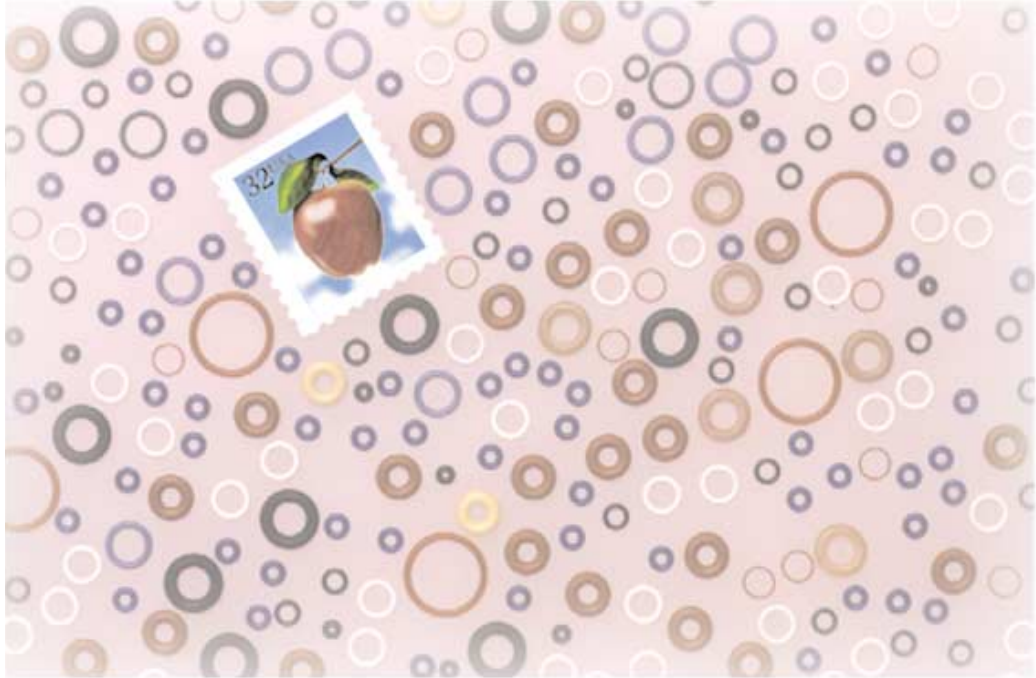


MicrOring™ Seals from Apple Rubber



The leader in microminiature sealing solutions.



APPLE RUBBER PRODUCTS INC.

The Way to SealSM

MicOring™ Seals from Apple Rubber.

What is a MicOring™ Seal?

As a general definition, a MicOring™ seal is any O-ring that measures less than 1 mm in either inside diameter or cross section. Apple Rubber offers MicOring seals in more than 2,000 sizes, ranging from the largest, with an inside diameter or cross section of .039 in. (1.0 mm), down to .008 in. (.20 mm) inside diameter and cross section — the smallest size O-ring in the world!

MicOring seals were developed by Apple Rubber to meet the ever-increasing demand for effective seals in a wide range of miniaturized applications, from precision instruments and medical devices to aerospace and fiber optics. Today's smaller designs can present some big challenges for the design engineer, particularly the tight tolerances required for microminiature sealing applications.

a reputation for solving tough sealing problems associated with smaller designs. Even our competitors have recommended us for challenging microminiature applications that were beyond their capabilities.

With engineering expertise and advanced manufacturing technology, Apple Rubber's capability to hold tolerances on microminiature seals is unsurpassed. In addition, Apple Rubber can develop special compounds to meet the needs of your application.

Beyond O-rings - the big benefits of microminiature composite seals.

Apple Rubber can ease installation and reduce assembly costs with a composite MicOring seal custom-engineered for your specific application. Composite seals combine the structural advantages of metal or plastic with the sealing performance of elastomers. They can provide the tighter tolerances and added finesse required in today's microminiature designs.

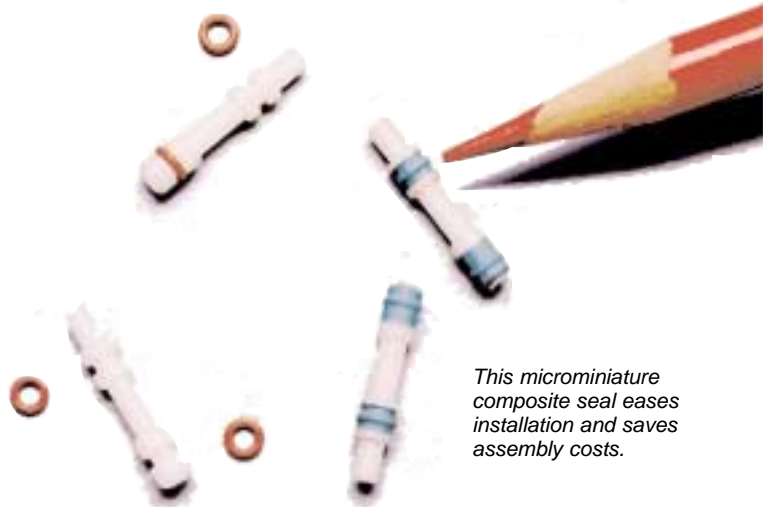
We can develop microminiature composite seals — incorporating the seal and another component in one part instead of two — that may even simplify the design of your product.



By definition, a MicOring™ Seal is any O-ring that measures less than 1 mm in either inside diameter or cross section.

Apple Rubber is the leader in microminiature sealing solutions.

Apple Rubber offers the largest selection of microminiature O-ring sizes available anywhere. Plus, no other company offers more experience and expertise in custom-engineered microminiature sealing solutions. We are continually adding to our microminiature experience and have earned



This microminiature composite seal eases installation and saves assembly costs.

Setting the quality standard for microminiature seals.

There is a big difference in the quality of Apple's MicrOring seals.

By nature of their size, microminiature O-rings and seals present some quality assurance challenges. Visual inspection can be difficult. Dimensional verification requires a higher level of precision. Because microminiature O-rings are difficult to visually inspect, potential problems such as non-fills may be overlooked. That's why the use of sophisticated, non-contact measuring equipment is especially important in evaluating microminiature seals.

Apple Rubber has some of the most sophisticated testing equipment and systems available today at AppleLab™, our advanced technology laboratory dedicated to seal performance. We utilize specialized equipment that requires only a small sample to perform complete material analysis. Other advanced systems include:

Avant Video Measuring System

Featuring MeasureMind Plus software, this system uses the latest optical, video and image processing technologies to accurately measure parts without touching them. The system enables Apple Rubber to measure even the most demanding microminiature applications quickly and accurately.



Apple uses the latest optical, video and image processing technologies to accurately measure our MicrOrings.

FTIR (Fourier Transform Infrared Spectrophotometer) - Apple's FTIR

equipment can determine chemical properties of rubber compounds both before and after molding, in a matter of minutes. It ensures the consistency of rubber compounds and seals batch to batch, shipment to shipment.



Apple's FTIR equipment assures rubber compounds are consistent from shipment to shipment.

Thermogravimetric Analyzer (TGA) - Apple utilizes TGA

equipment to accurately determine the chemical composition of materials and their thermal stability at temperatures up to 1,000°C. Completely computer controlled, the TGA equipment delivers unequalled accuracy for MicrOring seal analysis.

AppleLab features a wide variety of other specialized equipment to perform a range of tests on MicrOring seals such as tensile strength, elongation and modulus of elasticity.

AppleLab's sophisticated equipment allows Apple Rubber to offer both material and dimensional validation, even on the smallest of seals. We can provide standard and custom testing with full documentation, which may enable you to eliminate the need for costly incoming inspection.

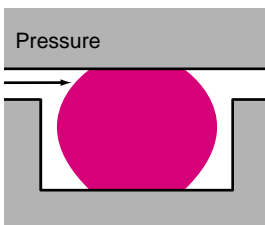
Important considerations for selecting microminiature O-rings.

In any sealing application, correct O-ring selection is the result of a number of design considerations including dimensions, chemical compatibility and the ability to resist pressure and temperature extremes. In microminiature applications the importance of some of these considerations increases as the size of the O-ring decreases.

Microminiature designs leave less room for inaccuracies, requiring higher precision and tighter tolerances. It is helpful to pay particular attention to some basic sealing concepts when selecting a microminiature O-ring for your application. These include:

Sealing Pressure - Sealing pressure is the force exerted by compression of the seal between the mating surfaces forming the gland itself and external forces (i.e. the fluid being sealed) transmitted through the seal. A physical barrier is formed when the force from compressing the seal and pressure applied by the fluid being sealed causes the seal to fill all leak paths.

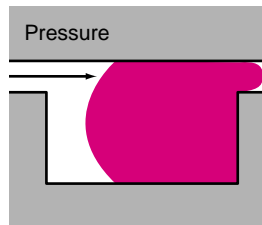
Low Pressure Sealing - In a low pressure sealing application, system pressure does not cause a noticeable increase in the seal's sealing



force. Because of this, all sealing force must come from the ability of the seal to deform and create a barrier by compression of the seal. Surface finish on both the seal and gland are

critical to an effective seal.

