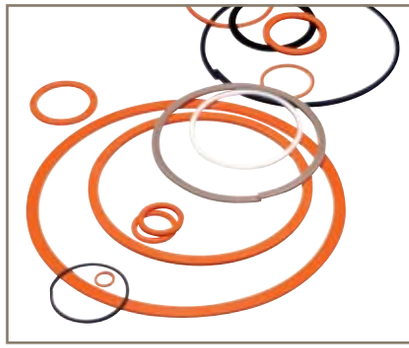
aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Sealing Solutions for Fluid Power Applications



Parker

ENGINEERING YOUR SUCCESS.

Put Parker's Expertise & Experience to Work

Value Added Services

Parker's product offering includes more than manufacturing and delivery. Custom seal kits, part marking and special packaging simplify inventory control of expendable components for heavy-duty fluid power equipment and tools.

Product Innovation

Today's sealing challenges demand innovative solutions, and nobody knows innovation better than Parker. Voice-of-the-customer programs, market knowledge and six decades of engineering, material formulation and manufacturing experience all combine to develop new products to meet your evolving sealing needs. And our manufacturing facilities are keeping pace with innovation with their custom machining and quick-turnaround PTFE manufacturing.

Application Engineering

Our team of expert application engineers can help you find the most reliable, cost-effective sealing solution for your application. Parker engineers offer decades of experience in real-world sealing and a full complement of technology-driven design tools.

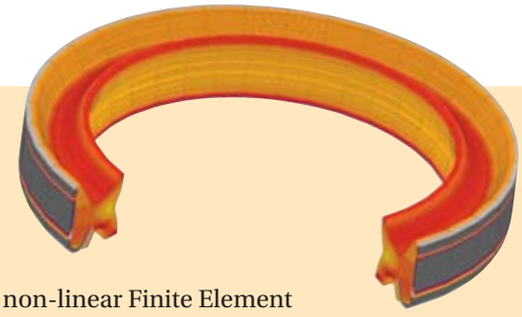
Quality Initiatives

Quality isn't just a buzzword at Parker; it's a culture based on employee empowerment and continuous improvement. Our manufacturing facilities are registered to ISO 9001, AS 7115, ISO 14001, and we're constantly striving to improve customer satisfaction and product quality through the implementation of:

- *Six Sigma methodology*
- *Lean manufacturing*
- *TQM methodology*
- *Feasibility studies*
- *Kaizen events*

Worldwide—Where You Need Us

Around the corner or around the globe, Parker is ready with engineered solutions to your tough sealing challenges. Your local Parker market specialist provides a single point of contact for local sealing support and our worldwide headquarters is the hub of an established worldwide network of over 300 distributor and service center locations. This network—and the global sales and engineering support it provides—means you can always get quality products when and where you need them. It also means that sound advice from a Parker sealing expert is never far away.



Advanced Computer Simulation

Utilizing advanced, non-linear Finite Element Analysis (FEA) software, our engineers can perform extremely accurate virtual simulations of performance, based on physical test data. These simulations eliminate the need for multiple iterations of costly prototype tooling and dramatically reduce development lead times. They also ensure first-time selection of the best material and geometry for your application.

Sealing Solutions for Fluid Power Applications

The equipment that moves today's industry is more reliable and highly-engineered than ever before. That's why Parker develops and manufactures engineered sealing solutions—technologically advanced sealing devices and materials that can keep pace with aggressive chemicals, high temperatures, rapid motion and high pressures. Our sealing products have our unique combination of experience and innovation built right in, and we're able to supply them quickly and cost effectively to fit virtually any application you can think of.

Sealing Environment

- Operating pressures to 5800 psi (400 bar)
- Plastic temperatures to 275°F (135°C)
- Elastomer temperatures to 550°F (275°C)
- Metal seal temperatures to 2192°F (1200°C)
- Tolerances to +/- .001 in. (.025 mm)
- Rod speeds to 13 ft/sec (4 m/sec)

