



O-RINGS DESIGN & REFERENCE

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DESIGNING WITH AUBURN PRP-568 SERIES O-RINGS

O-Rings are the most widely used sealing devices and the availability of hundreds of sizes in a great variety of elastomeric compounds allows the engineer to provide effective and reliable seals for most every application. The following pages contain the necessary information for proper selection and installation of O-Ring seals.

O-RING SIZES

Auburn has included all standard O-Ring sizes in the PRP 568 Universal Series which is in accordance with current industrial and military numbering systems, Specific O-Ring sizes are indicated by "dash numbers." The Size Chart on pages 2-4 contains a complete list of all dash numbers with the nominal and actual dimensions of the O-Rings. As an example, PRP568-214 is a nominal 1" ID x 1 1/4" OD O-Ring with actual dimensions of .984 ± .006 ID x .139 ± .004 W. The PRP Universal Series is a dimensional standard only and applies to compounds with standard shrinkage characteristics during fabrication. Certain Viton and silicone compounds have greater shrinkages and may be slightly undersize.

O-RING COMPOUNDS

Auburn produces O-Rings in various compounds to meet all specifications and applications. After the O-Ring size has been determined, a compound should be selected from page 2. If Auburn Compound appears to be appropriate for an application, for instance, the above mentioned O-Ring would be correctly specified as: PRP568-214 Compound Nitrile

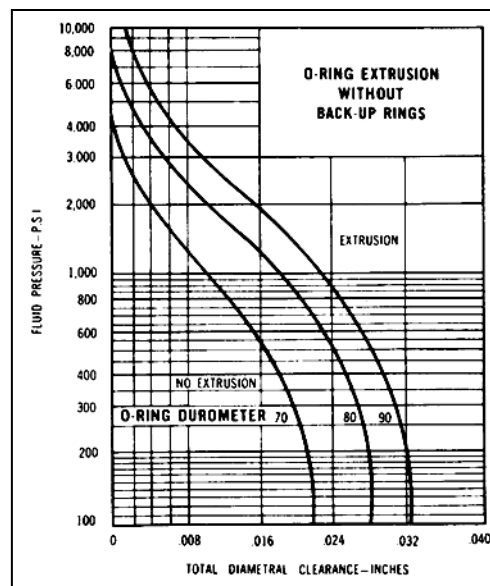
O-RING INSTALLATION

Originally the nominal O-Ring dimensions indicated #9 the installation dimensions. A nominal 1" ID x 1 1/4" OD O-Ring, for instance, would be installed on a 1" piston groove diameter in a 1 1/4" cylinder. For the most effective installations, however, the Installation Data on pages 2-4 should be used. These dimensions allow for the different requirements of internal and external seals as well as reciprocating, rotary and static applications.

The Installation Data Chart tabulates diametral dimensions suitable for production of standard installations. For non-standard applications the following table may be used as a guide. "Gland Depth" which equals the depth of the groove plus the clearance, determines the amount of "squeeze" on the O-Ring for effective sealing.

O-RING CROSS SECTION DIAMETER	GLAND DEPTH	
	RECIPROCATING SEALS	STATIC SEALS
.070	.055/.057	.050/.052
.103	.088/.090	.081/.083
.139	.121/.123	.111/.113
.210	.185/.188	.170/.173
.275	.237/.240	.226/.229

The most effective and reliable sealing is generally provided with the diametral clearances shown in the chart on page 2. When greater clearances occur, however, the graph at the top of the next column indicates conditions where O-Ring seals may be used depending on the fluid pressure and O-Ring hardness. If conditions fall to the right of the curve, extrusion of the O-Ring into the clearance gap will occur, greatly reducing the life of the seal. As an example, with .004 diametral clearance and 2500 psi pressure, extrusion will occur with a 70 durometer O-Ring, but no extrusion will occur with an 80 durometer O-Ring. The effective range of service is considerably greater when back-up rings are used.



TYPICAL AUBURN COMPOUNDS

Auburn produces O-Rings and custom molded parts in a great variety of elastomeric compounds to provide optimum performance in a great variety of applications. The following is a brief introduction to a few of the most popular Auburn compounds:

NITRILE An excellent general purpose nitrile compound suitable for use in most petroleum oils and greases, automotive gasoline, alcohols and glycols, L-P gases, propane and butane fuel oils and many other fluids. Listed by Underwriters' Labs. Good abrasion resistance and excellent resistance to compression set. Temperature range -40° F to +300° F.

SBR A general purpose SBR compound for applications which do not require resistance to petroleum fluids. It is especially suitable for automotive brake fluid service. Temperature range -65° F to +250° F.

FDA NITRILE A nitrile, material for food service, resistant to vegetable and animal oils and fats. This compound utilizes only compounding ingredients listed in the FDA "white list" as suitable for service in contact with foods. Temperature range -40° F to +280° F.

NEOPRENE A general purpose sulfur-free Neoprene compound, having low compression set and good resistance to elevated temperatures. Excellent resistance to sunlight, ozone, and weathering. Also for refrigerator gases such as Freon. Excellent abrasion resistance and flex life, Temperature range -40° F to +300° F. An FDA compound.

EDPM A general purpose ethylene propylene compound with excellent resistance to polar fluids such as water, phosphate esters and ketones, but not resistant to petroleum oils and solvents. Good resistance to heat degradation, compression set, low temperatures, sunlight and weathering. Excellent resistance to ozone and flexing and recommended for belt drive service. Temperature range -40° F to +212° F. For steam service to 300° F.

SILICONE A silicone rubber compound with a temperature range from -100° F to +500° F. It will tolerate even higher temperatures for brief periods and will resist reversion in confined applications. Excellent resistance to compression set, good electrical properties, resistance to weathering and capable of high strength bonds to metals. Moderately resistant to high aniline point petroleum oils, but not recommended for service in low aniline point oils. The compounds have molding shrinkage characteristics equivalent to organic rubbers allowing existing molds, originally designed for organic rubber, to be used.

