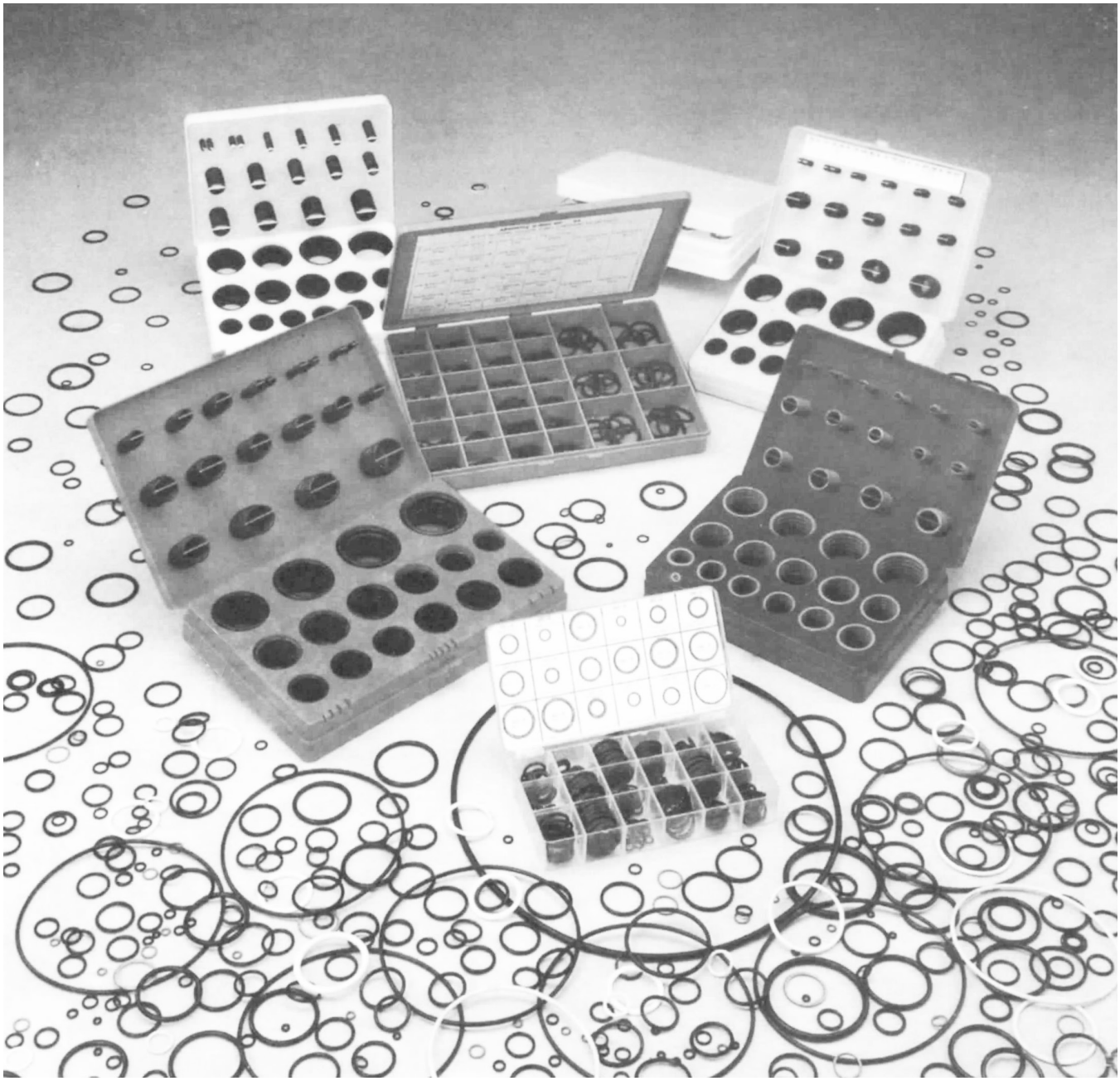
O-RINGS

16

METRIC SIZES AVAILABLE



O-RINGS

LONGWOOD

ILLUSTRATIONS BELOW NOT TO SCALE

Military Specification References

Drawing #	Specification	Static	Dynamic	Fluid	Temperature Range °F Low	High	Elastomer	Comments
AN12395 thru 124050	AMS 7270	X	X	Aircraft fluids	-40	+302	Nitrile	For use in aircraft fuels, both piston (gasoline) and jet engines.
M 25988/1	MIL-R-25988 Class 1, Grade 70	X	X	Aircraft fuels & lubricants	-70	+392	Fluorosilicone	Blue color as required by MIL spec. Not recommended for high pressure dynamic applications.
M 25988/2	MIL-R-25988 Class 3, Grade 75	X	X	Aircraft fuels & lubricants	-70	+437	Fluorosilicone	Blue color as required by MIL spec. Higher modulus and higher temperature resistance.
M 25988/3	MIL-R-25988 Class 1, Grade 60	X	X	Aircraft fuels & lubricants	-70	+392	Fluorosilicone	Blue color as required by MIL spec. Lower durometer. For low pressure applications.
M 25988/4	MIL-R-25988 Class 1, Grade 80	X	X	Aircraft fuels & lubricants	-70	+392	Fluorosilicone	Blue color as required by MIL spec.
M 83248/1	MIL-R-83248 Class 1	X	X	Aircraft fuels & lubricants	-20	+400	Fluorocarbon	Excellent resistance to compression set.
M 83248/2	MIL-R-83248 Class 2	X	X	Aircraft fuels & lubricants	-20	+400	Fluorocarbon	Higher durometer.
M 83461/1A	MIL-P-83461	X	X	MIL-H-5606	-65	+275	Nitrile	Better dynamic performance & longer service life at 257˚F
MS 9020	AMS 7271	X		Aircraft Fuels	-58	+257	Nitrile	This drawing covers tube fitting sizes only.
MS 9021		X	X					This drawing covers all sizes except the tube fitting sizes.
MS 9068	AMS 3304	X		Dry heat & petroleum based lube oils	-85	+400	Silicone	Not recommended for high pressure dynamic applications.
MS 9385	AMS 7267	X		Dry heat & petroleum based lube oils	-85	+500	Silicone	This drawing covers tube fitting sizes only.
MS 9386		X	X					This drawing covers all sizes except the tube fitting sizes.
MS 9387	AMS 7278	X		Aircraft fuels and lubricants	-20	+400	Fluorocarbon	This drawing covers tube fitting sizes only.
MS 9388		X	X					This drawing covers all sizes except the tube fitting sizes.
MS 28775	MIL-P-25732	X	X	MIL-H-5606	-65	+275	Nitrile	MIL-H5606 is the petroleum base hydraulic fluid used in military aircraft (inactive for new designs).
MS 28900	AMS 3209	X		Ozone	-40	+212	Neoprene	For weather resistant seals (Non standard sizes).
MS 29512	MIL-P-5315	X		Aircraft fuels	-65	+158	Nitrile	This drawing covers tube fitting sizes only.
MS 29513		X	X					This drawing covers all sizes except the tube fitting sizes.
MS 29561	MIL-R-7362, Type 1	X	X	Synthetic diester jet engine lubricants (MIL-L-7808)	-65	+257	Nitrile	This drawing covers all sizes except the tube fitting sizes.
NAS 617	MIL-R-7362, Type 1	X	X	Synthetic diester jet engine lubricants (MIL-L-7808)	-65	+257	Nitrile	This drawing covers tube fitting sizes only.
NAS 1601	NAS 1613 Class 1	X	X	Phosphate ester	-65	+250	Ethylene Propylene	This drawing covers all sizes except the tube fitting sizes. Replaces NAS 1611 which is inactive for the new design.
