

Rubber Seals and O-Rings Specification Sheet

NBR HNBR EPDM FKM and FFKM, plus Y seals and the full AS568 size range.

Nine sealing products organised by the only thing that actually decides seal life: material. NBR for oil and fuel, HNBR for cold media and automotive power steering, EPDM for water, steam, brake fluid and refrigerants, FKM for acids, hydraulic fluids and heat, and FFKM for semiconductor, pharmaceutical and chemical processes that defeat everything else. Y seals cover reciprocating dynamic duty, and the AS568 series covers standard sizes with every mould held.

9 products in this category. Every figure below is published on the product pages at trueglowimaging.com/categories/rubber-seals.html

Y Seals and Y O-Rings

Y Seals and Y O-Rings

A range of Y seals and Y O-rings covering the standard hole and shaft universal type, commonly called the Y-ring, along with YX hole, YX shaft, QY hole, QY shaft, high and low Y-type hole and shaft seal rings and KY shaft types. Each is designed around four parameters: the ratio of inner and outer lips, the cross-section, the angle between the two lips and the height. Those four decide whether a lip seal actually seals in a given groove and pressure.

Specification

Standard Type	Hole and shaft universal, commonly called the Y-ring
Specialised Types	YX hole, YX shaft, QY hole, QY shaft, high and low Y-type hole and shaft seal rings, KY shaft type
Design Parameters	Ratio of inner and outer lips, cross-section, angle between two lips, height
Material	Rubber elastomer, selected to fluid and temperature
Automotive Use	Various car parts, to ensure no leakage of fluids

Key benefits

Lip Geometry Is the Specification. Inner and outer lip ratio, cross-section, lip angle and height. A Y seal that is the right diameter but the wrong lip angle leaks, and none of those four appear on a part number.

Hole and Shaft Types Distinguished. A hole seal and a shaft seal are not interchangeable, because the sealing lip faces the other way. Both are supplied for every type.

Standard and Specialised Profiles. From the universal Y-ring through YX, QY, high and low Y types and KY shaft types, so an existing groove can be matched rather than remachined.

Pressure-Energised Sealing. A Y profile uses system pressure to push the lips apart against the sealing surfaces, which is why it seals better as pressure rises rather than worse.

Where it is used

Hydraulic cylinder rod and piston sealing • Pneumatic cylinder sealing • Automotive fluid systems preventing leakage • Reciprocating shaft sealing • Replacing worn seals in existing equipment • Sealing in grooves designed for a specific Y profile

O-rings

O-Ring Range • NBR, EPDM, silicone and more

O-rings in nitrile, EPDM, silicone and other elastomers, used to seal hydraulic systems, pneumatic systems, water filtration systems, automotive engines and industrial machinery. The O-ring is the simplest sealing element there is: a circular cross-section elastomer compressed in a groove, which is why it installs quickly and costs little, and why material selection rather than geometry is what decides whether it survives.

Specification

Materials	Nitrile (NBR), EPDM, silicone and others
Hydraulic Systems	Prevents fluid leakage between connected parts
Pneumatic Systems	Seals air and prevents loss of pressure
Water Filtration Systems	Ensures no contaminants bypass the filter
Installation	Simple design, quick and hassle-free
Sizing	By inside diameter and cross-section

Key benefits

Material Decides Everything. The geometry is standardised, so the choice that matters is elastomer. Nitrile for oil, EPDM for water and steam, silicone for temperature extremes. Getting that wrong is the most common seal failure there is.

Installs in Seconds. A simple design ensures quick and hassle-free installation. On a machine with dozens of seals, that time is the real assembly cost.

Cost-Effective Sealing. An O-ring costs a fraction of any engineered seal and works in the great majority of static applications.

Works Across Fluid Types. Hydraulic fluid, compressed air, water and engine fluids are all sealed by O-rings with the right elastomer selected.