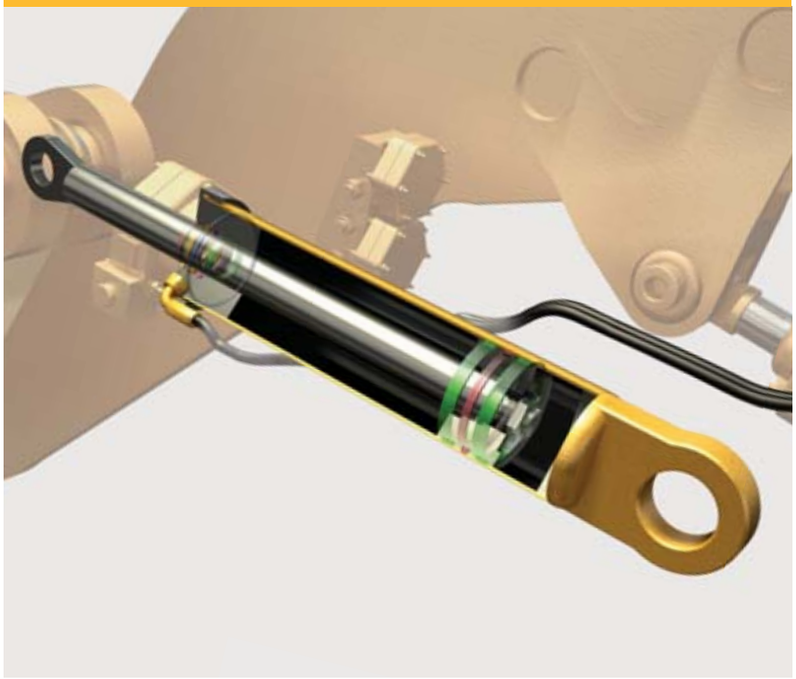
Market Environment

- Heavy duty applications are continually evolving to improve performance, meaning systems run hotter with tighter tolerances than ever
- Product durability demands are surpassing 20,000 hours in operation and greater than 2,000,000 cycles without maintenance
- Systems use a range of fluids from standard hydraulic oils to EcoSafe and water-glycol formulations
- Increased globalization will grow demand for global logistics, spurring vendor partnerships and single order point systems

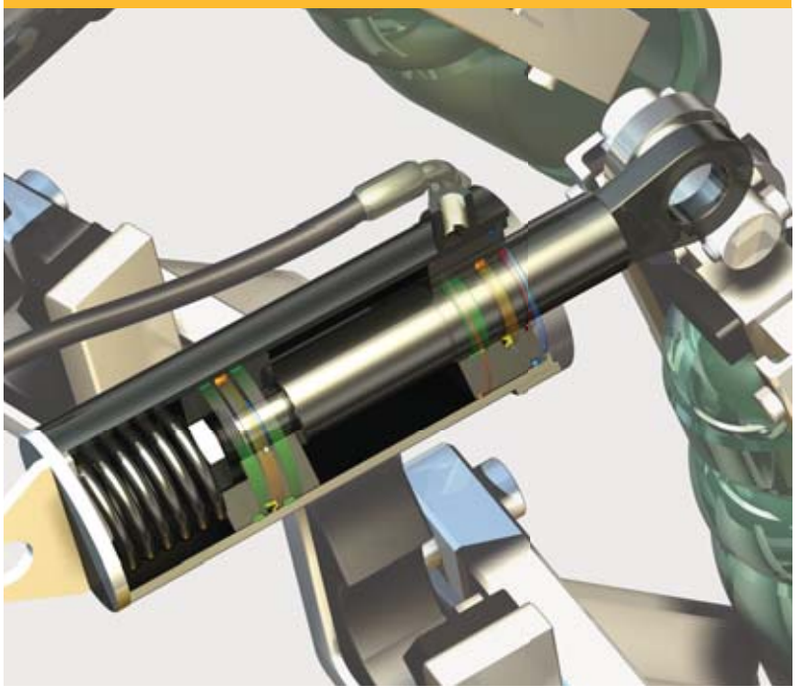
Around the corner or around the globe,
Parker is ready with engineered sealing solutions
to meet your most demanding applications.