NAS 1602	NAS 1613 Class 2	X		Hydraulic fluid (Skydrol)				This drawing covers tube fitting sizes only. Replaces NAS 1612 which is inactive for the new design.
NAS 1611	NAS 1613 Class 1	X	X	Phosphate ester	-65	+250	Ethylene Propylene	This drawing covers all sizes except the tube fitting sizes. Inactive for the new design.
NAS 1612	NAS 1613 Class 2	X		Hydraulic fluid (Skydrol)				This drawing covers tube fitting sizes only. Inactive for the new design.

Abbreviations used above: AMS—Aerospace Material Specification; AN—Army/Navy; ASTM—American Society for Testing and Materials; M—Military; MS—Military Standard; NAS—National Aerospace Standard SAE—Society of Automotive Engineers

O-RING MATERIALS

MATERIALS AND DUROMETERS AVAILABLE AS STANDARDS

BUNA-N (Nitrile) (NBR)

The standard for most general applications: petroleum-base lubricants, hydraulic oils, gasoline, fuels, alcohol, LP gasses, water, and many other media.

Temperature Range: -65 to +300°F

NEOPRENE (Chloroprene) (CR)

Recommended for refrigeration freon gases, carbon dioxide gases, chlorine, ozone, sunlight exposure, and for use as drive belts. F.D.A. - approved for food and beverages. Odorless, tasteless, and non-toxic.

Temperature Range: -80 to +260°F

ETHYLENE-PROPYLENE (EPDM)

For hot water, steam, acids, alcohols, alkalis, keytones, phosphate esters, brake fluids, drive belts, and exposure to oxygen, ozone, and weathering.

Temperature Range: -67 to +302°F

FLUOROCARBON (Viton) (Fluorel)

High-temperature toughness, stability, and compatibility with a wide range of fluid and chemical types, including acids, oils, fuels, solvents, and gasses.

Temperature Range: -65 to +500°F

SILICONE

Compatible with a variety of fluids, air, oxygen, ozone, and other media for extremes of low and high temperature applications.

Temperature Range: -85 to +500°F

FLUOROSILICONE

Recommended where extreme temperature properties are required. For petroleum oils, fuels, and lubricants; synthetic ester and diester lubricants.

Temperature Range: -112 to +520°F

CAST POLYURETHANE

Extremely high tensile abrasion resistance with elongation that allows easy installation. Highly recommended for cylinder design for a wide variety of hydraulic fluids.

Temperature Range: -65 to +225°F

IN ADDITION...

O-Rings are also available in all rubber elastomers, synthetic or natural, including:

•Hytrel •Teflon (TFE)
•Natural S.B.R.
(G.R.S.—government rubber-styrene)
•Buna S
•Butyl Hydrin Hypolon Thiokol-Polyrulfide
•Others now under research and development

Back-up Rings available in Teflon, Urethane, Nitrile, and Hytrel

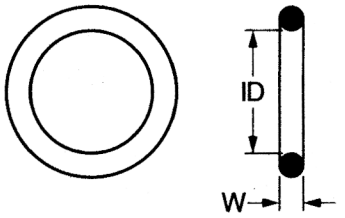
STANDARD INDUSTRIAL O-RING GROOVE DIMENSIONS

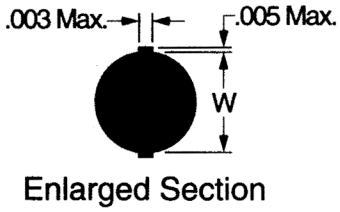
LONGWOOD

ILLUSTRATIONS BELOW NOT TO SCALE

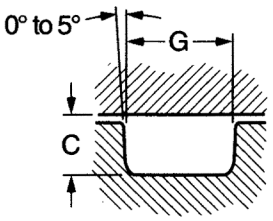
Standard Industrial O-Ring Groove Dimensions

