.3	G165
5.7	169.3	G170
5.7	174.3	G175
5.7	179.3	G180
5.7	184.3	G185
5.7	189.3	G190
5.7	194.3	G195

d1	d2	Japanese
5.7	199.3	G200
5.7	209.3	G210
5.7	219.3	G220
5.7	229.3	G230
5.7	239.3	G240
5.7	249.3	G250
5.7	259.3	G260
5.7	269.3	G270
5.7	279.3	G280
5.7	289.3	G290
5.7	299.3	G230
5.7	47.6	P48A
5.7	49.6	P50A
5.7	51.6	P52
5.7	52.6	P53
5.7	54.6	P55
5.7	55.6	P56
5.7	57.6	P58
5.7	59.6	P60
5.7	62.6	P63
5.7	64.6	P65
5.7	66.6	P67
5.7	67.6	P62
5.7	69.6	P70
5.7	70.6	P71
5.7	74.6	P75
5.7	79.6	P80
5.7	84.6	P85
5.7	89.6	P90
5.7	94.6	P95
5.7	99.6	P100
8.4	149.5	P150A
8.4	154.5	P155
8.4	159.5	P160
8.4	164.5	P165
8.4	169.5	P170

d1	d2	Japanese
8.4	174.5	P175
8.4	179.5	P180
8.4	184.5	P185
8.4	189.5	P190
8.4	194.5	P195
8.4	199.5	P200
8.4	204.5	P205
8.4	208.5	P209
8.4	209.5	P210
8.4	214.5	P215
8.4	219.5	P220
8.4	224.5	P225
8.4	229.5	P230
8.4	234.5	P235
8.4	239.5	P240
8.4	244.5	P245
8.4	249.5	P250
8.4	254.5	P255
8.4	259.5	P260
8.4	264.5	P265
8.4	269.5	P270
8.4	274.5	P275
8.4	279.5	P280
8.4	284.5	P285
8.4	289.5	P290
8.4	294.5	P295
8.4	299.5	P300
8.4	314.5	P315
8.4	319.5	P320
8.4	334.5	P335
8.4	339.5	P340
8.4	354.5	P355
8.4	359.5	P360
8.4	374.5	P375
8.4	384.5	P385
8.4	399.5	P400

5.4 Imperial British sizes

d1	d2	"R"	BS	UK
1.02	0.74		2-001	
1.02	1.78		2-606	
1.27	1.07		2-002	
1.42	4.70		2-901	
1.52	1.42		2-003	
1.63	6.07		2-902	
1.63	7.65		2-903	
1.78	1.78	R2007	2-004	
1.78	2.57	R2010	2-005	
1.78	2.90	R2012	2-006	R101
1.78	3.17		2-801	
1.78	3.68	R2015	2-007	R102
1.78	4.47	R2018	2-008	R103
1.78	4.76		2-802	
1.78	5.28	R2021	2-009	R104
1.78	6.07	R2025	2-010	R105
1.78	6.35		2-803	
1.78	6.75		2-610	R106
1.78	7.65	R2031	2-011	R107
1.78	7.94		2-804	
1.78	8.73		2-611	R108
1.78	9.25	R2037	2-012	R110
1.78	10.82	R2043	2-013	
1.78	11.11		2-806	R114
1.78	12.42	R2050	2-014	
1.78	14.00	R2056	2-015	
1.78	15.60	R2062	2-016	
1.78	17.17	R2068	2-017	
1.78	18.77	R2075	2-018	
1.78	20.35	R2081	2-019	
1.78	21.95	R2087	2-020	
1.78	23.52	R2093	2-021	
1.78	25.12	R2100	2-022	
1.78	26.70	R2106	2-023	
1.78	28.30	R2112	2-024	
1.78	29.87	R2118	2-025	
1.78	31.47	R2125	2-026	
1.78	33.05	R2131	2-027	