Parker Seals at Work in Heavy Duty Applications

Hydraulic Cylinder Applications



Pneumatic Cylinder Applications

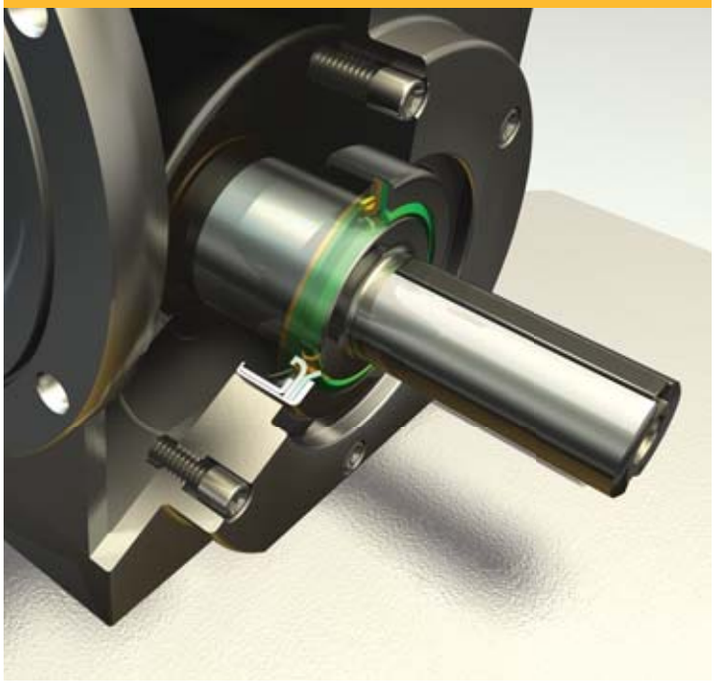


Shaft (Clipper) Seals

Protech Seals

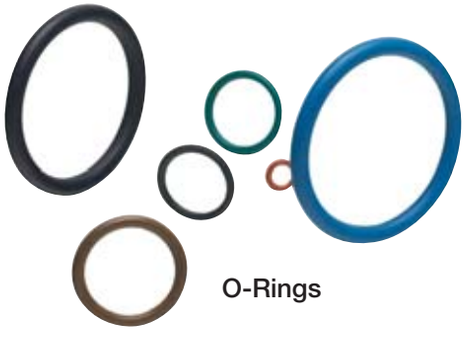
Flexi Seals

Pump / Motor Applications



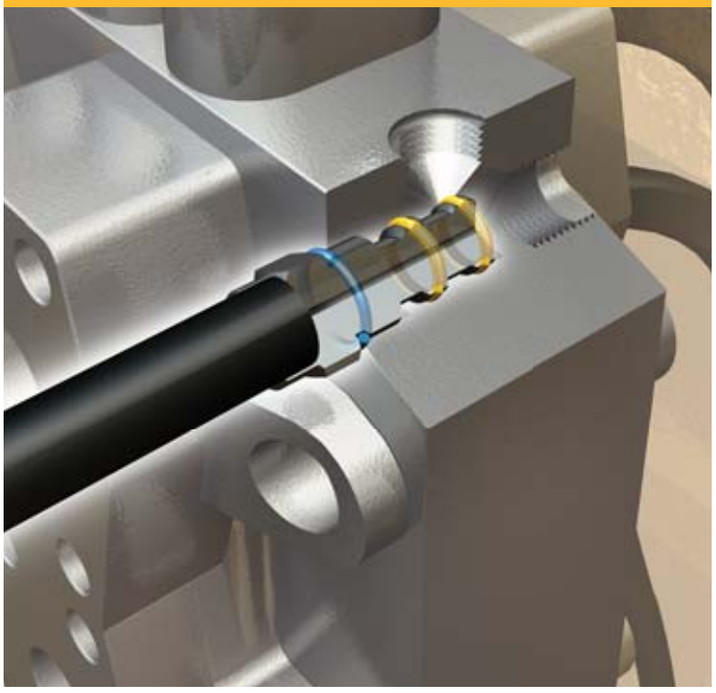
D-Rings

Back-up Rings



O-Rings

Valves and Control Applications



High-Performance Sealing Materials

Parker Material Code	Material Trade Name	Color	Typical Applications & Description	Service Temperature Range °F (°C)	Tensile Strength @ Break psi (MPa)	Ultimate Elongation	Shore Hardness	
							A	D
Thermoplastic Elastomers – TPU, Polyurethanes								
P4300A90	Polyurethane Resilon® 4300	Tan	Proprietary compound offering extended temperature range, high rebound	-65 to +275 (-54 to +135)	8625 (59.5)	560%	92	-
P4301A90	Polyurethane Resilon® 4301	Aqua Blue	For water- or petroleum-based fluids	-35 to 225 (-37 to +107)	7129 (49.2)	514%	90	-
P4304D60	Polyurethane Resilon® 4304	Brown	Offers higher extrusion resistance for seals and anti-extrusion devices	-65 to +275 (-54 to +135)	6521 (44.9)	556%	-	55
P4311A90	Polyurethane Resilon® 4311	Red	Formulation resists internal heat generated through hysteresis, ideal for shock applications	-65 to +275 (-54 to +135)	7229 (49.8)	632%	91	-
P4615A90	Polyurethane Molythane®	Black	General purpose industrial polyurethane offering high abrasion resistance	-65 to +200 (-54 to +93)	8134 (56.1)	565%	95	-
P4622A90	Polyurethane Ultrathane®	Yellow	Formulated with internal lubricants for lower friction to help reduce heat buildup	-65 to +225 (-54 to +107)	6757 (46.6)	466%	94	-
P4700A90	Polyurethane	Green	Enhanced properties over 4615 to improve sealing capabilities from lower compression set	-65 to +200 (-54 to +93)	5660 (39.0)	511%	92	-
P5065A88	Polyurethane	Dark Blue	Formulated for an improved low temperature range and higher resilience than 4615	-70 to +200 (-57 to +93)	5033 (34.7)	660%	86	-
Thermoplastic Elastomers – TPCE, Polymyte®								
Z4651D60	Polymyte®	Orange	Used in applications requiring extended extrusion resistance and fluid compatibility	-65 to +275 (-54 to +135)	5748 (39.6)	775%	-	58
