

ER & ES SERIES

End Rolling Attachments For CNC Threading Applications



CJWINTER expands their premier line of American-made end rolling attachments for thread rolling applications. The **CJWINTER ER and ES SERIES** of end rolling attachments features innovative design that provides high rigidity for longer tool life and better quality threads, as well as superior thread roll protection.

The CJWINTER ER and ES SERIES Features:

One piece front plate enclosures:

- Provides superior roll protection from debris
- Fewer parts, increased rigidity

Carbide bushings as standard equipment on all attachments

Engraved scale allowing thread or spline pitch diameter adjustments on the machine

High-strength construction for longer tool life

- Extensive use of tool steel and custom heat treat on wear surfaces
- Special coating on all wear surfaces for smoother operation and extended life
- Reduced operating costs = more profits for you at no extra charge
- Carbide Bushings replace cumbersome needle bearings

Fine Adjust

Engineered for speed and precision, the Fine Adjust Mechanism uses two opposing set screws to deliver fast, accurate pitch diameter adjustments — ensuring optimal performance with every use.

Compact sizes fit virtually any type of machine including CNC Turning and Milling Centers, Rotary Transfer, Swiss, Multi-Spindle, and many others.



CJWINTER.COM

INDUSTRIES SERVED: SEMICONDUCTOR • AUTOMOTIVE • AEROSPACE • CHEMICAL • OIL & GAS • POWER



THREAD ROLLING SOLUTIONS

Anything short of perfection wouldn't be good enough for our thread rolls. CJWinter's world-renowned thread roll manufacturing and design techniques provide longer thread life, higher repeatability and less runout. Standard and special size thread rolls are available for 5-day delivery and are interchangeable for use with competitive end rolling attachments.



800-288-ROLL

Other features available with the **ER and ES SERIES** of end rolling attachments are high performance materials and coatings to increase product performance and tool life. Application/design review at no charge when you provide a part print or specific roll geometry. Call us for information. You'll appreciate the attention we provide our customers every day, and see the difference in the quality of CJWinter products.

Features & Advantages of CJWinter End Rolling Attachments



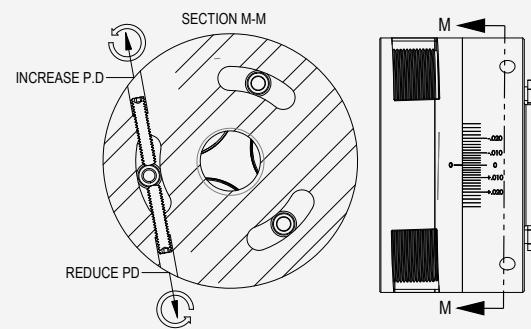
Precision — All Standard CJWinter ER and 193 ES type attachments utilize a one-piece front plate with integral standoffs. The rigid construction of our end rolling attachments provide the best of reliability and precision. With sealed pitch adjustment gear trains, fine-adjust screws, low friction ultra-hard coatings, and fewer wear parts than comparable heads, the CJWinter lineup of end rolling attachments are certain to overmatch the competition.

One-Twist Adjustment — CJWinter End Rolling Attachments require the loosening of only three locking screws and a simple twist of the head to adjust the distance between the three rolls. This one twist will cause all three rolls to move equally towards or away from the centerline of the attachment.

This ensures that each roll does an equal amount of work and that the work piece is always evenly supported. This facilitates the best concentricity of the roll surfaces to the part centerline. Other axial rolling tools on the market require as many as 27 separate screws to adjust size, and have no means of keeping the rolls concentric to the tool axis. This can lead to one die working harder than the others, bent parts, damaged tooling, and material slivering.

Graduated Scale — Adjustments to size are made while referencing a graduated scale on the side of the head. The scale is clearly labeled (+) and (-) so fine adjustments can be made with confidence.

Fine Adjust — Engineered for speed and precision, the Fine Adjust Mechanism uses two opposing set screws to deliver fast, accurate pitch diameter adjustments — ensuring optimal performance with every use.



Wide Range of Sizes — CJWinter End Rolling Attachments and their derivatives can accommodate a substantial range of sizes with optional variants and modifications the CJWinter catalog of end rolling heads is certain to meet your manufacturing needs.