d1	d2	"R"	BS	UK
1.78	34.65	R2137	2-028	
1.78	36.27		2-517	
1.78	37.82		2-029	
1.78	39.45		2-519	
1.78	41.00		2-030	
1.78	44.17		2-031	
1.78	47.35		2-032	
1.78	50.52		2-033	
1.78	53.70		2-034	
1.78	56.87		2-035	
1.78	60.04		2-036	
1.78	63.22		2-037	
1.78	66.40		2-038	
1.78	69.57		2-039	
1.78	72.75		2-040	
1.78	75.92		2-041	
1.78	79.00		2-532	
1.78	82.27		2-042	
1.78	85.34		2-534	
1.78	88.62		2-043	
1.78	91.70		2-536	
1.78	94.97		2-044	
1.78	98.05		2-538	
1.78	101.32		2-045	
1.78	104.40		2-540	
1.78	107.67		2-046	
1.78	110.74		2-542	
1.78	114.02		2-047	
1.78	117.10		2-544	
1.78	120.37		2-048	
1.78	123.44		2-546	
1.78	126.72		2-049	
1.78	129.40		2-548	
1.78	133.07		2-050	
1.78	135.76		2-550	
1.78	138.94		2-551	
1.78	142.11		2-552	
1.78	145.29		2-553	

d1	d2	"R"	BS	UK
1.78	148.46		2-554	
1.78	151.64		2-555	
1.78	154.81		2-556	
1.78	158.00		2-557	
1.78	161.16		2-558	
1.78	164.34		2-559	
1.78	167.51		2-560	
1.78	170.69		2-561	
1.78	173.87		2-562	
1.83	8.92		2-904	
1.83	10.52		2-905	
1.98	11.89		2-906	
2.08	13.46		2-907	
2.21	16.36		2-908	
2.46	17.93		2-909	
2.46	19.18		2-910	
2.62	1.24		2-102	
2.62	2.06		2-103	
2.62	2.84		2-104	
2.62	3.63		2-105	
2.62	4.42		2-106	
2.62	5.23		2-107	
2.62	6.02		2-108	
2.62	7.59		2-109	
2.62	9.13		2-612	R109
2.62	9.19	R3037	2-110	R111
2.62	9.90		2-613	R112
2.62	10.77	R3043	2-111	R113
2.62	11.91		2-614	R115
2.62	12.37	R3050	2-112	R116
2.62	12.70		2-807	
2.62	13.10		2-615	R117
2.62	13.94	R3056	2-113	R118
2.62	15.08		2-616	R119
2.62	15.54	R3062	2-114	R120
2.62	15.88		2-809	R121
2.62	17.12	R3068	2-115	R122
2.62	17.46		2-810	

d1	d2	"R"	BS	UK
2.62	17.86		2-617	R123
2.62	18.72	R3075	2-116	R124
2.62	20.30	R3081	2-117	R127
2.62	20.64		2-812	
2.62	21.89	R3087	2-118	
2.62	22.23		2-813	R130
2.62	23.47	R3093	2-119	
2.62	23.81		2-814	R132
2.62	25.07	R3100	2-120	
2.62	26.64	R3106	2-121	
2.62	28.24	R3112	2-122	
2.62	29.82	R3118	2-123	
2.62	31.42	R3125	2-124	
2.62	32.99	R3131	2-125	
2.62	34.59	R3137	2-126	
2.62	36.17	R3143	2-127	
2.62	37.77	R3150	2-128	
2.62	39.34	R3156	2-129	
2.62	40.94	R3162	2-130	
2.62	42.52	R3168	2-131	
2.62	44.12	R3175	2-132	
2.62	45.69	R3181	2-133	
2.62	47.29	R3187	2-134	
2.62	48.90	R3193	2-135	
2.62	50.47	R3200	2-136	
2.62	52.07	R3206	2-137	
2.62	53.64	R3212	2-138	
2.62	55.25	R3218	2-139	
2.62	56.82	R3225	2-140	
2.62	58.42	R3231	2-141	
2.62	59.99	R3237	2-142	
2.62	61.60	R3243	2-143	
2.62	63.17	R3250	2-144	
2.62	64.77	R3256	2-145	
2.62	66.34	R3262	2-146	
2.62	67.95	R3268	2-147	
2.62	69.52	R3275	2-148	
2.62	71.12	R3281	2-149	

