

Section VIII – Specifications

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How to Order

8.1 How to Order O-Rings and Other Parts

8.1.1 Parker Compound Numbering System

From time to time, you will see Parker compound numbers shown in a three digit format without a zero (0) preceding the numerical designation. For example, compound N0674-70 may be shown as N674-70. The three digit format was previously used, but Parker has updated to the four digit format to allow utilization of a computer format for listing new compounds beyond 999. There is no difference in compounds shown with or without the zero (0) preceding the older three digit compound designations.

The information in these tables may be used as a guide in selecting the most suitable Parker O-ring compound to seal any common fluid, and in specifying the necessary size number for the desired dimensions.

For further assistance, please feel free to call your Parker Seal Territory Sales Manager or Parker O-ring Distributor. You may also contact the Inside Sales Department at the Parker Seal O-ring Division, 2360 Palumbo Drive, P.O. Box 11751, Lexington, Kentucky 40512; telephone number (859) 269-2351.

Parker compound numbers, with one notable exceptions, indicate the base polymer by a prefix letter, and the type A durometer hardness by a two digit suffix number. The basic number is merely a sequential number and has no particular significance. In some instances, the prefix letter is followed by a secondary letter. This indicates a specialty property. See the following examples:

Example 1:

N0674-70 indicates a 70 durometer nitrile compound

N — base polymer
 0674 — sequential number
 70 — durometer hardness

Example 2:

NA151-70 indicates a 70 durometer nitrile compound

N — base polymer
 A — specialty property description
 151 — sequential number
 70 — durometer hardness

Prefix letters on compound designations used by Parker Seal, and the base polymers and specialty property description they indicate are identified in Table 8-1a and 8-1b.

Note that there is only one base polymer and one hardness associated with each basic number (i.e. there is not both N0674-70 and N0674-90).

Active Compound Designation Codes	
Letter	Polymer
A	Polyacrylate, Ethylene Acrylic
B	Butyl
C	Neoprene
E	Ethylene, Propylene
L	Fluorosilicone
N	Nitrile, Hydrogenated, Carboxylated
P	Polyurethane
S	Silicone
V	Fluorocarbon, Perfluorinated elastomer, AFLAS

Table 8-1a: Compound Designation Codes

Specialty Property	
Letter	Description
A	General purpose
B	Low compression set
E	Ethylene acrylate
F	Fuel resistant or fully fluorinated
G	Higher fluorine content
J	NSF / FDA / WRAS approvals
L	Internally lubed
M	Mil / AMS specifications
P	Low temperature flexible or tetrafluoroethylene - propylene
W	Non-black compound
X	Carboxylated

