SKF

SPEEDI-SLEEVE®

or how to repair shafts the easy way

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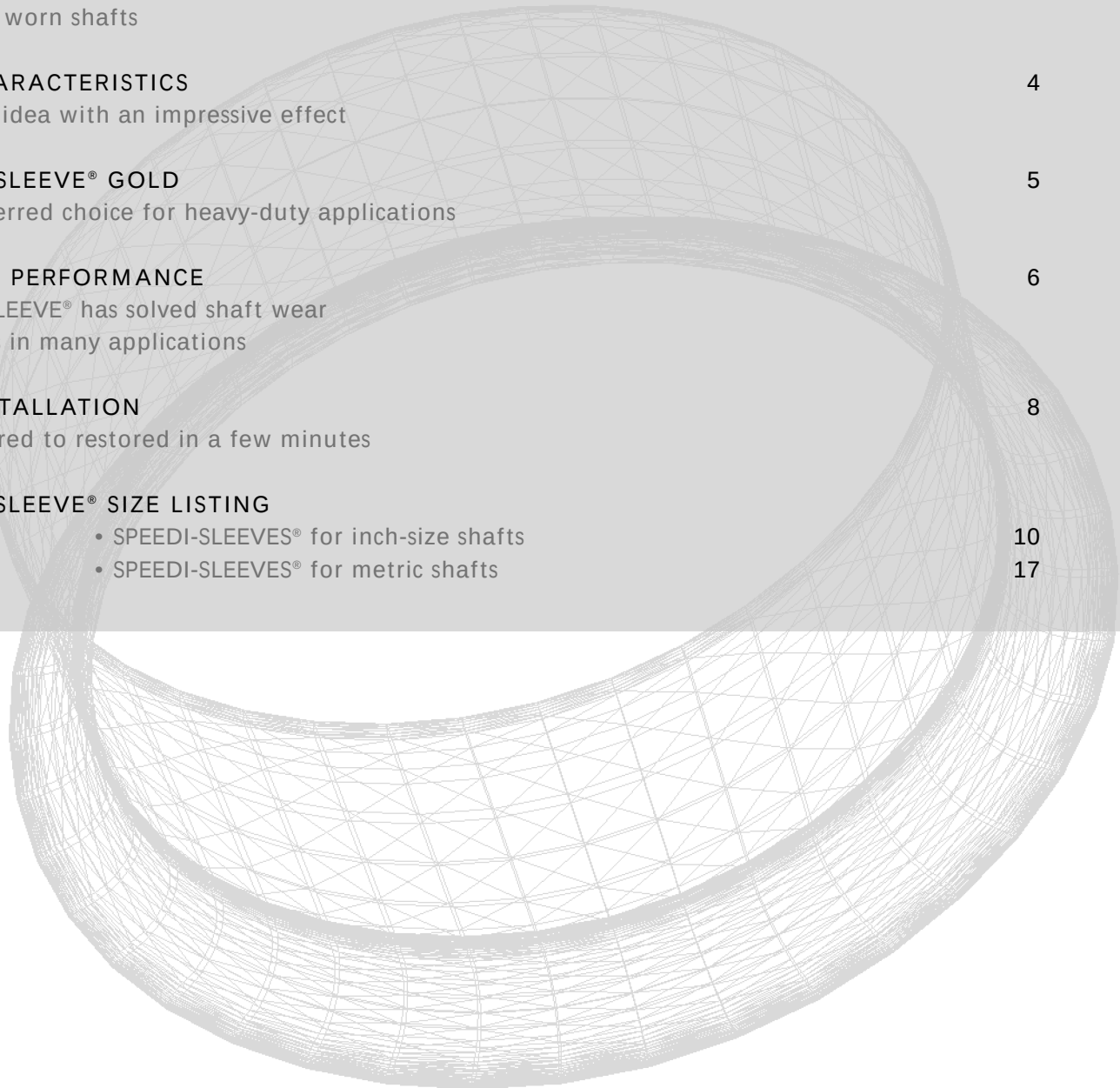


THE SPEEDI-SLEEVE® CONCEPT

the quickest and sensible way to repair worn shafts

To seal efficiently, radial shaft seals must run against a smooth round surface - the seal counterface. If the counterface becomes worn, and it usually does, then the seal will no longer be able to fulfil its function, which is to retain lubricant and to exclude contaminants - solid particles as well as liquid.

Normally, the counterface will become grooved as a contaminant particle is caught under the seal lip and abrades a track as the shaft rotates. As this continues, the seal will allow more particles to pass or get stuck, and seal efficiency deteriorates, eventually leading to mal-function of the component the seal is meant to protect. To rectify the situation it is necessary to repair the counterface on the shaft - a simple seal replacement will not be sufficient.

To repair the shaft it is usually necessary to dismantle the machine in order to be able to handle the shaft and then to grind down the counterface until it is smooth again. If the grooves are deep the original size of seal will no longer fit properly - a seal with a smaller bore diameter has to be found.

Now there is an easy way to repair the counterface with the shaft still in position and without having to look for a different size of seal. The answer is the SPEEDI-SLEEVE® from CR.

SPEEDI-SLEEVE® GOLD with a surface hardness between 80 and 85 HRC for heavy-duty applications.

THE CHARACTERISTICS

a simple idea with an impressive effect

The SPEEDI-SLEEVE® has been developed by CR - a leading seal specialist - precisely to solve the problem of worn seal counterfaces at shaft ends. It is a very thin-walled sleeve, with a near-perfect finish and hardness for its purpose, which is simply pushed in position over the worn shaft and after installing a new seal, the shaft is as good as new - if not better.

There is no shaft dismantling or machining involved - hence the "Speedi" - and costly downtime is saved. As the same size of seal as the original can be used, there is no need to search for other seals so that stockkeeping is simplified and more time saved.

No special equipment is required - the installation tool is supplied with the sleeve. A mallet and a pair of tongs are all that is needed for the repair job.

HOW IT WORKS

The sleeve is sufficiently thin-walled (0,254 mm) to allow the same size of seal to be used. The SPEEDI-SLEEVE® is made of high quality stainless steel SAE 304. The surface is wear-resistant and machined without directionality to a finish of Ra = 0,25 to 0,5 µm (depending on size). This is, in fact, a better counterface than can normally be achieved on a shaft. If an external all-rubber V-ring is added to the sealing arrangement, there is little risk of contaminants reaching the primary seal and causing wear.

SIZE RANGE

The standard range covers shaft diameters from 12 to 200 mm. Provided production quantities are viable, non-standard sizes can be produced. Because of their design, the sleeves will also fit inch-size shafts.

SPEEDI-SLEEVE®:
good as a new shaft,
if not better

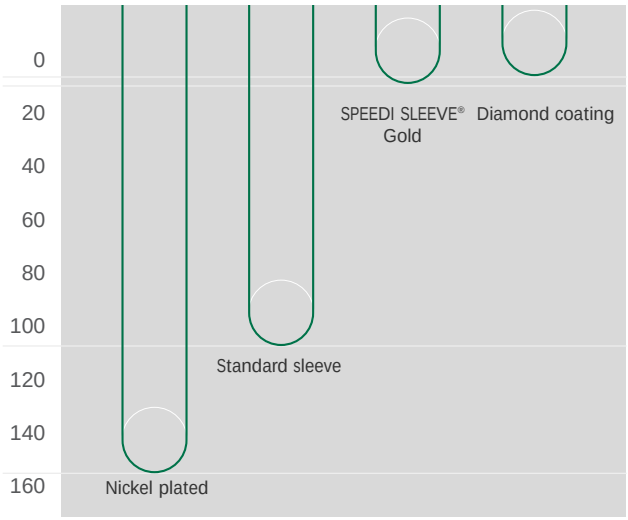
50 sizes of SPEEDI SLEEVE® Gold are in production.
Other sizes can be produced to special order.

SPEEDI-SLEEVE® GOLD

The preferred choice for heavy-duty applications

ABRASION RESISTANCE

Comparison of various SPEEDI-SLEEVE® coatings



Testing in highly abrasive conditions demonstrates how the hardened surface of SPEEDI-SLEEVE® GOLD resists wear

This is a recent development and embodies all the advantages of the original SPEEDI-SLEEVE®. SPEEDI-SLEEVE® Gold is equally thin but has a surface hardness of between 80 and 85 HRC and thus is much harder than the standard sleeve. The surface is very resistant to abrasion - being almost on a par with diamond coatings. However, installation is just as easy and again the tool is supplied with the sleeve.It is however harder (80 to 85 HRC) and more abrasion resistant. Thus for heavy-duty applications it is the preferred choice.

TEST RESULTS

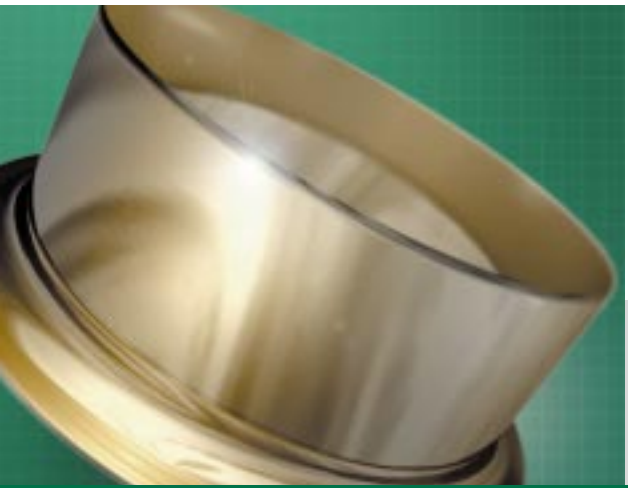
The SPEEDI-SLEEVE® Gold has been thoroughly tested to ascertain its degree of abrasion resistance in severe dust environments using both coarse and fine sand. The tests were carried out at temperatures up to 100 °C and at shaft speeds of up to 8,6 m/s.

Under these conditions, seals on shafts without SPEEDI-SLEEVE® protection started to leak after 450 hours on average. Seals on SPEEDI-SLEEVE® Gold ran for an average of 2 500 hours.