d1	d2	"R"	BS	UK
2.62	72.69		2-150	
2.62	74.30		2-640	
2.62	75.87		2-151	
2.62	77.50		2-641	
2.62	80.60		2-642	
2.62	82.22		2-152	
2.62	83.80		2-643	
2.62	88.57		2-153	
2.62	94.92		2-154	
2.62	101.27		2-155	
2.62	107.62		2-156	
2.62	113.97		2-157	
2.62	120.32		2-158	
2.62	126.67		2-159	
2.62	133.02		2-160	
2.62	139.37		2-161	
2.62	145.72		2-162	
2.62	152.07		2-163	
2.62	158.42		2-164	
2.62	164.77		2-165	
2.62	171.12		2-166	
2.62	177.47		2-167	
2.62	183.82		2-168	
2.62	190.17		2-169	
2.62	196.52		2-170	
2.62	202.87		2-171	
2.62	209.22		2-172	
2.62	215.57		2-173	
2.62	221.92		2-174	
2.62	228.27		2-175	
2.62	234.62		2-176	
2.62	240.97		2-177	
2.62	247.32		2-178	
2.95	21.92		2-911	
2.95	23.47		2-912	
2.95	25.04		2-913	
2.95	26.59		2-914	
2.95	29.74		2-916	
2.95	34.42		2-918	
3.00	37.47		2-920	

d1	d2	"R"	BS	UK
3.00	43.69		2-924	
3.00	53.09		2-928	
3.00	59.36		2-932	
3.50	89.00		2-847	
3.50	147.00		2-848	
3.50	150.00		2-849	
3.53	4.34		2-201	
3.53	5.94		2-202	
3.53	7.52		2-203	
3.53	9.12		2-204	
3.53	10.69		2-205	
3.53	12.29		2-206	
3.53	13.87		2-207	
3.53	15.47		2-208	
3.53	17.04		2-209	
3.53	18.64	R4075	2-210	R125
3.53	20.22	R4081	2-211	R126
3.53	21.82	R4087	2-212	R129
3.53	23.39	R4093	2-213	R131
3.53	24.99	R4100	2-214	R133
3.53	25.80		2-618	R134
3.53	26.57	R4106	2-215	R135
3.53	28.17	R4112	2-216	R136
3.53	29.74	R4118	2-217	R137
3.53	31.34	R4125	2-218	R138
3.53	32.92	R4131	2-219	R139
3.53	34.52	R4137	2-220	R140
3.53	36.09	R4143	2-221	R141
3.53	37.69	R4150	2-222	R142
3.53	39.70		2-824	R144
3.53	40.87	R4162	2-223	R146
3.53	41.28		2-825	R147
3.53	42.86		2-826	
3.53	44.04	R4175	2-224	R149
3.53	44.95		2-827	R150
3.53	46.04		2-828	
3.53	47.22	R4187	2-225	R152
3.53	47.62		2-829	
3.53	49.20		2-830	R153
3.53	50.39	R4200	2-226	R155

d1	d2	"R"	BS	UK
3.53	50.80		2-831	
3.53	52.40		2-832	R156
3.53	53.57	R4212	2-227	R158
3.53	53.97		2-833	
3.53	55.56		2-834	R159
3.53	56.74	R4225	2-228	R161
3.53	57.15		2-835	
3.53	58.74		2-836	R162
3.53	59.92	R4237	2-229	R164
3.53	60.32		2-837	
3.53	61.90		2-838	R165
3.53	63.09	R4250	2-230	R167
3.53	63.50		2-839	
3.53	65.10		2-840	R168
3.53	66.27	R4262	2-231	R170
3.53	66.67		2-841	
3.53	68.26		2-842	R171
3.53	69.44	R4275	2-232	R173
3.53	69.85		2-843	
3.53	71.44		2-844	R174
3.53	72.62	R4287	2-233	R176
3.53	73.02		2-845	
3.53	74.60		2-846	R177
3.53	75.79	R4300	2-234	
3.53	78.97	R4312	2-235	
3.53	82.14	R4325	2-236	
3.53	85.32	R4337	2-237	
3.53	88.49	R4350	2-238	
3.53	91.67	R4362	2-239	
3.53	94.84	R4375	2-240	
3.53	98.02	R4387	2-241	
3.53	101.19	R4400	2-242	
3.53	104.37	R4412	2-243	
3.53	107.54	R4425	2-244	
3.53	110.72	R4437	2-245	
3.53	113.89	R4450	2-246	
3.53	117.07	R4462	2-247	
3.53	120.24	R4475	2-248	
3.53	123.42	R4487	2-249	
3.53	126.59	R4500	2-250	

