



# PRODUCT **KNOWLEDGE**

**SHAFT PROTECTION SLEEVES –**  
LONG-LASTING, RELIABLE REPAIRS TO SLIDING  
SURFACES FOR RADIAL OIL SEALS

# SHAFT PROTECTION SLEEVES – APPLICATION AND ADVANTAGES

## AREA OF APPLICATION

Shaft protection sleeves are used to repair broken-in or worn sliding surfaces for radial oil seals. They provide a cost-effective alternative to replacement or costly remachining of the worn shaft, as they can be easily slid over the worn sliding surface.

Deep run-in grooves often require the diameter to be considerably reduced when remachining the shaft. As a consequence, the original radial oil seal must be replaced by a smaller radial oil seal. By using shaft protection sleeves, this problem can be simply and pragmatically overcome. The shaft need not be dismantled to carry out the repair work or remachined at great effort, and a radial oil seal with the original dimensions can still be used afterwards.



A radial oil seal with the original dimensions can be used after the repair.

## FUNCTION AND BENEFITS

Using the shaft protection sleeves in repair work helps to restore a flawless function quickly and durably. The shaft protection sleeve is used as a mating surface for the radial oil seal in the tribological rotation sealing system. This means that the shaft protection sleeve is the third important component for a perfectly functioning seal, alongside the radial oil seal and the lubricant used.

## SHAFT PROTECTION SLEEVES OFFER NUMEROUS ADVANTAGES TO THE USER:

- Quick and easy repair, the assembly sleeve is also supplied.
- Cost-effective restoration of the sliding surface on the shaft, as there is no need to remove and remachine the shaft.
- No more costly machinery downtimes, as the repair time is reduced to a minimum.
- Original seal dimension is retained.
- The sliding surface on the radial oil seal is restored functionally and durably.
- Good-value repair technique.
- Secure fit on the shaft due to press fit.
- Optimally processed and wear-resistant surface ensures a long service life.
- Spare part provisioning simplified.

**Material**

Rust- and acid-resistant steel 1.4301 (AISI 304)

**Surface quality / roughness values**

$R_a = 0.2$  to  $0.8 \mu\text{m}$  /  $R_z = 1$  to  $5 \mu\text{m}$  /  $R_{\text{max}} \leq 6.3 \mu\text{m}$

**Surface hardness**

HV 220 (95 HRB) wear-resistant processing

**Surface machining**

Spiral-free grind

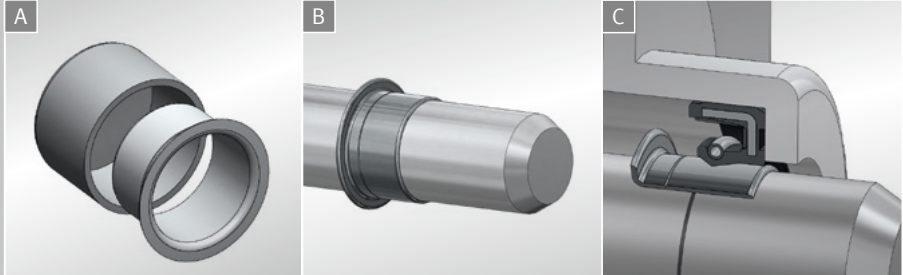
**Wall thickness**

0.28 mm thin-walled design

**Assembly sleeve material**

Normal steel 1.0330 (SAE 1008)

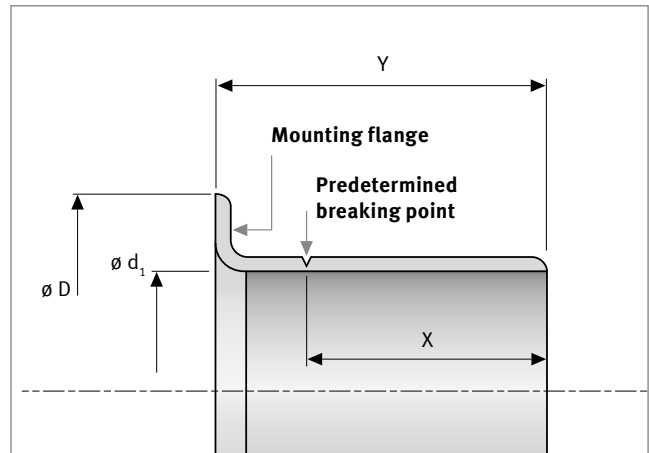
- A** The assembly sleeve is provided for quick and easy repair.
- B** Shaft with installed shaft protection sleeve
- C** Radial oil seal runs on mounted shaft protection sleeve



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**ORDER INFORMATION**

The operating parameters such as temperature, circumferential speed and pressure are affected by the radial oil seal selected. The shaft protection sleeve covers the operating parameters for all conventional radial oil seals. The shaft protection sleeves are individually packed for the diameter range of 12 to 200 mm and are delivered with the assembly sleeve and multilingual assembly instructions. Larger diameters and thicker walls are available on request.



