



STRAIGHT SPUR GEARS and RACKS

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WITH LATERAL HUB

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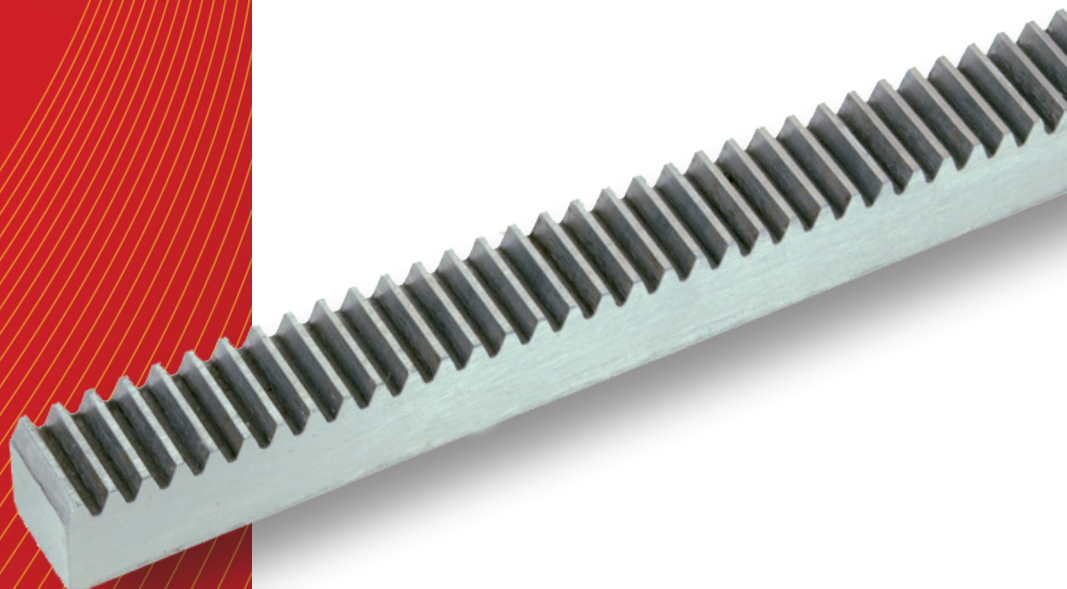
SPUR GEARS AND RACKS

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SPUR GEARS
WITHOUT HUB



SPUR GEARS
WITH LATERAL HUB



RACKS



STRAIGHT SPUR GEARS AND RACKS

Straight gears and racks are the classical components for mechanical transmission of rotary and transverse movements between moving parts of machines.

This explains why these components are so widespread and are used to such a large extent in various sectors of general mechanics such that in practice it is impossible to find a rigid type power transfer drive chain which does not adopt these basic components.

However, the needs of industry are extremely complex as regards the performance required from the gear and the rack and reflect the typical operating conditions in terms of precision or resistance of final use for which the gear and the rack are designed. This is why proposing a product intended to meet any need expressed by industrial experience would be unthinkable.

CHIARAVALLI GROUP SpA has made a basic choice with this aspect in mind, deciding to offer industry a broad range of gears and racks for general use, combined in a standardised series, which is characterised by excellent quality.

The gears and racks produced using standardised C40 steel are manufactured adopting modular sizes in accordance with a reference profile that complies with

DIN 3972

II and a full head radius.

This ensures complete engagement at the base of the tooth with an obvious increase in the bending resistance.

The internal specifications that define the geometry of the tooth prescribe a marked "K" profile for the side surface, with a strict limitation of the profile errors to negative deviations. This has a positive influence on the level of noise of the toothed pair, since the engaging impacts to the teeth head are reduced.

The systematic use of latest generation CNC gear hobbing machines, special hobs designed for very high cutting speeds and specifically developed processing technologies, enable a general precision to be assured in compliance with

DIN 3962

Standards and a degree of surface finish that is not readily achieved with operations using a hob gear cutting machine.