High Pressure Sealing - In a high pressure sealing application, system pressure



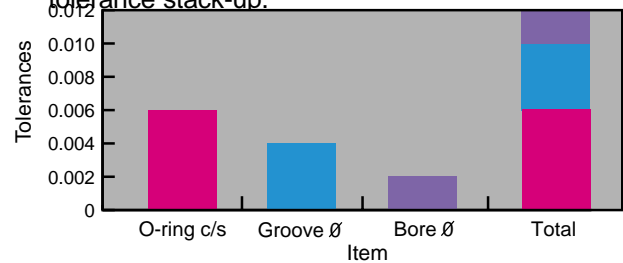
causes a noticeable increase in the seal's sealing force to fill all leak paths. Because this pressure activates the seal, the compression of the seal and surface roughness are not as

important as in low pressure sealing.

Understanding tolerance stack-up.

Tolerance stack-up is an especially important factor in microminiature O-rings due to the fact that the tolerances account for a large percentage of the nominal O-ring size. In a sealing application, the tolerances of all the parts in contact with the O-ring must be considered in order to create an effective seal.

The combination of these tolerances is the tolerance stack-up.



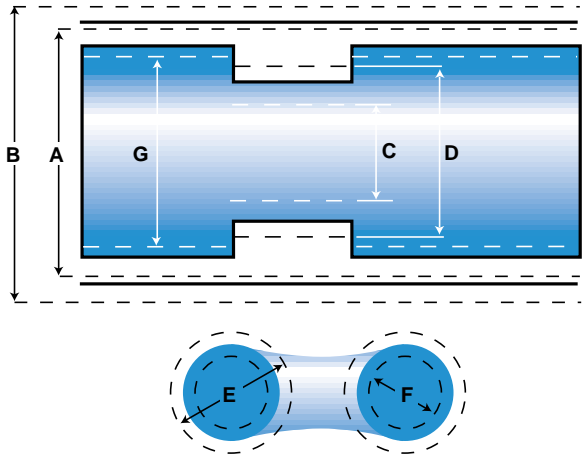
The graph above shows a situation where the O-ring cross section tolerance is ± 0.003 ", the groove diameter tolerance is ± 0.002 ", and the bore diameter tolerance is ± 0.001 ". In this example the metal dimensions can vary up to 0.006", while the O-ring can also vary up to 0.006". Therefore, the total tolerance stack up is 0.012". This is under the assumption that the application is concentric. If the nominal O-ring size is 0.030", it is easy to see that the tolerance stack up is nearly half the size of the O-ring. This can result in too much or too little compression which can cause the O-ring to fail.

basic sealing concepts.

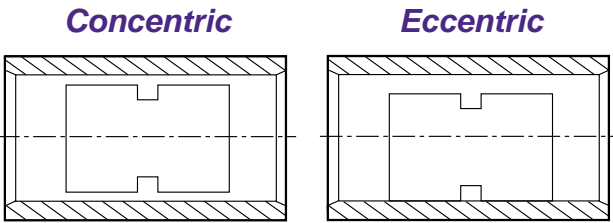
O-Ring Compression Calculations for Piston and Bore

In an application utilizing a standard size O-ring, it is usually possible to compensate for tolerance stack-up in any number of ways including specification of a larger O-ring. In microminiature applications there is little room for such compensation.

The following formulas can act as a guide for calculating minimum and maximum O-ring compression for a male radial seal when designing for microminiature sealing applications. The formulas should be used as a guide only. Apple Rubber engineers can assist you in determining exact specifications for your particular microminiature application.



- Legend**
- A = Min. Bore Diameter
 - B = Max. Bore Diameter
 - C = Min. Groove Diameter
 - D = Max. Groove Diameter
 - E = Max. O-ring Cross Section
 - F = Min. O-ring Cross Section
 - G = Min. Piston Diameter



Male Radial Seal

Concentric

$$\text{Max. \% Compression} = \frac{\left[\frac{A - D}{2} \right] - E}{E} 100$$

$$\text{Min. \% Compression} = \frac{\left[\frac{B - C}{2} \right] - F}{F} 100$$

$$\text{Min. Groove Width}^* = \frac{\left[\frac{\pi E^2}{4} \right]}{\left[\frac{A - D}{2} \right]} 1.1$$

Eccentric

$$\text{Max. \% Compression} = \frac{\left[\frac{G - D}{2} \right] - E}{E} 100$$

$$\text{Min. \% Compression} = \frac{\left[\frac{B - C}{2} + \frac{B - G}{2} \right] - F}{F} 100$$

$$\text{Min. Groove Width}^* = \frac{\left[\frac{\pi E^2}{4} \right]}{\left[\frac{G - D}{2} \right]} 1.1$$

* Equations based on Maximum O-ring Cross Section, Minimum Groove Depth and filling 90% of the groove.

The right materials for your applications.

Apple Rubber is also an outstanding resource for special compounds to meet the unique needs of your application. We continually research and develop new materials and durometers to keep pace with rapidly changing needs in today's microminiature designs. Call us for more information on special materials.

The largest selection of microminiature seals anywhere.

With more than 2,000 microminiature sizes, Apple Rubber offers the largest selection of microminiature O-rings anywhere, many available from stock for immediate delivery.

The charts on the following pages provide all the information you need at a glance to order MicrOring seals from stock, quickly and easily.

In addition, Apple Rubber has an extensive tooling inventory with thousands of molds ready for processing upon your request. This saves time and money in tooling for prototype or high production quantities. What's more, Apple Rubber has the capabilities to create and produce tooling for virtually any size microminiature O-ring for fast response to your needs.

Material Selection Guide

Materials	Apple Material Designation	Durometers (ShoreA)	Temperature Range	Description
Buna-N (Nitrile) (NBR)	BN	40 thru 90	-40 to +250°F (-40 to 121°C) Dry Heat Only	Presently the seal industry's most widely used elastomer. Nitrile combines excellent resistance to petroleum-based oils and fuels, silicone greases, hydraulic fluids, water and alcohols, with a good balance of such desirable working properties as low compression set, high tensile strength, and high abrasion resistance
Ethylene-Propylene (EPDM)	EP	40 thru 90	-60 to +300°F (-51 to 150°C)	Featuring good resistance to such polar solvents as ketones (MEK & Acetone). EPDM is also highly recommended for effective resistance to steam (to 400°F), hot water, silicone oils and greases, dilute acids and alkalis, alcohols and automotive brake fluids.
Silicone (MQ; PMQ; VMQ; PVMQ)	SL	25 thru 80	-75 to +450°F (-59.5 to +232°C)	Especially resistant to high, dry heat, in primarily static applications. Silicones are fungus-resistant, odorless, tasteless, non-toxic elastomers possessing high resistance to the aging effects of both sunlight and ozone attack.
Cast Polyurethane	CP	70 or 90	-60 to +225°F (-51 to +107°C)	Outstanding in abrasion resistance, tensile strength, and low friction qualities. Cast Polyurethane compounds feature excellent resistance to mineral-based oils and petroleum products, aliphatic solvents, alcohols and ether.
Neoprene® (Chloroprene)	CR	40 thru 90	-45 to +250°F (-43 to +107°C)	An early developed, oil-resistant substitute for Natural Rubber, Neoprene features moderate resistance to petroleum oils; good resistance to ozone, sunlight and oxygen aging; relatively low compression set; good resilience; reasonable cost; and high resistance to attack by Freon® and ammonia.
Fluorocarbon (Viton®) (Fluorel®) (FKM)	VT	50 thru 95	-20 to +400°F (-29 to +204°C)	Combining high temperature toughness with wide chemical agent compatibility, Fluorocarbon compounds feature excellent resistance to petroleum products and solvents with good high temperature compression set characteristics.
Fluorosilicone (FVMQ)	FS	50 thru 80	-75 to +400°F (-59.5 to +204°C)	Combining the good high and low temperature stability of silicones with the fuel, oil and solvent resistance of fluorocarbons, FS compounds feature good compression set and resilience properties. FS compounds are suitable for exposure to air, sunlight, ozone, chlorinated and aromatic hydrocarbons.

The most commonly used durometer is 70. Although other durometers are offered, availability may be limited due to processing or shrinkage factors. These are general recommendations. For specific applications, call 1-800-828-7745 for more information.

MicrOring Seal Sizes

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
0.20	x 0.20	0.008	x 0.008
0.25	x 0.25	0.010	x 0.010
0.30	x 0.35	0.012	x 0.014
0.33	x 2.36	0.013	x 0.093
0.38	x 2.36	0.015	x 0.093
0.40	x 0.40	0.016	x 0.016
0.40	x 0.45	0.016	x 0.018
0.40	x 1.05	0.016	x 0.041
0.43	x 0.51	0.017	x 0.020
0.43	x 1.02	0.017	x 0.040
0.45	x 0.30	0.018	x 0.012
0.45	x 0.40	0.018	x 0.016
0.45	x 0.45	0.018	x 0.018
0.45	x 0.50	0.018	x 0.020
0.50	x 0.40	0.020	x 0.016
0.50	x 0.45	0.020	x 0.018
0.50	x 0.50	0.020	x 0.020
0.50	x 1.00	0.020	x 0.039
0.51	x 0.42	0.020	x 0.017
0.55	x 0.37	0.022	x 0.015
0.55	x 0.40	0.022	x 0.016
0.56	x 0.65	0.022	x 0.025
0.56	x 0.74	0.022	x 0.029
0.58	x 0.76	0.023	x 0.030
0.60	x 0.35	0.024	x 0.014
0.60	x 0.40	0.024	x 0.016
0.60	x 0.45	0.024	x 0.018
0.60	x 0.50	0.024	x 0.020
0.60	x 0.55	0.024	x 0.022
0.60	x 0.60	0.024	x 0.024
0.60	x 0.65	0.024	x 0.026
0.60	x 0.80	0.024	x 0.031
0.61	x 0.31	0.024	x 0.012
0.61	x 0.36	0.024	x 0.014
0.61	x 0.52	0.024	x 0.020
0.61	x 1.02	0.024	x 0.040
0.63	x 0.33	0.025	x 0.013
0.63	x 0.43	0.025	x 0.017
0.63	x 0.63	0.025	x 0.025
0.64	x 0.60	0.025	x 0.024
0.65	x 0.40	0.026	x 0.016
0.65	x 0.55	0.026	x 0.022
0.65	x 0.60	0.026	x 0.024
0.65	x 0.70	0.026	x 0.028
0.66	x 0.38	0.026	x 0.015
0.66	x 0.61	0.026	x 0.024
0.68	x 0.35	0.027	x 0.014
0.70	x 0.20	0.028	x 0.008
0.70	x 0.40	0.028	x 0.016
0.70	x 0.45	0.028	x 0.018
0.70	x 0.50	0.028	x 0.020
0.70	x 0.55	0.028	x 0.022
0.70	x 0.60	0.028	x 0.024
0.70	x 0.75	0.028	x 0.030
0.71	x 1.22	0.028	x 0.048
0.74	x 0.32	0.029	x 0.013
0.74	x 1.02	0.029	x 0.040
0.74	x 3.07	0.029	x 0.121
0.75	x 0.50	0.030	x 0.020
0.75	x 0.80	0.030	x 0.031