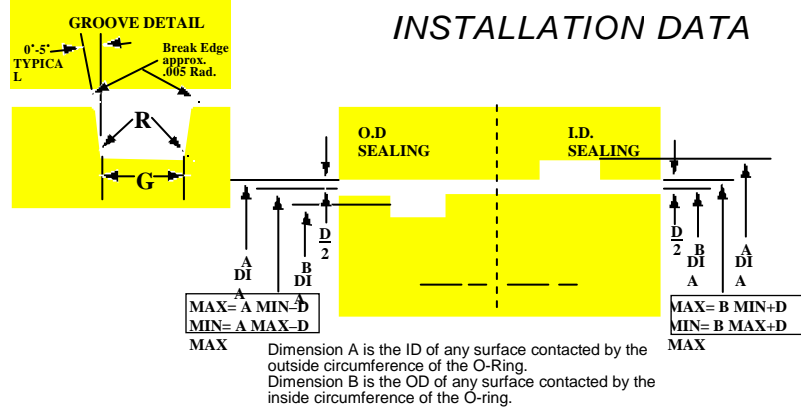
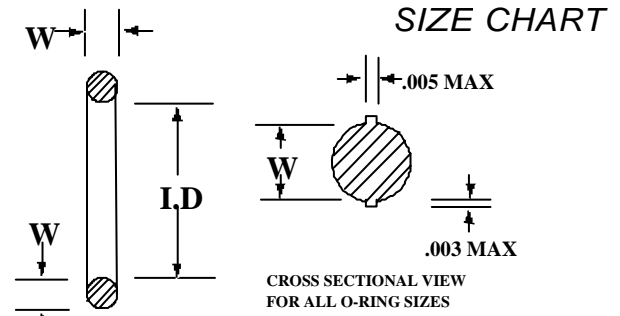
VITON A general purpose Viton compound suitable for applications requiring resistance to high temperatures or aromatic or halogenated solvents. Outstanding resistance to blended aromatic fuels and straight aromatics as well as halogenated hydrocarbons. Good resistance to strong acids. Temperature range -20° F to +500° F with limited serviceability up to +600° F. Temperature range in acid service -20° F to +250° F.

FLUID TABLE

This table shows Auburn compounds that are suitable for use in various fluids. When more than one compound is shown they are in the order of decreasing suitability. It is often necessary to make a compromise choice when several types of fluids and/or applications will be encountered. The temperature range, elastomer type and general characteristics of each compound in the table are included in the descriptive paragraphs.

The table lists only 70 durometer compounds, but equivalent compounds of other hardnesses are also available

FLUIDS	RECOMMENDED COMPOUNDS
ACETONE	EPDM
ACETYLENE	EPDM, NITRILE
ACID, ACETIC	EPDM
ACID, CARBONIC	NITRILE
ACID, CITRIC	NITRILE, NEOPRENE, EPDM
ACID, FATTY	NITRILE, NEOPRENE
ACID, HYDROCHLORIC	EPDM
ACID, NITRIC	VITON
ACID, SULFURIC	VITON
AIR	SILICONE, NITRILE
ALCOHOL, AMYL or ISOPROPYL	EPDM
ALCOHOL, BUTYL (BUTANOL)	NEOPRENE, SBR
ALCOHOL, DENATURED or ETHYL	NEOPRENE, EPDM
ALCOHOL, METHYL (METHANOL)	NEOPRENE, EPDM
AMMONIA, ANHYDROUS LIQUID	NEOPRENE, EPDM
AMMONIA, AQUEOUS	EPDM
AMMONIA GAS, COLD	EPDM, NEOPRENE
AMMONIA GAS, HOT	EPDM, NEOPRENE
ANIMAL OIL (LARD OIL)	EPDM, NITRILE
AROMATIC HYDROCARBONS	VITON
ASPHALT	VITON
ASTM #1 OIL	NEOPRENE, VITON
ASTM #3 OIL	VITON
BEER	FDA NITRILE, NEOPRENE
BENZENE (BENZOL)	VITON
BLAST FURNACE GAS	SILICONE, VITON
BLEACH SOLUTIONS	EPDM
BORON FUELS (HEF)	VITON
BRAKE FLUID, AUTOMOTIVE	SBR, EPDM
CALCIUM CARBONATE	NEOPRENE, EPDM
CALCIUM CHLORIDE	NEOPRENE, EPDM
CALGON	EPDM
CANE SUGAR LIQUORS	NEOPRENE, EPDM
CARBON DIOXIDE	NITRILE
CARBON MONOXIDE, HOT	SILICONE
CARBON TETRACHLORIDE	VITON
CARBONATED BEVERAGES	FDA NITRILE, NEOPRENE
CASTOR OIL	NEOPRENE, SILICONE
CHINA WOOD (TUNG) OIL	NITRILE
CHLORINE	VITON
CHLOROX	NEOPRENE, EPDM, VITON
CHROME PLATING SOLUTIONS	VITON, EPDM
COAL GAS	SILICONE, VITON
COAL TARS	VITON
COCA COLA	FDA NITRILE
COCOANUT OIL	EPDM
COFFEE	FDA NITRILE, NEOPRENE
CORN, COTTONSEED OIL	SILICONE, NEOPRENE
D.D.T.	NITRILE
DEGREASING FLUID (CHLORINATED)	VITON
DETERGENT SOLUTIONS	EPDM, SILICONE
DRILLING MUD (OIL BASE)	NITRILE
DRILLING MUD (WATER BASE)	NEOPRENE
FISH OIL	EPDM, SILICONE
FREON 11, 12, 113	NEOPRENE
FREON, 13, 13B1, 114	NEOPRENE, EPDM
FREON 22	NEOPRENE, EPDM
GASOLINE, AUTOMOTIVE	VITON
GLYCOLS and PRESTONE	NEOPRENE
GREASE (PETROLEUM BASE)	EPDM
HYDRAULIC FLUID (PETROLEUM)	VITON
HYDROGEN GAS	EPDM, NEOPRENE
HYDROLUBE H-2 or U-4	NITRILE
INK (PRINTERS)	NITRILE
KEROSENE	VITON
LINDOL	EPDM, VITON
L.P. GAS	NITRILE
LUBRICATING OILS (MINERAL)	NEOPRENE, VITON
METHANE	NITRILE
METHYL ETHYL KETONE (MEK)	EPDM
MILK	FDA NITRILE
NAPHTHA	VITON
NATURAL GAS	NEOPRENE
NITROGEN	NEOPRENE, EPDM
NITROMETHANE	EPDM, SBR
OIL (CRUDE, FUEL, DIESEL)	VITON
OXYGEN, GASEOUS	NEOPRENE, SILICONE
OZONE	EPDM, SILICONE
PETROLEUM OILS	VITON
PHENOL	VITON
PROPANE	VITON
PYDRAUL	VITON, EPDM
SEWAGE	NEOPRENE, EPDM
SHELLAC	NEOPRENE, EPDM
SILICONE OILS & GREASES	EPDM, SBR
SOAP SOLUTION	NEOPRENE, EPDM
SODIUM CHLORIDE	NEOPRENE, EPDM
STEAM	VITON, EPDM
TETRA ETHYL LEAD	VITON
TOLUENE	VITON
TRANSFORMER OILS	SILICONE
TRANSMISSION FLUID, AUTOMOTIVE	NITRILE
TURPENTINE	VITON
VEGETABLE OILS	FDA NITRILE
WATER	FDA NITRILE, EPDM
WHISKEY, WINES	FDA NITRILE
XYLENE	VITON