Sizing Charts

Standard Sizing Chart

Thread Size	Pitch Diameter (3A)	
	Max	Min

	189	190	191	193	194
# 6 - 40	0.1218	0.1198			
# 8 - 32	0.1437	0.1415			
# 8 - 36	0.1460	0.1439			
# 10 - 24	0.1629	0.1604			
# 10 - 32	0.1697	0.1674			
# 12 - 24	0.1889	0.1863			
# 12 - 28	0.1928	0.1904			
# 12 - 32	0.1957	0.1933			
1/4 - 20	0.2175	0.2147			
1/4 - 28	0.2268	0.2243			
1/4 - 32	0.2297	0.2273			
5/16 - 18	0.2764	0.2734			
5/16 - 20	0.2800	0.2770			
5/16 - 24	0.2854	0.2827			
5/16 - 28	0.2893	0.2867			
5/16 - 32	0.2922	0.2898			
3/8 - 16	0.3344	0.3311			
3/8 - 20	0.3425	0.3394			
3/8 - 24	0.3479	0.3450			
7/16 - 14	0.3911	0.3876	L		
7/16 - 16	0.3969	0.3935			
7/16 - 18	0.4001	0.3958			
7/16 - 20	0.4050	0.4019	L		
1/2 - 13	0.4500	0.4463			
1/2 - 16	0.4594	0.4559			
1/2 - 18	0.4626	0.4582			
1/2 - 20	0.4675	0.4643			
1/2 - 28	0.4768	0.4740			
1/2 - 32	0.4797	0.4771			
9/16 - 12	0.5084	0.5045			
9/16 - 14	0.5146	0.5096			
9/16 - 16	0.5219	0.5184			
9/16 - 18	0.5264	0.5230			
9/16 - 20	0.5300	0.5268			
9/16 - 24	0.5625	0.5553			
9/16 - 28	0.5625	0.5560			
9/16 - 32	0.5625	0.5565			
5/8 - 11	0.5660	0.5619			
5/8 - 12	0.5709	0.5668			
5/8 - 16	0.5844	0.5808			
5/8 - 18	0.5889	0.5854			
5/8 - 20	0.6250	0.6169			
5/8 - 24	0.6250	0.6178			
5/8 - 28	0.6250	0.6185			
5/8 - 32	0.6047	0.6020			
11/16 - 12	0.6334	0.6293			
11/16 - 16	0.6469	0.6433			
11/16 - 20	0.6862	0.6781			
11/16 - 24	0.6875	0.6803			
11/16 - 28	0.6875	0.6810			
3/4 - 10	0.6832	0.6773			
3/4 - 12	0.6959	0.6918			
3/4 - 16	0.7079	0.7029			
13/16 - 12	0.7584	0.7543			
13/16 - 16	0.8125	0.8031	L		
13/16 - 20	0.7800	0.7764	L		
13/16 - 28	0.8125	0.8060	L		
7/8 - 9	0.8009	0.7946			
7/8 - 12	0.8750	0.8636	L		
7/8 - 14	0.8270	0.8216	L		
7/8 - 16	0.8750	0.8656	L		
7/8 - 20	0.8750	0.8669	L		
7/8 - 28	0.8750	0.8685	L		
15/16 - 12	0.9375	0.9261			
15/16 - 16	0.9375	0.9281	L		
15/16 - 20	0.9375	0.9294	L		
1 - 12	1.0000	0.9886	L		
1 - 16	1.0000	0.9906	L		
1 - 20	0.9675	0.9641	L		
1 1/16 - 12	1.0625	1.0511	L		
1 1/16 - 16	1.0625	1.0531	L		
1 1/16 - 18	1.0625	1.0538	L		
1 1/16 - 20	1.0625	1.0544	L		
1 1/8 - 16	1.1250	1.1156	L		
1 1/8 - 18	1.1250	1.1163	L		
1 1/8 - 20	1.1250	1.1169	L		
1 3/16 - 12	1.1875	1.1761	L		
1 3/16 - 16	1.1469	1.1431	L		
1 3/16 - 18	1.1875	1.1788	L		
1 3/16 - 20	1.1875	1.1794	L		