O-Ring AS 568 Sizes	W O-Ring Cross Section	C Gland Depth	Squeeze Inches	Squeeze %	D Diametrical Clear. Max.	G Groove Width: No Backup Rings	G Groove Width: One Backup Ring	G Groove Width: Two Backup Rings	Groove Radius	Eccent. Max.
006–050	.070±.003	.055–.057	.010–.018	15–25	.004	.090	.145	.203	.005–.015	.002
102–178	.103±.003	.087–.090	.010–.019	10–18	.005	.140	.180	.244	.005–.020	.003
201–284	.139±.004	.119–.123	.012–.024	9–17	.006	.180	.217	.296	.005–.030	.004
309–395	.210±.005	.183–.188	.017–.032	8.5–15	.006	.280	.333	.423	.005–.050	.006
425–475	.275±.006	.234–.240	.029–.047	10.5–17	.007	.370	.435	.574	.005–.060	.008

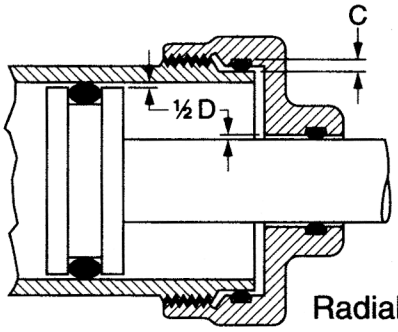




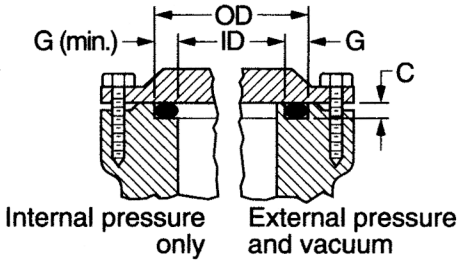
Enlarged Section



Groove Detail



Radial Squeeze Seals



Axial Squeeze Static Seals

O-rings are used primarily as seals, but they are also used in many applications where sealing is not their purpose, such as:

- Drive belts for tape recorders
- Radar—used in waveguide flanges
- Sonar—used in transducers
- Medical equipment—heart/lung/kidney machines
- Plumbing equipment
- Pipelines—fluid and gas
- Toy manufacturers—dolls, airplanes, games, etc.
- Marine and underwater devices
- Dispensing equipment—water, soft drinks, etc.
- Diesel engines
- Air conditioning units
- Vacuum equipment
- Space vehicles
- Butane and propane equipment
- Swimming pool equipment
- Velocity meters and accelerometers
- Gauges
- Fuel injection equipment
- Gas equipment—oxygen, helium, nitrogen, etc.
- Oil field equipment—oil tools, pumps, etc.
- Nuclear power generation—reactors
- Power transmission equipment
- Water purification equipment

NOTE: Tolerances may vary depending on material

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-001	1/32	3/32	1/32	.029±.003	.040±.003
16-002	3/64	9/64	3/64	.042±.003	.050±.003
16-003	1/16	3/16	1/16	.056±.003	.060±.003
16-004	5/64	13/64	1/16	.070±.003	.070±.003
16-005	3/32	7/32	1/16	.101±.005	.070±.003
16-006	1/8	1/4	1/16	.114±.005	.070±.003
16-007	5/32	9/32	1/16	.145±.005	.070±.003
16-008	3/16	5/16	1/16	.176±.005	.070±.003
16-009	7/32	11/32	1/16	.208±.005	.070±.003
16-010	1/4	3/8	1/16	.239±.005	.070±.003
16-011	5/16	7/16	1/16	.301±.005	.070±.003
16-012	3/8	1/2	1/16	.364±.005	.070±.003
16-013	7/16	9/16	1/16	.426±.005	.070±.003
16-014	1/2	5/8	1/16	.489±.005	.070±.003
16-015	9/16	11/16	1/16	.551±.005	.070±.003
16-016	5/8	3/4	1/16	.614±.005	.070±.003
16-017	11/16	13/16	1/16	.676±.005	.070±.003
16-018	3/4	7/8	1/16	.739±.005	.070±.003
16-019	13/16	15/16	1/16	.801±.005	.070±.003
16-020	7/8	1	1/16	.864±.006	.070±.003
16-021	15/16	1 1/16	1/16	.926±.006	.070±.003
16-022	1	1 1/8	1/16	.989±.006	.070±.003
16-023	1 1/16	1 3/16	1/16	1.051±.006	.070±.003
16-024	1 1/8	1 1/4	1/16	1.114±.006	.070±.003
16-025	1 3/16	1 5/16	1/16	1.176±.006	.070±.003
16-026	1 1/4	1 3/8	1/16	1.239±.006	.070±.003
16-027	1 5/16	1 7/16	1/16	1.301±.006	.070±.003
16-028	1 3/8	1 1/2	1/16	1.364±.006	.070±.003
16-029	1 1/2	1 5/8	1/16	1.489±.010	.070±.003
16-030	1 5/8	1 3/4	1/16	1.614±.010	.070±.003
16-031	1 3/4	1 7/8	1/16	1.739±.010	.070±.003
16-032	1 7/8	2	1/16	1.864±.010	.070±.003
16-033	2	2 1/8	1/16	1.989±.010	.070±.003
16-034	2 1/8	2 1/4	1/16	2.114±.010	.070±.003
16-035	2 1/4	2 3/8	1/16	2.239±.010	.070±.003
16-036	2 3/8	2 1/2	1/16	2.364±.010	.070±.003
16-037	2 1/2	2 5/8	1/16	2.489±.010	.070±.003
16-038	2 5/8	2 3/4	1/16	2.614±.010	.070±.003
16-039	2 3/4	2 7/8	1/16	2.739±.015	.070±.003
16-040	2 7/8	3	1/16	2.864±.015	.070±.003
16-041	3	3 1/8	1/16	2.989±.015	.070±.003
16-042	3 1/4	3 3/8	1/16	3.239±.015	.070±.003
16-043	3 1/2	3 5/8	1/16	3.489±.015	.070±.003

