



MELLING
CYLINDER SLEEVES™

CATALOG NUMBER

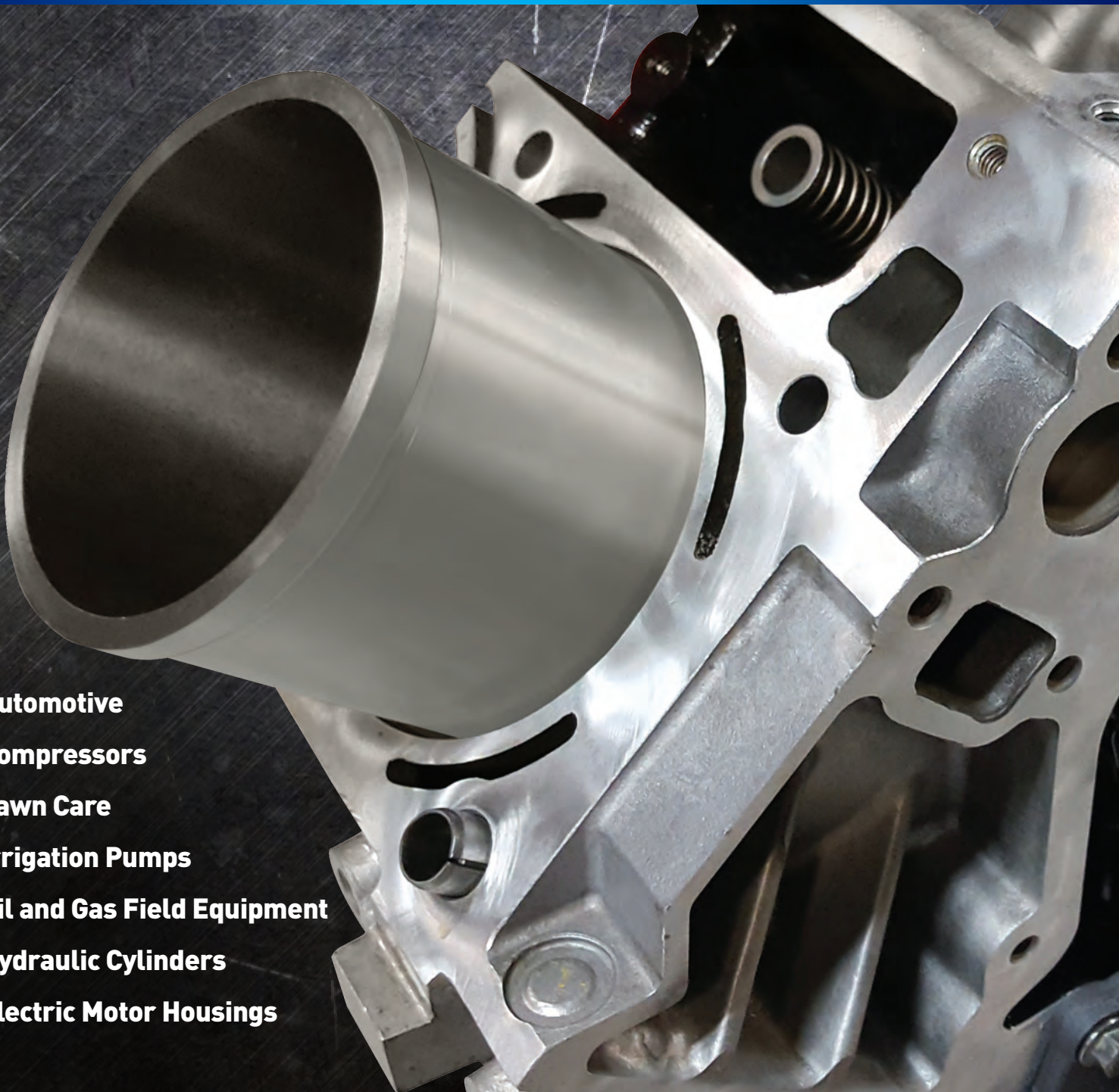
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2018

CYLINDER SLEEVE

AND SLEEVE ASSIGNMENT CATALOG

- Automotive
- Compressors
- Lawn Care
- Irrigation Pumps
- Oil and Gas Field Equipment
- Hydraulic Cylinders
- Electric Motor Housings





AN ADVANTAGE BY DESIGN

Since 1946, when my great grandfather George Melling Sr. and his son Ben started Melling Tool Company in Jackson, Michigan, the Melling brand has been recognized as a leader in supplying quality parts to the engine building industry.

More than 70 years later, demand for our products is stronger than ever and widely preferred by professionals in markets around the world. From those first products shipped three generations ago to our now extensive portfolio of world-class automotive solutions, Melling has given customers multiple reasons to prefer one brand and one standard of quality and performance.

Our Melling Cylinder Sleeves manufacturing division based in Maquoketa, Iowa offers these capabilities:

- Standard, flanged, high-performance, industrial and heavy duty sleeves
- Short runs, long runs, prototypes, custom and reverse engineering
- 3-5 Day turnaround on custom sleeves
- Extensive casting material coverage
- 2" to 8.50" bore diameter and length from 5" to 24" in 1/16" increments.
- Local availability
- 97% order fill rate

On behalf of the Melling family and all of our employees, thank you for taking the time to review this catalog and supporting our family business for over 70 years. Melling strives to deliver you, our valued customers "An Advantage by Design."

Sincerely,

Mark Melling
President and CEO





Company Overview

Industries Served

Automotive, Heavy Duty
Truck, Agriculture, Irrigation

Products

Cylinder Sleeves & Sleeve
Assemblies

Bores Diameters

2.00 – 8.50 inches

Wall Thickness

1/8 inch, 2.0mm, 3/32 inches

Finished O.D.s

+/-0.001 inch

Semi Fin I.D.s

+/- 0.005 inch

Order Quantities

1-20,000+ units

Awards/Certifications

ISO 9001:2000 Certified

Melling Cylinder Sleeves manufactures centrifugal cast iron cylinder liners to tolerances as small as one half of one thousandth of an inch, on modern CNC equipment. Our centerless OD grinding process guarantees a part that is perfectly round and to exact size specifications. The material used in Melling cylinder liners offers a Brinell hardness of 212-293, and machines easily with strength and durability.



— *Custom* —

CYLINDER SLEEVE MANUFACTURING



We have the capability to make sleeves for custom applications, even if you only need one! If you don't see what you are looking for in our catalog give us a call at 563-652-6806, email us at sleeves@melling.com, or fill out the Custom Sleeve Request form located in our catalog.

Low volume, high volume, honed or semi-finished it doesn't matter we do it all. Melling Cylinder Sleeves can make a sleeve to your exact specifications within three days!

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140 Jacobson Drive • Maquoketa, IA 52060
1 800-621-0169 563-652-6806



LIMITED WARRANTY

All products sold by Melling Cylinder Sleeves are warranted to the consumer owner for one (1) year from the date of installation to be free from defects in materials or workmanship.

This warranty does not apply to any product that has been altered, tampered with, such as taken apart, misused, subject to excessive operating conditions, malfunctions because of foreign particles such as dirt or pieces of other deteriorating engine components, products used in a vehicle that has been altered for other than intended purposes. Also, performance products are not covered under this warranty including products used for off-road or racing purposes.

If a product fails to conform to this warranty, the product should be returned to the place of purchase, then sent back, prepaid to Melling Cylinder Sleeves. If Melling Cylinder Sleeves determines that this product fails to conform to this warranty, it will either replace the product or refund the original purchase price at the option of Melling Cylinder Sleeves.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR WARRANTY OF QUALITY, WEATHER EXPRESSED OR IMPLIED, EXCEPT THE WARRANTY OF TITLE. ALL IMPLIED WARRANTIES ARE LIMITED TO THE DURATION OF THE WARRANTY, THE REMEDIES SET FORTH IN THIS WARRANTY ARE EXCLUSIVE.

Some states do not allow limitations on how long an implied warranty lasts or exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Melling Cylinder Sleeves
140 Jacobson Drive
Maquoketa, IA 52060

The information in this catalog has been gathered from the best available sources. Every possible effort has been made to verify accuracy. Melling Cylinder Sleeves does not accept any responsibility for errors or omissions. Melling Cylinder Sleeves reserves the right to update product specifications at any time without notice.

Before installing any part listed, consult the appropriate manufacturer's instruction manual for detailed installation instructions.

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INSTALLATION PROCEDURE

- 1) Measure the sleeve O.D., Top - Middle - Bottom, rotate the sleeve 90 degrees, and measure again Top - Middle - Bottom. The average measurement is the size of the sleeve. This measurement is what is used to calculate press or interference fit. Some minor sleeve distortion may have occurred during shipment, however the sleeve will conform to the cylinder shape.
- 2) Determine the amount of press needed for the application (see page 3 for press recommendations). Stop the boring tool 1/8" to 1/2" (depending on the type of block, piston travel, oil ring location, length of crack, etc.) from the bottom of the cylinder to leave a step (ledge) for the sleeve to sit on. The cylinder head will hold the sleeve from the top. When the block has been bored out to size to accept the sleeve, change the boring machine cutter to a pointed tool. In order to square the step/ledge, set the tool about .010" (PER SIDE) less than the block has been bored to. Lightly cut away some of the chamfer until the cutter reaches the flat or the top of the step/ledge. This allows the sleeve to sit fully on the step/ledge, not partially on the chamfered edges.
- 3) Apply a sleeve retainer compound of your choice (optional if not repairing a cracked block) to the outside diameter of the sleeve, then either press or carefully drive the sleeve into the block. Make sure the sleeve is all the way down and bottomed on the step/ledge. Trim the excess sleeve material from the top of the block (with the bottom flat of the boring tool if there is substantial material). Bore the sleeve to the required inside diameter size. With a long sharp file, remove any sleeve protrusion that would cause head gasket problems, or deck the block with a mill. Finally chamfer the top inside diameter of the sleeve.

PRESS FIT RECOMMENDATIONS

| | |
|--------------------------|-----------------------|
| 2.00" Bore up to 5-1/8" | = .003" Press Maximum |
| 5-1/8" Bore up to 6-1/2" | = .004" Press Maximum |
| 6-1/2" Bore up to 8-1/2" | = .005" Press Maximum |

- The above figures are for perfect to normal conditions, not for use in all applications. Please keep in mind that the machinist's past experiences should also be considered. There are numerous factors that will effect the amount of press that should be used.

Some of these include **BUT ARE NOT LIMITED TO:**

- The location of the damage, crack or hole.
- A long crack or large chunk missing will reduce the press because the damage will open under stress. Increase or decrease the amount of press according to what will seal the damage. Pressure testing is recommended.
- The material and strength integrity of the block (an air cooled aluminum jug vs a high nickel block and a lightweight design vs a rigid type block casting).
- If the remaining cylinders are going to be bored or not. (Remember, the more press the greater the distortion to the surrounding cylinders. This distortion may not become round with just fine honing).
- Not using a step at the bottom of the cylinder means more press should be used to help keep the sleeve from dropping.

Take these factors into consideration and adjust the amount of press for each sleeve installation accordingly!

HIGH PERFORMANCE SLEEVES

Melling “HP” sleeves are made from centrifugally cast, high strength gray iron. It is a lower carbon iron alloyed with chromium, copper and nickel to produce a harder (241-293 BHN) more wear resistant surface. The average tensile strength (45,000 - 50,000 p.s.i) is 1/3 greater than “regular” iron sleeves and nearly all OEM cylinder blocks.

This translates into this proven sleeve material has been used successfully for years in heavy- duty diesel and performance engines to give longer life with less distortion and enhanced reliability. Our “HP” iron is compatible with all ring materials.

| NOMINAL BORE | LENGTH | SEMI-FINISHED I.D. +/- .005 | 3/32" WALL | | 1/8" WALL | |
|--------------|--------|-----------------------------|------------|-----------|-----------|-----------|
| | | | O.D. | SLEEVE # | O.D. | SLEEVE # |
| 4.000 | 6.250 | 3.970 | 4.1905 | CSL136HP | 4.253 | CSL236HP |
| 4.110 | 6.875 | 4.080 | 4.3000 | CSL1174HP | 4.363 | CSL2274HP |
| 4.125 | 6.250 | 4.095 | 4.3155 | CSL161HP | 4.378 | CSL261HP |
| 4.250 | 7.000 | 4.220 | 4.4405 | CSL197HP | 4.503 | CSL297HP |

HIGH PERFORMANCE UNIVERSAL FLANGED SLEEVES

FEATURES

- Provide extra insurance to prevent sleeve movement in performance applications
- Reduce the critical factors that secure standard liners such as press fit, cylinder ledge at the bottom of the bore and heat expansion rates of metals.
- Flanged counter bore thickness in block can be machined .002 less to provide extra sealing against the gasket and head from the flange on the sleeve.
- Bore can be up to .060 larger than standard and still have a 3/32" wall
- Heavy duty 619 material

| PART # | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS |
|--------|---------------|-------|-------|----------------|-----------------|------------------|
| 590203 | 3.9375 | 3.907 | 4.190 | 6.750 | 4.330 | 0.125 |
| 590259 | 4.000 | 3.970 | 4.253 | 5.500 | 4.330 | 0.125 |
| 590298 | 4.000 | 3.970 | 4.253 | 5.875 | 4.393 | 0.125 |
| 590236 | 4.000 | 3.970 | 4.253 | 6.250 | 4.393 | 0.125 |
| 590280 | 4.000 | 3.970 | 4.253 | 6.500 | 4.393 | 0.125 |
| 590231 | 4.050 | 4.020 | 4.303 | 6.125 | 4.443 | 0.125 |
| 590295 | 4.050 | 4.020 | 4.303 | 6.3125 | 4.443 | 0.125 |
| 592274 | 4.110 | 4.080 | 4.363 | 6.875 | 4.503 | 0.125 |
| 592256 | 4.125 | 4.095 | 4.378 | 7.500 | 4.518 | 0.125 |
| 590261 | 4.125 | 4.095 | 4.378 | 6.250 | 4.518 | 0.125 |
| 590297 | 4.250 | 4.220 | 4.503 | 7.000 | 4.643 | 0.125 |

UNIVERSAL FLANGED SLEEVES

| PART # | I.D. | O.D. | OVERALL LENGTH | FLANGE O.D. | FLANGE THICKNESS |
|----------|-------|--------|----------------|-------------|------------------|
| CSL105F | 3.157 | 3.378 | 6.500 | 3.433 | 0.090 |
| CSL9326F | 3.358 | 3.513 | 5.590 | 3.758 | 0.188 |
| CSL357F | 3.424 | 3.605 | 5.221 | 3.830 | 0.169 |
| CSL9349F | 3.435 | 3.580 | 5.585 | 3.759 | 0.188 |
| CSL331F | 3.632 | 3.800 | 5.714 | 4.053 | 0.194 |
| CSL9352F | 3.679 | 3.904 | 5.340 | 4.140 | 0.212 |
| CSL356F | 3.730 | 3.904 | 5.770 | 4.034 | 0.182 |
| CSL355F | 3.760 | 4.180 | 5.600 | 4.320 | 0.285 |
| CSL332F | 3.870 | 4.180 | 5.525 | 4.320 | 0.285 |
| CSL198F | 3.960 | 4.1905 | 5.500 | 4.300 | 0.096 |
| CSL329F | 4.375 | 4.629 | 8.125 | 4.740 | 0.200 |



