



MELLING
CYLINDER SLEEVES™

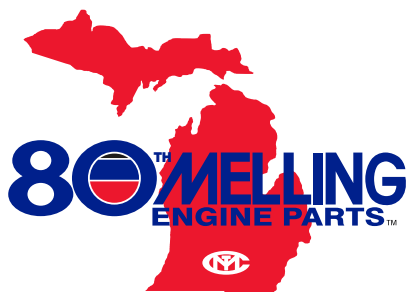
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010126-1

CYLINDER SLEEVE

AND SLEEVE ASSIGNMENT CATALOG

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





**Quality Engine Parts
Since 1946**

AN ADVANTAGE BY DESIGN

Since 1946, when my 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.

80 years later, demand for our products is stronger than ever and widely preferred by professionals in markets around the world. For those first products shipped four 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 8.5" 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 75 years. Melling strives to deliver you, our valued customers "An advantage by design."

Sincerely,

Mark Melling
President and CEO



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140 Jacobson Drive • Maquoketa, IA 52060
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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 and 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.	Q.D.	OVERALL LENGTH	FLANGE Q.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
CSL307FXV	3.500	3.652	5.750	3.742	0.180
CSL361FD	3.600	3.800	5.250	3.900	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
CSL359F.050	4.030	4.350	5.680	4.445	0.285
CSL329F	4.375	4.629	8.125	4.740	0.200
CSL359F	4.030	4.300	5.680	4.395	0.285
CSL360F	3.970	4.250	5.500	4.323	0.285



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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UNIVERSAL PROGRESSIVE SIZE CHART

BORE DIAMETER	LENGTH +/- 1/64"	WALL THICKNESS	O.D. +/- .001"	I.D. +/- .005"	SLEEVE NUMBER
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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UNIVERSAL PROGRESSIVE SIZE CHART

BORE DIAMETER	LENGTH +/- 1/64"	WALL THICKNESS	O.D. +/- .001"	I.D. +/- .005"	SLEEVE NUMBER
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

"N" Denotes "Notched"

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

"N" Denotes "Notched"

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

"N" Denotes "Notched"

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

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	
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	3.652	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.
4.2-S - 6 Cyl. - 2002-08 Vortec	CSL331F	3.661	3.632	3.800	5.694	4.054	0.195	Semi finished I.D.
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.
6.0-U,H - 8 Cyl. - 2005-09 (LS2)	CSL359F	4.060	4.030	4.300	5.680	4.395	0.285	Semi finished I.D.
6.2-W - 8 Cyl. - 2008-13 (LS3) Corvette	CSL359F.050	4.060	4.030	4.350	5.680	4.445	0.285	Semi finished I.D.
6.2 - 8 Cyl. - 2007-19 Vin Codes: 2,6,7,8,9,F,J,P,T & W	CSL360F	4.000	3.970	4.250	5.500	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
120 - 4 Cyl. - 1939-51 2N, 8N, 9N	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

FORD

APPLICATION	PART#	STANDARD BORE	I.D.	O.D.	OVERALL LENGTH	FLANGE DIAMETER	FLANGE THICKNESS	
5.0L - V8 - 2011- 24 Coyote F-150, Mustang	CSL361FD	3.630	3.600	3.800	5.250	3.900	0.188	Semi finished I.D.