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
0.76	x 0.41	0.030	x 0.016
0.76	x 0.43	0.030	x 0.017
0.76	x 0.51	0.030	x 0.020
0.77	x 0.97	0.030	x 0.038
0.80	x 0.40	0.031	x 0.016
0.80	x 0.45	0.031	x 0.018
0.80	x 0.50	0.031	x 0.020
0.80	x 0.55	0.031	x 0.022
0.80	x 0.60	0.031	x 0.024
0.80	x 0.70	0.031	x 0.028
0.80	x 0.80	0.031	x 0.031
0.80	x 1.00	0.031	x 0.039
0.81	x 0.69	0.032	x 0.027
0.81	x 0.81	0.032	x 0.032
0.82	x 1.62	0.032	x 0.064
0.84	x 0.56	0.033	x 0.022
0.85	x 0.37	0.033	x 0.015
0.85	x 0.40	0.033	x 0.016
0.85	x 0.45	0.033	x 0.018
0.85	x 0.55	0.033	x 0.022
0.89	x 0.95	0.035	x 0.037
0.90	x 0.40	0.035	x 0.016
0.90	x 0.50	0.035	x 0.020
0.90	x 0.53	0.035	x 0.021
0.90	x 0.55	0.035	x 0.022
0.91	x 0.55	0.036	x 0.022
0.91	x 0.58	0.036	x 0.023
0.91	x 0.75	0.036	x 0.030
0.91	x 0.81	0.036	x 0.032
0.94	x 2.18	0.037	x 0.086
0.95	x 0.40	0.037	x 0.016
0.95	x 0.55	0.037	x 0.022
0.95	x 0.81	0.037	x 0.032
0.95	x 0.95	0.037	x 0.037
0.97	x 0.33	0.038	x 0.013
0.97	x 0.48	0.038	x 0.019
1.00	x 0.40	0.039	x 0.016
1.00	x 0.45	0.039	x 0.018
1.00	x 0.50	0.039	x 0.020
1.00	x 0.55	0.039	x 0.022
1.00	x 0.60	0.039	x 0.024
1.00	x 0.70	0.039	x 0.028
1.00	x 0.75	0.039	x 0.030
1.00	x 0.80	0.039	x 0.031
1.00	x 0.81	0.039	x 0.032
1.00	x 0.91	0.039	x 0.036
1.00	x 1.00	0.039	x 0.039
1.00	x 1.50	0.039	x 0.059
1.00	x 2.00	0.039	x 0.079
1.04	x 0.81	0.041	x 0.032
1.05	x 0.50	0.041	x 0.020
1.05	x 0.55	0.041	x 0.022
1.05	x 0.58	0.041	x 0.023
1.05	x 0.60	0.041	x 0.024
1.09	x 0.79	0.043	x 0.031
1.10	x 0.40	0.043	x 0.016
1.10	x 0.50	0.043	x 0.020
1.10	x 0.55	0.043	x 0.022
1.10	x 0.65	0.043	x 0.026
1.12	x 0.43	0.044	x 0.017

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
1.14	x 0.51	0.045	x 0.020
1.15	x 0.40	0.045	x 0.016
1.15	x 0.55	0.045	x 0.022
1.15	x 0.59	0.045	x 0.023
1.15	x 1.00	0.045	x 0.039
1.17	x 0.86	0.046	x 0.034
1.19	x 0.30	0.047	x 0.012
1.19	x 0.41	0.047	x 0.016
1.20	x 0.45	0.047	x 0.018
1.20	x 0.55	0.047	x 0.022
1.20	x 0.58	0.047	x 0.023
1.20	x 0.60	0.047	x 0.024
1.20	x 0.70	0.047	x 0.028
1.20	x 0.80	0.047	x 0.031
1.20	x 1.00	0.047	x 0.039
1.25	x 0.65	0.049	x 0.026
1.25	x 1.00	0.049	x 0.039
1.27	x 0.45	0.050	x 0.018
1.27	x 0.56	0.050	x 0.022
1.28	x 0.70	0.050	x 0.028
1.30	x 0.30	0.051	x 0.012
1.30	x 0.40	0.051	x 0.016
1.30	x 0.45	0.051	x 0.018
1.30	x 0.50	0.051	x 0.020
1.30	x 0.65	0.051	x 0.026
1.30	x 0.70	0.051	x 0.028
1.40	x 0.30	0.055	x 0.012
1.40	x 0.35	0.055	x 0.014
1.40	x 0.40	0.055	x 0.016
1.40	x 0.50	0.055	x 0.020
1.40	x 0.60	0.055	x 0.024
1.40	x 0.64	0.055	x 0.025
1.40	x 0.80	0.055	x 0.031
1.40	x 0.81	0.055	x 0.032
1.43	x 0.60	0.056	x 0.024
1.45	x 0.38	0.057	x 0.015
1.45	x 0.45	0.057	x 0.018
1.45	x 0.55	0.057	x 0.022
1.45	x 0.58	0.057	x 0.023
1.45	x 0.90	0.057	x 0.035
1.50	x 0.35	0.059	x 0.014
1.50	x 0.45	0.059	x 0.018
1.50	x 0.50	0.059	x 0.020
1.50	x 0.55	0.059	x 0.022
1.50	x 0.60	0.059	x 0.024
1.50	x 0.65	0.059	x 0.026
1.50	x 0.70	0.059	x 0.028
1.50	x 0.73	0.059	x 0.029
1.50	x 0.75	0.059	x 0.030
1.50	x 0.80	0.059	x 0.031
1.50	x 0.90	0.059	x 0.035
1.50	x 1.00	0.059	x 0.039
1.55	x 0.40	0.061	x 0.016
1.55	x 0.70	0.061	x 0.028
1.57	x 0.81	0.062	x 0.032
1.60	x 0.35	0.063	x 0.014
1.60	x 0.40	0.063	x 0.016
1.60	x 0.50	0.063	x 0.020
1.60	x 0.55	0.063	x 0.022
1.60	x 0.60	0.063	x 0.024

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
1.60	x 0.70	0.063	x 0.028
1.60	x 0.75	0.063	x 0.030
1.60	x 0.90	0.063	x 0.035
1.60	x 1.00	0.063	x 0.039
1.65	x 0.38	0.065	x 0.015
1.65	x 0.43	0.065	x 0.017
1.65	x 0.45	0.065	x 0.018
1.65	x 0.55	0.065	x 0.022
1.65	x 0.89	0.065	x 0.035
1.70	x 0.30	0.067	x 0.012
1.70	x 0.45	0.067	x 0.018
1.70	x 0.50	0.067	x 0.020
1.70	x 0.55	0.067	x 0.022
1.70	x 0.60	0.067	x 0.024
1.70	x 0.70	0.067	x 0.028
1.70	x 0.75	0.067	x 0.030
1.70	x 0.80	0.067	x 0.031
1.70	x 0.85	0.067	x 0.033
1.74	x 1.00	0.069	x 0.039
1.75	x 0.50	0.069	x 0.020
1.75	x 0.55	0.069	x 0.022
1.75	x 0.58	0.069	x 0.023
1.75	x 0.60	0.069	x 0.024
1.75	x 0.65	0.069	x 0.026
1.75	x 0.70	0.069	x 0.028
1.75	x 0.75	0.069	x 0.030
1.75	x 0.80	0.069	x 0.031
1.77	x 0.78	0.070	x 0.031
1.78	x 0.64	0.070	x 0.025
1.78	x 0.76	0.070	x 0.030
1.78	x 0.86	0.070	x 0.034
1.80	x 0.38	0.071	x 0.015
1.80	x 0.40	0.071	x 0.016
1.80	x 0.50	0.071	x 0.020
1.80	x 0.55	0.071	x 0.022
1.80	x 0.60	0.071	x 0.024
1.80	x 0.70	0.071	x 0.028
1.80	x 0.80	0.071	x 0.031
1.80	x 1.00	0.071	x 0.039
1.82	x 0.92	0.072	x 0.036
1.83	x 0.71	0.072	x 0.028
1.84	x 0.43	0.072	x 0.017
1.85	x 0.40	0.073	x 0.016
1.85	x 0.45	0.073	x 0.018
1.85	x 0.50	0.073	x 0.020
1.85	x 0.80	0.073	x 0.031
1.88	x 0.53	0.074	x 0.021
1.90	x 0.40	0.075	x 0.016
1.90	x 0.45	0.075	x 0.018
1.90	x 0.55	0.075	x 0.022
1.90	x 0.64	0.075	x 0.025
1.90	x 0.89	0.075	x 0.035
1.90	x 1.00	0.075	x 0.039
1.91	x 0.30	0.075	x 0.012
1.91	x 0.61	0.075	x 0.024
1.91	x 0.76	0.075	x 0.030
1.93	x 0.74	0.076	x 0.029
1.95	x 0.35	0.077	x 0.014
1.98	x 0.25	0.078	x 0.010
1.98	x 0.65	0.078	x 0.026