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-044	3 3/4	3 7/8	1/16	3.739±.015	.070±.003
16-045	4	4 1/8	1/16	3.989±.015	.070±.003
16-046	4 1/4	4 3/8	1/16	4.239±.015	.070±.003
16-047	4 1/2	4 5/8	1/16	4.489±.015	.070±.003
16-048	4 3/4	4 7/8	1/16	4.739±.015	.070±.003
16-049	5	5 1/8	1/16	4.989±.023	.070±.003
16-050	5 1/4	5 3/8	1/16	5.239±.023	.103±.003
16-110	3/8	9/16	3/32	.362±.005	.103±.003
16-111	7/16	5/8	3/32	.424±.005	.103±.003
16-112	1/2	11/16	3/32	.487±.005	.103±.003
16-113	9/16	3/4	3/32	.549±.005	.103±.003
16-114	5/8	13/16	3/32	.612±.005	.103±.003
16-115	11/16	7/8	3/32	.674±.005	.103±.003
16-116	3/4	15/16	3/32	.737±.005	.103±.003
16-117	13/16	1	3/32	.799±.006	.103±.003
16-118	7/8	1 1/16	3/32	.862±.006	.103±.003
16-119	15/16	1 1/8	3/32	.924±.006	.103±.003
16-120	1	1 3/16	3/32	.987±.006	.103±.003
16-121	1 1/16	1 1/4	3/32	1.049±.006	.103±.003
16-122	1 1/8	1 5/16	3/32	1.112±.006	.103±.003
16-123	1 3/16	1 3/8	3/32	1.174±.006	.103±.003
16-124	1 1/4	1 7/16	3/32	1.237±.006	.103±.003
16-125	1 5/16	1 1/2	3/32	1.299±.006	.103±.003
16-126	1 3/8	1 9/16	3/32	1.362±.006	.103±.003
16-127	1 7/16	1 5/8	3/32	1.424±.006	.103±.003
16-128	1 1/2	1 11/16	3/32	1.487±.006	.103±.003
16-129	1 9/16	1 3/4	3/32	1.549±.010	.103±.003
16-130	1 5/8	1 13/16	3/32	1.612±.010	.103±.003
16-131	1 11/16	1 7/8	3/32	1.674±.010	.103±.003
16-132	1 3/4	1 15/16	3/32	1.737±.010	.103±.003
16-133	1 13/16	2	3/32	1.799±.010	.103±.003
16-134	1 7/8	2 1/16	3/32	1.862±.010	.103±.003
16-135	1 15/16	2 1/8	3/32	1.925±.010	.103±.003
16-136	2	2 3/16	3/32	1.987±.010	.103±.003
16-137	2 1/16	2 1/4	3/32	2.050±.010	.103±.003
16-138	2 1/8	2 5/16	3/32	2.112±.010	.103±.003
16-139	2 3/16	2 3/8	3/32	2.175±.010	.103±.003
16-140	2 1/4	2 7/16	3/32	2.237±.010	.103±.003
16-141	2 5/16	2 1/2	3/32	2.300±.010	.103±.003
16-142	2 3/8	2 9/16	3/32	2.362±.010	.103±.003
16-143	2 7/16	2 5/8	3/32	2.425±.010	.103±.003
16-144	2 1/2	2 11/16	3/32	2.487±.010	.103±.003
16-145	2 9/16	2 3/4	3/32	2.550±.010	.103±.003