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

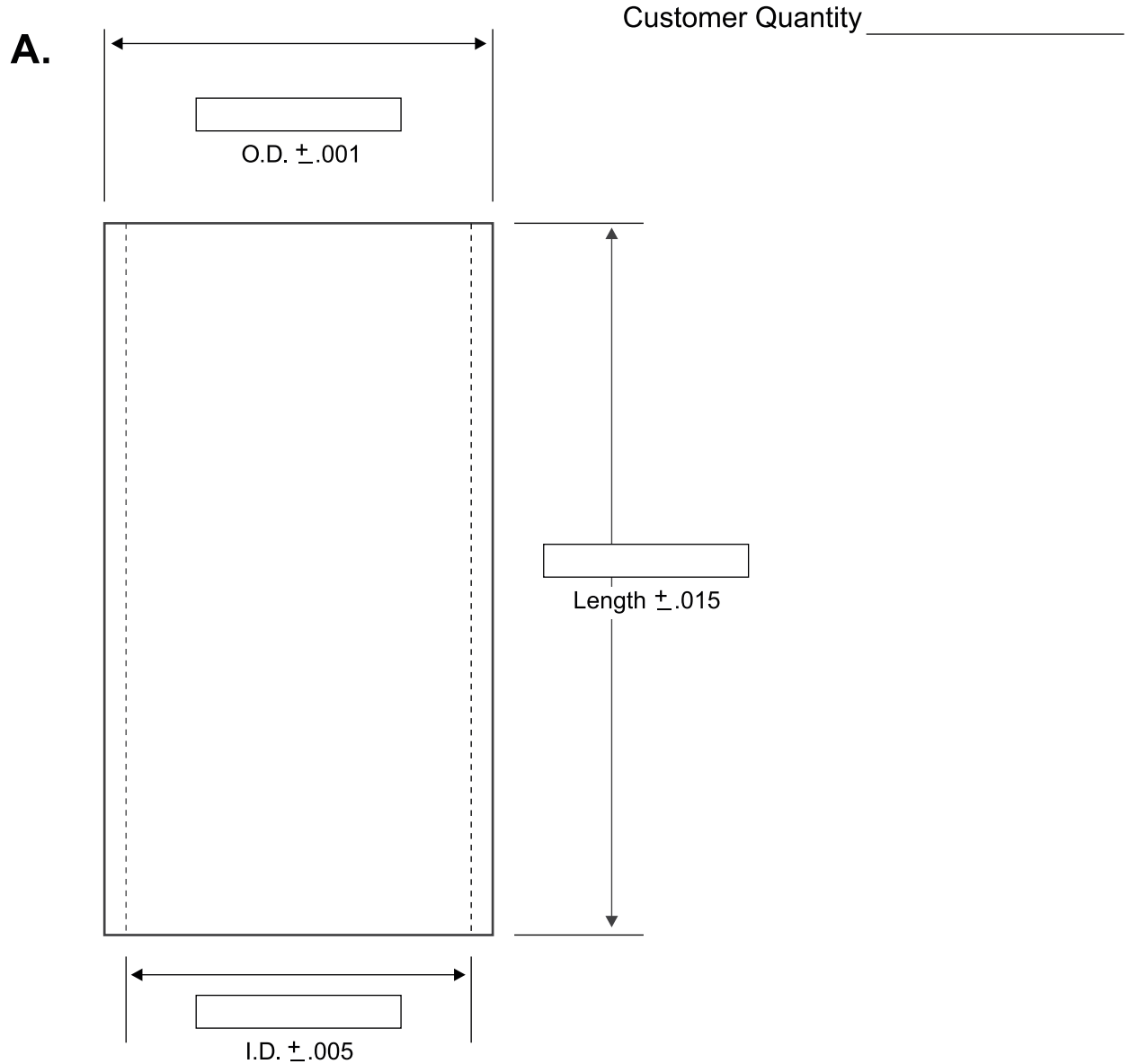
TOYOTA

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.



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Custom Sleeve Information Template



