

STAMPINGS & WASHERS

2023 CATALOG



BOKER'S, INC.

STAMPING & WASHER SPECIALISTS SINCE 1919

32,000 SIZES • 2,000 MATERIALS • ENDLESS POSSIBILITIES

AS9100:2016
ISO9001:2015
CERTIFIED

A NOTE FROM BOKER'S

We are pleased to bring you the Boker's, Inc. 2023 Stampings & Washers Catalog. For over 100 years, we have been honored to provide stamped components and washer solutions to every market and industry to date.

As you are likely aware, our lead times in 2021 and well into 2022 were longer than they ever have been. Globally, manufacturers faced the same challenge of re-stocking the world after the pandemic shutdowns left retailers and distribution centers empty and OEM's work-in-process nearly diminished. The overwhelming increase of "super-sized" orders led us to a point where our capacity was booked out further than ever before. We have now dug out of our backlog and have made major strides in meeting or exceeding customer on-time delivery expectations. Boker's understands that long lead times have an adverse effect on our customers and their ability to plan and execute; we are excited to announce that Boker's team continues to work hard and has significantly reduced our lead times to provide you, our customer, with world-class service.

As we continue to drive our lead times back down to the quick delivery we are known for, please reach out to understand the lead time required to manufacture your order. Our lead times are back, and we are stronger than ever.

As always, it is our pleasure to be at your service.

Amy Kersey
Amy Kersey
CEO/President


CONTENTS

- 3 Our Story
- 4 The Boker's Advantage
- 6 Stampings
- 7 Washers, Spacers & Shims
- 8 Industries Served
- 9 Stock Tool Listings
- 67 Edge/Thickness Considerations
- 68 Boker's Corner
- 70 Glossary
- 71 Equipment & Capabilities List



100+ YEARS OF PRECISION MANUFACTURING

It all began in the Minneapolis basement of a young, passionate and focused man named Vitus Boker. He instilled the values of hard work and attention to detail throughout the company as it grew. These values still guide the company today, which inspires the team to provide an exceptional customer experience while producing the highest quality component parts.

Being a value-driven company also means giving back and being good stewards for the surrounding community. From drawing skilled tradespeople from across the Twin Cities to volunteering with local non-profits, Boker's brings passion and attention to detail to everything we do.

A Part of Every Industry

Boker's has been serving companies on the forefront of technology innovation for over 100 years. As a result, you come into contact with components that Boker's has manufactured almost every day. From airplanes, appliances and medical devices to outdoor recreational equipment, furniture and renewable energy, you interact with items that feature stamped components manufactured by Boker's.

Customers trust Boker's because of their quality, on-time delivery and service. Often times, customers come with a difficult part that they were struggling with and Boker's figures out how to manufacture the part to their exact specifications.

Continuing the Legacy

Boker's works in and serves all fast-paced and high-demand industries. Over the past 100+ years, we have embraced and been on the forefront of technology evolution and integration.

The future of Boker's is sticking to our wheelhouse of what we are known for while expanding our customer base and serving emerging markets. We will continue to expand capabilities by adapting and pursuing new technologies and processes in an effort to continue exceeding customer expectations.

Our team works hard and is dedicated to following and continually improving processes. This is the reason Boker's is successful and will continue to be so for at least the next 100 years.

— Chuck Kersey, Assistant Sales Manager

4th location on Snelling Avenue

Held the first meeting of the board of directors

William Tedlund becomes sole owner

66,500 square foot expansion totaling over 165,000 square feet

 BOKER'S, INC.

1860

1901

1919

1923

1926

1933

1939

1942

1947

1968

1986

2008

2018

2019

Vitus Boker started using short run stamping methods in Denmark

Vitus immigrated to the United States

V.A. Boker & Sons was founded in Minneapolis

Check Protector patented

Second location on Erie Street

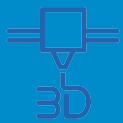
Third location at Bohemian Flats

Vitus retired, leaving company to his children (John, William, Richard, Marie)

Boker's purchased by four employees (William Tedlund, Joseph Basara, Chester Engquist, Joseph Kantorowicz)

Expansion completed totaling over 90,000 square feet

Boker's celebrates 100th Anniversary



Prototype Before Production

No more guess work or uncertainty. Only precision.

Make sure to take advantage of our capabilities next time you work with us.

The Boker's Advantage

Over 2,000 Materials

To expedite your order and shorten delivery time, Boker's has immediate access to over 2,000 commonly specified and hard-to-find materials. **Whatever your requirements, if it can be stamped, we can turn it into the part you need.**

Metallic Materials: Low carbon, cold rolled strip and sheet steel, SAE 1050, 1075, and 1095 spring steel, blue and black temper spring steel, low alloy steel sheets, brass, copper, nickel silver, beryllium copper, phosphor bronze, stainless steel, aluminum and others.

Non-Metallic Materials: Acetal, PTFE, polyester, nylon, fiber, polyethylene, various phenolics and NEMA grade phenolics and others.

Superalloys: Iron, cobalt and nickel based alloys such as: Hastelloy, Inconel, Monel and others.

Secondary Operations

Boker's provides secondary operations including deburring, tapping, counterboring, reaming, and spotfacing to name a few. We also have approved vendors for plating, heat treating, grinding, testing and others.

Boker's Environmental Compliance

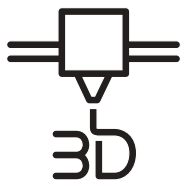
Boker's, Inc. is committed to responsible business practices that portray our dedication to our employees, customers, country and world.

Certified Quality Management System

Our Quality Management System (QMS) is AS 9100:2016 / ISO 9001:2015 Certified. When you purchase products from us, you can be confident that our processes are efficient and effective.

Quality Assurance and Certification

- | | | |
|----------|----------|---------------------|
| ✓ C of C | ✓ F.A.I. | ✓ Dock-To-Stock |
| ✓ PPAP | ✓ AS9102 | ✓ Conflict Minerals |
| ✓ DFARS | ✓ REACH | ✓ CA Proposition 65 |
| ✓ RoHS | ✓ ITAR | ✓ Latex-Free |
| ✓ S.P.C. | ✓ IMDS | ✓ WBENC |



Boker's 3D Printing Prototyping Services

Boker's offers additive manufacturing (3D printing) to provide customers with 3D prototypes. See how your product will turn out in advance. This service allows our customers to test parts for form and fit prior to production of the actual stamped part.



Inspection Reports

Certificates of Compliance, Chemical/Physical Analysis, PPAP, FAI and AS9102 are available upon request.



Fast Delivery

At Boker's, fast delivery is the standard practice. Boker's can also meet your delivery and stocking requirements with flexible "Just-In-Time" (J.I.T.) and "Dock-to-Stock" programs. Your order may also be expedited for faster delivery.



Minimum Quantity

Orders require a minimum production run of 100 pieces, though deliveries of lesser quantities can be arranged. Per-unit costs rapidly decrease as the quantity increases.



High-Volume Orders

Increased production capacity and enhanced technology allows Boker's quality stampings and non-standard washers to be manufactured quickly, well into the millions.

Bokers.com is Your Complete Resource

Boker's website provides extensive stamping information including access to thousands of non-standard flat washer, spacer, shim and disk sizes.

Simply key in the desired size range in inch or millimeter measurements by O.D. or I.D. and get immediate display of all stock tool sizes.



Stay in the Loop with Boker's Bulletin

This electronic newsletter is sent out on a quarterly basis and contains industry news as well as other metal forming industry information.

Subscribe today!
Scan or visit
bokersbulletin.com



Quality Stampings Made to Order

Vitus Boker launched the company based on pioneering the production of high-quality, short-run stamped metal parts. With over 100 years of experience, Boker's has earned the reputation as a stamping leader and the respect of many customers for their specialized metal components.



Draws up to 3" deep
and 8" in diameter



Complex metal forming needs
in thicknesses from .005" to .190"
(varies by material)



Flat blanking and
piercing up to 12" by 12"

Draws, Forming, Blanking and Piercing

At Boker's, we utilize the latest stamping technologies and manufacturing concepts to continually provide you with stampings of the highest quality. This diligent effort to achieve and retain the highest quality possible in our metal stamping processes goes back to 1919.

Production Process Overview:

- In-House tool and die department designs and produces custom tooling to be used in the stamping process.
- Material warehouse shears sheets of material into strips or issues a coil of material—metallic or non-metallic.
- The material then transfers to the production floor to be stamped using the custom or stock tool(s) in one or more of our many varieties of punch presses.
- Parts are then (in any combination) blanked, deburred, formed, drawn, tapped or pierced in-house. After in-house production is complete parts may be sent to an approved vendor for plating, heat treating, grinding, or testing before going to Boker's Quality Assurance Department. In our Q.A. Lab, parts are inspected to ensure they meet customer specifications before being released for shipping.



Precision Fabrication

When you've been successful for 100+ years, quality isn't just a promise, it's our mission. The washers, spacers and shims you get from Boker's will meet your specifications from the first part to the last. Those are not just words at Boker's, but the goal of the quality-conscious personnel who produce your precision parts. Boker's dedicates every department to the task of providing the highest quality washers, spacers and shims.

As a final check, your parts are inspected in the Q.A. Lab before your order is shipped out.

Washers, Spacers & Shims

Metric Sizes No Problem! Boker's maintains over 32,000 stock tools for flat washers, spacers and shims. You can choose from a wide variety of sizes, thicknesses and materials, including non-metallics. With outside diameters of 0.080" to 5.140" and a wide variety of inside diameters, you have millions of flat washer possibilities.



Special Shapes and Sizes

Boker's also makes special washer shapes and sizes—up to 12" in outside diameter. We can produce a vast number of custom washer types with little to no tooling costs.

Tell us what you need, and we'll make it to your exact specifications. Visit bokers.com to submit a drawing for a fast quote or to search stock metric sizes.



The Widest Range of Disks Available

Disks, commonly referred to as discs, circles, plates and/or slugs, are typically round washers with or without a center hole and are typically used to provide a precise space between components or materials or for load disbursement.

All of Boker's 32,000+ flat washer sizes are available without the I.D. hole in more than 2,000 commonly specified and difficult-to-find materials.

- Sizes up to 12" x 12" (flat)
- Thicknesses from .005" to .190"
(varies by material)

SPACEAIR LANDSEA

Serving a World of Industries

AEROSPACE, AVIATION & DEFENSE • MEDICAL • ELECTRONIC MEASUREMENT & TESTING • TELECOMMUNICATIONS • RENEWABLE ENERGY • OIL & GAS HYDRAULICS • INDUSTRIAL EQUIPMENT • AGRICULTURE • APPLIANCES HVAC • RECREATIONAL VEHICLES • AUTOMOTIVE • INFORMATION TECHNOLOGY PHOTOGRAPHIC & IMAGING EQUIPMENT • OFFICE MACHINES • CUTLERY & HAND TOOLS • CABINET & FURNITURE • CONSUMER PRODUCTS AND MORE

With a commitment to continuous improvement, Boker's recently surveyed a subset of our customer base in our pursuit of perfection. Our customer service team, comprised of key personnel, reviewed every response and identified action assignments focused on providing the highest quality customer service. Thank you to everyone who participated. We are listening.

Here's what our customers are saying:

“

BOKER'S STAFF HAVE ALWAYS **JUMPED THROUGH HOOPS TO ACCOMMODATE US** WHENEVER WE WERE IN DIRE STRAITS. *I ENJOY WORKING WITH THEIR STAFF* EVERY TIME WE NEED TO PLACE AN ORDER.

- Customer in Defense Industry

BOKER'S HAS BEEN VERY GOOD IN THESE HARD TIMES. DELIVERY HAS BEEN MUCH BETTER. *CUSTOMER SERVICE IS EXCELLENT.*

- Customer in Pressure Gauge Manufacturing Industry

HONESTLY, BOKER'S PROVIDES EXACTLY WHAT WE NEED IN CUSTOM STAMPED WASHERS AND SPACERS.

- Customer in Firearm Industry

WE'VE BEEN A **SATISFIED BOKER'S CUSTOMER FOR OVER 20 YEARS.** THE QUALITY OF THE PRODUCTS, CUSTOMER SERVICE, AND *LEAD TIMES HAVE ALWAYS BEEN EXCELLENT.*

- Customer in Prosthetics & Orthotics Industry

GIVEN ALL THE *GENERAL SUPPLY CHAIN ISSUES*, BOKER'S HAS **DONE GREAT AND EXCEEDED EXPECTATIONS.**

- Customer in Photography & Imaging Industry

”

Customer Satisfaction is Our #1 Goal

When quality and precision matter the most, turn to Boker's for your stamped components.

BOKER'S NON-STANDARD WASHERS AND SPACERS

This is our list of stock tools from which our washers are made to your order in any quantity without a tooling charge. We do NOT carry any washers in stock. You can choose an exact thickness for washers within the tool range indicated. For the most up-to-date list of sizes, please visit bokers.com

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.080	.049	.005 - .010	.106	.077	.005 - .012	.123	.052	.020 - .040	.135	.066	.005 - .010	.149	.097	.015 - .025	.156	.089	.005 - .015
.081	.033	.005 - .010	.107	.055	.005 - .012	.123	.058	.005 - .010	.135	.072	.005 - .015	.150	.033	.005 - .010	.156	.094	.010 - .015
.083	.033	.010 - .020	.108	.055	.005 - .020	.123	.069	.005 - .010	.135	.085	.005 - .010	.150	.035	.010 - .020	.156	.095	.005 - .010
.084	.043	.005 - .010	.108	.061	.010 - .020	.123	.080	.010 - .020	.136	.064	.015 - .030	.150	.041	.005 - .030	.156	.098	.010 - .020
.084	.048	.012 - .020	.109	.047	.012 - .020	.123	.082	.010 - .020	.136	.073	.005 - .010	.150	.044	.005 - .010	.156	.100	.016 - .025
.084	.065	.005 - .010	.109	.058	.010 - .020	.124	.028	.005 - .010	.136	.090	.005 - .010	.150	.046	.005 - .010	.156	.103	.015 - .030
.085	.040	.005 - .010	.109	.067	.008 - .018	.124	.063	.005 - .010	.136	.095	.012 - .020	.150	.056	.015 - .020	.156	.106	.005 - .010
.085	.043	.005 - .010	.110	.032	.010 - .015	.124	.065	.015 - .025	.137	.049	.005 - .010	.150	.057	.010 - .020	.156	.115	.005 - .010
.085	.048	.010 - .015	.110	.054	.005 - .010	.124	.066	.015 - .030	.137	.066	.012 - .025	.150	.059	.005 - .010	.156	.130	.010 - .020
.086	.027	.010 - .020	.110	.055	.010 - .020	.124	.073	.005 - .010	.137	.077	.020 - .030	.150	.065	.005 - .010	.157	.043	.020 - .030
.086	.036	.005 - .008	.110	.073	.005 - .010	.125	.049	.005 - .010	.137	.091	.008 - .016	.150	.066	.006 - .010	.157	.057	.005 - .025
.086	.045	.005 - .010	.111	.061	.010 - .020	.125	.052	.005 - .012	.138	.049	.010 - .020	.150	.073	.005 - .010	.157	.061	.010 - .020
.086	.048	.010 - .015	.111	.067	.015 - .025	.125	.054	.015 - .025	.138	.070	.005 - .010	.150	.077	.010 - .020	.157	.064	.005 - .010
.087	.025	.005 - .010	.111	.082	.005 - .010	.125	.055	.020 - .030	.138	.073	.005 - .010	.150	.083	.010 - .020	.157	.066	.010 - .020
.087	.043	.015 - .030	.112	.039	.005 - .010	.125	.060	.015 - .030	.138	.075	.015 - .030	.150	.087	.010 - .015	.157	.086	.005 - .010
.088	.032	.005 - .010	.112	.044	.012 - .020	.125	.062	.010 - .020	.138	.088	.005 - .010	.150	.088	.005 - .010	.157	.088	.005 - .010
.088	.066	.005 - .015	.112	.059	.015 - .025	.125	.063	.005 - .020	.138	.102	.005 - .010	.150	.089	.015 - .025	.157	.091	.010 - .020
.089	.044	.005 - .010	.112	.061	.005 - .010	.125	.064	.010 - .020	.139	.047	.005 - .010	.150	.090	.005 - .030	.157	.092	.010 - .020
.089	.065	.005 - .015	.112	.062	.015 - .025	.125	.065	.005 - .030	.139	.053	.005 - .012	.150	.091	.005 - .012	.157	.094	.020 - .030
.090	.030	.010 - .030	.112	.067	.015 - .025	.125	.066	.005 - .030	.139	.056	.010 - .020	.150	.099	.020 - .025	.157	.096	.005 - .030
.090	.050	.010 - .015	.112	.073	.005 - .010	.125	.067	.015 - .025	.139	.057	.005 - .012	.150	.116	.016 - .020	.157	.120	.005 - .010
.090	.054	.010 - .015	.113	.052	.005 - .010	.125	.068	.010 - .032	.139	.063	.005 - .010	.151	.056	.015 - .025	.157	.127	.005 - .010
.090	.064	.008 - .012	.113	.074	.005 - .010	.125	.069	.005 - .010	.139	.066	.015 - .030	.151	.069	.005 - .010	.158	.040	.010 - .020
.091	.031	.005 - .010	.114	.040	.030 - .040	.125	.072	.012 - .020	.139	.095	.010 - .020	.151	.073	.005 - .010	.158	.046	.012 - .025
.091	.065	.005 - .010	.114	.044	.005 - .010	.125	.076	.020 - .025	.139	.097	.005 - .010	.151	.077	.015 - .020	.158	.050	.020 - .035
.092	.027	.010 - .015	.114	.066	.005 - .010	.125	.078	.005 - .010	.140	.062	.005 - .010	.151	.078	.010 - .020	.158	.057	.010 - .020
.092	.041	.008 - .012	.114	.073	.005 - .010	.126	.042	.008 - .032	.140	.073	.005 - .010	.151	.083	.025 - .030	.158	.060	.020 - .030
.092	.043	.010 - .020	.115	.031	.010 - .020	.126	.050	.005 - .012	.140	.082	.005 - .032	.152	.094	.020 - .025	.158	.089	.020 - .032
.092	.044	.005 - .010	.115	.033	.005 - .010	.126	.052	.008 - .025	.140	.090	.005 - .010	.152	.095	.015 - .025	.158	.094	.025 - .035
.092	.047	.005 - .010	.115	.061	.005 - .010	.126	.057	.025 - .032	.140	.095	.005 - .010	.152	.098	.005 - .010	.158	.095	.005 - .010
.092	.060	.005 - .010	.115	.079	.005 - .015	.126	.062	.008 - .040	.140	.109	.010 - .015	.152	.100	.005 - .010	.158	.098	.005 - .015
.092	.068	.005 - .010	.116	.037	.005 - .010	.126	.064	.005 - .010	.141	.061	.005 - .010	.153	.056	.010 - .020	.158	.100	.015 - .020
.093	.036	.010 - .020	.116	.055	.010 - .020	.126	.065	.005 - .015	.141	.065	.015 - .025	.153	.061	.005 - .010	.158	.101	.005 - .010
.093	.049	.010 - .020	.116	.066	.015 - .025	.126	.068	.005 - .010	.141	.067	.010 - .016	.153	.062	.005 - .010	.158	.119	.015 - .025
.093	.051	.005 - .020	.116	.067	.005 - .010	.126	.073	.005 - .010	.141	.076	.005 - .010	.153	.073	.015 - .025	.159	.077	.005 - .010
.094	.062	.010 - .015	.116	.073	.005 - .010	.126	.080	.005 - .010	.141	.079	.015 - .025	.153	.077	.025 - .035	.159	.081	.005 - .010
.095	.024	.010 - .015	.117	.032	.005 - .010	.126	.095	.005 - .015	.141	.092	.015 - .025	.153	.078	.005 - .015	.159	.095	.005 - .010
.095	.043	.005 - .010	.117	.035	.005 - .012	.126	.096	.005 - .010	.142	.038	.015 - .030	.153	.081	.020 - .035	.159	.100	.010 - .025
.095	.049	.005 - .010	.117	.056	.010 - .015	.127	.039	.020 - .032	.142	.073	.005 - .010	.153	.095	.020 - .030	.159	.110	.005 - .012
.095	.052	.005 - .010	.118	.058	.010 - .020	.127	.042	.010 - .020	.142	.076	.005 - .010	.153	.100	.010 - .025	.160	.060	.005 - .015
.095	.056	.015 - .020	.118	.073	.005 - .020	.127	.047	.015 - .030	.142	.078	.005 - .010	.154	.073	.020 - .040	.160	.088	.010 - .020
.097	.060	.005 - .010	.118	.075	.005 - .015	.127	.065	.012 - .020	.142	.083	.005 - .010	.154	.095	.005 - .010	.160	.090	.005 - .010
.097	.074	.005 - .010	.118	.080	.005 - .012	.127	.067	.010 - .020	.142	.089	.020 - .030	.154	.101	.005 - .010	.160	.095	.025 - .040
.098	.040	.005 - .010	.118	.091	.005 - .010	.127	.077	.015 - .025	.142	.098	.010 - .015	.154	.110	.020 - .030	.161	.063	.015 - .030
.098	.064	.010 - .020	.120	.039	.010 - .020	.127	.083	.015 - .030	.143	.052	.005 - .010	.154	.115	.005 - .010	.161	.069	.010 - .020
.098	.065	.005 - .010	.120	.040	.010 - .020	.127	.093	.010 - .015	.143	.083	.015 - .025	.155	.064	.015 - .030	.161	.076	.015 - .030
.099	.050	.005 - .010	.120	.041	.005 - .010	.127	.094	.008 - .015	.143	.095	.010 - .020	.155	.066	.005 - .010	.162	.061	.005 - .020
.100	.026	.010 - .015	.120	.050	.005 - .010	.128	.056	.015 - .025	.143	.097	.005 - .015	.155	.069	.005 - .015	.162	.077	.012 - .020
.100	.035	.005 - .010	.120	.062	.010 - .020	.128	.073	.005 - .010	.144	.065	.005 - .010	.155	.072	.020 - .040	.162	.086	.020 - .032
.100	.040	.005 - .010	.120	.063	.015 - .030	.128	.076	.015 - .030	.144	.073	.005 - .010	.155	.076	.010 - .020	.162	.092	.015 - .030
.100	.055	.020 - .030	.120	.065	.005 - .010	.128	.078	.005 - .010	.144	.076	.010 - .020	.155	.078	.008 - .012	.162	.097	.010 - .020
.100	.062	.005 - .010	.120	.070	.015 - .030	.128	.089	.005 - .010	.145	.056	.005 - .010	.155	.081	.005 - .010	.162	.112	.005 - .010
.100	.065	.005 - .020	.120	.073	.005 - .010	.128	.103	.005 - .010	.145	.068	.005 - .012	.155	.084	.005 - .010	.163	.082	.015 - .030
.100	.067	.015 - .025	.120	.080	.010 - .016	.129	.083	.010 - .020	.145	.090	.005 - .010	.155	.094	.015 - .025	.163	.110	.015 - .020
.101	.036	.015 - .025	.121	.043	.005 - .012	.130	.061	.010 - .020	.145	.097	.005 - .010	.155	.111	.005 - .010	.163	.128	.005 - .010
.101	.045	.005 - .030	.121	.047	.005 - .010	.130	.063	.020 - .030	.145	.116	.005 - .010	.155	.124	.010 - .020	.163	.129	.005 - .010
.101	.049	.015 - .020	.121	.054	.010 - .025	.130	.073	.005 - .010	.146	.046	.010 - .020	.156	.044	.015 - .035	.164	.081	.010 - .020
.101	.050	.005 - .010	.121	.062	.010 - .020	.131	.059	.005 - .012	.146	.065	.005 - .010	.156	.049	.005 - .015	.164	.087	.005 - .010
.102	.040	.020 - .030	.121	.072	.005 - .010	.132	.073	.005 - .010	.146	.073	.005 - .010	.156	.052	.010 - .032	.164	.100	.005 - .012
.102	.053	.020 - .030	.121	.092	.005 - .010	.133	.052	.005 - .010	.146	.091	.010 - .020	.156	.053	.005 - .012	.164	.114	.010 - .020
.104	.044	.020 - .030	.122	.049	.010 - .020	.133	.088	.005 - .010	.146	.107	.005 - .010	.156	.062	.020 - .040	.165	.040	.005 - .010
.105	.030	.005 - .015	.122	.056	.005 - .010	.133	.096	.010 - .020	.147	.067	.020 - .032	.156	.064	.016 - .025	.165	.045	.015 - .030
.105	.037	.015 - .025	.122	.066	.020 - .030	.134	.041										

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.165	.096	.015 - .030	.176	.119	.010 - .020	.185	.118	.015 - .030	.188	.102	.005 - .015	.196	.122	.005 - .020	.202	.066	.015 - .025
.165	.100	.015 - .025	.177	.053	.005 - .010	.185	.119	.015 - .030	.188	.103	.020 - .030	.196	.128	.005 - .010	.202	.067	.005 - .015
.165	.125	.005 - .010	.177	.070	.005 - .010	.185	.126	.020 - .030	.188	.106	.010 - .020	.196	.129	.005 - .025	.202	.101	.015 - .025
.165	.126	.015 - .025	.177	.081	.005 - .010	.185	.127	.005 - .010	.188	.113	.020 - .040	.196	.130	.010 - .020	.202	.116	.015 - .020
.166	.062	.005 - .010	.177	.094	.007 - .015	.185	.128	.010 - .020	.188	.118	.015 - .025	.196	.140	.010 - .020	.202	.120	.015 - .032
.166	.073	.010 - .020	.177	.099	.005 - .015	.185	.129	.005 - .015	.188	.119	.005 - .012	.196	.142	.005 - .010	.202	.126	.005 - .010
.166	.075	.005 - .010	.177	.113	.005 - .015	.185	.131	.005 - .010	.188	.121	.010 - .025	.196	.145	.005 - .012	.202	.128	.005 - .010
.166	.081	.005 - .010	.177	.119	.030 - .042	.185	.134	.005 - .010	.188	.122	.005 - .010	.197	.055	.015 - .025	.202	.134	.005 - .010
.166	.108	.010 - .020	.177	.122	.015 - .020	.185	.136	.010 - .025	.188	.128	.005 - .036	.197	.062	.030 - .050	.202	.136	.020 - .032
.166	.125	.005 - .010	.177	.125	.005 - .010	.185	.145	.005 - .010	.188	.129	.020 - .030	.197	.077	.005 - .010	.203	.056	.005 - .010
.166	.129	.005 - .010	.177	.127	.005 - .010	.186	.028	.006 - .010	.188	.131	.020 - .030	.197	.091	.020 - .040	.203	.063	.005 - .032
.167	.031	.005 - .010	.178	.050	.030 - .040	.186	.035	.005 - .010	.188	.164	.010 - .020	.197	.099	.005 - .010	.203	.072	.015 - .040
.167	.065	.010 - .020	.178	.077	.015 - .030	.186	.038	.005 - .010	.189	.043	.025 - .040	.197	.103	.005 - .010	.203	.091	.010 - .040
.167	.078	.005 - .010	.178	.113	.005 - .015	.186	.046	.010 - .020	.189	.053	.030 - .040	.197	.116	.005 - .010	.203	.092	.030 - .040
.167	.085	.010 - .020	.178	.119	.030 - .042	.186	.064	.008 - .020	.189	.064	.010 - .050	.197	.121	.005 - .010	.203	.093	.040 - .060
.167	.108	.010 - .020	.178	.123	.005 - .010	.186	.075	.015 - .025	.189	.094	.040 - .060	.197	.122	.020 - .040	.203	.107	.005 - .010
.168	.082	.005 - .010	.178	.137	.010 - .020	.186	.079	.015 - .040	.189	.095	.025 - .045	.197	.129	.005 - .010	.203	.114	.015 - .040
.168	.096	.025 - .040	.178	.139	.005 - .010	.186	.086	.005 - .010	.189	.102	.005 - .010	.197	.139	.030 - .040	.203	.123	.005 - .010
.168	.130	.005 - .010	.179	.039	.005 - .010	.186	.088	.015 - .025	.189	.108	.010 - .020	.197	.147	.015 - .025	.203	.124	.010 - .020
.169	.027	.010 - .020	.179	.101	.010 - .020	.186	.093	.015 - .030	.189	.109	.005 - .010	.198	.088	.010 - .020	.203	.128	.015 - .025
.169	.115	.015 - .025	.179	.103	.005 - .010	.186	.094	.025 - .035	.189	.119	.005 - .010	.198	.092	.010 - .030	.203	.137	.020 - .040
.170	.034	.005 - .010	.179	.113	.005 - .010	.186	.096	.005 - .010	.189	.136	.010 - .020	.198	.095	.015 - .030	.203	.170	.005 - .020
.170	.057	.005 - .010	.179	.115	.025 - .030	.186	.098	.012 - .025	.190	.030	.005 - .010	.198	.097	.005 - .010	.203	.175	.005 - .010
.170	.064	.015 - .032	.180	.081	.020 - .035	.186	.099	.005 - .010	.190	.048	.005 - .010	.198	.102	.020 - .030	.203	.176	.005 - .010
.170	.067	.010 - .020	.180	.089	.005 - .032	.186	.103	.005 - .010	.190	.091	.005 - .010	.198	.114	.005 - .010	.204	.044	.005 - .010
.170	.070	.020 - .030	.180	.090	.010 - .020	.186	.108	.010 - .020	.190	.095	.040 - .060	.198	.116	.005 - .010	.204	.075	.025 - .040
.170	.089	.015 - .025	.180	.094	.010 - .025	.186	.118	.030 - .040	.190	.113	.010 - .020	.198	.126	.020 - .030	.204	.100	.005 - .010
.170	.097	.005 - .010	.180	.096	.005 - .010	.186	.119	.005 - .010	.190	.128	.010 - .015	.198	.131	.020 - .040	.204	.105	.030 - .040
.170	.109	.025 - .035	.180	.100	.025 - .040	.186	.124	.020 - .030	.190	.130	.015 - .030	.198	.147	.005 - .010	.204	.125	.025 - .040
.170	.121	.005 - .010	.180	.114	.020 - .040	.186	.125	.010 - .030	.190	.132	.005 - .010	.199	.050	.005 - .010	.204	.143	.020 - .030
.171	.065	.005 - .010	.180	.115	.005 - .010	.186	.126	.005 - .010	.191	.038	.005 - .010	.199	.088	.030 - .050	.204	.157	.010 - .020
.171	.086	.030 - .050	.180	.118	.005 - .010	.186	.127	.010 - .015	.191	.039	.010 - .020	.199	.105	.030 - .050	.205	.038	.015 - .025
.171	.087	.015 - .030	.180	.128	.005 - .010	.186	.129	.020 - .040	.191	.063	.010 - .016	.199	.122	.010 - .020	.205	.050	.030 - .040
.171	.090	.005 - .030	.180	.141	.005 - .010	.186	.136	.010 - .020	.191	.065	.025 - .050	.199	.154	.005 - .015	.205	.079	.020 - .030
.171	.098	.007 - .015	.181	.071	.005 - .010	.186	.155	.005 - .010	.191	.069	.025 - .040	.199	.158	.015 - .020	.205	.094	.010 - .020
.171	.101	.010 - .020	.181	.078	.007 - .016	.186	.164	.005 - .010	.191	.075	.040 - .060	.200	.026	.005 - .010	.205	.097	.010 - .020
.171	.128	.010 - .020	.181	.087	.005 - .010	.187	.042	.015 - .030	.191	.077	.005 - .030	.200	.053	.005 - .010	.205	.112	.010 - .020
.171	.129	.010 - .020	.181	.093	.005 - .010	.187	.074	.015 - .030	.191	.092	.032 - .050	.200	.057	.005 - .010	.205	.115	.015 - .025
.171	.130	.005 - .010	.181	.095	.010 - .016	.187	.077	.020 - .040	.191	.104	.020 - .030	.200	.066	.005 - .010	.205	.131	.010 - .020
.172	.036	.005 - .010	.181	.116	.015 - .030	.187	.078	.025 - .050	.191	.119	.010 - .020	.200	.072	.020 - .030	.205	.137	.025 - .040
.172	.074	.005 - .020	.181	.127	.015 - .025	.187	.080	.005 - .010	.191	.142	.005 - .010	.200	.078	.020 - .030	.205	.147	.025 - .030
.172	.080	.015 - .025	.181	.128	.005 - .025	.187	.081	.005 - .010	.191	.151	.005 - .010	.200	.079	.010 - .020	.206	.051	.005 - .015
.172	.081	.020 - .030	.182	.052	.010 - .020	.187	.082	.005 - .042	.191	.162	.015 - .020	.200	.086	.025 - .040	.206	.094	.005 - .010
.172	.096	.020 - .032	.182	.057	.012 - .020	.187	.084	.005 - .010	.192	.091	.020 - .040	.200	.087	.025 - .040	.206	.126	.005 - .010
.172	.103	.010 - .020	.182	.068	.010 - .020	.187	.086	.030 - .050	.192	.118	.005 - .010	.200	.090	.010 - .020	.206	.154	.005 - .010
.172	.109	.020 - .040	.182	.083	.040 - .050	.187	.089	.010 - .030	.192	.120	.020 - .040	.200	.092	.005 - .010	.206	.161	.005 - .010
.172	.128	.005 - .010	.182	.094	.015 - .030	.187	.090	.025 - .040	.192	.125	.005 - .010	.200	.095	.015 - .025	.207	.112	.005 - .010
.173	.065	.015 - .030	.182	.110	.010 - .020	.187	.091	.015 - .025	.192	.133	.005 - .010	.200	.096	.005 - .010	.207	.127	.015 - .025
.173	.070	.020 - .030	.182	.130	.005 - .016	.187	.095	.005 - .010	.192	.149	.015 - .025	.200	.097	.015 - .030	.207	.132	.020 - .030
.173	.079	.020 - .030	.182	.134	.005 - .010	.187	.096	.010 - .025	.193	.075	.015 - .030	.200	.098	.015 - .025	.207	.133	.020 - .030
.173	.088	.005 - .010	.183	.067	.012 - .025	.187	.098	.015 - .025	.193	.095	.020 - .040	.200	.100	.040 - .050	.207	.144	.010 - .020
.173	.092	.020 - .035	.183	.090	.010 - .020	.187	.100	.005 - .010	.193	.103	.010 - .020	.200	.101	.005 - .040	.207	.147	.005 - .010
.173	.096	.020 - .040	.183	.096	.020 - .030	.187	.104	.032 - .042	.193	.111	.005 - .010	.200	.102	.005 - .030	.208	.099	.010 - .020
.173	.100	.010 - .020	.183	.097	.005 - .010	.187	.106	.015 - .040	.193	.123	.015 - .030	.200	.105	.010 - .025	.208	.120	.005 - .060
.173	.102	.010 - .020	.183	.101	.020 - .036	.187	.108	.005 - .010	.193	.130	.005 - .010	.200	.110	.025 - .035	.208	.127	.015 - .025
.173	.104	.016 - .025	.183	.105	.005 - .010	.187	.115	.015 - .032	.193	.133	.005 - .010	.200	.116	.010 - .020	.208	.128	.040 - .050
.173	.114	.010 - .020	.183	.106	.010 - .020	.187	.116	.010 - .020	.193	.162	.010 - .012	.200	.124	.020 - .036	.208	.129	.020 - .030
.173	.117	.005 - .025	.183	.118	.015 - .030	.187	.122	.005 - .010	.194	.065	.020 - .030	.200	.125	.005 - .010	.208	.130	.005 - .010
.174	.044	.020 - .030	.183	.120	.005 - .010	.187	.124	.020 - .030	.194	.068	.040 - .060	.200	.126	.020 - .036	.208	.147	.005 - .010
.174	.077	.010 - .020	.183	.131	.015 - .025	.187	.125	.005 - .010	.194	.094	.005 - .010	.200	.128	.025 - .040	.208	.155	.005 - .010
.174	.093	.040 - .060	.183	.132	.005 - .010	.187	.126	.005 - .010	.195	.032	.005 - .010	.200	.143	.015 - .030	.208	.163	.010 - .015
.174	.095	.020 - .032	.183	.141	.005 - .020	.187	.127	.010 - .020	.195	.075	.020 - .030	.200	.153	.005 - .010	.209	.078	.005 - .010
.174	.097	.025 - .040	.183	.143	.008 - .012	.187	.128	.005 - .010	.195	.076	.015 - .030	.200	.160	.020 - .030	.209	.090	.015 - .030
.174	.106	.005 - .010	.184	.062	.010 - .020	.187	.129	.005 - .012	.195	.078	.005 - .008	.200	.163	.005 - .010	.209	.114	.005 - .010
.174	.137	.010 - .020	.184	.065	.005 - .010	.187	.135	.005 - .010	.195	.099	.030 - .050	.200	.177	.010 - .020	.209	.116	.025 - .040
.175	.056	.005 - .025	.184	.086	.015 - .030	.188	.030	.020 - .032	.195	.100	.020 - .035	.201	.038	.005 - .010	.209	.117	.005 - .010
.175	.077	.005 - .010	.185	.070	.025 - .050	.188	.031	.005 - .010	.195	.102	.020 - .040	.201	.067	.010 - .020	.209	.128	.015 - .030
.175	.089	.015 - .030	.185	.075	.020 - .030	.188	.046	.005 - .010	.195	.108	.015 - .030	.201	.073	.005 - .010	.209	.143	.012 - .020
.175	.090	.005 - .030	.185	.076													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.248	.133	.015 - .030	.250	.146	.010 - .020	.253	.145	.025 - .040	.263	.193	.005 - .010	.270	.210	.020 - .040	.276	.146	.005 - .015
.248	.135	.015 - .025	.250	.147	.005 - .050	.253	.151	.005 - .010	.263	.195	.005 - .010	.271	.127	.015 - .025	.276	.153	.020 - .035
.248	.152	.030 - .050	.250	.150	.005 - .015	.253	.166	.020 - .040	.263	.199	.010 - .025	.271	.130	.008 - .015	.276	.159	.030 - .050
.248	.155	.005 - .010	.250	.153	.010 - .020	.253	.190	.020 - .040	.264	.108	.025 - .040	.271	.138	.005 - .040	.276	.161	.005 - .015
.248	.158	.025 - .042	.250	.154	.015 - .025	.253	.191	.020 - .040	.264	.139	.015 - .025	.271	.146	.005 - .010	.276	.162	.010 - .020
.248	.176	.010 - .020	.250	.157	.025 - .040	.253	.192	.005 - .010	.264	.147	.005 - .010	.271	.175	.030 - .050	.276	.167	.005 - .010
.248	.208	.010 - .020	.250	.158	.015 - .030	.253	.197	.005 - .010	.264	.162	.025 - .040	.271	.190	.015 - .025	.276	.190	.020 - .040
.249	.075	.015 - .030	.250	.159	.020 - .036	.254	.051	.030 - .050	.264	.168	.015 - .025	.271	.199	.015 - .025	.276	.192	.015 - .040
.249	.100	.020 - .032	.250	.161	.005 - .010	.254	.117	.010 - .020	.264	.174	.050 - .060	.271	.221	.020 - .030	.276	.196	.005 - .010
.249	.103	.005 - .010	.250	.162	.032 - .042	.254	.127	.025 - .040	.264	.240	.005 - .010	.272	.032	.010 - .020	.276	.200	.010 - .020
.249	.112	.010 - .018	.250	.164	.010 - .020	.254	.159	.005 - .010	.265	.093	.060 - .080	.272	.093	.025 - .042	.276	.209	.010 - .020
.249	.116	.020 - .040	.250	.165	.010 - .020	.254	.160	.025 - .042	.265	.101	.020 - .040	.272	.095	.015 - .030	.277	.088	.005 - .010
.249	.121	.015 - .025	.250	.166	.005 - .012	.254	.194	.025 - .042	.265	.115	.040 - .050	.272	.120	.005 - .010	.277	.092	.010 - .020
.249	.123	.015 - .030	.250	.167	.010 - .045	.254	.201	.005 - .010	.265	.122	.020 - .040	.272	.121	.020 - .040	.277	.108	.005 - .010
.249	.124	.005 - .010	.250	.172	.005 - .010	.254	.205	.005 - .010	.265	.125	.005 - .010	.272	.132	.015 - .030	.277	.126	.005 - .010
.249	.127	.010 - .050	.250	.173	.025 - .040	.255	.097	.005 - .010	.265	.126	.020 - .040	.272	.156	.030 - .048	.277	.127	.005 - .008
.249	.128	.020 - .035	.250	.175	.005 - .010	.255	.101	.030 - .050	.265	.129	.005 - .010	.272	.169	.032 - .042	.277	.129	.050 - .070
.249	.135	.005 - .010	.250	.176	.025 - .040	.255	.105	.025 - .040	.265	.141	.005 - .010	.272	.192	.015 - .032	.277	.132	.015 - .025
.249	.137	.025 - .050	.250	.183	.020 - .040	.255	.109	.010 - .020	.265	.143	.040 - .062	.272	.194	.010 - .020	.277	.140	.020 - .030
.249	.139	.005 - .040	.250	.186	.010 - .020	.255	.135	.015 - .030	.265	.153	.005 - .010	.272	.220	.005 - .010	.277	.143	.005 - .010
.249	.143	.015 - .030	.250	.189	.010 - .020	.255	.149	.040 - .050	.265	.160	.005 - .010	.273	.104	.005 - .010	.277	.146	.050 - .070
.249	.144	.030 - .050	.250	.190	.010 - .020	.255	.164	.035 - .050	.265	.161	.010 - .030	.273	.108	.015 - .030	.277	.161	.015 - .030
.249	.152	.005 - .010	.250	.191	.010 - .020	.255	.167	.005 - .010	.265	.166	.010 - .015	.273	.118	.015 - .030	.277	.163	.015 - .025
.249	.158	.020 - .030	.250	.192	.025 - .030	.255	.195	.040 - .060	.265	.183	.025 - .040	.273	.135	.020 - .040	.277	.166	.005 - .008
.249	.160	.020 - .040	.251	.036	.010 - .020	.256	.119	.040 - .060	.265	.189	.005 - .010	.273	.141	.015 - .025	.277	.170	.015 - .030
.249	.170	.025 - .040	.251	.057	.005 - .012	.256	.164	.025 - .042	.266	.082	.015 - .030	.273	.144	.005 - .010	.277	.195	.005 - .010
.249	.172	.010 - .020	.251	.059	.005 - .010	.257	.067	.015 - .030	.266	.090	.005 - .010	.273	.148	.005 - .010	.277	.201	.010 - .020
.249	.186	.005 - .010	.251	.063	.025 - .040	.257	.078	.025 - .040	.266	.106	.005 - .010	.273	.149	.020 - .030	.278	.058	.010 - .020
.249	.189	.015 - .032	.251	.074	.025 - .050	.257	.095	.005 - .010	.266	.110	.010 - .020	.273	.163	.020 - .040	.278	.087	.005 - .010
.249	.190	.005 - .008	.251	.076	.005 - .010	.257	.191	.010 - .020	.266	.121	.020 - .040	.273	.173	.005 - .010	.278	.103	.005 - .010
.249	.193	.008 - .012	.251	.093	.005 - .010	.257	.213	.005 - .010	.266	.123	.031 - .048	.273	.203	.020 - .030	.278	.135	.040 - .062
			.251	.101	.025 - .040	.258	.067	.015 - .030	.266	.131	.036 - .060	.274	.032	.005 - .010	.278	.141	.010 - .020
			.251	.108	.020 - .040	.258	.095	.015 - .025	.266	.134	.025 - .040	.274	.052	.005 - .010	.278	.142	.025 - .040
			.251	.113	.030 - .050	.258	.149	.005 - .010	.266	.168	.025 - .040	.274	.093	.005 - .040	.278	.145	.005 - .010
			.251	.115	.040 - .060	.258	.154	.005 - .010	.266	.171	.020 - .035	.274	.095	.005 - .010	.278	.151	.005 - .030
			.251	.122	.035 - .050	.258	.163	.015 - .030	.266	.179	.020 - .030	.274	.121	.005 - .010	.278	.155	.005 - .010
			.251	.125	.010 - .020	.258	.169	.020 - .030	.266	.185	.015 - .025	.274	.127	.030 - .060	.278	.183	.005 - .010
			.251	.127	.010 - .025	.258	.177	.005 - .015	.266	.202	.005 - .010	.274	.132	.025 - .035	.278	.190	.005 - .010
			.251	.130	.015 - .030	.259	.116	.005 - .010	.266	.218	.005 - .010	.274	.170	.030 - .050	.278	.191	.015 - .032
			.251	.131	.005 - .050	.259	.160	.005 - .010	.267	.059	.010 - .020	.274	.172	.040 - .060	.278	.224	.010 - .020
.250	.027	.005 - .010	.251	.136	.005 - .010	.259	.213	.005 - .010	.267	.100	.030 - .050	.274	.174	.035 - .050	.278	.236	.005 - .010
.250	.039	.005 - .025	.251	.138	.005 - .010	.260	.065	.010 - .020	.267	.125	.005 - .010	.274	.175	.040 - .050	.279	.045	.005 - .015
.250	.044	.005 - .015	.251	.145	.015 - .048	.260	.089	.010 - .020	.267	.140	.015 - .030	.274	.191	.005 - .020	.279	.103	.005 - .010
.250	.052	.005 - .012	.251	.146	.015 - .030	.260	.108	.015 - .030	.267	.143	.010 - .025	.274	.211	.005 - .010	.279	.116	.010 - .020
.250	.063	.005 - .010	.251	.149	.040 - .050	.260	.113	.015 - .030	.267	.144	.020 - .030	.274	.237	.005 - .010	.279	.129	.010 - .015
.250	.072	.005 - .012	.251	.151	.025 - .040	.260	.120	.020 - .060	.267	.168	.005 - .010	.275	.071	.010 - .020	.279	.139	.032 - .048
.250	.077	.012 - .025	.251	.157	.040 - .060	.260	.121	.007 - .015	.267	.170	.030 - .050	.275	.079	.010 - .020	.279	.140	.030 - .040
.250	.082	.005 - .010	.251	.158	.005 - .015	.260	.128	.040 - .060	.267	.178	.025 - .040	.275	.081	.020 - .040	.279	.144	.025 - .040
.250	.083	.015 - .020	.251	.160	.005 - .010	.260	.129	.025 - .040	.267	.190	.005 - .008	.275	.089	.030 - .050	.279	.156	.020 - .030
.250	.085	.005 - .030	.251	.162	.025 - .042	.260	.144	.020 - .040	.267	.205	.015 - .030	.275	.091	.020 - .040	.279	.170	.015 - .025
.250	.091	.020 - .030	.251	.187	.010 - .020	.260	.148	.005 - .012	.267	.211	.020 - .030	.275	.096	.005 - .010	.279	.195	.005 - .040
.250	.093	.062 - .083	.251	.188	.005 - .008	.260	.158	.005 - .020	.268	.109	.015 - .030	.275	.098	.030 - .050	.279	.197	.015 - .030
.250	.094	.005 - .025	.251	.190	.005 - .015	.260	.163	.020 - .040	.268	.114	.020 - .040	.275	.115	.005 - .010	.279	.217	.015 - .030
.250	.095	.007 - .040	.251	.192	.005 - .010	.260	.167	.005 - .010	.268	.124	.015 - .030	.275	.118	.020 - .040	.279	.232	.005 - .010
.250	.097	.030 - .080	.251	.195	.005 - .010	.260	.170	.040 - .060	.268	.147	.032 - .050	.275	.122	.020 - .040	.279	.247	.010 - .015
.250	.098	.010 - .025	.251	.200	.015 - .025	.260	.173	.020 - .040	.268	.173	.005 - .010	.275	.126	.010 - .020	.280	.067	.005 - .015
.250	.099	.032 - .050	.251	.205	.007 - .015	.260	.175	.005 - .010	.268	.179	.005 - .010	.275	.135	.005 - .012	.280	.079	.030 - .050
.250	.100	.025 - .040	.251	.214	.005 - .010	.260	.176	.020 - .040	.268	.199	.010 - .020	.275	.143	.010 - .020	.280	.100	.005 - .010
.250	.102	.005 - .060	.252	.078	.060 - .072	.260	.188	.005 - .015	.268	.202	.005 - .015	.275	.144	.040 - .050	.280	.105	.015 - .032
.250	.105	.005 - .035	.252	.099	.005 - .010	.260	.190	.010 - .020	.268	.213	.010 - .020	.275	.163	.015 - .025	.280	.115	.015 - .030
.250	.106	.030 - .050	.252	.103	.015 - .025	.260	.205	.010 - .020	.269	.139	.020 - .030	.275	.166	.020 - .030	.280	.118	.010 - .020
.250	.108	.005 - .010	.252	.120	.010 - .020	.261	.104	.050 - .070	.269	.156	.015 - .025	.275	.170	.032 - .048	.280	.122	.025 - .048
.250	.110	.005 - .030	.252	.127	.030 - .050	.261	.110	.005 - .010	.269	.158	.010 - .020	.275	.180	.020 - .040	.280	.126	.020 - .030
.250	.116	.020 - .040	.252	.128	.005 - .010	.261	.111	.030 - .050	.269	.160	.015 - .030	.275	.189	.030 - .050	.280	.127	.005 - .010
.250	.117	.020 - .040	.252	.141	.020 - .040	.261	.201	.005 - .010	.269	.161	.048 - .062	.275	.190	.005 - .010	.280	.128	.010 - .032
.250	.120	.030 - .050	.252	.146	.008 - .016	.261	.206	.005 - .010	.269	.179	.025 - .040	.275	.192	.005 - .010	.280	.133	.020 - .040
.250	.122	.005 - .060	.252	.159	.025 - .040	.262	.062	.020 - .030	.269	.190	.005 - .010	.275	.200	.005 - .010	.280	.134	.005 - .010
.250	.124	.010 - .032	.252	.191	.010 - .040	.262	.117	.015 - .030	.269	.213	.005 - .010	.275	.203	.030 - .050	.280	.135	.020 - .035
.250	.125	.010 - .050	.252	.195	.012 - .020	.262	.129	.005 - .010	.270	.079	.005 - .010	.275	.242	.010 - .020	.280	.145	.032 - .050
.250	.126	.005															