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UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 2.0000 | 6 1/2 | 3/32 | 2.1905 | 1.970 | CSL450 |
| 2.0000 | 6 1/2 | 1/8 | 2.2530 | 1.970 | CSL550 |
| 2.0625 | 6 1/2 | 3/32 | 2.2530 | 2.032 | CSL451 |
| 2.0625 | 6 1/2 | 1/8 | 2.3155 | 2.032 | CSL551 |
| 2.1250 | 6 1/2 | 3/32 | 2.3155 | 2.095 | CSL452 |
| 2.1250 | 6 1/2 | 1/8 | 2.3780 | 2.095 | CSL552 |
| 2.1875 | 6 1/2 | 3/32 | 2.3780 | 2.157 | CSL453 |
| 2.1875 | 6 1/2 | 1/8 | 2.4405 | 2.157 | CSL553 |
| 2.2500 | 6 1/2 | 3/32 | 2.4405 | 2.220 | CSL454 |
| 2.2500 | 6 1/2 | 1/8 | 2.5030 | 2.220 | CSL554 |
| 2.3125 | 6 1/2 | 3/32 | 2.5030 | 2.282 | CSL455 |
| 2.3125 | 6 1/2 | 1/8 | 2.5655 | 2.282 | CSL555 |
| 2.3750 | 6 1/2 | 3/32 | 2.5655 | 2.345 | CSL456 |
| 2.3750 | 6 1/2 | 1/8 | 2.6280 | 2.345 | CSL556 |
| 2.3750 | 7 | 3/32 | 2.5655 | 2.345 | CSL446 |
| 2.4375 | 6 1/2 | 3/32 | 2.6280 | 2.407 | CSL457 |
| 2.4375 | 6 1/2 | 1/8 | 2.6905 | 2.407 | CSL557 |
| 2.5000 | 6 1/2 | 3/32 | 2.6905 | 2.470 | CSL458 |
| 2.5000 | 6 1/2 | 1/8 | 2.7530 | 2.470 | CSL558 |
| 2.5000 | 7 | 3/32 | 2.6905 | 2.470 | CSL447 |
| 2.5420 | 5 3/16 | 3/32 | 2.7325 | 2.512 | CSL633 |
| 2.5625 | 6 1/2 | 3/32 | 2.7530 | 2.532 | CSL459 |
| 2.5625 | 6 1/2 | 1/8 | 2.8155 | 2.532 | CSL559 |
| 2.5625 | 7 | 3/32 | 2.7530 | 2.532 | CSL448 |
| 2.6250 | 6 1/2 | 3/32 | 2.8155 | 2.595 | CSL460 |
| 2.6250 | 6 1/2 | 1/8 | 2.8780 | 2.595 | CSL560 |
| 2.6250 | 7 | 3/32 | 2.8155 | 2.595 | CSL449 |
| 2.6250 | 8 1/4 | 3/32 | 2.8155 | 2.595 | CSL488 |
| 2.6250 | 8 1/4 | 1/8 | 2.8780 | 2.595 | CSL588 |
| 2.6770 | 5 3/4 | 3/32 | 2.8675 | 2.647 | CSL622 |
| 2.6770 | 5 3/4 | 1/8 | 2.9300 | 2.647 | CSL722 |
| 2.6875 | 8 1/4 | 3/32 | 2.8780 | 2.657 | CSL461 |
| 2.6875 | 8 1/4 | 1/8 | 2.9405 | 2.657 | CSL561 |
| 2.7280 | 5 5/16 | 3/32 | 2.9185 | 2.698 | CSL634 |
| 2.7500 | 7 1/2 | 3/32 | 2.9405 | 2.720 | CSL401 |
| 2.7500 | 7 1/2 | 1/8 | 3.0030 | 2.720 | CSL501 |
| 2.7500 | 8 1/4 | 3/32 | 2.9405 | 2.720 | CSL485 |
| 2.7500 | 8 1/4 | 1/8 | 3.0030 | 2.720 | CSL585 |
| 2.7950 | 5 1/4 | 3/32 | 2.9855 | 2.765 | CSL628 |
| 2.7950 | 5 1/4 | 1/8 | 3.0480 | 2.765 | CSL728 |
| 2.8125 | 8 1/4 | 3/32 | 3.0030 | 2.782 | CSL462 |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 2.8125 | 8 1/4 | 1/8 | 3.0655 | 2.782 | CSL562 |
| 2.8350 | 6 1/2 | 3/32 | 3.0255 | 2.805 | CSL604A |
| 2.8350 | 6 1/2 | 1/8 | 3.0880 | 2.805 | CSL704A |
| 2.8740 | 4 7/8 | 3/32 | 3.0645 | 2.844 | CSL601 |
| 2.8740 | 4 7/8 | 1/8 | 3.1270 | 2.844 | CSL701 |
| 2.8740 | 5 1/4 | 3/32 | 3.0645 | 2.844 | CSL607 |
| 2.8740 | 5 1/4 | 1/8 | 3.1270 | 2.844 | CSL707 |
| 2.8740 | 6 1/16 | 3/32 | 3.0645 | 2.844 | CSL620 |
| 2.8740 | 6 1/16 | 1/8 | 3.1270 | 2.844 | CSL720 |
| 2.8750 | 8 1/4 | 3/32 | 3.0655 | 2.845 | CSL402 |
| 2.8750 | 8 1/4 | 1/8 | 3.1280 | 2.845 | CSL502 |
| 2.9130 | 6 1/2 | 3/32 | 3.1035 | 2.883 | CSL605A |
| 2.9130 | 6 1/2 | 1/8 | 3.1660 | 2.883 | CSL705A |
| 2.9375 | 8 1/4 | 3/32 | 3.1280 | 2.907 | CSL463 |
| 2.9375 | 8 1/4 | 1/8 | 3.1905 | 2.907 | CSL563 |
| 2.9530 | 4 7/8 | 3/32 | 3.1435 | 2.923 | CSL606 |
| 2.9530 | 4 7/8 | 1/8 | 3.2060 | 2.923 | CSL706 |
| 2.9530 | 6 3/8 | 3/32 | 3.1435 | 2.923 | CSL616 |
| 2.9530 | 6 3/8 | 1/8 | 3.2060 | 2.923 | CSL716 |
| 2.9720 | 5 1/8 | 3/32 | 3.1625 | 2.942 | CSL629 |
| 2.9720 | 5 1/8 | 1/8 | 3.2250 | 2.942 | CSL729 |
| 2.9920 | 5 1/4 | 3/32 | 3.1825 | 2.962 | CSL610 |
| 2.9920 | 5 1/4 | 1/8 | 3.2450 | 2.962 | CSL710 |
| 2.9920 | 7 | 2mm | 3.1530 | 2.962 | CSL760 |
| 2.9920 | 7 | 3/32 | 3.1825 | 2.962 | CSL621 |
| 2.9920 | 7 | 1/8 | 3.2450 | 2.962 | CSL721 |
| 3.0000 | 6 | 3/32 | 3.1905 | 2.970 | CSL1168 |
| 3.0000 | 6 | 1/8 | 3.2530 | 2.970 | CSL2268 |
| 3.0000 | 6 3/8 | 3/32 | 3.1905 | 2.970 | CSL150 |
| 3.0000 | 6 3/8 | 1/8 | 3.2530 | 2.970 | CSL250 |
| 3.0000 | 7 1/2 | 3/32 | 3.1905 | 2.970 | CSL154N |
| 3.0000 | 7 1/2 | 1/8 | 3.2530 | 2.970 | CSL254N |
| 3.0000 | 8 1/4 | 3/32 | 3.1905 | 2.970 | CSL403 |
| 3.0000 | 8 1/4 | 1/8 | 3.2530 | 2.970 | CSL503 |
| 3.0000 | 9 1/4 | 3/32 | 3.1905 | 2.970 | CSL486 |
| 3.0000 | 9 1/4 | 1/8 | 3.2530 | 2.970 | CSL586 |
| 3.0300 | 5 3/4 | 3/32 | 3.2205 | 3.000 | CSL1116 |
| 3.0300 | 5 3/4 | 1/8 | 3.2830 | 3.000 | CSL2216 |
| 3.0510 | 5 1/8 | 3/32 | 3.2415 | 3.021 | CSL631 |
| 3.0510 | 5 1/8 | 1/8 | 3.3040 | 3.021 | CSL731 |
| 3.0625 | 8 1/4 | 3/32 | 3.2530 | 3.032 | CSL404 |

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|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 3.0625 | 8 1/4 | 1/8 | 3.3155 | 3.032 | CSL504 |
| 3.0710 | 5 5/8 | 3/32 | 3.2615 | 3.041 | CSL618 |
| 3.0710 | 5 5/8 | 1/8 | 3.3240 | 3.041 | CSL718 |
| 3.0710 | 6 3/8 | 3/32 | 3.2615 | 3.041 | CSL1108N |
| 3.0710 | 6 3/8 | 1/8 | 3.3240 | 3.041 | CSL2208N |
| 3.0730 | 9 1/4 | 3/32 | 3.2530 | 3.043 | CSL433 |
| 3.1250 | 6 | 3/32 | 3.3155 | 3.095 | CSL1169 |
| 3.1250 | 6 | 1/8 | 3.3780 | 3.095 | CSL2269 |
| 3.1250 | 6 7/8 | 3/32 | 3.3155 | 3.095 | CSL170 |
| 3.1250 | 6 7/8 | 1/8 | 3.3780 | 3.095 | CSL270 |
| 3.1250 | 8 1/8 | 3/32 | 3.3155 | 3.095 | CSL135 |
| 3.1250 | 8 1/8 | 1/8 | 3.3780 | 3.095 | CSL235 |
| 3.1250 | 9 | 3/32 | 3.3155 | 3.095 | CSL405 |
| 3.1250 | 9 | 1/8 | 3.3780 | 3.095 | CSL505 |
| 3.1250 | 9 1/4 | 1/8 | 3.3780 | 3.095 | CSL9022 |
| 3.1250 | 9 1/4 | 3/32 | 3.3155 | 3.095 | CSL9073 |
| 3.1300 | 5 3/4 | 3/32 | 3.3205 | 3.100 | CSL1134 |
| 3.1300 | 5 3/4 | 1/8 | 3.3830 | 3.100 | CSL2234 |
| 3.1500 | 5 13/16 | 3/32 | 3.3405 | 3.120 | CSL1131 |
| 3.1500 | 5 13/16 | 1/8 | 3.4030 | 3.120 | CSL2231 |
| 3.1500 | 6 | 3/32 | 3.3405 | 3.120 | CSL1132 |
| 3.1500 | 6 | 1/8 | 3.4030 | 3.120 | CSL2232 |
| 3.1500 | 6 1/4 | 3/32 | 3.3405 | 3.120 | CSL609 |
| 3.1500 | 6 1/4 | 1/8 | 3.4030 | 3.120 | CSL709 |
| 3.1500 | 7 | 2mm | 3.3101 | 3.120 | CSL800 |
| 3.1610 | 6 | 3/32 | 3.3515 | 3.131 | CSL619 |
| 3.1610 | 6 | 1/8 | 3.4140 | 3.131 | CSL719 |
| 3.1875 | 6 | 3/32 | 3.3780 | 3.157 | CSL151 |
| 3.1875 | 6 | 1/8 | 3.4405 | 3.157 | CSL251 |
| 3.1875 | 6 1/2 | 3/32 | 3.3780 | 3.157 | CSL105 |
| 3.1875 | 6 1/2 | 1/8 | 3.4405 | 3.157 | CSL205 |
| 3.1875 | 7 1/2 | 3/32 | 3.3780 | 3.157 | CSL153 |
| 3.1875 | 7 1/2 | 3/32 | 3.3780 | 3.157 | CSL153N |
| 3.1875 | 7 1/2 | 1/8 | 3.4405 | 3.157 | CSL253 |
| 3.1875 | 7 1/2 | 1/8 | 3.4405 | 3.157 | CSL253N |
| 3.1875 | 9 1/4 | 3/32 | 3.3780 | 3.157 | CSL406A |
| 3.1875 | 9 1/4 | 1/8 | 3.4405 | 3.157 | CSL506A |
| 3.1875 | 9 1/4 | 1/8 +.015 | 3.4555 | 3.157 | CSL506A.015 |
| 3.1890 | 5 1/2 | 3/32 | 3.3795 | 3.159 | CSL623 |
| 3.1890 | 5 1/2 | 1/8 | 3.4420 | 3.159 | CSL723 |
| 3.1890 | 5 7/8 | 3/32 | 3.3795 | 3.159 | CSL1118N |

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|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 3.1890 | 5 7/8 | 1/8 | 3.4420 | 3.159 | CSL2218N |
| 3.1890 | 7 | 2mm | 3.3495 | 3.159 | CSL810 |
| 3.2280 | 5 3/8 | 3/32 | 3.4185 | 3.198 | CSL1105 |
| 3.2280 | 5 3/8 | 1/8 | 3.4810 | 3.198 | CSL2205 |
| 3.2283 | 7 | 2mm | 3.3888 | 3.198 | CSL820 |
| 3.2500 | 7 1/4 | 3/32 | 3.4405 | 3.220 | CSL1142 |
| 3.2500 | 7 1/4 | 1/8 | 3.5030 | 3.220 | CSL2242 |
| 3.2500 | 7 1/2 | 3/32 | 3.4405 | 3.220 | CSL1143 |
| 3.2500 | 7 1/2 | 1/8 | 3.5030 | 3.220 | CSL2243 |
| 3.2500 | 8 1/16 | 1/16 | 3.3780 | 3.220 | CSL115NX |
| 3.2500 | 8 1/16 | 3/32 | 3.4405 | 3.220 | CSL115N |
| 3.2500 | 8 1/16 | 1/8 | 3.5030 | 3.220 | CSL215N |
| 3.2500 | 9 1/4 | 3/32 | 3.4405 | 3.220 | CSL407 |
| 3.2500 | 9 1/4 | 1/8 | 3.5030 | 3.220 | CSL507 |
| 3.2680 | 5 1/2 | 3/32 | 3.4585 | 3.238 | CSL613 |
| 3.2680 | 5 1/2 | 1/8 | 3.5210 | 3.238 | CSL713 |
| 3.2680 | 5 3/4 | 3/32 | 3.4585 | 3.238 | CSL624 |
| 3.2680 | 5 3/4 | 1/8 | 3.5210 | 3.238 | CSL724 |
| 3.2680 | 6 1/4 | 3/32 | 3.4585 | 3.238 | CSL611 |
| 3.2680 | 6 1/4 | 1/8 | 3.5210 | 3.238 | CSL711 |
| 3.2680 | 7 | 2mm | 3.4282 | 3.238 | CSL830 |
| 3.2680 | 7 | 3/32 | 3.4584 | 3.238 | CSL803 |
| 3.2680 | 7 | 1/8 | 3.5210 | 3.238 | CSL903 |
| 3.3000 | 8 3/16 | 3/32 | 3.4905 | 3.270 | CSL112 |
| 3.3000 | 8 3/16 | 1/8 | 3.5530 | 3.270 | CSL212 |
| 3.3030 | 7 | 2mm | 3.4676 | 3.273 | CSL840 |
| 3.3070 | 5 5/8 | 3/32 | 3.4975 | 3.277 | CSL1107 |
| 3.3070 | 5 5/8 | 1/8 | 3.5600 | 3.277 | CSL2207 |
| 3.3070 | 6 1/2 | 3/32 | 3.4975 | 3.277 | CSL1128 |
| 3.3070 | 6 1/2 | 1/8 | 3.5600 | 3.277 | CSL2228 |
| 3.3125 | 7 9/16 | 3/32 | 3.5030 | 3.282 | CSL107 |
| 3.3125 | 7 9/16 | 1/8 | 3.5655 | 3.282 | CSL207 |
| 3.3125 | 9 1/4 | 3/32 | 3.5030 | 3.282 | CSL408 |
| 3.3125 | 9 1/4 | 1/8 | 3.5655 | 3.282 | CSL508 |
| 3.3300 | 5 11/16 | 3/32 | 3.5205 | 3.300 | CSL1136 |
| 3.3300 | 5 11/16 | 1/8 | 3.5830 | 3.300 | CSL2236 |
| 3.3440 | 7 9/16 | 3/32 | 3.5345 | 3.314 | CSL1144 |
| 3.3440 | 7 9/16 | 1/8 | 3.5970 | 3.314 | CSL2244 |
| 3.3460 | 5 1/4 | 3/32 | 3.5365 | 3.316 | CSL602 |
| 3.3460 | 5 1/4 | 1/8 | 3.5990 | 3.316 | CSL702 |
| 3.3460 | 6 | 3/32 | 3.5365 | 3.316 | CSL612 |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 3.3460 | 6 | 1/8 | 3.5990 | 3.316 | CSL712 |
| 3.3460 | 6 1/4 | 3/32 | 3.5365 | 3.316 | CSL617 |
| 3.3460 | 6 1/4 | 1/8 | 3.5990 | 3.316 | CSL717 |
| 3.3460 | 7 | 2mm | 3.5069 | 3.316 | CSL850 |
| 3.3750 | 6 | 3/32 | 3.5655 | 3.345 | CSL1145 |
| 3.3750 | 6 | 1/8 | 3.6280 | 3.345 | CSL2245 |
| 3.3750 | 7 5/16 | 3/32 | 3.5655 | 3.345 | CSL125 |
| 3.3750 | 7 5/16 | 1/8 | 3.6280 | 3.345 | CSL225 |
| 3.3750 | 9 1/4 | 3/32 | 3.5655 | 3.345 | CSL409 |
| 3.3750 | 9 1/4 | 1/8 | 3.6280 | 3.345 | CSL509 |
| 3.3860 | 5 3/4 | 3/32 | 3.5765 | 3.356 | CSL615 |
| 3.3860 | 5 3/4 | 1/8 | 3.6390 | 3.356 | CSL715 |
| 3.3860 | 7 | 2mm | 3.5463 | 3.356 | CSL860 |
| 3.3860 | 7 | 3/32 | 3.5765 | 3.356 | CSL804 |
| 3.3860 | 7 | 1/8 | 3.6390 | 3.356 | CSL904 |
| 3.4000 | 5 15/16 | 3/32 | 3.5905 | 3.370 | CSL156 |
| 3.4000 | 5 15/16 | 1/8 | 3.6530 | 3.370 | CSL256 |
| 3.4000 | 7 1/16 | 3/32 | 3.5905 | 3.370 | CSL155 |
| 3.4000 | 7 1/16 | 1/8 | 3.6530 | 3.370 | CSL255 |
| 3.4250 | 5 1/2 | 3/32 | 3.6155 | 3.395 | CSL1138 |
| 3.4250 | 5 1/2 | 1/8 | 3.6780 | 3.395 | CSL2238 |
| 3.4250 | 7 | 2mm | 3.5857 | 3.405 | CSL870 |
| 3.4330 | 5 13/16 | 3/32 | 3.6235 | 3.403 | CSL603 |
| 3.4330 | 5 13/16 | 1/8 | 3.6860 | 3.403 | CSL703 |
| 3.4375 | 5 13/16 | 3/32 | 3.6280 | 3.407 | CSL1146 |
| 3.4375 | 5 13/16 | 1/8 | 3.6905 | 3.407 | CSL2246 |
| 3.4375 | 7 1/2 | 3/32 | 3.6280 | 3.407 | CSL152 |
| 3.4375 | 7 1/2 | 3/32 | 3.6280 | 3.407 | CSL152N |
| 3.4375 | 7 1/2 | 1/8 | 3.6905 | 3.407 | CSL252 |
| 3.4375 | 7 1/2 | 1/8 | 3.6905 | 3.407 | CSL252N |
| 3.4375 | 8 1/8 | 1/16 | 3.5655 | 3.407 | CSL119NX |
| 3.4375 | 8 1/8 | 3/32 | 3.6280 | 3.407 | CSL119N |
| 3.4375 | 8 1/8 | 1/8 | 3.6905 | 3.407 | CSL219N |
| 3.4375 | 9 1/4 | 3/32 | 3.6280 | 3.407 | CSL410 |
| 3.4375 | 9 1/4 | 1/8 | 3.6905 | 3.407 | CSL510 |
| 3.4440 | 6 | 3/32 | 3.6345 | 3.414 | CSL1129 |
| 3.4440 | 6 | 1/8 | 3.6970 | 3.414 | CSL2229 |
| 3.4440 | 6 7/16 | 3/32 | 3.6345 | 3.414 | CSL1171 |
| 3.4440 | 6 7/16 | 1/8 | 3.6970 | 3.414 | CSL2271 |
| 3.4646 | 7 | 2mm | 3.6250 | 3.434 | CSL880 |
| 3.4650 | 5 7/8 | 3/32 | 3.6555 | 3.435 | CSL614 |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 3.4650 | 5 7/8 | 1/8 | 3.7180 | 3.435 | CSL714 |
| 3.4840 | 6 1/4 | 3/32 | 3.6745 | 3.454 | CSL608 |
| 3.4840 | 6 1/4 | 1/8 | 3.7370 | 3.454 | CSL708 |
| 3.5000 | 5 1/8 | 3/32 | 3.6905 | 3.470 | CSL104 |
| 3.5000 | 5 1/8 | 1/8 | 3.7530 | 3.470 | CSL204 |
| 3.5000 | 5 1/4 | 3/32 | 3.6905 | 3.470 | CSL1112 |
| 3.5000 | 5 1/4 | 1/8 | 3.7530 | 3.470 | CSL2212 |
| 3.5000 | 5 1/2 | 1/16 | 3.6280 | 3.470 | CSL1137X |
| 3.5000 | 5 1/2 | 3/32 | 3.6905 | 3.470 | CSL1137 |
| 3.5000 | 5 1/2 | 1/8 | 3.7530 | 3.470 | CSL2237 |
| 3.5000 | 5 9/16 | 3/32 | 3.6905 | 3.470 | CSL1141 |
| 3.5000 | 5 9/16 | 1/8 | 3.7530 | 3.470 | CSL2241 |
| 3.5000 | 5 3/4 | 3/32 | 3.6905 | 3.470 | CSL1122 |
| 3.5000 | 5 3/4 | 1/8 | 3.7530 | 3.470 | CSL2222 |
| 3.5000 | 5 7/8 | 3/32 | 3.6905 | 3.470 | CSL1120 |
| 3.5000 | 5 7/8 | 1/8 | 3.7530 | 3.470 | CSL2220 |
| 3.5000 | 5 15/16 | 3/32 | 3.6905 | 3.470 | CSL141 |
| 3.5000 | 5 15/16 | 1/8 | 3.7530 | 3.470 | CSL241 |
| 3.5000 | 6 | 3/32 | 3.6905 | 3.470 | CSL1111 |
| 3.5000 | 6 | 1/8 | 3.7530 | 3.470 | CSL2211 |
| 3.5000 | 7 1/16 | 3/32 | 3.6905 | 3.470 | CSL109 |
| 3.5000 | 7 1/16 | 1/8 | 3.7530 | 3.470 | CSL209 |
| 3.5000 | 8 1/16 | 3/32 | 3.6905 | 3.470 | CSL108 |
| 3.5000 | 8 1/16 | 1/8 | 3.7530 | 3.470 | CSL208 |
| 3.5000 | 9 1/4 | 3/32 | 3.6905 | 3.470 | CSL411 |
| 3.5000 | 9 1/4 | 1/8 | 3.7530 | 3.470 | CSL511 |
| 3.5000 | 9 1/4 | 1/8 + .015 | 3.7680 | 3.470 | CSL511.015 |
| 3.5040 | 7 | 2mm | 3.6644 | 3.474 | CSL890 |
| 3.5180 | 5 1/2 | 3/32 | 3.7085 | 3.488 | CSL1147 |
| 3.5180 | 5 1/2 | 1/8 | 3.7710 | 3.488 | CSL2247 |
| 3.5510 | 5 1/4 | 1/16 | 3.6780 | 3.520 | CSL1177X |
| 3.5510 | 6 1/4 | 1/16 | 3.6780 | 3.520 | CSL1178X |
| 3.5625 | 5 15/16 | 3/32 | 3.7530 | 3.532 | CSL158 |
| 3.5625 | 5 15/16 | 1/8 | 3.8155 | 3.532 | CSL258 |
| 3.5625 | 6 7/8 | 3/32 | 3.7530 | 3.532 | CSL102 |
| 3.5625 | 6 7/8 | 1/8 | 3.8155 | 3.532 | CSL202 |
| 3.5625 | 7 7/32 | 3/32 | 3.7530 | 3.532 | CSL111 |
| 3.5625 | 7 7/32 | 1/8 | 3.8155 | 3.532 | CSL211 |
| 3.5625 | 7 9/16 | 3/32 | 3.7530 | 3.532 | CSL123 |
| 3.5625 | 7 9/16 | 1/8 | 3.8155 | 3.532 | CSL223 |
| 3.5625 | 10 | 3/32 | 3.7530 | 3.532 | CSL412 |