L - Limited Length; Consult CJWinter Engineer

Metric Sizing Chart

Thread Size	Pitch Diameter (6g)	
	Max	Min

	189	190	191	193	194
M 3.5 x 0.5	3.155	3.080			
M 3.5 x 0.6	3.089	3.004			
M 4 x 0.5	3.655	3.580			
M 4 x 0.7	3.523	3.433			
M 4 x 0.75	3.491	3.391			
M 4.5 x 0.5	4.155	4.080			
M 4.5 x 0.75	3.991	3.901			
M 5 x 0.75	4.491	4.391			
M 5 x 0.8	4.456	4.361			
M 5 x 0.9	4.390	4.287			
M 5.5 x 0.75	4.991	4.891			
M 5.5 x 0.9	4.890	4.787			
M 6 x 0.75	5.491	5.391			
M 6 x 1	5.324	5.212			
M 7 x 0.75	6.491	6.391			
M 7 x 1	6.324	6.212			
M 8 x 0.75	7.513	7.453			
M 8 x 1	7.324	7.212			
M 8 x 1.25	7.160	7.042			
M 9 x 1	8.324	8.212			
M 9 x 1.25	8.160	8.042			
M 10 x 1	9.324	9.212			
M 10 x 1.25	9.160	9.042			
M 10 x 1.5	8.994	8.862			
M 11 x 1.5	10.026	9.936			
M 12 x 0.5	11.655	11.580			
M 12 x 0.75	11.491	11.391			
M 12 x 1	11.974	11.794			
M 12 x 1.25	11.160	11.028			
M 12 x 1.5	10.994	10.854			
M 12 x 1.75	10.863	10.768			
M 13 x 0.75	12.491	12.391			
M 13 x 1	12.324	12.206			
M 13 x 1.5	11.994	11.854			
M 14 x 0.75	13.491	13.391			
M 14 x 1	13.324	13.206			
M 14 x 1.5	12.994	12.854			
M 14 x 2	12.663	12.503			
M 15 x 0.75	14.491	14.391			
M 15 x 1	14.325	14.206			
M 15 x 1.5	13.994	13.854			
M 16 x 1	15.324	15.206			
M 16 x 1.5	14.994	14.854			
M 16 x 2	14.663	14.503			
M 17 x 1	16.974	16.794			
M 18 x 1	17.324	17.206			
M 18 x 1.5	16.994	16.854			
M 20 x 1	19.324	19.206			
M 20 x 1.5	18.994	18.854			
M 20 x 2	18.663	18.503			
M 20 x 2.5	19.623	19.958			
M 22 x 1.5	20.994	20.854			
M 22 x 2	20.663	20.503			
M 22 x 2.5	21.623	21.958			
M 24 x 1.5	22.994	22.854			
M 24 x 2	22.663	22.493			
M 25 x 1.5	23.994	23.844			
M 27 x 1.5	25.994	25.854			
M 27 x 2	25.663	25.493			
M 30 x 1.5	28.994	28.844			
M 30 x 2	28.663	28.493			

L - Limited Length; Consult CJWinter Engineer

NPT Pipe Sizing Chart

Thread Size	NPT Pitch	
	Max	Min

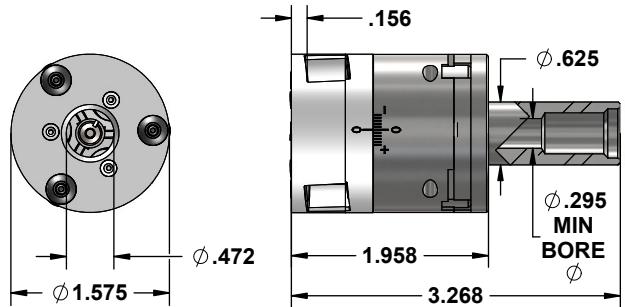
	189	190	191	193	194
NPT 1/16 - 27	0.2712	0.1171			
NPT 1/8 - 27	0.3635	0.1632			
NPT 1/4 - 18	0.4774	0.2109			
NPT 3/8 - 18	0.6120	0.2782			
NPT 1/2 - 14	0.7584	0.3435			
NPT 3/4 - 14	0.9677	0.4481			

