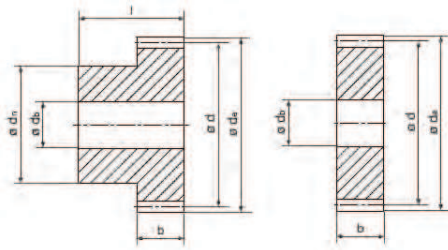


## Stirnräder gefräst

## Spur Gears with Milled Teeth



Modul | module

1,0

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

20°

bis 60 Zähne mit einseitiger Nabe

ab 76 Zähne als Scheibe

12 to 60 teeth with hub

76 to 120 teeth without hub

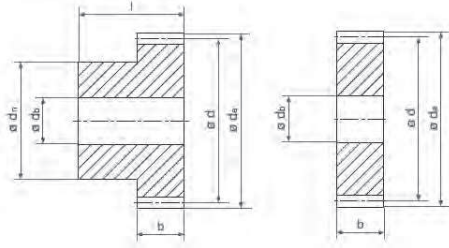
Material | material

1.0503 [C45]

**b = 8 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	14,0	12,0	9	4	18	8	0,01	111-010-012
13	15,0	13,0	10	4	18	8	0,01	111-010-013
14	16,0	14,0	12	4	18	8	0,02	111-010-014
15	17,0	15,0	12	5	18	8	0,02	111-010-015
16	18,0	16,0	12	5	18	8	0,02	111-010-016
17	19,0	17,0	14	6	18	8	0,02	111-010-017
18	20,0	18,0	15	6	18	8	0,02	111-010-018
19	21,0	19,0	15	6	18	8	0,03	111-010-019
20	22,0	20,0	15	6	18	8	0,03	111-010-020
21	23,0	21,0	18	6	18	8	0,04	111-010-021
22	24,0	22,0	18	6	18	8	0,04	111-010-022
23	25,0	23,0	18	6	18	8	0,04	111-010-023
24	26,0	24,0	18	6	18	8	0,04	111-010-024
25	27,0	25,0	18	6	18	8	0,05	111-010-025
28	30,0	28,0	20	8	18	8	0,05	111-010-028
30	32,0	30,0	20	8	18	8	0,06	111-010-030
36	38,0	36,0	25	8	18	8	0,09	111-010-036
38	40,0	38,0	25	8	18	8	0,10	111-010-038
40	42,0	40,0	25	8	18	8	0,11	111-010-040
45	47,0	45,0	30	8	18	8	0,15	111-010-045
48	50,0	48,0	30	8	18	8	0,16	111-010-048
50	52,0	50,0	35	8	18	8	0,19	111-010-050
52	54,0	52,0	35	10	18	8	0,19	111-010-052
56	58,0	56,0	35	10	18	8	0,21	111-010-056
60	62,0	60,0	40	10	18	8	0,26	111-010-060
76	78,0	76,0	-	10	-	8	0,27	110-010-076
80	82,0	80,0	-	10	-	8	0,30	110-010-080
95	97,0	95,0	-	10	-	8	0,43	110-010-095
120	122,0	120,0	-	10	-	8	0,68	110-010-120

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **1,0**

geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**

bis 70 Zähne mit einseitiger Nabe  
 ab 76 Zähne als Scheibe  
 12 to 70 teeth with hub  
 76 to 114 teeth without hub  
 Material | material

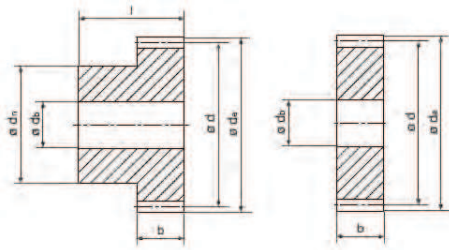
**1.0503 [C45]**

**b = 15 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	14,0	12,0	9	-	25	15	0,010	116-010-012
13	15,0	13,0	10	-	25	15	0,020	116-010-013
14	16,0	14,0	11	6	25	15	0,020	116-010-014
15	17,0	15,0	12	6	25	15	0,020	116-010-015
16	18,0	16,0	13	6	25	15	0,030	116-010-016
17	19,0	17,0	14	6	25	15	0,030	116-010-017
18	20,0	18,0	15	8	25	15	0,030	116-010-018
19	21,0	19,0	15	8	25	15	0,040	116-010-019
20	22,0	20,0	16	8	25	15	0,040	116-010-020
21	23,0	21,0	16	8	25	15	0,050	116-010-021
22	24,0	22,0	16	8	25	15	0,050	116-010-022
23	25,0	23,0	18	8	25	15	0,060	116-010-023
24	26,0	24,0	20	10	25	15	0,060	116-010-024
25	27,0	25,0	20	10	25	15	0,070	116-010-025
26	28,0	26,0	20	10	25	15	0,070	116-010-026
28	30,0	28,0	20	10	25	15	0,080	116-010-028
30	32,0	30,0	20	10	25	15	0,090	116-010-030
32	34,0	32,0	25	10	25	15	0,120	116-010-032
35	37,0	35,0	25	10	25	15	0,140	116-010-035
36	38,0	36,0	25	10	25	15	0,140	116-010-036
38	40,0	38,0	25	10	25	15	0,160	116-010-038
40	42,0	40,0	25	10	25	15	0,170	116-010-040
42	44,0	42,0	30	10	25	15	0,200	116-010-042
45	47,0	45,0	30	10	25	15	0,230	116-010-045
48	50,0	48,0	30	10	25	15	0,250	116-010-048
50	52,0	50,0	30	12	25	15	0,260	116-010-050
52	54,0	52,0	40	12	25	15	0,330	116-010-052
54	56,0	54,0	40	12	25	15	0,340	116-010-054
56	58,0	56,0	40	12	25	15	0,370	116-010-056
58	60,0	58,0	40	12	25	15	0,390	116-010-058
60	62,0	60,0	40	12	25	15	0,410	116-010-060
70	72,0	70,0	50	12	25	15	0,580	116-010-070
76	78,0	76,0	-	12	-	15	0,520	114-010-076
80	82,0	80,0	-	12	-	15	0,580	114-010-080
95	97,0	95,0	-	12	-	15	0,820	114-010-095
110	112,0	110,0	-	12	-	15	1,100	114-010-110
114	116,0	114,0	-	12	-	15	1,190	114-010-114