O-RINGS

LONGWOOD

NOTE: Tolerances may vary depending on material

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-146	2 5/8	2 13/16	3/32	2.612±.010	.103±.003
16-147	2 11/16	2 7/8	3/32	2.675±.015	.103±.003
16-148	2 3/4	2 15/16	3/32	2.737±.015	.103±.003
16-149	2 13/16	3	3/32	2.800±.015	.103±.003
16-150	2 7/8	3 1/16	3/32	2.862±.015	.103±.003
16-151	3	3 3/16	3/32	2.987±.015	.103±.003
16-152	3 1/4	3 7/16	3/32	3.237±.015	.103±.003
16-153	3 1/2	3 11/16	3/32	3.487±.015	.103±.003
16-154	3 3/4	3 15/16	3/32	3.737±.015	.103±.003
16-155	4	4 3/16	3/32	3.987±.015	.103±.003
16-156	4 1/4	4 7/16	3/32	4.237±.015	.103±.003
16-157	4 1/2	4 11/16	3/32	4.487±.015	.103±.003
16-158	4 3/4	4 15/16	3/32	4.737±.015	.103±.003
16-159	5	5 3/16	3/32	4.987±.015	.103±.003
16-160	5 1/4	5 7/16	3/32	5.237±.023	.103±.003
16-161	5 1/2	5 11/16	3/32	5.487±.023	.103±.003
16-162	5 3/4	5 15/16	3/32	5.737±.023	.103±.003
16-163	6	6 3/16	3/32	5.987±.023	.103±.003
16-164	6 1/4	6 7/16	3/32	6.237±.023	.103±.003
16-165	6 1/2	6 11/16	3/32	6.487±.023	.103±.003
16-166	6 3/4	6 15/16	3/32	6.737±.023	.103±.003
16-167	7	7 3/16	3/32	6.987±.023	.103±.003
16-168	7 1/4	7 7/16	3/32	7.237±.030	.103±.003
16-169	7 1/2	7 11/16	3/32	7.487±.030	.103±.003
16-170	7 3/4	7 15/16	3/32	7.737±.030	.103±.003
16-171	8	8 3/16	3/32	7.987±.030	.103±.003
16-172	8 1/4	8 7/16	3/32	8.237±.030	.103±.003
16-173	8 1/2	8 11/16	3/32	8.487±.030	.103±.003
16-174	8 3/4	8 15/16	3/32	8.737±.030	.103±.003
16-175	9	9 3/16	3/32	8.987±.030	.103±.003
16-176	9 1/4	9 7/16	3/32	9.237±.030	.103±.003
16-177	9 1/2	9 11/16	3/32	9.487±.030	.103±.003
16-178	9 3/4	9 15/16	3/32	9.737±.030	.103±.003
16-210	3/4	1	1/8	.734±.006	.139±.004
16-211	3/16	1 1/16	1/8	.796±.006	.139±.004
16-212	7/8	1 1/8	1/8	.859±.006	.139±.004
16-213	15/16	1 3/16	1/8	.921±.006	.139±.004
16-214	1	1 1/4	1/8	.984±.006	.139±.004
16-215	1 1/16	1 5/16	1/8	1.046±.006	.139±.004
16-216	1 1/8	1 3/8	1/8	1.109±.006	.139±.004
16-217	1 3/16	1 7/16	1/8	1.171±.006	.139±.004
16-218	1 1/4	1 1/2	1/8	1.234±.006	.139±.004
16-219	1 5/16	1 9/16	1/8	1.296±.006	.139±.004

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-220	1 3/8	1 5/8	1/8	1.359±.006	.139±.004
16-221	1 7/16	1 11/16	1/8	1.421±.006	.139±.004
16-222	1 1/2	1 3/4	1/8	1.484±.006	.139±.004
16-223	1 5/8	1 7/8	1/8	1.609±.010	.139±.004
16-224	1 3/4	2	1/8	1.734±.010	.139±.004
16-225	1 7/8	2 1/8	1/8	1.859±.010	.139±.004
16-226	2	2 1/4	1/8	1.984±.010	.139±.004
16-227	2 1/8	2 3/8	1/8	2.109±.010	.139±.004
16-228	2 1/4	2 1/2	1/8	2.234±.010	.139±.004
16-229	2 3/8	2 5/8	1/8	2.359±.010	.139±.004
16-230	2 1/2	2 3/4	1/8	2.484±.010	.139±.004
16-231	2 5/8	2 7/8	1/8	2.609±.010	.139±.004
16-232	2 3/4	3	1/8	2.734±.015	.139±.004
16-233	2 7/8	3 1/8	1/8	2.859±.015	.139±.004
16-234	3	3 1/4	1/8	2.984±.015	.139±.004
16-235	3 1/8	3 3/8	1/8	3.109±.015	.139±.004
16-236	3 1/4	3 1/2	1/8	3.234±.015	.139±.004
16-237	3 3/8	3 5/8	1/8	3.359±.015	.139±.004
16-238	3 1/2	3 3/4	1/8	3.484±.015	.139±.004
16-239	3 5/8	3 7/8	1/8	3.609±.015	.139±.004
16-240	3 3/4	4	1/8	3.734±.015	.139±.004
16-241	3 7/8	4 1/8	1/8	3.859±.015	.139±.004
16-242	4	4 1/4	1/8	3.984±.015	.139±.004
16-243	4 1/8	4 3/8	1/8	4.109±.015	.139±.004
16-244	4 1/4	4 1/2	1/8	4.234±.015	.139±.004
16-245	4 3/8	4 5/8	1/8	4.359±.015	.139±.004
16-246	4 1/2	4 3/4	1/8	4.484±.015	.139±.004
16-247	4 5/8	4 7/8	1/8	4.609±.015	.139±.004
16-248	4 3/4	5	1/8	4.734±.015	.139±.004
16-249	4 7/8	5 1/8	1/8	4.859±.015	.139±.004
16-250	5	5 1/4	1/8	4.984±.015	.139±.004
16-251	5 1/8	5 3/8	1/8	5.109±.023	.139±.004
16-252	5 1/4	5 1/2	1/8	5.234±.023	.139±.004
16-253	5 3/8	5 5/8	1/8	5.359±.023	.139±.004
16-254	5 1/2	5 3/4	1/8	5.484±.023	.139±.004
16-255	5 5/8	5 7/8	1/8	5.609±.023	.139±.004
16-256	5 3/4	6	1/8	5.734±.023	.139±.004
16-257	5 7/8	6 1/8	1/8	5.859±.023	.139±.004
16-258	6	6 1/4	1/8	5.984±.023	.139±.004
16-259	6 1/4	6 1/2	1/8	6.234±.023	.139±.004
16-260	6 1/2	6 3/4	1/8	6.484±.023	.139±.004
16-261	6 3/4	7	1/8	6.734±.023	.139±.004
16-262	7	7 1/4	1/8	6.984±.023	.139±.004