d1	d2	"R"	BS	UK
3.53	129.77	R4512	2-251	
3.53	132.94	R4525	2-252	
3.53	136.12	R4537	2-253	
3.53	139.29	R4550	2-254	
3.53	142.47	R4562	2-255	
3.53	145.64	R4575	2-256	
3.53	148.82	R4587	2-257	
3.53	151.99	R4600	2-258	
3.53	158.34	R4625	2-259	
3.53	164.69	R4650	2-260	
3.53	171.04	R4675	2-261	
3.53	177.39	R4700	2-262	
3.53	183.74	R4725	2-263	
3.53	190.09	R4750	2-264	
3.53	196.44	R4775	2-265	
3.53	202.79	R4800	2-266	
3.53	209.14	R4825	2-267	
3.53	215.49	R4850	2-268	
3.53	221.84	R4875	2-269	
3.53	228.19	R4900	2-270	
3.53	234.54	R4925	2-271	
3.53	240.89	R4950	2-272	
3.53	247.26	R4975	2-273	
3.53	253.59	R41000	2-274	
3.53	266.29		2-275	
3.53	278.99		2-276	
3.53	291.69		2-277	
3.53	304.39		2-278	
3.53	329.79		2-279	
3.53	355.19		2-280	
3.53	380.59		2-281	
3.53	405.26		2-282	
3.53	430.66		2-283	
3.53	456.06		2-284	
5.33	10.46		2-309	
5.33	12.07		2-310	
5.33	13.64		2-311	
5.33	15.24		2-312	
5.33	16.81		2-313	
5.33	18.42		2-314	

d1	d2	"R"	BS	UK
5.33	19.99		2-315	
5.33	21.59		2-316	
5.33	23.16		2-317	
5.33	24.77		2-318	
5.33	26.34		2-319	
5.33	27.94		2-320	
5.33	29.51		2-321	
5.33	31.12		2-322	
5.33	32.69		2-323	
5.33	34.29		2-324	
5.33	37.47	R6150	2-325	R143
5.33	40.64	R6162	2-326	R145
5.33	43.82	R6175	2-327	R148
5.33	46.99	R6187	2-328	R151
5.33	50.17	R6200	2-329	R154
5.33	53.34	R6212	2-330	R157
5.33	56.52	R6225	2-331	R160
5.33	59.69	R6237	2-332	R163
5.33	62.87	R6250	2-333	R166
5.33	66.04	R6262	2-334	R169
5.33	69.22	R6275	2-335	R172
5.33	72.39	R6287	2-336	R175
5.33	74.63		2-619	R178
5.33	75.57	R6300	2-337	R179
5.33	78.74	R6312	2-338	R180
5.33	79.73		2-620	R181
5.33	81.92	R6325	2-339	R182
5.33	85.09	R6337	2-340	R183
5.33	88.27	R6350	2-341	R184
5.33	89.69		2-621	R185
5.33	91.44	R6362	2-342	R186
5.33	94.62	R6375	2-343	R187
5.33	97.79	R6387	2-344	R188
5.33	100.00		2-622	R189
5.33	100.97	R6400	2-345	R190
5.33	104.14	R6412	2-346	R191
5.33	107.32	R6425	2-347	R192
5.33	109.54		2-623	R193
5.33	110.49	R6437	2-348	R194
5.33	113.67	R6450	2-349	R195

d1	d2	"R"	BS	UK
5.33	116.84		2-350	
5.33	117.48		2-860	R199
5.33	120.02		2-351	R201
5.33	120.65		2-861	
5.33	123.19		2-352	R203
5.33	123.83		2-862	
5.33	126.37		2-353	
5.33	127.00		2-863	R206
5.33	129.54		2-354	
5.33	130.18		2-864	R208
5.33	132.72		2-355	
5.33	133.35		2-865	R210
5.33	135.89		2-356	
5.33	136.53		2-866	R213
5.33	139.07		2-357	
5.33	139.70		2-867	R215
5.33	142.24		2-358	
5.33	142.88		2-868	R217
5.33	145.42		2-359	
5.33	146.05		2-869	R218
5.33	148.59		2-360	
5.33	149.23		2-870	R221
5.33	151.77		2-361	
5.33	155.00		2-644	
5.33	158.12		2-362	
5.33	161.30		2-645	
5.33	164.47		2-363	
5.33	167.70		2-646	
5.33	170.82		2-364	
5.33	174.00		2-647	
5.33	177.17		2-365	
5.33	183.52		2-366	
5.33	189.87		2-367	
5.33	196.22		2-368	
5.33	202.57		2-369	
5.33	208.92		2-370	
5.33	215.27		2-371	
5.33	221.62		2-372	
5.33	227.97		2-373	
5.33	234.32		2-374	