In other tests, for example, it was found that continuous salt spray at 40 °C produced no trace of corrosion even after 600 hours.

AVAILABILITY

Currently some 50 sizes of SPEEDI-SLEEVE® Gold are in production. These cover the majority of common shaft sizes. Other sizes (up to 200 mm) can be produced to special order subject to viability considerations. Because of their design the sleeves can also be used for inch-size shafts.



PROVEN PERFORMANCE

SPEEDI-SLEEVES® has solved shaft wear problems in many applications

The SPEEDI-SLEEVE® has solved shaft wear problems in thousands of applications. Here are just a few examples. It obviously pays to involve a sealing expert, not only to solve existing problems, but to propose sealing arrangements that are up to the job.

CONVEYOR SYSTEM OVER-RUNNING CLUTCH

The clutches are used to control the rollers of heavy-duty conveyors used to deliver gypsum wall board sheets to drying ovens during the production process.

Shaft scoring occurred from lack of lubricant coupled with contamination including dust and gypsum fibres. The damaged shafts and lubricant leakage caused the lines to be shut down with resultant loss of production as well as high maintenance costs.

The sealing system was redesigned and a SPEEDI-SLEEVE® used to repair the scored shaft without any re-metallising or reworking. The original braided packing was replaced by a CR "LongLife" radial shaft seal and a V-ring was added to prevent contaminants from reaching the radial shaft seal. The use of this redesigned sealing system has significantly reduced downtime and the need for maintenance.

PAPERMAKING MACHINE

The conditions in a paper mill are not the easiest as moisture content and dust levels are high and operating temperatures are often rather high.

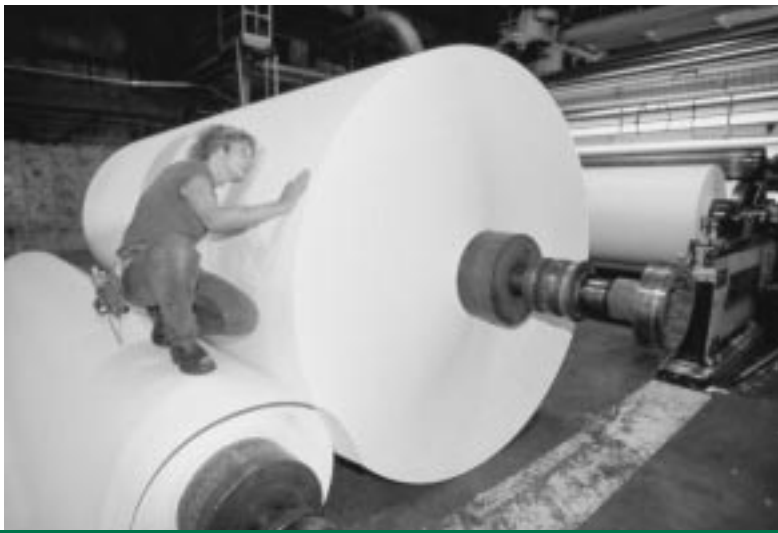
The original design featured labyrinth seals. These excluded coarse particulate contamination, but were only partially successful in excluding water and airborne dust. Bearing failure was common and resulted in unacceptable levels of downtime.

Again the answer was to redesign the sealing arrangement. A SPEEDI-SLEEVE® was incorporated to protect the shaft from wear and the labyrinth was replaced by a combination of a radial shaft seal with a single lip (CRWH design) and a V-ring seal. Both seals are made of the LongLife rubber to cope with the elevated temperatures. Bearing failures were reduced so that downtime was cut and repair work minimised.

AMUSEMENT PARK MONORAIL TRANSPORTATION

Lubricant was leaking from the monorail gearbox as the train travelled overhead through the park. As the lubricant frequently fell on park visitors, the leakage was costing park management considerable sums for cleaning clothing.

The original seal was of leather and ran on a highly polished shaft. The seal design unfortunately allowed lubricant to escape.



A combination of SPEEDI-SLEEVE® and CR seals solved the problem. The SPEEDI-SLEEVE® provided a more reliable counterface for the seals and could be installed with the shaft in place. The result - a much cleaner environment.

HOT ROLLING MILL RUNOUT TABLE

A rough shaft surface and contamination from the process (scale, coolant etc.) meant that seal service life was short with frequent stoppages for repairs of expensive equipment.

The SPEEDI-SLEEVE® came to the rescue. The sleeve was installed without having to remove the shaft and provided a proper surface finish for the CR Waveseal to run on, maximising the service life of the seal. A V-ring was also installed to provide extra protection to the primary seal.

FOOD PROCESSING EQUIPMENT

This particular case was a poultry skinner. Poultry packaging plants use high-pressure water jets to clean their processing equipment. During this hosing down procedure some water can force its way past the seal lip, contaminating the lubricant and causing bearing corrosion. The existing seals had worn grooves in the expensive shafts.

SPEEDI-SLEEVES® were used to repair the grooved shafts without removing them from the equipment. With the addition of external V-rings, the high-pressure water was prevented from penetrating the primary seals.

To solve sealing problems call in the experts

INSTALLATION

From scored to restored in a few minutes

Although installation is simple, it should be done carefully to achieve the best results.

Before starting, the seal seating on the shaft should be carefully cleaned and any burrs or rough spots should be filed down and polished. Deep wear grooves, scratches or very rough surfaces should be treated with a suitable metallic powder epoxy filler. The sleeve must be positioned on the shaft before the filler has hardened.

It should also be noted that although Speedi-Sleeves can be easily installed within minutes on most shafts, they should not be placed over splines or keyways etc. on the shaft. As the thin-walled sleeve has an interference fit, any disturbances on the shaft surface may create a similar pattern on the sleeve surface and the seal will leak.

CHOOSING THE RIGHT SIZE

To determine the appropriate sleeve size it is first necessary to clean the shaft carefully. The diameter of an undamaged section of the seal counterface should then be measured in at least three different planes. The arithmetical mean of these measurements is used to choose a SPEEDI-SLEEVE®. If the value lies within the permissible range shown in the product table for the shaft diameter (d_a) then the SPEEDI-SLEEVE® will have an adequately tight fit on the shaft. The sleeve cannot turn on the shaft and no adhesive is required.

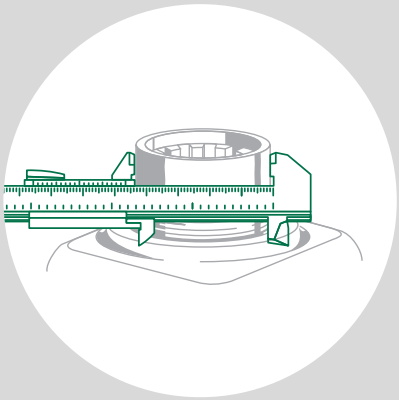
If no suitable sleeve is listed in the product table then it will be necessary to rework the shaft to an appropriate dimension. This will also mean that a new size of seal will be required. If production quantities are viable, CR will also make tailored sleeves.

PROCEDURE

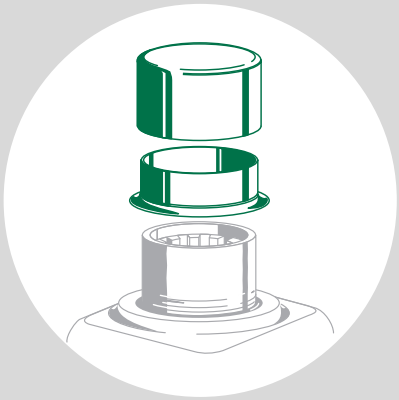
1. The final position of the sleeve on the shaft should be determined and marked. The sleeve should cover the wear tracks of the old seal and not just left flush with the shaft end.

2. Push the sleeve on to the shaft with the flanged end first. The mounting tool supplied with the sleeve is then pushed on to the sleeve. If the tool is not long enough a length of pipe of tubing with square, deburred ends can be used instead.

3. Apply light mallet blows centrally to the mounting tool until the sleeve has been driven up to its final position. Be careful not to damage the outside diameter of the sleeve.



Clean and measure the diameter of the worn shaft and mark the area where the sleeve will cover the scored portion of the shaft.



Place SPEEDI SLEEVE® on to the shaft and then place special installation tool over the sleeve.

Tap installation tool with mallet until sleeve is seated on shaft over the marked area. Remove installation tool.

4 Remove the flange if necessary. It is important that this is only done after the sleeve has reached its final position. The flange should be cut through to the tear groove after which it can be peeled off along the groove using a pair of tongs.

If the flange is not in the way when other parts are being assembled and if it will not foul another component in operation, it is recommended that it be left in position.

5 After the sleeve has been installed, check the shaft end again for burrs which could damage the new seal.

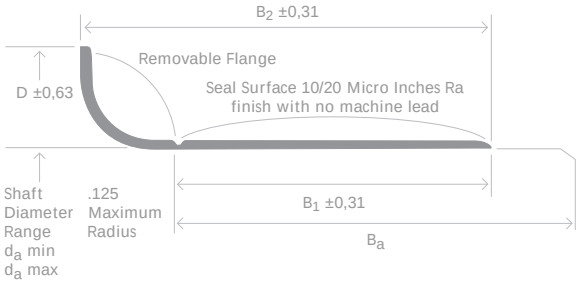
6 Lightly oil or grease the SPEEDI-SLEEVE® surface and, if necessary, the shaft end to ease mounting the seal. Use the same lubricant as that which the seal is to retain.

REMOVAL

A SPEEDI-SLEEVE can be dismounted in one of the following ways: by applying heat to the sleeve; by using a pair of wire cutters starting at or near the flange and applying a twisting action; by "peening" with a small hammer across the full width of the sleeve to expand it or, if accessible, by using a drift on the flange. A SPEEDI-SLEEVE® cannot be re-used.