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UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 3.5625 | 10 | 1/8 | 3.8155 | 3.532 | CSL512 |
| 3.5750 | 5 3/8 | 3/32 | 3.7655 | 3.545 | CSL190A |
| 3.5750 | 5 3/8 | 1/8 | 3.8280 | 3.545 | CSL290A |
| 3.5830 | 5 1/2 | 3/32 | 3.7735 | 3.553 | CSL625 |
| 3.5860 | 5 | 3/32 | 3.7765 | 3.556 | CSL1172 |
| 3.5860 | 5 | 1/8 | 3.8390 | 3.556 | CSL2272 |
| 3.5860 | 6 1/2 | 3/32 | 3.7765 | 3.556 | CSL1130 |
| 3.5860 | 6 1/2 | 1/8 | 3.8390 | 3.556 | CSL2230 |
| 3.6220 | 6 1/16 | 3/32 | 3.8125 | 3.592 | CSL630 |
| 3.6220 | 6 1/16 | 1/8 | 3.8750 | 3.592 | CSL730 |
| 3.6250 | 6 | 3/32 | 3.8155 | 3.595 | CSL144 |
| 3.6250 | 6 | 1/8 | 3.8780 | 3.595 | CSL244 |
| 3.6250 | 6 11/16 | 3/32 | 3.8155 | 3.595 | CSL142 |
| 3.6250 | 6 11/16 | 1/8 | 3.8780 | 3.595 | CSL242 |
| 3.6250 | 7 | 3/32 | 3.8155 | 3.595 | CSL134 |
| 3.6250 | 7 | 1/8 | 3.8780 | 3.595 | CSL234 |
| 3.6250 | 10 1/4 | 3/32 | 3.8155 | 3.595 | CSL413A |
| 3.6250 | 10 1/4 | 1/8 | 3.8780 | 3.595 | CSL513A |
| 3.6610 | 5 1/16 | 3/32 | 3.8515 | 3.631 | CSL174 |
| 3.6610 | 5 1/16 | 1/8 | 3.9140 | 3.631 | CSL274 |
| 3.6610 | 5 1/2 | 3/32 | 3.8515 | 3.631 | CSL626 |
| 3.6610 | 5 1/2 | 1/8 | 3.9140 | 3.631 | CSL726 |
| 3.6614 | 7 | 2mm | 3.8220 | 3.631 | CSL930 |
| 3.6710 | 5 1/2 | 3/32 | 3.8615 | 3.641 | CSL1106 |
| 3.6710 | 5 1/2 | 1/8 | 3.9240 | 3.641 | CSL2206 |
| 3.6800 | 5 1/8 | 3/32 | 3.8705 | 3.650 | CSL194 |
| 3.6800 | 5 1/8 | 1/8 | 3.9330 | 3.650 | CSL294 |
| 3.6800 | 5 1/2 | 3/32 | 3.8705 | 3.650 | CSL1173 |
| 3.6800 | 5 1/2 | 1/8 | 3.9330 | 3.650 | CSL2273 |
| 3.6800 | 6 | 3/32 | 3.8705 | 3.650 | CSL124 |
| 3.6800 | 6 | 1/8 | 3.9330 | 3.650 | CSL224 |
| 3.6875 | 5 1/8 | 3/32 | 3.8780 | 3.657 | CSL1165 |
| 3.6875 | 5 1/8 | 1/8 | 3.9405 | 3.657 | CSL2265 |
| 3.6875 | 6 | 3/32 | 3.8780 | 3.657 | CSL1166 |
| 3.6875 | 6 | 1/8 | 3.9405 | 3.657 | CSL2266 |
| 3.6875 | 7 9/16 | 3/32 | 3.8780 | 3.657 | CSL1148 |
| 3.6875 | 7 9/16 | 1/8 | 3.9405 | 3.657 | CSL2248 |
| 3.6875 | 10 1/4 | 3/32 | 3.8780 | 3.657 | CSL414 |
| 3.6875 | 10 1/4 | 1/8 | 3.9405 | 3.657 | CSL514 |
| 3.7190 | 7 3/4 | 3/32 | 3.9095 | 3.689 | CSL145 |
| 3.7190 | 7 3/4 | 1/8 | 3.9720 | 3.689 | CSL245 |

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UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 3.7360 | 5 1/2 | 3/32 | 3.9265 | 3.706 | CSL1149 |
| 3.7360 | 5 1/2 | 1/8 | 3.9890 | 3.706 | CSL2249 |
| 3.7400 | 6 3/4 | 0.083 | 3.909 | 3.689 | CSL147 |
| 3.7500 | 5 3/16 | 3/32 | 3.9405 | 3.720 | CSL1181 |
| 3.7500 | 5 7/8 | 3/32 | 3.9405 | 3.720 | CSL126 |
| 3.7500 | 5 7/8 | 1/8 | 4.0030 | 3.720 | CSL226 |
| 3.7500 | 6 | 3/32 | 3.9405 | 3.720 | CSL139 |
| 3.7500 | 6 | 1/8 | 4.0030 | 3.720 | CSL239 |
| 3.7500 | 6 1/16 | 3/32 | 3.9405 | 3.720 | CSL117 |
| 3.7500 | 6 1/16 | 1/8 | 4.0030 | 3.720 | CSL217 |
| 3.7500 | 7 1/4 | 3/32 | 3.9405 | 3.720 | CSL120 |
| 3.7500 | 7 1/4 | 1/8 | 4.0030 | 3.720 | CSL220 |
| 3.7500 | 10 1/4 | 3/32 | 3.9405 | 3.720 | CSL415A |
| 3.7500 | 10 1/4 | 1/8 | 4.0030 | 3.720 | CSL515A |
| 3.7500 | 10 1/4 | 1/8 +.015 | 4.0180 | 3.720 | CSL515A.015 |
| 3.7810 | 5 1/2 | 3/32 | 3.9710 | 3.751 | CSL173 |
| 3.7810 | 5 1/2 | 1/8 | 4.0335 | 3.751 | CSL273 |
| 3.7810 | 7 7/8 | 3/32 | 3.9710 | 3.751 | CSL146 |
| 3.7810 | 7 7/8 | 1/8 | 4.0335 | 3.751 | CSL246 |
| 3.8000 | 5 1/4 | 3/32 | 3.9905 | 3.770 | CSL1133 |
| 3.8000 | 5 1/4 | 1/8 | 4.0530 | 3.770 | CSL2233 |
| 3.8000 | 5 7/8 | 3/32 | 3.9905 | 3.770 | CSL1123 |
| 3.8000 | 5 7/8 | 3/32 | 3.9905 | 3.770 | CSL1123N |
| 3.8000 | 5 7/8 | 1/8 | 4.0530 | 3.770 | CSL2223 |
| 3.8000 | 5 7/8 | 1/8 | 4.0530 | 3.770 | CSL2223N |
| 3.8000 | 6 | 0.048 | 3.8950 | 3.770 | CSL138X |
| 3.8000 | 6 | 3/32 | 3.9905 | 3.770 | CSL138 |
| 3.8000 | 6 | 1/8 | 4.0530 | 3.770 | CSL238 |
| 3.8000 | 6 1/8 | 3/32 | 3.9905 | 3.770 | CSL1101 |
| 3.8000 | 6 1/8 | 1/8 | 4.0530 | 3.770 | CSL2201 |
| 3.8000 | 6 3/8 | 3/32 | 3.9905 | 3.770 | CSL183 |
| 3.8000 | 6 3/8 | 1/8 | 4.0530 | 3.770 | CSL283 |
| 3.8000 | 6 7/8 | 3/32 | 3.9905 | 3.770 | CSL1124 |
| 3.8000 | 6 7/8 | 1/8 | 4.0530 | 3.770 | CSL2224 |
| 3.8000 | 6 15/16 | 3/32 | 3.9905 | 3.770 | CSL143 |
| 3.8000 | 6 15/16 | 1/8 | 4.0530 | 3.770 | CSL243 |
| 3.8125 | 6 7/8 | 3/32 | 4.0030 | 3.782 | CSL162 |
| 3.8125 | 6 7/8 | 1/8 | 4.0655 | 3.782 | CSL262 |
| 3.8125 | 10 1/4 | 3/32 | 4.0030 | 3.782 | CSL428A |
| 3.8125 | 10 1/4 | 1/8 | 4.0655 | 3.782 | CSL528A |
| 3.8750 | 5 3/4 | 3/32 | 4.0655 | 3.845 | CSL188 |
| 3.8750 | 5 3/4 | 1/8 | 4.1280 | 3.845 | CSL288 |

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UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|---|
| 3.8750 | 5 7/8 | 3/32 | 4.0655 | 3.845 | CSL122A |
| 3.8750 | 5 7/8 | 1/8 | 4.1280 | 3.845 | CSL222A |
| 3.8750 | 6 1/4 | 3/32 | 4.0655 | 3.845 | CSL181 |
| 3.8750 | 6 1/4 | 1/8 | 4.1280 | 3.845 | CSL281 |
| 3.8750 | 6 3/8 | 3/32 | 4.0655 | 3.845 | CSL133 |
| 3.8750 | 6 3/8 | 1/8 | 4.1280 | 3.845 | CSL233 |
| 3.8750 | 6 7/16 | 3/32 | 4.0655 | 3.845 | CSL182 |
| 3.8750 | 6 7/16 | 1/8 | 4.1280 | 3.845 | CSL282 |
| 3.8750 | 6.700 | 3/32 | 4.065 | 3.845 | CSL901D |
| 3.8750 | 6 3/4 | 3/32 | 4.065 | 3.845 | CSL101FD (Flange, Ductile Iron; Flange O.D. 4.200) (Flange Thickness 0.125) |
| 3.8750 | 7 | 1/16 | 4.0030 | 3.845 | CSL165X |
| 3.8750 | 7 | 3/32 | 4.0655 | 3.845 | CSL165 |
| 3.8750 | 7 | 1/8 | 4.1280 | 3.845 | CSL265 |
| 3.8750 | 7 1/2 | 3/32 | 4.0655 | 3.845 | CSL101 |
| 3.8750 | 7 1/2 | 1/8 | 4.1280 | 3.845 | CSL201 |
| 3.8750 | 10 1/4 | 3/32 | 4.0655 | 3.845 | CSL416A |
| 3.8750 | 10 1/4 | 1/8 | 4.1280 | 3.845 | CSL516A |
| 3.8750 | 10 1/4 | 1/8 +.015 | 4.1430 | 3.845 | CSL516A.015 |
| 3.9100 | 6 | 3/32 | 4.1005 | 3.880 | CSL116 |
| 3.9100 | 6 | 1/8 | 4.1630 | 3.880 | CSL216 |
| 3.9375 | 6 3/4 | 3/32 | 4.1280 | 3.907 | CSL103 |
| 3.9375 | 6 3/4 | 1/8 | 4.1905 | 3.907 | CSL203 |
| 3.9375 | 6 7/8 | 3/32 | 4.1280 | 3.907 | CSL1151 |
| 3.9375 | 6 7/8 | 1/8 | 4.1905 | 3.907 | CSL2251 |
| 3.9375 | 10 1/4 | 3/32 | 4.1280 | 3.907 | CSL429A |
| 3.9375 | 10 1/4 | 1/8 | 4.1905 | 3.907 | CSL529A |
| 3.9650 | 6 | 3/32 | 4.1555 | 3.935 | CSL1119 |
| 3.9650 | 6 | 1/8 | 4.2180 | 3.935 | CSL2219 |
| 3.9760 | 6 1/4 | 3/32 | 4.1665 | 3.946 | CSL1152 |
| 3.9760 | 6 1/4 | 1/8 | 4.2290 | 3.946 | CSL2252 |
| 4.0000 | 5 1/16 | 3/32 | 4.1905 | 3.970 | CSL193 |
| 4.0000 | 5 1/16 | 1/8 | 4.2530 | 3.970 | CSL293 |
| 4.0000 | 5 1/8 | 3/32 | 4.1905 | 3.970 | CSL1113A |
| 4.0000 | 5 1/8 | 1/8 | 4.2530 | 3.970 | CSL2213A |
| 4.0000 | 5 1/2 | 3/32 | 4.1905 | 3.970 | CSL159 |
| 4.0000 | 5 1/2 | 1/8 | 4.2530 | 3.970 | CSL259 |
| 4.0000 | 5 5/8 | 3/32 | 4.1905 | 3.970 | CSL127 |
| 4.0000 | 5 5/8 | 1/8 | 4.2530 | 3.970 | CSL227 |
| 4.0000 | 5 3/4 | 3/32 | 4.1905 | 3.970 | CSL1104 |
| 4.0000 | 5 3/4 | 3/32 | 4.1905 | 3.970 | CSL1104N |
| 4.0000 | 5 3/4 | 1/8 | 4.2530 | 3.970 | CSL2204 |
| 4.0000 | 5 3/4 | 1/8 | 4.2530 | 3.970 | CSL2204N |
| 4.0000 | 5 7/8 | 1/16 | 4.1280 | 3.970 | CSL198X |