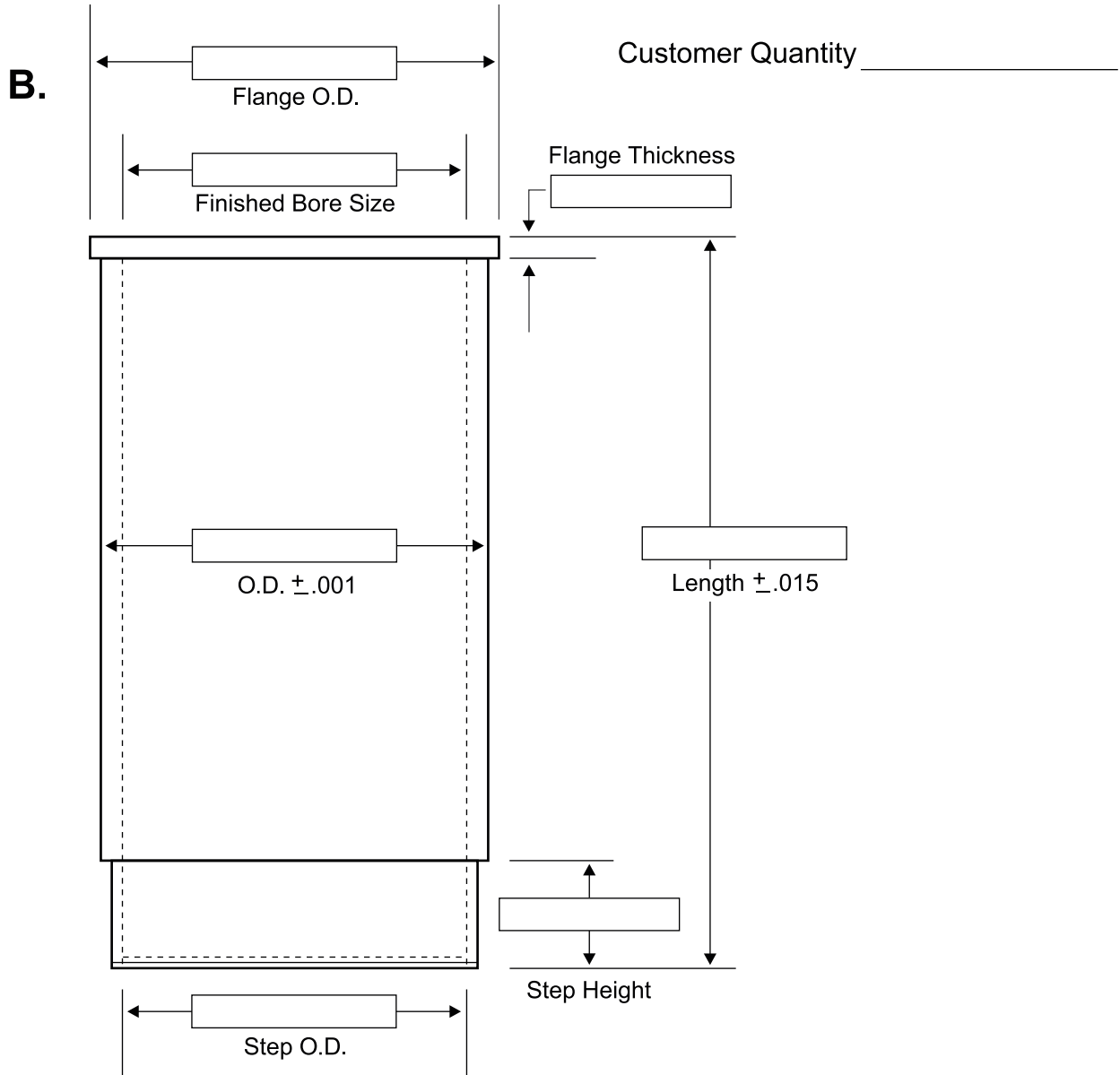
Customer # (if applicable) _____ Contact Name _____

Phone _____ Fax _____

Email _____



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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"