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.312	.112	.010 - .020	.313	.200	.010 - .020	.316	.239	.005 - .010	.324	.165	.060 - .080	.330	.257	.020 - .036	.338	.201	.050 - .060
.312	.116	.005 - .010	.313	.206	.030 - .050	.316	.252	.005 - .010	.324	.190	.005 - .010	.330	.261	.005 - .010	.338	.238	.005 - .010
.312	.122	.015 - .030	.313	.207	.020 - .040	.316	.255	.006 - .010	.324	.200	.010 - .020	.331	.067	.010 - .025	.338	.251	.015 - .030
.312	.126	.005 - .090	.313	.208	.005 - .010	.317	.095	.008 - .020	.324	.204	.040 - .060	.331	.124	.020 - .030	.338	.253	.010 - .020
.312	.127	.010 - .020	.313	.224	.020 - .040	.317	.100	.006 - .030	.324	.206	.040 - .060	.331	.129	.005 - .010	.339	.150	.010 - .020
.312	.128	.020 - .040	.313	.230	.005 - .015	.317	.114	.005 - .010	.324	.207	.020 - .030	.331	.140	.030 - .050	.339	.151	.005 - .010
.312	.129	.010 - .030	.313	.232	.005 - .015	.317	.132	.005 - .010	.324	.242	.025 - .042	.331	.158	.005 - .010	.339	.157	.005 - .010
.312	.130	.005 - .015	.313	.242	.005 - .010	.317	.148	.050 - .070	.324	.254	.005 - .010	.331	.161	.020 - .040	.339	.176	.020 - .040
.312	.132	.010 - .025	.313	.253	.020 - .030	.317	.179	.005 - .010	.325	.118	.005 - .010	.331	.167	.020 - .030	.339	.206	.005 - .010
.312	.134	.010 - .015	.313	.255	.015 - .025	.317	.205	.010 - .020	.325	.125	.015 - .025	.331	.196	.005 - .010	.339	.223	.005 - .010
.312	.139	.005 - .008	.314	.039	.010 - .020	.317	.229	.005 - .010	.325	.130	.015 - .025	.331	.198	.015 - .030	.340	.085	.015 - .030
.312	.142	.006 - .030	.314	.043	.005 - .010	.317	.240	.025 - .035	.325	.134	.005 - .010	.331	.200	.040 - .060	.340	.150	.015 - .025
.312	.143	.005 - .012	.314	.060	.005 - .010	.317	.281	.005 - .010	.325	.140	.040 - .060	.331	.236	.015 - .030	.340	.158	.020 - .040
.312	.144	.005 - .020	.314	.088	.015 - .035	.318	.094	.005 - .010	.325	.142	.008 - .018	.331	.237	.020 - .030	.340	.164	.030 - .060
.312	.146	.008 - .016	.314	.103	.025 - .045	.318	.097	.005 - .010	.325	.164	.015 - .030	.331	.254	.005 - .008	.340	.189	.012 - .020
.312	.148	.040 - .060	.314	.111	.010 - .025	.318	.125	.010 - .020	.325	.169	.005 - .010	.331	.279	.005 - .010	.340	.190	.005 - .010
.312	.150	.020 - .040	.314	.114	.032 - .050	.318	.132	.010 - .020	.325	.200	.005 - .050	.332	.164	.005 - .010	.340	.191	.025 - .050
.312	.154	.005 - .060	.314	.122	.025 - .048	.318	.143	.008 - .020	.325	.235	.005 - .010	.332	.175	.050 - .075	.340	.194	.005 - .010
.312	.156	.016 - .080	.314	.128	.005 - .015	.318	.159	.020 - .040	.325	.236	.025 - .040	.332	.192	.016 - .030	.340	.196	.020 - .040
.312	.157	.005 - .035	.314	.139	.040 - .060	.318	.166	.020 - .040	.325	.244	.015 - .025	.332	.203	.010 - .020	.340	.197	.005 - .035
.312	.158	.005 - .020	.314	.147	.015 - .030	.318	.174	.015 - .030	.325	.254	.015 - .025	.332	.213	.005 - .008	.340	.204	.036 - .050
.312	.160	.040 - .060	.314	.148	.025 - .062	.318	.191	.010 - .020	.325	.256	.005 - .010	.332	.236	.005 - .030	.340	.207	.030 - .050
.312	.165	.020 - .040	.314	.152	.035 - .050	.318	.198	.030 - .060	.326	.138	.005 - .010	.333	.123	.020 - .080	.340	.210	.030 - .050
.312	.167	.015 - .025	.314	.158	.060 - .080	.318	.228	.008 - .016	.326	.150	.030 - .050	.333	.173	.032 - .048	.340	.212	.020 - .040
.312	.171	.040 - .060	.314	.161	.040 - .060	.318	.237	.005 - .010	.326	.180	.005 - .010	.333	.175	.020 - .050	.340	.222	.025 - .062
.312	.172	.020 - .030	.314	.162	.040 - .060	.319	.140	.015 - .030	.326	.181	.005 - .010	.333	.212	.020 - .036	.340	.233	.050 - .060
.312	.173	.005 - .010	.314	.176	.030 - .050	.319	.146	.020 - .030	.326	.189	.050 - .070	.333	.225	.010 - .020	.340	.240	.030 - .050
.312	.182	.010 - .020	.314	.189	.015 - .032	.319	.178	.005 - .010	.326	.196	.005 - .010	.333	.257	.015 - .025	.340	.257	.005 - .020
.312	.188	.020 - .040	.314	.219	.030 - .050	.319	.228	.010 - .020	.326	.256	.005 - .010	.334	.039	.015 - .025	.340	.283	.015 - .025
.312	.189	.005 - .062	.314	.220	.015 - .030	.320	.061	.005 - .010	.327	.113	.025 - .042	.334	.040	.005 - .010	.341	.052	.025 - .040
.312	.190	.005 - .030	.314	.225	.015 - .025	.320	.067	.030 - .042	.327	.120	.025 - .040	.334	.046	.005 - .010	.341	.061	.005 - .010
.312	.191	.008 - .020	.314	.230	.005 - .010	.320	.078	.005 - .010	.327	.130	.030 - .050	.334	.122	.005 - .010	.341	.090	.060 - .080
.312	.192	.005 - .040	.314	.236	.005 - .010	.320	.084	.030 - .040	.327	.190	.030 - .050	.334	.127	.005 - .010	.341	.093	.020 - .040
.312	.193	.005 - .010	.314	.242	.010 - .020	.320	.093	.042 - .060	.327	.194	.010 - .020	.334	.160	.015 - .030	.341	.120	.005 - .010
.312	.194	.025 - .040	.314	.256	.010 - .020	.320	.113	.005 - .010	.327	.217	.030 - .050	.334	.196	.005 - .010	.341	.131	.070 - .090
.312	.195	.020 - .035	.315	.025	.006 - .010	.320	.122	.015 - .030	.327	.250	.050 - .060	.334	.197	.032 - .048	.341	.141	.080 - .090
.312	.199	.005 - .020	.315	.030	.005 - .015	.320	.124	.005 - .010	.327	.258	.010 - .025	.334	.218	.015 - .030	.341	.158	.025 - .040
.312	.200	.040 - .060	.315	.068	.010 - .020	.320	.131	.005 - .010	.327	.262	.005 - .010	.334	.220	.005 - .050	.341	.161	.015 - .035
.312	.204	.005 - .050	.315	.087	.020 - .040	.320	.145	.025 - .042	.328	.105	.005 - .010	.334	.226	.025 - .040	.341	.164	.010 - .025
.312	.206	.010 - .020	.315	.092	.045 - .065	.320	.146	.015 - .030	.328	.162	.040 - .060	.334	.242	.010 - .020	.341	.202	.015 - .030
.312	.208	.005 - .010	.315	.095	.032 - .062	.320	.149	.005 - .010	.328	.175	.030 - .050	.334	.258	.020 - .030	.341	.281	.025 - .035
.312	.216	.010 - .020	.315	.097	.005 - .030	.320	.170	.015 - .025	.328	.177	.005 - .010	.334	.260	.005 - .010	.342	.092	.005 - .020
.312	.219	.015 - .030	.315	.124	.050 - .060	.320	.178	.010 - .020	.328	.179	.015 - .030	.334	.275	.005 - .010	.342	.118	.032 - .048
.312	.221	.005 - .010	.315	.127	.050 - .070	.320	.182	.050 - .070	.328	.192	.030 - .050	.334	.295	.010 - .015	.342	.145	.005 - .008
.312	.223	.005 - .042	.315	.129	.030 - .050	.320	.220	.040 - .050	.328	.197	.025 - .040	.335	.034	.010 - .020	.342	.156	.005 - .010
.312	.227	.030 - .042	.315	.138	.060 - .080	.320	.221	.050 - .062	.328	.200	.005 - .015	.335	.129	.015 - .025	.342	.162	.030 - .050
.312	.228	.030 - .050	.315	.140	.020 - .040	.321	.062	.005 - .010	.328	.214	.010 - .032	.335	.159	.060 - .075	.342	.164	.015 - .030
.312	.231	.025 - .040	.315	.147	.020 - .030	.321	.077	.020 - .030	.328	.219	.030 - .050	.335	.169	.015 - .030	.342	.193	.005 - .050
.312	.251	.005 - .010	.315	.157	.005 - .015	.321	.135	.020 - .035	.328	.222	.010 - .025	.335	.172	.010 - .020	.342	.198	.015 - .030
.312	.252	.025 - .042	.315	.160	.005 - .010	.321	.147	.010 - .020	.328	.225	.005 - .040	.335	.196	.025 - .040	.342	.201	.025 - .040
.312	.254	.015 - .030	.315	.162	.020 - .030	.321	.203	.005 - .010	.328	.245	.007 - .016	.335	.200	.020 - .040	.342	.206	.015 - .030
.313	.062	.005 - .010	.315	.163	.005 - .010	.321	.226	.010 - .020	.328	.252	.020 - .031	.335	.204	.005 - .040	.342	.212	.015 - .025
.313	.082	.005 - .010	.315	.167	.020 - .040	.321	.253	.020 - .030	.328	.253	.005 - .010	.335	.215	.030 - .050	.342	.255	.020 - .030
.313	.096	.075 - .090	.315	.170	.020 - .040	.322	.050	.005 - .010	.328	.256	.010 - .020	.335	.235	.010 - .020	.343	.062	.050 - .070
.313	.100	.008 - .042	.315	.181	.005 - .010	.322	.128	.010 - .020	.328	.260	.020 - .040	.335	.257	.010 - .030	.343	.087	.030 - .050
.313	.101	.040 - .060	.315	.190	.005 - .010	.322	.145	.015 - .030	.328	.273	.005 - .010	.335	.258	.005 - .010	.343	.088	.060 - .075
.313	.105	.008 - .020	.315	.195	.040 - .060	.322	.206	.005 - .010	.329	.030	.010 - .020	.335	.259	.005 - .015	.343	.092	.005 - .010
.313	.110	.008 - .015	.315	.223	.030 - .050	.322	.224	.010 - .020	.329	.100	.025 - .040	.336	.045	.005 - .010	.343	.094	.025 - .060
.313	.120	.005 - .010	.315	.224	.005 - .010	.322	.228	.025 - .040	.329	.108	.005 - .010	.336	.048	.005 - .010	.343	.097	.010 - .020
.313	.123	.050 - .070	.315	.237	.005 - .010	.322	.241	.010 - .020	.329	.111	.010 - .020	.336	.117	.040 - .060	.343	.110	.025 - .040
.313	.126	.020 - .040	.315	.238	.010 - .020	.322	.242	.025 - .040	.329	.132	.005 - .010	.336	.118	.040 - .060	.343	.116	.015 - .030
.313	.129	.005 - .010	.315	.240	.005 - .010	.322	.287	.010 - .020	.329	.206	.005 - .010	.336	.138	.005 - .048	.343	.134	.007 - .016
.313	.130	.025 - .040	.315	.244	.020 - .035	.323	.094	.010 - .020	.329	.209	.030 - .050	.336	.191	.030 - .050	.343	.138	.040 - .060
.313	.133	.015 - .030	.315	.250	.005 - .020	.323	.099	.020 - .040	.329	.221	.005 - .010	.336	.197	.005 - .010	.343	.161	.005 - .008
.313	.135	.030 - .050	.316	.098	.030 - .050	.323	.124	.005 - .010	.329	.245	.020 - .040	.336	.218	.005 - .010	.343	.167	.010 - .020
.313	.138	.025 - .040	.316	.105	.025 - .048	.323	.130	.025 - .042	.329	.253	.005 - .010	.336	.230	.010 - .020	.343	.193	.005 - .060
.313	.140	.040 - .060	.316	.124	.060 - .075	.323	.160	.005 - .025	.329	.288	.005 - .010	.336	.257	.020 - .040	.343	.194	.060 - .078
.313	.147	.030 - .050	.316	.134	.005 - .010	.323	.166	.020 - .030	.330	.093	.005 - .010	.336	.270	.005 - .010	.343	.195	.006 - .070
.313	.151	.005 - .010	.316	.138													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.373	.193	.005 - .060	.375	.165	.042 - .062	.376	.205	.005 - .010	.379	.163	.020 - .035	.384	.127	.020 - .030	.390	.266	.025 - .040
.373	.196	.005 - .010	.375	.169	.015 - .050	.376	.217	.040 - .060	.379	.164	.040 - .070	.384	.144	.030 - .050	.390	.284	.005 - .010
.373	.200	.005 - .010	.375	.172	.005 - .050	.376	.220	.020 - .032	.379	.173	.005 - .010	.384	.159	.030 - .050	.390	.306	.005 - .010
.373	.210	.005 - .010	.375	.173	.020 - .030	.376	.222	.005 - .010	.379	.198	.005 - .010	.384	.214	.030 - .050	.390	.314	.025 - .040
.373	.222	.015 - .030	.375	.175	.005 - .012	.376	.223	.005 - .042	.379	.200	.005 - .010	.384	.238	.020 - .030	.391	.105	.005 - .010
.373	.238	.030 - .050	.375	.177	.060 - .075	.376	.234	.030 - .050	.379	.221	.005 - .010	.384	.271	.015 - .020	.391	.132	.120 - .140
.373	.253	.040 - .060	.375	.180	.060 - .080	.376	.244	.032 - .050	.379	.250	.005 - .010	.384	.285	.015 - .030	.391	.163	.040 - .060
.373	.256	.042 - .060	.375	.184	.005 - .010	.376	.251	.020 - .032	.379	.252	.005 - .010	.385	.156	.020 - .032	.391	.177	.040 - .060
.373	.269	.005 - .010	.375	.188	.005 - .030	.376	.252	.040 - .050	.379	.257	.040 - .062	.385	.181	.030 - .050	.391	.197	.015 - .030
.373	.317	.010 - .020	.375	.189	.080 - .104	.376	.254	.025 - .048	.379	.297	.030 - .042	.385	.188	.025 - .040	.391	.226	.010 - .020
.373	.318	.005 - .010	.375	.190	.080 - .104	.376	.255	.040 - .060	.380	.093	.015 - .030	.385	.194	.060 - .080	.391	.242	.005 - .010
.374	.049	.005 - .010	.375	.191	.040 - .090	.376	.260	.005 - .032	.380	.095	.015 - .030	.385	.239	.005 - .010	.391	.271	.020 - .040
.374	.083	.036 - .050	.375	.192	.005 - .090	.376	.261	.010 - .020	.380	.096	.060 - .080	.385	.241	.030 - .070	.391	.285	.020 - .035
.374	.099	.005 - .010	.375	.193	.005 - .015	.376	.263	.005 - .020	.380	.097	.040 - .060	.385	.249	.025 - .048	.391	.306	.005 - .010
.374	.120	.040 - .060	.375	.194	.040 - .060	.376	.269	.005 - .010	.380	.116	.005 - .010	.385	.252	.005 - .012	.391	.307	.010 - .020
.374	.130	.010 - .020	.375	.195	.005 - .042	.376	.271	.010 - .040	.380	.126	.030 - .050	.385	.260	.005 - .010	.391	.314	.015 - .020
.374	.138	.005 - .015	.375	.196	.005 - .060	.376	.276	.040 - .060	.380	.148	.025 - .040	.385	.262	.050 - .060	.391	.348	.005 - .010
.374	.149	.010 - .015	.375	.200	.040 - .060	.376	.301	.005 - .010	.380	.149	.080 - .100	.385	.290	.010 - .020	.392	.129	.025 - .040
.374	.157	.025 - .040	.375	.202	.010 - .032	.376	.316	.005 - .010	.380	.162	.040 - .060	.385	.301	.005 - .010	.392	.190	.005 - .010
.374	.168	.025 - .040	.375	.203	.015 - .060	.377	.031	.005 - .010	.380	.173	.005 - .010	.386	.121	.030 - .050	.392	.207	.015 - .030
.374	.172	.040 - .060	.375	.204	.060 - .080	.377	.035	.015 - .025	.380	.175	.015 - .090	.386	.130	.020 - .030	.392	.219	.005 - .010
.374	.173	.040 - .060	.375	.205	.008 - .015	.377	.047	.030 - .042	.380	.180	.005 - .010	.386	.141	.010 - .020	.392	.280	.035 - .050
.374	.175	.040 - .060	.375	.209	.025 - .062	.377	.068	.030 - .042	.380	.186	.015 - .040	.386	.162	.050 - .062	.392	.328	.005 - .010
.374	.180	.020 - .080	.375	.211	.010 - .020	.377	.071	.005 - .010	.380	.190	.005 - .010	.386	.181	.040 - .060	.392	.337	.005 - .010
.374	.185	.015 - .030	.375	.213	.015 - .025	.377	.100	.015 - .030	.380	.191	.020 - .040	.386	.225	.020 - .040	.393	.042	.005 - .010
.374	.191	.005 - .060	.375	.218	.060 - .080	.377	.101	.020 - .030	.380	.192	.005 - .010	.386	.237	.040 - .050	.393	.103	.010 - .020
.374	.194	.005 - .010	.375	.220	.005 - .010	.377	.110	.020 - .030	.380	.194	.005 - .010	.386	.250	.015 - .040	.393	.111	.025 - .040
.374	.196	.025 - .040	.375	.223	.050 - .070	.377	.114	.020 - .040	.380	.195	.005 - .025	.386	.301	.020 - .040	.393	.120	.005 - .010
.374	.199	.005 - .010	.375	.225	.050 - .070	.377	.115	.005 - .010	.380	.204	.012 - .025	.386	.313	.020 - .030	.393	.158	.005 - .020
.374	.200	.005 - .010	.375	.226	.015 - .030	.377	.134	.015 - .030	.380	.215	.030 - .050	.387	.091	.030 - .050	.393	.196	.040 - .050
.374	.202	.025 - .040	.375	.235	.010 - .020	.377	.140	.005 - .010	.380	.226	.005 - .010	.387	.118	.020 - .030	.393	.201	.030 - .050
.374	.206	.005 - .010	.375	.237	.005 - .075	.377	.145	.050 - .060	.380	.242	.015 - .030	.387	.171	.060 - .090	.393	.209	.005 - .010
.374	.221	.010 - .020	.375	.238	.005 - .030	.377	.147	.010 - .020	.380	.255	.005 - .010	.387	.189	.032 - .048	.393	.214	.005 - .010
.374	.222	.005 - .010	.375	.245	.050 - .060	.377	.156	.030 - .060	.380	.262	.005 - .010	.387	.192	.005 - .010	.393	.217	.030 - .050
.374	.224	.005 - .010	.375	.248	.010 - .020	.377	.157	.070 - .090	.380	.264	.025 - .040	.387	.258	.020 - .040	.393	.230	.025 - .040
.374	.225	.008 - .016	.375	.250	.005 - .060	.377	.164	.005 - .010	.380	.276	.005 - .010	.387	.280	.005 - .010	.393	.237	.005 - .010
.374	.232	.005 - .040	.375	.252	.005 - .015	.377	.165	.020 - .030	.380	.277	.010 - .020	.387	.318	.008 - .020	.393	.239	.005 - .010
.374	.236	.050 - .060	.375	.253	.005 - .025	.377	.171	.025 - .040	.380	.280	.030 - .040	.387	.328	.010 - .020	.393	.240	.005 - .050
.374	.237	.030 - .060	.375	.254	.005 - .040	.377	.173	.030 - .050	.380	.285	.032 - .050	.388	.090	.015 - .025	.393	.256	.020 - .040
.374	.252	.005 - .040	.375	.255	.020 - .030	.377	.182	.025 - .048	.381	.094	.005 - .010	.388	.127	.008 - .020	.393	.277	.005 - .010
.374	.255	.005 - .010	.375	.257	.025 - .040	.377	.185	.010 - .020	.381	.099	.025 - .040	.388	.136	.005 - .010	.393	.279	.005 - .010
.374	.257	.025 - .060	.375	.258	.010 - .020	.377	.189	.030 - .060	.381	.114	.005 - .010	.388	.171	.075 - .090	.393	.285	.010 - .020
.374	.280	.005 - .010	.375	.267	.020 - .030	.377	.190	.015 - .030	.381	.116	.005 - .010	.388	.205	.025 - .040	.393	.287	.005 - .015
.374	.307	.005 - .010	.375	.274	.010 - .020	.377	.191	.025 - .040	.381	.124	.005 - .012	.388	.211	.005 - .010	.393	.314	.025 - .035
.374	.320	.010 - .020	.375	.280	.030 - .042	.377	.194	.025 - .060	.381	.126	.030 - .050	.388	.215	.040 - .060	.393	.315	.005 - .010
.375	.041	.040 - .050	.375	.281	.005 - .040	.377	.219	.032 - .042	.381	.131	.040 - .060	.388	.252	.015 - .030	.393	.316	.010 - .020
.375	.045	.006 - .015	.375	.282	.005 - .010	.377	.220	.020 - .040	.381	.138	.005 - .010	.388	.264	.025 - .040	.393	.324	.010 - .020
.375	.048	.015 - .030	.375	.285	.008 - .015	.377	.223	.030 - .050	.381	.148	.025 - .040	.388	.280	.005 - .030	.394	.083	.005 - .010
.375	.059	.005 - .010	.375	.292	.015 - .025	.377	.225	.015 - .030	.381	.150	.005 - .010	.388	.288	.015 - .030	.394	.095	.005 - .020
.375	.086	.015 - .030	.375	.301	.015 - .030	.377	.230	.010 - .020	.381	.153	.060 - .070	.389	.078	.015 - .030	.394	.142	.005 - .010
.375	.091	.005 - .030	.375	.303	.025 - .040	.377	.253	.015 - .060	.381	.163	.030 - .050	.389	.130	.020 - .035	.394	.157	.040 - .060
.375	.095	.090 - .104	.375	.313	.005 - .010	.377	.254	.025 - .040	.381	.175	.075 - .090	.389	.198	.020 - .040	.394	.158	.040 - .060
.375	.100	.005 - .030	.375	.316	.020 - .040	.377	.255	.040 - .062	.381	.178	.015 - .030	.389	.199	.015 - .030	.394	.168	.050 - .075
.375	.101	.070 - .080	.375	.318	.020 - .032	.377	.262	.030 - .050	.381	.182	.005 - .020	.389	.200	.015 - .030	.394	.183	.010 - .020
.375	.103	.030 - .050	.375	.382	.005 - .010	.377	.265	.005 - .010	.381	.186	.015 - .030	.389	.205	.005 - .012	.394	.196	.050 - .075
.375	.110	.030 - .040	.376	.084	.008 - .016	.377	.267	.006 - .012	.381	.195	.040 - .060	.389	.223	.012 - .020	.394	.203	.005 - .010
.375	.111	.005 - .010	.376	.117	.015 - .040	.377	.276	.010 - .020	.381	.200	.020 - .030	.389	.227	.005 - .010	.394	.207	.050 - .075
.375	.114	.030 - .042	.376	.122	.015 - .030	.377	.315	.010 - .020	.381	.203	.005 - .010	.389	.276	.020 - .030	.394	.208	.070 - .090
.375	.120	.030 - .060	.376	.126	.012 - .020	.378	.061	.005 - .010	.381	.212	.005 - .010	.390	.039	.005 - .010	.394	.237	.005 - .010
.375	.123	.030 - .075	.376	.130	.025 - .040	.378	.062	.005 - .010	.381	.255	.015 - .030	.390	.077	.010 - .020	.394	.239	.025 - .040
.375	.125	.010 - .070	.376	.141	.020 - .040	.378	.064	.015 - .025	.381	.260	.015 - .030	.390	.087	.020 - .030	.394	.240	.005 - .025
.375	.126	.010 - .020	.376	.156	.010 - .020	.378	.127	.005 - .010	.381	.290	.005 - .010	.390	.129	.015 - .030	.394	.243	.015 - .030
.375	.129	.005 - .036	.376	.157	.010 - .090	.378	.130	.010 - .020	.381	.294	.005 - .010	.390	.145	.015 - .080	.394	.251	.005 - .080
.375	.132	.080 - .090	.376	.158	.050 - .070	.378	.160	.010 - .020	.381	.300	.020 - .035	.390	.157	.005 - .010	.394	.255	.045 - .064
.375	.133	.050 - .062	.376	.159	.050 - .075	.378	.164	.010 - .030	.381	.315	.020 - .036	.390	.162	.020 - .030	.394	.260	.040 - .060
.375	.135	.005 - .010	.376	.161	.005 - .010	.378	.171	.032 - .050	.382	.132	.025 - .040	.390	.169	.025 - .050	.394	.319	.005 - .010
.375	.143	.075 - .090	.376	.169	.005 - .010	.378	.178	.005 - .010	.382	.163	.030 - .050	.390	.181	.030 - .050	.395	.099	.030 - .050
.375	.144	.005 - .040	.376	.172	.005 - .060	.378	.200	.010 - .020	.382	.175	.015 - .030	.390	.185	.005 - .010	.395	.165	.015 - .030
.375	.145	.025 - .040	.376	.174													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.430	.190	.020 - .040	.434	.079	.030 - .050	.437	.120	.040 - .060	.438	.196	.005 - .020	.440	.211	.005 - .010	.446	.151	.062 - .090
.430	.191	.020 - .080	.434	.094	.040 - .060	.437	.125	.005 - .015	.438	.198	.025 - .035	.440	.217	.070 - .090	.446	.162	.005 - .010
.430	.200	.070 - .090	.434	.103	.040 - .060	.437	.126	.025 - .050	.438	.200	.005 - .090	.440	.218	.005 - .020	.446	.171	.040 - .060
.430	.206	.080 - .100	.434	.160	.090 - .125	.437	.127	.015 - .060	.438	.201	.025 - .050	.440	.228	.015 - .040	.446	.197	.010 - .020
.430	.215	.032 - .042	.434	.176	.020 - .040	.437	.128	.030 - .050	.438	.202	.020 - .050	.440	.237	.050 - .075	.446	.208	.050 - .070
.430	.220	.015 - .035	.434	.187	.005 - .010	.437	.129	.010 - .042	.438	.203	.075 - .090	.440	.245	.005 - .010	.446	.256	.005 - .010
.430	.230	.005 - .010	.434	.196	.005 - .010	.437	.130	.025 - .042	.438	.205	.070 - .090	.440	.250	.005 - .010	.446	.270	.005 - .040
.430	.258	.020 - .040	.434	.198	.005 - .010	.437	.133	.050 - .062	.438	.206	.020 - .030	.440	.252	.010 - .025	.446	.307	.030 - .050
.430	.265	.005 - .080	.434	.224	.005 - .010	.437	.141	.048 - .072	.438	.207	.005 - .010	.440	.253	.005 - .010	.446	.319	.032 - .060
.430	.279	.005 - .010	.434	.236	.032 - .062	.437	.142	.040 - .060	.438	.210	.042 - .060	.440	.260	.010 - .070	.446	.325	.032 - .060
.430	.285	.020 - .030	.434	.244	.040 - .050	.437	.143	.040 - .060	.438	.216	.005 - .100	.440	.265	.005 - .010	.447	.127	.020 - .040
.430	.300	.010 - .020	.434	.253	.005 - .010	.437	.144	.025 - .035	.438	.232	.035 - .050	.440	.275	.020 - .045	.447	.146	.020 - .040
.430	.308	.010 - .020	.434	.255	.005 - .010	.437	.147	.020 - .040	.438	.236	.005 - .010	.440	.283	.040 - .062	.447	.194	.030 - .050
.430	.314	.030 - .050	.434	.271	.050 - .070	.437	.150	.010 - .020	.438	.247	.005 - .010	.440	.291	.020 - .040	.447	.202	.025 - .040
.430	.339	.005 - .010	.434	.282	.005 - .010	.437	.157	.015 - .030	.438	.249	.050 - .075	.440	.304	.030 - .050	.447	.223	.025 - .050
.430	.343	.015 - .030	.434	.286	.020 - .030	.437	.158	.005 - .010	.438	.255	.005 - .030	.440	.314	.040 - .060	.447	.230	.025 - .040
.430	.364	.005 - .010	.434	.315	.005 - .010	.437	.166	.010 - .050	.438	.256	.025 - .050	.440	.316	.020 - .050	.447	.236	.005 - .010
.430	.372	.005 - .020	.434	.316	.015 - .040	.437	.169	.008 - .016	.438	.257	.030 - .050	.440	.328	.040 - .060	.447	.250	.020 - .040
.430	.376	.005 - .010	.434	.318	.005 - .010	.437	.171	.030 - .050	.438	.258	.005 - .010	.440	.355	.015 - .025	.447	.254	.010 - .020
.430	.379	.015 - .020	.434	.320	.005 - .010	.437	.183	.050 - .062	.438	.259	.005 - .010	.440	.381	.010 - .020	.447	.270	.020 - .030
.431	.040	.005 - .010	.434	.330	.030 - .050	.437	.191	.010 - .104	.438	.262	.030 - .050	.440	.390	.005 - .010	.447	.313	.015 - .025
.431	.126	.035 - .050	.434	.350	.025 - .035	.437	.194	.020 - .104	.438	.265	.030 - .060	.441	.042	.010 - .020	.447	.337	.005 - .010
.431	.127	.025 - .040	.435	.064	.035 - .062	.437	.197	.040 - .125	.438	.266	.015 - .030	.441	.093	.005 - .020	.447	.375	.020 - .036
.431	.157	.025 - .040	.435	.067	.020 - .040	.437	.198	.005 - .010	.438	.274	.015 - .030	.441	.143	.005 - .020	.447	.380	.015 - .030
.431	.158	.005 - .010	.435	.077	.005 - .010	.437	.199	.015 - .032	.438	.276	.030 - .050	.441	.151	.030 - .050	.448	.094	.005 - .010
.431	.195	.005 - .010	.435	.080	.012 - .025	.437	.204	.020 - .030	.438	.281	.060 - .080	.441	.168	.030 - .050	.448	.139	.030 - .040
.431	.197	.020 - .030	.435	.082	.030 - .050	.437	.205	.020 - .035	.438	.282	.005 - .075	.441	.172	.062 - .083	.448	.181	.006 - .012
.431	.235	.005 - .012	.435	.112	.007 - .012	.437	.215	.020 - .040	.438	.284	.050 - .075	.441	.190	.005 - .010	.448	.189	.005 - .010
.431	.238	.030 - .060	.435	.136	.090 - .105	.437	.217	.060 - .080	.438	.297	.005 - .010	.441	.198	.005 - .030	.448	.191	.030 - .048
.431	.259	.005 - .030	.435	.149	.060 - .083	.437	.218	.015 - .062	.438	.297	.015 - .025	.441	.224	.050 - .075	.448	.203	.015 - .030
.431	.294	.015 - .025	.435	.160	.010 - .020	.437	.219	.008 - .016	.438	.313	.030 - .060	.441	.242	.020 - .030	.448	.205	.030 - .060
.432	.080	.005 - .010	.435	.166	.090 - .105	.437	.220	.040 - .060	.438	.315	.010 - .020	.441	.254	.020 - .040	.448	.215	.020 - .040
.432	.117	.030 - .050	.435	.174	.025 - .040	.437	.222	.005 - .010	.438	.316	.005 - .010	.441	.255	.005 - .010	.448	.223	.025 - .040
.432	.118	.015 - .030	.435	.178	.105 - .125	.437	.225	.032 - .062	.438	.322	.010 - .020	.441	.257	.020 - .040	.448	.245	.005 - .020
.432	.120	.015 - .030	.435	.182	.060 - .083	.437	.228	.050 - .070	.438	.323	.025 - .040	.441	.258	.030 - .050	.448	.248	.010 - .020
.432	.122	.030 - .050	.435	.190	.070 - .090	.437	.232	.030 - .042	.438	.325	.005 - .010	.441	.266	.042 - .072	.448	.251	.032 - .060
.432	.125	.032 - .062	.435	.191	.005 - .010	.437	.238	.006 - .016	.438	.328	.010 - .020	.441	.270	.025 - .040	.448	.271	.030 - .050
.432	.130	.010 - .020	.435	.198	.005 - .072	.437	.245	.020 - .040	.438	.335	.005 - .010	.441	.273	.005 - .010	.448	.312	.005 - .010
.432	.133	.050 - .090	.435	.200	.050 - .075	.437	.251	.010 - .015	.438	.337	.025 - .040	.441	.316	.040 - .060	.448	.323	.010 - .020
.432	.135	.040 - .060	.435	.203	.005 - .008	.437	.252	.010 - .020	.438	.339	.025 - .040	.441	.319	.005 - .010	.448	.331	.010 - .020
.432	.187	.005 - .010	.435	.214	.040 - .062	.437	.253	.035 - .050	.438	.365	.005 - .015	.441	.320	.005 - .008	.448	.367	.035 - .050
.432	.199	.005 - .010	.435	.223	.025 - .050	.437	.254	.005 - .050	.438	.381	.020 - .030	.442	.154	.030 - .040	.448	.368	.030 - .040
.432	.260	.080 - .100	.435	.237	.015 - .030	.437	.255	.010 - .020	.438	.384	.015 - .030	.442	.195	.005 - .010	.448	.377	.005 - .010
.432	.263	.015 - .025	.435	.250	.015 - .030	.437	.257	.008 - .016	.439	.118	.030 - .050	.442	.254	.020 - .040	.449	.259	.005 - .010
.432	.297	.005 - .010	.435	.252	.015 - .030	.437	.258	.025 - .070	.439	.141	.010 - .020	.442	.260	.010 - .020	.449	.351	.005 - .010
.432	.313	.020 - .048	.435	.254	.005 - .008	.437	.259	.050 - .070	.439	.165	.025 - .040	.442	.286	.005 - .010	.449	.412	.005 - .010
.432	.314	.005 - .010	.435	.257	.025 - .040	.437	.260	.010 - .025	.439	.173	.030 - .050	.442	.317	.040 - .060	.450	.062	.030 - .050
.432	.315	.005 - .010	.435	.261	.025 - .045	.437	.261	.005 - .010	.439	.174	.005 - .050	.443	.190	.025 - .040	.450	.065	.006 - .015
.432	.316	.040 - .060	.435	.267	.010 - .020	.437	.262	.030 - .042	.439	.185	.090 - .105	.443	.191	.025 - .040	.450	.089	.030 - .050
.432	.317	.005 - .010	.435	.268	.010 - .020	.437	.265	.005 - .012	.439	.189	.010 - .075	.443	.223	.005 - .010	.450	.114	.015 - .030
.432	.319	.030 - .050	.435	.284	.040 - .072	.437	.275	.020 - .040	.439	.190	.060 - .080	.443	.224	.040 - .060	.450	.120	.010 - .015
.432	.356	.015 - .025	.435	.290	.025 - .050	.437	.281	.042 - .062	.439	.192	.005 - .010	.443	.278	.020 - .040	.450	.138	.005 - .015
.432	.364	.005 - .010	.435	.296	.005 - .010	.437	.284	.015 - .030	.439	.203	.040 - .090	.443	.295	.016 - .025	.450	.143	.005 - .010
.433	.042	.031 - .048	.435	.305	.005 - .010	.437	.287	.010 - .020	.439	.207	.040 - .060	.443	.336	.040 - .060	.450	.162	.050 - .075
.433	.052	.015 - .030	.435	.321	.030 - .050	.437	.302	.005 - .012	.439	.251	.060 - .080	.444	.165	.005 - .010	.450	.174	.025 - .040
.433	.054	.015 - .030	.435	.327	.030 - .050	.437	.312	.005 - .010	.439	.252	.060 - .080	.444	.174	.030 - .050	.450	.182	.005 - .010
.433	.089	.020 - .040	.435	.380	.010 - .020	.437	.316	.010 - .015	.439	.253	.010 - .025	.444	.196	.015 - .030	.450	.185	.040 - .050
.433	.157	.030 - .050	.436	.187	.005 - .010	.437	.321	.020 - .040	.439	.260	.025 - .040	.444	.220	.030 - .050	.450	.192	.005 - .010
.433	.178	.105 - .125	.436	.188	.070 - .090	.437	.325	.005 - .010	.439	.264	.060 - .075	.444	.318	.030 - .050	.450	.200	.015 - .080
.433	.202	.015 - .030	.436	.201	.005 - .010	.437	.328	.020 - .030	.439	.276	.005 - .010	.444	.342	.010 - .020	.450	.201	.005 - .010
.433	.203	.005 - .030	.436	.226	.010 - .025	.437	.329	.040 - .060	.439	.282	.005 - .010	.444	.347	.020 - .040	.450	.216	.005 - .010
.433	.220	.005 - .010	.436	.241	.025 - .035	.437	.343	.005 - .060	.439	.313	.040 - .060	.444	.349	.005 - .010	.450	.223	.015 - .025
.433	.224	.005 - .010	.436	.251	.080 - .100	.437	.365	.005 - .010	.439	.315	.005 - .010	.444	.381	.015 - .030	.450	.237	.030 - .050
.433	.237	.030 - .050	.436	.253	.030 - .050	.437	.376	.005 - .025	.439	.317	.040 - .060	.445	.095	.030 - .050	.450	.240	.005 - .010
.433	.238	.005 - .010	.436	.254	.010 - .020	.437	.380	.005 - .010	.439	.321	.040 - .060	.445	.116	.050 - .070	.450	.247	.005 - .010
.433	.239	.005 - .010	.436	.256	.005 - .010	.438	.048	.005 - .010	.440	.024	.005 - .010	.445	.136	.010 - .020	.450	.251	.020 - .100
.433	.243	.020 - .050	.436	.263	.005 - .010	.438	.058	.020 - .035	.440	.052	.025 - .040	.445	.142	.040 - .050	.450	.252	.005 - .020
.433	.251	.010 - .030	.436	.279	.010 - .025	.438	.087	.005 - .010	.440	.090	.035 - .050	.445	.206	.035 - .050	.450	.254	.025 - .040
.433	.253	.008 - .070	.436	.282													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* To	O.D.	I.D.	Choose Any Thickness* To	O.D.	I.D.	Choose Any Thickness* To	O.D.	I.D.	Choose Any Thickness* To	O.D.	I.D.	Choose Any Thickness* To
.482	.396	.005 - .010	.488	.096	.060 - .090	.492	.276	.005 - .010	.495	.225	.075 - .090	.497	.324	.005 - .010
.483	.033	.010 - .020	.488	.118	.080 - .104	.492	.281	.030 - .050	.495	.236	.010 - .020	.497	.337	.005 - .010
.483	.077	.020 - .040	.488	.137	.005 - .010	.492	.290	.020 - .030	.495	.252	.040 - .060	.497	.344	.062 - .075
.483	.149	.005 - .060	.488	.193	.050 - .070	.492	.323	.005 - .010	.495	.268	.080 - .100	.497	.347	.005 - .030
.483	.152	.015 - .060	.488	.281	.032 - .062	.492	.328	.012 - .020	.495	.282	.042 - .072	.497	.406	.005 - .010
.483	.202	.042 - .062	.488	.315	.005 - .010	.492	.377	.030 - .050	.495	.285	.015 - .040	.497	.410	.020 - .030
.483	.247	.005 - .010	.488	.365	.010 - .020	.492	.379	.005 - .010	.495	.286	.015 - .040	.497	.437	.005 - .010
.483	.360	.030 - .040	.488	.400	.005 - .010	.492	.380	.005 - .010	.495	.298	.025 - .045	.497	.442	.005 - .030
.483	.375	.025 - .040	.489	.180	.030 - .050	.492	.393	.020 - .042	.495	.310	.010 - .030	.498	.063	.050 - .062
.483	.379	.030 - .040	.489	.189	.025 - .040	.493	.125	.015 - .030	.495	.312	.005 - .010	.498	.078	.040 - .060
.484	.119	.020 - .040	.489	.192	.020 - .030	.493	.131	.020 - .040	.495	.315	.040 - .060	.498	.082	.042 - .062
.484	.143	.016 - .025	.489	.205	.030 - .060	.493	.145	.070 - .090	.495	.322	.020 - .040	.498	.096	.030 - .050
.484	.230	.005 - .010	.489	.206	.040 - .060	.493	.181	.005 - .010	.495	.325	.020 - .030	.498	.122	.020 - .040
.484	.257	.050 - .075	.489	.230	.005 - .010	.493	.193	.075 - .090	.495	.327	.080 - .100	.498	.126	.010 - .015
.484	.285	.060 - .080	.489	.296	.010 - .020	.493	.198	.005 - .010	.495	.329	.010 - .030	.498	.130	.005 - .010
.484	.313	.050 - .072	.489	.303	.010 - .020	.493	.207	.005 - .010	.495	.337	.060 - .080	.498	.134	.010 - .020
.484	.350	.010 - .020	.489	.304	.020 - .040	.493	.244	.050 - .070	.495	.347	.035 - .050	.498	.148	.060 - .080
.484	.370	.005 - .010	.489	.315	.005 - .010	.493	.258	.020 - .040	.495	.361	.050 - .065	.498	.173	.020 - .040
.484	.379	.040 - .060	.489	.320	.040 - .060	.493	.282	.050 - .075	.495	.363	.040 - .060	.498	.175	.100 - .125
.484	.398	.040 - .060	.489	.333	.020 - .030	.493	.284	.030 - .050	.495	.381	.010 - .020	.498	.184	.005 - .010
.484	.432	.005 - .010	.489	.338	.035 - .050	.493	.300	.030 - .050	.495	.401	.010 - .025	.498	.187	.015 - .030
.485	.115	.015 - .030	.489	.382	.005 - .010	.493	.316	.025 - .040	.495	.440	.005 - .008	.498	.197	.040 - .062
.485	.120	.010 - .080	.490	.126	.070 - .090	.493	.320	.060 - .080	.496	.041	.030 - .042	.498	.215	.010 - .032
.485	.162	.020 - .040	.490	.127	.025 - .040	.493	.350	.005 - .010	.496	.085	.005 - .010	.498	.216	.025 - .042
.485	.170	.040 - .060	.490	.155	.040 - .060	.493	.354	.025 - .040	.496	.128	.020 - .040	.498	.220	.050 - .072
.485	.200	.005 - .010	.490	.165	.015 - .030	.493	.369	.005 - .010	.496	.130	.010 - .020	.498	.230	.020 - .042
.485	.250	.015 - .030	.490	.167	.020 - .030	.493	.373	.005 - .010	.496	.132	.060 - .080	.498	.232	.020 - .036
.485	.257	.005 - .010	.490	.170	.007 - .016	.493	.375	.020 - .040	.496	.156	.005 - .012	.498	.239	.025 - .040
.485	.258	.005 - .010	.490	.174	.020 - .030	.493	.376	.005 - .010	.496	.162	.035 - .050	.498	.247	.015 - .030
.485	.260	.015 - .025	.490	.189	.030 - .050	.493	.388	.005 - .010	.496	.170	.020 - .030	.498	.248	.005 - .010
.485	.270	.005 - .010	.490	.230	.005 - .010	.493	.394	.025 - .040	.496	.186	.070 - .090	.498	.251	.005 - .010
.485	.281	.005 - .010	.490	.250	.005 - .010	.494	.032	.005 - .010	.496	.194	.030 - .050	.498	.252	.005 - .010
.485	.288	.005 - .010	.490	.252	.005 - .010	.494	.081	.005 - .016	.496	.203	.005 - .012	.498	.257	.010 - .020
.485	.312	.030 - .050	.490	.259	.090 - .110	.494	.131	.030 - .050	.496	.205	.005 - .060	.498	.259	.090 - .120
.485	.313	.010 - .020	.490	.260	.005 - .010	.494	.162	.020 - .030	.496	.218	.005 - .010	.498	.262	.032 - .104
.485	.317	.005 - .010	.490	.260	.020 - .040	.494	.187	.050 - .070	.496	.248	.005 - .010	.498	.265	.050 - .075
.485	.319	.010 - .020	.490	.265	.005 - .010	.494	.204	.005 - .010	.496	.249	.005 - .010	.498	.269	.050 - .070
.485	.320	.010 - .040	.490	.295	.005 - .020	.494	.211	.005 - .010	.496	.252	.020 - .040	.498	.300	.020 - .030
.485	.328	.032 - .050	.490	.301	.005 - .010	.494	.224	.005 - .010	.496	.253	.020 - .070	.498	.302	.025 - .040
.485	.336	.010 - .020	.490	.302	.005 - .010	.494	.240	.100 - .125	.496	.255	.005 - .010	.498	.315	.005 - .010
.485	.347	.020 - .030	.490	.313	.015 - .030	.494	.241	.005 - .010	.496	.260	.015 - .030	.498	.321	.010 - .020
.485	.350	.020 - .030	.490	.315	.015 - .020	.494	.261	.010 - .020	.496	.262	.015 - .030	.498	.323	.020 - .040
.485	.354	.010 - .020	.490	.316	.015 - .020	.494	.262	.025 - .040	.496	.263	.015 - .030	.498	.328	.060 - .075
.485	.376	.015 - .025	.490	.343	.030 - .040	.494	.265	.010 - .060	.496	.265	.060 - .080	.498	.337	.015 - .030
.485	.385	.015 - .030	.490	.344	.005 - .010	.494	.273	.005 - .010	.496	.304	.060 - .080	.498	.339	.020 - .035
.485	.386	.015 - .025	.490	.353	.010 - .020	.494	.274	.005 - .010	.496	.318	.040 - .080	.498	.341	.050 - .070
.485	.402	.030 - .050	.490	.360	.020 - .040	.494	.278	.010 - .020	.496	.319	.005 - .010	.498	.344	.015 - .025
.485	.411	.020 - .040	.490	.377	.050 - .070	.494	.280	.005 - .010	.496	.332	.030 - .050	.498	.377	.005 - .010
.485	.412	.020 - .040	.490	.378	.010 - .042	.494	.282	.005 - .010	.496	.343	.030 - .042	.498	.380	.010 - .015
.485	.431	.005 - .010	.490	.380	.005 - .010	.494	.314	.015 - .050	.496	.346	.050 - .070	.498	.392	.005 - .042
.486	.062	.030 - .050	.490	.391	.016 - .025	.494	.321	.010 - .020	.496	.349	.050 - .075	.498	.399	.015 - .025
.486	.128	.015 - .030	.490	.393	.030 - .042	.494	.322	.050 - .070	.496	.353	.050 - .070	.498	.408	.005 - .010
.486	.220	.025 - .040	.490	.412	.005 - .010	.494	.323	.005 - .078	.496	.377	.050 - .070	.498	.426	.005 - .010
.486	.224	.040 - .060	.490	.416	.005 - .015	.494	.325	.025 - .035	.496	.380	.005 - .040	.499	.065	.015 - .025
.486	.230	.030 - .050	.491	.136	.020 - .040	.494	.348	.030 - .050	.496	.381	.015 - .075	.499	.072	.050 - .075
.486	.260	.010 - .020	.491	.172	.005 - .010	.494	.367	.005 - .010	.496	.390	.030 - .040	.499	.090	.040 - .060
.486	.315	.015 - .030	.491	.207	.020 - .030	.494	.370	.008 - .015	.496	.400	.005 - .010	.499	.094	.042 - .062
.486	.327	.005 - .050	.491	.250	.005 - .010	.494	.373	.005 - .010	.496	.433	.005 - .010	.499	.118	.060 - .080
.486	.355	.005 - .010	.491	.252	.100 - .134	.494	.380	.005 - .010	.496	.437	.005 - .010	.499	.123	.050 - .060
.486	.404	.010 - .020	.491	.253	.005 - .075	.494	.399	.025 - .040	.497	.088	.020 - .030	.499	.125	.005 - .010
.487	.042	.025 - .042	.491	.254	.050 - .075	.494	.420	.008 - .015	.497	.098	.030 - .050	.499	.138	.005 - .010
.487	.071	.010 - .020	.491	.256	.040 - .060	.495	.034	.015 - .025	.497	.137	.030 - .048	.499	.142	.030 - .050
.487	.120	.005 - .010	.491	.265	.090 - .105	.495	.040	.005 - .010	.497	.138	.030 - .048	.499	.170	.020 - .030
.487	.225	.010 - .032	.491	.266	.010 - .030	.495	.063	.020 - .035	.497	.166	.010 - .020	.499	.175	.050 - .072
.487	.233	.040 - .060	.491	.267	.005 - .010	.495	.064	.005 - .010	.497	.191	.060 - .080	.499	.189	.010 - .020
.487	.256	.025 - .040	.491	.268	.005 - .010	.495	.073	.040 - .062	.497	.193	.025 - .040	.499	.190	.020 - .030
.487	.257	.010 - .020	.491	.317	.010 - .020	.495	.136	.030 - .050	.497	.196	.005 - .010	.499	.192	.005 - .030
.487	.270	.090 - .110	.491	.320	.010 - .020	.495	.143	.100 - .125	.497	.215	.005 - .010	.499	.193	.005 - .075
.487	.272	.005 - .010	.491	.338	.030 - .050	.495	.158	.030 - .060	.497	.220	.020 - .070	.499	.194	.005 - .010
.487	.286	.015 - .030	.491	.385	.015 - .030	.495	.162	.048 - .075	.497	.250	.015 - .030	.499	.201	.050 - .075
.487	.321	.040 - .060	.491	.393	.005 - .010	.495	.170	.005 - .010	.497	.252	.005 - .025	.499	.203	.080 - .100
.487	.327	.030 - .040	.492	.124	.110 - .130	.495	.184	.070 - .090	.497	.253	.005 - .010	.499	.215	.010 - .020
.487	.336	.025 - .040	.492	.193	.030 - .050	.495	.190	.010 - .020	.497	.254	.015 - .060	.499	.229	.005 - .010
.487	.337	.020 - .040	.492	.201	.040 - .050	.495	.191	.020 - .030	.497	.259	.010 - .040	.499	.239	.030 - .040
.487	.355	.005 - .020	.492	.204	.105 - .125	.495	.195	.005 - .010	.497	.280	.015 - .030	.499	.240	.048 - .070
.487	.364	.005 - .010	.492	.250	.020 - .040	.495	.200	.030 - .050	.497	.287	.005 - .015	.499	.243	.005 - .010
.487	.399	.005 - .010	.492	.254	.030 - .060	.495	.203	.050 - .070	.497	.315	.005 - .012	.499	.246	.005 - .010
.487	.402	.005 - .010	.492	.255	.030 - .050	.495	.210	.025 - .040	.497	.316	.035 - .050	.499	.254	.035 - .060
.488	.031	.005 - .010	.492	.256	.010 - .020	.495	.215	.010 - .020	.497	.318	.015 - .030	.499	.257	.005 - .010
.488	.054	.025 - .040	.492	.260	.070 - .090	.495	.223	.050 - .070	.497	.319	.015 - .030	.499	.258	.015 - .030

BOKER'S METAL WASHERS ARE FLAT AND TUMBLE DEBURRED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.500	.202	.060 - .125	.500	.361	.050 - .060	.502	.190	.062 - .100	.507	.368	.005 - .030	.513	.455	.010 - .020
.500	.203	.012 - .020	.500	.368	.020 - .040	.502	.192	.030 - .050	.507	.375	.010 - .020	.514	.100	.020 - .040
.500	.204	.015 - .075	.500	.370	.005 - .010	.502	.193	.005 - .010	.507	.446	.020 - .030	.514	.151	.020 - .040
.500	.205	.005 - .050	.500	.373	.008 - .015	.502	.194	.060 - .080	.508	.201	.020 - .030	.514	.194	.070 - .090
.500	.209	.050 - .070	.500	.375	.040 - .075	.502	.196	.040 - .060	.508	.223	.050 - .070	.514	.200	.020 - .040
.500	.210	.010 - .025	.500	.376	.015 - .030	.502	.245	.025 - .036	.508	.269	.010 - .020	.514	.203	.005 - .010
.500	.217	.040 - .060	.500	.377	.005 - .060	.502	.257	.040 - .050	.508	.280	.020 - .040	.514	.210	.040 - .060
.500	.218	.005 - .090	.500	.378	.005 - .060	.502	.262	.040 - .060	.508	.285	.015 - .025	.514	.339	.010 - .020
.500	.220	.062 - .105	.500	.383	.030 - .050	.502	.263	.030 - .050	.508	.314	.005 - .010	.514	.392	.005 - .010
.500	.221	.020 - .125	.500	.385	.040 - .050	.502	.303	.075 - .100	.508	.329	.050 - .075	.514	.431	.030 - .040
.500	.222	.010 - .020	.500	.388	.020 - .036	.502	.315	.005 - .040	.508	.336	.005 - .010	.514	.454	.020 - .030
.500	.226	.025 - .040	.500	.390	.005 - .060	.502	.329	.020 - .030	.508	.355	.040 - .060	.515	.149	.005 - .010
.500	.230	.032 - .048	.500	.396	.005 - .030	.502	.378	.025 - .040	.508	.366	.005 - .010	.515	.163	.030 - .050
.500	.231	.005 - .010	.500	.402	.005 - .015	.502	.386	.005 - .010	.508	.405	.005 - .010	.515	.191	.050 - .070
.500	.233	.100 - .125	.500	.412	.005 - .010	.503	.131	.005 - .120	.508	.405	.030 - .050	.515	.206	.080 - .104
.500	.234	.100 - .120	.500	.415	.012 - .016	.503	.142	.030 - .060	.508	.430	.030 - .040	.515	.218	.005 - .010
.500	.235	.005 - .010	.500	.441	.010 - .020	.503	.153	.040 - .050	.509	.031	.030 - .050	.515	.227	.030 - .050
.500	.237	.008 - .125	.500	.446	.005 - .010	.503	.157	.050 - .062	.509	.064	.030 - .050	.515	.228	.005 - .010
.500	.238	.105 - .125	.500	.450	.005 - .010	.503	.159	.005 - .010	.509	.080	.030 - .050	.515	.253	.105 - .125
.500	.245	.020 - .030	.500	.452	.010 - .020	.503	.205	.030 - .040	.509	.219	.025 - .042	.515	.260	.020 - .040
.500	.250	.010 - .134	.501	.061	.005 - .020	.503	.280	.075 - .100	.509	.285	.010 - .020	.515	.308	.008 - .015
.500	.251	.015 - .030	.501	.099	.050 - .075	.503	.281	.010 - .020	.509	.286	.010 - .020	.515	.310	.008 - .015
.500	.253	.005 - .050	.501	.130	.030 - .050	.503	.315	.005 - .010	.509	.298	.050 - .070	.515	.315	.008 - .015
.500	.254	.005 - .083	.501	.131	.025 - .040	.503	.316	.005 - .010	.509	.430	.020 - .035	.515	.316	.008 - .015
.500	.255	.005 - .030	.501	.136	.005 - .020	.503	.318	.050 - .070	.510	.053	.015 - .025	.515	.318	.005 - .010
.500	.257	.005 - .104	.501	.139	.075 - .105	.503	.363	.005 - .010	.510	.156	.025 - .042	.515	.322	.015 - .025
.500	.258	.100 - .120	.501	.143	.070 - .090	.503	.383	.005 - .010	.510	.210	.075 - .090	.515	.377	.005 - .010
.500	.259	.100 - .125	.501	.158	.005 - .010	.503	.387	.005 - .010	.510	.251	.020 - .040	.515	.378	.020 - .030
.500	.260	.005 - .020	.501	.168	.045 - .060	.503	.411	.005 - .010	.510	.269	.005 - .010	.515	.385	.005 - .010
.500	.261	.050 - .075	.501	.170	.005 - .010	.504	.125	.090 - .104	.510	.280	.040 - .075	.515	.388	.020 - .040
.500	.263	.005 - .120	.501	.182	.010 - .104	.504	.230	.005 - .010	.510	.300	.010 - .020	.515	.390	.010 - .040
.500	.264	.005 - .010	.501	.191	.090 - .100	.504	.249	.040 - .060	.510	.341	.042 - .062	.515	.391	.050 - .060
.500	.265	.005 - .104	.501	.192	.020 - .040	.504	.258	.030 - .050	.510	.398	.040 - .050	.515	.394	.005 - .008
.500	.266	.005 - .025	.501	.195	.048 - .062	.504	.269	.005 - .010	.510	.414	.007 - .020	.515	.397	.005 - .010
.500	.266	.040 - .060	.501	.196	.005 - .010	.504	.283	.010 - .020	.511	.150	.005 - .010	.515	.420	.020 - .032
.500	.268	.005 - .020	.501	.199	.005 - .010	.504	.321	.030 - .050	.511	.165	.040 - .060	.516	.156	.030 - .050
.500	.269	.020 - .036	.501	.202	.005 - .010	.504	.343	.070 - .090	.511	.237	.005 - .010	.516	.195	.008 - .015
.500	.270	.005 - .090	.501	.205	.030 - .100	.504	.361	.005 - .010	.511	.250	.005 - .072	.516	.239	.005 - .010
.500	.275	.005 - .010	.501	.207	.025 - .040	.504	.362	.005 - .010	.511	.256	.005 - .010	.516	.246	.005 - .020
.500	.276	.060 - .080	.501	.208	.060 - .072	.504	.379	.020 - .030	.511	.259	.010 - .020	.516	.315	.005 - .010
.500	.280	.042 - .078	.501	.210	.100 - .125	.504	.382	.005 - .010	.511	.285	.020 - .040	.516	.320	.005 - .010
.500	.281	.005 - .040	.501	.223	.005 - .010	.504	.390	.030 - .050	.511	.316	.005 - .010	.516	.387	.020 - .040
.500	.283	.030 - .104	.501	.228	.060 - .080	.505	.090	.015 - .030	.511	.319	.040 - .060	.516	.388	.005 - .010
.500	.286	.030 - .050	.501	.230	.005 - .010	.505	.101	.050 - .070	.511	.320	.015 - .030	.516	.438	.020 - .032
.500	.288	.010 - .020	.501	.241	.080 - .100	.505	.129	.050 - .070	.511	.327	.020 - .040	.516	.445	.005 - .010
.500	.289	.015 - .030	.501	.253	.005 - .125	.505	.149	.010 - .075	.511	.383	.015 - .030	.517	.331	.030 - .050
.500	.291	.025 - .040	.501	.254	.048 - .072	.505	.167	.025 - .040	.511	.460	.005 - .010	.517	.340	.015 - .030
.500	.292	.005 - .010	.501	.255	.080 - .105	.505	.194	.005 - .010	.512	.180	.040 - .060	.517	.341	.040 - .060
.500	.295	.025 - .040	.501	.256	.020 - .090	.505	.250	.020 - .030	.512	.198	.050 - .070	.517	.346	.005 - .070
.500	.296	.010 - .025	.501	.263	.005 - .010	.505	.254	.010 - .020	.512	.203	.005 - .010	.517	.402	.005 - .010
.500	.298	.005 - .025	.501	.272	.090 - .105	.505	.295	.080 - .090	.512	.209	.010 - .020	.517	.417	.005 - .010
.500	.299	.030 - .050	.501	.281	.050 - .104	.505	.300	.010 - .020	.512	.238	.005 - .010	.517	.438	.005 - .010
.500	.300	.005 - .010	.501	.283	.010 - .100	.505	.301	.005 - .030	.512	.275	.040 - .060	.517	.441	.020 - .030
.500	.302	.060 - .070	.501	.300	.005 - .010	.505	.324	.050 - .070	.512	.278	.005 - .010	.518	.175	.008 - .016
.500	.304	.005 - .010	.501	.313	.005 - .070	.505	.335	.025 - .040	.512	.312	.010 - .020	.518	.214	.015 - .030
.500	.305	.020 - .030	.501	.318	.005 - .090	.505	.341	.025 - .075	.512	.317	.005 - .020	.518	.253	.005 - .010
.500	.309	.005 - .025	.501	.322	.020 - .040	.505	.355	.025 - .040	.512	.320	.005 - .010	.518	.256	.040 - .060
.500	.312	.015 - .030	.501	.340	.070 - .090	.505	.386	.020 - .030	.512	.321	.005 - .010	.518	.338	.005 - .010
.500	.313	.008 - .015	.501	.345	.025 - .040	.505	.390	.030 - .050	.512	.322	.005 - .080	.518	.375	.050 - .070
.500	.314	.005 - .010	.501	.370	.050 - .070	.505	.396	.005 - .010	.512	.363	.030 - .040	.518	.438	.005 - .010
.500	.315	.015 - .104	.501	.375	.016 - .030	.505	.399	.020 - .040	.512	.375	.050 - .070	.518	.440	.020 - .030
.500	.316	.010 - .050	.501	.376	.005 - .010	.505	.401	.030 - .050	.512	.394	.005 - .010	.518	.447	.010 - .020
.500	.317	.005 - .090	.501	.379	.030 - .050	.505	.457	.005 - .010	.512	.395	.015 - .025	.519	.081	.015 - .025
.500	.318	.010 - .020	.501	.380	.005 - .010	.506	.053	.005 - .010	.512	.433	.005 - .010	.519	.103	.005 - .010
.500	.319	.025 - .050	.501	.386	.010 - .020	.506	.206	.005 - .010	.513	.119	.040 - .060	.519	.170	.050 - .070
.500	.320	.015 - .025	.501	.397	.005 - .010	.506	.220	.040 - .060	.513	.126	.015 - .030	.519	.290	.030 - .040
.500	.321	.005 - .010	.501	.400	.030 - .050	.506	.221	.040 - .060	.513	.137	.005 - .010	.519	.339	.005 - .010
.500	.323	.005 - .010	.501	.402	.020 - .030	.506	.257	.005 - .010	.513	.153	.040 - .060	.519	.377	.005 - .010
.500	.327	.020 - .080	.501	.404	.015 - .030	.506	.258	.040 - .060	.513	.174	.030 - .050	.519	.397	.005 - .010
.500	.328	.048 - .070	.501	.409	.030 - .048	.506	.266	.005 - .010	.513	.197	.015 - .030	.520	.120	.010 - .020
.500	.332	.080 - .100	.501	.413	.015 - .025	.506	.275	.005 - .010	.513	.237	.070 - .090	.520	.194	.050 - .060
.500	.334	.010 - .020	.502	.124	.060 - .083	.507	.107	.005 - .010	.513	.240	.030 - .050	.520	.208	.015 - .020
.500	.336	.030 - .050	.502	.130	.005 - .010	.507	.125	.030 - .040	.513	.268	.005 - .012	.520	.224	.005 - .010
.500	.338	.005 - .070	.502	.131	.025 - .040	.507	.145	.005 - .010	.513	.287	.050 - .070	.520	.311	.020 - .035
.500	.344	.040 - .060	.502	.142	.005 - .010	.507	.221	.010 - .020	.513	.313	.080 - .090	.520	.324	.005 - .010
.500	.348	.015 - .030	.502	.161	.012 - .025	.507	.232	.060 - .078	.513	.360	.005 - .010	.520	.328	.020 - .040
.500	.350	.040 - .060	.502	.183	.080 - .104	.507	.253	.050 - .075	.513	.373	.015 - .030	.520	.333	.005 - .010
.500	.352	.006 - .012	.502	.185	.032 - .062	.507	.265	.060 - .070	.513	.383	.005 - .010	.520	.346	.020 - .030
.500	.356	.005 - .010	.502	.188	.062 - .090	.507	.319	.005 - .010	.513	.396	.040 - .060	.520	.380	.005 - .010
.500	.360	.015 - .040	.502	.189	.030 - .050	.507	.360	.005 - .010	.513	.440	.005 - .010	.520	.392	.005 - .010