The working tolerance for tooth thickness has been chosen to comply with the "**cd 25**" **Coupling Category** in accordance

with **DIN 3967** Standards,

which defines the position and the size of the tolerance range and therefore the coupling gap between the gears.

A processing **tolerance equal to "js 8"** for the centre distance is recommended in compliance with

DIN 3964 Standards

for normal operating conditions, which if adopted, enables us to assure a minimum working coupling gap of adequate size, while at the same time limiting the value of the maximum gap. Similar considerations apply in the case of the gear-rack coupling, since the latter is manufactured adopting the same coupling category.

Our Technical Department is available and willing to recommend the most appropriate assembly tolerances to Customers who are interested, although we are also able to manufacture gears with coupling gaps that are larger or smaller compared with the standard value to meet specific needs.

We are able to manufacture our straight gears as illustrated in the catalogue with a lengthwise crowning of the teeth, at the request of customers. This solution is particularly useful if the user is unable to ensure a perfect alignment between the axes.

THE RANGE OF MACHINES USED, COMPRISING ALMOST ENTIRELY OF VERY MODERN MACHINES THAT HAVE CUTTING EDGE FEATURES AND DESIGN ENABLES OUR COMPANY TO PRODUCE GEARS BASED ON A DRAWING IN QUALITATIVE AT A VERY COMPETITIVE PRICE.

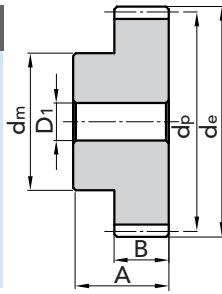
Our Technical Department is available to carry out a preliminary examination of any processing problems experienced by Customers and to prepare cost estimates.



STRAIGHT SPUR GEARS AND RACKS

WITH LATERAL HUB

Pressure angle: 20°



WIDTH BAND B for:

Module **2.5** = 25 mm
 Module **3** = 30 mm
 Module **4** = 40 mm

TOTAL WIDTH A for:

Module **2.5** = 40 mm
 Module **3** = 50 mm
 Module **4** = 60 mm

MODULE 2,5

MODULE 3

MODULE 4

Z	P. NUMBER	d _e	d _p	d _m	ØD ₁	Kg	P. NUMBER	d _e	d _p	d _m	ØD ₁	Kg	P. NUMBER	d _e	d _p	d _m	ØD ₁	Kg
12	30125012	35,0	30,0	22	10	0,17	30130012	42	36	25	12	0,28	30140012	56	48	35	14	0,63
13	30125013	37,5	32,5	25	10	0,21	30130013	45	39	25	12	0,34	30140013	60	52	40	14	0,78
14	30125014	40,0	35,0	28	10	0,25	30130014	48	42	30	12	0,41	30140014	64	56	45	14	0,93
15	30125015	42,5	37,5	30	10	0,30	30130015	51	45	35	12	0,47	30140015	68	60	45	14	1,05
16	30125016	45,0	40,0	32	12	0,33	30130016	54	48	38	15	0,54	30140016	72	64	50	15	1,20
17	30125017	47,5	42,5	35	12	0,38	30130017	57	51	42	15	0,63	30140017	76	68	50	15	1,33
18	30125018	50,0	45,0	35	12	0,42	30130018	60	54	45	15	0,72	30140018	80	72	50	15	1,47
19	30125019	52,5	47,5	35	12	0,45	30130019	63	57	45	15	0,78	30140019	84	76	60	15	1,75
20	30125020	55,0	50,0	40	14	0,54	30130020	66	60	45	15	0,84	30140020	88	80	60	15	1,90
21	30125021	57,5	52,5	40	14	0,56	30130021	69	63	45	15	0,89	30140021	92	84	70	20	2,22
22	30125022	60,0	55,0	45	14	0,66	30130022	72	66	50	15	1,02	30140022	96	88	70	20	2,39
23	30125023	62,5	57,5	45	14	0,70	30130023	75	69	50	15	1,10	30140023	100	92	75	20	2,60
24	30125024	65,0	60,0	45	14	0,74	30130024	78	72	50	16	1,18	30140024	104	96	75	20	2,79
25	30125025	67,5	62,5	50	14	0,85	30130025	81	75	60	16	1,39	30140025	108	100	75	20	2,98
26	30125026	70,0	65,0	50	14	0,90	30130026	84	78	60	16	1,48	30140026	112	104	75	20	3,18
27	30125027	72,5	67,5	50	14	0,95	30130027	87	81	60	16	1,56	30140027	116	108	75	20	3,39
28	30125028	75,0	70,0	50	14	1,00	30130028	90	84	60	16	1,66	30140028	120	112	75	20	3,60
29	30125029	77,5	72,5	50	14	1,06	30130029	93	87	60	16	1,75	30140029	124	116	75	20	3,83
30	30125030	80,0	75,0	55	16	1,18	30130030	96	90	60	16	1,85	30140030	128	120	75	20	4,06
31	30125031	82,5	77,5	55	16	1,22	30130031	99	93	70	20	1,95	30140031	132	124	80	20	4,39
32	30125032	85,0	80,0	55	16	1,28	30130032	102	96	70	20	2,21	30140032	136	128	80	20	4,64
33	30125033	87,5	82,5	55	16	1,34	30130033	105	99	70	20	2,32	30140033	140	132	80	20	4,90
34	30125034	90,0	85,0	55	16	1,41	30130034	108	102	70	20	2,43	30140034	144	136	80	20	5,16
35	30125035	92,5	87,5	60	16	1,54	30130035	111	105	70	20	2,55	30140035	148	140	80	20	5,43
36	30125036	95,0	90,0	60	16	1,61	30130036	114	108	70	20	2,62	30140036	152	144	80	20	5,63
37	30125037	97,5	92,5	60	16	1,68	30130037	117	111	80	20	2,74						
38	30125038	100,0	95,0	60	16	1,75	30130038	120	114	80	20	3,05						
39	30125039	102,5	97,5	60	16	1,83	30130039	123	117	80	20	3,18						
40	30125040	105,0	100,0	70	20	2,06	30130040	126	120	80	20	3,31						
41	30125041	107,5	102,5	70	20	2,14	30130041	129	123	90	20	3,44						
42	30125042	110,0	105,0	70	20	2,22	30130042	132	126	90	20	3,58						
43	30125043	112,5	107,5	70	20	2,30	30130043	135	129	90	20	3,72						
44	30125044	115,0	110,0	70	20	2,38	30130044	138	132	90	20	4,07						
45	30125045	117,5	112,5	70	20	2,47	30130045	141	135	90	20	4,22						
46	30125046	120,0	115,0	70	20	2,52	30130046	144	138	90	20	4,37						
47	30125047	122,5	117,5	80	20	2,80	30130047	147	141	90	20	4,76						
48	30125048	125,0	120,0	80	20	2,88	30130048	150	144	100	20	4,92						
49	30125049	127,5	122,5	80	20	2,98												
50	30125050	130,0	125,0	80	20	3,07												
51	30125051	132,5	127,5	90	20	3,17												
52	30125052	135,0	130,0	90	20	3,48												
53	30125053	137,5	132,5	90	20	3,58												
54	30125054	140,0	135,0	90	20	3,68												
55	30125055	142,5	137,5	90	20	3,78												
56	30125056	145,0	140,0	100	20	4,13												
57	30125057	147,5	142,5	100	20	4,23												
58	30125058	150,0	145,0	100	20	4,34												
59	30125059	152,5	147,5	100	20	4,46												
60	30125060	155,0	150,0	100	20	4,57												

MATERIAL C 45 UNI 7845



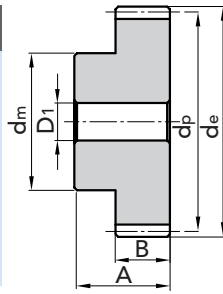
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WITH LATERAL HUB

Pressure angle: 20°

WIDTH BAND **B** for:

Module **5** = 50 mm
 Module **6** = 60 mm
 Module **8** = 80 mm

TOTAL WIDTH **A** for:

Module **5** = 75 mm
 Module **6** = 80 mm
 Module **8** = 110 mm

MODULE 5							MODULE 6					MODULE 8						
Z	P. NUMBER	d _e	d _p	d _m	ØD ₁	Kg	P. NUMBER	d _e	d _p	d _m	ØD ₁	Kg	P. NUMBER	d _e	d _p	d _m	ØD ₁	Kg
12	30150012	70	60	45	16	1,21	30160012	84	72	54	16	1,98						
13	30150013	75	65	50	16	1,47	30160013	90	78	60	16	2,38						
14	30150014	80	70	55	20	1,76												
15	30150015	85	75	60	20	2,07	30160015	102	90	70	20	3,29	30180015	136	120	90	25	8,20
16	30150016	90	80	65	20	2,40	30160016	108	96	75	20	3,80						
17	30150017	95	85	70	20	2,75												
18	30150018	100	90	70	20	3,02	30160018	120	108	80	20	4,76	30180018	160	144	100	25	11,7
19	30150019	105	95	70	20	3,30												
20	30150020	110	100	80	20	3,83	30160020	132	120	90	20	5,99	30180020	176	160	120	30	14,6
21	30150021	115	105	80	20	4,15												
22	30150022	120	110	80	25	4,48												
23	30150023	125	115	90	25	5,08												
24	30150024	130	120	90	25	5,44	30160024	156	144	110	25	8,70	30180024	208	192	150	30	21,7
25	30150025	135	125	90	25	5,82	30160025	162	150	110	25	9,33	30180025	216	200	150	30	23,3
26	30150026	140	130	100	25	6,50												
27	30150027	145	135	100	25	6,91												
28	30150028	150	140	100	25	7,22							30180028	240	224	170	30	29,5
29	30150029	155	145	100	25	7,98												
30	30150030	160	150	100	25	8,44							30180030	256	240	190	30	34,4
31																		
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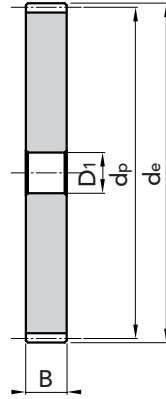




STRAIGHT SPUR GEARS AND RACKS

WITHOUT HUB LATERAL

Pressure angle: 20°



WIDTH BAND B for:

- Module 1 = 15 mm
- Module 1.5 = 17 mm
- Module 2 = 20 mm
- Module 2.5 = 25 mm

STRAIGHT SPUR GEARS AND RACKS

Z	MODULE 1					MODULE 1.5					MODULE 2					MODUE 2.5					
	P. NUMBER	d _e	d _p	ØD ₁	Kg	P. NUMBER	d _e	d _p	ØD ₁	Kg	P. NUMBER	d _e	d _p	ØD ₁	Kg	P. NUMBER	d _e	d _p	ØD ₁	Kg	
55																					
57																					
60																					
65																					
70																	30225065	167,5	162,5	20	3,99
72	30210072	74	72	12	0,46	30215072	111	108	20	1,19	30220072	148	144	20	2,50	30225072	185	180	20	4,91	
75	30210075	77	75	12	0,51	30215075	115,5	112,5	20	1,30	30220075	154	150	20	2,61	30225075	192,5	187,5	20	5,33	
76	30210076	78	76	12	0,52	30215076	117	114	20	1,33	30220076	156	152	20	2,79	30225076	195	190	20	5,48	
80	30210080	82	80	12	0,58	30215080	123	120	20	1,48	30220080	164	160	20	3,09	30225080	205	200	25	6,04	
85	30210085	87	85	12	0,65	30215085	130,5	127,5	20	1,67	30220085	174	170	20	3,50	30225085	217,5	212,5	25	6,84	
90	30210090	92	90	12	0,73	30215090	138	135	20	1,78	30220090	184	180	20	3,93	30225090	230	225	25	7,68	
95	30210095	97	95	12	0,82	30215095	145,5	142,5	20	2,09	30220095	194	190	20	4,39	30225095	242,5	237,5	25	8,57	
100	30210100	102	100	12	0,91	30215100	153	150	20	2,32	30220100	204	200	20	4,87	30225100	255	250	25	9,51	
110	30210110	112	110	12	1,10	30215110	168	165	20	2,82	30220110	224	220	20	5,90	30225110	280	275	25	11,53	
114	30210114	116	114	12	1,19	30215114	174	171	20	3,03	30220114	232	228	20	6,34	30225114	290	285	25	12,39	
120	30210120	122	120	12	1,32	30215120	183	180	20	3,36	30220120	244	240	20	7,03	30225120	305	300	25	13,74	
127	30210127	129	127	12	1,47	30215127	193,5	190,5	20	3,77	30220127	258	254	20	7,89	30225127	322,5	317,5	25	15,40	

