



# Parker O-Ring Material Offering Guide

ORD 5712

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

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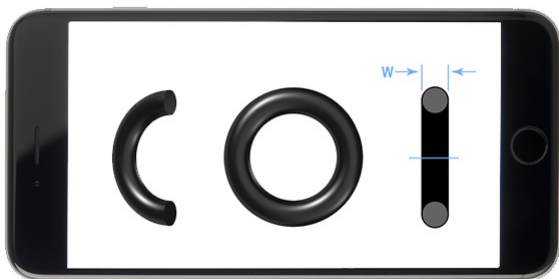
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# O-Ring Material Offering Guide



## THIS IS O-RING DESIGN EXPERTISE

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## Operations

Engineers in every industry - from automotive to fluid power to semiconductor processing - choose O-rings made by Parker to keep their equipment running safely and reliably. That's because Parker's O-Ring & Engineered Seals Division develops, manufactures and supplies precision-engineered O-rings and custom seals by offering a unique combination of experience, innovation and support.

## Quality Assurance

In our world-class facilities, skilled Parker technicians manufacture O-rings to exacting standards, closely monitoring each step of the process through a Controlled Batch Identification (CBI) program. From in-house mixing and tooling operations to the final non-contact inspection process, state-of-the-art technology is employed to provide unparalleled material consistency and dimensional control. Quality registrations (AS 9100, ISO 9001, TS 16949 and VDA 6.1) are maintained to ensure superior product performance and process repeatability.

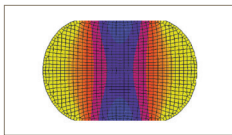
## Research and Development

In its on-site research labs, Parker develops new O-ring material formulations and compounds to meet customer needs. These materials are subjected to a broad range of mechanical, physical and environmental conditions, and their performance is evaluated through a comprehensive testing process.



## Finite Element Analysis

Through the use of powerful computers and Finite Element Analysis (FEA) software specifically designed for elastomeric evaluation, Parker engineers can predict a seal's performance in a variety of media, temperatures and pressures before a single part is made. This eliminates the need for costly tooling, speeds the production process and ensures the selection of the right material and geometry for a customer's application.

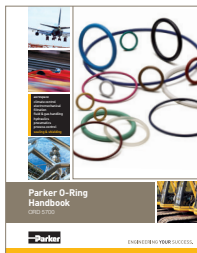


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## Literature

Since its initial release, the Parker O-Ring Handbook (ORD 5700) has been a fixture on the reference shelves of engineers and seal specifiers worldwide.

This book contains extensive information about basic sealing elastomer properties, typical O-ring applications, static and dynamic seal design fundamentals, and O-ring failure modes.



To download a pdf copy of the O-Ring Handbook, go to [www.parker.com/ORD5700](http://www.parker.com/ORD5700)

For fast, on the go access to this information, check out our abridged versions of the handbook, available as the O-Ring eHandbook (interactive online version), ORD 5712 (US) and 5705 (Europe).

## Seal Design Software

Parker's Mobile inPHorm™ and O-Ring Selector (advanced users) are web-based mobile applications designed to assist with material selection, fluid compatibility, gland/seal calculations and overall design analysis. Scan the below QR codes to try them out today!



inPHorm



Selector



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## Product Lines

### O-Rings

- Manufactured to US and international standards: AS568, ISO 3601, DIN 3771, JIS and metric. Custom sizes of almost any dimension.
- Miniature O-rings, large special O-rings, continuously molded and spliced cord.
- Perfluorinated (FFKM) O-rings, custom molded products and die-cuts. Broadest chemical resistance, highest purity and temperature resistance of any elastomeric family - up to 320°C/608°F.

### Parbak® Back-up Rings

Prevent extrusion in high-pressure applications and help retain lubricant, extending O-ring life.

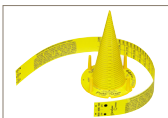


### O-Ring Kits

Kits are conveniently arranged with various size O-rings for repair, assembly and workshop.

### Accessories

Products to assist O-ring users include assembly greases and lubricants, sizing cones and extraction tools.



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## Material Offering



### Compounds

O-rings can be molded in a wide range of compounds in durometers ranging from 40 to 95 Shore A. These materials include:

- Acrylonitrile-Butadiene (NBR)
- Butyl (IIR)
- Chloroprene (CR)
- Ethylene Acrylic (AEM)
- Ethylene Propylene (EPDM)
- Fluorocarbon (FKM)
- Fluorosilicone (FVMQ)
- Hydrogenated Nitrile (HNBR)
- Perfluoroelastomer (FFKM)
- Polyacrylate (ACM)
- Silicone (VMQ)

Parker O-ring compounds are formulated to meet the most stringent industry standards, including NSF, Underwriters Laboratories (UL), Military (MIL-SPEC), Aerospace (AMS), NASA, FDA, USDA, USP, and many customer-specific requirements.

### Wynn's Numbering System

Parker Hannifin acquired Wynn's International, parent company of Wynn's Precision and Goshen Rubber, in July 2000. As a result, some Wynn's products and materials were added to the Parker O-Ring & Engineered Seals Division's offering.

The Wynn's compound numbering system has been phased out; however, the old numbers are noted in parentheses (XXXXX) wherever applicable for reference purposes.



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## Parker O-Ring Compound Numbering Systems

Note: There are two types of nomenclature used to reference Parker O-Ring products. See tables below for description of these types.

| TYPE I                          |                                  |                                     |
|---------------------------------|----------------------------------|-------------------------------------|
| N                               | 0674                             | -70                                 |
| Polymer Code<br>(Single Letter) | Sequence Number<br>(four digits) | Durometer Indicator<br>(two digits) |

| TYPE II                         |                                                    |                                   |                                     |
|---------------------------------|----------------------------------------------------|-----------------------------------|-------------------------------------|
| A                               | A                                                  | 150                               | -70                                 |
| Polymer Code<br>(Single Letter) | Special Property<br>Description<br>(Single Letter) | Sequence Number<br>(three digits) | Durometer Indicator<br>(two digits) |

### Polymer Codes

|   |                         |   |                                           |
|---|-------------------------|---|-------------------------------------------|
| A | Polyacrylate            | N | Nitrile (Buna N) and HNBR                 |
| B | Butyl                   | P | Polyurethane                              |
| C | Chloroprene (Neoprene®) | S | Silicone                                  |
| E | Ethylene Propylene      | V | Fluorocarbon, AFLAS®,<br>Hifluor™, ULTRA™ |
| F | ULTRA™ FFKM             | Y | Epichlorohydrin                           |
| H | Hifluor™                | Z | Exotic Polymers                           |
| K | HNBR                    |   |                                           |
| L | Fluorosilicone          |   |                                           |

### Special Property Descriptions

|   |                                        |
|---|----------------------------------------|
| A | General Purpose                        |
| B | Low Compression Set                    |
| E | Ethylene Acrylate or (Vamac®)          |
| F | Fuel Resistant or Fully<br>Fluorinated |
| G | Higher Fluorine Content                |
| J | NSF / FDA / WRAS Approvals             |
| L | Internally Lubed                       |
| M | Mil/ AMS Specifications                |
| P | Low Temperature Flexible<br>or (AFLAS) |
| W | Non-Black Compound                     |
| X | Carboxylated                           |

### Durometer Indicators (Hardness)

|     |       |                   |
|-----|-------|-------------------|
| -40 | 40 ±5 | Shore A Durometer |
| -45 | 45 ±5 | Shore A Durometer |
| -50 | 50 ±5 | Shore A Durometer |
| -55 | 55 ±5 | Shore A Durometer |
| -60 | 60 ±5 | Shore A Durometer |
| -65 | 65 ±5 | Shore A Durometer |
| -70 | 70 ±5 | Shore A Durometer |
| -75 | 75 ±5 | Shore A Durometer |
| -80 | 80 ±5 | Shore A Durometer |
| -85 | 85 ±5 | Shore A Durometer |
| -90 | 90 ±5 | Shore A Durometer |
| -95 | 95 ±5 | Shore A Durometer |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR | TEMP.<br>RANGE (°F) | COLOR |
|--------------------|-----------------|---------------------|-------|
|--------------------|-----------------|---------------------|-------|

## POLYACRYLATE (ACM)

ACM (acrylic rubber) has good resistance to mineral oil, oxygen and ozone. The water compatibility and cold flexibility of ACM are considerably worse than with NBR.

|                 |                                         |                  |              |
|-----------------|-----------------------------------------|------------------|--------------|
| <b>AA150-70</b> | <b>Engines &amp; Transmission Seals</b> | <b>-5 to 350</b> | <b>Black</b> |
|-----------------|-----------------------------------------|------------------|--------------|

## ETHYLENE ACRYLATE (AEM)

Ethylene acrylate is a mixed polymer of ethylene, methyl acrylate and a small amount of carboxylated cure-site monomer. Developed as a lower-temperature version of Polyacrylate, but swells slightly more. Polymer is sold under the tradename VAMAC®.

|                 |                                             |                   |              |
|-----------------|---------------------------------------------|-------------------|--------------|
| <b>AE152-70</b> | <b>Transmission Applications</b>            | <b>-40 to 325</b> | <b>Black</b> |
| AE153-75        | Transmission Applications, Internally Lubed | -40 to 325        | Black        |

## BUTYL RUBBER (IIR)

Butyl rubber (isobutylene-isoprene rubber or IIR) has a very low permeability rate and good electrical properties, but poor short-term rebound.

|                 |                                    |                   |              |
|-----------------|------------------------------------|-------------------|--------------|
| <b>B0612-70</b> | <b>Vacuum, Low Compression Set</b> | <b>-75 to 250</b> | <b>Black</b> |
|-----------------|------------------------------------|-------------------|--------------|

## POLYCHLOROPRENE RUBBER (CR)

Also known by the tradename Neoprene®, polychloroprene was the first synthetic rubber and exhibits generally good ozone, aging, and chemical resistance. It has good mechanical properties over a wide temperature range.

|                 |                                                                 |                   |              |
|-----------------|-----------------------------------------------------------------|-------------------|--------------|
| <b>C0267-50</b> | <b>AMS 3208, Low Temperature</b>                                | <b>-60 to 250</b> | <b>Black</b> |
| C0557-70        | Drive Belt Applications, General Purpose                        | -35 to 250        | Black        |
| <b>C0873-70</b> | <b>Refrigerant Gases, Low Extractibles, Low Compression Set</b> | <b>-35 to 225</b> | <b>Black</b> |
| C1124-70        | AMS 3209, Low Temperature                                       | -60 to 250        | Black        |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR | TEMP.<br>RANGE (°F) | COLOR |
|--------------------|-----------------|---------------------|-------|
|--------------------|-----------------|---------------------|-------|

## ETHYLENE PROPYLENE RUBBER (EPM, EPR, EPDM)

EPM (EPR) is a copolymer of ethylene and propylene. EPDM is a terpolymer of ethylene, propylene, and a diene third monomer used for cross-linking.

|                 |                                                     |                   |              |
|-----------------|-----------------------------------------------------|-------------------|--------------|
| <b>EA454-50</b> | <b>General Purpose</b>                              | <b>-70 to 250</b> | <b>Black</b> |
| EB152-70        | UL Listed                                           | -70 to 250        | Black        |
| <b>E1157-60</b> | <b>General Purpose</b>                              | <b>-70 to 250</b> | <b>Black</b> |
| E1561-60        | KTW, WRAS                                           | -70 to 250        | Black        |
| <b>E0751-65</b> | <b>Drive Belt Applications</b>                      | <b>-70 to 250</b> | <b>Black</b> |
| E0603-70        | General Purpose                                     | -70 to 250        | Black        |
| E0667-70        | Auto Disc Brakes                                    | -70 to 250        | Black        |
| <b>E0803-70</b> | <b>General Purpose</b>                              | <b>-70 to 250</b> | <b>Black</b> |
| E1244-70        | NSF 61, Internally Lubed, USP VI                    | -70 to 250        | Black        |
| E1549-70        | WRAS, FDA                                           | -70 to 250        | Black        |
| E1583-70        | NSF 51 and Internally Lubed                         | -70 to 250        | Black        |
| <b>E3609-70</b> | <b>NSF 51, NSF 61, FDA, USP Class VI, ISO 10993</b> | <b>-70 to 250</b> | <b>Black</b> |
| EJ274-70        | Internally lubed, NSF 61, Chloramine Resistant      | -70 to 250        | Black        |
| <b>E0740-75</b> | <b>Nuclear Applications, USP VI, USP &lt;87&gt;</b> | <b>-70 to 250</b> | <b>Black</b> |
| E0515-80        | NAS 1613 Rev 2                                      | -70 to 250        | Black        |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR                            | TEMP.<br>RANGE (°F) | COLOR        |
|--------------------|--------------------------------------------|---------------------|--------------|
| <b>E0540-80</b>    | <b>General Purpose</b>                     | <b>-70 to 250</b>   | <b>Black</b> |
| E0893-80           | General Purpose                            | -70 to 250          | Purple       |
| EM163-80           | NAS 1613 Rev 6                             | -80 to 250          | Black        |
| <b>E0652-90</b>    | <b>General Purpose, Back-Up Rings</b>      | <b>-60 to 250</b>   | <b>Black</b> |
| E0962-90           | Excellent Steam to 500° F, ED<br>Resistant | -60 to 250          | Black        |

## FLUOROSILICONE (FVMQ)

Fluorosilicone is a silicone polymer chains with fluorinated side-chains for improved oil and fuel resistance. The mechanical and physical properties are very similar to those of silicone.

|                 |                                                        |                    |             |
|-----------------|--------------------------------------------------------|--------------------|-------------|
| L1223-60        | MIL-DTL-25988, TY 1, CL 1, GR 60,<br>AMS 3325          | -100 to 350        | Blue        |
| <b>LM100-70</b> | <b>MIL-DTL-25988, TY I, CL I, GR 70,<br/>UL listed</b> | <b>-100 to 350</b> | <b>Blue</b> |
| L1077-75        | MIL-DTL-25988, TY I, CL III, GR 75                     | -90 to 350         | Blue        |
| L1218-80        | MIL-DTL-25988, TY 1, CL 1, GR 80                       | -90 to 350         | Blue        |

## ACRYLONITRILE-BUTADIENE (NBR)

Nitrile rubber (NBR) is the general term for acrylonitrile-butadiene terpolymer. The acrylonitrile content of nitrile sealing compounds varies considerably (18 to 50%). Polymers with higher ACN content exhibit less swell in gasoline and aromatic solvents, while lower ACN polymers exhibit better compression set and low temperature flexibility. Polymer is also called Buna-N.

|                 |                  |                   |              |
|-----------------|------------------|-------------------|--------------|
| N0545-40        | General Purpose  | -45 to 225        | Black        |
| <b>N0299-50</b> | <b>UL listed</b> | <b>-55 to 225</b> | <b>Black</b> |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR                                      | TEMP.<br>RANGE (°F) | COLOR        |
|--------------------|------------------------------------------------------|---------------------|--------------|
| <b>N0525-60</b>    | <b>AMS 3220</b>                                      | <b>-25 to 250</b>   | <b>Black</b> |
| <b>NM506-65</b>    | <b>AMS 7271</b>                                      | <b>-70 to 180</b>   | <b>Black</b> |
| <b>N0103-70</b>    | <b>Low Temp.</b>                                     | <b>-55 to 225</b>   | <b>Black</b> |
| N0497-70           | Low Swell, SAE 120R1 CL II, UL listed                | -35 to 212          | Black        |
| N0602-70           | General Purpose, AMS-P-5315, Low Temp.               | -70 to 180          | Black        |
| <b>N0674-70</b>    | <b>General Purpose, MIL-G-21569, Cl I, UL listed</b> | <b>-30 to 250</b>   | <b>Black</b> |
| N0757-70           | NSF 61, UL Listed                                    | -30 to 225          | Black        |
| N1220-70           | NSF 51, FDA                                          | -30 to 225          | Black        |
| N1470-70           | General Purpose, X-rings                             | -40 to 250          | Black        |
| N1499-70           | General Purpose, UL                                  | -30 to 250          | Black        |
| N1510-70           | NSF 61                                               | -30 to 225          | Black        |
| N1527-70           | UL Listed                                            | -30 to 225          | Black        |
| NA151-70           | UL Listed                                            | -60 to 180          | Black        |
| NM072-70           | AMS-R-7362                                           | -60 to 180          | Black        |
| N0756-75           | AMS-P-83461                                          | -65 to 250          | Black        |
| <b>N0951-75</b>    | <b>High Temp, Low Compression Set</b>                | <b>-25 to 275</b>   | <b>Black</b> |



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| COMPOUND NUMBER | RECOMMENDED FOR                                 | TEMP. RANGE (°F)  | COLOR        |
|-----------------|-------------------------------------------------|-------------------|--------------|
| N1500-75        | Low Swell, UL Listed, Fuel applications         | -35 to 212        | Black        |
| <b>NM304-75</b> | <b>MIL-P-25732</b>                              | <b>-65 to 250</b> | <b>Black</b> |
| N1090-85        | "ELF" Pneumatic, Carboxylated, Internally Lubed | -25 to 225        | Black        |
| N0300-90        | Back Up Rings                                   | -40 to 180        | Black        |
| N0507-90        | AMS-P-5510, Low Temp.                           | -65 to 180        | Black        |
| <b>N0552-90</b> | <b>General Purpose</b>                          | <b>-30 to 250</b> | <b>Black</b> |
| N0702-90        | Low Compression Set                             | -30 to 275        | Black        |
| <b>N1059-90</b> | <b>Low Compression Set</b>                      | <b>-30 to 275</b> | <b>Black</b> |
| N1444-90        | Parbaks only                                    | -30 to 250        | Black        |
| N1490-90        | General Purpose                                 | -30 to 250        | Black        |

## HYDROGENATED NITRILE (HNBR, HSN)

Hydrogenated nitrile was developed as an air-resistant variant of nitrile rubber. In HNBR, the carbon-carbon double bonds in the main polymer chain are saturated with hydrogen atoms in a process called "hydrogenation" that improves the material's thermal stability and oxidation resistance.

|                 |                        |                   |              |
|-----------------|------------------------|-------------------|--------------|
| <b>N1173-70</b> | <b>General Purpose</b> | <b>-25 to 300</b> | <b>Black</b> |
| KA158-70        | Low Temp.              | -40 to 300        | Black        |
| KA157-70        | General Purpose        | -30 to 300        | Black        |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR                                                        | TEMP.<br>RANGE (°F) | COLOR        |
|--------------------|------------------------------------------------------------------------|---------------------|--------------|
| N1231-80           | Explosive Decompression                                                | -25 to 300          | Black        |
| KA453-80           | Low Swell, ED Resistant                                                | -25 to 300          | Black        |
| <b>KB162-80</b>    | <b>Oilfield, High Temp. Hydraulics</b>                                 | <b>-25 to 300</b>   | <b>Black</b> |
| KA183-85           | Low Temp.                                                              | -55 to 300          | Black        |
| <b>KB163-90</b>    | <b>Oilfield, High Temp. Hydraulics,<br/>RGD Resistant, NORSOK M710</b> | <b>-25 to 300</b>   | <b>Black</b> |

## SILICONE RUBBER (VMQ, PVMQ)

Silicones possess good insulating properties and tends to be physiologically neutral. However, silicone elastomers have relatively low tensile strength, poor tear and wear resistance.

|                 |                                                                                        |                    |             |
|-----------------|----------------------------------------------------------------------------------------|--------------------|-------------|
| S0469-40        | AMS 3301, USP Class VI, A-A-59588<br>CL 2a, 2b, GR 40                                  | -75 to 400         | Rust        |
| S0595-50        | AMS 3302                                                                               | -70 to 400         | Rust        |
| <b>S0317-60</b> | <b>FDA, USDA, USP CL VI</b>                                                            | <b>-103 to 450</b> | <b>Rust</b> |
| S0613-60        | A-A-59588 Cl 2b, Gr 60, AMS 3303                                                       | -60 to 450         | Rust        |
| S0383-70        | A-A-59588 CL 1a, 1b, GR 70, AMS<br>3337                                                | -175 to 400        | Rust        |
| S0455-70        | High Temperature                                                                       | -65 to 450         | Rust        |
| <b>S0604-70</b> | <b>A-A-59588 Cl 2a, 2b, Gr 70, AMS<br/>3304, AMS 3357, MIL-G-21569 Class<br/>2, UL</b> | <b>-65 to 450</b>  | <b>Rust</b> |
| S1138-70        | FDA, USP Class VI, USP <87>                                                            | -60 to 400         | Rust        |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR | TEMP.<br>RANGE (°F) | COLOR |
|--------------------|-----------------|---------------------|-------|
|--------------------|-----------------|---------------------|-------|

|          |                                      |            |      |
|----------|--------------------------------------|------------|------|
| S0614-80 | A-A-59588 CL 2a, 2b, GR 80, AMS 3305 | -65 to 450 | Rust |
|----------|--------------------------------------|------------|------|

## FLUOROCARBON (FKM, FPM)

Fluorocarbon (FKM) has excellent resistance to high temperature and a broad range of chemicals. Permeability and compression set are excellent.

