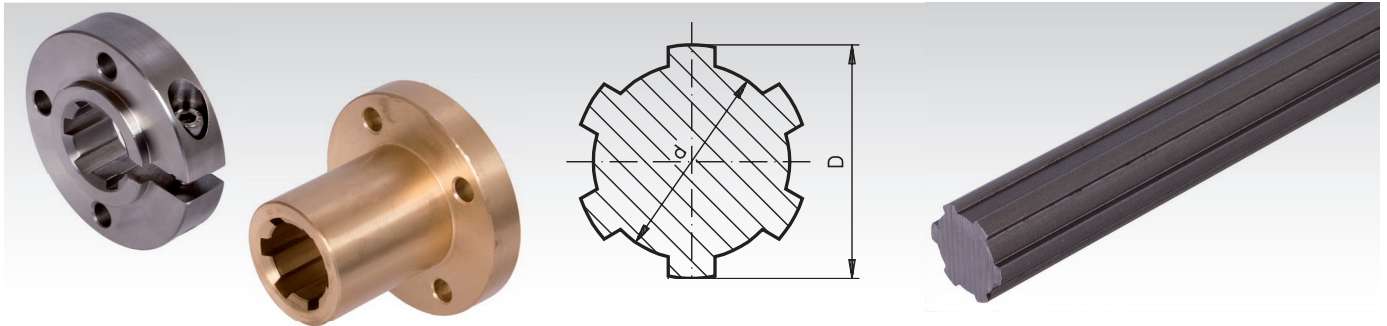


## Splined Shafts and Splined Hubs DIN ISO 14 – Description



### General Description

Splined shafts with splined hubs are used when torques have to be transmitted and the component to be driven needs to be movable in axial direction.

### Common Profiles

DIN ISO 14 (used to be DIN 5463): Most common type, with straight, parallel flanks. This is the profile of catalogue goods. Other standards are less commonly used.

### Profile Description DIN ISO 14:

Number of splines x small diameter x big diameter. Example for a component with 6 splines and outside diameter 14 mm: splined shaft (KW) or splined hub (KN) 6 x 11 x 14.

### Production method:

**Cold drawn:** Economical production method. Due to the chipless shaping, the shafts have a unsevered grain structure and thus a high strength. This production method is perfectly suited for easy to shape materials as C45, 1.4301 or 42CrMo4.

**Milled:** for single-unit production, if special dimensional accuracy is required or for high strength materials. With this methods, shafts with diameters (steps) that are larger than the core diameter or outside diameter can be produced.

## Splined Shafts in Catalogue Version, Page 328

### Profiles

Main dimensions in accordance with DIN ISO 14. Shaft with splines with parallel, straight flanks. Up to size 28 x 34 with six splines, from size 32 x 38 with 8 splines.

### Materials

The catalogue splined shafts are optionally available in steel C45 cold drawn or stainless steel 1.4301 cold drawn. Other materials as e.g. 42CrMo4 on request.

### Tolerances

Up to size KW 21x25: Straightness 0.8 mm/m, Torsion max. 1.0 mm/m. From size KW 23x28: Straightness 1.2 mm/m, Torsion max. 1.5 mm/m. A straightness of 0.1mm/m can be produced on request.

### Lengths

Splined shafts up to a length of 6 metres can be supplied from stock. Standard lengths sold are 1 metre, 1.5 metre, 2 metre and 3 metre. Price for bigger lengths up to 6 metre on request.

## Splined Hubs in in Catalogue Version, Page 328

### Profile

Main dimensions in accordance with DIN 14. Hub with splines with parallel, straight flanks. Up to size 28 x 34 with six splines, from size 32 x 38 with 8 splines.

### Materials

The catalogue splined hubs are optionally available in steel C45, red brass or stainless steel 1.4301. Other materials as e.g. 42CrMo4 on request.

### Tolerances

Profile inner diameter: H7. Profile outside diameter: H11. Outer dimensions: according to DIN 2768m.