Table 8-1b: Compound Specialty Property

Military Fluid Specification Description

Fluid Specification	Parker O-Ring Compound	Description	Fluid Specification	Parker O-Ring Compound	Description
MIL-L-2104	N0304-75	Oil, Engine	MIL-E-8500	E1267-80	Ethylene Glycol, Technical, Uninhibited
MIL-S-3136	N0602-70	Standard Test Fluids, Hydrocarbon	MIL-G-10924	N0304-75	Automotive Grease
MIL-L-3150	N0304-75	Oil, Preservative	MIL-H-13910	E1267-80	Hydraulic Fluid, Non-petroleum Automotive Brake
MIL-G-3278	LM159-70	Aircraft Grease	MIL-L-15017	N0304-75	Oil, Hydraulic
MIL-O-3503	N0304-75	Oil, Preservative	MIL-G-15793	N0304-75	Grease, Instrument
MIL-G-3545	N0304-75	Hi-Temperature Grease	MIL-F-16884	N0304-75	Fuel Oil, Diesel, Marine
MIL-G-4339	N0304-75	Soluble Oil	MIL-F-17111	N0304-75	Power Transmission Fluid
MIL-G-4343	N0304-75	Pneumatic System Grease	MIL-L-17331	V1164-75	Lubricating Oil, Non-corrosive, Steam Turbine
MIL-J-5161	N0602-70	Jet Fuel, Referee	MIL-H-19457	E1267-80	Fire Resistant Hydraulic Fluid (phosphate-ester base)
MIL-F-5566	E1267-80	Isopropyl Alcohol	MIL-L-21260	N0304-75	Lubricating Oil, Engine, Preservative
MIL-G-5572	N0602-70	Fuel, Aircraft Reciprocating Engine, Grades 80/87 91/96, 100/130, 115/145 Aviation Gas	MIL-S-21568	E1267-80	Silicone Fluid, Dimethyl Polysiloxane
MIL-H-5606	(1)	Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance	MIL-H-22251	E1267-80	Hydrazine Solution, 22%
MIL-T-5624	N0602-70	Jet Fuel JP-4, JP-5	MIL-L-23699	V1164-75	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-L-6081	N0304-75	Jet Engine Oil	MIL-G-23827	N0602-70	Grease, Aircraft and Instrument
MIL-L-6082	N0304-75	Lubricating Oil, Aircraft Reciprocating Piston Engine	MIL-G-25013	V1164-75	Bearing Grease, Extreme High Temperature
MIL-H-6083	N0304-75	Hydraulic Fluid, Preservative	MIL-G-25537	N0304-75	Aircraft, Helicopter Oscillating Bearing Grease
MIL-L-6085	V1164-75	Synthetic Di-ester Base Fluid	MIL-F-25558	N0602-70	Fuel, Ram Jet (RJ1)
MIL-A-6091	E1267-80	Denatured Ethyl Alcohol	MIL-C-25576	N0602-70	Rocket and Ram Jet Fuel (RP1)
MIL-L-6387	V1164-74	Synthetic Di-ester Base Lubricating Oil	MIL-F-25656	N0602-70	Jet Fuel, Grade JP6
MIL-C-7024	N0602-70	Aircraft Calibrating Fluid	MIL-L-25681	V1164-75	Oil, Moly Disulphide, Silicone Base, High Temperature
MIL-H-7083	E1267-70	Hydraulic Fluid, Hydrolube	MIL-G-25760	V1164-75	Bearing Grease, Wide Temp. Range
MIL-G-7118	N0304-75	Actuator Grease	MIL-P-27402		Propellant, Aerozine-50
MIL-G-7187	N0304-75	Grease, Graphite	MIL-H-27601	V1164-75	Hydraulic Fluid, Petroleum Base, High Temperature, Flight Vehicle
MLO-7277	V1164-75	Hydraulic Fluid, Petroleum Base, Hi-Temp.	MIL-L-46167	N0304-75	Lubricating Oil, Internal Combustion Engine, Arctic
MIL-G-7421	LM159-70	Grease, Extreme Low Temp.	MIL-H-46170	(2)	Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic
MLO-7557	V1164-75	Hydraulic Fluid, Petroleum Base, Hi-Temp.	MIL-F-81912	V1164-75	Fuel, Expendable, Turbine Engine
MIL-G-7711	N0304-75	Grease, General Purpose	MIL-F-82522	N0602-75	Fuel, Ramjet Engine, T-H Dimer Grade RJ-4
MIL-L-7808	V1164-75	Lubricating Oil, Aircraft Turbine Engine, Synthetic Di-ester Base	MIL-T-83133	47-071	Turbine Fuel, Aviation, Kerosene Type, Grade JP-8
MIL-L-7870	N0304-75	Lubricating Oil, Low Temperature, General Purpose	MIL-H-83282	(2)	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft
MIL-C-8188	V1164-75	Corrosion Preventive Oil, Syn. Base	MIL-H-87257	(2)	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Low Temperature
MLO-8200	V1164-75	Hydraulic Fluid, Aircraft and Missile, Silicate-ester Base			
MIL-H-8446	V1164-75	Hydraulic Fluid, Silicate-ester Base (MLO-8515)			
MLO-8515	V1164-75	Hydraulic Fluid, Silicate-ester Base (MIL-H-8446)			
MIL-L-9000	N0304-75	Lubricating Oil, Diesel			
MIL-L-9236	V1164-75	Synthetic Lubricating Oil, Turbine			

(1) -48°C to +113°C (-55°F to +235°F), cpd. N0304-75
 -54°C to +135°C (-65°F to +275°F), cpd. N0756-75

(2) -26°C to +204°C (-15°F to +400°F), cpd. V1164-75
 -29°C to +135°C (-20°F to +275°F), cpd. N0951-75
 -54°C to +135°C (-65°F to +275°F), cpd. N0756-75

Recommended compounds are military quality, meeting military material specifications.