## Stirnräder gefräst

## Spur Gears with Milled Teeth



Modul | module

1,5

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

20°

bis 60 Zähne mit einseitiger Nabe

ab 76 Zähne als Scheibe

12 to 60 teeth with hub

76 to 120 teeth without hub

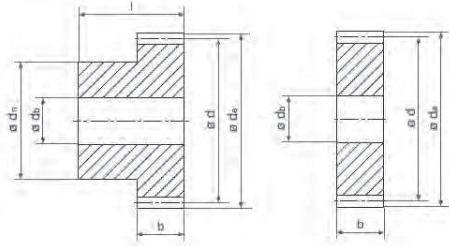
Material | material

1.0503 [C45]

**b = 12 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	21,0	18,0	14	6	25	12	0,03	111-015-012
13	22,5	19,5	15	6	25	12	0,04	111-015-013
14	24,0	21,0	16,5	6	25	12	0,05	111-015-014
15	25,5	22,5	18	6	25	12	0,06	111-015-015
16	27,0	24,0	18	6	25	12	0,06	111-015-016
17	28,5	25,5	20	6	25	12	0,07	111-015-017
18	30,0	27,0	20	8	25	12	0,07	111-015-018
19	31,5	28,5	20	8	25	12	0,08	111-015-019
20	33,0	30,0	20	8	25	12	0,10	111-015-020
21	34,5	31,5	25	8	25	12	0,11	111-015-021
22	36,0	33,0	25	8	25	12	0,12	111-015-022
23	37,5	34,5	25	8	25	12	0,13	111-015-023
24	39,0	36,0	25	8	25	12	0,14	111-015-024
25	40,5	37,5	25	8	25	12	0,14	111-015-025
28	45,0	42,0	30	10	25	12	0,18	111-015-028
30	48,0	45,0	30	10	25	12	0,20	111-015-030
36	57,0	54,0	40	10	25	12	0,32	111-015-036
38	60,0	57,0	40	10	25	12	0,35	111-015-038
40	63,0	60,0	40	10	25	12	0,36	111-015-040
45	70,5	67,5	45	10	25	12	0,45	111-015-045
48	75,0	72,0	45	10	25	12	0,53	111-015-048
50	78,0	75,0	50	12	25	12	0,56	111-015-050
52	81,0	78,0	50	12	25	12	0,59	111-015-052
56	87,0	84,0	50	12	25	12	0,66	111-015-056
60	93,0	90,0	60	12	25	12	0,82	111-015-060
76	117,0	114,0	-	16	-	12	0,90	110-015-076
80	123,0	120,0	-	16	-	12	1,03	110-015-080
95	145,5	142,5	-	16	-	12	1,45	110-015-095
120	183,0	180,0	-	16	-	12	2,34	110-015-120

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **1,5**

geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**

bis 70 Zähne mit einseitiger Nabe  
 ab 76 Zähne als Scheibe  
 12 to 70 teeth with hub  
 76 to 114 teeth without hub

Material | material

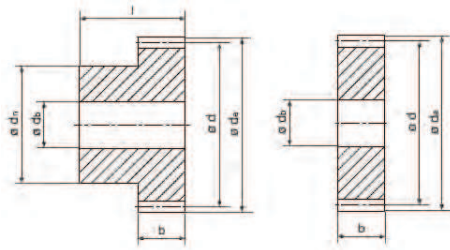
**1.0503 [C45]**

**b = 17 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	21,0	18,0	14	8	30	17	0,040	116-015-012
13	22,5	19,5	15	8	30	17	0,050	116-015-013
14	24,0	21,0	17	8	30	17	0,060	116-015-014
15	25,5	22,5	18	8	30	17	0,070	116-015-015
16	27,0	24,0	19	8	30	17	0,080	116-015-016
17	28,5	25,5	20	8	30	17	0,090	116-015-017
18	30,0	27,0	20	8	30	17	0,100	116-015-018
19	31,5	28,5	20	8	30	17	0,100	116-015-019
20	33,0	30,0	25	8	30	17	0,130	116-015-020
21	34,5	31,5	25	10	30	17	0,130	116-015-021
22	36,0	33,0	25	10	30	17	0,140	116-015-022
23	37,5	34,5	25	10	30	17	0,160	116-015-023
24	39,0	36,0	25	10	30	17	0,170	116-015-024
25	40,5	37,5	25	10	30	17	0,180	116-015-025
26	42,0	39,0	30	12	30	17	0,200	116-015-026
28	45,0	42,0	30	12	30	17	0,230	116-015-028
30	48,0	45,0	30	12	30	17	0,260	116-015-030
32	51,0	48,0	35	12	30	17	0,310	116-015-032
35	55,5	52,5	35	12	30	17	0,360	116-015-035
36	57,0	54,0	35	12	30	17	0,370	116-015-036
38	60,0	57,0	40	12	30	17	0,440	116-015-038
40	63,0	60,0	40	12	30	17	0,480	116-015-040
42	66,0	63,0	50	12	30	17	0,590	116-015-042
45	70,5	67,5	50	12	30	17	0,650	116-015-045
48	75,0	72,0	50	14	30	17	0,700	116-015-048
50	78,0	75,0	50	14	30	17	0,760	116-015-050
52	81,0	78,0	60	14	30	17	0,890	116-015-052
54	84,0	81,0	60	14	30	17	0,940	116-015-054
56	87,0	84,0	60	16	30	17	0,980	116-015-056
58	90,0	87,0	60	16	30	17	1,030	116-015-058
60	93,0	90,0	60	16	30	17	1,090	116-015-060
70	108,0	105,0	70	16	30	17	1,500	116-015-070
76	117,0	114,0	-	16	-	17	1,330	114-015-076
80	123,0	120,0	-	16	-	17	1,480	114-015-080
95	145,5	142,5	-	16	-	17	2,090	114-015-095
110	168,0	165,0	-	16	-	17	2,820	114-015-110
114	174,0	171,0	-	16	-	17	3,030	114-015-114