Where it is used

Hydraulic systems preventing fluid leakage between connected parts • Pneumatic systems sealing air and preventing loss of pressure • Water filtration systems ensuring no contaminants bypass the filter • Automotive engine sealing • Industrial machinery static and dynamic seals • Replacement seals during machine maintenance

NBR O-Rings

NBR O-Ring · Nitrile rubber

NBR O-rings in nitrile rubber, chosen for their oil resistance. They are used mainly in the automotive industry, in aerospace, in wire and cable applications and in home appliances. NBR resists oils, fuels and other hydrocarbons better than most general-purpose elastomers, which is why it remains the default material wherever oil is present and cost matters.

Specification

Material	NBR nitrile rubber
Key Property	Good oil resistance
Resists	Oils, fuels and other hydrocarbons
Primary Industry	Automotive
Other Applications	Aerospace, wire and cable, home appliances
Sizing	By inside diameter and cross-section

Key benefits

Oil and Fuel Resistance. NBR resists oils, fuels and other hydrocarbons, which is the single property that governs seal life in an engine, gearbox or hydraulic circuit.

Cost Without Compromise. NBR costs far less than fluoroelastomer and does the job wherever temperature and chemistry stay within its range. Specifying FKM where NBR suffices is money spent for nothing.

Consistent Performance in Oil-Saturated Environments. The resistance is inherent to the polymer rather than a coating, so performance does not degrade with time in service.

Established Across Four Industries. Automotive, aerospace, wire and cable, and home appliances all use NBR O-rings as standard.

Where it is used

Automotive engine and fluid system sealing • Aerospace hydraulic and fuel systems • Wire and cable gland sealing • Home appliance water and fluid seals • Hydraulic circuits handling mineral oil • General industrial sealing where oil is present

HNBR O-Rings and Seals

HNBR Seals · Hydrogenated nitrile

HNBR O-rings and seals in hydrogenated nitrile, used predominantly for cold medium sealing where the material's composition keeps it performing at low temperature. In automotive work it is used on power steering pipes and oil seals, and beyond automotive it is found in packer and screw pumps and in O-ring applications generally.

Specification

Material	HNBR hydrogenated nitrile
Primary Use	Cold medium sealing
Automotive Applications	Power steering pipes, automotive oil seals

Industrial Applications	Packer and screw pumps, O-ring applications
Sizing	By inside diameter and cross-section

Key benefits

Performs in Cold Media. HNBR is predominantly used for cold medium sealing, where standard nitrile stiffens and loses sealing contact. That is the specific reason to pay more for it.

Automotive Proven. Power steering pipes and automotive oil seals are named applications, both of which see temperature cycling and pressure in the same duty.

Suited to Pump Service. Packer and screw pumps are named applications, where the seal sees both abrasion and chemical exposure.

Hydrogenation Improves the Backbone. Hydrogenating nitrile removes the double bonds that make standard NBR vulnerable to heat and ozone, without losing its oil resistance.

Where it is used

Power steering pipe sealing in vehicles • Automotive oil seals • Cold medium sealing applications • Packer pumps in oilfield service • Screw pump sealing • General O-ring applications requiring HNBR properties

FKM and FFKM O-Rings

FKM and FFKM O-Rings · Fluoroelastomer and perfluoroelastomer

FKM and FFKM O-rings for chemically demanding service. FKM O-rings are made from fluoroelastomer and resist a wide range of chemicals and temperatures, including petroleum products, hydraulic fluids and acidic compounds. FFKM, or perfluoroelastomer, is specified where the highest level of chemical resistance is needed, withstanding even the most aggressive chemicals in semiconductor manufacturing, chemical processing and similar industries.

Specification

FKM Material	Fluoroelastomer
FKM Resistance	Petroleum products, hydraulic fluids, acidic compounds, wide temperature range
FFKM Material	Perfluoroelastomer
FFKM Resistance	Almost universal chemical resistance
FFKM Industries	Semiconductor manufacturing, chemical processing
Chemical Processing Use	Seals for reactors, mixers and transfer systems

Key benefits

FKM Covers Most Difficult Chemistry. Petroleum products, hydraulic fluids and acidic compounds are all within FKM's range. For the majority of aggressive industrial fluids, FKM is sufficient and much cheaper than FFKM.