NOTE: Tolerances may vary depending on material

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-263	7 ¼	7 ½	⅛	7.234±.030	.139±.004
16-264	7 ½	7 ¾	⅛	7.484±.030	.139±.004
16-265	7 ¾	8	⅛	7.734±.030	.139±.004
16-266	8	8 ¼	⅛	7.984±.030	.139±.004
16-267	8 ¼	8 ½	⅛	8.234±.030	.139±.004
16-268	8 ½	8 ¾	⅛	8.484±.030	.139±.004
16-269	8 ¾	9	⅛	8.734±.030	.139±.004
16-270	9	9 ¼	⅛	8.984±.030	.139±.004
16-271	9 ¼	9 ½	⅛	9.234±.030	.139±.004
16-272	9 ½	9 ¾	⅛	9.484±.030	.139±.004
16-273	9 ¾	10	⅛	9.734±.030	.139±.004
16-274	10	10 ¼	⅛	9.984±.030	.139±.004
16-275	10 ½	10 ¾	⅛	10.484±.030	.139±.004
16-276	11	11 ¼	⅛	10.494±.030	.139±.004
16-277	11 ½	11 ¾	⅛	11.484±.030	.139±.004
16-278	12	12 ¼	⅛	11.984±.030	.139±.004
16-279	13	13 ¼	⅛	12.984±.030	.139±.004
16-280	14	14 ¼	⅛	13.984±.030	.139±.004
16-281	15	15 ¼	⅛	14.984±.030	.139±.004
16-282	16	16 ¼	⅛	15.955±.045	.139±.004
16-283	17	17 ¼	⅛	16.955±.045	.139±.004
16-284	18	18 ¼	⅛	17.955±.045	.139±.004
16-325	1 ½	1 ⅞	3⁄16	1.475±.010	.210±.005
16-326	1 ⅝	2	3⁄16	1.600±.010	.210±.005
16-327	1 ¾	2 ⅛	3⁄16	1.725±.010	.210±.005
16-328	1 ⅞	2 ¼	3⁄16	1.850±.010	.210±.005
16-329	2	2 ⅜	3⁄16	1.975±.010	.210±.005
16-330	2 ⅛	2 ½	3⁄16	2.100±.010	.210±.005
16-331	2 ¼	2 ⅝	3⁄16	2.225±.010	.210±.005
16-332	2 ⅜	2 ¾	3⁄16	2.350±.010	.210±.005
16-333	2 ½	2 ⅞	3⁄16	2.475±.010	.210±.005
16-334	2 ⅝	3	3⁄16	2.600±.015	.210±.005
16-335	2 ¾	3 ⅛	3⁄16	2.725±.015	.210±.005
16-336	2 ⅞	3 ¼	3⁄16	2.850±.015	.210±.005
16-337	3	3 ⅜	3⁄16	2.975±.015	.210±.005
16-338	3 ⅛	3 ½	3⁄16	3.100±.015	.210±.005
16-339	3 ¼	3 ⅝	3⁄16	3.225±.015	.210±.005
16-340	3 ⅜	3 ¾	3⁄16	3.350±.015	.210±.005
16-341	3 ½	3 ⅞	3⁄16	3.475±.015	.210±.005
16-342	3 ⅝	4	3⁄16	3.600±.015	.210±.005
16-343	3 ¾	4 ⅛	3⁄16	3.725±.015	.210±.005
16-344	3 ⅞	4 ¼	3⁄16	3.850±.015	.210±.005
16-345	4	4 ⅜	3⁄16	3.975±.015	.210±.005

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-346	4 ⅛	4 ½	3⁄16	4.100±.015	.210±.005
16-347	4 ¼	4 ⅝	3⁄16	4.225±.015	.210±.005
16-348	4 ⅜	4 ¾	3⁄16	4.350±.015	.210±.005
16-349	4 ½	4 ⅞	3⁄16	4.475±.015	.210±.005
16-350	4 ⅝	5	3⁄16	4.600±.015	.210±.005
16-351	4 ¾	5 ⅛	3⁄16	4.725±.015	.210±.005
16-352	4 ⅞	5 ¼	3⁄16	4.850±.015	.210±.005
16-353	5	5 ⅜	3⁄16	4.975±.015	.210±.005
16-354	5 ⅛	5 ½	3⁄16	5.100±.023	.210±.005
16-355	5 ¼	5 ⅝	3⁄16	5.225±.023	.210±.005
16-356	5 ⅜	5 ¾	3⁄16	5.350±.023	.210±.005
16-357	5 ½	5 ⅞	3⁄16	5.475±.023	.210±.005
16-358	5 ⅝	6	3⁄16	5.600±.023	.210±.005
16-359	5 ¾	6 ⅛	3⁄16	5.725±.023	.210±.005
16-360	5 ⅞	6 ¼	3⁄16	5.850±.023	.210±.005
16-361	6	6 ⅜	3⁄16	5.975±.023	.210±.005
16-362	6 ¼	6 ⅝	3⁄16	6.225±.023	.210±.005
16-363	6 ½	6 ⅞	3⁄16	6.475±.023	.210±.005
16-364	6 ¾	7 ⅛	3⁄16	6.725±.023	.210±.005
16-365	7	7 ⅜	3⁄16	6.975±.023	.210±.005
16-366	7 ¼	7 ⅝	3⁄16	7.225±.030	.210±.005
16-367	7 ½	7 ⅞	3⁄16	7.475±.030	.210±.005
16-368	7 ¾	8 ⅛	3⁄16	7.725±.030	.210±.005
16-369	8	8 ⅜	3⁄16	7.975±.030	.210±.005
16-370	8 ¼	8 ⅝	3⁄16	8.225±.030	.210±.005
16-371	8 ½	8 ⅞	3⁄16	8.475±.030	.210±.005
16-372	8 ¾	9 ⅛	3⁄16	8.725±.030	.210±.005
16-373	9	9 ⅜	3⁄16	8.975±.030	.210±.005
16-374	9 ¼	9 ⅝	3⁄16	9.225±.030	.210±.005
16-375	9 ½	9 ⅞	3⁄16	9.475±.030	.210±.005
16-376	9 ¾	10 ⅛	3⁄16	9.725±.030	.210±.005
16-377	10	10 ⅜	3⁄16	9.975±.030	.210±.005
16-378	10 ½	10 ⅞	3⁄16	10.475±.030	.210±.005
16-379	11	11 ⅜	3⁄16	10.975±.030	.210±.005
16-380	11 ½	11 ⅞	3⁄16	11.475±.030	.210±.005
16-381	12	12 ⅜	3⁄16	11.975±.030	.210±.005
16-382	13	13 ⅜	3⁄16	12.975±.030	.210±.005
16-383	14	14 ⅜	3⁄16	13.975±.010	.210±.005
16-384	15	15 ⅜	3⁄16	14.975±.030	.210±.005
16-385	16	16 ⅜	3⁄16	15.955±.045	.210±.005
16-386	17	17 ⅜	3⁄16	16.955±.045	.210±.005
16-387	18	18 ⅜	3⁄16	17.955±.045	.210±.005
16-388	19	19 ⅜	3⁄16	18.953±.047	.210±.005