## Stirnräder gefräst

## Spur Gears with Milled Teeth



Modul | module

2,0

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

20°

bis 60 Zähne mit einseitiger Nabe

ab 76 Zähne als Scheibe

12 to 60 teeth with hub

76 to 120 teeth without hub

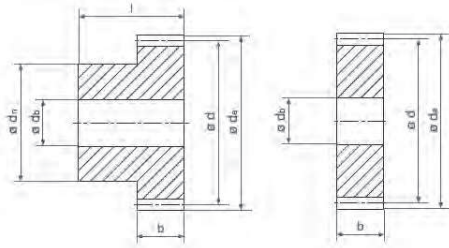
Material | material

1.0503 [C45]

**b = 16 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	28,0	24,0	18	8	30	16	0,07	111-020-012
13	30,0	26,0	20,5	8	30	16	0,08	111-020-013
14	32,0	28,0	22,5	8	30	16	0,10	111-020-014
15	34,0	30,0	24	8	30	16	0,12	111-020-015
16	36,0	32,0	25	8	30	16	0,13	111-020-016
17	38,0	34,0	27,5	8	30	16	0,16	111-020-017
18	40,0	36,0	28	10	30	16	0,17	111-020-018
19	42,0	38,0	28	10	30	16	0,18	111-020-019
20	44,0	40,0	28	10	30	16	0,20	111-020-020
21	46,0	42,0	30	10	30	16	0,22	111-020-021
22	48,0	44,0	30	10	30	16	0,24	111-020-022
23	50,0	46,0	30	10	30	16	0,26	111-020-023
24	52,0	48,0	30	10	30	16	0,27	111-020-024
25	54,0	50,0	30	10	30	16	0,29	111-020-025
28	60,0	56,0	40	10	30	16	0,41	111-020-028
30	64,0	60,0	40	12	30	16	0,45	111-020-030
36	76,0	72,0	50	12	30	16	0,67	111-020-036
38	80,0	76,0	50	12	30	16	0,71	111-020-038
40	84,0	80,0	50	12	30	16	0,76	111-020-040
45	94,0	90,0	60	12	30	16	1,07	111-020-045
48	100,0	96,0	60	12	30	16	1,18	111-020-048
50	104,0	100,0	70	15	30	16	1,35	111-020-050
52	108,0	104,0	70	15	30	16	1,43	111-020-052
56	116,0	112,0	70	15	30	16	1,61	111-020-056
60	124,0	120,0	80	15	30	16	1,91	111-020-060
76	156,0	152,0	-	16	-	16	2,24	110-020-076
80	164,0	160,0	-	16	-	16	2,47	110-020-080
95	194,0	190,0	-	16	-	16	3,52	110-020-095
120	244,0	240,0	-	20	-	16	5,59	110-020-120

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **2,0**

geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**

bis 70 Zähne mit einseitiger Nabe  
 ab 76 Zähne als Scheibe  
 12 to 70 teeth with hub  
 76 to 114 teeth without hub

Material | material

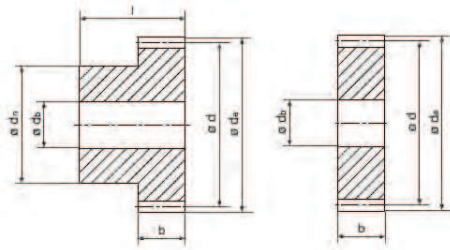
**1.0503 [C45]**

**b = 20 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	28,0	24,0	18	10	35	20	0,080	116-020-012
13	30,0	26,0	20	10	35	20	0,100	116-020-013
14	32,0	28,0	20	10	35	20	0,120	116-020-014
15	34,0	30,0	24	10	35	20	0,140	116-020-015
16	36,0	32,0	25	10	35	20	0,160	116-020-016
17	38,0	34,0	25	10	35	20	0,180	116-020-017
18	40,0	36,0	25	10	35	20	0,190	116-020-018
19	42,0	38,0	25	10	35	20	0,210	116-020-019
20	44,0	40,0	30	10	35	20	0,260	116-020-020
21	46,0	42,0	30	12	35	20	0,270	116-020-021
22	48,0	44,0	30	12	35	20	0,290	116-020-022
23	50,0	46,0	30	12	35	20	0,310	116-020-023
24	52,0	48,0	35	12	35	20	0,360	116-020-024
25	54,0	50,0	35	12	35	20	0,390	116-020-025
26	56,0	52,0	40	12	35	20	0,450	116-020-026
28	60,0	56,0	40	12	35	20	0,500	116-020-028
30	64,0	60,0	40	14	35	20	0,550	116-020-030
32	68,0	64,0	45	14	35	20	0,650	116-020-032
35	74,0	70,0	45	14	35	20	0,740	116-020-035
36	76,0	72,0	45	14	35	20	0,780	116-020-036
38	80,0	76,0	50	14	35	20	0,900	116-020-038
40	84,0	80,0	50	14	35	20	0,970	116-020-040
42	88,0	84,0	55	16	35	20	1,090	116-020-042
45	94,0	90,0	60	16	35	20	1,270	116-020-045
48	100,0	96,0	70	16	35	20	1,530	116-020-048
50	104,0	100,0	70	16	35	20	1,620	116-020-050
52	108,0	104,0	70	16	35	20	1,720	116-020-052
54	112,0	108,0	70	16	35	20	1,830	116-020-054
56	116,0	112,0	70	16	35	20	1,940	116-020-056
58	120,0	116,0	70	16	35	20	2,050	116-020-058
60	124,0	120,0	70	16	35	20	2,160	116-020-060
70	144,0	140,0	80	16	35	20	2,940	116-020-070
76	156,0	152,0	-	20	-	20	2,790	114-020-076
80	164,0	160,0	-	20	-	20	3,090	114-020-080
95	194,0	190,0	-	20	-	20	4,390	114-020-095
110	224,0	220,0	-	20	-	20	5,900	114-020-110
114	232,0	228,0	-	20	-	20	6,340	114-020-114

