

## 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 arades 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 malfunction 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  $0,5 \mu m$  (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.

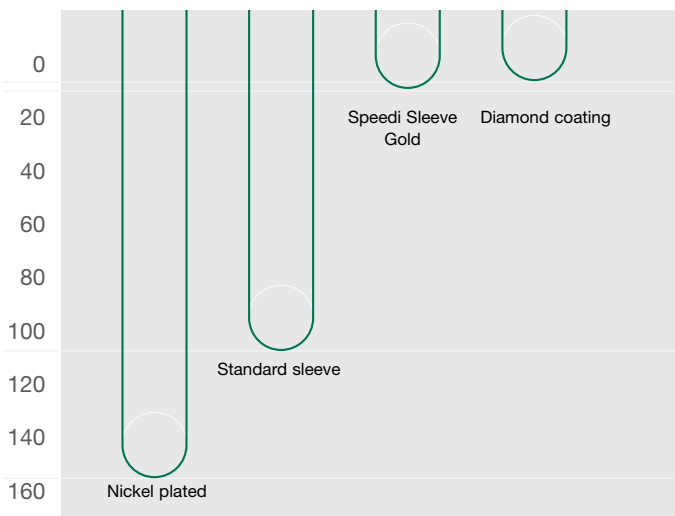
*Speedi-Sleeve:  
good as a new shaft,  
if not better*



## 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.

*50 sizes of Speedi-Sleeve Gold are in production.  
Other sizes can be produced to special order.*



## 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 remetallising 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.

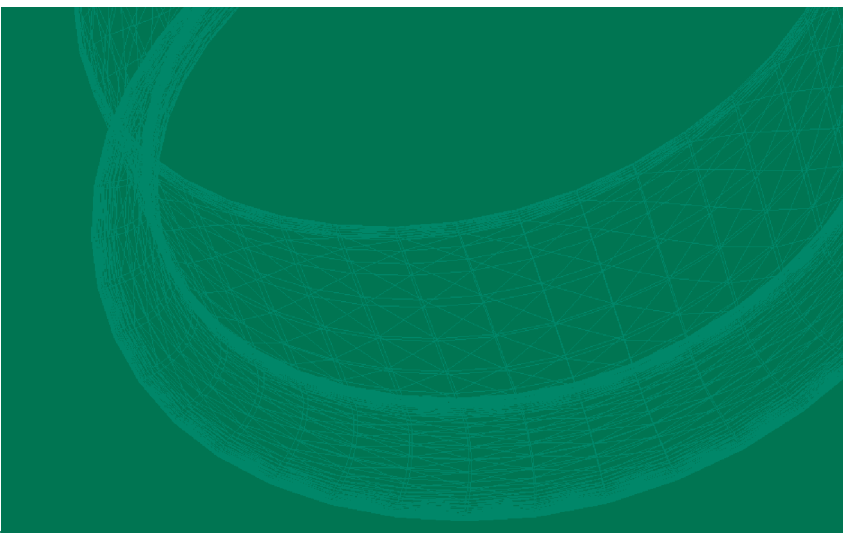
The Speedi-Sleeve came to the rescue. The sleeve was installed without having to remove the shaft and provided a proper surface finish for the CR Waves seal to run on, maximising the service life of the seal. A V-ring was also installed to provide extra protection to the primary seal.

#### **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-Sleeve 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.

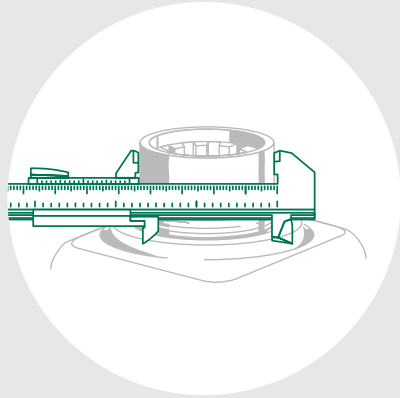
If no suitable sleeve is listed in the product table then it will be necessary to rework the shaft to an appropriate dimension. This will also mean that a new size of seal will be required. If production quantities are viable, CR will also make tailored sleeves.

### Procedure

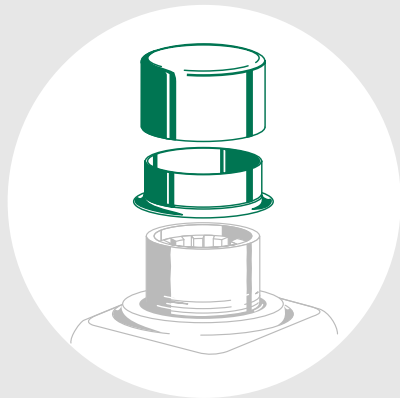
- 1** The final position of the sleeve on the shaft should be determined and marked. The sleeve should cover the wear tracks of the old seal and not just left flush with the shaft end.
- 2** Push the sleeve on to the shaft with the flanged end first. The mounting tool supplied with the sleeve is then 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.*

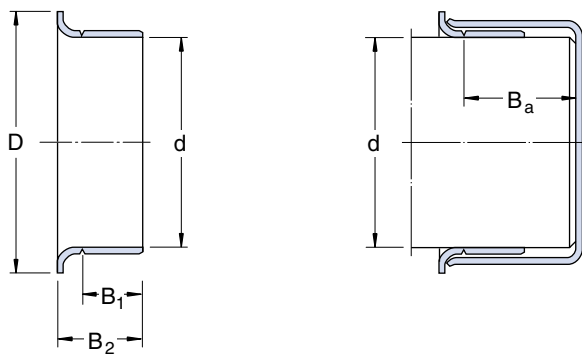
- 4** Remove the flange if necessary. It is important that this is only done after the sleeve has reached its final position. The flange should be cut through to the tear groove after which it can be peeled off along the groove using a pair of tongs.

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 dismantled 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.

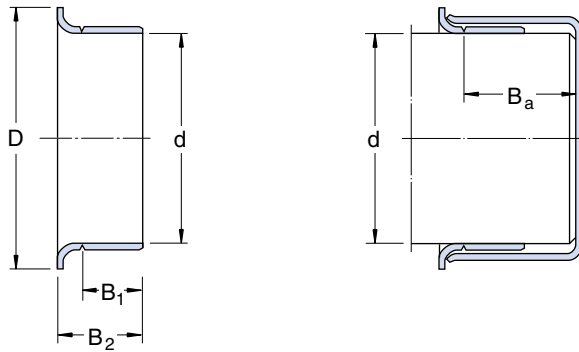


Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
11,93	12,07	12,00	15,50	6,00	8,40	22,20	<b>CR 99049</b>
12,65	12,75	12,70	15,50	6,40	8,70	51,00	<b>CR 99050</b>
13,89	14,00	14,00	19,10	6,40	9,90	46,50	<b>CR 99055</b>
14,22	14,38	14,30	19,10	6,40	9,90	47,00	<b>CR 99056</b>
14,96	15,06	15,00	19,10	5,00	9,00	47,30	<b>CR 99059</b>
15,82	15,93	15,88	19,10	8,00	10,30	50,80	<b>CR 99810*</b>
15,82	15,92	15,88	19,10	8,00	10,30	51,00	<b>CR 99062</b>
15,89	16,00	16,00	19,10	8,00	11,10	50,80	<b>CR 99058</b>
16,95	17,05	17,00	27,00	8,00	11,00	51,00	<b>CR 99068</b>
17,32	17,42	17,37	22,90	8,00	11,10	51,00	<b>CR 99060</b>
17,89	18,00	18,00	27,00	8,00	11,00	46,00	<b>CR 99082</b>
19,00	19,10	19,00	24,00	8,00	11,10	50,80	<b>CR 99811*</b>
19,00	19,10	19,00	24,00	8,00	11,10	51,00	<b>CR 99076</b>
19,28	19,33	19,30	23,80	8,00	11,10	51,00	<b>CR 99081</b>
19,81	19,91	19,86	23,80	8,00	11,10	51,00	<b>CR 99080</b>
19,95	20,05	20,00	23,60	8,00	11,00	51,00	<b>CR 99078</b>
21,77	21,87	21,82	29,30	6,50	9,50	51,00	<b>CR 99086</b>
21,87	22,00	22,00	30,20	8,00	12,00	46,00	<b>CR 99085</b>
21,87	22,00	22,00	30,20	6,60	9,10	47,10	<b>CR 99084</b>
22,17	22,28	22,23	27,80	8,00	11,10	50,80	<b>CR 99812*</b>
22,17	22,27	22,23	27,80	8,00	11,10	51,00	<b>CR 99087</b>
23,06	23,16	23,11	30,90	8,00	11,10	47,00	<b>CR 99091</b>
23,06	23,17	23,11	30,90	8,00	11,10	47,00	<b>CR 99860*</b>
23,87	24,00	24,00	28,70	8,00	11,10	50,80	<b>CR 99092</b>
24,54	24,64	24,59	28,70	15,90	18,30	51,00	<b>CR 99096</b>
24,54	24,64	24,59	28,70	8,00	11,10	51,00	<b>CR 99094</b>
24,94	25,04	25,00	33,00	8,00	11,00	50,80	<b>CR 99813*</b>
24,95	25,05	25,00	33,00	8,00	11,00	51,00	<b>CR 99098</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>25,35</b>	<b>25,45</b>	25,40	31,00	8,00	11,10	50,80	<b>CR 99814*</b>
<b>25,35</b>	<b>25,45</b>	25,40	31,00	8,00	11,10	51,00	<b>CR 99100</b>
<b>25,87</b>	<b>26,00</b>	26,00	33,30	8,00	12,00	46,00	<b>CR 99103</b>
<b>26,92</b>	<b>27,03</b>	27,00	33,50	8,00	11,00	72,00	<b>CR 99106</b>
<b>26,92</b>	<b>27,03</b>	27,00	33,50	8,00	11,10	47,00	<b>CR 99815*</b>
<b>27,61</b>	<b>27,71</b>	27,66	35,70	8,00	11,10	16,00	<b>CR 99108</b>
<b>27,94</b>	<b>28,04</b>	28,00	34,90	9,50	12,70	72,00	<b>CR 99111</b>
<b>28,52</b>	<b>28,62</b>	28,58	38,10	8,00	11,10	17,00	<b>CR 99816*</b>
<b>28,52</b>	<b>28,62</b>	28,58	38,10	8,00	11,10	17,00	<b>CR 99112</b>
<b>28,53</b>	<b>28,63</b>	28,58	38,10	9,50	12,70	17,50	<b>CR 99116</b>
<b>29,31</b>	<b>29,41</b>	29,36	34,30	9,50	12,70	17,00	<b>CR 99120</b>
<b>29,79</b>	<b>29,92</b>	29,85	40,00	8,00	11,10	17,00	<b>CR 99122</b>
<b>29,95</b>	<b>30,07</b>	30,00	35,60	8,00	11,00	17,00	<b>CR 99114</b>
<b>30,10</b>	<b>30,22</b>	30,15	35,60	8,00	11,00	17,00	<b>CR 99118</b>
<b>30,89</b>	<b>31,04</b>	31,00	39,70	8,00	11,00	16,00	<b>CR 99123</b>
<b>31,42</b>	<b>31,57</b>	31,50	39,10	8,00	11,10	17,00	<b>CR 99141</b>
<b>31,67</b>	<b>31,83</b>	31,75	38,10	8,00	11,10	18,00	<b>CR 99125</b>
<b>31,67</b>	<b>31,83</b>	31,75	38,10	8,00	11,10	18,00	<b>CR 99817*</b>
<b>31,92</b>	<b>32,08</b>	32,00	38,00	8,00	11,10	18,00	<b>CR 99128</b>
<b>33,23</b>	<b>33,37</b>	33,30	40,60	6,40	9,50	21,00	<b>CR 99129</b>
<b>33,28</b>	<b>33,42</b>	33,35	40,50	12,70	15,90	21,00	<b>CR 99131</b>
<b>33,28</b>	<b>33,42</b>	33,35	40,50	12,70	15,90	21,00	<b>CR 99818*</b>
<b>33,84</b>	<b>34,00</b>	34,00	41,30	12,70	15,90	20,70	<b>CR 99134</b>
<b>34,82</b>	<b>34,98</b>	34,90	41,60	12,70	15,90	21,00	<b>CR 99138</b>
<b>34,82</b>	<b>34,98</b>	34,90	41,60	8,00	11,10	21,00	<b>CR 99133</b>
<b>34,82</b>	<b>34,98</b>	34,93	41,60	12,70	15,90	21,00	<b>CR 99819*</b>
<b>34,92</b>	<b>35,08</b>	35,00	41,60	13,00	16,00	20,00	<b>CR 99139</b>
<b>34,92</b>	<b>35,08</b>	35,00	41,60	13,00	16,00	20,00	<b>CR 99820*</b>
<b>35,86</b>	<b>36,00</b>	36,00	42,90	13,00	17,00	25,00	<b>CR 99146</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