SPEEDI-SLEEVE®

Size Listing/Inches



SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
11,93	12,07	12,00	15,50	6,00	8,40	22,20	CR 99049
12,65	12,75	12,70	15,50	6,40	8,70	51,00	CR 99050
13,89	14,00	14,00	19,10	6,40	9,90	46,50	CR 99055
14,22	14,38	14,30	19,10	6,40	9,90	47,00	CR 99056
14,96	15,06	15,00	19,10	5,00	9,00	47,30	CR 99059
15,82	15,93	15,88	19,10	8,00	10,30	50,80	CR 99810*
15,82	15,92	15,88	19,10	8,00	10,30	51,00	CR 99062
15,89	16,00	16,00	19,10	8,00	11,10	50,80	CR 99058
16,95	17,05	17,00	27,00	8,00	11,00	51,00	CR 99068
17,32	17,42	17,37	22,90	8,00	11,10	51,00	CR 99060
17,89	18,00	18,00	27,00	8,00	11,00	46,00	CR 99082
19,00	19,10	19,00	24,00	8,00	11,10	50,80	CR 99811*
19,00	19,10	19,00	24,00	8,00	11,10	51,00	CR 99076
19,28	19,33	19,30	23,80	8,00	11,10	51,00	CR 99081
19,81	19,91	19,86	23,80	8,00	11,10	51,00	CR 99080
19,95	20,05	20,00	23,60	8,00	11,00	51,00	CR 99078
21,77	21,87	21,82	29,30	6,50	9,50	51,00	CR 99086
21,87	22,00	22,00	30,20	8,00	12,00	46,00	CR 99085
21,87	22,00	22,00	30,20	6,60	9,10	47,10	CR 99084
22,17	22,28	22,23	27,80	8,00	11,10	50,80	CR 99812*
22,17	22,27	22,23	27,80	8,00	11,10	51,00	CR 99087
23,06	23,16	23,11	30,90	8,00	11,10	47,00	CR 99091
23,06	23,17	23,11	30,90	8,00	11,10	47,00	CR 99860*
23,87	24,00	24,00	28,70	8,00	11,10	50,80	CR 99092
24,54	24,64	24,59	28,70	15,90	18,30	51,00	CR 99096
24,54	24,64	24,59	28,70	8,00	11,10	51,00	CR 99094
24,94	25,04	25,00	33,00	8,00	11,00	50,80	CR 99813*
24,95	25,05	25,00	33,00	8,00	11,00	51,00	CR 99098
25,35	25,45	25,40	31,00	8,00	11,10	50,80	CR 99814*
25,35	25,45	25,40	31,00	8,00	11,10	51,00	CR 99100
25,87	26,00	26,00	33,30	8,00	12,00	46,00	CR 99103
26,92	27,03	27,00	33,50	8,00	11,00	72,00	CR 99106
26,92	27,03	27,00	33,50	8,00	11,10	47,00	CR 99815*
27,61	27,71	27,66	35,70	8,00	11,10	16,00	CR 99108
27,94	28,04	28,00	34,90	9,50	12,70	72,00	CR 99111
28,52	28,62	28,58	38,10	8,00	11,10	17,00	CR 99816*
28,52	28,62	28,58	38,10	8,00	11,10	17,00	CR 99112
28,53	28,63	28,58	38,10	9,50	12,70	17,50	CR 99116
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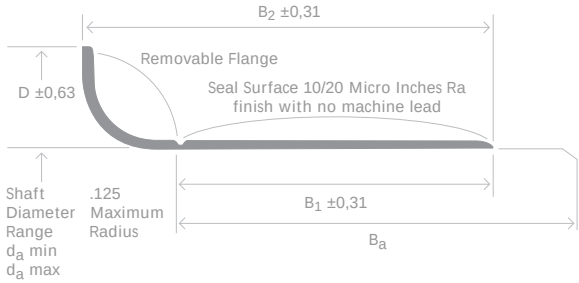
29,95	30,07	30,00	35,60	8,00	11,00	17,00	CR 99114
30,10	30,22	30,15	35,60	8,00	11,00	17,00	CR 99118
30,89	31,04	31,00	39,70	8,00	11,00	16,00	CR 99123
31,42	31,57	31,50	39,10	8,00	11,10	17,00	CR 99141
31,67	31,83	31,75	38,10	8,00	11,10	18,00	CR 99125
31,67	31,83	31,75	38,10	8,00	11,10	18,00	CR 99817*
31,92	32,08	32,00	38,00	8,00	11,10	18,00	CR 99128
33,23	33,37	33,30	40,60	6,40	9,50	21,00	CR 99129
33,28	33,42	33,35	40,50	12,70	15,90	21,00	CR 99131
33,28	33,42	33,35	40,50	12,70	15,90	21,00	CR 99818*
33,84	34,00	34,00	41,30	12,70	15,90	20,70	CR 99134
34,82	34,98	34,90	41,60	12,70	15,90	21,00	CR 99138
34,82	34,98	34,90	41,60	8,00	11,10	21,00	CR 99133
34,82	34,98	34,93	41,60	12,70	15,90	21,00	CR 99819*

* Indicates Speedi-Sleeve Gold Product



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Inches	Inches		Inches	Inches	Inches		
34,92	35,08	35,00	41,60	13,00	16,00	20,00	CR 99139
34,92	35,08	35,00	41,60	13,00	16,00	20,00	CR 99820*
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36,37	36,52	36,45	45,20	14,30	17,50	26,00	CR 99821*
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38,02	38,18	38,10	45,20	9,50	12,70	26,00	CR 99823*
38,61	38,76	38,68	47,20	11,10	14,30	26,00	CR 99152
39,35	39,49	39,42	47,20	11,10	14,30	26,00	CR 99155
39,60	39,74	39,67	47,20	14,30	17,50	26,00	CR 99156
39,60	39,74	39,67	47,20	14,30	17,50	26,00	CR 99824*
39,77	39,93	39,85	47,20	16,00	19,10	26,00	CR 99159
39,84	40,00	40,00	46,90	9,90	12,90	25,40	CR 99153
39,92	40,08	40,00	47,00	13,00	16,00	26,00	CR 99157
39,92	40,08	40,00	47,00	13,00	16,00	26,00	CR 99825*
40,69	40,84	40,77	49,20	12,70	16,30	25,00	CR 99160
40,84	41,00	41,00	49,20	12,70	15,90	25,80	CR 99163
41,21	41,35	41,28	47,60	14,30	17,50	21,00	CR 99826*
41,21	41,35	41,28	47,60	14,30	17,50	21,00	CR 99162
41,20	41,35	41,28	47,60	8,00	11,10	26,00	CR 99161
41,84	42,00	42,00	53,00	11,30	14,50	21,00	CR 99166
41,84	42,00	42,00	53,00	14,30	17,50	21,00	CR 99169
41,98	42,14	42,06	53,00	14,00	17,50	21,00	CR 99165
42,77	42,93	42,85	48,40	14,30	17,50	22,00	CR 99168
42,80	42,95	42,88	48,40	8,00	11,10	22,00	CR 99167
42,84	43,00	43,00	48,40	12,70	15,90	21,40	CR 99182
43,56	43,71	43,64	51,60	14,30	17,50	21,00	CR 99971
44,09	44,25	44,17	52,40	9,50	12,70	21,00	CR 99170
44,37	44,53	44,45	52,40	13,50	15,90	22,30	CR 99180
44,37	44,53	44,45	52,40	14,30	17,50	21,00	CR 99174
44,37	44,53	44,45	52,40	19,00	22,20	21,00	CR 99175
44,37	44,53	44,45	52,50	9,50	12,70	21,00	CR 99172
44,37	44,53	44,45	52,40	14,30	17,50	21,00	CR 99827*
44,37	44,53	44,45	52,40	19,00	22,20	21,00	CR 99828*
44,73	44,87	44,80	52,40	14,30	17,50	21,00	CR 99176
44,73	44,87	44,80	52,40	14,30	17,50	21,00	CR 99829*
44,92	45,08	45,00	53,00	14,00	17,00	21,00	CR 99177
44,92	45,08	45,00	53,00	14,00	17,00	21,00	CR 99830*
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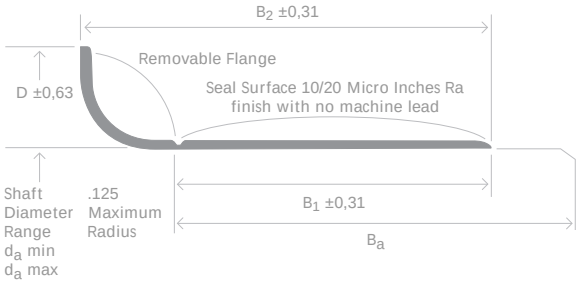
45,95	46,10	46,00	53,10	14,30	17,50	26,00	CR 99181
45,95	46,10	46,05	53,10	14,30	17,50	26,00	CR 99831*
47,17	47,32	47,24	54,80	14,30	17,50	25,00	CR 99185
47,40	47,55	47,45	55,60	22,60	26,00	25,00	CR 99186
47,55	47,70	47,63	56,00	14,30	17,50	25,40	CR 99832*
47,55	47,70	47,63	56,00	7,50	10,50	19,00	CR 99188
47,55	47,70	47,63	56,00	9,50	13,10	27,00	CR 99184
47,55	47,70	47,63	56,00	14,30	17,50	25,00	CR 99187
47,55	47,70	47,63	56,00	4,50	7,50	19,00	CR 99190
47,92	48,08	48,00	56,00	14,00	17,00	25,00	CR 99189
48,49	48,64	48,56	56,40	9,50	12,70	25,00	CR 99192