MATERIAL C 45 UNI 7845



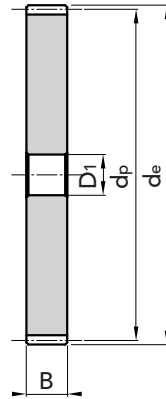
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WITHOUT HUB LATERAL

Pressure angle: 20°

WIDTH BAND **B** for:

Module **3** = 30 mm
 Module **4** = 40 mm
 Module **5** = 50 mm
 Module **6** = 60 mm

Z	MODULE 3					MODULE 4					MODULE 5					MODULE 6				
	P. NUMBER	d _e	d _p	ØD ₁	Kg	P. NUMBER	d _e	d _p	ØD ₁	Kg	P. NUMBER	d _e	d _p	ØD ₁	Kg	P. NUMBER	d _e	d _p	ØD ₁	Kg
28																30260028	180	168	25	10,0
30																30260030	192	180	25	11,55
32											30250032	170	160	25	7,62	30260032	204	192	25	13,22
35											30250035	185	175	25	9,16	30260035	222	210	25	15,79
38						30240038	160	152	25	5,20	30250038	200	190	30	10,84	30260038	240	228	25	18,74
40						30240040	168	160	25	6,11	30250040	210	200	30	12,04	30260040	252	240	25	20,75
45						30240045	188	180	25	7,68	30250045	235	225	30	15,30					
48						30240048	200	192	25	8,87	30250048	250	240	30	17,44					
50	30230050	156	150	25	4,06	30240050	208	200	25	9,65	30250050	260	250	30	18,69					
52	30230052	162	156	25	4,40	30240052	216	208	25	10,45	30250052	270	260	30	20,43					
55	30230055	171	165	25	4,93	30240055	228	220	25	11,01	30250055	285	275	30	22,89					
57	30230057	177	171	25	5,30	30240057	236	228	25	12,59	30250057	295	285	30	24,62					
60	30230060	186	180	25	5,89	30240060	248	240	25	13,97	30250060	310	300	30	27,31					
65	30230065	201	195	25	6,92	30240065	268	260	25	16,43	30250065	335	325	30	32,12					
70	30230070	216	210	25	8,00	30240070	288	280	25	19,09	30250070	360	350	30	37,31					
72	30230072	222	216	25	8,47															
75	30230075	231	225	25	9,21	30240075	308	300	25	21,94	30250075	385	375	30	42,88					
76	30230076	234	228	25	9,46	30240076	312	304	25	22,47	30250076	390	380	30	44,04					
80	30230080	246	240	25	10,49	30240080	328	320	25	24,83	30250080	410	400	30	48,84					
85	30230085	261	255	25	11,76	30240085	348	340	25	28,18	30250085	435	425	30	55,19					
90	30230090	276	270	25	13,82	30240090	368	360	25	31,62	30250090	460	450	30	61,92					
95	30230095	291	285	25	14,86	30240095	388	380	25	35,26	30250095	485	475	30	69,03					
100	30230100	306	300	25	16,48	30240100	408	400	25	39,11	30250100	510	500	30	76,53					
110	30230110	336	320	25	19,97	30240110	448	440	25	47,38	30250110	560	550	30	92,69					
114	30230114	348	342	25	21,40	30240114	464	456	25	50,91	30250114	580	570	30	99,59					
120	30230120	366	360	25	23,74															
127	30230127	387	381	25	26,61															