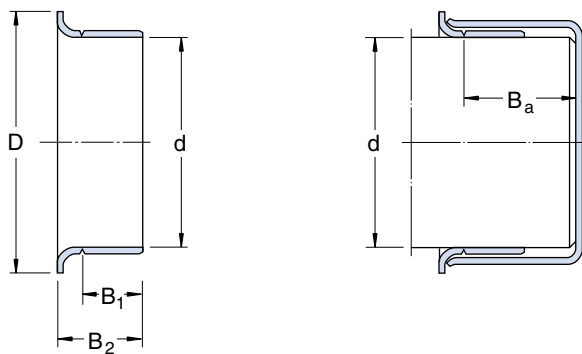


Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>36,37</b>	<b>36,52</b>	36,45	45,20	14,30	17,50	26,00	<b>CR 99143</b>
<b>36,37</b>	<b>36,52</b>	36,45	45,20	14,30	17,50	26,00	<b>CR 99821*</b>
<b>36,45</b>	<b>36,60</b>	36,53	45,20	9,50	12,70	26,00	<b>CR 99144</b>
<b>37,84</b>	<b>38,00</b>	38,00	45,20	13,00	17,00	25,00	<b>CR 99147</b>
<b>38,02</b>	<b>38,18</b>	38,10	45,20	14,30	17,50	26,00	<b>CR 99149</b>
<b>38,02</b>	<b>38,18</b>	38,10	45,20	9,50	12,70	26,00	<b>CR 99150</b>
<b>38,02</b>	<b>38,18</b>	38,10	45,20	14,30	17,50	26,00	<b>CR 99822*</b>
<b>38,02</b>	<b>38,18</b>	38,10	45,20	9,50	12,70	26,00	<b>CR 99823*</b>
<b>38,61</b>	<b>38,76</b>	38,68	47,20	11,10	14,30	26,00	<b>CR 99152</b>
<b>39,35</b>	<b>39,49</b>	39,42	47,20	11,10	14,30	26,00	<b>CR 99155</b>
<b>39,60</b>	<b>39,74</b>	39,67	47,20	14,30	17,50	26,00	<b>CR 99156</b>
<b>39,60</b>	<b>39,74</b>	39,67	47,20	14,30	17,50	26,00	<b>CR 99824*</b>
<b>39,77</b>	<b>39,93</b>	39,85	47,20	16,00	19,10	26,00	<b>CR 99159</b>
<b>39,84</b>	<b>40,00</b>	40,00	46,90	9,90	12,90	25,40	<b>CR 99153</b>
<b>39,92</b>	<b>40,08</b>	40,00	47,00	13,00	16,00	26,00	<b>CR 99157</b>
<b>39,92</b>	<b>40,08</b>	40,00	47,00	13,00	16,00	26,00	<b>CR 99825*</b>
<b>40,69</b>	<b>40,84</b>	40,77	49,20	12,70	16,30	25,00	<b>CR 99160</b>
<b>40,84</b>	<b>41,00</b>	41,00	49,20	12,70	15,90	25,80	<b>CR 99163</b>
<b>41,21</b>	<b>41,35</b>	41,28	47,60	14,30	17,50	21,00	<b>CR 99826*</b>
<b>41,21</b>	<b>41,35</b>	41,28	47,60	14,30	17,50	21,00	<b>CR 99162</b>
<b>41,20</b>	<b>41,35</b>	41,28	47,60	8,00	11,10	26,00	<b>CR 99161</b>
<b>41,84</b>	<b>42,00</b>	42,00	53,00	11,30	14,50	21,00	<b>CR 99166</b>
<b>41,84</b>	<b>42,00</b>	42,00	53,00	14,30	17,50	21,00	<b>CR 99169</b>
<b>41,98</b>	<b>42,14</b>	42,06	53,00	14,00	17,50	21,00	<b>CR 99165</b>
<b>42,77</b>	<b>42,93</b>	42,85	48,40	14,30	17,50	22,00	<b>CR 99168</b>
<b>42,80</b>	<b>42,95</b>	42,88	48,40	8,00	11,10	22,00	<b>CR 99167</b>
<b>42,84</b>	<b>43,00</b>	43,00	48,40	12,70	15,90	21,40	<b>CR 99182</b>
<b>43,56</b>	<b>43,71</b>	43,64	51,60	14,30	17,50	21,00	<b>CR 99971</b>
<b>44,09</b>	<b>44,25</b>	44,17	52,40	9,50	12,70	21,00	<b>CR 99170</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>44,37</b>	<b>44,53</b>	44,45	52,40	13,50	15,90	22,30	<b>CR 99180</b>
<b>44,37</b>	<b>44,53</b>	44,45	52,40	14,30	17,50	21,00	<b>CR 99174</b>
<b>44,37</b>	<b>44,53</b>	44,45	52,40	19,00	22,20	21,00	<b>CR 99175</b>
<b>44,37</b>	<b>44,53</b>	44,45	52,50	9,50	12,70	21,00	<b>CR 99172</b>
<b>44,37</b>	<b>44,53</b>	44,45	52,40	14,30	17,50	21,00	<b>CR 99827*</b>
<b>44,37</b>	<b>44,53</b>	44,45	52,40	19,00	22,20	21,00	<b>CR 99828*</b>
<b>44,73</b>	<b>44,87</b>	44,80	52,40	14,30	17,50	21,00	<b>CR 99176</b>
<b>44,73</b>	<b>44,87</b>	44,80	52,40	14,30	17,50	21,00	<b>CR 99829*</b>
<b>44,92</b>	<b>45,08</b>	45,00	53,00	14,00	17,00	21,00	<b>CR 99177</b>
<b>44,92</b>	<b>45,08</b>	45,00	53,00	14,00	17,00	21,00	<b>CR 99830*</b>
<b>45,16</b>	<b>45,31</b>	45,24	54,00	17,20	20,30	27,00	<b>CR 99179</b>
<b>45,95</b>	<b>46,10</b>	46,00	53,10	14,30	17,50	26,00	<b>CR 99181</b>
<b>45,95</b>	<b>46,10</b>	46,05	53,10	14,30	17,50	26,00	<b>CR 99831*</b>
<b>47,17</b>	<b>47,32</b>	47,24	54,80	14,30	17,50	25,00	<b>CR 99185</b>
<b>47,40</b>	<b>47,55</b>	47,45	55,60	22,60	26,00	25,00	<b>CR 99186</b>
<b>47,55</b>	<b>47,70</b>	47,63	56,00	14,30	17,50	25,40	<b>CR 99832*</b>
<b>47,55</b>	<b>47,70</b>	47,63	56,00	7,50	10,50	19,00	<b>CR 99188</b>
<b>47,55</b>	<b>47,70</b>	47,63	56,00	9,50	13,10	27,00	<b>CR 99184</b>
<b>47,55</b>	<b>47,70</b>	47,63	56,00	14,30	17,50	25,00	<b>CR 99187</b>
<b>47,55</b>	<b>47,70</b>	47,63	56,00	4,50	7,50	19,00	<b>CR 99190</b>
<b>47,92</b>	<b>48,08</b>	48,00	56,00	14,00	17,00	25,00	<b>CR 99189</b>
<b>48,49</b>	<b>48,64</b>	48,56	56,40	9,50	12,70	25,00	<b>CR 99192</b>
<b>49,12</b>	<b>49,28</b>	49,20	56,40	14,30	17,50	25,00	<b>CR 99193</b>
<b>49,12</b>	<b>49,28</b>	49,23	56,40	14,30	17,50	25,40	<b>CR 99833*</b>
<b>49,92</b>	<b>50,08</b>	50,00	57,00	14,00	17,00	25,00	<b>CR 99196</b>
<b>50,22</b>	<b>50,37</b>	50,30	58,70	14,30	17,90	27,00	<b>CR 99198</b>
<b>50,73</b>	<b>50,87</b>	50,80	61,10	22,20	25,40	25,00	<b>CR 99200</b>
<b>50,73</b>	<b>50,87</b>	50,80	61,10	14,30	17,50	25,00	<b>CR 99199</b>
<b>50,72</b>	<b>50,88</b>	50,80	61,10	14,30	17,50	25,40	<b>CR 99834*</b>
<b>50,72</b>	<b>50,88</b>	50,80	61,10	22,20	25,40	25,40	<b>CR 99835*</b>
<b>51,81</b>	<b>52,00</b>	52,00	62,70	12,70	15,90	34,50	<b>CR 99204</b>
<b>52,25</b>	<b>52,39</b>	52,32	63,40	20,70	23,80	35,00	<b>CR 99205</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