For quotes, prototypes or questions call: 1-800-828-7745

MicrOring Seal Sizes

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
1.98 x 0.76		0.078 x 0.030	
2.00 x 0.40		0.079 x 0.016	
2.00 x 0.50		0.079 x 0.020	
2.00 x 0.55		0.079 x 0.022	
2.00 x 0.58		0.079 x 0.023	
2.00 x 0.60		0.079 x 0.024	
2.00 x 0.65		0.079 x 0.026	
2.00 x 0.70		0.079 x 0.028	
2.00 x 0.75		0.079 x 0.030	
2.00 x 0.80		0.079 x 0.031	
2.00 x 0.84		0.079 x 0.033	
2.00 x 1.00		0.079 x 0.039	
2.05 x 0.55		0.081 x 0.022	
2.05 x 0.70		0.081 x 0.028	
2.08 x 0.46		0.082 x 0.018	
2.10 x 0.30		0.083 x 0.012	
2.10 x 0.78		0.083 x 0.031	
2.10 x 0.90		0.083 x 0.035	
2.13 x 0.39		0.084 x 0.015	
2.13 x 0.40		0.084 x 0.016	
2.15 x 0.70		0.085 x 0.028	
2.15 x 0.80		0.085 x 0.031	
2.16 x 0.33		0.085 x 0.013	
2.16 x 0.76		0.085 x 0.030	
2.16 x 0.89		0.085 x 0.035	
2.18 x 0.76		0.086 x 0.030	
2.18 x 0.86		0.086 x 0.034	
2.20 x 0.40		0.087 x 0.016	
2.20 x 0.50		0.087 x 0.020	
2.20 x 0.60		0.087 x 0.024	
2.20 x 0.65		0.087 x 0.026	
2.20 x 0.70		0.087 x 0.028	
2.20 x 0.80		0.087 x 0.031	
2.20 x 0.85		0.087 x 0.033	
2.20 x 1.00		0.087 x 0.039	
2.25 x 0.60		0.089 x 0.024	
2.25 x 0.65		0.089 x 0.026	
2.25 x 0.70		0.089 x 0.028	
2.26 x 0.91		0.089 x 0.036	
2.29 x 0.51		0.090 x 0.020	
2.29 x 0.64		0.090 x 0.025	
2.30 x 0.45		0.091 x 0.018	
2.30 x 0.55		0.091 x 0.022	
2.30 x 0.60		0.091 x 0.024	
2.30 x 0.65		0.091 x 0.026	
2.30 x 0.70		0.091 x 0.028	
2.30 x 0.75		0.091 x 0.030	
2.30 x 0.80		0.091 x 0.031	
2.30 x 0.85		0.091 x 0.033	
2.30 x 0.90		0.091 x 0.035	
2.30 x 0.95		0.091 x 0.037	
2.30 x 1.00		0.091 x 0.039	
2.31 x 0.40		0.091 x 0.016	
2.35 x 0.95		0.093 x 0.037	
2.35 x 1.00		0.093 x 0.039	
2.39 x 0.71		0.094 x 0.028	
2.39 x 0.81		0.094 x 0.032	
2.39 x 0.86		0.094 x 0.034	
2.40 x 0.40		0.095 x 0.016	
2.40 x 0.70		0.095 x 0.028	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
2.40 x 0.80		0.095 x 0.031	
2.44 x 0.58		0.096 x 0.023	
2.45 x 0.50		0.096 x 0.020	
2.45 x 1.00		0.096 x 0.039	
2.46 x 0.66		0.097 x 0.026	
2.48 x 0.55		0.098 x 0.022	
2.49 x 0.30		0.098 x 0.012	
2.49 x 0.51		0.098 x 0.020	
2.49 x 0.76		0.098 x 0.030	
2.50 x 0.60		0.098 x 0.024	
2.50 x 0.65		0.098 x 0.026	
2.50 x 0.70		0.098 x 0.028	
2.50 x 0.80		0.098 x 0.031	
2.50 x 0.95		0.098 x 0.037	
2.50 x 1.00		0.098 x 0.039	
2.54 x 0.30		0.100 x 0.012	
2.54 x 0.97		0.100 x 0.038	
2.54 x 1.00		0.100 x 0.039	
2.55 x 0.45		0.100 x 0.018	
2.59 x 0.76		0.102 x 0.030	
2.60 x 0.70		0.102 x 0.028	
2.60 x 0.81		0.102 x 0.032	
2.60 x 0.90		0.102 x 0.035	
2.60 x 1.00		0.102 x 0.039	
2.62 x 0.76		0.103 x 0.030	
2.69 x 0.64		0.106 x 0.025	
2.69 x 0.86		0.106 x 0.034	
2.70 x 0.45		0.106 x 0.018	
2.70 x 0.70		0.106 x 0.028	
2.70 x 1.00		0.106 x 0.039	
2.73 x 0.90		0.107 x 0.035	
2.76 x 0.86		0.109 x 0.034	
2.79 x 0.71		0.110 x 0.028	
2.80 x 0.50		0.110 x 0.020	
2.80 x 0.66		0.110 x 0.026	
2.80 x 0.80		0.110 x 0.031	
2.80 x 0.81		0.110 x 0.032	
2.85 x 0.60		0.112 x 0.024	
2.85 x 0.90		0.112 x 0.035	
2.90 x 0.40		0.114 x 0.016	
2.90 x 0.45		0.114 x 0.018	
2.90 x 0.65		0.114 x 0.026	
2.90 x 0.80		0.114 x 0.031	
2.90 x 0.85		0.114 x 0.033	
2.90 x 0.90		0.114 x 0.035	
2.90 x 0.94		0.114 x 0.037	
2.92 x 0.71		0.115 x 0.028	
2.94 x 0.63		0.116 x 0.025	
2.97 x 0.63		0.117 x 0.025	
2.98 x 0.56		0.117 x 0.022	
3.00 x 0.40		0.118 x 0.016	
3.00 x 0.50		0.118 x 0.020	
3.00 x 0.75		0.118 x 0.030	
3.00 x 0.85		0.118 x 0.033	
3.00 x 0.86		0.118 x 0.034	
3.00 x 0.95		0.118 x 0.038	
3.00 x 1.00		0.118 x 0.039	
3.05 x 0.45		0.120 x 0.018	
3.05 x 0.76		0.120 x 0.030	
3.10 x 0.40		0.122 x 0.016	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
3.10 x 0.80		0.122 x 0.031	
3.10 x 1.00		0.122 x 0.039	
3.14 x 0.63		0.124 x 0.025	
3.15 x 0.86		0.124 x 0.034	
3.17 x 0.50		0.125 x 0.020	
3.18 x 0.76		0.125 x 0.030	
3.18 x 0.79		0.125 x 0.031	
3.20 x 0.70		0.126 x 0.028	
3.20 x 0.71		0.126 x 0.028	
3.20 x 1.00		0.126 x 0.039	
3.25 x 0.63		0.128 x 0.025	
3.30 x 0.60		0.130 x 0.024	
3.30 x 0.89		0.130 x 0.035	
3.30 x 1.00		0.130 x 0.039	
3.35 x 0.70		0.132 x 0.028	
3.37 x 0.35		0.133 x 0.014	
3.38 x 0.69		0.133 x 0.027	
3.38 x 0.81		0.133 x 0.032	
3.40 x 0.70		0.134 x 0.028	
3.40 x 0.74		0.134 x 0.029	
3.45 x 0.35		0.136 x 0.014	
3.48 x 0.63		0.137 x 0.025	
3.50 x 0.41		0.138 x 0.016	
3.50 x 0.45		0.138 x 0.018	
3.50 x 0.70		0.138 x 0.028	
3.50 x 0.90		0.138 x 0.035	
3.50 x 0.91		0.138 x 0.036	
3.50 x 1.00		0.138 x 0.039	
3.52 x 0.64		0.139 x 0.025	
3.53 x 1.00		0.139 x 0.039	
3.55 x 0.76		0.140 x 0.030	
3.60 x 0.76		0.142 x 0.030	
3.60 x 0.80		0.142 x 0.031	
3.60 x 0.84		0.142 x 0.033	
3.63 x 0.58		0.143 x 0.023	
3.63 x 0.69		0.143 x 0.027	
3.66 x 0.58		0.144 x 0.023	
3.66 x 0.64		0.144 x 0.025	
3.70 x 0.30		0.146 x 0.012	
3.70 x 0.36		0.146 x 0.014	
3.70 x 0.50		0.146 x 0.020	
3.70 x 0.69		0.146 x 0.027	
3.70 x 0.85		0.146 x 0.033	
3.70 x 0.90		0.146 x 0.035	
3.70 x 0.99		0.146 x 0.039	
3.71 x 0.71		0.146 x 0.028	
3.71 x 0.79		0.146 x 0.031	
3.80 x 0.50		0.150 x 0.020	
3.80 x 0.80		0.150 x 0.031	
3.81 x 0.61		0.150 x 0.024	
3.84 x 0.58		0.151 x 0.023	
3.86 x 0.91		0.152 x 0.036	
3.89 x 0.30		0.153 x 0.012	
3.90 x 0.33		0.154 x 0.013	
3.90 x 0.40		0.154 x 0.016	
3.94 x 0.25		0.155 x 0.010	
3.99 x 0.97		0.157 x 0.038	
4.00 x 0.30		0.158 x 0.012	
4.00 x 0.40		0.158 x 0.016	
4.00 x 0.60		0.158 x 0.024	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
4.00 x 1.00		0.158 x 0.039	
4.06 x 0.64		0.160 x 0.025	
4.10 x 0.50		0.161 x 0.020	
4.10 x 0.80		0.161 x 0.031	
4.19 x 0.81		0.165 x 0.032	
4.20 x 0.50		0.165 x 0.020	
4.20 x 0.53		0.165 x 0.021	
4.20 x 0.80		0.165 x 0.031	
4.30 x 0.45		0.169 x 0.018	
4.30 x 0.50		0.169 x 0.020	
4.30 x 0.61		0.169 x 0.024	
4.32 x 0.51		0.170 x 0.020	
4.34 x 0.41		0.171 x 0.016	
4.34 x 0.76		0.171 x 0.030	
4.35 x 0.70		0.171 x 0.028	
4.35 x 1.00		0.171 x 0.039	
4.37 x 0.94		0.172 x 0.037	
4.40 x 0.55		0.173 x 0.022	
4.40 x 0.60		0.173 x 0.024	
4.40 x 0.80		0.173 x 0.031	
4.40 x 1.00		0.173 x 0.039	
4.45 x 0.50		0.175 x 0.020	
4.45 x 1.00		0.175 x 0.039	
4.47 x 0.64		0.176 x 0.025	
4.47 x 0.76		0.176 x 0.030	
4.47 x 0.79		0.176 x 0.031	
4.50 x 0.60		0.177 x 0.024	
4.50 x 1.00		0.177 x 0.039	
4.55 x 0.91		0.179 x 0.036	
4.57 x 0.89		0.180 x 0.035	
4.60 x 0.70		0.181 x 0.028	
4.60 x 0.80		0.181 x 0.031	
4.60 x 0.81		0.181 x 0.032	
4.60 x 0.90		0.181 x 0.035	
4.70 x 0.60		0.185 x 0.024	
4.72 x 0.78		0.186 x 0.031	
4.75 x 0.48		0.187 x 0.019	
4.75 x 0.76		0.187 x 0.030	
4.75 x 0.79		0.187 x 0.031	
4.80 x 0.55		0.189 x 0.022	
4.80 x 0.80		0.189 x 0.031	
4.80 x 0.81		0.189 x 0.032	
4.80 x 1.00		0.189 x 0.039	
4.83 x 0.89		0.190 x 0.035	
4.85 x 0.58		0.191 x 0.023	
4.88 x 0.64		0.192 x 0.025	
4.90 x 0.65		0.193 x 0.026	
4.95 x 0.38		0.195 x 0.015	
5.00 x 0.40		0.197 x 0.016	
5.00 x 0.50		0.197 x 0.020	
5.00 x 0.60		0.197 x 0.024	
5.00 x 0.80		0.197 x 0.031	
5.00 x 0.86		0.197 x 0.034	
5.00 x 1.00		0.197 x 0.039	
5.08 x 0.25		0.200 x 0.010	
5.10 x 0.58		0.201 x 0.023	
5.10 x 0.82		0.201 x 0.032	
5.10 x 1.00		0.201 x 0.039	
5.20 x 0.40		0.205 x 0.016	
5.20 x 0.55		0.205 x 0.022	