* Indicates Speedi-Sleeve Gold Product



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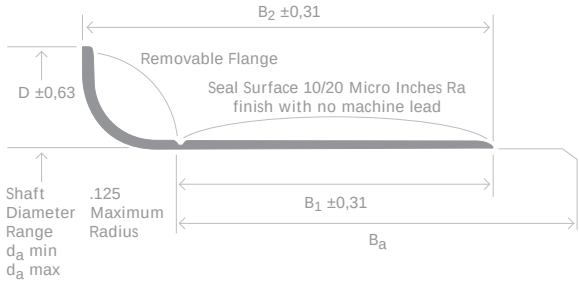
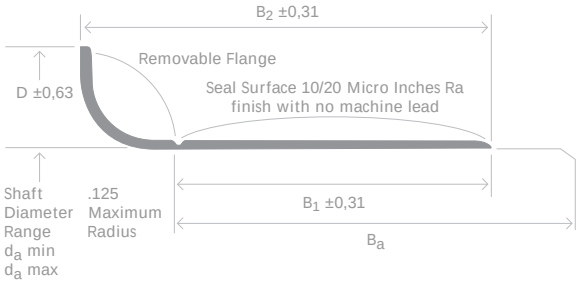
Inches	Inches		Inches	Inches	Inches		
49,12	49,28	49,20	56,40	14,30	17,50	25,00	CR 99193
49,12	49,28	49,23	56,40	14,30	17,50	25,40	CR 99833*
49,92	50,08	50,00	57,00	14,00	17,00	25,00	CR 99196
50,22	50,37	50,30	58,70	14,30	17,90	27,00	CR 99198
50,73	50,87	50,80	61,10	22,20	25,40	25,00	CR 99200
50,73	50,87	50,80	61,10	14,30	17,50	25,00	CR 99199
50,72	50,88	50,80	61,10	14,30	17,50	25,40	CR 99834*
50,72	50,88	50,80	61,10	22,20	25,40	25,40	CR 99835*
51,81	52,00	52,00	62,70	12,70	15,90	34,50	CR 99204
52,25	52,39	52,32	63,40	20,70	23,80	35,00	CR 99205
53,95	54,10	54,00	61,50	19,80	23,80	35,00	CR 99212
53,95	54,10	54,00	61,50	12,70	19,00	33,00	CR 99210
53,95	54,10	54,00	62,00	20,00	24,00	35,00	CR 99836*
54,92	55,09	55,00	62,00	20,00	23,00	32,00	CR 99863*
54,92	55,08	55,00	62,00	20,00	23,00	32,00	CR 99215
55,32	55,47	55,40	64,00	20,00	24,00	38,10	CR 99217
55,52	55,68	55,60	63,50	19,80	23,80	33,00	CR 99218
55,81	56,00	56,00	64,30	12,70	15,90	33,40	CR 99220
56,56	56,72	56,64	64,30	19,80	23,00	32,00	CR 99230
56,56	56,72	56,64	64,30	12,70	15,90	33,00	CR 99229
56,57	56,72	56,64	64,30	12,70	15,90	33,40	CR 99861*
56,82	56,97	56,90	65,10	19,40	22,90	32,00	CR 99226
57,13	57,28	57,15	64,30	19,80	23,80	33,40	CR 99837*
57,13	57,28	57,15	64,30	8,00	11,10	33,40	CR 99838*
57,12	57,28	57,20	64,30	19,80	23,80	33,00	CR 99225
57,12	57,28	57,20	64,30	8,00	11,10	33,00	CR 99227
58,65	58,80	58,72	68,30	19,80	23,80	35,00	CR 99231
59,10	59,26	59,18	69,80	19,00	22,20	38,00	CR 99233
59,92	60,07	60,00	70,70	9,40	11,40	37,40	CR 99241
59,92	60,07	60,00	70,70	20,00	23,00	35,00	CR 99235
60,30	60,45	60,33	69,90	19,80	23,80	35,00	CR 99839*
60,25	60,40	60,33	69,90	15,10	19,10	35,00	CR 99238
60,31	60,45	60,38	69,90	19,80	23,80	35,00	CR 99237
60,31	60,45	60,38	69,90	13,40	17,30	35,00	CR 99240
61,83	61,97	61,90	71,80	19,80	23,80	35,30	CR 99243
61,85	62,00	62,00	71,80	12,70	15,90	36,00	CR 99242
61,81	62,00	62,00	71,80	12,70	15,90	36,20	CR 99244
63,23	63,37	63,30	73,00	19,80	23,80	35,00	CR 99249
63,50	63,65	63,50	71,80	12,70	16,70	35,00	CR 99248
63,50	63,65	63,50	71,60	19,80	23,80	35,00	CR 99250
63,42	63,58	63,50	71,60	14,10	16,50	23,00	CR 99253
63,50	63,65	63,50	71,60	19,80	23,80	35,00	CR 99840*
63,75	63,91	63,83	71,80	19,80	23,00	37,00	CR 99251
64,92	65,08	65,00	72,40	20,00	23,00	35,00	CR 99254
64,92	65,75	65,00	72,40	20,00	23,00	35,00	CR 99841*
65,02	65,18	65,10	73,40	19,80	23,80	35,00	CR 99256
65,92	66,07	66,00	76,00	19,80	23,80	32,00	CR 99259
66,50	66,64	66,57	77,40	19,80	23,80	35,00	CR 99261
66,57	66,73	66,65	77,40	19,80	23,00	35,00	CR 99264
66,60	66,75	66,68	77,40	12,70	15,90	35,00	CR 99260
66,68	66,82	66,75	77,40	19,80	23,80	35,00	CR 99262
66,68	66,83	66,78	77,40	19,80	23,80	35,00	CR 99842*
67,81	68,00	68,00	79,40	19,10	22,20	42,90	CR 99266
69,26	69,42	69,34	79,40	19,80	23,00	33,00	CR 99268

* Indicates Speedi-Sleeve Gold Product



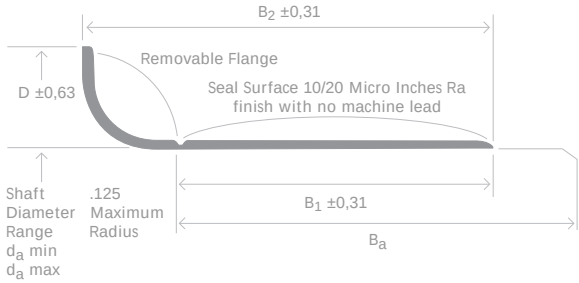
SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
69,60	69,74	69,67	77,90	19,80	23,80	32,00	CR 99273
69,72	69,88	69,80	79,40	19,80	23,80	32,00	CR 99274
69,77	69,93	69,85	78,10	36,50	41,30	41,00	CR 99267
69,72	69,88	69,80	79,40	19,80	23,80	32,00	CR 99843*
69,85	70,00	70,00	79,40	19,80	23,80	32,00	CR 99275
69,85	70,00	70,00	79,40	28,60	31,80	32,00	CR 99269
69,92	70,08	70,00	79,40	20,00	24,00	32,00	CR 99276
69,92	70,08	70,00	79,40	10,30	14,30	32,00	CR 99272
69,85	70,00	70,00	79,40	19,80	23,80	32,00	CR 99844*
71,35	71,50	71,42	80,90	15,10	17,50	32,00	CR 99281
71,81	72,00	72,00	81,90	19,10	22,20	34,10	CR 99284
72,09	72,24	72,09	81,90	12,70	16,70	32,00	CR 99845*
72,08	72,24	72,16	81,90	12,70	16,70	32,00	CR 99282
72,80	72,94	72,87	81,00	19,80	23,80	32,00	CR 99286
72,97	73,13	73,00	81,80	19,80	23,80	32,00	CR 99287
72,97	73,13	73,00	81,80	19,80	23,80	32,00	CR 99846*
74,60	74,75	74,63	84,90	19,80	23,80	33,40	CR 99847*
74,60	74,75	74,68	84,90	12,70	16,30	33,00	CR 99290
74,60	74,75	74,68	84,90	19,80	23,80	33,00	CR 99293
74,92	75,08	75,00	83,10	15,10	17,50	28,00	CR 99289
74,92	75,08	75,00	84,00	22,00	26,00	33,00	CR 99294
75,49	75,59	75,54	82,20	20,60	25,40	32,00	CR 99292
75,95	76,10	76,00	85,30	12,30	15,90	34,00	CR 99291
75,95	76,10	76,00	85,10	20,60	25,40	33,00	CR 99299
75,95	76,10	76,00	85,30	14,30	17,50	35,00	CR 99298
76,12	76,28	76,20	82,30	20,60	23,80	35,00	CR 99296
76,20	76,35	76,20	82,20	20,60	25,40	32,60	CR 99848*
76,20	76,40	76,28	85,00	15,90	20,60	27,00	CR 99303
76,20	76,35	76,28	82,20	20,60	25,40	33,00	CR 99300
76,40	76,56	76,48	85,20	12,70	15,80	51,00	CR 99301
77,81	78,00	78,00	88,10	19,50	22,20	52,30	CR 99306
79,25	79,40	79,32	89,70	20,60	25,40	51,00	CR 99312
79,24	79,40	79,32	89,70	17,50	20,60	51,00	CR 99311
79,25	79,40	79,38	89,70	20,60	25,40	50,80	CR 99849*
79,35	79,55	79,44	89,50	14,00	18,00	52,00	CR 99307
79,92	80,08	80,00	90,00	11,00	15,00	35,00	CR 99317
79,92	80,08	80,00	90,00	21,00	24,00	35,00	CR 99315
79,81	80,01	80,00	89,90	19,10	22,50	35,00	CR 99313
81,92	82,07	82,00	91,10	16,80	21,60	44,00	CR 99328
82,50	82,70	82,50	90,80	15,10	18,30	35,00	CR 99850*
82,47	82,63	82,55	91,30	20,60	25,40	35,00	CR 99322
82,55	82,70	82,55	91,10	20,60	25,40	35,00	CR 99851*
82,55	82,70	82,63	91,10	17,50	22,20	32,00	CR 99326
82,55	82,70	82,63	91,10	20,60	25,40	35,00	CR 99325
82,55	82,70	82,63	90,80	15,10	18,30	35,00	CR 99324
84,00	84,15	84,00	93,70	20,60	25,40	35,00	CR 99331
84,76	85,02	85,00	94,00	17,00	21,00	35,00	CR 99332
84,78	85,00	85,00	94,00	21,00	25,00	35,00	CR 99333
84,78	85,00	85,00	93,90	10,10	12,70	36,40	CR 99334
85,67	85,83	85,75	93,90	20,60	25,40	35,00	CR 99337
85,67	85,83	85,75	93,70	9,50	12,70	36,00	CR 99338
87,25	87,40	87,33	97,60	19,80	23,00	36,00	CR 99339
88,31	88,47	88,39	97,40	19,80	23,00	36,00	CR 99340
88,82	88,98	88,98	97,60	16,00	20,60	34,20	CR 99346