## Stirnräder gefräst

## Spur Gears with Milled Teeth



Modul | module

2,5

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

20°

bis 60 Zähne mit einseitiger Nabe

ab 76 Zähne als Scheibe

12 to 60 teeth with hub

76 to 95 teeth without hub

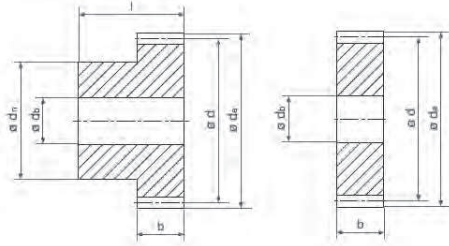
Material | material

1.0503 [C45]

**b = 20 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	35,0	30,0	23	10	35	20	0,13	111-025-012
13	37,5	32,5	25	10	35	20	0,16	111-025-013
14	40,0	35,0	25	10	35	20	0,19	111-025-014
15	42,5	37,5	25	10	35	20	0,20	111-025-015
16	45,0	40,0	25	10	35	20	0,23	111-025-016
17	47,5	42,5	30	10	35	20	0,28	111-025-017
18	50,0	45,0	30	12	35	20	0,29	111-025-018
19	52,5	47,5	30	12	35	20	0,31	111-025-019
20	55,0	50,0	30	12	35	20	0,34	111-025-020
21	57,5	52,5	40	12	35	20	0,43	111-025-021
22	60,0	55,0	40	12	35	20	0,47	111-025-022
23	62,5	57,5	40	12	35	20	0,49	111-025-023
24	65,0	60,0	40	12	35	20	0,52	111-025-024
25	67,5	62,5	40	12	35	20	0,55	111-025-025
28	75,0	70,0	45	12	35	20	0,74	111-025-028
30	80,0	75,0	50	15	35	20	0,86	111-025-030
36	95,0	90,0	60	15	35	20	1,23	111-025-036
38	100,0	95,0	60	15	35	20	1,38	111-025-038
40	105,0	100,0	60	15	35	20	1,50	111-025-040
45	117,5	112,5	70	15	35	20	1,95	111-025-045
48	125,0	120,0	70	15	35	20	2,16	111-025-048
50	130,0	125,0	80	20	35	20	2,40	111-025-050
52	135,0	130,0	80	20	35	20	2,56	111-025-052
56	145,0	140,0	80	20	35	20	2,90	111-025-056
60	155,0	150,0	90	20	35	20	3,41	111-025-060
76	195,0	190,0	-	16	-	20	4,36	110-025-076
80	205,0	200,0	-	16	-	20	4,84	110-025-080
95	242,5	237,5	-	16	-	20	6,85	110-025-095

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **2,5**

geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**

bis 60 Zähne mit einseitiger Nabe  
 ab 70 Zähne als Scheibe  
 12 to 60 teeth with hub  
 70 to 114 teeth without hub

Material | material

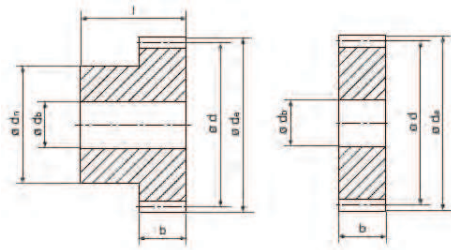
**1.0503 [C45]**

**b = 25 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	35,0	30,0	22	10	45	25	0,170	116-025-012
13	37,5	32,5	25	10	45	25	0,210	116-025-013
14	40,0	35,0	28	10	45	25	0,250	116-025-014
15	42,5	37,5	30	10	45	25	0,300	116-025-015
16	45,0	40,0	32	12	45	25	0,330	116-025-016
17	47,5	42,5	35	12	45	25	0,380	116-025-017
18	50,0	45,0	35	12	45	25	0,420	116-025-018
19	52,5	47,5	35	12	45	25	0,450	116-025-019
20	55,0	50,0	40	12	45	25	0,540	116-025-020
21	57,5	52,5	40	14	45	25	0,560	116-025-021
22	60,0	55,0	45	14	45	25	0,660	116-025-022
23	62,5	57,5	45	14	45	25	0,700	116-025-023
24	65,0	60,0	45	14	45	25	0,740	116-025-024
25	67,5	62,5	50	14	45	25	0,850	116-025-025
26	70,0	65,0	50	14	45	25	0,900	116-025-026
28	75,0	70,0	50	14	45	25	1,000	116-025-028
30	80,0	75,0	55	14	45	25	1,180	116-025-030
32	85,0	80,0	55	14	45	25	1,280	116-025-032
35	92,5	87,5	60	16	45	25	1,540	116-025-035
36	95,0	90,0	60	16	45	25	1,610	116-025-036
38	100,0	95,0	60	16	45	25	1,750	116-025-038
40	105,0	100,0	70	16	45	25	2,060	116-025-040
42	110,0	105,0	70	16	45	25	2,220	116-025-042
45	117,5	112,5	70	16	45	25	2,470	116-025-045
48	125,0	120,0	80	20	45	25	2,880	116-025-048
50	130,0	125,0	80	20	45	25	3,070	116-025-050
52	135,0	130,0	90	20	45	25	3,480	116-025-052
54	140,0	135,0	90	20	45	25	3,680	116-025-054
56	145,0	140,0	100	20	45	25	4,130	116-025-056
58	150,0	145,0	100	20	45	25	4,340	116-025-058
60	155,0	150,0	100	20	45	25	4,570	116-025-060
70	180,0	175,0	-	20	-	25	4,640	114-025-070
76	195,0	190,0	-	20	-	25	5,480	114-025-076
80	205,0	200,0	-	25	-	25	6,040	114-025-080
95	242,5	237,5	-	25	-	25	8,570	114-025-095
110	280,0	275,0	-	25	-	25	11,530	114-025-110
114	290,0	285,0	-	25	-	25	12,390	114-025-114



## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **3,0**

geradverzahnt | straight teeth  
Eingriffswinkel | pressure angle **20°**

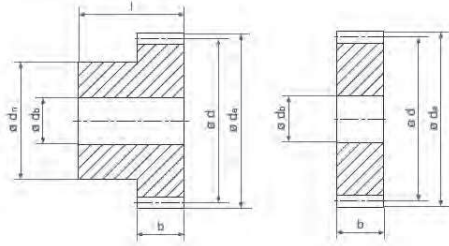
bis 40 Zähne mit einseitiger Nabe  
ab 45 Zähne als Scheibe  
12 to 40 teeth with hub  
45 to 95 teeth without hub

1.0503 [C45]

**b = 25 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	42,0	36,0	25	10	40	25	0,22	111-030-012
13	45,0	39,0	30	10	40	25	0,27	111-030-013
14	48,0	42,0	30	10	40	25	0,33	111-030-014
15	51,0	45,0	30	12	40	25	0,38	111-030-015
16	54,0	48,0	30	12	40	25	0,36	111-030-016
17	57,0	51,0	40	12	40	25	0,48	111-030-017
18	60,0	54,0	40	15	40	25	0,50	111-030-018
19	63,0	57,0	40	15	40	25	0,55	111-030-019
20	66,0	60,0	40	15	40	25	0,60	111-030-020
21	69,0	63,0	45	15	40	25	0,72	111-030-021
22	72,0	66,0	50	15	40	25	0,78	111-030-022
23	75,0	69,0	50	15	40	25	0,85	111-030-023
24	78,0	72,0	50	15	40	25	0,86	111-030-024
25	81,0	75,0	50	15	40	25	0,96	111-030-025
28	90,0	84,0	60	15	40	25	1,34	111-030-028
30	96,0	90,0	60	20	40	25	1,45	111-030-030
36	114,0	108,0	70	20	40	25	2,15	111-030-036
38	120,0	114,0	70	20	40	25	2,33	111-030-038
40	126,0	120,0	80	20	40	25	2,68	111-030-040
45	141,0	135,0	-	20	-	25	2,70	110-030-045
48	150,0	144,0	-	20	-	25	3,10	110-030-048
50	156,0	150,0	-	20	-	25	3,36	110-030-050
52	162,0	156,0	-	25	-	25	3,51	110-030-052
56	174,0	168,0	-	25	-	25	4,28	110-030-056
60	186,0	180,0	-	25	-	25	4,84	110-030-060
76	234,0	228,0	-	25	-	25	7,81	110-030-076
80	246,0	240,0	-	25	-	25	8,60	110-030-080
95	291,0	285,0	-	25	-	25	12,29	110-030-095

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **3,0**

geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**

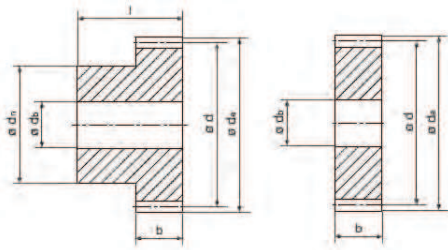
bis 48 Zähne mit einseitiger Nabe  
 ab 50 Zähne als Scheibe  
 12 to 48 teeth with hub  
 50 to 114 teeth without hub  
 Material | material

1.0503 [C45]

**b = 30 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	42,0	36,0	27	12	50	30	0,280	116-030-012
13	45,0	39,0	30	12	50	30	0,340	116-030-013
14	48,0	42,0	33	12	50	30	0,410	116-030-014
15	51,0	45,0	35	12	50	30	0,470	116-030-015
16	54,0	48,0	38	14	50	30	0,540	116-030-016
17	57,0	51,0	42	14	50	30	0,630	116-030-017
18	60,0	54,0	45	14	50	30	0,720	116-030-018
19	63,0	57,0	45	14	50	30	0,780	116-030-019
20	66,0	60,0	45	14	50	30	0,840	116-030-020
21	69,0	63,0	45	16	50	30	0,890	116-030-021
22	72,0	66,0	50	16	50	30	1,020	116-030-022
23	75,0	69,0	50	16	50	30	1,100	116-030-023
24	78,0	72,0	50	16	50	30	1,180	116-030-024
25	81,0	75,0	60	16	50	30	1,390	116-030-025
26	84,0	78,0	60	16	50	30	1,480	116-030-026
28	90,0	84,0	60	16	50	30	1,660	116-030-028
30	96,0	90,0	60	16	50	30	1,850	116-030-030
32	102,0	96,0	70	16	50	30	2,210	116-030-032
35	111,0	105,0	70	16	50	30	2,550	116-030-035
36	114,0	108,0	70	20	50	30	2,620	116-030-036
38	120,0	114,0	80	20	50	30	3,050	116-030-038
40	126,0	120,0	80	20	50	30	3,310	116-030-040
42	132,0	126,0	80	20	50	30	3,580	116-030-042
45	141,0	135,0	90	20	50	30	4,220	116-030-045
48	150,0	144,0	100	20	50	30	4,920	116-030-048
50	156,0	150,0	-	20	-	30	4,060	114-030-050
52	162,0	156,0	-	20	-	30	4,400	114-030-052
60	186,0	180,0	-	20	-	30	5,890	114-030-060
76	234,0	228,0	-	25	-	30	9,460	114-030-076
80	246,0	240,0	-	25	-	30	10,490	114-030-080
95	291,0	285,0	-	25	-	30	14,860	114-030-095
100	306,0	300,0	-	25	-	30	19,970	114-030-100
114	348,0	342,0	-	30	-	30	21,400	114-030-114

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **4,0**

geradverzahnt | straight teeth  
Eingriffswinkel | pressure angle **20°**

bis 30 Zähne mit einseitiger Nabe

ab 36 Zähne als Scheibe

12 to 30 teeth with hub

36 to 95 teeth without hub

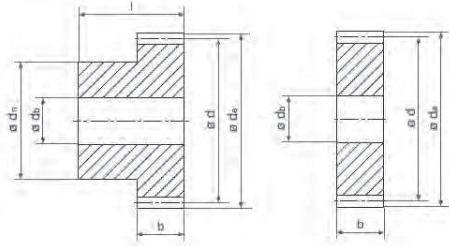
Material | material

1.0503 [C45]

