

# Product Information

## O-Rings & Molded Rubber Parts

### O-Rings

**NAK O-Rings** are precision rubber seals available in all standard AS568, JIS B2401 P/G/S, and Metric sizes. We also offer a wide range of specialty and custom sizes. NAK O-Rings are made of various high-performance rubber compounds with excellent capabilities and used in various applications.



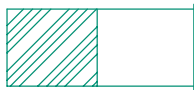
### Molded Rubber Parts

**NAK Molded Rubber & Rubber-Metal Parts** are made of high-performance rubber compounds with excellent capabilities through high-precision tooling, molding and processing. They can be molded specifically to the customer specification for use in different applications.

## Product Description

O-Rings are ring-shaped seals with a circular cross-section. The O-Ring looks simple yet it is a critical component in most industrial and even domestic equipment. NAK O-Rings have been accepted by engineers as an essential item and integral part of the system assembly. In actual application different types of rubber Rings can be used to ensure proper sealing and service life. Besides the O-Ring, NAK also offers specialty rubber Rings and custom designs such as the following.

### SQ-RING



During installation, SQ-Ring would not be reversed easily, because it has a large contact area. The anti-extrusion pressure of SQ-Ring is stronger compared to the O-Ring. The main application of SQ-Ring is static sealing, such as aligning gear and engine.

### X-RING



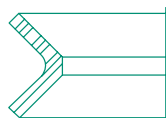
X-Ring has a good sealing function and is capable of storing up the lubricating oil in the fillister of the sliding surface. Therefore, X-Ring offers greater friction resistance. The design of X-Ring is suitable for both reciprocating and oscillating applications.

### D-RING



D-Ring performs stably when installed in the cannellure. It has good sealing, impact resistant, and reverse prevention capabilities. Application of D-Ring such as the shock absorber prop of aligning gear.

### V-O RING



V-O Ring combines V-Ring and O-Ring to be in one ring. The contact surface has many grooves, so they can store up the lubricating oil to reduce the friction force. V-O Ring will not be reversed easily when used in the reciprocating application. In high-pressure application a protection back-up ring is recommended to use along with the V-O Ring.

### H-RING



H-Ring offers low friction force. The even side of H-Ring can fit in trenched surface, thus it would not be twisted easily.

# Technical Information

## PRODUCT DEVELOPMENT



In developing and manufacturing **O-Rings and Molded Rubber & Rubber-Metal Parts**, NAK utilizes state-of-the-art facilities. From material to finished product, we have complete in-house machinery and equipment including CNC tooling machines, compounding and material preparation equipment, precision molding and deflashing machines, automatic inspection equipment, etc. Our chemical lab can do all tests as per international standard such ASTM and also customer specified tests.

### Material Selection

When choosing the material, considerations include: compression-set property, wear and abrasion resistance, fluid and chemical resistance, thermal stability, etc. Advantages of rubber include good heat-aging capability, fluid and chemical compatibility, viscoelasticity and temperature range, etc. NBR and FKM are the most widely used rubber elastomers, NBR for its excellent oil resistance and FKM for its superb chemical capability. Besides, NAK offers a wide range of materials to suite different application requirements including HNBR, POLYACRYLATE, EPDM, SILICONE, NEOPRENET, PU, etc.



NAK has an all-round material research laboratory, and dedicated chemical engineers who are always ready to offer professional viewpoints. If you have any queries regarding material selection, please feel free to contact us for more information.



# Application

The O-ring is usually used as a mechanical seal or gasket to be installed in a groove and compressed during assembly between parts to create sealing at the interface.

Though the O-ring is mostly used as a static seal, in some cases it is used for dynamic sealing, for example, pump shaft and hydraulic cylinder. When it is dynamic application, usually external or internal lubrication is required to reduce wear. For external application mostly grease is applied, and for internal lubrication the O-ring compound is made with friction reduction element - NAK offers special compounds for this purpose.

The O-ring is a simple but highly critical and precision mechanical component. In selecting an O-ring, it is important to first determine the compound. Basically, the parameters of the application determine the rubber compound. Important factors include: the media to be sealed (fluid, gas, air, etc.), extrusion resistance where pressure is applied, the range of the system temperatures, required external or internal lubrication, etc.



## Disclaimer

1. NAK product is prohibited to use, install or apply in or on any aerospace related instrument and equipment.
2. NAK has no liability under any express or implied Warranty if NAK Product:
  - is modified or tampered;
  - is misused, abused or misapplied;
  - is used in a critical environment or specific equipment without NAK prior written acknowledgement;
  - is not used in accordance with the printed user instruction materials
  - is damaged owing to natural deterioration, decomposition or transformation of chemical structure
3. If NAK's product to be applied in critical environment or specific equipment, it is only allowed to launch into mass production when the sample has been passed the testing conducted by the user.



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