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UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|------------------|---------------------|-------------------|-------------------|-------------------|--------------------|
| 4.0000 | 5 7/8 | 3/32 | 4.1905 | 3.970 | CSL198 |
| 4.0000 | 5 7/8 | 1/8 | 4.2530 | 3.970 | CSL298 |
| 4.0000 | 6 | 3/32 | 4.1905 | 3.970 | CSL1170 |
| 4.0000 | 6 1/16 | 3/32 | 4.1905 | 3.970 | CSL129 |
| 4.0000 | 6 1/16 | 1/8 | 4.2530 | 3.970 | CSL229 |
| 4.0000 | 6 1/4 | 3/32 | 4.1905 | 3.970 | CSL136 |
| 4.0000 | 6 1/4 | 3/32 | 4.1905 | 3.970 | CSL136HP |
| 4.0000 | 6 1/4 | 1/8 | 4.2530 | 3.970 | CSL236 |
| 4.0000 | 6 1/4 | 1/8 | 4.2530 | 3.970 | CSL236HP |
| 4.0000 | 6 7/16 | 3/32 | 4.1905 | 3.970 | CSL1153 |
| 4.0000 | 6 7/16 | 1/8 | 4.2530 | 3.970 | CSL2253 |
| 4.0000 | 6 1/2 | 1/16 | 4.1280 | 3.970 | CSL180X |
| 4.0000 | 6 1/2 | 3/32 | 4.1905 | 3.970 | CSL180 |
| 4.0000 | 6 1/2 | 1/8 | 4.2530 | 3.970 | CSL280 |
| 4.0000 | 6 7/8 | 3/32 | 4.1905 | 3.970 | CSL137 |
| 4.0000 | 6 7/8 | 1/8 | 4.2530 | 3.970 | CSL237 |
| 4.0000 | 7 7/8 | 0.060 | 4.1200 | 3.970 | CSL157X |
| 4.0000 | 7 7/8 | 3/32 | 4.1905 | 3.970 | CSL157 |
| 4.0000 | 7 7/8 | 1/8 | 4.2530 | 3.970 | CSL257 |
| 4.0000 | 9 3/8 | 3/32 | 4.1905 | 3.970 | CSL175 |
| 4.0000 | 9 3/8 | 1/8 | 4.2530 | 3.970 | CSL275 |
| 4.0000 | 10 1/4 | 3/32 | 4.1905 | 3.970 | CSL417A |
| 4.0000 | 10 1/4 | 1/8 | 4.2530 | 3.970 | CSL517A |
| 4.0000 | 10 1/4 | 1/8 +.015 | 4.2680 | 3.970 | CSL517A.015 |
| 4.0100 | 8 3/8 | 1/16 | 4.1460 | 3.985 | CSL641X |
| 4.0100 | 8 3/8 | 3/32 | 4.2090 | 3.985 | CSL641 |
| 4.0310 | 6 3/8 | 3/32 | 4.2215 | 4.001 | CSL1154 |
| 4.0310 | 6 3/8 | 1/8 | 4.2840 | 4.001 | CSL2254 |
| 4.0400 | 6 1/2 | 0.055 | 4.1500 | 4.010 | CSL9154 |
| 4.0400 | 6 3/4 | 3/32 | 4.2305 | 4.010 | CSL160 |
| 4.0400 | 6 3/4 | 1/8 | 4.2930 | 4.010 | CSL260 |
| 4.0500 | 6 1/4 | 3/32 | 4.2405 | 4.020 | CSL131 |
| 4.0500 | 6 1/4 | 1/8 | 4.3030 | 4.020 | CSL231 |
| 4.0500 | 6 1/4 | 0.175 | 4.4030 | 4.020 | CSL1139 |
| 4.0500 | 6 5/16 | 1/16 | 4.1780 | 4.020 | CSL195X |
| 4.0500 | 6 5/16 | 3/32 | 4.2405 | 4.020 | CSL195 |
| 4.0500 | 6 5/16 | 1/8 | 4.3030 | 4.020 | CSL295 |
| 4.0625 | 6 5/16 | 3/32 | 4.2530 | 4.032 | CSL167 |
| 4.0625 | 6 5/16 | 1/8 | 4.3155 | 4.032 | CSL267 |
| 4.0625 | 6 1/2 | 3/32 | 4.2530 | 4.032 | CSL1102 |
| 4.0625 | 6 1/2 | 1/8 | 4.3155 | 4.032 | CSL2202 |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 4.0625 | 10 1/4 | 3/32 | 4.2530 | 4.032 | CSL489 |
| 4.0625 | 10 1/4 | 1/8 | 4.3155 | 4.033 | CSL589 |
| 4.0625 | 11 | 3/32 | 4.2530 | 4.032 | CSL430 |
| 4.0625 | 11 | 1/8 | 4.3155 | 4.032 | CSL530 |
| 4.0820 | 6 7/8 | 3/32 | 4.2725 | 4.052 | CSL1155 |
| 4.0820 | 6 7/8 | 1/8 | 4.3350 | 4.052 | CSL2255 |
| 4.0940 | 6 | 3/32 | 4.2845 | 4.064 | CSL179 |
| 4.0940 | 6 | 1/8 | 4.3468 | 4.064 | CSL279 |
| 4.0940 | 6 1/4 | 3/32 | 4.2840 | 4.064 | CSL1179N |
| 4.0940 | 6 1/4 | 1/8 | 4.3467 | 4.074 | CSL2279N |
| 4.1100 | 6 7/8 | 3/32 | 4.3005 | 4.080 | CSL1174 |
| 4.1100 | 6 7/8 | 3/32 | 4.3005 | 4.080 | CSL1174HP |
| 4.1100 | 6 7/8 | 1/8 | 4.3630 | 4.080 | CSL2274 |
| 4.1100 | 6 7/8 | 1/8 | 4.3630 | 4.080 | CSL2274HP |
| 4.1250 | 6 1/16 | 3/32 | 4.3155 | 4.095 | CSL164 |
| 4.1250 | 6 1/16 | 1/8 | 4.3780 | 4.095 | CSL264 |
| 4.1250 | 6 1/4 | 3/32 | 4.3155 | 4.095 | CSL161 |
| 4.1250 | 6 1/4 | 3/32 | 4.3155 | 4.095 | CSL161HP |
| 4.1250 | 6 1/4 | 1/8 | 4.3780 | 4.095 | CSL261 |
| 4.1250 | 6 1/4 | 1/8 | 4.3780 | 4.095 | CSL261HP |
| 4.1250 | 6 3/8 | 3/32 | 4.3155 | 4.095 | CSL1109 |
| 4.1250 | 6 3/8 | 1/8 | 4.3780 | 4.095 | CSL2209 |
| 4.1250 | 6 1/2 | 3/32 | 4.3155 | 4.095 | CSL172 |
| 4.1250 | 6 1/2 | 1/8 | 4.3780 | 4.095 | CSL272 |
| 4.1250 | 6 3/4 | 1/16 | 4.2530 | 4.095 | CSL130X |
| 4.1250 | 6 3/4 | 3/32 | 4.3155 | 4.080 | CSL130 |
| 4.1250 | 6 3/4 | 1/8 | 4.3780 | 4.095 | CSL230 |
| 4.1250 | 7 1/2 | 3/32 | 4.3155 | 4.095 | CSL1156 |
| 4.1250 | 7 1/2 | 1/8 | 4.3780 | 4.095 | CSL2256 |
| 4.1250 | 10 1/4 | 3/32 | 4.3155 | 4.095 | CSL418A |
| 4.1250 | 10 1/4 | 1/8 | 4.3780 | 4.095 | CSL518A |
| 4.1250 | 10 1/4 | 1/8 +.015 | 4.3930 | 4.095 | CSL518A.015 |
| 4.1400 | 7 3/4 | 0.090 | 4.3220 | 4.110 | CSL640 |
| 4.1400 | 8 | 0.080 | 4.3005 | 4.110 | CSL9138 |
| 4.1500 | 6 1/8 | 3/32 | 4.3405 | 4.120 | CSL118 |
| 4.1500 | 6 1/8 | 1/8 | 4.4030 | 4.120 | CSL218 |
| 4.1875 | 6 3/4 | 3/32 | 4.3780 | 4.157 | CSL186 |
| 4.1875 | 6 3/4 | 1/8 | 4.4405 | 4.157 | CSL286 |
| 4.1875 | 7 7/8 | 1/8 | 4.4405 | 4.157 | CSL591 |
| 4.1875 | 10 1/4 | 3/32 | 4.3780 | 4.157 | CSL490 |
| 4.1875 | 12 1/4 | 3/32 | 4.3780 | 4.157 | CSL432A |
| 4.1875 | 12 1/4 | 1/8 | 4.4405 | 4.157 | CSL532A |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 4.2100 | 7 7/8 | 0.0550 | 4.3200 | 4.180 | CSL1180X |
| 4.2100 | 7 7/8 | 3/32 | 4.4025 | 4.180 | CSL1180 |
| 4.2100 | 7 7/8 | 1/8 | 4.4630 | 4.180 | CSL2280 |
| 4.2330 | 6 1/4 | 3/32 | 4.4235 | 4.203 | CSL1158 |
| 4.2330 | 6 1/4 | 1/8 | 4.4860 | 4.203 | CSL2258 |
| 4.2500 | 6 | 3/32 | 4.4405 | 4.220 | CSL199 |
| 4.2500 | 6 | 1/8 | 4.5030 | 4.220 | CSL299 |
| 4.2500 | 6 1/2 | 1/16 | 4.3780 | 4.220 | CSL196X |
| 4.2500 | 6 1/2 | 3/32 | 4.4405 | 4.220 | CSL196 |
| 4.2500 | 6 1/2 | 1/8 | 4.5030 | 4.220 | CSL296 |
| 4.2500 | 7 | 1/16 | 4.3780 | 4.220 | CSL197X |
| 4.2500 | 7 | 3/32 | 4.4405 | 4.220 | CSL197 |
| 4.2500 | 7 | 3/32 | 4.4405 | 4.220 | CSL197HP |
| 4.2500 | 7 | 1/8 | 4.5030 | 4.220 | CSL297 |
| 4.2500 | 7 | 1/8 | 4.5030 | 4.220 | CSL297HP |
| 4.2500 | 7 1/2 | 3/32 | 4.4405 | 4.220 | CSL106 |
| 4.2500 | 7 1/2 | 1/8 | 4.5030 | 4.220 | CSL206 |
| 4.2500 | 12 1/4 | 3/32 | 4.4405 | 4.220 | CSL419A |
| 4.2500 | 12 1/4 | 1/8 | 4.5030 | 4.220 | CSL519A |
| 4.2500 | 12 1/4 | 1/8 +.015 | 4.5180 | 4.220 | CSL519A.015 |
| 4.3000 | 7 1/2 | 3/32 | 4.4905 | 4.270 | CSL187 |
| 4.3000 | 7 1/2 | 1/8 | 4.5530 | 4.270 | CSL287 |
| 4.3125 | 6 3/4 | 3/32 | 4.5030 | 4.282 | CSL1159 |
| 4.3125 | 6 3/4 | 1/8 | 4.5655 | 4.282 | CSL2259 |
| 4.3125 | 12 3/4 | 3/32 | 4.5030 | 4.282 | CSL420A |
| 4.3125 | 12 3/4 | 1/8 | 4.5655 | 4.282 | CSL520A |
| 4.3200 | 6 3/4 | 3/32 | 4.5105 | 4.290 | CSL121 |
| 4.3200 | 6 3/4 | 1/8 | 4.5730 | 4.290 | CSL221 |
| 4.3200 | 7 | 3/32 | 4.5105 | 4.290 | CSL114 |
| 4.3200 | 7 | 1/8 | 4.5730 | 4.290 | CSL214 |
| 4.3300 | 7 3/4 | 3/32 | 4.5210 | 4.300 | CSL110 |
| 4.3420 | 6 1/4 | 1/16 | 4.4660 | 4.312 | CSL169X |
| 4.3420 | 6 1/4 | 3/32 | 4.5325 | 4.312 | CSL169 |
| 4.3420 | 6 1/4 | 1/8 | 4.5950 | 4.312 | CSL269 |
| 4.3500 | 5 7/8 | 3/32 | 4.5405 | 4.320 | CSL1114 |
| 4.3500 | 5 7/8 | 1/8 | 4.6030 | 4.320 | CSL2214 |
| 4.3600 | 6 | 3/32 | 4.5505 | 4.330 | CSL128 |
| 4.3600 | 6 | 1/8 | 4.6130 | 4.330 | CSL228 |
| 4.3600 | 6 1/4 | 3/32 | 4.5505 | 4.330 | CSL1125 |
| 4.3600 | 6 1/4 | 1/8 | 4.6130 | 4.330 | CSL2225 |
| 4.3600 | 6 7/8 | 3/32 | 4.5505 | 4.330 | CSL1160 |
| 4.3600 | 6 7/8 | 1/8 | 4.6130 | 4.330 | CSL2260 |
| 4.3750 | 7 1/2 | 3/32 | 4.5655 | 4.345 | CSL1161 |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 4.3750 | 7 1/2 | 1/8 | 4.6280 | 4.345 | CSL2261 |
| 4.3750 | 12 1/4 | 3/32 | 4.5655 | 4.345 | CSL421A |
| 4.3750 | 12 1/4 | 1/8 | 4.6280 | 4.345 | CSL521A |
| 4.3750 | 12 1/4 | 1/8 + .015 | 4.6430 | 4.345 | CSL521A.015 |
| 4.3750 | 12 3/4 | 3/32 | 4.5655 | 4.345 | CSL487 |
| 4.3750 | 12 3/4 | 1/8 | 4.6280 | 4.345 | CSL587 |
| 4.3800 | 9 | 0.104 | 4.5880 | 4.350 | CSL9133 |
| 4.4000 | 8 1/2 | 3/32 | 4.5905 | 4.370 | CSL1176 |
| 4.4000 | 8 1/2 | 1/8 | 4.6530 | 4.370 | CSL2276 |
| 4.4375 | 12 1/4 | 0.1388 | 4.7150 | 4.407 | CSL662 |
| 4.4375 | 12 3/4 | 3/32 | 4.6280 | 4.407 | CSL427 |
| 4.4375 | 12 3/4 | 1/8 | 4.6900 | 4.407 | CSL527 |
| 4.5000 | 7 3/8 | 3/32 | 4.6905 | 4.470 | CSL1167 |
| 4.5000 | 7 3/8 | 1/8 | 4.7530 | 4.470 | CSL2267 |
| 4.5000 | 7 3/4 | 3/32 | 4.6905 | 4.470 | CSL1126 |
| 4.5000 | 7 3/4 | 1/8 | 4.7530 | 4.470 | CSL2226 |
| 4.5000 | 8 | 3/32 | 4.6905 | 4.470 | CSL1126X |
| 4.5000 | 8 | 1/8 | 4.7530 | 4.470 | CSL2226X |
| 4.5000 | 8 | 1/8 + .020 | 4.7730 | 4.470 | CSL2226X.020 |
| 4.5000 | 8 1/4 | 3/32 | 4.6905 | 4.470 | CSL1162 |
| 4.5000 | 8 1/4 | 1/8 | 4.7530 | 4.470 | CSL2262 |
| 4.5000 | 8 3/4 | 1/8 | 4.7530 | 4.470 | CSL276 ANGLE TOP |
| 4.5000 | 8 3/4 | 3/32 | 4.6905 | 4.470 | CSL1175 |
| 4.5000 | 8 3/4 | 1/8 | 4.7530 | 4.470 | CSL2275 |
| 4.5000 | 9 | 3/32 | 4.6905 | 4.470 | CSL1163 |
| 4.5000 | 9 | 1/8 | 4.7530 | 4.470 | CSL2263 |
| 4.5000 | 12 1/4 | 3/32 | 4.6905 | 4.470 | CSL422A |
| 4.5000 | 12 1/4 | 1/8 | 4.7530 | 4.470 | CSL522A |
| 4.5000 | 12 1/4 | 1/8 + .015 | 4.7680 | 4.470 | CSL522A.015 |
| 4.5625 | 7 1/2 | 3/32 | 4.7530 | 4.532 | CSL1117 |
| 4.5625 | 7 1/2 | 1/8 | 4.8150 | 4.532 | CSL2217 |
| 4.5625 | 7 5/8 | 3/32 | 4.7525 | 4.532 | CSL168 |
| 4.5625 | 7 5/8 | 1/8 | 4.8150 | 4.532 | CSL268 |
| 4.5625 | 12 1/2 | 3/32 | 4.7525 | 4.532 | CSL431 |
| 4.5625 | 12 1/2 | 1/8 | 4.8150 | 4.532 | CSL531 |
| 4.6250 | 12 1/2 | 3/32 | 4.8155 | 4.595 | CSL423 |
| 4.6250 | 12 1/2 | 1/8 | 4.8780 | 4.595 | CSL523 |
| 4.6875 | 13 | 3/32 | 4.8780 | 4.657 | CSL464 |
| 4.6875 | 13 | 1/8 | 4.9405 | 4.657 | CSL564 |
| 4.7500 | 14 | 3/32 | 4.9405 | 4.720 | CSL465 |
| 4.7500 | 14 | 1/8 | 5.0030 | 4.720 | CSL565 |

"N" Denotes "Notched"

UNIVERSAL PROGRESSIVE SIZE CHART

| BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" | SLEEVE NUMBER |
|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| 4.7500 | 12 1/4 | 1/8 | 5.0030 | 4.720 | CSL9014 |
| 4.8750 | 7 5/8 | 3/32 | 5.0655 | 4.845 | CSL113 |
| 4.8750 | 7 5/8 | 1/8 | 5.1280 | 4.845 | CSL213 |
| 4.8750 | 13 | 1/8 | 5.1280 | 4.845 | CSL525 |
| 5.0000 | 13 | 1/8 | 5.2530 | 4.970 | CSL526 |
| 5.0000 | 13 | 1/8 + .015 | 5.2680 | 4.970 | CSL526.015 |
| 5.0000 | 14 | 3/32 | 5.1915 | 4.970 | CSL426 |
| 5.0625 | 14 | 1/8 | 5.3165 | 5.032 | CSL566 |
| 5.1250 | 7 1/4 | 3/32 | 5.3155 | 5.095 | CSL1164 |
| 5.1250 | 7 1/4 | 1/8 | 5.3790 | 5.095 | CSL2264 |
| 5.1250 | 14 | 1/8 | 5.3790 | 5.095 | CSL567 |
| 5.2500 | 14 1/4 | 1/8 | 5.5040 | 5.220 | CSL568 |
| 5.3750 | 14 1/4 | 1/8 | 5.6290 | 5.345 | CSL569 |
| 5.5000 | 17 1/2 | 1/8 | 5.7540 | 5.470 | CSL570 |
| 5.6250 | 17 1/2 | 1/8 | 5.8790 | 5.595 | CSL571 |
| 5.7500 | 17 1/2 | 1/8 | 6.0040 | 5.720 | CSL572 |
| 5.7500 | 17 1/2 | 1/8 + .032 | 6.0640 | 5.720 | CSL9157 |
| 5.8750 | 17 1/2 | 1/8 | 6.1290 | 5.845 | CSL573 |
| 6.0000 | 17 1/2 | 1/8 | 6.2540 | 5.970 | CSL574 |
| 6.1250 | 17 1/2 | 1/8 | 6.3790 | 6.095 | CSL575 |
| 6.2500 | 17 1/2 | 1/8 | 6.5040 | 6.220 | CSL576 |
| 6.5000 | 17 | 1/8 | 6.7540 | 6.470 | CSL577 |
| 6.7500 | 17 | 1/8 | 7.0050 | 6.720 | CSL578 |
| 7.0000 | 17 | 3/32 | 7.1925 | 6.960 | CSL479 |
| 7.0000 | 17 | 1/8 | 7.2550 | 6.970 | CSL579 |
| 7.2500 | 22 | 1/8 | 7.5050 | 7.220 | CSL580 |
| 7.5000 | 22 | 1/8 | 7.7550 | 7.470 | CSL581 |
| 7.7500 | 22 | 1/8 | 8.0050 | 7.720 | CSL582 |
| 7.8640 | 11 3/8 | 0.1325 | 8.1290 | 7.834 | CSL9095 |
| 7.9680 | 22 | 0.1755 | 8.3180 | 7.938 | CSL9079 |
| 8.0000 | 22 | 1/8 | 8.2550 | 7.970 | CSL583 |
| 8.5000 | 24 | 1/8 | 8.7550 | 8.470 | CSL584 |

"N" Denotes "Notched"

FINISHED CYLINDER SLEEVE APPLICATIONS

ALLIS CHALMERS

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|--|-----------------|---------------|--------|------|----------------|-----------------|------------------|-------------------|
| 685T, 6000, 7000, 10000, 11000 MARK II Diesel Engines | CSL344FS | 4.4375 | 4.4375 | | 10.8125 | 5.251 | 0.3163 | Includes seal kit |
| D175, DA175, D262, DA262, G262 Diesel & Gas Engines | CSL345FS | 3.5625 | 3.5625 | | 8.0625 | 3.980 | 0.250 | Includes seal kit |
| B, BE, B15, B125 Gas Engines | CSL338FS | 3.375 | 3.375 | | 6.5625 | 3.994 | 0.248 | Includes seal kit |
| D2200, D2800, D2900, 433, 433T 649, 649T Diesel Engines & G2800 Gas Engine | CSL336FS | 3.875 | 3.875 | | 8.125 | 4.627 | 0.319 | Includes seal kit |

CASE

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|--|-----------------|---------------|-------|------|----------------|-----------------|------------------|-------------------|
| A-267D, A-401D Diesel Engines | CSL343FS | 4.125 | 4.125 | | 9.781 | 4.997 | 0.252 | Includes seal kit |
| A-301, A-301D (After S/N 7070351) & A-301DF, A-451D Diesel Engines | CSL342FS | 4.375 | 4.375 | | 10.200 | 5.172 | 0.252 | Includes seal kit |
| A-301BD, A-451BD, A-451BDT Diesel Engines | CSL340FS | 4.375 | 4.375 | | 10.200 | 5.125 | 0.252 | Includes seal kit |

CADILLAC/CHEVROLET/GM

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|--|----------------------|---------------|-------|-------|----------------|-----------------|------------------|--|
| 2.0/2.2 - 4 Cyl. - 2002-09 Ecotec | CSL9326F | 3.390 | 3.358 | 3.512 | 5.595 | 3.795 | 0.188 | Semi finished I.D. |
| 2.3-A,B - 4 Cyl. - 1971-77 Vega | CSL307FXV | 3.500 | 3.500 | 3.744 | 5.750 | 3.742 | 0.180 | I.D. Is finished honed |
| 2.4 - 4 Cyl. 2006-12 Ecotec | CSL9349F | 3.465 | 3.435 | 3.580 | 5.590 | 3.758 | 0.188 | Semi finished I.D. |
| 2.8-T - 4 Cyl. - 2004-06 Vortec | CSL331F | 3.661 | 3.632 | 3.800 | 5.694 | 4.054 | 0.195 | Semi finished I.D. |
| 2.9-9 - 4 Cyl. - 2007-08 Vortec | CSL356F | 3.760 | 3.730 | 3.904 | 5.770 | 4.035 | 0.182 | Semi finished I.D. |
| 3.5-6 - 5 Cyl. - 2004-06 Vortec | CSL331F | 3.661 | 3.632 | 3.800 | 5.694 | 4.054 | 0.195 | Semi finished I.D.. |
| 3.7-E - 5 Cyl. - 2007-08 Vortec | CSL356F | 3.760 | 3.730 | 3.904 | 5.770 | 4.035 | 0.182 | Semi finished I.D. |
| 4.1-8 - 8 Cyl. - 1982-88 (Cadillac) | CSL327F SA161 | 3.465 | 3.465 | 3.892 | 5.580 | | | I.D. Is finished honed I.D. Is finished honed |
| 4.2-S - 6 Cyl. - 2002-08 Vortec | CSL331F | 3.661 | 3.632 | 3.800 | 5.694 | 4.054 | 0.195 | Semi finished I.D. |
| 4.5-5 - 8 Cyl. - 1988-89 (Cadillac) | CSL328F SA171 | 3.620 | | | | | | I.D. Is finished honed I.D. Is finished honed |
| 4.5-3,8 - 8 Cyl. - 1990-92 (Cadillac) | CSL328F SA170 | 3.620 | | | | | | I.D. Is finished honed I.D. Is finished honed |
| 4.9-B - 8 Cyl. - 1991-95 (Cadillac) | CSL328F SA170 | 3.620 | | | | | | I.D. Is finished honed I.D. Is finished honed |
| 5.3 (Gen IV) - 8 Cyl. - 2006-09 AL Block | CSL355F | 3.780 | 3.760 | 4.180 | 5.600 | 4.320 | 0.285 | Semi finished I.D. |
| 5.7-G,S - 8 Cyl. - 1997-04 (LS1) | CSL332F | 3.900 | 3.870 | 4.180 | 5.600 | 4.320 | 0.285 | Semi finished I.D. |