### Lengths

The standard lengths are equivalent to the maximum possible sweeping length. Longer splined hubs are available on request. Provide for at least one centred (or one-sided) relieve groove.

## Torque- and Performance Figures of Splined Shafts and Hubs based on the Torsional Stress (with Safety Margin of 2.5)

### Material C45

Profile	11 x 14	13 x 16	16 x 20	18 x 22	21 x 25	23 x 28	26 x 32	28 x 34	32 x 38	36 x 42	42 x 48	46 x 54
Nm* fluctuating	38,1	59,5	103	141	215	293	373	455	655	906	1106	1455
Nm* alternating	33,3	52,0	90	124	189	257	326	398	573	793	973	1280
kW** fluctuating	6,0	9,3	16	22	34	46	59	72	103	142	174	230
kW** alternating	5,2	8,2	14	20	30	40	51	62	90	124	153	200

### Material 1.4301

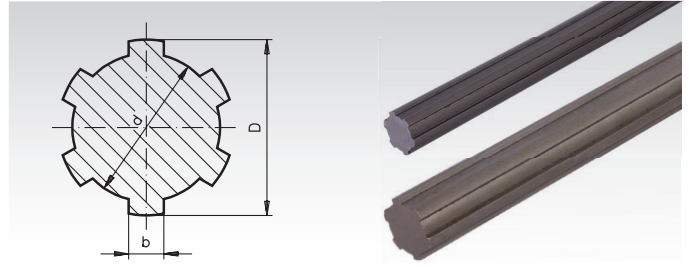
Profile	11 x 14	13 x 16	16 x 20	18 x 22	21 x 25	23 x 28	26 x 32	28 x 34	32 x 38	36 x 42	42 x 48	46 x 54
Nm* fluctuating	16,4	25,5	49	67	102	139	204	249	359	496	763	1005
Nm* alternating	14,4	22,5	43	59	90	122	180	220	316	437	672	885
kW** fluctuating	2,6	4,0	8	10	16	22	32	39	56	78	120	160
kW** alternating	2,3	3,5	7	9	14	19	28	34	50	69	106	140

\* Transmittable torque in Nm.

\*\* Transmittable power in kW at 1500 min<sup>-1</sup>.

## Splined Shafts - Similar to DIN ISO 14 Cold Drawn C45 and Stainless Steel, Material-No. 1.4301

Lengths in stock: 1000, 1500, 2000 and 3000 mm.  
 Special lengths up to 6000 mm on request (some in stock).  
 Tolerances:  
 Straightness 0.8 mm/m, torsion max. 0.5 mm/m.  
 A straightness of 0.1 mm/m can be produced on request.



Ordering Details: e.g.: Product No. 648 402 00, Splined Shaft KW 11 x 14, 1000 mm long

### Material C45

Product No. 1000 mm	Product No. 1500 mm	Product No. 2000 mm	Product No. 3000 mm	Profile Description mm	Number of splines	Ø D -0.07 -0.27 mm	Ø d -0.03 -0.08 mm	b +0 -0.08 mm	Weight kg/m
648 402 00	648 432 00	648 452 00	648 472 00	KW 11 x 14	6	14	11	3	0,949
648 404 00	648 434 00	648 454 00	648 474 00	KW 13 x 16	6	16	13	3,5	1,287
648 405 00	648 435 00	648 455 00	648 475 00	KW 16 x 20	6	20	16	4	1,911
648 401 00	648 431 00	648 451 00	648 471 00	KW 18 x 22	6	22	18	5	2,453
648 406 00	648 436 00	648 456 00	648 476 00	KW 21 x 25	6	25	21	5	3,139
648 403 00	648 433 00	648 453 00	648 473 00	KW 23 x 28	6	28	23	6	3,964
648 407 00	648 437 00	648 457 00	648 477 00	KW 26 x 32	6	32	26	6	5,008
648 409 00	648 439 00	648 459 00	648 479 00	KW 28 x 34	6	34	28	7	5,816
648 408 00	648 438 00	648 458 00	648 478 00	KW 32 x 38	8	38	32	6	7,433
648 412 00	648 442 00	648 462 00	648 482 00	KW 36 x 42	8	42	36	7	9,302
648 410 00	648 440 00	648 460 00	648 480 00	KW 42 x 48	8	48	42	8	12,371
648 414 00	648 444 00	648 464 00	648 484 00	KW 46 x 54	8	54	46	9	15,300