Appropriate industrial compounds may be selected from the Fluid Compatibility Table in Section VII.

Table 8-2: Military Fluid Specification Description

Military Rubber Specifications

Note: In keeping with the Federal Acquisition Streamlining Act (FASA), most of these specifications are in the process of being revised to AMS specifications. For the most current information, contact the O-Ring Division.

Rubber Specification Class	Grade	Parker Compound	Temperature Range ⁽²⁾	Description
ZZ-R-765E				
1a. 1b. 2a. 2b.	40	S1198-40	- 103 to 437°F (-75 to 225°C)	Rubber, Silicone
1a. 1b. 2a. 2b.	50	S0899-50	- 103 to 437°F (-75 to 225°C)	Low and High Temperature Resistant, Low Compression Set
1a. 1b.	70	S0383-70	- 103 to 437°F (-75 to 225°C)	Low and High Temperature Resistant, Low Compression Set
2a. 2b.	80	S0614-80	- 80 to 437°F (-62 to 225°C)	Low Temperature Resistant, Low Compression Set
2a. 2b.	70	S1224-70	- 80 to 437°F (-62 to 225°C)	High Temperature Resistant, Low Compression Set
2b.	60	S0613-60	- 80 to 437°F (-62 to 225°C)	High Temperature Resistant, Low Compression Set
Note: A-A-59588 supercedes ZZ-R-765E				
MIL-G-1149C- Gasket Materials, Synthetic Rubber, 50 and 65 Durometer Hardness				
Type I Class 1		C0267-50	(-20 to 212°F) (-29 to 100°C) ⁽²⁾	
MIL-R-3533B - Rubber, Synthetic; Sheet, Strip and Molded				
Type I Grade B		N0602-70	(-20 to 158°F) (-29 to 70°C) ⁽²⁾	
MIL-P-5315B - Packing, O-ring, Hydrocarbon Fuel Resistant (Jet Fuels)				
		N0602-70	(-65 to 160°F) (-54 to 71°C)	(Military O-ring series MS29512 and MS29513)
Note: AMS-P-5315 supercedes MIL-P-5315B				
MIL-P-5510C - Gasket, Straight Thread Tube Fitting Boss (MIL-H-5606 Petroleum Based Hydraulic Fluid,				
		N0507-90	(-45 to 160°F) (-43 to 71°C) ⁽²⁾	(Military O-ring series MS28778)
Note: AMS-P-5510 supercedes MIL-P-5510				
MIL-DTL-7362D - Rubber, Sheet, Molded and Extruded Shapes, Synthetic Oil Resistant (AMS3021)				
Types I, II		47-071	Synthetic, Di-Ester Base Lubricant (-65 to 275°F) (-54 to 135°C) ⁽²⁾	(Military O-ring series MS29561 and WAS617)
Note: AMS-R-7362 supercedes MIL-R-7362D				
MIL-G-21569B - Gaskets, Cylinder Liner Seal, Synthetic				
Class I		N0674-70 ⁽¹⁾		(Room temperature to 194°F) (RT to 90°C)
Class II		S0604-70		
MIL-DTL-25732C - Packing, Preformed, Petroleum Hydraulic Fluid Resistant (MIL-H-5606)				
		N0304-75		Petroleum Base Hydraulic Fluid (-65 to 275°F) (-54 to 135°C) ⁽²⁾ (Military O-ring series MS28775)
MIL-R-25988 - Rubber Fluorosilicone Elastomer, Oil and Fuel Resistant (MIL-H-5606 Petroleum Base)				
Type 1, Class 1, Grade 60/3		LM158-60		Hydraulic Fluid, Fuel, Air (-90 to 350°F) (-68 to 176°C) ⁽²⁾
Type 1, Class 1, Grade 70/1		LM159-70		
Type 1, Class 1, Grade 80/4		LM160-80		
Type 1, Class 3, Grade 75/2		L1077-75 ⁽¹⁾		
Note: AMS-R-25988 supercedes MIL-R-35988				
MIL-P-82744 - Packing, Preformed, Otto Fuel Compatible				
		E0515-80		(-65 to 250°F) (-54 to 121°C)
MIL-R-83248C, Type I - Rubber, Fluorocarbon Elastomer, High Temperature Fluid and Compression				
Class I		V0747-75, V1164-75, V1226-75		Set Resistant (-15 to 400°F) (-5 to 105°C)
Class 2		V0709-90		
Note: AMS-R-83248 supercedes MIL-R-83248C				
MIL-R-83485				
	Grade 80	VM835-75		Rubber, fluorocarbon Elastomer, Improved performance @ low Temp (-40 to 400°C)
Note: AMS-R-83485 supercedes MIL-R-83485				
MIL-P-83461B - Packings, Preformed, Petroleum Hydraulic Fluid Resistant, Improved Performance				
		N0756-75		(-65 to 275°F) (-54 to 135°C) ⁽²⁾
Note: AMS-P-5315 supercedes MIL-P-5315B				