FINISHED CYLINDER SLEEVE APPLICATIONS

CUMMINS

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|--|-----------------|---------------|-------|-------|----------------|-----------------|------------------|---|
| 14L OHV, NT-NH 855 OE# 3055099 Diesel Engine | CSL335FS | 5.500 | 5.500 | 6.200 | 11.290 | 6.560 | 0.355 | I.D. Is finished honed (Includes O-Rings) |

FORD INDUSTRIAL / TRACTOR

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|--|----------------|---------------|-------|-------|----------------|-----------------|------------------|--------------------------------------|
| 120 - 4 Cyl. - 1939-51 2N, 8N, 9N | CSL301F | 3.188 | 3.188 | 3.270 | 6.500 | 3.342 | 0.051 | 0.040 Wall I.D. Is finished honed |
| | CSL304F | 3.188 | 3.188 | 3.367 | 6.500 | 3.408 | 0.060 | 0.090 Wall |
| | CSL105F | 3.188 | 3.157 | 3.378 | 6.500 | 3.433 | 0.090 | 0.095 Wall |
| 134 - 4 Cyl. - 1953-65 NAA, NAB 500 - 700 Series | CSL307F | 3.438 | 3.438 | 3.651 | 6.940 | 3.742 | 0.181 | 0.109 Wall I.D. Is finished honed |
| 172 - 4 Cyl. - 1955-65 800, 900 Series Gas, Kerosene & LPG | CSL308F | 3.900 | 3.900 | 4.101 | 6.940 | 4.242 | 0.181 | 0.100 Wall I.D. Is finished honed |

JOHN DEERE

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|---|-----------------|---------------|-------|-------|----------------|-----------------|------------------|-------------------|
| 254, 381, 4270 (Blocks marked R26120 R32020, R40850) JD404(Blocks marked R26070, R33180, R34340, R40890, R40900) | CSL341FS | 4.250 | 4.250 | 4.250 | 9.125 | 5.125 | 0.253 | Includes seal kit |

HERCULES

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|-------------|----------------|---------------|-------|-------|----------------|-----------------|------------------|------------------------|
| DJXC | CSL333F | 3.750 | 3.750 | 3.999 | 8.940 | 4.085 | 1.192 | I.D. Is finished honed |

NAVISTAR / IHC

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|------------------------------|----------------|---------------|-------|-------|----------------|-----------------|------------------|------------------------|
| RD372, 406, 450, 450A, RED50 | CSL325F | 4.375 | 4.375 | 4.503 | 8.690 | 4.565 | 0.125 | I.D. Is finished honed |

TOYOTA

| APPLICATION | PART# | STANDARD BORE | I.D. | O.D. | OVERALL LENGTH | FLANGE DIAMETER | FLANGE THICKNESS | |
|-----------------------------|----------------|---------------|-------|-------|----------------|-----------------|------------------|--------------------|
| 1MZFE 3.0L - V6 - 1994-2006 | CSL357F | 87MM | 3.424 | 3.605 | 5.221 | 3.83 | 0.170 | Semi finished I.D. |
| 3MZFE 3.3L - V6 - 2004-2009 | CSL358F | 92MM | 3.602 | 3.744 | 5.143 | 4.005 | 0.160 | Semi finished I.D. |

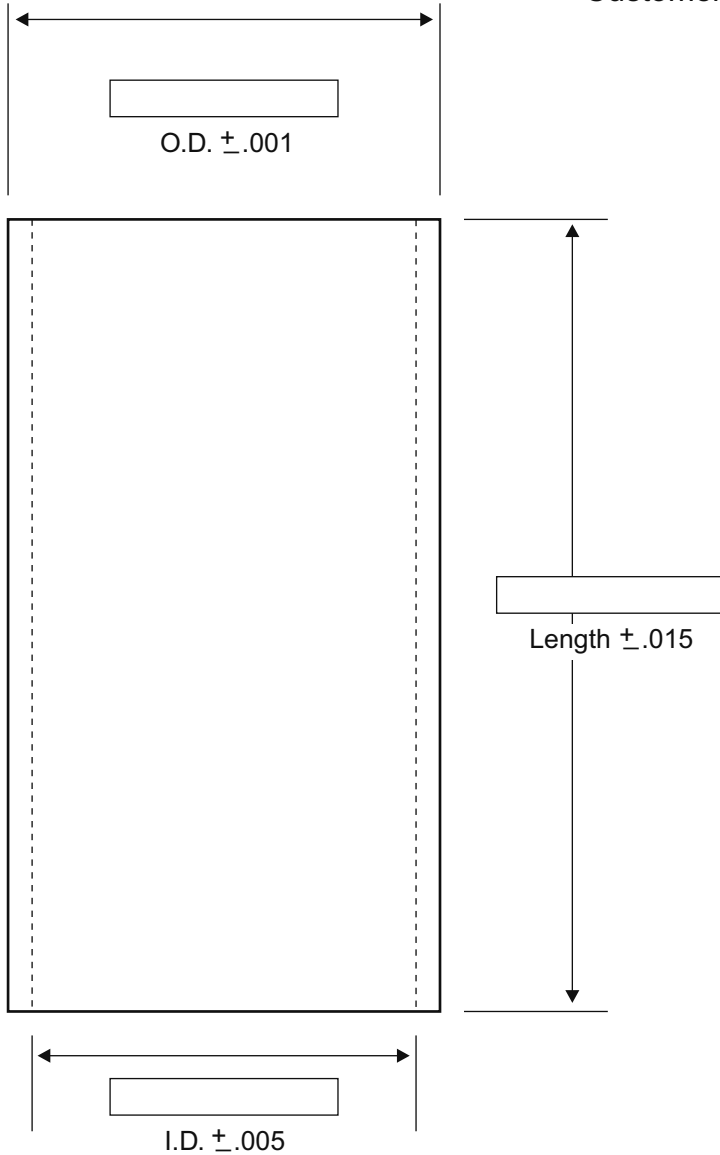


www.mellingcylindersleeves.com

Custom Sleeve Information Template

Customer Quantity _____

A.

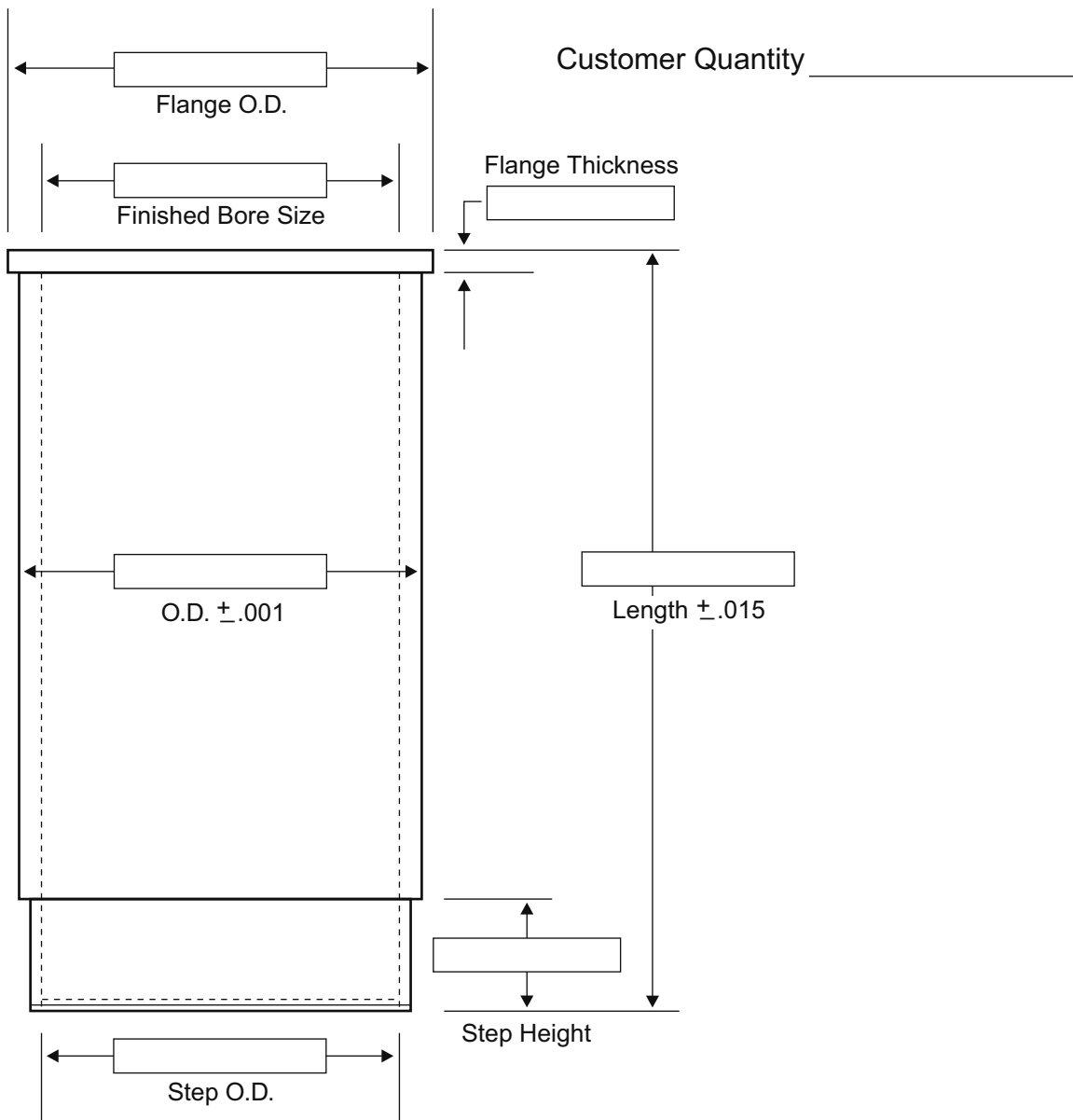


Customer # (if applicable) _____ Contact Name _____

Phone _____ Fax _____

Email _____

B.