### Material Stainless Steel

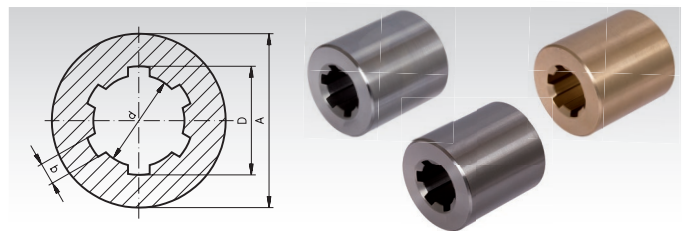
Product No. 1000 mm ★ STAINLESS	Product No. 1500 mm ★ STAINLESS	Product No. 2000 mm ★ STAINLESS	Product No. 3000 mm ★ STAINLESS	Profile Description mm	Number of splines	Ø D -0.07 -0.27 mm	Ø d -0.03 -0.08 mm	b +0 -0.08 mm	Weight kg/m
648 994 02	648 994 32	648 994 52	648 994 72	KW 11 x 14	6	14	11	3	0,949
648 994 04	648 994 34	648 994 54	648 994 74	KW 13 x 16	6	16	13	3,5	1,287
648 994 05	648 994 35	648 994 55	648 994 75	KW 16 x 20	6	20	16	4	1,911
648 994 01	648 994 31	648 994 51	648 994 71	KW 18 x 22	6	22	18	5	2,453
648 994 06	648 994 36	648 994 56	648 994 76	KW 21 x 25	6	25	21	5	3,139
648 994 03	648 994 33	648 994 53	648 994 73	KW 23 x 28	6	28	23	6	3,964
648 994 07	648 994 37	648 994 57	648 994 77	KW 26 x 32	6	32	26	6	5,008
648 994 09	648 994 39	648 994 59	648 994 79	KW 28 x 34	6	34	28	7	5,816
648 994 08	648 994 38	648 994 58	648 994 78	KW 32 x 38	8	38	32	6	7,433
648 994 12	648 994 42	648 994 62	648 994 82	KW 36 x 42	8	42	36	7	9,302
648 994 10	648 994 40	648 994 60	648 994 80	KW 42 x 48	8	48	42	8	12,371
648 994 14	648 994 44	648 994 64	648 994 84	KW 46 x 54	8	54	46	9	15,300

## Splined Hubs - DIN ISO 14

Material: Steel C45Pb, from diameter 80 C45,  
 red brass (GC-CuSn7ZnPb).  
 Stainless steel, Material-No. 1.4305



© A/d up to size 16 x 20 = 0.2 mm, above 0.3 mm



Ordering Details: e.g.: Product No. 648 302 00, Splined Hub DIN 14, KN 11 x 14

Product No. C45	Product No. Rg7	Product No. Stainless Steel	Profile Description mm	Number of keyways	Ø DH11 mm	Ø dH7 mm	bD9 mm	DIN ISO 2768 m Ø A mm	Länge mm	Weight Steel kg	Weight Rg7 kg
648 302 00	648 352 00	648 993 02	KN 11 x 14	6	14	11	3	20	40	0,06	0,08
648 304 00	648 354 00	648 993 04	KN 13 x 16	6	16	13	3,5	28	45	0,16	0,18
648 305 00	648 355 00	648 993 05	KN 16 x 20	6	20	16	4	32	45	0,20	0,22
648 301 00	648 351 00	648 993 01	KN 18 x 22	6	22	18	5	40	50	0,27	0,3
648 306 00	648 356 00	648 993 06	KN 21 x 25	6	25	21	5	40	55	0,36	0,42
648 303 00	648 353 00	648 993 03	KN 23 x 28	6	28	23	6	50	55	0,47	0,54
648 307 00	648 357 00	648 993 07	KN 26 x 32	6	32	26	6	52	60	0,70	0,78
648 309 00	648 359 00	648 993 09	KN 28 x 34	6	34	28	7	60	60	0,76	0,87
648 308 00	648 358 00	648 993 08	KN 32 x 38	8	38	32	6	60	60	0,88	1,00
648 312 00	648 362 00	648 993 12	KN 36 x 42	8	42	36	7	70	65	1,08	1,23
648 310 00	648 360 00	648 993 10	KN 42 x 48	8	48	42	8	65	70	0,94	1,10
648 311 00	648 361 00	648 993 11	KN 42 x 48	8	48	42	8	80	70	1,88	2,16
648 314 00	648 364 00	648 993 14	KN 46 x 54	8	54	46	9	80	90	2,25	2,49