d1	d2	"R"	BS	UK
5.33	240.67		2-375	
5.33	247.02		2-376	
5.33	253.37		2-377	
5.33	266.07		2-378	
5.33	278.77		2-379	
5.33	291.47		2-380	
5.33	304.17		2-381	
5.33	329.57		2-382	
5.33	354.97		2-383	
5.33	380.37		2-384	
5.33	405.26		2-385	
5.33	430.66		2-386	
5.33	456.06		2-387	
5.33	481.41		2-388	
5.33	506.81		2-389	
5.33	532.21		2-390	
5.33	557.61		2-391	
5.33	582.68		2-392	
5.33	608.08		2-393	
5.33	633.48		2-394	
5.33	658.88		2-395	
6.99	113.67	R8450	2-425	R196
6.99	114.70		2-624	R197
6.99	116.84	R8462	2-426	R198
6.99	120.02	R8475	2-427	R200
6.99	123.19	R8487	2-428	R202
6.99	124.60		2-625	R204
6.99	126.37	R8500	2-429	R205
6.99	129.54	R8512	2-430	R207
6.99	132.72	R8525	2-431	R209
6.99	134.50		2-626	R211
6.99	135.89	R8537	2-432	R212
6.99	139.07	R8550	2-433	R214
6.99	142.24	R8562	2-434	R216
6.99	145.42	R8575	2-435	R218
6.99	148.59	R8587	2-436	R220
6.99	151.77	R8600	2-437	R222
6.99	155.60		2-872	R223
6.99	158.12	R8625	2-438	R224
6.99	159.50		2-627	R225

d1	d2	"R"	BS	UK
6.99	161.90		2-874	R226
6.99	164.47	R8650	2-439	R227
6.99	166.70		2-628	R228
6.99	168.30		2-876	R229
6.99	170.82	R8675	2-440	R230
6.99	174.60		2-878	R231
6.99	177.17	R8700	2-441	R232
6.99	181.00		2-880	R233
6.99	183.52	R8725	2-442	R234
6.99	187.30		2-882	R235
6.99	189.87	R8750	2-443	R236
6.99	193.70		2-884	R237
6.99	196.22	R8775	2-444	R238
6.99	200.00		2-886	R239
6.99	202.57	R8800	2-445	R240
6.99	208.92	R8825	2-674	
6.99	215.27	R8850	2-446	R242
6.99	221.62	R8875	2-676	
6.99	227.97	R8900	2-447	R244
6.99	234.32	R8925	2-678	
6.99	240.67	R8950	2-448	R246
6.99	247.00	R8975	2-680	
6.99	253.37	R81000	2-449	R248
6.99	259.70	R81025	2-682	
6.99	266.07	R81050	2-450	R250
6.99	272.40	R81075	2-684	
6.99	278.77	R81100	2-451	R252
6.99	285.10	R81125	2-686	
6.99	291.47	R81150	2-452	R254
6.99	297.80	R81175	2-688	
6.99	304.17	R81200	2-453	R256
6.99	310.50		2-648	
6.99	316.87	R81250	2-454	R257
6.99	323.20		2-649	
6.99	329.57	R81300	2-455	R258
6.99	335.90		2-650	
6.99	342.27	R81350	2-456	R259
6.99	354.97	R81400	2-457	R260
6.99	367.67	R81450	2-458	R261
6.99	380.37	R81500	2-459	R262

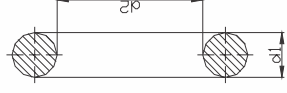
d1	d2	"R"	BS	UK
6.99	393.07	R81550	2-460	R263
6.99	405.26		2-461	
6.99	417.96		2-462	
6.99	430.66		2-463	
6.99	443.36		2-464	
6.99	456.06		2-465	
6.99	468.76		2-466	
6.99	481.46		2-467	
6.99	494.16		2-468	
6.99	506.86		2-469	
6.99	532.26		2-470	
6.99	557.66		2-471	
6.99	582.68		2-472	
6.99	608.08		2-473	
6.99	633.48		2-474	
6.99	658.88		2-475	