**b = 32 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	56,0	48,0	36	12	50	32	0,50	111-040-012
13	60,0	52,0	40	12	50	32	0,61	111-040-013
14	64,0	56,0	44	12	50	32	0,74	111-040-014
15	68,0	60,0	45	15	50	32	0,80	111-040-015
16	72,0	64,0	45	15	50	32	0,99	111-040-016
17	76,0	68,0	50	15	50	32	1,08	111-040-017
18	80,0	72,0	50	20	50	32	1,15	111-040-018
19	84,0	76,0	50	20	50	32	1,26	111-040-019
20	88,0	80,0	50	20	50	32	1,38	111-040-020
21	92,0	84,0	60	20	50	32	1,63	111-040-021
22	96,0	88,0	60	20	50	32	1,77	111-040-022
23	100,0	92,0	60	20	50	32	1,91	111-040-023
24	104,0	96,0	60	20	50	32	2,06	111-040-024
25	108,0	100,0	60	20	50	32	2,22	111-040-025
28	120,0	112,0	70	20	50	32	3,00	111-040-028
30	128,0	120,0	80	25	50	32	3,29	111-040-030
36	152,0	144,0	-	25	-	32	3,91	110-040-036
38	160,0	152,0	-	25	-	32	4,40	110-040-038
40	168,0	160,0	-	25	-	32	4,92	110-040-040
45	188,0	180,0	-	25	-	32	6,23	110-040-045
48	200,0	192,0	-	25	-	32	7,05	110-040-048
50	208,0	200,0	-	25	-	32	7,70	110-040-050
52	216,0	208,0	-	30	-	32	8,27	110-040-052
56	232,0	224,0	-	30	-	32	9,60	110-040-056
60	248,0	240,0	-	30	-	32	11,06	110-040-060
76	312,0	304,0	-	30	-	32	17,80	110-040-076
80	328,0	320,0	-	30	-	32	19,80	110-040-080
95	388,0	380,0	-	30	-	32	28,10	110-040-095

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **4,0**

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

bis 36 Zähne mit einseitiger Nabe

ab 38 Zähne als Scheibe

12 to 36 teeth with hub

38 to 114 teeth without hub

Material | material

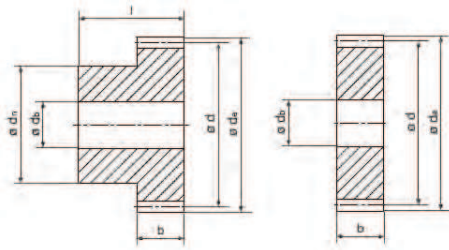
**20°**

**1.0503 [C45]**

**b = 40 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	56,0	48,0	35	14	60	40	0,630	116-040-012
13	60,0	52,0	40	14	60	40	0,780	116-040-013
14	64,0	56,0	45	14	60	40	0,930	116-040-014
15	68,0	60,0	45	14	60	40	1,050	116-040-015
16	72,0	64,0	50	16	60	40	1,200	116-040-016
17	76,0	68,0	50	16	60	40	1,330	116-040-017
18	80,0	72,0	50	16	60	40	1,470	116-040-018
19	84,0	76,0	60	16	60	40	1,750	116-040-019
20	88,0	80,0	60	16	60	40	1,900	116-040-020
21	92,0	84,0	70	16	60	40	2,220	116-040-021
22	96,0	88,0	70	16	60	40	2,390	116-040-022
23	100,0	92,0	75	20	60	40	2,600	116-040-023
24	104,0	96,0	75	20	60	40	2,790	116-040-024
25	108,0	100,0	75	20	60	40	2,980	116-040-025
26	112,0	104,0	75	20	60	40	3,180	116-040-026
28	120,0	112,0	75	20	60	40	3,600	116-040-028
30	128,0	120,0	75	20	60	40	4,060	116-040-030
32	136,0	128,0	80	20	60	40	4,640	116-040-032
35	148,0	140,0	80	20	60	40	5,430	116-040-035
36	152,0	144,0	80	25	60	40	5,630	116-040-036
38	160,0	152,0	-	25	-	40	5,200	114-040-038
40	168,0	160,0	-	25	-	40	6,110	114-040-040
45	188,0	180,0	-	25	-	40	7,780	114-040-045
48	200,0	192,0	-	25	-	40	8,870	114-040-048
50	208,0	200,0	-	25	-	40	9,650	114-040-050
52	216,0	208,0	-	25	-	40	10,450	114-040-052
60	248,0	240,0	-	25	-	40	13,970	114-040-060
76	312,0	304,0	-	30	-	40	22,470	114-040-076
80	328,0	320,0	-	30	-	40	24,930	114-040-080
95	388,0	380,0	-	30	-	40	35,260	114-040-095
100	408,0	400,0	-	30	-	40	47,380	114-040-100
114	464,0	456,0	-	30	-	40	50,910	114-040-114

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **5.0**

geradverzahnt | straight teeth  
Eingriffswinkel | pressure angle **20°**

bis 25 Zähne mit einseitiger Nabe

ab 28 Zähne als Scheibe

12 to 25 teeth with hub

28 to 95 teeth without hub

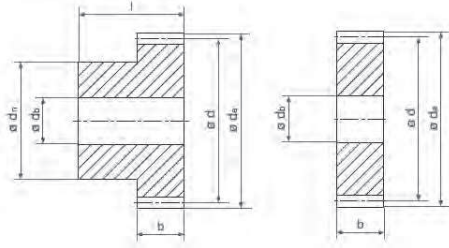
Material | material

1.0503 [C45]