* Indicates Speedi-Sleeve Gold Product



SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
88,90	89,05	89,00	97,60	20,60	25,40	34,00	CR 99350
88,93	89,08	89,00	97,60	15,90	20,60	34,00	CR 99349
88,90	89,05	89,00	97,20	8,00	12,70	34,00	CR 99347
88,90	89,05	89,00	97,60	20,60	25,40	34,20	CR 99852*
89,92	90,08	90,00	101,60	13,40	16,90	44,00	CR 99353
89,92	90,08	90,00	101,60	18,00	23,00	46,00	CR 99351
89,92	90,08	90,00	101,60	23,00	28,00	44,00	CR 99354
89,92	90,08	90,00	101,60	11,00	13,70	46,00	CR 99352
90,42	90,58	90,50	99,10	20,60	25,40	44,00	CR 99356
91,90	92,05	92,00	102,40	20,60	25,40	44,00	CR 99360
92,02	92,18	92,10	102,40	20,60	25,40	44,00	CR 99362
92,02	92,18	92,10	102,20	12,70	15,90	45,00	CR 99363
93,57	93,73	93,65	97,30	8,00	11,10	22,00	CR 99368
93,60	93,75	93,68	102,20	20,60	23,80	45,00	CR 99365
94,67	94,82	94,74	102,00	12,00	15,10	44,00	CR 99359
94,66	94,82	94,74	102,20	19,80	23,00	45,00	CR 99366
94,99	95,15	95,00	102,50	12,00	15,10	45,00	CR 99364
95,00	95,15	95,00	102,40	8,70	12,70	44,00	CR 99374
94,92	95,08	95,00	102,20	21,00	24,00	44,00	CR 99369
95,14	95,30	95,22	102,20	14,30	17,50	45,00	CR 99376
95,25	95,40	95,25	102,10	17,50	22,20	45,70	CR 99853*
95,26	95,40	95,33	102,10	17,50	22,20	48,00	CR 99372
95,26	95,40	95,33	102,20	8,70	12,70	44,00	CR 99367
98,25	98,40	98,32	106,30	20,60	25,40	48,00	CR 99386
98,37	98,53	98,45	107,20	20,60	25,40	48,00	CR 99387
99,95	100,10	100,00	110,00	20,60	25,40	52,00	CR 99393
99,95	100,10	100,00	109,60	20,60	25,40	52,00	CR 99854*
101,55	101,75	101,60	111,10	20,60	25,40	52,00	CR 99855*
101,55	101,75	101,65	111,10	12,70	15,90	52,00	CR 99401
101,55	101,75	101,65	111,10	16,50	19,70	35,00	CR 99400
101,55	101,75	101,65	111,10	20,60	25,40	52,00	CR 99399
101,55	101,75	101,65	111,10	15,20	18,40	52,00	CR 99395
103,90	104,10	104,00	112,70	20,00	24,00	36,00	CR 99409
104,70	104,90	104,80	113,50	20,60	25,40	35,00	CR 99412
104,90	105,10	105,00	113,50	20,00	23,20	35,00	CR 99413
106,25	106,45	106,35	114,30	20,60	25,40	35,00	CR 99418
107,34	107,54	107,44	117,10	19,80	23,00	37,00	CR 99423
107,90	108,10	108,00	117,10	20,60	25,40	37,00	CR 99424
109,90	110,10	110,00	125,00	12,90	16,50	32,00	CR 99435
109,78	110,00	110,00	124,90	11,40	14,50	32,90	CR 99434
111,00	111,20	111,00	120,70	20,60	25,40	42,00	CR 99437
111,80	112,00	112,00	120,70	19,00	22,50	27,00	CR 99438
112,62	112,83	112,72	122,20	25,40	29,00	33,00	CR 99439
114,20	114,40	114,30	124,50	20,60	25,40	32,00	CR 99450
114,12	114,40	114,30	124,50	20,60	25,40	32,00	CR 99856*
114,90	115,10	115,00	127,00	20,60	23,80	32,00	CR 99452
117,37	117,58	117,48	127,00	11,10	15,80	35,00	CR 99465
117,37	117,57	117,48	128,60	25,40	31,80	35,00	CR 99463
119,00	119,20	119,00	128,60	20,60	25,40	35,00	CR 99468
119,90	120,10	120,00	129,80	8,00	11,00	33,00	CR 99471
119,90	120,10	120,00	129,80	20,00	25,00	32,00	CR 99473
120,55	120,75	120,65	127,00	12,70	19,00	38,00	CR 99475
121,89	122,10	122,00	131,50	20,00	24,00	32,00	CR 99472
122,90	123,10	123,00	132,80	20,00	25,00	31,00	CR 99484

* Indicates Speedi-Sleeve Gold Product

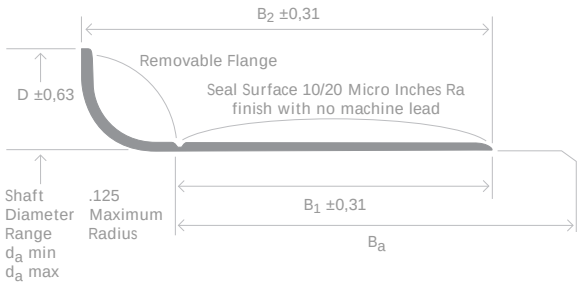


SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
123,72	123,93	123,83	133,40	15,90	19,10	37,00	CR 99487
124,90	125,10	125,00	137,20	10,00	14,00	37,00	CR 99490
124,90	125,10	125,00	137,20	26,00	32,00	37,00	CR 99492
126,95	127,15	127,00	137,20	13,70	17,30	37,00	CR 99501
126,95	127,15	127,00	136,90	20,60	25,40	37,00	CR 99499
126,95	127,15	127,00	137,20	17,50	22,20	37,00	CR 99498
126,95	127,15	127,00	137,20	17,50	22,20	37,00	CR 99857*
126,95	127,15	127,00	139,90	20,60	25,40	37,00	CR 99858*
129,98	130,18	130,00	139,50	22,00	25,30	33,00	CR 99491
129,79	130,00	130,00	139,50	19,00	24,00	30,00	CR 99494
130,05	130,25	130,15	139,70	20,60	25,40	32,00	CR 99513
133,25	133,45	133,35	141,20	20,60	25,40	32,00	CR 99525
134,79	135,00	135,00	149,20	20,50	25,40	32,00	CR 99533
136,42	136,62	136,53	149,20	20,60	25,40	32,00	CR 99537
138,02	138,23	138,13	146,10	38,10	42,90	48,00	CR 99548
139,00	139,20	139,00	154,90	14,30	19,10	24,00	CR 99547
139,65	139,85	139,70	150,80	20,60	25,40	32,00	CR 99859*
139,65	139,85	139,75	150,80	20,60	25,40	32,00	CR 99549
139,65	139,85	139,75	150,80	13,20	17,90	32,00	CR 99550
139,90	140,10	140,00	151,00	20,50	25,50	32,00	CR 99552
142,77	142,98	142,88	157,20	22,20	25,40	46,00	CR 99560
144,75	145,00	145,00	149,90	19,50	22,20	46,00	CR 99571
145,44	145,64	145,54	149,90	14,30	19,10	49,20	CR 99562
145,95	146,15	146,05	157,00	20,60	25,40	44,00	CR 99575
149,12	149,33	149,23	157,20	25,40	31,80	33,00	CR 99862*
149,12	149,33	149,23	157,20	25,40	31,80	33,00	CR 99587
149,75	150,00	150,00	159,00	26,00	30,00	34,00	CR 99595
150,73	150,93	150,83	161,90	25,40	28,60	48,00	CR 99596
152,27	152,47	152,37	161,90	25,40	31,80	44,00	CR 99599
152,27	152,47	152,37	161,50	12,70	19,00	44,00	CR 99601
153,87	154,13	154,00	161,90	26,00	30,00	33,00	CR 99605
154,75	155,00	155,00	167,00	26,00	30,00	33,00	CR 99606
157,43	157,68	157,56	168,30	20,60	27,00	44,00	CR 99620
158,62	158,88	158,75	168,30	26,20	31,80	44,00	CR 99625
159,74	169,00	160,00	177,80	25,40	31,80	35,00	CR 99630
164,97	165,23	165,10	177,80	25,40	31,80	35,00	CR 99650
169,75	170,00	170,00	182,60	31,80	38,00	44,50	CR 99640
171,32	171,58	171,45	181,00	20,60	27,00	44,00	CR 99675
174,75	175,00	175,00	187,00	28,00	32,00	35,00	CR 99687
177,67	177,93	177,80	189,90	25,40	31,80	43,00	CR 99700
179,79	180,00	180,00	190,50	33,00	38,00	45,00	CR 99721
184,00	184,25	184,00	197,10	31,70	38,10	55,00	CR 99725
184,73	185,00	185,00	199,00	32,00	38,00	55,00	CR 99726
189,08	189,33	189,20	199,60	20,60	25,40	32,00	CR 99745
190,37	190,63	190,50	200,00	20,60	25,40	32,00	CR 99750
196,72	196,98	196,85	210,10	25,40	33,30	48,00	CR 99775
199,87	200,13	200,00	212,70	34,50	38,10	44,00	CR 99787
201,50	201,75	201,63	212,70	25,40	31,80	44,00	CR 99799
203,07	203,33	203,20	212,70	25,40	31,80	44,00	CR 99800