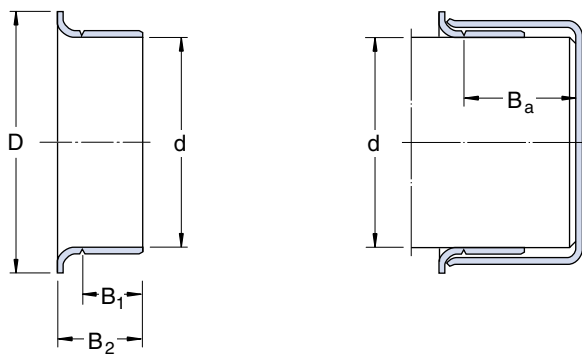


Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>53,95</b>	<b>54,10</b>	54,00	61,50	19,80	23,80	35,00	<b>CR 99212</b>
<b>53,95</b>	<b>54,10</b>	54,00	61,50	12,70	19,00	33,00	<b>CR 99210</b>
<b>53,95</b>	<b>54,10</b>	54,00	62,00	20,00	24,00	35,00	<b>CR 99836*</b>
<b>54,92</b>	<b>55,09</b>	55,00	62,00	20,00	23,00	32,00	<b>CR 99863*</b>
<b>54,92</b>	<b>55,08</b>	55,00	62,00	20,00	23,00	32,00	<b>CR 99215</b>
<b>55,32</b>	<b>55,47</b>	55,40	64,00	20,00	24,00	38,10	<b>CR 99217</b>
<b>55,52</b>	<b>55,68</b>	55,60	63,50	19,80	23,80	33,00	<b>CR 99218</b>
<b>55,81</b>	<b>56,00</b>	56,00	64,30	12,70	15,90	33,40	<b>CR 99220</b>
<b>56,56</b>	<b>56,72</b>	56,64	64,30	19,80	23,00	32,00	<b>CR 99230</b>
<b>56,56</b>	<b>56,72</b>	56,64	64,30	12,70	15,90	33,00	<b>CR 99229</b>
<b>56,57</b>	<b>56,72</b>	56,64	64,30	12,70	15,90	33,40	<b>CR 99861*</b>
<b>56,82</b>	<b>56,97</b>	56,90	65,10	19,40	22,90	32,00	<b>CR 99226</b>
<b>57,13</b>	<b>57,28</b>	57,15	64,30	19,80	23,80	33,40	<b>CR 99837*</b>
<b>57,13</b>	<b>57,28</b>	57,15	64,30	8,00	11,10	33,40	<b>CR 99838*</b>
<b>57,12</b>	<b>57,28</b>	57,20	64,30	19,80	23,80	33,00	<b>CR 99225</b>
<b>57,12</b>	<b>57,28</b>	57,20	64,30	8,00	11,10	33,00	<b>CR 99227</b>
<b>58,65</b>	<b>58,80</b>	58,72	68,30	19,80	23,80	35,00	<b>CR 99231</b>
<b>59,10</b>	<b>59,26</b>	59,18	69,80	19,00	22,20	38,00	<b>CR 99233</b>
<b>59,92</b>	<b>60,07</b>	60,00	70,70	9,40	11,40	37,40	<b>CR 99241</b>
<b>59,92</b>	<b>60,07</b>	60,00	70,70	20,00	23,00	35,00	<b>CR 99235</b>
<b>60,30</b>	<b>60,45</b>	60,33	69,90	19,80	23,80	35,00	<b>CR 99839*</b>
<b>60,25</b>	<b>60,40</b>	60,33	69,90	15,10	19,10	35,00	<b>CR 99238</b>
<b>60,31</b>	<b>60,45</b>	60,38	69,90	19,80	23,80	35,00	<b>CR 99237</b>
<b>60,31</b>	<b>60,45</b>	60,38	69,90	13,40	17,30	35,00	<b>CR 99240</b>
<b>61,83</b>	<b>61,97</b>	61,90	71,80	19,80	23,80	35,30	<b>CR 99243</b>
<b>61,85</b>	<b>62,00</b>	62,00	71,80	12,70	15,90	36,00	<b>CR 99242</b>
<b>61,81</b>	<b>62,00</b>	62,00	71,80	12,70	15,90	36,20	<b>CR 99244</b>
<b>63,23</b>	<b>63,37</b>	63,30	73,00	19,80	23,80	35,00	<b>CR 99249</b>
<b>63,50</b>	<b>63,65</b>	63,50	71,80	12,70	16,70	35,00	<b>CR 99248</b>
<b>63,50</b>	<b>63,65</b>	63,50	71,60	19,80	23,80	35,00	<b>CR 99250</b>
<b>63,42</b>	<b>63,58</b>	63,50	71,60	14,10	16,50	23,00	<b>CR 99253</b>
<b>63,50</b>	<b>63,65</b>	63,50	71,60	19,80	23,80	35,00	<b>CR 99840*</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>63,75</b>	<b>63,91</b>	63,83	71,80	19,80	23,00	37,00	<b>CR 99251</b>
<b>64,92</b>	<b>65,08</b>	65,00	72,40	20,00	23,00	35,00	<b>CR 99254</b>
<b>64,92</b>	<b>65,75</b>	65,00	72,40	20,00	23,00	35,00	<b>CR 99841*</b>
<b>65,02</b>	<b>65,18</b>	65,10	73,40	19,80	23,80	35,00	<b>CR 99256</b>
<b>65,92</b>	<b>66,07</b>	66,00	76,00	19,80	23,80	32,00	<b>CR 99259</b>
<b>66,50</b>	<b>66,64</b>	66,57	77,40	19,80	23,80	35,00	<b>CR 99261</b>
<b>66,57</b>	<b>66,73</b>	66,65	77,40	19,80	23,00	35,00	<b>CR 99264</b>
<b>66,60</b>	<b>66,75</b>	66,68	77,40	12,70	15,90	35,00	<b>CR 99260</b>
<b>66,68</b>	<b>66,82</b>	66,75	77,40	19,80	23,80	35,00	<b>CR 99262</b>
<b>66,68</b>	<b>66,83</b>	66,78	77,40	19,80	23,80	35,00	<b>CR 99842*</b>
<b>67,81</b>	<b>68,00</b>	68,00	79,40	19,10	22,20	42,90	<b>CR 99266</b>
<b>69,26</b>	<b>69,42</b>	69,34	79,40	19,80	23,00	33,00	<b>CR 99268</b>
<b>69,60</b>	<b>69,74</b>	69,67	77,90	19,80	23,80	32,00	<b>CR 99273</b>
<b>69,72</b>	<b>69,88</b>	69,80	79,40	19,80	23,80	32,00	<b>CR 99274</b>
<b>69,77</b>	<b>69,93</b>	69,85	78,10	36,50	41,30	41,00	<b>CR 99267</b>
<b>69,72</b>	<b>69,88</b>	69,80	79,40	19,80	23,80	32,00	<b>CR 99843*</b>
<b>69,85</b>	<b>70,00</b>	70,00	79,40	19,80	23,80	32,00	<b>CR 99275</b>
<b>69,85</b>	<b>70,00</b>	70,00	79,40	28,60	31,80	32,00	<b>CR 99269</b>
<b>69,92</b>	<b>70,08</b>	70,00	79,40	20,00	24,00	32,00	<b>CR 99276</b>
<b>69,92</b>	<b>70,08</b>	70,00	79,40	10,30	14,30	32,00	<b>CR 99272</b>
<b>69,85</b>	<b>70,00</b>	70,00	79,40	19,80	23,80	32,00	<b>CR 99844*</b>
<b>71,35</b>	<b>71,50</b>	71,42	80,90	15,10	17,50	32,00	<b>CR 99281</b>
<b>71,81</b>	<b>72,00</b>	72,00	81,90	19,10	22,20	34,10	<b>CR 99284</b>
<b>72,09</b>	<b>72,24</b>	72,09	81,90	12,70	16,70	32,00	<b>CR 99845*</b>
<b>72,08</b>	<b>72,24</b>	72,16	81,90	12,70	16,70	32,00	<b>CR 99282</b>
<b>72,80</b>	<b>72,94</b>	72,87	81,00	19,80	23,80	32,00	<b>CR 99286</b>
<b>72,97</b>	<b>73,13</b>	73,00	81,80	19,80	23,80	32,00	<b>CR 99287</b>
<b>72,97</b>	<b>73,13</b>	73,00	81,80	19,80	23,80	32,00	<b>CR 99846*</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



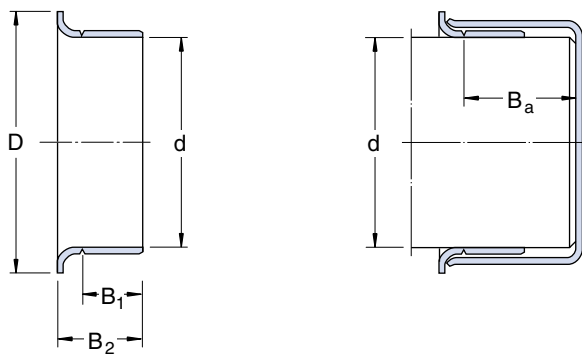
Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>74,60</b>	<b>74,75</b>	74,63	84,90	19,80	23,80	33,40	<b>CR 99847*</b>
<b>74,60</b>	<b>74,75</b>	74,68	84,90	12,70	16,30	33,00	<b>CR 99290</b>
<b>74,60</b>	<b>74,75</b>	74,68	84,90	19,80	23,80	33,00	<b>CR 99293</b>
<b>74,92</b>	<b>75,08</b>	75,00	83,10	15,10	17,50	28,00	<b>CR 99289</b>
<b>74,92</b>	<b>75,08</b>	75,00	84,00	22,00	26,00	33,00	<b>CR 99294</b>
<b>75,49</b>	<b>75,59</b>	75,54	82,20	20,60	25,40	32,00	<b>CR 99292</b>
<b>75,95</b>	<b>76,10</b>	76,00	85,30	12,30	15,90	34,00	<b>CR 99291</b>
<b>75,95</b>	<b>76,10</b>	76,00	85,10	20,60	25,40	33,00	<b>CR 99299</b>
<b>75,95</b>	<b>76,10</b>	76,00	85,30	14,30	17,50	35,00	<b>CR 99298</b>
<b>76,12</b>	<b>76,28</b>	76,20	82,30	20,60	23,80	35,00	<b>CR 99296</b>
<b>76,20</b>	<b>76,35</b>	76,20	82,20	20,60	25,40	32,60	<b>CR 99848*</b>
<b>76,20</b>	<b>76,40</b>	76,28	85,00	15,90	20,60	27,00	<b>CR 99303</b>
<b>76,20</b>	<b>76,35</b>	76,28	82,20	20,60	25,40	33,00	<b>CR 99300</b>
<b>76,40</b>	<b>76,56</b>	76,48	85,20	12,70	15,80	51,00	<b>CR 99301</b>
<b>77,81</b>	<b>78,00</b>	78,00	88,10	19,50	22,20	52,30	<b>CR 99306</b>
<b>79,25</b>	<b>79,40</b>	79,32	89,70	20,60	25,40	51,00	<b>CR 99312</b>
<b>79,24</b>	<b>79,40</b>	79,32	89,70	17,50	20,60	51,00	<b>CR 99311</b>
<b>79,25</b>	<b>79,40</b>	79,38	89,70	20,60	25,40	50,80	<b>CR 99849*</b>
<b>79,35</b>	<b>79,55</b>	79,44	89,50	14,00	18,00	52,00	<b>CR 99307</b>
<b>79,92</b>	<b>80,08</b>	80,00	90,00	11,00	15,00	35,00	<b>CR 99317</b>
<b>79,92</b>	<b>80,08</b>	80,00	90,00	21,00	24,00	35,00	<b>CR 99315</b>
<b>79,81</b>	<b>80,01</b>	80,00	89,90	19,10	22,50	35,00	<b>CR 99313</b>
<b>81,92</b>	<b>82,07</b>	82,00	91,10	16,80	21,60	44,00	<b>CR 99328</b>
<b>82,50</b>	<b>82,70</b>	82,50	90,80	15,10	18,30	35,00	<b>CR 99850*</b>
<b>82,47</b>	<b>82,63</b>	82,55	91,30	20,60	25,40	35,00	<b>CR 99322</b>
<b>82,55</b>	<b>82,70</b>	82,55	91,10	20,60	25,40	35,00	<b>CR 99851*</b>
<b>82,55</b>	<b>82,70</b>	82,63	91,10	17,50	22,20	32,00	<b>CR 99326</b>
<b>82,55</b>	<b>82,70</b>	82,63	91,10	20,60	25,40	35,00	<b>CR 99325</b>
<b>82,55</b>	<b>82,70</b>	82,63	90,80	15,10	18,30	35,00	<b>CR 99324</b>
<b>84,00</b>	<b>84,15</b>	84,00	93,70	20,60	25,40	35,00	<b>CR 99331</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>84,76</b>	<b>85,02</b>	85,00	94,00	17,00	21,00	35,00	<b>CR 99332</b>
<b>84,78</b>	<b>85,00</b>	85,00	94,00	21,00	25,00	35,00	<b>CR 99333</b>
<b>84,78</b>	<b>85,00</b>	85,00	93,90	10,10	12,70	36,40	<b>CR 99334</b>
<b>85,67</b>	<b>85,83</b>	85,75	93,90	20,60	25,40	35,00	<b>CR 99337</b>
<b>85,67</b>	<b>85,83</b>	85,75	93,70	9,50	12,70	36,00	<b>CR 99338</b>
<b>87,25</b>	<b>87,40</b>	87,33	97,60	19,80	23,00	36,00	<b>CR 99339</b>
<b>88,31</b>	<b>88,47</b>	88,39	97,40	19,80	23,00	36,00	<b>CR 99340</b>
<b>88,82</b>	<b>88,98</b>	88,98	97,60	16,00	20,60	34,20	<b>CR 99346</b>
<b>88,90</b>	<b>89,05</b>	89,00	97,60	20,60	25,40	34,00	<b>CR 99350</b>
<b>88,93</b>	<b>89,08</b>	89,00	97,60	15,90	20,60	34,00	<b>CR 99349</b>
<b>88,90</b>	<b>89,05</b>	89,00	97,20	8,00	12,70	34,00	<b>CR 99347</b>
<b>88,90</b>	<b>89,05</b>	89,00	97,60	20,60	25,40	34,20	<b>CR 99852*</b>
<b>89,92</b>	<b>90,08</b>	90,00	101,60	13,40	16,90	44,00	<b>CR 99353</b>
<b>89,92</b>	<b>90,08</b>	90,00	101,60	18,00	23,00	46,00	<b>CR 99351</b>
<b>89,92</b>	<b>90,08</b>	90,00	101,60	23,00	28,00	44,00	<b>CR 99354</b>
<b>89,92</b>	<b>90,08</b>	90,00	101,60	11,00	13,70	46,00	<b>CR 99352</b>
<b>90,42</b>	<b>90,58</b>	90,50	99,10	20,60	25,40	44,00	<b>CR 99356</b>
<b>91,90</b>	<b>92,05</b>	92,00	102,40	20,60	25,40	44,00	<b>CR 99360</b>
<b>92,02</b>	<b>92,18</b>	92,10	102,40	20,60	25,40	44,00	<b>CR 99362</b>
<b>92,02</b>	<b>92,18</b>	92,10	102,20	12,70	15,90	45,00	<b>CR 99363</b>
<b>93,57</b>	<b>93,73</b>	93,65	97,30	8,00	11,10	22,00	<b>CR 99368</b>
<b>93,60</b>	<b>93,75</b>	93,68	102,20	20,60	23,80	45,00	<b>CR 99365</b>
<b>94,67</b>	<b>94,82</b>	94,74	102,00	12,00	15,10	44,00	<b>CR 99359</b>
<b>94,66</b>	<b>94,82</b>	94,74	102,20	19,80	23,00	45,00	<b>CR 99366</b>
<b>94,99</b>	<b>95,15</b>	95,00	102,50	12,00	15,10	45,00	<b>CR 99364</b>
<b>95,00</b>	<b>95,15</b>	95,00	102,40	8,70	12,70	44,00	<b>CR 99374</b>
<b>94,92</b>	<b>95,08</b>	95,00	102,20	21,00	24,00	44,00	<b>CR 99369</b>
<b>95,14</b>	<b>95,30</b>	95,22	102,20	14,30	17,50	45,00	<b>CR 99376</b>
<b>95,25</b>	<b>95,40</b>	95,25	102,10	17,50	22,20	45,70	<b>CR 99853*</b>
<b>95,26</b>	<b>95,40</b>	95,33	102,10	17,50	22,20	48,00	<b>CR 99372</b>
<b>95,26</b>	<b>95,40</b>	95,33	102,20	8,70	12,70	44,00	<b>CR 99367</b>
<b>98,25</b>	<b>98,40</b>	98,32	106,30	20,60	25,40	48,00	<b>CR 99386</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