MicrOring Seal Sizes

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
5.20	x 0.60	0.205	x 0.024
5.20	x 0.70	0.205	x 0.028
5.20	x 0.80	0.205	x 0.031
5.21	x 0.41	0.205	x 0.016
5.21	x 0.61	0.205	x 0.024
5.28	x 0.76	0.208	x 0.030
5.28	x 0.79	0.208	x 0.031
5.28	x 1.00	0.208	x 0.039
5.30	x 0.40	0.209	x 0.016
5.30	x 0.50	0.209	x 0.020
5.33	x 0.84	0.210	x 0.033
5.36	x 0.81	0.211	x 0.032
5.38	x 0.29	0.212	x 0.011
5.40	x 0.71	0.213	x 0.028
5.40	x 0.80	0.213	x 0.031
5.44	x 0.76	0.214	x 0.030
5.48	x 0.57	0.216	x 0.022
5.50	x 1.00	0.217	x 0.039
5.51	x 0.46	0.217	x 0.018
5.53	x 0.64	0.218	x 0.025
5.59	x 0.76	0.220	x 0.030
5.59	x 0.81	0.220	x 0.032
5.59	x 0.94	0.220	x 0.037
5.60	x 0.70	0.220	x 0.028
5.60	x 1.00	0.220	x 0.039
5.56	x 0.80	0.222	x 0.031
5.70	x 0.60	0.224	x 0.024
5.71	x 0.48	0.225	x 0.019
5.72	x 0.61	0.225	x 0.024
5.80	x 0.75	0.228	x 0.030
5.80	x 0.90	0.228	x 0.035
5.96	x 0.76	0.235	x 0.030
5.57	x 0.76	0.235	x 0.030
5.97	x 0.86	0.235	x 0.034
6.00	x 0.50	0.236	x 0.020
6.00	x 0.75	0.236	x 0.030
6.00	x 1.00	0.236	x 0.039
6.02	x 0.64	0.237	x 0.025
6.05	x 0.79	0.238	x 0.031
6.07	x 0.63	0.239	x 0.025
6.07	x 0.64	0.239	x 0.025
6.07	x 0.65	0.239	x 0.026
6.07	x 0.76	0.239	x 0.030
6.07	x 0.79	0.239	x 0.031
6.10	x 0.45	0.240	x 0.018
6.10	x 0.50	0.240	x 0.020
6.10	x 0.84	0.240	x 0.033
6.14	x 0.94	0.242	x 0.037
6.15	x 0.80	0.242	x 0.031
6.20	x 0.50	0.244	x 0.020
6.20	x 1.00	0.244	x 0.039
6.30	x 0.50	0.248	x 0.020
6.30	x 0.70	0.248	x 0.028
6.35	x 0.81	0.250	x 0.032
6.35	x 0.89	0.250	x 0.035
6.43	x 0.81	0.253	x 0.032
6.45	x 1.00	0.254	x 0.039
6.50	x 0.70	0.256	x 0.028
6.50	x 0.86	0.256	x 0.034
6.50	x 1.00	0.256	x 0.039

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
6.55	x 1.00	0.258	x 0.039
6.60	x 0.81	0.260	x 0.032
6.70	x 0.76	0.264	x 0.030
6.70	x 0.80	0.264	x 0.031
6.71	x 0.81	0.264	x 0.032
6.71	x 1.00	0.264	x 0.039
6.80	x 0.50	0.268	x 0.020
6.80	x 0.85	0.268	x 0.033
6.86	x 0.45	0.270	x 0.018
6.90	x 0.76	0.272	x 0.030
7.00	x 0.50	0.276	x 0.020
7.00	x 1.00	0.276	x 0.039
7.20	x 0.65	0.283	x 0.026
7.20	x 0.70	0.283	x 0.028
7.20	x 0.80	0.283	x 0.031
7.20	x 0.90	0.283	x 0.035
7.21	x 0.71	0.284	x 0.028
7.24	x 0.64	0.284	x 0.025
7.44	x 0.99	0.293	x 0.039
7.48	x 0.35	0.294	x 0.014
7.48	x 0.39	0.294	x 0.015
7.50	x 0.50	0.295	x 0.020
7.50	x 0.60	0.295	x 0.024
7.50	x 0.80	0.295	x 0.031
7.50	x 1.00	0.295	x 0.039
7.62	x 0.25	0.300	x 0.010
7.65	x 0.64	0.301	x 0.025
7.65	x 0.89	0.301	x 0.035
7.65	x 0.97	0.301	x 0.038
7.67	x 0.71	0.302	x 0.028
7.70	x 0.80	0.303	x 0.032
7.70	x 0.86	0.303	x 0.034
7.75	x 0.51	0.305	x 0.020
7.77	x 0.86	0.306	x 0.034
7.80	x 0.51	0.307	x 0.020
7.80	x 0.60	0.307	x 0.024
7.90	x 0.40	0.311	x 0.016
7.90	x 0.50	0.311	x 0.020
7.90	x 0.78	0.311	x 0.031
7.92	x 0.71	0.312	x 0.028
7.92	x 0.79	0.312	x 0.031
7.92	x 0.91	0.312	x 0.036
7.95	x .084	0.313	x 0.033
8.00	x .050	0.315	x 0.020
8.00	x 0.70	0.315	x 0.028
8.04	x 1.00	0.317	x 0.039
8.10	x 0.45	0.319	x 0.018
8.10	x 0.71	0.319	x 0.028
8.10	x 1.00	0.319	x 0.039
8.18	x 0.89	0.322	x 0.035
8.20	x 0.89	0.323	x 0.035
8.23	x 0.71	0.324	x 0.028
8.25	x 0.73	0.325	x 0.029
8.25	x 0.85	0.325	x 0.033
8.25	x 0.86	0.325	x 0.034
8.30	x 1.00	0.327	x 0.039
8.40	x 0.55	0.331	x 0.022
8.40	x 0.75	0.331	x 0.030
8.43	x 0.79	0.332	x 0.031
8.45	x 0.55	0.333	x 0.022