6. O-ring cord sizes and tolerances

Cross section d1	Tol. ±
1.78	0.20
2.00	0.20
2.40	0.25
2.50	0.25
2.62	0.25
3.00	0.25
3.20	0.35
3.50	0.35
3.53	0.35
4.00	0.35
4.50	0.40
5.00	0.40
5.33	0.40
5.50	0.40
5.70	0.40
6.00	0.40
6.35	0.55
6.50	0.55
6.99	0.55
7.00	0.55
7.50	0.55
8.00	0.55
8.40	0.55
8.50	0.55
9.00	0.55
10.00	0.55
11.00	0.65
12.00	0.65
13.00	0.65
14.00	0.65
15.00	0.65
16.00	0.65
18.00	0.85
20.00	0.85
22.00	0.85
25.00	1.00
30.00	1.00

7. O-ring dimensional tolerances to DIN ISO 3601 and DIN 3771

d1	Tol	d2	Tol	d2	Tol	d2	Tol
≤ 1.8	± 0.08	33.5	± 0.32	100.0	± 0.84	335.0	± 2.43
≤ 2.7	± 0.09	34.5	± 0.33	103.0	± 0.87	345.0	± 2.49
≤ 3.6	± 0.10	35.5	± 0.34	106.0	± 0.89	355.0	± 2.56
≤ 5.3	± 0.13	36.5	± 0.35	109.0	± 0.91	365.0	± 2.62
≤ 7.0	± 0.15	37.5	± 0.36	112.0	± 0.93	375.0	± 2.68
≤ 8.0	± 0.16	38.7	± 0.37	115.0	± 0.95	387.0	± 2.76
≤ 10.0	± 0.18	40.0	± 0.38	118.0	± 0.97	400.0	± 2.84
		41.2	± 0.39	122.0	± 1.00	412.0	± 2.91
		42.5	± 0.40	125.0	± 1.03	425.0	± 2.99
		43.7	± 0.41	128.0	± 1.05	437.0	± 3.07
		45.0	± 0.42	132.0	± 1.08	475.0	± 3.30
		46.2	± 0.43	136.0	± 1.10	487.0	± 3.37
		47.5	± 0.44	140.0	± 1.13	500.0	± 3.45
		48.7	± 0.45	145.0	± 1.17	515.0	± 3.54
		50.0	± 0.46	150.0	± 1.20	530.0	± 3.63
		51.5	± 0.47	175.0	± 1.24	545.0	± 3.72
		53.0	± 0.48	180.0	± 1.41	560.0	± 3.81
		54.5	± 0.50	185.0	± 1.44	580.0	± 3.93
		56.0	± 0.51	190.0	± 1.48	600.0	± 4.05
		58.0	± 0.54	615.0	± 4.13	630.0	± 4.22
		60.0	± 0.54	200.0	± 1.55	650.0	± 4.34
		61.5	± 0.55	206.0	± 1.59	670.0	± 4.46
2.5	± 0.13	63.0	± 0.56	212.0	± 1.63	>670	± 0.70%
4.5	± 0.14	65.0	± 0.58	218.0	± 1.67		
6.3	± 0.15	67.0	± 0.59	224.0	± 1.71		
8.5	± 0.16	69.0	± 0.61	230.0	± 1.75		
10.0	± 0.17	71.0	± 0.63	236.0	± 1.79		
11.2	± 0.18	73.0	± 0.64	243.0	± 1.83		
14.0	± 0.19	75.0	± 0.66	250.0	± 1.88		
16.0	± 0.20	77.5	± 0.67	258.0	± 1.93		
18.0	± 0.21	80.0	± 0.69	265.0	± 1.98		
20.0	± 0.22	82.5	± 0.71	272.0	± 2.02		
21.2	± 0.23	85.0	± 0.73	280.0	± 2.08		
23.6	± 0.24	87.5	± 0.75	290.0	± 2.14		
25.0	± 0.25	90.0	± 0.77	300.0	± 2.21		
26.5	± 0.26	92.5	± 0.79	307.0	± 2.25		
28.0	± 0.28	95.0	± 0.81	315.0	± 2.30		
30.0	± 0.29	97.5	± 0.83	325.0	± 2.37		
31.5	± 0.31						