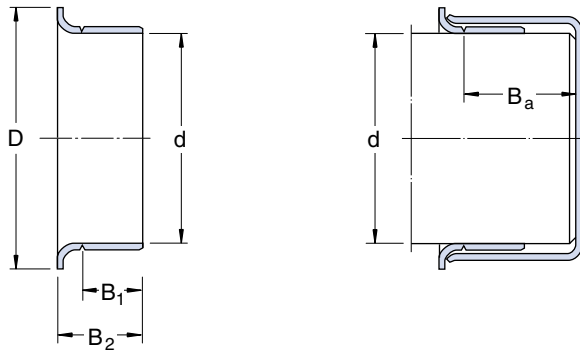


Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					—
98,37	98,53	98,45	107,20	20,60	25,40	48,00	<b>CR 99387</b>
99,95	100,10	100,00	110,00	20,60	25,40	52,00	<b>CR 99393</b>
99,95	100,10	100,00	109,60	20,60	25,40	52,00	<b>CR 99854*</b>
101,55	101,75	101,60	111,10	20,60	25,40	52,00	<b>CR 99855*</b>
101,55	101,75	101,65	111,10	12,70	15,90	52,00	<b>CR 99401</b>
101,55	101,75	101,65	111,10	16,50	19,70	35,00	<b>CR 99400</b>
101,55	101,75	101,65	111,10	20,60	25,40	52,00	<b>CR 99399</b>
101,55	101,75	101,65	111,10	15,20	18,40	52,00	<b>CR 99395</b>
103,90	104,10	104,00	112,70	20,00	24,00	36,00	<b>CR 99409</b>
104,70	104,90	104,80	113,50	20,60	25,40	35,00	<b>CR 99412</b>
104,90	105,10	105,00	113,50	20,00	23,20	35,00	<b>CR 99413</b>
106,25	106,45	106,35	114,30	20,60	25,40	35,00	<b>CR 99418</b>
107,34	107,54	107,44	117,10	19,80	23,00	37,00	<b>CR 99423</b>
107,90	108,10	108,00	117,10	20,60	25,40	37,00	<b>CR 99424</b>
109,90	110,10	110,00	125,00	12,90	16,50	32,00	<b>CR 99435</b>
109,78	110,00	110,00	124,90	11,40	14,50	32,90	<b>CR 99434</b>
111,00	111,20	111,00	120,70	20,60	25,40	42,00	<b>CR 99437</b>
111,80	112,00	112,00	120,70	19,00	22,50	27,00	<b>CR 99438</b>
112,62	112,83	112,72	122,20	25,40	29,00	33,00	<b>CR 99439</b>
114,20	114,40	114,30	124,50	20,60	25,40	32,00	<b>CR 99450</b>
114,12	114,40	114,30	124,50	20,60	25,40	32,00	<b>CR 99856*</b>
114,90	115,10	115,00	127,00	20,60	23,80	32,00	<b>CR 99452</b>
117,37	117,58	117,48	127,00	11,10	15,80	35,00	<b>CR 99465</b>
117,37	117,57	117,48	128,60	25,40	31,80	35,00	<b>CR 99463</b>
119,00	119,20	119,00	128,60	20,60	25,40	35,00	<b>CR 99468</b>
119,90	120,10	120,00	129,80	8,00	11,00	33,00	<b>CR 99471</b>
119,90	120,10	120,00	129,80	20,00	25,00	32,00	<b>CR 99473</b>
120,55	120,75	120,65	127,00	12,70	19,00	38,00	<b>CR 99475</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					–
<b>121,89</b>	<b>122,10</b>	122,00	131,50	20,00	24,00	32,00	<b>CR 99472</b>
<b>122,90</b>	<b>123,10</b>	123,00	132,80	20,00	25,00	31,00	<b>CR 99484</b>
<b>123,72</b>	<b>123,93</b>	123,83	133,40	15,90	19,10	37,00	<b>CR 99487</b>
<b>124,90</b>	<b>125,10</b>	125,00	137,20	10,00	14,00	37,00	<b>CR 99490</b>
<b>124,90</b>	<b>125,10</b>	125,00	137,20	26,00	32,00	37,00	<b>CR 99492</b>
<b>126,95</b>	<b>127,15</b>	127,00	137,20	13,70	17,30	37,00	<b>CR 99501</b>
<b>126,95</b>	<b>127,15</b>	127,00	136,90	20,60	25,40	37,00	<b>CR 99499</b>
<b>126,95</b>	<b>127,15</b>	127,00	137,20	17,50	22,20	37,00	<b>CR 99498</b>
<b>126,95</b>	<b>127,15</b>	127,00	137,20	17,50	22,20	37,00	<b>CR 99857*</b>
<b>126,95</b>	<b>127,15</b>	127,00	139,90	20,60	25,40	37,00	<b>CR 99858*</b>
<b>129,98</b>	<b>130,18</b>	130,00	139,50	22,00	25,30	33,00	<b>CR 99491</b>
<b>129,79</b>	<b>130,00</b>	130,00	139,50	19,00	24,00	30,00	<b>CR 99494</b>
<b>130,05</b>	<b>130,25</b>	130,15	139,70	20,60	25,40	32,00	<b>CR 99513</b>
<b>133,25</b>	<b>133,45</b>	133,35	141,20	20,60	25,40	32,00	<b>CR 99525</b>
<b>134,79</b>	<b>135,00</b>	135,00	149,20	20,50	25,40	32,00	<b>CR 99533</b>
<b>136,42</b>	<b>136,62</b>	136,53	149,20	20,60	25,40	32,00	<b>CR 99537</b>
<b>138,02</b>	<b>138,23</b>	138,13	146,10	38,10	42,90	48,00	<b>CR 99548</b>
<b>139,00</b>	<b>139,20</b>	139,00	154,90	14,30	19,10	24,00	<b>CR 99547</b>
<b>139,65</b>	<b>139,85</b>	139,70	150,80	20,60	25,40	32,00	<b>CR 99859*</b>
<b>139,65</b>	<b>139,85</b>	139,75	150,80	20,60	25,40	32,00	<b>CR 99549</b>
<b>139,65</b>	<b>139,85</b>	139,75	150,80	13,20	17,90	32,00	<b>CR 99550</b>
<b>139,90</b>	<b>140,10</b>	140,00	151,00	20,50	25,50	32,00	<b>CR 99552</b>
<b>142,77</b>	<b>142,98</b>	142,88	157,20	22,20	25,40	46,00	<b>CR 99560</b>
<b>144,75</b>	<b>145,00</b>	145,00	149,90	19,50	22,20	46,00	<b>CR 99571</b>
<b>145,44</b>	<b>145,64</b>	145,54	149,90	14,30	19,10	49,20	<b>CR 99562</b>
<b>145,95</b>	<b>146,15</b>	146,05	157,00	20,60	25,40	44,00	<b>CR 99575</b>
<b>149,12</b>	<b>149,33</b>	149,23	157,20	25,40	31,80	33,00	<b>CR 99862*</b>
<b>149,12</b>	<b>149,33</b>	149,23	157,20	25,40	31,80	33,00	<b>CR 99587</b>
<b>149,75</b>	<b>150,00</b>	150,00	159,00	26,00	30,00	34,00	<b>CR 99595</b>