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.529	.385	.005 - .010	.533	.411	.010 - .025	.540	.391	.030 - .050	.547	.365	.005 - .010	.551	.264	.070 - .090	.555	.328	.050 - .078
.529	.439	.015 - .030	.534	.039	.015 - .030	.540	.392	.010 - .020	.547	.405	.005 - .020	.551	.278	.005 - .010	.555	.356	.050 - .060
.530	.066	.035 - .060	.534	.131	.030 - .050	.540	.395	.005 - .010	.548	.095	.040 - .060	.551	.284	.030 - .050	.555	.360	.050 - .070
.530	.090	.010 - .020	.534	.186	.070 - .090	.540	.399	.025 - .040	.548	.170	.050 - .070	.551	.294	.012 - .025	.555	.438	.005 - .010
.530	.099	.015 - .030	.534	.193	.015 - .030	.540	.408	.015 - .025	.548	.211	.015 - .030	.551	.300	.020 - .040	.555	.440	.005 - .010
.530	.130	.040 - .060	.534	.207	.030 - .050	.540	.409	.005 - .010	.548	.303	.005 - .016	.551	.315	.005 - .010	.555	.443	.015 - .030
.530	.153	.080 - .104	.534	.220	.005 - .010	.540	.413	.040 - .050	.548	.325	.060 - .080	.551	.316	.005 - .050	.555	.445	.005 - .010
.530	.180	.005 - .010	.534	.284	.060 - .083	.540	.420	.015 - .030	.548	.329	.025 - .040	.551	.317	.005 - .010	.555	.475	.030 - .045
.530	.191	.005 - .010	.534	.361	.062 - .080	.540	.446	.005 - .010	.548	.397	.005 - .010	.551	.318	.050 - .070	.556	.120	.030 - .050
.530	.206	.100 - .125	.534	.394	.030 - .050	.541	.152	.060 - .090	.548	.401	.050 - .070	.551	.320	.005 - .010	.556	.123	.030 - .060
.530	.219	.030 - .050	.534	.441	.030 - .042	.541	.275	.010 - .020	.548	.452	.030 - .050	.551	.321	.005 - .010	.556	.136	.030 - .050
.530	.222	.020 - .035	.535	.064	.012 - .020	.541	.300	.010 - .020	.548	.453	.025 - .040	.551	.322	.005 - .010	.556	.172	.040 - .060
.530	.253	.005 - .010	.535	.228	.075 - .104	.541	.306	.010 - .020	.549	.099	.005 - .010	.551	.330	.050 - .070	.556	.197	.030 - .050
.530	.254	.015 - .030	.535	.238	.010 - .020	.541	.314	.050 - .060	.549	.216	.005 - .010	.551	.357	.015 - .030	.556	.200	.005 - .010
.530	.255	.015 - .030	.535	.239	.005 - .010	.541	.319	.030 - .050	.549	.316	.005 - .010	.551	.377	.010 - .020	.556	.263	.005 - .010
.530	.270	.100 - .125	.535	.244	.015 - .030	.541	.375	.030 - .050	.549	.326	.005 - .010	.551	.378	.010 - .010	.556	.281	.075 - .104
.530	.272	.100 - .125	.535	.298	.010 - .020	.541	.378	.040 - .060	.549	.334	.025 - .040	.551	.385	.005 - .010	.556	.317	.040 - .060
.530	.273	.100 - .125	.535	.310	.025 - .042	.541	.402	.005 - .030	.549	.452	.030 - .060	.551	.387	.010 - .020	.556	.327	.010 - .020
.530	.277	.005 - .010	.535	.314	.005 - .010	.541	.407	.040 - .060	.549	.455	.010 - .020	.551	.394	.005 - .040	.556	.383	.040 - .060
.530	.281	.040 - .050	.535	.318	.005 - .010	.541	.415	.005 - .010	.549	.476	.005 - .010	.551	.395	.050 - .070	.556	.441	.005 - .010
.530	.312	.005 - .010	.535	.320	.016 - .025	.542	.172	.010 - .020	.550	.032	.010 - .020	.551	.399	.010 - .040	.557	.242	.010 - .020
.530	.314	.015 - .070	.535	.325	.010 - .020	.542	.175	.020 - .040	.550	.105	.042 - .060	.551	.418	.036 - .060	.557	.262	.010 - .020
.530	.315	.010 - .020	.535	.335	.005 - .010	.542	.178	.030 - .050	.550	.120	.005 - .060	.551	.443	.010 - .025	.557	.317	.020 - .060
.530	.316	.025 - .040	.535	.338	.025 - .040	.542	.303	.060 - .080	.550	.140	.020 - .040	.551	.461	.005 - .010	.557	.380	.040 - .060
.530	.320	.025 - .040	.535	.343	.008 - .015	.542	.380	.040 - .060	.550	.158	.005 - .010	.551	.472	.005 - .030	.557	.387	.025 - .040
.530	.321	.010 - .020	.535	.357	.005 - .010	.542	.395	.005 - .010	.550	.159	.090 - .100	.552	.093	.025 - .040	.557	.396	.050 - .070
.530	.344	.060 - .083	.535	.378	.012 - .025	.542	.437	.010 - .020	.550	.173	.015 - .030	.552	.094	.005 - .008	.557	.421	.010 - .020
.530	.375	.005 - .010	.535	.379	.010 - .020	.542	.440	.020 - .040	.550	.190	.020 - .030	.552	.129	.031 - .048	.557	.446	.020 - .040
.530	.377	.005 - .010	.535	.384	.010 - .020	.542	.453	.005 - .010	.550	.193	.005 - .060	.552	.160	.020 - .040	.558	.288	.005 - .010
.530	.385	.050 - .060	.535	.445	.005 - .010	.543	.198	.040 - .060	.550	.208	.048 - .062	.552	.202	.015 - .030	.558	.327	.050 - .070
.530	.388	.010 - .020	.536	.105	.030 - .050	.543	.316	.020 - .040	.550	.240	.010 - .020	.552	.212	.060 - .080	.558	.331	.020 - .050
.530	.393	.005 - .010	.536	.191	.075 - .090	.543	.333	.005 - .010	.550	.245	.020 - .040	.552	.220	.005 - .010	.558	.360	.005 - .012
.530	.397	.025 - .035	.536	.242	.005 - .010	.543	.346	.030 - .050	.550	.250	.040 - .100	.552	.237	.005 - .020	.558	.361	.036 - .060
.530	.403	.005 - .010	.536	.259	.100 - .125	.543	.377	.015 - .025	.550	.255	.020 - .032	.552	.238	.005 - .010	.558	.414	.030 - .050
.530	.417	.005 - .010	.536	.264	.030 - .050	.543	.433	.005 - .010	.550	.258	.025 - .040	.552	.240	.010 - .020	.558	.486	.005 - .030
.530	.450	.015 - .030	.536	.276	.005 - .010	.543	.441	.005 - .010	.550	.259	.005 - .030	.552	.276	.030 - .040	.559	.032	.020 - .030
.530	.468	.005 - .030	.536	.324	.025 - .040	.544	.189	.005 - .010	.550	.271	.005 - .010	.552	.286	.010 - .020	.559	.060	.015 - .025
.530	.490	.005 - .010	.536	.346	.010 - .015	.544	.206	.020 - .040	.550	.282	.035 - .125	.552	.305	.025 - .060	.559	.128	.005 - .010
.531	.143	.015 - .050	.537	.104	.016 - .025	.544	.226	.010 - .020	.550	.300	.042 - .062	.552	.319	.005 - .010	.559	.135	.005 - .010
.531	.158	.032 - .048	.537	.243	.105 - .125	.544	.227	.020 - .040	.550	.304	.030 - .060	.552	.320	.090 - .010	.559	.145	.015 - .030
.531	.180	.050 - .075	.537	.283	.105 - .125	.544	.311	.030 - .040	.550	.315	.005 - .048	.552	.321	.005 - .010	.559	.209	.060 - .080
.531	.191	.012 - .020	.537	.370	.040 - .060	.544	.324	.005 - .010	.550	.316	.005 - .030	.552	.387	.040 - .060	.559	.216	.020 - .040
.531	.200	.015 - .030	.537	.375	.005 - .010	.544	.325	.020 - .040	.550	.317	.015 - .030	.552	.395	.005 - .015	.559	.225	.005 - .010
.531	.202	.015 - .030	.537	.394	.010 - .020	.544	.385	.005 - .010	.550	.319	.005 - .010	.552	.396	.050 - .075	.559	.259	.010 - .040
.531	.206	.005 - .030	.537	.409	.025 - .040	.544	.421	.005 - .010	.550	.322	.030 - .050	.552	.397	.005 - .010	.559	.285	.005 - .010
.531	.213	.005 - .010	.538	.210	.030 - .060	.544	.449	.015 - .030	.550	.323	.008 - .020	.552	.398	.005 - .010	.559	.311	.005 - .010
.531	.230	.105 - .125	.538	.219	.005 - .010	.544	.463	.005 - .010	.550	.332	.005 - .010	.552	.400	.025 - .040	.559	.322	.080 - .104
.531	.254	.060 - .083	.538	.257	.015 - .030	.544	.502	.010 - .020	.550	.344	.060 - .083	.552	.401	.010 - .015	.559	.347	.025 - .042
.531	.257	.010 - .060	.538	.309	.010 - .020	.545	.100	.042 - .060	.550	.351	.005 - .010	.552	.425	.040 - .050	.559	.349	.075 - .090
.531	.264	.030 - .050	.538	.340	.030 - .050	.545	.187	.005 - .012	.550	.357	.040 - .062	.552	.434	.015 - .030	.559	.379	.030 - .050
.531	.271	.025 - .035	.538	.342	.040 - .060	.545	.244	.005 - .060	.550	.375	.005 - .020	.552	.438	.005 - .010	.559	.388	.060 - .080
.531	.295	.015 - .030	.538	.385	.050 - .075	.545	.260	.050 - .070	.550	.380	.005 - .020	.552	.478	.005 - .010	.559	.391	.030 - .050
.531	.317	.010 - .060	.538	.440	.005 - .010	.545	.313	.005 - .010	.550	.381	.040 - .060	.553	.176	.010 - .020	.559	.454	.020 - .040
.531	.330	.040 - .060	.538	.457	.005 - .010	.545	.319	.015 - .050	.550	.390	.070 - .090	.553	.212	.060 - .080	.559	.471	.005 - .030
.531	.335	.090 - .120	.539	.195	.025 - .050	.545	.346	.042 - .062	.550	.398	.005 - .010	.553	.229	.005 - .010	.559	.480	.005 - .010
.531	.346	.042 - .062	.539	.252	.060 - .080	.545	.378	.040 - .060	.550	.400	.050 - .070	.553	.237	.005 - .010	.559	.507	.005 - .010
.531	.348	.050 - .072	.539	.278	.015 - .030	.545	.382	.040 - .062	.550	.404	.020 - .040	.553	.242	.040 - .060	.560	.113	.015 - .030
.531	.350	.040 - .062	.539	.318	.005 - .010	.545	.385	.005 - .010	.550	.408	.040 - .060	.553	.320	.005 - .010	.560	.118	.016 - .030
.531	.386	.010 - .020	.539	.366	.005 - .010	.545	.409	.010 - .020	.550	.409	.060 - .075	.553	.396	.015 - .030	.560	.120	.075 - .104
.531	.406	.050 - .060	.539	.367	.025 - .040	.545	.410	.020 - .030	.550	.415	.005 - .010	.554	.154	.015 - .030	.560	.128	.015 - .030
.531	.438	.005 - .010	.539	.380	.025 - .042	.545	.442	.005 - .010	.550	.421	.020 - .040	.554	.240	.005 - .010	.560	.131	.060 - .083
.531	.463	.015 - .030	.539	.399	.005 - .030	.545	.445	.005 - .010	.550	.427	.025 - .042	.554	.249	.030 - .050	.560	.135	.050 - .070
.532	.073	.010 - .020	.539	.420	.005 - .010	.546	.217	.005 - .010	.550	.429	.035 - .050	.554	.258	.025 - .035	.560	.149	.005 - .020
.532	.166	.100 - .125	.539	.425	.005 - .010	.546	.259	.005 - .010	.550	.479	.005 - .010	.554	.318	.090 - .110	.560	.161	.040 - .062
.532	.201	.005 - .010	.539	.447	.005 - .010	.546	.271	.010 - .020	.550	.487	.010 - .020	.554	.330	.005 - .010	.560	.172	.005 - .010
.532	.207	.062 - .090	.539	.469	.007 - .015	.546	.305	.005 - .010	.550	.498	.005 - .010	.554	.370	.005 - .020	.560	.180	.005 - .015
.532	.250	.005 - .015	.540	.162	.032 - .062	.546	.375	.030 - .050	.551	.081	.005 - .010	.554	.379	.010 - .020	.560	.190	.030 - .050
.532	.329	.040 - .075	.540	.186	.060 - .070	.546	.378	.015 - .030	.551	.095	.012 - .020	.554	.405	.030 - .048	.560	.192	.008 - .016
.532	.381	.030 - .050	.540	.220													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.590	.318	.030 - .050	.593	.472	.005 - .010	.599	.415	.005 - .010	.601	.461	.005 - .010	.610	.317	.010 - .020	.615	.153	.020 - .030
.590	.324	.005 - .010	.593	.478	.005 - .015	.599	.476	.050 - .070	.601	.480	.005 - .010	.610	.321	.080 - .100	.615	.212	.020 - .030
.590	.327	.050 - .075	.593	.497	.005 - .010	.599	.489	.005 - .010	.602	.101	.080 - .100	.610	.328	.050 - .075	.615	.240	.005 - .010
.590	.329	.042 - .062	.593	.518	.020 - .030	.600	.041	.015 - .025	.602	.180	.050 - .080	.610	.335	.015 - .030	.615	.267	.040 - .060
.590	.331	.010 - .020	.594	.061	.015 - .030	.600	.046	.005 - .010	.602	.254	.005 - .010	.610	.352	.020 - .040	.615	.298	.020 - .030
.590	.334	.005 - .010	.594	.283	.005 - .010	.600	.066	.020 - .035	.602	.255	.040 - .060	.610	.365	.010 - .020	.615	.315	.010 - .020
.590	.339	.035 - .060	.594	.312	.010 - .020	.600	.076	.020 - .030	.602	.407	.025 - .040	.610	.367	.020 - .030	.615	.321	.050 - .070
.590	.340	.010 - .050	.594	.315	.005 - .010	.600	.077	.005 - .010	.602	.486	.040 - .060	.610	.375	.050 - .060	.615	.322	.020 - .040
.590	.344	.032 - .050	.594	.325	.005 - .010	.600	.089	.020 - .040	.603	.227	.030 - .050	.610	.376	.060 - .125	.615	.341	.050 - .070
.590	.345	.040 - .060	.594	.358	.015 - .025	.600	.118	.015 - .030	.603	.479	.040 - .060	.610	.380	.010 - .020	.615	.352	.005 - .012
.590	.355	.005 - .010	.594	.375	.070 - .090	.600	.119	.080 - .100	.603	.498	.010 - .020	.610	.395	.015 - .030	.615	.359	.005 - .010
.590	.376	.020 - .032	.594	.378	.005 - .104	.600	.128	.032 - .048	.603	.504	.010 - .020	.610	.409	.005 - .010	.615	.377	.070 - .090
.590	.378	.005 - .010	.594	.383	.015 - .030	.600	.138	.040 - .105	.604	.252	.005 - .010	.610	.438	.050 - .070	.615	.386	.060 - .080
.590	.379	.025 - .040	.594	.405	.005 - .010	.600	.156	.025 - .040	.604	.255	.005 - .010	.610	.460	.040 - .060	.615	.387	.005 - .010
.590	.386	.005 - .010	.594	.423	.025 - .040	.600	.157	.025 - .040	.604	.307	.005 - .010	.610	.461	.060 - .075	.615	.395	.020 - .040
.590	.390	.032 - .062	.594	.452	.040 - .060	.600	.168	.070 - .090	.604	.308	.010 - .030	.610	.472	.050 - .075	.615	.408	.090 - .105
.590	.396	.005 - .012	.594	.506	.015 - .025	.600	.176	.005 - .010	.604	.340	.040 - .060	.610	.476	.040 - .060	.615	.420	.010 - .020
.590	.397	.005 - .050	.595	.144	.008 - .016	.600	.200	.005 - .010	.604	.347	.031 - .042	.610	.550	.005 - .010	.615	.441	.005 - .010
.590	.401	.005 - .010	.595	.186	.070 - .090	.600	.203	.020 - .040	.604	.381	.025 - .040	.611	.089	.040 - .060	.615	.448	.030 - .040
.590	.410	.040 - .060	.595	.193	.075 - .090	.600	.203	.100 - .120	.604	.384	.015 - .030	.611	.192	.020 - .030	.615	.460	.020 - .040
.590	.426	.070 - .080	.595	.195	.010 - .020	.600	.207	.015 - .030	.604	.407	.005 - .030	.611	.243	.062 - .090	.615	.478	.030 - .040
.590	.430	.005 - .060	.595	.251	.010 - .020	.600	.209	.040 - .060	.604	.439	.030 - .050	.611	.250	.062 - .090	.615	.492	.020 - .040
.590	.439	.005 - .010	.595	.253	.020 - .030	.600	.210	.075 - .090	.604	.502	.010 - .020	.611	.259	.040 - .060	.615	.510	.025 - .040
.590	.471	.015 - .025	.595	.256	.015 - .030	.600	.215	.005 - .010	.604	.508	.015 - .030	.611	.261	.005 - .010	.615	.511	.005 - .010
.590	.480	.005 - .020	.595	.320	.010 - .020	.600	.217	.050 - .075	.605	.163	.015 - .030	.611	.265	.105 - .125	.615	.520	.025 - .035
.590	.498	.025 - .040	.595	.353	.025 - .040	.600	.236	.005 - .010	.605	.190	.020 - .040	.611	.273	.005 - .010	.615	.536	.010 - .020
.590	.523	.005 - .008	.595	.359	.005 - .010	.600	.237	.040 - .060	.605	.313	.015 - .030	.611	.278	.005 - .010	.615	.537	.020 - .040
.591	.079	.020 - .030	.595	.413	.050 - .070	.600	.241	.005 - .030	.605	.317	.075 - .090	.611	.315	.050 - .010	.615	.540	.010 - .025
.591	.115	.020 - .040	.595	.430	.040 - .060	.600	.252	.005 - .010	.605	.359	.025 - .040	.611	.347	.005 - .010	.615	.551	.030 - .040
.591	.161	.050 - .070	.595	.436	.005 - .010	.600	.253	.005 - .060	.605	.388	.070 - .090	.611	.350	.030 - .050	.616	.044	.015 - .025
.591	.200	.040 - .060	.595	.437	.040 - .060	.600	.254	.015 - .030	.605	.416	.005 - .010	.611	.352	.005 - .010	.616	.160	.015 - .030
.591	.216	.050 - .070	.595	.495	.030 - .050	.600	.255	.005 - .010	.605	.453	.005 - .060	.611	.379	.025 - .040	.616	.167	.020 - .032
.591	.217	.015 - .025	.595	.515	.005 - .010	.600	.265	.010 - .020	.605	.566	.005 - .010	.611	.405	.060 - .083	.616	.192	.070 - .090
.591	.240	.075 - .090	.596	.099	.030 - .050	.600	.266	.005 - .010	.606	.198	.040 - .050	.611	.406	.080 - .090	.616	.251	.005 - .010
.591	.277	.005 - .010	.596	.129	.025 - .040	.600	.267	.005 - .010	.606	.203	.005 - .010	.611	.460	.025 - .040	.616	.256	.020 - .032
.591	.289	.080 - .105	.596	.207	.050 - .070	.600	.269	.025 - .040	.606	.285	.060 - .083	.611	.480	.040 - .070	.616	.259	.005 - .010
.591	.296	.050 - .070	.596	.401	.020 - .040	.600	.270	.005 - .010	.606	.312	.075 - .100	.611	.515	.020 - .040	.616	.268	.015 - .030
.591	.316	.010 - .020	.596	.409	.010 - .020	.600	.282	.005 - .010	.606	.380	.040 - .060	.612	.194	.100 - .125	.616	.323	.010 - .020
.591	.318	.010 - .020	.596	.443	.050 - .075	.600	.285	.005 - .010	.606	.389	.050 - .075	.612	.198	.008 - .020	.616	.328	.025 - .040
.591	.321	.015 - .030	.596	.485	.005 - .040	.600	.296	.015 - .105	.606	.400	.020 - .030	.612	.214	.030 - .050	.616	.377	.050 - .090
.591	.324	.040 - .060	.596	.503	.020 - .040	.600	.300	.005 - .010	.606	.462	.020 - .040	.612	.433	.040 - .060	.616	.384	.005 - .010
.591	.326	.005 - .010	.596	.510	.025 - .040	.600	.322	.030 - .080	.606	.480	.040 - .060	.612	.440	.042 - .062	.616	.386	.062 - .083
.591	.435	.050 - .070	.597	.130	.005 - .015	.600	.330	.080 - .090	.606	.505	.015 - .030	.612	.444	.010 - .030	.616	.410	.005 - .010
.591	.440	.040 - .050	.597	.251	.062 - .078	.600	.346	.005 - .010	.607	.247	.020 - .040	.612	.467	.005 - .010	.616	.412	.020 - .040
.591	.511	.010 - .020	.597	.305	.025 - .040	.600	.361	.015 - .030	.607	.251	.030 - .050	.612	.510	.040 - .050	.616	.456	.040 - .050
.592	.147	.005 - .010	.597	.388	.005 - .015	.600	.370	.040 - .060	.607	.333	.005 - .010	.612	.520	.005 - .010	.616	.478	.030 - .040
.592	.221	.005 - .010	.597	.406	.025 - .040	.600	.380	.015 - .090	.607	.388	.080 - .105	.613	.040	.020 - .030	.616	.480	.040 - .060
.592	.236	.005 - .010	.597	.452	.016 - .040	.600	.383	.010 - .020	.607	.461	.005 - .010	.613	.278	.050 - .070	.616	.505	.005 - .010
.592	.258	.030 - .050	.597	.470	.015 - .030	.600	.386	.010 - .020	.607	.531	.005 - .010	.613	.331	.050 - .070	.616	.524	.030 - .040
.592	.315	.010 - .015	.597	.512	.020 - .030	.600	.401	.010 - .020	.608	.204	.010 - .020	.613	.350	.050 - .070	.617	.310	.005 - .010
.592	.317	.005 - .010	.597	.513	.020 - .030	.600	.406	.020 - .030	.608	.249	.030 - .050	.613	.377	.015 - .030	.617	.318	.015 - .025
.592	.322	.005 - .010	.598	.159	.015 - .030	.600	.408	.040 - .060	.608	.252	.015 - .040	.613	.391	.025 - .040	.617	.351	.005 - .010
.592	.330	.040 - .062	.598	.180	.005 - .010	.600	.413	.010 - .020	.608	.253	.020 - .040	.613	.402	.005 - .010	.617	.359	.025 - .040
.592	.332	.005 - .010	.598	.215	.032 - .062	.600	.421	.005 - .010	.608	.254	.020 - .040	.613	.451	.030 - .050	.617	.362	.005 - .010
.592	.389	.005 - .010	.598	.264	.010 - .020	.600	.434	.005 - .010	.608	.283	.020 - .040	.613	.472	.005 - .010	.617	.385	.005 - .010
.592	.394	.040 - .060	.598	.271	.025 - .040	.600	.438	.005 - .010	.608	.293	.040 - .060	.613	.521	.020 - .042	.617	.448	.065 - .080
.592	.396	.040 - .060	.598	.304	.025 - .040	.600	.440	.010 - .020	.608	.350	.020 - .032	.614	.065	.005 - .010	.617	.496	.010 - .020
.592	.397	.020 - .040	.598	.313	.005 - .020	.600	.442	.030 - .050	.608	.392	.030 - .050	.614	.094	.040 - .060	.617	.514	.005 - .010
.592	.453	.020 - .042	.598	.321	.010 - .020	.600	.450	.040 - .060	.608	.397	.005 - .020	.614	.198	.050 - .090	.617	.560	.005 - .010
.592	.472	.040 - .060	.598	.340	.005 - .010	.600	.460	.030 - .050	.608	.505	.015 - .030	.614	.199	.060 - .078	.618	.120	.015 - .030
.592	.497	.005 - .010	.598	.387	.025 - .040	.600	.498	.005 - .010	.608	.509	.010 - .025	.614	.200	.060 - .083	.618	.124	.040 - .060
.593	.082	.032 - .062	.598	.412	.031 - .048	.600	.503	.005 - .010	.608	.518	.020 - .040	.614	.207	.020 - .040	.618	.164	.030 - .050
.593	.096	.005 - .010	.598	.442	.025 - .040	.600	.505	.020 - .030	.609	.128	.030 - .050	.614	.268	.005 - .010	.618	.185	.040 - .050
.593	.129	.005 - .012	.598	.494	.040 - .060	.600	.517	.005 - .010	.609	.274	.005 - .010	.614	.330	.015 - .030	.618	.215	.005 - .010
.593	.190	.032 - .060	.598	.504	.005 - .010	.600	.550	.005 - .010	.609	.297	.020 - .032	.614	.354	.050 - .070	.618	.216	.010 - .020
.593	.195	.015 - .030	.598	.506	.040 - .050	.601	.159	.080 - .100	.609	.400	.040 - .060	.614	.373	.050 - .070	.618	.259	.040 - .060
.593	.196	.015 - .040	.598	.511	.005 - .015	.601	.165	.005 - .010	.609	.487	.030 - .060	.614	.388	.015 - .030	.618	.262	.005 - .010
.593	.261	.005 - .010	.598	.527	.005 - .010	.601	.227	.005 - .030	.609	.506	.020 - .030	.614	.402	.010 - .020	.618	.364	.005 - .078
.593	.265	.025 - .042	.599	.128													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.627	.392	.005 - .010	.630	.326	.060 - .080	.634	.194	.015 - .025	.640	.576	.020 - .030	.648	.551	.005 - .010	.652	.510	.010 - .020
.627	.406	.050 - .090	.630	.330	.010 - .020	.634	.330	.005 - .010	.640	.579	.005 - .010	.649	.126	.020 - .050	.653	.154	.040 - .062
.627	.442	.005 - .010	.630	.331	.050 - .125	.634	.354	.010 - .030	.641	.125	.005 - .010	.649	.201	.090 - .100	.653	.238	.040 - .062
.627	.475	.020 - .030	.630	.336	.005 - .010	.634	.394	.005 - .010	.641	.243	.020 - .090	.649	.203	.025 - .040	.653	.276	.005 - .010
.627	.486	.012 - .025	.630	.346	.040 - .060	.634	.459	.020 - .030	.641	.265	.005 - .060	.649	.250	.005 - .010	.653	.316	.010 - .020
.627	.505	.050 - .070	.630	.354	.005 - .070	.634	.477	.008 - .016	.641	.308	.005 - .010	.649	.266	.125 - .135	.653	.317	.005 - .010
.627	.510	.005 - .040	.630	.363	.070 - .090	.634	.478	.005 - .010	.641	.320	.010 - .025	.649	.281	.005 - .020	.653	.376	.010 - .020
.627	.527	.005 - .010	.630	.368	.050 - .075	.634	.512	.010 - .020	.641	.332	.015 - .030	.649	.286	.070 - .090	.653	.392	.050 - .090
.627	.547	.007 - .012	.630	.384	.005 - .040	.635	.167	.015 - .035	.641	.368	.020 - .040	.649	.338	.030 - .050	.653	.414	.050 - .070
.628	.096	.030 - .050	.630	.387	.010 - .020	.635	.179	.010 - .015	.641	.470	.010 - .020	.649	.387	.005 - .010	.653	.442	.005 - .010
.628	.125	.005 - .010	.630	.394	.060 - .070	.635	.200	.025 - .040	.641	.475	.005 - .010	.649	.452	.005 - .010	.653	.542	.005 - .010
.628	.166	.050 - .070	.630	.395	.005 - .020	.635	.204	.010 - .020	.641	.501	.031 - .048	.649	.522	.005 - .010	.654	.142	.040 - .060
.628	.191	.040 - .060	.630	.397	.005 - .090	.635	.312	.035 - .050	.641	.522	.020 - .030	.649	.562	.005 - .010	.654	.267	.030 - .050
.628	.198	.005 - .010	.630	.400	.025 - .090	.635	.356	.010 - .020	.641	.533	.030 - .060	.649	.583	.005 - .010	.654	.270	.005 - .010
.628	.201	.040 - .060	.630	.401	.015 - .030	.635	.375	.032 - .042	.642	.153	.030 - .050	.650	.056	.005 - .010	.654	.276	.010 - .020
.628	.208	.020 - .040	.630	.403	.005 - .010	.635	.376	.005 - .010	.642	.254	.015 - .030	.650	.062	.020 - .040	.654	.363	.050 - .075
.628	.232	.030 - .050	.630	.404	.005 - .010	.635	.410	.005 - .010	.642	.411	.005 - .010	.650	.076	.005 - .010	.654	.389	.015 - .040
.628	.238	.050 - .070	.630	.415	.080 - .105	.635	.443	.020 - .030	.642	.449	.005 - .010	.650	.118	.010 - .030	.654	.480	.010 - .020
.628	.261	.040 - .060	.630	.417	.050 - .070	.635	.470	.030 - .042	.642	.477	.070 - .090	.650	.161	.005 - .015	.654	.510	.025 - .040
.628	.271	.005 - .010	.630	.427	.005 - .010	.635	.531	.025 - .040	.642	.482	.020 - .040	.650	.162	.040 - .060	.654	.564	.005 - .012
.628	.287	.090 - .105	.630	.440	.070 - .090	.636	.179	.008 - .015	.642	.536	.007 - .012	.650	.212	.005 - .010	.654	.574	.015 - .025
.628	.331	.105 - .120	.630	.443	.070 - .090	.636	.212	.005 - .010	.643	.169	.005 - .010	.650	.236	.005 - .010	.655	.124	.015 - .030
.628	.375	.060 - .083	.630	.461	.015 - .030	.636	.275	.005 - .010	.643	.174	.005 - .010	.650	.250	.020 - .030	.655	.125	.040 - .060
.628	.477	.005 - .010	.630	.475	.010 - .020	.636	.381	.015 - .030	.643	.256	.010 - .020	.650	.255	.020 - .040	.655	.142	.015 - .030
.628	.483	.030 - .050	.630	.478	.010 - .020	.636	.384	.005 - .010	.643	.322	.015 - .030	.650	.260	.042 - .060	.655	.167	.030 - .050
.628	.510	.010 - .020	.630	.479	.040 - .050	.636	.393	.020 - .030	.643	.370	.005 - .010	.650	.260	.130 - .150	.655	.191	.010 - .020
.628	.511	.040 - .060	.630	.499	.005 - .010	.636	.410	.005 - .015	.643	.502	.005 - .010	.650	.290	.015 - .030	.655	.223	.080 - .100
.628	.555	.020 - .030	.630	.500	.015 - .030	.636	.454	.015 - .030	.643	.503	.015 - .030	.650	.311	.075 - .090	.655	.256	.020 - .040
.629	.095	.062 - .078	.630	.502	.015 - .030	.636	.565	.005 - .010	.643	.530	.005 - .010	.650	.312	.005 - .120	.655	.318	.005 - .010
.629	.149	.015 - .030	.630	.518	.010 - .020	.637	.244	.020 - .040	.644	.171	.005 - .010	.650	.315	.010 - .020	.655	.378	.030 - .090
.629	.177	.005 - .010	.630	.534	.005 - .010	.637	.356	.005 - .010	.644	.257	.050 - .070	.650	.316	.005 - .010	.655	.379	.010 - .020
.629	.226	.005 - .010	.630	.554	.005 - .010	.637	.381	.025 - .040	.644	.316	.020 - .035	.650	.317	.005 - .010	.655	.381	.020 - .030
.629	.290	.050 - .083	.630	.558	.005 - .020	.637	.399	.105 - .125	.644	.346	.015 - .030	.650	.319	.005 - .010	.655	.419	.005 - .010
.629	.292	.042 - .060	.631	.150	.040 - .060	.637	.425	.012 - .020	.644	.396	.025 - .040	.650	.325	.050 - .075	.655	.421	.050 - .070
.629	.316	.005 - .010	.631	.154	.050 - .070	.637	.520	.005 - .010	.644	.454	.025 - .040	.650	.326	.005 - .010	.655	.465	.005 - .010
.629	.319	.005 - .010	.631	.238	.005 - .010	.638	.156	.032 - .048	.644	.477	.020 - .030	.650	.357	.015 - .030	.655	.488	.005 - .010
.629	.344	.005 - .010	.631	.240	.010 - .020	.638	.263	.040 - .060	.644	.503	.020 - .040	.650	.374	.015 - .030	.655	.512	.015 - .025
.629	.351	.090 - .110	.631	.315	.015 - .030	.638	.338	.020 - .040	.644	.531	.030 - .050	.650	.377	.005 - .030	.655	.525	.040 - .060
.629	.356	.010 - .020	.631	.316	.005 - .010	.638	.401	.005 - .010	.645	.152	.030 - .050	.650	.380	.050 - .070	.655	.528	.005 - .010
.629	.391	.030 - .050	.631	.318	.005 - .010	.638	.401	.015 - .030	.645	.170	.035 - .050	.650	.388	.070 - .090	.655	.530	.005 - .010
.629	.406	.030 - .050	.631	.319	.005 - .010	.638	.410	.020 - .040	.645	.214	.010 - .020	.650	.397	.005 - .010	.656	.118	.030 - .050
.629	.407	.030 - .050	.631	.320	.005 - .010	.638	.506	.025 - .040	.645	.316	.020 - .032	.650	.404	.040 - .060	.656	.190	.075 - .090
.629	.427	.005 - .010	.631	.374	.105 - .125	.639	.199	.060 - .080	.645	.347	.025 - .040	.650	.410	.080 - .090	.656	.195	.050 - .075
.629	.472	.030 - .080	.631	.378	.060 - .080	.639	.322	.005 - .010	.645	.393	.050 - .062	.650	.424	.005 - .010	.656	.196	.020 - .040
.629	.473	.005 - .020	.631	.386	.060 - .080	.639	.325	.010 - .020	.645	.434	.032 - .048	.650	.469	.050 - .070	.656	.258	.030 - .050
.629	.507	.005 - .030	.631	.387	.010 - .020	.639	.394	.020 - .040	.645	.441	.060 - .080	.650	.500	.005 - .010	.656	.267	.050 - .075
.629	.512	.015 - .030	.631	.396	.005 - .010	.639	.415	.025 - .040	.645	.470	.005 - .010	.650	.503	.015 - .030	.656	.278	.005 - .010
.629	.517	.005 - .010	.631	.399	.010 - .020	.639	.438	.030 - .050	.645	.510	.005 - .010	.650	.505	.020 - .030	.656	.290	.070 - .090
.630	.052	.015 - .030	.631	.403	.060 - .080	.639	.439	.040 - .050	.645	.518	.040 - .060	.650	.507	.010 - .020	.656	.320	.025 - .040
.630	.128	.005 - .010	.631	.411	.020 - .030	.639	.453	.005 - .010	.645	.579	.005 - .010	.650	.534	.025 - .040	.656	.341	.030 - .050
.630	.138	.030 - .060	.631	.437	.005 - .010	.639	.524	.025 - .035	.646	.204	.060 - .070	.650	.553	.010 - .020	.656	.345	.005 - .010
.630	.140	.020 - .040	.631	.452	.060 - .080	.639	.550	.005 - .010	.646	.210	.060 - .110	.650	.562	.005 - .010	.656	.377	.015 - .030
.630	.141	.100 - .120	.631	.521	.040 - .060	.639	.576	.015 - .030	.646	.255	.020 - .030	.651	.147	.042 - .060	.656	.387	.030 - .050
.630	.158	.050 - .060	.632	.160	.030 - .040	.640	.036	.015 - .030	.646	.257	.005 - .010	.651	.160	.020 - .030	.656	.397	.015 - .025
.630	.163	.050 - .060	.632	.239	.005 - .010	.640	.073	.025 - .040	.646	.273	.020 - .035	.651	.229	.005 - .010	.656	.404	.080 - .104
.630	.174	.050 - .075	.632	.253	.015 - .030	.640	.168	.025 - .040	.646	.316	.005 - .012	.651	.315	.010 - .020	.656	.406	.090 - .125
.630	.177	.030 - .050	.632	.261	.020 - .040	.640	.175	.025 - .042	.646	.344	.020 - .030	.651	.374	.010 - .020	.656	.453	.005 - .040
.630	.188	.090 - .105	.632	.285	.005 - .010	.640	.186	.030 - .050	.646	.393	.090 - .105	.651	.377	.030 - .050	.656	.458	.040 - .060
.630	.204	.050 - .065	.632	.317	.005 - .010	.640	.251	.020 - .040	.646	.409	.005 - .010	.651	.379	.005 - .010	.656	.460	.025 - .035
.630	.209	.105 - .125	.632	.320	.005 - .010	.640	.256	.005 - .010	.646	.447	.005 - .010	.651	.380	.015 - .030	.656	.470	.035 - .050
.630	.214	.065 - .080	.632	.357	.005 - .010	.640	.299	.005 - .010	.646	.539	.005 - .010	.651	.394	.005 - .010	.656	.489	.005 - .010
.630	.236	.005 - .025	.632	.359	.025 - .040	.640	.334	.005 - .010	.647	.131	.005 - .010	.651	.398	.005 - .010	.656	.500	.030 - .050
.630	.237	.005 - .020	.632	.387	.020 - .060	.640	.342	.040 - .060	.647	.191	.030 - .050	.651	.450	.010 - .020	.656	.503	.010 - .020
.630	.238	.005 - .010	.632	.426	.070 - .090	.640	.361	.030 - .050	.647	.283	.030 - .050	.651	.460	.005 - .010	.656	.510	.005 - .010
.630	.239	.005 - .010	.632	.475	.040 - .060	.640	.377	.030 - .040	.647	.355	.010 - .020	.651	.465	.010 - .020	.656	.511	.005 - .030
.630	.241	.050 - .060	.632	.480	.005 - .072	.640	.390	.050 - .075	.647	.381	.105 - .125	.651	.485	.040 - .060	.656	.515	.015 - .030
.630	.243	.005 - .010	.632	.547	.010 - .020	.640	.400	.005 - .010	.647	.407	.030 - .050	.651	.505	.005 - .010	.656	.528	.015 - .030
.630	.247	.030 - .050	.633	.119	.005 - .010	.640	.406	.005 - .010	.647	.472	.015 - .030	.651	.551	.005 - .030	.656	.563	.020 - .040
.630	.254	.025 - .040	.633	.172													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.687	.198	.090 - .105	.688	.378	.050 - .075	.690	.566	.030 - .050	.699	.380	.005 - .010	.700	.533	.030 - .050	.705	.098	.005 - .010
.687	.199	.015 - .020	.688	.381	.005 - .010	.690	.569	.010 - .020	.699	.483	.005 - .020	.700	.535	.040 - .050	.705	.248	.015 - .030
.687	.200	.032 - .042	.688	.384	.050 - .070	.690	.575	.010 - .020	.699	.500	.010 - .020	.700	.550	.005 - .010	.705	.253	.050 - .072
.687	.219	.036 - .050	.688	.386	.050 - .070	.690	.615	.020 - .030	.699	.502	.005 - .010	.700	.555	.015 - .030	.705	.265	.020 - .040
.687	.221	.020 - .062	.688	.391	.105 - .125	.690	.625	.010 - .020	.699	.503	.070 - .090	.700	.560	.005 - .030	.705	.274	.005 - .010
.687	.234	.005 - .010	.688	.393	.075 - .090	.690	.639	.005 - .010	.699	.505	.010 - .020	.700	.564	.025 - .072	.705	.311	.005 - .010
.687	.237	.005 - .010	.688	.407	.005 - .010	.691	.163	.025 - .040	.699	.514	.060 - .080	.700	.565	.010 - .060	.705	.312	.005 - .010
.687	.257	.080 - .090	.688	.452	.030 - .050	.691	.189	.050 - .070	.699	.562	.040 - .060	.700	.566	.015 - .032	.705	.317	.005 - .010
.687	.259	.005 - .010	.688	.464	.080 - .100	.691	.192	.020 - .040	.700	.076	.010 - .020	.700	.578	.005 - .010	.705	.361	.105 - .125
.687	.267	.030 - .048	.688	.468	.020 - .040	.691	.194	.015 - .030	.700	.077	.005 - .010	.700	.585	.005 - .010	.705	.383	.010 - .020
.687	.296	.050 - .075	.688	.469	.015 - .030	.691	.203	.005 - .010	.700	.093	.005 - .010	.700	.600	.010 - .020	.705	.438	.005 - .010
.687	.306	.040 - .060	.688	.505	.060 - .080	.691	.238	.030 - .050	.700	.096	.050 - .062	.700	.608	.005 - .010	.705	.516	.025 - .040
.687	.312	.120 - .156	.688	.513	.050 - .075	.691	.258	.060 - .080	.700	.120	.070 - .090	.700	.610	.015 - .030	.705	.531	.005 - .010
.687	.316	.036 - .048	.688	.518	.005 - .010	.691	.475	.030 - .060	.700	.129	.005 - .010	.700	.615	.005 - .010	.705	.550	.030 - .050
.687	.323	.048 - .062	.688	.538	.015 - .040	.691	.485	.005 - .010	.700	.138	.010 - .020	.700	.631	.005 - .010	.705	.570	.050 - .070
.687	.328	.005 - .012	.688	.563	.005 - .010	.691	.511	.020 - .030	.700	.159	.040 - .060	.700	.651	.005 - .010	.705	.634	.015 - .025
.687	.330	.050 - .075	.688	.615	.015 - .030	.691	.515	.015 - .030	.700	.164	.010 - .020	.701	.130	.060 - .080	.706	.254	.030 - .050
.687	.339	.050 - .070	.689	.156	.040 - .060	.691	.598	.005 - .010	.700	.168	.050 - .070	.701	.153	.048 - .090	.706	.347	.005 - .010
.687	.343	.005 - .010	.689	.162	.100 - .120	.692	.286	.042 - .062	.700	.169	.040 - .060	.701	.168	.005 - .010	.706	.390	.005 - .010
.687	.350	.050 - .075	.689	.222	.090 - .120	.692	.406	.020 - .040	.700	.176	.005 - .010	.701	.193	.040 - .060	.706	.395	.062 - .083
.687	.359	.025 - .048	.689	.249	.005 - .010	.692	.519	.005 - .010	.700	.193	.005 - .010	.701	.204	.050 - .070	.706	.398	.050 - .070
.687	.371	.100 - .125	.689	.273	.005 - .010	.692	.603	.015 - .030	.700	.210	.050 - .070	.701	.224	.040 - .060	.706	.402	.005 - .010
.687	.376	.010 - .020	.689	.281	.050 - .070	.693	.119	.005 - .012	.700	.221	.020 - .040	.701	.241	.050 - .070	.706	.420	.005 - .010
.687	.378	.010 - .020	.689	.313	.020 - .040	.693	.236	.005 - .010	.700	.221	.075 - .090	.701	.257	.050 - .100	.706	.434	.025 - .040
.687	.379	.005 - .010	.689	.319	.025 - .040	.693	.320	.005 - .010	.700	.250	.070 - .090	.701	.259	.005 - .010	.706	.453	.023 - .042
.687	.380	.025 - .040	.689	.320	.005 - .010	.693	.396	.050 - .075	.700	.252	.010 - .020	.701	.285	.005 - .010	.706	.478	.040 - .060
.687	.384	.010 - .040	.689	.325	.040 - .060	.693	.410	.025 - .040	.700	.253	.005 - .010	.701	.321	.125 - .135	.706	.500	.075 - .100
.687	.385	.005 - .010	.689	.345	.040 - .060	.693	.438	.020 - .030	.700	.256	.040 - .060	.701	.410	.005 - .010	.706	.505	.010 - .060
.687	.386	.070 - .090	.689	.375	.010 - .020	.693	.443	.005 - .010	.700	.272	.060 - .080	.701	.419	.050 - .070	.707	.315	.100 - .125
.687	.393	.005 - .015	.689	.377	.050 - .070	.693	.539	.050 - .070	.700	.291	.005 - .010	.701	.425	.050 - .070	.707	.316	.005 - .125
.687	.397	.050 - .075	.689	.398	.005 - .010	.694	.200	.080 - .100	.700	.313	.010 - .020	.701	.438	.040 - .060	.707	.320	.005 - .010
.687	.406	.040 - .050	.689	.401	.015 - .030	.694	.275	.020 - .040	.700	.317	.005 - .020	.701	.500	.010 - .060	.707	.335	.020 - .040
.687	.416	.050 - .060	.689	.402	.032 - .048	.694	.370	.010 - .020	.700	.320	.005 - .010	.701	.521	.080 - .100	.707	.436	.005 - .010
.687	.432	.050 - .070	.689	.408	.100 - .125	.694	.379	.060 - .070	.700	.327	.015 - .020	.701	.549	.020 - .030	.707	.472	.015 - .030
.687	.433	.050 - .125	.689	.435	.005 - .010	.694	.478	.060 - .070	.700	.328	.010 - .025	.701	.561	.010 - .020	.707	.480	.005 - .010
.687	.438	.005 - .020	.689	.437	.005 - .010	.694	.484	.050 - .070	.700	.330	.100 - .125	.701	.614	.015 - .030	.708	.120	.072 - .120
.687	.441	.020 - .070	.689	.468	.015 - .125	.695	.195	.015 - .025	.700	.337	.050 - .070	.702	.255	.005 - .010	.708	.136	.040 - .060
.687	.443	.030 - .125	.689	.471	.005 - .010	.695	.196	.032 - .062	.700	.344	.007 - .020	.702	.261	.100 - .120	.708	.170	.040 - .060
.687	.445	.012 - .020	.689	.472	.030 - .050	.695	.264	.005 - .012	.700	.356	.005 - .010	.702	.312	.010 - .020	.708	.218	.005 - .030
.687	.452	.010 - .020	.689	.493	.040 - .060	.695	.265	.030 - .060	.700	.357	.010 - .020	.702	.319	.020 - .030	.708	.236	.030 - .050
.687	.455	.050 - .100	.689	.494	.050 - .075	.695	.282	.005 - .010	.700	.358	.040 - .060	.702	.325	.005 - .010	.708	.238	.005 - .010
.687	.465	.080 - .100	.689	.500	.005 - .010	.695	.335	.025 - .040	.700	.360	.030 - .050	.702	.327	.105 - .125	.708	.239	.030 - .050
.687	.468	.040 - .060	.689	.517	.030 - .050	.695	.353	.010 - .020	.700	.366	.090 - .105	.702	.401	.025 - .040	.708	.253	.040 - .060
.687	.469	.050 - .080	.689	.564	.010 - .030	.695	.412	.080 - .104	.700	.376	.010 - .020	.702	.437	.090 - .105	.708	.257	.050 - .070
.687	.475	.015 - .030	.689	.565	.010 - .020	.695	.414	.012 - .025	.700	.377	.020 - .040	.702	.487	.050 - .070	.708	.271	.105 - .120
.687	.481	.050 - .070	.689	.577	.030 - .050	.695	.486	.060 - .070	.700	.378	.005 - .030	.702	.504	.012 - .025	.708	.279	.060 - .080
.687	.487	.025 - .040	.690	.076	.010 - .020	.695	.505	.050 - .070	.700	.380	.040 - .060	.702	.505	.005 - .010	.708	.293	.050 - .070
.687	.500	.010 - .050	.690	.149	.050 - .060	.695	.518	.030 - .040	.700	.381	.005 - .010	.702	.516	.050 - .075	.708	.305	.005 - .010
.687	.503	.005 - .010	.690	.157	.005 - .010	.695	.520	.005 - .010	.700	.383	.040 - .060	.702	.561	.015 - .030	.708	.315	.005 - .010
.687	.506	.005 - .010	.690	.167	.005 - .010	.695	.557	.005 - .010	.700	.385	.090 - .105	.702	.595	.025 - .040	.708	.319	.005 - .070
.687	.510	.050 - .060	.690	.173	.050 - .070	.695	.558	.015 - .030	.700	.392	.010 - .020	.702	.635	.010 - .020	.708	.322	.005 - .010
.687	.511	.020 - .040	.690	.188	.040 - .060	.695	.626	.015 - .025	.700	.394	.135 - .156	.703	.119	.030 - .050	.708	.335	.020 - .030
.687	.513	.042 - .062	.690	.190	.010 - .020	.696	.037	.007 - .015	.700	.397	.005 - .010	.703	.206	.025 - .040	.708	.338	.005 - .010
.687	.517	.030 - .048	.690	.192	.060 - .080	.696	.147	.005 - .015	.700	.405	.120 - .134	.703	.263	.005 - .010	.708	.339	.040 - .060
.687	.564	.005 - .010	.690	.202	.030 - .050	.696	.156	.005 - .010	.700	.406	.050 - .150	.703	.409	.010 - .020	.708	.341	.005 - .010
.687	.566	.005 - .015	.690	.206	.050 - .075	.696	.166	.062 - .090	.700	.411	.005 - .060	.703	.442	.005 - .020	.708	.347	.005 - .010
.687	.603	.005 - .010	.690	.220	.020 - .032	.696	.178	.062 - .078	.700	.417	.005 - .020	.703	.480	.030 - .050	.708	.354	.050 - .060
.688	.130	.050 - .060	.690	.250	.125 - .135	.696	.196	.050 - .070	.700	.435	.005 - .010	.703	.482	.050 - .070	.708	.372	.010 - .020
.688	.168	.050 - .060	.690	.254	.050 - .070	.696	.281	.090 - .120	.700	.437	.005 - .010	.703	.487	.040 - .050	.708	.375	.005 - .010
.688	.205	.025 - .040	.690	.264	.105 - .125	.696	.458	.025 - .042	.700	.441	.005 - .020	.703	.516	.020 - .040	.708	.393	.005 - .020
.688	.206	.040 - .060	.690	.265	.100 - .125	.696	.498	.005 - .010	.700	.443	.105 - .125	.703	.525	.030 - .050	.708	.394	.050 - .070
.688	.216	.050 - .070	.690	.280	.050 - .075	.696	.531	.015 - .030	.700	.446	.010 - .020	.703	.540	.040 - .060	.708	.395	.010 - .020
.688	.253	.010 - .020	.690	.281	.050 - .070	.697	.313	.090 - .110	.700	.450	.005 - .080	.703	.635	.010 - .020	.708	.404	.050 - .070
.688	.259	.040 - .060	.690	.317	.080 - .100	.697	.532	.025 - .040	.700	.455	.005 - .010	.704	.078	.040 - .060	.708	.413	.080 - .100
.688	.263	.005 - .190	.690	.323	.020 - .070	.698	.231	.005 - .010	.700	.456	.030 - .050	.704	.259	.050 - .070	.708	.415	.025 - .040
.688	.284	.005 - .010	.690	.330	.105 - .135	.698	.361	.005 - .010	.700	.465	.020 - .040	.704	.264	.060 - .080	.708	.478	.010 - .020
.688	.311	.010 - .040	.690	.336	.060 - .075	.698	.477	.005 - .010	.700	.473	.005 - .010	.704	.268	.060 - .090	.708	.478	.080 - .090
.688	.313	.020 - .140	.690	.343	.050 - .070	.698	.500	.005 - .010	.700	.476	.005 - .010	.704	.336	.005 - .010	.708	.512	.005 - .040
.688	.316	.005 - .010	.690	.344													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.740	.510	.040 - .060	.744	.504	.005 - .010	.746	.564	.015 - .030	.748	.513	.070 - .090	.750	.285	.015 - .135
.740	.511	.005 - .010	.744	.507	.040 - .075	.746	.565	.075 - .090	.748	.553	.005 - .010		.288	.015 - .030
.740	.550	.005 - .010	.744	.523	.030 - .050	.746	.579	.025 - .048	.748	.563	.015 - .030		.291	.100 - .125
.740	.571	.005 - .010	.744	.525	.040 - .050	.746	.608	.050 - .070	.748	.570	.005 - .012		.293	.100 - .125
.740	.603	.005 - .010	.744	.532	.010 - .020	.746	.621	.005 - .010	.748	.573	.012 - .020		.295	.015 - .030
.740	.626	.005 - .010	.744	.561	.005 - .010	.746	.627	.020 - .040	.748	.582	.005 - .010		.299	.010 - .020
.740	.628	.005 - .010	.744	.599	.005 - .012	.746	.634	.010 - .020	.748	.626	.040 - .060		.303	.060 - .080
.740	.631	.005 - .010	.744	.622	.020 - .040	.746	.670	.005 - .010	.748	.629	.010 - .020		.312	.035 - .050
.740	.659	.005 - .010	.745	.095	.005 - .010	.747	.131	.025 - .040	.748	.632	.015 - .030		.313	.020 - .135
.740	.660	.020 - .030	.745	.120	.015 - .040	.747	.143	.030 - .050	.748	.634	.005 - .030		.315	.025 - .190
.740	.691	.005 - .010	.745	.126	.032 - .050	.747	.214	.065 - .080	.748	.635	.015 - .025	.750	.316	.007 - .125
.740	.696	.010 - .020	.745	.143	.035 - .055	.747	.235	.005 - .010	.748	.644	.025 - .040	.750	.317	.005 - .030
.741	.201	.015 - .025	.745	.184	.010 - .020	.747	.261	.015 - .025	.748	.670	.005 - .015	.750	.318	.005 - .015
.741	.203	.060 - .080	.745	.190	.040 - .060	.747	.268	.005 - .010	.748	.693	.005 - .010	.750	.319	.040 - .100
.741	.261	.156 - .187	.745	.191	.025 - .035	.747	.269	.040 - .060	.749	.064	.030 - .050	.750	.320	.015 - .025
.741	.291	.015 - .025	.745	.193	.020 - .060	.747	.315	.005 - .010	.749	.087	.015 - .030	.750	.321	.005 - .010
.741	.296	.015 - .030	.745	.200	.050 - .070	.747	.316	.030 - .040	.749	.160	.008 - .016	.750	.325	.125 - .156
.741	.322	.050 - .075	.745	.214	.015 - .030	.747	.317	.040 - .060	.749	.161	.060 - .090	.750	.326	.025 - .040
.741	.378	.050 - .080	.745	.234	.040 - .060	.747	.324	.020 - .030	.749	.162	.030 - .050	.750	.327	.062 - .090
.741	.395	.025 - .040	.745	.244	.005 - .010	.747	.376	.010 - .020	.749	.181	.060 - .090	.750	.329	.070 - .090
.741	.412	.080 - .105	.745	.255	.032 - .050	.747	.377	.010 - .015	.749	.190	.010 - .020	.750	.330	.025 - .040
.741	.505	.060 - .083	.745	.265	.050 - .125	.747	.380	.008 - .016	.749	.194	.090 - .125	.750	.331	.005 - .010
.741	.515	.040 - .060	.745	.291	.005 - .010	.747	.395	.010 - .020	.749	.200	.020 - .042	.750	.333	.005 - .010
.741	.529	.010 - .020	.745	.316	.060 - .070	.747	.397	.105 - .125	.749	.203	.125 - .156	.750	.337	.042 - .072
.741	.531	.050 - .070	.745	.317	.105 - .135	.747	.468	.030 - .050	.749	.204	.005 - .060	.750	.344	.075 - .100
.741	.562	.030 - .060	.745	.320	.080 - .105	.747	.475	.008 - .012	.749	.220	.105 - .135	.750	.345	.005 - .125
.741	.570	.020 - .040	.745	.330	.015 - .030	.747	.478	.005 - .015	.749	.221	.040 - .060	.750	.348	.005 - .010
.741	.636	.015 - .030	.745	.389	.050 - .070	.747	.491	.005 - .010	.749	.229	.160 - .187	.750	.350	.072 - .090
.741	.640	.005 - .010	.745	.403	.050 - .060	.747	.508	.100 - .125	.749	.237	.005 - .030	.750	.354	.005 - .010
.741	.690	.005 - .010	.745	.422	.090 - .100	.747	.510	.015 - .030	.749	.252	.025 - .040	.750	.356	.070 - .080
.742	.149	.005 - .010	.745	.438	.020 - .036	.747	.517	.010 - .020	.749	.257	.072 - .120	.750	.359	.015 - .125
.742	.226	.075 - .100	.745	.451	.010 - .020	.747	.561	.010 - .025	.749	.258	.030 - .040	.750	.362	.050 - .075
.742	.251	.040 - .060	.745	.454	.120 - .140	.747	.566	.050 - .070	.749	.263	.030 - .050	.750	.364	.005 - .010
.742	.271	.110 - .130	.745	.455	.032 - .050	.747	.594	.005 - .010	.749	.268	.060 - .090	.750	.374	.010 - .020
.742	.346	.020 - .030	.745	.468	.005 - .012	.747	.618	.005 - .010	.749	.272	.005 - .010	.750	.375	.005 - .010
.742	.360	.050 - .060	.745	.509	.005 - .010	.747	.628	.005 - .010	.749	.286	.105 - .120	.750	.376	.005 - .125
.742	.378	.080 - .104	.745	.510	.020 - .040	.747	.632	.030 - .050	.749	.313	.005 - .040	.750	.377	.005 - .010
.742	.380	.030 - .050	.745	.538	.030 - .050	.747	.651	.005 - .010	.749	.315	.005 - .010	.750	.378	.005 - .187
.742	.387	.100 - .135	.745	.541	.010 - .025	.747	.691	.015 - .025	.749	.316	.005 - .010	.750	.379	.015 - .040
.742	.389	.042 - .062	.745	.558	.010 - .020	.748	.066	.015 - .030	.749	.322	.005 - .010	.750	.381	.048 - .062
.742	.426	.050 - .070	.745	.560	.005 - .010	.748	.136	.031 - .042	.749	.323	.105 - .125	.750	.382	.020 - .040
.742	.443	.025 - .060	.745	.562	.020 - .030	.748	.139	.020 - .042	.749	.330	.060 - .090	.750	.383	.060 - .083
.742	.462	.005 - .010	.745	.571	.005 - .010	.748	.140	.005 - .010	.749	.347	.020 - .035	.750	.384	.005 - .020
.742	.466	.060 - .075	.745	.576	.042 - .060	.748	.147	.062 - .075	.749	.350	.005 - .010	.750	.385	.005 - .010
.742	.474	.080 - .100	.745	.591	.030 - .050	.748	.173	.032 - .050	.749	.351	.005 - .010	.750	.387	.050 - .080
.742	.502	.060 - .070	.745	.599	.005 - .010	.748	.180	.008 - .016	.749	.364	.005 - .010	.750	.388	.025 - .040
.742	.517	.005 - .030	.745	.605	.005 - .010	.748	.201	.060 - .090	.749	.375	.025 - .040	.750	.389	.050 - .070
.742	.566	.025 - .040	.745	.626	.040 - .060	.748	.237	.005 - .010	.749	.379	.036 - .060	.750	.390	.005 - .105
.742	.593	.025 - .040	.745	.628	.005 - .010	.748	.238	.005 - .010	.749	.386	.005 - .010	.750	.394	.100 - .125
.742	.671	.010 - .020	.745	.661	.010 - .015	.748	.239	.050 - .070	.749	.387	.005 - .010	.750	.395	.020 - .050
.743	.144	.070 - .090	.745	.693	.010 - .020	.748	.241	.040 - .060	.749	.395	.005 - .010	.750	.396	.060 - .070
.743	.271	.050 - .075	.746	.100	.032 - .050	.748	.249	.050 - .075	.749	.397	.015 - .025	.750	.400	.010 - .040
.743	.390	.005 - .010	.746	.125	.015 - .030	.748	.252	.005 - .010	.749	.402	.100 - .120	.750	.402	.042 - .060
.743	.417	.005 - .010	.746	.166	.050 - .075	.748	.254	.060 - .090	.749	.403	.005 - .008	.750	.406	.010 - .030
.743	.475	.040 - .050	.746	.200	.060 - .080	.748	.255	.005 - .010	.749	.408	.005 - .010	.750	.407	.120 - .134
.743	.488	.060 - .080	.746	.203	.030 - .050	.748	.259	.008 - .016	.749	.424	.040 - .060	.750	.411	.060 - .070
.743	.520	.070 - .090	.746	.204	.070 - .090	.748	.315	.005 - .010	.749	.437	.042 - .060	.750	.413	.005 - .015
.743	.531	.005 - .010	.746	.253	.040 - .060	.748	.316	.005 - .190	.749	.438	.010 - .020	.750	.415	.005 - .010
.743	.541	.005 - .010	.746	.260	.005 - .010	.748	.318	.005 - .020	.749	.440	.005 - .070	.750	.419	.080 - .100
.743	.556	.005 - .008	.746	.285	.005 - .010	.748	.322	.005 - .010	.749	.445	.005 - .015	.750	.420	.105 - .125
.743	.572	.040 - .060	.746	.316	.005 - .030	.748	.328	.105 - .134	.749	.459	.005 - .010	.750	.426	.005 - .010
.743	.596	.005 - .010	.746	.318	.078 - .090	.748	.331	.015 - .030	.749	.468	.005 - .010	.750	.437	.005 - .010
.743	.600	.010 - .080	.746	.319	.040 - .060	.748	.357	.070 - .090	.749	.471	.050 - .070	.750	.438	.040 - .062
.743	.623	.010 - .020	.746	.379	.040 - .060	.748	.376	.005 - .010	.749	.474	.050 - .070	.750	.439	.010 - .020
.743	.630	.016 - .025	.746	.386	.060 - .070	.748	.377	.156 - .187	.749	.499	.020 - .080	.750	.440	.080 - .104
.744	.187	.100 - .120	.746	.390	.006 - .010	.748	.384	.020 - .040	.749	.503	.005 - .010	.750	.441	.060 - .090
.744	.215	.030 - .050	.746	.393	.110 - .130	.748	.385	.005 - .010	.749	.504	.090 - .120	.750	.442	.005 - .090
.744	.236	.010 - .020	.746	.395	.030 - .050	.748	.393	.060 - .080	.749	.507	.008 - .016	.750	.444	.015 - .030
.744	.262	.015 - .030	.746	.405	.005 - .010	.748	.397	.005 - .010	.749	.517	.005 - .010	.750	.445	.030 - .050
.744	.370	.015 - .030	.746	.437	.042 - .060	.748	.400	.005 - .010	.749	.528	.005 - .010	.750	.446	.015 - .030
.744	.383	.035 - .050	.746	.438	.005 - .010	.748	.451	.005 - .010	.749	.531	.005 - .010	.750	.448	.005 - .010
.744	.388	.005 - .010	.746	.445	.040 - .060	.748	.461	.010 - .020	.749	.562	.010 - .020	.750	.450	.025 - .042
.744	.403	.031 - .048	.746	.455	.010 - .020	.748	.462	.005 - .010	.749	.563	.005 - .010	.750	.451	.036 - .050
.744	.409	.050 - .070	.746	.469	.030 - .060	.748	.473	.005 - .015	.749	.575	.040 - .060	.750	.454	.042 - .125
.744	.413	.105 - .125	.746	.480	.015 - .090	.748	.476	.005 - .020	.749	.594	.010 - .020	.750	.457	.070 - .090
.744	.430	.005 - .010	.746	.499	.020 - .040	.748	.501	.090 - .105	.749	.595	.035 - .062	.750	.468	.010 - .125
.744	.438	.040 - .060	.746	.500	.005 - .012	.748	.503	.010 - .040	.749	.599	.015 - .030	.750	.470	.020 - .040
.744	.449	.060 - .080	.746	.521	.005 - .010	.748	.504	.050 - .070	.749	.609	.005 - .010	.750	.472	.016 - .025
.744	.450	.050 - .075	.746	.531	.005 - .020	.748	.507	.020 - .036	.749	.620	.015 - .030	.750	.476	.060 - .080
.744	.500	.005 - .012	.746	.533	.030 - .050	.748	.511	.010 - .020	.749	.626	.040 - .060	.750	.477	.005 - .010