Notes: When ordering parts made with a military, AMS or NAS specification material, see the section on ordering.

(1) Extra charges may apply for testing and documentation.

(2) These temperatures are limits for particular tests required by the specifications, but they do not necessarily represent operating temperature limits.

(3) Inactive for new design, refer to MIL-P-25732. See discussion on "Temperature" in the Basic O-Ring Elastomers Section (II).

Table 8-3: Military Rubber Specifications

AMS⁽¹⁾ and NAS⁽²⁾ Rubber Specification Descriptions

Rubber Specification	Parker Compound	Description	
		Durometer	Title
AMS3201	N0545-40	35-45	Dry Heat Resistance
AMS3205	N0299-50	45-55	Low Temperature Resistance
AMS3208	C0267-50	45-55	Weather Resistant, Chloroprene Type
AMS3209	C1124-70	65-75	Weather Resistant, Chloroprene Type
AMS3212	N0525-60	55-65	Aromatic Fuel Resistant
AMS 3238	B0318-70	65-75	Phosphate-Ester Resistant, Butyl Type
AMS3301	S0469-40	35-45	Silicone, General Purpose
AMS3302	S0595-50	45-55	Silicone, General Purpose
AMS3303	S0613-60	55-65	Silicone, General Purpose
AMS3304	S1224-70	65-75	Silicone, General Purpose
AMS3305	S0614-80	75-85	Silicone, General Purpose
AMS3325	LM158-60	55-65	Fluorosilicone Rubber, Fuel and Oil Resistant
AMS3337	S0383-70	65-75	Silicone, Extreme Low Temperature Resistant
AMS3345	S0899-50	45-55	Silicone Rubber
AMS3357	S1224-70	65-75	Silicone Rubber, Lubricating Oil, Compression Set Resistant
AMS7257	FF200-75	70-80	Sealing Rings, Perfluorocarbon, High Temperature Resistant
AMS7259	V0709-90	85-95	High Temp, Fluid Resistant, Very Low Compression Set FKM
AMS7267	S0355-75	70-80	Silicone, Heat Resistant, Low Compression Set
AMS7271	N0506-65	60-70	Fuel and Low Temperature Resistant
AMS7272	N0287-70	65-75	Synthetic Lubricant Resistant
AMS7276	V1164-75	70-80	High Temp. Fluid Resistant, Very Low Compression Set FKM
NAS1613 Rev 2	E0515	80-75	Packing, O-ring, Phosphate Ester Resistant
NAS1613 Rev 5	E1267-80	75-85	Packing, O-ring, Phosphate Ester Resistant
AMS-P-5315	N0602-70	65-75	Packing O-ring, Hydrocarbon Fuel Resistant
AMS-P-5510	N0507-90	85-95	Gasket, Straight Thread Tube Fitting Boss
AMS-R-7362	47-071	65-75	Rubber, Sheet, Molded and Extruded Shapes, Synthetic Oil Resistant
AMS-P-25732	N0304-75	70-80	Packing, Preformed, Petroleum Hydraulic Fluid Resistant, Limited Performance
AMS-R-25988	LM158-60, LM159-70, LM160-80, L1077-75	55-85	Rubber, Fluorosilicone Elastomer, Oil and Fuel Resistant
AMS-R-83248	V1164-75, V1226-75, V0709-90	70-95	Rubber, Fluorocarbon Elastomer, High Temperature Fluid and Compression Set Resistant
AMS-P-83461	N0756-75	70-80	Packings, Preformed, Petroleum Hydraulic Fluid Resistant, Improved Performance
AMS-R-83485	VM835-75	70-80	Rubber, Fluorocarbon Elastomer, Improved Performance at Low Temperatures