Customer # (if applicable) _____ Contact Name _____

Phone _____ Fax _____

Email _____

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|-------------------------------------|---------------|------------------|----------------|----------------|----------------|
| CSL101 | 3.8750 | 7 1/2 | 3/32 | 4.0655 | 3.845 |
| (Flange O.D. 4.200 x .125) CSL101FD | 3.8750 | 6 3/4 | 3/32 | 4.065 | 3.845 |
| CSL102 | 3.5625 | 6 7/8 | 3/32 | 3.7530 | 3.532 |
| CSL103 | 3.9375 | 6 3/4 | 3/32 | 4.1280 | 3.907 |
| CSL104 | 3.5000 | 5 1/8 | 3/32 | 3.6905 | 3.470 |
| CSL105 | 3.1875 | 6 1/2 | 3/32 | 3.3780 | 3.157 |
| CSL106 | 4.2500 | 7 1/2 | 3/32 | 4.4405 | 4.220 |
| CSL107 | 3.3125 | 7 9/16 | 3/32 | 3.5030 | 3.282 |
| CSL108 | 3.5000 | 8 1/16 | 3/32 | 3.6905 | 3.470 |
| CSL109 | 3.5000 | 7 1/16 | 3/32 | 3.6905 | 3.470 |
| CSL110 | 4.3300 | 7 3/4 | 3/32 | 4.5210 | 4.300 |
| CSL111 | 3.5625 | 7 7/32 | 3/32 | 3.7530 | 3.532 |
| CSL112 | 3.3000 | 8 3/16 | 3/32 | 3.4905 | 3.270 |
| CSL113 | 4.8750 | 7 5/8 | 3/32 | 5.0655 | 4.845 |
| CSL114 | 4.3200 | 7 | 3/32 | 4.5105 | 4.290 |
| CSL115N | 3.2500 | 8 1/16 | 3/32 | 3.4405 | 3.220 |
| CSL115NX | 3.2500 | 8 1/16 | 1/16 | 3.3780 | 3.220 |
| CSL116 | 3.9100 | 6 | 3/32 | 4.1005 | 3.880 |
| CSL117 | 3.7500 | 6 1/16 | 3/32 | 3.9405 | 3.720 |
| CSL118 | 4.1500 | 6 1/8 | 3/32 | 4.3405 | 4.120 |
| CSL119N | 3.4375 | 8 1/8 | 3/32 | 3.6280 | 3.407 |
| CSL119NX | 3.4375 | 8 1/8 | 1/16 | 3.5655 | 3.407 |
| CSL120 | 3.7500 | 7 1/4 | 3/32 | 3.9405 | 3.720 |
| CSL121 | 4.3200 | 6 3/4 | 3/32 | 4.5105 | 4.290 |
| CSL122A | 3.8750 | 5 7/8 | 3/32 | 4.0655 | 3.845 |
| CSL123 | 3.5625 | 7 9/16 | 3/32 | 3.7530 | 3.532 |
| CSL124 | 3.6800 | 6 | 3/32 | 3.8705 | 3.650 |
| CSL125 | 3.3750 | 7 5/16 | 3/32 | 3.5655 | 3.345 |
| CSL126 | 3.7500 | 5 7/8 | 3/32 | 3.9405 | 3.720 |
| CSL127 | 4.0000 | 5 5/8 | 3/32 | 4.1905 | 3.970 |
| CSL128 | 4.3600 | 6 | 3/32 | 4.5505 | 4.330 |
| CSL129 | 4.0000 | 6 1/16 | 3/32 | 4.1905 | 3.970 |
| CSL130 | 4.1250 | 6 3/4 | 3/32 | 4.3155 | 4.080 |
| CSL130X | 4.1250 | 6 3/4 | 1/16 | 4.2530 | 4.095 |
| CSL131 | 4.0500 | 6 1/4 | 3/32 | 4.2405 | 4.020 |
| CSL133 | 3.8750 | 6 3/8 | 3/32 | 4.0655 | 3.845 |
| CSL134 | 3.6250 | 7 | 3/32 | 3.8155 | 3.595 |
| CSL135 | 3.1250 | 8 1/8 | 3/32 | 3.3155 | 3.095 |
| CSL136 | 4.0000 | 6 1/4 | 3/32 | 4.1905 | 3.970 |
| CSL136HP | 4.0000 | 6 1/4 | 3/32 | 4.1905 | 3.970 |
| CSL137 | 4.0000 | 6 7/8 | 3/32 | 4.1905 | 3.970 |
| CSL138 | 3.8000 | 6 | 3/32 | 3.9905 | 3.770 |
| CSL138X | 3.8000 | 6 | 0.048 | 3.8950 | 3.770 |
| CSL139 | 3.7500 | 6 | 3/32 | 3.9405 | 3.720 |
| CSL141 | 3.5000 | 5 15/16 | 3/32 | 3.6905 | 3.470 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL142 | 3.6250 | 6 11/16 | 3/32 | 3.8155 | 3.595 |
| CSL143 | 3.8000 | 6 15/16 | 3/32 | 3.9905 | 3.770 |
| CSL144 | 3.6250 | 6 | 3/32 | 3.8155 | 3.595 |
| CSL145 | 3.7190 | 7 3/4 | 3/32 | 3.9095 | 3.689 |
| CSL146 | 3.7810 | 7 7/8 | 3/32 | 3.9710 | 3.751 |
| CSL147 | 3.7400 | 6 3/4 | .083 | 3.9070 | 3.689 |
| CSL150 | 3.0000 | 6 3/8 | 3/32 | 3.1905 | 2.970 |
| CSL151 | 3.1875 | 6 | 3/32 | 3.3780 | 3.157 |
| CSL152 | 3.4375 | 7 1/2 | 3/32 | 3.6280 | 3.407 |
| CSL152N | 3.4375 | 7 1/2 | 3/32 | 3.6280 | 3.407 |
| CSL153 | 3.1875 | 7 1/2 | 3/32 | 3.3780 | 3.157 |
| CSL153N | 3.1875 | 7 1/2 | 3/32 | 3.3780 | 3.157 |
| CSL154N | 3.0000 | 7 1/2 | 3/32 | 3.1905 | 2.970 |
| CSL155 | 3.4000 | 7 1/16 | 3/32 | 3.5905 | 3.370 |
| CSL156 | 3.4000 | 5 15/16 | 3/32 | 3.5905 | 3.370 |
| CSL157 | 4.0000 | 7 7/8 | 3/32 | 4.1905 | 3.970 |
| CSL157X | 4.0000 | 7 7/8 | 0.060 | 4.1200 | 3.970 |
| CSL158 | 3.5625 | 5 15/16 | 3/32 | 3.7530 | 3.532 |
| CSL159 | 4.0000 | 5 1/2 | 3/32 | 4.1905 | 3.970 |
| CSL160 | 4.0400 | 6 3/4 | 3/32 | 4.2305 | 4.010 |
| CSL161 | 4.1250 | 6 1/4 | 3/32 | 4.3155 | 4.095 |
| CSL161HP | 4.1250 | 6 1/4 | 3/32 | 4.3155 | 4.095 |
| CSL162 | 3.8125 | 6 7/8 | 3/32 | 4.0030 | 3.782 |
| CSL164 | 4.1250 | 6 1/16 | 3/32 | 4.3155 | 4.095 |
| CSL165 | 3.8750 | 7 | 3/32 | 4.0655 | 3.845 |
| CSL165X | 3.8750 | 7 | 1/16 | 4.0030 | 3.845 |
| CSL167 | 4.0625 | 6 5/16 | 3/32 | 4.2530 | 4.032 |
| CSL168 | 4.5625 | 7 5/8 | 3/32 | 4.7525 | 4.532 |
| CSL169 | 4.3420 | 6 1/4 | 3/32 | 4.5325 | 4.312 |
| CSL169X | 4.3420 | 6 1/4 | 1/16 | 4.4660 | 4.312 |
| CSL170 | 3.1250 | 6 7/8 | 3/32 | 3.3155 | 3.095 |
| CSL172 | 4.1250 | 6 1/2 | 3/32 | 4.3155 | 4.095 |
| CSL173 | 3.7810 | 5 1/2 | 3/32 | 3.9710 | 3.751 |
| CSL174 | 3.6610 | 5 1/16 | 3/32 | 3.8515 | 3.631 |
| CSL175 | 4.0000 | 9 3/8 | 3/32 | 4.1905 | 3.970 |
| CSL179 | 4.0940 | 6 | 3/32 | 4.2845 | 4.064 |
| CSL180 | 4.0000 | 6 1/2 | 3/32 | 4.1905 | 3.970 |
| CSL180X | 4.0000 | 6 1/2 | 1/16 | 4.1280 | 3.970 |
| CSL181 | 3.8750 | 6 1/4 | 3/32 | 4.0655 | 3.845 |
| CSL182 | 3.8750 | 6 7/16 | 3/32 | 4.0655 | 3.845 |
| CSL183 | 3.8000 | 6 3/8 | 3/32 | 3.9905 | 3.770 |
| CSL186 | 4.1875 | 6 3/4 | 3/32 | 4.3780 | 4.157 |
| CSL187 | 4.3000 | 7 1/2 | 3/32 | 4.4905 | 4.270 |
| CSL188 | 3.8750 | 5 3/4 | 3/32 | 4.0655 | 3.845 |
| CSL190A | 3.5750 | 5 3/8 | 3/32 | 3.7655 | 3.545 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|------------------|------------------|---------------------|-------------------|-------------------|-------------------|
| CSL193 | 4.0000 | 5 1/16 | 3/32 | 4.1905 | 3.970 |
| CSL194 | 3.6800 | 5 1/8 | 3/32 | 3.8705 | 3.650 |
| CSL195 | 4.0500 | 6 5/16 | 3/32 | 4.2405 | 4.020 |
| CSL195X | 4.0500 | 6 5/16 | 1/16 | 4.1780 | 4.020 |
| CSL196 | 4.2500 | 6 1/2 | 3/32 | 4.4405 | 4.220 |
| CSL196X | 4.2500 | 6 1/2 | 1/16 | 4.3780 | 4.220 |
| CSL197 | 4.2500 | 7 | 3/32 | 4.4405 | 4.220 |
| CSL197HP | 4.2500 | 7 | 3/32 | 4.4405 | 4.220 |
| CSL197X | 4.2500 | 7 | 1/16 | 4.3780 | 4.220 |
| CSL198 | 4.0000 | 5 7/8 | 3/32 | 4.1905 | 3.970 |
| CSL198X | 4.0000 | 5 7/8 | 1/16 | 4.1280 | 3.970 |
| CSL199 | 4.2500 | 6 | 3/32 | 4.4405 | 4.220 |
| CSL201 | 3.8750 | 7 1/2 | 1/8 | 4.1280 | 3.845 |
| CSL202 | 3.5625 | 6 7/8 | 1/8 | 3.8155 | 3.532 |
| CSL203 | 3.9375 | 6 3/4 | 1/8 | 4.1905 | 3.907 |
| CSL204 | 3.5000 | 5 1/8 | 1/8 | 3.7530 | 3.470 |
| CSL205 | 3.1875 | 6 1/2 | 1/8 | 3.4405 | 3.157 |
| CSL206 | 4.2500 | 7 1/2 | 1/8 | 4.5030 | 4.220 |
| CSL207 | 3.3125 | 7 9/16 | 1/8 | 3.5655 | 3.282 |
| CSL208 | 3.5000 | 8 1/16 | 1/8 | 3.7530 | 3.470 |
| CSL209 | 3.5000 | 7 1/16 | 1/8 | 3.7530 | 3.470 |
| CSL211 | 3.5625 | 7 7/32 | 1/8 | 3.8155 | 3.532 |
| CSL212 | 3.3000 | 8 3/16 | 1/8 | 3.5530 | 3.270 |
| CSL213 | 4.8750 | 7 5/8 | 1/8 | 5.1280 | 4.845 |
| CSL214 | 4.3200 | 7 | 1/8 | 4.5730 | 4.290 |
| CSL215N | 3.2500 | 8 1/16 | 1/8 | 3.5030 | 3.220 |
| CSL216 | 3.9100 | 6 | 1/8 | 4.1630 | 3.880 |
| CSL217 | 3.7500 | 6 1/16 | 1/8 | 4.0030 | 3.720 |
| CSL218 | 4.1500 | 6 1/8 | 1/8 | 4.4030 | 4.120 |
| CSL219N | 3.4375 | 8 1/8 | 1/8 | 3.6905 | 3.407 |
| CSL220 | 3.7500 | 7 1/4 | 1/8 | 4.0030 | 3.720 |
| CSL221 | 4.3200 | 6 3/4 | 1/8 | 4.5730 | 4.290 |
| CSL222A | 3.8750 | 5 7/8 | 1/8 | 4.1280 | 3.845 |
| CSL223 | 3.5625 | 7 9/16 | 1/8 | 3.8155 | 3.532 |
| CSL224 | 3.6800 | 6 | 1/8 | 3.9330 | 3.650 |
| CSL225 | 3.3750 | 7 5/16 | 1/8 | 3.6280 | 3.345 |
| CSL226 | 3.7500 | 5 7/8 | 1/8 | 4.0030 | 3.720 |
| CSL227 | 4.0000 | 5 5/8 | 1/8 | 4.2530 | 3.970 |
| CSL228 | 4.3600 | 6 | 1/8 | 4.6130 | 4.330 |
| CSL229 | 4.0000 | 6 1/16 | 1/8 | 4.2530 | 3.970 |
| CSL230 | 4.1250 | 6 3/4 | 1/8 | 4.3780 | 4.095 |
| CSL231 | 4.0500 | 6 1/4 | 1/8 | 4.3030 | 4.020 |
| CSL233 | 3.8750 | 6 3/8 | 1/8 | 4.1280 | 3.845 |
| CSL234 | 3.6250 | 7 | 1/8 | 3.8780 | 3.595 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|------------------|---------------|------------------|----------------|----------------|----------------|
| CSL235 | 3.1250 | 8 1/8 | 1/8 | 3.3780 | 3.095 |
| CSL236 | 4.0000 | 6 1/4 | 1/8 | 4.2530 | 3.970 |
| CSL236HP | 4.0000 | 6 1/4 | 1/8 | 4.2530 | 3.970 |
| CSL237 | 4.0000 | 6 7/8 | 1/8 | 4.2530 | 3.970 |
| CSL238 | 3.8000 | 6 | 1/8 | 4.0530 | 3.770 |
| CSL239 | 3.7500 | 6 | 1/8 | 4.0030 | 3.720 |
| CSL241 | 3.5000 | 5 15/16 | 1/8 | 3.7530 | 3.470 |
| CSL242 | 3.6250 | 6 11/16 | 1/8 | 3.8780 | 3.595 |
| CSL243 | 3.8000 | 6 15/16 | 1/8 | 4.0530 | 3.770 |
| CSL244 | 3.6250 | 6 | 1/8 | 3.8780 | 3.595 |
| CSL245 | 3.7190 | 7 3/4 | 1/8 | 3.9720 | 3.689 |
| CSL246 | 3.7810 | 7 7/8 | 1/8 | 4.0335 | 3.751 |
| CSL250 | 3.0000 | 6 3/8 | 1/8 | 3.2530 | 2.970 |
| CSL251 | 3.1875 | 6 | 1/8 | 3.4405 | 3.157 |
| CSL252 | 3.4375 | 7 1/2 | 1/8 | 3.6905 | 3.407 |
| CSL252N | 3.4375 | 7 1/2 | 1/8 | 3.6905 | 3.407 |
| CSL253 | 3.1875 | 7 1/2 | 1/8 | 3.4405 | 3.157 |
| CSL253N | 3.1875 | 7 1/2 | 1/8 | 3.4405 | 3.157 |
| CSL254N | 3.0000 | 7 1/2 | 1/8 | 3.2530 | 2.970 |
| CSL255 | 3.4000 | 7 1/16 | 1/8 | 3.6530 | 3.370 |
| CSL256 | 3.4000 | 5 15/16 | 1/8 | 3.6530 | 3.370 |
| CSL257 | 4.0000 | 7 7/8 | 1/8 | 4.2530 | 3.970 |
| CSL258 | 3.5625 | 5 15/16 | 1/8 | 3.8155 | 3.532 |
| CSL259 | 4.0000 | 5 1/2 | 1/8 | 4.2530 | 3.970 |
| CSL260 | 4.0400 | 6 3/4 | 1/8 | 4.2930 | 4.010 |
| CSL261 | 4.1250 | 6 1/4 | 1/8 | 4.3780 | 4.095 |
| CSL261HP | 4.1250 | 6 1/4 | 1/8 | 4.3780 | 4.095 |
| CSL262 | 3.8125 | 6 7/8 | 1/8 | 4.0655 | 3.782 |
| CSL264 | 4.1250 | 6 1/16 | 1/8 | 4.3780 | 4.095 |
| CSL265 | 3.8750 | 7 | 1/8 | 4.1280 | 3.845 |
| CSL267 | 4.0625 | 6 5/16 | 1/8 | 4.3155 | 4.032 |
| CSL268 | 4.5625 | 7 5/8 | 1/8 | 4.8150 | 4.532 |
| CSL269 | 4.3420 | 6 1/4 | 1/8 | 4.5950 | 4.312 |
| CSL270 | 3.1250 | 6 7/8 | 1/8 | 3.3780 | 3.095 |
| CSL272 | 4.1250 | 6 1/2 | 1/8 | 4.3780 | 4.095 |
| CSL273 | 3.7810 | 5 1/2 | 1/8 | 4.0335 | 3.751 |
| CSL274 | 3.6610 | 5 1/16 | 1/8 | 3.9140 | 3.631 |
| CSL275 | 4.0000 | 9 3/8 | 1/8 | 4.2530 | 3.970 |
| CSL276 ANGLE TOP | 4.5000 | 8 3/4 | 1/8 | 4.7530 | 4.470 |
| CSL279 | 4.0940 | 6 | 1/8 | 4.3468 | 4.064 |
| CSL280 | 4.0000 | 6 1/2 | 1/8 | 4.2530 | 3.970 |
| CSL281 | 3.8750 | 6 1/4 | 1/8 | 4.1280 | 3.845 |
| CSL282 | 3.8750 | 6 7/16 | 1/8 | 4.1280 | 3.845 |
| CSL283 | 3.8000 | 6 3/8 | 1/8 | 4.0530 | 3.770 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL286 | 4.1875 | 6 3/4 | 1/8 | 4.4405 | 4.157 |
| CSL287 | 4.3000 | 7 1/2 | 1/8 | 4.5530 | 4.270 |
| CSL288 | 3.8750 | 5 3/4 | 1/8 | 4.1280 | 3.845 |
| CSL290A | 3.5750 | 5 3/8 | 1/8 | 3.8280 | 3.545 |
| CSL293 | 4.0000 | 5 1/16 | 1/8 | 4.2530 | 3.970 |
| CSL294 | 3.6800 | 5 1/8 | 1/8 | 3.9330 | 3.650 |
| CSL295 | 4.0500 | 6 5/16 | 1/8 | 4.3030 | 4.020 |
| CSL296 | 4.2500 | 6 1/2 | 1/8 | 4.5030 | 4.220 |
| CSL297 | 4.2500 | 7 | 1/8 | 4.5030 | 4.220 |
| CSL297HP | 4.2500 | 7 | 1/8 | 4.5030 | 4.220 |
| CSL298 | 4.0000 | 5 7/8 | 1/8 | 4.2530 | 3.970 |
| CSL299 | 4.2500 | 6 | 1/8 | 4.5030 | 4.220 |
| CSL401 | 2.7500 | 7 1/2 | 3/32 | 2.9405 | 2.720 |
| CSL402 | 2.8750 | 8 1/4 | 3/32 | 3.0655 | 2.845 |
| CSL403 | 3.0000 | 8 1/4 | 3/32 | 3.1905 | 2.970 |
| CSL404 | 3.0625 | 8 1/4 | 3/32 | 3.2530 | 3.032 |
| CSL405 | 3.1250 | 9 | 3/32 | 3.3155 | 3.095 |
| CSL406A | 3.1875 | 9 1/4 | 3/32 | 3.3780 | 3.157 |
| CSL407 | 3.2500 | 9 1/4 | 3/32 | 3.4405 | 3.220 |
| CSL408 | 3.3125 | 9 1/4 | 3/32 | 3.5030 | 3.282 |
| CSL409 | 3.3750 | 9 1/4 | 3/32 | 3.5655 | 3.345 |
| CSL410 | 3.4375 | 9 1/4 | 3/32 | 3.6280 | 3.407 |
| CSL411 | 3.5000 | 9 1/4 | 3/32 | 3.6905 | 3.470 |
| CSL412 | 3.5625 | 10 | 3/32 | 3.7530 | 3.532 |
| CSL413A | 3.6250 | 10 1/4 | 3/32 | 3.8155 | 3.595 |
| CSL414 | 3.6875 | 10 1/4 | 3/32 | 3.8780 | 3.657 |
| CSL415A | 3.7500 | 10 1/4 | 3/32 | 3.9405 | 3.720 |
| CSL416A | 3.8750 | 10 1/4 | 3/32 | 4.0655 | 3.845 |
| CSL417A | 4.0000 | 10 1/4 | 3/32 | 4.1905 | 3.970 |
| CSL418A | 4.1250 | 10 1/4 | 3/32 | 4.3155 | 4.095 |
| CSL419A | 4.2500 | 12 1/4 | 3/32 | 4.4405 | 4.220 |
| CSL420A | 4.3125 | 12 3/4 | 3/32 | 4.5030 | 4.282 |
| CSL421A | 4.3750 | 12 1/4 | 3/32 | 4.5655 | 4.345 |
| CSL422A | 4.5000 | 12 1/4 | 3/32 | 4.6905 | 4.470 |
| CSL423 | 4.6250 | 12 1/2 | 3/32 | 4.8155 | 4.595 |
| CSL426 | 5.0000 | 14 | 3/32 | 5.1915 | 4.970 |
| CSL427 | 4.4375 | 12 3/4 | 3/32 | 4.6280 | 4.407 |
| CSL428A | 3.8125 | 10 1/4 | 3/32 | 4.0030 | 3.782 |
| CSL429A | 3.9375 | 10 1/4 | 3/32 | 4.1280 | 3.907 |
| CSL430 | 4.0625 | 11 | 3/32 | 4.2530 | 4.032 |
| CSL431 | 4.5625 | 12 1/2 | 3/32 | 4.7525 | 4.532 |
| CSL432A | 4.1875 | 12 1/4 | 3/32 | 4.3780 | 4.157 |
| CSL433 | 3.0730 | 9 1/4 | 3/32 | 3.2530 | 3.043 |
| CSL446 | 2.3750 | 7 | 3/32 | 2.5655 | 2.345 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL447 | 2.5000 | 7 | 3/32 | 2.6905 | 2.470 |
| CSL448 | 2.5625 | 7 | 3/32 | 2.7530 | 2.532 |
| CSL449 | 2.6250 | 7 | 3/32 | 2.8155 | 2.595 |
| CSL450 | 2.0000 | 6 1/2 | 3/32 | 2.1905 | 1.970 |
| CSL451 | 2.0625 | 6 1/2 | 3/32 | 2.2530 | 2.032 |
| CSL452 | 2.1250 | 6 1/2 | 3/32 | 2.3155 | 2.095 |
| CSL453 | 2.1875 | 6 1/2 | 3/32 | 2.3780 | 2.157 |
| CSL454 | 2.2500 | 6 1/2 | 3/32 | 2.4405 | 2.220 |
| CSL455 | 2.3125 | 6 1/2 | 3/32 | 2.5030 | 2.282 |
| CSL456 | 2.3750 | 6 1/2 | 3/32 | 2.5655 | 2.345 |
| CSL457 | 2.4375 | 6 1/2 | 3/32 | 2.6280 | 2.407 |
| CSL458 | 2.5000 | 6 1/2 | 3/32 | 2.6905 | 2.470 |
| CSL459 | 2.5625 | 6 1/2 | 3/32 | 2.7530 | 2.532 |
| CSL460 | 2.6250 | 6 1/2 | 3/32 | 2.8155 | 2.595 |
| CSL461 | 2.6875 | 8 1/4 | 3/32 | 2.8780 | 2.657 |
| CSL462 | 2.8125 | 8 1/4 | 3/32 | 3.0030 | 2.782 |
| CSL463 | 2.9375 | 8 1/4 | 3/32 | 3.1280 | 2.907 |
| CSL464 | 4.6875 | 13 | 3/32 | 4.8780 | 4.657 |
| CSL465 | 4.7500 | 14 | 3/32 | 4.9405 | 4.720 |
| CSL479 | 7.0000 | 17 | 3/32 | 7.1925 | 6.960 |
| CSL485 | 2.7500 | 8 1/4 | 3/32 | 2.9405 | 2.720 |
| CSL486 | 3.0000 | 9 1/4 | 3/32 | 3.1905 | 2.970 |
| CSL487 | 4.3750 | 12 3/4 | 3/32 | 4.5655 | 4.345 |
| CSL488 | 2.6250 | 8 1/4 | 3/32 | 2.8155 | 2.595 |
| CSL489 | 4.0625 | 10 1/4 | 3/32 | 4.2530 | 4.032 |
| CSL490 | 4.1875 | 10 1/4 | 3/32 | 4.3780 | 4.157 |
| CSL501 | 2.7500 | 7 1/2 | 1/8 | 3.0030 | 2.720 |
| CSL502 | 2.8750 | 8 1/4 | 1/8 | 3.1280 | 2.845 |
| CSL503 | 3.0000 | 8 1/4 | 1/8 | 3.2530 | 2.970 |
| CSL504 | 3.0625 | 8 1/4 | 1/8 | 3.3155 | 3.032 |
| CSL505 | 3.1250 | 9 | 1/8 | 3.3780 | 3.095 |
| CSL506A | 3.1875 | 9 1/4 | 1/8 | 3.4405 | 3.157 |
| CSL506A.015 | 3.1875 | 9 1/4 | 1/8 +.015 | 3.4555 | 3.157 |
| CSL507 | 3.2500 | 9 1/4 | 1/8 | 3.5030 | 3.220 |
| CSL508 | 3.3125 | 9 1/4 | 1/8 | 3.5655 | 3.282 |
| CSL509 | 3.3750 | 9 1/4 | 1/8 | 3.6280 | 3.345 |
| CSL510 | 3.4375 | 9 1/4 | 1/8 | 3.6905 | 3.407 |
| CSL511 | 3.5000 | 9 1/4 | 1/8 | 3.7530 | 3.470 |
| CSL511.015 | 3.5000 | 9 1/4 | 1/8 +.015 | 3.7680 | 3.470 |
| CSL512 | 3.5625 | 10 | 1/8 | 3.8155 | 3.532 |
| CSL513A | 3.6250 | 10 1/4 | 1/8 | 3.8780 | 3.595 |