|          |                 |            |       |
|----------|-----------------|------------|-------|
| V0986-50 | General Purpose | -15 to 400 | Brown |
|----------|-----------------|------------|-------|

|                 |                        |                   |              |
|-----------------|------------------------|-------------------|--------------|
| <b>V0769-60</b> | <b>General Purpose</b> | <b>-15 to 400</b> | <b>Black</b> |
|-----------------|------------------------|-------------------|--------------|

|          |                              |            |       |
|----------|------------------------------|------------|-------|
| VG271-65 | Automotive Fuel Applications | -15 to 400 | Black |
|----------|------------------------------|------------|-------|

|                 |                  |                   |              |
|-----------------|------------------|-------------------|--------------|
| <b>VW252-65</b> | <b>Low Swell</b> | <b>-15 to 400</b> | <b>Green</b> |
|-----------------|------------------|-------------------|--------------|

|                 |                                        |                   |            |
|-----------------|----------------------------------------|-------------------|------------|
| <b>V0680-70</b> | <b>FDA, USDA, NSF 51, USP Class VI</b> | <b>-15 to 400</b> | <b>Red</b> |
|-----------------|----------------------------------------|-------------------|------------|

|          |                            |            |       |
|----------|----------------------------|------------|-------|
| VA179-70 | FKM for High Temp. Engines | -10 to 437 | Black |
|----------|----------------------------|------------|-------|

|          |                               |            |       |
|----------|-------------------------------|------------|-------|
| VB185-70 | Acid Resistant, Steam, B Type | -15 to 400 | Black |
|----------|-------------------------------|------------|-------|

|          |           |            |       |
|----------|-----------|------------|-------|
| V0747-75 | UL listed | -15 to 400 | Black |
|----------|-----------|------------|-------|

|          |             |            |       |
|----------|-------------|------------|-------|
| V0848-75 | PTFE Loaded | -15 to 400 | Black |
|----------|-------------|------------|-------|

|          |                            |            |       |
|----------|----------------------------|------------|-------|
| V0884-75 | General Purpose, UL listed | -15 to 400 | Brown |
|----------|----------------------------|------------|-------|

|          |                        |            |       |
|----------|------------------------|------------|-------|
| V1163-75 | "GFLT Type", UL listed | -35 to 400 | Black |
|----------|------------------------|------------|-------|

|          |                      |            |       |
|----------|----------------------|------------|-------|
| V1164-75 | Low Compression Set, | -15 to 400 | Black |
|----------|----------------------|------------|-------|

|                 |                                                  |                   |              |
|-----------------|--------------------------------------------------|-------------------|--------------|
| <b>V1226-75</b> | <b>Low Compression Set, AMS 7276, UL listed,</b> | <b>-15 to 400</b> | <b>Brown</b> |
|-----------------|--------------------------------------------------|-------------------|--------------|



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| COMPOUND<br>NUMBER | RECOMMENDED FOR                                             | TEMP.<br>RANGE (°F) | COLOR        |
|--------------------|-------------------------------------------------------------|---------------------|--------------|
| V1260-75           | Very Chemically Resistant, "Viton™<br>Extreme" Type         | -15 to 400          | Black        |
| V1263-75           | Low Swell, Flex Fuel Blends, UL<br>listed                   | -15 to 400          | Black        |
| V1289-75           | AMS 7379, Low Temp.                                         | -55 to 400          | Black        |
| V1436-75           | General Purpose, UL Listed                                  | -15 to 400          | Black        |
| V1475-75           | General Purpose, X-rings                                    | -15 to 400          | Black        |
| V1476-75           | General Purpose                                             | -15 to 400          | Brown        |
| VA151-75           | General Purpose, UL Listed                                  | -15 to 400          | Black        |
| VG292-75           | Engine Coolant Biodiesel Resistant                          | -40 to 400          | Black        |
| <b>VM100-75</b>    | <b>AMS 7276, Low Compression Set</b>                        | <b>-15 to 400</b>   | <b>Black</b> |
| <b>VM125-75</b>    | <b>"GLT" Type, AMS-R-83485, AMS<br/>7287</b>                | <b>-40 to 400</b>   | <b>Black</b> |
| VW173-75           | Automotive Applications                                     | -15 to 400          | Green        |
| VX065-75           | Extreme Low Temperature FKM,<br>Fuel Resistant              | -65 to 400          | Black        |
| V1274-80           | USP Class VI, ISO 10993, FDA, Low<br>Swell                  | -15 to 400          | Black        |
| VG286-80           | ISO 23936 RGD & Extrusion<br>Resistant, Low Compression Set | -50 to 400          | Black        |
| VP104-85           | Base Resistant                                              | +10 to 400          | Black        |
| <b>V0709-90</b>    | <b>AMS 7259</b>                                             | <b>-15 to 400</b>   | <b>Black</b> |
| <b>V0894-90</b>    | <b>General Purpose</b>                                      | <b>-15 to 400</b>   | <b>Brown</b> |



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| COMPOUND NUMBER | RECOMMENDED FOR                                          | TEMP. RANGE (°F)  | COLOR        |
|-----------------|----------------------------------------------------------|-------------------|--------------|
| V1411-90        | General Purpose                                          | -15 to 400        | Black        |
| V1412-90        | General Purpose                                          | -15 to 400        | Brown        |
| VA153-90        | General Purpose                                          | -15 to 400        | Black        |
| VW155-90        | General Purpose                                          | -15 to 400        | Green        |
| VG109-90        | ISO 23936 RGD & Extrusion Resistant, Low Compression Set | -50 to 400        | Black        |
| VX165-90        | Extreme Low Temperature FKM, Extrusion/RGD Resistant     | -65 to 400        | Black        |
| <b>V1238-95</b> | <b>Extrusion &amp; RGD Resistant</b>                     | <b>-15 to 400</b> | <b>Black</b> |

## TETRAFLUOROETHYLENE - PROPYLENE (AFLAS)

This material is a copolymer of TFE and propylene. Its chemical resistance is excellent across a wide range of aggressive media. Polymer is sold under the tradename AFLAS®.

|                 |                                             |                  |              |
|-----------------|---------------------------------------------|------------------|--------------|
| <b>V1006-75</b> | <b>AMS 7255</b>                             | <b>25 to 450</b> | <b>Black</b> |
| <b>VP101-80</b> | <b>General Purpose</b>                      | <b>25 to 450</b> | <b>Black</b> |
| V1041-85        | RGD Resistant, General Purpose, NORSOK M710 | 15 to 450        | Black        |
| VP103-95        | Extrusion Resistant                         | 25 to 450        | Black        |

## HIGH PERFORMANCE FLUOROELASTOMER (HiFluor)

HiFluor is Parker's tradename for high performance fluoroelastomers – materials that “bridge the gap” between traditional fluorocarbon and perfluoroelastomer.

|          |                                        |            |        |
|----------|----------------------------------------|------------|--------|
| HF355-65 | USP Class VI, Extreme Low Extractibles | -15 to 400 | Trans. |
|----------|----------------------------------------|------------|--------|



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| COMPOUND<br>NUMBER | RECOMMENDED FOR                             | TEMP.<br>RANGE (°F) | COLOR |
|--------------------|---------------------------------------------|---------------------|-------|
| HF359-80           | Resistant to Plasma Etch, Low<br>Metal Ions | -15 to 400          | Tan   |

## PERFLUOROELASTOMER (ULTRA) (FFKM)

Perfluoroelastomer is a rubber version of PTFE. Available from Parker under the tradename ULTRA™.

|                 |                                                                                              |                 |              |
|-----------------|----------------------------------------------------------------------------------------------|-----------------|--------------|
| FF354-65        | Low Closure Force                                                                            | 5 to 608        | White        |
| <b>FF156-75</b> | <b>Broad Chemical Resistance, FDA,<br/>General Purpose</b>                                   | <b>5 to 525</b> | <b>Black</b> |
| FF200-75        | Low Comp Set, AMS7257, FDA                                                                   | 5 to 608        | Black        |
| FF302-75        | Etch Resistant, Low Metal Ions                                                               | 5 to 608        | Brown        |
| FF350-75        | Plasma, High Purity, FDA, USP<br>Class VI                                                    | 5 to 608        | White        |
| FF352-75        | General Purpose, Etch Resistant                                                              | 5 to 608        | White        |
| FF370-75        | Low Particle Generation, Low<br>Metal Ions                                                   | 5 to 608        | Black        |
| FF500-75        | Broad Chemical Resistance, FDA                                                               | 5 to 550        | Black        |
| FF580-75        | Broad Chemical Resistance, Steam<br>Resistant, Amine/Base Resistant,<br>USP VI               | 5 to 525        | Black        |
| FF504-80        | Broad Chemical Resistance, Steam<br>Resistant, Amine/Base Resistant,<br>Lewis Acid Resistant | 5 to 525        | Green        |
| FF400-80        | Low Temp., RGD Resistant                                                                     | -40 to 525      | Black        |
| FF202-90        | Low Compression Set, Extrusion<br>Resistant, NORSOK M710                                     | 5 to 608        | Black        |



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| COMPOUND<br>NUMBER | RECOMMENDED FOR                                       | TEMP.<br>RANGE (°F) | COLOR |
|--------------------|-------------------------------------------------------|---------------------|-------|
| FF582-90           | Steam Resistant, Amine/Base<br>Resistant, ISO 23936-2 | 5 to 525            | Black |
| V8581-90           | Plasma Etch Resistant, Low<br>Stiction                | 5 to 550            | White |

Note: Compound numbers in (XXXXX) are the obsolete Wynn's Precision compound numbering system.

AFLAS® is a registered trademark of Asahi Glass Co., Ltd.

Hifluor™ is a trademark of the Parker Hannifin Corporation

Neoprene® is a registered trademark of Denka Performance Elastomers LLC

ULTRA™ is a trademark of the Parker Hannifin Corporation

Vamac® is a registered trademark of E.I. du Pont de Nemours & Co.

Viton™ is a trademark of The Chemours Company



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## Underwriters Laboratories Approved Services\*

| SERVICE          |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
|------------------|---------------------------|----------|--------------------------|--------------------|---------|--------------------|----------------------------------------|-----------------|-------------------|--------|--------------------|------------------------|-----------------------------|-----------------------------------------|----------------------------------------|-------------------------------------|
|                  | Fire Extinguishing Agents | Gasoline | Gasoline/Alcohol Blends* | Naptha or Kerosene | MPS Gas | MFG or Natural Gas | Diesel Fuel, Fuel Oil, Lubricating Oil | Heated Fuel Oil | Anhydrous Ammonia | LP-Gas | Laundry Detergents | Dishwashing Detergents | Suitable for use in UL 1081 | Suitable for use in UL 262 applications | Suitable for UL 25 gasket applications | Dry Chemical, Carbon Dioxide, Water |
| Code             | A                         | B        | C                        | D                  | E       | F                  | G                                      | H               | I                 | J      | L                  | M                      |                             |                                         |                                        |                                     |
| EA454-50 (3575)  |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| EA140-70         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| EB152-70 (3407)  |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| EJ151-80         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| L1120-70         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| LM100-70         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| N0299-50         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| N0497-70         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| N0674-70         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| N1499-70         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| N1500-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V1262-65         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V0747-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V0884-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V1163-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V1226-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V1263-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| V1436-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| VA151-75 (19357) |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |
| VM100-75         |                           |          |                          |                    |         |                    |                                        |                 |                   |        |                    |                        |                             |                                         |                                        |                                     |

\* Contact factory for specific ratios of alcohol (methyl and/or ethyl) and gasoline.

Note: Material certifications are subject to change. Please contact Parker's O-Ring Division for more information.



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## FDA, USDA, NSF 51, USP Approved Compounds

The Food and Drug Administration (FDA) has established a list of rubber compounding ingredients which tests have indicated are neither toxic nor carcinogenic. Rubber compounds produced entirely from those ingredients and which also pass the FDA extraction tests are said to "meet the FDA requirements". The FDA does not approve rubber compounds. It is the responsibility of the manufacturer to compound food grade materials from the FDA list of ingredients and establish whether they pass the necessary extraction requirements. Similar standards are established by the United States Department of Agriculture (USDA).

Additional requirements have been imposed upon seal manufacturers regarding food and beverage service. Parker has developed several materials that are certified to NSF 51, Food and Beverage Standard. In critical medical applications, seals often must be made from an even "cleaner" list of ingredients. The U.S. Pharmacopoeia (USP) Class VI outlines requirements for system toxicity and intracutaneous toxicity for these "cleaner" compounds. The USP Class VI compounds must be made from ingredients with clear histories of biocompatibility that meet tighter requirements for leachates.

Typical applications for our FDA, NSF 51, USDA materials are disposable medical devices, surgical instruments and medical fluid dispensing components, as well as a wide variety of food and beverage handling equipment. The type of approval/certification required generally rests with the end customer's regulatory expectations for the specific application.

| Parker Compound | Polymer | Hardness | Color | Service                   |
|-----------------|---------|----------|-------|---------------------------|
| E1028-70        | EPDM    | 70       | Black | FDA                       |
| E3609-70        | EPDM    | 70       | Black | NSF 51, FDA, USP Class VI |
| FF200-75        | FFKM    | 75       | Black | FDA                       |
| FF350-75        | FFKM    | 75       | White | FDA, USP Class VI         |
| FF500-75        | FFKM    | 75       | Black | FDA                       |
| V8545-75        | FFKM    | 75       | Black | FDA                       |
| V0680-70        | FKM     | 70       | Red   | NSF 51, FDA, USDA         |
| N1219-60        | NBR     | 60       | Black | NSF 51, FDA               |
| N1220-70        | NBR     | 70       | Black | NSF 51, FDA               |
| S0802-40        | VMQ     | 40       | White | FDA                       |

Continued on next page



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## FDA, USDA, NSF 51, USP Approved Compounds

| Parker Compound | Polymer | Hardness | Color       | Service                 |
|-----------------|---------|----------|-------------|-------------------------|
| S1538-55        | VMQ     | 55       | Translucent | FDA, USP Class VI       |
| S0317-60        | VMQ     | 60       | Rust        | FDA, USDA, USP Class VI |
| S1138-70        | VMQ     | 70       | Rust        | FDA                     |
| SM355-75        | VMQ     | 75       | Rust        | FDA, USDA               |
| V1274-80        | FKM     | 80       | Black       | USP Class VI            |



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## NSF 61 Approved Compounds

NSF 61 Drinking Water System Components - is the nationally recognized health effects standard for all devices, components and materials which contact drinking water. Parker's O-Ring Division has developed several materials that are certified to NSF 61.

NSF International is an industry regulating agency that was established in 1944. Recognized by ANSI (American National Standards Institute), NSF maintains qualification standards and criteria for a wide range of products, including potable water components and delivery systems.

| Parker Compound     | Polymer | Hardness | Water Contact Temp. | Service                                                 |
|---------------------|---------|----------|---------------------|---------------------------------------------------------|
| E1244-70            | EPDM    | 70       | Commercial Hot**    | NSF 61, Internally Lubed                                |
| E3609-70            | EPDM    | 70       | Commercial Hot**    | NSF 61, WRAS, KTW, Excellent Compression Set Resistance |
| EA140-70            | EPDM    | 70       | Commercial Hot**    | NSF 61                                                  |
| EJ274-70            | EPDM    | 70       | Commercial Hot**    | NSF 61, Internally Lubed, Chloramine Resistant          |
| N0757-70            | NBR     | 70       | Cold Water***       | NSF 61                                                  |
| N1510-70<br>[67997] | NBR     | 70       | Commercial Hot**    | NSF 61                                                  |

\* NSF 61 listed materials given a commercial hot water rating are also certified for cold water

\*\* Commercial Hot = Tested at 82° C (180° F)

\*\*\* Cold Water = Tested at 23° C (73.4° F)



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| Parker Compound | O-Rings | Molded Shapes | Extruded Seals | Lathe Cut | Machined | Spliced Seals | Backup Rings |
|-----------------|---------|---------------|----------------|-----------|----------|---------------|--------------|
| AA150-70        |         |               |                |           |          |               |              |
| AE152-70        |         |               |                |           |          |               |              |
| AE153-75        |         |               |                |           |          |               |              |
| B0612-70        |         |               |                |           |          |               |              |
| C0267-50        |         |               |                |           |          |               |              |
| C0557-70        |         |               |                |           |          |               |              |
| C0873-70        |         |               |                |           |          |               |              |
| C1124-70        |         |               |                |           |          |               |              |
| EA454-50        |         |               |                |           |          |               |              |
| EB152-70        |         |               |                |           |          |               |              |
| E1157-60        |         |               |                |           |          |               |              |
| E1561-60        |         |               |                |           |          |               |              |
| E0751-65        |         |               |                |           |          |               |              |
| E0603-70        |         |               |                |           |          |               |              |
| E0667-70        |         |               |                |           |          |               |              |
| E0803-70        |         |               |                |           |          |               |              |
| E1244-70        |         |               |                |           |          |               |              |
| E1549-70        |         |               |                |           |          |               |              |
| E1583-70        |         |               |                |           |          |               |              |
| E3609-70        |         |               |                |           |          |               |              |
| EJ274-70        |         |               |                |           |          |               |              |
| E0740-75        |         |               |                |           |          |               |              |
| E0515-80        |         |               |                |           |          |               |              |
| E0540-80        |         |               |                |           |          |               |              |
| E0893-80        |         |               |                |           |          |               |              |
| EM163-80        |         |               |                |           |          |               |              |
| E0652-90        |         |               |                |           |          |               |              |
| E0962-90        |         |               |                |           |          |               |              |



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| Parker Compound | O-Rings | Molded Shapes | Extruded Seals | Lathe Cut | Machined | Spliced Seals | Backup Rings |
|-----------------|---------|---------------|----------------|-----------|----------|---------------|--------------|
| LM158-60        |         |               |                |           |          |               |              |
| L1223-60        |         |               |                |           |          |               |              |
| LM160-80        |         |               |                |           |          |               |              |
| L1218-80        |         |               |                |           |          |               |              |
| N0545-40        |         |               |                |           |          |               |              |
| N0299-50        |         |               |                |           |          |               |              |
| N0525-60        |         |               |                |           |          |               |              |
| NM506-65        |         |               |                |           |          |               |              |
| N0103-70        |         |               |                |           |          |               |              |
| N0497-70        |         |               |                |           |          |               |              |
| N0602-70        |         |               |                |           |          |               |              |
| N0674-70        |         |               |                |           |          |               |              |
| N0757-70        |         |               |                |           |          |               |              |
| N1220-70        |         |               |                |           |          |               |              |
| N1470-70        |         |               |                |           |          |               |              |
| N1499-70        |         |               |                |           |          |               |              |
| N1510-70        |         |               |                |           |          |               |              |
| N1527-70        |         |               |                |           |          |               |              |
| NA151-70        |         |               |                |           |          |               |              |
| NM072-70        |         |               |                |           |          |               |              |
| N0756-75        |         |               |                |           |          |               |              |
| N0951-75        |         |               |                |           |          |               |              |
| N1500-75        |         |               |                |           |          |               |              |
| NM304-75        |         |               |                |           |          |               |              |
| N1090-85        |         |               |                |           |          |               |              |
| N0300-90        |         |               |                |           |          |               |              |
| N0507-90        |         |               |                |           |          |               |              |
| N0552-90        |         |               |                |           |          |               |              |



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| Parker Compound | O-Rings | Molded Shapes | Extruded Seals | Lathe Cut | Machined | Spliced Seals | Backup Rings |
|-----------------|---------|---------------|----------------|-----------|----------|---------------|--------------|
| N0702-90        |         |               |                |           |          |               |              |
| N1059-90        |         |               |                |           |          |               |              |
| N1444-90        |         |               |                |           |          |               |              |
| N1490-90        |         |               |                |           |          |               |              |
| N1173-70        |         |               |                |           |          |               |              |
| KA158-70        |         |               |                |           |          |               |              |
| KA157-70        |         |               |                |           |          |               |              |
| N1231-80        |         |               |                |           |          |               |              |
| KA453-80        |         |               |                |           |          |               |              |
| KB162-80        |         |               |                |           |          |               |              |
| KA183-85        |         |               |                |           |          |               |              |
| KB163-90        |         |               |                |           |          |               |              |
| S0469-40        |         |               |                |           |          |               |              |
| S0595-50        |         |               |                |           |          |               |              |
| S0317-60        |         |               |                |           |          |               |              |
| S0613-60        |         |               |                |           |          |               |              |
| S0383-70        |         |               |                |           |          |               |              |
| S0455-70        |         |               |                |           |          |               |              |
| S0604-70        |         |               |                |           |          |               |              |
| S1138-70        |         |               |                |           |          |               |              |
| S0614-80        |         |               |                |           |          |               |              |
| V0986-50        |         |               |                |           |          |               |              |
| V0769-60        |         |               |                |           |          |               |              |
| VW252-65        |         |               |                |           |          |               |              |
| V0680-70        |         |               |                |           |          |               |              |
| VA179-70        |         |               |                |           |          |               |              |
| VB185-70        |         |               |                |           |          |               |              |
| V0747-75        |         |               |                |           |          |               |              |



**WARNING:** This product contains a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

| Parker Compound | O-Rings | Molded Shapes | Extruded Seals | Lathe Cut | Machined | Spliced Seals | Backup Rings |
|-----------------|---------|---------------|----------------|-----------|----------|---------------|--------------|
| V0884-75        |         |               |                |           |          |               |              |
| V1163-75        |         |               |                |           |          |               |              |
| V1164-75        |         |               |                |           |          |               |              |
| V1226-75        |         |               |                |           |          |               |              |
| V1260-75        |         |               |                |           |          |               |              |
| V1263-75        |         |               |                |           |          |               |              |
| V1289-75        |         |               |                |           |          |               |              |
| V1436-75        |         |               |                |           |          |               |              |
| V1475-75        |         |               |                |           |          |               |              |
| V1476-75        |         |               |                |           |          |               |              |
| VA151-75        |         |               |                |           |          |               |              |
| VG292-75        |         |               |                |           |          |               |              |
| VM100-75        |         |               |                |           |          |               |              |
| VM125-75        |         |               |                |           |          |               |              |
| VM128-75        |         |               |                |           |          |               |              |
| VW173-75        |         |               |                |           |          |               |              |
| VX065-75        |         |               |                |           |          |               |              |
| V1274-80        |         |               |                |           |          |               |              |
| VA163-80        |         |               |                |           |          |               |              |
| VG286-85        |         |               |                |           |          |               |              |
| VP104-85        |         |               |                |           |          |               |              |
| V0709-90        |         |               |                |           |          |               |              |
| V0894-90        |         |               |                |           |          |               |              |
| V1411-90        |         |               |                |           |          |               |              |
| V1412-90        |         |               |                |           |          |               |              |
| VA153-90        |         |               |                |           |          |               |              |
| VW155-90        |         |               |                |           |          |               |              |
| VG109-90        |         |               |                |           |          |               |              |