Note: When ordering parts made with military, AMS, or NAS specification material, see section on ordering.

(1) Aerospace Material Specification issued by the Society of Automotive Engineers, Inc.

(2) National Aerospace Standard issued by Aerospace Industries Association of America, Inc.

Table 8-4: AMS⁽¹⁾ and NAS⁽²⁾ Rubber Specification Descriptions

Compound Selections for Commonly Used SAE and ASTM Specifications

This table is in accordance with the 1997 revision of ASTM D2000, which requires that minimum tensile strength indications shall be expressed in SI units (Megapascals). The “M” prefix in these callouts signifies this fact, and the requirement is shown in the 6th and 7th characters of each specification

(excluding the “ASTM D2000”). For example, in the specification number M2BC614, the “14” indicates that the tensile strength of the material shall not fall below 14 MPa. To convert this value to psi (pounds per square inch), multiply by 145. In this example, the equivalent is 104.1 Bar (2030 psi).

Compound Selections For Commonly Used SAE and ASTM Specifications

ASTM D200-97 Specification	MIL-R-3065 ASTM D735-58/ SAE J14 Specification	Parker Compound Number
M2AA708 A13 EA14 F17		E0603-70
M2AA810 A13 EA14 F17 Z1 (Purple)		E0893-80
M2AA810 A13 EA14 F17	R810BF ₂	E0515-80
M2AA810 A13 EA14 F17	R810BF ₂	E0540-80
M2AA907 A13 EA14 F17		E0652-90
M3BA707 A14		B0612-70
M2BC510 A14 B14 EO14 EO34 F17	SC515BE ₁ E ₃ F ₂	C0267-50
M3BC614 A14 B14 EO14 EO34 F17	SC615BE ₁ E ₃ F ₁	C0518-60
M3BC710 A14 B14 EO14 EO34	SC715BE ₃ F ₁	C0873-70
M3BC710 A14 B14 EO14 EO34 F17	SC715BE ₃ F ₂	C1124-70
M2BE510 A14 B14 EO14 EO34 F17		C0267-50
M2BE614 A14 B14 EO14 EO34 F17		C0518-60
M3BE710 A14 B14 EO14 EO34		C0873-70
M2BE710 A14 B14 EO14 EO34 F17		C0147-70
M2BF714 B34 EO14 EO34		N0674-70
M2BG410 B34 EA14 EF11 EF21 EO14 EO34	SB415BE ₁ E ₃ F ₁	N0545-40
M5BG410 A14 B34 EO14 EO34		N0545-40
M2BG510 B14 EA14 EF11 EF21 EO14 EO34 F17	SB515A ₁ BE ₁ E ₃ F ₂	N0299-50
M2BG510 A14 B14		N0299-50
M2BG608 B34 EA14 EO14 F17 Z1 (65 ± 5 Type A Durometer)	SB712BE ₁ F ₂	N0506-65
M2BG614 B34 EA14 EF11 EF21 EO14 EO34 F17	SB620BE ₁ F ₁	N0525-60
M2BG708 EA14 EF11 EF21 EO14 EO34 F17		N0602-70
M2BG708 EF11 EF21 EO34 F17		47-071
M5BG710 A14 B14		N0497-70
M2BG710 B14 B34 EA14 EF11 EF21		N0497-70
M2BG714 B14 B34 EA14 EF11 EF21 EO14 EO34	SB715A ₁ BE ₁ E ₃	N0674-70
M(5)BG714 A14 B14 B34 EO14 EO34		N0103-70
M2BG714 B14 B34 EA14 EF11 EF21 EO14 EO34 F17	SB715BE ₁ E ₃ F ₂	N0103-70
M4BG721 B14 EO14 EO34		P0642-70
M7BG810 EA14 EF11 EF21 EO14 EO34 Z1 (75 ± 5 Type A Durometer) Z2 (1)		N0951-75
M7BG810 EA14 EF11 EO14 EO34 F16 Z1 (75 ± 5 Type A Durometer)	SB708E ₁ E ₃ F ₂	N0304-75
M7BG910 B14 EA14 EF11 EF21 EO14 EO34 F16	SB915BE ₁ E ₃	N0507-90
M2BG910 B14 EA14 EF21 EO14 EO34	SB915BE ₁ E ₃	N0552-90
M(2)CA614 A25 B44		E0529-60
M3CA710 A25 B44 EA14		E1244-70
M4CA714 A25 B35 EA14 F17 G21		E0803-70
M8CA814 A25 B35 EA14 F17		E0810-80