AS568 Dash #	Nominal Size (in.)			Actual Size (in.)		Actual Size (mm)	
	I.D.	O.D.	C/S	I.D. +/- Tol.	C/S +/- Tol.	I.D.	C/S
-001	1/32	3/32	1/32	.029±.004	.040±.003	0.74±0.10	1.02±0.08
-002	3/64	9/64	3/64	.042±.004	.050±.003	1.07±0.10	1.27±0.08
-003	1/16	3/16	1/16	.056±.004	.060±.003	1.42±0.10	1.52±0.08
-004	5/64	13/64	1/16	.070±.005	.070±.003	1.78±0.13	1.78±0.08
-005	3/32	7/32	1/16	.101±.005	.070±.003	2.57±0.13	1.78±0.08
-006	1/8	1/4	1/16	.114±.005	.070±.003	2.90±0.13	1.78±0.08
-007	5/32	9/32	1/16	.145±.005	.070±.003	3.68±0.13	1.78±0.08
-008	3/16	5/16	1/16	.176±.005	.070±.003	4.47±0.13	1.78±0.08
-009	7/32	11/32	1/16	.208±.005	.070±.003	5.28±0.13	1.78±0.08
-010	1/4	3/8	1/16	.239±.005	.070±.003	6.07±0.13	1.78±0.08
-011	5/16	7/16	1/16	.301±.005	.070±.003	7.65±0.13	1.78±0.08
-012	3/8	1/2	1/16	.364±.005	.070±.003	9.25±0.13	1.78±0.08
-013	7/16	9/16	1/16	.426±.005	.070±.003	10.82±0.13	1.78±0.08
-014	1/2	5/8	1/16	.489±.005	.070±.003	12.42±0.13	1.78±0.08
-015	9/16	11/16	1/16	.551±.007	.070±.003	14.00±0.18	1.78±0.08
-016	5/8	3/4	1/16	.614±.009	.070±.003	15.60±0.23	1.78±0.08
-017	11/16	13/16	1/16	.676±.009	.070±.003	17.17±0.23	1.78±0.08
-018	3/4	7/8	1/16	.739±.009	.070±.003	18.77±0.23	1.78±0.08
-019	13/16	15/16	1/16	.801±.009	.070±.003	20.35±0.23	1.78±0.08
-020	7/8	1	1/16	.864±.009	.070±.003	21.95±0.23	1.78±0.08
-021	15/16	1-1/16	1/16	.926±.009	.070±.003	23.52±0.23	1.78±0.08
-022	1	1-1/8	1/16	.989±.010	.070±.003	25.12±0.25	1.78±0.08
-023	1-1/16	1-3/16	1/16	1.051±.010	.070±.003	26.70±0.25	1.78±0.08
-024	1-1/8	1-1/4	1/16	1.114±.010	.070±.003	28.30±0.25	1.78±0.08
-025	1-3/16	1-5/16	1/16	1.176±.011	.070±.003	29.87±0.28	1.78±0.08
-026	1-1/4	1-3/8	1/16	1.239±.011	.070±.003	31.47±0.28	1.78±0.08
-027	1-5/16	1-7/16	1/16	1.301±.011	.070±.003	33.05±0.28	1.78±0.08
-028	1-3/8	1-1/2	1/16	1.364±.013	.070±.003	34.65±0.33	1.78±0.08
-029	1-1/2	1-5/8	1/16	1.428±.013	.070±.003	37.82±0.33	1.78±0.08
-030	1-5/8	1-3/4	1/16	1.614±.013	.070±.003	41.00±0.33	1.78±0.08
-031	1-3/4	1-7/8	1/16	1.739±.015	.070±.003	44.17±0.38	1.78±0.08
-032	1-7/8	2	1/16	1.864±.015	.070±.003	47.35±0.38	1.78±0.08
-033	2	2-1/8	1/16	1.989±.018	.070±.003	50.52±0.46	1.78±0.08
-034	2-1/8	2-1/4	1/16	2.114±.018	.070±.003	53.70±0.46	1.78±0.08
-035	2-1/4	2-3/8	1/16	2.239±.018	.070±.003	56.87±0.46	1.78±0.08
-036	2-3/8	2-1/2	1/16	2.364±.018	.070±.003	60.05±0.46	1.78±0.08
-037	2-1/2	2-5/8	1/16	2.489±.018	.070±.003	63.22±0.46	1.78±0.08
-038	2-5/8	2-3/4	1/16	2.614±.020	.070±.003	66.40±0.51	1.78±0.08
-039	2-3/4	2-7/8	1/16	2.739±.020	.070±.003	69.57±0.51	1.78±0.08
-040	2-7/8	3	1/16	2.864±.020	.070±.003	72.75±0.51	1.78±0.08
-041	3	3-1/8	1/16	2.989±.024	.070±.003	75.92±0.61	1.78±0.08
-042	3-1/4	3-3/8	1/16	3.239±.024	.070±.003	82.27±0.61	1.78±0.08
-043	3-1/2	3-5/8	1/16	3.489±.024	.070±.003	88.62±0.61	1.78±0.08
-044	3-3/4	3-7/8	1/16	3.739±.027	.070±.003	94.97±0.69	1.78±0.08
-045	4	4-1/8	1/16	3.989±.027	.070±.003	101.32±0.69	1.78±0.08
-046	4-1/4	4-3/8	1/16	4.239±.030	.070±.003	107.67±0.76	1.78±0.08
-047	4-1/2	4-5/8	1/16	4.489±.030	.070±.003	114.02±0.76	1.78±0.08
-048	4-3/4	4-7/8	1/16	4.739±.030	.070±.003	120.37±0.76	1.78±0.08
-049	5	5-1/8	1/16	4.989±.037	.070±.003	126.72±0.94	1.78±0.08
-050	5-1/4	5-3/8	1/16	5.239±.037	.070±.003	133.07±0.94	1.78±0.08
-102	1/16	1/4	3/32	.049±.005	.103±.003	1.24±0.13	2.62±0.08
-103	3/32	9/32	3/32	.081±.005	.103±.003	2.06±0.13	2.62±0.08
-104	1/8	5/16	3/32	.112±.005	.103±.003	2.84±0.13	2.62±0.08
-105	5/32	11/32	3/32	.143±.005	.103±.003	3.63±0.13	2.62±0.08
-106	3/16	3/8	3/32	.174±.005	.103±.003	4.42±0.13	2.62±0.08