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| Parker Compound | O-Rings | Molded Shapes | Extruded Seals | Lathe Cut | Machined | Spliced Seals | Backup Rings |
|-----------------|---------|---------------|----------------|-----------|----------|---------------|--------------|
| VX165-90        |         |               |                |           |          |               |              |
| V1238-95        |         |               |                |           |          |               |              |
| V1006-75        |         |               |                |           |          |               |              |
| VP101-80        |         |               |                |           |          |               |              |
| VP102-80        |         |               |                |           |          |               |              |
| V1041-85        |         |               |                |           |          |               |              |
| VP103-90        |         |               |                |           |          |               |              |
| HF355-65        |         |               |                |           |          |               |              |
| V3819-75        |         |               |                |           |          |               |              |
| HF359-80        |         |               |                |           |          |               |              |
| FF102-75        |         |               |                |           |          |               |              |
| FF106-75        |         |               |                |           |          |               |              |
| FF156-75        |         |               |                |           |          |               |              |
| FF200-75        |         |               |                |           |          |               |              |
| FF302-75        |         |               |                |           |          |               |              |
| FF350-75        |         |               |                |           |          |               |              |
| FF352-75        |         |               |                |           |          |               |              |
| FF370-75        |         |               |                |           |          |               |              |
| FF500-75        |         |               |                |           |          |               |              |
| FF580-75        |         |               |                |           |          |               |              |
| V8545-75        |         |               |                |           |          |               |              |
| FF400-80        |         |               |                |           |          |               |              |
| FF202-90        |         |               |                |           |          |               |              |
| FF582-90        |         |               |                |           |          |               |              |
| V8581-90        |         |               |                |           |          |               |              |



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## General Notes

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## General Notes

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## Engineering Tools

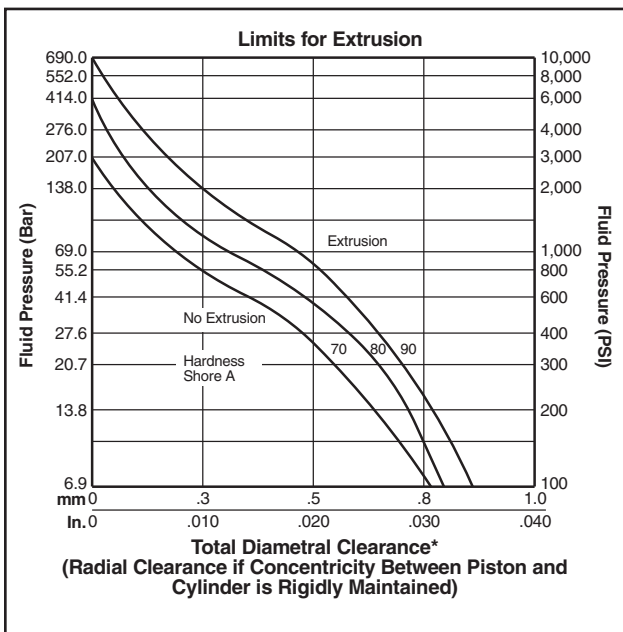


The following charts are included to facilitate engineering analysis. Additional information is available in the Parker O-Ring Handbook (ORD 5700) or online at [www.parkerorings.com](http://www.parkerorings.com)



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## Extrusion



\* Reduce the clearance shown by 60% when using silicone or fluorosilicone elastomers.

Basis for Curves

1. 100,000 pressure cycles at the rate of 60 per minute from zero to the indicated pressure.
2. Maximum temperature [i.e., test temperature] 71°C (160°F).
3. No back-up rings.
4. Total diametral clearance must include cylinder expansion due to pressure.
5. Apply a reasonable safety factor in practical applications to allow for excessively sharp edges and other imperfections and for higher temperatures.



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## Gland Designs



The following charts are included to facilitate engineering analysis. Additional information is available in the Parker O-Ring Handbook (ORD 5700) or online at [www.parkerorings.com](http://www.parkerorings.com)

Parker offers O-rings for use in static as well as dynamic sealing applications. Static seals are those where the mating parts of the gland do not have movement relative to each other. These seals include face, radial and dovetail. Examples of these seals and the corresponding design charts are found on pages 30-34. Dynamic seals include reciprocating, floating pneumatic, oscillating, and rotary applications. Dynamic seals are defined by one of the gland parts having movement relative to the other part. Gland design recommendations for a reciprocating seal are provided on pages 36 and 37.

For further design assistance and recommendations, access our solutions area of the website: Mobile inPHorm O-Ring Calculator, O-Ring Selector, or contact a Parker O-Ring & Engineered Seals Division Applications Engineer.



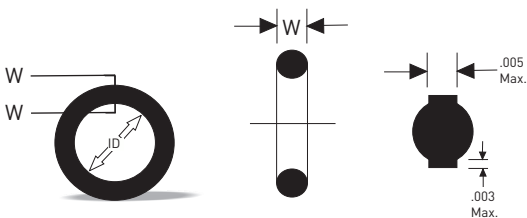
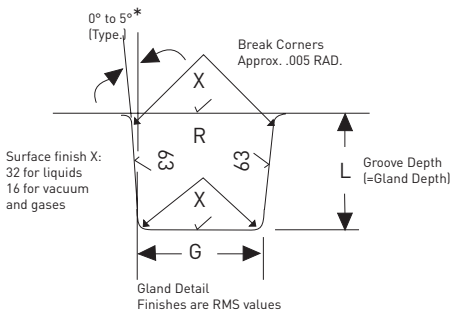
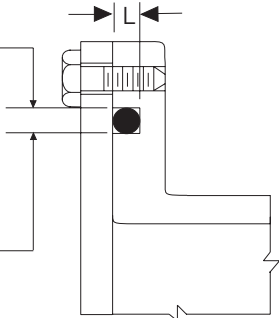
**WARNING:** This product contains a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

For Internal Pressure  
(outward pressure direction) dimension  
the groove by its outside diameter ( $H_O$ )  
and width:

( $H_O$ ) = Mean O.D. of O-ring tolerance =  
Minus 1% of mean O.D., but not more  
than -.060

For External Pressure  
(inward pressure direction) dimension  
the groove by its inside diameter ( $H_I$ )  
and width:

( $H_I$ ) = Mean I.D. of O-ring tolerance  
= Plus 1% of mean I.D., but not more  
than +.060



\* Mean OD = ID + [2X Cross Section]



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## O-Ring Face Seal Glands

These dimensions are intended primarily for face type O-ring seals and low temperature applications.

| O-Ring Size Parker No.<br>2-size AS568 | W Cross Section |             | L<br>Gland Depth | Squeeze      |          | G Groove Width |                  | R<br>Groove Radius |
|----------------------------------------|-----------------|-------------|------------------|--------------|----------|----------------|------------------|--------------------|
|                                        | Nominal         | Actual      |                  | Actual       | %        | Liquids        | Vacuum and Gases |                    |
| 004<br>to<br>050                       | 1/16            | .070 ± .003 | .050 to .054     | .013 to .023 | 19 to 32 | .101 to .107   | .084 to .089     | .005 to .015       |
| 102<br>to<br>178                       | 3/32            | .103 ± .003 | .074 to .080     | .020 to .032 | 20 to 30 | .136 to .142   | .120 to .125     | .005 to .015       |
| 201<br>to<br>284                       | 1/8             | .139 ± .004 | .101 to .107     | .028 to .042 | 20 to 30 | .177 to .187   | .158 to .164     | .010 to .025       |
| 309<br>to<br>395                       | 3/16            | .210 ± .005 | .152 to .162     | .043 to .063 | 21 to 30 | .270 to .290   | .239 to .244     | .020 to .035       |
| 425<br>to<br>475                       | 1/4             | .275 ± .006 | .201 to .211     | .058 to .080 | 21 to 29 | .342 to .362   | .309 to .314     | .020 to .035       |
| Special                                | 3/8             | .375 ± .007 | .276 to .286     | .082 to .108 | 22 to 28 | .475 to .485   | .419 to .424     | .030 to .035       |
| Special                                | 1/2             | .500 ± .008 | .370 to .380     | .112 to .138 | 22 to 27 | .638 to .645   | .560 to .565     | .030 to .045       |

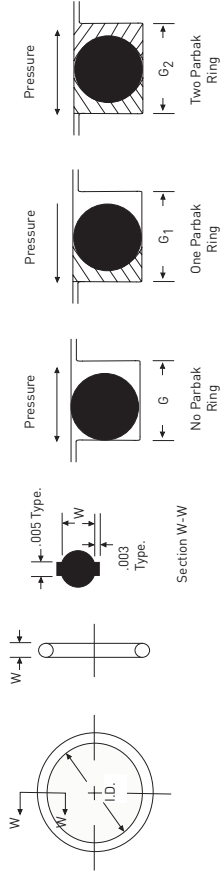
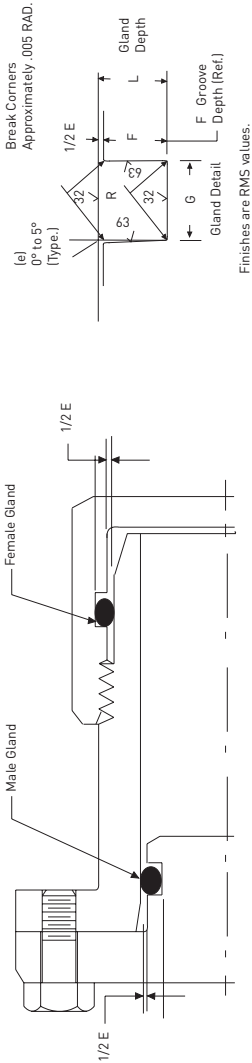
Note: These design recommendations assume metal-to-metal contact. In some hard vacuum applications, it may be necessary to increase compression on the seal to achieve proper sealing. Contact a Parker Applications Engineer for more information.



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## Industrial O-Ring Static Seal Glands



**WARNING:** This product contains a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## Industrial O-Ring Static Seal Glands

| O-Ring<br>2-Size<br>AS568B | W<br>Cross Section |             | L<br>Gland         | Squeeze            |                | E (a)<br>Diametral Clear-<br>ance | G Groove Width              |                              |                              | R<br>Groove        | Max.<br>Eccentricity (b) |
|----------------------------|--------------------|-------------|--------------------|--------------------|----------------|-----------------------------------|-----------------------------|------------------------------|------------------------------|--------------------|--------------------------|
|                            | Nominal            | Actual      | Depth              | Actual             | %              |                                   | No Par-<br>bak rings<br>(G) | 1<br>Parbak<br>rings<br>(G1) | 2<br>Parbak<br>rings<br>(G2) | Radius             |                          |
| 004 - 050                  | 1/16               | .070 ± .003 | .050<br>to<br>.052 | .015<br>to<br>.023 | 22<br>to<br>32 | .002 to .005                      | .093<br>to<br>.098          | .138<br>to<br>.143           | .205<br>to<br>.210           | .005<br>to<br>.015 | .002                     |
| 105 - 178                  | 3/32               | .103 ± .003 | .081<br>to<br>.083 | .017<br>to<br>.025 | 17<br>to<br>24 | .002 to .005                      | .140<br>to<br>.145          | .171<br>to<br>.176           | .238<br>to<br>.243           | .005<br>to<br>.015 | .002                     |
| 201 - 284                  | 1/8                | .139 ± .004 | .111<br>to<br>.113 | .022<br>to<br>.032 | 16<br>to<br>23 | .003 to .006                      | .187<br>to<br>.192          | .208<br>to<br>.213           | .275<br>to<br>.280           | .010<br>to<br>.025 | .003                     |
| 309 - 395                  | 3/16               | .210 ± .005 | .170<br>to<br>.173 | .032<br>to<br>.045 | 15<br>to<br>21 | .003 to .006                      | .281<br>to<br>.286          | .311<br>to<br>.316           | .410<br>to<br>.415           | .020<br>to<br>.035 | .004                     |
| 425 - 475                  | 1/4                | .275 ± .006 | .226<br>to<br>.229 | .040<br>to<br>.055 | 15<br>to<br>20 | .004 to .007                      | .375<br>to<br>.380          | .408<br>to<br>.413           | .538<br>to<br>.543           | .020<br>to<br>.035 | .005                     |

(a) Clearance (extrusion gap) must be held to a minimum consistent with design requirements for temperature range variation.

(b) Total indicator reading between groove and adjacent bearing surface.

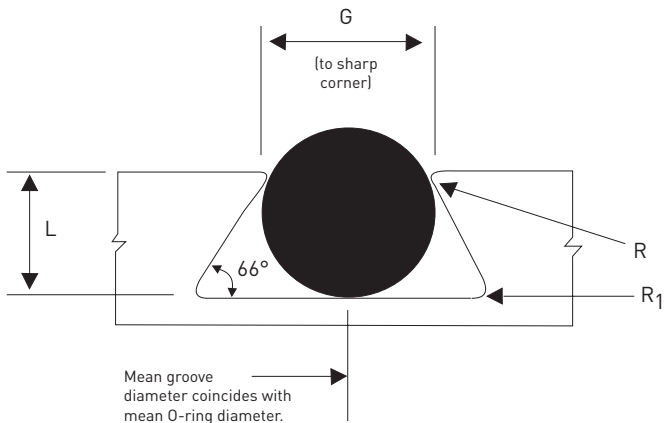
(c) Reduce maximum diametral clearance 50% when using silicone or fluorosilicone O-rings.

(d) For ease of assembly, when Parbaks are used, gland depth may be increased up to 5%.



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## O-Ring Dovetail Grooves



Finishes are RMS values

It is often necessary to provide some mechanical means for holding an O-ring in a face seal groove during assembly and maintenance of equipment. An undercut or dovetail groove has proven beneficial in many applications to keep the O-ring in place. This is an expensive groove to machine, however, and thus should be used only when absolutely necessary.

It should be noted that although this method has been used successfully, it is not generally recommended. The inherent characteristics of the groove design limit the amount of void area. Normally acceptable tolerance extremes, wide service temperature ranges and fluid media that cause high swell of the elastomer are conditions that cannot be tolerated in this type of groove design.

**NOTE:** If needed, Applications Engineering can recommend where to purchase dovetail cutters.



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## O-Ring Dovetail Grooves

Radius "R" is CRITICAL. Insufficient radius will potentially cause damage to the O-ring during installation, while excessive radius may contribute to extrusion.

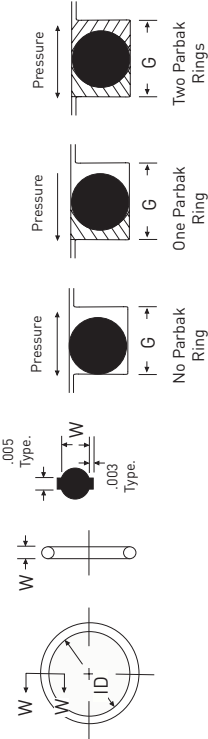
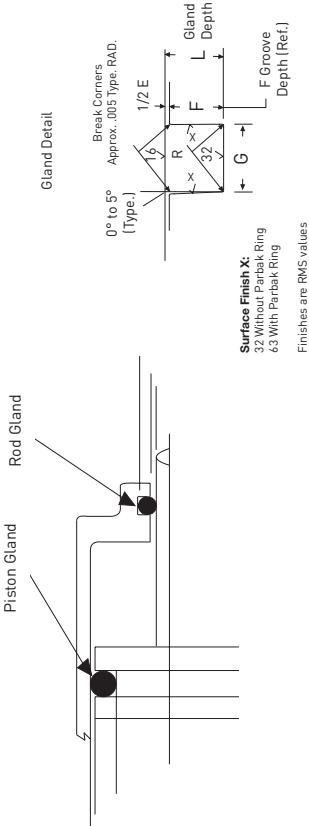
| O-Ring Size<br>AS568B | W<br>Cross Section |             | L Gland Depth | Squeeze<br>% | G Gland Width (to<br>sharp corner) | R    | R1   |
|-----------------------|--------------------|-------------|---------------|--------------|------------------------------------|------|------|
|                       | Nominal            | Actual      |               |              |                                    |      |      |
| 004 - 050             | 1/16               | .070 ± .003 | .050 to .052  | 27           | .055 to .059                       | .005 | 1/64 |
| 102 - 178             | 3/32               | .103 ± .003 | .081 to .083  | 21           | .083 to .087                       | .010 | 1/64 |
| 201 - 284             | 1/8                | .139 ± .004 | .111 to .113  | 20           | .113 to .117                       | .010 | 1/32 |
| 309 - 395             | 3/16               | .210 ± .005 | .171 to .173  | 18           | .171 to .175                       | .015 | 1/32 |
| 425 - 475             | 1/4                | .275 ± .006 | .231 to .234  | 16           | .231 to .235                       | .015 | 1/16 |
| Special               | 3/8                | .375 ± .007 | .315 to .319  | 16           | .315 to .319                       | .020 | 3/32 |

Note: These design recommendations assume metal-to-metal contact. In some hard vacuum applications, it may be necessary to increase compression on the seal to achieve proper sealing. Contact a Parker Applications Engineer for more information.



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# Industrial Reciprocating O-Ring Packing Glands



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## Industrial Reciprocating O-Ring Packing Glands

| O-Ring<br>2-Size<br>AS568B | W Cross-Section |                   | L Gland      | Squeeze      |         | E (a)<br>Diametral<br>Clearance | G - Groove Width      |                       |                        | R Groove     | Max.<br>Eccentricity<br>(b) |
|----------------------------|-----------------|-------------------|--------------|--------------|---------|---------------------------------|-----------------------|-----------------------|------------------------|--------------|-----------------------------|
|                            | Nominal         | Actual            |              | Actual       | %       |                                 | No Parbak<br>Ring (G) | 1 Parbak<br>Ring (G1) | 2 Parbak<br>Rings (G2) |              |                             |
| 006<br>to<br>012           | 1/16            | .070<br>±<br>.003 | .055 to .057 | .010 to .018 | 15 - 25 | .002 to .005                    | .093 to .098          | .138 to .143          | .205 to .210           | .005 to .015 | .002                        |
| 104<br>to<br>116           | 3/32            | .103<br>±<br>.003 | .088 to .090 | .010 to .018 | 10 - 17 | .002 to .005                    | .140 to .145          | .171 to .176          | .238 to .243           | .005 to .015 | .002                        |
| 201<br>to<br>222           | 1/8             | .139<br>±<br>.004 | .121 to .123 | .012 to .022 | 9 - 16  | .003 to .006                    | .187 to .192          | .208 to .213          | .275 to .280           | .010 to .025 | .003                        |
| 309<br>to<br>349           | 3/16            | .210<br>±<br>.005 | .185 to .188 | .017 to .030 | 8 - 14  | .003 to .006                    | .281 to .286          | .311 to .316          | .410 to .415           | .020 to .035 | .004                        |
| 425<br>to<br>460           | 1/4             | .275<br>±<br>.006 | .237 to .240 | .029 to .044 | 11 - 16 | .004 to .007                    | .375 to .380          | .408 to .413          | .538 to .543           | .020 to .035 | .005                        |

(a) Clearance (extrusion gap) must be held to a minimum consistent with design requirements for temperature range variation.

(b) Total indicator reading between groove and adjacent bearing surface.

(c) O-rings not listed are not recommended for reciprocating applications.



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2260 Palumbo Drive, Lexington, KY 40509  
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[www.parkerorings.com](http://www.parkerorings.com)



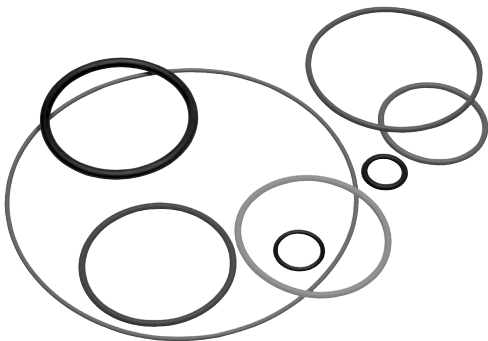
**Parker O-Ring & Engineered Seals Division**  
2260 Palumbo Drive, Lexington, KY 40509  
Phone: (859) 269-2351 • Fax: (859) 335-5128  
[www.parkerorings.com](http://www.parkerorings.com)

## General Notes

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## Sizing Charts



The following charts provide dimensions for standard shrinkage materials only. These correspond to AS568 dimensions. O-rings manufactured from compounds with different shrinkage rates will provide slightly different dimensions and tolerances when standard tooling is used. Custom tooling may be necessary for some compounds in order to meet AS568 dimensions and tolerances. For further information contact a Parker O-Ring Applications Engineer.