L - Limited Length; Consult CJWinter Engineer

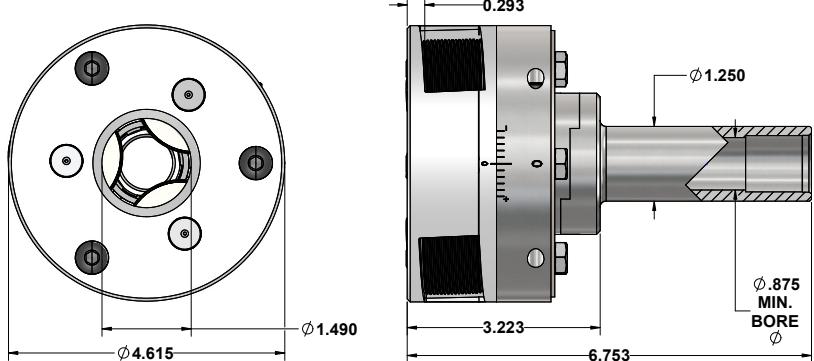
ER/ES SERIES ATTACHMENT LINE-UP



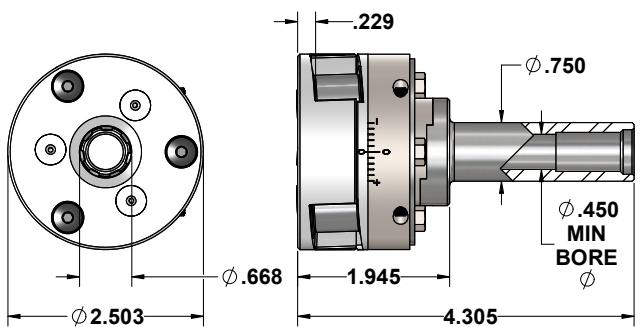
CJWinter
189 ER
Attachment



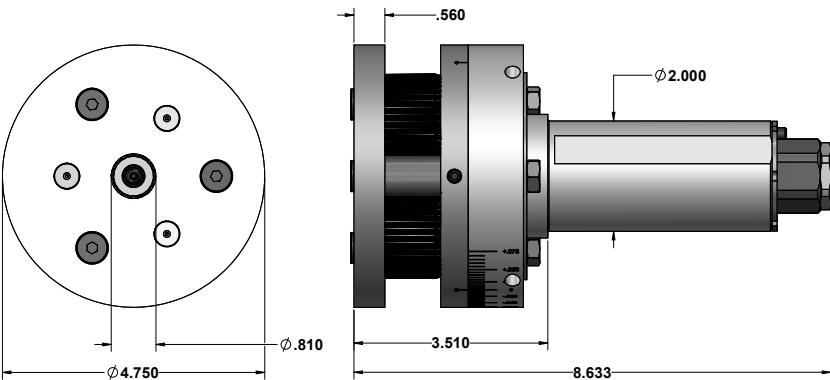
CJWinter
194 ER Attachment



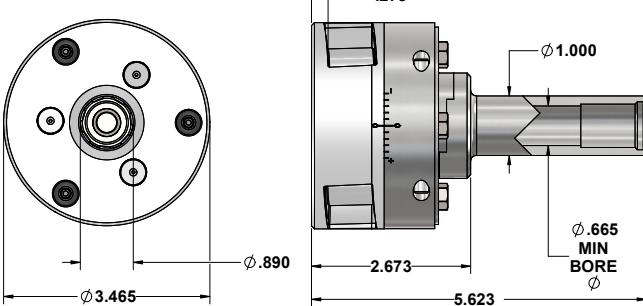
CJWinter
190 ER
Attachment



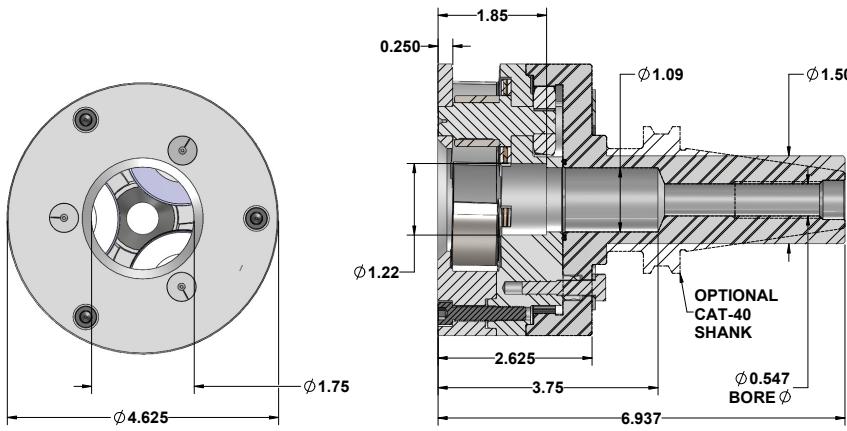
CJWinter
192 ES Attachment
Specialty Knurling Head



CJWinter
191 ER
Attachment



CJWinter
193 ES Attachment
Specialty Roll-on Roll-off Attachment



Definition: Involute Knurl or Spline

Involute knurls and **involute splines** are two names for the same type of feature. They are a series of ridges formed on the periphery of a cylinder, where the shape of each ridge is defined by the involute formulas of a gear tooth. They are primarily used as shaft connection devices to transmit torque to components that are pressed onto or over-molded the end of a shaft. The involute ridges transmit torque more effectively than a simple press into a round hole, and can orient features between the shaft and the pressed component.