* Indicates Speedi-Sleeve Gold Product

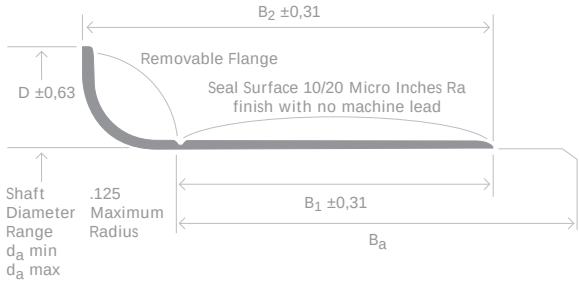
SPEEDI-SLEEVE®

Size Listing/Metric



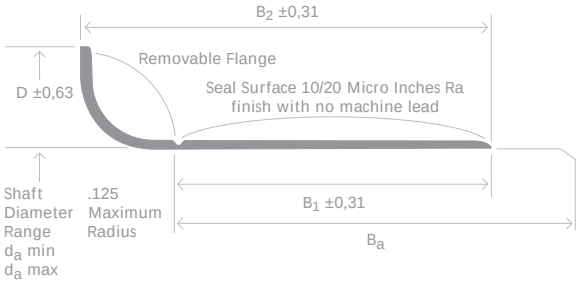
SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
.469	.475	.472	.610	.236	.331	1.875	CR 99049
.498	.502	.500	.610	.250	.344	2.000	CR 99050
.547	.551	.551	.752	.251	.389	1.831	CR 99055
.560	.566	.563	.750	.250	.391	1.831	CR 99056
.589	.593	.591	.750	.197	.354	1.862	CR 99059
.623	.627	.625	.750	.313	.406	2.000	CR 99062
.623	.627	.625	.750	.313	.406	2.000	CR 99810*
.624	.630	630	.752	.315	.437	2.000	CR 99058
.667	.671	.669	1063,00	.313	.433	2.000	CR 99068
.682	.686	.684	.900	.313	.438	2.000	CR 99060
.704	.709	.706	1063,00	.315	.433	1.811	CR 99082
.748	.752	.750	.945	.313	.438	2.000	CR 99076
.748	.752	.750	.945	.313	.438	2.000	CR 99871*
.759	.761	.760	.938	.313	.438	2.000	CR 99081
.780	.784	.781	.935	.313	.438	2.000	CR 99080
.785	.789	.787	.930	.313	.133	2.000	CR 99078
.857	.861	.859	1155,00	.250	.375	2.000	CR 99086
.861	.866	.866	1188,00	.315	.472	1.813	CR 99085
.861	.866	.866	1189,00	260	.358	1.854	CR 99084
.873	.877	875	1094,00	.313	.438	2.000	CR 99087
.873	.877	.875	1094,00	.313	.438	2.000	CR 99812*
908	.912	.910	1218,00	.313	.438	1.847	CR 99091
.908	.912	.910	1218,00	.313	.438	1.847	CR 99860*
.940	.945	.945	1130,00	.315	.437	2.000	CR 99092
.966	.970	.969	1130,00	.313	.438	2.000	CR 99094
.966	.970	.969	1130,00	.625	.719	2.000	CR 99096
.982	.986	.984	1300,00	.313	.433	2.000	CR 99098
.982	.986	.984	1300,00	.313	.433	2.000	CR 99813*
.998	1.002	1.000	1219,00	.313	.438	2.000	CR 99100
.998	1.002	1.000	1219,00	.313	.438	2.000	CR 99814*
1.019	1.024	1.024	1312,00	.313	.472	1.813	CR 99103
1.060	1.064	1.063	1320,00	.313	.438	2.813	CR 99106
1.060	1.064	1.063	1320,00	.313	.438	1.843	CR 99815*
1.087	1.091	1.089	1406,00	.313	.438	.625	CR 99108
1.100	1.104	1.102	1375,00	.375	.500	1.843	CR 99111
1.123	1.127	1.125	1500,00	.313	.438	.688	CR 99112
1.123	1.127	1.125	1500,00	.375	.500	.688	CR 99116
1.123	1.127	1.125	1500,00	.313	.438	.688	CR 99816*
1.154	1.158	1.156	1350,00	.375	.500	.688	CR 99120
1.173	1.178	1.175	1575,00	.313	.438	.688	CR 99122
1.179	1.184	1.181	1400,00	.315	.433	.688	CR 99114
1.185	1.190	1.188	1400,00	.313	.438	.688	CR 99118
1.216	1.222	1.219	1563,00	.313	.433	.625	CR 99123
1.237	1.243	1.240	1540,00	.315	.438	.688	CR 99141
1.247	1.253	1.250	1500,00	.313	.438	.688	CR 99125
1.247	1.253	1.250	1500,00	.313	.438	.688	CR 99817*
1.257	1.263	1.260	1500,00	.315	.438	.688	CR 99128
1.308	1.314	1.313	1600,00	.250	.375	.813	CR 99129
1.310	1.316	1.313	1594,00	.500	.625	.813	CR 99131
1.310	1.316	1.313	1594,00	.500	.625	.813	CR 99818*
1.332	1.339	1.339	1625,00	.500	.625	.815	CR 99134
1.371	1.377	1.375	1638,00	.313	438	.813	CR 99133
1.371	1.377	1.375	1638,00	.500	.625	.813	CR 99138
1.375	1.381	1.375	1638,00	.512	.630	.813	CR 99139

* Indicates Speedi-Sleeve Gold Product



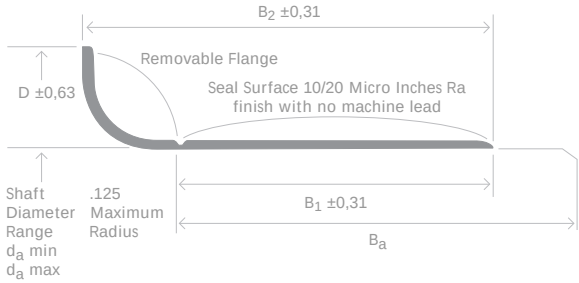
SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
1.371	1.377	1.375	1638,00	.500	.625	813	CR 99819*
1.375	1.381	1.375	1638,00	.512	.630	.813	CR 99820*
1.412	1.417	1.417	1781,00	.512	.669	.984	CR 99146
1.432	1.438	1.438	1781,00	.563	.688	1.016	CR 99143
1.435	1.441	1.438	1781,00	.375	.500	1.016	CR 99144
1.432	1.438	1.438	1781,00	.563	.688	1.016	CR 99821*
1.490	1.496	1.496	1781,00	.512	.669	.984	CR 99147
1.497	1.503	1.500	1781,00	.375	500	1.016	CR 99150
1.497	1.503	1.500	1781,00	.563	.688	1.016	CR 99149
1.497	1.503	1.500	1781,00	.563	688	1.016	CR 99822*
1.497	1.503	1.500	1781,00	.375	.500	1.016	CR 99823*
1.520	1.526	1.523	1859,00	.438	.563	1.016	CR 99152
1.549	1.555	1.552	1859,00	.438	.563	1.016	CR 99155
1.559	1.565	1.563	1859,00	.563	.688	1.016	CR 99156
1.559	1.565	1.563	1859,00	.563	.688	1.016	CR 99824*
1.566	1.572	1.569	1859,00	.625	.750	1.016	CR 99159
1.569	1.575	1.575	1846,00	389	.508	1.000	CR 99153
1.572	1.578	1.578	1850,00	.512	.630	1.023	CR 99157
1.572	1.578	1.578	1850,00	.512	.630	1.023	CR 99825*
1.602	1.608	1.605	1938,00	.500	.641	1.000	CR 99160
1.608	1.614	1.614	1937,00	.500	625	1.016	CR 99163
1.622	1.628	1.625	1875,00	.313	.438	1.016	CR 99161
1.623	1.628	1.625	1875,00	.563	688	.813	CR 99162
1.622	1.628	1.625	1875,00	.563	.688	.813	CR 99826*
1.647	1.653	1.650	2087,00	.445	.571	.846	CR 99166
1.647	1.653	1.650	2087,00	.563	.689	.827	CR 99169
1.653	1.659	1.656	2087,00	.550	.689	827	CR 99165
1.684	1.690	1.688	1906,00	.563	.688	.875	CR 99168
1.685	1.691	1.688	1906,00	.313	.438	.875	CR 99167
1.687	1.693	1.693	1906,00	.500	.625	.843	CR 99182
1.715	1.721	1.719	2031,00	.563	.688	.813	CR 99171
1.736	1.742	1.739	2063,00	.375	.500	.813	CR 99170
1.747	1.753	1.750	2055,00	.375	.500	.813	CR 99172
1.747	1.753	1.750	2063,00	.531	.625	.875	CR 99180
1.747	1.753	1.750	2063,00	.563	.688	.813	CR 99174
1.747	1.753	1.750	2063,00	750	.875	.813	CR 99175
1.747	1.753	1.750	2063,00	.563	.688	.813	CR 9827*
1.747	1.753	1.750	2063,00	.750	.875	.813	CR 99828*
1.761	1.767	1.766	2063,00	.563	.688	.813	CR 99176
1.761	1.767	1.766	2063,00	.563	.688	.813	CR 99829*
1.769	1.775	1.772	2087,00	.551	.669	.813	CR 99177
1.769	1.775	1.772	2087,00	.551	.669	.812	CR 99830*
1.778	1.784	1.781	2125,00	.675	.800	1.062	CR 99179
1.809	1.815	1.813	2090,00	.563	.688	1.000	CR 99181
1.809	1.815	1.813	2090,00	.563	.688	1.000	CR 99831*
1.857	1.863	1.859	2156,00	.563	.688	1.000	CR 99185
1.866	1.872	1.868	2188,00	.889	1.025	1.000	CR 99186
1.872	1.878	1.875	2203,00	.175	.295	.744	CR 99190
1.872	1.878	1.875	2203,00	.295	.415	.744	CR 99188
1.872	1.878	1.875	2203,00	.375	.516	1.050	CR 99184
1.872	1.878	1.875	2203,00	.563	688	1.000	CR 99187
1.872	1.878	1.875	2203,00	.563	.688	1.000	CR 99832*
1.887	1.893	1.891	2205,00	.551	.668	.984	CR 99189
1.909	1.915	1.912	2219,00	.375	.500	1.000	CR 99192