Prefix (grade) numbers and suffix letters in parenthesis are technically “not permitted”, but nevertheless, they describe a property of the material. Explanations in parenthesis apply to the Z suffix letters.

(1) Compression Set = 20% max. after 70 hours at 125°C when tested on plied discs per ASTM D395.

Table 8-5: Compound Selectons for Commonly Used SAE and ASTM Specifications

Compound Selections for Commonly Used SAE and ASTM Specifications (Continued)

ASTM D200-97 Specification	MIL-R-3065 ASTM D735-58/ SAE J14 Specification	Parker Compound Number
M2CH608 A25 B34 F17 Z1 (65 ± 5 Type A Durometer)		N0506-65
M3CH708 A25 B14 B34 EO16 EO36 EF31		N0497-70
M2CH708 A25 EO35 F17		47-071
M3CH714 A25 B14 EO16 EO36		N0674-70
M3CH714 A25 B34 EO16 EO36		N0674-70
M3CH810 A25 EO16 Z1 (75 ± 5 Type A Durometer) Z2 (1)		N0951-75
M3CH810 A25 EO16 Z1 (75 ± 5 Type A Durometer)		N0304-75
M3CH910 B34 EO16 EO36		N0552-90
M2CH910 EO15 EO35 Z1 (80% Min Elongation)		N1210-90
M3DA710 A26 B36 EA14 Z1 (75+/-5 type A Durometer) Z2 (130% Min Elongation)		EO692-75
M3DA810 A26 B36 EA14		EO540-80
M2DH710 A26 B16 EO16 EO36Z1 (175% Min Elongation)		N1173-70
M2DH810 A26 B16 EO16		N1231-80
M3DH710 A26 B16 EO16 EO36 F13	TB715E ₁ E ₃	AA150-70
M2DH910 A26 B36 EO16 EO36		KB163-90
M2FK606 A19 EA36		LM158-60
M2FK606 A19 EF31 Z1 (70+/-5 type A Durometer)		LM159-70
M2GE405 A19 B37 EA14 EO16 EO36 F19 G11		S0469-40
M3GE503 A19 B37 EA14 EO16 EO36 F19 G11	TA507BE ₁ E ₃ F ₂	S0595-50
M3GE603 A19 B37 EA14 EO16 EO36 F19 G11	TA605BE ₁ E ₃ F ₂	S0613-60
M3GE603 A19 EO16 F19		S0317-60
M7GE705 A19 B37 EA14 EO16 EO36 F19 G11	TA705BE ₁ E ₃ F ₂	S0455-70
M7GE705 A19 B37 EA14 EO16 EO36 F19 G11	TA705BE ₁ E ₃ F ₂	S1224-70
M7GE705 F19		S0383-70
M6GE803 A19 B37 EA14 EO16 EO36 F19 G11	TA805BE ₁ E ₃ F ₂	S0614-80
M2HK710 A1 - 10 B37 B38 EF31 EO78 Z1 (75 ± 5 Type A Durometer)		V1164-75
M2HK710 A1 - 10 B37 B38 EF31 EO78 Z1 (75 ± 5 Type A Durometer) Z2 (Brown)		V1226-75
M4HK710 A1 - 11 B38 EF31 EO78 Z1 (75 ± 5 Type A Durometer)		V1164-75
M4HK710 A1 - 11 B38 EF31 EO78 Z1 (75 ± 5 Type A Durometer) Z2 (Brown) Z3 (150% Min Elongation)		V1226-75
M6HK810 A1-10 B38 EF31 EO78 EO88 Z1 (75 ± 5 Type A Durometer)		V0747-75
M7HK810 A1-11 B38 Z1 (75 ± 5 Type A Durometer) Z2 (130% Min Elongation)		VM835-75
M3HK910 A1 - 10 B37 EF31 EO78		V0709-90
M3HK910 A1 - 10 B37 B38 EF31 EO78 Z1 (Brown)		V0894-90
M5HK910 A1 - 11 B38 EF31 EO78		V0709-90
M5HK910 A1 - 11 B38 EF31 EO78 Z1 (Brown)		V0894-90
M2HK910 B37 C12 EF31 Z1 (95 ± 5 Type A Durometer) Z2 (80% Min Elongation)		V1238-95
SAE 120RI Class 1		NA151-70
SAE 120R1 Class 2		N0497-70
SAE J515 Type 1		N0552-90
SAE J515 Type 2		E0652-90