BOKER'S METAL WASHERS ARE FLAT AND TUMBLE DEBURRED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.750	.478	.100 - .125	.751	.239	.005 - .010	.752	.461	.008 - .012	.760	.032	.020 - .032	.770	.375	.040 - .060
.750	.480	.030 - .050	.751	.242	.080 - .105	.752	.475	.030 - .050	.760	.126	.015 - .030	.770	.377	.040 - .060
.750	.491	.015 - .030	.751	.244	.050 - .070	.752	.502	.008 - .012	.760	.150	.020 - .040	.770	.384	.020 - .040
.750	.496	.040 - .060	.751	.250	.080 - .140	.752	.504	.010 - .050	.760	.200	.090 - .110	.770	.385	.015 - .030
.750	.499	.100 - .125	.751	.255	.050 - .070	.752	.505	.015 - .030	.760	.256	.080 - .104	.770	.430	.030 - .050
.750	.500	.005 - .060	.751	.257	.050 - .070	.752	.516	.005 - .015	.760	.260	.030 - .062	.770	.474	.030 - .040
.750	.502	.005 - .100	.751	.265	.005 - .015	.752	.555	.040 - .070	.760	.269	.040 - .060	.770	.517	.005 - .015
.750	.503	.005 - .020	.751	.266	.032 - .050	.752	.564	.050 - .070	.760	.322	.050 - .070	.770	.524	.040 - .060
.750	.504	.015 - .025	.751	.272	.100 - .125	.752	.570	.010 - .020	.760	.330	.005 - .010	.770	.525	.005 - .010
.750	.505	.025 - .105	.751	.296	.050 - .070	.752	.591	.060 - .090	.760	.385	.040 - .060	.770	.531	.005 - .060
.750	.506	.005 - .020	.751	.303	.005 - .010	.752	.624	.050 - .070	.760	.446	.010 - .020	.770	.536	.015 - .030
.750	.509	.005 - .010	.751	.307	.010 - .020	.752	.697	.010 - .020	.760	.471	.050 - .070	.770	.571	.025 - .040
.750	.510	.010 - .020	.751	.315	.015 - .030	.753	.133	.075 - .090	.760	.482	.040 - .060	.770	.636	.020 - .040
.750	.510	.100 - .120	.751	.322	.050 - .070	.753	.170	.020 - .040	.760	.508	.105 - .120	.770	.664	.005 - .010
.750	.511	.030 - .060	.751	.325	.015 - .030	.753	.276	.010 - .020	.760	.565	.020 - .040	.770	.680	.035 - .045
.750	.512	.005 - .075	.751	.331	.075 - .093	.753	.318	.050 - .070	.760	.571	.070 - .090	.770	.711	.015 - .030
.750	.513	.010 - .075	.751	.332	.005 - .010	.753	.330	.110 - .130	.760	.579	.005 - .008	.771	.380	.005 - .010
.750	.514	.100 - .125	.751	.335	.090 - .125	.753	.337	.100 - .125	.760	.592	.020 - .035	.771	.474	.050 - .070
.750	.517	.030 - .050	.751	.343	.025 - .040	.753	.375	.100 - .125	.760	.624	.020 - .030	.771	.511	.105 - .125
.750	.522	.010 - .020	.751	.361	.005 - .010	.753	.381	.134 - .187	.760	.664	.005 - .010	.771	.554	.010 - .020
.750	.524	.015 - .030	.751	.376	.005 - .015	.753	.384	.050 - .070	.760	.675	.010 - .020	.771	.606	.005 - .010
.750	.525	.050 - .070	.751	.379	.040 - .060	.753	.405	.050 - .072	.761	.141	.005 - .015	.771	.639	.050 - .060
.750	.528	.005 - .010	.751	.380	.005 - .020	.753	.409	.005 - .010	.761	.184	.005 - .015	.771	.700	.005 - .010
.750	.530	.040 - .105	.751	.387	.105 - .125	.753	.472	.100 - .120	.761	.561	.030 - .050	.772	.188	.020 - .040
.750	.531	.010 - .020	.751	.395	.020 - .030	.753	.477	.020 - .040	.762	.250	.005 - .010	.772	.250	.040 - .060
.750	.532	.020 - .125	.751	.400	.050 - .080	.753	.484	.025 - .050	.762	.445	.040 - .060	.772	.265	.060 - .070
.750	.533	.050 - .070	.751	.420	.110 - .130	.753	.526	.030 - .060	.762	.616	.005 - .010	.772	.404	.005 - .010
.750	.535	.010 - .020	.751	.435	.005 - .010	.753	.527	.005 - .010	.763	.503	.005 - .010	.772	.412	.050 - .060
.750	.536	.040 - .060	.751	.437	.005 - .010	.753	.609	.025 - .050	.763	.660	.005 - .010	.772	.671	.010 - .020
.750	.540	.040 - .050	.751	.438	.050 - .070	.753	.627	.005 - .015	.764	.315	.050 - .075	.773	.126	.005 - .010
.750	.545	.015 - .030	.751	.440	.050 - .070	.753	.629	.005 - .010	.764	.528	.060 - .080	.773	.238	.062 - .080
.750	.549	.005 - .010	.751	.448	.050 - .070	.754	.253	.005 - .010	.764	.707	.005 - .010	.773	.370	.060 - .080
.750	.550	.020 - .030	.751	.455	.010 - .020	.754	.265	.030 - .060	.765	.117	.040 - .062	.773	.480	.015 - .030
.750	.551	.010 - .020	.751	.463	.050 - .070	.754	.393	.005 - .010	.765	.222	.030 - .050	.773	.579	.090 - .100
.750	.558	.040 - .060	.751	.470	.075 - .090	.754	.428	.048 - .062	.765	.265	.100 - .125	.773	.656	.020 - .040
.750	.562	.040 - .060	.751	.499	.005 - .025	.754	.460	.105 - .125	.765	.285	.005 - .010	.773	.677	.040 - .050
.750	.563	.010 - .060	.751	.500	.050 - .070	.754	.469	.040 - .060	.765	.293	.040 - .060	.773	.692	.005 - .010
.750	.564	.005 - .060	.751	.503	.005 - .110	.754	.509	.030 - .050	.765	.312	.050 - .062	.774	.251	.050 - .070
.750	.565	.010 - .040	.751	.504	.010 - .080	.754	.532	.080 - .105	.765	.331	.025 - .040	.774	.556	.050 - .070
.750	.566	.012 - .020	.751	.505	.010 - .105	.755	.222	.005 - .010	.765	.348	.025 - .035	.774	.605	.010 - .020
.750	.569	.050 - .062	.751	.506	.015 - .025	.755	.281	.005 - .010	.765	.406	.005 - .010	.774	.634	.010 - .020
.750	.570	.020 - .040	.751	.508	.020 - .030	.755	.335	.170 - .190	.765	.508	.005 - .010	.774	.705	.005 - .010
.750	.582	.030 - .050	.751	.513	.090 - .120	.755	.347	.010 - .020	.765	.528	.050 - .060	.775	.228	.050 - .072
.750	.584	.005 - .010	.751	.515	.025 - .040	.755	.378	.010 - .080	.765	.533	.015 - .030	.775	.229	.070 - .090
.750	.590	.005 - .010	.751	.516	.008 - .060	.755	.385	.025 - .042	.765	.565	.010 - .020	.775	.231	.042 - .062
.750	.595	.005 - .020	.751	.521	.048 - .060	.755	.393	.005 - .010	.765	.625	.050 - .070	.775	.252	.005 - .010
.750	.609	.040 - .060	.751	.524	.005 - .010	.755	.513	.030 - .040	.766	.505	.030 - .050	.775	.324	.100 - .125
.750	.625	.005 - .050	.751	.563	.005 - .040	.755	.520	.005 - .010	.766	.518	.050 - .070	.775	.335	.015 - .030
.750	.626	.015 - .030	.751	.594	.010 - .020	.755	.532	.020 - .040	.766	.535	.080 - .100	.775	.368	.080 - .090
.750	.630	.005 - .060	.751	.600	.030 - .050	.755	.533	.010 - .020	.766	.557	.025 - .040	.775	.379	.005 - .012
.750	.632	.005 - .010	.751	.606	.005 - .010	.755	.552	.030 - .040	.766	.585	.015 - .030	.775	.428	.025 - .040
.750	.634	.005 - .020	.751	.626	.005 - .025	.755	.554	.005 - .010	.766	.610	.030 - .050	.775	.457	.005 - .010
.750	.639	.015 - .030	.751	.633	.005 - .010	.755	.565	.040 - .060	.766	.676	.005 - .010	.775	.464	.048 - .070
.750	.640	.010 - .020	.751	.634	.005 - .010	.755	.586	.005 - .010	.767	.073	.025 - .040	.775	.469	.080 - .100
.750	.645	.010 - .020	.751	.639	.010 - .015	.756	.230	.005 - .010	.767	.084	.015 - .030	.775	.500	.075 - .090
.750	.650	.025 - .040	.751	.650	.010 - .020	.756	.258	.075 - .100	.767	.224	.090 - .110	.775	.525	.100 - .125
.750	.651	.040 - .060	.752	.143	.090 - .120	.756	.375	.040 - .050	.767	.301	.100 - .125	.775	.555	.020 - .030
.750	.679	.005 - .010	.752	.145	.100 - .125	.756	.395	.005 - .010	.767	.315	.020 - .040	.775	.560	.070 - .090
.750	.691	.010 - .020	.752	.150	.090 - .105	.756	.408	.020 - .035	.767	.429	.005 - .010	.775	.602	.005 - .010
.750	.692	.015 - .025	.752	.181	.080 - .104	.756	.500	.010 - .020	.767	.537	.005 - .010	.775	.643	.005 - .030
.750	.697	.030 - .060	.752	.186	.005 - .010	.756	.564	.005 - .010	.767	.563	.020 - .040	.776	.196	.015 - .030
.750	.700	.010 - .020	.752	.196	.040 - .060	.756	.570	.020 - .030	.767	.576	.030 - .050	.776	.197	.020 - .035
.750	.705	.010 - .020	.752	.212	.030 - .060	.757	.139	.005 - .010	.767	.588	.015 - .030	.776	.221	.005 - .010
.751	.105	.010 - .020	.752	.250	.005 - .010	.757	.243	.005 - .020	.767	.699	.005 - .010	.776	.239	.070 - .090
.751	.126	.030 - .050	.752	.269	.100 - .135	.757	.279	.005 - .015	.768	.235	.040 - .060	.776	.240	.025 - .040
.751	.129	.050 - .070	.752	.303	.005 - .012	.757	.387	.060 - .125	.768	.378	.110 - .130	.776	.283	.030 - .050
.751	.140	.080 - .100	.752	.315	.104 - .135	.757	.400	.040 - .060	.768	.415	.050 - .070	.776	.386	.005 - .010
.751	.168	.040 - .060	.752	.317	.010 - .020	.757	.436	.005 - .010	.768	.416	.050 - .070	.776	.432	.070 - .090
.751	.170	.040 - .060	.752	.319	.005 - .030	.757	.468	.030 - .050	.768	.471	.010 - .020	.776	.598	.050 - .070
.751	.184	.005 - .010	.752	.320	.050 - .070	.757	.470	.020 - .040	.768	.530	.010 - .030	.776	.646	.020 - .040
.751	.187	.010 - .020	.752	.322	.005 - .010	.757	.563	.010 - .020	.768	.545	.020 - .040	.776	.653	.040 - .050
.751	.188	.060 - .083	.752	.340	.005 - .010	.758	.234	.005 - .010	.768	.631	.020 - .040	.777	.150	.005 - .010
.751	.190	.005 - .010	.752	.357	.050 - .070	.758	.237	.005 - .010	.769	.202	.050 - .070	.777	.317	.020 - .040
.751	.194	.090 - .125	.752	.375	.062 - .075	.758	.310	.015 - .030	.769	.240	.050 - .070	.777	.328	.156 - .187
.751	.200	.042 - .062	.752	.379	.090 - .110	.758	.350	.080 - .100	.769	.256	.005 - .035	.777	.392	.020 - .030
.751	.204	.005 - .010	.752	.380	.090 - .120	.758	.394	.040 - .060	.769	.395	.070 - .090	.777	.421	.025 - .040
.751	.205	.060 - .080	.752	.388	.050 - .070	.758	.608	.050 - .075	.769	.399	.135 - .156	.777	.572	.005 - .010
.751	.206	.040 - .075	.752	.389	.005 - .010	.759	.462	.005 - .010	.770	.141	.025 - .040	.777	.613	.050 - .070
.751	.218	.020 - .050	.752	.406	.060 - .083	.759	.606	.005 - .010	.770	.211	.040 - .060	.778	.221	.005 - .015
.751	.229	.015 - .030	.752	.431	.090 - .125	.759	.694	.005 - .010	.770	.248	.005 - .010	.778	.261	.060 - .070

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.781	.605	.032 - .050	.786	.535	.005 - .030	.788	.478	.030 - .050	.793	.441	.020 - .040	.800	.225	.040 - .060	.801	.629	.040 - .060
.781	.621	.040 - .060	.786	.556	.040 - .060	.788	.483	.070 - .090	.793	.471	.025 - .048	.800	.250	.020 - .030	.801	.650	.010 - .020
.781	.625	.050 - .075	.786	.572	.050 - .070	.788	.487	.040 - .060	.793	.505	.025 - .040	.800	.252	.008 - .015	.801	.657	.005 - .010
.781	.627	.040 - .060	.786	.594	.010 - .020	.788	.488	.040 - .050	.793	.575	.032 - .050	.800	.253	.040 - .060	.801	.674	.005 - .010
.781	.628	.005 - .010	.786	.598	.030 - .050	.788	.505	.050 - .070	.794	.257	.005 - .010	.800	.254	.025 - .040	.801	.696	.060 - .070
.781	.629	.025 - .060	.786	.626	.030 - .050	.788	.512	.060 - .090	.794	.285	.005 - .010	.800	.256	.005 - .010	.802	.257	.060 - .080
.781	.640	.060 - .070	.786	.631	.030 - .050	.788	.521	.048 - .062	.794	.420	.090 - .110	.800	.315	.010 - .020	.802	.261	.040 - .062
.782	.368	.010 - .020	.786	.680	.010 - .020	.788	.545	.005 - .010	.794	.477	.135 - .160	.800	.316	.005 - .010	.802	.346	.020 - .035
.782	.437	.090 - .105	.787	.129	.030 - .050	.788	.555	.040 - .060	.794	.552	.070 - .090	.800	.320	.105 - .125	.802	.387	.050 - .075
.782	.440	.015 - .030	.787	.141	.040 - .060	.788	.566	.080 - .100	.795	.116	.005 - .010	.800	.327	.020 - .040	.802	.408	.100 - .110
.782	.442	.070 - .090	.787	.142	.030 - .060	.788	.596	.030 - .050	.795	.159	.005 - .010	.800	.345	.075 - .104	.802	.453	.025 - .040
.782	.482	.070 - .090	.787	.161	.050 - .070	.788	.697	.010 - .015	.795	.170	.090 - .125	.800	.370	.005 - .012	.802	.503	.005 - .010
.782	.500	.030 - .060	.787	.188	.020 - .040	.788	.715	.005 - .010	.795	.175	.005 - .010	.800	.377	.005 - .010	.802	.516	.040 - .060
.782	.513	.030 - .050	.787	.203	.040 - .060	.788	.716	.010 - .020	.795	.187	.030 - .050	.800	.378	.005 - .078	.802	.596	.005 - .010
.782	.517	.080 - .100	.787	.208	.070 - .080	.789	.114	.025 - .040	.795	.197	.008 - .016	.800	.379	.010 - .020	.802	.611	.025 - .040
.782	.530	.093 - .103	.787	.228	.052 - .072	.789	.221	.005 - .010	.795	.267	.048 - .062	.800	.380	.040 - .060	.802	.622	.020 - .030
.782	.542	.005 - .010	.787	.238	.005 - .010	.789	.255	.010 - .020	.795	.281	.040 - .060	.800	.387	.020 - .040	.802	.701	.005 - .010
.782	.546	.010 - .020	.787	.256	.010 - .020	.789	.262	.040 - .050	.795	.340	.005 - .012	.800	.397	.005 - .010	.802	.704	.025 - .040
.782	.562	.060 - .083	.787	.257	.025 - .060	.789	.312	.042 - .060	.795	.392	.010 - .020	.800	.398	.005 - .010	.802	.752	.005 - .008
.782	.563	.010 - .020	.787	.279	.005 - .010	.789	.316	.005 - .010	.795	.427	.090 - .105	.800	.411	.070 - .090	.803	.261	.050 - .075
.782	.699	.005 - .010	.787	.315	.005 - .020	.789	.327	.005 - .010	.795	.482	.030 - .050	.800	.426	.105 - .135	.803	.264	.010 - .020
.783	.062	.030 - .050	.787	.317	.005 - .010	.789	.354	.060 - .080	.795	.509	.030 - .060	.800	.437	.005 - .010	.803	.345	.080 - .105
.783	.254	.050 - .070	.787	.318	.005 - .010	.789	.438	.005 - .010	.795	.551	.010 - .020	.800	.439	.030 - .050	.803	.422	.015 - .030
.783	.270	.070 - .080	.787	.319	.005 - .010	.789	.478	.050 - .080	.795	.577	.090 - .105	.800	.440	.005 - .010	.803	.517	.105 - .125
.783	.278	.010 - .020	.787	.324	.015 - .030	.789	.498	.005 - .010	.795	.634	.005 - .010	.800	.441	.010 - .020	.803	.569	.005 - .010
.783	.320	.050 - .070	.787	.329	.005 - .010	.789	.514	.005 - .010	.795	.655	.030 - .040	.800	.443	.005 - .020	.803	.715	.010 - .025
.783	.453	.080 - .104	.787	.355	.135 - .156	.789	.543	.010 - .020	.795	.680	.005 - .040	.800	.464	.040 - .060	.804	.134	.050 - .072
.783	.488	.005 - .010	.787	.380	.015 - .030	.789	.630	.010 - .020	.795	.730	.025 - .035	.800	.490	.030 - .050	.804	.191	.060 - .080
.783	.500	.030 - .050	.787	.392	.005 - .010	.790	.160	.015 - .030	.795	.731	.030 - .040	.800	.502	.005 - .020	.804	.313	.005 - .010
.783	.513	.025 - .040	.787	.395	.005 - .010	.790	.175	.050 - .070	.796	.256	.005 - .010	.800	.504	.005 - .030	.804	.330	.050 - .072
.783	.604	.005 - .010	.787	.397	.005 - .010	.790	.240	.010 - .020	.796	.286	.005 - .010	.800	.505	.005 - .010	.804	.409	.100 - .125
.783	.630	.060 - .080	.787	.398	.005 - .020	.790	.250	.032 - .042	.796	.290	.025 - .040	.800	.508	.005 - .010	.804	.602	.005 - .010
.783	.635	.050 - .070	.787	.399	.070 - .080	.790	.288	.090 - .110	.796	.353	.030 - .040	.800	.510	.020 - .040	.805	.312	.005 - .010
.783	.645	.005 - .020	.787	.400	.040 - .060	.790	.319	.005 - .010	.796	.397	.050 - .070	.800	.528	.005 - .010	.805	.564	.090 - .110
.783	.646	.005 - .010	.787	.410	.060 - .080	.790	.320	.005 - .010	.796	.509	.040 - .060	.800	.530	.030 - .050	.805	.573	.060 - .080
.783	.656	.048 - .062	.787	.424	.005 - .010	.790	.341	.020 - .040	.796	.520	.005 - .012	.800	.544	.005 - .010	.805	.632	.005 - .010
.784	.480	.030 - .050	.787	.433	.010 - .020	.790	.350	.025 - .048	.796	.521	.030 - .060	.800	.550	.060 - .075	.805	.656	.005 - .010
.784	.592	.015 - .030	.787	.453	.005 - .010	.790	.375	.015 - .030	.796	.525	.010 - .020	.800	.551	.005 - .010	.805	.672	.005 - .010
.784	.599	.030 - .050	.787	.472	.030 - .050	.790	.377	.020 - .040	.796	.579	.040 - .060	.800	.557	.005 - .010	.805	.692	.010 - .020
.784	.601	.030 - .050	.787	.473	.005 - .010	.790	.378	.040 - .050	.796	.602	.025 - .040	.800	.558	.005 - .015	.806	.209	.005 - .010
.784	.612	.020 - .030	.787	.475	.010 - .020	.790	.383	.075 - .090	.796	.610	.005 - .070	.800	.560	.070 - .090	.806	.262	.040 - .060
.785	.170	.042 - .062	.787	.477	.050 - .070	.790	.423	.025 - .040	.796	.630	.030 - .040	.800	.574	.050 - .060	.806	.300	.005 - .010
.785	.238	.006 - .010	.787	.480	.020 - .030	.790	.438	.020 - .040	.797	.349	.005 - .010	.800	.575	.025 - .040	.806	.350	.005 - .010
.785	.343	.005 - .010	.787	.490	.120 - .130	.790	.440	.010 - .020	.797	.413	.005 - .010	.800	.582	.005 - .010	.806	.378	.060 - .083
.785	.357	.005 - .010	.787	.525	.005 - .010	.790	.441	.020 - .040	.797	.561	.020 - .040	.800	.594	.005 - .010	.806	.407	.030 - .050
.785	.392	.110 - .130	.787	.530	.030 - .050	.790	.448	.015 - .030	.797	.691	.025 - .040	.800	.618	.005 - .010	.806	.469	.030 - .050
.785	.406	.005 - .010	.787	.547	.005 - .010	.790	.450	.030 - .042	.798	.312	.010 - .025	.800	.619	.005 - .010	.806	.631	.020 - .040
.785	.417	.050 - .070	.787	.551	.005 - .030	.790	.452	.030 - .060	.798	.351	.010 - .020	.800	.623	.050 - .075	.806	.636	.005 - .010
.785	.450	.050 - .070	.787	.556	.005 - .010	.790	.467	.030 - .050	.798	.378	.005 - .010	.800	.626	.005 - .010	.806	.641	.060 - .083
.785	.475	.015 - .050	.787	.577	.005 - .010	.790	.478	.025 - .045	.798	.487	.005 - .010	.800	.628	.025 - .080	.806	.650	.050 - .070
.785	.482	.100 - .125	.787	.603	.005 - .010	.790	.500	.050 - .072	.798	.578	.005 - .090	.800	.631	.010 - .020	.806	.671	.005 - .010
.785	.512	.060 - .080	.787	.610	.005 - .080	.790	.511	.125 - .135	.798	.624	.070 - .090	.800	.639	.005 - .010	.806	.691	.020 - .040
.785	.520	.090 - .105	.787	.630	.030 - .050	.790	.515	.020 - .040	.798	.632	.010 - .020	.800	.641	.016 - .025	.806	.692	.005 - .010
.785	.523	.005 - .020	.787	.631	.005 - .010	.790	.550	.030 - .042	.798	.656	.005 - .010	.800	.645	.025 - .040	.807	.117	.015 - .030
.785	.530	.030 - .050	.787	.648	.025 - .040	.790	.560	.020 - .040	.798	.711	.010 - .020	.800	.654	.040 - .060	.807	.222	.015 - .030
.785	.548	.042 - .062	.787	.661	.005 - .010	.790	.565	.040 - .060	.799	.252	.005 - .010	.800	.659	.010 - .020	.807	.283	.005 - .010
.785	.556	.030 - .050	.787	.677	.010 - .020	.790	.586	.015 - .025	.799	.360	.170 - .190	.800	.670	.005 - .020	.807	.389	.050 - .070
.785	.569	.005 - .010	.787	.680	.060 - .080	.790	.623	.050 - .070	.799	.397	.010 - .020	.800	.672	.005 - .010	.807	.445	.040 - .060
.785	.594	.005 - .010	.787	.697	.005 - .010	.790	.642	.010 - .040	.799	.401	.030 - .050	.800	.675	.005 - .010	.807	.531	.080 - .090
.785	.656	.005 - .010	.787	.707	.005 - .010	.790	.650	.030 - .042	.799	.439	.005 - .010	.800	.677	.005 - .010	.807	.534	.005 - .010
.785	.696	.010 - .020	.788	.128	.010 - .020	.790	.694	.040 - .060	.799	.471	.005 - .010	.800	.678	.005 - .010	.807	.598	.020 - .040
.786	.157	.015 - .030	.788	.218	.040 - .060	.790	.728	.010 - .020	.799	.472	.030 - .050	.800	.679	.005 - .010	.807	.625	.005 - .010
.786	.198	.015 - .030	.788	.227	.005 - .010	.791	.056	.015 - .030	.799	.492	.080 - .100	.800	.680	.005 - .010	.807	.629	.020 - .040
.786	.253	.070 - .090	.788	.237	.080 - .100	.791	.323	.050 - .070	.799	.500	.005 - .010	.800	.694	.020 - .040	.807	.638	.015 - .030
.786	.257	.005 - .010	.788	.243	.030 - .050	.791	.400	.010 - .020	.799	.501	.010 - .020	.800	.711	.010 - .040	.807	.640	.010 - .020
.786	.300	.005 - .010	.788	.244	.005 - .010	.791	.401	.025 - .040	.799	.505	.025 - .040	.801	.148	.010 - .020	.807	.670	.050 - .070
.786	.316	.090 - .135	.788	.317	.010 - .020	.791	.531	.010 - .020	.799	.580	.050 - .075	.801	.255	.030 - .060	.807	.690	.015 - .030
.786	.382	.005 - .010	.788	.319	.060 - .080	.791	.635	.005 - .010	.799	.596	.005 - .010	.801	.321	.040 - .050	.807	.745	.020 - .031
.786	.396	.040 - .060	.788	.322													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.842	.690	.005 - .010	.850	.175	.050 - .070	.852	.543	.025 - .040	.859	.515	.032 - .042	.863	.626	.090 - .120	.866	.475	.010 - .020
.842	.729	.005 - .010	.850	.180	.120 - .135	.852	.628	.020 - .040	.859	.606	.060 - .080	.863	.679	.040 - .062	.866	.484	.070 - .090
.842	.764	.005 - .010	.850	.200	.020 - .080	.852	.685	.020 - .062	.859	.628	.020 - .030	.863	.680	.005 - .008	.866	.496	.100 - .125
.843	.142	.010 - .020	.850	.240	.048 - .072	.853	.266	.030 - .060	.859	.629	.005 - .010	.863	.682	.010 - .020	.866	.500	.010 - .020
.843	.210	.040 - .060	.850	.250	.015 - .030	.853	.357	.005 - .010	.859	.646	.020 - .040	.863	.687	.015 - .020	.866	.531	.025 - .040
.843	.260	.005 - .010	.850	.251	.120 - .140	.853	.401	.040 - .060	.859	.650	.030 - .070	.863	.688	.005 - .010	.866	.543	.030 - .060
.843	.358	.005 - .010	.850	.252	.005 - .010	.853	.408	.050 - .070	.859	.671	.040 - .060	.863	.759	.015 - .050	.866	.545	.020 - .040
.843	.390	.070 - .090	.850	.283	.005 - .010	.853	.438	.016 - .025	.859	.675	.030 - .050	.864	.208	.005 - .010	.866	.562	.015 - .030
.843	.453	.100 - .125	.850	.301	.015 - .030	.853	.467	.010 - .020	.859	.705	.005 - .010	.864	.316	.005 - .010	.866	.568	.040 - .060
.843	.500	.005 - .010	.850	.302	.105 - .125	.853	.628	.040 - .060	.859	.779	.005 - .010	.864	.368	.005 - .010	.866	.591	.030 - .050
.843	.530	.040 - .060	.850	.316	.090 - .105	.853	.632	.005 - .010	.860	.036	.032 - .042	.864	.430	.040 - .060	.866	.592	.005 - .010
.843	.559	.050 - .072	.850	.319	.060 - .080	.853	.726	.030 - .050	.860	.171	.015 - .030	.864	.505	.015 - .025	.866	.626	.040 - .060
.843	.630	.005 - .010	.850	.330	.020 - .040	.853	.750	.005 - .010	.860	.192	.090 - .125	.864	.536	.080 - .104	.866	.627	.025 - .040
.843	.656	.010 - .020	.850	.340	.005 - .010	.854	.077	.005 - .030	.860	.225	.030 - .040	.864	.551	.005 - .010	.866	.631	.010 - .020
.843	.689	.030 - .040	.850	.350	.080 - .104	.854	.329	.050 - .075	.860	.252	.015 - .030	.864	.569	.010 - .020	.866	.637	.015 - .030
.843	.782	.020 - .030	.850	.351	.030 - .050	.854	.352	.100 - .125	.860	.261	.010 - .030	.864	.595	.005 - .008	.866	.638	.060 - .070
.844	.099	.025 - .040	.850	.356	.010 - .020	.854	.578	.010 - .020	.860	.265	.075 - .090	.864	.620	.010 - .020	.866	.642	.005 - .010
.844	.397	.005 - .010	.850	.374	.005 - .010	.854	.583	.030 - .050	.860	.275	.030 - .050	.864	.628	.050 - .070	.866	.643	.005 - .010
.844	.555	.010 - .020	.850	.377	.005 - .020	.854	.605	.005 - .010	.860	.314	.075 - .090	.864	.633	.005 - .010	.866	.647	.015 - .030
.844	.578	.005 - .010	.850	.378	.005 - .010	.854	.650	.005 - .010	.860	.321	.062 - .090	.864	.639	.042 - .062	.866	.670	.005 - .010
.844	.610	.030 - .060	.850	.380	.030 - .040	.854	.655	.005 - .010	.860	.324	.060 - .080	.864	.781	.010 - .020	.866	.697	.015 - .025
.844	.666	.070 - .090	.850	.382	.005 - .125	.854	.808	.015 - .020	.860	.338	.005 - .010	.865	.205	.005 - .010	.866	.709	.040 - .060
.844	.703	.005 - .010	.850	.384	.100 - .125	.855	.078	.005 - .010	.860	.340	.020 - .030	.865	.260	.020 - .040	.866	.719	.015 - .030
.844	.711	.015 - .030	.850	.433	.005 - .010	.855	.130	.060 - .080	.860	.384	.005 - .015	.865	.351	.020 - .030	.866	.750	.015 - .030
.844	.750	.020 - .040	.850	.495	.015 - .025	.855	.229	.050 - .075	.860	.428	.100 - .125	.865	.398	.020 - .040	.866	.756	.005 - .010
.845	.163	.010 - .020	.850	.500	.015 - .025	.855	.242	.020 - .040	.860	.439	.020 - .035	.865	.412	.060 - .080	.866	.758	.010 - .030
.845	.313	.015 - .090	.850	.502	.005 - .010	.855	.327	.048 - .072	.860	.458	.010 - .020	.865	.421	.040 - .060	.866	.806	.005 - .010
.845	.466	.005 - .010	.850	.503	.005 - .010	.855	.331	.030 - .050	.860	.488	.010 - .020	.865	.434	.005 - .010	.866	.814	.005 - .010
.845	.482	.005 - .010	.850	.506	.020 - .040	.855	.375	.005 - .062	.860	.496	.005 - .010	.865	.471	.005 - .010	.867	.129	.020 - .040
.845	.495	.020 - .030	.850	.509	.005 - .135	.855	.376	.070 - .090	.860	.512	.005 - .010	.865	.476	.020 - .040	.867	.264	.070 - .090
.845	.497	.015 - .030	.850	.510	.005 - .012	.855	.503	.010 - .080	.860	.540	.040 - .060	.865	.477	.005 - .010	.867	.336	.090 - .120
.845	.513	.015 - .030	.850	.513	.005 - .060	.855	.509	.070 - .080	.860	.562	.015 - .030	.865	.479	.070 - .090	.867	.360	.020 - .040
.845	.651	.030 - .050	.850	.523	.040 - .060	.855	.512	.005 - .010	.860	.563	.005 - .015	.865	.492	.036 - .060	.867	.370	.025 - .040
.845	.660	.010 - .020	.850	.535	.050 - .075	.855	.531	.010 - .020	.860	.592	.005 - .010	.865	.493	.010 - .020	.867	.381	.030 - .060
.845	.758	.005 - .035	.850	.566	.005 - .010	.855	.562	.005 - .010	.860	.600	.005 - .010	.865	.551	.080 - .100	.867	.387	.005 - .010
.845	.782	.005 - .010	.850	.574	.060 - .080	.855	.598	.005 - .010	.860	.602	.010 - .020	.865	.553	.010 - .020	.867	.394	.010 - .020
.846	.242	.032 - .050	.850	.585	.010 - .020	.855	.599	.105 - .135	.860	.625	.050 - .070	.865	.566	.005 - .010	.867	.398	.005 - .010
.846	.273	.005 - .010	.850	.595	.090 - .105	.855	.651	.050 - .062	.860	.629	.030 - .050	.865	.570	.030 - .040	.867	.405	.090 - .105
.846	.320	.015 - .030	.850	.600	.010 - .020	.855	.691	.050 - .070	.860	.634	.020 - .030	.865	.597	.042 - .062	.867	.413	.005 - .010
.846	.327	.005 - .010	.850	.612	.005 - .010	.856	.088	.010 - .020	.860	.645	.040 - .060	.865	.626	.040 - .060	.867	.452	.005 - .010
.846	.455	.030 - .060	.850	.620	.005 - .010	.856	.123	.005 - .010	.860	.676	.005 - .030	.865	.630	.005 - .010	.867	.474	.090 - .110
.846	.456	.035 - .050	.850	.625	.060 - .080	.856	.265	.048 - .062	.860	.691	.005 - .010	.865	.634	.005 - .070	.867	.477	.015 - .030
.846	.630	.005 - .010	.850	.627	.005 - .010	.856	.286	.050 - .070	.860	.698	.030 - .050	.865	.635	.005 - .010	.867	.560	.040 - .060
.846	.639	.005 - .040	.850	.630	.015 - .020	.856	.380	.010 - .020	.860	.705	.005 - .050	.865	.650	.020 - .030	.867	.566	.005 - .010
.846	.658	.032 - .050	.850	.635	.015 - .030	.856	.443	.020 - .040	.860	.711	.025 - .040	.865	.672	.010 - .015	.867	.593	.015 - .030
.846	.662	.010 - .020	.850	.650	.070 - .080	.856	.616	.025 - .040	.860	.742	.030 - .050	.865	.698	.005 - .010	.867	.608	.080 - .120
.846	.663	.030 - .060	.850	.653	.015 - .030	.856	.628	.060 - .080	.860	.750	.005 - .010	.865	.714	.005 - .010	.867	.632	.025 - .040
.846	.670	.040 - .060	.850	.664	.005 - .030	.856	.640	.015 - .030	.860	.757	.005 - .010	.865	.715	.032 - .042	.867	.638	.012 - .020
.846	.697	.015 - .030	.850	.673	.015 - .030	.856	.650	.010 - .020	.860	.767	.005 - .010	.865	.740	.020 - .040	.867	.644	.080 - .100
.846	.757	.005 - .010	.850	.706	.005 - .010	.856	.671	.010 - .020	.860	.778	.005 - .010	.865	.755	.032 - .050	.867	.670	.015 - .030
.847	.193	.090 - .105	.850	.711	.015 - .030	.856	.688	.005 - .010	.860	.785	.010 - .020	.865	.756	.005 - .010	.867	.688	.005 - .008
.847	.253	.005 - .010	.850	.731	.020 - .040	.856	.689	.030 - .050	.861	.499	.030 - .050	.865	.794	.005 - .010	.867	.690	.010 - .020
.847	.323	.005 - .010	.850	.735	.005 - .030	.856	.734	.010 - .020	.861	.527	.040 - .060	.866	.157	.020 - .030	.867	.704	.025 - .040
.847	.416	.005 - .010	.850	.750	.010 - .020	.857	.312	.005 - .010	.861	.601	.030 - .050	.866	.197	.080 - .100	.867	.709	.005 - .010
.847	.422	.005 - .010	.850	.756	.020 - .030	.857	.409	.005 - .010	.861	.620	.060 - .080	.866	.236	.005 - .020	.867	.710	.010 - .030
.847	.500	.005 - .010	.850	.809	.010 - .020	.857	.555	.015 - .025	.861	.636	.005 - .010	.866	.239	.030 - .050	.867	.724	.040 - .060
.847	.522	.005 - .010	.851	.093	.005 - .010	.857	.640	.025 - .040	.861	.638	.050 - .070	.866	.242	.005 - .010	.867	.753	.005 - .010
.847	.536	.005 - .010	.851	.164	.050 - .070	.857	.665	.010 - .020	.861	.689	.030 - .050	.866	.276	.030 - .040	.867	.760	.015 - .030
.848	.067	.010 - .020	.851	.173	.005 - .010	.857	.692	.030 - .050	.861	.749	.015 - .020	.866	.299	.005 - .020	.867	.770	.030 - .050
.848	.199	.025 - .040	.851	.184	.040 - .090	.858	.352	.100 - .125	.861	.763	.005 - .010	.866	.302	.060 - .080	.867	.794	.005 - .010
.848	.317	.005 - .010	.851	.185	.060 - .090	.858	.564	.030 - .060	.862	.256	.050 - .072	.866	.315	.005 - .020	.868	.237	.005 - .010
.848	.323	.005 - .020	.851	.384	.104 - .134	.858	.596	.030 - .050	.862	.295	.040 - .070	.866	.316	.005 - .010	.868	.238	.005 - .010
.848	.472	.015 - .030	.851	.385	.010 - .020	.858	.619	.050 - .070	.862	.312	.025 - .042	.866	.317	.005 - .010	.868	.315	.015 - .060
.848	.492	.050 - .070	.851	.401	.005 - .010	.858	.626	.005 - .010	.862	.407	.015 - .025	.866	.318	.005 - .020	.868	.317	.005 - .010
.848	.505	.005 - .010	.851	.421	.105 - .120	.858	.630	.005 - .010	.862	.427	.020 - .030	.866	.322	.005 - .010	.868	.442	.005 - .010
.848	.510	.010 - .020	.851	.450	.030 - .050	.858	.649	.030 - .050	.862	.472	.050 - .060	.866	.325	.090 - .105	.868	.462	.030 - .050
.848	.540	.005 - .010	.851	.503	.005 - .010	.858	.650	.008 - .020	.862	.518	.090 - .125	.866	.336	.070 - .080	.868	.473	.005 - .010
.848	.610	.010 - .020	.851	.513	.040 - .060	.858	.653	.025 - .040	.862	.529	.050 - .075	.866	.350	.025 - .040	.868	.477	.005 - .010
.848	.685	.032 - .062	.851	.564													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.880	.376	.025 - .062	.889	.395	.105 - .120	.899	.841	.010 - .020	.903	.258	.060 - .080	.906	.638	.093 - .125	.912	.636	.060 - .070
.880	.380	.005 - .080	.889	.557	.005 - .010	.900	.063	.010 - .020	.903	.315	.030 - .048	.906	.657	.025 - .035	.912	.656	.105 - .120
.880	.381	.005 - .015	.889	.569	.005 - .010	.900	.079	.030 - .050	.903	.330	.015 - .030	.906	.669	.015 - .030	.912	.683	.015 - .030
.880	.386	.070 - .090	.889	.758	.025 - .040	.900	.100	.015 - .030	.903	.401	.005 - .010	.906	.728	.030 - .050	.912	.805	.005 - .010
.880	.406	.005 - .010	.889	.786	.005 - .010	.900	.154	.005 - .010	.903	.416	.100 - .125	.906	.730	.030 - .050	.913	.493	.015 - .030
.880	.407	.080 - .105	.890	.192	.050 - .072	.900	.217	.025 - .040	.903	.500	.025 - .036	.906	.750	.010 - .020	.913	.507	.020 - .030
.880	.426	.005 - .015	.890	.273	.070 - .105	.900	.252	.005 - .010	.903	.531	.160 - .180	.906	.759	.010 - .020	.913	.510	.020 - .040
.880	.430	.005 - .010	.890	.385	.090 - .105	.900	.254	.040 - .060	.903	.664	.025 - .040	.906	.769	.010 - .020	.913	.665	.080 - .100
.880	.455	.005 - .012	.890	.405	.100 - .125	.900	.321	.005 - .010	.903	.710	.010 - .020	.907	.200	.060 - .080	.913	.847	.005 - .010
.880	.485	.050 - .060	.890	.438	.030 - .040	.900	.376	.005 - .030	.903	.735	.005 - .015	.907	.228	.040 - .060	.914	.521	.005 - .010
.880	.495	.005 - .010	.890	.504	.015 - .030	.900	.377	.005 - .010	.903	.760	.015 - .030	.907	.293	.070 - .090	.914	.596	.025 - .040
.880	.505	.015 - .025	.890	.530	.010 - .030	.900	.378	.015 - .040	.903	.766	.040 - .060	.907	.330	.050 - .060	.914	.650	.015 - .030
.880	.518	.040 - .060	.890	.537	.105 - .125	.900	.379	.005 - .078	.903	.771	.005 - .050	.907	.380	.125 - .135	.915	.350	.040 - .060
.880	.523	.005 - .010	.890	.547	.110 - .130	.900	.380	.010 - .020	.903	.781	.040 - .050	.907	.411	.025 - .040	.915	.446	.015 - .025
.880	.530	.030 - .040	.890	.580	.005 - .008	.900	.383	.090 - .110	.903	.807	.010 - .020	.907	.469	.100 - .120	.915	.448	.005 - .010
.880	.541	.025 - .035	.890	.582	.005 - .010	.900	.390	.030 - .060	.904	.206	.040 - .060	.907	.514	.005 - .010	.915	.509	.050 - .070
.880	.557	.005 - .010	.890	.587	.005 - .010	.900	.400	.005 - .010	.904	.262	.070 - .090	.907	.603	.070 - .090	.915	.510	.005 - .010
.880	.604	.005 - .010	.890	.667	.005 - .010	.900	.406	.135 - .156	.904	.319	.005 - .020	.907	.624	.020 - .035	.915	.512	.020 - .040
.880	.621	.020 - .060	.890	.711	.025 - .040	.900	.437	.005 - .010	.904	.329	.005 - .010	.907	.645	.020 - .040	.915	.616	.015 - .030
.880	.626	.062 - .078	.890	.785	.040 - .050	.900	.440	.005 - .010	.904	.486	.025 - .042	.907	.669	.060 - .080	.915	.623	.030 - .060
.880	.659	.070 - .080	.891	.582	.030 - .050	.900	.442	.005 - .010	.904	.629	.020 - .100	.907	.672	.042 - .060	.915	.628	.080 - .095
.880	.681	.005 - .012	.891	.632	.005 - .010	.900	.453	.030 - .040	.904	.640	.030 - .040	.907	.682	.030 - .050	.915	.744	.005 - .010
.880	.688	.030 - .050	.891	.669	.010 - .020	.900	.455	.050 - .070	.904	.649	.020 - .035	.907	.728	.005 - .015	.915	.775	.005 - .010
.880	.690	.060 - .070	.891	.711	.005 - .015	.900	.489	.005 - .010	.904	.690	.015 - .030	.907	.740	.010 - .050	.916	.150	.020 - .032
.880	.711	.025 - .040	.892	.073	.025 - .036	.900	.500	.005 - .105	.904	.750	.040 - .060	.907	.757	.010 - .020	.916	.317	.100 - .120
.881	.201	.005 - .010	.892	.273	.070 - .105	.900	.503	.005 - .020	.904	.805	.005 - .040	.908	.332	.135 - .156	.916	.507	.020 - .040
.881	.203	.005 - .010	.892	.390	.005 - .010	.900	.504	.005 - .008	.905	.127	.090 - .110	.908	.342	.050 - .075	.916	.532	.040 - .060
.881	.257	.060 - .080	.892	.514	.005 - .010	.900	.510	.015 - .030	.905	.196	.040 - .060	.908	.379	.025 - .040	.916	.540	.020 - .040
.881	.548	.030 - .050	.892	.612	.010 - .025	.900	.562	.005 - .015	.905	.201	.005 - .010	.908	.502	.030 - .050	.916	.570	.050 - .090
.881	.661	.005 - .010	.892	.632	.005 - .010	.900	.563	.040 - .060	.905	.238	.005 - .010	.908	.555	.080 - .105	.916	.571	.090 - .110
.881	.681	.010 - .015	.892	.653	.050 - .070	.900	.564	.010 - .100	.905	.330	.015 - .030	.908	.564	.015 - .030	.916	.734	.020 - .040
.881	.732	.020 - .030	.892	.726	.005 - .010	.900	.570	.005 - .070	.905	.344	.020 - .030	.908	.616	.020 - .032	.916	.735	.020 - .040
.882	.300	.005 - .010	.893	.621	.040 - .075	.900	.577	.015 - .025	.905	.392	.010 - .040	.908	.688	.010 - .025	.916	.795	.010 - .020
.882	.323	.005 - .010	.893	.701	.005 - .010	.900	.578	.070 - .090	.905	.396	.005 - .010	.908	.705	.030 - .048	.916	.804	.016 - .032
.882	.325	.005 - .010	.894	.195	.020 - .040	.900	.595	.070 - .090	.905	.398	.120 - .135	.908	.751	.060 - .080	.916	.834	.005 - .010
.882	.500	.150 - .180	.894	.251	.010 - .020	.900	.610	.020 - .040	.905	.403	.020 - .040	.908	.753	.005 - .010	.917	.501	.050 - .090
.882	.518	.110 - .130	.894	.501	.060 - .080	.900	.625	.025 - .040	.905	.414	.180 - .190	.908	.764	.020 - .030	.917	.506	.010 - .020
.882	.522	.020 - .040	.894	.624	.005 - .010	.900	.626	.050 - .070	.905	.451	.070 - .090	.908	.765	.020 - .040	.917	.531	.062 - .078
.882	.540	.090 - .110	.894	.762	.005 - .010	.900	.628	.005 - .010	.905	.460	.005 - .010	.909	.250	.030 - .040	.917	.579	.050 - .060
.882	.642	.040 - .060	.895	.375	.070 - .090	.900	.629	.010 - .020	.905	.473	.010 - .030	.909	.342	.050 - .075	.917	.596	.005 - .015
.882	.664	.005 - .010	.895	.390	.032 - .062	.900	.630	.120 - .135	.905	.475	.105 - .125	.909	.364	.005 - .010	.917	.623	.040 - .060
.882	.788	.015 - .030	.895	.462	.005 - .010	.900	.634	.040 - .060	.905	.481	.040 - .060	.909	.379	.005 - .010	.918	.497	.010 - .020
.883	.315	.010 - .020	.895	.574	.032 - .042	.900	.651	.005 - .010	.905	.493	.070 - .090	.909	.634	.010 - .020	.918	.508	.030 - .050
.883	.500	.050 - .075	.895	.631	.005 - .010	.900	.654	.060 - .070	.905	.513	.060 - .080	.909	.676	.007 - .015	.918	.596	.005 - .010
.883	.509	.030 - .050	.895	.661	.010 - .020	.900	.661	.070 - .090	.905	.520	.020 - .040	.909	.749	.040 - .060	.918	.614	.005 - .010
.883	.560	.050 - .070	.895	.733	.050 - .070	.900	.670	.025 - .048	.905	.531	.050 - .060	.909	.796	.005 - .010	.918	.762	.025 - .035
.883	.622	.050 - .075	.895	.795	.010 - .020	.900	.690	.010 - .050	.905	.558	.005 - .010	.910	.250	.080 - .104	.919	.257	.070 - .090
.883	.777	.010 - .020	.895	.801	.020 - .030	.900	.711	.025 - .040	.905	.564	.040 - .060	.910	.330	.030 - .040	.919	.366	.005 - .010
.883	.788	.005 - .010	.896	.215	.060 - .080	.900	.725	.020 - .040	.905	.585	.050 - .075	.910	.381	.050 - .070	.919	.396	.005 - .010
.884	.411	.005 - .010	.896	.340	.050 - .070	.900	.730	.060 - .080	.905	.634	.032 - .060	.910	.400	.015 - .030	.919	.493	.100 - .125
.884	.510	.015 - .030	.896	.772	.020 - .042	.900	.755	.010 - .020	.905	.637	.015 - .030	.910	.417	.010 - .020	.919	.565	.005 - .020
.885	.150	.020 - .040	.897	.292	.005 - .010	.900	.800	.005 - .010	.905	.639	.040 - .060	.910	.425	.005 - .010	.919	.671	.005 - .010
.885	.212	.010 - .020	.897	.407	.005 - .010	.900	.805	.005 - .010	.905	.643	.010 - .020	.910	.440	.005 - .010	.919	.697	.010 - .020
.885	.325	.005 - .010	.897	.408	.010 - .020	.900	.810	.010 - .020	.905	.657	.070 - .080	.910	.468	.075 - .090	.919	.765	.005 - .010
.885	.396	.005 - .010	.897	.409	.025 - .080	.900	.825	.005 - .010	.905	.667	.040 - .060	.910	.490	.130 - .156	.919	.812	.020 - .030
.885	.443	.005 - .008	.897	.704	.025 - .040	.900	.830	.015 - .025	.905	.672	.070 - .090	.910	.500	.025 - .040	.920	.048	.005 - .010
.885	.456	.005 - .020	.897	.748	.005 - .015	.900	.840	.005 - .010	.905	.673	.090 - .125	.910	.515	.100 - .125	.920	.090	.040 - .060
.885	.521	.005 - .010	.897	.810	.010 - .020	.901	.202	.030 - .050	.905	.674	.075 - .100	.910	.540	.060 - .080	.920	.157	.005 - .010
.885	.565	.015 - .032	.898	.250	.040 - .060	.901	.256	.010 - .016	.905	.677	.105 - .125	.910	.560	.110 - .130	.920	.163	.032 - .060
.885	.626	.020 - .040	.898	.318	.050 - .075	.901	.292	.040 - .060	.905	.682	.010 - .020	.910	.590	.005 - .010	.920	.200	.005 - .010
.885	.695	.005 - .010	.898	.343	.005 - .010	.901	.361	.010 - .020	.905	.709	.015 - .030	.910	.638	.010 - .020	.920	.230	.025 - .040
.885	.705	.005 - .010	.898	.453	.080 - .100	.901	.506	.005 - .020	.905	.728	.050 - .070	.910	.650	.005 - .015	.920	.253	.005 - .075
.886	.118	.030 - .050	.898	.510	.075 - .104	.901	.626	.005 - .020	.905	.785	.005 - .010	.910	.667	.030 - .050	.920	.265	.040 - .060
.886	.291	.030 - .050	.898	.665	.025 - .040	.901	.694	.075 - .093	.906	.316	.005 - .010	.910	.703	.030 - .040	.920	.269	.135 - .187
.886	.443	.005 - .040	.898	.726	.005 - .010	.901	.710	.005 - .020	.906	.317	.005 - .020	.910	.750	.010 - .020	.920	.316	.080 - .100
.886	.531	.050 - .070	.898	.748	.005 - .010	.901	.715	.010 - .020	.906	.325	.005 - .010	.910	.811	.020 - .040	.920	.318	.005 - .010
.886	.650	.070 - .090	.898	.812	.005 - .010	.902	.316	.010 - .030	.906	.332	.090 - .110	.910	.820	.005 - .010	.920	.378	.005 - .010
.887	.265	.062 - .090	.898	.829	.015 - .030	.902	.318	.005 - .010	.906	.394	.010 - .020	.911	.256	.080 - .100	.920	.456	.010 - .030
.887	.325	.035 - .050	.899	.121													