AS568 Dash #	Nominal Size (in.)			Actual Size (in.)		Actual Size (mm)	
	I.D.	O.D.	C/S	I.D. +/- Tol.	C/S +/- Tol.	I.D.	C/S
-107	7/32	13/32	3/32	.206±.005	.103±.003	5.23±0.13	2.62±0.08
-108	1/4	7/16	3/32	.237±.005	.103±.003	6.02±0.13	2.62±0.08
-109	5/16	1/2	3/32	.299±.005	.103±.003	7.59±0.13	2.62±0.08
-110	3/8	9/16	3/32	.362±.005	.103±.003	9.19±0.13	2.62±0.08
-111	7/16	5/8	3/32	.424±.005	.103±.003	10.77±0.13	2.62±0.08
-112	1/2	11/16	3/32	.487±.005	.103±.003	12.37±0.13	2.62±0.08
-113	9/16	3/4	3/32	.549±.007	.103±.003	13.94±0.18	2.62±0.08
-114	5/8	13/16	3/32	.612±.009	.103±.003	15.54±0.23	2.62±0.08
-115	11/16	7/8	3/32	.674±.009	.103±.003	17.12±0.23	2.62±0.08
-116	3/4	15/16	3/32	.737±.009	.103±.003	18.72±0.23	2.62±0.08
-117	13/16	1	3/32	.799±.010	.103±.003	20.30±0.25	2.62±0.08
-118	7/8	1-1/16	3/32	.862±.010	.103±.003	21.89±0.25	2.62±0.08
-119	15/16	1-1/8	3/32	.924±.010	.103±.003	23.47±0.25	2.62±0.08
-120	1	1-3/16	3/32	.987±.010	.103±.003	25.07±0.25	2.62±0.08
-121	1-1/16	1-1/4	3/32	1.049±.010	.103±.003	26.64±0.25	2.62±0.08
-122	1-1/8	1-5/16	3/32	1.112±.010	.103±.003	28.24±0.25	2.62±0.08
-123	1-3/16	1-3/8	3/32	1.174±.012	.103±.003	29.82±0.30	2.62±0.08
-124	1-1/4	1-7/16	3/32	1.237±.012	.103±.003	31.42±0.30	2.62±0.08
-125	1-5/16	1-1/2	3/32	1.299±.012	.103±.003	32.99±0.30	2.62±0.08
-126	1-3/8	1-9/16	3/32	1.362±.012	.103±.003	34.59±0.30	2.62±0.08
-127	1-7/16	1-5/8	3/32	1.424±.012	.103±.003	36.17±0.30	2.62±0.08
-128	1-1/2	1-11/16	3/32	1.487±.012	.103±.003	37.77±0.30	2.62±0.08
-129	1-9/16	1-3/4	3/32	1.549±.015	.103±.003	39.34±0.38	2.62±0.08
-130	1-5/8	1-13/16	3/32	1.612±.015	.103±.003	40.94±0.38	2.62±0.08
-131	1-11/16	1-7/8	3/32	1.674±.015	.103±.003	42.52±0.38	2.62±0.08
-132	1-3/4	1-15/16	3/32	1.737±.015	.103±.003	44.12±0.38	2.62±0.08
-133	1-13/16	2	3/32	1.799±.015	.103±.003	45.69±0.38	2.62±0.08
-134	1-7/8	2-1/16	3/32	1.862±.015	.103±.003	47.30±0.38	2.62±0.08
-135	1-15/16	2-1/8	3/32	1.925±.017	.103±.003	48.90±0.43	2.62±0.08
-136	2	2-3/16	3/32	1.987±.017	.103±.003	50.47±0.43	2.62±0.08
-137	2-1/16	2-1/4	3/32	2.050±.017	.103±.003	52.07±0.43	2.62±0.08
-138	2-1/8	2-5/16	3/32	2.112±.017	.103±.003	53.64±0.43	2.62±0.08
-139	2-3/16	2-3/8	3/32	2.175±.017	.103±.003	55.25±0.43	2.62±0.08
-140	2-1/4	2-7/16	3/32	2.237±.017	.103±.003	56.82±0.43	2.62±0.08
-141	2-5/16	2-1/2	3/32	2.300±.020	.103±.003	58.42±0.51	2.62±0.08
-142	2-3/8	2-9/16	3/32	2.362±.020	.103±.003	59.99±0.51	2.62±0.08
-143	2-7/16	2-5/8	3/32	2.425±.020	.103±.003	61.60±0.51	2.62±0.08
-144	2-1/2	2-11/16	3/32	2.487±.020	.103±.003	63.17±0.51	2.62±0.08
-145	2-9/16	2-3/4	3/32	2.550±.020	.103±.003	64.77±0.51	2.62±0.08
-146	2-5/8	2-13/16	3/32	2.612±.020	.103±.003	66.34±0.51	2.62±0.08
-147	2-11/16	2-7/8	3/32	2.675±.022	.103±.003	67.95±0.56	2.62±0.08
-148	2-3/4	2-15/16	3/32	2.737±.022	.103±.003	69.52±0.56	2.62±0.08
-149	2-13/16	3	3/32	2.800±.022	.103±.003	71.12±0.56	2.62±0.08
-150	2-7/8	3-1/16	3/32	2.862±.022	.103±.003	72.69±0.56	2.62±0.08
-151	3	3-3/16	3/32	2.925±.024	.103±.003	74.27±0.61	2.62±0.08
-152	3-1/4	3-7/16	3/32	2.987±.024	.103±.003	75.87±0.61	2.62±0.08