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| 2-xxx Sizes, Cross-Section:<br>.070 ± .003 in<br>(1,78 ± 0,08mm) |                 |            |                |           | 2-xxx Sizes, Cross-Section:<br>.070 ± .003 in<br>(1,78 ± 0,08mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm | Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-001*                                                           | .029            | .004       | 0,74           | 0,10      | 2-026                                                            | 1.239           | .011       | 31,47          | 0,28      |
| 2-002*                                                           | .042            | .004       | 1,07           | 0,10      | 2-027                                                            | 1.301           | .011       | 33,05          | 0,28      |
| 2-003*                                                           | .056            | .004       | 1,42           | 0,10      | 2-028                                                            | 1.364           | .013       | 34,65          | 0,33      |
| 2-004                                                            | .070            | .005       | 1,78           | 0,13      | 2-029                                                            | 1.489           | .013       | 37,82          | 0,33      |
| 2-005                                                            | .101            | .005       | 2,57           | 0,13      | 2-030                                                            | 1.614           | .013       | 41,00          | 0,33      |
| 2-006                                                            | .114            | .005       | 2,90           | 0,13      | 2-031                                                            | 1.739           | .015       | 44,17          | 0,38      |
| 2-007                                                            | .145            | .005       | 3,68           | 0,13      | 2-032                                                            | 1.864           | .015       | 47,35          | 0,38      |
| 2-008                                                            | .176            | .005       | 4,47           | 0,13      | 2-033                                                            | 1.989           | .018       | 50,52          | 0,46      |
| 2-009                                                            | .208            | .005       | 5,28           | 0,13      | 2-034                                                            | 2.114           | .018       | 53,70          | 0,46      |
| 2-010                                                            | .239            | .005       | 6,07           | 0,13      | 2-035                                                            | 2.239           | .018       | 56,87          | 0,46      |
| 2-011                                                            | .301            | .005       | 7,65           | 0,13      | 2-036                                                            | 2.364           | .018       | 60,05          | 0,46      |
| 2-012                                                            | .364            | .005       | 9,25           | 0,13      | 2-037                                                            | 2.489           | .018       | 63,22          | 0,46      |
| 2-013                                                            | .426            | .005       | 10,82          | 0,13      | 2-038                                                            | 2.614           | .020       | 66,40          | 0,51      |
| 2-014                                                            | .489            | .005       | 12,42          | 0,13      | 2-039                                                            | 2.739           | .020       | 69,57          | 0,51      |
| 2-015                                                            | .551            | .007       | 14,00          | 0,18      | 2-040                                                            | 2.864           | .020       | 72,75          | 0,51      |
| 2-016                                                            | .614            | .009       | 15,60          | 0,23      | 2-041                                                            | 2.989           | .024       | 75,92          | 0,61      |
| 2-017                                                            | .676            | .009       | 17,17          | 0,23      | 2-042                                                            | 3.239           | .024       | 82,27          | 0,61      |
| 2-018                                                            | .739            | .009       | 18,77          | 0,23      | 2-043                                                            | 3.489           | .024       | 88,62          | 0,61      |
| 2-019                                                            | .801            | .009       | 20,35          | 0,23      | 2-044                                                            | 3.739           | .027       | 94,97          | 0,69      |
| 2-020                                                            | .864            | .009       | 21,95          | 0,23      | 2-045                                                            | 3.989           | .027       | 101,32         | 0,69      |
| 2-021                                                            | .926            | .009       | 23,52          | 0,23      | 2-046                                                            | 4.239           | .030       | 107,67         | 0,76      |
| 2-022                                                            | .989            | .010       | 25,12          | 0,25      | 2-047                                                            | 4.489           | .030       | 114,02         | 0,76      |
| 2-023                                                            | 1.051           | .010       | 26,70          | 0,25      | 2-048                                                            | 4.739           | .030       | 120,37         | 0,76      |
| 2-024                                                            | 1.114           | .010       | 28,30          | 0,25      | 2-049                                                            | 4.989           | .037       | 126,72         | 0,94      |
| 2-025                                                            | 1.176           | .011       | 29,87          | 0,28      | 2-050                                                            | 5.239           | .037       | 133,07         | 0,94      |

- (a) The rubber compound must be added when ordering by the 2-size number (i.e., N0674 2-007).
- (b) This chart provides dimensions for standard (AN) shrinkage materials ONLY. These correspond to AS568 dimensions. O-rings manufactured out of compounds with different shrinkage rates (other than AN) will produce slightly different dimensions and tolerances. For more information on shrinkage rates, see Parker O-Ring Handbook [ORD 5700].

\* Please note: for 2-001 cross-section width = .040 in (1,02 mm)  
for 2-002 cross-section width = .050 in (1,27 mm)  
for 2-003 cross-section width = .060 in (1,52 mm)



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| 2-xxx Sizes, Cross-Section:<br>.103 ± .003 in<br>(2,62 ± 0,08mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-102                                                            | .049            | .005       | 1,24           | 0,13      |
| 2-103                                                            | .081            | .005       | 2,06           | 0,13      |
| 2-104                                                            | .112            | .005       | 2,84           | 0,13      |
| 2-105                                                            | .143            | .005       | 3,63           | 0,13      |
| 2-106                                                            | .174            | .005       | 4,42           | 0,13      |
| 2-107                                                            | .206            | .005       | 5,23           | 0,13      |
| 2-108                                                            | .237            | .005       | 6,02           | 0,13      |
| 2-109                                                            | .299            | .005       | 7,59           | 0,13      |
| 2-110                                                            | .362            | .005       | 9,19           | 0,13      |
| 2-111                                                            | .424            | .005       | 10,77          | 0,13      |
| 2-112                                                            | .487            | .005       | 12,37          | 0,13      |
| 2-113                                                            | .549            | .007       | 13,94          | 0,18      |
| 2-114                                                            | .612            | .009       | 15,54          | 0,23      |
| 2-115                                                            | .674            | .009       | 17,12          | 0,23      |
| 2-116                                                            | .737            | .009       | 18,72          | 0,23      |
| 2-117                                                            | .799            | .010       | 20,30          | 0,25      |
| 2-118                                                            | .862            | .010       | 21,89          | 0,25      |
| 2-119                                                            | .924            | .010       | 23,47          | 0,25      |
| 2-120                                                            | .987            | .010       | 25,07          | 0,25      |
| 2-121                                                            | 1.049           | .010       | 26,64          | 0,25      |
| 2-122                                                            | 1.112           | .010       | 28,24          | 0,25      |
| 2-123                                                            | 1.174           | .012       | 29,82          | 0,30      |
| 2-124                                                            | 1.237           | .012       | 31,42          | 0,30      |
| 2-125                                                            | 1.299           | .012       | 32,99          | 0,30      |
| 2-126                                                            | 1.362           | .012       | 34,59          | 0,30      |
| 2-127                                                            | 1.424           | .012       | 36,17          | 0,30      |
| 2-128                                                            | 1.487           | .012       | 37,77          | 0,30      |
| 2-129                                                            | 1.549           | .015       | 39,34          | 0,38      |
| 2-130                                                            | 1.612           | .015       | 40,94          | 0,38      |
| 2-131                                                            | 1.674           | .015       | 42,52          | 0,38      |
| 2-132                                                            | 1.737           | .015       | 44,12          | 0,38      |
| 2-133                                                            | 1.799           | .015       | 45,69          | 0,38      |
| 2-134                                                            | 1.862           | .015       | 47,29          | 0,38      |
| 2-135                                                            | 1.925           | .017       | 48,90          | 0,43      |
| 2-136                                                            | 1.987           | .017       | 50,47          | 0,43      |
| 2-137                                                            | 2.050           | .017       | 52,07          | 0,43      |
| 2-138                                                            | 2.112           | .017       | 53,64          | 0,43      |
| 2-139                                                            | 2.175           | .017       | 55,25          | 0,43      |
| 2-140                                                            | 2.237           | .017       | 56,82          | 0,43      |

| 2-xxx Sizes, Cross-Section:<br>.103 ± .003 in<br>(2,62 ± 0,08mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-141                                                            | 2.300           | .020       | 58,42          | 0,51      |
| 2-142                                                            | 2.362           | .020       | 59,99          | 0,51      |
| 2-143                                                            | 2.425           | .020       | 61,60          | 0,51      |
| 2-144                                                            | 2.487           | .020       | 63,17          | 0,51      |
| 2-145                                                            | 2.550           | .020       | 64,77          | 0,51      |
| 2-146                                                            | 2.612           | .020       | 66,34          | 0,51      |
| 2-147                                                            | 2.675           | .022       | 67,95          | 0,56      |
| 2-148                                                            | 2.737           | .022       | 69,52          | 0,56      |
| 2-149                                                            | 2.800           | .022       | 71,12          | 0,56      |
| 2-150                                                            | 2.862           | .022       | 72,69          | 0,56      |
| 2-151                                                            | 2.987           | 0.24       | 75,87          | 0,61      |
| 2-152                                                            | 3.237           | .024       | 82,22          | 0,61      |
| 2-153                                                            | 3.487           | .024       | 88,57          | 0,61      |
| 2-154                                                            | 3.737           | .028       | 94,92          | 0,71      |
| 2-155                                                            | 3.987           | .028       | 101,27         | 0,71      |
| 2-156                                                            | 4.237           | .030       | 107,62         | 0,76      |
| 2-157                                                            | 4.487           | .030       | 113,97         | 0,76      |
| 2-158                                                            | 4.737           | .030       | 120,32         | 0,76      |
| 2-159                                                            | 4.987           | .035       | 126,67         | 0,89      |
| 2-160                                                            | 5.237           | .035       | 133,02         | 0,89      |
| 2-161                                                            | 5.487           | .035       | 139,37         | 0,89      |
| 2-162                                                            | 5.737           | .035       | 145,72         | 0,89      |
| 2-163                                                            | 5.987           | .035       | 152,07         | 0,89      |
| 2-164                                                            | 6.237           | .040       | 158,42         | 1,02      |
| 2-165                                                            | 6.487           | .040       | 167,77         | 1,02      |
| 2-166                                                            | 6.737           | .040       | 171,12         | 1,02      |
| 2-167                                                            | 6.987           | .040       | 177,47         | 1,02      |
| 2-168                                                            | 7.237           | .045       | 183,82         | 1,14      |
| 2-169                                                            | 7.487           | .045       | 190,17         | 1,14      |
| 2-170                                                            | 7.737           | .045       | 196,52         | 1,14      |
| 2-171                                                            | 7.987           | .045       | 202,87         | 1,14      |
| 2-172                                                            | 8.237           | .050       | 209,22         | 1,27      |
| 2-173                                                            | 8.487           | .050       | 215,57         | 1,27      |
| 2-174                                                            | 8.737           | .050       | 221,92         | 1,27      |
| 2-175                                                            | 8.987           | .050       | 228,27         | 1,27      |
| 2-176                                                            | 9.237           | .055       | 234,62         | 1,40      |
| 2-177                                                            | 9.487           | .055       | 240,97         | 1,40      |
| 2-178                                                            | 9.737           | .055       | 247,32         | 1,40      |



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| 2-xxx Sizes, Cross-Section:<br>.139 ± .004 in<br>(3,53 ± 0,10mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-201                                                            | .171            | .055       | 4,34           | 0,13      |
| 2-202                                                            | .234            | .005       | 5,94           | 0,13      |
| 2-203                                                            | .296            | .005       | 7,52           | 0,13      |
| 2-204                                                            | .359            | .005       | 9,12           | 0,13      |
| 2-205                                                            | .421            | .005       | 10,69          | 0,13      |
| 2-206                                                            | .484            | .005       | 12,29          | 0,13      |
| 2-207                                                            | .546            | .007       | 13,87          | 0,18      |
| 2-208                                                            | .609            | .009       | 15,47          | 0,23      |
| 2-209                                                            | .671            | .009       | 17,04          | 0,23      |
| 2-210                                                            | .734            | .010       | 18,64          | 0,25      |
| 2-211                                                            | .796            | .010       | 20,22          | 0,25      |
| 2-212                                                            | .859            | .010       | 21,82          | 0,25      |
| 2-213                                                            | .921            | .010       | 23,39          | 0,25      |
| 2-214                                                            | .984            | .010       | 24,99          | 0,25      |
| 2-215                                                            | 1.046           | .010       | 26,57          | 0,25      |
| 2-216                                                            | 1.109           | .012       | 28,17          | 0,30      |
| 2-217                                                            | 1.171           | .012       | 29,74          | 0,30      |
| 2-218                                                            | 1.234           | .012       | 31,34          | 0,30      |
| 2-219                                                            | 1.296           | .012       | 32,92          | 0,30      |
| 2-220                                                            | 1.359           | .012       | 34,52          | 0,30      |
| 2-221                                                            | 1.421           | .012       | 36,09          | 0,30      |
| 2-222                                                            | 1.484           | .015       | 37,69          | 0,38      |
| 2-223                                                            | 1.609           | .015       | 40,87          | 0,38      |
| 2-224                                                            | 1.734           | .015       | 44,04          | 0,38      |
| 2-225                                                            | 1.859           | .018       | 47,22          | 0,38      |
| 2-226                                                            | 1.984           | .018       | 50,39          | 0,46      |
| 2-227                                                            | 2.109           | .018       | 53,57          | 0,46      |
| 2-228                                                            | 2.234           | .020       | 56,74          | 0,51      |
| 2-229                                                            | 2.359           | .020       | 59,92          | 0,51      |
| 2-230                                                            | 2.484           | .020       | 63,09          | 0,51      |
| 2-231                                                            | 2.609           | .020       | 66,27          | 0,51      |
| 2-232                                                            | 2.734           | .024       | 69,44          | 0,60      |
| 2-233                                                            | 2.859           | .024       | 72,62          | 0,61      |
| 2-234                                                            | 2.984           | .024       | 75,79          | 0,61      |
| 2-235                                                            | 3.109           | .024       | 78,97          | 0,61      |
| 2-236                                                            | 3.234           | .024       | 82,14          | 0,61      |
| 2-237                                                            | 3.359           | .024       | 85,32          | 0,61      |
| 2-238                                                            | 3.484           | .024       | 88,49          | 0,61      |
| 2-239                                                            | 3.609           | .028       | 91,67          | 0,71      |
| 2-240                                                            | 3.734           | .028       | 94,84          | 0,71      |
| 2-241                                                            | 3.859           | .028       | 98,02          | 0,71      |
| 2-242                                                            | 3.984           | .028       | 101,19         | 0,71      |

| 2-xxx Sizes, Cross-Section:<br>.139 ± .004 in<br>(3,53 ± 0,10mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-243                                                            | 4.109           | .028       | 104,37         | 0,71      |
| 2-244                                                            | 4.234           | .030       | 107,54         | 0,76      |
| 2-245                                                            | 4.359           | .030       | 110,72         | 0,76      |
| 2-246                                                            | 4.484           | .030       | 113,89         | 0,76      |
| 2-247                                                            | 4.609           | .030       | 117,07         | 0,76      |
| 2-248                                                            | 4.734           | .030       | 120,24         | 0,76      |
| 2-249                                                            | 4.859           | .035       | 123,42         | 0,89      |
| 2-250                                                            | 4.984           | .035       | 126,59         | 0,89      |
| 2-251                                                            | 5.109           | .035       | 129,77         | 0,89      |
| 2-252                                                            | 5.234           | .035       | 132,94         | 0,89      |
| 2-253                                                            | 5.359           | .035       | 136,12         | 0,89      |
| 2-254                                                            | 5.484           | .035       | 139,29         | 0,89      |
| 2-255                                                            | 5.609           | .035       | 142,47         | 0,89      |
| 2-256                                                            | 5.734           | .035       | 145,64         | 0,89      |
| 2-257                                                            | 5.859           | .035       | 148,82         | 0,89      |
| 2-258                                                            | 5.984           | .035       | 151,99         | 0,89      |
| 2-259                                                            | 6.234           | .040       | 158,34         | 1,02      |
| 2-260                                                            | 6.484           | .040       | 164,69         | 1,02      |
| 2-261                                                            | 6.734           | .040       | 171,04         | 1,02      |
| 2-262                                                            | 6.984           | .040       | 177,39         | 1,02      |
| 2-263                                                            | 7.234           | .045       | 183,74         | 1,14      |
| 2-264                                                            | 7.484           | .045       | 190,09         | 1,14      |
| 2-265                                                            | 7.734           | .045       | 196,44         | 1,14      |
| 2-266                                                            | 7.984           | .045       | 202,79         | 1,14      |
| 2-267                                                            | 8.234           | .050       | 209,14         | 1,27      |
| 2-268                                                            | 8.484           | .050       | 215,49         | 1,27      |
| 2-269                                                            | 8.734           | .050       | 221,84         | 1,27      |
| 2-270                                                            | 8.984           | .050       | 228,19         | 1,27      |
| 2-271                                                            | 9.234           | .055       | 234,54         | 1,40      |
| 2-272                                                            | 9.484           | .055       | 240,89         | 1,40      |
| 2-273                                                            | 9.734           | .055       | 247,24         | 1,40      |
| 2-274                                                            | 9.984           | .055       | 253,59         | 1,40      |
| 2-275                                                            | 10.484          | .055       | 266,29         | 1,40      |
| 2-276                                                            | 10.984          | .065       | 278,99         | 1,65      |
| 2-277                                                            | 11.484          | .065       | 291,69         | 1,65      |
| 2-278                                                            | 11.984          | .065       | 304,39         | 1,65      |
| 2-279                                                            | 12.984          | .065       | 329,79         | 1,65      |
| 2-280                                                            | 13.984          | .065       | 355,19         | 1,65      |
| 2-281                                                            | 14.984          | .065       | 380,59         | 1,65      |
| 2-282                                                            | 15.955          | .075       | 405,26         | 1,91      |
| 2-283                                                            | 16.955          | .080       | 430,66         | 2,03      |
| 2-284                                                            | 17.955          | .085       | 456,06         | 2,16      |

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| 2-xxx Sizes, Cross-Section:<br>.210 ± .005 in<br>(5,33 ± 0,13mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-309                                                            | .412            | .005       | 10,46          | 0,13      |
| 2-310                                                            | .475            | .005       | 12,07          | 0,13      |
| 2-311                                                            | .537            | .007       | 13,64          | 0,18      |
| 2-312                                                            | .600            | .009       | 15,24          | 0,23      |
| 2-313                                                            | .662            | .009       | 16,81          | 0,23      |
| 2-314                                                            | .725            | .010       | 18,42          | 0,25      |
| 2-315                                                            | .787            | .010       | 19,99          | 0,25      |
| 2-316                                                            | .850            | .010       | 21,59          | 0,25      |
| 2-317                                                            | .912            | .010       | 23,16          | 0,25      |
| 2-318                                                            | .975            | .010       | 24,77          | 0,25      |
| 2-319                                                            | 1.037           | .010       | 26,34          | 0,25      |
| 2-320                                                            | 1.100           | .012       | 27,94          | 0,30      |
| 2-321                                                            | 1.162           | .012       | 29,51          | 0,30      |
| 2-322                                                            | 1.225           | .012       | 31,12          | 0,30      |
| 2-323                                                            | 1.287           | .012       | 32,69          | 0,30      |
| 2-324                                                            | 1.350           | .012       | 34,29          | 0,30      |
| 2-325                                                            | 1.475           | .015       | 37,47          | 0,38      |
| 2-326                                                            | 1.600           | .015       | 40,64          | 0,38      |
| 2-327                                                            | 1.725           | .015       | 43,82          | 0,38      |
| 2-328                                                            | 1.850           | .015       | 46,99          | 0,38      |
| 2-329                                                            | 1.975           | .018       | 50,17          | 0,46      |
| 2-330                                                            | 2.10            | .018       | 53,34          | 0,46      |
| 2-331                                                            | 2.225           | .018       | 56,52          | 0,46      |
| 2-332                                                            | 2.350           | .018       | 59,69          | 0,46      |
| 2-333                                                            | 2.475           | .020       | 62,87          | 0,51      |
| 2-334                                                            | 2.600           | .020       | 66,04          | 0,51      |
| 2-335                                                            | 2.725           | .020       | 69,22          | 0,51      |
| 2-336                                                            | 2.850           | .020       | 72,39          | 0,61      |
| 2-337                                                            | 2.975           | .024       | 75,57          | 0,61      |
| 2-338                                                            | 3.100           | .024       | 78,74          | 0,61      |
| 2-339                                                            | 3.225           | .024       | 81,92          | 0,61      |
| 2-340                                                            | 3.350           | .024       | 85,09          | 0,61      |
| 2-341                                                            | 3.475           | .024       | 88,27          | 0,61      |
| 2-342                                                            | 3.600           | .028       | 91,44          | 0,71      |
| 2-343                                                            | 3.725           | .028       | 94,62          | 0,71      |
| 2-344                                                            | 3.850           | .028       | 97,79          | 0,71      |
| 2-345                                                            | 3.975           | .028       | 100,97         | 0,71      |
| 2-346                                                            | 4.100           | .028       | 104,14         | 0,71      |
| 2-347                                                            | 4.225           | .030       | 107,32         | 0,76      |
| 2-348                                                            | 4.350           | .030       | 110,49         | 0,76      |
| 2-349                                                            | 4.475           | .030       | 113,67         | 0,76      |
| 2-350                                                            | 4.600           | .030       | 116,84         | 0,76      |
| 2-351                                                            | 4.725           | .030       | 120,02         | 0,76      |
| 2-352                                                            | 4.850           | .030       | 123,19         | 0,76      |

| 2-xxx Sizes, Cross-Section:<br>.210 ± .005 in<br>(5,33 ± 0,13mm) |                 |            |                |           |
|------------------------------------------------------------------|-----------------|------------|----------------|-----------|
| Parker No.                                                       | Inside Dia. in. | Tol. ± in. | Inside Dia. mm | Tol. ± mm |
| 2-353                                                            | 4.975           | .037       | 126,37         | 0,94      |
| 2-354                                                            | 5.100           | .037       | 129,54         | 0,94      |
| 2-355                                                            | 5.225           | .037       | 132,72         | 0,94      |
| 2-356                                                            | 5.350           | .037       | 135,89         | 0,94      |
| 2-357                                                            | 5.475           | .037       | 139,07         | 0,94      |
| 2-358                                                            | 5.600           | .037       | 142,24         | 0,94      |
| 2-359                                                            | 5.725           | .037       | 145,42         | 0,94      |
| 2-360                                                            | 5.850           | .037       | 148,59         | 0,94      |
| 2-361                                                            | 5.975           | .037       | 151,77         | 0,94      |
| 2-362                                                            | 6.225           | .040       | 158,12         | 1,02      |
| 2-363                                                            | 6.475           | .040       | 164,47         | 1,02      |
| 2-364                                                            | 6.725           | .040       | 170,82         | 1,02      |
| 2-365                                                            | 6.975           | .040       | 177,17         | 1,02      |
| 2-366                                                            | 7.225           | .045       | 183,52         | 1,14      |
| 2-367                                                            | 7.475           | .045       | 189,87         | 1,14      |
| 2-368                                                            | 7.725           | .045       | 196,22         | 1,14      |
| 2-369                                                            | 7.975           | .045       | 202,57         | 1,14      |
| 2-370                                                            | 8.225           | .050       | 208,92         | 1,27      |
| 2-371                                                            | 8.475           | .050       | 215,27         | 1,27      |
| 2-372                                                            | 8.725           | .050       | 221,62         | 1,27      |
| 2-373                                                            | 8.975           | .050       | 227,97         | 1,27      |
| 2-374                                                            | 9.225           | .055       | 234,32         | 1,40      |
| 2-375                                                            | 9.475           | .055       | 240,67         | 1,40      |
| 2-376                                                            | 9.725           | .055       | 247,02         | 1,40      |
| 2-377                                                            | 9.975           | .055       | 253,37         | 1,40      |
| 2-378                                                            | 10.475          | .060       | 266,07         | 1,52      |
| 2-379                                                            | 10.975          | .060       | 278,77         | 1,52      |
| 2-380                                                            | 11.475          | .065       | 291,47         | 1,65      |
| 2-381                                                            | 11.975          | .065       | 304,17         | 1,65      |
| 2-382                                                            | 12.975          | .065       | 329,57         | 1,65      |
| 2-383                                                            | 13.975          | .070       | 354,97         | 1,78      |
| 2-384                                                            | 14.975          | .070       | 380,37         | 1,78      |
| 2-385                                                            | 15.955          | .075       | 405,26         | 1,91      |
| 2-386                                                            | 16.955          | .080       | 430,66         | 2,03      |
| 2-387                                                            | 17.955          | .085       | 456,06         | 2,16      |
| 2-388                                                            | 18.955          | .090       | 481,41         | 2,29      |
| 2-389                                                            | 19.955          | .095       | 506,81         | 2,41      |
| 2-390                                                            | 20.955          | .095       | 532,21         | 2,41      |
| 2-391                                                            | 21.955          | .100       | 557,61         | 2,54      |
| 2-392                                                            | 22.940          | .105       | 582,68         | 2,67      |
| 2-393                                                            | 23.940          | .110       | 608,08         | 2,79      |
| 2-394                                                            | 24.940          | .115       | 633,48         | 2,92      |
| 2-395                                                            | 25.940          | .120       | 658,88         | 3,05      |