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
.945	.477	.005 - .010	.950	.234	.015 - .030	.960	.350	.032 - .050	.968	.869	.025 - .040	.976	.503	.030 - .050	.982	.501	.005 - .010
.945	.484	.050 - .075	.950	.250	.015 - .030	.960	.398	.090 - .105	.969	.250	.050 - .070	.976	.525	.010 - .020	.982	.502	.015 - .030
.945	.502	.005 - .010	.950	.328	.105 - .125	.960	.450	.032 - .050	.969	.391	.030 - .050	.976	.527	.015 - .030	.982	.503	.005 - .010
.945	.511	.080 - .100	.950	.387	.005 - .010	.960	.500	.030 - .060	.969	.436	.050 - .075	.976	.565	.005 - .010	.982	.504	.100 - .125
.945	.512	.005 - .010	.950	.395	.005 - .070	.960	.507	.080 - .104	.969	.559	.020 - .040	.976	.640	.005 - .020	.982	.562	.060 - .080
.945	.514	.180 - .190	.950	.440	.090 - .105	.960	.537	.005 - .010	.969	.565	.020 - .030	.976	.661	.005 - .010	.982	.620	.005 - .010
.945	.519	.040 - .110	.950	.454	.050 - .070	.960	.550	.032 - .050	.969	.582	.005 - .010	.976	.717	.005 - .010	.982	.704	.010 - .020
.945	.554	.010 - .020	.950	.500	.005 - .030	.960	.572	.005 - .010	.969	.638	.025 - .042	.976	.872	.010 - .020	.982	.752	.030 - .050
.945	.607	.005 - .010	.950	.502	.005 - .020	.960	.575	.005 - .010	.969	.641	.060 - .080	.977	.276	.015 - .030	.982	.801	.005 - .010
.945	.610	.060 - .080	.950	.503	.010 - .040	.960	.640	.005 - .010	.969	.656	.060 - .080	.977	.315	.015 - .040	.982	.875	.020 - .040
.945	.627	.032 - .042	.950	.505	.010 - .020	.960	.650	.032 - .050	.969	.661	.060 - .080	.977	.485	.005 - .010	.983	.090	.010 - .025
.945	.669	.050 - .125	.950	.512	.100 - .125	.960	.705	.030 - .060	.969	.750	.005 - .010	.977	.550	.020 - .030	.983	.242	.040 - .060
.945	.671	.005 - .010	.950	.531	.060 - .080	.960	.728	.040 - .060	.969	.770	.010 - .048	.977	.560	.020 - .040	.983	.257	.100 - .125
.945	.673	.015 - .030	.950	.567	.030 - .050	.960	.740	.090 - .105	.969	.792	.025 - .048	.977	.626	.070 - .090	.983	.280	.015 - .025
.945	.686	.060 - .105	.950	.640	.030 - .125	.960	.750	.030 - .060	.969	.802	.015 - .030	.977	.649	.010 - .020	.983	.315	.005 - .010
.945	.708	.060 - .080	.950	.645	.090 - .105	.960	.751	.050 - .075	.970	.092	.025 - .048	.977	.720	.010 - .040	.983	.319	.005 - .010
.945	.710	.030 - .050	.950	.680	.110 - .130	.960	.758	.005 - .010	.970	.230	.005 - .010	.977	.778	.070 - .090	.983	.323	.040 - .060
.945	.714	.060 - .080	.950	.696	.030 - .040	.960	.774	.005 - .010	.970	.262	.100 - .125	.978	.180	.020 - .040	.983	.381	.015 - .030
.945	.719	.070 - .090	.950	.747	.005 - .010	.960	.783	.020 - .030	.970	.345	.020 - .040	.978	.437	.050 - .075	.983	.396	.050 - .075
.945	.737	.005 - .010	.950	.760	.030 - .050	.960	.820	.005 - .010	.970	.380	.025 - .040	.978	.503	.025 - .040	.983	.398	.050 - .070
.945	.831	.015 - .030	.950	.775	.020 - .035	.961	.438	.050 - .070	.970	.418	.070 - .080	.978	.515	.005 - .120	.983	.416	.005 - .010
.945	.845	.005 - .015	.950	.807	.010 - .020	.961	.500	.040 - .050	.970	.440	.005 - .010	.978	.659	.015 - .020	.983	.434	.005 - .010
.946	.354	.005 - .010	.950	.815	.005 - .010	.961	.621	.005 - .010	.970	.515	.080 - .100	.978	.690	.010 - .020	.983	.471	.008 - .015
.946	.386	.040 - .060	.951	.104	.005 - .010	.961	.676	.020 - .030	.970	.550	.010 - .020	.979	.171	.015 - .035	.983	.502	.005 - .010
.946	.398	.010 - .020	.951	.156	.015 - .030	.961	.730	.005 - .010	.970	.631	.156 - .187	.979	.285	.015 - .030	.983	.659	.010 - .020
.946	.473	.005 - .010	.951	.376	.010 - .020	.961	.820	.010 - .020	.970	.670	.005 - .010	.979	.340	.060 - .080	.983	.670	.020 - .040
.946	.506	.050-.070	.951	.377	.020 - .030	.961	.844	.010 - .020	.970	.679	.010 - .020	.979	.393	.005 - .010	.983	.678	.060 - .080
.946	.513	.105 - .125	.951	.380	.040 - .060	.961	.878	.005 - .010	.970	.723	.005 - .010	.979	.405	.005 - .010	.983	.719	.005 - .010
.946	.602	.025 - .042	.951	.388	.010 - .020	.962	.045	.015 - .025	.970	.754	.040 - .060	.979	.517	.125 - .135	.983	.753	.020 - .030
.946	.678	.005 - .010	.951	.500	.010 - .020	.962	.055	.005 - .010	.970	.769	.005 - .010	.979	.563	.070 - .090	.984	.183	.050 - .075
.946	.686	.062 - .070	.951	.586	.015 - .025	.962	.766	.005 - .010	.970	.802	.030 - .048	.979	.630	.005 - .010	.984	.238	.005 - .010
.946	.717	.060 - .080	.951	.661	.005 - .010	.962	.769	.035 - .062	.970	.882	.010 - .020	.979	.674	.005 - .010	.984	.239	.005 - .010
.946	.786	.050 - .070	.951	.741	.020 - .030	.962	.789	.020 - .030	.971	.345	.105 - .135	.979	.678	.025 - .040	.984	.240	.015 - .030
.947	.128	.005 - .010	.952	.125	.025 - .040	.963	.271	.005 - .010	.971	.376	.060 - .080	.979	.705	.005 - .010	.984	.257	.105 - .125
.947	.397	.010 - .020	.952	.166	.060 - .080	.963	.283	.030 - .050	.971	.408	.050 - .075	.979	.710	.030 - .050	.984	.284	.005 - .010
.947	.463	.060 - .070	.952	.198	.048 - .070	.963	.324	.005 - .010	.971	.439	.020 - .040	.979	.837	.010 - .030	.984	.320	.010 - .020
.947	.482	.005 - .010	.952	.213	.048 - .070	.963	.400	.020 - .040	.971	.444	.020 - .030	.979	.840	.015 - .030	.984	.355	.080 - .104
.947	.566	.030 - .048	.952	.376	.005 - .010	.963	.451	.030 - .050	.971	.550	.030 - .050	.980	.198	.005 - .010	.984	.394	.005 - .010
.947	.599	.042 - .060	.952	.470	.005 - .010	.963	.500	.010 - .020	.971	.605	.005 - .010	.980	.246	.015 - .030	.984	.395	.100 - .125
.947	.730	.030 - .050	.952	.502	.050 - .070	.963	.504	.005 - .010	.971	.631	.080 - .104	.980	.302	.015 - .030	.984	.435	.005 - .010
.947	.757	.010 - .025	.952	.555	.060 - .070	.963	.659	.080 - .100	.971	.720	.104 - .125	.980	.347	.005 - .010	.984	.469	.080 - .100
.947	.780	.020 - .040	.952	.570	.080 - .100	.963	.758	.020 - .030	.971	.761	.005 - .020	.980	.395	.015 - .025	.984	.473	.005 - .010
.947	.783	.048 - .062	.952	.627	.005 - .010	.963	.800	.030 - .050	.971	.837	.040 - .060	.980	.407	.100 - .125	.984	.477	.005 - .010
.947	.799	.010 - .020	.952	.685	.060 - .070	.963	.885	.010 - .020	.971	.865	.030 - .050	.980	.445	.005 - .010	.984	.481	.040 - .060
.947	.821	.005 - .010	.952	.687	.005 - .010	.964	.376	.030 - .050	.972	.335	.040 - .060	.980	.458	.020 - .030	.984	.507	.070 - .090
.948	.059	.005 - .010	.953	.693	.105 - .125	.964	.500	.015 - .030	.972	.365	.010 - .020	.980	.480	.060 - .080	.984	.513	.105 - .125
.948	.245	.005 - .072	.953	.710	.105 - .135	.964	.652	.090 - .120	.972	.570	.100 - .130	.980	.481	.005 - .010	.984	.530	.042 - .062
.948	.262	.060 - .080	.953	.742	.090 - .105	.965	.264	.020 - .040	.972	.657	.015 - .105	.980	.500	.010 - .020	.984	.531	.005 - .010
.948	.390	.005 - .010	.954	.322	.005 - .010	.965	.423	.030 - .040	.972	.746	.050 - .070	.980	.501	.005 - .010	.984	.556	.005 - .010
.948	.398	.005 - .010	.954	.630	.105 - .125	.965	.506	.060 - .075	.972	.764	.050 - .075	.980	.514	.005 - .010	.984	.572	.040 - .060
.948	.413	.005 - .010	.954	.670	.060 - .070	.965	.514	.090 - .120	.973	.110	.050 - .072	.980	.521	.025 - .040	.984	.625	.040 - .060
.948	.439	.010 - .020	.954	.753	.040 - .060	.965	.580	.032 - .060	.973	.567	.005 - .010	.980	.522	.005 - .010	.984	.628	.035 - .060
.948	.448	.060 - .070	.954	.826	.005 - .010	.965	.610	.020 - .035	.973	.595	.005 - .075	.980	.600	.030 - .105	.984	.630	.015 - .025
.948	.485	.090 - .100	.955	.510	.025 - .040	.965	.620	.025 - .040	.974	.226	.050 - .075	.980	.640	.007 - .015	.984	.641	.080 - .105
.948	.493	.062 - .080	.955	.733	.020 - .040	.965	.644	.005 - .010	.974	.260	.050 - .070	.980	.647	.005 - .010	.984	.643	.060 - .080
.948	.502	.006 - .015	.955	.825	.010 - .020	.965	.669	.080 - .105	.974	.502	.005 - .010	.980	.648	.050 - .070	.984	.648	.015 - .030
.948	.503	.005 - .010	.955	.848	.005 - .010	.965	.709	.005 - .010	.974	.669	.015 - .025	.980	.664	.060 - .083	.984	.650	.100 - .125
.948	.506	.005 - .010	.956	.439	.060 - .125	.965	.754	.020 - .040	.974	.699	.025 - .040	.980	.668	.080 - .100	.984	.689	.020 - .030
.948	.514	.050 - .075	.956	.635	.005 - .050	.965	.783	.020 - .036	.974	.716	.120 - .135	.980	.719	.040 - .060	.984	.715	.050 - .075
.948	.518	.030 - .060	.956	.781	.005 - .010	.966	.391	.040 - .060	.974	.755	.050 - .070	.980	.740	.020 - .040	.984	.716	.025 - .042
.948	.576	.005 - .010	.956	.820	.005 - .010	.966	.542	.020 - .032	.974	.768	.030 - .050	.980	.757	.080 - .104	.984	.748	.010 - .020
.948	.666	.035 - .050	.957	.295	.030 - .050	.966	.643	.080 - .105	.975	.440	.005 - .010	.980	.841	.030 - .050	.984	.749	.040 - .060
.948	.763	.005 - .010	.957	.626	.040 - .060	.966	.703	.060 - .075	.975	.495	.005 - .010	.980	.851	.010 - .020	.984	.794	.070 - .090
.948	.780	.020 - .040	.957	.734	.015 - .030	.967	.265	.005 - .030	.975	.503	.015 - .030	.980	.860	.005 - .010	.984	.795	.025 - .042
.948	.864	.025 - .040	.957	.812	.005 - .010	.967	.375	.090 - .125	.975	.531	.010 - .020	.980	.875	.005 - .010	.984	.798	.070 - .090
.949	.189	.005 - .010	.957	.841	.015 - .020	.967	.542	.015 - .030	.975	.532	.025 - .040	.981	.396	.010 - .020	.984	.799	.040 - .060
.949	.380	.040 - .060	.958	.442	.005 - .010	.967	.567	.070 - .090	.975	.550	.050 - .060	.981	.467	.020 - .030	.984	.817	.005 - .010
.949	.503	.005 - .010	.958	.606	.050 - .072	.967	.593	.050 - .075	.975	.571	.050 - .110	.981	.504	.050 - .060	.984	.838	.015 - .030
.949	.505	.050 - .070	.958	.639	.020 - .030	.967											

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.000	.443	.135 - .170	1.000	.675	.005 - .030	1.001	.389	.030 - .050	1.004	.567	.100 - .125	1.016	.460	.015 - .030	1.023	.839	.005 - .010
1.000	.444	.005 - .010	1.000	.676	.020 - .030	1.001	.409	.005 - .010	1.004	.628	.062 - .120	1.016	.481	.020 - .040	1.023	.869	.010 - .020
1.000	.445	.060 - .080	1.000	.679	.050 - .070	1.001	.416	.070 - .090	1.004	.675	.100 - .125	1.016	.505	.050 - .070	1.023	.885	.010 - .020
1.000	.447	.010 - .020	1.000	.680	.005 - .125	1.001	.418	.050 - .070	1.004	.705	.040 - .060	1.016	.522	.015 - .030	1.023	.887	.010 - .020
1.000	.451	.005 - .010	1.000	.686	.030 - .060	1.001	.423	.050 - .070	1.004	.750	.090 - .105	1.016	.650	.005 - .010	1.023	.893	.015 - .030
1.000	.452	.010 - .020	1.000	.688	.008 - .016	1.001	.439	.170 - .190	1.004	.760	.090 - .125	1.016	.750	.005 - .010	1.023	.909	.005 - .010
1.000	.457	.100 - .125	1.000	.690	.025 - .048	1.001	.494	.005 - .010	1.004	.780	.010 - .020	1.016	.761	.015 - .030	1.024	.394	.010 - .020
1.000	.459	.005 - .010	1.000	.691	.005 - .010	1.001	.500	.010 - .020	1.004	.781	.005 - .010	1.016	.920	.005 - .010	1.024	.395	.005 - .010
1.000	.465	.030 - .050	1.000	.700	.005 - .060	1.001	.503	.005 - .100	1.004	.873	.050 - .070	1.016	.929	.005 - .010	1.024	.398	.005 - .010
1.000	.468	.100 - .125	1.000	.709	.015 - .030	1.001	.504	.005 - .030	1.005	.210	.030 - .042	1.017	.301	.050 - .075	1.024	.454	.040 - .060
1.000	.471	.050 - .070	1.000	.716	.005 - .010	1.001	.505	.015 - .025	1.005	.257	.100 - .125	1.017	.627	.005 - .008	1.024	.473	.005 - .010
1.000	.475	.020 - .040	1.000	.720	.010 - .020	1.001	.508	.005 - .105	1.005	.262	.010 - .020	1.017	.754	.005 - .015	1.024	.476	.005 - .010
1.000	.476	.100 - .125	1.000	.724	.040 - .060	1.001	.531	.170 - .190	1.005	.263	.100 - .125	1.017	.825	.005 - .060	1.024	.568	.050 - .070
1.000	.480	.005 - .125	1.000	.729	.060 - .080	1.001	.564	.170 - .190	1.005	.480	.060 - .075	1.017	.865	.005 - .010	1.024	.629	.005 - .010
1.000	.482	.005 - .010	1.000	.733	.025 - .040	1.001	.587	.020 - .040	1.005	.510	.025 - .040	1.017	.878	.048 - .062	1.024	.694	.015 - .030
1.000	.485	.040 - .135	1.000	.742	.005 - .010	1.001	.595	.050 - .070	1.005	.536	.100 - .125	1.018	.203	.008 - .015	1.024	.717	.070 - .090
1.000	.499	.005 - .010	1.000	.750	.005 - .125	1.001	.611	.040 - .062	1.005	.650	.080 - .100	1.018	.688	.050 - .070	1.024	.801	.030 - .050
1.000	.500	.005 - .062	1.000	.751	.100 - .125	1.001	.626	.005 - .020	1.005	.758	.005 - .010	1.018	.696	.050 - .070	1.024	.881	.010 - .020
1.000	.501	.030 - .105	1.000	.752	.040 - .105	1.001	.628	.040 - .062	1.005	.801	.010 - .020	1.018	.747	.048 - .062	1.025	.243	.005 - .010
1.000	.502	.005 - .187	1.000	.753	.050 - .070	1.001	.629	.050 - .070	1.005	.840	.005 - .010	1.018	.807	.010 - .020	1.025	.315	.005 - .010
1.000	.504	.010 - .110	1.000	.754	.020 - .075	1.001	.688	.006 - .016	1.005	.900	.005 - .010	1.018	.824	.020 - .040	1.025	.318	.005 - .010
1.000	.505	.030 - .050	1.000	.755	.005 - .125	1.001	.690	.050 - .070	1.005	.950	.005 - .010	1.018	.826	.005 - .010	1.025	.330	.020 - .040
1.000	.506	.010 - .020	1.000	.756	.030 - .050	1.001	.711	.080 - .090	1.006	.516	.080 - .105	1.018	.832	.020 - .040	1.025	.337	.060 - .080
1.000	.507	.020 - .187	1.000	.759	.005 - .040	1.001	.756	.025 - .050	1.006	.584	.040 - .060	1.019	.166	.015 - .030	1.025	.375	.030 - .040
1.000	.508	.005 - .190	1.000	.760	.060 - .080	1.001	.818	.080 - .105	1.006	.881	.010 - .030	1.019	.415	.020 - .030	1.025	.394	.010 - .020
1.000	.510	.060 - .083	1.000	.761	.035 - .050	1.001	.906	.005 - .010	1.007	.203	.050 - .075	1.019	.613	.015 - .030	1.025	.395	.005 - .010
1.000	.511	.032 - .060	1.000	.764	.105 - .125	1.002	.136	.050 - .070	1.007	.414	.015 - .025	1.019	.665	.030 - .050	1.025	.410	.036 - .060
1.000	.513	.140 - .160	1.000	.765	.030 - .050	1.002	.140	.042 - .060	1.007	.448	.015 - .025	1.019	.757	.005 - .010	1.025	.433	.050 - .070
1.000	.515	.005 - .187	1.000	.766	.100 - .125	1.002	.172	.010 - .025	1.007	.528	.080 - .105	1.019	.766	.010 - .030	1.025	.440	.090 - .110
1.000	.517	.005 - .010	1.000	.767	.050 - .075	1.002	.197	.005 - .010	1.007	.569	.135 - .160	1.019	.769	.050 - .070	1.025	.475	.005 - .010
1.000	.518	.015 - .125	1.000	.768	.010 - .020	1.002	.277	.010 - .020	1.007	.641	.015 - .030	1.019	.794	.010 - .020	1.025	.477	.005 - .010
1.000	.520	.100 - .125	1.000	.770	.005 - .060	1.002	.312	.135 - .160	1.007	.647	.100 - .125	1.020	.316	.050 - .075	1.025	.505	.005 - .020
1.000	.531	.120 - .140	1.000	.771	.015 - .030	1.002	.319	.060 - .080	1.007	.725	.062 - .075	1.020	.378	.015 - .030	1.025	.550	.005 - .012
1.000	.534	.050 - .070	1.000	.776	.070 - .090	1.002	.379	.005 - .010	1.007	.752	.036 - .050	1.020	.510	.135 - .160	1.025	.606	.048 - .062
1.000	.535	.010 - .060	1.000	.778	.040 - .060	1.002	.384	.090 - .125	1.007	.764	.005 - .010	1.020	.552	.134 - .156	1.025	.632	.010 - .020
1.000	.545	.150 - .190	1.000	.785	.100 - .125	1.002	.442	.050 - .070	1.008	.469	.015 - .030	1.020	.641	.005 - .010	1.025	.704	.032 - .042
1.000	.549	.100 - .125	1.000	.787	.060 - .070	1.002	.454	.025 - .042	1.008	.661	.060 - .080	1.020	.667	.010 - .020	1.025	.720	.035 - .050
1.000	.550	.030 - .110	1.000	.791	.005 - .020	1.002	.470	.005 - .075	1.008	.689	.050 - .060	1.020	.700	.005 - .008	1.025	.749	.005 - .035
1.000	.556	.025 - .040	1.000	.796	.010 - .015	1.002	.504	.100 - .125	1.008	.778	.015 - .030	1.020	.744	.010 - .020	1.025	.754	.040 - .060
1.000	.562	.050 - .075	1.000	.797	.025 - .125	1.002	.505	.005 - .010	1.008	.831	.030 - .040	1.020	.750	.040 - .060	1.025	.775	.010 - .020
1.000	.563	.005 - .020	1.000	.798	.005 - .010	1.002	.507	.010 - .020	1.008	.845	.050 - .070	1.020	.775	.050 - .070	1.025	.776	.020 - .040
1.000	.564	.030 - .050	1.000	.800	.012 - .025	1.002	.531	.035 - .090	1.009	.195	.025 - .042	1.020	.787	.030 - .048	1.025	.787	.030 - .050
1.000	.567	.010 - .020	1.000	.801	.025 - .040	1.002	.532	.005 - .010	1.009	.444	.060 - .080	1.020	.805	.060 - .075	1.025	.788	.010 - .020
1.000	.568	.005 - .010	1.000	.805	.005 - .010	1.002	.534	.025 - .040	1.009	.511	.030 - .050	1.020	.861	.025 - .048	1.025	.804	.040 - .050
1.000	.572	.005 - .080	1.000	.815	.005 - .010	1.002	.564	.062 - .083	1.010	.130	.060 - .070	1.020	.960	.015 - .030	1.025	.877	.010 - .020
1.000	.578	.100 - .125	1.000	.828	.015 - .025	1.002	.579	.015 - .030	1.010	.388	.005 - .010	1.020	.962	.005 - .020	1.025	.893	.020 - .040
1.000	.579	.020 - .040	1.000	.837	.040 - .060	1.002	.581	.050 - .070	1.010	.450	.005 - .010	1.021	.257	.050 - .075	1.025	.926	.020 - .040
1.000	.590	.020 - .125	1.000	.845	.030 - .050	1.002	.645	.015 - .030	1.010	.506	.005 - .010	1.021	.316	.040 - .060	1.026	.239	.005 - .010
1.000	.594	.156 - .187	1.000	.850	.005 - .010	1.002	.652	.015 - .030	1.010	.510	.015 - .030	1.021	.575	.005 - .010	1.026	.480	.030 - .050
1.000	.598	.060 - .070	1.000	.851	.070 - .080	1.002	.658	.100 - .125	1.010	.540	.015 - .030	1.021	.668	.015 - .020	1.026	.630	.060 - .080
1.000	.600	.005 - .010	1.000	.854	.010 - .020	1.002	.685	.060 - .083	1.010	.640	.050 - .060	1.021	.726	.005 - .010	1.026	.781	.040 - .060
1.000	.605	.010 - .020	1.000	.855	.005 - .010	1.002	.700	.125 - .135	1.010	.664	.025 - .040	1.021	.750	.025 - .040	1.026	.917	.005 - .010
1.000	.610	.005 - .120	1.000	.875	.016 - .025	1.002	.703	.050 - .070	1.010	.757	.015 - .025	1.021	.766	.015 - .030	1.027	.203	.005 - .010
1.000	.611	.030 - .060	1.000	.876	.005 - .010	1.002	.718	.020 - .040	1.011	.501	.015 - .030	1.021	.878	.020 - .030	1.027	.294	.070 - .090
1.000	.623	.030 - .050	1.000	.879	.030 - .060	1.002	.719	.062 - .083	1.012	.315	.030 - .040	1.021	.930	.015 - .030	1.027	.382	.005 - .010
1.000	.624	.005 - .187	1.000	.880	.010 - .020	1.002	.767	.020 - .040	1.012	.358	.010 - .020	1.022	.219	.005 - .010	1.027	.417	.075 - .090
1.000	.625	.015 - .030	1.000	.892	.030 - .050	1.002	.820	.020 - .040	1.012	.551	.030 - .040	1.022	.318	.005 - .010	1.027	.418	.070 - .090
1.000	.626	.050 - .075	1.000	.900	.005 - .010	1.002	.842	.030 - .050	1.012	.849	.015 - .030	1.022	.354	.005 - .010	1.027	.439	.005 - .010
1.000	.627	.105 - .125	1.000	.911	.020 - .035	1.002	.897	.025 - .040	1.012	.869	.020 - .040	1.022	.394	.005 - .010	1.027	.542	.070 - .090
1.000	.628	.005 - .030	1.000	.936	.005 - .010	1.003	.211	.010 - .020	1.012	.896	.010 - .020	1.022	.468	.030 - .050	1.027	.635	.020 - .070
1.000	.629	.005 - .010	1.000	.957	.015 - .025	1.003	.377	.005 - .015	1.013	.755	.005 - .010	1.022	.477	.010 - .020	1.027	.637	.010 - .030
1.000	.630	.030 - .060	1.000	.958	.005 - .010	1.003	.410	.005 - .020	1.013	.806	.040 - .060	1.022	.552	.005 - .010	1.027	.669	.075 - .100
1.000	.631	.134 - .156	1.001	.164	.005 - .010	1.003	.441	.030 - .050	1.013	.848	.042 - .060	1.022	.590	.015 - .030	1.027	.721	.040 - .060
1.000	.632	.090 - .110	1.001	.203	.025 - .040	1.003	.445	.010 - .020	1.014	.503	.060 - .080	1.022	.626	.030 - .050	1.027	.793	.060 - .

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.068	.813	.030 - .050	1.079	.760	.025 - .040	1.092	.239	.005 - .020	1.098	.671	.005 - .010	1.100	.863	.030 - .042	1.103	.811	.005 - .010
1.069	.153	.005 - .010	1.079	.933	.005 - .010	1.092	.433	.040 - .105	1.098	.752	.120 - .140	1.100	.875	.005 - .010	1.103	.820	.015 - .030
1.069	.390	.005 - .010	1.079	.955	.005 - .010	1.092	.615	.020 - .030	1.098	.754	.120 - .156	1.100	.877	.025 - .040	1.103	.827	.020 - .040
1.069	.600	.170 - .190	1.080	.088	.005 - .010	1.092	.695	.025 - .040	1.098	.761	.005 - .010	1.100	.882	.030 - .040	1.103	.845	.060 - .080
1.069	.936	.025 - .040	1.080	.276	.020 - .040	1.092	.750	.015 - .025	1.098	.846	.110 - .130	1.100	.889	.015 - .030	1.103	.857	.010 - .020
1.070	.255	.105 - .125	1.080	.320	.040 - .060	1.092	.753	.048 - .070	1.098	.929	.005 - .010	1.100	.905	.040 - .060	1.103	.886	.010 - .020
1.070	.266	.020 - .030	1.080	.328	.015 - .030	1.092	.791	.010 - .020	1.098	.939	.005 - .010	1.100	.926	.010 - .020	1.103	.947	.015 - .030
1.070	.318	.020 - .040	1.080	.505	.005 - .020	1.092	.811	.005 - .010	1.099	.253	.005 - .010	1.100	.941	.015 - .050	1.104	.097	.060 - .090
1.070	.619	.005 - .010	1.080	.571	.070 - .090	1.092	.812	.015 - .030	1.099	.318	.005 - .010	1.100	.952	.010 - .020	1.104	.396	.060 - .070
1.070	.755	.030 - .040	1.080	.623	.020 - .040	1.093	.239	.012 - .020	1.099	.377	.005 - .010	1.100	.961	.005 - .010	1.104	.496	.005 - .010
1.070	.794	.070 - .080	1.080	.738	.060 - .080	1.093	.405	.030 - .060	1.099	.378	.010 - .015	1.100	.965	.030 - .050	1.104	.552	.110 - .130
1.070	.906	.005 - .010	1.080	.760	.020 - .040	1.093	.421	.050 - .070	1.099	.436	.020 - .040	1.100	.987	.005 - .035	1.104	.633	.110 - .130
1.070	.961	.020 - .035	1.080	.770	.050 - .075	1.093	.500	.050 - .075	1.099	.440	.005 - .010	1.100	.992	.030 - .050	1.104	.670	.080 - .105
1.071	.259	.040 - .062	1.080	.773	.030 - .060	1.093	.641	.015 - .030	1.099	.500	.005 - .010	1.100	.994	.030 - .050	1.104	.752	.050 - .075
1.071	.266	.010 - .030	1.080	.780	.005 - .010	1.093	.681	.010 - .030	1.099	.508	.005 - .020	1.100	1.000	.005 - .010	1.104	.826	.005 - .010
1.071	.323	.015 - .030	1.080	.856	.020 - .035	1.093	.830	.030 - .050	1.099	.558	.010 - .020	1.100	1.007	.010 - .020	1.104	.945	.010 - .020
1.071	.626	.005 - .010	1.080	.906	.005 - .010	1.093	.871	.025 - .040	1.099	.633	.020 - .030	1.100	1.010	.005 - .020	1.105	.126	.005 - .010
1.071	.884	.015 - .030	1.080	.935	.005 - .010	1.093	.876	.025 - .050	1.099	.650	.110 - .130	1.101	.075	.005 - .010	1.105	.252	.060 - .078
1.072	.256	.005 - .010	1.080	.973	.030 - .050	1.093	.878	.050 - .075	1.099	.788	.010 - .050	1.101	.255	.110 - .130	1.105	.360	.100 - .134
1.072	.381	.005 - .010	1.081	.341	.030 - .050	1.093	.883	.035 - .050	1.099	.816	.015 - .025	1.101	.275	.060 - .070	1.105	.496	.030 - .050
1.072	.712	.005 - .010	1.081	.793	.030 - .050	1.093	.957	.005 - .010	1.099	.840	.015 - .025	1.101	.316	.020 - .030	1.105	.592	.030 - .050
1.072	.750	.075 - .100	1.081	.797	.005 - .010	1.094	.313	.005 - .010	1.099	.902	.010 - .030	1.101	.317	.005 - .010	1.105	.635	.010 - .020
1.072	1.001	.005 - .010	1.083	.253	.050 - .075	1.094	.395	.040 - .060	1.100	.128	.005 - .010	1.101	.354	.005 - .010	1.105	.640	.010 - .020
1.073	.347	.060 - .080	1.083	.475	.010 - .020	1.094	.559	.020 - .030	1.100	.162	.030 - .042	1.101	.356	.015 - .030	1.105	.703	.080 - .090
1.073	.474	.005 - .010	1.083	.670	.010 - .020	1.094	.668	.080 - .100	1.100	.253	.005 - .010	1.101	.444	.010 - .020	1.105	.749	.030 - .070
1.073	.510	.015 - .030	1.083	1.016	.020 - .030	1.094	.782	.025 - .040	1.100	.312	.010 - .020	1.101	.473	.005 - .010	1.105	.756	.030 - .050
1.073	.572	.070 - .090	1.084	.631	.080 - .100	1.094	.846	.030 - .050	1.100	.316	.005 - .010	1.101	.502	.010 - .020	1.105	.881	.070 - .090
1.073	.656	.040 - .060	1.084	.645	.025 - .040	1.094	.885	.030 - .040	1.100	.346	.050 - .070	1.101	.505	.015 - .025	1.105	.886	.020 - .030
1.073	.672	.005 - .010	1.084	.721	.050 - .070	1.094	.900	.005 - .010	1.100	.354	.070 - .090	1.101	.630	.020 - .040	1.105	.900	.005 - .010
1.073	.890	.050 - .070	1.084	.725	.040 - .060	1.094	.993	.020 - .030	1.100	.377	.010 - .020	1.101	.719	.025 - .040	1.105	.916	.005 - .010
1.074	.680	.135 - .156	1.084	.728	.040 - .050	1.095	.375	.025 - .080	1.100	.378	.015 - .030	1.101	.788	.005 - .010	1.105	.954	.005 - .010
1.074	.720	.020 - .040	1.084	.765	.040 - .060	1.095	.405	.025 - .048	1.100	.380	.005 - .010	1.102	.070	.005 - .010	1.105	.960	.105 - .120
1.074	.971	.015 - .025	1.084	.800	.015 - .030	1.095	.591	.100 - .125	1.100	.416	.015 - .030	1.102	.237	.005 - .010	1.106	.317	.015 - .030
1.075	.350	.005 - .010	1.084	.848	.005 - .010	1.095	.625	.010 - .020	1.100	.426	.157 - .187	1.102	.239	.005 - .010	1.106	.633	.078 - .105
1.075	.525	.100 - .120	1.084	.871	.005 - .010	1.095	.655	.042 - .062	1.100	.439	.005 - .010	1.102	.245	.050 - .060	1.106	.656	.060 - .090
1.075	.689	.075 - .100	1.084	.926	.005 - .010	1.095	.700	.060 - .090	1.100	.440	.005 - .020	1.102	.251	.025 - .040	1.106	.782	.020 - .040
1.075	.694	.050 - .060	1.084	.927	.010 - .020	1.095	.749	.040 - .060	1.100	.452	.005 - .010	1.102	.276	.180 - .190	1.106	.790	.040 - .060
1.075	.804	.005 - .010	1.085	.245	.030 - .050	1.095	.755	.040 - .050	1.100	.454	.050 - .125	1.102	.305	.005 - .010	1.107	.691	.080 - .100
1.075	.810	.005 - .010	1.085	.283	.050 - .075	1.095	.790	.060 - .080	1.100	.478	.005 - .010	1.102	.320	.005 - .020	1.107	.892	.040 - .060
1.075	.814	.005 - .010	1.085	.476	.005 - .010	1.095	.808	.015 - .030	1.100	.485	.010 - .020	1.102	.334	.005 - .010	1.107	.912	.030 - .050
1.075	.834	.005 - .020	1.085	.572	.070 - .090	1.095	.809	.025 - .040	1.100	.500	.005 - .010	1.102	.335	.080 - .090	1.107	.955	.020 - .030
1.076	.348	.050 - .075	1.085	.650	.015 - .030	1.095	.813	.105 - .135	1.100	.502	.005 - .010	1.102	.394	.005 - .020	1.107	.983	.010 - .020
1.076	.367	.075 - .090	1.085	.722	.005 - .010	1.095	.818	.050 - .075	1.100	.503	.005 - .010	1.102	.395	.005 - .025	1.108	.407	.050 - .070
1.076	.398	.005 - .010	1.085	.749	.050 - .070	1.095	.906	.005 - .010	1.100	.504	.005 - .020	1.102	.396	.005 - .010	1.108	.525	.005 - .015
1.076	.499	.015 - .030	1.085	1.022	.005 - .010	1.096	.375	.030 - .060	1.100	.505	.005 - .010	1.102	.401	.005 - .010	1.108	.563	.005 - .010
1.076	.508	.083 - .104	1.086	.643	.050 - .030	1.096	.398	.050 - .083	1.100	.506	.005 - .010	1.102	.473	.005 - .010	1.108	.636	.050 - .070
1.076	.515	.015 - .025	1.086	.820	.010 - .020	1.096	.441	.060 - .075	1.100	.515	.100 - .125	1.102	.474	.005 - .010	1.108	.714	.060 - .075
1.076	.535	.060 - .080	1.086	.915	.020 - .035	1.096	.450	.060 - .070	1.100	.525	.010 - .020	1.102	.476	.005 - .020	1.108	.778	.030 - .050
1.076	.536	.060 - .080	1.086	.948	.032 - .050	1.096	.500	.070 - .090	1.100	.560	.005 - .010	1.102	.477	.005 - .010	1.108	.786	.015 - .030
1.076	.643	.075 - .090	1.087	.281	.030 - .050	1.096	.577	.015 - .030	1.100	.562	.040 - .060	1.102	.511	.160 - .190	1.108	.801	.030 - .040
1.076	.690	.080 - .104	1.087	.562	.036 - .060	1.096	.675	.005 - .015	1.100	.563	.015 - .035	1.102	.541	.015 - .030	1.108	.832	.005 - .010
1.076	.915	.015 - .025	1.087	.597	.005 - .010	1.096	.690	.030 - .050	1.100	.566	.005 - .010	1.102	.564	.100 - .120	1.108	.844	.050 - .070
1.077	.380	.060 - .080	1.087	.740	.040 - .060	1.096	.754	.005 - .010	1.100	.578	.080 - .090	1.102	.590	.090 - .105	1.109	.318	.010 - .020
1.077	.758	.050 - .075	1.087	.848	.005 - .010	1.096	.803	.010 - .020	1.100	.607	.075 - .100	1.102	.598	.030 - .050	1.109	.488	.005 - .010
1.077	.767	.025 - .040	1.088	.194	.062 - .083	1.096	.872	.005 - .020	1.100	.626	.005 - .020	1.102	.632	.005 - .020	1.109	.504	.030 - .050
1.077	.830	.005 - .010	1.088	.214	.005 - .010	1.096	.922	.025 - .040	1.100	.627	.005 - .010	1.102	.666	.040 - .060	1.109	.506	.025 - .040
1.077	.870	.050 - .070	1.088	.306	.030 - .050	1.096	.935	.050 - .070	1.100	.629	.010 - .020	1.102	.667	.040 - .060	1.109	.556	.020 - .030
1.077	.907	.020 - .050	1.088	.541	.005 - .010	1.096	.937	.032 - .060	1.100	.630	.005 - .015	1.102	.670	.030 - .050	1.109	.830	.005 - .010
1.078	.232	.025 - .040	1.088	.840	.080 - .100	1.097	.079	.005 - .010	1.100	.632	.010 - .075	1.102	.689	.050 - .070	1.109	.835	.010 - .020
1.078	.278	.010 - .020	1.089	.460	.020 - .030	1.097	.598	.170 - .190	1.100	.635	.005 - .010	1.102	.766	.005 - .010	1.109	.917	.040 - .050
1.078	.392	.060 - .083	1.089	.687	.110 - .130	1.097	.627	.070 - .090	1.100	.641	.135 - .156	1.102	.771	.040 - .060	1.110	.094	.005 - .010
1.078	.456	.005 - .010	1.089	.843	.050 - .070	1.097	.638	.030 - .050	1.100	.643	.050 - .070	1.102	.787	.060 - .080	1.110	.097	.045 - .060
1.078	.523	.040 - .060	1.089	.875	.042 - .060	1.097	.782	.005 - .010	1.100	.672	.015 - .035	1.102	.827	.010 - .020	1.110	.228	.030 - .042
1.078	.574	.020 - .040	1.090	.120	.020 - .030	1.097	.830	.025 - .040	1.100	.675	.070 - .090	1.102	.835	.020 - .040	1.110	.2	

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.129	.957	.005 - .010	1.140	.657	.005 - .020	1.150	.381	.005 - .020	1.156	.911	.020 - .040	1.169	.698	.030 - .050	1.175	.840	.005 - .010
1.130	.163	.005 - .010	1.140	.690	.020 - .040	1.150	.382	.020 - .030	1.156	.966	.005 - .010	1.169	.796	.020 - .040	1.175	.868	.005 - .010
1.130	.171	.050 - .070	1.140	.722	.005 - .010	1.150	.383	.105 - .125	1.156	.968	.010 - .030	1.169	.878	.080 - .100	1.175	.905	.030 - .050
1.130	.200	.060 - .070	1.140	.723	.005 - .010	1.150	.450	.005 - .010	1.157	.378	.050 - .070	1.169	.880	.040 - .060	1.175	.910	.005 - .010
1.130	.302	.020 - .040	1.140	.742	.005 - .010	1.150	.503	.005 - .020	1.157	.570	.020 - .040	1.169	.883	.005 - .010	1.175	.925	.020 - .030
1.130	.340	.170 - .190	1.140	.753	.010 - .020	1.150	.505	.005 - .010	1.157	.748	.015 - .030	1.169	.995	.005 - .010	1.175	.947	.015 - .030
1.130	.376	.005 - .010	1.140	.780	.005 - .010	1.150	.553	.005 - .010	1.157	.785	.020 - .030	1.169	1.119	.010 - .020	1.175	.985	.080 - .100
1.130	.410	.060 - .080	1.140	.809	.005 - .010	1.150	.628	.005 - .010	1.158	.237	.020 - .040	1.169	1.590	.015 - .030	1.175	.999	.015 - .020
1.130	.500	.040 - .060	1.140	.812	.031 - .042	1.150	.630	.005 - .062	1.158	.408	.010 - .030	1.170	.224	.005 - .010	1.175	1.031	.005 - .010
1.130	.506	.100 - .125	1.140	.936	.005 - .010	1.150	.633	.005 - .010	1.158	.476	.005 - .010	1.170	.256	.020 - .030	1.175	1.112	.010 - .020
1.130	.589	.030 - .050	1.140	.950	.005 - .015	1.150	.736	.005 - .010	1.158	.504	.005 - .010	1.170	.378	.005 - .020	1.176	.127	.025 - .040
1.130	.751	.080 - .105	1.140	.961	.005 - .010	1.150	.750	.040 - .090	1.158	.505	.010 - .020	1.170	.440	.090 - .105	1.176	.371	.040 - .060
1.130	.759	.005 - .010	1.140	.970	.025 - .050	1.150	.763	.005 - .010	1.158	.588	.020 - .030	1.170	.524	.005 - .010	1.176	.439	.005 - .010
1.130	.791	.050 - .070	1.140	.990	.015 - .030	1.150	.803	.040 - .060	1.158	.971	.050 - .060	1.170	.611	.020 - .040	1.176	.443	.005 - .020
1.130	.800	.005 - .010	1.140	1.010	.005 - .010	1.150	.814	.048 - .125	1.158	1.052	.015 - .030	1.170	.675	.032 - .050	1.176	.500	.070 - .090
1.130	.821	.005 - .010	1.140	1.020	.005 - .010	1.150	.830	.032 - .042	1.159	.298	.025 - .040	1.170	.710	.005 - .010	1.176	.506	.005 - .010
1.130	.855	.062 - .083	1.141	.162	.030 - .050	1.150	.951	.025 - .040	1.159	.393	.015 - .030	1.170	.758	.050 - .070	1.176	.589	.020 - .030
1.130	.882	.005 - .010	1.141	.394	.005 - .010	1.150	.986	.005 - .020	1.159	.687	.020 - .040	1.170	.793	.030 - .050	1.176	.625	.040 - .105
1.130	.951	.070 - .090	1.141	.395	.005 - .015	1.150	.988	.010 - .020	1.159	.901	.005 - .010	1.170	.815	.005 - .010	1.176	.682	.005 - .010
1.130	1.001	.030 - .050	1.141	.642	.090 - .105	1.150	.993	.005 - .012	1.159	1.008	.015 - .025	1.170	.860	.020 - .040	1.176	.756	.030 - .050
1.130	1.070	.005 - .010	1.141	.717	.015 - .025	1.150	1.045	.005 - .010	1.160	.130	.025 - .035	1.170	.870	.010 - .020	1.177	.271	.005 - .015
1.131	.251	.050 - .070	1.141	.787	.005 - .010	1.150	1.050	.030 - .040	1.160	.269	.035 - .050	1.170	.880	.030 - .050	1.177	.445	.005 - .030
1.131	.515	.040 - .060	1.141	.818	.105 - .125	1.151	.127	.020 - .040	1.160	.655	.100 - .125	1.170	.919	.025 - .040	1.177	.525	.010 - .020
1.131	.664	.005 - .010	1.142	.132	.010 - .020	1.151	.157	.035 - .050	1.160	.710	.030 - .050	1.170	.920	.005 - .010	1.177	.759	.050 - .070
1.131	.751	.015 - .025	1.142	.472	.005 - .010	1.151	.249	.015 - .030	1.160	.750	.042 - .062	1.170	.936	.010 - .025	1.177	.782	.005 - .010
1.131	.758	.020 - .040	1.142	.532	.080 - .100	1.151	.633	.010 - .020	1.160	.752	.030 - .048	1.170	.985	.040 - .062	1.177	.790	.030 - .050
1.131	.855	.060 - .080	1.142	.552	.005 - .010	1.151	.700	.005 - .010	1.160	.759	.030 - .050	1.170	1.000	.020 - .032	1.177	.823	.093 - .125
1.131	.956	.025 - .042	1.142	.638	.020 - .040	1.151	.729	.005 - .010	1.160	.800	.050 - .062	1.170	1.002	.005 - .020	1.177	.865	.062 - .090
1.131	1.034	.025 - .042	1.142	.751	.005 - .020	1.151	.755	.062 - .120	1.160	.829	.060 - .080	1.171	.259	.010 - .015	1.177	.875	.025 - .040
1.132	.170	.060 - .075	1.142	.753	.090 - .110	1.151	.900	.010 - .020	1.160	.889	.025 - .040	1.171	.659	.025 - .040	1.177	.878	.105 - .135
1.132	.955	.025 - .050	1.142	.790	.005 - .010	1.151	1.046	.005 - .010	1.160	.942	.050 - .075	1.171	.778	.040 - .060	1.177	.883	.105 - .120
1.133	.191	.030 - .050	1.142	.826	.080 - .104	1.152	.305	.020 - .030	1.160	.955	.030 - .060	1.171	.853	.050 - .070	1.177	.893	.005 - .010
1.133	.199	.050 - .060	1.142	.945	.040 - .080	1.152	.380	.005 - .010	1.160	.989	.032 - .050	1.171	.965	.070 - .090	1.177	.911	.050 - .070
1.133	.946	.030 - .050	1.143	.187	.060 - .075	1.152	.563	.040 - .060	1.161	.408	.005 - .030	1.171	1.005	.060 - .080	1.177	.954	.060 - .080
1.133	.971	.005 - .010	1.143	.206	.040 - .060	1.152	.673	.120 - .135	1.161	.753	.060 - .080	1.171	1.050	.005 - .010	1.177	.989	.070 - .090
1.134	.530	.030 - .050	1.143	.250	.060 - .075	1.152	.781	.090 - .105	1.161	.770	.010 - .020	1.171	1.105	.005 - .010	1.177	.990	.025 - .040
1.134	.545	.015 - .030	1.143	.313	.060 - .075	1.152	1.048	.010 - .020	1.161	.794	.080 - .100	1.172	.190	.040 - .060	1.177	.992	.005 - .010
1.134	.555	.010 - .020	1.143	.314	.062 - .080	1.152	1.053	.010 - .020	1.161	.922	.040 - .060	1.172	.356	.090 - .110	1.177	1.000	.005 - .010
1.134	.791	.050 - .070	1.143	.375	.060 - .075	1.153	.062	.025 - .042	1.162	.443	.070 - .090	1.172	.473	.120 - .135	1.178	.380	.090 - .125
1.134	.904	.040 - .060	1.143	.376	.020 - .035	1.153	.626	.010 - .032	1.162	.600	.075 - .100	1.172	.523	.005 - .010	1.178	.395	.100 - .125
1.135	.201	.050 - .060	1.143	.504	.005 - .020	1.153	.731	.100 - .125	1.162	.906	.060 - .080	1.172	.600	.050 - .080	1.178	.442	.060 - .080
1.135	.375	.010 - .020	1.143	.651	.140 - .160	1.153	.843	.015 - .030	1.162	.955	.040 - .060	1.172	.628	.040 - .060	1.178	.631	.005 - .020
1.135	.376	.015 - .030	1.143	.739	.005 - .010	1.154	.159	.030 - .060	1.163	.408	.010 - .020	1.172	.632	.030 - .040	1.178	.636	.005 - .010
1.135	.483	.005 - .050	1.143	.812	.100 - .120	1.154	.375	.100 - .125	1.163	.419	.135 - .156	1.172	.694	.050 - .075	1.178	.663	.090 - .110
1.135	.507	.090 - .120	1.143	.848	.015 - .040	1.154	.387	.005 - .008	1.163	.480	.040 - .060	1.172	.800	.010 - .020	1.178	.709	.005 - .010
1.135	.770	.020 - .040	1.143	.916	.005 - .010	1.154	.499	.050 - .075	1.163	.800	.030 - .042	1.172	.816	.050 - .075	1.178	.753	.015 - .030
1.135	.775	.040 - .060	1.143	.952	.050 - .070	1.154	.584	.030 - .060	1.163	.846	.040 - .060	1.172	.819	.005 - .010	1.178	.820	.005 - .010
1.135	.812	.100 - .125	1.145	.210	.005 - .010	1.154	.609	.005 - .010	1.163	1.010	.010 - .020	1.172	.897	.030 - .050	1.178	1.041	.020 - .040
1.136	.946	.030 - .050	1.145	.355	.135 - .156	1.154	.710	.005 - .010	1.164	.351	.005 - .010	1.172	.917	.080 - .090	1.179	.170	.010 - .020
1.136	.961	.060 - .075	1.145	.856	.005 - .010	1.154	.787	.090 - .100	1.164	.787	.083 - .120	1.172	.958	.050 - .062	1.179	.381	.170 - .190
1.137	.253	.125 - .135	1.145	.896	.030 - .060	1.154	.803	.030 - .050	1.164	.801	.060 - .080	1.172	1.000	.050 - .075	1.179	.473	.010 - .020
1.137	.693	.005 - .010	1.145	1.006	.030 - .050	1.154	.856	.025 - .040	1.164	.802	.040 - .060	1.173	.063	.015 - .025	1.179	.502	.005 - .010
1.137	.814	.040 - .060	1.146	.289	.015 - .030	1.154	.875	.010 - .020	1.164	.946	.031 - .048	1.173	.412	.130 - .150	1.179	.569	.030 - .060
1.137	.907	.030 - .050	1.146	1.000	.005 - .010	1.154	.877	.005 - .010	1.165	.315	.070 - .090	1.173	.413	.156 - .190	1.179	.632	.010 - .020
1.137	.953	.030 - .050	1.146	1.010	.005 - .020	1.154	.921	.020 - .040	1.165	.735	.010 - .020	1.173	.600	.090 - .105	1.179	.641	.050 - .070
1.138	.126	.025 - .040	1.146	1.035	.010 - .020	1.154	1.033	.005 - .010	1.165	.781	.070 - .090	1.173	.710	.005 - .010	1.179	.648	.015 - .030
1.138	.568	.070 - .090	1.147	.316	.050 - .070	1.155	.250	.040 - .060	1.165	1.010	.005 - .015	1.173	.722	.005 - .010	1.179	.687	.030 - .060
1.138	.570	.025 - .040	1.147	.775	.070 - .090	1.155	.266	.050 - .075	1.165	1.065	.005 - .010	1.173	.804	.030 - .050	1.179	.721	.060 - .080
1.138	.692	.156 - .190	1.148	.221	.070 - .090	1.155	.437	.050 - .075	1.165	1.100	.005 - .010	1.173	.851	.025 - .040	1.179	.829	.030 - .060
1.138	.738	.025 - .050	1.148	.251	.105 - .135	1.155	.501	.075 - .090	1.165	1.122	.005 - .010	1.173	.891	.020 - .030	1.179	.874	.005 - .010
1.138	.781	.062 - .083	1.148	.630	.020 - .030	1.155	.510	.030 - .040	1.166	.689	.010 - .020	1.173	.940	.070 - .090	1.179	.875	.005 - .010
1.138	.813	.050 - .070	1.148	.809	.005 - .010	1.155	.567	.020 - .040	1.166	.957	.025 - .035	1.173	.998	.020 - .030	1.179	.911	.040 - .062
1.138	.872	.090 - .110	1.148	.941	.020 - .030	1.155	.594	.080 - .105	1.167	.990	.060 - .080	1.174	.207	.100 - .125	1.179	.914	.035 - .050
1.138	.912	.060 - .075	1.149	.187	.030 - .050	1.155	.766	.020 - .030	1.168	.194							