**DIMENSIONS FOR SHAFT PROTECTION SLEEVES**

Ø d1 (mm) shaft dimension	Ø D (mm) flange	X (mm) width	Y (mm) total width	Kolbenschmidt no.	Ø d1 (mm) shaft dimension	Ø D (mm) flange	X (mm) width	Y (mm) total width	Kolbenschmidt no.	Ø d1 (mm) shaft dimension	Ø D (mm) flange	X (mm) width	Y (mm) total width	Kolbenschmidt no.
12,00	15,50	6,00	8,40	50 008 371	43,00	48,40	12,70	15,90	50 008 425	82,55	91,30	20,60	25,40	50 008 439
14,00	19,10	6,30	9,90	50 008 420	43,66	51,60	14,30	17,50	50 008 352	84,07	93,70	20,60	25,40	50 008 333
14,30	19,10	6,30	9,90	50 008 406	44,17	52,40	9,50	12,70	50 008 364	84,89	94,00	17,00	21,00	50 008 313
15,00	19,10	5,00	9,00	50 008 383	44,45	52,40	14,30	17,50	50 008 443	84,89	94,00	21,00	25,00	50 008 321
15,88	19,10	8,00	10,30	50 008 421	44,45	52,40	13,50	15,90	50 008 428	85,00	90,90	10,10	12,70	50 008 308
16,00	18,20	8,00	11,10	50 008 356	44,45	52,20	9,50	12,70	50 008 427	88,90	97,60	20,60	25,40	50 008 451
17,00	22,20	8,00	11,00	50 008 341	44,45	52,40	19,10	22,20	50 008 426	90,00	101,60	11,10	13,70	50 008 305
17,37	22,70	8,00	11,10	50 008 407	44,86	52,40	14,30	17,50	50 008 359	90,00	101,60	13,40	16,90	50 008 316
17,93	24,40	8,00	11,00	50 008 361	45,00	53,00	14,00	17,00	50 008 307	90,00	101,60	18,00	23,00	50 008 339
19,05	24,00	8,00	11,10	50 008 384	45,24	54,00	16,90	20,30	50 008 429	90,00	101,60	23,00	28,00	50 008 340
19,84	23,80	8,70	11,10	50 008 408	46,05	53,10	14,30	17,50	50 008 348	92,08	102,40	20,60	25,40	50 008 444
20,00	23,60	8,00	11,00	50 008 314	47,22	54,80	14,30	17,50	50 008 430	94,74	102,20	19,80	23,00	50 008 452
21,82	29,30	6,30	9,50	50 008 412	47,45	55,60	22,60	26,00	50 008 431	95,00	102,20	21,00	24,00	50 008 322
22,00	30,20	8,00	12,00	50 008 373	47,63	56,00	14,30	17,50	50 008 432	95,00	102,50	11,90	15,10	50 008 353
22,00	30,20	6,60	9,10	50 008 372	48,03	56,00	14,00	17,00	50 008 335	95,00	102,40	8,70	12,70	50 008 354
22,23	27,80	8,00	11,10	50 008 409	49,23	56,40	14,30	17,50	50 008 433	95,25	102,10	17,50	22,20	50 008 453
24,00	28,70	8,00	11,10	50 008 362	50,00	57,00	14,00	17,00	50 008 310	95,25	102,20	14,30	17,50	50 008 454
24,60	28,70	15,90	18,30	50 008 411	50,30	58,80	14,30	17,90	50 008 390	100,00	109,50	20,60	25,40	50 008 323
24,60	28,70	8,00	11,10	50 008 410	50,80	61,10	14,30	17,50	50 008 360	101,60	111,10	20,60	25,40	50 008 379
25,00	33,00	8,00	11,00	50 008 327	52,00	62,70	12,70	15,90	50 008 405	101,60	111,10	20,60	25,40	50 008 379
25,40	31,00	8,00	11,10	50 008 385	53,98	61,50	19,80	23,80	50 008 445	104,78	113,50	20,60	25,40	50 008 449
26,01	33,40	8,00	12,00	50 008 312	53,98	61,50	12,70	19,10	50 008 365	105,00	113,50	20,00	23,20	50 008 326
27,00	33,50	8,00	11,10	50 008 416	55,00	62,00	20,00	23,00	50 008 315	109,93	125,00	12,90	16,50	50 008 302
27,66	35,70	8,00	11,10	50 008 413	55,58	63,50	19,80	23,80	50 008 437	110,00	125,00	11,40	15,00	50 008 403
28,00	34,90	9,50	12,70	50 008 334	56,00	64,30	12,70	15,90	50 008 446	115,00	127,00	20,60	23,80	50 008 306
28,58	38,10	8,00	11,10	50 008 414	57,15	64,30	19,80	23,80	50 008 447	117,50	128,60	25,40	31,80	50 008 395
28,58	38,10	9,50	12,70	50 008 423	57,15	64,30	8,00	11,10	50 008 366	120,00	129,80	20,00	25,00	50 008 325