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
8.50	x 0.50	0.335	x 0.020
8.50	x 1.00	0.335	x 0.039
8.55	x 1.00	0.337	x 0.039
8.56	x 0.51	0.337	x 0.020
8.71	x 0.78	0.343	x 0.031
8.92	x 0.71	0.351	x 0.028
9.00	x 0.50	0.354	x 0.020
9.00	x 0.80	0.354	x 0.031
9.00	x 1.00	0.354	x 0.039
9.05	x 0.50	0.356	x 0.020
9.12	x 0.64	0.359	x 0.025
9.17	x 0.89	0.361	x 0.035
9.20	x 0.60	0.362	x 0.024
9.20	x 1.00	0.362	x 0.039
9.25	x 0.89	0.364	x 0.035
9.30	x 0.63	0.366	x 0.025
9.35	x 0.80	0.368	x 0.030
9.50	x 0.50	0.374	x 0.020
9.50	x 0.80	0.374	x 0.031
9.50	x 1.00	0.374	x 0.039
9.58	x 0.97	0.377	x 0.038
9.80	x 0.90	0.386	x 0.035
9.80	x 1.00	0.386	x 0.039
10.00	x 0.40	0.394	x 0.016
10.00	x 0.41	0.394	x 0.016
10.00	x 0.50	0.394	x 0.020
10.00	x 0.55	0.394	x 0.022
10.00	x 0.60	0.394	x 0.024
10.00	x 1.00	0.394	x 0.039
10.03	x 0.89	0.395	x 0.035
10.10	x 0.55	0.398	x 0.022
10.20	x 0.50	0.402	x 0.020
10.31	x 0.79	0.406	x 0.031
10.36	x 0.99	0.408	x 0.039
10.40	x 0.80	0.409	x 0.031
10.40	x 1.00	0.409	x 0.039
10.49	x 0.79	0.413	x 0.031
10.50	x 0.80	0.413	x 0.031
10.60	x 0.60	0.417	x 0.024
10.70	x 0.80	0.421	x 0.031
10.80	x 0.40	0.425	x 0.016
10.82	x .064	0.426	x 0.025
10.82	x 0.89	0.426	x 0.035
10.97	x 0.86	0.432	x 0.034
11.00	x 0.40	0.433	x 0.016
11.00	x 0.50	0.433	x 0.020
11.00	x 0.60	0.433	x 0.024
11.00	x 0.66	0.433	x 0.026
11.00	x 1.00	0.433	x 0.039
11.05	x 0.63	0.435	x 0.025
11.05	x 0.79	0.435	x 0.031
11.30	x 0.30	0.445	x 0.012
11.30	x 0.40	0.445	x 0.016
11.30	x 0.50	0.445	x 0.020
11.30	x 0.60	0.445	x 0.024
11.40	x 0.55	0.449	x 0.022
11.50	x 0.40	0.453	x 0.016
11.50	x 0.60	0.453	x 0.024
11.50	x 1.00	0.453	x 0.039
11.60	x 0.70	0.457	x 0.028

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
11.68	x 0.74	0.460	x 0.029
11.73	x 0.51	0.462	x 0.020
11.81	x 0.91	0.465	x 0.036
11.90	x 0.30	0.469	x 0.012
11.90	x 0.38	0.469	x 0.015
11.90	x 0.50	0.469	x 0.020
11.91	x 0.81	0.469	x 0.032
12.00	x 0.40	0.472	x 0.016
12.00	x 0.50	0.472	x 0.020
12.00	x 0.60	0.472	x 0.024
12.00	x 0.65	0.472	x 0.026
12.00	x 1.00	0.472	x 0.039
12.20	x 0.55	0.480	x 0.022
12.20	x 1.00	0.480	x 0.039
12.30	x 1.00	0.484	x 0.039
12.40	x 0.50	0.488	x 0.020
12.50	x 0.40	0.492	x 0.016
12.50	x 0.50	0.492	x 0.020
12.50	x 0.65	0.492	x 0.026
12.50	x 0.75	0.492	x 0.030
12.50	x 0.80	0.492	x 0.031
12.50	x 1.00	0.492	x 0.039
12.58	x 0.35	0.495	x 0.014
12.60	x 0.75	0.496	x 0.030
12.80	x 0.40	0.504	x 0.016
12.80	x 0.60	0.504	x 0.024
12.80	x 0.66	0.504	x 0.026
12.95	x 0.51	0.510	x 0.020
13.00	x 0.30	0.512	x 0.012
13.00	x 0.40	0.512	x 0.016
13.00	x 0.50	0.512	x 0.020
13.00	x 0.60	0.512	x 0.024
13.00	x 0.65	0.512	x 0.026
13.00	x 0.85	0.512	x 0.033
13.00	x 1.00	0.512	x 0.039
13.10	x 1.00	0.516	x 0.039
13.30	x 0.80	0.524	x 0.031
13.36	x 0.79	0.526	x 0.031
13.40	x 0.55	0.528	x 0.022
13.50	x 0.30	0.531	x 0.012
13.50	x 0.40	0.531	x 0.016
13.50	x 0.50	0.531	x 0.020
13.50	x 0.60	0.531	x 0.024
13.50	x 0.65	0.531	x 0.026
13.50	x 0.80	0.531	x 0.031
13.60	x 1.00	0.535	x 0.039
13.64	x 0.51	0.537	x 0.020
13.70	x 0.66	0.539	x 0.026
13.70	x 0.80	0.539	x 0.031
13.80	x 0.50	0.543	x 0.020
13.80	x 1.00	0.543	x 0.039
14.00	x 0.30	0.551	x 0.012
14.00	x 0.40	0.551	x 0.016
14.00	x 0.50	0.551	x 0.020
14.00	x 0.55	0.551	x 0.022
14.00	x 0.60	0.551	x 0.024
14.00	x 0.65	0.551	x 0.026
14.00	x 0.70	0.551	x 0.028
14.00	x 0.80	0.551	x 0.031
14.00	x 0.81	0.551	x 0.032