-153	3-1/2	3-11/16	3/32	3.050±.024	.103±.003	77.47±0.61	2.62±0.08
-154	3-3/4	3-15/16	3/32	3.112±.028	.103±.003	79.07±0.71	2.62±0.08
-155	4	4-3/16	3/32	3.175±.028	.103±.003	80.67±0.71	2.62±0.08
-156	4-1/4	4-7/16	3/32	3.237±.030	.103±.003	82.27±0.76	2.62±0.08
-157	4-1/2	4-11/16	3/32	3.300±.030	.103±.003	83.87±0.76	2.62±0.08
-158	4-3/4	4-15/16	3/32	3.362±.030	.103±.003	85.47±0.76	2.62±0.08
-159	5	5-3/16	3/32	3.425±.035	.103±.003	87.07±0.89	2.62±0.08
-160	5-1/4	5-7/16	3/32	3.487±.035	.103±.003	88.67±0.89	2.62±0.08
-161	5-1/2	5-11/16	3/32	3.550±.035	.103±.003	90.27±0.89	2.62±0.08
-162	5-3/4	5-15/16	3/32	3.612±.035	.103±.003	91.87±0.89	2.62±0.08
-163	6	6-3/16	3/32	3.675±.040	.103±.003	93.47±0.89	2.62±0.08
-164	6-1/4	6-7/16	3/32	3.737±.040	.103±.003	95.07±1.02	2.62±0.08
-165	6-1/2	6-11/16	3/32	3.800±.040	.103±.003	96.67±1.02	2.62±0.08
-166	6-3/4	6-15/16	3/32	3.862±.040	.103±.003	98.27±1.02	2.62±0.08
-167	7	7-3/16	3/32	3.925±.040	.103±.003	99.87±1.02	2.62±0.08
-168	7-1/4	7-7/16	3/32	3.987±.045	.103±.003	101.47±1.14	2.62±0.08
-169	7-1/2	7-11/16	3/32	4.050±.045	.103±.003	103.07±1.14	2.62±0.08
-170	7-3/4	7-15/16	3/32	4.112±.045	.103±.003	104.67±1.14	2.62±0.08
-171	8	8-3/16	3/32	4.175±.045	.103±.003	106.27±1.14	2.62±0.08
-172	8-1/4	8-7/16	3/32	4.237±.050	.103±.003	107.87±1.27	2.62±0.08
-173	8-1/2	8-11/16	3/32	4.300±.050	.103±.003	109.47±1.27	2.62±0.08
-174	8-3/4	8-15/16	3/32	4.362±.050	.103±.003	111.07±1.27	2.62±0.08
-175	9	9-3/16	3/32	4.425±.050	.103±.003	112.67±1.27	2.62±0.08
-176	9-1/4	9-7/16	3/32	4.487±.055	.103±.003	114.27±1.40	2.62±0.08
-177	9-1/2	9-11/16	3/32	4.550±.055	.103±.003	115.87±1.40	2.62±0.08
-178	9-3/4	9-15/16	3/32	4.612±.055	.103±.003	117.47±1.40	2.62±0.08
-201	3/16	7/16	1/8	.171±.007	.139±.004	4.34±0.13	3.53±0.10
-202	1/4	1/2	1/8	.234±.007	.139±.004	5.94±0.13	3.53±0.10
-203	5/16	9/16	1/8	.296±.007	.139±.004	7.52±0.13	3.53±0.10
-204	3/8	5/8	1/8	.359±.007	.139±.004	9.12±0.13	3.53±0.10
-205	7/16	11/16	1/8	.421±.007	.139±.004	10.69±0.13	3.53±0.10
-206	1/2	3/4	1/8	.484±.007	.139±.004	12.29±0.13	3.53±0.10
-207	9/16	13/16	1/8	.546±.007	.139±.004	13.87±0.17	3.53±0.10
-208	5/8	7/8	1/8	.609±.009	.139±.004	15.47±0.23	3.53±0.10
-209	11/16	15/16	1/8	.671±.009	.139±.004	17.04±0.23	3.53±0.10
-210	3/4	1	1/8	.734±.010	.139±.004	18.64±0.25	3.53±0.10
-211	13/16	1-1/16	1/8	.796±.010	.139±.004	20.22±0.25	3.53±0.10
-212	7/8	1-1/8	1/8	.859±.010	.139±.004	21.82±0.25	3.53±0.10
-213	15/16	1-3/16	1/8	.921±.010	.139±.004	23.39±0.25	3.53±0.10
-214	1	1-1/4	1/8	.984±.010	.139±.004	25.00±0.25	3.53±0.10
-215	1-1/16	1-5/16	1/8	1.046±.010	.139±.004	26.57±0.25	3.53±0.10
-216	1-1/8	1-3/8	1/8	1.109±.012	.139±.004	28.17±0.30	3.53±0.10
-217	1-3/16	1-7/16	1/8	1.171±.012	.139±.004	29.74±0.30	3.53±0.10
-218	1-1/4	1-1/2	1/8	1.234±.012	.139±.004	31.34±0.30	3.53±0.10
-219	1-5/16	1-9/16	1/8	1.296±.012	.139±.004	32.92±0.30	3.53±0.10
-220	1-3/8	1-5/8	1/8	1.359±.012	.139±.004	34.52±0.30	3.53±0.10
-221	1-7/16	1-11/16	1/8	1.421±.012	.139±.004	36.09±0.30	3.53±0.10
-222	1-1/2	1-3/4	1/8	1.484±.015	.139±.004	37.69±0.38	3.53±0.10
-223	1-5/8	1-7/8	1/8	1.609±.015	.139±.004	40.87±0.38	3.53±0.10