Z4652D65	Polymyte®	Orange	Primarily used for back-up rings and other anti-extrusion devices	-65 to +275 (-54 to +135)	6175 (42.6)	700%	-	62
Non-Filled PTFE								
0100	Virgin PTFE	White	Excellent for cryogenic applications & gases	-425 to 450 (-254 to 233)	4575 (316)	400%	60	-
Filled PTFE								
0102	Modified PTFE	Turquoise	Lower creep, reduced permeability and good wear resistance	-320 to 450 (-195 to 282)	4600 (317)	390%	60	-
0120	Mineral Filled PTFE	White	Excellent low abrasion to soft surfaces & improved upper temperature performances. FDA materials	-250 to 550 (-157 to 288)	4070 (281)	270%	65	-
0203	Fiberglass Filled PTFE	Gold	Excellent compressive strength and good wear resistance	-200 to 575 (-129 to 302)	3480 (240)	190%	67	-
0204	Fiberglass & Moly Filled PTFE	Gray	Excellent for extreme conditions such as high pressure, temperature and longer wear life on hardened dynamic surfaces	-200 to 575 (-129 to 302)	3100 (214)	245%	62	-
0205	Fiberglass & Moly Filled PTFE	Gray	Improved compressive strength and wear in rotary applications	-200 to 575 (-129 to 302)	3480 (240)	190%	67	-
0301	Graphite Filled PTFE	Black	Excellent for corrosive service. Low abrasion to soft shafts. Good in unlubricated service	-250 to 550 (-157 to 288)	3200 (221)	260%	60	-
0307	Carbon-Graphite Filled PTFE	Black	Excellent wear resistance and reduces creep	-250 to 575 (-157 to 302)	2250 (155)	100%	64	-
0401	Bronze Filled PTFE	Bronze	Excellent extrusion resistance and high compressive loads	-200 to 575 (-129 to 302)	3200 (221)	250%	63	-
0502	Carbon Fiber Filled PTFE	Brown	Good for strong alkali and hydrofluoric acid. Good in water service	-200 to 550 (-129 to 288)	3200 (221)	150%	60	-
0601	Aromatic Polyester Filled PTFE	Tan	Excellent high temperature capabilities and excellent wear resistance	-250 to 550 (-157 to 285)	2500 (172)	200%	61	-
UltraCOMP™ (PEEK)								
W4685	UltraCOMP™ HTP	Tan	A homogenous engineered thermoplastic used for extreme conditions in many markets	-65 to +500 (-54 to +260)	14000 (96.5)			
W4686	UltraCOMP™ GF	Tan	30% glass filled engineered thermoplastic with enhanced compressive strength	-65 to +500 (-54 to +260)	22600 (156)			
W4737	UltraCOMP™ CF	Black	30% carbon fiber blend, provides enhanced tensile and compressive strength	-65 to +500 (-54 to +260)	32400 (224)			