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| 2-xxx Sizes, Cross-Section:<br>.275 ± .006 in<br>(6,99 ± 0,15mm) |                       |                  |                      |                 | 2-xxx Sizes, Cross-Section:<br>.275 ± .006 in<br>(6,99 ± 0,15mm) |                       |                  |                      |                 |
|------------------------------------------------------------------|-----------------------|------------------|----------------------|-----------------|------------------------------------------------------------------|-----------------------|------------------|----------------------|-----------------|
| Parker<br>No.                                                    | Inside<br>Dia.<br>in. | Tol.<br>±<br>in. | Inside<br>Dia.<br>mm | Tol.<br>±<br>mm | Parker<br>No.                                                    | Inside<br>Dia.<br>in. | Tol.<br>±<br>in. | Inside<br>Dia.<br>mm | Tol.<br>±<br>mm |
| 2-425                                                            | 4.475                 | .033             | 113,67               | 0,84            | 2-451                                                            | 10.975                | .060             | 278,77               | 1,52            |
| 2-426                                                            | 4.600                 | .033             | 116,84               | 0,84            | 2-452                                                            | 11.475                | .060             | 291,47               | 1,52            |
| 2-427                                                            | 4.725                 | .033             | 120,02               | 0,84            | 2-453                                                            | 11.975                | .060             | 304,17               | 1,52            |
| 2-428                                                            | 4.850                 | .033             | 123,19               | 0,84            | 2-454                                                            | 12.475                | .060             | 316,87               | 1,52            |
| 2-429                                                            | 4.975                 | .037             | 126,37               | 0,94            | 2-455                                                            | 12.975                | .060             | 329,57               | 1,52            |
| 2-430                                                            | 5.100                 | .037             | 129,54               | 0,94            | 2-456                                                            | 13.475                | .070             | 342,27               | 1,78            |
| 2-431                                                            | 5.225                 | .037             | 132,72               | 0,94            | 2-457                                                            | 13.975                | .070             | 354,97               | 1,78            |
| 2-432                                                            | 5.350                 | .037             | 135,89               | 0,94            | 2-458                                                            | 14.475                | .070             | 367,67               | 1,78            |
| 2-433                                                            | 5.475                 | .037             | 139,07               | 0,94            | 2-459                                                            | 14.975                | .070             | 380,37               | 1,78            |
| 2-434                                                            | 5.600                 | .037             | 142,24               | 0,94            | 2-460                                                            | 15.475                | .070             | 393,07               | 1,78            |
| 2-435                                                            | 5.725                 | .037             | 145,42               | 0,94            | 2-461                                                            | 15.955                | .075             | 405,26               | 1,91            |
| 2-436                                                            | 5.850                 | .037             | 148,59               | 0,94            | 2-462                                                            | 16.455                | .075             | 417,96               | 1,91            |
| 2-437                                                            | 5.975                 | .037             | 151,77               | 0,94            | 2-463                                                            | 16.955                | .080             | 430,66               | 2,03            |
| 2-438                                                            | 6.225                 | .040             | 158,12               | 1,02            | 2-464                                                            | 17.455                | .085             | 443,36               | 2,16            |
| 2-439                                                            | 6.475                 | .040             | 164,47               | 1,02            | 2-465                                                            | 17.955                | .085             | 456,06               | 2,16            |
| 2-440                                                            | 6.725                 | .040             | 170,82               | 1,02            | 2-466                                                            | 18.455                | .085             | 468,76               | 2,16            |
| 2-441                                                            | 6.975                 | .040             | 177,17               | 1,02            | 2-467                                                            | 18.955                | .090             | 481,46               | 2,29            |
| 2-442                                                            | 7.225                 | .045             | 183,52               | 1,14            | 2-468                                                            | 19.455                | .090             | 494,16               | 2,29            |
| 2-443                                                            | 7.475                 | .045             | 189,87               | 1,14            | 2-469                                                            | 19.955                | .095             | 506,86               | 2,41            |
| 2-444                                                            | 7.725                 | .045             | 196,22               | 1,14            | 2-470                                                            | 20.955                | .095             | 532,26               | 2,41            |
| 2-445                                                            | 7.975                 | .045             | 202,57               | 1,14            | 2-471                                                            | 21.955                | .100             | 557,66               | 2,54            |
| 2-446                                                            | 8.475                 | .055             | 215,27               | 1,40            | 2-472                                                            | 22.940                | .105             | 582,68               | 2,67            |
| 2-447                                                            | 8.975                 | .055             | 227,97               | 1,40            | 2-473                                                            | 23.940                | .110             | 608,08               | 2,79            |
| 2-448                                                            | 9.475                 | .055             | 240,67               | 1,40            | 2-474                                                            | 24.940                | .115             | 633,48               | 2,92            |
| 2-449                                                            | 9.975                 | .055             | 253,37               | 1,40            | 2-475                                                            | 25.940                | .120             | 658,88               | 3,05            |
| 2-450                                                            | 10.475                | .060             | 266,07               | 1,52            |                                                                  |                       |                  |                      |                 |

 **WARNING:** This product contains a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

The following charts provide dimensions for standard shrinkage materials only. These correspond to AS568B dimensions. O-rings manufactured from compounds with different shrinkage rates will provide slightly different dimensions and tolerances when standard tooling is used. Custom tooling may be necessary for some compounds in order to meet AS568B dimensions and tolerances. Contact a Parker O-Ring Applications Engineer with any questions.

| 3-9xx Sizes |        |            |           |            |       |           |      |           |
|-------------|--------|------------|-----------|------------|-------|-----------|------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | W mm | Tol. ± mm |
| 3-901       | .185   | .005       | .056      | .003       | 4,70  | 0,13      | 1,42 | 0,08      |
| 3-902       | .239   | .005       | .064      | .003       | 6,07  | 0,13      | 1,63 | 0,08      |
| 3-903       | .301   | .005       | .064      | .003       | 7,65  | 0,13      | 1,63 | 0,08      |
| 3-904       | .351   | .005       | .072      | .003       | 8,92  | 0,13      | 1,83 | 0,08      |
| 3-905       | .414   | .005       | .072      | .003       | 10,52 | 0,13      | 1,83 | 0,08      |
| 3-906       | .468   | .005       | .078      | .003       | 11,89 | 0,13      | 1,98 | 0,08      |
| 3-907       | .530   | .007       | .082      | .003       | 13,46 | 0,18      | 2,08 | 0,08      |
| 3-908       | .644   | .009       | .087      | .003       | 16,36 | 0,23      | 2,21 | 0,08      |
| 3-909       | .706   | .009       | .097      | .003       | 17,93 | 0,23      | 2,46 | 0,08      |
| 3-910       | .755   | .009       | .097      | .003       | 19,18 | 0,23      | 2,46 | 0,08      |
| 3-911       | .863   | .009       | .116      | .004       | 21,92 | 0,23      | 2,95 | 0,10      |
| 3-912       | .924   | .009       | .116      | .004       | 23,47 | 0,23      | 2,95 | 0,10      |
| 3-913       | .986   | .010       | .116      | .004       | 25,04 | 0,26      | 2,95 | 0,10      |
| 3-914       | 1.047  | .010       | .116      | .004       | 26,59 | 0,26      | 2,95 | 0,10      |
| 3-916       | 1.171  | .010       | .116      | .004       | 29,74 | 0,26      | 2,95 | 0,10      |
| 3-918       | 1.355  | .012       | .116      | .004       | 34,42 | 0,30      | 2,95 | 0,10      |
| 3-920       | 1.475  | .014       | .118      | .004       | 37,47 | 0,36      | 3,00 | 0,10      |
| 3-924       | 1.720  | .014       | .118      | .004       | 43,69 | 0,36      | 3,00 | 0,10      |
| 3-928       | 2.090  | .018       | .118      | .004       | 53,09 | 0,46      | 3,00 | 0,10      |
| 3-932       | 2.337  | .018       | .118      | .004       | 59,36 | 0,46      | 3,00 | 0,10      |

- (a) The rubber compound must be added when ordering by the 3-size number (i.e., N0552 3-910).  
(b) Material with unusual shrinkage during molding will give slightly different dimensions.

### O-Rings for Metric Tube Fittings (ISO 6149) (Similar to SAE J2244)

Parker O-Ring Division is tooled in these sizes for Nitrile and Fluorocarbon rubber only. Contact the division for availability.

| Port Thread | O-Ring Name    | Parker Part No. | ID mm | Tol. ± mm | W mm | Tol. ± mm |
|-------------|----------------|-----------------|-------|-----------|------|-----------|
| M8x1        | M8 ISO O-Ring  | 0024-0063       | 6,10  | 0,13      | 1,60 | 0,08      |
| M10x1       | M10 ISO O-Ring | 0031-9063       | 8,10  | 0,13      | 1,60 | 0,08      |
| M12x1.5     | M12 ISO O-Ring | 0036-6087       | 9,30  | 0,13      | 2,20 | 0,08      |
| M14x1.5     | M14 ISO O-Ring | 0044-5087       | 11,30 | 0,13      | 2,20 | 0,08      |
| M16x1.5     | M16 ISO O-Ring | 0052-4087       | 13,30 | 0,15      | 2,20 | 0,08      |
| M18x1.5     | M18 ISO O-Ring | 0060-2087       | 15,30 | 0,18      | 2,20 | 0,08      |
| M22x1.5     | M22 ISO O-Ring | 0076-0087       | 19,30 | 0,20      | 2,20 | 0,08      |
| M27x2       | M27 ISO O-Ring | 0092-9114       | 23,60 | 0,23      | 2,90 | 0,10      |
| M33x2       | M33 ISO O-Ring | 0116-5114       | 29,60 | 0,30      | 2,90 | 0,10      |
| M42x2       | M42 ISO O-Ring | 0152-0114       | 38,60 | 0,36      | 2,90 | 0,10      |
| M48x2       | M48 ISO O-Ring | 0175-6114       | 44,60 | 0,41      | 2,90 | 0,10      |
| M60x2       | M60 ISO O-Ring | 0222-8114       | 56,60 | 0,46      | 2,90 | 0,10      |



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## Parker Series 5-XXX O-Ring Sizes

The following 5-XXX sizes are O-rings of non-standard dimensions for which Parker tooling was available as of April 1, 2004. This tooling will be maintained while volume demand continues. A mold scrapped as defective will not be replaced unless demand justifies the expense. Please note 5-XXX tooling does not exist for ULTRA Family compounds.

Note: These molds are cut to allow for standard "AN" shrinkage and in materials having standard shrinkage they will normally produce rings to the dimensions listed. Materials with other than standard shrinkage will give different dimensions and tolerances. Please consult the factory or your local Parker Distributor for the availability of special sizes not included in this list.

| 5-xxx Sizes |        |            |           |            |       |           |          |           |
|-------------|--------|------------|-----------|------------|-------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | Width mm | Tol. ± mm |
| 5-118       | 0.059  | 0.004      | 0.040     | 0.003      | 1.50  | 0.10      | 1.02     | 0.08      |
| 5-187       | 0.070  | 0.005      | 0.036     | 0.003      | 1.78  | 0.13      | 0.91     | 0.08      |
| 5-051       | 0.070  | 0.005      | 0.040     | 0.003      | 1.78  | 0.13      | 1.02     | 0.08      |
| 5-101       | 0.100  | 0.005      | 0.038     | 0.003      | 2.54  | 0.13      | 0.97     | 0.08      |
| 5-578       | 0.102  | 0.005      | 0.074     | 0.003      | 2.59  | 0.13      | 1.88     | 0.08      |
| 5-632       | 0.110  | 0.005      | 0.040     | 0.003      | 2.79  | 0.13      | 1.02     | 0.08      |
| 5-102       | 0.116  | 0.005      | 0.038     | 0.003      | 2.95  | 0.13      | 0.97     | 0.08      |
| 5-178       | 0.120  | 0.005      | 0.040     | 0.003      | 3.05  | 0.13      | 1.02     | 0.08      |
| 5-683       | 0.122  | 0.005      | 0.063     | 0.003      | 3.10  | 0.13      | 1.60     | 0.08      |
| 5-646       | 0.126  | 0.005      | 0.040     | 0.003      | 3.20  | 0.13      | 1.02     | 0.08      |
| 5-103       | 0.128  | 0.005      | 0.050     | 0.003      | 3.25  | 0.13      | 1.27     | 0.08      |
| 5-190       | 0.132  | 0.005      | 0.070     | 0.003      | 3.35  | 0.13      | 1.78     | 0.08      |
| 5-579       | 0.133  | 0.005      | 0.074     | 0.003      | 3.39  | 0.13      | 1.88     | 0.08      |
| 5-669       | 0.146  | 0.005      | 0.040     | 0.003      | 3.71  | 0.13      | 1.02     | 0.08      |
| 5-148       | 0.154  | 0.005      | 0.038     | 0.003      | 3.91  | 0.13      | 0.97     | 0.08      |
| 5-105       | 0.154  | 0.005      | 0.050     | 0.003      | 3.91  | 0.13      | 1.27     | 0.08      |
| 5-106       | 0.154  | 0.005      | 0.066     | 0.003      | 3.91  | 0.13      | 1.68     | 0.08      |
| 5-580       | 0.165  | 0.005      | 0.074     | 0.003      | 4.19  | 0.13      | 1.88     | 0.08      |
| 5-193       | 0.176  | 0.005      | 0.040     | 0.003      | 4.47  | 0.13      | 1.02     | 0.08      |
| 5-108       | 0.176  | 0.005      | 0.050     | 0.003      | 4.47  | 0.13      | 1.27     | 0.08      |
| 5-124       | 0.176  | 0.005      | 0.056     | 0.003      | 4.47  | 0.13      | 1.42     | 0.08      |
| 5-107       | 0.176  | 0.005      | 0.066     | 0.003      | 4.47  | 0.13      | 1.68     | 0.08      |
| 5-125       | 0.180  | 0.005      | 0.040     | 0.003      | 4.57  | 0.13      | 1.02     | 0.08      |
| 5-581       | 0.192  | 0.005      | 0.074     | 0.003      | 4.88  | 0.13      | 1.88     | 0.08      |
| 5-685       | 0.208  | 0.005      | 0.094     | 0.003      | 5.28  | 0.13      | 2.39     | 0.08      |
| 5-582       | 0.224  | 0.005      | 0.074     | 0.003      | 5.69  | 0.13      | 1.88     | 0.08      |



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| 5-xxx Sizes |        |            |           |            |       |           |          |           |
|-------------|--------|------------|-----------|------------|-------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | Width mm | Tol. ± mm |
| 5-194       | 0.228  | 0.005      | 0.040     | 0.003      | 5.79  | 0.13      | 1.02     | 0.08      |
| 5-638       | 0.233  | 0.005      | 0.076     | 0.003      | 5.92  | 0.13      | 1.93     | 0.08      |
| 5-179       | 0.239  | 0.005      | 0.040     | 0.003      | 6.07  | 0.13      | 1.02     | 0.08      |
| 5-151       | 0.239  | 0.005      | 0.051     | 0.003      | 6.07  | 0.13      | 1.30     | 0.08      |
| 5-127       | 0.239  | 0.005      | 0.074     | 0.003      | 6.07  | 0.13      | 1.88     | 0.08      |
| 5-197       | 0.242  | 0.005      | 0.040     | 0.003      | 6.15  | 0.13      | 1.02     | 0.08      |
| 5-180       | 0.248  | 0.005      | 0.048     | 0.003      | 6.30  | 0.13      | 1.22     | 0.08      |
| 5-686       | 0.248  | 0.005      | 0.094     | 0.003      | 6.30  | 0.13      | 2.39     | 0.08      |
| 5-583       | 0.251  | 0.005      | 0.074     | 0.003      | 6.38  | 0.13      | 1.88     | 0.08      |
| 5-052       | 0.270  | 0.005      | 0.070     | 0.003      | 6.86  | 0.13      | 1.78     | 0.08      |
| 5-202       | 0.278  | 0.005      | 0.046     | 0.003      | 7.06  | 0.13      | 1.17     | 0.08      |
| 5-698       | 0.283  | 0.005      | 0.040     | 0.003      | 7.19  | 0.13      | 1.02     | 0.08      |
| 5-584       | 0.283  | 0.005      | 0.074     | 0.003      | 7.19  | 0.13      | 1.88     | 0.08      |
| 5-687       | 0.287  | 0.005      | 0.094     | 0.003      | 7.29  | 0.13      | 2.39     | 0.08      |
| 5-1004      | 0.290  | 0.005      | 0.045     | 0.003      | 7.39  | 0.13      | 1.14     | 0.08      |
| 5-056       | 0.301  | 0.005      | 0.038     | 0.003      | 7.65  | 0.13      | 0.97     | 0.08      |
| 5-710       | 0.301  | 0.005      | 0.054     | 0.003      | 7.65  | 0.13      | 1.37     | 0.08      |
| 5-673       | 0.305  | 0.005      | 0.074     | 0.003      | 7.75  | 0.13      | 1.88     | 0.08      |
| 5-204       | 0.312  | 0.005      | 0.036     | 0.003      | 7.92  | 0.13      | 0.91     | 0.08      |
| 5-205       | 0.312  | 0.005      | 0.092     | 0.003      | 7.92  | 0.13      | 2.34     | 0.08      |
| 5-160       | 0.312  | 0.005      | 0.103     | 0.003      | 7.92  | 0.13      | 2.62     | 0.08      |
| 5-712       | 0.313  | 0.005      | 0.051     | 0.003      | 7.95  | 0.13      | 1.30     | 0.08      |
| 5-585       | 0.314  | 0.005      | 0.074     | 0.003      | 7.98  | 0.13      | 1.88     | 0.08      |
| 5-664       | 0.320  | 0.005      | 0.070     | 0.003      | 8.13  | 0.13      | 1.78     | 0.08      |
| 5-1006      | 0.322  | 0.005      | 0.070     | 0.003      | 8.18  | 0.13      | 1.78     | 0.08      |
| 5-206       | 0.326  | 0.005      | 0.103     | 0.003      | 8.28  | 0.13      | 2.62     | 0.08      |
| 5-1007      | 0.330  | 0.005      | 0.050     | 0.003      | 8.38  | 0.13      | 1.27     | 0.08      |
| 5-133       | 0.332  | 0.005      | 0.031     | 0.003      | 8.43  | 0.13      | 0.79     | 0.08      |
| 5-612       | 0.344  | 0.005      | 0.070     | 0.003      | 8.74  | 0.13      | 1.78     | 0.08      |
| 5-586       | 0.350  | 0.005      | 0.074     | 0.003      | 8.89  | 0.13      | 1.88     | 0.08      |
| 5-587       | 0.350  | 0.005      | 0.106     | 0.004      | 8.89  | 0.13      | 2.69     | 0.10      |
| 5-699       | 0.353  | 0.005      | 0.094     | 0.003      | 8.97  | 0.13      | 2.39     | 0.08      |
| 5-700       | 0.354  | 0.005      | 0.118     | 0.004      | 8.99  | 0.13      | 3.00     | 0.10      |
| 5-716       | 0.362  | 0.005      | 0.118     | 0.004      | 9.19  | 0.13      | 3.00     | 0.10      |
| 5-057       | 0.364  | 0.005      | 0.045     | 0.003      | 9.25  | 0.13      | 1.14     | 0.08      |