AS568 Dash #	Nominal Size (in.)			Actual Size (in.)		Actual Size (mm)	
	I.D.	O.D.	C/S	I.D. +/- Tol.	C/S +/- Tol.	I.D.	C/S
-224	1-3/4	2	1/8	1.734±.015	.139±.004	44.04±0.38	3.53±0.10
-225	1-7/8	2-1/8	1/8	1.859±.018	.139±.004	47.22±0.46	3.53±0.10
-226	2	2-1/4	1/8	1.984±.018	.139±.004	50.39±0.46	3.53±0.10
-227	2-1/8	2-3/8	1/8	2.109±.018	.139±.004	53.57±0.46	3.53±0.10
-228	2-1/4	2-1/2	1/8	2.234±.020	.139±.004	56.74±0.50	3.53±0.10
-229	2-3/8	2-5/8	1/8	2.359±.020	.139±.004	59.92±0.50	3.53±0.10
-230	2-1/2	2-3/4	1/8	2.484±.020	.139±.004	63.09±0.50	3.53±0.10
-231	2-5/8	2-7/8	1/8	2.609±.020	.139±.004	66.27±0.50	3.53±0.10
-232	2-3/4	3	1/8	2.734±.024	.139±.004	69.44±0.61	3.53±0.10
-233	2-7/8	3-1/8	1/8	2.859±.024	.139±.004	72.62±0.61	3.53±0.10
-234	3	3-1/4	1/8	2.984±.024	.139±.004	75.79±0.61	3.53±0.10
-235	3-1/8	3-3/8	1/8	3.109±.024	.139±.004	78.97±0.61	3.53±0.10
-236	3-1/4	3-1/2	1/8	3.234±.024	.139±.004	82.14±0.61	3.53±0.10
-237	3-3/8	3-5/8	1/8	3.359±.024	.139±.004	85.32±0.61	3.53±0.10
-238	3-1/2	3-3/4	1/8	3.484±.024	.139±.004	88.49±0.61	3.53±0.10
-239	3-5/8	3-7/8	1/8	3.609±.028	.139±.004	91.67±0.71	3.53±0.10
-240	3-3/4	4	1/8	3.734±.028	.139±.004	94.84±0.71	3.53±0.10
-241	3-7/8	4-1/8	1/8	3.859±.028	.139±.004	98.02±0.71	3.53±0.10
-242	4	4-1/4	1/8	3.984±.028	.139±.004	101.19±0.71	3.53±0.10
-243	4-1/8	4-3/8	1/8	4.109±.028	.139±.004	104.37±0.71	3.53±0.10
-244	4-1/4	4-1/2	1/8	4.234±.030	.139±.004	107.54±0.76	3.53±0.10
-245	4-3/8	4-5/8	1/8	4.359±.030	.139±.004	110.72±0.76	3.53±0.10
-246	4-1/2	4-3/4	1/8	4.484±.030	.139±.004	113.89±0.76	3.53±0.10
-247	4-5/8	4-7/8	1/8	4.609±.030	.139±.004	117.07±0.76	3.53±0.10
-248	4-3/4	5	1/8	4.734±.030	.139±.004	120.24±0.76	3.53±0.10
-249	4-7/8	5-1/8	1/8	4.859±.035	.139±.004	123.42±0.89	3.53±0.10
-250	5	5-1/4	1/8	4.984±.035	.139±.004	126.59±0.89	3.53±0.10
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AS568 Dash #	Nominal Size (in.)			Actual Size (in.)		Actual Size (mm)	
	I.D.	O.D.	C/S	I.D. +/- Tol.	C/S +/- Tol.	I.D.	C/S
-343	3-3/4	4-1/8	3/16	3.725±.028	.210±.005	94.62±0.71	5.33±0.13
-344	3-7/8	4-1/4	3/16	3.850±.028	.210±.005	97.79±0.71	5.33±0.13
-345	4	4-3/8	3/16	3.975±.028	.210±.005	100.97±0.71	5.33±0.13
-346	4-1/8	4-1/2	3/16	4.100±.028	.210±.005	104.14±0.71	5.33±0.13
-347	4-1/4	4-5/8	3/16	4.225±.030	.210±.005	107.32±0.76	5.33±0.13
-348	4-3/8	4-3/4	3/16	4.350±.030	.210±.005	110.49±0.76	5.33±0.13
-349	4-1/2	4-7/8	3/16	4.475±.030	.210±.005	113.67±0.76	5.33±0.13
-350	4-5/8	5	3/16	4.600±.030	.210±.005	116.84±0.76	5.33±0.13
-351	4-3/4	5-1/8	3/16	4.725±.030	.210±.005	120.02±0.76	5.33±0.13
-352	4-7/8	5-1/4	3/16	4.850±.030	.210±.005	123.19±0.76	5.33±0.13
-353	5	5-3/8	3/16	4.975±.037	.210±.005	126.37±0.94	5.33±0.13
-354	5-1/8	5-1/2	3/16	5.100±.037	.210±.005	129.54±0.94	5.33±0.13
-355	5-1/4	5-5/8	3/16	5.225±.037	.210±.005	132.72±0.94	5.33±0.13
-356	5-3/8	5-3/4	3/16	5.350±.037	.210±.005	135.89±0.94	5.33±0.13
-357	5-1/2	5-7/8	3/16	5.475±.037	.210±.005	139.07±0.94	5.33±0.13
-358	5-5/8	6	3/16	5.600±.037	.210±.005	142.24±0.94	5.33±0.13
-359	5-3/4	6-1/8	3/16	5.725±.037	.210±.005	145.42±0.94	5.33±0.13
-360	5-7/8	6-1/4	3/16	5.850±.037	.210±.005	148.59±0.94	5.33±0.13
-361	6	6-3/8	3/16	5.975±.037	.210±.005	151.77±0.94	5.33±0.13
-362	6-1/4	6-5/8	3/16	6.225±.040	.210±.005	158.12±1.02	5.33±0.13
-363	6-1/2	6-7/8	3/16	6.475±.040	.210±.005	164.47±1.02	5.33±0.13
-364	6-3/4	7-1/8	3/16	6.725±.040	.210±.005	170.82±1.02	5.33±0.13
-365	7	7-3/8	3/16	6.975±.040	.210±.005	177.17±1.02	5.33±0.13
-366	7-1/4	7-5/8	3/16	7.225±.045	.210±.005	183.52±1.14	5.33±0.13
-367	7-1/2	7-7/8	3/16	7.475±.045	.210±.005	189.87±1.14	5.33±0.13
-368	7-3/4	8-1/8	3/16	7.725±.045	.210±.005	196.22±1.14	5.33±0.13
-369	8	8-3/8	3/16	7.975±.045	.210±.005	202.57±1.14	5.33±0.13
-370	8-1/4	8-5/8	3/16	8.225±.050	.210±.005	208.92±1.27	5.33±0.13
-371	8-1/2	8-7/8	3/16	8.475±.050	.210±.005	215.27±1.27	5.33±0.13
-372	8-3/4	9-1/8	3/16	8.725±.050	.210±.005	221.62±1.27	5.33±0.13
-373	9	9-3/8	3/16	8.975±.050	.210±.005	227.97±1.27	5.33±0.13
-374	9-1/4	9-5/8	3/16	9.225±.055	.210±.005	234.32±1.40	5.33±0.13