**b = 40 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	70,0	60,0	45	15	60	40	0,99	111-050-012
13	75,0	65,0	50	15	60	40	1,22	111-050-013
14	80,0	70,0	50	15	60	40	1,45	111-050-014
15	85,0	75,0	50	20	60	40	1,50	111-050-015
16	90,0	80,0	50	20	60	40	1,69	111-050-016
17	95,0	85,0	64	20	60	40	2,08	111-050-017
18	100,0	90,0	65	25	60	40	2,15	111-050-018
19	105,0	95,0	68	25	60	40	2,50	111-050-019
20	110,0	100,0	70	25	60	40	2,61	111-050-020
21	115,0	105,0	75	25	60	40	3,11	111-050-021
22	120,0	110,0	75	25	60	40	3,40	111-050-022
23	125,0	115,0	80	25	60	40	3,74	111-050-023
24	130,0	120,0	80	25	60	40	3,85	111-050-024
25	135,0	125,0	80	25	60	40	4,30	111-050-025
28	150,0	140,0	-	25	-	40	4,60	110-050-028
30	160,0	150,0	-	30	-	40	5,25	110-050-030
36	190,0	180,0	-	30	-	40	7,75	110-050-036
38	200,0	190,0	-	30	-	40	8,50	110-050-038
40	210,0	200,0	-	30	-	40	9,58	110-050-040
45	235,0	225,0	-	30	-	40	12,10	110-050-045
48	250,0	240,0	-	30	-	40	13,80	110-050-048
50	260,0	250,0	-	30	-	40	15,00	110-050-050
52	270,0	260,0	-	40	-	40	16,14	110-050-052
56	290,0	280,0	-	40	-	40	18,71	110-050-056
60	310,0	300,0	-	40	-	40	21,60	110-050-060
76	390,0	380,0	-	40	-	40	35,20	110-050-076
80	410,0	400,0	-	40	-	40	39,00	110-050-080
95	485,0	475,0	-	40	-	40	55,00	110-050-095

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **5,0**

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

bis 30 Zähne mit einseitiger Nabe **20°**

ab 32 Zähne als Scheibe

12 to 30 teeth with hub

32 to 114 teeth without hub

Material | material

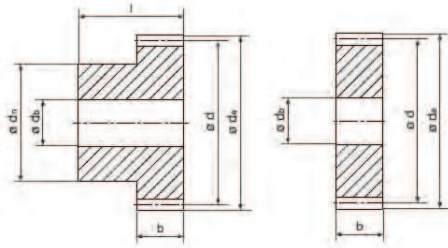
**1.0503 [C45]**

**b = 50 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	70,0	60,0	45	20	75	50	1,210	116-050-012
13	75,0	65,0	50	20	75	50	1,470	116-050-013
14	80,0	70,0	55	20	75	50	1,760	116-050-014
15	85,0	75,0	60	20	75	50	2,070	116-050-015
16	90,0	80,0	65	20	75	50	2,400	116-050-016
17	95,0	85,0	70	20	75	50	2,750	116-050-017
18	100,0	90,0	70	20	75	50	3,020	116-050-018
19	105,0	95,0	70	20	75	50	3,300	116-050-019
20	110,0	100,0	80	20	75	50	3,830	116-050-020
21	115,0	105,0	80	20	75	50	4,150	116-050-021
22	120,0	110,0	80	20	75	50	4,480	116-050-022
23	125,0	115,0	90	20	75	50	5,080	116-050-023
24	130,0	120,0	90	20	75	50	5,440	116-050-024
25	135,0	125,0	90	20	75	50	5,820	116-050-025
26	140,0	130,0	100	20	75	50	6,500	116-050-026
28	150,0	140,0	100	25	75	50	7,220	116-050-028
30	160,0	150,0	110	25	75	50	8,440	116-050-030
32	170,0	160,0	-	25	-	50	7,620	114-050-032
35	185,0	175,0	-	25	-	50	9,160	114-050-035
38	200,0	190,0	-	25	-	50	10,840	114-050-038
40	210,0	200,0	-	25	-	50	12,040	114-050-040
45	235,0	225,0	-	25	-	50	15,300	114-050-045
48	250,0	240,0	-	25	-	50	17,440	114-050-048
50	260,0	250,0	-	30	-	50	18,860	114-050-050
52	270,0	260,0	-	30	-	50	20,430	114-050-052
60	310,0	300,0	-	30	-	50	27,310	114-050-060
76	390,0	380,0	-	30	-	50	44,040	114-050-076
80	410,0	400,0	-	30	-	50	48,840	114-050-080
95	485,0	475,0	-	30	-	50	69,030	114-050-095
100	510,0	500,0	-	30	-	50	92,690	114-050-100
114	580,0	570,0	-	30	-	50	99,590	114-050-114

## Stirnräder gefräst

### Spur Gears with Milled Teeth



Modul | module

6,0

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

20°

bis 25 Zähne mit einseitiger Nabe

ab 28 Zähne als Scheibe

12 to 25 teeth with hub

28 to 95 teeth without hub

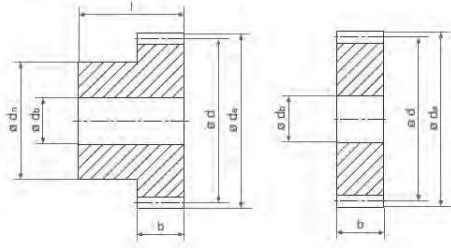
Material | material

1.0503 [C45]

**b = 48 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	84,0	72,0	54	20	70	48	1,70	111-060-012
13	90,0	78,0	60	20	70	48	2,03	111-060-013
15	102,0	90,0	60	25	70	48	2,56	111-060-015
16	108,0	96,0	60	25	70	48	3,16	111-060-016
18	120,0	108,0	70	25	70	48	3,79	111-060-018
20	132,0	120,0	70	25	70	48	4,60	111-060-020
24	156,0	144,0	80	30	70	48	6,53	111-060-024
25	162,0	150,0	80	30	70	48	7,02	111-060-025
28	180,0	168,0	-	30	-	48	8,00	110-060-028
30	192,0	180,0	-	30	-	48	9,23	110-060-030
36	228,0	216,0	-	30	-	48	13,30	110-060-036
38	240,0	228,0	-	30	-	48	14,80	110-060-038
40	252,0	240,0	-	30	-	48	16,61	110-060-040
45	282,0	270,0	-	40	-	48	20,90	110-060-045
48	300,0	288,0	-	40	-	48	23,75	110-060-048
50	312,0	300,0	-	40	-	48	25,90	110-060-050
52	324,0	312,0	-	40	-	48	28,10	110-060-052
56	348,0	336,0	-	40	-	48	32,00	110-060-056
60	372,0	360,0	-	40	-	48	37,70	110-060-060
76	468,0	456,0	-	40	-	48	60,20	110-060-076
80	492,0	480,0	-	50	-	48	66,80	110-060-080
95	582,0	570,0	-	50	-	48	95,00	110-060-095

## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **6,0**

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle

bis 25 Zähne mit einseitiger Nabe **20°**

ab 28 Zähne als Scheibe

12 to 25 teeth with hub

28 to 40 teeth without hub

Material | material

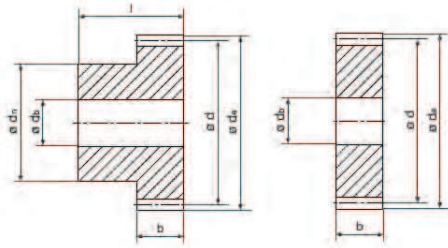
**1.0503 [C45]**

**b = 60 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	84,0	72,0	54	20	80	60	1,820	116-060-012
13	90,0	78,0	60	20	80	60	2,200	116-060-013
15	102,0	90,0	70	20	80	60	3,010	116-060-015
16	108,0	96,0	75	20	80	60	3,460	116-060-016
18	120,0	108,0	80	20	80	60	4,330	116-060-018
20	132,0	120,0	90	20	80	60	5,430	116-060-020
24	156,0	144,0	110	25	80	60	7,880	116-060-024
25	162,0	150,0	110	25	80	60	8,420	116-060-025
28	180,0	168,0	-	25	-	60	8,410	114-060-028
30	192,0	180,0	-	25	-	60	9,690	114-060-030
32	204,0	192,0	-	25	-	60	11,050	114-060-032
35	222,0	210,0	-	25	-	60	13,270	114-060-035
38	240,0	228,0	-	25	-	60	15,690	114-060-038
40	252,0	240,0	-	25	-	60	17,420	114-060-040



## Stirnräder gefräst Spur Gears with Milled Teeth



Modul | module **8,0**

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle **20°**

bis 25 Zähne mit einseitiger Nabe

ab 30 Zähne als Scheibe

15 to 25 teeth with hub

30 to 60 teeth without hub

Material | material

1.0503 [C45]

**b = 64 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
15	136,0	120,0	80	25	95	64	7,24	111-080-015
20	176,0	160,0	100	30	95	64	12,80	111-080-020
25	216,0	200,0	125	30	95	64	21,50	111-080-025
30	256,0	240,0	-	30	-	64	39,00	110-080-030
40	336,0	320,0	-	40	-	64	52,50	110-080-040
60	496,0	480,0	-	50	-	64	72,50	110-080-060

Modul | module **8,0**

geradverzahnt | straight teeth

Eingriffswinkel | pressure angle **20°**

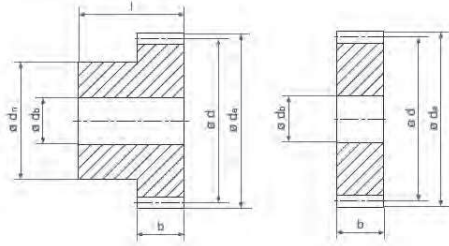
Material | material

1.0503 [C45]

**b = 80 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
15	136,00	120,00	90,00	40,00	120,00	80,00	7,70	116-080-015
20	176,00	160,00	120,00	40,00	120,00	80,00	12,20	116-080-020
25	216,00	200,00	150,00	40,00	120,00	80,00	23,80	116-080-025

## Stirnräder gefräst Spur Gears with Milled Teeth



**Modul | module** **1,591**  
 Teilung | Pitch **5 mm**  
 geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**  
 Material | material **1.0503 [C45]**

**b = 12 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	22,3	19,1	14	6	25	12	0,03	111-016-012
15	27,0	23,9	18	6	25	12	0,06	111-016-015
18	31,8	28,6	20	8	25	12	0,07	111-016-018
20	35,0	31,8	20	8	25	12	0,10	111-016-020
24	41,4	38,2	25	8	25	12	0,14	111-016-024
25	43,0	39,8	25	8	25	12	0,14	111-016-025
30	50,9	47,7	30	10	25	12	0,20	111-016-030
36	60,5	57,3	40	10	25	12	0,32	111-016-036
40	66,8	63,6	40	10	25	12	0,36	111-016-040
45	74,8	71,6	45	10	25	12	0,45	111-016-045
50	82,7	79,6	50	12	25	12	0,56	111-016-050
60	98,6	95,5	60	12	25	12	0,82	111-016-060

**Modul | module** **3,183**  
 Teilung | Pitch **10 mm**  
 geradverzahnt | straight teeth  
 Eingriffswinkel | pressure angle **20°**  
 bis 40 Zähne mit einseitiger Nabe  
 ab 45 Zähne als Scheibe  
 12 to 40 teeth with hub  
 45 to 60 teeth without hub  
 Material | material **1.0503 [C45]**

**b = 25 mm**

Zähnez. No. teeth	$d_a$	$d$	$d_n$	$d_b$	$l$	$b$	[kg]	Bestell Nr. Part No.
12	44,6	38,2	25	10	40	25	0,22	111-031-012
15	54,1	47,7	30	12	40	25	0,38	111-031-015
18	63,7	57,3	40	15	40	25	0,50	111-031-018
20	70,0	63,7	40	15	40	25	0,60	111-031-020
24	82,8	76,4	50	15	40	25	0,86	111-031-024
25	85,9	79,6	50	15	40	25	0,96	111-031-025
30	101,9	95,5	60	20	40	25	1,45	111-031-030
36	121,0	114,6	70	20	40	25	2,15	111-031-036
40	133,7	127,3	80	20	40	25	2,68	111-031-040
45	149,6	143,2	-	20	-	25	2,70	110-031-045
50	165,5	159,2	-	20	-	25	3,36	110-031-050
60	197,3	191,0	-	25	-	25	4,84	110-031-060