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.218	.380	.020 - .060	1.223	1.085	.005 - .010	1.235	1.007	.020 - .040	1.243	.405	.030 - .050	1.246	.952	.050 - .067	1.248	1.045	.015 - .030
1.218	.439	.030 - .050	1.224	.754	.070 - .090	1.235	1.010	.005 - .020	1.243	.491	.125 - .156	1.246	1.035	.075 - .090	1.248	1.060	.005 - .015
1.218	.474	.005 - .010	1.224	1.020	.020 - .040	1.236	.131	.005 - .010	1.243	.613	.005 - .010	1.246	1.046	.020 - .040	1.248	1.145	.040 - .060
1.218	.565	.042 - .062	1.224	1.090	.040 - .060	1.236	.413	.005 - .010	1.243	.614	.005 - .010	1.246	1.060	.020 - .040	1.249	.140	.005 - .050
1.218	.627	.005 - .010	1.225	.120	.015 - .030	1.236	.500	.005 - .010	1.243	.699	.005 - .010	1.247	.064	.015 - .030	1.249	.188	.015 - .030
1.218	.758	.025 - .035	1.225	.375	.015 - .030	1.236	.501	.090 - .110	1.243	.855	.070 - .090	1.247	.125	.040 - .060	1.249	.203	.005 - .105
1.218	.855	.060 - .075	1.225	.564	.010 - .020	1.236	.635	.005 - .010	1.243	.965	.090 - .105	1.247	.254	.060 - .080	1.249	.250	.030 - .050
1.218	.856	.060 - .075	1.225	.640	.005 - .010	1.236	.644	.060 - .070	1.243	1.012	.005 - .010	1.247	.263	.050 - .075	1.249	.253	.005 - .010
1.218	.889	.050 - .062	1.225	.826	.040 - .060	1.236	.812	.020 - .040	1.243	1.025	.030 - .040	1.247	.354	.100 - .125	1.249	.318	.170 - .190
1.218	1.038	.060 - .080	1.225	.947	.010 - .020	1.236	.967	.020 - .040	1.243	1.037	.015 - .030	1.247	.378	.005 - .010	1.249	.319	.036 - .060
1.218	1.076	.025 - .040	1.226	.525	.015 - .030	1.236	1.122	.005 - .010	1.243	1.100	.042 - .060	1.247	.392	.005 - .010	1.249	.320	.105 - .125
1.219	.268	.060 - .080	1.226	.750	.135 - .156	1.237	.867	.030 - .050	1.244	.150	.015 - .030	1.247	.450	.020 - .030	1.249	.327	.015 - .030
1.219	.270	.005 - .025	1.227	.381	.005 - .010	1.237	.930	.050 - .070	1.244	.543	.005 - .010	1.247	.503	.030 - .050	1.249	.328	.090 - .125
1.219	.315	.035 - .050	1.227	.777	.005 - .010	1.238	.326	.040 - .060	1.244	.768	.060 - .125	1.247	.572	.030 - .048	1.249	.380	.105 - .125
1.219	.473	.005 - .010	1.227	.812	.005 - .010	1.238	.640	.070 - .090	1.244	.770	.020 - .083	1.247	.684	.110 - .120	1.249	.391	.042 - .060
1.219	.515	.050 - .075	1.227	.966	.010 - .020	1.238	.661	.020 - .030	1.244	.782	.070 - .090	1.247	.699	.005 - .010	1.249	.401	.100 - .125
1.219	.534	.050 - .075	1.228	.661	.080 - .100	1.238	.890	.070 - .090	1.244	.793	.005 - .010	1.247	.754	.050 - .070	1.249	.427	.020 - .040
1.219	.552	.005 - .010	1.228	.926	.010 - .020	1.239	.718	.005 - .010	1.244	.801	.025 - .040	1.247	.816	.005 - .050	1.249	.444	.036 - .060
1.219	.595	.025 - .042	1.228	1.012	.005 - .010	1.239	.779	.020 - .030	1.244	.878	.015 - .135	1.247	.850	.070 - .090	1.249	.450	.005 - .010
1.219	.642	.005 - .010	1.229	.416	.005 - .010	1.239	.879	.062 - .083	1.244	.967	.080 - .100	1.247	.874	.015 - .030	1.249	.455	.005 - .010
1.219	.751	.010 - .020	1.229	.591	.040 - .060	1.239	.885	.020 - .030	1.244	1.000	.025 - .040	1.247	.937	.016 - .025	1.249	.495	.005 - .010
1.219	.801	.005 - .010	1.229	.753	.020 - .040	1.239	.950	.010 - .020	1.244	1.018	.070 - .090	1.247	.978	.050 - .070	1.249	.510	.070 - .090
1.219	.890	.020 - .040	1.229	.757	.025 - .070	1.239	.962	.020 - .060	1.244	1.178	.005 - .010	1.247	.992	.062 - .083	1.249	.516	.030 - .050
1.219	.940	.040 - .060	1.229	.785	.032 - .050	1.239	1.043	.015 - .030	1.245	.205	.005 - .075	1.247	1.011	.020 - .030	1.249	.532	.156 - .187
1.219	1.000	.020 - .075	1.229	.861	.070 - .090	1.240	.065	.030 - .040	1.245	.315	.156 - .175	1.247	1.034	.035 - .050	1.249	.549	.005 - .010
1.220	.125	.015 - .030	1.229	.917	.025 - .042	1.240	.127	.090 - .105	1.245	.340	.005 - .010	1.248	.145	.050 - .075	1.249	.578	.060 - .070
1.220	.194	.075 - .100	1.229	.919	.005 - .010	1.240	.130	.040 - .060	1.245	.501	.100 - .125	1.248	.147	.030 - .040	1.249	.605	.005 - .010
1.220	.258	.050 - .070	1.229	.920	.010 - .020	1.240	.163	.070 - .090	1.245	.527	.005 - .010	1.248	.178	.100 - .125	1.249	.623	.040 - .060
1.220	.283	.015 - .030	1.230	.145	.050 - .070	1.240	.172	.010 - .020	1.245	.528	.050 - .070	1.248	.202	.050 - .070	1.249	.635	.005 - .010
1.220	.315	.005 - .010	1.230	.176	.040 - .060	1.240	.323	.062 - .083	1.245	.550	.015 - .035	1.248	.219	.040 - .060	1.249	.650	.020 - .030
1.220	.375	.090 - .100	1.230	.201	.125 - .156	1.240	.325	.060 - .083	1.245	.560	.005 - .010	1.248	.255	.005 - .010	1.249	.651	.020 - .040
1.220	.394	.005 - .020	1.230	.378	.060 - .080	1.240	.378	.005 - .020	1.245	.565	.050 - .083	1.248	.262	.005 - .010	1.249	.660	.020 - .040
1.220	.455	.012 - .020	1.230	.381	.042 - .062	1.240	.380	.030 - .048	1.245	.595	.080 - .100	1.248	.263	.050 - .075	1.249	.663	.060 - .080
1.220	.476	.005 - .010	1.230	.501	.050 - .070	1.240	.412	.005 - .010	1.245	.631	.015 - .025	1.248	.325	.030 - .050	1.249	.689	.050 - .075
1.220	.504	.005 - .125	1.230	.562	.110 - .130	1.240	.451	.015 - .030	1.245	.636	.050 - .070	1.248	.333	.050 - .070	1.249	.690	.080 - .100
1.220	.507	.110 - .134	1.230	.612	.050 - .070	1.240	.484	.070 - .090	1.245	.741	.015 - .025	1.248	.344	.042 - .060	1.249	.721	.030 - .050
1.220	.564	.010 - .020	1.230	.680	.010 - .020	1.240	.560	.075 - .105	1.245	.754	.050 - .075	1.248	.354	.100 - .125	1.249	.723	.010 - .020
1.220	.602	.090 - .120	1.230	.761	.005 - .010	1.240	.581	.010 - .020	1.245	.756	.010 - .020	1.248	.375	.005 - .010	1.249	.752	.090 - .110
1.220	.640	.100 - .125	1.230	.766	.050 - .134	1.240	.635	.030 - .040	1.245	.758	.040 - .060	1.248	.377	.020 - .040	1.249	.756	.036 - .060
1.220	.672	.025 - .042	1.230	.890	.030 - .050	1.240	.661	.050 - .105	1.245	.760	.060 - .080	1.248	.378	.042 - .062	1.249	.758	.005 - .010
1.220	.680	.030 - .050	1.230	.911	.015 - .025	1.240	.697	.030 - .072	1.245	.768	.015 - .025	1.248	.428	.005 - .010	1.249	.797	.030 - .050
1.220	.699	.030 - .050	1.230	.921	.025 - .040	1.240	.710	.040 - .060	1.245	.773	.005 - .010	1.248	.451	.005 - .010	1.249	.800	.030 - .050
1.220	.799	.010 - .020	1.230	.925	.010 - .030	1.240	.720	.020 - .040	1.245	.788	.025 - .040	1.248	.453	.005 - .010	1.249	.812	.050 - .070
1.220	.809	.050 - .070	1.230	.981	.020 - .030	1.240	.749	.010 - .020	1.245	.836	.030 - .050	1.248	.455	.090 - .120	1.249	.850	.015 - .030
1.220	.831	.060 - .083	1.230	.985	.010 - .020	1.240	.812	.025 - .040	1.245	.852	.005 - .010	1.248	.471	.005 - .010	1.249	.905	.015 - .030
1.220	.844	.050 - .070	1.230	1.005	.030 - .050	1.240	.814	.005 - .010	1.245	.880	.015 - .030	1.248	.500	.135 - .187	1.249	.920	.005 - .010
1.220	.875	.062 - .090	1.230	1.053	.020 - .040	1.240	.851	.030 - .050	1.245	.887	.050 - .070	1.248	.505	.005 - .020	1.249	.925	.105 - .125
1.220	.960	.050 - .083	1.230	1.080	.005 - .010	1.240	.875	.030 - .125	1.245	.906	.100 - .120	1.248	.508	.105 - .125	1.249	.951	.005 - .010
1.220	1.004	.010 - .020	1.231	.625	.060 - .080	1.240	.937	.090 - .105	1.245	.921	.030 - .050	1.248	.510	.005 - .010	1.249	.961	.007 - .015
1.220	1.083	.005 - .010	1.231	.915	.010 - .020	1.240	.938	.020 - .040	1.245	.945	.005 - .020	1.248	.517	.005 - .125	1.249	1.001	.030 - .050
1.220	1.090	.042 - .062	1.231	1.048	.005 - .010	1.240	.960	.025 - .040	1.245	.947	.080 - .104	1.248	.532	.005 - .010	1.249	1.027	.030 - .050
1.220	1.116	.040 - .050	1.232	.185	.015 - .030	1.240	1.015	.025 - .070	1.245	.948	.070 - .090	1.248	.535	.005 - .010	1.249	1.037	.025 - .040
1.221	.131	.015 - .030	1.232	.500	.005 - .010	1.240	1.036	.030 - .050	1.245	.990	.100 - .125	1.248	.550	.050 - .070	1.249	1.100	.075 - .090
1.221	.194	.020 - .040	1.232	.661	.040 - .060	1.240	1.062	.010 - .020	1.245	1.010	.020 - .105	1.248	.559	.156 - .187	1.249	1.110	.010 - .020
1.221	.257	.040 - .060	1.232	.751	.005 - .010	1.240	1.070	.005 - .010	1.245	1.107	.010 - .020	1.248	.574	.005 - .010	1.249	1.134	.005 - .010
1.221	.867	.020 - .040	1.232	.792	.120 - .130	1.240	1.075	.030 - .050	1.245	1.123	.005 - .010	1.248	.627	.010 - .020	1.249	1.156	.015 - .030
1.221	.899	.025 - .040	1.233	1.027	.040 - .060	1.240	1.120	.025 - .042	1.245	1.126	.005 - .010	1.248	.636	.110 - .130			
1.221	.916	.005 - .010	1.233	1.028	.005 - .010	1.241	.279	.005 - .030	1.245	1.130	.005 - .010	1.248	.651	.090 - .105			
1.221	.985	.074 - .090	1.233	1.065	.005 - .010	1.241	.500	.050 - .060	1.245	1.143	.005 - .015	1.248	.656	.005 - .010			
1.221	.986	.020 - .040	1.233	1.131	.020 - .030	1.241	.641	.050 - .075	1.246	.252	.080 - .104	1.248	.689	.050 - .070			
1.221	1.094	.010 - .020	1.234	.087	.015 - .030	1.241	.750	.030 - .050	1.246	.254	.015 - .030	1.248	.695	.005 - .010			
1.221	1.098	.035 - .050	1.234	.279	.005 - .010	1.241	.761	.105 - .125	1.246	.261	.075 - .090	1.248	.723	.005 - .010			
1.222	.194	.020 - .040	1.234	.392	.134 - .156	1.241	.782	.110 - .130	1.246	.287	.005 - .010	1.248	.742	.100 - .125			
1.222	.200	.110 - .120	1.234	.505	.070 - .090	1.241	.788	.010 - .020	1.246	.384	.050 - .083	1.248	.749	.050 - .070			
1.222	.691	.020 -															

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.274	.711	.030 - .050	1.282	1.020	.005 - .010	1.297	.852	.010 - .020	1.300	1.020	.035 - .050	1.309	1.128	.030 - .050	1.312	.781	.020 - .125
1.274	.938	.015 - .025	1.282	1.043	.030 - .050	1.297	.860	.010 - .020	1.300	1.060	.006 - .016	1.310	.190	.050 - .070	1.312	.782	.060 - .083
1.274	.969	.080 - .105	1.282	1.066	.040 - .060	1.297	.945	.062 - .090	1.300	1.062	.070 - .090	1.310	.205	.040 - .060	1.312	.783	.040 - .070
1.274	1.125	.005 - .010	1.282	1.162	.010 - .020	1.297	1.058	.090 - .105	1.300	1.067	.050 - .060	1.310	.231	.080 - .100	1.312	.812	.070 - .090
1.275	.255	.015 - .030	1.282	1.164	.010 - .020	1.297	1.150	.020 - .040	1.300	1.087	.010 - .020	1.310	.379	.005 - .010	1.312	.825	.010 - .020
1.275	.297	.025 - .042	1.283	.104	.005 - .010	1.297	1.169	.020 - .050	1.300	1.093	.005 - .010	1.310	.385	.170 - .190	1.312	.843	.005 - .010
1.275	.313	.060 - .090	1.283	.375	.020 - .035	1.298	.220	.060 - .080	1.300	1.126	.010 - .020	1.310	.407	.090 - .120	1.312	.878	.060 - .080
1.275	.409	.050 - .070	1.283	.409	.010 - .020	1.298	.275	.050 - .075	1.300	1.136	.030 - .040	1.310	.416	.110 - .130	1.312	.890	.090 - .125
1.275	.410	.025 - .042	1.283	.650	.080 - .090	1.298	.395	.010 - .020	1.300	1.182	.005 - .010	1.310	.505	.010 - .020	1.312	.892	.020 - .040
1.275	.411	.025 - .040	1.283	.671	.015 - .025	1.298	.441	.010 - .020	1.301	.377	.015 - .030	1.310	.510	.012 - .020	1.312	.906	.062 - .080
1.275	.500	.075 - .090	1.283	.890	.015 - .030	1.298	.479	.105 - .125	1.301	.504	.005 - .020	1.310	.516	.040 - .060	1.312	.938	.005 - .010
1.275	.672	.025 - .042	1.283	.929	.030 - .040	1.298	.496	.030 - .050	1.301	.698	.005 - .010	1.310	.529	.040 - .060	1.312	.941	.030 - .040
1.275	.797	.025 - .042	1.283	1.126	.040 - .060	1.298	.504	.090 - .110	1.301	.756	.018 - .025	1.310	.619	.015 - .030	1.312	.948	.070 - .090
1.275	.980	.020 - .040	1.283	1.167	.005 - .010	1.298	.630	.005 - .010	1.301	.820	.040 - .060	1.310	.711	.015 - .030	1.312	.986	.005 - .010
1.275	1.009	.090 - .110	1.284	.192	.050 - .070	1.298	.640	.005 - .010	1.301	.901	.080 - .110	1.310	.751	.100 - .120	1.312	1.000	.010 - .020
1.275	1.045	.025 - .042	1.284	.324	.080 - .104	1.298	.862	.005 - .010	1.301	.945	.080 - .105	1.310	.753	.105 - .125	1.312	1.001	.080 - .105
1.275	1.060	.005 - .008	1.284	.787	.050 - .070	1.298	.880	.070 - .090	1.301	.962	.105 - .125	1.310	.755	.005 - .010	1.312	1.008	.050 - .125
1.275	1.092	.005 - .010	1.284	1.019	.010 - .020	1.298	.906	.015 - .025	1.301	1.068	.030 - .050	1.310	.768	.040 - .060	1.312	1.027	.005 - .010
1.276	.105	.025 - .040	1.284	1.089	.015 - .030	1.299	.140	.020 - .040	1.302	.441	.100 - .125	1.310	.770	.005 - .010	1.312	1.031	.080 - .105
1.276	.821	.050 - .070	1.284	1.208	.005 - .010	1.299	.245	.005 - .010	1.302	.477	.050 - .070	1.310	.772	.020 - .040	1.312	1.190	.015 - .025
1.277	.657	.083 - .105	1.285	.409	.120 - .135	1.299	.253	.030 - .040	1.302	.628	.100 - .125	1.310	.812	.030 - .042	1.312	1.251	.105 - .125
1.277	.964	.020 - .030	1.285	.505	.120 - .135	1.299	.385	.005 - .010	1.302	.774	.060 - .090	1.310	.868	.156 - .187	1.313	.268	.035 - .050
1.277	1.059	.050 - .070	1.285	.724	.005 - .010	1.299	.395	.005 - .020	1.302	.787	.100 - .125	1.310	.878	.015 - .030	1.313	.375	.100 - .125
1.278	.250	.005 - .015	1.285	1.000	.020 - .040	1.299	.396	.005 - .010	1.302	.788	.005 - .010	1.310	.944	.005 - .010	1.313	.456	.005 - .010
1.278	.500	.100 - .125	1.285	1.136	.005 - .010	1.299	.471	.030 - .050	1.302	1.007	.012 - .020	1.310	1.006	.005 - .010	1.313	.563	.005 - .030
1.278	.529	.100 - .125	1.286	.251	.060 - .090	1.299	.473	.005 - .010	1.302	1.200	.005 - .010	1.310	1.049	.005 - .010	1.313	.635	.090 - .100
1.278	.571	.005 - .010	1.286	.509	.156 - .187	1.299	.553	.005 - .015	1.303	.194	.005 - .010	1.310	1.130	.005 - .015	1.313	.657	.050 - .075
1.278	.750	.015 - .030	1.286	.809	.005 - .010	1.299	.626	.010 - .020	1.303	.504	.005 - .010	1.310	1.250	.010 - .020	1.313	.660	.090 - .125
1.278	.821	.030 - .050	1.286	.811	.090 - .105	1.299	.812	.025 - .040	1.303	.734	.020 - .030	1.311	.189	.040 - .060	1.313	.687	.105 - .125
1.278	.924	.005 - .010	1.286	.918	.010 - .020	1.299	.922	.040 - .060	1.303	.787	.070 - .090	1.311	.202	.020 - .040	1.313	.751	.025 - .040
1.279	.438	.005 - .010	1.287	.178	.050 - .083	1.299	.958	.050 - .070	1.303	.899	.040 - .060	1.311	.261	.020 - .040	1.313	.759	.080 - .100
1.279	.506	.005 - .010	1.287	.251	.060 - .090	1.299	.960	.005 - .010	1.304	.250	.040 - .050	1.311	.335	.080 - .100	1.313	.874	.020 - .040
1.279	.633	.050 - .060	1.287	.254	.050 - .062	1.299	1.019	.025 - .042	1.304	.470	.075 - .125	1.311	.380	.030 - .050	1.313	.951	.070 - .090
1.280	.155	.005 - .015	1.287	.264	.010 - .020	1.299	1.030	.016 - .025	1.304	.504	.090 - .120	1.311	.389	.025 - .040	1.313	1.015	.060 - .083
1.280	.170	.100 - .125	1.287	1.142	.005 - .010	1.299	1.068	.005 - .010	1.304	1.189	.005 - .016	1.311	.500	.025 - .040	1.313	1.063	.040 - .060
1.280	.221	.070 - .090	1.288	.614	.050 - .070	1.300	.147	.080 - .104	1.305	.080	.005 - .008	1.311	.573	.005 - .010	1.313	1.118	.015 - .035
1.280	.318	.050 - .062	1.288	.761	.030 - .050	1.300	.298	.020 - .030	1.305	.255	.040 - .050	1.311	.593	.075 - .090	1.313	1.148	.020 - .030
1.280	.438	.030 - .040	1.288	.777	.100 - .120	1.300	.312	.005 - .010	1.305	.514	.100 - .120	1.311	.635	.005 - .010	1.313	1.164	.025 - .040
1.280	.505	.010 - .020	1.288	.969	.005 - .010	1.300	.316	.105 - .125	1.305	.705	.062 - .120	1.311	.655	.090 - .110	1.314	.268	.030 - .060
1.280	.515	.040 - .070	1.288	1.023	.015 - .030	1.300	.318	.005 - .010	1.305	.734	.020 - .030	1.311	.676	.005 - .010	1.314	.341	.060 - .080
1.280	.518	.020 - .040	1.288	1.111	.020 - .035	1.300	.368	.025 - .040	1.305	.803	.040 - .060	1.311	.688	.156 - .187	1.314	.392	.040 - .060
1.280	.530	.015 - .025	1.288	1.113	.075 - .090	1.300	.377	.005 - .020	1.305	.825	.040 - .060	1.311	.858	.005 - .010	1.314	.439	.050 - .075
1.280	.628	.040 - .060	1.288	1.128	.040 - .060	1.300	.378	.005 - .020	1.305	.826	.100 - .125	1.311	.875	.020 - .040	1.314	.441	.105 - .135
1.280	.668	.062 - .120	1.288	1.150	.015 - .030	1.300	.380	.005 - .020	1.305	.942	.020 - .040	1.311	.884	.050 - .135	1.314	.522	.015 - .030
1.280	.677	.030 - .050	1.289	1.113	.075 - .090	1.300	.382	.010 - .020	1.305	1.006	.015 - .030	1.311	.890	.030 - .050	1.314	.593	.015 - .030
1.280	.760	.040 - .060	1.290	.128	.020 - .030	1.300	.383	.020 - .030	1.305	1.011	.005 - .010	1.311	.905	.020 - .040	1.314	.626	.100 - .125
1.280	.888	.070 - .090	1.290	.231	.105 - .135	1.300	.394	.005 - .020	1.305	1.016	.060 - .070	1.311	.947	.020 - .040	1.314	.673	.015 - .025
1.280	.893	.005 - .010	1.290	.264	.005 - .010	1.300	.397	.010 - .020	1.305	1.140	.070 - .080	1.311	.995	.030 - .050	1.314	.827	.010 - .020
1.280	.915	.007 - .012	1.290	.377	.020 - .030	1.300	.437	.005 - .010	1.305	1.201	.010 - .020	1.311	1.001	.005 - .010	1.314	.885	.070 - .100
1.280	1.000	.060 - .090	1.290	.629	.020 - .030	1.300	.438	.010 - .020	1.305	1.205	.010 - .020	1.311	1.005	.030 - .048	1.314	.969	.040 - .060
1.280	1.017	.025 - .040	1.290	.760	.030 - .060	1.300	.442	.005 - .020	1.306	.758	.040 - .060	1.311	1.009	.030 - .040	1.314	1.062	.006 - .016
1.280	1.020	.070 - .090	1.290	1.000	.050 - .070	1.300	.504	.005 - .010	1.306	.970	.015 - .025	1.311	1.057	.005 - .010	1.314	1.090	.042 - .062
1.280	1.031	.010 - .020	1.290	1.146	.050 - .060	1.300	.511	.010 - .020	1.306	.996	.007 - .015	1.311	1.190	.005 - .010	1.314	1.188	.005 - .010
1.280	1.041	.040 - .050	1.290	1.204	.005 - .010	1.300	.518	.010 - .020	1.306	1.007	.050 - .090	1.312	.197	.025 - .040	1.315	.177	.005 - .010
1.280	1.045	.040 - .060	1.291	.457	.030 - .050	1.300	.558	.010 - .020	1.306	1.070	.015 - .030	1.312	.234	.050 - .075	1.315	.253	.080 - .104
1.280	1.066	.010 - .060	1.291	.966	.020 - .040	1.300	.628	.020 - .035	1.306	1.167	.005 - .010	1.312	.251	.050 - .070	1.315	.522	.010 - .020
1.280	1.070	.050 - .070	1.291	1.180	.005 - .010	1.300	.629	.005 - .030	1.306	1.184	.005 - .010	1.312	.314	.075 - .090	1.315	.560	.005 - .010
1.280	1.074	.030 - .050	1.292	1.000	.005 - .010	1.300	.630	.050 - .075	1.307	.502	.010 - .020	1.312	.320	.030 - .050	1.315	.626	.100 - .125
1.280	1.139	.020 - .040	1.292	1.121	.010 - .020	1.300	.634	.005 - .020	1.307	.655	.005 - .010	1.312	.374	.020 - .040	1.315	.703	.010 - .020
1.280	1.140	.020 - .040	1.292	1.132	.060 - .080	1.300	.650	.080 - .105	1.307	1.068	.075 - .090	1.312	.377	.020 - .030	1.315	.923	.020 - .030
1.281	.248	.060 - .090	1.293	.378	.005 - .010	1.300	.677	.030 - .050	1.308	.125	.040 - .062	1.312	.392	.030 - .060	1.315	1.177	.005 - .010
1.281	.264	.010 - .020	1.293	1.200	.005 - .010	1.300	.681	.005 - .010	1.308	.220	.050 - .070	1.312	.505	.010 - .015	1.316	.655	.005 - .010
1.281	.408	.005 - .030	1.293	1.223	.015 - .030	1.300	.754	.005 - .010	1.308	.251	.005 - .010	1.312	.507	.042 - .062	1.316	.704	.050 - .070

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.369	1.207	.005 - .010	1.372	1.135	.050 - .070	1.374	1.011	.090 - .120	1.375	.860	.006 - .100	1.377	.384	.030 - .050	1.381	.689	.050 - .070
1.370	.144	.030 - .050	1.372	1.145	.050 - .105	1.374	1.049	.005 - .010	1.375	.875	.100 - .125	1.377	.505	.005 - .020	1.381	1.200	.025 - .040
1.370	.192	.030 - .050	1.372	1.153	.030 - .050	1.374	1.059	.030 - .050	1.375	.876	.032 - .048	1.377	.515	.050 - .075	1.382	.542	.010 - .030
1.370	.234	.100 - .125	1.372	1.189	.030 - .050	1.374	1.078	.010 - .020	1.375	.877	.050 - .020	1.377	.517	.060 - .080	1.382	.543	.040 - .070
1.370	.282	.080 - .100	1.372	1.191	.005 - .010	1.374	1.125	.050 - .075	1.375	.878	.090 - .120	1.377	.531	.100 - .125	1.382	.633	.020 - .030
1.370	.300	.075 - .125	1.372	1.210	.010 - .020	1.374	1.128	.010 - .020	1.375	.883	.010 - .020	1.377	.754	.060 - .080	1.382	1.093	.005 - .010
1.370	.316	.005 - .010	1.372	1.213	.020 - .035	1.374	1.145	.005 - .010	1.375	.892	.015 - .030	1.377	.756	.050 - .075	1.382	1.137	.060 - .080
1.370	.333	.010 - .020	1.372	1.285	.015 - .030	1.374	1.209	.040 - .060	1.375	.922	.015 - .030	1.377	.790	.020 - .040	1.382	1.138	.005 - .010
1.370	.505	.100 - .125	1.373	.218	.040 - .062	1.374	1.265	.030 - .050	1.375	.936	.020 - .032	1.377	.860	.005 - .010	1.382	1.192	.020 - .040
1.370	.538	.008 - .016	1.373	.234	.105 - .125	1.375	.100	.025 - .045	1.375	.940	.060 - .090	1.377	.895	.032 - .048	1.383	.629	.090 - .125
1.370	.568	.005 - .010	1.373	.250	.016 - .032	1.375	.125	.070 - .090	1.375	.941	.010 - .020	1.377	.983	.060 - .080	1.383	1.000	.030 - .050
1.370	.628	.005 - .010	1.373	.255	.040 - .060	1.375	.129	.015 - .030	1.375	.953	.005 - .010	1.377	.985	.005 - .010	1.384	.314	.090 - .110
1.370	.685	.075 - .125	1.373	.380	.120 - .135	1.375	.131	.005 - .010	1.375	.962	.035 - .060	1.377	.997	.030 - .050	1.384	.543	.020 - .030
1.370	.696	.015 - .030	1.373	.409	.005 - .010	1.375	.144	.040 - .060	1.375	.977	.062 - .083	1.377	1.001	.025 - .090	1.384	.758	.005 - .010
1.370	.698	.050 - .075	1.373	.410	.100 - .125	1.375	.207	.040 - .062	1.375	.995	.005 - .010	1.377	1.018	.030 - .050	1.384	1.171	.012 - .025
1.370	.751	.080 - .100	1.373	.462	.020 - .040	1.375	.210	.100 - .125	1.375	1.000	.025 - .125	1.377	1.029	.040 - .060	1.384	1.318	.005 - .010
1.370	.793	.020 - .030	1.373	.463	.015 - .030	1.375	.250	.080 - .104	1.375	1.005	.120 - .156	1.377	1.100	.005 - .010	1.385	.567	.080 - .105
1.370	.794	.005 - .010	1.373	.500	.105 - .135	1.375	.252	.040 - .060	1.375	1.006	.100 - .125	1.377	1.241	.005 - .010	1.385	.578	.031 - .042
1.370	.886	.070 - .090	1.373	.563	.070 - .090	1.375	.255	.040 - .060	1.375	1.008	.060 - .080	1.378	.206	.050 - .075	1.385	.796	.005 - .010
1.370	.890	.100 - .125	1.373	.568	.170 - .190	1.375	.260	.015 - .030	1.375	1.015	.005 - .010	1.378	.208	.005 - .010	1.385	.920	.015 - .020
1.370	.900	.005 - .007	1.373	.570	.006 - .015	1.375	.270	.005 - .010	1.375	1.022	.016 - .032	1.378	.240	.105 - .125	1.385	1.010	.030 - .060
1.370	.940	.080 - .100	1.373	.575	.050 - .075	1.375	.281	.100 - .125	1.375	1.031	.080 - .105	1.378	.313	.020 - .032	1.385	1.015	.075 - .090
1.370	.948	.062 - .080	1.373	.625	.020 - .190	1.375	.310	.062 - .080	1.375	1.045	.025 - .040	1.378	.315	.010 - .020	1.385	1.220	.005 - .010
1.370	.950	.005 - .015	1.373	.627	.010 - .020	1.375	.312	.050 - .083	1.375	1.065	.035 - .050	1.378	.316	.005 - .010	1.385	1.269	.005 - .010
1.370	.960	.032 - .050	1.373	.639	.040 - .050	1.375	.316	.050 - .100	1.375	1.078	.040 - .060	1.378	.324	.005 - .010	1.385	1.339	.005 - .010
1.370	.990	.020 - .040	1.373	.641	.125 - .156	1.375	.318	.100 - .125	1.375	1.110	.005 - .010	1.378	.402	.156 - .187	1.386	.474	.080 - .105
1.370	1.000	.042 - .062	1.373	.737	.010 - .020	1.375	.321	.060 - .080	1.375	1.124	.005 - .010	1.378	.492	.005 - .010	1.386	.655	.170 - .190
1.370	1.056	.005 - .015	1.373	.749	.005 - .010	1.375	.328	.025 - .070	1.375	1.130	.015 - .080	1.378	.500	.010 - .020	1.386	1.084	.060 - .080
1.370	1.065	.005 - .015	1.373	.750	.005 - .010	1.375	.329	.105 - .134	1.375	1.131	.005 - .010	1.378	.657	.060 - .080	1.386	1.124	.005 - .010
1.370	1.126	.005 - .010	1.373	.765	.010 - .020	1.375	.343	.100 - .125	1.375	1.136	.050 - .070	1.378	.660	.105 - .135	1.386	1.187	.030 - .045
1.370	1.127	.040 - .060	1.373	.785	.005 - .010	1.375	.355	.070 - .100	1.375	1.146	.025 - .040	1.378	.736	.100 - .125	1.387	1.065	.060 - .080
1.370	1.130	.005 - .020	1.373	.890	.030 - .050	1.375	.373	.100 - .125	1.375	1.154	.005 - .010	1.378	.754	.005 - .010	1.387	1.212	.020 - .040
1.370	1.136	.020 - .030	1.373	.906	.005 - .020	1.375	.375	.062 - .120	1.375	1.159	.005 - .010	1.378	.780	.025 - .050	1.388	.662	.120 - .134
1.370	1.163	.040 - .060	1.373	.912	.040 - .090	1.375	.382	.050 - .075	1.375	1.188	.005 - .010	1.378	.783	.040 - .060	1.388	.785	.015 - .030
1.370	1.188	.060 - .070	1.373	.996	.005 - .010	1.375	.391	.090 - .105	1.375	1.189	.030 - .050	1.378	.787	.100 - .120	1.388	.825	.020 - .040
1.370	1.199	.005 - .010	1.373	1.000	.008 - .060	1.375	.395	.062 - .080	1.375	1.195	.005 - .025	1.378	.858	.032 - .050	1.388	1.016	.090 - .110
1.370	1.245	.010 - .020	1.373	1.095	.042 - .062	1.375	.420	.048 - .062	1.375	1.200	.020 - .032	1.378	.861	.080 - .100	1.389	.474	.080 - .105
1.370	1.255	.010 - .015	1.373	1.126	.020 - .040	1.375	.422	.060 - .070	1.375	1.201	.025 - .040	1.378	.865	.100 - .125	1.389	1.052	.030 - .050
1.371	.148	.005 - .010	1.373	1.207	.025 - .040	1.375	.439	.170 - .190	1.375	1.247	.040 - .060	1.378	.876	.090 - .125	1.389	1.073	.005 - .010
1.371	.234	.090 - .125	1.373	1.209	.030 - .060	1.375	.440	.075 - .090	1.375	1.251	.010 - .020	1.378	.878	.060 - .120	1.390	.368	.060 - .083
1.371	.281	.005 - .010	1.373	1.218	.040 - .060	1.375	.444	.050 - .070	1.375	1.253	.005 - .030	1.378	.957	.105 - .125	1.390	.430	.080 - .134
1.371	.525	.020 - .030	1.373	1.236	.010 - .020	1.375	.445	.015 - .030	1.375	1.265	.005 - .010	1.378	.984	.010 - .020	1.390	.552	.010 - .020
1.371	.595	.010 - .020	1.373	1.255	.005 - .020	1.375	.452	.156 - .187	1.376	.258	.005 - .010	1.378	1.060	.005 - .010	1.390	.780	.005 - .010
1.371	.627	.050 - .075	1.374	.155	.005 - .010	1.375	.500	.100 - .125	1.376	.267	.134 - .187	1.378	1.061	.012 - .020	1.390	1.094	.005 - .008
1.371	.641	.105 - .125	1.374	.190	.060 - .080	1.375	.502	.005 - .060	1.376	.383	.005 - .015	1.378	1.075	.030 - .050	1.390	1.147	.015 - .030
1.371	.651	.030 - .050	1.374	.245	.050 - .070	1.375	.505	.030 - .050	1.376	.406	.050 - .075	1.378	1.143	.050 - .070	1.390	1.187	.015 - .030
1.371	.698	.040 - .062	1.374	.251	.160 - .180	1.375	.515	.060 - .080	1.376	.503	.090 - .125	1.378	1.186	.060 - .080	1.390	1.203	.010 - .020
1.371	.759	.100 - .125	1.374	.253	.083 - .104	1.375	.526	.070 - .090	1.376	.513	.005 - .010	1.378	1.201	.005 - .010	1.391	.888	.010 - .035
1.371	.760	.005 - .010	1.374	.318	.050 - .060	1.375	.530	.005 - .075	1.376	.530	.156 - .187	1.379	.203	.020 - .040	1.391	.983	.040 - .060
1.371	.820	.008 - .040	1.374	.340	.010 - .020	1.375	.556	.005 - .060	1.376	.534	.010 - .020	1.379	.453	.010 - .040	1.391	1.056	.005 - .010
1.371	.886	.005 - .025	1.374	.341	.090 - .110	1.375	.560	.005 - .010	1.376	.620	.005 - .010	1.379	.510	.070 - .080	1.392	1.055	.100 - .120
1.371	1.000	.120 - .135	1.374	.378	.050 - .070	1.375	.563	.120 - .135	1.376	.650	.100 - .125	1.379	.564	.005 - .010	1.393	.611	.060 - .080
1.371	1.020	.005 - .010	1.374	.389	.060 - .070	1.375	.564	.010 - .020	1.376	.657	.005 - .010	1.379	.599	.015 - .030	1.393	.719	.080 - .104
1.371	1.073	.005 - .010	1.374	.518	.134 - .187	1.375	.571	.060 - .070	1.376	.700	.010 - .020	1.379	.787	.070 - .090	1.393	1.281	.005 - .010
1.371	1.102	.005 - .010	1.374	.562	.015 - .025	1.375	.590	.105 - .125	1.376	.703	.005 - .010	1.379	.812	.005 - .010	1.394	.654	.005 - .010
1.371	1.123	.020 - .040	1.374	.563	.005 - .010	1.375	.619	.020 - .040	1.376	.760	.060 - .140	1.379	.835	.005 - .010	1.394	.724	.070 - .090
1.371	1.138	.070 - .090	1.374	.568	.005 - .010	1.375	.630	.005 - .007	1.376	.761	.090 - .105	1.379	1.069	.090 - .120	1.395	.132	.025 - .035
1.371	1.178	.070 - .090	1.374	.575	.090 - .110	1.375	.634	.005 - .010	1.376	.765	.090 - .105	1.379	1.075	.015 - .025	1.395	.420	.105 - .125
1.371	1.200	.010 - .020	1.374	.577	.020 - .042	1.375	.636	.010 - .020	1.376	.780	.110 - .130	1.379	1.089	.030 - .050	1.395	.550	.050 - .083
1.371	1.212	.005 - .015	1.374	.641	.050 - .070	1.375	.641	.157 - .187	1.376	.815	.060 - .080	1.380	.254	.040 - .060	1.395	1.157	.040 - .060
1.371	1.257	.005 - .010	1.374	.700	.156 - .187	1.375	.644	.005 - .010	1.376	.847	.005 - .010	1.380	.282	.062 - .190	1.396	.563	.060 - .080
1.372	.141	.070 - .090	1.374	.701	.005 - .010	1.375	.656	.040 - .062	1.376	.903	.025 - .040	1.380	.300	.005 - .008	1.396	.611	.105 - .125
1.372	.191	.070 - .090	1.374	.710	.005 - .010	1.375	.700	.120 - .135	1.376	.906	.030 - .060	1.380					

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.448	1.053	.040 - .060	1.459	.841	.040 - .050	1.471	1.331	.005 - .040	1.485	.070	.030 - .050	1.491	1.063	.080 - .100	1.496	.250	.030 - .050
1.448	1.057	.005 - .010	1.459	.951	.030 - .050	1.472	.438	.015 - .030	1.485	.138	.030 - .050	1.491	1.210	.010 - .020	1.496	.256	.005 - .010
1.448	1.091	.010 - .020	1.459	1.143	.015 - .030	1.472	.501	.005 - .010	1.485	.472	.080 - .104	1.491	1.312	.005 - .010	1.496	.296	.010 - .020
1.448	1.126	.090 - .105	1.459	1.189	.015 - .030	1.472	.762	.010 - .020	1.485	.520	.060 - .080	1.492	.394	.005 - .010	1.496	.438	.040 - .060
1.448	1.190	.080 - .100	1.460	.180	.035 - .050	1.472	.765	.080 - .100	1.485	.550	.100 - .125	1.492	.803	.016 - .025	1.496	.473	.005 - .020
1.448	1.193	.050 - .070	1.460	.500	.025 - .040	1.472	.829	.010 - .020	1.485	.646	.005 - .010	1.492	.886	.020 - .032	1.496	.474	.005 - .010
1.449	.522	.105 - .125	1.460	.569	.050 - .070	1.472	1.001	.070 - .090	1.485	.650	.100 - .125	1.492	1.011	.020 - .040	1.496	.512	.170 - .190
1.449	.629	.010 - .020	1.460	.667	.050 - .070	1.472	1.230	.090 - .125	1.485	.660	.105 - .120	1.492	1.062	.100 - .125	1.496	.620	.015 - .050
1.449	.966	.040 - .060	1.460	.761	.010 - .020	1.473	.130	.042 - .062	1.485	.674	.050 - .070	1.492	1.118	.005 - .010	1.496	.625	.050 - .080
1.449	.990	.010 - .020	1.460	.950	.040 - .060	1.473	.609	.010 - .030	1.485	.771	.050 - .070	1.492	1.130	.015 - .030	1.496	.630	.005 - .075
1.449	1.028	.045 - .060	1.460	1.189	.035 - .050	1.474	.318	.010 - .020	1.485	.794	.005 - .010	1.493	.433	.105 - .125	1.496	.720	.010 - .020
1.449	1.057	.040 - .060	1.460	1.394	.020 - .025	1.474	1.010	.040 - .060	1.485	.846	.005 - .020	1.493	.521	.005 - .010	1.496	.762	.005 - .010
1.449	1.198	.005 - .010	1.461	.180	.070 - .080	1.474	1.180	.005 - .010	1.485	.901	.134 - .156	1.493	.748	.015 - .030	1.496	.767	.010 - .020
1.449	1.322	.010 - .020	1.461	.875	.030 - .050	1.474	1.357	.005 - .010	1.485	.919	.030 - .040	1.493	.758	.032 - .060	1.496	.783	.100 - .125
1.450	.157	.020 - .035	1.461	1.172	.050 - .070	1.474	1.358	.015 - .025	1.485	.970	.032 - .042	1.493	.776	.020 - .030	1.496	.900	.005 - .010
1.450	.201	.025 - .040	1.461	1.34	.005 - .010	1.475	.499	.005 - .010	1.485	1.108	.050 - .070	1.493	.810	.005 - .010	1.496	.946	.005 - .010
1.450	.208	.050 - .075	1.461	1.362	.020 - .030	1.475	.500	.110 - .130	1.485	1.166	.015 - .030	1.493	1.008	.050 - .070	1.496	.994	.010 - .020
1.450	.220	.020 - .030	1.462	.502	.080 - .100	1.475	.504	.006 - .015	1.485	1.223	.015 - .030	1.493	1.062	.030 - .050	1.496	1.003	.040 - .060
1.450	.262	.020 - .030	1.462	.563	.048 - .062	1.475	.526	.080 - .100	1.485	1.250	.005 - .012	1.493	1.136	.010 - .025	1.496	1.007	.005 - .010
1.450	.282	.040 - .060	1.462	1.070	.080 - .100	1.475	.620	.005 - .010	1.485	1.357	.015 - .025	1.493	1.191	.030 - .050	1.496	1.014	.060 - .080
1.450	.380	.005 - .020	1.462	1.247	.008 - .075	1.475	.626	.005 - .020	1.486	.139	.005 - .010	1.493	1.229	.005 - .010	1.496	1.017	.050 - .075
1.450	.442	.005 - .020	1.463	.480	.090 - .110	1.475	.751	.005 - .020	1.486	.650	.100 - .125	1.493	1.242	.005 - .010	1.496	1.060	.005 - .010
1.450	.449	.010 - .020	1.463	.813	.090 - .110	1.475	.828	.062 - .090	1.486	.803	.005 - .010	1.493	1.259	.010 - .020	1.496	1.066	.005 - .010
1.450	.450	.005 - .010	1.463	1.211	.015 - .025	1.475	.834	.005 - .010	1.486	.830	.040 - .062	1.493	1.273	.060 - .070	1.496	1.114	.010 - .020
1.450	.531	.080 - .100	1.463	1.224	.015 - .030	1.475	1.169	.040 - .060	1.486	.893	.005 - .010	1.493	1.299	.005 - .010	1.496	1.162	.005 - .010
1.450	.626	.010 - .020	1.464	.590	.005 - .010	1.475	1.360	.010 - .020	1.486	.906	.005 - .010	1.493	1.314	.005 - .010	1.496	1.181	.010 - .020
1.450	.631	.005 - .010	1.464	.741	.042 - .062	1.476	.255	.005 - .010	1.486	1.090	.050 - .075	1.494	.271	.015 - .030	1.496	1.189	.005 - .010
1.450	.650	.050 - .062	1.464	1.189	.015 - .025	1.476	.500	.005 - .030	1.486	1.229	.070 - .090	1.494	.330	.005 - .020	1.496	1.216	.010 - .020
1.450	.760	.030 - .060	1.465	.377	.030 - .060	1.476	.650	.005 - .010	1.486	1.330	.005 - .015	1.494	.474	.005 - .010	1.496	1.221	.040 - .060
1.450	.830	.020 - .040	1.465	.378	.010 - .050	1.476	1.359	.010 - .020	1.486	1.380	.015 - .030	1.494	.477	.005 - .010	1.496	1.245	.020 - .040
1.450	.952	.040 - .060	1.465	.812	.105 - .134	1.477	.617	.010 - .020	1.487	.949	.080 - .104	1.494	.637	.005 - .010	1.496	1.253	.050 - .070
1.450	1.019	.105 - .135	1.465	1.095	.050 - .075	1.477	1.201	.010 - .040	1.487	1.128	.005 - .010	1.494	.650	.007 - .020	1.496	1.255	.040 - .060
1.450	1.031	.083 - .120	1.465	1.190	.025 - .040	1.478	1.099	.080 - .100	1.487	1.233	.015 - .030	1.494	.760	.060 - .080	1.496	1.260	.005 - .075
1.450	1.085	.050 - .075	1.465	1.262	.060 - .080	1.478	1.310	.025 - .042	1.487	1.368	.020 - .030	1.494	.857	.080 - .104	1.496	1.270	.005 - .010
1.450	1.100	.005 - .010	1.465	1.306	.035 - .050	1.479	.470	.080 - .110	1.488	.390	.020 - .030	1.494	.937	.030 - .050	1.496	1.311	.010 - .020
1.450	1.140	.005 - .010	1.465	1.325	.015 - .030	1.479	.600	.020 - .030	1.488	.550	.100 - .125	1.494	1.024	.030 - .050	1.497	.145	.020 - .040
1.450	1.225	.030 - .040	1.466	.379	.030 - .050	1.479	.786	.134 - .156	1.488	.804	.050 - .070	1.494	1.057	.080 - .104	1.497	.195	.025 - .042
1.450	1.265	.010 - .020	1.466	.596	.005 - .010	1.479	1.133	.015 - .030	1.488	.880	.005 - .010	1.494	1.060	.064 - .078	1.497	.375	.050 - .083
1.450	1.379	.010 - .020	1.466	1.064	.005 - .010	1.479	1.147	.005 - .010	1.488	1.043	.005 - .010	1.494	1.075	.050 - .060	1.497	.377	.105 - .125
1.451	.503	.005 - .010	1.466	1.072	.030 - .050	1.479	1.361	.005 - .020	1.488	1.217	.010 - .020	1.494	1.092	.040 - .060	1.497	.379	.042 - .062
1.451	1.016	.050 - .070	1.466	1.155	.020 - .040	1.480	.221	.062 - .080	1.488	1.313	.030 - .042	1.494	1.175	.015 - .025	1.497	.386	.062 - .080
1.451	1.140	.005 - .015	1.466	1.268	.030 - .050	1.480	.511	.105 - .125	1.488	1.330	.030 - .042	1.494	1.201	.035 - .050	1.497	.421	.156 - .187
1.451	1.196	.010 - .020	1.466	1.272	.005 - .010	1.480	.632	.100 - .125	1.488	1.350	.005 - .010	1.494	1.265	.005 - .010	1.497	.477	.005 - .010
1.451	1.271	.036 - .060	1.467	.841	.015 - .030	1.480	.640	.156 - .188	1.489	.383	.070 - .090	1.494	1.270	.010 - .015	1.497	.515	.100 - .125
1.452	.266	.020 - .040	1.467	.939	.075 - .090	1.480	.677	.005 - .010	1.489	1.004	.050 - .070	1.494	1.305	.005 - .010	1.497	.559	.100 - .125
1.452	.270	.005 - .010	1.467	1.038	.030 - .050	1.480	.702	.015 - .060	1.489	1.165	.015 - .030	1.494	1.338	.010 - .020	1.497	.612	.020 - .030
1.452	.441	.010 - .020	1.467	1.126	.075 - .100	1.480	.707	.090 - .105	1.489	1.260	.050 - .075	1.494	1.342	.008 - .010	1.497	.620	.010 - .060
1.453	.104	.005 - .010	1.468	.310	.010 - .020	1.480	.769	.005 - .010	1.490	.170	.025 - .042	1.494	1.414	.015 - .025	1.497	.632	.010 - .020
1.453	.760	.030 - .050	1.468	.384	.080 - .105	1.480	.784	.075 - .090	1.490	.171	.030 - .050	1.494	1.425	.025 - .040	1.497	.655	.075 - .100
1.453	1.234	.010 - .020	1.468	.991	.050 - .070	1.480	.824	.015 - .135	1.490	.243	.080 - .100	1.495	.263	.005 - .010	1.497	.723	.060 - .083
1.454	.568	.080 - .100	1.468	.440	.010 - .020	1.480	.984	.070 - .090	1.490	.325	.156 - .187	1.495	.276	.005 - .010	1.497	.753	.025 - .040
1.454	.756	.020 - .030	1.468	.640	.050 - .075	1.480	1.049	.120 - .156	1.490	.511	.105 - .125	1.495	.294	.020 - .032	1.497	.755	.025 - .042
1.454	1.014	.015 - .030	1.468	.820	.005 - .010	1.480	1.120	.010 - .020	1.490	.580	.015 - .030	1.495	.295	.100 - .125	1.497	.757	.010 - .030
1.454	1.102	.005 - .010	1.468	.988	.005 - .010	1.480	1.134	.110 - .125	1.490	.630	.010 - .020	1.495	.354	.105 - .135	1.497	.763	.005 - .015
1.454	1.282	.050 - .070	1.468	1.235	.010 - .020	1.480	1.154	.030 - .060	1.490	.688	.080 - .100	1.495	.355	.005 - .010	1.497	.772	.030 - .048
1.455	.475	.125 - .135	1.468	1.250	.005 - .010	1.480	1.232	.005 - .010	1.490	.760	.020 - .030	1.495	.375	.030 - .050	1.497	.810	.005 - .010
1.455	.637	.040 - .050	1.468	1.310	.020 - .032	1.480	1.269	.080 - .105	1.490	.764	.030 - .050	1.495	.459	.156 - .187	1.497	.891	.005 - .010
1.455	.638	.085 - .100	1.469	.665	.100 - .120	1.480	1.276	.040 - .060	1.490	.820	.040 - .060	1.495	.500	.105 - .125	1.497	.906	.100 - .120
1.455	.754	.005 - .010	1.469	.750	.080 - .090	1.480	1.279	.005 - .010	1.490	.875	.100 - .125	1.495	.510	.070 - .090	1.497	1.060	.100 - .125
1.455	1.000	.015 - .030	1.469	.808	.005 - .010	1.481	.269	.042 - .062	1.490	1.004	.005 - .010	1.495	.545	.010 - .020	1.497	1.113	.030 - .050
1.455	1.065	.040 - .060	1.470	.171	.005 - .010	1.481	.622	.010 - .020	1.490	1.063	.080 - .100	1.495	.629	.040 - .050	1.497	1.119	.040 - .060
1.455	1.101	.040 - .050	1.470	.203	.010 - .020	1.481	.936	.005 - .010	1.490	1.125	.005 - .010	1.495	.682	.010 - .020	1.497	1.126	.135 - .156
1.456	.315	.020 - .030	1.470	.610	.100 - .125	1.481	1.1										