For quotes, prototypes or questions call: 1-800-828-7745

MicrOring Seal Sizes

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
14.00 x 1.00		0.551 x 0.039	
14.20 x 0.76		0.559 x 0.030	
14.50 x 0.30		0.571 x 0.012	
14.50 x 0.40		0.571 x 0.016	
14.50 x 0.50		0.571 x 0.020	
14.50 x 0.60		0.571 x 0.024	
14.50 x 0.65		0.571 x 0.026	
14.50 x 0.70		0.571 x 0.028	
14.50 x 1.00		0.571 x 0.039	
14.66 x 0.35		0.577 x 0.014	
14.66 x 0.78		0.577 x 0.031	
14.75 x 0.50		0.581 x 0.020	
14.80 x 1.00		0.583 x 0.039	
14.81 x 0.51		0.583 x 0.020	
14.91 x 0.50		0.587 x 0.020	
15.00 x 0.30		0.591 x 0.012	
15.00 x 0.40		0.591 x 0.016	
15.00 x 0.43		0.591 x 0.017	
15.00 x 0.50		0.591 x 0.020	
15.00 x 0.55		0.591 x 0.022	
15.00 x 0.60		0.591 x 0.024	
15.00 x 0.65		0.591 x 0.026	
15.00 x 0.80		0.591 x 0.031	
15.00 x 1.00		0.591 x 0.039	
15.11 x 0.51		0.595 x 0.020	
15.15 x 1.00		0.596 x 0.039	
15.22 x 0.89		0.599 x 0.035	
15.25 x 0.75		0.600 x 0.030	
15.30 x 1.00		0.602 x 0.039	
15.40 x 0.76		0.606 x 0.030	
15.40 x 1.00		0.606 x 0.039	
15.50 x 0.40		0.610 x 0.016	
15.50 x 0.50		0.610 x 0.020	
15.50 x 0.60		0.610 x 0.024	
15.50 x 0.65		0.610 x 0.026	
15.56 x 1.00		0.613 x 0.039	
15.70 x 0.40		0.618 x 0.016	
15.80 x 0.35		0.622 x 0.014	
15.80 x 0.76		0.622 x 0.030	
15.80 x 0.80		0.622 x 0.031	
15.88 x 0.56		0.625 x 0.022	
15.88 x 0.74		0.625 x 0.029	
15.88 x 0.79		0.625 x 0.031	
15.88 x 0.86		0.625 x 0.034	
16.00 x 0.30		0.630 x 0.012	
16.00 x 0.40		0.630 x 0.016	
16.00 x 0.42		0.630 x 0.017	
16.00 x 0.50		0.630 x 0.020	
16.00 x 0.53		0.630 x 0.021	
16.00 x 0.55		0.630 x 0.022	
16.00 x 0.60		0.630 x 0.024	
16.00 x 0.65		0.630 x 0.026	
16.00 x 0.70		0.630 x 0.028	
16.00 x 0.80		0.630 x 0.031	
16.00 x 1.00		0.630 x 0.039	
16.13 x 0.79		0.635 x 0.031	
16.20 x 0.80		0.638 x 0.031	
16.20 x 0.81		0.638 x 0.032	
16.30 x 0.80		0.642 x 0.031	
16.33 x 0.79		0.643 x 0.031	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
16.50 x 0.40		0.650 x 0.016	
16.50 x 0.50		0.650 x 0.020	
16.50 x 0.60		0.650 x 0.024	
16.50 x 0.65		0.650 x 0.026	
16.50 x 0.70		0.650 x 0.028	
16.50 x 0.75		0.650 x 0.030	
16.50 x 0.80		0.650 x 0.031	
16.50 x 1.00		0.650 x 0.039	
16.60 x 0.60		0.654 x 0.024	
16.60 x 0.65		0.654 x 0.026	
16.60 x 0.75		0.654 x 0.030	
16.65 x 0.95		0.656 x 0.037	
16.70 x 0.40		0.657 x 0.016	
16.74 x 0.81		0.659 x 0.032	
16.75 x 0.42		0.659 x 0.017	
16.76 x 0.43		0.660 x 0.017	
16.79 x 1.00		0.661 x 0.039	
17.00 x 0.30		0.669 x 0.012	
17.00 x 0.35		0.669 x 0.014	
17.00 x 0.40		0.669 x 0.016	
17.00 x 0.50		0.669 x 0.020	
17.00 x 0.55		0.669 x 0.022	
17.00 x 0.60		0.669 x 0.024	
17.00 x 0.65		0.669 x 0.026	
17.00 x 0.70		0.669 x 0.028	
17.00 x 0.75		0.669 x 0.030	
17.00 x 1.00		0.669 x 0.039	
17.35 x 0.75		0.683 x 0.030	
17.40 x 0.50		0.685 x 0.020	
17.40 x 0.53		0.685 x 0.021	
17.40 x 0.70		0.685 x 0.028	
17.40 x 1.00		0.685 x 0.039	
17.47 x 0.86		0.688 x 0.034	
17.50 x 0.30		0.689 x 0.012	
17.50 x 0.40		0.689 x 0.016	
17.50 x 0.50		0.689 x 0.020	
17.50 x 0.60		0.689 x 0.024	
17.50 x 0.70		0.689 x 0.028	
17.50 x 0.80		0.689 x 0.031	
17.50 x 0.85		0.689 x 0.033	
17.60 x 0.50		0.693 x 0.020	
17.60 x 0.60		0.693 x 0.024	
17.60 x 0.90		0.693 x 0.035	
17.70 x 0.40		0.697 x 0.016	
17.70 x 0.41		0.697 x 0.016	
17.80 x 0.50		0.701 x 0.020	
17.80 x 0.70		0.701 x 0.028	
17.88 x 0.56		0.704 x 0.022	
18.00 x 0.30		0.709 x 0.012	
18.00 x 0.40		0.709 x 0.016	
18.00 x 0.50		0.709 x 0.020	
18.00 x 0.55		0.709 x 0.022	
18.00 x 0.60		0.709 x 0.024	
18.00 x 0.65		0.709 x 0.026	
18.00 x 0.70		0.709 x 0.028	
18.00 x 0.80		0.709 x 0.031	
18.00 x 1.00		0.709 x 0.039	
18.20 x 0.40		0.717 x 0.016	
18.20 x 0.60		0.717 x 0.024	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
18.20 x 0.70		0.717 x 0.028	
18.20 x 0.75		0.717 x 0.030	
18.20 x 0.80		0.717 x 0.031	
18.35 x 0.60		0.722 x 0.024	
18.39 x 0.56		0.724 x 0.022	
18.39 x 0.74		0.724 x 0.029	
18.50 x 0.30		0.728 x 0.012	
18.50 x 0.35		0.728 x 0.014	
18.50 x 0.40		0.728 x 0.016	
18.50 x 0.50		0.728 x 0.020	
18.50 x 0.55		0.728 x 0.022	
18.50 x 0.60		0.728 x 0.024	
18.50 x 0.65		0.728 x 0.026	
18.50 x 0.70		0.728 x 0.028	
18.50 x 0.80		0.728 x 0.031	
18.50 x 0.90		0.728 x 0.035	
18.59 x 0.91		0.732 x 0.036	
18.60 x 0.50		0.732 x 0.020	
18.60 x 0.75		0.732 x 0.030	
18.60 x 0.90		0.732 x 0.035	
18.60 x 0.91		0.732 x 0.036	
18.69 x 0.61		0.736 x 0.024	
18.70 x 0.40		0.736 x 0.016	
18.70 x 0.50		0.736 x 0.020	
18.70 x 0.80		0.736 x 0.031	
18.80 x 0.60		0.740 x 0.024	
18.85 x 0.42		0.742 x 0.017	
18.85 x 0.53		0.742 x 0.021	
18.85 x 0.56		0.742 x 0.022	
18.85 x 0.75		0.742 x 0.030	
18.90 x 0.40		0.744 x 0.016	
18.90 x 0.70		0.744 x 0.028	
19.00 x 0.30		0.748 x 0.012	
19.00 x 0.40		0.748 x 0.016	
19.00 x 0.50		0.748 x 0.020	
19.00 x 0.55		0.748 x 0.022	
19.00 x 0.60		0.748 x 0.024	
19.00 x 0.65		0.748 x 0.026	
19.00 x 0.70		0.748 x 0.028	
19.00 x 0.75		0.748 x 0.030	
19.00 x 0.80		0.748 x 0.031	
19.00 x 0.90		0.748 x 0.035	
19.00 x 1.00		0.748 x 0.039	
19.05 x 0.50		0.750 x 0.020	
19.05 x 0.89		0.750 x 0.035	
19.10 x 0.40		0.752 x 0.016	
19.10 x 0.75		0.752 x 0.030	
19.20 x 0.50		0.756 x 0.020	
19.20 x 0.75		0.756 x 0.030	
19.20 x 0.80		0.756 x 0.031	
19.20 x 0.90		0.756 x 0.035	
19.25 x 0.70		0.758 x 0.028	
19.30 x 0.70		0.760 x 0.028	
19.35 x 0.40		0.762 x 0.016	
19.35 x 0.75		0.762 x 0.030	
19.40 x 0.40		0.764 x 0.016	
19.40 x 0.80		0.764 x 0.031	
19.41 x 0.41		0.764 x 0.016	
19.41 x 0.91		0.764 x 0.036	
19.50 x 0.30		0.768 x 0.012	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
19.50 x 0.50		0.768 x 0.020	
19.50 x 0.55		0.768 x 0.022	
19.50 x 0.60		0.768 x 0.024	
19.50 x 0.65		0.768 x 0.026	
19.50 x 1.00		0.768 x 0.039	
19.51 x 0.81		0.768 x 0.032	
19.60 x 0.50		0.772 x 0.020	
19.60 x 0.70		0.772 x 0.028	
19.60 x 0.80		0.772 x 0.031	
19.69 x 0.79		0.775 x 0.031	
19.70 x 0.50		0.776 x 0.020	
19.70 x 0.60		0.776 x 0.024	
19.70 x 0.70		0.776 x 0.028	
19.70 x 0.75		0.776 x 0.030	
19.70 x 0.80		0.776 x 0.031	
19.71 x 0.99		0.776 x 0.039	
19.79 x 0.79		0.779 x 0.031	
19.80 x 0.40		0.780 x 0.016	
19.80 x 0.50		0.780 x 0.020	
19.80 x 0.55		0.780 x 0.022	
19.80 x 0.58		0.780 x 0.023	
19.80 x 0.60		0.780 x 0.024	
19.80 x 0.70		0.780 x 0.028	
19.80 x 0.80		0.780 x 0.031	
20.00 x 0.30		0.787 x 0.012	
20.00 x 0.40		0.787 x 0.016	
20.00 x 0.50		0.787 x 0.020	
20.00 x 0.55		0.787 x 0.022	
20.00 x 0.60		0.787 x 0.024	
20.00 x 0.65		0.787 x 0.026	
20.00 x 0.70		0.787 x 0.028	
20.00 x 0.75		0.787 x 0.030	
20.00 x 0.80		0.787 x 0.031	
20.00 x 0.90		0.787 x 0.035	
20.00 x 1.00		0.787 x 0.039	
20.10 x 0.53		0.791 x 0.021	
20.10 x 0.70		0.791 x 0.028	
20.20 x 0.50		0.795 x 0.020	
20.20 x 0.70		0.795 x 0.028	
20.20 x 1.00		0.795 x 0.039	
20.30 x 0.80		0.799 x 0.031	
20.35 x 0.75		0.801 x 0.030	
20.35 x 0.80		0.801 x 0.031	
20.40 x 0.40		0.803 x 0.016	
20.40 x 0.63		0.803 x 0.025	
20.50 x 0.30		0.807 x 0.012	
20.50 x 0.40		0.807 x 0.016	
20.50 x 0.50		0.807 x 0.020	
20.50 x 0.55		0.807 x 0.022	
20.50 x 0.60		0.807 x 0.024	
20.50 x 0.65		0.807 x 0.026	
20.50 x 0.70		0.807 x 0.028	
20.50 x 0.75		0.807 x 0.030	
20.50 x 0.80		0.807 x 0.031	
20.60 x 0.60		0.811 x 0.024	
20.60 x 0.70		0.811 x 0.028	
20.60 x 0.90		0.811 x 0.035	
20.70 x 0.40		0.815 x 0.016	
20.70 x 0.50		0.815 x 0.020	
20.70 x 0.70		0.815 x 0.028	