Prefix (grade) numbers and suffix letters in parenthesis are technically "not permitted," but nevertheless, they describe a property of the material. Explanations in parenthesis apply to the Z suffix letters.

(1) Compression Set = 20% max. after 70 hours at 125°C when tested on plied discs per ASTM D395.

Table 8-5: Compound Selectons for Commonly Used SAE and ASTM Specifications

Revisions from Older Versions of ASTM

Old		New
E14	=	E014
E34	=	E034
L14	=	EA14
E51	=	EF11
E61	=	EF21
E71	=	EF31

8.2 International O-Ring Standards and Test Methods

Germany

DIN 3770	Sealing rings (O-rings) with special accuracy made of elastomeric materials. This standard should not be used for new designs.
DIN 3771 Part 1	Fluid systems, O-rings, sizes to ISO 3601-1. This standard contains sizes and tolerances of O-rings with special accuracy for general applications in fluid systems.
DIN 3771 Part 2	Fluid systems, O-rings, testing, marking. This standard applies to DIN 3771 Part 1, testing and marking of O-rings.
DIN 3771 Part 3	Fluid systems, O-rings, field of application, materials. This standard covers materials, their hardness range and fields of application of O-rings to DIN 3771 Part 1.
DIN 3771 Part 4	Fluid systems, O-rings, quality acceptance criteria, surface finish and form. This standard covers acceptance criteria for surface finish and form.
DIN 7715	Rubber parts; tolerances, molded shapes from soft rubber (elastomers).
DIN 7716	Products from rubber; requirements for storage, cleaning and servicing.
DIN 9088	Aerospace; shelf-life of parts from elastomers (under preparation).
DIN 24 320	Fire resistant hydraulic fluids, group HFA-1, properties and requirements.
DIN 40 080	Procedures and tables for inspection by attributes — statistical sampling.
DIN 50 049	Certification of material testing.
DIN 51 524	Hydraulic fluids, hydraulic oils H and H-L; minimum requirements.
DIN 51 525	Hydraulic fluids; hydraulic oils H-LP; minimum requirements.
DIN 51 600	Liquid fuels, leaded petroleum oils; minimum requirements.
DIN 51 601	Liquid fuels, Diesel oil; minimum requirements.
DIN 51 603 Part 1	Liquid fuels; heating oils, heating oil EL; minimum requirements.
DIN 51 603 Part 2	Liquid fuels; heating oils, heating oils L, M and S; minimum requirements.
DIN 53 479	Testing of plastics and elastomers; measurement of specific gravity.
DIN 53 504	Testing of elastomers; measurement of tensile strength, maximum stress, elongation at break and stress values at tensile test.
DIN 53 505	Testing of elastomers; Shore A and D hardness tests.
DIN 53 507	Testing of elastomers; determination of tear growth, strip specimen.
DIN 53 512	Testing of rubbers; determination of rebound resilience.
DIN 53 516	Testing of rubbers and elastomers; determination of abrasion resistance.
DIN 53 517	Testing of elastomers - determination of compression set.
DIN 53 519 Part 1	Testing of elastomers; determination of indentation hardness of soft rubber (IRHD), hardness test on samples.
DIN 53 519 Part 2	Testing of elastomers; determination of indentation hardness of soft rubber (IRHD), microhardness on samples of minor dimensions.
DIN 53 521	Testing of rubber and elastomers; determination of the resistance to liquids, vapors and gases.
DIN 53 522	Testing of elastomers; determination of resistance to flex-cracking and crack growth.
DIN 53 538	Standard reference elastomer; nitrile-butadiene rubber (NBR), cross-linked by peroxide to characterize working fluids with respect to their reaction on NBR.
DIN 53 545	Testing of rubber; determination of the behavior at low temperature (behaviour to cold), principles, testing methods.
DIN 53 670	Testing of rubber or elastomers; testing of rubber in standard text mixtures, equipment and procedures.
DIN ISO 1629	Rubber and latex; difference and abbreviations.
VDMA 24 317	Fluid systems; hydraulic, fire-resistant hydraulic fluids, guidelines.
LN 9214	Aerospace; toroidal sealing rings (O-rings) for solderless tube fittings with coupling sleeves, flareless.