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.523	.507	.005 - .020	1.535	.710	.020 - .040	1.550	.368	.020 - .035	1.560	.392	.080 - .105	1.562	1.203	.025 - .048	1.570	.346	.010 - .020
1.523	.584	.050 - .070	1.535	.788	.050 - .070	1.550	.438	.005 - .030	1.560	.455	.100 - .125	1.562	1.313	.005 - .010	1.570	.526	.080 - .100
1.523	1.467	.005 - .010	1.535	.867	.105 - .125	1.550	.440	.005 - .010	1.560	.508	.100 - .125	1.562	1.320	.060 - .080	1.570	.720	.005 - .010
1.524	.329	.110 - .130	1.535	.904	.100 - .125	1.550	.449	.010 - .020	1.560	.563	.015 - .030	1.562	1.323	.105 - .125	1.570	.813	.030 - .050
1.524	.432	.100 - .125	1.535	1.064	.080 - .104	1.550	.500	.050 - .070	1.560	.619	.005 - .010	1.562	1.346	.030 - .050	1.570	.870	.005 - .010
1.524	.435	.040 - .060	1.535	1.138	.005 - .020	1.550	.502	.005 - .010	1.560	.772	.005 - .010	1.562	1.347	.040 - .060	1.570	.906	.100 - .125
1.524	.560	.040 - .060	1.535	1.140	.030 - .040	1.550	.505	.010 - .020	1.560	.839	.050 - .070	1.562	1.348	.062 - .075	1.570	1.003	.035 - .060
1.524	1.274	.042 - .060	1.535	1.290	.005 - .010	1.550	.522	.005 - .010	1.560	.845	.025 - .048	1.562	1.354	.005 - .010	1.570	1.031	.080 - .105
1.524	1.416	.040 - .060	1.535	1.300	.060 - .080	1.550	.626	.005 - .020	1.560	.883	.030 - .050	1.562	1.374	.025 - .040	1.570	1.032	.100 - .125
1.525	.250	.050 - .070	1.535	1.344	.012 - .025	1.550	.629	.005 - .010	1.560	.891	.020 - .040	1.562	1.375	.020 - .040	1.570	1.190	.032 - .042
1.525	.265	.005 - .010	1.535	1.378	.020 - .035	1.550	.635	.015 - .035	1.560	1.063	.135 - .156	1.562	1.376	.005 - .010	1.570	1.191	.125 - .156
1.525	.268	.005 - .010	1.536	.188	.090 - .120	1.550	.704	.005 - .010	1.560	1.100	.005 - .010	1.562	1.437	.010 - .020	1.570	1.220	.050 - .070
1.525	.501	.005 - .010	1.536	.501	.010 - .020	1.550	.750	.020 - .040	1.560	1.140	.005 - .010	1.563	.439	.005 - .010	1.570	1.250	.005 - .010
1.525	.617	.050 - .060	1.536	.576	.015 - .030	1.550	.752	.105 - .125	1.560	1.207	.010 - .020	1.563	.638	.005 - .010	1.570	1.259	.030 - .040
1.525	.657	.005 - .010	1.536	.651	.015 - .030	1.550	1.221	.005 - .010	1.560	1.261	.070 - .080	1.563	.690	.032 - .060	1.571	.379	.080 - .100
1.525	.685	.040 - .060	1.536	.694	.015 - .020	1.550	1.235	.050 - .075	1.560	1.315	.015 - .025	1.563	.762	.005 - .010	1.571	.870	.100 - .120
1.525	.800	.010 - .020	1.536	.710	.005 - .010	1.550	1.250	.005 - .010	1.560	1.319	.005 - .010	1.563	.878	.025 - .040	1.571	1.018	.100 - .125
1.525	1.231	.005 - .010	1.536	.712	.030 - .050	1.550	1.255	.015 - .025	1.560	1.320	.015 - .025	1.563	.892	.075 - .100	1.571	1.038	.005 - .015
1.525	1.310	.025 - .040	1.536	.811	.005 - .010	1.550	1.321	.010 - .020	1.560	1.331	.050 - .070	1.563	.999	.105 - .125	1.571	1.146	.070 - .090
1.525	1.316	.070 - .090	1.536	1.009	.050 - .070	1.550	1.415	.005 - .010	1.560	1.353	.005 - .010	1.563	1.005	.110 - .130	1.572	.476	.005 - .010
1.525	1.335	.040 - .060	1.536	1.024	.135 - .156	1.550	1.416	.015 - .020	1.560	1.376	.025 - .040	1.563	1.062	.005 - .010	1.572	.569	.050 - .060
1.526	1.280	.040 - .060	1.537	.407	.075 - .125	1.550	1.439	.005 - .010	1.561	.161	.020 - .030	1.563	1.131	.050 - .070	1.572	.625	.050 - .070
1.526	1.310	.025 - .042	1.537	.501	.010 - .020	1.551	.289	.050 - .070	1.561	.251	.040 - .060	1.563	1.347	.040 - .062	1.572	.754	.005 - .010
1.526	1.345	.005 - .010	1.537	.670	.005 - .010	1.551	.438	.010 - .020	1.561	.259	.083 - .125	1.563	1.402	.020 - .040	1.572	.761	.020 - .040
1.526	1.376	.050 - .070	1.537	1.288	.042 - .062	1.551	.440	.010 - .020	1.561	.562	.005 - .010	1.564	.375	.048 - .075	1.572	1.254	.030 - .050
1.527	1.317	.060 - .078	1.537	1.296	.005 - .010	1.551	1.026	.060 - .080	1.561	.629	.075 - .105	1.564	.501	.025 - .040	1.572	1.255	.025 - .040
1.527	1.418	.015 - .030	1.539	.562	.010 - .020	1.551	1.140	.010 - .020	1.561	.766	.100 - .125	1.564	.511	.020 - .040	1.572	1.258	.007 - .016
1.528	.187	.025 - .040	1.539	1.206	.015 - .030	1.551	1.189	.105 - .125	1.561	.768	.025 - .040	1.564	.700	.020 - .030	1.572	1.452	.005 - .010
1.528	.195	.050 - .100	1.539	1.220	.015 - .030	1.551	1.278	.060 - .080	1.561	.883	.005 - .010	1.564	.767	.010 - .020	1.573	.504	.090 - .135
1.528	.250	.010 - .030	1.539	1.336	.040 - .060	1.552	1.460	.005 - .010	1.561	.952	.030 - .050	1.564	1.123	.020 - .040	1.573	.641	.060 - .083
1.528	.728	.005 - .010	1.539	1.359	.030 - .050	1.553	.854	.075 - .105	1.561	1.039	.030 - .050	1.564	1.135	.050 - .075	1.573	.648	.010 - .020
1.528	1.009	.050 - .070	1.539	1.462	.005 - .010	1.553	.859	.080 - .100	1.561	1.040	.010 - .015	1.564	1.189	.005 - .010	1.573	.731	.040 - .062
1.528	1.276	.010 - .020	1.540	.512	.105 - .125	1.553	1.158	.125 - .156	1.561	1.158	.040 - .060	1.564	1.309	.005 - .010	1.573	.812	.015 - .030
1.528	1.285	.020 - .040	1.540	.563	.005 - .010	1.554	.765	.080 - .104	1.561	1.231	.040 - .060	1.564	1.393	.015 - .030	1.573	.990	.005 - .010
1.529	.466	.005 - .010	1.540	.910	.015 - .030	1.554	.883	.010 - .015	1.561	1.261	.040 - .060	1.564	1.434	.005 - .010	1.573	1.013	.005 - .010
1.529	.791	.030 - .050	1.540	1.102	.025 - .040	1.554	1.000	.060 - .080	1.561	1.390	.005 - .010	1.565	.122	.020 - .040	1.573	1.102	.060 - .080
1.529	.984	.080 - .105	1.540	1.200	.020 - .030	1.554	1.193	.060 - .080	1.561	1.433	.005 - .012	1.565	.562	.030 - .048	1.573	1.221	.030 - .050
1.529	1.052	.080 - .100	1.540	1.290	.050 - .070	1.554	1.460	.005 - .010	1.561	1.439	.005 - .010	1.565	1.192	.050 - .075	1.573	1.224	.135 - .156
1.529	1.117	.100 - .110	1.541	.318	.020 - .030	1.555	.166	.080 - .104	1.562	.201	.020 - .030	1.565	1.228	.030 - .050	1.573	1.264	.005 - .010
1.529	1.259	.020 - .040	1.541	1.008	.025 - .070	1.555	.650	.007 - .012	1.562	.251	.090 - .104	1.565	1.260	.010 - .020	1.573	1.374	.005 - .010
1.529	1.360	.020 - .040	1.541	1.030	.005 - .010	1.555	1.060	.032 - .060	1.562	.317	.008 - .016	1.565	1.270	.030 - .042	1.574	.344	.105 - .125
1.529	1.416	.020 - .030	1.541	1.250	.050 - .070	1.555	1.100	.090 - .120	1.562	.351	.075 - .105	1.565	1.369	.050 - .075	1.574	.410	.005 - .010
1.529	1.453	.005 - .010	1.542	.833	.020 - .030	1.555	1.112	.080 - .105	1.562	.378	.048 - .075	1.566	.257	.070 - .090	1.574	.434	.150 - .170
1.530	.251	.015 - .030	1.542	.998	.005 - .010	1.555	1.133	.090 - .105	1.562	.406	.105 - .125	1.566	.502	.105 - .125	1.574	.474	.005 - .010
1.530	.282	.060 - .080	1.542	1.193	.005 - .010	1.555	1.196	.015 - .030	1.562	.408	.015 - .030	1.566	.980	.005 - .010	1.574	.475	.010 - .020
1.530	.312	.030 - .050	1.543	.431	.075 - .105	1.555	1.250	.060 - .080	1.562	.447	.040 - .060	1.566	1.330	.050 - .070	1.574	.502	.010 - .020
1.530	.536	.005 - .010	1.543	1.200	.020 - .030	1.556	.164	.050 - .062	1.562	.562	.032 - .050	1.566	1.347	.035 - .050	1.574	.631	.010 - .020
1.530	.548	.005 - .010	1.543	1.255	.050 - .075	1.556	.511	.080 - .105	1.562	.563	.156 - .187	1.566	1.416	.040 - .060	1.574	.828	.060 - .080
1.530	.832	.020 - .030	1.543	1.257	.025 - .040	1.556	1.192	.050 - .070	1.562	.564	.005 - .020	1.567	.729	.030 - .048	1.574	.984	.035 - .045
1.530	1.031	.075 - .090	1.543	1.261	.030 - .050	1.556	1.260	.015 - .030	1.562	.656	.156 - .187	1.567	.935	.050 - .075	1.574	1.071	.090 - .100
1.530	1.141	.050 - .070	1.544	1.169	.030 - .050	1.556	1.262	.020 - .040	1.562	.746	.075 - .105	1.567	.978	.007 - .015	1.574	1.103	.015 - .030
1.530	1.202	.010 - .030	1.544	1.182	.025 - .040	1.556	1.405	.010 - .020	1.562	.750	.010 - .100	1.567	.992	.010 - .020	1.574	1.130	.012 - .020
1.530	1.280	.050 - .060	1.544	1.191	.005 - .010	1.556	1.437	.032 - .050	1.562	.762	.005 - .010	1.567	1.004	.105 - .125	1.574	1.188	.005 - .010
1.531	.333	.005 - .010	1.544	1.481	.010 - .020	1.557	.396	.005 - .015	1.562	.765	.090 - .120	1.567	1.232	.030 - .050	1.574	1.221	.010 - .020
1.531	.390	.100 - .125	1.545	.264	.030 - .050	1.557	.407	.060 - .080	1.562	.781	.083 - .105	1.567	1.248	.062 - .090	1.574	1.320	.005 - .010
1.531	.516	.060 - .080	1.545	.437	.020 - .040	1.557	.770	.110 - .130	1.562	.782	.080 - .104	1.567	1.260	.005 - .010	1.574	1.337	.020 - .030
1.531	.625	.005 - .010	1.545	1.060	.005 - .010	1.557	1.002	.075 - .090	1.562	.812	.062 - .080	1.567	1.311	.015 - .030	1.574	1.373	.062 - .090
1.531	.689	.060 - .080	1.545	1.156	.020 - .030	1.557	1.038	.040 - .060	1.562	.864	.120 - .140	1.567	1.346	.015 - .030	1.574	1.416	.005 - .010
1.531	.776	.025 - .040	1.545	1.191	.005 - .010	1.557	1.314	.105 - .125	1.562	.874	.020 - .040	1.567	1.380	.040 - .062	1.575	.355	.100 - .125
1.531	.808	.030 - .050	1.545	1.391	.050 - .070	1.557	1.355	.025 - .040	1.562	.875	.015 - .030	1.568	.060	.040 - .050	1.575	.393	.120 - .135
1.531	1.000	.020 - .032	1.545	1.457	.025 - .035	1.557	1.358	.005 - .010	1.562	.904	.040 - .050	1.568	.675	.005 - .010	1.575	.473	.005 - .010
1.531	1.015	.025 - .042	1.546	1.182	.025 - .040	1.558	.157	.015 - .030	1.562	.906	.040 - .050	1.568	.692	.060 - .080	1.575	.477	.005 - .010

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.627	.627	.062 - .080	1.640	1.082	.156 - .187	1.650	1.252	.105 - .156	1.660	1.354	.015 - .030	1.681	1.034	.105 - .125	1.694	1.500	.005 - .015
1.627	.693	.105 - .135	1.640	1.373	.010 - .035	1.650	1.253	.020 - .030	1.660	1.375	.090 - .120	1.681	1.193	.020 - .040	1.695	.203	.040 - .060
1.627	.816	.025 - .042	1.640	1.399	.015 - .030	1.650	1.262	.005 - .010	1.660	1.389	.090 - .105	1.681	1.300	.040 - .060	1.695	.314	.040 - .060
1.627	.876	.015 - .030	1.640	1.440	.005 - .010	1.650	1.321	.100 - .125	1.660	1.390	.110 - .130	1.681	1.372	.005 - .020	1.695	.998	.005 - .010
1.627	1.006	.105 - .125	1.640	1.440	.015 - .030	1.650	1.328	.005 - .010	1.661	1.141	.080 - .100	1.681	1.400	.005 - .010	1.695	1.010	.100 - .125
1.627	1.125	.080 - .104	1.640	1.442	.050 - .070	1.650	1.399	.050 - .070	1.661	1.194	.025 - .042	1.682	1.016	.060 - .080	1.695	1.537	.060 - .075
1.627	1.130	.005 - .010	1.641	1.044	.036 - .060	1.650	1.413	.015 - .025	1.661	1.359	.105 - .125	1.683	.819	.010 - .020	1.696	1.002	.060 - .083
1.627	1.181	.080 - .100	1.642	.682	.105 - .135	1.650	1.430	.070 - .090	1.661	1.381	.005 - .010	1.683	.918	.010 - .020	1.696	1.200	.020 - .040
1.627	1.250	.005 - .010	1.642	1.039	.005 - .010	1.651	.276	.030 - .040	1.662	1.375	.040 - .060	1.683	1.006	.050 - .075	1.696	1.397	.005 - .010
1.627	1.260	.005 - .010	1.642	1.330	.050 - .080	1.651	.690	.005 - .010	1.662	1.410	.040 - .125	1.683	1.298	.090 - .105	1.696	1.452	.080 - .105
1.627	1.267	.005 - .030	1.643	.678	.080 - .104	1.651	.818	.040 - .060	1.663	.340	.005 - .010	1.684	1.188	.005 - .010	1.697	.453	.100 - .125
1.627	1.278	.005 - .010	1.643	.755	.050 - .080	1.651	1.251	.005 - .010	1.663	1.291	.020 - .040	1.684	1.389	.025 - .040	1.697	.861	.090 - .125
1.627	1.302	.010 - .020	1.643	1.329	.050 - .070	1.651	1.300	.015 - .025	1.663	1.298	.060 - .090	1.684	1.442	.005 - .010	1.697	1.308	.105 - .125
1.627	1.320	.025 - .040	1.644	.911	.025 - .040	1.651	1.413	.020 - .030	1.664	1.471	.015 - .030	1.684	1.525	.015 - .030	1.697	1.328	.005 - .010
1.627	1.378	.050 - .070	1.644	.914	.030 - .050	1.652	.562	.005 - .020	1.665	1.256	.050 - .070	1.684	1.562	.040 - .050	1.697	1.338	.010 - .020
1.628	.129	.050 - .070	1.644	.990	.040 - .060	1.652	.786	.070 - .090	1.665	1.437	.070 - .090	1.685	.340	.025 - .042	1.698	.131	.015 - .030
1.628	.323	.080 - .105	1.644	1.039	.015 - .030	1.653	.473	.005 - .010	1.665	1.471	.010 - .016	1.685	.425	.050 - .083	1.698	.453	.100 - .125
1.628	.420	.156 - .187	1.644	1.310	.070 - .090	1.653	.474	.020 - .030	1.665	1.581	.005 - .010	1.685	.495	.032 - .060	1.698	.502	.015 - .030
1.628	.508	.090 - .120	1.644	1.328	.075 - .090	1.653	.475	.005 - .010	1.666	.895	.005 - .008	1.685	.782	.020 - .040	1.698	.626	.010 - .020
1.628	.810	.040 - .060	1.644	1.388	.090 - .110	1.653	.492	.090 - .125	1.667	1.400	.005 - .010	1.685	1.065	.032 - .060	1.698	.715	.090 - .105
1.628	1.137	.005 - .010	1.644	1.405	.040 - .060	1.653	.502	.005 - .010	1.668	1.010	.042 - .060	1.685	1.070	.040 - .050	1.698	.753	.060 - .090
1.628	1.358	.030 - .050	1.644	1.458	.020 - .040	1.653	.631	.005 - .010	1.668	1.144	.005 - .010	1.685	1.190	.010 - .020	1.698	.760	.080 - .100
1.628	1.386	.005 - .010	1.644	1.528	.030 - .050	1.653	.633	.020 - .040	1.668	1.264	.005 - .010	1.685	1.269	.062 - .080	1.698	1.449	.005 - .010
1.628	1.387	.010 - .040	1.645	.625	.015 - .050	1.653	1.273	.050 - .060	1.669	.987	.005 - .010	1.685	1.300	.050 - .060	1.699	.625	.015 - .030
1.629	.240	.015 - .030	1.645	.956	.105 - .125	1.653	1.274	.050 - .070	1.670	.635	.005 - .010	1.685	1.360	.020 - .030	1.699	.754	.010 - .020
1.629	.284	.015 - .030	1.645	1.073	.005 - .010	1.653	1.326	.070 - .090	1.670	1.009	.100 - .135	1.685	1.567	.032 - .050	1.699	.949	.050 - .060
1.629	.530	.100 - .125	1.645	1.250	.140 - .160	1.653	1.378	.090 - .105	1.670	1.060	.020 - .040	1.685	1.568	.040 - .060	1.699	1.404	.005 - .010
1.629	.592	.020 - .030	1.645	1.288	.060 - .080	1.653	1.416	.070 - .090	1.670	1.131	.070 - .080	1.686	.317	.020 - .040	1.699	1.503	.015 - .030
1.629	1.125	.015 - .025	1.646	1.236	.030 - .050	1.653	1.481	.040 - .060	1.670	1.255	.025 - .042	1.686	.345	.050 - .070	1.700	.125	.100 - .125
1.629	1.319	.005 - .010	1.646	1.411	.015 - .030	1.653	1.486	.030 - .050	1.670	1.314	.005 - .010	1.686	.350	.005 - .010	1.700	.204	.100 - .125
1.629	1.331	.025 - .040	1.646	1.427	.015 - .030	1.654	1.128	.010 - .020	1.670	1.380	.030 - .050	1.686	1.070	.005 - .012	1.700	.206	.100 - .120
1.629	1.388	.020 - .030	1.646	1.435	.070 - .090	1.654	.475	.010 - .020	1.670	1.417	.005 - .010	1.686	1.190	.015 - .030	1.700	.364	.100 - .125
1.630	.231	.050 - .070	1.646	1.460	.015 - .025	1.654	.632	.010 - .020	1.670	1.420	.020 - .040	1.686	1.270	.015 - .030	1.700	.500	.005 - .020
1.630	.243	.110 - .135	1.646	1.525	.005 - .010	1.654	.639	.090 - .105	1.671	.922	.005 - .010	1.686	1.383	.016 - .025	1.700	.502	.005 - .010
1.630	.320	.100 - .125	1.647	.619	.010 - .020	1.654	.691	.005 - .010	1.671	1.152	.030 - .050	1.686	1.560	.005 - .010	1.700	.505	.010 - .020
1.630	.422	.140 - .160	1.647	.621	.025 - .040	1.654	.820	.005 - .010	1.671	1.200	.075 - .105	1.687	.255	.080 - .104	1.700	.578	.005 - .010
1.630	.828	.005 - .010	1.647	.722	.005 - .010	1.654	.834	.005 - .050	1.672	.874	.105 - .125	1.687	.375	.030 - .050	1.700	.579	.090 - .100
1.630	.890	.025 - .042	1.647	1.053	.010 - .020	1.654	.886	.070 - .090	1.672	1.198	.005 - .010	1.687	.406	.105 - .135	1.700	.585	.135 - .156
1.630	1.007	.083 - .120	1.647	1.310	.050 - .070	1.654	1.050	.080 - .100	1.672	1.515	.005 - .010	1.687	.484	.060 - .080	1.700	.631	.005 - .020
1.630	1.061	.042 - .062	1.647	1.426	.005 - .010	1.654	1.265	.050 - .070	1.673	.714	.005 - .010	1.687	.562	.005 - .020	1.700	.726	.005 - .010
1.630	1.153	.025 - .040	1.648	.408	.062 - .080	1.654	1.272	.010 - .020	1.674	1.150	.040 - .060	1.687	.634	.030 - .050	1.700	.860	.090 - .105
1.630	1.200	.125 - .156	1.648	.543	.040 - .060	1.654	1.419	.020 - .040	1.675	.250	.005 - .010	1.687	.756	.030 - .050	1.700	.938	.135 - .156
1.630	1.274	.005 - .010	1.648	1.008	.010 - .020	1.654	1.420	.005 - .010	1.675	.771	.060 - .075	1.687	.893	.005 - .010	1.700	.990	.030 - .040
1.630	1.283	.020 - .040	1.648	1.194	.090 - .105	1.655	.203	.050 - .075	1.675	.800	.042 - .075	1.687	1.226	.030 - .050	1.700	1.000	.060 - .083
1.630	1.330	.040 - .060	1.648	1.270	.020 - .030	1.655	.473	.005 - .010	1.675	.855	.005 - .010	1.687	1.312	.030 - .040	1.700	1.187	.010 - .020
1.630	1.489	.030 - .040	1.648	1.403	.005 - .010	1.655	.629	.005 - .010	1.675	1.285	.060 - .080	1.687	1.520	.060 - .070	1.700	1.190	.020 - .080
1.630	1.490	.040 - .060	1.648	1.515	.040 - .050	1.655	.633	.020 - .040	1.676	.096	.030 - .050	1.687	1.534	.005 - .010	1.700	1.192	.100 - .125
1.630	1.503	.015 - .030	1.649	.055	.005 - .010	1.655	.651	.080 - .105	1.677	1.141	.030 - .050	1.688	.635	.015 - .030	1.700	1.223	.050 - .075
1.631	1.010	.010 - .020	1.649	.505	.005 - .010	1.655	.771	.020 - .030	1.677	1.198	.005 - .010	1.688	.686	.100 - .125	1.700	1.250	.005 - .012
1.631	1.378	.005 - .010	1.649	.562	.010 - .020	1.655	.905	.050 - .070	1.677	1.499	.020 - .030	1.688	1.090	.070 - .090	1.700	1.340	.005 - .010
1.631	1.438	.020 - .035	1.649	.621	.030 - .050	1.655	.985	.015 - .030	1.678	.717	.020 - .030	1.688	1.097	.030 - .050	1.700	1.380	.005 - .010
1.631	1.503	.050 - .070	1.649	1.296	.005 - .010	1.655	1.063	.030 - .050	1.678	.756	.105 - .125	1.688	1.257	.015 - .030	1.700	1.385	.040 - .060
1.632	.513	.040 - .060	1.649	1.366	.060 - .080	1.655	1.125	.020 - .030	1.678	.769	.025 - .040	1.688	1.262	.050 - .075	1.700	1.389	.005 - .010
1.632	.565	.005 - .010	1.649	1.449	.050 - .070	1.655	1.179	.005 - .020	1.678	1.342	.080 - .100	1.688	1.432	.030 - .050	1.700	1.400	.040 - .060
1.632	1.202	.030 - .050	1.649	1.499	.050 - .070	1.655	1.395	.005 - .010	1.679	.897	.156 - .188	1.688	1.507	.040 - .060	1.700	1.451	.005 - .010
1.633	.501	.015 - .030	1.649	1.501	.010 - .020	1.655	1.412	.005 - .010	1.679	.951	.040 - .060	1.689	.517	.075 - .015	1.700	1.504	.030 - .050
1.633	.828	.005 - .010	1.650	.051	.015 - .030	1.655	1.440	.030 - .050	1.679	1.050	.005 - .010	1.689	.940	.090 - .125	1.700	1.515	.012 - .020
1.634	1.202	.030 - .050	1.650	.132	.010 - .020	1.655	1.541	.005 - .010	1.679	1.182	.040 - .060	1.689	1.230	.100 - .125	1.700	1.542	.010 - .020
1.635	.787	.020 - .030	1.650	.377	.030 - .050	1.656	1.101	.120 - .156	1.679	1.365	.015 - .030	1.689	1.376	.020 - .030	1.701	.560	.010 - .020
1.635	.998	.050 - .075	1.650	.411	.015 - .025	1.656	1.223	.090 - .105	1.679	1.375	.005 - .010	1.690	.125	.020 - .040	1.701	1.004	.005 - .010
1.635	1.162	.050 - .070	1.650	.424	.100 - .125	1.656	1.344	.050 - .070	1.679	1.389	.040 - .060	1.690	.410	.105 - .125	1.701	1.266	.015 - .030
1.635	1.326	.020 - .040	1.650	.440	.010 - .020	1.656	1.390	.030 - .050	1.680	.250	.010 - .035	1.690</					

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.750	1.062	.050 - .075	1.751	1.405	.050 - .075	1.765	1.005	.010 - .020	1.780	1.601	.070 - .090	1.800	.992	.060 - .080	1.812	.213	.010 - .125
1.750	1.120	.005 - .010	1.751	1.434	.020 - .040	1.765	1.024	.036 - .060	1.780	1.612	.030 - .050	1.800	1.010	.120 - .134	1.812	.246	.005 - .010
1.750	1.122	.110 - .130	1.751	1.515	.005 - .010	1.765	1.044	.090 - .105	1.780	1.691	.020 - .030	1.800	1.172	.080 - .100	1.812	.251	.005 - .010
1.750	1.124	.100 - .125	1.751	1.569	.020 - .035	1.765	1.350	.030 - .050	1.781	.936	.080 - .105	1.800	1.173	.083 - .120	1.812	.328	.156 - .187
1.750	1.126	.010 - .083	1.751	1.583	.025 - .040	1.765	1.361	.050 - .070	1.781	1.157	.020 - .040	1.800	1.251	.010 - .020	1.812	.456	.060 - .080
1.750	1.130	.105 - .125	1.752	.262	.100 - .120	1.765	1.382	.062 - .083	1.781	1.517	.015 - .030	1.800	1.268	.020 - .030	1.812	.629	.005 - .010
1.750	1.135	.005 - .010	1.752	.375	.030 - .050	1.765	1.569	.020 - .040	1.782	.396	.005 - .010	1.800	1.380	.005 - .010	1.812	.751	.156 - .187
1.750	1.139	.015 - .060	1.752	.381	.040 - .060	1.766	1.382	.060 - .080	1.782	.645	.005 - .010	1.800	1.385	.005 - .010	1.812	.792	.035 - .048
1.750	1.141	.060 - .080	1.752	.485	.156 - .190	1.767	1.607	.015 - .030	1.783	.880	.010 - .030	1.800	1.430	.040 - .060	1.812	1.062	.075 - .100
1.750	1.150	.090 - .120	1.752	.531	.005 - .010	1.768	.793	.005 - .010	1.784	1.136	.020 - .040	1.800	1.451	.015 - .030	1.812	1.124	.050 - .075
1.750	1.170	.030 - .048	1.752	.563	.110 - .130	1.768	1.232	.005 - .010	1.784	1.330	.010 - .020	1.800	1.500	.005 - .020	1.812	1.130	.090 - .125
1.750	1.187	.030 - .080	1.752	.640	.010 - .020	1.768	1.380	.030 - .050	1.784	1.616	.060 - .080	1.800	1.548	.005 - .010	1.812	1.156	.080 - .104
1.750	1.189	.100 - .125	1.752	.800	.025 - .040	1.768	1.382	.005 - .010	1.785	.881	.050 - .070	1.800	1.562	.005 - .010	1.812	1.188	.050 - .080
1.750	1.190	.005 - .010	1.752	.907	.180 - .199	1.769	.406	.080 - .104	1.785	1.084	.032 - .048	1.800	1.569	.025 - .040	1.812	1.300	.030 - .050
1.750	1.193	.005 - .010	1.752	.910	.015 - .030	1.769	.641	.090 - .120	1.785	1.264	.105 - .115	1.801	.502	.005 - .010	1.812	1.312	.010 - .015
1.750	1.226	.015 - .040	1.752	1.000	.030 - .060	1.769	.838	.040 - .060	1.788	.330	.080 - .100	1.801	.505	.010 - .020	1.812	1.381	.050 - .075
1.750	1.250	.010 - .030	1.752	1.051	.020 - .040	1.769	1.299	.050 - .070	1.788	.698	.050 - .075	1.801	.751	.005 - .010	1.812	1.402	.015 - .030
1.750	1.252	.010 - .020	1.752	1.062	.100 - .125	1.769	1.301	.040 - .060	1.788	1.124	.010 - .015	1.801	1.501	.050 - .070	1.812	1.410	.030 - .050
1.750	1.253	.005 - .010	1.752	1.064	.110 - .130	1.769	1.391	.025 - .040	1.788	1.425	.075 - .100	1.801	1.610	.020 - .030	1.812	1.436	.040 - .060
1.750	1.254	.020 - .082	1.752	1.256	.020 - .040	1.770	.439	.005 - .010	1.788	1.586	.090 - .105	1.801	1.611	.010 - .020	1.812	1.444	.040 - .060
1.750	1.255	.010 - .020	1.752	1.450	.080 - .100	1.770	.781	.050 - .070	1.788	1.587	.050 - .065	1.802	.425	.040 - .060	1.812	1.445	.020 - .040
1.750	1.256	.090 - .105	1.752	1.453	.083 - .120	1.770	.789	.040 - .060	1.788	1.605	.020 - .040	1.802	1.257	.005 - .010	1.812	1.480	.050 - .075
1.750	1.259	.080 - .105	1.752	1.500	.080 - .090	1.770	.810	.030 - .040	1.789	.761	.080 - .125	1.803	.712	.070 - .090	1.812	1.498	.010 - .020
1.750	1.260	.005 - .042	1.752	1.507	.050 - .070	1.770	.827	.030 - .048	1.790	.620	.015 - .125	1.803	.760	.060 - .080	1.812	1.510	.005 - .010
1.750	1.261	.040 - .060	1.752	1.513	.042 - .062	1.770	1.065	.050 - .070	1.790	.820	.015 - .125	1.803	.906	.020 - .032	1.812	1.522	.020 - .040
1.750	1.300	.040 - .060	1.752	1.528	.070 - .090	1.770	1.181	.010 - .020	1.790	1.063	.005 - .010	1.803	1.362	.040 - .060	1.812	1.523	.030 - .050
1.750	1.316	.010 - .020	1.753	.343	.080 - .104	1.770	1.250	.040 - .060	1.790	1.530	.010 - .020	1.804	1.270	.010 - .020	1.812	1.524	.015 - .030
1.750	1.318	.005 - .008	1.753	.387	.040 - .080	1.770	1.265	.005 - .010	1.804	1.366	.005 - .010	1.812	1.563	.015 - .030	1.812	1.563	.015 - .030
1.750	1.319	.005 - .010	1.753	.751	.080 - .100	1.770	1.542	.010 - .020	1.791	1.276	.010 - .020	1.805	.338	.005 - .010	1.813	.251	.083 - .104
1.750	1.324	.035 - .050	1.753	.752	.105 - .125	1.770	1.565	.050 - .070	1.791	1.280	.040 - .060	1.805	.375	.090 - .105	1.813	.751	.025 - .040
1.750	1.329	.030 - .050	1.753	1.067	.005 - .010	1.77	1.569	.020 - .040	1.791	1.605	.030 - .050	1.805	.550	.025 - .040	1.813	.754	.030 - .040
1.750	1.351	.060 - .080	1.753	1.268	.005 - .010	1.770	1.629	.015 - .025	1.792	1.605	.010 - .020	1.805	1.117	.020 - .040	1.813	.906	.025 - .040
1.750	1.353	.040 - .060	1.753	1.313	.080 - .100	1.771	.257	.050 - .070	1.793	.638	.005 - .010	1.805	1.375	.030 - .060	1.813	.938	.005 - .010
1.750	1.375	.005 - .020	1.753	1.323	.005 - .010	1.771	.433	.105 - .125	1.793	.999	.010 - .020	1.805	1.398	.005 - .010	1.813	1.140	.156 - .187
1.750	1.383	.005 - .010	1.753	1.385	.005 - .008	1.771	.812	.020 - .030	1.793	1.499	.020 - .030	1.805	1.565	.010 - .020	1.813	1.266	.090 - .105
1.750	1.384	.015 - .025	1.753	1.564	.050 - .070	1.771	1.332	.090 - .105	1.794	.387	.010 - .020	1.805	1.584	.015 - .030	1.813	1.323	.010 - .020
1.750	1.385	.100 - .125	1.754	.894	.100 - .125	1.771	1.378	.005 - .020	1.794	1.588	.010 - .020	1.805	1.591	.070 - .090	1.813	1.394	.040 - .060
1.750	1.386	.005 - .010	1.754	1.254	.062 - .083	1.771	1.397	.005 - .010	1.795	.276	.100 - .125	1.805	1.718	.005 - .010	1.813	1.585	.010 - .020
1.750	1.389	.060 - .080	1.754	1.375	.105 - .125	1.772	.473	.005 - .010	1.795	.510	.105 - .125	1.806	.206	.040 - .050	1.814	1.000	.100 - .125
1.750	1.394	.090 - .120	1.754	1.387	.020 - .030	1.772	.501	.010 - .025	1.795	1.001	.005 - .010	1.806	.350	.005 - .010	1.814	1.300	.025 - .050
1.750	1.398	.032 - .050	1.755	.186	.060 - .080	1.772	1.313	.050 - .060	1.795	1.625	.025 - .040	1.806	1.344	.015 - .030	1.815	.323	.005 - .016
1.750	1.400	.005 - .050	1.755	.257	.040 - .060	1.772	1.360	.005 - .010	1.796	.400	.120 - .140	1.806	1.655	.030 - .050	1.815	.410	.070 - .110
1.750	1.410	.005 - .020	1.755	.281	.080 - .100	1.772	1.361	.005 - .010	1.796	1.688	.015 - .030	1.806	1.660	.005 - .010	1.815	.523	.010 - .020
1.750	1.411	.008 - .015	1.755	.322	.050 - .070	1.772	1.470	.015 - .025	1.797	1.687	.020 - .030	1.806	1.690	.030 - .050	1.815	.772	.100 - .125
1.750	1.420	.070 - .090	1.755	.906	.040 - .062	1.773	.202	.050 - .070	1.798	.096	.030 - .050	1.807	.166	.035 - .050	1.815	.775	.125 - .135
1.750	1.435	.005 - .040	1.755	1.285	.060 - .080	1.773	.471	.130 - .150	1.798	.629	.005 - .010	1.807	.461	.050 - .075	1.815	1.024	.020 - .040
1.750	1.436	.120 - .134	1.755	1.536	.050 - .070	1.773	.501	.005 - .020	1.798	.931	.050 - .075	1.807	1.007	.050 - .070	1.815	1.192	.080 - .100
1.750	1.438	.040 - .060	1.756	.484	.105 - .135	1.773	1.023	.050 - .070	1.798	1.076	.005 - .010	1.807	1.209	.090 - .105	1.815	1.523	.015 - .030
1.750	1.443	.090 - .105	1.757	.252	.080 - .104	1.773	1.149	.050 - .070	1.798	1.122	.105 - .125	1.807	1.223	.005 - .010	1.816	.751	.010 - .020
1.750	1.450	.040 - .060	1.757	.629	.100 - .125	1.773	1.386	.070 - .090	1.798	1.255	.100 - .125	1.807	1.438	.040 - .060	1.816	1.338	.020 - .030
1.750	1.471	.050 - .075	1.757	1.437	.005 - .010	1.773	1.500	.010 - .020	1.799	.096	.030 - .050	1.807	1.518	.030 - .060	1.818	.631	.020 - .030
1.750	1.500	.025 - .040	1.758	.562	.005 - .010	1.774	.127	.015 - .030	1.799	.180	.030 - .050	1.808	.690	.030 - .050	1.818	1.065	.015 - .030
1.750	1.502	.005 - .010	1.758	1.476	.050 - .070	1.774	1.182	.040 - .060	1.799	.377	.005 - .010	1.808	1.534	.010 - .020	1.818	1.404	.025 - .040
1.750	1.527	.020 - .040	1.760	.445	.015 - .030	1.774	1.362	.005 - .010	1.799	.753	.042 - .060	1.809	.096	.040 - .060	1.818	1.406	.020 - .030
1.750	1.531	.030 - .080	1.760	.631	.010 - .020	1.774	1.484	.020 - .030	1.799	.795	.036 - .050	1.809	.463	.025 - .040	1.818	1.498	.040 - .060
1.750	1.532	.025 - .045	1.760	.767	.007 - .016	1.775	1.275	.100 - .130	1.799	.945	.100 - .125	1.809	1.063	.093 - .113	1.818	1.502	.020 - .030
1.750	1.550	.010 - .015	1.760	1.140	.007 - .016	1.775	1.511	.025 - .040	1.799	1.020	.040 - .060	1.809	1.121	.105 - .120	1.818	1.572	.005 - .010
1.750	1.565	.005 - .010	1.760	1.270	.020 - .040	1.775	1.517	.030 - .040	1.799	1.029	.120 - .135	1.809	1.437	.005 - .008	1.819	.450	.010 - .020
1.750	1.566	.005 - .010	1.760	1.286	.005 - .010	1.775	1.520	.025 - .040	1.799	1.380	.050 - .075	1.810	.100	.020 - .050	1.819	1.580	.005 - .008
1.750	1.567	.010 - .020	1.761	.408	.015 - .030	1.776	.685	.005 - .010	1.799	1.397	.015 - .030	1.810	.167	.093 - .125	1.820	.447	.010 - .020
1.750	1.580	.040 - .060	1.761	.699	.080 - .105	1.776	.752	.100 - .134	1.800	.147	.080 - .104	1.810	.180	.015 - .030	1.820	.630	.010 - .020
1.750	1.615	.020 - .040	1.762	.408	.015 - .030	1.776	1.235										

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
1.899	.340	.156 - .190	1.912	1.801	.020 - .030	1.928	1.585	.005 - .010	1.940	.687	.090 - .105	1.960	1.619	.020 - .040	1.970	1.428	.020 - .040
1.899	.380	.030 - .050	1.913	1.096	.005 - .010	1.928	1.664	.070 - .090	1.940	.880	.065 - .080	1.960	1.642	.005 - .010	1.970	1.500	.050 - .070
1.899	.437	.156 - .190	1.913	1.337	.015 - .030	1.929	1.550	.015 - .025	1.940	1.155	.080 - .100	1.960	1.674	.005 - .010	1.970	1.576	.050 - .070
1.899	.629	.015 - .030	1.913	1.755	.005 - .010	1.930	.375	.032 - .048	1.940	1.260	.005 - .010	1.960	1.712	.005 - .010	1.970	1.630	.005 - .010
1.899	.630	.005 - .010	1.913	1.779	.005 - .010	1.930	.451	.015 - .025	1.940	1.261	.030 - .070	1.960	1.862	.005 - .010	1.970	1.654	.040 - .060
1.899	1.015	.040 - .060	1.915	.255	.020 - .030	1.930	1.181	.050 - .070	1.940	1.402	.015 - .030	1.961	1.188	.010 - .020	1.970	1.692	.010 - .020
1.900	.253	.050 - .060	1.915	1.259	.100 - .125	1.930	1.478	.010 - .020	1.940	1.410	.040 - .060	1.961	1.300	.020 - .030	1.970	1.814	.015 - .030
1.900	.378	.030 - .075	1.915	1.346	.040 - .060	1.930	1.532	.010 - .020	1.940	1.769	.005 - .010	1.961	1.312	.050 - .083	1.971	1.268	.093 - .125
1.900	.500	.005 - .010	1.915	1.586	.007 - .015	1.930	1.600	.025 - .042	1.941	1.627	.065 - .080	1.961	1.584	.090 - .125	1.971	1.541	.005 - .030
1.900	.502	.005 - .010	1.915	1.675	.010 - .020	1.930	1.650	.005 - .010	1.941	1.629	.075 - .090	1.962	1.735	.008 - .020	1.972	.379	.015 - .030
1.900	.626	.005 - .020	1.916	.966	.050 - .070	1.930	1.824	.005 - .030	1.942	.314	.105 - .125	1.963	.281	.005 - .010	1.972	.505	.015 - .030
1.900	.630	.005 - .010	1.917	1.258	.125 - .156	1.930	1.880	.010 - .020	1.942	1.157	.080 - .100	1.963	.481	.005 - .010	1.972	.875	.105 - .125
1.900	.755	.010 - .020	1.918	1.385	.015 - .025	1.931	.181	.015 - .025	1.942	1.746	.015 - .030	1.963	1.565	.025 - .040	1.972	1.130	.015 - .030
1.900	.855	.005 - .010	1.918	1.410	.062 - .083	1.931	.566	.156 - .190	1.942	1.787	.005 - .010	1.964	.281	.015 - .030	1.972	1.250	.093 - .125
1.900	.870	.060 - .080	1.918	1.519	.050 - .070	1.931	1.595	.005 - .020	1.943	.764	.105 - .125	1.964	1.576	.015 - .025	1.972	1.579	.030 - .040
1.900	.881	.090 - .125	1.918	1.632	.005 - .010	1.932	1.126	.130 - .150	1.944	.393	.030 - .050	1.964	1.579	.005 - .040	1.973	.413	.190 - .210
1.900	1.000	.050 - .070	1.919	1.263	.040 - .060	1.932	1.626	.040 - .060	1.944	.800	.156 - .187	1.964	1.740	.005 - .010	1.974	.408	.015 - .030
1.900	1.002	.075 - .105	1.919	1.390	.060 - .080	1.932	1.695	.025 - .040	1.944	1.628	.025 - .040	1.964	1.756	.020 - .030	1.974	.630	.120 - .140
1.900	1.006	.040 - .060	1.919	1.501	.010 - .020	1.932	1.779	.005 - .010	1.945	.426	.050 - .070	1.964	1.790	.012 - .020	1.974	.880	.120 - .140
1.900	1.095	.040 - .060	1.919	1.595	.060 - .080	1.933	.750	.130 - .150	1.945	1.063	.105 - .125	1.965	.281	.005 - .010	1.974	1.170	.005 - .010
1.900	1.256	.080 - .104	1.919	1.754	.015 - .030	1.933	1.504	.015 - .030	1.945	1.477	.010 - .020	1.965	.815	.060 - .080	1.974	1.284	.005 - .010
1.900	1.320	.040 - .060	1.920	.859	.080 - .104	1.933	1.556	.050 - .060	1.945	1.792	.005 - .020	1.965	1.427	.030 - .050	1.974	1.503	.005 - .010
1.900	1.321	.040 - .060	1.920	1.000	.070 - .090	1.933	1.565	.030 - .050	1.946	1.780	.005 - .010	1.965	1.491	.015 - .030	1.975	.755	.025 - .040
1.900	1.375	.010 - .020	1.920	1.263	.062 - .083	1.934	1.002	.030 - .050	1.947	1.661	.005 - .010	1.965	1.498	.048 - .062	1.975	1.004	.130 - .150
1.900	1.375	.050 - .075	1.920	1.264	.040 - .060	1.934	1.562	.050 - .062	1.948	1.083	.070 - .090	1.965	1.503	.005 - .010	1.975	1.821	.020 - .030
1.900	1.395	.040 - .060	1.920	1.410	.060 - .090	1.935	.473	.060 - .085	1.948	1.578	.005 - .010	1.965	1.513	.005 - .010	1.975	1.879	.010 - .020
1.900	1.453	.020 - .040	1.920	1.411	.090 - .105	1.935	.500	.060 - .083	1.948	1.749	.010 - .020	1.965	1.586	.020 - .030	1.976	.759	.030 - .050
1.900	1.500	.006 - .060	1.920	1.471	.080 - .100	1.935	.651	.020 - .040	1.948	1.820	.005 - .020	1.965	1.694	.005 - .010	1.976	1.289	.020 - .060
1.900	1.501	.090 - .105	1.920	1.635	.030 - .040	1.935	1.032	.156 - .187	1.949	.459	.020 - .030	1.965	1.860	.007 - .030	1.976	1.385	.015 - .030
1.900	1.530	.010 - .020	1.920	1.826	.010 - .020	1.935	1.190	.005 - .010	1.949	.820	.005 - .010	1.966	1.006	.005 - .010	1.976	1.673	.030 - .050
1.900	1.600	.030 - .050	1.921	.438	.090 - .110	1.935	1.309	.105 - .125	1.949	1.062	.030 - .050	1.966	1.206	.005 - .010	1.977	1.775	.005 - .010
1.900	1.626	.015 - .030	1.921	.566	.015 - .030	1.935	1.500	.090 - .100	1.949	1.119	.080 - .100	1.966	1.438	.060 - .080	1.977	1.798	.010 - .020
1.900	1.628	.030 - .050	1.921	1.500	.010 - .020	1.935	1.555	.060 - .083	1.949	1.526	.005 - .010	1.966	1.722	.020 - .040	1.978	1.550	.015 - .030
1.900	1.650	.025 - .060	1.921	1.671	.062 - .083	1.935	1.656	.010 - .020	1.949	1.555	.015 - .030	1.967	.394	.080 - .100	1.978	1.694	.020 - .030
1.900	1.651	.080 - .100	1.922	.317	.015 - .030	1.935	1.661	.032 - .048	1.949	1.620	.030 - .040	1.967	.502	.010 - .020	1.978	1.776	.050 - .070
1.900	1.660	.005 - .010	1.922	.565	.150 - .170	1.935	1.687	.090 - .105	1.949	1.664	.035 - .050	1.967	1.113	.025 - .040	1.979	.395	.160 - .190
1.901	.626	.025 - .040	1.922	.972	.080 - .104	1.936	.688	.025 - .040	1.950	.190	.015 - .040	1.967	1.519	.005 - .010	1.979	1.660	.005 - .010
1.901	.726	.105 - .125	1.922	1.079	.080 - .104	1.936	.780	.060 - .080	1.950	.320	.005 - .010	1.967	1.596	.030 - .050	1.979	1.775	.020 - .030
1.901	.760	.120 - .140	1.922	1.176	.080 - .104	1.936	.818	.005 - .060	1.950	.490	.005 - .010	1.967	1.654	.005 - .010	1.980	.267	.125 - .135
1.901	.781	.105 - .125	1.922	1.341	.080 - .104	1.936	1.186	.050 - .075	1.950	.505	.125 - .156	1.967	1.687	.010 - .020	1.980	1.060	.010 - .020
1.901	1.501	.010 - .020	1.922	1.410	.080 - .104	1.936	1.564	.060 - .080	1.950	.810	.005 - .010	1.968	.283	.050 - .070	1.980	1.478	.050 - .070
1.902	.631	.005 - .010	1.922	1.574	.010 - .020	1.936	1.579	.015 - .042	1.950	.878	.125 - .135	1.968	.315	.040 - .060	1.980	1.500	.050 - .070
1.902	1.101	.040 - .062	1.923	.390	.015 - .030	1.936	1.586	.090 - .100	1.950	1.321	.005 - .010	1.968	.386	.110 - .135	1.980	1.507	.005 - .010
1.902	1.139	.090 - .125	1.923	.881	.105 - .135	1.936	1.656	.050 - .070	1.950	1.408	.005 - .010	1.968	.505	.005 - .010	1.980	1.546	.005 - .010
1.902	1.256	.083 - .104	1.923	1.181	.025 - .040	1.936	1.719	.005 - .010	1.950	1.500	.050 - .070	1.968	.625	.005 - .010	1.980	1.601	.010 - .020
1.902	1.420	.020 - .040	1.923	1.262	.080 - .104	1.936	1.740	.005 - .010	1.950	1.600	.005 - .050	1.968	.630	.105 - .125	1.980	1.778	.005 - .010
1.902	1.570	.005 - .010	1.923	1.533	.050 - .070	1.936	1.757	.010 - .020	1.950	1.617	.010 - .020	1.968	.827	.105 - .125	1.980	1.850	.005 - .010
1.903	.485	.025 - .040	1.923	1.714	.010 - .020	1.937	.651	.105 - .125	1.950	1.820	.025 - .035	1.968	.866	.170 - .190	1.981	.831	.156 - .187
1.903	.719	.010 - .125	1.923	1.720	.005 - .010	1.937	1.015	.075 - .090	1.951	.504	.110 - .130	1.968	.984	.005 - .010	1.981	1.519	.040 - .060
1.903	1.031	.050 - .070	1.924	.315	.015 - .030	1.937	1.021	.156 - .187	1.951	1.000	.105 - .135	1.968	.995	.005 - .010	1.981	1.736	.005 - .010
1.903	1.404	.015 - .025	1.924	.691	.050 - .070	1.937	1.079	.005 - .010	1.951	1.201	.030 - .050	1.968	1.008	.030 - .050	1.982	.760	.015 - .030
1.904	1.510	.025 - .040	1.924	.860	.062 - .083	1.937	1.157	.020 - .040	1.951	1.781	.005 - .010	1.968	1.026	.090 - .100	1.982	1.609	.083 - .104
1.904	1.565	.010 - .020	1.924	.973	.062 - .083	1.937	1.250	.005 - .010	1.952	.812	.040 - .060	1.968	1.028	.005 - .010	1.983	.515	.030 - .050
1.905	1.160	.005 - .010	1.924	1.068	.025 - .040	1.937	1.260	.040 - .062	1.952	1.055	.020 - .040	1.968	1.150	.005 - .010	1.983	.914	.005 - .010
1.905	1.510	.005 - .010	1.924	1.080	.062 - .083	1.937	1.283	.005 - .010	1.952	1.069	.090 - .110	1.968	1.183	.005 - .010	1.983	1.628	.020 - .040
1.905	1.590	.010 - .030	1.924	1.177	.062 - .083	1.937	1.284	.015 - .030	1.952	1.592	.030 - .050	1.968	1.253	.030 - .050	1.984	.229	.005 - .010
1.905	1.627	.025 - .040	1.924	1.180	.062 - .083	1.937	1.285	.040 - .060	1.953	1.375	.040 - .060	1.968	1.394	.005 - .010	1.984	.395	.005 - .190
1.905	1.640	.080 - .100	1.924	1.261	.050 - .070	1.937	1.399	.030 - .050	1.953	1.421	.005 - .010	1.968	1.401	.060 - .070	1.984	1.329	.040 - .060
1.906	.194	.070 - .090	1.924	1.263	.062 - .083	1.937	1.436	.030 - .050	1.954	.377	.050 - .075	1.968	1.501	.015 - .030	1.984	1.544	.005 - .015
1.906	.316	.060 - .080	1.924	1.265	.005 - .010	1.937	1.498	.025 - .040	1.954	.421	.050 - .070	1.968	1.530	.020 - .040	1.985	1.206	.070 - .090
1.906	.381	.090 - .120	1.924	1.341	.062 - .083	1.937	1.527	.005 - .010	1.954	1.108	.125 - .156	1.968	1.578	.015 - .125	1.985	1.398	.010 - .030
1.906	.409	.050 - .070	1.9														