O-RINGS

LONGWOOD

NOTE: Tolerances may vary depending on material

O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-389	20	20 3/8	3/16	19.953±.047	.210±.005
16-390	21	21 3/8	3/16	20.953±.047	.210±.005
16-391	22	22 3/8	3/16	21.953±.047	.210±.005
16-392	23	23 3/8	3/16	22.940±.060	.210±.005
16-393	24	24 3/8	3/16	23.940±.060	.210±.005
16-394	25	25 3/8	3/16	24.940±.060	.210±.005
16-395	26	26 3/8	3/16	25.940±.060	.210±.005
16-425	4 1/2	5	1/4	4.475±.015	.275±.006
16-426	4 5/8	5 1/8	1/4	4.600±.015	.275±.006
16-427	4 3/4	5 1/4	1/4	4.725±.015	.275±.006
16-428	4 7/8	5 3/8	1/4	4.850±.015	.275±.006
16-429	5	5 1/2	1/4	4.975±.015	.275±.006
16-430	5 1/8	5 5/8	1/4	5.100±.023	.275±.006
16-431	5 1/4	5 3/4	1/4	5.225±.023	.275±.006
16-432	5 3/8	5 7/8	1/4	5.350±.023	.275±.006
16-433	5 1/2	6	1/4	5.475±.023	.275±.006
16-434	5 5/8	6 1/8	1/4	5.600±.023	.275±.006
16-435	5 3/4	6 1/4	1/4	5.725±.023	.275±.006
16-436	5 7/8	6 3/8	1/4	5.850±.023	.275±.006
16-437	6	6 1/2	1/4	5.975±.023	.275±.006
16-438	6 1/4	6 3/4	1/4	6.225±.023	.275±.006
16-439	6 1/2	7	1/4	6.475±.023	.275±.006
16-440	6 3/4	7 1/4	1/4	6.725±.023	.275±.006
16-441	7	7 1/2	1/4	6.975±.023	.275±.006
16-442	7 1/4	7 3/4	1/4	7.225±.030	.275±.006
16-443	7 1/2	8	1/4	7.475±.030	.275±.006
16-444	7 3/4	8 1/4	1/4	7.725±.030	.275±.006
16-445	8	8 1/2	1/4	7.975±.030	.275±.006
16-446	8 1/2	9	1/4	8.475±.030	.275±.006
16-447	9	9 1/2	1/4	8.975±.030	.275±.006
16-448	9 1/2	10	1/4	9.475±.030	.275±.006
16-449	10	10 1/2	1/4	9.975±.030	.275±.006
16-450	10 1/2	11	1/4	10.475±.030	.275±.006
16-451	11	11 1/2	1/4	10.975±.030	.275±.006
16-452	11 1/2	12	1/4	11.475±.030	.275±.006
16-453	12	12 1/2	1/4	11.975±.030	.275±.006
16-454	12 1/2	13	1/4	12.475±.030	.275±.006
16-455	13	13 1/2	1/4	12.975±.030	.275±.006
16-456	13 1/2	14	1/4	13.475±.030	.275±.006
16-457	14	14 1/2	1/4	13.975±.030	.275±.006
16-458	14 1/2	15	1/4	14.475±.030	.275±.006
16-459	15	15 1/2	1/4	14.975±.030	.275±.006
16-460	15 1/2	16	1/4	15.475±.030	.275±.006

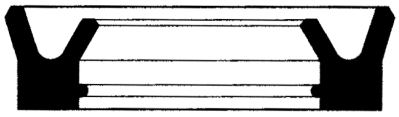
O-Rings A5-568 Sizes					
	Nominal Size			Actual Size	
Part #	ID	OD	W	ID	W
16-461	16	16 1/2	1/4	15.955±.045	.275±.006
16-462	16 1/2	17	1/4	16.455±.045	.275±.006
16-463	17	17 1/2	1/4	16.955±.045	.275±.006
16-464	17 1/2	18	1/4	17.455±.045	.275±.006
16-465	18	18 1/2	1/4	17.955±.045	.275±.006
16-466	18 1/2	19	1/4	18.455±.045	.275±.006
16-467	19	19 1/2	1/4	18.955±.045	.275±.006
16-468	19 1/2	20	1/4	19.455±.045	.275±.006
16-469	20	20 1/2	1/4	19.955±.045	.275±.006
16-470	21	21 1/2	1/4	20.955±.045	.275±.006
16-471	22	22 1/2	1/4	21.955±.045	.275±.006
16-472	23	23 1/2	1/4	22.940±.060	.275±.006
16-473	24	24 1/2	1/4	23.940±.060	.275±.006
16-474	25	25 1/2	1/4	24.940±.060	.275±.006
16-475	26	26 1/2	1/4	25.940±.060	.275±.006