-375	9-1/2	9-7/8	3/16	9.475±.055	.210±.005	240.67±1.40	5.33±0.13
-376	9-3/4	10-1/8	3/16	9.725±.055	.210±.005	247.02±1.40	5.33±0.13
-377	10	10-3/8	3/16	9.975±.055	.210±.005	253.37±1.40	5.33±0.13
-378	10-1/2	10-7/8	3/16	10.475±.060	.210±.005	266.07±1.52	5.33±0.13
-379	11	11-3/8	3/16	10.975±.060	.210±.005	278.77±1.52	5.33±0.13
-380	11-1/2	11-7/8	3/16	11.475±.065	.210±.005	291.47±1.65	5.33±0.13
-381	12	12-3/8	3/16	11.975±.065	.210±.005	304.17±1.65	5.33±0.13
-382	13	13-3/8	3/16	12.975±.065	.210±.005	329.57±1.65	5.33±0.13
-383	14	14-3/8	3/16	13.975±.070	.210±.005	354.97±1.78	5.33±0.13
-384	15	15-3/8	3/16	14.975±.070	.210±.005	380.37±1.78	5.33±0.13
-385	16	16-3/8	3/16	15.955±.075	.210±.005	405.26±1.91	5.33±0.13
-386	17	17-3/8	3/16	16.955±.080	.210±.005	430.66±2.03	5.33±0.13
-387	18	18-3/8	3/16	17.955±.085	.210±.005	456.06±2.16	5.33±0.13
-388	19	19-3/8	3/16	18.955±.090	.210±.005	481.41±2.29	5.33±0.13
-389	20	20-3/8	3/16	19.955±.095	.210±.005	506.81±2.41	5.33±0.13
-390	21	21-3/8	3/16	20.955±.095	.210±.005	532.21±2.41	5.33±0.13
-391	22	22-3/8	3/16	21.955±.100	.210±.005	557.61±2.54	5.33±0.13
-392	23	23-3/8	3/16	22.940±.105	.210±.005	582.68±2.67	5.33±0.13
-393	24	24-3/8	3/16	23.940±.110	.210±.005	608.08±2.79	5.33±0.13
-394	25	25-3/8	3/16	24.940±.115	.210±.005	633.48±2.92	5.33±0.13
-395	26	26-3/8	3/16	25.940±.120	.210±.005	658.88±3.05	5.33±0.13
-425	4-1/2	5	1/4	4.475±.033	.275±.006	113.67±0.84	6.99±0.15
-426	4-5/8	5-1/8	1/4	4.600±.033	.275±.006	116.84±0.84	6.99±0.15
-427	4-3/4	5-1/4	1/4	4.725±.033	.275±.006	120.02±0.84	6.99±0.15
-428	4-7/8	5-3/8	1/4	4.850±.033	.275±.006	123.19±0.84	6.99±0.15
-429	5	5-1/2	1/4	4.975±.037	.275±.006	126.37±0.94	6.99±0.15
-430	5-1/8	5-5/8	1/4	5.100±.037	.275±.006	129.54±0.94	6.99±0.15
-431	5-1/4	5-3/4	1/4	5.225±.037	.275±.006	132.72±0.94	6.99±0.15
-432	5-3/8	5-7/8	1/4	5.350±.037	.275±.006	135.89±0.94	6.99±0.15
-433	5-1/2	6	1/4	5.475±.037	.275±.006	139.07±0.94	6.99±0.15
-434	5-5/8	6-1/8	1/4	5.600±.037	.275±.006	142.24±0.94	6.99±0.15
-435	5-3/4	6-1/4	1/4	5.725±.037	.275±.006	145.42±0.94	6.99±0.15
-436	5-7/8	6-3/8	1/4	5.850±.037	.275±.006	148.59±0.94	6.99±0.15
-437	6	6-1/2	1/4	5.975±.037	.275±.006	151.77±0.94	6.99±0.15
-438	6-1/4	6-3/4	1/4	6.225±.040	.275±.006	158.12±1.02	6.99±0.15
-439	6-1/2	7	1/4	6.475±.040	.275±.006	164.47±1.02	6.99±0.15
-440	6-3/4	7-1/4	1/4	6.725±.040	.275±.006	170.82±1.02	6.99±0.15
-441	7	7-1/2	1/4	6.975±.040	.275±.006	177.17±1.02	6.99±0.15
-442	7-1/4	7-3/4	1/4	7.225±.045	.275±.006	183.52±1.14	6.99±0.15
-443	7-1/2	8	1/4	7.475±.045	.275±.006	189.87±1.14	6.99±0.15
-444	7-3/4	8-1/4	1/4	7.725±.045	.275±.006	196.22±1.14	6.99±0.15
-445	8	8-1/2	1/4	7.975±.045	.275±.006	202.57±1.14	6.99±0.15
-446	8-1/2	9	1/4	8.475±.055	.275±.006	215.27±1.40	6.99±0.15
-447	9	9-1/2	1/4	8.975±.055	.275±.006	227.97±1.40	6.99±0.15
-448	9-1/2	10	1/4	9.475±.055	.275±.006	240.67±1.40	6.99±0.15
-449	10	10-1/2	1/4	9.975±.055	.275±.006	253.37±1.40	6.99±0.15
-450	10-1/2	11	1/4	10.475±.060	.275±.006	266.07±1.52	6.99±0.15
-451	11	11-1/2	1/4	10.975±.060	.275±.006	278.77±1.52	6.99±0.15
-452	11-1/2	12	1/4	11.475±.060	.275±.006	291.47±1.52	6.99±0.15
-453	12	12-1/2	1/4	11.975±.060	.275±.006	304.17±1.52	6.99±0.15
-454	12-1/2	13	1/4	12.475±.060	.275±.006	316.87±1.52	6.99±0.15
-455	13	13-1/2	1/4	12.975±.060	.275±.006	329.57±1.52	6.99±0.15
-456	13-1/2	14	1/4	13.457±.070	.275±.006	342.27±1.78	6.99±0.15
-457	14	14-1/2	1/4	13.975±.070	.275±.006	354.97±1.78	6.99±0.15
-458	14-1/2	15	1/4	14.475±.070	.275±.006	367.67±1.78	6.99±0.15
-459	15	15-1/2	1/4	14.975±.070	.275±.006	380.37±1.78	6.99±0.15
-460	15-1/2	16	1/4	15.475±.070	.275±.006	393.07±1.78	6.99±0.15
-461	16	16-1/2	1/4	15.955±.075	.275±.006	405.26±1.91	6.99±0.15
-462	16-1/2	17	1/4	16.455±.075	.275±.006	417.96±1.91	6.99±0.15
-463	17	17-1/2	1/4	16.955±.080	.275±.006	430.66±2.03	6.99±0.15
-464	17-1/2	18	1/4	17.455±.085	.275±.006	443.36±2.16	6.99±0.15
-465	18	18-1/2	1/4	17.955±.085	.275±.006	456.06±2.16	6.99±0.15
-466	18-1/2	19	1/4	18.455±.085	.275±.006	468.76±2.16	6.99±0.15