FFKM for Almost Universal Resistance. Where the fluid defeats FKM, perfluoroelastomer offers almost universal chemical resistance. It is the material of last resort, and it is available here.

Two Grades From One Supplier. Having both means the specification can be stepped up only where it needs to be, rather than applying FFKM across a whole machine.

Temperature and Chemistry Together. FKM handles a wide temperature range as well as chemical exposure, which is what most high-temperature oil and fuel applications actually need.

Where it is used

Chemical processing seals for reactors, mixers and transfer systems • Semiconductor manufacturing equipment seals • Hydraulic fluid sealing at elevated temperature • Petroleum product handling • Acidic compound service • High temperature sealing where nitrile fails

FFKM Seals

FFKM Seals · Perfluoroelastomer

FFKM material seals for industries where chemical attack and temperature defeat every other elastomer. They are supplied into the semiconductor sector, the pharmaceutical industry and chemical processing, and also into petroleum and automobile applications, laser plating, battery manufacturing and special equipment production. FFKM is the most chemically resistant elastomer available, which is why it is specified where a seal failure stops a process rather than merely leaking.

Specification

Material	FFKM perfluoroelastomer
Semiconductor Sector	Process equipment sealing
Pharmaceutical	Manufacturing equipment seals
Chemical Industry	Reactor, mixer and transfer sealing
Other Industries	Petroleum, automobile, laser plating, battery manufacturing, special equipment production
Build	Engineered to the application

Key benefits

Specified Where Failure Is Unacceptable. In semiconductor and pharmaceutical processes, a failed seal contaminates a batch worth far more than the seal. FFKM is bought for that risk, not for its price.

Eight Industries Supplied. Semiconductor, pharmaceutical, chemical, petroleum, automobile, laser plating, battery manufacturing and special equipment production all use these seals.

Battery Manufacturing Coverage. Battery production chemistry is aggressive and growing fast. FFKM is one of the few elastomers that survives electrolyte exposure.

Durability Over Replacement Intervals. The reason to pay for FFKM is that it stays in service through process cycles that would consume several sets of lesser seals.

Where it is used

Semiconductor process equipment sealing • Pharmaceutical manufacturing equipment • Chemical industry reactor and transfer sealing • Petroleum industry service • Laser plating equipment • Battery manufacturing lines • Special equipment production

FFKM O-Rings

FFKM O-Ring · Perfluoroelastomer

FFKM O-rings for applications where chemical attack and temperature both defeat conventional elastomers. They resist a wide range of aggressive chemicals, solvents and corrosive agents, and maintain sealing integrity under extreme temperatures and thermal cycling. They are used in aerospace, biotechnology where purity and freedom from contamination matter, automotive fuel systems and high-temperature engine components, petrochemical work and semiconductor manufacturing.

Specification

Material	FFKM perfluoroelastomer
Chemical Resistance	Aggressive chemicals, solvents and corrosive agents
Temperature Performance	Maintains integrity under extreme temperatures and thermal fluctuation
Aerospace	Fluid and fuel system sealing
Biotechnology	Ensures purity and prevents contamination in processes
Automotive	Fuel systems and high-temperature engine components
Other Industries	Petrochemical, semiconductor manufacturing

Key benefits

Survives Thermal Cycling. Many seals hold at a steady high temperature and fail when it swings. FFKM maintains its integrity and sealing capability through thermal fluctuation, which is what most real processes actually do.

Purity in Biotechnology Processes. In biotech the seal must not contribute anything to the process. FFKM ensures purity and prevents contamination, which is why it is specified there despite the cost.

Resists Solvents and Corrosives Together. Aggressive chemicals, solvents and corrosive agents are all within range. Most elastomers handle one category and fail on another.

Long Service Life Justifies the Cost. FFKM is expensive per piece. It is bought because the replacement interval stretches far enough that the total cost falls.