| CSL514 | 3.6875 | 10 1/4 | 1/8 | 3.9405 | 3.657 |
| CSL515A | 3.7500 | 10 1/4 | 1/8 | 4.0030 | 3.720 |
| CSL515A.015 | 3.7500 | 10 1/4 | 1/8 +.015 | 4.0180 | 3.720 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL516A | 3.8750 | 10 1/4 | 1/8 | 4.1280 | 3.845 |
| CSL516A.015 | 3.8750 | 10 1/4 | 1/8 +.015 | 4.1430 | 3.845 |
| CSL517A | 4.0000 | 10 1/4 | 1/8 | 4.2530 | 3.970 |
| CSL517A.015 | 4.0000 | 10 1/4 | 1/8 +.015 | 4.2680 | 3.970 |
| CSL518A | 4.1250 | 10 1/4 | 1/8 | 4.3780 | 4.095 |
| CSL518A.015 | 4.1250 | 10 1/4 | 1/8 +.015 | 4.3930 | 4.095 |
| CSL519A | 4.2500 | 12 1/4 | 1/8 | 4.5030 | 4.220 |
| CSL519A.015 | 4.2500 | 12 1/4 | 1/8 +.015 | 4.5180 | 4.220 |
| CSL520A | 4.3125 | 12 3/4 | 1/8 | 4.5655 | 4.282 |
| CSL521A | 4.3750 | 12 1/4 | 1/8 | 4.6280 | 4.345 |
| CSL521A.015 | 4.3750 | 12 1/4 | 1/8 +.015 | 4.6430 | 4.345 |
| CSL522A | 4.5000 | 12 1/4 | 1/8 | 4.7530 | 4.470 |
| CSL522A.015 | 4.5000 | 12 1/4 | 1/8 +.015 | 4.7680 | 4.470 |
| CSL523 | 4.6250 | 12 1/2 | 1/8 | 4.8780 | 4.595 |
| CSL525 | 4.8750 | 13 | 1/8 | 5.1280 | 4.845 |
| CSL526 | 5.0000 | 13 | 1/8 | 5.2530 | 4.970 |
| CSL526.015 | 5.0000 | 13 | 1/8 +.015 | 5.2680 | 4.970 |
| CSL527 | 4.4375 | 12 3/4 | 1/8 | 4.6900 | 4.407 |
| CSL528A | 3.8125 | 10 1/4 | 1/8 | 4.0655 | 3.782 |
| CSL529A | 3.9375 | 10 1/4 | 1/8 | 4.1905 | 3.907 |
| CSL530 | 4.0625 | 11 | 1/8 | 4.3155 | 4.032 |
| CSL531 | 4.5625 | 12 1/2 | 1/8 | 4.8150 | 4.532 |
| CSL532A | 4.1875 | 12 1/4 | 1/8 | 4.4405 | 4.157 |
| CSL550 | 2.0000 | 6 1/2 | 1/8 | 2.2530 | 1.970 |
| CSL551 | 2.0625 | 6 1/2 | 1/8 | 2.3155 | 2.032 |
| CSL552 | 2.1250 | 6 1/2 | 1/8 | 2.3780 | 2.095 |
| CSL553 | 2.1875 | 6 1/2 | 1/8 | 2.4405 | 2.157 |
| CSL554 | 2.2500 | 6 1/2 | 1/8 | 2.5030 | 2.220 |
| CSL555 | 2.3125 | 6 1/2 | 1/8 | 2.5655 | 2.282 |
| CSL556 | 2.3750 | 6 1/2 | 1/8 | 2.6280 | 2.345 |
| CSL557 | 2.4375 | 6 1/2 | 1/8 | 2.6905 | 2.407 |
| CSL558 | 2.5000 | 6 1/2 | 1/8 | 2.7530 | 2.470 |
| CSL559 | 2.5625 | 6 1/2 | 1/8 | 2.8155 | 2.532 |
| CSL560 | 2.6250 | 6 1/2 | 1/8 | 2.8780 | 2.595 |
| CSL561 | 2.6875 | 8 1/4 | 1/8 | 2.9405 | 2.657 |
| CSL562 | 2.8125 | 8 1/4 | 1/8 | 3.0655 | 2.782 |
| CSL563 | 2.9375 | 8 1/4 | 1/8 | 3.1905 | 2.907 |
| CSL564 | 4.6875 | 13 | 1/8 | 4.9405 | 4.657 |
| CSL565 | 4.7500 | 14 | 1/8 | 5.0030 | 4.720 |
| CSL566 | 5.0625 | 14 | 1/8 | 5.3165 | 5.032 |
| CSL567 | 5.1250 | 14 | 1/8 | 5.3790 | 5.095 |
| CSL568 | 5.2500 | 14 1/4 | 1/8 | 5.5040 | 5.220 |
| CSL569 | 5.3750 | 14 1/4 | 1/8 | 5.6290 | 5.345 |
| CSL570 | 5.5000 | 17 1/2 | 1/8 | 5.7540 | 5.470 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL571 | 5.6250 | 17 1/2 | 1/8 | 5.8790 | 5.595 |
| CSL572 | 5.7500 | 17 1/2 | 1/8 | 6.0040 | 5.720 |
| CSL573 | 5.8750 | 17 1/2 | 1/8 | 6.1290 | 5.845 |
| CSL574 | 6.0000 | 17 1/2 | 1/8 | 6.2540 | 5.970 |
| CSL575 | 6.1250 | 17 1/2 | 1/8 | 6.3790 | 6.095 |
| CSL576 | 6.2500 | 17 1/2 | 1/8 | 6.5040 | 6.220 |
| CSL577 | 6.5000 | 17 | 1/8 | 6.7540 | 6.470 |
| CSL578 | 6.7500 | 17 | 1/8 | 7.0050 | 6.720 |
| CSL579 | 7.0000 | 17 | 1/8 | 7.2550 | 6.970 |
| CSL580 | 7.2500 | 22 | 1/8 | 7.5050 | 7.220 |
| CSL581 | 7.5000 | 22 | 1/8 | 7.7550 | 7.470 |
| CSL582 | 7.7500 | 22 | 1/8 | 8.0050 | 7.720 |
| CSL583 | 8.0000 | 22 | 1/8 | 8.2550 | 7.970 |
| CSL584 | 8.5000 | 24 | 1/8 | 8.7550 | 8.470 |
| CSL585 | 2.7500 | 8 1/4 | 1/8 | 3.0030 | 2.720 |
| CSL586 | 3.0000 | 9 1/4 | 1/8 | 3.2530 | 2.970 |
| CSL587 | 4.3750 | 12 3/4 | 1/8 | 4.6280 | 4.345 |
| CSL588 | 2.6250 | 8 1/4 | 1/8 | 2.8780 | 2.595 |
| CSL589 | 4.0625 | 10 1/4 | 1/8 | 4.3155 | 4.033 |
| CSL591 | 4.1875 | 7 7/8 | 1/8 | 4.4405 | 4.157 |
| CSL601 | 2.8740 | 4 7/8 | 3/32 | 3.0645 | 2.844 |
| CSL602 | 3.3460 | 5 1/4 | 3/32 | 3.5365 | 3.316 |
| CSL603 | 3.4330 | 5 13/16 | 3/32 | 3.6235 | 3.403 |
| CSL604A | 2.8350 | 6 1/2 | 3/32 | 3.0255 | 2.805 |
| CSL605A | 2.9130 | 6 1/2 | 3/32 | 3.1035 | 2.883 |
| CSL606 | 2.9530 | 4 7/8 | 3/32 | 3.1435 | 2.923 |
| CSL607 | 2.8740 | 5 1/4 | 3/32 | 3.0645 | 2.844 |
| CSL608 | 3.4840 | 6 1/4 | 3/32 | 3.6745 | 3.454 |
| CSL609 | 3.1500 | 6 1/4 | 3/32 | 3.3405 | 3.120 |
| CSL610 | 2.9920 | 5 1/4 | 3/32 | 3.1825 | 2.962 |
| CSL611 | 3.2680 | 6 1/4 | 3/32 | 3.4585 | 3.238 |
| CSL612 | 3.3460 | 6 | 3/32 | 3.5365 | 3.316 |
| CSL613 | 3.2680 | 5 1/2 | 3/32 | 3.4585 | 3.238 |
| CSL614 | 3.4650 | 5 7/8 | 3/32 | 3.6555 | 3.435 |
| CSL615 | 3.3860 | 5 3/4 | 3/32 | 3.5765 | 3.356 |
| CSL616 | 2.9530 | 6 3/8 | 3/32 | 3.1435 | 2.923 |
| CSL617 | 3.3460 | 6 1/4 | 3/32 | 3.5365 | 3.316 |
| CSL618 | 3.0710 | 5 5/8 | 3/32 | 3.2615 | 3.041 |
| CSL619 | 3.1610 | 6 | 3/32 | 3.3515 | 3.131 |
| CSL620 | 2.8740 | 6 1/16 | 3/32 | 3.0645 | 2.844 |
| CSL621 | 2.9920 | 7 | 3/32 | 3.1825 | 2.962 |
| CSL622 | 2.6770 | 5 3/4 | 3/32 | 2.8675 | 2.647 |
| CSL623 | 3.1890 | 5 1/2 | 3/32 | 3.3795 | 3.159 |
| CSL624 | 3.2680 | 5 3/4 | 3/32 | 3.4585 | 3.238 |
| CSL625 | 3.5830 | 5 1/2 | 3/32 | 3.7735 | 3.553 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL626 | 3.6610 | 5 1/2 | 3/32 | 3.8515 | 3.631 |
| CSL628 | 2.7950 | 5 1/4 | 3/32 | 2.9855 | 2.765 |
| CSL629 | 2.9720 | 5 1/8 | 3/32 | 3.1625 | 2.942 |
| CSL630 | 3.6220 | 6 1/16 | 3/32 | 3.8125 | 3.592 |
| CSL631 | 3.0510 | 5 1/8 | 3/32 | 3.2415 | 3.021 |
| CSL633 | 2.5420 | 5 3/16 | 3/32 | 2.7325 | 2.512 |
| CSL634 | 2.7280 | 5 5/16 | 3/32 | 2.9185 | 2.698 |
| CSL640 | 4.1400 | 7 3/4 | 0.090 | 4.3220 | 4.110 |
| CSL641 | 4.0100 | 8 3/8 | 3/32 | 4.2090 | 3.985 |
| CSL641X | 4.0100 | 8 3/8 | 1/16 | 4.1460 | 3.985 |
| CSL662 | 4.4375 | 12 1/4 | 0.1388 | 4.7150 | 4.407 |
| CSL701 | 2.8740 | 4 7/8 | 1/8 | 3.1270 | 2.844 |
| CSL702 | 3.3460 | 5 1/4 | 1/8 | 3.5990 | 3.316 |
| CSL703 | 3.4330 | 5 13/16 | 1/8 | 3.6860 | 3.403 |
| CSL704A | 2.8350 | 6 1/2 | 1/8 | 3.0880 | 2.805 |
| CSL705A | 2.9130 | 6 1/2 | 1/8 | 3.1660 | 2.883 |
| CSL706 | 2.9530 | 4 7/8 | 1/8 | 3.2060 | 2.923 |
| CSL707 | 2.8740 | 5 1/4 | 1/8 | 3.1270 | 2.844 |
| CSL708 | 3.4840 | 6 1/4 | 1/8 | 3.7370 | 3.454 |
| CSL709 | 3.1500 | 6 1/4 | 1/8 | 3.4030 | 3.120 |
| CSL710 | 2.9920 | 5 1/4 | 1/8 | 3.2450 | 2.962 |
| CSL711 | 3.2680 | 6 1/4 | 1/8 | 3.5210 | 3.238 |
| CSL712 | 3.3460 | 6 | 1/8 | 3.5990 | 3.316 |
| CSL713 | 3.2680 | 5 1/2 | 1/8 | 3.5210 | 3.238 |
| CSL714 | 3.4650 | 5 7/8 | 1/8 | 3.7180 | 3.435 |
| CSL715 | 3.3860 | 5 3/4 | 1/8 | 3.6390 | 3.356 |
| CSL716 | 2.9530 | 6 3/8 | 1/8 | 3.2060 | 2.923 |
| CSL717 | 3.3460 | 6 1/4 | 1/8 | 3.5990 | 3.316 |
| CSL718 | 3.0710 | 5 5/8 | 1/8 | 3.3240 | 3.041 |
| CSL719 | 3.1610 | 6 | 1/8 | 3.4140 | 3.131 |
| CSL720 | 2.8740 | 6 1/16 | 1/8 | 3.1270 | 2.844 |
| CSL721 | 2.9920 | 7 | 1/8 | 3.2450 | 2.962 |
| CSL722 | 2.6770 | 5 3/4 | 1/8 | 2.9300 | 2.647 |
| CSL723 | 3.1890 | 5 1/2 | 1/8 | 3.4420 | 3.159 |
| CSL724 | 3.2680 | 5 3/4 | 1/8 | 3.5210 | 3.238 |
| CSL726 | 3.6610 | 5 1/2 | 1/8 | 3.9140 | 3.631 |
| CSL728 | 2.7950 | 5 1/4 | 1/8 | 3.0480 | 2.765 |
| CSL729 | 2.9720 | 5 1/8 | 1/8 | 3.2250 | 2.942 |
| CSL730 | 3.6220 | 6 1/16 | 1/8 | 3.8750 | 3.592 |
| CSL731 | 3.0510 | 5 1/8 | 1/8 | 3.3040 | 3.021 |
| CSL760 | 2.9920 | 7 | 2mm | 3.1530 | 2.962 |
| CSL800 | 3.1500 | 7 | 2mm | 3.3101 | 3.120 |
| CSL803 | 3.2680 | 7 | 3/32 | 3.4584 | 3.238 |
| CSL804 | 3.3860 | 7 | 3/32 | 3.5765 | 3.356 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL810 | 3.1890 | 7 | 2mm | 3.3495 | 3.159 |
| CSL820 | 3.2283 | 7 | 2mm | 3.3888 | 3.198 |
| CSL830 | 3.2680 | 7 | 2mm | 3.4282 | 3.238 |
| CSL840 | 3.3030 | 7 | 2mm | 3.4676 | 3.273 |
| CSL850 | 3.3460 | 7 | 2mm | 3.5069 | 3.316 |
| CSL860 | 3.3860 | 7 | 2mm | 3.5463 | 3.356 |
| CSL870 | 3.4250 | 7 | 2mm | 3.5857 | 3.405 |
| CSL880 | 3.4646 | 7 | 2mm | 3.6250 | 3.434 |
| CSL890 | 3.5040 | 7 | 2mm | 3.6644 | 3.474 |
| CSL901D | 3.8750 | 6.700 | 3/32 | 4.0650 | 3.845 |
| CSL903 | 3.2680 | 7 | 1/8 | 3.5210 | 3.238 |
| CSL904 | 3.3860 | 7 | 1/8 | 3.6390 | 3.356 |
| CSL930 | 3.6614 | 7 | 2mm | 3.8220 | 3.631 |
| CSL1101 | 3.8000 | 6 1/8 | 3/32 | 3.9905 | 3.770 |
| CSL1102 | 4.0625 | 6 1/2 | 3/32 | 4.2530 | 4.032 |
| CSL1104 | 4.0000 | 5 3/4 | 3/32 | 4.1905 | 3.970 |
| CSL1104N | 4.0000 | 5 3/4 | 3/32 | 4.1905 | 3.970 |
| CSL1105 | 3.2280 | 5 3/8 | 3/32 | 3.4185 | 3.198 |
| CSL1106 | 3.6710 | 5 1/2 | 3/32 | 3.8615 | 3.641 |
| CSL1107 | 3.3070 | 5 5/8 | 3/32 | 3.4975 | 3.277 |
| CSL1108N | 3.0710 | 6 3/8 | 3/32 | 3.2615 | 3.041 |
| CSL1109 | 4.1250 | 6 3/8 | 3/32 | 4.3155 | 4.095 |
| CSL1111 | 3.5000 | 6 | 3/32 | 3.6905 | 3.470 |
| CSL1112 | 3.5000 | 5 1/4 | 3/32 | 3.6905 | 3.470 |
| CSL1113A | 4.0000 | 5 1/8 | 3/32 | 4.1905 | 3.970 |
| CSL1114 | 4.3500 | 5 7/8 | 3/32 | 4.5405 | 4.320 |
| CSL1116 | 3.0300 | 5 3/4 | 3/32 | 3.2205 | 3.000 |
| CSL1117 | 4.5625 | 7 1/2 | 3/32 | 4.7530 | 4.532 |
| CSL1118N | 3.1890 | 5 7/8 | 3/32 | 3.3795 | 3.159 |
| CSL1119 | 3.9650 | 6 | 3/32 | 4.1555 | 3.935 |
| CSL1120 | 3.5000 | 5 7/8 | 3/32 | 3.6905 | 3.470 |
| CSL1122 | 3.5000 | 5 3/4 | 3/32 | 3.6905 | 3.470 |
| CSL1123 | 3.8000 | 5 7/8 | 3/32 | 3.9905 | 3.770 |
| CSL1123N | 3.8000 | 5 7/8 | 3/32 | 3.9905 | 3.770 |
| CSL1124 | 3.8000 | 6 7/8 | 3/32 | 3.9905 | 3.770 |
| CSL1125 | 4.3600 | 6 1/4 | 3/32 | 4.5505 | 4.330 |
| CSL1126 | 4.5000 | 7 3/4 | 3/32 | 4.6905 | 4.470 |
| CSL1126X | 4.5000 | 8 | 3/32 | 4.6905 | 4.470 |
| CSL1128 | 3.3070 | 6 1/2 | 3/32 | 3.4975 | 3.277 |
| CSL1129 | 3.4440 | 6 | 3/32 | 3.6345 | 3.414 |
| CSL1130 | 3.5860 | 6 1/2 | 3/32 | 3.7765 | 3.556 |
| CSL1131 | 3.1500 | 5 13/16 | 3/32 | 3.3405 | 3.120 |
| CSL1132 | 3.1500 | 6 | 3/32 | 3.3405 | 3.120 |
| CSL1133 | 3.8000 | 5 1/4 | 3/32 | 3.9905 | 3.770 |
| CSL1134 | 3.1300 | 5 3/4 | 3/32 | 3.3205 | 3.100 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL1136 | 3.3300 | 5 11/16 | 3/32 | 3.5205 | 3.300 |
| CSL1137 | 3.5000 | 5 1/2 | 3/32 | 3.6905 | 3.470 |
| CSL1137X | 3.5000 | 5 1/2 | 1/16 | 3.6280 | 3.470 |
| CSL1138 | 3.4250 | 5 1/2 | 3/32 | 3.6155 | 3.395 |
| CSL1139 | 4.0500 | 6 1/4 | 0.175 | 4.4030 | 4.020 |
| CSL1141 | 3.5000 | 5 9/16 | 3/32 | 3.6905 | 3.470 |
| CSL1142 | 3.2500 | 7 1/4 | 3/32 | 3.4405 | 3.220 |
| CSL1143 | 3.2500 | 7 1/2 | 3/32 | 3.4405 | 3.220 |
| CSL1144 | 3.3440 | 7 9/16 | 3/32 | 3.5345 | 3.314 |
| CSL1145 | 3.3750 | 6 | 3/32 | 3.5655 | 3.345 |
| CSL1146 | 3.4375 | 5 13/16 | 3/32 | 3.6280 | 3.407 |
| CSL1147 | 3.5180 | 5 1/2 | 3/32 | 3.7085 | 3.488 |
| CSL1148 | 3.6875 | 7 9/16 | 3/32 | 3.8780 | 3.657 |
| CSL1149 | 3.7360 | 5 1/2 | 3/32 | 3.9265 | 3.706 |
| CSL1151 | 3.9375 | 6 7/8 | 3/32 | 4.1280 | 3.907 |
| CSL1152 | 3.9760 | 6 1/4 | 3/32 | 4.1665 | 3.946 |
| CSL1153 | 4.0000 | 6 7/16 | 3/32 | 4.1905 | 3.970 |
| CSL1154 | 4.0310 | 6 3/8 | 3/32 | 4.2215 | 4.001 |
| CSL1155 | 4.0820 | 6 7/8 | 3/32 | 4.2725 | 4.052 |
| CSL1156 | 4.1250 | 7 1/2 | 3/32 | 4.3155 | 4.095 |
| CSL1158 | 4.2330 | 6 1/4 | 3/32 | 4.4235 | 4.203 |
| CSL1159 | 4.3125 | 6 3/4 | 3/32 | 4.5030 | 4.282 |
| CSL1160 | 4.3600 | 6 7/8 | 3/32 | 4.5505 | 4.330 |
| CSL1161 | 4.3750 | 7 1/2 | 3/32 | 4.5655 | 4.345 |
| CSL1162 | 4.5000 | 8 1/4 | 3/32 | 4.6905 | 4.470 |
| CSL1163 | 4.5000 | 9 | 3/32 | 4.6905 | 4.470 |
| CSL1164 | 5.1250 | 7 1/4 | 3/32 | 5.3155 | 5.095 |
| CSL1165 | 3.6875 | 5 1/8 | 3/32 | 3.8780 | 3.657 |
| CSL1166 | 3.6875 | 6 | 3/32 | 3.8780 | 3.657 |
| CSL1167 | 4.5000 | 7 3/8 | 3/32 | 4.6905 | 4.470 |
| CSL1168 | 3.0000 | 6 | 3/32 | 3.1905 | 2.970 |
| CSL1169 | 3.1250 | 6 | 3/32 | 3.3155 | 3.095 |
| CSL1170 | 4.0000 | 6 | 3/32 | 4.1905 | 3.970 |
| CSL1171 | 3.4440 | 6 7/16 | 3/32 | 3.6345 | 3.414 |
| CSL1172 | 3.5860 | 5 | 3/32 | 3.7765 | 3.556 |
| CSL1173 | 3.6800 | 5 1/2 | 3/32 | 3.8705 | 3.650 |
| CSL1174 | 4.1100 | 6 7/8 | 3/32 | 4.3005 | 4.080 |
| CSL1174HP | 4.1100 | 6 7/8 | 3/32 | 4.3005 | 4.080 |
| CSL1175 | 4.5000 | 8 3/4 | 3/32 | 4.6905 | 4.470 |
| CSL1176 | 4.4000 | 8 1/2 | 3/32 | 4.5905 | 4.370 |
| CSL1177X | 3.5510 | 5 1/4 | 1/16 | 3.6780 | 3.520 |
| CSL1178X | 3.5510 | 6 1/4 | 1/16 | 3.6780 | 3.520 |
| CSL1179N | 4.0940 | 6 1/4 | 3/32 | 4.2840 | 4.064 |
| CSL1180X | 4.2100 | 7 7/8 | 0.0550 | 4.3200 | 4.180 |
| CSL1180 | 4.2100 | 7 7/8 | 3/32 | 4.4025 | 4.180 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL1181 | 3.7500 | 5 3/16 | 3/32 | 3.9405 | 3.720 |
| CSL2201 | 3.8000 | 6 1/8 | 1/8 | 4.0530 | 3.770 |
| CSL2202 | 4.0625 | 6 1/2 | 1/8 | 4.3155 | 4.032 |
| CSL2204 | 4.0000 | 5 3/4 | 1/8 | 4.2530 | 3.970 |
| CSL2204N | 4.0000 | 5 3/4 | 1/8 | 4.2530 | 3.970 |
| CSL2205 | 3.2280 | 5 3/8 | 1/8 | 3.4810 | 3.198 |
| CSL2206 | 3.6710 | 5 1/2 | 1/8 | 3.9240 | 3.641 |
| CSL2207 | 3.3070 | 5 5/8 | 1/8 | 3.5600 | 3.277 |
| CSL2208N | 3.0710 | 6 3/8 | 1/8 | 3.3240 | 3.041 |
| CSL2209 | 4.1250 | 6 3/8 | 1/8 | 4.3780 | 4.095 |
| CSL2211 | 3.5000 | 6 | 1/8 | 3.7530 | 3.470 |
| CSL2212 | 3.5000 | 5 1/4 | 1/8 | 3.7530 | 3.470 |
| CSL2213A | 4.0000 | 5 1/8 | 1/8 | 4.2530 | 3.970 |
| CSL2214 | 4.3500 | 5 7/8 | 1/8 | 4.6030 | 4.320 |
| CSL2216 | 3.0300 | 5 3/4 | 1/8 | 3.2830 | 3.000 |
| CSL2217 | 4.5625 | 7 1/2 | 1/8 | 4.8150 | 4.532 |
| CSL2218N | 3.1890 | 5 7/8 | 1/8 | 3.4420 | 3.159 |
| CSL2219 | 3.9650 | 6 | 1/8 | 4.2180 | 3.935 |
| CSL2220 | 3.5000 | 5 7/8 | 1/8 | 3.7530 | 3.470 |
| CSL2222 | 3.5000 | 5 3/4 | 1/8 | 3.7530 | 3.470 |
| CSL2223 | 3.8000 | 5 7/8 | 1/8 | 4.0530 | 3.770 |
| CSL2223N | 3.8000 | 5 7/8 | 1/8 | 4.0530 | 3.770 |
| CSL2224 | 3.8000 | 6 7/8 | 1/8 | 4.0530 | 3.770 |
| CSL2225 | 4.3600 | 6 1/4 | 1/8 | 4.6130 | 4.330 |
| CSL2226 | 4.5000 | 7 3/4 | 1/8 | 4.7530 | 4.470 |
| CSL2226X | 4.5000 | 8 | 1/8 | 4.7530 | 4.470 |
| CSL2226X.020 | 4.5000 | 8 | 1/8 + .020 | 4.7730 | 4.470 |
| CSL2228 | 3.3070 | 6 1/2 | 1/8 | 3.5600 | 3.277 |
| CSL2229 | 3.4440 | 6 | 1/8 | 3.6970 | 3.414 |
| CSL2230 | 3.5860 | 6 1/2 | 1/8 | 3.8390 | 3.556 |
| CSL2231 | 3.1500 | 5 13/16 | 1/8 | 3.4030 | 3.120 |
| CSL2232 | 3.1500 | 6 | 1/8 | 3.4030 | 3.120 |
| CSL2233 | 3.8000 | 5 1/4 | 1/8 | 4.0530 | 3.770 |
| CSL2234 | 3.1300 | 5 3/4 | 1/8 | 3.3830 | 3.100 |
| CSL2236 | 3.3300 | 5 11/16 | 1/8 | 3.5830 | 3.300 |
| CSL2237 | 3.5000 | 5 1/2 | 1/8 | 3.7530 | 3.470 |
| CSL2238 | 3.4250 | 5 1/2 | 1/8 | 3.6780 | 3.395 |
| CSL2241 | 3.5000 | 5 9/16 | 1/8 | 3.7530 | 3.470 |
| CSL2242 | 3.2500 | 7 1/4 | 1/8 | 3.5030 | 3.220 |
| CSL2243 | 3.2500 | 7 1/2 | 1/8 | 3.5030 | 3.220 |
| CSL2244 | 3.3440 | 7 9/16 | 1/8 | 3.5970 | 3.314 |
| CSL2245 | 3.3750 | 6 | 1/8 | 3.6280 | 3.345 |
| CSL2246 | 3.4375 | 5 13/16 | 1/8 | 3.6905 | 3.407 |
| CSL2247 | 3.5180 | 5 1/2 | 1/8 | 3.7710 | 3.488 |