8. Industrial O-ring kits, Splicing kits, Quad-ring kits

Kit number	Kit contains O-rings for the following applications	Pcs
ORK IMP	Imperial sizes in 70 shore Nitrile	407
ORK IMP-90	Imperial sizes in 90 shore Nitrile	407
ORK IMP-EP	Imperial sizes in 70 shore silicone	407
ORK IMP-SIL	Imperial sizes in 70 shore EPDM	407
ORK IMP-VF	Imperial sizes in 80 shore Viton	407
ORK JAP	Japanese imperial sizes in 70 shore Nitrile	380
ORK JAP-90	Japanese imperial sizes in 90 shore Nitrile	380
ORK MAX	Flange, boss and standard imperial cross sections	1377
ORK METRIC	Metric sizes in 70 shore Nitrile	407
ORK METRIC-90	Metric sizes in 90 shore Nitrile	407
ORK METRIC-EP	Metric sizes in 70 shore Silicone	407
ORK METRIC-SIL	Metric sizes in 70 shore EPDM	407
ORK METRIC-VF	Metric sizes in 80 shore Viton	407
ORK PICKSET	Pick set for extraction of O-rings	
ORK PTFE	Imperial sizes in PTFE	325
ORK QUAD	Imperial size quad rings in 80 shore Nitrile	226
BUK IMP	Imperial size backup rings in 90 shore Nitrile	293
BUK IMP PTFE	Imperial size backup rings in PTFE	
SPK IMP	Splicing kit 1/16" - 1/4" cord in 70 shore Nitrile	325
SPK IMP-L	Splicing kit 5/16" - 1/2" cord in 70 shore Nitrile	
SPK IMP-VF	Splicing kit 1/16" - 1/4" cord in 80 shore Viton	
SPK METRIC	Splicing kit 2mm - 6mm cord in 70 shore Nitrile	
SPK METRIC-L	Splicing kit 6mm - 15mm cord in 70 shore Nitrile	
SPK METRIC-VF	Splicing kit 2mm - 6mm cord in 80 shore Viton	

9. O-ring kits for fittings, flanges and hoses

Kit number	Kit contains O-rings for the following applications	Pcs
ORK BOSS-90	Flange & Boss imperial sizes in 90 shore Nitrile	250
ORK FACE	Flat face hose end imperial sizes in 90 shore Nitrile	155
ORK FLANGE	Flange imperial sizes in 70/90 shore Nitrile	70
ORK HOSE&ADAPTOR	SAE flange, flat face and pipe fitting sizes in 90 shore Nitrile	216
ORK AEROUQUIP 8-AQFF-90	Flat face ORS fittings	265
ORK AEROUQUIP 24-AQ-90	Flat face ORS fittings Flange fittings Straight thread boss fittings	96 42 95
ORK FLAT FACE 8-PKFF-90	Flat face ORS fittings	265
ORK GATES 8-HOEFF-90	Flat face ORS fittings	265
ORK GATES 24-HOE-97	Flat face ORS fittings Code 61 & 62 SAE flange fittings Straight thread Boss fittings	96 56 79
ORK PARKER 24-PK-90	SAE Seal-lock fittings SAE flange fittings Straight thread boss fittings	96 42 95

10. O-ring kits for earthmoving and off-highway equipment

Kit number	Kit contains O-rings for the following applications	Pcs
ORK AGRI 24-AG-70	Various sizes to fit general agricultural applications	
ORK CASE 8-CSEFF-90	Flat face ORS hose fittings & fittings	265
ORK CASE 24-CSE-90	Flat face fittings Sae flange fittings Straight thread boss fittings	96 56 79
ORK CASE 32-CSE-79	Various sizes to fit general applications incl flat face ORS hose end sizes	451
ORK CASE 33-CSE-70	Various sizes to fit general applications	239
ORK CASE 46-CSE-79	Various sizes for high and low pressure applications	348
ORK CASE 453-CSE-70	Various sizes to fit general applications	417
ORK 4C4782	Various sizes of caterpillar O-rings in Nitrile	570
ORK 4C4784	Various sizes of caterpillar D-rings	70
ORK 4C4786	Various sizes of caterpillar O-rings for air conditioners	
ORK 4C8253	Various sizes of caterpillar O-rings in silicone	149
ORK BD959007	Various sizes of bulldog O-rings in silicone	227
ORK BD959008	Various sizes of bulldog O-rings in Nitrile	227
ORK CAT 8-CAFF-90	Flat face ORS hose fittings & fittings	265
ORK CAT 24-CA-90	O-rings for flat face ORS fittings O-rings for flange fittings O-rings for straight thread boss fittings	96 56 79
ORK CAT 32-CA-79	Flat face ORS hose fittings & fittings	451
ORK CAT 33-CA-75	Various sizes black O-rings for general applications Various sizes black O-rings for high and low pressure applications	233
ORK CAT 33-CA-90	O-rings for flat face ors, flange & straight thread boss fittings D-rings for XT5 and XT6 flanges	231 45
ORK CAT 33-CA-105	Yellow O-rings for use with engine oil and hydraulic fluids on torque converter flat face ORS, transmissions and diffs. High heat low pressure	237
ORK CAT 46-CA-79	Various sizes black O-rings for high and low pressure applications Yellow O-rings for use with engine oil and hydraulic fluids on torque converter flat face ORS, transmissions and diffs. High heat low pressure	349 178
ORK CAT 46-CYB-70	Black O-rings for use with fuel oils, lubricant and coolant applications.	177