* Indicates Speedi-Sleeve Gold Product



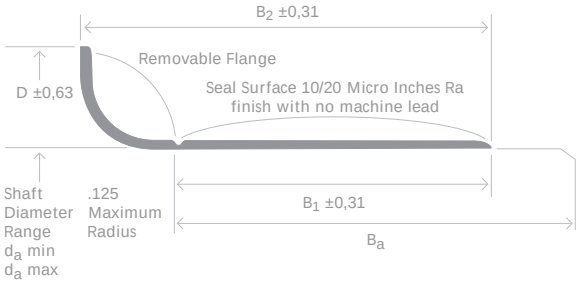
SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
1.934	1.940	1.938	2219,00	.563	.688	1.000	CR 99193
1.934	1.940	1.938	2219,00	.563	.688	1.000	CR 99833*
1.965	1.971	1.969	2244,00	.551	.668	.984	CR 99196
1.977	1.983	1.980	2313,00	.563	.704	1.050	CR 99198
1.997	2.003	2.000	2406,00	.563	.688	1.000	CR 99199
1.997	2.003	2.000	2406,00	.875	1.000	1.000	CR 99200
1.997	2.003	2.000	2406,00	.563	.688	1.006	CR 99834*
1.997	2.003	2.000	2406,00	.875	1.000	1.000	CR 99835*
2.040	2.047	2.047	2469,00	.500	.625	1.358	CR 99204
2.057	2.063	2.063	2469,00	.813	.938	1.375	CR 99205
2.123	2.128	2.125	2422,00	.500	750	1.281	CR 99210
2.124	2.130	2.125	2422,00	.781	.938	1.375	CR 99212
2.124	2.130	2.125	2422,00	.781	.938	1.375	CR 99836*
2.162	2.168	2.165	2441,00	.787	.905	1.250	CR 99215
2.162	2.169	2.165	2441,00	.787	.905	1.250	CR 99863*
2.178	2.184	2.181	2500,00	.781	.938	1.500	CR 99217
2.186	2.192	2.188	2500,00	.781	.938	1.313	CR 99218
2.198	2.205	2.205	2531,00	.500	.625	1.315	CR 99220
2.227	2.233	2.230	2531,00	.500	.625	1.313	CR 99229
2.227	2.233	2.230	2531,00	.781	.906	1.250	CR 99230
2.227	2.233	2.230	2531,00	.500	.625	1.313	CR 99861*
2.237	2.243	2.240	2563,00	.764	.900	1.250	CR 99226
2.249	2.255	2.250	2531,00	.781	.938	1.313	CR 99225
2.249	2.255	2.250	2531,00	.313	.438	1.313	CR 99227
2.249	2.255	2.250	2531,00	.781	.938	1.313	CR 99837*
2.249	2.255	2.250	2531,00	.313	.438	1.313	CR 99838*
2.309	2.315	2.313	2688,00	.781	.938	1.375	CR 99231
2.327	2.333	2.328	2750,00	.750	.875	1.500	CR 99233
2.359	2.365	2.362	2785,00	.370	.450	1.471	CR 99241
2.359	2.365	2.362	2785,00	.787	.905	1.375	CR 99235
2.372	2.378	2.375	2750,00	.594	.750	1.375	CR 99238
2.374	2.380	2.375	2750,00	.526	.683	1.375	CR 99240
2.374	2.380	2.375	2750,00	.781	.938	1.375	CR 99237
2.374	2.380	2.375	2750,00	.781	.938	1.375	CR 99839*
2.434	2.440	2.438	2828,00	.781	.938	1.393	CR 99243
2.435	2.441	2.438	2828,00	.500	.625	1.425	CR 99242
2.433	2.441	2.441	2827,00	.500	.625	1.425	CR 99244
2.489	2.495	2.492	2875,00	.781	938	1.393	CR 99249
2.497	2.503	2.500	2820,00	.555	.650	.890	CR 99253
2.500	2.506	2.500	2828,00	.500	.656	1.393	CR 99248
2.500	2.506	2.500	2820,00	.781	.938	1.375	CR 99250
2.500	2.506	2.500	2820,00	.781	.938	1.375	CR 99840*
2.510	2.516	2.516	2828,00	.781	.906	1.438	CR 99251
2.556	2.562	2.559	2850,00	.787	.905	1.375	CR 99254
2.556	2.562	2.559	2850,00	.787	.905	1.375	CR 99841*
2.560	2.566	2.563	2891,00	.781	.938	1.375	CR 99256
2.595	2.601	2.598	2990,00	.781	.938	1.250	CR 99259
2.618	2.624	2.621	3047,00	.781	.938	1.375	CR 99261
2.621	2.627	2.625	3047,00	.781	.906	1.375	CR 99264
2.622	2.628	2.625	3047,00	.500	.625	1.375	CR 99260
2.625	2.631	2.625	3047,00	.781	.938	1.375	CR 99262
2.625	2.631	2.625	3047,00	.781	.938	1.375	CR 99842*
2.670	2.677	2.677	3126,00	.752	.874	1.689	CR 99266
2.727	2.733	2.730	3125,00	.781	.906	1.313	CR 99268

* Indicates Speedi-Sleeve Gold Product



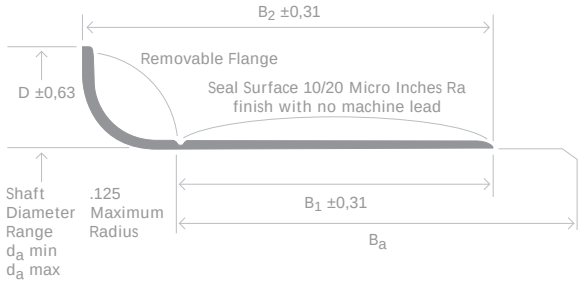
SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
2.740	2.746	2.743	3065,00	.781	.938	1.250	CR 99273
2.745	2.751	2.750	3125,00	.781	.938	1.250	CR 99274
2.747	2.753	2.750	3075,00	1.438	1.625	1.625	CR 99267
2.750	2.756	2.750	3125,00	.406	.563	1.250	CR 99272
2.750	2.756	2.750	3125,00	.781	.938	1.250	CR 99275
2.750	2.756	2.750	3125,00	1.125	1.250	1.313	CR 99269
2.745	2.751	2.750	3125,00	.781	.938	1.250	CR 99843*
2.750	2.756	2.750	3125,00	.781	.938	1.250	CR 99844*
2.753	2.759	2.756	3125,00	.787	.945	1.250	CR 99276
2.809	2.815	2.813	3188,00	.594	.688	1.250	CR 99281
2.827	2.835	2.835	3224,00	.752	.874	1.343	CR 99284
2.838	2.844	2.838	3225,00	.500	.656	1.250	CR 99845*
2.838	2.844	2.844	3225,00	.500	.656	1.250	CR 99282
2.866	2.872	2.869	3188,00	.781	.938	1.250	CR 99286
2.873	2.879	2.875	3219,00	.781	.938	1.250	CR 99287
2.873	2.879	2.875	3219,00	.781	.938	1.250	CR 99846*
2.937	2.943	2.938	3344,00	.500	.641	1.331	CR 99290
2.937	2.943	2.938	3344,00	.781	.938	1.313	CR 99293
2.937	2.943	2.938	3344,00	.781	.938	1.313	CR 99847*
2.950	2.956	2.953	3273,00	.594	.688	1.083	CR 99289
2.950	2.956	2.953	3305,00	.866	1.024	1.313	CR 99294
2.972	2.976	2.974	3235,00	.813	1.000	1.250	CR 99292
2.990	2.996	2.993	3359,00	.484	.625	1.331	CR 99291
2.990	2.996	2.993	3359,00	.563	.688	1.375	CR 99298
2.990	2.996	2.993	3350,00	.813	1.000	1.281	CR 99299
2.997	3.003	3.000	3240,00	.813	.938	1.375	CR 99296
3.000	3.006	3.000	3235,00	.813	1.000	1.281	CR 99300
3.000	3.006	3.000	3345,00	.625	.813	1.063	CR 99303
3.000	3.006	3.000	3235,00	.813	1.000	1.281	CR 99848*
3.008	3.014	3.011	3355,00	.500	.625	2.000	CR 99301
3.063	3.071	3.071	3469,00	.770	.874	2.059	CR 99306
3.120	3.126	3.125	3531,00	.688	.813	2.000	CR 99311
3.120	3.126	3.125	3531,00	.813	1.000	2.000	CR 99312
3.124	3.132	3.125	3525,00	.551	.709	2.031	CR 99307
3.120	3.126	3.125	3531,00	.813	1.000	2.000	CR 99849*
3.142	3.150	3.146	3540,00	.750	.886	1.375	CR 99313
3.146	3.153	3.150	3543,00	.433	.591	1.375	CR 99317
3.146	3.153	3.150	3543,00	.827	945	1.375	CR 99315
3.225	3.231	3.228	3585,00	.660	.848	1.750	CR 99328
3.250	3.256	3.250	3575,00	.595	.719	1.375	CR 99324
3.250	3.256	3.250	3585,00	.813	1.000	1.375	CR 99325
3.250	3.256	3.250	3585,00	.688	.875	1.250	CR 99326
3.247	3.253	3.250	3594,00	.813	1.000	1.375	CR 99322
3.250	3.256	3.250	3575,00	.595	.719	1.375	CR 99850*
3.250	3.256	3.250	3585,00	.813	1.000	1.375	CR 99851*
3.307	3.313	3.310	3688,00	.813	1.000	1.375	CR 99331
3.337	3.347	3.342	3700,00	.669	.827	1.378	CR 99332
3.337	3.346	3.342	3700,00	.827	.984	1.378	CR 99333
3.338	3.346	3.346	3697,00	.398	.500	1.433	CR 99334
3.373	3.379	3.375	3688,00	.375	.500	1.410	CR 99338
3.373	3.379	3.375	3695,00	.813	1.000	1.375	CR 99337
3.435	3.441	3.438	3844,00	.781	.906	1.406	CR 99339
3.477	3.483	3.480	3835,00	.781	.906	1.406	CR 99340
3.497	3.503	3.500	3844,00	.625	.813	1.347	CR 99346