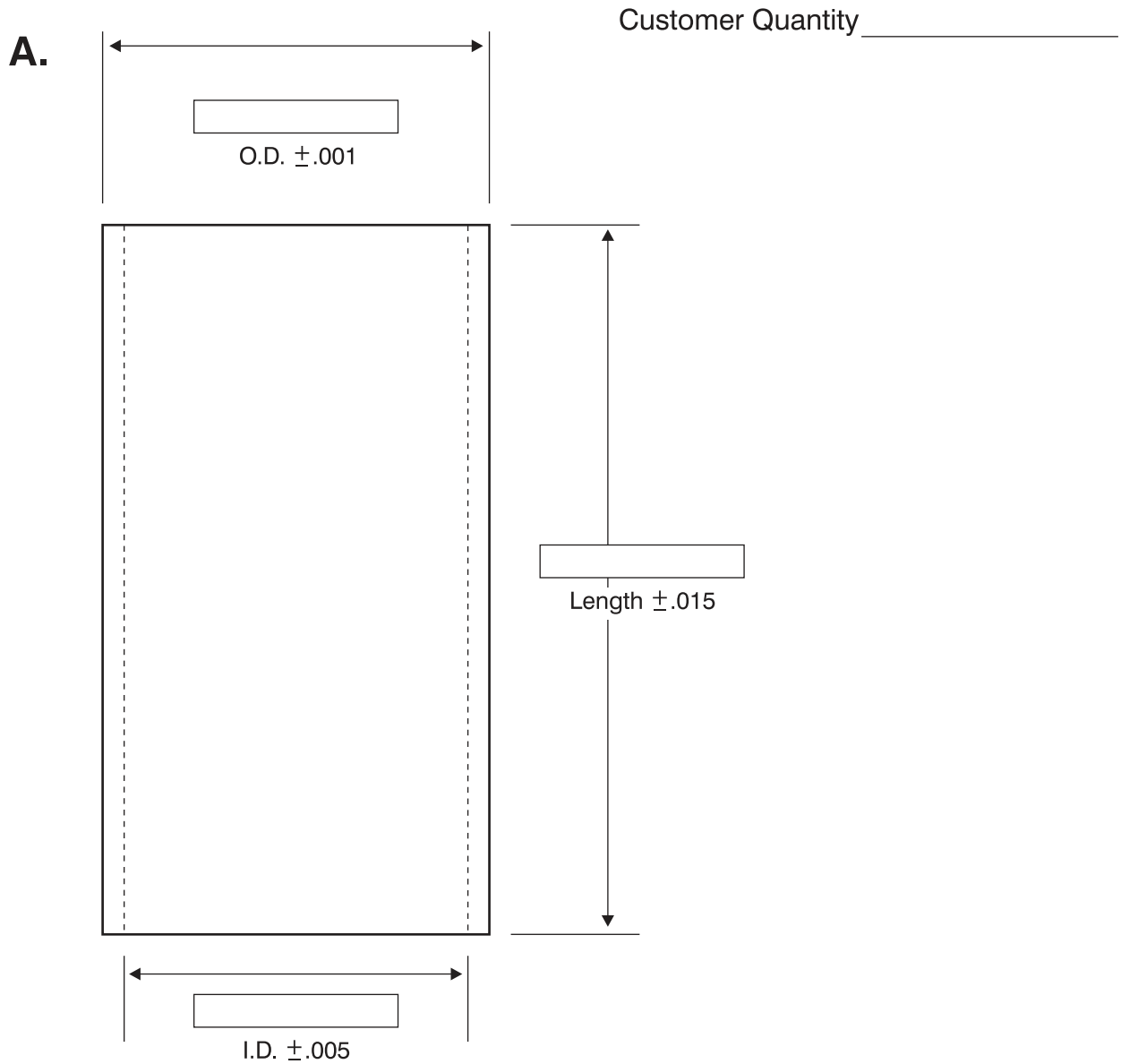
	33/64"	.515625"
	17/32"	.53125"
	35/64"	.546875"
9/16"		.5625"
	37/64"	.578125"
	19/32"	.59375"
	39/64"	.609375"
5/8"		.625"
	41/64"	.640625"
	21/32"	.65625"
	43/64"	.671875"
11/16"		.6875"
	45/64"	.703125"
	23/32"	.71875"
	47/64"	.734375"
3/4"		.750"
	49/64"	.765625"
	25/32"	.78125"
	51/64"	.796875"
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