O-Ring Boss Gaskets for Straight Thread Fittings

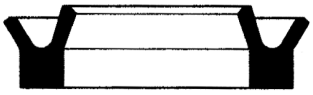
A5-568 Sizes		
	Actual Size	
Part #	ID	W
16-901	.185±.005	.056
16-902	.239±.005	.064
16-903	.301±.005	.064
16-904	.351±.005	.072
16-905	.414±.005	.072
16-906	.468±.005	.078
16-907	.468±.005	.082
16-908	.644±.005	.087
16-909	.706±.005	.097
16-910	.755±.005	.097
16-911	.863±.005	.116
16-912	.924±.006	.116
16-913	.986±.006	.116
16-914	1.047±.006	.116
16-916	1.171±.006	.116
16-918	1.355±.006	.116
16-920	1.475±.010	.118
16-924	1.720±.010	.118
16-928	2.090±.010	.118
16-932	2.337±.010	.118

ILLUSTRATIONS BELOW NOT TO SCALE

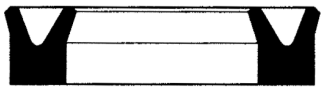
Heavy-Duty Rod U-Seals



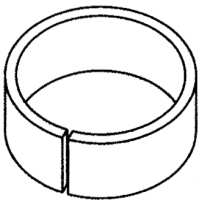
Heavy-Duty Piston U-Seals



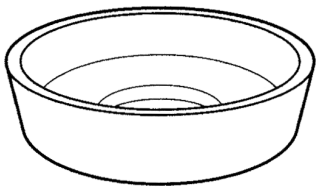
Heavy-Duty U-Seals



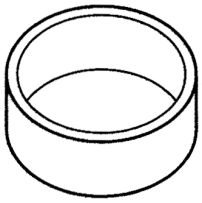
Wear Rings ⅛″ Thick



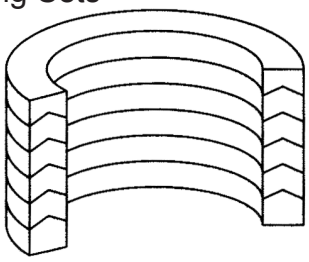
Piston Cups



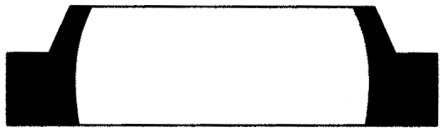
Modular Bearings



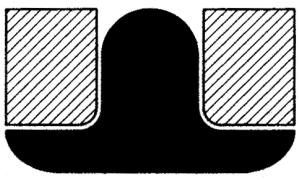
Vee Packing Sets



Urethane Wiper Rings

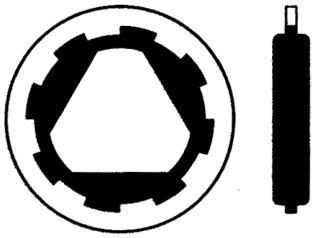


T-Seals



Thread Seal

Seals directly against the threads of a bolt. Self-centering and easily installed.



GASKET SELECTION & DESIGN

LONGWOOD

ILLUSTRATIONS BELOW NOT TO SCALE

Selection Factors

Selection of the most suitable gasket material for a specific application usually involves a number of requirements and is more complex than is readily apparent.

The most important conditions to be considered are the medium to be sealed, the flange temperature, internal pressure, flange construction, and load on the gasket. Other factors that also play a significant role are vibration, torque loss of bolts, and distribution of flange load.

Flange Loads

Flange load usually varies over the area to be sealed, sometimes to a considerable extent. The load tends to be concentrated in the immediate vicinity of the bolts. Thinner flanges exhibit this characteristic more than heavier flanges, since more deformation occurs when the bolt load is applied.

Stamped flanges are particularly susceptible to this condition. The addition of ribs or other reinforcements is frequently used to reduce the amount of deformation.

The guidelines given here are intended to serve as general indicators of the range of average flange loads used for each category. Since each group includes materials with widely varying properties, these loads are only approximate with exceptions to be found in some cases.

500—2000 psi (6.89— 13.78 MPa)
Highly compressible materials.
Protein-glycerine treated cellulose fiber, soft rubber-asbestos

1000—3000 psi (6.89— 20.67 MPa)
Moderately compressible materials.
Rubber-cellulose fiber, medium density rubber-asbestos

2000—5000 psi (13.78—34.47 MPa)
Low compressibility materials.
Medium or high density rubber-asbestos

Temperature

Each type of material possesses a satisfactory maximum working temperature, depending upon its composition. The temperature of the flanges in contact with a gasket must therefore be considered in the selection process.

250˚F (121˚C) max.
Protein-glycerine treated cellulose fiber materials.

300˚F (149˚C) max.
Rubber-cellulose fiber materials.

400–500˚F (204–260˚C) max.
Rubber-asbestos fiber materials.

Sealing Fluids

The most frequently used fluids are petroleum oils, automotive fuels, and water. Flange sealing conditions and other factors already described must be considered along with composition of the gasket material.

In the selection of a suitable material on this basis, certain general criteria can be followed:

Protein-glycerine cellulose fiber materials
Petroleum oils and fuels
Water under some conditions

Styrene or blended rubber-cellulose or asbestos fiber materials
Petroleum oils and fuels under moderate application conditions.
Water—specific material grades.

Nitrile rubber—cellulose or asbestos fiber materials
Petroleum oils and fuels
Water