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| 5-xxx Sizes |        |            |           |            |       |           |          |           |
|-------------|--------|------------|-----------|------------|-------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | Width mm | Tol. ± mm |
| 5-209       | 0.370  | 0.005      | 0.040     | 0.003      | 9.40  | 0.13      | 1.02     | 0.08      |
| 5-211       | 0.375  | 0.005      | 0.187     | 0.005      | 9.53  | 0.13      | 4.75     | 0.13      |
| 5-212       | 0.384  | 0.005      | 0.070     | 0.003      | 9.75  | 0.13      | 1.78     | 0.08      |
| 5-614       | 0.391  | 0.005      | 0.103     | 0.003      | 9.93  | 0.13      | 2.62     | 0.08      |
| 5-718       | 0.395  | 0.005      | 0.040     | 0.003      | 10.03 | 0.13      | 1.02     | 0.08      |
| 5-134       | 0.410  | 0.005      | 0.031     | 0.003      | 10.41 | 0.13      | 0.79     | 0.08      |
| 5-588       | 0.413  | 0.005      | 0.106     | 0.004      | 10.49 | 0.13      | 2.69     | 0.10      |
| 5-002       | 0.416  | 0.005      | 0.059     | 0.003      | 10.57 | 0.13      | 1.50     | 0.08      |
| 5-215       | 0.418  | 0.005      | 0.094     | 0.003      | 10.62 | 0.13      | 2.39     | 0.08      |
| 5-218       | 0.425  | 0.005      | 0.025     | 0.003      | 10.80 | 0.13      | 0.64     | 0.08      |
| 5-682       | 0.426  | 0.005      | 0.040     | 0.003      | 10.82 | 0.13      | 1.02     | 0.08      |
| 5-058       | 0.426  | 0.005      | 0.050     | 0.003      | 10.82 | 0.13      | 1.27     | 0.08      |
| 5-613       | 0.437  | 0.005      | 0.070     | 0.003      | 11.10 | 0.13      | 1.78     | 0.08      |
| 5-1011      | 0.447  | 0.005      | 0.103     | 0.003      | 11.35 | 0.13      | 2.62     | 0.08      |
| 5-223       | 0.458  | 0.005      | 0.053     | 0.003      | 11.63 | 0.13      | 1.35     | 0.08      |
| 5-225       | 0.469  | 0.006      | 0.094     | 0.003      | 11.91 | 0.15      | 2.39     | 0.08      |
| 5-615       | 0.469  | 0.006      | 0.103     | 0.003      | 11.91 | 0.15      | 2.62     | 0.15      |
| 5-652       | 0.473  | 0.006      | 0.071     | 0.003      | 12.01 | 0.15      | 1.80     | 0.08      |
| 5-566       | 0.489  | 0.006      | 0.055     | 0.003      | 12.42 | 0.15      | 1.40     | 0.08      |
| 5-230       | 0.500  | 0.006      | 0.125     | 0.004      | 12.70 | 0.15      | 3.18     | 0.10      |
| 5-231       | 0.501  | 0.006      | 0.062     | 0.003      | 12.73 | 0.15      | 1.57     | 0.08      |
| 5-675       | 0.508  | 0.006      | 0.049     | 0.003      | 12.90 | 0.15      | 1.24     | 0.08      |
| 5-616       | 0.516  | 0.006      | 0.103     | 0.003      | 13.11 | 0.15      | 2.62     | 0.08      |
| 5-1014      | 0.525  | 0.007      | 0.071     | 0.003      | 13.34 | 0.18      | 1.80     | 0.08      |
| 5-135       | 0.526  | 0.007      | 0.031     | 0.003      | 13.36 | 0.18      | 0.79     | 0.08      |
| 5-162       | 0.554  | 0.007      | 0.070     | 0.003      | 14.07 | 0.18      | 1.78     | 0.08      |
| 5-239       | 0.570  | 0.007      | 0.106     | 0.004      | 14.48 | 0.18      | 2.69     | 0.10      |
| 5-156       | 0.575  | 0.007      | 0.060     | 0.003      | 14.61 | 0.18      | 1.52     | 0.08      |
| 5-563       | 0.583  | 0.007      | 0.040     | 0.003      | 14.81 | 0.18      | 1.02     | 0.08      |
| 5-735       | 0.583  | 0.007      | 0.103     | 0.003      | 14.81 | 0.18      | 2.62     | 0.08      |
| 5-736       | 0.590  | 0.007      | 0.070     | 0.003      | 14.99 | 0.18      | 1.78     | 0.08      |
| 5-591       | 0.594  | 0.007      | 0.106     | 0.004      | 15.09 | 0.18      | 2.69     | 0.10      |
| 5-609       | 0.600  | 0.007      | 0.094     | 0.003      | 15.24 | 0.18      | 2.39     | 0.08      |
| 5-243       | 0.604  | 0.007      | 0.103     | 0.003      | 15.34 | 0.18      | 2.62     | 0.08      |
| 5-676       | 0.610  | 0.007      | 0.058     | 0.003      | 15.49 | 0.18      | 1.47     | 0.08      |

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| 5-xxx Sizes |        |            |           |            |       |           |          |           |
|-------------|--------|------------|-----------|------------|-------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | Width mm | Tol. ± mm |
| 5-247       | 0.623  | 0.007      | 0.125     | 0.004      | 15.82 | 0.18      | 3.18     | 0.10      |
| 5-248       | 0.625  | 0.007      | 0.050     | 0.003      | 15.88 | 0.18      | 1.27     | 0.08      |
| 5-617       | 0.625  | 0.007      | 0.103     | 0.003      | 15.88 | 0.18      | 2.62     | 0.08      |
| 5-250       | 0.627  | 0.007      | 0.062     | 0.003      | 15.93 | 0.18      | 1.57     | 0.08      |
| 5-251       | 0.631  | 0.007      | 0.062     | 0.003      | 16.03 | 0.18      | 1.57     | 0.08      |
| 5-005       | 0.640  | 0.007      | 0.080     | 0.003      | 16.26 | 0.18      | 2.03     | 0.08      |
| 5-136       | 0.643  | 0.007      | 0.031     | 0.003      | 16.33 | 0.18      | 0.79     | 0.08      |
| 5-643       | 0.650  | 0.007      | 0.045     | 0.003      | 16.51 | 0.18      | 1.14     | 0.08      |
| 5-252       | 0.652  | 0.007      | 0.070     | 0.003      | 16.56 | 0.18      | 1.78     | 0.08      |
| 5-254       | 0.660  | 0.007      | 0.064     | 0.003      | 16.76 | 0.18      | 1.63     | 0.08      |
| 5-592       | 0.665  | 0.007      | 0.106     | 0.004      | 16.89 | 0.18      | 2.69     | 0.10      |
| 5-256       | 0.707  | 0.008      | 0.103     | 0.003      | 17.96 | 0.20      | 2.62     | 0.08      |
| 5-594       | 0.720  | 0.008      | 0.141     | 0.004      | 18.29 | 0.20      | 3.58     | 0.10      |
| 5-257       | 0.722  | 0.008      | 0.113     | 0.004      | 18.34 | 0.20      | 2.87     | 0.10      |
| 5-593       | 0.724  | 0.008      | 0.106     | 0.004      | 18.39 | 0.20      | 2.69     | 0.10      |
| 5-181       | 0.725  | 0.008      | 0.040     | 0.003      | 18.42 | 0.20      | 1.02     | 0.08      |
| 5-964       | 0.744  | 0.008      | 0.109     | 0.004      | 18.90 | 0.20      | 2.77     | 0.10      |
| 5-263       | 0.750  | 0.008      | 0.061     | 0.003      | 19.05 | 0.20      | 1.55     | 0.08      |
| 5-264       | 0.752  | 0.008      | 0.070     | 0.003      | 19.10 | 0.20      | 1.78     | 0.08      |
| 5-266       | 0.766  | 0.008      | 0.080     | 0.003      | 19.46 | 0.20      | 2.03     | 0.08      |
| 5-137       | 0.775  | 0.008      | 0.031     | 0.003      | 19.69 | 0.20      | 0.79     | 0.08      |
| 5-595       | 0.779  | 0.008      | 0.141     | 0.004      | 19.79 | 0.20      | 3.58     | 0.10      |
| 5-006       | 0.796  | 0.008      | 0.080     | 0.003      | 20.22 | 0.20      | 2.03     | 0.08      |
| 5-751       | 0.820  | 0.009      | 0.150     | 0.005      | 20.83 | 0.23      | 3.81     | 0.13      |
| 5-003       | 0.836  | 0.009      | 0.059     | 0.003      | 21.23 | 0.23      | 1.50     | 0.08      |
| 5-596       | 0.838  | 0.009      | 0.141     | 0.004      | 21.29 | 0.23      | 3.58     | 0.10      |
| 5-708       | 0.850  | 0.009      | 0.045     | 0.003      | 21.59 | 0.23      | 1.14     | 0.08      |
| 5-753       | 0.857  | 0.009      | 0.123     | 0.004      | 21.77 | 0.23      | 3.12     | 0.10      |
| 5-273       | 0.879  | 0.009      | 0.040     | 0.003      | 22.33 | 0.23      | 1.02     | 0.08      |
| 5-138       | 0.898  | 0.009      | 0.031     | 0.003      | 22.81 | 0.23      | 0.79     | 0.08      |
| 5-597       | 0.905  | 0.009      | 0.141     | 0.004      | 22.99 | 0.23      | 3.58     | 0.10      |
| 5-598       | 0.968  | 0.010      | 0.141     | 0.004      | 24.59 | 0.25      | 3.58     | 0.10      |
| 5-139       | 0.987  | 0.010      | 0.031     | 0.003      | 25.07 | 0.25      | 0.79     | 0.08      |
| 5-709       | 1.000  | 0.010      | 0.055     | 0.003      | 25.40 | 0.25      | 1.40     | 0.08      |
| 5-677       | 1.004  | 0.010      | 0.081     | 0.003      | 25.50 | 0.25      | 2.06     | 0.08      |



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| 5-xxx Sizes |        |            |           |            |       |           |          |           |
|-------------|--------|------------|-----------|------------|-------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | Width mm | Tol. ± mm |
| 5-618       | 1.016  | 0.010      | 0.139     | 0.004      | 25.81 | 0.25      | 3.53     | 0.10      |
| 5-599       | 1.031  | 0.010      | 0.141     | 0.004      | 26.19 | 0.25      | 3.58     | 0.10      |
| 5-004       | 1.070  | 0.010      | 0.065     | 0.003      | 27.18 | 0.25      | 1.65     | 0.08      |
| 5-763       | 1.080  | 0.010      | 0.050     | 0.003      | 27.43 | 0.25      | 1.27     | 0.08      |
| 5-600       | 1.094  | 0.010      | 0.141     | 0.004      | 27.79 | 0.25      | 3.58     | 0.10      |
| 5-140       | 1.112  | 0.010      | 0.031     | 0.003      | 28.24 | 0.25      | 0.79     | 0.08      |
| 5-601       | 1.153  | 0.012      | 0.141     | 0.004      | 29.29 | 0.30      | 3.58     | 0.10      |
| 5-291       | 1.186  | 0.012      | 0.070     | 0.003      | 30.12 | 0.30      | 1.78     | 0.08      |
| 5-602       | 1.212  | 0.012      | 0.141     | 0.004      | 30.78 | 0.30      | 3.58     | 0.10      |
| 5-294       | 1.213  | 0.012      | 0.149     | 0.004      | 30.81 | 0.30      | 3.78     | 0.10      |
| 5-295       | 1.225  | 0.012      | 0.275     | 0.006      | 31.12 | 0.30      | 6.99     | 0.15      |
| 5-141       | 1.226  | 0.012      | 0.031     | 0.003      | 31.14 | 0.30      | 0.79     | 0.08      |
| 5-296       | 1.229  | 0.012      | 0.070     | 0.003      | 31.22 | 0.30      | 1.78     | 0.08      |
| 5-603       | 1.279  | 0.012      | 0.141     | 0.004      | 32.49 | 0.30      | 3.58     | 0.10      |
| 5-157       | 1.338  | 0.012      | 0.092     | 0.003      | 33.99 | 0.30      | 2.34     | 0.08      |
| 5-604       | 1.342  | 0.012      | 0.141     | 0.004      | 34.09 | 0.30      | 3.58     | 0.10      |
| 5-605       | 1.401  | 0.014      | 0.141     | 0.004      | 35.59 | 0.36      | 3.58     | 0.10      |
| 5-780       | 1.412  | 0.014      | 0.073     | 0.003      | 35.86 | 0.36      | 1.85     | 0.08      |
| 5-008       | 1.421  | 0.014      | 0.080     | 0.003      | 36.09 | 0.36      | 2.03     | 0.08      |
| 5-670       | 1.437  | 0.014      | 0.070     | 0.003      | 36.40 | 0.36      | 1.78     | 0.08      |
| 5-142       | 1.450  | 0.014      | 0.047     | 0.003      | 36.83 | 0.36      | 1.19     | 0.08      |
| 5-657       | 1.465  | 0.014      | 0.103     | 0.003      | 37.21 | 0.36      | 2.62     | 0.08      |
| 5-606       | 1.468  | 0.014      | 0.141     | 0.004      | 37.29 | 0.36      | 3.58     | 0.10      |
| 5-980       | 1.475  | 0.014      | 0.275     | 0.006      | 37.47 | 0.36      | 6.99     | 0.15      |
| 5-024       | 1.515  | 0.015      | 0.125     | 0.004      | 38.48 | 0.38      | 3.18     | 0.10      |
| 5-320       | 1.540  | 0.015      | 0.070     | 0.003      | 39.12 | 0.38      | 1.78     | 0.08      |
| 5-158       | 1.550  | 0.015      | 0.092     | 0.003      | 39.37 | 0.38      | 2.34     | 0.08      |
| 5-009       | 1.553  | 0.015      | 0.080     | 0.003      | 39.45 | 0.38      | 2.03     | 0.08      |
| 5-321       | 1.559  | 0.015      | 0.139     | 0.004      | 39.60 | 0.38      | 3.53     | 0.10      |
| 5-788       | 1.591  | 0.015      | 0.071     | 0.003      | 40.41 | 0.38      | 1.80     | 0.08      |
| 5-327       | 1.640  | 0.015      | 0.139     | 0.004      | 41.66 | 0.38      | 3.53     | 0.10      |
| 5-143       | 1.670  | 0.015      | 0.047     | 0.003      | 42.42 | 0.38      | 1.19     | 0.08      |
| 5-329       | 1.670  | 0.015      | 0.070     | 0.003      | 42.42 | 0.38      | 1.78     | 0.08      |
| 5-1018      | 1.671  | 0.015      | 0.139     | 0.004      | 42.44 | 0.38      | 3.53     | 0.10      |
| 5-330       | 1.674  | 0.015      | 0.210     | 0.005      | 42.52 | 0.38      | 5.33     | 0.13      |

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| 5-xxx Sizes |        |            |           |            |       |           |          |           |
|-------------|--------|------------|-----------|------------|-------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm | Tol. ± mm | Width mm | Tol. ± mm |
| 5-671       | 1.680  | 0.015      | 0.080     | 0.003      | 42.67 | 0.38      | 2.03     | 0.08      |
| 5-025       | 1.765  | 0.016      | 0.125     | 0.004      | 44.83 | 0.41      | 3.18     | 0.10      |
| 5-035       | 1.786  | 0.016      | 0.139     | 0.004      | 45.36 | 0.41      | 3.53     | 0.10      |
| 5-1023      | 1.788  | 0.016      | 0.070     | 0.003      | 45.42 | 0.41      | 1.78     | 0.08      |
| 5-335       | 1.802  | 0.016      | 0.062     | 0.003      | 45.77 | 0.41      | 1.57     | 0.08      |
| 5-794       | 1.812  | 0.016      | 0.070     | 0.003      | 46.02 | 0.41      | 1.78     | 0.08      |
| 5-795       | 1.850  | 0.016      | 0.070     | 0.003      | 46.99 | 0.41      | 1.78     | 0.08      |
| 5-981       | 1.850  | 0.016      | 0.275     | 0.006      | 46.99 | 0.41      | 6.99     | 0.15      |
| 5-337       | 1.873  | 0.016      | 0.062     | 0.003      | 47.57 | 0.41      | 1.57     | 0.08      |
| 5-1043      | 1.882  | 0.017      | 0.118     | 0.004      | 47.80 | 0.43      | 3.00     | 0.10      |
| 5-144       | 1.891  | 0.017      | 0.047     | 0.003      | 48.03 | 0.43      | 1.19     | 0.08      |
| 5-796       | 1.913  | 0.017      | 0.070     | 0.003      | 48.59 | 0.43      | 1.78     | 0.08      |
| 5-338       | 1.925  | 0.017      | 0.210     | 0.005      | 48.90 | 0.43      | 5.33     | 0.13      |
| 5-342       | 1.980  | 0.017      | 0.038     | 0.003      | 50.29 | 0.43      | 0.97     | 0.08      |
| 5-655       | 2.020  | 0.018      | 0.070     | 0.003      | 51.31 | 0.46      | 1.78     | 0.08      |
| 5-037       | 2.036  | 0.018      | 0.139     | 0.004      | 51.71 | 0.46      | 3.53     | 0.10      |
| 5-642       | 2.051  | 0.018      | 0.070     | 0.003      | 52.10 | 0.46      | 1.78     | 0.08      |
| 5-1044      | 2.060  | 0.018      | 0.139     | 0.004      | 52.32 | 0.46      | 3.53     | 0.10      |
| 5-027       | 2.140  | 0.018      | 0.125     | 0.004      | 54.36 | 0.46      | 3.18     | 0.10      |
| 5-1046      | 2.140  | 0.018      | 0.315     | 0.010      | 54.36 | 0.46      | 8.00     | 0.25      |
| 5-145       | 2.141  | 0.018      | 0.047     | 0.003      | 54.38 | 0.46      | 1.19     | 0.08      |
| 5-347       | 2.163  | 0.018      | 0.062     | 0.003      | 54.94 | 0.46      | 1.57     | 0.08      |
| 5-348       | 2.172  | 0.018      | 0.070     | 0.003      | 55.17 | 0.46      | 1.78     | 0.08      |
| 5-800       | 2.225  | 0.018      | 0.275     | 0.006      | 56.52 | 0.46      | 6.99     | 0.15      |
| 5-015       | 2.296  | 0.020      | 0.080     | 0.003      | 58.32 | 0.51      | 2.03     | 0.08      |
| 5-702       | 2.312  | 0.020      | 0.139     | 0.004      | 58.72 | 0.51      | 3.53     | 0.10      |
| 5-039       | 2.411  | 0.020      | 0.139     | 0.004      | 61.24 | 0.51      | 3.53     | 0.10      |
| 5-354       | 2.471  | 0.020      | 0.070     | 0.003      | 62.76 | 0.51      | 1.78     | 0.08      |
| 5-703       | 2.563  | 0.020      | 0.139     | 0.004      | 65.10 | 0.51      | 3.53     | 0.10      |
| 5-358       | 2.576  | 0.020      | 0.082     | 0.003      | 65.43 | 0.51      | 2.08     | 0.08      |
| 5-361       | 2.671  | 0.022      | 0.139     | 0.004      | 67.84 | 0.56      | 3.53     | 0.10      |
| 5-159       | 2.683  | 0.022      | 0.115     | 0.004      | 68.15 | 0.56      | 2.92     | 0.10      |
| 5-982       | 2.725  | 0.022      | 0.275     | 0.006      | 69.22 | 0.56      | 6.99     | 0.15      |
| 5-704       | 2.812  | 0.022      | 0.139     | 0.004      | 71.42 | 0.56      | 3.53     | 0.10      |
| 5-697       | 2.878  | 0.022      | 0.080     | 0.003      | 73.10 | 0.56      | 2.03     | 0.08      |