CYLINDER SLEEVE NUMERIC LISTING

| SLEEVE NUMBER | BORE DIAMETER | LENGTH +/- 1/64" | WALL THICKNESS | O.D. +/- .001" | I.D. +/- .005" |
|---------------|---------------|------------------|----------------|----------------|----------------|
| CSL2248 | 3.6875 | 7 9/16 | 1/8 | 3.9405 | 3.657 |
| CSL2249 | 3.7360 | 5 1/2 | 1/8 | 3.9890 | 3.706 |
| CSL2251 | 3.9375 | 6 7/8 | 1/8 | 4.1905 | 3.907 |
| CSL2252 | 3.9760 | 6 1/4 | 1/8 | 4.2290 | 3.946 |
| CSL2253 | 4.0000 | 6 7/16 | 1/8 | 4.2530 | 3.970 |
| CSL2254 | 4.0310 | 6 3/8 | 1/8 | 4.2840 | 4.001 |
| CSL2255 | 4.0820 | 6 7/8 | 1/8 | 4.3350 | 4.052 |
| CSL2256 | 4.1250 | 7 1/2 | 1/8 | 4.3780 | 4.095 |
| CSL2258 | 4.2330 | 6 1/4 | 1/8 | 4.4860 | 4.203 |
| CSL2259 | 4.3125 | 6 3/4 | 1/8 | 4.5655 | 4.282 |
| CSL2260 | 4.3600 | 6 7/8 | 1/8 | 4.6130 | 4.330 |
| CSL2261 | 4.3750 | 7 1/2 | 1/8 | 4.6280 | 4.345 |
| CSL2262 | 4.5000 | 8 1/4 | 1/8 | 4.7530 | 4.470 |
| CSL2263 | 4.5000 | 9 | 1/8 | 4.7530 | 4.470 |
| CSL2264 | 5.1250 | 7 1/4 | 1/8 | 5.3790 | 5.095 |
| CSL2265 | 3.6875 | 5 1/8 | 1/8 | 3.9405 | 3.657 |
| CSL2266 | 3.6875 | 6 | 1/8 | 3.9405 | 3.657 |
| CSL2267 | 4.5000 | 7 3/8 | 1/8 | 4.7530 | 4.470 |
| CSL2268 | 3.0000 | 6 | 1/8 | 3.2530 | 2.970 |
| CSL2269 | 3.1250 | 6 | 1/8 | 3.3780 | 3.095 |
| CSL2271 | 3.4440 | 6 7/16 | 1/8 | 3.6970 | 3.414 |
| CSL2272 | 3.5860 | 5 | 1/8 | 3.8390 | 3.556 |
| CSL2273 | 3.6800 | 5 1/2 | 1/8 | 3.9330 | 3.650 |
| CSL2274 | 4.1100 | 6 7/8 | 1/8 | 4.3630 | 4.080 |
| CSL2274HP | 4.1100 | 6 7/8 | 1/8 | 4.3630 | 4.080 |
| CSL2275 | 4.5000 | 8 3/4 | 1/8 | 4.7530 | 4.470 |
| CSL2276 | 4.4000 | 8 1/2 | 1/8 | 4.6530 | 4.370 |
| CSL2279N | 4.0940 | 6 1/4 | 1/8 | 4.3467 | 4.074 |
| CSL2280 | 4.2100 | 7 7/8 | 1/8 | 4.4360 | 4.180 |
| CSL9014 | 4.7500 | 12 1/4 | 1/8 | 5.0030 | 4.720 |
| CSL9022 | 3.1250 | 9 1/4 | 1/8 | 3.3780 | 3.095 |
| CSL9073 | 3.1250 | 9 1/4 | 3/32 | 3.3155 | 3.095 |
| CSL9079 | 7.9680 | 22 | 0.1755 | 8.3180 | 7.938 |
| CSL9095 | 7.8640 | 11 3/8 | 0.1325 | 8.1290 | 7.834 |
| CSL9133 | 4.3800 | 9 | 0.104 | 4.5880 | 4.350 |
| CSL9138 | 4.1400 | 8 | 0.080 | 4.3005 | 4.110 |
| CSL9154 | 4.0400 | 6 1/2 | 0.055 | 4.1500 | 4.010 |
| CSL9157 | 5.7500 | 17 1/2 | 1/8 + .032 | 6.0640 | 5.720 |

FRACTION / DECIMAL EQUIVALENT CHART

| | | |
|--------|--------|----------|
| | 1/64" | .015625" |
| 1/32" | | .03125" |
| | 3/64" | .046875" |
| 1/16" | | .0625" |
| | 5/64" | .078125" |
| 3/32" | | .09375" |
| | 7/64" | .109375 |
| 1/8" | | .125" |
| | 9/64" | .140625" |
| 5/32" | | .15625" |
| | 11/64" | .171875" |
| 3/16" | | .1875" |
| | 13/64" | .203125" |
| 7/32" | | .21875" |
| | 15/64" | .234375 |
| 1/4" | | .250" |
| | 17/64" | .265625" |
| 9/32" | | .28125" |
| | 19/64" | .296875" |
| 5/16" | | .3125" |
| | 21/64" | .328125" |
| 11/32" | | .34375" |
| | 23/64" | .359375" |
| 3/8" | | .375" |
| | 25/64" | .390625" |
| 13/32" | | .40625" |
| | 27/64" | .421875" |
| 7/16" | | .4375" |
| | 29/64" | .453125" |
| 15/32" | | .46875" |
| | 31/64" | .484375" |
| 1/2" | | .500" |

| | | |
|--------|--------|----------|
| | 33/64" | .515625" |
| 17/32" | | .53125" |
| | 35/64" | .546875" |
| 9/16" | | .5625" |
| | 37/64" | .578125" |
| 19/32" | | .59375" |
| | 39/64" | .609375 |
| 5/8" | | .625" |
| | 41/64" | .640625" |
| 21/32" | | .65625" |
| | 43/64" | .671875" |
| 11/16" | | .6875" |
| | 45/64" | .703125" |
| 23/32" | | .71875" |
| | 47/64" | .734375 |
| 3/4" | | .750" |
| | 49/64" | .765625" |
| 25/32" | | .78125" |
| | 51/64" | .796875" |
| 13/16" | | .8125" |
| | 53/64" | .828125" |
| 27/32" | | .84375" |
| | 55/64" | .859375" |
| 7/8" | | .875" |
| | 57/64" | .890625" |
| 29/32" | | .90625" |
| | 59/64" | .921875" |
| 15/16" | | .9375" |
| | 61/64" | .953125" |
| 31/32" | | .96875" |
| | 63/64" | .984375" |
| 1" | | 1.00" |

METRIC CONVERSION - 1mm = .03937

NOTES

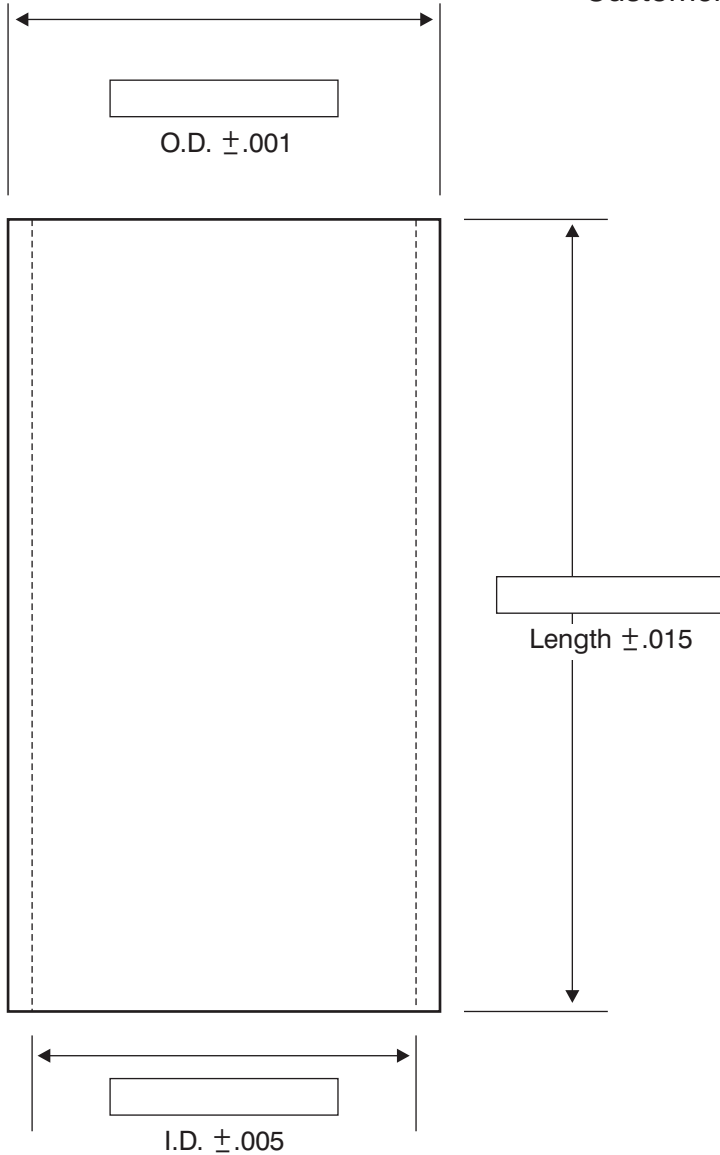


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Custom Sleeve Information Template

Customer Quantity _____

A.

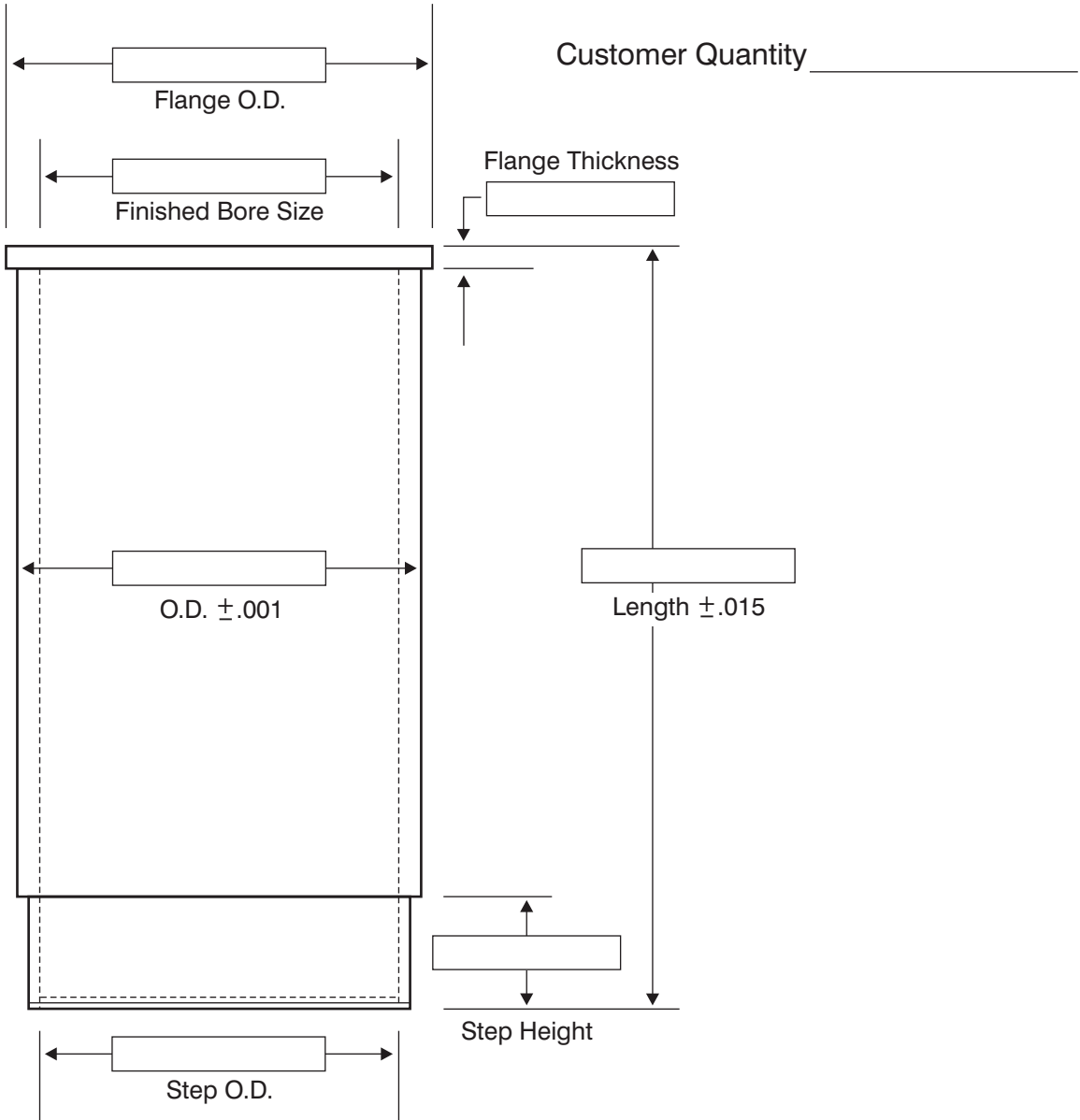


Customer # (if applicable) _____ Contact Name _____

Phone _____ Fax _____

Email _____

B.



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