MicrOring Seal Sizes

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
20.70 x 0.75		0.815 x 0.030	
20.75 x 0.50		0.817 x 0.020	
20.80 x 0.60		0.819 x 0.024	
20.80 x 0.70		0.819 x 0.028	
20.80 x 0.75		0.819 x 0.030	
20.80 x 0.80		0.819 x 0.031	
20.90 x 0.45		0.823 x 0.018	
20.90 x 0.80		0.823 x 0.031	
20.90 x 1.00		0.823 x 0.039	
21.00 x 0.30		0.827 x 0.012	
21.00 x 0.40		0.827 x 0.016	
21.00 x 0.50		0.827 x 0.020	
21.00 x 0.55		0.827 x 0.022	
21.00 x 0.60		0.827 x 0.024	
21.00 x 0.65		0.827 x 0.026	
21.00 x 0.70		0.827 x 0.028	
21.00 x 0.75		0.827 x 0.030	
21.00 x 0.80		0.827 x 0.031	
21.00 x 1.00		0.827 x 0.039	
21.10 x 0.60		0.831 x 0.024	
21.10 x 0.70		0.831 x 0.028	
21.30 x 0.40		0.839 x 0.016	
21.30 x 0.50		0.839 x 0.020	
21.30 x 0.70		0.839 x 0.028	
21.30 x 0.80		0.839 x 0.031	
21.30 x 0.90		0.839 x 0.035	
21.34 x 0.76		0.840 x 0.030	
21.35 x 0.60		0.841 x 0.024	
21.38 x 0.60		0.842 x 0.024	
21.40 x 0.60		0.843 x 0.024	
21.50 x 0.40		0.846 x 0.016	
21.50 x 0.50		0.846 x 0.020	
21.50 x 0.55		0.846 x 0.022	
21.50 x 0.60		0.846 x 0.024	
21.50 x 0.65		0.846 x 0.026	
21.50 x 0.70		0.846 x 0.028	
21.50 x 0.80		0.846 x 0.031	
21.50 x 1.00		0.846 x 0.039	
21.60 x 0.50		0.850 x 0.020	
21.60 x 0.75		0.850 x 0.030	
21.65 x 0.60		0.852 x 0.024	
21.70 x 0.70		0.854 x 0.028	
21.70 x 0.90		0.854 x 0.035	
21.80 x 0.60		0.858 x 0.024	
21.80 x 0.70		0.858 x 0.028	
21.84 x 0.81		0.860 x 0.032	
21.90 x 0.50		0.862 x 0.020	
22.00 x 0.30		0.866 x 0.012	
22.00 x 0.40		0.866 x 0.016	
22.00 x 0.50		0.866 x 0.020	
22.00 x 0.55		0.866 x 0.022	
22.00 x 0.60		0.866 x 0.024	
22.00 x 0.65		0.866 x 0.026	
22.00 x 0.70		0.866 x 0.028	
22.00 x 0.75		0.866 x 0.030	
22.00 x 0.80		0.866 x 0.031	
22.00 x 0.85		0.866 x 0.033	
22.00 x 0.90		0.866 x 0.035	
22.00 x 1.00		0.866 x 0.039	
22.10 x 0.55		0.870 x 0.022	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
22.10 x 0.60		0.870 x 0.024	
22.15 x 0.75		0.872 x 0.030	
22.20 x 0.60		0.874 x 0.024	
22.20 x 0.90		0.874 x 0.035	
22.30 x 0.60		0.878 x 0.024	
22.40 x 0.50		0.882 x 0.020	
22.50 x 0.40		0.886 x 0.016	
22.50 x 0.50		0.886 x 0.020	
22.50 x 0.55		0.886 x 0.022	
22.50 x 0.60		0.886 x 0.024	
22.50 x 0.65		0.886 x 0.026	
22.50 x 0.70		0.886 x 0.028	
22.50 x 0.75		0.886 x 0.030	
22.50 x 0.80		0.886 x 0.031	
22.60 x 0.60		0.890 x 0.024	
22.60 x 0.70		0.890 x 0.028	
22.70 x 0.70		0.894 x 0.028	
22.70 x 0.75		0.894 x 0.030	
22.80 x 0.40		0.898 x 0.016	
22.80 x 0.50		0.898 x 0.020	
22.80 x 0.60		0.898 x 0.024	
22.80 x 0.80		0.898 x 0.031	
22.80 x 0.90		0.898 x 0.035	
22.90 x 0.40		0.902 x 0.016	
22.90 x 0.90		0.902 x 0.035	
23.00 x 0.40		0.906 x 0.016	
23.00 x 0.50		0.906 x 0.020	
23.00 x 0.55		0.906 x 0.022	
23.00 x 0.60		0.906 x 0.024	
23.00 x 0.65		0.906 x 0.026	
23.00 x 0.70		0.906 x 0.028	
23.00 x 0.75		0.906 x 0.030	
23.00 x 0.80		0.906 x 0.031	
23.00 x 0.85		0.906 x 0.033	
23.00 x 1.00		0.906 x 0.039	
23.15 x 0.40		0.911 x 0.016	
23.15 x 1.00		0.911 x 0.039	
23.20 x 0.80		0.913 x 0.031	
23.20 x 0.85		0.913 x 0.033	
23.24 x 0.79		0.915 x 0.031	
23.30 x 1.00		0.917 x 0.039	
23.35 x 0.75		0.919 x 0.030	
23.40 x 0.40		0.921 x 0.016	
23.40 x 0.80		0.921 x 0.031	
23.50 x 0.40		0.925 x 0.016	
23.50 x 0.50		0.925 x 0.020	
23.50 x 0.55		0.925 x 0.022	
23.50 x 0.60		0.925 x 0.024	
23.50 x 0.65		0.925 x 0.026	
23.50 x 0.70		0.925 x 0.028	
23.50 x 0.75		0.925 x 0.030	
23.50 x 0.80		0.925 x 0.031	
23.50 x 0.85		0.925 x 0.033	
23.50 x 1.00		0.925 x 0.039	
23.59 x 1.00		0.929 x 0.039	
23.60 x 0.60		0.929 x 0.024	
23.70 x 0.50		0.933 x 0.020	
23.70 x 0.70		0.933 x 0.028	
23.80 x 0.70		0.937 x 0.028	
23.80 x 0.80		0.937 x 0.031	

Millimeters		Inches	
I.D.	C.S.	I.D.	C.S.
23.80 x 0.90		0.937 x 0.035	
23.90 x 0.50		0.941 x 0.020	
24.00 x 0.40		0.945 x 0.016	
24.00 x 0.50		0.945 x 0.020	
24.00 x 0.55		0.945 x 0.022	
24.00 x 0.60		0.945 x 0.024	
24.00 x 0.65		0.945 x 0.026	
24.00 x 0.70		0.945 x 0.028	
24.00 x 0.75		0.945 x 0.030	
24.00 x 0.80		0.945 x 0.031	
24.00 x 1.00		0.945 x 0.039	
24.10 x 0.40		0.949 x 0.016	
24.10 x 0.70		0.949 x 0.028	
24.30 x 0.40		0.957 x 0.016	
24.31 x 0.91		0.957 x 0.036	
24.35 x 0.90		0.959 x 0.035	
24.40 x 0.40		0.961 x 0.016	
24.40 x 0.75		0.961 x 0.030	
24.50 x 0.30		0.965 x 0.012	
24.50 x 0.40		0.965 x 0.016	
24.50 x 0.50		0.965 x 0.020	
24.50 x 0.60		0.965 x 0.024	
24.50 x 0.65		0.965 x 0.026	
24.50 x 0.75		0.965 x 0.030	
24.50 x 0.80		0.965 x 0.031	
24.60 x 0.70		0.969 x 0.028	
24.70 x 0.65		0.972 x 0.026	
24.70 x 0.70		0.972 x 0.028	
24.70 x 0.90		0.972 x 0.035	
24.75 x 0.60		0.974 x 0.024	
24.77 x 0.79		0.975 x 0.031	
24.80 x 0.60		0.976 x 0.024	
24.85 x 0.75		0.978 x 0.030	
24.90 x 0.70		0.980 x 0.028	
25.00 x 0.30		0.984 x 0.012	
25.00 x 0.40		0.984 x 0.016	
25.00 x 0.50		0.984 x 0.020	
25.00 x 0.55		0.984 x 0.022	
25.00 x 0.60		0.984 x 0.024	
25.00 x 0.65		0.984 x 0.026	
25.00 x 0.70		0.984 x 0.028	
25.00 x 0.75		0.984 x 0.030	
25.00 x 0.80		0.984 x 0.031	
25.00 x 0.85		0.984 x 0.033	
25.00 x 1.00		0.984 x 0.039	
25.10 x 0.70		0.988 x 0.028	
25.10 x 0.75		0.988 x 0.030	
25.10 x 0.80		0.988 x 0.031	
25.10 x 0.90		0.988 x 0.035	
25.12 x 0.76		0.989 x 0.030	
25.20 x 0.50		0.992 x 0.020	
25.20 x 0.60		0.992 x 0.024	
25.27 x 0.81		0.995 x 0.032	
25.30 x 0.60		0.996 x 0.024	
25.30 x 0.75		0.996 x 0.030	
25.40 x 0.80		1.000 x 0.031	
25.40 x 0.81		1.000 x 0.032	
25.40 x 0.95		1.000 x 0.037	
25.50 x 0.30		1.004 x 0.012	

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