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| 5-xxx Sizes |        |            |           |            |        |           |          |           |
|-------------|--------|------------|-----------|------------|--------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm  | Tol. ± mm | Width mm | Tol. ± mm |
| 5-367       | 2.924  | 0.022      | 0.103     | 0.003      | 74.27  | 0.56      | 2.62     | 0.08      |
| 5-705       | 2.937  | 0.022      | 0.139     | 0.004      | 74.60  | 0.56      | 3.53     | 0.10      |
| 5-044       | 3.036  | 0.024      | 0.139     | 0.004      | 77.11  | 0.61      | 3.53     | 0.10      |
| 5-369       | 3.037  | 0.024      | 0.103     | 0.003      | 77.14  | 0.61      | 2.62     | 0.08      |
| 5-810       | 3.041  | 0.024      | 0.062     | 0.003      | 77.24  | 0.61      | 1.57     | 0.08      |
| 5-374       | 3.112  | 0.024      | 0.070     | 0.003      | 79.04  | 0.61      | 1.78     | 0.08      |
| 5-557       | 3.125  | 0.024      | 0.103     | 0.003      | 79.38  | 0.61      | 2.62     | 0.08      |
| 5-815       | 3.156  | 0.024      | 0.060     | 0.003      | 80.16  | 0.61      | 1.52     | 0.08      |
| 5-045       | 3.161  | 0.024      | 0.139     | 0.004      | 80.29  | 0.61      | 3.53     | 0.10      |
| 5-816       | 3.162  | 0.024      | 0.070     | 0.003      | 80.31  | 0.61      | 1.78     | 0.08      |
| 5-984       | 3.225  | 0.024      | 0.275     | 0.006      | 81.92  | 0.61      | 6.99     | 0.15      |
| 5-821       | 3.300  | 0.026      | 0.070     | 0.003      | 83.82  | 0.66      | 1.78     | 0.08      |
| 5-825       | 3.350  | 0.026      | 0.275     | 0.006      | 85.09  | 0.66      | 6.99     | 0.15      |
| 5-1053      | 3.354  | 0.026      | 0.070     | 0.003      | 85.19  | 0.66      | 1.78     | 0.08      |
| 5-979       | 3.443  | 0.026      | 0.275     | 0.006      | 87.45  | 0.66      | 6.99     | 0.15      |
| 5-381       | 3.475  | 0.026      | 0.275     | 0.006      | 88.27  | 0.66      | 6.99     | 0.15      |
| 5-985       | 3.600  | 0.026      | 0.275     | 0.006      | 91.44  | 0.66      | 6.99     | 0.15      |
| 5-031       | 3.640  | 0.028      | 0.125     | 0.004      | 92.46  | 0.71      | 3.18     | 0.10      |
| 5-986       | 3.725  | 0.028      | 0.275     | 0.006      | 94.62  | 0.71      | 6.99     | 0.15      |
| 5-390       | 3.957  | 0.028      | 0.147     | 0.004      | 100.51 | 0.71      | 3.73     | 0.10      |
| 5-987       | 3.975  | 0.028      | 0.275     | 0.006      | 100.97 | 0.71      | 6.99     | 0.15      |
| 5-833       | 4.085  | 0.030      | 0.103     | 0.003      | 103.76 | 0.76      | 2.62     | 0.08      |
| 5-394       | 4.096  | 0.030      | 0.070     | 0.003      | 104.04 | 0.76      | 1.78     | 0.08      |
| 5-988       | 4.100  | 0.030      | 0.275     | 0.006      | 104.14 | 0.76      | 6.99     | 0.15      |
| 5-395       | 4.117  | 0.030      | 0.070     | 0.003      | 104.57 | 0.76      | 1.78     | 0.08      |
| 5-396       | 4.171  | 0.030      | 0.070     | 0.003      | 105.94 | 0.76      | 1.78     | 0.08      |
| 5-989       | 4.225  | 0.030      | 0.275     | 0.006      | 107.32 | 0.76      | 6.99     | 0.15      |
| 5-060       | 4.390  | 0.030      | 0.044     | 0.003      | 111.51 | 0.76      | 1.12     | 0.08      |
| 5-401       | 4.531  | 0.030      | 0.070     | 0.003      | 115.09 | 0.76      | 1.78     | 0.08      |
| 5-402       | 4.750  | 0.035      | 0.188     | 0.005      | 120.65 | 0.89      | 4.78     | 0.13      |
| 5-850       | 4.925  | 0.035      | 0.260     | 0.006      | 125.10 | 0.89      | 6.60     | 0.15      |
| 5-403       | 4.930  | 0.035      | 0.103     | 0.003      | 125.22 | 0.89      | 2.62     | 0.08      |
| 5-852       | 5.030  | 0.035      | 0.210     | 0.005      | 127.76 | 0.89      | 5.33     | 0.13      |
| 5-853       | 5.057  | 0.035      | 0.233     | 0.006      | 128.45 | 0.89      | 5.92     | 0.15      |
| 5-407       | 5.249  | 0.035      | 0.123     | 0.004      | 133.32 | 0.89      | 3.12     | 0.10      |

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| 5-xxx Sizes |        |            |           |            |        |           |          |           |
|-------------|--------|------------|-----------|------------|--------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm  | Tol. ± mm | Width mm | Tol. ± mm |
| 5-410       | 5.340  | 0.035      | 0.070     | 0.003      | 135.64 | 0.89      | 1.78     | 0.08      |
| 5-412       | 5.414  | 0.035      | 0.103     | 0.003      | 137.52 | 0.89      | 2.62     | 0.08      |
| 5-855       | 5.444  | 0.035      | 0.124     | 0.004      | 138.28 | 0.89      | 3.15     | 0.10      |
| 5-856       | 5.465  | 0.035      | 0.070     | 0.003      | 138.81 | 0.89      | 1.78     | 0.08      |
| 5-413       | 5.475  | 0.035      | 0.164     | 0.005      | 139.07 | 0.89      | 4.17     | 0.13      |
| 5-414       | 5.487  | 0.035      | 0.062     | 0.003      | 139.37 | 0.89      | 1.57     | 0.08      |
| 5-416       | 5.553  | 0.035      | 0.120     | 0.004      | 141.05 | 0.89      | 3.05     | 0.10      |
| 5-062       | 5.604  | 0.040      | 0.070     | 0.003      | 142.34 | 1.02      | 1.78     | 0.08      |
| 5-063       | 5.750  | 0.040      | 0.070     | 0.003      | 146.05 | 1.02      | 1.78     | 0.08      |
| 5-421       | 5.882  | 0.040      | 0.110     | 0.004      | 149.40 | 1.02      | 2.79     | 0.10      |



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| 5-xxx Sizes |        |            |           |            |        |           |          |           |
|-------------|--------|------------|-----------|------------|--------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm  | Tol. ± mm | Width mm | Tol. ± mm |
| 5-573       | 5.968  | 0.040      | 0.070     | 0.003      | 151.59 | 1.02      | 1.78     | 0.08      |
| 5-567       | 5.985  | 0.040      | 0.070     | 0.003      | 152.02 | 1.02      | 1.78     | 0.08      |
| 5-428       | 6.361  | 0.040      | 0.108     | 0.004      | 161.57 | 1.02      | 2.74     | 0.10      |
| 5-666       | 6.520  | 0.040      | 0.070     | 0.003      | 165.61 | 1.02      | 1.78     | 0.08      |
| 5-869       | 6.609  | 0.045      | 0.139     | 0.004      | 167.87 | 1.14      | 3.53     | 0.10      |
| 5-696       | 7.110  | 0.045      | 0.103     | 0.003      | 180.59 | 1.14      | 2.62     | 0.08      |
| 5-691       | 7.139  | 0.045      | 0.072     | 0.003      | 181.33 | 1.14      | 1.83     | 0.08      |
| 5-873       | 7.230  | 0.045      | 0.070     | 0.003      | 183.64 | 1.14      | 1.78     | 0.08      |
| 5-975       | 7.425  | 0.045      | 0.260     | 0.006      | 188.60 | 1.14      | 6.60     | 0.15      |
| 5-875       | 7.580  | 0.050      | 0.210     | 0.005      | 192.53 | 1.27      | 5.33     | 0.13      |
| 5-438       | 7.613  | 0.050      | 0.070     | 0.003      | 193.37 | 1.27      | 1.78     | 0.08      |
| 5-877       | 7.802  | 0.050      | 0.104     | 0.003      | 198.17 | 1.27      | 2.64     | 0.08      |
| 5-445       | 8.277  | 0.050      | 0.275     | 0.006      | 210.24 | 1.27      | 6.99     | 0.15      |
| 5-880       | 8.350  | 0.050      | 0.275     | 0.006      | 212.09 | 1.27      | 6.99     | 0.15      |
| 5-575       | 8.875  | 0.055      | 0.070     | 0.003      | 225.42 | 1.40      | 1.78     | 0.08      |
| 5-635       | 9.370  | 0.055      | 0.103     | 0.003      | 238.00 | 1.40      | 2.62     | 0.08      |
| 5-883       | 9.820  | 0.060      | 0.103     | 0.003      | 249.43 | 1.52      | 2.62     | 0.08      |
| 5-884       | 9.984  | 0.060      | 0.070     | 0.003      | 253.59 | 1.52      | 1.78     | 0.08      |
| 5-885       | 10.171 | 0.060      | 0.139     | 0.004      | 258.34 | 1.52      | 3.53     | 0.10      |
| 5-457       | 10.232 | 0.060      | 0.139     | 0.004      | 259.89 | 1.52      | 3.53     | 0.10      |
| 5-458       | 10.340 | 0.060      | 0.139     | 0.004      | 262.64 | 1.52      | 3.53     | 0.10      |
| 5-887       | 10.343 | 0.060      | 0.275     | 0.006      | 262.71 | 1.52      | 6.99     | 0.15      |
| 5-165       | 10.359 | 0.060      | 0.139     | 0.004      | 263.12 | 1.52      | 3.53     | 0.10      |
| 5-889       | 10.372 | 0.060      | 0.104     | 0.003      | 263.45 | 1.52      | 2.64     | 0.08      |
| 5-976       | 10.425 | 0.060      | 0.260     | 0.006      | 264.80 | 1.52      | 6.60     | 0.15      |
| 5-890       | 10.606 | 0.060      | 0.103     | 0.003      | 269.39 | 1.52      | 2.62     | 0.08      |
| 5-464       | 10.656 | 0.060      | 0.070     | 0.003      | 270.66 | 1.52      | 1.78     | 0.08      |
| 5-891       | 10.734 | 0.060      | 0.139     | 0.004      | 272.64 | 1.52      | 3.53     | 0.10      |
| 5-466       | 10.749 | 0.060      | 0.210     | 0.005      | 273.03 | 1.52      | 5.33     | 0.10      |
| 5-469       | 10.883 | 0.060      | 0.103     | 0.003      | 276.43 | 1.52      | 2.62     | 0.08      |
| 5-894       | 10.996 | 0.060      | 0.103     | 0.003      | 279.30 | 1.52      | 2.62     | 0.10      |
| 5-474       | 11.331 | 0.060      | 0.275     | 0.006      | 287.81 | 1.52      | 6.99     | 0.15      |



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| 5-xxx Sizes |        |            |           |            |        |           |          |           |
|-------------|--------|------------|-----------|------------|--------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm  | Tol. ± mm | Width mm | Tol. ± mm |
| 5-898       | 11.335 | 0.060      | 0.103     | 0.003      | 287.91 | 1.52      | 2.62     | 0.08      |
| 5-069       | 11.750 | 0.070      | 0.139     | 0.004      | 298.45 | 1.78      | 3.53     | 0.10      |
| 5-482       | 12.109 | 0.070      | 0.139     | 0.004      | 307.57 | 1.78      | 3.53     | 0.10      |
| 5-164       | 12.160 | 0.070      | 0.210     | 0.005      | 308.86 | 1.78      | 5.33     | 0.13      |
| 5-901       | 12.234 | 0.070      | 0.139     | 0.004      | 310.74 | 1.78      | 3.53     | 0.10      |
| 5-485       | 12.260 | 0.070      | 0.139     | 0.004      | 311.40 | 1.78      | 3.53     | 0.10      |
| 5-902       | 12.360 | 0.070      | 0.210     | 0.005      | 313.94 | 1.78      | 5.33     | 0.13      |
| 5-487       | 12.380 | 0.070      | 0.139     | 0.004      | 314.45 | 1.78      | 3.53     | 0.10      |
| 5-488       | 12.463 | 0.070      | 0.103     | 0.003      | 316.56 | 1.78      | 2.62     | 0.08      |
| 5-569       | 12.475 | 0.070      | 0.139     | 0.004      | 316.87 | 1.78      | 3.53     | 0.10      |
| 5-905       | 12.623 | 0.070      | 0.140     | 0.004      | 320.62 | 1.78      | 3.56     | 0.10      |
| 5-906       | 12.705 | 0.070      | 0.070     | 0.003      | 322.71 | 1.78      | 1.78     | 0.08      |
| 5-907       | 12.725 | 0.070      | 0.275     | 0.006      | 323.22 | 1.78      | 6.99     | 0.15      |
| 5-908       | 12.840 | 0.070      | 0.139     | 0.004      | 326.14 | 1.78      | 3.53     | 0.10      |
| 5-619       | 12.915 | 0.070      | 0.139     | 0.004      | 328.04 | 1.78      | 3.53     | 0.10      |
| 5-492       | 13.248 | 0.070      | 0.139     | 0.004      | 336.50 | 1.78      | 3.53     | 0.10      |
| 5-070       | 13.270 | 0.070      | 0.139     | 0.004      | 337.06 | 1.78      | 3.53     | 0.10      |
| 5-910       | 13.375 | 0.070      | 0.210     | 0.005      | 339.73 | 1.78      | 5.33     | 0.13      |
| 5-071       | 13.410 | 0.070      | 0.139     | 0.004      | 340.61 | 1.78      | 3.53     | 0.10      |
| 5-493       | 13.490 | 0.070      | 0.139     | 0.004      | 342.65 | 1.78      | 3.53     | 0.10      |
| 5-494       | 13.541 | 0.070      | 0.210     | 0.005      | 343.94 | 1.78      | 5.33     | 0.13      |
| 5-496       | 13.616 | 0.070      | 0.141     | 0.004      | 345.85 | 1.78      | 3.58     | 0.10      |
| 5-498       | 13.650 | 0.070      | 0.139     | 0.004      | 346.71 | 1.78      | 3.53     | 0.10      |
| 5-912       | 13.734 | 0.070      | 0.139     | 0.004      | 348.84 | 1.78      | 3.53     | 0.10      |
| 5-1097      | 13.750 | 0.070      | 0.103     | 0.003      | 349.25 | 1.78      | 2.62     | 0.08      |
| 5-073       | 13.820 | 0.080      | 0.139     | 0.004      | 351.03 | 2.03      | 3.53     | 0.10      |
| 5-502       | 14.088 | 0.080      | 0.210     | 0.005      | 357.84 | 2.03      | 5.33     | 0.13      |
| 5-624       | 14.111 | 0.080      | 0.139     | 0.004      | 358.42 | 2.03      | 3.53     | 0.10      |
| 5-074       | 14.234 | 0.080      | 0.139     | 0.004      | 361.54 | 2.03      | 3.53     | 0.10      |
| 5-504       | 14.430 | 0.080      | 0.139     | 0.004      | 366.52 | 2.03      | 3.53     | 0.10      |
| 5-505       | 14.470 | 0.080      | 0.139     | 0.004      | 367.54 | 2.03      | 3.53     | 0.10      |
| 5-507       | 14.600 | 0.080      | 0.210     | 0.005      | 370.84 | 2.03      | 5.33     | 0.13      |

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| 5-xxx Sizes |        |            |           |            |        |           |          |           |
|-------------|--------|------------|-----------|------------|--------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm  | Tol. ± mm | Width mm | Tol. ± mm |
| 5-508       | 14.674 | 0.080      | 0.139     | 0.004      | 372.72 | 2.03      | 3.53     | 0.10      |
| 5-166       | 14.722 | 0.080      | 0.139     | 0.004      | 373.94 | 2.03      | 3.53     | 0.10      |
| 5-920       | 14.780 | 0.080      | 0.175     | 0.005      | 375.41 | 2.03      | 4.45     | 0.13      |
| 5-921       | 14.795 | 0.080      | 0.071     | 0.003      | 375.79 | 2.03      | 1.80     | 0.08      |
| 5-512       | 15.171 | 0.080      | 0.139     | 0.004      | 385.34 | 2.03      | 3.53     | 0.10      |
| 5-077       | 15.300 | 0.080      | 0.139     | 0.004      | 388.62 | 2.03      | 3.53     | 0.10      |
| 5-924       | 15.410 | 0.080      | 0.210     | 0.005      | 391.41 | 2.03      | 5.33     | 0.13      |
| 5-079       | 15.540 | 0.080      | 0.139     | 0.004      | 394.72 | 2.03      | 3.53     | 0.10      |
| 5-515       | 15.548 | 0.080      | 0.210     | 0.005      | 394.92 | 2.03      | 5.33     | 0.13      |
| 5-516       | 15.740 | 0.080      | 0.139     | 0.004      | 399.80 | 2.03      | 3.53     | 0.10      |
| 5-517       | 15.750 | 0.080      | 0.275     | 0.006      | 400.05 | 2.03      | 6.99     | 0.15      |
| 5-518       | 16.031 | 0.080      | 0.256     | 0.006      | 407.19 | 2.03      | 6.50     | 0.15      |
| 5-571       | 16.234 | 0.090      | 0.139     | 0.004      | 412.34 | 2.29      | 3.53     | 0.10      |
| 5-930       | 16.285 | 0.090      | 0.250     | 0.006      | 413.64 | 2.29      | 6.35     | 0.15      |
| 5-520       | 16.435 | 0.090      | 0.139     | 0.004      | 417.45 | 2.29      | 3.53     | 0.10      |
| 5-524       | 16.640 | 0.090      | 0.210     | 0.005      | 422.66 | 2.29      | 5.33     | 0.13      |
| 5-622       | 16.750 | 0.090      | 0.275     | 0.006      | 425.45 | 2.29      | 6.99     | 0.15      |
| 5-525       | 16.765 | 0.090      | 0.125     | 0.004      | 425.83 | 2.29      | 3.18     | 0.10      |
| 5-935       | 17.100 | 0.090      | 0.275     | 0.006      | 434.34 | 2.29      | 6.99     | 0.15      |
| 5-526       | 17.250 | 0.090      | 0.187     | 0.005      | 438.15 | 2.29      | 4.75     | 0.13      |
| 5-082       | 17.250 | 0.090      | 0.240     | 0.006      | 438.15 | 2.29      | 6.10     | 0.15      |
| 5-937       | 17.390 | 0.090      | 0.139     | 0.004      | 441.71 | 2.29      | 3.53     | 0.10      |
| 5-529       | 17.455 | 0.090      | 0.139     | 0.004      | 443.36 | 2.29      | 3.53     | 0.10      |
| 5-939       | 17.870 | 0.090      | 0.210     | 0.005      | 453.90 | 2.29      | 5.33     | 0.13      |
| 5-084       | 18.062 | 0.090      | 0.281     | 0.006      | 458.77 | 2.29      | 7.16     | 0.15      |
| 5-533       | 18.169 | 0.090      | 0.096     | 0.003      | 461.49 | 2.29      | 2.44     | 0.08      |
| 5-085       | 18.350 | 0.090      | 0.210     | 0.005      | 466.09 | 2.29      | 5.33     | 0.13      |
| 5-1104      | 18.500 | 0.090      | 0.188     | 0.005      | 469.90 | 2.29      | 4.78     | 0.13      |
| 5-1105      | 18.635 | 0.090      | 0.139     | 0.004      | 473.33 | 2.29      | 3.53     | 0.10      |
| 5-944       | 18.880 | 0.100      | 0.139     | 0.004      | 479.55 | 2.54      | 3.53     | 0.10      |
| 5-947       | 19.380 | 0.100      | 0.139     | 0.004      | 492.25 | 2.54      | 3.53     | 0.10      |



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| 5-xxx Sizes |        |            |           |            |        |           |          |           |
|-------------|--------|------------|-----------|------------|--------|-----------|----------|-----------|
| Parker No.  | ID in. | Tol. ± in. | Width in. | Tol. ± in. | ID mm  | Tol. ± mm | Width mm | Tol. ± mm |
| 5-541       | 19.500 | 0.100      | 0.250     | 0.006      | 495.30 | 2.54      | 6.35     | 0.15      |
| 5-948       | 19.725 | 0.100      | 0.210     | 0.005      | 501.02 | 2.54      | 5.33     | 0.13      |
| 5-950       | 19.960 | 0.100      | 0.139     | 0.004      | 506.98 | 2.54      | 3.53     | 0.10      |
| 5-1010      | 20.609 | 0.100      | 0.139     | 0.004      | 523.47 | 2.54      | 3.53     | 0.10      |
| 5-547       | 21.564 | 0.100      | 0.139     | 0.004      | 547.73 | 2.54      | 3.53     | 0.10      |
| 5-089       | 23.406 | 0.120      | 0.281     | 0.006      | 594.51 | 3.05      | 7.14     | 0.15      |
| 5-551       | 23.540 | 0.120      | 0.139     | 0.004      | 597.92 | 3.05      | 3.53     | 0.10      |
| 5-090       | 23.576 | 0.120      | 0.139     | 0.004      | 598.83 | 3.05      | 3.53     | 0.10      |
| 5-167       | 23.780 | 0.120      | 0.375     | 0.007      | 604.01 | 3.05      | 9.52     | 0.18      |
| 5-091       | 25.474 | 0.120      | 0.139     | 0.004      | 647.04 | 3.05      | 3.53     | 0.10      |
| 5-170       | 25.500 | 0.120      | 0.275     | 0.006      | 647.70 | 3.05      | 6.99     | 0.15      |
| 5-171       | 26.125 | 0.120      | 0.275     | 0.006      | 663.58 | 3.05      | 6.99     | 0.15      |
| 5-173       | 26.188 | 0.120      | 0.210     | 0.005      | 665.18 | 3.05      | 5.33     | 0.13      |
| 5-631       | 26.408 | 0.120      | 0.139     | 0.004      | 670.76 | 3.05      | 3.53     | 0.10      |
| 5-172       | 27.485 | 0.120      | 0.275     | 0.006      | 698.12 | 3.05      | 6.99     | 0.15      |
| 5-092       | 27.625 | 0.120      | 0.275     | 0.006      | 701.68 | 3.05      | 6.99     | 0.15      |
| 5-955       | 28.801 | 0.140      | 0.275     | 0.006      | 731.55 | 3.56      | 6.99     | 0.15      |



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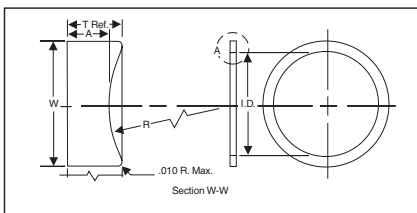
## General Notes

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## Parker Series 8-XXX Compounds Sizes

Developed primarily for service in petroleum based hydraulic fluids at -40°C to 121°C (-40°F to 250°F), Parker's standard Parbak N0300-90 and N1444-90 compounds provide the maximum benefits in back-up ring service. Compounds for use in other fluids and for temperatures up to 204°C (400°F) are available on request. Parbaks will stretch up to 50%, and are quickly and easily installed. Advantages of the contour design are obtained regardless of how Parbaks are installed — they may be installed with the concave face in either direction, toward or away from the O-ring.