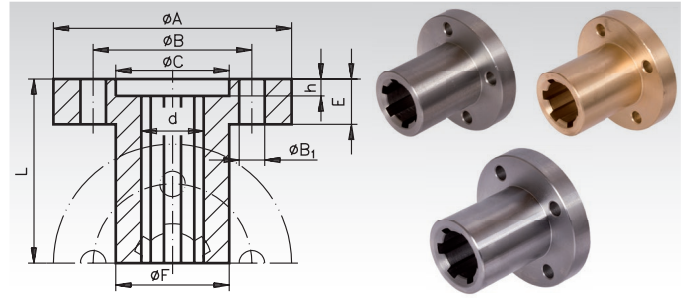
## Splined Hubs with Flange - DIN ISO 14

**Material:** Steel C45Pb, from diameter 70 C45.  
Red brass Rg7 (GC-CuSn7Zn Pb).  
Stainless steel, Material-No. 1.4305.



© F/d and C/d = 0.03mm

Ready-to-install, with 4 mounting holes.



Ordering Details: e.g.: Product No. 648 502 00, Hub DIN 14 KN 11 x 14 with Flange

Product No. C45	Product No. Rg7	Product No. Stainless Steel	Profile Description mm	DIN ISO 2768 m $\phi A$ mm	DIN ISO 2768 m $\phi B$ mm	DIN74m $\phi B_1$ mm	DIN ISO 2768 m $\phi CH7$ mm	DIN ISO 2768 m $\phi Fh8$ mm	DIN ISO 2768 m $\phi dH7$ mm	DIN ISO 2768 m E mm	DIN ISO 2768 m h mm	DIN ISO 2768 m L mm	Weight Steel kg	Weight Rg7 kg
648 502 00	648 552 00	648 995 02	KN 11 x 14	42	28	4,5	20	20	11	8	3	35	0,10	0,12
648 504 00	648 554 00	648 995 04	KN 13 x 16	50	36	4,5	22	25	13	8	3	40	0,18	0,22
648 505 00	648 555 00	648 995 05	KN 16 x 20	52	38	5,5	25	28	16	10	3	40	0,22	0,26
648 501 00	648 551 00	648 995 01	KN 18 x 22	54	40	5,5	30	30	18	10	3,5	45	0,26	0,30
648 506 00	648 556 00	648 995 06	KN 21 x 25	62	48	6,6	35	34	21	10	3,5	50	0,34	0,38
648 503 00	648 553 00	648 995 03	KN 23 x 28	64	50	6,6	36	36	23	10	3,5	55	0,41	0,47
648 507 00	648 557 00	648 995 07	KN 26 x 32	70	56	6,6	40	42	26	10	3,5	60	0,50	0,58
648 509 00	648 559 00	648 995 09	KN 28 x 34	78	60	9,0	46	45	28	12	3,5	60	0,64	0,74
648 508 00	648 558 00	648 995 08	KN 32 x 38	82	65	9,0	50	50	32	12	3,5	60	0,72	0,84
648 512 00	648 562 00	648 995 12	KN 36 x 42	90	70	9,0	52	52	36	16	4	80	0,94	1,07
648 510 00	648 560 00	648 995 10	KN 42 x 48	95	75	11,0	60	60	42	16	4	80	1,22	1,38
648 514 00	648 564 00	648 995 14	KN 46 x 54	100	80	11,0	65	65	46	16	4	100	1,50	1,70