Parker Material Code	Material	Color	Typical Applications & Description	Service Temperature Range °F (°C)	Tensile Strength @ Break psi (MPa)	Ultimate Elongation	Shore A Hardness
Nitrile (NBR)							
N4115A75	NBR	Black	General purpose nitrile with medium ACN content for use where a softer seal is required	-40 to +225 (-40 to +107)	2215 (15.3)	328%	74
N4181A80	NBR	Black	Fiber added reinforcement helps retain lubrication for reduced friction. Used in 8600 wipers	-40 to +250 (-40 to +121)	2437 (16.8)	345%	80
N4121A90	NBR	Black	High modulus for outstanding extrusion resistance plus good compression set	-40 to +250 (-40 to +121)	2415 (16.7)	247%	89
N4008A80	NBR	Black	Premium, low ACN nitrile for use when low temperature sealability is required	-70 to +275 (-57 to +135)	2141 (14.8)	177%	79
N4182A75	NBR	Black	General purpose nitrile for use when low temperature sealability is required	-65 to +225 (-54 to +135)	1914 (13.2)	278%	79
Carboxylated Nitroxile® (XNBR)							
N4257A85	XNBR	Black	XNBR with internal lubricant to reduce friction. Ideal for pneumatic applications	0 to +250 (-18 to +121)	2845 (19.6)	249%	80
N4274A85	XNBR	Black	Premier XNBR in the industry formulated with proprietary internal lubricant	-10 to +250 (-23 to +121)	3016 (20.8)	241%	83
N4263A90	XNBR	Black	Extra tough XNBR with increased hardness, modulus and tensile strength	-20 to +275 (-29 to +135)	3103 (21.4)	117%	90
Hydrogenated Nitrile (HNBR)							
N4031A85 (KA183)	HNBR	Black	Equivalent to Parker compound KA183A85, offers low temperature improvement	-40 to +320 (-40 to +160)	1800 (12.4)	100%	88
N4032A80 (KB162)	HNBR	Black	Equivalent to Parker compound KB162A80 offering improved chemical compatibility	-25 to +320 (-32 to +160)	3335 (22.9)	164%	82
N4033A90 (KB163)	HNBR	Black	Equivalent to Parker compound KB163A90 offering improved chemical compatibility	-25 to +320 (-32 to +160)	3219 (22.2)	107%	88
N4007A95	HNBR	Black	Excellent extrusion resistance	-20 to +320 (-29 to +160)	4698 (32.4)	207%	92
Ethylene Propylene (EPR)							
E4207A90	EPR	Black	General purpose 90A EPR, has excellent dimensional stability in water-based fluids & steam	-65 to +300 (-54 to +149)	2285 (15.8)	135%	87
E4259A80	EPR	Black	General purpose 80A EPR, has excellent dimensional stability in water-based fluids & steam	-65 to +300 (-54 to +149)	2142 (14.8)	162%	79
E4270A90	EPR	Black	Formulated for geothermal environments and steam up to +600˚F	-65 to +400 (-54 to +204)	3047 (21.0)	145%	89
Fluorocarbon Elastomers (FKM)							
V1289A75	FKM	Black	Fluorocarbon material formulated for improved low-temperature applications	-40 to +400 (-40 to +204)	1497 (10.3)	163%	78
V4205A75	FKM	Black	70 Shore A general-purpose fluorocarbon resistant to chemical attack and heat	-20 to +400 (-29 to +204)	2161 (14.9)	202%	76
V4208A90	FKM	Black	90 Shore A general-purpose fluorocarbon resistant to chemical attack and heat	-5 to +400 (-21 to +204)	1954 (13.5)	152%	90
V4266A95	FKM	Black	Features extended wear and extrusion resistance over general purpose fluorocarbons	-5 to +400 (-21 to +204)	2442 (16.8)	102%	92
V1238A95	FKM	Black	Resistant to explosive decompression and extrusion. Shows no visual physical damage after prolonged exposure to 100% CO_2 concentrations	-20 to +400 (-29 to +204)	3030 (20.9)	95%	93
Nylons							
W4650	MolyGard®	Gray	Heat stabilized, internally lubed 30% glass-reinforced nylon for standard tolerance wear rings	-65 to +275 (-54 to +135)	17500 (121)		
W4655	Nylatron®	Gray	Wear resistant nylon with molybdenum disulfide for lower friction, suited for back-up rings	-65 to +275 (-54 to +135)	13000 (89.6)		
W4733	WearGard™	Green	High compressive strength, 35% glass-reinforced nylon for tight tolerance wear rings	-65 to +275 (-54 to +135)	18300 (126)		

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