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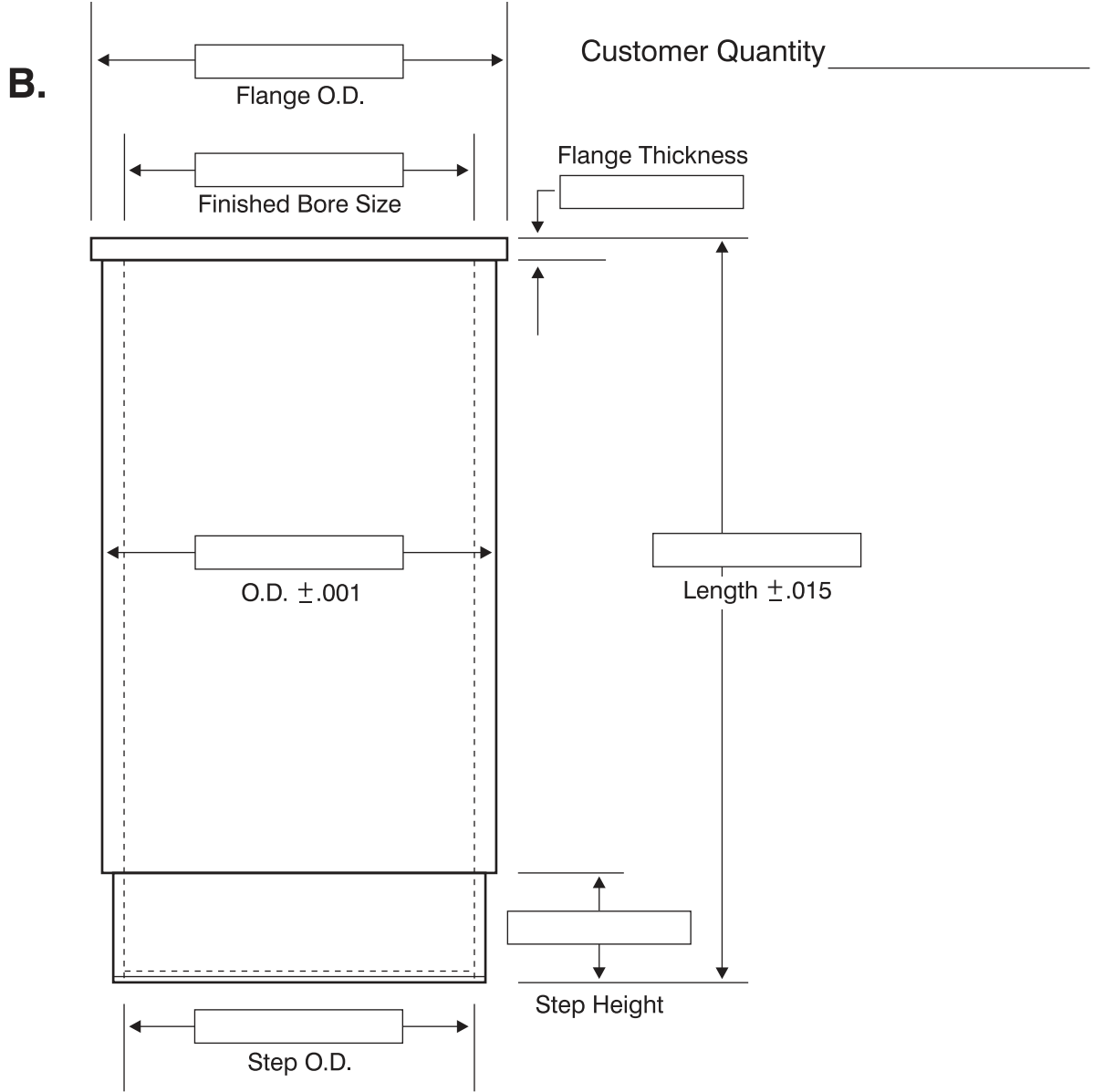
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