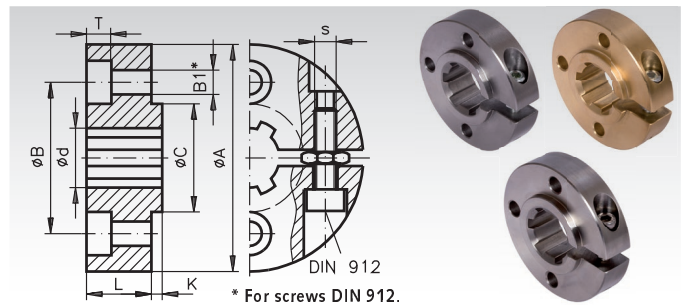
## Clamp Collars for Splined Hubs - DIN ISO 14

**Material:** Steel C45Pb, from  $\phi$  70 C45.  
Red brass (GC-CuSn7Zn Pb).  
Stainless steel, Material-No. 1.4305.



© C/d = 0.03mm

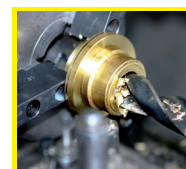
Ready-to-install, with 4 mounting holes, match with splined hubs with flange.



Ordering Details: e.g.: Product No. 648 602 00, Clamp Collar DIN 14 KN 11 x 14

Product No. C45	Product No. Rg7	Product No. Stainless Steel	Profile Description mm	DIN ISO 2768 m $\phi A$ mm	DIN ISO 2768 m $\phi B$ mm	DIN74m $\phi B_1$ mm	1) $\phi Ch8^*$ mm	1) $\phi dH7^*$ mm	DIN ISO 2768 m L mm	DIN ISO 2768 m K mm	DIN ISO 2768 m T mm	DIN ISO 2768 m S mm	Weight Steel kg	Weight Rg7 kg
648 602 00	648 652 00	648 996 02	KN 11 x 14	42	28	4,5	20	11	12	2	4,6	M4	0,10	0,12
648 604 00	648 654 00	648 996 04	KN 13 x 16	50	36	4,5	22	13	12	2	4,6	M4	0,16	0,18
648 605 00	648 655 00	648 996 05	KN 16 x 20	52	38	5,5	25	16	14	2	5,7	M5	0,18	0,20
648 601 00	648 651 00	648 996 01	KN 18 x 22	54	40	5,5	30	18	14	3	5,7	M5	0,20	0,23
648 606 00	648 656 00	648 996 06	KN 21 x 25	62	48	6,6	35	21	14	3	6,8	M5	0,24	0,28
648 603 00	648 653 00	648 996 03	KN 23 x 28	64	50	6,6	36	23	15	3	6,8	M6	0,26	0,30
648 607 00	648 657 00	648 996 07	KN 26 x 32	70	56	6,6	40	26	15	3	6,8	M6	0,34	0,40
648 609 00	648 659 00	648 996 09	KN 28 x 34	78	60	9,0	46	28	18	3	9,0	M8	0,47	0,54
648 608 00	648 658 00	648 996 08	KN 32 x 38	82	65	9,0	50	32	18	3	9,0	M8	0,52	0,62
648 612 00	648 662 00	648 996 12	KN 36 x 42	90	70	9,0	52	36	18	3	9,0	M8	0,62	0,72
648 610 00	648 660 00	648 996 10	KN 42 x 48	95	75	11,0	60	42	22	3	11,0	M8	0,82	0,94
648 614 00	648 664 00	648 996 14	KN 46 x 54	100	80	11,0	65	46	24	3	11,0	M8	0,96	1,08

<sup>1)</sup> Manufacturing tolerance before making the clamp slot.



**Reworking within 24h-service possible. Custom made parts on request.**