* Indicates Speedi-Sleeve Gold Product



SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
3.500	3.506	3.500	3825,00	.313	.500	1.347	CR 99347
3.500	3.506	3.500	3844,00	.813	1.000	1.347	CR 99350
3.500	3.506	3.500	3844,00	.813	1.000	1.347	CR 99852*
3.501	3.507	3.504	3844,00	.625	.813	1.348	CR 99349
3.540	3.546	3.543	4000,00	.526	.667	1.750	CR 99353
3.540	3.546	3.543	4000,00	.434	.538	1.813	CR 99352
3.540	3.546	3.543	4000,00	.710	.906	1.813	CR 99351
3.540	3.546	3.543	4000,00	.906	1.102	1.750	CR 99354
3.560	3.566	3.563	3900,00	.813	1.000	1.750	CR 99356
3.618	3.624	3.621	4031,00	.813	1.000	1.750	CR 99360
3.623	3.629	3.625	4025,00	.500	.625	1.750	CR 99363
3.623	3.629	3.625	4031,00	.813	1.000	1.750	CR 99362
3.684	3.690	3.688	3830,00	.313	.438	.875	CR 99368
3.685	3.691	3.688	4025,00	.813	.938	1.750	CR 99365
3.727	3.733	3.730	4016,00	.469	.594	1.719	CR 99359
3.727	3.733	3.730	4025,00	.781	.906	1.750	CR 99366
3.737	3.743	3.740	4025,00	.827	.945	1.750	CR 99369
3.740	3.746	3.743	4031,00	.344	.500	1.750	CR 99374
3.740	3.746	3.743	4035,00	.469	.594	1.750	CR 99364
3.746	3.752	3.750	4025,00	.563	.688	1.750	CR 99376
3.750	3.756	3.750	4025,00	.344	.500	1.750	CR 99367
3.750	3.756	3.750	4020,00	.688	.875	1.875	CR 99372
3.750	3.756	3.750	4020,00	.688	.875	1.800	CR 99853*
3.868	3.874	3.871	4185,00	.813	1.000	1.875	CR 99386
3.873	3.879	3.875	4219,00	.813	1.000	1.875	CR 99387
3.935	3.941	3.938	4313,00	.813	1.000	2.050	CR 99393
3.935	3.941	3.938	4313,00	.813	1.000	2.050	CR 99854*
3.998	4.006	4.000	4375,00	.600	.725	2.050	CR 99395
3.998	4.006	4.000	4375,00	.813	1.000	2.050	CR 99399
3.998	4.006	4.000	4375,00	.650	.775	1.375	CR 99400
3.998	4.006	4.000	4375,00	.500	.625	2.066	CR 99401
3.998	4.006	4.000	4375,00	.813	1.000	2.050	CR 99855*
4.090	4.098	4.094	4438,00	.787	.945	1.417	CR 99409
4.122	4.130	4.125	4420,00	.813	1.000	1.375	CR 99412
4.130	4.138	4.134	4470,00	.787	.913	1.378	CR 99413
4.183	4.191	4.188	4500,00	.813	1.000	1.375	CR 99418
4.226	4.234	4.234	4610,00	.781	.906	1.438	CR 99423
4.248	4.256	4.250	4610,00	.813	1.000	1.438	CR 99424
4.327	4.335	4.328	4921,00	.509	.650	1.250	CR 99435
4.322	4.331	4.331	4917,00	.499	.570	1.295	CR 99434
4.370	4.378	4.375	4750,00	.813	1.000	1.650	CR 99437
4.401	4.409	4.406	4750,00	.748	.886	1.063	CR 99438
4.434	4.442	4.438	4813,00	1.000	1.142	1.313	CR 99439
4.496	4.504	4.500	4900,00	.813	1.000	1.250	CR 99450
4.496	4.504	4.500	4900,00	813	1.000	1.250	CR 99856*
4.523	4.531	4.527	5000,00	.813	.938	1.250	CR 99452
4.621	4.629	4.625	5063,00	1.000	1.250	1.375	CR 99463
4.621	4.629	4.625	5000,00	.438	.625	1.375	CR 99465
4.685	4.693	4.688	5063,00	.813	1.000	1.375	CR 99468
4.720	4.728	4.724	5110,00	.315	.433	1.323	CR 99471
4.720	4.728	4.724	5110,00	.787	984	1.260	CR 99473
4.746	4.754	4.750	5000,00	.500	.750	1.500	CR 99475
4.799	4.807	4.803	5177,00	.787	.945	1.260	CR 99472
4.839	4.847	4.843	5229,00	787	.984	1.244	CR 99484

* Indicates Speedi-Sleeve Gold Product



SHAFT DIAMETER RANGE	SHAFT DIAMETER RANGE	NOMINAL SHAFT DIAMETER	FLANGE DIAMETER	WIDTH ON SHAFT	OVERALL WIDTH	INSTALLATION DEPTH	DESIGNATION
d_a min	d_a max	d	D ±0,63	B_1 ±0,31	B_2 ±0,63	B_a	
Inches	Inches		Inches	Inches	Inches		
4.871	4.879	4.875	5250,00	.625	.750	1.438	CR 99487
4.917	4.925	4.921	5400,00	.394	.551	1.438	CR 99490
4.917	4.925	4.921	5400,00	1.024	1.260	1.438	CR 99492
4.998	5.006	5.000	5400,00	540	.681	1.438	CR 99501
4.998	5.006	5.000	5400,00	.688	.875	1.438	CR 99498
4.998	5.006	5.000	5390,00	.813	1.000	1.438	CR 99499
4.998	5.006	5.000	5400,00	.688	.875	1.438	CR 99857*
4.998	5.006	5.000	5390,00	.813	1.000	1.438	CR 99858*
5.110	5.118	5.114	5493,00	750	.938	1.181	CR 99494
5.117	5.125	5.125	5493,00	.866	.996	1.280	CR 99491
5.120	5.128	5.125	5500,00	.813	1.000	1.250	CR 99513
5.246	5.254	5.250	5560,00	.813	1.000	1.250	CR 99525
5.307	5.315	5.313	5875,00	807	1.000	1.250	CR 99533
5.371	5.379	5.375	5875,00	.813	1.000	1.250	CR 99537
5.434	5.442	5.438	5750,00	1.500	1.688	1.875	CR 99548
5.472	5.480	5.472	6100,00	563	.750	.938	CR 99547
5.498	5.506	5.500	5938,00	.813	1.000	1.250	CR 99549
5.498	5.506	5.500	5938,00	.518	.705	1.250	CR 99550
5.498	5.506	5.500	5938,00	.813	1.000	1.250	CR 99859*
5.508	5.516	5.512	5945,00	.807	1.000	1.250	CR 99552
5.621	5.629	5.625	6188,00	.875	1.000	1.812	CR 99560
5.700	5.709	5.709	5902,00	.768	.874	1.811	CR 99571
5.726	5.734	5.734	5900,00	.563	.750	1.938	CR 99562
5.746	5.754	5.750	6180,00	.813	1.000	1.750	CR 99575
5.871	5.879	5.875	6188,00	1.000	1.250	1.313	CR 99587
5.871	5.879	5.875	6188,00	1.000	1.250	1.313	CR 99862*
5.895	5.905	5.905	6260,00	1.024	1.181	1.338	CR 99595
5.934	5.942	5.938	6375,00	1.000	1.125	1.875	CR 99596
5.995	6.003	6.000	6360,00	.500	.750	1.750	CR 99601
5.995	6.003	6.000	6375,00	1.000	1.250	1.750	CR 99599
6.058	6.068	6.063	6375,00	1.024	1.181	1.299	CR 99605
6.092	6.102	6.097	6575,00	1.024	1.181	1.299	CR 99606
6.198	6.208	6.203	6625,00	.813	1.063	1.750	CR 99620
6.245	6.255	6.250	6625,00	1.031	1.250	1.750	CR 99625
6.289	6.299	6.299	7000,00	1.000	1.250	1.375	CR 99630
6.495	6.505	6.500	7000,00	1.000	1.250	1.375	CR 99650
6.683	6.693	6.688	7188,00	1.250	1.496	1.750	CR 99640
6.745	6.755	6.750	7125,00	.813	1.063	1.750	CR 99675
6.880	6.890	6.890	7362,00	1.102	1.260	1.378	CR 99687
6.995	7.005	7.000	7475,00	1.000	1.250	1.688	CR 99700
7.077	7.087	7.087	7500,00	1.300	1.496	1.752	CR 99721
7.244	7.254	7.250	7760,00	1.250	1.500	2.175	CR 99725
7.273	7.283	7.278	7834,00	1.260	1.496	2.165	CR 99726
7.444	7.454	7.453	7860,00	.813	1.000	1.250	CR 99745
7.495	7.505	7.500	7875,00	.813	1.000	1.250	CR 99750
7.745	7.755	7.750	8270,00	1.000	1.313	1.875	CR 99775
7.869	7.879	7.875	8375,00	1.359	1.500	1.750	CR 99787
7.933	7.943	7.938	8375,00	1.000	1.250	1.750	CR 99799
7.995	8.005	8.000	8375,00	1.000	1.250	1.750	CR 99800

* Indicates Speedi-Sleeve Gold Product

CHICAGO RAWHIDE – LOCATIONS

A world-wide network

SALES AND MANUFACTURING

Brazil	1 plant
China	2 plants
Germany	1 plant
India	1 plant
Italy	2 plants
Korea	1 plant
Mexico	1 plant
USA	6 plants

SALES AND DISTRIBUTION CENTRES

Australia
Belgium
France
Japan
Poland
Sweden
United Kingdom
additional sales via regional SKF offices
in over 130 countries

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