29,36	34,30	9,50	12,70	50 008 387	59,13	69,80	19,10	22,20	50 008 391	120,00	129,80	8,00	11,00	50 008 450
29,85	35,60	8,00	11,10	50 008 351	60,00	70,70	9,40	11,40	50 008 317	120,65	127,00	12,70	19,10	50 008 396
30,00	35,60	8,00	11,00	50 008 311	60,00	70,70	20,00	23,00	50 008 319	125,00	137,20	10,00	14,00	50 008 368
30,18	35,60	8,00	11,10	50 008 386	60,33	69,80	13,40	17,40	50 008 349	125,00	137,20	26,00	32,00	50 008 380
31,50	39,10	8,00	11,10	50 008 415	61,92	71,80	19,80	23,80	50 008 434	127,00	137,20	17,50	22,20	50 008 457
31,80	38,10	8,00	11,10	50 008 328	61,93	71,80	12,70	15,90	50 008 448	129,90	139,50	19,10	23,80	50 008 350
32,00	38,10	8,00	11,10	50 008 300	62,00	71,80	12,70	15,90	50 008 336	130,18	139,50	22,00	25,30	50 008 332
33,35	40,60	6,30	9,50	50 008 417	63,50	71,60	19,80	23,80	50 008 435	133,35	141,20	20,60	25,40	50 008 401
33,35	40,50	12,70	15,90	50 008 374	63,91	71,80	19,80	23,00	50 008 436	134,95	145,70	20,50	25,40	50 008 455
34,01	41,30	12,70	15,90	50 008 418	65,00	72,40	20,00	23,00	50 008 304	140,00	151,00	20,50	25,40	50 008 343
34,93	41,60	8,00	11,10	50 008 419	65,10	73,40	19,80	23,80	50 008 392	145,00	154,90	19,10	22,20	50 008 397
34,93	41,60	13,00	16,00	50 008 303	66,00	76,00	19,80	23,80	50 008 404	150,00	159,00	26,00	30,00	50 008 369
34,93	41,60	12,70	15,90	50 008 344	68,00	79,40	19,10	22,20	50 008 346	152,40	161,90	25,40	31,80	50 008 458
36,00	45,20	13,00	17,00	50 008 375	69,85	79,40	10,30	14,30	50 008 318	154,86	167,00	26,00	30,00	50 008 459
36,53	45,20	9,50	12,70	50 008 422	69,85	79,40	19,80	23,79	50 008 377	160,00	171,40	25,40	31,80	50 008 355
38,00	45,20	13,00	17,00	50 008 342	69,85	79,40	28,60	31,80	50 008 367	165,10	177,80	25,40	31,80	50 008 456
38,10	45,20	9,50	12,70	50 008 388	69,85	79,40	19,80	23,80	50 008 347	169,88	182,60	31,80	38,00	50 008 461
38,10	45,20	14,30	17,50	50 008 440	70,00	79,40	20,00	24,00	50 008 330	171,45	181,00	20,60	27,00	50 008 398
38,68	47,20	11,10	14,30	50 008 441	71,45	81,00	15,10	17,50	50 008 393	175,01	187,00	28,00	32,00	50 008 460
39,42	47,20	11,10	14,30	50 008 357	72,00	81,90	19,10	22,20	50 008 337	177,80	189,90	25,40	31,80	50 008 381
39,70	47,20	14,30	17,50	50 008 442	74,63	84,90	19,80	23,80	50 008 438	180,01	190,50	33,00	38,00	50 008 370
40,00	46,90	9,90	12,90	50 008 363	75,00	83,10	15,10	17,50	50 008 324	184,86	197,10	32,00	38,00	50 008 399
40,08	47,00	13,00	16,00	50 008 309	75,00	84,00	22,00	26,00	50 008 338	189,31	199,60	20,60	25,40	50 008 462
41,00	49,20	12,70	15,90	50 008 389	76,02	85,30	14,30	17,50	50 008 394	190,50	200,00	20,60	25,40	50 008 382
41,28	47,60	14,30	17,50	50 008 424	78,00	88,00	19,10	22,20	50 008 402	200,03	212,70	34,50	38,10	50 008 400
41,90	53,00	11,30	14,50	50 008 329	79,38	89,70	17,50	20,60	50 008 378					
41,90	53,00	14,30	17,50	50 008 345	79,91	89,90	19,10	22,50	50 008 320					
42,06	53,00	14,00	17,50	50 008 358	80,00	90,00	11,00	15,00	50 008 301					
42,88	48,40	14,30	17,50	50 008 376	80,00	90,00	21,00	24,00	50 008 331					



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**MS Motorservice International GmbH**

Wilhelm-Maybach-Straße 14-18

74196 Neuenstadt, Germany

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