Where it is used

Aerospace fluid and fuel system sealing • Biotechnology processes requiring purity • Automotive fuel systems • High-temperature engine components • Petrochemical industry equipment • Semiconductor manufacturing equipment

EPDM Seals and O-Rings

EPDM Seals and O-Rings · Ethylene Propylene Diene Monomer

EPDM seals and O-rings, chosen for heat, ozone and weather resistance. EPDM is used across automotive, electronic and electrical industries, daily necessities, sports equipment and mechanised industrial equipment, and as insulation material for wires, cables and high-voltage and ultra-high-voltage applications. In sealing it covers heating systems, automotive brakes, water systems and refrigeration units, and food-grade EPDM extends it to pharmaceutical and food processing.

Specification

Material	EPDM, Ethylene Propylene Diene Monomer
Key Properties	Heat, ozone and weather resistance
Heating Systems	Hot water and steam service
Automotive	Brake system sealing
Refrigeration	Resistant to coolants and refrigerants
Food Grade Option	Pharmaceutical and food processing
Electrical Use	Wire, cable, high-voltage and ultra-high-voltage insulation

Key benefits

Weather and Ozone Resistance. EPDM does not crack in sunlight and ozone the way nitrile does. For any seal that lives outdoors or near electrical equipment, that is the property that decides service life.

The Right Choice for Water and Steam. Heating systems, water systems and refrigeration units all use EPDM because it handles hot water, steam and glycol where oil-resistant elastomers fail.

Brake Fluid Compatible. Automotive brake systems are a named application. Brake fluid attacks most elastomers, and EPDM is one of the few that tolerates it.

Food Grade Available. With food-grade EPDM the same material covers pharmaceutical and food processing, which keeps one elastomer family across a plant.

Where it is used

Heating system seals handling hot water and steam • Automotive brake system sealing • Water systems and plumbing seals • Refrigeration units, due to resistance to coolants and refrigerants • Pharmaceutical and food processing using food-grade EPDM • High-voltage and ultra-high-voltage insulation components

AS568 O-Ring Series

AS568 · Full standard size range

The AS568 series is the American standard O-ring size range, and the complete set of moulds for it is held in stock, so standard AS568 parts are supplied promptly rather than tooled to order. O-rings from the series are used across machine tools, agricultural machinery, instrumentation, construction machinery, automobiles, ships, aerospace equipment, engineering machinery, chemical machinery, mining machinery, plastic machinery and petroleum machinery.

Specification

Standard	AS568 O-ring size series
Tooling	All moulds for the AS568 size range held
Availability	Standard parts supplied promptly
Variants	AS568 O-RING, AS568 O RING, AS568 ORING
Applications	Machine tools, agricultural, instrumentation, construction, automobiles, ships, aerospace, engineering, chemical, mining, plastic and petroleum machinery

Key benefits

Every Mould in the Series Held. Holding all AS568 moulds means any size in the standard is a production question rather than a tooling question. That is the difference between a two-week delivery and a two-month one.

A Standard Rather Than a Part Number. AS568 sizes are interchangeable between suppliers worldwide. Specifying to the standard removes the dependency on one vendor's catalogue.

Twelve Industries Covered. From machine tools to petroleum machinery, the same size range serves them all, which is exactly what a standard is for.

Material Choice Independent of Size. Because the size is standardised, the specification decision reduces to elastomer selection, which is where seal life is actually decided.

Where it is used

Machine tool hydraulic and pneumatic sealing • Agricultural machinery sealing • Instrumentation and measurement equipment • Construction and engineering machinery • Automobiles and ships • Aerospace equipment • Chemical, mining, plastic and petroleum machinery

How To Enquire

Send the process rather than a model number: capacity or flow rate, the product being handled, the container format where relevant, and the utilities already on site. WhatsApp +86 150 5517 9418 or email sales@trueglowimaging.com.

Minimum order is one unit on the process, packaging, utility and crane ranges. Machined, fabricated and moulded parts are quoted from single pieces upward.