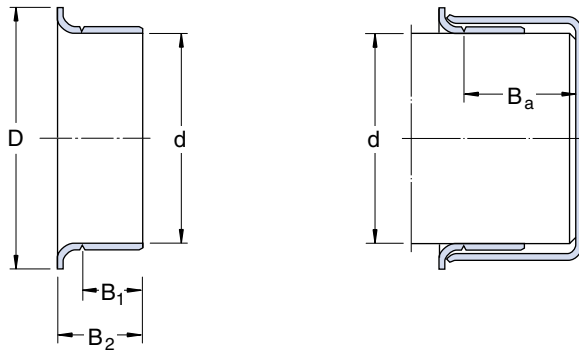
<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
mm		mm					—
<b>150,73</b>	<b>150,93</b>	150,83	161,90	25,40	28,60	48,00	<b>CR 99596</b>
<b>152,27</b>	<b>152,47</b>	152,37	161,90	25,40	31,80	44,00	<b>CR 99599</b>
<b>152,27</b>	<b>152,47</b>	152,37	161,50	12,70	19,00	44,00	<b>CR 99601</b>
<b>153,87</b>	<b>154,13</b>	154,00	161,90	26,00	30,00	33,00	<b>CR 99605</b>
<b>154,75</b>	<b>155,00</b>	155,00	167,00	26,00	30,00	33,00	<b>CR 99606</b>
<b>157,43</b>	<b>157,68</b>	157,56	168,30	20,60	27,00	44,00	<b>CR 99620</b>
<b>158,62</b>	<b>158,88</b>	158,75	168,30	26,20	31,80	44,00	<b>CR 99625</b>
<b>159,74</b>	<b>169,00</b>	160,00	177,80	25,40	31,80	35,00	<b>CR 99630</b>
<b>164,97</b>	<b>165,23</b>	165,10	177,80	25,40	31,80	35,00	<b>CR 99650</b>
<b>169,75</b>	<b>170,00</b>	170,00	182,60	31,80	38,00	44,50	<b>CR 99640</b>
<b>171,32</b>	<b>171,58</b>	171,45	181,00	20,60	27,00	44,00	<b>CR 99675</b>
<b>174,75</b>	<b>175,00</b>	175,00	187,00	28,00	32,00	35,00	<b>CR 99687</b>
<b>177,67</b>	<b>177,93</b>	177,80	189,90	25,40	31,80	43,00	<b>CR 99700</b>
<b>179,79</b>	<b>180,00</b>	180,00	190,50	33,00	38,00	45,00	<b>CR 99721</b>
<b>184,00</b>	<b>184,25</b>	184,00	197,10	31,70	38,10	55,00	<b>CR 99725</b>
<b>184,73</b>	<b>185,00</b>	185,00	199,00	32,00	38,00	55,00	<b>CR 99726</b>
<b>189,08</b>	<b>189,33</b>	189,20	199,60	20,60	25,40	32,00	<b>CR 99745</b>
<b>190,37</b>	<b>190,63</b>	190,50	200,00	20,60	25,40	32,00	<b>CR 99750</b>
<b>196,72</b>	<b>196,98</b>	196,85	210,10	25,40	33,30	48,00	<b>CR 99775</b>
<b>199,87</b>	<b>200,13</b>	200,00	212,70	34,50	38,10	44,00	<b>CR 99787</b>
<b>201,50</b>	<b>201,75</b>	201,63	212,70	25,40	31,80	44,00	<b>CR 99799</b>
<b>203,07</b>	<b>203,33</b>	203,20	212,70	25,40	31,80	44,00	<b>CR 99800</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

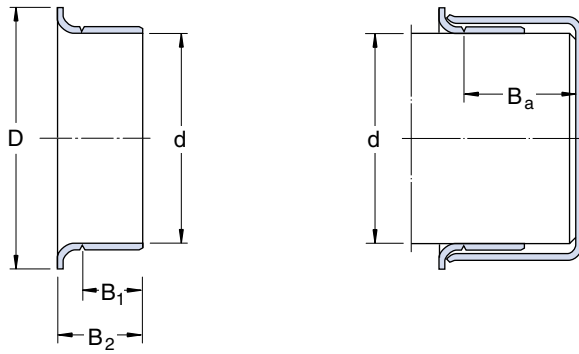


Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>0.4690</b>	<b>0.475</b>	0.472	0.610	0.236	0.331	1.875	<b>CR 99049</b>
<b>0.498</b>	<b>0.502</b>	0.500	0.610	0.250	0.344	2.000	<b>CR 99050</b>
<b>0.547</b>	<b>0.551</b>	0.551	0.752	0.251	0.389	1.831	<b>CR 99055</b>
<b>0.560</b>	<b>0.566</b>	0.563	0.750	0.250	0.391	1.831	<b>CR 99056</b>
<b>0.589</b>	<b>0.593</b>	0.591	0.750	0.197	0.354	1.862	<b>CR 99059</b>
<b>0.623</b>	<b>0.627</b>	0.625	0.750	0.313	0.406	2.000	<b>CR 99062</b>
<b>0.623</b>	<b>0.627</b>	0.625	0.750	0.313	0.406	2.000	<b>CR 99810*</b>
<b>0.624</b>	<b>0.630</b>	0.630	0.752	0.315	0.437	2.000	<b>CR 99058</b>
<b>0.667</b>	<b>0.671</b>	0.669	1.063	0.313	0.433	2.000	<b>CR 99068</b>
<b>0.682</b>	<b>0.686</b>	0.684	0.900	0.313	0.438	2.000	<b>CR 99060</b>
<b>0.704</b>	<b>0.709</b>	0.706	1.063	0.315	0.433	1.811	<b>CR 99082</b>
<b>0.748</b>	<b>0.752</b>	0.750	0.945	0.313	0.438	2.000	<b>CR 99076</b>
<b>0.748</b>	<b>0.752</b>	0.750	0.945	0.313	0.438	2.000	<b>CR 99871*</b>
<b>0.759</b>	<b>0.761</b>	0.760	0.938	0.313	0.438	2.000	<b>CR 99081</b>
<b>0.780</b>	<b>0.784</b>	0.781	0.935	0.313	0.438	2.000	<b>CR 99080</b>
<b>0.785</b>	<b>0.789</b>	0.787	0.930	0.313	0.133	2.000	<b>CR 99078</b>
<b>0.857</b>	<b>0.861</b>	0.859	1.155	0.250	0.375	2.000	<b>CR 99086</b>
<b>0.861</b>	<b>0.866</b>	0.866	1.188	0.315	0.472	1.813	<b>CR 99085</b>
<b>0.861</b>	<b>0.866</b>	0.866	1.189	0.260	0.358	1.854	<b>CR 99084</b>
<b>0.873</b>	<b>0.877</b>	0.875	1.094	0.313	0.438	2.000	<b>CR 99087</b>
<b>0.873</b>	<b>0.877</b>	0.875	1.094	0.313	0.438	2.000	<b>CR 99812*</b>
<b>0.908</b>	<b>0.912</b>	0.910	1.218	0.313	0.438	1.847	<b>CR 99091</b>
<b>0.908</b>	<b>0.912</b>	0.910	1.218	0.313	0.438	1.847	<b>CR 99860*</b>
<b>0.940</b>	<b>0.945</b>	0.945	1.130	0.315	0.437	2.000	<b>CR 99092</b>
<b>0.966</b>	<b>0.970</b>	0.969	1.130	0.313	0.438	2.000	<b>CR 99094</b>
<b>0.966</b>	<b>0.970</b>	0.969	1.130	0.625	0.719	2.000	<b>CR 99096</b>
<b>0.982</b>	<b>0.986</b>	0.984	1.300	0.313	0.433	2.000	<b>CR 99098</b>
<b>0.982</b>	<b>0.986</b>	0.984	1.300	0.313	0.433	2.000	<b>CR 99813*</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>0.998</b>	<b>1.002</b>	1.000	1.219	0.313	0.438	2.000	<b>CR 99100</b>
<b>0.998</b>	<b>1.002</b>	1.000	1.219	0.313	0.438	2.000	<b>CR 99814*</b>
<b>1.019</b>	<b>1.024</b>	1.024	1.312	0.313	0.472	1.813	<b>CR 99103</b>
<b>1.060</b>	<b>1.064</b>	1.063	1.320	0.313	0.438	2.813	<b>CR 99106</b>
<b>1.060</b>	<b>1.064</b>	1.063	1.320	0.313	0.438	1.843	<b>CR 99815*</b>
<b>1.087</b>	<b>1.091</b>	1.089	1.406	0.313	0.438	0.625	<b>CR 99108</b>
<b>1.100</b>	<b>1.104</b>	1.102	1.375	0.375	0.500	1.843	<b>CR 99111</b>
<b>1.123</b>	<b>1.127</b>	1.125	1.500	0.313	0.438	0.688	<b>CR 99112</b>
<b>1.123</b>	<b>1.127</b>	1.125	1.500	0.375	0.500	0.688	<b>CR 99116</b>
<b>1.123</b>	<b>1.127</b>	1.125	1.500	0.313	0.438	0.688	<b>CR 99816*</b>
<b>1.154</b>	<b>1.158</b>	1.156	1.350	0.375	0.500	0.688	<b>CR 99120</b>
<b>1.173</b>	<b>1.178</b>	1.175	1.575	0.313	0.438	0.688	<b>CR 99122</b>
<b>1.179</b>	<b>1.184</b>	1.181	1.400	0.315	0.433	0.688	<b>CR 99114</b>
<b>1.185</b>	<b>1.190</b>	1.188	1.400	0.313	0.438	0.688	<b>CR 99118</b>
<b>1.216</b>	<b>1.222</b>	1.219	1.563	0.313	0.433	0.625	<b>CR 99123</b>
<b>1.237</b>	<b>1.243</b>	1.240	1.540	0.315	0.438	0.688	<b>CR 99141</b>
<b>1.247</b>	<b>1.253</b>	1.250	1.500	0.313	0.438	0.688	<b>CR 99125</b>
<b>1.247</b>	<b>1.253</b>	1.250	1.500	0.313	0.438	0.688	<b>CR 99817*</b>
<b>1.257</b>	<b>1.263</b>	1.260	1.500	0.315	0.438	0.688	<b>CR 99128</b>
<b>1.308</b>	<b>1.314</b>	1.313	1.600	0.250	0.375	0.813	<b>CR 99129</b>
<b>1.310</b>	<b>1.316</b>	1.313	1.594	0.500	0.625	0.813	<b>CR 99131</b>
<b>1.310</b>	<b>1.316</b>	1.313	1.594	0.500	0.625	0.813	<b>CR 99818*</b>
<b>1.332</b>	<b>1.339</b>	1.339	1.625	0.500	0.625	0.815	<b>CR 99134</b>
<b>1.371</b>	<b>1.377</b>	1.375	1.638	0.313	0.438	0.813	<b>CR 99133</b>
<b>1.371</b>	<b>1.377</b>	1.375	1.638	0.500	0.625	0.813	<b>CR 99138</b>
<b>1.375</b>	<b>1.381</b>	1.375	1.638	0.512	0.630	0.813	<b>CR 99139</b>
<b>1.371</b>	<b>1.377</b>	1.375	1.638	0.500	0.625	0.813	<b>CR 99819*</b>
<b>1.375</b>	<b>1.381</b>	1.375	1.638	0.512	0.630	0.813	<b>CR 99820*</b>
<b>1.412</b>	<b>1.417</b>	1.417	1.781	0.512	0.669	0.984	<b>CR 99146</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