Parbak sizes are designed to correspond with the Parker 2-xxx, 3-xxx and AS568B series O-ring with which they are used.

Complete call-out consists of the digit 8, the dash number for the size wanted and the rubber material.

Example: N0300 8-009



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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .087           | .049         | .045     | .003      | .053         | .003      |
| Parker No.     | ID in.       | Tol. ±   |           |              |           |
| 8-004          | .096         | .005     |           |              |           |
| 8-005          | .127         |          |           |              |           |
| 8-006          | .140         |          |           |              |           |
| 8-007          | .171         |          |           |              |           |
| 8-008          | .202         |          |           |              |           |
| 8-009          | .234         |          |           |              |           |
| 8-010          | .265         |          |           |              |           |
| 8-011          | .327         |          |           |              |           |
| 8-012          | .390         |          |           |              |           |
| 8-013          | .455         |          |           |              |           |
| 8-014          | .518         | .007     |           |              |           |
| 8-015          | .580         | .009     |           |              |           |
| 8-016          | .643         |          |           |              |           |
| 8-017          | .705         |          |           |              |           |
| 8-018          | .768         |          |           |              |           |
| 8-019          | .830         |          |           |              |           |
| 8-020          | .893         |          |           |              |           |
| 8-021          | .955         |          |           |              |           |
| 8-022          | 1.018        | .010     |           |              |           |
| 8-023          | 1.080        |          |           |              |           |
| 8-024          | 1.143        |          |           |              |           |
| 8-025          | 1.205        | .011     |           |              |           |
| 8-026          | 1.268        |          |           |              |           |
| 8-027          | 1.330        |          |           |              |           |
| 8-028          | 1.393        | .013     |           |              |           |
| 8-029          | 1.518        |          |           |              |           |
| 8-030          | 1.643        |          |           |              |           |
| 8-031          | 1.768        | .015     |           |              |           |
| 8-032          | 1.893        |          |           |              |           |
| 8-033          | 2.018        | .018     |           |              |           |
| 8-034          | 2.143        |          |           |              |           |
| 8-035          | 2.268        |          |           |              |           |
| 8-036          | 2.393        |          |           |              |           |
| 8-037          | 2.518        |          |           |              |           |

| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .087           | .049         | .045     | .003      | .053         | .003      |
| Parker No.     | ID in.       | Tol. ±   |           |              |           |
| 8-038          | 2.643        | .020     |           |              |           |
| 8-039          | 2.768        |          |           |              |           |
| 8-040          | 2.893        |          |           |              |           |
| 8-041          | 3.018        | .024     |           |              |           |
| 8-042          | 3.268        |          |           |              |           |
| 8-043          | 3.518        |          |           |              |           |
| 8-044          | 3.768        | .027     |           |              |           |
| 8-045          | 4.018        |          |           |              |           |
| 8-046          | 4.268        | .030     |           |              |           |
| 8-047          | 4.518        |          |           |              |           |
| 8-048          | 4.768        | .037     |           |              |           |
| 8-049          | 5.018        |          |           |              |           |
| 8-050          | 5.268        |          |           |              |           |



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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .129           | .053         | .045     | .003      | .086         | .003      |

| Parker No. | ID in. | Tol. ± |
|------------|--------|--------|
| 8-102      | .077   | .005   |
| 8-103      | .109   |        |
| 8-104      | .140   |        |
| 8-105      | .171   |        |
| 8-106      | .202   |        |
| 8-107      | .234   |        |
| 8-108      | .265   |        |
| 8-109      | .327   |        |
| 8-110      | .390   |        |
| 8-111      | .452   |        |
| 8-112      | .515   | .007   |
| 8-113      | .577   |        |
| 8-114      | .640   |        |
| 8-115      | .702   | .009   |
| 8-116      | .765   |        |
| 8-117      | .831   |        |
| 8-118      | .893   | .010   |
| 8-119      | .956   |        |
| 8-120      | 1.018  |        |
| 8-121      | 1.081  |        |
| 8-122      | 1.143  |        |
| 8-123      | 1.206  | .012   |
| 8-124      | 1.268  |        |
| 8-125      | 1.331  |        |
| 8-126      | 1.393  |        |
| 8-127      | 1.456  |        |
| 8-128      | 1.518  | .015   |
| 8-129      | 1.581  |        |
| 8-130      | 1.643  |        |
| 8-131      | 1.706  |        |
| 8-132      | 1.768  |        |
| 8-133      | 1.831  |        |
| 8-134      | 1.893  |        |

| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .129           | .053         | .045     | .003      | .086         | .003      |

| Parker No. | ID in. | Tol. ± |
|------------|--------|--------|
| 8-135      | 1.956  | .017   |
| 8-136      | 2.018  |        |
| 8-137      | 2.081  |        |
| 8-138      | 2.143  |        |
| 8-139      | 2.206  |        |
| 8-140      | 2.268  |        |
| 8-141      | 2.331  | .020   |
| 8-142      | 2.393  |        |
| 8-143      | 2.456  |        |
| 8-144      | 2.518  |        |
| 8-145      | 2.581  |        |
| 8-146      | 2.643  | .022   |
| 8-147      | 2.706  |        |
| 8-148      | 2.768  |        |
| 8-149      | 2.831  |        |
| 8-150      | 2.893  |        |
| 8-151      | 3.018  | .024   |
| 8-152      | 3.268  |        |
| 8-153      | 3.518  |        |
| 8-154      | 3.768  | .028   |
| 8-155      | 4.018  |        |
| 8-156      | 4.268  | .030   |
| 8-157      | 4.518  |        |
| 8-158      | 4.768  |        |
| 8-159      | 5.018  | .035   |
| 8-160      | 5.268  |        |
| 8-161      | 5.518  |        |
| 8-162      | 5.768  |        |
| 8-163      | 6.018  | .040   |
| 8-164      | 6.268  |        |
| 8-165      | 6.518  |        |
| 8-166      | 6.768  |        |
| 8-167      | 7.018  |        |



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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .129           | .053         | .045     | .003      | .086         | .003      |
|                |              |          |           |              |           |
| Parker No.     |              | ID in.   | Tol. ±    |              |           |
| 8-168          |              | 7.268    | .045      |              |           |
| 8-169          |              | 7.518    |           |              |           |
| 8-170          |              | 7.768    |           |              |           |
| 8-171          |              | 8.018    |           |              |           |
| 8-172          |              | 8.268    | .050      |              |           |
| 8-173          |              | 8.518    |           |              |           |
| 8-174          |              | 8.768    |           |              |           |
| 8-175          |              | 9.018    |           |              |           |
| 8-176          |              | 9.238    | .055      |              |           |
| 8-177          |              | 9.518    |           |              |           |
| 8-178          |              | 9.768    |           |              |           |



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| 8-XXX Sizes    |              |          |           |              |           | 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± | R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .174           | .050         | .040     | .003      | .118         | .004      | .174           | .050         | .040     | .003      | .118         | .004      |
| Parker No.     |              | ID in.   | Tol. ±    |              |           | Parker No.     |              | ID in.   | Tol. ±    |              |           |
| 8-201          |              | .202     | .005      |              |           | 8-232          |              | 2.756    | .024      |              |           |
| 8-202          |              | .265     |           |              |           | 8-233          |              | 2.881    |           |              |           |
| 8-203          |              | .327     |           |              |           | 8-234          |              | 3.006    |           |              |           |
| 8-204          |              | .390     |           |              |           | 8-235          |              | 3.131    |           |              |           |
| 8-205          |              | .455     |           |              |           | 8-236          |              | 3.256    |           |              |           |
| 8-206          |              | .518     | .007      |              |           | 8-237          |              | 3.381    | .028      |              |           |
| 8-207          |              | .580     |           |              |           | 8-238          |              | 3.506    |           |              |           |
| 8-208          |              | .643     | .009      |              |           | 8-239          |              | 3.631    | .030      |              |           |
| 8-209          |              | .705     |           |              |           | 8-240          |              | 3.756    |           |              |           |
| 8-210          |              | .766     | .010      |              |           | 8-241          |              | 3.881    | .035      |              |           |
| 8-211          |              | .828     |           |              |           | 8-242          |              | 4.006    |           |              |           |
| 8-212          |              | .891     |           |              |           | 8-243          |              | 4.131    |           |              |           |
| 8-213          |              | .953     |           |              |           | 8-244          |              | 4.256    |           |              |           |
| 8-214          |              | 1.016    |           |              |           | 8-245          |              | 4.381    |           |              |           |
| 8-215          |              | 1.078    | .012      |              |           | 8-246          |              | 4.506    | .040      |              |           |
| 8-216          |              | 1.141    |           |              |           | 8-247          |              | 4.631    |           |              |           |
| 8-217          |              | 1.203    |           |              |           | 8-248          |              | 4.768    |           |              |           |
| 8-218          |              | 1.266    |           |              |           | 8-249          |              | 4.893    |           |              |           |
| 8-219          |              | 1.334    |           |              |           | 8-250          |              | 5.018    |           |              |           |
| 8-220          |              | 1.397    | .015      |              |           | 8-251          |              | 5.143    | .040      |              |           |
| 8-221          |              | 1.459    |           |              |           | 8-252          |              | 5.268    |           |              |           |
| 8-222          |              | 1.522    |           |              |           | 8-253          |              | 5.393    |           |              |           |
| 8-223          |              | 1.647    |           |              |           | 8-254          |              | 5.518    |           |              |           |
| 8-224          |              | 1.772    |           |              |           | 8-255          |              | 5.643    |           |              |           |
| 8-225          |              | 1.897    | .018      |              |           | 8-256          |              | 5.768    |           |              |           |
| 8-226          |              | 2.022    |           |              |           | 8-257          |              | 5.893    |           |              |           |
| 8-227          |              | 2.147    |           |              |           | 8-258          |              | 6.018    |           |              |           |
| 8-228          |              | 2.272    | .020      |              |           | 8-259          |              | 6.268    |           |              |           |
| 8-229          |              | 2.397    |           |              |           | 8-260          |              | 6.518    |           |              |           |
| 8-230          |              | 2.522    |           |              |           | 8-261          |              | 6.768    |           |              |           |
| 8-231          |              | 2.631    |           |              |           | 8-262          |              | 7.018    |           |              |           |

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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .174           | .050         | .040     | .003      | .118         | .004      |
| Parker No.     |              | ID in.   | Tol. ±    |              |           |
| 8-263          |              | 7.268    | .045      |              |           |
| 8-264          |              | 7.518    |           |              |           |
| 8-265          |              | 7.768    |           |              |           |
| 8-266          |              | 8.018    |           |              |           |
| 8-267          |              | 8.268    | .050      |              |           |
| 8-268          |              | 8.518    |           |              |           |
| 8-269          |              | 8.768    |           |              |           |
| 8-270          |              | 9.018    |           |              |           |
| 8-271          |              | 9.268    | .055      |              |           |
| 8-272          |              | 9.518    |           |              |           |
| 8-273          |              | 9.768    |           |              |           |
| 8-274          |              | 10.018   |           |              |           |
| 8-275          |              | 10.518   | .065      |              |           |
| 8-276          |              | 11.018   |           |              |           |
| 8-277          |              | 11.518   |           |              |           |
| 8-278          |              | 12.018   |           |              |           |
| 8-279          |              | 13.018   |           |              |           |
| 8-280          |              | 14.018   | .075      |              |           |
| 8-281          |              | 15.018   |           |              |           |
| 8-282          |              | 15.989   |           |              |           |
| 8-283          |              | 16.989   |           |              |           |
| 8-284          |              | 17.989   | .085      |              |           |



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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .262           | .076         | .060     | .004      | .183         | .005      |
| Parker No.     | ID in.       | Tol. ±   |           |              |           |
| 8-309          | .450         | .005     |           |              |           |
| 8-310          | .513         |          |           |              |           |
| 8-311          | .575         | .007     |           |              |           |
| 8-312          | .638         | .009     |           |              |           |
| 8-313          | .700         |          |           |              |           |
| 8-314          | .763         | .010     |           |              |           |
| 8-315          | .825         |          |           |              |           |
| 8-316          | .888         |          |           |              |           |
| 8-317          | .950         |          |           |              |           |
| 8-318          | 1.013        |          |           |              |           |
| 8-319          | 1.075        |          |           |              |           |
| 8-320          | 1.138        | .012     |           |              |           |
| 8-321          | 1.200        |          |           |              |           |
| 8-322          | 1.263        |          |           |              |           |
| 8-323          | 1.316        |          |           |              |           |
| 8-324          | 1.388        |          |           |              |           |
| 8-325          | 1.513        | .015     |           |              |           |
| 8-326          | 1.638        |          |           |              |           |
| 8-327          | 1.763        |          |           |              |           |
| 8-328          | 1.888        |          |           |              |           |
| 8-329          | 2.013        | .018     |           |              |           |
| 8-330          | 2.138        |          |           |              |           |
| 8-331          | 2.268        |          |           |              |           |
| 8-332          | 2.393        |          |           |              |           |
| 8-333          | 2.518        | .020     |           |              |           |
| 8-334          | 2.643        |          |           |              |           |
| 8-335          | 2.768        |          |           |              |           |
| 8-336          | 2.893        | .024     |           |              |           |
| 8-337          | 3.018        |          |           |              |           |
| 8-338          | 3.143        |          |           |              |           |
| 8-339          | 3.273        |          |           |              |           |
| 8-340          | 3.398        |          |           |              |           |
| 8-341          | 3.523        |          |           |              |           |

| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .262           | .076         | .060     | .004      | .183         | .005      |
| Parker No.     | ID in.       | Tol. ±   |           |              |           |
| 8-342          | 3.648        | .028     |           |              |           |
| 8-343          | 3.773        |          |           |              |           |
| 8-344          | 3.989        |          |           |              |           |
| 8-345          | 4.028        |          |           |              |           |
| 8-346          | 4.153        | .030     |           |              |           |
| 8-347          | 4.278        |          |           |              |           |
| 8-348          | 4.403        |          |           |              |           |
| 8-349          | 4.528        |          |           |              |           |
| 8-350          | 4.653        |          |           |              |           |
| 8-351          | 4.778        |          |           |              |           |
| 8-352          | 4.903        | .037     |           |              |           |
| 8-353          | 5.028        |          |           |              |           |
| 5-354          | 5.153        |          |           |              |           |
| 8-355          | 5.278        |          |           |              |           |
| 8-356          | 5.403        |          |           |              |           |
| 8-357          | 5.528        |          |           |              |           |
| 8-358          | 5.653        |          |           |              |           |
| 8-359          | 5.778        | .040     |           |              |           |
| 8-360          | 5.903        |          |           |              |           |
| 8-361          | 6.028        |          |           |              |           |
| 8-362          | 6.278        |          |           |              |           |
| 8-363          | 6.528        |          |           |              |           |
| 8-364          | 6.778        | .045     |           |              |           |
| 8-365          | 7.028        |          |           |              |           |
| 8-366          | 7.278        |          |           |              |           |
| 8-367          | 7.528        | .050     |           |              |           |
| 8-368          | 7.778        |          |           |              |           |
| 8-369          | 8.028        |          |           |              |           |
| 8-370          | 8.278        |          |           |              |           |
| 8-371          | 8.528        |          |           |              |           |
| 8-372          | 8.778        |          |           |              |           |
| 8-373          | 9.028        |          |           |              |           |

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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .262           | .076         | .060     | .004      | .183         | .005      |
| Parker No.     |              | ID in.   | Tol. ±    |              |           |
| 8-374          |              | 9.278    | .055      |              |           |
| 8-375          |              | 9.528    |           |              |           |
| 8-376          |              | 9.778    |           |              |           |
| 8-377          |              | 10.028   | .060      |              |           |
| 8-378          |              | 10.528   |           |              |           |
| 8-379          |              | 11.028   |           |              |           |
| 8-380          |              | 11.528   | .065      |              |           |
| 8-381          |              | 12.028   |           |              |           |
| 8-382          |              | 13.028   |           |              |           |
| 8-383          |              | 14.028   | .070      |              |           |
| 8-384          |              | 15.028   |           |              |           |
| 8-385          |              | 16.008   |           |              |           |
| 8-386          |              | 17.008   | .075      |              |           |
| 8-387          |              | 18.008   | .080      |              |           |
| 8-388          |              | 19.006   | .085      |              |           |
| 8-389          |              | 20.006   | .090      |              |           |
| 8-390          |              | 21.006   | .095      |              |           |
| 8-391          |              | 22.006   |           |              |           |
| 8-392          |              | 22.993   |           |              |           |
| 8-393          |              | 23.993   | .105      |              |           |
| 8-394          |              | 24.993   | .110      |              |           |
| 8-395          |              | 25.993   | .115      |              |           |
|                |              |          | .120      |              |           |



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| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .344           | .117         | .096     | .005      | .236         | .006      |
| Parker No.     | ID in.       | Tol. ±   |           |              |           |
| 8-425          | 4.551        | .003     |           |              |           |
| 8-426          | 4.676        |          |           |              |           |
| 8-427          | 4.801        |          |           |              |           |
| 8-428          | 4.926        |          |           |              |           |
| 8-429          | 5.051        | .037     |           |              |           |
| 8-430          | 5.176        |          |           |              |           |
| 8-431          | 5.301        |          |           |              |           |
| 8-432          | 5.426        |          |           |              |           |
| 8-433          | 5.551        |          |           |              |           |
| 8-434          | 5.676        |          |           |              |           |
| 8-435          | 5.801        |          |           |              |           |
| 8-436          | 5.926        |          |           |              |           |
| 8-437          | 6.051        |          |           |              |           |
| 8-438          | 6.274        |          |           |              |           |
| 8-439          | 6.524        | .040     |           |              |           |
| 8-440          | 6.774        |          |           |              |           |
| 8-441          | 7.024        |          |           |              |           |
| 8-442          | 7.274        |          |           |              |           |
| 8-443          | 7.524        | .045     |           |              |           |
| 8-444          | 7.774        |          |           |              |           |
| 8-445          | 8.024        |          |           |              |           |
| 8-446          | 8.524        |          |           |              |           |
| 8-447          | 9.024        | .055     |           |              |           |
| 8-448          | 9.524        |          |           |              |           |
| 8-449          | 10.024       |          |           |              |           |
| 8-450          | 10.524       |          |           |              |           |
| 8-451          | 11.024       | .060     |           |              |           |
| 8-452          | 11.524       |          |           |              |           |
| 8-453          | 12.024       |          |           |              |           |
| 8-454          | 12.524       |          |           |              |           |
| 8-455          | 13.024       |          |           |              |           |
| 8-456          | 13.524       | .070     |           |              |           |
| 8-457          | 14.024       |          |           |              |           |
| 8-458          | 14.524       |          |           |              |           |
| 8-459          | 15.024       |          |           |              |           |
| 8-460          | 15.524       |          |           |              |           |

| 8-XXX Sizes    |              |          |           |              |           |
|----------------|--------------|----------|-----------|--------------|-----------|
| R<br>±<br>.010 | Tol.<br>Ref. | A<br>in. | Tol.<br>± | Width<br>in. | Tol.<br>± |
| .344           | .117         | .096     | .005      | .236         | .006      |
| Parker No.     | ID in.       | Tol. ±   |           |              |           |
| 8-461          | 16.004       | .075     |           |              |           |
| 8-462          | 16.504       |          |           |              |           |
| 8-463          | 17.004       | .080     |           |              |           |
| 8-464          | 17.504       |          |           |              |           |
| 8-465          | 18.004       |          |           |              |           |
| 8-466          | 18.504       | .085     |           |              |           |
| 8-467          | 19.004       |          |           |              |           |
| 8-468          | 19.504       |          |           |              |           |
| 8-469          | 20.004       | .090     |           |              |           |
| 8-470          | 21.004       |          |           |              |           |
| 8-471          | 22.004       | .095     |           |              |           |
| 8-472          | 23.004       |          |           |              |           |
| 8-473          | 24.004       | .100     |           |              |           |
| 8-474          | 25.004       |          |           |              |           |
| 8-475          | 26.004       | .105     |           |              |           |



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## General Notes



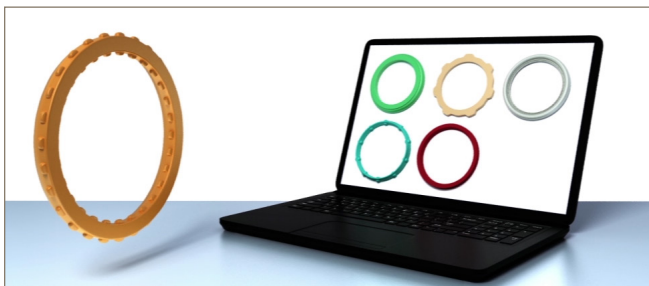
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## General Notes

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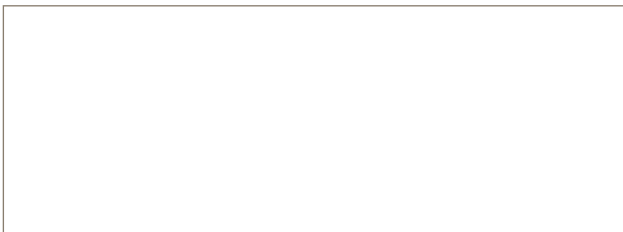
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- Direct links to resources and articles to accelerate the design process
- Online *Chat with an Engineer* capability within each page to provide personalized assistance
- Design analysis for O-rings via Mobile inPHorm O-Ring Calculator and the O-Ring Selector



**WARNING:** This product contains a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



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8/18 1000 TMR



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