192 ES SERIES

Reasons to Roll Involute Knurl Connections

Involute Knurl connections can be manufactured by a wide variety of means, including casting, forging, cutting, broaching, milling etc. However, none of these processes can match the speed at which rolling can form a knurl, the economy of the process, the convenience of performing the operation in a traditional metalworking lathe or mill without specialized equipment, nor the strength of the final product.

Knurl rolling typically occurs in 2 to 5 seconds. Time will naturally vary with the knurl length, and diameter, but in virtually all cases, rolling is an order of magnitude faster than conventional machining processes. Tooling cost per part is extremely competitive to all other processes, usually 5 to 10 times less expensive than the next closest option, which makes it perfect for high volume, low margin jobs.

Knurling can be completed on virtually any lathe, mill, or multi-spindle machine. No specialized equipment is required, and no secondary processes are required. For the most part, if you can machine the blank, you can knurl the part.

Knurl rolling is a cold-forming process, where material is displaced and formed into the final shape at room temperature. The material's grain structure is refined, and the grain boundaries are forced to flow smoothly past all root radii, rather than being cut. As a result, the final part is work-hardened into a tougher connection. The knurl tooth is more resistant to deformation and cracking, and can carry a higher load than a cut counterpart.



Specialty 192 ES Series Attachment Capacity

Min and Max Bolt Circle (Same for both 1" and 2" wide rolls)	Max Roll OD
FCD Max: 2.456	2.000"
FCD Min: 2.396	
Plate Max Diameters	Part Major Diameter
Front Plate: .950*	0.625" to 1.000" Max**
Back Plate: .920	

 **CJ WINTER**
A Brinkman International Group, Inc. Company

THREAD ROLLING SOLUTIONS



* If bigger thrust washer may need to be modified

** If part is under or over, review application with CJWinter

Scan QR code for complete specs

Thread Rolling Tips & Information

Selecting Thread Rolls

The thread rolls used on these ER series attachments have an annular groove geometry. Rolls are mounted and tilted to the approximate helix angle in the attachment. This allows for the production of the proper thread geometry on parts during the thread rolling process.

Thread rolls can be supplied with a .6L, 1L or 2L lead. This lead determines how close the attachment can get to the shoulder of the part.

- A .6L lead can roll very close to a shoulder, but tends to be more aggressive and sacrifices thread roll life.
- A 1L lead is the most popular lead as it provides a good balance between thread roll life and being able to get somewhat close to a shoulder.
- A 2L lead can't roll very close to a shoulder, but tends to be less aggressive and provides for the best thread roll life.

Reversible Rolls

The rolls (as well as the master pinion on the 192 Series) are reversible. This allows for an entirely "new" rolling die simply with the inversion of the thread rolls or knurl rolls when one worksurface wears out. This enables each set of CJWinter thread rolls to provide twice the life of a set of comparable roll dies.



Attachment Options

Contact your CJWinter Sales Representative for more information on customized thread rolling and attachment solutions for your industry!

CJWinter Attachment Options		189	190	191	192	193	194
Part Desc.	Quick Install						
Lockup Plate		189040	190028	191037			194039
Internal Trip Mechanism		189031	190027	191028			194028
Alternate Shank Sizes		•	•	•	•	•	•
• - CONSULT FACTORY							

CJWinter is the industry leader in thread rolling solutions – let us be your first choice when it comes to your material forming needs!

CJWINTER
A Brinkman International Group, Inc. Company
THREAD ROLLING SOLUTIONS
800-288-ROLL



167 Ames Street, Rochester NY 14611 USA
Phone: 585-429-5000
Toll Free: **800-288-7655 (ROLL)**
Email: info@cjwinter.com
Website: www.cjwinter.com