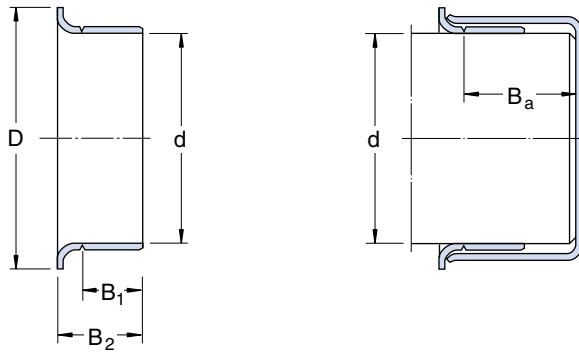
Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					-
<b>1.432</b>	<b>1.438</b>	1.438	1.781	0.563	0.688	1.016	<b>CR 99143</b>
<b>1.435</b>	<b>1.441</b>	1.438	1.781	0.375	0.500	1.016	<b>CR 99144</b>
<b>1.432</b>	<b>1.438</b>	1.438	1.781	0.563	0.688	1.016	<b>CR 99821*</b>
<b>1.490</b>	<b>1.496</b>	1.496	1.781	0.512	0.669	0.984	<b>CR 99147</b>
<b>1.497</b>	<b>1.503</b>	1.500	1.781	0.375	0.500	1.016	<b>CR 99150</b>
<b>1.497</b>	<b>1.503</b>	1.500	1.781	0.563	0.688	1.016	<b>CR 99149</b>
<b>1.497</b>	<b>1.503</b>	1.500	1.781	0.563	0.688	1.016	<b>CR 99822*</b>
<b>1.497</b>	<b>1.503</b>	1.500	1.781	0.375	0.500	1.016	<b>CR 99823*</b>
<b>1.520</b>	<b>1.526</b>	1.523	1.859	0.438	0.563	1.016	<b>CR 99152</b>
<b>1.549</b>	<b>1.555</b>	1.552	1.859	0.438	0.563	1.016	<b>CR 99155</b>
<b>1.559</b>	<b>1.565</b>	1.563	1.859	0.563	0.688	1.016	<b>CR 99156</b>
<b>1.559</b>	<b>1.565</b>	1.563	1.859	0.563	0.688	1.016	<b>CR 99824*</b>
<b>1.566</b>	<b>1.572</b>	1.569	1.859	0.625	0.750	1.016	<b>CR 99159</b>
<b>1.569</b>	<b>1.575</b>	1.575	1.846	0.389	0.508	1.000	<b>CR 99153</b>
<b>1.572</b>	<b>1.578</b>	1.578	1.850	0.512	0.630	1.023	<b>CR 99157</b>
<b>1.572</b>	<b>1.578</b>	1.578	1.850	0.512	0.630	1.023	<b>CR 99825*</b>
<b>1.602</b>	<b>1.608</b>	1.605	1.938	0.500	0.641	1.000	<b>CR 99160</b>
<b>1.608</b>	<b>1.614</b>	1.614	1.937	0.500	0.625	1.016	<b>CR 99163</b>
<b>1.622</b>	<b>1.628</b>	1.625	1.875	0.313	0.438	1.016	<b>CR 99161</b>
<b>1.623</b>	<b>1.628</b>	1.625	1.875	0.563	0.688	0.813	<b>CR 99162</b>
<b>1.622</b>	<b>1.628</b>	1.625	1.875	0.563	0.688	0.813	<b>CR 99826*</b>
<b>1.647</b>	<b>1.653</b>	1.650	2.087	0.445	0.571	0.846	<b>CR 99166</b>
<b>1.647</b>	<b>1.653</b>	1.650	2.087	0.563	0.689	0.827	<b>CR 99169</b>
<b>1.653</b>	<b>1.659</b>	1.656	2.087	0.550	0.689	0.827	<b>CR 99165</b>
<b>1.684</b>	<b>1.690</b>	1.688	1.906	0.563	0.688	0.875	<b>CR 99168</b>
<b>1.685</b>	<b>1.691</b>	1.688	1.906	0.313	0.438	0.875	<b>CR 99167</b>
<b>1.687</b>	<b>1.693</b>	1.693	1.906	0.500	0.625	0.843	<b>CR 99182</b>
<b>1.715</b>	<b>1.721</b>	1.719	2.031	0.563	0.688	0.813	<b>CR 99171</b>
<b>1.736</b>	<b>1.742</b>	1.739	2.063	0.375	0.500	0.813	<b>CR 99170</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>1.747</b>	<b>1.753</b>	1.750	2.055	0.375	0.500	0.813	<b>CR 99172</b>
<b>1.747</b>	<b>1.753</b>	1.750	2.063	0.531	0.625	0.875	<b>CR 99180</b>
<b>1.747</b>	<b>1.753</b>	1.750	2.063	0.563	0.688	0.813	<b>CR 99174</b>
<b>1.747</b>	<b>1.753</b>	1.750	2.063	0.750	0.875	0.813	<b>CR 99175</b>
<b>1.747</b>	<b>1.753</b>	1.750	2.063	0.563	0.688	0.813	<b>CR 9827*</b>
<b>1.747</b>	<b>1.753</b>	1.750	2.063	0.750	0.875	0.813	<b>CR 99828*</b>
<b>1.761</b>	<b>1.767</b>	1.766	2.063	0.563	0.688	0.813	<b>CR 99176</b>
<b>1.761</b>	<b>1.767</b>	1.766	2.063	0.563	0.688	0.813	<b>CR 99829*</b>
<b>1.769</b>	<b>1.775</b>	1.772	2.087	0.551	0.669	0.813	<b>CR 99177</b>
<b>1.769</b>	<b>1.775</b>	1.772	2.087	0.551	0.669	0.812	<b>CR 99830*</b>
<b>1.778</b>	<b>1.784</b>	1.781	2.125	0.675	0.800	1.062	<b>CR 99179</b>
<b>1.809</b>	<b>1.815</b>	1.813	2.090	0.563	0.688	1.000	<b>CR 99181</b>
<b>1.809</b>	<b>1.815</b>	1.813	2.090	0.563	0.688	1.000	<b>CR 99831*</b>
<b>1.857</b>	<b>1.863</b>	1.859	2.156	0.563	0.688	1.000	<b>CR 99185</b>
<b>1.866</b>	<b>1.872</b>	1.868	2.188	0.889	1.025	1.000	<b>CR 99186</b>
<b>1.872</b>	<b>1.878</b>	1.875	2.203	0.175	0.295	0.744	<b>CR 99190</b>
<b>1.872</b>	<b>1.878</b>	1.875	2.203	0.295	0.415	0.744	<b>CR 99188</b>
<b>1.872</b>	<b>1.878</b>	1.875	2.203	0.375	0.516	1.050	<b>CR 99184</b>
<b>1.872</b>	<b>1.878</b>	1.875	2.203	0.563	0.688	1.000	<b>CR 99187</b>
<b>1.872</b>	<b>1.878</b>	1.875	2.203	0.563	0.688	1.000	<b>CR 99832*</b>
<b>1.887</b>	<b>1.893</b>	1.891	2.205	0.551	0.668	0.984	<b>CR 99189</b>
<b>1.909</b>	<b>1.915</b>	1.912	2.219	0.375	0.500	1.000	<b>CR 99192</b>
<b>1.934</b>	<b>1.940</b>	1.938	2.219	0.563	0.688	1.000	<b>CR 99193</b>
<b>1.934</b>	<b>1.940</b>	1.938	2.219	0.563	0.688	1.000	<b>CR 99833*</b>
<b>1.965</b>	<b>1.971</b>	1.969	2.244	0.551	0.668	0.984	<b>CR 99196</b>
<b>1.977</b>	<b>1.983</b>	1.980	2.313	0.563	0.704	1.050	<b>CR 99198</b>
<b>1.997</b>	<b>2.003</b>	2.000	2.406	0.563	0.688	1.000	<b>CR 99199</b>
<b>1.997</b>	<b>2.003</b>	2.000	2.406	0.875	1.000	1.000	<b>CR 99200</b>
<b>1.997</b>	<b>2.003</b>	2.000	2.406	0.563	0.688	1.006	<b>CR 99834*</b>
<b>1.997</b>	<b>2.003</b>	2.000	2.406	0.875	1.000	1.000	<b>CR 99835*</b>
<b>2.040</b>	<b>2.047</b>	2.047	2.469	0.500	0.625	1.358	<b>CR 99204</b>
<b>2.057</b>	<b>2.063</b>	2.063	2.469	0.813	0.938	1.375	<b>CR 99205</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