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
2.042	1.630	.040 - .060	2.060	.890	.080 - .104	2.098	1.013	.010 - .020	2.122	1.878	.020 - .040	2.129	.251	.050 - .070	2.154	1.957	.010 - .020
2.042	1.795	.050 - .075	2.060	1.141	.040 - .060	2.098	1.635	.010 - .020	2.123	.890	.090 - .105	2.129	.533	.105 - .135	2.155	1.097	.050 - .070
2.042	1.940	.020 - .030	2.060	1.438	.030 - .050	2.098	1.909	.020 - .040	2.123	.906	.090 - .125	2.129	.735	.020 - .040	2.155	1.325	.005 - .010
2.043	1.825	.015 - .030	2.060	1.450	.025 - .042	2.099	1.200	.010 - .020	2.123	1.008	.050 - .070	2.129	1.282	.050 - .070	2.155	1.957	.015 - .030
2.043	1.940	.010 - .020	2.060	1.511	.005 - .010	2.099	1.638	.005 - .010	2.123	1.645	.105 - .125	2.129	1.500	.010 - .020	2.156	.345	.030 - .060
2.044	1.025	.050 - .070	2.060	1.520	.040 - .060	2.100	.753	.025 - .040	2.123	1.659	.105 - .125	2.129	1.524	.100 - .125	2.156	.877	.110 - .130
2.044	1.826	.010 - .020	2.060	1.629	.015 - .030	2.100	.794	.010 - .020	2.123	1.811	.005 - .010	2.130	.293	.050 - .070	2.156	1.312	.050 - .070
2.045	.344	.040 - .060	2.060	1.672	.020 - .040	2.100	1.391	.020 - .030	2.124	.312	.080 - .100	2.130	.516	.040 - .060	2.156	2.006	.015 - .030
2.045	.722	.005 - .030	2.060	1.805	.005 - .010	2.100	1.406	.050 - .070	2.124	1.127	.015 - .030	2.130	.532	.134 - .156	2.157	.344	.050 - .075
2.045	.724	.005 - .050	2.061	1.291	.060 - .080	2.100	1.640	.005 - .015	2.124	1.250	.010 - .020	2.130	.549	.040 - .060	2.157	.350	.005 - .010
2.045	1.256	.050 - .070	2.061	1.734	.020 - .035	2.100	1.656	.105 - .125	2.124	1.580	.040 - .060	2.130	.860	.100 - .125	2.157	.629	.120 - .135
2.045	1.344	.040 - .060	2.062	.372	.005 - .010	2.100	1.675	.005 - .010	2.124	1.815	.070 - .090	2.130	1.030	.015 - .030	2.157	1.253	.005 - .010
2.045	1.703	.005 - .010	2.062	.515	.100 - .125	2.100	1.700	.040 - .060	2.124	1.974	.015 - .030	2.130	1.057	.005 - .010	2.157	1.344	.050 - .075
2.045	1.730	.010 - .020	2.062	.625	.005 - .032	2.100	1.825	.005 - .010	2.125	.346	.050 - .075	2.130	1.625	.040 - .060	2.157	1.427	.040 - .050
2.045	1.881	.005 - .010	2.062	.630	.050 - .070	2.100	1.830	.010 - .020	2.125	.380	.100 - .125	2.130	1.762	.005 - .010	2.157	1.670	.015 - .030
2.046	1.536	.060 - .080	2.062	.766	.040 - .060	2.100	1.900	.050 - .075	2.125	.500	.080 - .100	2.130	1.869	.025 - .040	2.157	2.006	.010 - .020
2.046	1.611	.070 - .090	2.062	1.371	.070 - .090	2.100	1.933	.005 - .010	2.125	.507	.005 - .010	2.130	1.871	.010 - .020	2.158	1.060	.075 - .090
2.046	1.730	.020 - .030	2.062	1.381	.015 - .040	2.100	1.971	.010 - .020	2.125	.562	.100 - .125	2.131	1.658	.015 - .030	2.158	1.063	.080 - .120
2.046	1.871	.040 - .060	2.063	.392	.050 - .070	2.101	.564	.010 - .020	2.125	.565	.010 - .020	2.131	1.878	.080 - .105	2.158	1.469	.005 - .010
2.047	.551	.060 - .080	2.063	.751	.030 - .050	2.101	1.731	.025 - .040	2.125	.626	.015 - .030	2.131	2.031	.030 - .050	2.158	1.564	.080 - .120
2.047	.747	.015 - .030	2.063	1.062	.005 - .010	2.102	.792	.030 - .040	2.125	.655	.075 - .100	2.132	.250	.090 - .110	2.158	1.727	.030 - .050
2.047	.807	.070 - .090	2.063	1.312	.005 - .010	2.103	1.781	.010 - .020	2.125	.695	.090 - .105	2.132	1.190	.060 - .080	2.159	.386	.010 - .020
2.047	.828	.025 - .040	2.063	1.454	.040 - .060	2.104	1.250	.060 - .080	2.125	.705	.005 - .010	2.132	1.658	.020 - .040	2.159	1.690	.025 - .040
2.047	.965	.025 - .040	2.063	1.628	.005 - .010	2.104	1.680	.040 - .060	2.125	.761	.060 - .090	2.134	1.410	.015 - .030	2.160	1.127	.020 - .030
2.047	.985	.070 - .080	2.065	1.564	.040 - .070	2.106	1.808	.015 - .030	2.125	.813	.110 - .135	2.134	1.729	.060 - .080	2.160	1.400	.040 - .125
2.047	1.102	.060 - .080	2.065	1.570	.050 - .070	2.106	1.814	.050 - .075	2.125	.895	.005 - .010	2.134	1.752	.005 - .012	2.160	1.730	.020 - .040
2.047	1.274	.005 - .010	2.065	1.722	.015 - .030	2.107	.314	.105 - .125	2.125	.907	.020 - .030	2.134	1.898	.020 - .040	2.162	.668	.020 - .030
2.047	1.417	.060 - .080	2.065	1.857	.075 - .090	2.108	1.801	.075 - .090	2.125	1.015	.105 - .125	2.135	1.120	.100 - .120	2.162	.756	.025 - .040
2.047	1.692	.060 - .080	2.066	1.718	.030 - .050	2.109	1.726	.025 - .040	2.125	1.070	.005 - .010	2.135	1.900	.020 - .040	2.162	.857	.020 - .030
2.047	1.773	.015 - .030	2.068	.756	.050 - .070	2.109	1.829	.080 - .100	2.125	1.075	.010 - .020	2.136	1.578	.060 - .080	2.162	1.512	.080 - .105
2.047	1.811	.025 - .040	2.070	1.180	.080 - .104	2.110	1.929	.005 - .010	2.125	1.100	.030 - .050	2.137	1.969	.005 - .010	2.162	1.724	.134 - .160
2.048	.296	.005 - .010	2.070	1.530	.020 - .030	2.111	1.436	.010 - .020	2.125	1.123	.060 - .080	2.138	1.897	.005 - .010	2.162	1.760	.032 - .050
2.048	.626	.005 - .010	2.070	1.780	.090 - .105	2.112	1.260	.080 - .105	2.125	1.251	.050 - .075	2.138	1.968	.025 - .040	2.163	.252	.030 - .050
2.048	.631	.005 - .010	2.071	1.749	.010 - .020	2.112	1.509	.020 - .040	2.125	1.252	.090 - .105	2.139	1.417	.080 - .104	2.163	.678	.005 - .010
2.048	1.260	.070 - .090	2.072	1.277	.015 - .030	2.112	1.831	.050 - .070	2.125	1.260	.075 - .090	2.139	1.454	.005 - .010	2.163	1.929	.060 - .080
2.048	1.378	.030 - .050	2.074	.628	.005 - .010	2.113	.256	.006 - .016	2.125	1.308	.025 - .050	2.139	1.818	.005 - .010	2.163	2.028	.005 - .010
2.048	1.387	.005 - .010	2.074	1.500	.040 - .060	2.113	.876	.015 - .030	2.125	1.339	.080 - .105	2.139	1.821	.025 - .040	2.164	.987	.050 - .070
2.048	1.393	.070 - .090	2.075	1.969	.030 - .050	2.113	1.497	.070 - .090	2.125	1.376	.015 - .030	2.139	1.896	.030 - .040	2.164	1.801	.025 - .040
2.048	1.748	.020 - .040	2.076	1.629	.050 - .070	2.113	1.535	.010 - .020	2.125	1.408	.030 - .050	2.140	1.730	.025 - .040	2.164	1.898	.070 - .090
2.049	1.209	.005 - .010	2.077	1.155	.080 - .104	2.113	1.735	.040 - .060	2.125	1.439	.015 - .030	2.140	2.012	.040 - .060	2.164	1.908	.050 - .070
2.049	1.854	.005 - .010	2.077	1.380	.080 - .104	2.113	1.890	.020 - .040	2.125	1.500	.005 - .010	2.142	1.545	.030 - .050	2.165	.254	.005 - .010
2.050	.140	.060 - .080	2.077	1.639	.030 - .050	2.113	1.916	.005 - .010	2.125	1.500	.015 - .104	2.142	1.941	.005 - .010	2.165	.323	.030 - .050
2.050	.253	.005 - .010	2.077	1.719	.030 - .050	2.114	1.190	.025 - .040	2.125	1.504	.040 - .060	2.142	2.003	.005 - .010	2.165	.502	.010 - .020
2.050	.406	.105 - .125	2.078	1.237	.005 - .010	2.114	1.900	.015 - .030	2.125	1.507	.005 - .060	2.143	1.621	.005 - .010	2.165	.670	.105 - .135
2.050	.506	.005 - .010	2.078	1.620	.005 - .010	2.115	.986	.080 - .100	2.125	1.510	.020 - .040	2.143	1.730	.020 - .040	2.165	1.379	.020 - .040
2.050	.626	.010 - .020	2.078	1.691	.050 - .060	2.115	1.762	.020 - .030	2.125	1.526	.040 - .060	2.143	1.791	.010 - .020	2.165	1.380	.005 - .010
2.050	.627	.010 - .020	2.079	1.750	.060 - .080	2.116	1.330	.030 - .050	2.125	1.529	.005 - .010	2.144	1.831	.050 - .070	2.165	1.506	.050 - .070
2.050	.629	.005 - .010	2.080	.834	.070 - .090	2.117	1.152	.005 - .010	2.125	1.562	.050 - .070	2.144	1.890	.005 - .010	2.165	1.645	.005 - .010
2.050	.630	.005 - .020	2.080	1.600	.005 - .040	2.117	1.764	.005 - .010	2.125	1.580	.005 - .010	2.145	.845	.005 - .010	2.165	1.660	.080 - .100
2.050	.651	.080 - .100	2.080	1.695	.090 - .105	2.118	1.382	.070 - .090	2.125	1.625	.015 - .030	2.145	1.730	.005 - .010	2.165	1.701	.030 - .050
2.050	.731	.010 - .020	2.080	1.719	.030 - .040	2.118	1.508	.105 - .125	2.125	1.641	.010 - .040	2.145	1.967	.005 - .010	2.165	1.790	.040 - .050
2.050	1.425	.030 - .050	2.081	.820	.042 - .060	2.118	1.537	.005 - .010	2.125	1.642	.040 - .060	2.146	1.645	.070 - .090	2.165	1.800	.005 - .010
2.050	1.660	.075 - .090	2.081	1.060	.010 - .020	2.118	1.610	.070 - .080	2.125	1.671	.010 - .020	2.146	1.654	.075 - .090	2.165	1.968	.005 - .010
2.050	1.708	.040 - .060	2.082	1.883	.005 - .010	2.118	1.641	.060 - .080	2.125	1.750	.010 - .020	2.146	1.743	.005 - .020	2.166	.458	.090 - .105
2.052	.626	.025 - .040	2.082	1.942	.020 - .030	2.118	1.887	.025 - .040	2.125	1.751	.090 - .105	2.147	1.671	.030 - .050	2.166	1.216	.050 - .070
2.054	1.274	.010 - .020	2.083	1.440	.005 - .010	2.119	1.061	.075 - .090	2.125	1.757	.025 - .050	2.148	.626	.015 - .030	2.166	1.594	.060 - .090
2.054	1.384	.025 - .040	2.085	1.429	.040 - .060	2.119	1.414	.020 - .040	2.125	1.781	.025 - .040	2.148	.690	.105 - .135	2.167	1.408	.070 - .090
2.054	1.632	.015 - .030	2.085	1.801	.025 - .040	2.119	1.503	.005 - .010	2.125	1.811	.015 - .030	2.148	.878	.105 - .135	2.167	1.718	.005 - .010
2.055	1.570	.005 - .010	2.086	.787	.020 - .035	2.119	1.512	.005 - .010	2.125	1.852	.015 - .030	2.148	1.003	.010 - .020	2.167	1.772	.070 - .090
2.056	.528	.048 - .062	2.086	1.536	.030 - .050	2.119	1.587	.050 - .070	2.125	1.876	.050 - .070	2.148	1.764	.030 - .040	2.169	.720	.020 - .030
2.057	.390	.040 - .060	2.086	1.674	.005 - .010	2.120	.628	.050 - .075	2.125	1.891	.005 - .010	2.148	1.778	.050 - .070	2.170	.536	.005 - .010
2.058	.482	.048 - .062	2.089														

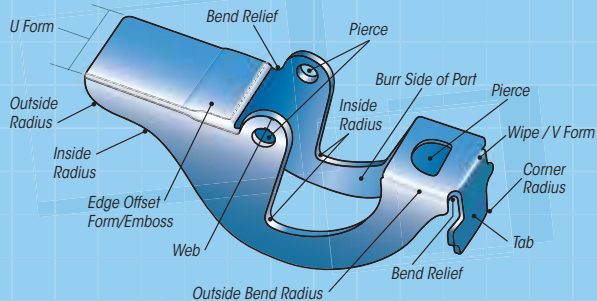
NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
2.312	1.003	.005 - .010	2.350	1.947	.090 - .105	2.372	1.512	.050 - .075	2.378	2.005	.040 - .060	2.402	.857	.050 - .070	2.438	1.693	.020 - .040
2.312	1.640	.015 - .030	2.350	2.010	.010 - .040	2.372	1.654	.040 - .060	2.379	.876	.060 - .080	2.402	1.970	.070 - .090	2.438	2.007	.040 - .060
2.312	1.651	.105 - .134	2.351	.270	.080 - .100	2.372	1.990	.015 - .030	2.379	1.505	.040 - .060	2.402	2.000	.060 - .075	2.438	2.160	.015 - .025
2.312	1.802	.005 - .010	2.351	.628	.010 - .020	2.373	.193	.060 - .080	2.379	1.630	.010 - .030	2.402	2.295	.005 - .030	2.438	2.214	.040 - .060
2.312	1.881	.010 - .020	2.351	1.659	.010 - .020	2.373	.210	.030 - .050	2.379	2.011	.030 - .040	2.403	2.196	.005 - .010	2.439	1.966	.040 - .060
2.312	2.000	.040 - .060	2.352	.638	.156 - .190	2.373	.630	.015 - .030	2.380	.551	.080 - .105	2.404	1.903	.005 - .010	2.439	1.977	.005 - .015
2.313	1.828	.015 - .030	2.352	1.660	.005 - .010	2.373	.642	.080 - .100	2.380	.670	.050 - .075	2.405	.135	.005 - .010	2.439	2.164	.015 - .030
2.313	1.992	.005 - .010	2.354	2.100	.010 - .020	2.373	.755	.005 - .010	2.380	.870	.060 - .090	2.405	.467	.050 - .070	2.440	.837	.105 - .135
2.313	2.185	.005 - .010	2.355	1.873	.005 - .010	2.373	.876	.050 - .070	2.380	1.000	.040 - .060	2.405	.993	.080 - .104	2.440	1.274	.050 - .070
2.314	.745	.070 - .090	2.355	2.217	.010 - .020	2.373	1.125	.025 - .040	2.380	1.250	.030 - .040	2.405	2.125	.010 - .025	2.440	1.968	.005 - .010
2.314	1.313	.020 - .060	2.356	.815	.080 - .105	2.373	1.281	.030 - .045	2.380	1.632	.010 - .020	2.405	2.217	.040 - .060	2.440	1.978	.020 - .030
2.314	1.758	.025 - .040	2.358	1.095	.025 - .040	2.373	1.300	.040 - .060	2.380	1.649	.030 - .050	2.407	.658	.100 - .120	2.440	1.982	.015 - .030
2.314	1.991	.005 - .010	2.358	1.542	.030 - .050	2.373	1.500	.050 - .070	2.380	1.700	.050 - .060	2.408	1.875	.020 - .040	2.440	2.175	.005 - .010
2.315	1.906	.040 - .060	2.358	1.600	.020 - .040	2.373	1.739	.015 - .025	2.380	1.937	.040 - .060	2.409	1.873	.030 - .050	2.440	2.219	.090 - .105
2.315	1.986	.090 - .105	2.358	1.932	.135 - .156	2.373	1.912	.005 - .010	2.380	1.997	.015 - .030	2.410	1.908	.007 - .035	2.440	2.262	.040 - .050
2.315	2.032	.040 - .060	2.358	2.130	.010 - .020	2.373	1.937	.030 - .050	2.380	2.020	.090 - .105	2.411	2.187	.005 - .010	2.440	2.290	.005 - .010
2.316	.173	.040 - .060	2.359	1.260	.020 - .040	2.373	2.166	.040 - .060	2.380	2.090	.010 - .020	2.414	1.624	.005 - .010	2.440	2.330	.010 - .020
2.316	.623	.020 - .040	2.360	.438	.070 - .090	2.374	.346	.105 - .125	2.381	.328	.050 - .070	2.414	1.935	.025 - .040	2.441	1.527	.050 - .070
2.316	1.757	.032 - .050	2.360	.728	.050 - .070	2.374	.560	.040 - .060	2.381	1.437	.025 - .040	2.416	1.519	.040 - .060	2.446	.315	.105 - .125
2.316	2.058	.005 - .010	2.360	1.003	.050 - .070	2.374	.625	.050 - .075	2.381	1.552	.020 - .040	2.416	1.911	.030 - .040	2.447	1.500	.005 - .010
2.317	1.941	.025 - .040	2.360	1.133	.160 - .190	2.374	.900	.020 - .040	2.382	2.014	.105 - .125	2.417	1.465	.050 - .070	2.447	2.040	.015 - .030
2.317	1.969	.070 - .080	2.360	1.262	.005 - .010	2.374	1.066	.005 - .010	2.383	.881	.060 - .080	2.418	1.873	.020 - .040	2.447	2.059	.005 - .010
2.318	.771	.005 - .010	2.360	1.375	.015 - .060	2.374	1.170	.030 - .187	2.383	2.144	.005 - .010	2.419	2.187	.005 - .010	2.447	2.129	.040 - .060
2.318	1.760	.005 - .010	2.360	1.578	.005 - .040	2.374	1.374	.050 - .070	2.384	.318	.090 - .110	2.420	1.873	.020 - .030	2.448	1.749	.005 - .010
2.318	1.942	.020 - .040	2.360	1.958	.010 - .020	2.374	1.535	.040 - .060	2.385	.254	.080 - .100	2.420	2.100	.020 - .030	2.448	1.989	.070 - .090
2.320	1.580	.070 - .090	2.360	2.165	.005 - .010	2.374	1.537	.020 - .040	2.385	1.877	.010 - .020	2.420	2.180	.020 - .035	2.448	2.089	.005 - .010
2.320	1.681	.005 - .010	2.361	1.009	.025 - .070	2.374	1.757	.010 - .020	2.385	1.935	.060 - .080	2.420	2.186	.015 - .030	2.449	1.970	.015 - .035
2.321	1.580	.010 - .020	2.361	1.047	.005 - .010	2.374	1.811	.005 - .050	2.387	1.366	.050 - .075	2.420	2.187	.030 - .050	2.450	.504	.010 - .020
2.321	2.053	.005 - .010	2.361	1.181	.080 - .120	2.374	1.990	.100 - .120	2.388	1.433	.060 - .070	2.421	2.125	.020 - .040	2.450	.753	.015 - .030
2.322	.192	.015 - .030	2.361	1.774	.010 - .020	2.375	.139	.040 - .062	2.388	1.701	.050 - .070	2.422	1.522	.110 - .130	2.450	1.192	.040 - .060
2.322	1.770	.030 - .040	2.361	2.026	.040 - .060	2.375	.165	.030 - .050	2.388	2.048	.040 - .060	2.422	2.040	.100 - .125	2.450	2.133	.015 - .032
2.322	2.000	.015 - .030	2.362	.240	.020 - .030	2.375	.280	.025 - .040	2.389	1.443	.050 - .060	2.422	2.215	.005 - .010	2.450	2.135	.005 - .030
2.323	.311	.015 - .030	2.362	.502	.010 - .020	2.375	.369	.156 - .187	2.390	1.120	.015 - .030	2.423	1.422	.005 - .008	2.450	2.140	.012 - .020
2.323	1.693	.040 - .060	2.362	1.002	.005 - .010	2.375	.375	.104 - .134	2.390	1.188	.050 - .070	2.423	1.623	.030 - .050	2.450	2.305	.040 - .050
2.323	1.813	.005 - .010	2.362	1.541	.020 - .050	2.375	.390	.160 - .190	2.390	1.328	.010 - .050	2.424	1.125	.110 - .130	2.451	.629	.010 - .020
2.323	1.948	.070 - .090	2.362	1.575	.020 - .040	2.375	.503	.015 - .025	2.390	1.850	.020 - .040	2.425	1.520	.040 - .060	2.451	.814	.005 - .010
2.323	2.165	.050 - .070	2.362	1.875	.005 - .010	2.375	.506	.080 - .100	2.391	2.070	.005 - .010	2.425	1.552	.020 - .030	2.452	1.630	.060 - .080
2.324	1.253	.025 - .040	2.362	1.891	.040 - .060	2.375	.640	.040 - .060	2.391	2.078	.040 - .060	2.425	1.899	.010 - .020	2.453	1.565	.060 - .075
2.324	1.811	.020 - .040	2.362	2.075	.015 - .030	2.375	.687	.050 - .075	2.393	1.100	.010 - .050	2.427	1.187	.010 - .020	2.453	1.791	.075 - .095
2.325	1.851	.050 - .070	2.363	1.010	.005 - .015	2.375	.717	.100 - .135	2.395	.813	.040 - .060	2.427	1.191	.050 - .070	2.453	1.820	.060 - .080
2.325	2.008	.015 - .060	2.363	1.122	.100 - .120	2.375	.945	.006 - .020	2.395	1.435	.050 - .070	2.428	1.510	.050 - .070	2.453	1.828	.134 - .156
2.325	2.062	.005 - .010	2.363	1.526	.120 - .135	2.375	.955	.100 - .120	2.395	1.443	.050 - .070	2.428	2.001	.020 - .030	2.453	2.050	.120 - .135
2.325	2.148	.005 - .010	2.363	1.870	.060 - .080	2.375	1.067	.120 - .140	2.395	2.000	.020 - .030	2.428	2.020	.042 - .060	2.454	1.020	.015 - .030
2.328	.500	.120 - .135	2.363	1.889	.010 - .020	2.375	1.269	.010 - .125	2.395	2.099	.005 - .010	2.430	1.651	.010 - .020	2.454	1.827	.105 - .125
2.328	1.199	.030 - .050	2.363	2.206	.010 - .020	2.375	1.345	.050 - .070	2.396	1.085	.010 - .020	2.430	1.938	.010 - .020	2.460	1.726	.050 - .060
2.328	2.006	.005 - .010	2.364	.630	.105 - .125	2.375	1.371	.100 - .120	2.396	1.783	.005 - .010	2.430	2.000	.020 - .040	2.462	1.727	.050 - .070
2.330	1.200	.005 - .010	2.365	.674	.125 - .156	2.375	1.381	.005 - .010	2.396	2.099	.010 - .060	2.430	2.118	.015 - .025	2.462	1.940	.020 - .040
2.331	1.627	.090 - .110	2.365	1.136	.005 - .010	2.375	1.490	.025 - .050	2.396	2.151	.030 - .050	2.430	2.121	.005 - .010	2.467	1.593	.040 - .060
2.334	2.162	.010 - .020	2.365	2.266	.015 - .030	2.375	1.500	.010 - .020	2.397	2.024	.030 - .050	2.431	2.090	.005 - .010	2.468	.381	.105 - .135
2.334	2.164	.025 - .040	2.366	1.508	.030 - .050	2.375	1.639	.010 - .125	2.398	2.170	.005 - .010	2.431	2.091	.020 - .030	2.469	1.270	.010 - .020
2.335	1.968	.050 - .070	2.366	1.570	.030 - .050	2.375	1.645	.005 - .010	2.399	1.393	.080 - .105	2.432	1.005	.015 - .025	2.469	2.123	.010 - .020
2.335	1.995	.020 - .030	2.366	1.827	.030 - .050	2.375	1.688	.030 - .040	2.399	1.560	.025 - .040	2.432	1.267	.025 - .040	2.469	2.264	.005 - .010
2.338	1.636	.020 - .040	2.367	1.520	.100 - .125	2.375	1.766	.050 - .075	2.399	1.681	.025 - .040	2.432	1.679	.040 - .050	2.470	.502	.040 - .060
2.339	.430	.060 - .080	2.368	1.379	.040 - .060	2.375	1.785	.015 - .030	2.399	1.713	.005 - .010	2.432	2.000	.005 - .015	2.470	2.362	.005 - .010
2.339	2.235	.020 - .030	2.368	1.380	.015 - .030	2.375	1.812	.060 - .080	2.399	1.720	.035 - .050	2.432	2.140	.020 - .030	2.472	.814	.125 - .135
2.340	1.752	.005 - .025	2.368	1.640	.050 - .070	2.375	1.906	.042 - .060	2.399	1.772	.005 - .010	2.433	1.866	.010 - .020	2.473	1.220	.070 - .090
2.341	2.200	.005 - .060	2.368	2.069	.005 - .010	2.375	1.925	.050 - .070	2.399	2.133	.050 - .075	2.433	2.188	.010 - .020	2.473	2.000	.010 - .020
2.342	1.770	.075 - .090	2.369	.245	.010 - .020	2.375	1.938	.050 - .090	2.399	2.165	.020 - .040	2.434	1.483	.030 - .050	2.475	.568	.005 - .010
2.342	2.001	.050 - .070	2.369	.816	.015 - .030	2.375	1.976	.010 - .020	2.400	.504	.005 - .010	2.434	1.501	.050 - .075	2.475	.870	.125 - .135
2.343	1.773	.005 - .010	2.369	1.701	.005 - .010	2.375	2.019	.020 - .040	2.400	.505	.010 - .020	2.434	1.531	.030 - .050	2.475	1.351	.070 - .080
2.344	1.033	.020 - .040	2.369	1.875	.050 - .070	2.375	2.105	.005 - .010	2.400	.511	.105 - .135	2.434	2.187	.050 - .070	2.475		

NO TOOLING CHARGE FOR ANY OF THE SIZES LISTED

O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To	O.D.	I.D.	Choose Any Thickness* From To
2.626	1.745	.060 - .090	2.734	2.323	.020 - .030	2.850	2.650	.020 - .040	3.000	.981	.015 - .030	3.244	1.425	.005 - .010	3.500	3.158	.020 - .030
2.626	1.807	.025 - .040	2.735	1.985	.030 - .040	2.854	1.583	.010 - .020	3.000	1.020	.020 - .035	3.248	2.776	.010 - .015	3.500	3.250	.010 - .020
2.626	1.825	.060 - .090	2.735	2.000	.050 - .060	2.855	2.295	.015 - .025	3.000	1.218	.010 - .015	3.249	1.001	.005 - .010	3.503	2.702	.040 - .060
2.626	1.836	.060 - .080	2.736	2.253	.010 - .020	2.867	2.476	.015 - .025	3.000	1.748	.048 - .062	3.250	.190	.010 - .020	3.510	2.510	.020 - .040
2.626	1.849	.005 - .010	2.739	2.403	.020 - .040	2.869	1.765	.005 - .010	3.000	1.750	.050 - .070	3.250	.628	.010 - .020	3.511	3.207	.040 - .050
2.626	1.871	.010 - .020	2.740	1.501	.010 - .030	2.869	1.900	.030 - .050	3.000	2.000	.020 - .040	3.250	.750	.010 - .015	3.515	3.050	.050 - .060
2.626	1.933	.060 - .090	2.740	2.200	.020 - .030	2.870	1.780	.048 - .062	3.000	2.125	.030 - .050	3.250	1.013	.005 - .010	3.520	2.750	.020 - .030
2.626	2.000	.015 - .050	2.740	2.250	.010 - .020	2.871	1.316	.020 - .030	3.000	2.255	.010 - .020	3.250	1.338	.005 - .010	3.537	2.186	.020 - .040
2.626	2.074	.060 - .080	2.742	1.728	.030 - .040	2.872	1.700	.010 - .020	3.000	2.444	.020 - .040	3.250	2.375	.030 - .050	3.537	2.280	.030 - .050
2.627	.394	.010 - .020	2.743	2.520	.030 - .040	2.873	1.371	.005 - .010	3.000	2.500	.048 - .062	3.250	2.510	.020 - .030	3.540	2.890	.015 - .030
2.627	.395	.005 - .010	2.745	.888	.005 - .010	2.875	.755	.040 - .060	3.000	2.527	.040 - .060	3.250	2.563	.010 - .020	3.543	3.150	.015 - .025
2.627	.500	.135 - .187	2.745	2.345	.020 - .030	2.875	1.500	.005 - .030	3.000	2.550	.020 - .040	3.250	2.670	.010 - .030	3.545	2.756	.040 - .054
2.627	1.266	.025 - .040	2.747	1.400	.025 - .040	2.875	2.255	.020 - .040	3.000	2.625	.010 - .030	3.259	2.694	.010 - .060	3.550	.628	.020 - .030
2.627	1.296	.060 - .075	2.749	1.376	.040 - .050	2.875	2.275	.030 - .050	3.009	1.650	.048 - .062	3.263	2.558	.030 - .040	3.550	2.975	.020 - .030
2.627	1.317	.060 - .080	2.749	2.497	.005 - .010	2.880	2.020	.030 - .040	3.010	2.530	.030 - .040	3.265	2.465	.020 - .030	3.551	3.015	.020 - .030
2.627	1.461	.060 - .075	2.750	.505	.010 - .020	2.880	2.263	.050 - .060	3.015	2.665	.008 - .015	3.290	2.280	.020 - .035	3.557	2.782	.010 - .020
2.627	1.561	.060 - .075				2.880	2.500	.015 - .030	3.029	2.184	.050 - .070	3.290	3.115	.020 - .035	3.570	.259	.030 - .050
2.627	1.674	.105 - .125				2.880	2.528	.030 - .050	3.030	2.917	.010 - .020	3.300	.630	.015 - .030	3.570	1.070	.040 - .060
2.627	1.949	.025 - .040				2.883	2.000	.008 - .016	3.031	2.185	.030 - .040	3.300	2.270	.020 - .035	3.570	1.090	.030 - .040
2.627	2.263	.010 - .020				2.885	2.177	.020 - .040	3.031	2.310	.050 - .060	3.306	2.505	.040 - .050	3.572	3.134	.030 - .050
2.627	2.321	.040 - .060				2.885	2.475	.015 - .030	3.031	2.435	.050 - .060	3.312	2.375	.015 - .025	3.572	3.135	.030 - .050
2.628	.351	.005 - .010				2.890	2.390	.005 - .010	3.032	2.913	.030 - .050	3.313	2.188	.010 - .020	3.575	1.020	.036 - .050
2.628	.634	.080 - .100				2.895	2.420	.020 - .030	3.037	.820	.020 - .035	3.313	2.753	.025 - .040	3.586	3.275	.020 - .032
2.628	1.878	.040 - .060				2.900	.630	.010 - .030	3.047	1.795	.040 - .050	3.325	3.145	.015 - .025	3.590	3.375	.020 - .040
2.628	1.881	.005 - .010				2.900	.780	.080 - .105	3.050	.630	.015 - .030	3.337	.308	.080 - .090	3.609	2.250	.025 - .040
2.628	2.253	.050 - .070	2.750	1.200	.020 - .030	2.900	2.010	.060 - .080	3.060	2.015	.010 - .015	3.340	2.943	.020 - .030	3.609	2.500	.025 - .040
2.629	1.920	.050 - .070	2.750	1.250	.010 - .020	2.900	2.400	.010 - .040	3.060	2.180	.040 - .050	3.341	2.565	.005 - .010	3.620	.750	.040 - .060
2.629	2.290	.005 - .010	2.750	1.300	.020 - .035	2.911	1.656	.040 - .060	3.062	2.750	.020 - .030	3.347	2.559	.030 - .050	3.625	2.030	.062 - .080
2.630	.254	.020 - .040	2.750	1.312	.040 - .060	2.915	1.965	.040 - .060	3.062	2.798	.025 - .035	3.364	1.404	.020 - .030	3.625	2.562	.020 - .040
2.630	.411	.015 - .030	2.750	1.437	.050 - .070	2.915	2.643	.020 - .030	3.063	2.372	.048 - .062	3.367	2.065	.020 - .030	3.625	3.032	.010 - .020
2.630	1.419	.030 - .050	2.750	1.562	.040 - .060	2.916	1.965	.040 - .060	3.065	1.560	.090 - .105	3.370	2.625	.048 - .062	3.625	3.196	.020 - .030
2.630	1.610	.090 - .105	2.750	1.635	.020 - .030	2.919	1.257	.050 - .060	3.065	2.800	.040 - .050	3.373	2.870	.005 - .010	3.640	2.072	.020 - .040
2.630	1.689	.020 - .040	2.750	1.880	.020 - .040	2.920	2.030	.050 - .060	3.066	2.550	.040 - .050	3.375	2.000	.010 - .030	3.647	2.346	.015 - .036
2.630	2.291	.060 - .080	2.750	2.000	.010 - .050	2.925	1.690	.040 - .060	3.067	.901	.040 - .050	3.375	3.156	.015 - .025	3.661	2.992	.010 - .030
2.630	2.292	.005 - .010	2.750	2.370	.010 - .015	2.925	2.362	.020 - .040	3.070	1.775	.010 - .020	3.385	3.146	.020 - .030	3.663	2.427	.040 - .060
2.630	2.385	.030 - .060	2.750	2.453	.005 - .010	2.930	2.710	.020 - .030	3.070	1.930	.020 - .040	3.387	1.816	.020 - .030	3.700	2.899	.040 - .060
2.631	2.288	.005 - .010	2.750	2.500	.010 - .020	2.931	1.310	.040 - .060	3.070	2.711	.015 - .025	3.390	.191	.010 - .015	3.700	2.960	.020 - .040
2.634	1.868	.040 - .060	2.755	.375	.010 - .020	2.932	2.596	.010 - .020	3.077	.941	.040 - .060	3.393	1.841	.020 - .040	3.733	3.332	.020 - .035
2.635	1.634	.005 - .010	2.755	1.260	.035 - .045	2.934	2.597	.060 - .070	3.080	2.190	.040 - .050	3.395	3.020	.020 - .030	3.735	3.300	.010 - .020
2.635	1.868	.015 - .030	2.755	2.346	.025 - .035	2.935	2.520	.020 - .030	3.085	2.458	.060 - .080	3.400	.400	.048 - .062	3.740	2.953	.040 - .054
2.635	1.911	.080 - .100	2.755	2.401	.010 - .040	2.937	1.375	.040 - .060	3.090	1.650	.048 - .062	3.400	.628	.020 - .030	3.750	.656	.090 - .105
2.636	1.636	.005 - .010	2.756	1.085	.010 - .020	2.937	1.500	.040 - .060	3.093	2.628	.020 - .040	3.426	2.939	.010 - .030	3.750	.875	.020 - .035
2.640	1.630	.005 - .010	2.756	2.284	.040 - .050	2.937	2.640	.025 - .040	3.093	2.760	.010 - .040	3.427	2.940	.020 - .035	3.750	3.015	.005 - .010
2.640	2.410	.030 - .050	2.756	2.401	.040 - .050	2.940	1.325	.048 - .062	3.094	2.000	.010 - .020	3.430	3.077	.020 - .040	3.750	3.250	.035 - .045
2.645	2.057	.010 - .020	2.760	1.850	.020 - .040	2.944	.572	.010 - .020	3.099	2.757	.040 - .050	3.450	.630	.010 - .030	3.761	1.870	.030 - .050
2.645	2.175	.030 - .040	2.780	2.263	.025 - .040	2.945	1.994	.040 - .060	3.100	.628	.010 - .020	3.450	1.554	.005 - .010	3.780	3.049	.020 - .040
2.647	2.174	.020 - .040	2.780	2.363	.020 - .040	2.949	1.511	.040 - .060	3.100	2.500	.005 - .060	3.450	2.610	.040 - .050	3.781	1.435	.030 - .050
2.650	.628	.010 - .020	2.780	2.480	.010 - .050	2.950	.628	.010 - .020	3.100	2.501	.030 - .050	3.450	3.125	.030 - .040	3.800	3.300	.020 - .035
2.650	.754	.020 - .030	2.781	2.531	.006 - .010	2.950	2.229	.040 - .050	3.100	2.750	.030 - .050	3.452	3.038	.010 - .015	3.800	3.350	.020 - .040
2.650	2.080	.005 - .010	2.787	2.390	.015 - .025	2.950	2.250	.015 - .025	3.107	2.122	.040 - .060	3.454	3.055	.015 - .030	3.819	3.415	.040 - .060
2.652	1.910	.005 - .010	2.790	1.747													

Designer's Guide to Precision Metal Stampings

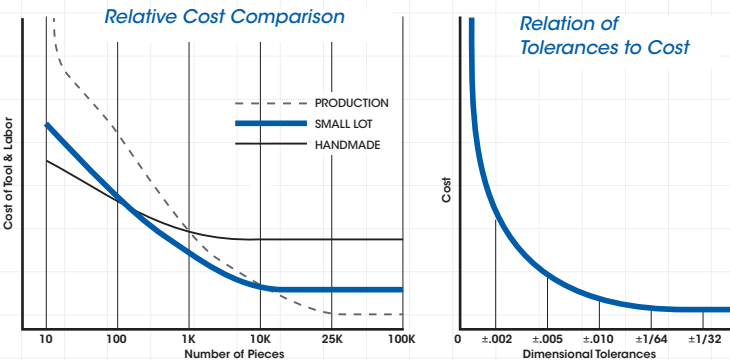


INTRODUCTION

Boker's has been a metal stamping leader for over 100 years. The following is excerpted from a longer white paper authored by Boker's regarding short-run stamped components and considerations for design engineers regarding these crucial pieces.

The basics of metal stampings.

Precision metal stampings are produced by converting flat metal sheet or coil into engineered component parts for manufacturers. Parts can be flat and simple or complex profiles. Stampings are produced using a variety of punch presses that brings to bear ten to hundreds-of-tons of stamping pressure onto the sheet or coil. In their most basic operation, punch presses use a corresponding die and punch tool for flat blanking—a flat metal cutout of the exact periphery shape and size of the part. Additional metal forming stages are often employed to produce complex parts and profiles including piercing, and metal forming operations such as bending, drawing, flanging, embossing, rolling, and others.



What are the advantages of short-run custom stampings?

Compared to permanent production tooling, short-run stamping offers high quality and durability plus considerable manufacturing advantages—primarily in cost and time. Significantly lower initial tooling costs versus permanent tooling offers savings that gives manufacturers greater design and component inventory flexibility. Small quantity needs, customization, pilot runs, testing, frequently-changing designs, functional prototypes and limited production runs are all opportunities for short-run stampings that would be less feasible with expensive permanent tooling.

STAMPING OPERATIONS

Flat Blanking

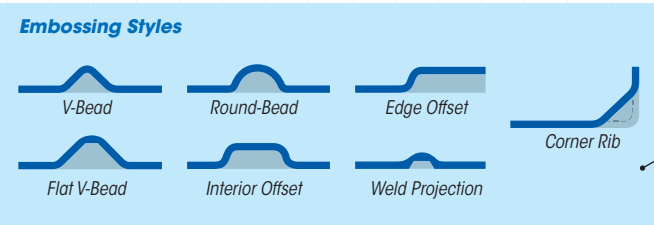
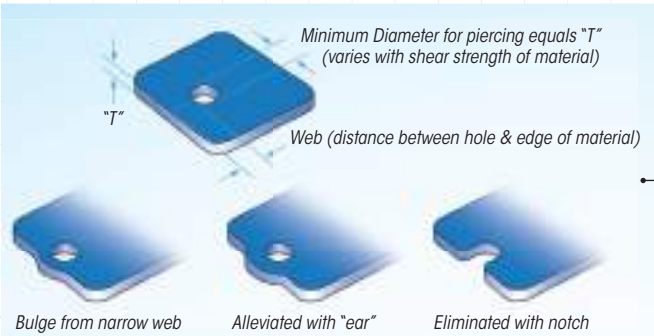
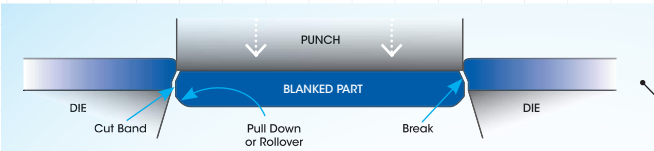
Flat blanking is the process of stamping out the perimeter of a product from sheet or coil material to produce more complex metal blanks. Blanking can also be performed with flat non-metallic sheet or coil material.

Metal Piercing

Piercing metal is a shearing process used to produce holes, slots and/or notches with tight tolerances within a component part or raw material. The punched side of pierced metal produces a clean cut with high output rates often making it a more productive method than drilling, machining, or using a laser. Boker's utilizes a CAD drawing system, over 70 different punch presses, digital servo feeders and compound as well as progressive dies to transform raw material into your most complex components.

Metal Forming

Metal forming is the process of converting a flat piece of metal into a three-dimensional part. Metal forming can be done in a variety of ways including bending, drawing, embossing, rolling etc



Selecting the Optimal Washer

Though this catalog's primary focus is to provide you with thousands of non-standard, round flat washer sizes that are available without tool charges, there are many specific applications that demand a more specialized washer type. Following is an overview of just some of the many washer styles Boker's produces, and what they are optimally designed for.

To review Boker's complete *Optimal Washer Solution* guide, visit bokers.com/washerguide.



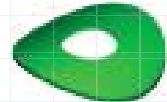
Flat: Most common washer category generally used for load disbursement. Internal and external shape may be round, symmetrically square, hexagonal or rectangular.



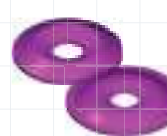
Tab: A type of lock washer designed with one or more tabs or notches to effectively lock a part into place, generally used where heat or heavy vibrations are a factor.



Lock: Designed to secure fasteners that have a tendency to rotate or lose friction. Often paired with a flat washer to evenly disburse load without deforming the assembly.



Cylindrically Curved: They offer the most uniform spring constant of any of the spring washer types.



Finishing: Also referred to as "countersunk" washers, finishing washers are often found on consumer products and used as an appearance part where the washer catches the head of a fastener, allowing it to sit flush with its surrounding surface.



Shoulder: Shoulder washers, also known as "step" or "flange" washers, have an appearance of a low-crowned top hat and an integral cylindrical sleeve. The sleeve is designed to mate with a cutout and segregates the fastener from the material it is secured to.



Wave: These washers are ideal for obtaining loads when the load is static or the working range is small and the amount of axial space is limited.



Belleville: Deliver the highest load capacity of all the spring washers and are very common in thermal expansion applications.



Fender: Fender washers have an outside diameter that is much larger in proportion to the center hole to distribute a load evenly across a large surface area.



Shim Stacks: Ideal for simple and complex applications as they offer exact dimensions for precise spacing.



Estimated Non-Metallic I.D. Shrinkage Factor

MATERIAL	FACTOR %	MATERIAL	FACTOR %
Polycarbonate	10-12	Polypropylene	5-10
Nylon	10	PTFE	5
Polyethylene	10	Polyester	5
Acetal	10	Linen Phenolic	5
PVC	10	Vulcanized Fiber	0-5
A.B.S.	10	FR-4	0-5
MD Nylon	10	G-10	0-5

Non-Metallic Washers and Spacers

The thickness ranges stated in this catalog are minimum and maximum values for metallic washers and spacers but may be suitable for non-metallic parts as well.

When determining the proper sized tool for your washer or spacer, the outside diameter (O.D.) listed in the catalog typically remains the same for both the metallic and non-metallic part. The inside diameter (I.D.), however, may shrink by as much as twelve percent of the material thickness depending on the material used and its thickness. Rely on Boker's experienced Sales Associates to determine the proper tool to manufacture the size part you specify.

Glossary of Terms

Bar Coding – Machine readable alphabetic and/or numeric information used for identification of packaged parts.

Barrel Tumbling – Process in which parts to be deburred are put together with abrasive material into a barrel and rotated for prolonged periods for the purpose of burr removal.

Bend Radius – Inside radius.

Bend Relief – Clearance notch at an end of flange to allow bending without distorting or tearing adjacent material.

Bending – Generally applied to forming. Creation of a formed feature by angular displacement of a sheet metal workpiece. See also "Drawing" and "Forming."

Blank – (1) Sheet metal stock from which a product is to be made. (2) Workpiece resulting from blanking operation.

Blanking – Die cutting of the outside shape of a part.

Bow Distortion – Out of flatness condition in sheet material commonly known as "Oil Canning" in which, with the edges of the sheet restrained, the center of the sheet can be popped back and forth but cannot be flattened without specialized equipment.

Breakout – Fractured portion of the cross section of a cut edge of stock. A condition naturally occurring during shearing, blanking, punching and other cutting operations.

Burn Mark – Heat discoloration created in the contact area of a welding electrode.

Burr – Raised, sharp edge inherent in cutting operations such as shearing, blanking, punching and drilling.

Burr Direction – Side of the stock on which burrs appear.

Burr-Free – Edge without sharp protrusions.

Burr Height – Height to which burr is raised beyond the surface of the material.

Burr Rollover – Condition of burr displacement resulting from mechanical deburring operation.

Chain Dimensioning – Drafting practice which dimensions repetitive features from each other rather than a common datum.

Clamp Marks – Slight indentations at the edge of one side of stock caused by pressure from turret press holding devices.

Coining – Compressive metal flowing action.

Compound Die – Tool used to pierce, form and blank a part at the same time, with one stroke of the press.

Concentricity – Dimensional relationship of 2 or more items sharing a common center line.

Corner – Three surfaces meeting at one point.

Corner Radius – Outside radius.

Counterboring – Machining or coining operation to generate a cylindrical flat-bottomed hole.

Countersinking – Machining or coining operation to generate a conical angle on a hole.

Cumulative Tolerance – Progressive accumulation of tolerances resulting from multiple operations or assembly of multiple parts.

Datums – Theoretically exact planes, lines or points from which other features are located on design drawings.

Deburr – To remove the sharp, knife-like edge from parts.

Dedicated Tooling – Commonly referred to as "hard tooling"—tooling made to produce a specific part.

Die – Tool with a void or cavity which is precisely fitted to a "Punch" used to shear or form sheet metal parts.

Die Clearance – Amount of space between the punch and die opening.

Die Marks – Scratches, scrub marks, indentations, galling or burnishing of sheet metal workpieces by tooling.

Drawing – (1) Engineering document depicting a part or assembly. (2) In metalforming, the stretching or compressing of a sheet metal part into a die by a punch to create a 3-dimensional part. See also "Bending".

Ductility – Ability of a material to be bent or otherwise formed without fracture.

Edge Bulge – Condition resulting from any forming, piercing, hardware insertion or spot welding operation too close to an edge.

Edge-to-Feature – A dimension between the edge of the part and a feature.

Feature-to-Feature – Dimension between two features on a part.

Fixture – Tooling designed to locate and hold components in position.

Flange – Formed projection or rim of a part generally used for stiffness or assembly.

Flat or Matte – Coating surface which displays no gloss when observed at any angle; a perfectly diffused reflecting surface.

Formed Tab – Small flange bent at an angle from the body of a metal workpiece.

Forming – Operation converting a flat sheet metal workpiece into a three dimensional part. See also "Bending" and "Drawing".

Gauge – (1) Instrument for measuring, testing, or registering. (2) Numeric scale for metal thickness.

Go/No-Go Gauge – Measuring device with two registration elements which determine if a feature to be measured is between two established limits.

Gouge – Surface imperfection, deeper than a scratch, often with raised edges.

Grain Direction – (1) Crystalline orientation of material in the direction of mill rolling. (2) Orientation of a surface finish generated by abrasive method.

Grinding – Process of removing material by abrasion.

Half Shearing – Partial penetration piercing, creating a locating button with a height of about 1/2 material thickness.

Hard Tooling – Tooling made for a specific part. Also called "dedicated tooling".

Hem (Dutch Bend) – Edge of material doubled over onto itself for the purpose of safe handling or to increase edge stiffness.

Hold-Down Marks – Slight indentations or scuff marks on one side of the stock which can result from the pressure of hold-down devices during shearing operations.

Hole Rollover – Rounding of the top edge of a pierced feature caused by the ductility of the metal, which flows in the direction of the applied force.

Hole-to-Form – Distance from the edge of a hole to the inside edge of a formed feature.

Hole-to-Hole – Dimension between the centers of holes.

Hydraulic Press – Machine which exerts working pressure by hydraulic means.

Inspection Criteria – Characteristics by which the part will be evaluated both dimensionally and cosmetically.

Lead Time – Time required to manufacture a product from order placement until availability.

Master Die – Universal tool receptacle for holding changeable tool systems.

Metal Thinning – Thickness reduction during any forming operation.

Model – Pre-production sample made with limited emphasis on tolerance to test a design concept. See also "Prototype".

Nesting – (1) Grouping of identical or different parts in multiples within a workpiece to conserve material. (2) In packaging, stacking of parts whose shape permits one to fit inside another.

Nibble Marks – Slight irregularities at the edge of the stock surface after progressive punching ("nibbling") operations in a turret press.

Notching – Operation in which the punch removes material from the edge or corner of a strip or blank.

Penetration – (1) Depth of a cutting operation before breakout occurs. (2) In welding, the depth of material through which fusion occurs.

Perpendicularity – Dimensional relationship of a part or datum located at right angles (90°) to a given feature.

Piercing – Punching of openings such as holes and slots in material.

Pinch Trim – Trimming excess material from a drawn part at the bottom of the stroke. Leaves drawn shell without an inside burr, but with an outside burr and a thinned edge.

Progressive Tool – Die using multiple stations or operations to produce a variety of options. Can incorporate piercing, forming, extruding and drawing, and is usually applied to high quantity production runs.

Prototype – First part of a design which is made to test tolerance capability, tooling concepts and manufacturability.

Pull Down – Area of material next to the penetrating edge of a piercing punch, or die edge of the blanking station, where the material yields i.e., flows in the direction of the applied force creating a rounded edge. Also known as "roll-over".

Punch Press – Machine supplying compression force for reshaping materials.

Punch Side – Opposite side from burr side for pierced features; side on which the punch enters the material.

Quick Change Inserts – Tool sections or parts which may be changed without removing the entire tool from the press.

Rerolling – Final cold rolling operation, usually done to achieve specific thickness control and improved finish.

Roundness – Extent to which a feature is circular.

Run Out Flange – Feature on a formed part which is designated by the designer to absorb the tolerance accumulations created by multiple forming operations.

Scrap – Leftover, unused material relegated to recycling.

Shear-to-Feature – Shearing of an edge of stock to an exact dimension from an already existing feature.

Shearing – Cutting force applied perpendicular to material causing the material to yield and break.

Shut Height – Clearance in a press between ram and bed with ram down and adjustment up.

Slide Forming – A high-volume stamping process in which a machine with multiple slides sequentially performs various operations (i.e. – blanking, piercing, forming, etc.).

Slug – Scrap from a piercing operation.

Slug Marks – Surface defects caused by scrap being indented into the metal surface.

Spot Face – Circular flat surface as a bearing area for hardware.

Squareness – Measure of perpendicularity of adjacent edges or surfaces.

Spring Back – Partial rebounding of formed material caused by its elasticity.

Staking – Method of fastening using displaced material for retention.

Stiffening Rib – Embossed feature in a sheet metal workpiece which is added to make the part more rigid.

Stretcher Levelled – A flattening process in which a material is stretched to achieve a desired flatness tolerance.

Stripper – Mechanical hold-down device applied to the workpiece during the punching process.

Stripper Marks – Imprints on one side of the stock around pierced holes, caused by punch strippers.

Stripping – Process of disengaging tooling from the workpiece.

Strips – Sheet material, sheared into narrow long pieces.

Stroke – RAM travel from top dead center (TDC) to bottom dead center (BDC).

Tapping – Operation to create internal threads by either cutting or forming.

Tolerance – Permissible variation from a specification for any characteristic of the product.

Transfer Die – Variation of a progressive die where the part is transferred from station to station by a mechanical system. Mainly used where the part has to be free from the strip to allow operations to be performed in a free state.

Turret Press – Automatic punch press indexing the material and selecting the intended tool out of the rotary tool holding device (turret) totally by computer control for piercing, blanking and forming workpieces as programmed.

V Die – Tool used in conjunction with a V punch.

V Punch – Vee shaped tool used for angle forming.

Vibratory Finishing – Burr removal process in which an appropriate number of parts, depending on part size and abrasive material, is accelerated and decelerated by mechanical means inside of a drum-like enclosure.

Webs – Material between two openings or edges.

Wipe Die – Forming tool using two opposing edges, separated by one material thickness, moving past each other to form material.

Tool & Die Department

- CAD CAM Drawing System
- Kitamura Vertical Machine Center
- Mori Seiki Vertical Machine Center (20" x 40")
- Mori Seiki High Precision C.N.C. Lathes
- Digital Optical Comparator
- (2) Clausing Surface Grinders
- Matsui Precision Grinder
- (2) Charmilles Wire E.D.M. (14" x 21" x 8")
- (2) Fanuc Wire E.D.M.
- Ocean Technologies E.D.M. Drill
- Okamoto Precision Grinder
- Stratasys Dimension SST 1200ES 3D Printer



Washer Department

- (20) Punch Presses (10 to 75 tons)
- Digital Servo Feeders
- Electric Coil Reels (1,200 lb. capacity)
- Coil Straighteners
- Tonnage Monitors

Stamping Department

- (46) Punch Presses (10 to 180 tons)
- Aida Servo Press
- (2) High Speed Minster Progressive Die Presses (60 to 150 tons)
- Digital Servo Feeders
- Electric Coil Reels (6,000 lb. capacity)
- 48" Press Brake
- Optical Part Detection Systems
- Press Control Automation
- Tonnage Monitors
- (2) Material Handling Conveyors



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CREDIT CARDS ACCEPTED



Heat Treating Department

- Electric High Temperature Hardening Furnaces
- Electric Tempering Furnaces (all furnaces calibrated)

Raw Stock & Shear Department

- (3) 10' Shears (.20" thick maximum)
- Stanat Model Rolling Mill
- IRM Rolling Mill
- Cooper Weymouth Roller Levelers
- Coil Set Straightener
- Wilder Coil Slitter
- Computer Inventory & Control System
- (2) Material Slitting Machines

Secondary Operations Department

- Trimming Lathes
- Production Milling Machines
- Pneumatic Presses
- Tapping Machines
- 6 Spindle Machine Centers (multiple head drilling, tapping, and reaming)
- 4 Straight-liners up to 18"
- Parts Washing System



Shipping Department

- Toledo Electronic Scales & Printer
- Precision Electronic Scales & Printers
- Automated Protective Packaging Bagger
- Polychem Automatic Plastic Strapping System
- Hercules Ergo Container Handling System
- Wulftec Pallet Wrapper

Cleaning & Deburring Department

- Agitated Chemical Washing System
- Rotary Deburring Machines
- Vibratory Deburring Machines
- Centrifugal Tumblers
- Heated Centrifugal Dryers
- Lewis Ultrasonic Cleaner
- High Energy Deburring Machines
- Mass Finishing Machines
- Custom Parts Dryer
- Custom Multi-Station Vibratory Deburring Machine



Inspection Department

- Numerex Coordinate Measuring Machine
- Digital Optical Comparator
- Digital Buehler Hardness Tester
- Digital Profilometer
- Ceramic Gauge Block Sets
- Plug Gauge Sets
- Height Gauges
- Thread Gauges
- Statistical Process & Capability Studies Available
- Climate-controlled & Monitored
- Keyence Vision System

Material Capabilities

- Material Thickness: .005" to .190" (varies by material)
- Blank Size: 12" x 12" maximum (flat)
- Draws: 8" diameter, 3" deep

BOKER'S Delivers



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Call 800-WASHERS (800-927-4377) • Toll Free Fax 800-321-3462 • sales@bokers.com

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