Kit number	Kit contains O-rings for the following applications	Pcs
ORK CAT 453-CA-79	Various sizes black O-rings for general applications	381
ORK CAT 466-CYB-70	Yellow O-rings for use with engine oil and hydraulic fluids on torque converter flat face ORS, transmissions and diffs. High heat low pressure Black O-rings for use with fuel oils, lubricant and coolant applications.	253 253
ORK CHAMPION 425-CRM-79	Various sizes to fit general applications	194
ORK DRESSER- GALL 28-DRG-79	Various sizes to fit general applications	228
ORK DRESSER I.H 33-DIH-70	Various sizes to fit general applications	241
ORK DRESSER I.H 46-DIH-79	Various sizes to fit general applications	397
ORK DRESSER I.H 453-DIH-70	Various sizes to fit general applications	437
ORK GROVE 8-GRFF-90	Flat face ors fittings	265
ORK GROVE 223-GR-70	Various sizes to fit general applications	213
ORK HITACHI 24-HIT-79	For EX100 to EX1100 series excavators	185
ORK HITACHI 446-HIT-79	For EX100 to EX3500 series excavators	332
ORK JCB 8JCB	Bonded seals	48
ORK JCB 24-JCB-89	O-rings Bonded seals	160 80
ORK JOHN DEERE 8-JDFF-90	Flat face ORS flat face ors hose end O-rings	265
ORK JOHN DEERE 22-JD-79	Various sizes for high and low pressure applications	198
ORK JOHN DEERE 24-JD-90	Flat face ORS fittings SAE flange fittings Straight thread boss fittings	96 56 79
ORK JOHN DEERE 46-JD-79	Various sizes for high and low pressure applications	408
ORK JOHN DEERE 33-JD-79-1	Various sizes to fit general applications with the 8 sizes "flat face ORS" O-rings	271
ORK JOHN DEERE 453-JD-79	Various sizes to fit general applications with some "flat face ORS" O-rings	455

O-ring kits for earthmoving and off-highway equipment

Kit number	Kit contains O-rings for the following applications	Pcs
ORK KOMATSU 10-KU-90G	"21T green excavator series" O-rings	74
ORK KOMATSU 20-KU-90	"07000 1-series" high pressure O-rings	165
ORK KOMATSU 24-KU-90	"07002-1 series" O-rings "21T green excavator series" O-rings Flat face fittings	220
ORK KOMATSU 26-KU-90	"07000 1-series" high pressure O-rings	210
ORK KOMATSU 30-KU-90	"07000-1 series" O-rings "21T green excavator series" O-rings	239
ORK KOMATSU 40-KU-79	"07000-0 series" O-rings "07000-1 series" O-rings	165 165
ORK KOMATSU 440-KU-79	"07000-0 series" O-rings "07000-1 series" O-rings	153 153
ORK KOMATSU 466-KU-90	"07000-1 series" O-rings "21t green excavator series" O-rings "07002-1 series" O-rings Straight thread Boss fittings, flange, flat face O-rings	567
ORK TEREX 33-TRX-79	Various sizes to fit general applications	237
ORK TEREX 453-TRX-79	Various sizes to fit general applications	452
ORK VOLVO 8-VOFF-90	Flat face ors hose fittings & fittings	265
ORK VOLVO 18-VO-90	Various sizes to fit general applications	178
ORK VOLVO 22-VM-79	Various sizes to fit general applications	193
ORK VOLVO 24-VO-79	Various sizes to fit hose fittings & fittings	298
ORK VOLVO 24-VO-90	Various sizes to fit general applications	219
ORK VOLVO 33-VM-79	Various sizes to fit general applications	270
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