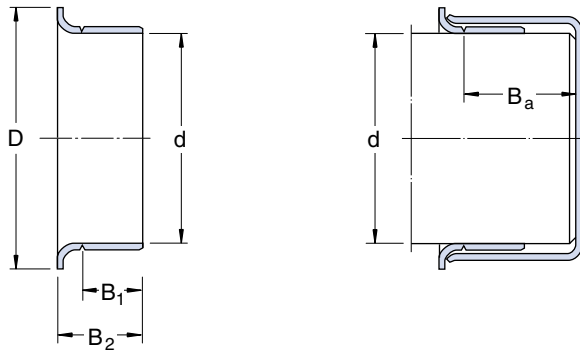


Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					-
<b>2.123</b>	<b>2.128</b>	2.125	2.422	0.500	750	1.281	<b>CR 99210</b>
<b>2.124</b>	<b>2.130</b>	2.125	2.422	0.781	0.938	1.375	<b>CR 99212</b>
<b>2.124</b>	<b>2.130</b>	2.125	2.422	0.781	0.938	1.375	<b>CR 99836*</b>
<b>2.162</b>	<b>2.168</b>	2.165	2.441	0.787	0.905	1.250	<b>CR 99215</b>
<b>2.162</b>	<b>2.169</b>	2.165	2.441	0.787	0.905	1.250	<b>CR 99863*</b>
<b>2.178</b>	<b>2.184</b>	2.181	2.500	0.781	0.938	1.500	<b>CR 99217</b>
<b>2.186</b>	<b>2.192</b>	2.188	2.500	0.781	0.938	1.313	<b>CR 99218</b>
<b>2.198</b>	<b>2.205</b>	2.205	2.531	0.500	0.625	1.315	<b>CR 99220</b>
<b>2.227</b>	<b>2.233</b>	2.230	2.531	0.500	0.625	1.313	<b>CR 99229</b>
<b>2.227</b>	<b>2.233</b>	2.230	2.531	0.781	0.906	1.250	<b>CR 99230</b>
<b>2.227</b>	<b>2.233</b>	2.230	2.531	0.500	0.625	1.313	<b>CR 99861*</b>
<b>2.237</b>	<b>2.243</b>	2.240	2.563	0.764	0.900	1.250	<b>CR 99226</b>
<b>2.249</b>	<b>2.255</b>	2.250	2.531	0.781	0.938	1.313	<b>CR 99225</b>
<b>2.249</b>	<b>2.255</b>	2.250	2.531	0.313	0.438	1.313	<b>CR 99227</b>
<b>2.249</b>	<b>2.255</b>	2.250	2.531	0.781	0.938	1.313	<b>CR 99837*</b>
<b>2.249</b>	<b>2.255</b>	2.250	2.531	0.313	0.438	1.313	<b>CR 99838*</b>
<b>2.309</b>	<b>2.315</b>	2.313	2.688	0.781	0.938	1.375	<b>CR 99231</b>
<b>2.327</b>	<b>2.333</b>	2.328	2.750	0.750	0.875	1.500	<b>CR 99233</b>
<b>2.359</b>	<b>2.365</b>	2.362	2.785	0.370	0.450	1.471	<b>CR 99241</b>
<b>2.359</b>	<b>2.365</b>	2.362	2.785	0.787	0.905	1.375	<b>CR 99235</b>
<b>2.372</b>	<b>2.378</b>	2.375	2.750	0.594	0.750	1.375	<b>CR 99238</b>
<b>2.374</b>	<b>2.380</b>	2.375	2.750	0.526	0.683	1.375	<b>CR 99240</b>
<b>2.374</b>	<b>2.380</b>	2.375	2.750	0.781	0.938	1.375	<b>CR 99237</b>
<b>2.374</b>	<b>2.380</b>	2.375	2.750	0.781	0.938	1.375	<b>CR 99839*</b>
<b>2.434</b>	<b>2.440</b>	2.438	2.828	0.781	0.938	1.393	<b>CR 99243</b>
<b>2.435</b>	<b>2.441</b>	2.438	2.828	0.500	0.625	1.425	<b>CR 99242</b>
<b>2.433</b>	<b>2.441</b>	2.441	2.827	0.500	0.625	1.425	<b>CR 99244</b>
<b>2.489</b>	<b>2.495</b>	2.492	2.875	0.781	938	1.393	<b>CR 99249</b>
<b>2.497</b>	<b>2.503</b>	2.500	2.820	0.555	0.650	0.890	<b>CR 99253</b>
<b>2.500</b>	<b>2.506</b>	2.500	2.828	0.500	0.656	1.393	<b>CR 99248</b>
<b>2.500</b>	<b>2.506</b>	2.500	2.820	0.781	0.938	1.375	<b>CR 99250</b>
<b>2.500</b>	<b>2.506</b>	2.500	2.820	0.781	0.938	1.375	<b>CR 99840*</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>2.510</b>	<b>2.516</b>	2.516	2.828	0.781	0.906	1.438	<b>CR 99251</b>
<b>2.556</b>	<b>2.562</b>	2.559	2.850	0.787	0.905	1.375	<b>CR 99254</b>
<b>2.556</b>	<b>2.562</b>	2.559	2.850	0.787	0.905	1.375	<b>CR 99841*</b>
<b>2.560</b>	<b>2.566</b>	2.563	2.891	0.781	0.938	1.375	<b>CR 99256</b>
<b>2.595</b>	<b>2.601</b>	2.598	2.990	0.781	0.938	1.250	<b>CR 99259</b>
<b>2.618</b>	<b>2.624</b>	2.621	3.047	0.781	0.938	1.375	<b>CR 99261</b>
<b>2.621</b>	<b>2.627</b>	2.625	3.047	0.781	0.906	1.375	<b>CR 99264</b>
<b>2.622</b>	<b>2.628</b>	2.625	3.047	0.500	0.625	1.375	<b>CR 99260</b>
<b>2.625</b>	<b>2.631</b>	2.625	3.047	0.781	0.938	1.375	<b>CR 99262</b>
<b>2.625</b>	<b>2.631</b>	2.625	3.047	0.781	0.938	1.375	<b>CR 99842*</b>
<b>2.670</b>	<b>2.677</b>	2.677	3.126	0.752	0.874	1.689	<b>CR 99266</b>
<b>2.727</b>	<b>2.733</b>	2.730	3.125	0.781	0.906	1.313	<b>CR 99268</b>
<b>2.740</b>	<b>2.746</b>	2.743	3.065	0.781	0.938	1.250	<b>CR 99273</b>
<b>2.745</b>	<b>2.751</b>	2.750	3.125	0.781	0.938	1.250	<b>CR 99274</b>
<b>2.747</b>	<b>2.753</b>	2.750	3.075	1.438	1.625	1.625	<b>CR 99267</b>
<b>2.750</b>	<b>2.756</b>	2.750	3.125	0.406	0.563	1.250	<b>CR 99272</b>
<b>2.750</b>	<b>2.756</b>	2.750	3.125	0.781	0.938	1.250	<b>CR 99275</b>
<b>2.750</b>	<b>2.756</b>	2.750	3.125	1.125	1.250	1.313	<b>CR 99269</b>
<b>2.745</b>	<b>2.751</b>	2.750	3.125	0.781	0.938	1.250	<b>CR 99843*</b>
<b>2.750</b>	<b>2.756</b>	2.750	3.125	0.781	0.938	1.250	<b>CR 99844*</b>
<b>2.753</b>	<b>2.759</b>	2.756	3.125	0.787	0.945	1.250	<b>CR 99276</b>
<b>2.809</b>	<b>2.815</b>	2.813	3.188	0.594	0.688	1.250	<b>CR 99281</b>
<b>2.827</b>	<b>2.835</b>	2.835	3.224	0.752	0.874	1.343	<b>CR 99284</b>
<b>2.838</b>	<b>2.844</b>	2.838	3.225	0.500	0.656	1.250	<b>CR 99845*</b>
<b>2.838</b>	<b>2.844</b>	2.844	3.225	0.500	0.656	1.250	<b>CR 99282</b>
<b>2.866</b>	<b>2.872</b>	2.869	3.188	0.781	0.938	1.250	<b>CR 99286</b>
<b>2.873</b>	<b>2.879</b>	2.875	3.219	0.781	0.938	1.250	<b>CR 99287</b>
<b>2.873</b>	<b>2.879</b>	2.875	3.219	0.781	0.938	1.250	<b>CR 99846*</b>
<b>2.937</b>	<b>2.943</b>	2.938	3.344	0.500	0.641	1.331	<b>CR 99290</b>
<b>2.937</b>	<b>2.943</b>	2.938	3.344	0.781	0.938	1.313	<b>CR 99293</b>
<b>2.937</b>	<b>2.943</b>	2.938	3.344	0.781	0.938	1.313	<b>CR 99847*</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

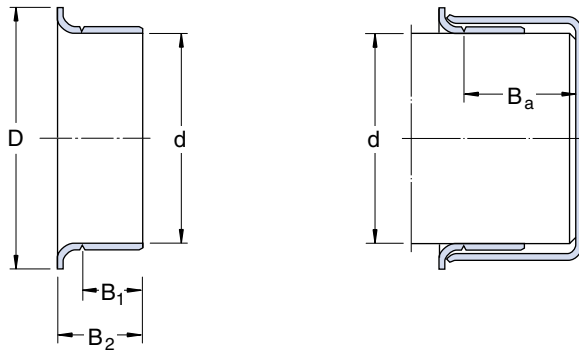


Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>2.950</b>	<b>2.956</b>	2.953	3.273	0.594	0.688	1.083	<b>CR 99289</b>
<b>2.950</b>	<b>2.956</b>	2.953	3.305	0.866	1.024	1.313	<b>CR 99294</b>
<b>2.972</b>	<b>2.976</b>	2.974	3.235	0.813	1.000	1.250	<b>CR 99292</b>
<b>2.990</b>	<b>2.996</b>	2.993	3.359	0.484	0.625	1.331	<b>CR 99291</b>
<b>2.990</b>	<b>2.996</b>	2.993	3.359	0.563	0.688	1.375	<b>CR 99298</b>
<b>2.990</b>	<b>2.996</b>	2.993	3.350	0.813	1.000	1.281	<b>CR 99299</b>
<b>2.997</b>	<b>3.003</b>	3.000	3.240	0.813	0.938	1.375	<b>CR 99296</b>
<b>3.000</b>	<b>3.006</b>	3.000	3.235	0.813	1.000	1.281	<b>CR 99300</b>
<b>3.000</b>	<b>3.006</b>	3.000	3.345	0.625	0.813	1.063	<b>CR 99303</b>
<b>3.000</b>	<b>3.006</b>	3.000	3.235	0.813	1.000	1.281	<b>CR 99848*</b>
<b>3.008</b>	<b>3.014</b>	3.011	3.355	0.500	0.625	2.000	<b>CR 99301</b>
<b>3.063</b>	<b>3.071</b>	3.071	3.469	0.770	0.874	2.059	<b>CR 99306</b>
<b>3.120</b>	<b>3.126</b>	3.125	3.531	0.688	0.813	2.000	<b>CR 99311</b>
<b>3.120</b>	<b>3.126</b>	3.125	3.531	0.813	1.000	2.000	<b>CR 99312</b>
<b>3.124</b>	<b>3.132</b>	3.125	3.525	0.551	0.709	2.031	<b>CR 99307</b>
<b>3.120</b>	<b>3.126</b>	3.125	3.531	0.813	1.000	2.000	<b>CR 99849*</b>
<b>3.142</b>	<b>3.150</b>	3.146	3.540	0.750	0.886	1.375	<b>CR 99313</b>
<b>3.146</b>	<b>3.153</b>	3.150	3.543	0.433	0.591	1.375	<b>CR 99317</b>
<b>3.146</b>	<b>3.153</b>	3.150	3.543	0.827	945	1.375	<b>CR 99315</b>
<b>3.225</b>	<b>3.231</b>	3.228	3.585	0.660	0.848	1.750	<b>CR 99328</b>
<b>3.250</b>	<b>3.256</b>	3.250	3.575	0.595	0.719	1.375	<b>CR 99324</b>
<b>3.250</b>	<b>3.256</b>	3.250	3.585	0.813	1.000	1.375	<b>CR 99325</b>
<b>3.250</b>	<b>3.256</b>	3.250	3.585	0.688	0.875	1.250	<b>CR 99326</b>
<b>3.247</b>	<b>3.253</b>	3.250	3.594	0.813	1.000	1.375	<b>CR 99322</b>
<b>3.250</b>	<b>3.256</b>	3.250	3.575	0.595	0.719	1.375	<b>CR 99850*</b>
<b>3.250</b>	<b>3.256</b>	3.250	3.585	0.813	1.000	1.375	<b>CR 99851*</b>
<b>3.307</b>	<b>3.313</b>	3.310	3.688	0.813	1.000	1.375	<b>CR 99331</b>
<b>3.337</b>	<b>3.347</b>	3.342	3.700	0.669	0.827	1.378	<b>CR 99332</b>
<b>3.337</b>	<b>3.346</b>	3.342	3.700	0.827	0.984	1.378	<b>CR 99333</b>
<b>3.338</b>	<b>3.346</b>	3.346	3.697	0.398	0.500	1.433	<b>CR 99334</b>
<b>3.373</b>	<b>3.379</b>	3.375	3.688	0.375	0.500	1.410	<b>CR 99338</b>
<b>3.373</b>	<b>3.379</b>	3.375	3.695	0.813	1.000	1.375	<b>CR 99337</b>
<b>3.435</b>	<b>3.441</b>	3.438	3.844	0.781	0.906	1.406	<b>CR 99339</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
d <sub>a</sub> min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>3.477</b>	<b>3.483</b>	3.480	3.835	0.781	0.906	1.406	<b>CR 99340</b>
<b>3.497</b>	<b>3.503</b>	3.500	3.844	0.625	0.813	1.347	<b>CR 99346</b>
<b>3.500</b>	<b>3.506</b>	3.500	3.825	0.313	0.500	1.347	<b>CR 99347</b>
<b>3.500</b>	<b>3.506</b>	3.500	3.844	0.813	1.000	1.347	<b>CR 99350</b>
<b>3.500</b>	<b>3.506</b>	3.500	3.844	0.813	1.000	1.347	<b>CR 99852*</b>
<b>3.501</b>	<b>3.507</b>	3.504	3.844	0.625	0.813	1.348	<b>CR 99349</b>
<b>3.540</b>	<b>3.546</b>	3.543	4.000	0.526	0.667	1.750	<b>CR 99353</b>
<b>3.540</b>	<b>3.546</b>	3.543	4.000	0.434	0.538	1.813	<b>CR 99352</b>
<b>3.540</b>	<b>3.546</b>	3.543	4.000	0.710	0.906	1.813	<b>CR 99351</b>
<b>3.540</b>	<b>3.546</b>	3.543	4.000	0.906	1.102	1.750	<b>CR 99354</b>
<b>3.560</b>	<b>3.566</b>	3.563	3.900	0.813	1.000	1.750	<b>CR 99356</b>
<b>3.618</b>	<b>3.624</b>	3.621	4.031	0.813	1.000	1.750	<b>CR 99360</b>
<b>3.623</b>	<b>3.629</b>	3.625	4.025	0.500	0.625	1.750	<b>CR 99363</b>
<b>3.623</b>	<b>3.629</b>	3.625	4.031	0.813	1.000	1.750	<b>CR 99362</b>
<b>3.684</b>	<b>3.690</b>	3.688	3.830	0.313	0.438	0.875	<b>CR 99368</b>
<b>3.685</b>	<b>3.691</b>	3.688	4.025	0.813	0.938	1.750	<b>CR 99365</b>
<b>3.727</b>	<b>3.733</b>	3.730	4.016	0.469	0.594	1.719	<b>CR 99359</b>
<b>3.727</b>	<b>3.733</b>	3.730	4.025	0.781	0.906	1.750	<b>CR 99366</b>
<b>3.737</b>	<b>3.743</b>	3.740	4.025	0.827	0.945	1.750	<b>CR 99369</b>
<b>3.740</b>	<b>3.746</b>	3.743	4.031	0.344	0.500	1.750	<b>CR 99374</b>
<b>3.740</b>	<b>3.746</b>	3.743	4.035	0.469	0.594	1.750	<b>CR 99364</b>
<b>3.746</b>	<b>3.752</b>	3.750	4.025	0.563	0.688	1.750	<b>CR 99376</b>
<b>3.750</b>	<b>3.756</b>	3.750	4.025	0.344	0.500	1.750	<b>CR 99367</b>
<b>3.750</b>	<b>3.756</b>	3.750	4.020	0.688	0.875	1.875	<b>CR 99372</b>
<b>3.750</b>	<b>3.756</b>	3.750	4.020	0.688	0.875	1.800	<b>CR 99853*</b>
<b>3.868</b>	<b>3.874</b>	3.871	4.185	0.813	1.000	1.875	<b>CR 99386</b>
<b>3.873</b>	<b>3.879</b>	3.875	4.219	0.813	1.000	1.875	<b>CR 99387</b>
<b>3.935</b>	<b>3.941</b>	3.938	4.313	0.813	1.000	2.050	<b>CR 99393</b>
<b>3.935</b>	<b>3.941</b>	3.938	4.313	0.813	1.000	2.050	<b>CR 99854*</b>
<b>3.998</b>	<b>4.006</b>	4.000	4.375	0.600	0.725	2.050	<b>CR 99395</b>
<b>3.998</b>	<b>4.006</b>	4.000	4.375	0.813	1.000	2.050	<b>CR 99399</b>
<b>3.998</b>	<b>4.006</b>	4.000	4.375	0.650	0.775	1.375	<b>CR 99400</b>
<b>3.998</b>	<b>4.006</b>	4.000	4.375	0.500	0.625	2.066	<b>CR 99401</b>
<b>3.998</b>	<b>4.006</b>	4.000	4.375	0.813	1.000	2.050	<b>CR 99855*</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