International

ISO 3601/1	Fluid systems, O-rings - Part 1. Inner diameters, cross-sections, tolerances and size coding.
ISO 3601/2 (under preparation)	Fluid systems, O-rings - Part 2. Design criteria for O-ring grooves.
ISO 3601/3 (under preparation)	Fluid systems, O-rings - Part 3. Quality acceptance levels.
ISO 3601/4 (under preparation)	Fluid systems, O-rings - Part 4. O-ring grooves with back-up rings.
ISO 3601/5 (under preparation)	Fluid systems, O-rings - Part 5. O-rings for connectors to ISO 6149.

United Kingdom

BS 1806	Specifies dimensions (inches) for inner diameters and cross-sections and their tolerances including grooves. O-ring dimensions are identical with the Parker 2-xxx series. Table 11.1 gives a cross-reference among the various European standard specifications.
BS 4518	Specifies dimensions and tolerances together with groove dimensions. Cross-section diameters are: 1.6 / 2.4 / 3.0 / 5.7 and 8.4 mm

France The following French standards base upon ISO 3601 Parts 1 to 3:

NF-T-47-501	is comparable with ISO 3601 Part 1.
NF-T-47-502	is comparable with ISO 3601 Part 2.
NF-T-47-503	is comparable with ISO 3601 Part 3.

French purchase codes R 1 to R 27 are identical with Parker sizes 5-578 to 5-606. R 28 to R 88 are identical with Parker sizes 2-325 to 2-349 and 2-425 to 2-460. For more details, cf European O-ring codes, Table 11.1.

Italy

A committee for seal and hose standardization exists in the UNI which recommends the use of the American AS 568 A standard specification. In certain areas the French R 1 to R 88 are used.

Sweden

O-rings are standardized under SMS 1586, Swedish military standard. Cross sections 1.6 / 2.4 / 3.0 / 5.7 and 8.4 mm are recommended.

United States

AS 568 B (Aerospace Standard)	Published by the SAE (Society of Automotive Engineers) specifies sizes and tolerances. The cross-section tolerances correspond to ISO 3601/1 and DIN 3771 Part 1 (within a few hundredths of a millimeter), see Table 11.1, Cross Reference List.
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8.3 Ordering Addresses

DIN and DIN ISO standard specifications and VDMA recommendations can be obtained from:

Beuth Verlag GmbH
Burggrafenstrasse 4-10, D-10787
Berlin

AMS and SAE specifications can be obtained from:

SAE
400 Commonwealth Dr.
Warrendale, PA 15096-0001

ASTM standard specifications can be obtained from:

ASTM
100 Barr Harbor Drive.
West Conshohocken, PA 19428

Military specifications can be obtained from:

Defense Automated Printing Service
700 Robbins Ave., Building 4/D
Philadelphia, PA 19111-5094
ATTN: DODSSP