AS568 Dash #	Nominal Size (in.)			Actual Size (in.)		Actual Size (mm)	
	I.D.	O.D.	C/S	I.D. +/- Tol.	C/S +/- Tol.	I.D.	C/S
-467	19	19-1/2	1/4	18.955±.090	.275±.006	481.46±2.29	6.99±0.15
-468	19-1/2	20	1/4	19.455±.090	.275±.006	494.16±2.29	6.99±0.15
-469	20	20-1/2	1/4	19.955±.095	.275±.006	506.86±2.41	6.99±0.15
-470	21	21-1/2	1/4	20.955±.095	.275±.006	532.26±2.41	6.99±0.15
-471	22	22-1/2	1/4	21.955±.100	.275±.006	557.66±2.54	6.99±0.15
-472	23	23-1/2	1/4	22.940±.105	.275±.006	582.68±2.67	6.99±0.15
-473	24	24-1/2	1/4	23.940±.110	.275±.006	608.08±2.79	6.99±0.15
-474	25	25-1/2	1/4	24.940±.115	.275±.006	633.48±2.92	6.99±0.15
-475	26	26-1/2	1/4	25.940±.120	.275±.006	658.88±3.05	6.99±0.15

Seal Size	Tube Size (O.D.) Inches	Actual Size (in.)		Actual Size (mm)	
		I.D.	C/S	I.D. +/- Tol.	C/S +/- Tol.
-901	3/32	.185±.005	.056±.003	4.70±0.13	1.42±0.08
-902	1/8	.239±.005	.064±.003	6.07±0.13	1.63±0.08
-903	3/16	.301±.005	.064±.003	7.65±0.13	1.63±0.08
-904	1/4	.351±.005	.072±.003	8.92±0.13	1.83±0.08
-905	5/16	.414±.005	.072±.003	10.52±0.13	1.83±0.08
-906	3/8	.468±.005	.078±.003	11.89±0.13	1.98±0.08
-907	7/16	.530±.007	.082±.003	13.46±0.18	2.08±0.08
-908	1/2	.644±.009	.087±.003	16.36±0.23	2.21±0.08
-909	9/16	.706±.009	.097±.003	17.93±0.23	2.46±0.08
-910	5/8	.755±.009	.097±.003	19.18±0.23	2.46±0.08
-911	11/16	.863±.009	.116±.004	21.92±0.23	2.95±0.10
-912	3/4	.924±.009	.116±.004	23.47±0.23	2.95±0.10
-913	13/16	.986±.010	.116±.004	25.04±0.26	2.95±0.10
-914	7/8	1.047±.010	.116±.004	26.59±0.26	2.95±0.10
-916	1	1.171±.010	.116±.004	29.74±0.26	2.95±0.10
-918	1-1/8	1.355±.012	.116±.004	34.42±0.30	2.95±0.10
-920	1-1/4	1.475±.014	.118±.004	37.47±0.36	3.00±0.10
-924	1-1/2	1.720±.014	.118±.004	43.69±0.36	3.00±0.10
-928	1-3/4	2.090±.018	.118±.004	53.09±0.46	3.00±0.10
-932	2	2.337±.018	.118±.004	59.36±0.46	3.00±0.10