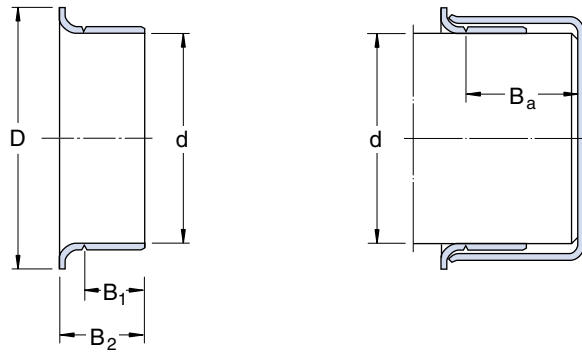


Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	B <sub>1</sub>	B <sub>2</sub>	B <sub>a</sub> <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>4.090</b>	<b>4.098</b>	4.094	4.438	0.787	0.945	1.417	<b>CR 99409</b>
<b>4.122</b>	<b>4.130</b>	4.125	4.420	0.813	1.000	1.375	<b>CR 99412</b>
<b>4.130</b>	<b>4.138</b>	4.134	4.470	0.787	0.913	1.378	<b>CR 99413</b>
<b>4.183</b>	<b>4.191</b>	4.188	4.500	0.813	1.000	1.375	<b>CR 99418</b>
<b>4.226</b>	<b>4.234</b>	4.234	4.610	0.781	0.906	1.438	<b>CR 99423</b>
<b>4.248</b>	<b>4.256</b>	4.250	4.610	0.813	1.000	1.438	<b>CR 99424</b>
<b>4.327</b>	<b>4.335</b>	4.328	4.921	0.509	0.650	1.250	<b>CR 99435</b>
<b>4.322</b>	<b>4.331</b>	4.331	4.917	0.499	0.570	1.295	<b>CR 99434</b>
<b>4.370</b>	<b>4.378</b>	4.375	4.750	0.813	1.000	1.650	<b>CR 99437</b>
<b>4.401</b>	<b>4.409</b>	4.406	4.750	0.748	0.886	1.063	<b>CR 99438</b>
<b>4.434</b>	<b>4.442</b>	4.438	4.813	1.000	1.142	1.313	<b>CR 99439</b>
<b>4.496</b>	<b>4.504</b>	4.500	4.900	0.813	1.000	1.250	<b>CR 99450</b>
<b>4.496</b>	<b>4.504</b>	4.500	4.900	813	1.000	1.250	<b>CR 99856*</b>
<b>4.523</b>	<b>4.531</b>	4.527	5.000	0.813	0.938	1.250	<b>CR 99452</b>
<b>4.621</b>	<b>4.629</b>	4.625	5.063	1.000	1.250	1.375	<b>CR 99463</b>
<b>4.621</b>	<b>4.629</b>	4.625	5.000	0.438	0.625	1.375	<b>CR 99465</b>
<b>4.685</b>	<b>4.693</b>	4.688	5.063	0.813	1.000	1.375	<b>CR 99468</b>
<b>4.720</b>	<b>4.728</b>	4.724	5.110	0.315	0.433	1.323	<b>CR 99471</b>
<b>4.720</b>	<b>4.728</b>	4.724	5.110	0.787	984	1.260	<b>CR 99473</b>
<b>4.746</b>	<b>4.754</b>	4.750	5.000	0.500	0.750	1.500	<b>CR 99475</b>
<b>4.799</b>	<b>4.807</b>	4.803	5.177	0.787	0.945	1.260	<b>CR 99472</b>
<b>4.839</b>	<b>4.847</b>	4.843	5.229	787	0.984	1.244	<b>CR 99484</b>
<b>4.871</b>	<b>4.879</b>	4.875	5.250	0.625	0.750	1.438	<b>CR 99487</b>
<b>4.917</b>	<b>4.925</b>	4.921	5.400	0.394	0.551	1.438	<b>CR 99490</b>
<b>4.917</b>	<b>4.925</b>	4.921	5.400	1.024	1.260	1.438	<b>CR 99492</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	$B_1$	$B_2$	$B_a$ <sup>1)</sup>	* Indicates Speedi-Sleeve Gold Product
in		in					–
<b>4.998</b>	<b>5.006</b>	5.000	5.400	540	0.681	1.438	<b>CR 99501</b>
<b>4.998</b>	<b>5.006</b>	5.000	5.400	0.688	0.875	1.438	<b>CR 99498</b>
<b>4.998</b>	<b>5.006</b>	5.000	5.390	0.813	1.000	1.438	<b>CR 99499</b>
<b>4.998</b>	<b>5.006</b>	5.000	5.400	0.688	0.875	1.438	<b>CR 99857*</b>
<b>4.998</b>	<b>5.006</b>	5.000	5.390	0.813	1.000	1.438	<b>CR 99858*</b>
<b>5.110</b>	<b>5.118</b>	5.114	5.493	750	0.938	1.181	<b>CR 99494</b>
<b>5.117</b>	<b>5.125</b>	5.125	5.493	0.866	0.996	1.280	<b>CR 99491</b>
<b>5.120</b>	<b>5.128</b>	5.125	5.500	0.813	1.000	1.250	<b>CR 99513</b>
<b>5.246</b>	<b>5.254</b>	5.250	5.560	0.813	1.000	1.250	<b>CR 99525</b>
<b>5.307</b>	<b>5.315</b>	5.313	5.875	807	1.000	1.250	<b>CR 99533</b>
<b>5.371</b>	<b>5.379</b>	5.375	5.875	0.813	1.000	1.250	<b>CR 99537</b>
<b>5.434</b>	<b>5.442</b>	5.438	5.750	1.500	1.688	1.875	<b>CR 99548</b>
<b>5.472</b>	<b>5.480</b>	5.472	6.100	563	0.750	0.938	<b>CR 99547</b>
<b>5.498</b>	<b>5.506</b>	5.500	5.938	0.813	1.000	1.250	<b>CR 99549</b>
<b>5.498</b>	<b>5.506</b>	5.500	5.938	0.518	0.705	1.250	<b>CR 99550</b>
<b>5.498</b>	<b>5.506</b>	5.500	5.938	0.813	1.000	1.250	<b>CR 99859*</b>
<b>5.508</b>	<b>5.516</b>	5.512	5.945	0.807	1.000	1.250	<b>CR 99552</b>
<b>5.621</b>	<b>5.629</b>	5.625	6.188	0.875	1.000	1.812	<b>CR 99560</b>
<b>5.700</b>	<b>5.709</b>	5.709	5.902	0.768	0.874	1.811	<b>CR 99571</b>
<b>5.726</b>	<b>5.734</b>	5.734	5.900	0.563	0.750	1.938	<b>CR 99562</b>
<b>5.746</b>	<b>5.754</b>	5.750	6.180	0.813	1.000	1.750	<b>CR 99575</b>
<b>5.871</b>	<b>5.879</b>	5.875	6.188	1.000	1.250	1.313	<b>CR 99587</b>
<b>5.871</b>	<b>5.879</b>	5.875	6.188	1.000	1.250	1.313	<b>CR 99862*</b>
<b>5.895</b>	<b>5.905</b>	5.905	6.260	1.024	1.181	1.338	<b>CR 99595</b>
<b>5.934</b>	<b>5.942</b>	5.938	6.375	1.000	1.125	1.875	<b>CR 99596</b>
<b>5.995</b>	<b>6.003</b>	6.000	6.360	0.500	0.750	1.750	<b>CR 99601</b>
<b>5.995</b>	<b>6.003</b>	6.000	6.375	1.000	1.250	1.750	<b>CR 99599</b>
<b>6.058</b>	<b>6.068</b>	6.063	6.375	1.024	1.181	1.299	<b>CR 99605</b>
<b>6.092</b>	<b>6.102</b>	6.097	6.575	1.024	1.181	1.299	<b>CR 99606</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



Shaft diameter		Sleeve Dimensions					Designation
$d_a$ min	max	d	D	$B_1$	$B_2$	$B_a^{1)}$	* Indicates Speedi-Sleeve Gold Product
in		in					-
6.198	6.208	6.203	6.625	0.813	1.063	1.750	<b>CR 99620</b>
6.245	6.255	6.250	6.625	1.031	1.250	1.750	<b>CR 99625</b>
6.289	6.299	6.299	7.000	1.000	1.250	1.375	<b>CR 99630</b>
6.495	6.505	6.500	7.000	1.000	1.250	1.375	<b>CR 99650</b>
6.683	6.693	6.688	7.188	1.250	1.496	1.750	<b>CR 99640</b>
6.745	6.755	6.750	7.125	0.813	1.063	1.750	<b>CR 99675</b>
6.880	6.890	6.890	7.362	1.102	1.260	1.378	<b>CR 99687</b>
6.995	7.005	7.000	7.475	1.000	1.250	1.688	<b>CR 99700</b>
7.077	7.087	7.087	7.500	1.300	1.496	1.752	<b>CR 99721</b>
7.244	7.254	7.250	7.760	1.250	1.500	2.175	<b>CR 99725</b>
7.273	7.283	7.278	7.834	1.260	1.496	2.165	<b>CR 99726</b>
7.444	7.454	7.453	7.860	0.813	1.000	1.250	<b>CR 99745</b>
7.495	7.505	7.500	7.875	0.813	1.000	1.250	<b>CR 99750</b>
7.745	7.755	7.750	8.270	1.000	1.313	1.875	<b>CR 99775</b>
7.869	7.879	7.875	8.375	1.359	1.500	1.750	<b>CR 99787</b>
7.933	7.943	7.938	8.375	1.000	1.250	1.750	<b>CR 99799</b>
7.995	8.005	8.000	8.375	1.000	1.250	1.750	<b>CR 99800</b>

<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used



<sup>1)</sup> Possible max. distance of rear groove from shaft end when installation tool supplied with sleeve is used

# CHICAGO RAWHIDE – LOCATIONS

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India	1 plant
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