MATERIAL **C 45 UNI 7845**

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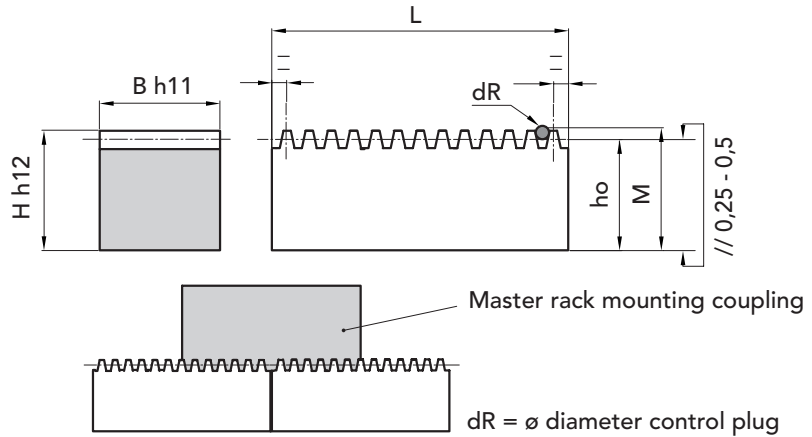


Tolerance on the pitch: = fpt
 from M=1 up to M=3 = ± 0,028
 from M=4 up to M=10 = ± 0,040

Tolerance on the sum of the wheelbases on 100 mm = ± 0,08

Quality class 9 as per norm
DIN 3962/63/67

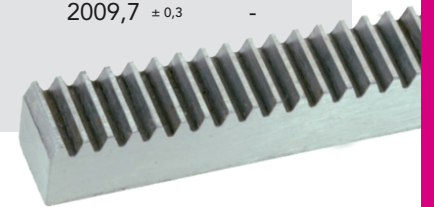
Pressure angle 20°



RACKS INSTRUCTIONS FOR CONTINUOUS MOUNTING

5

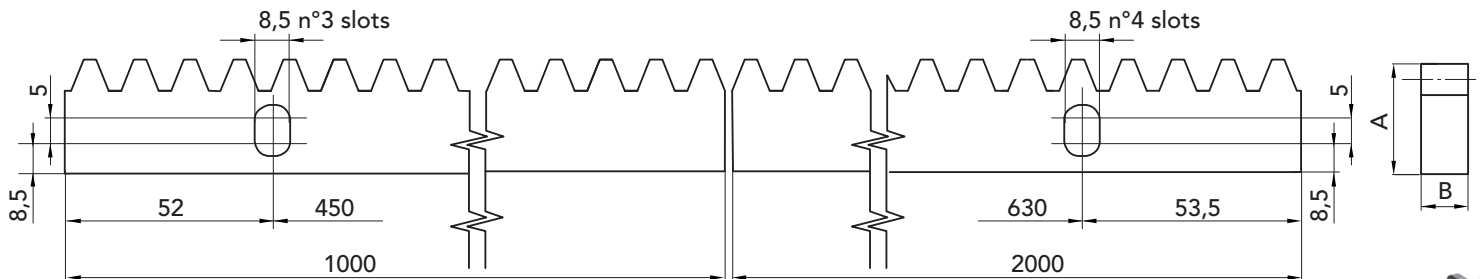
M	B h11	H h12	dR	ho	M	M - ho	L= real lenght of the rack x continuous mounting			
1	15 ⁰ _{-0,110}	15 ⁰ _{-0,180}	2	14	15,71 ⁻⁰ _{-0,35}	1,71	502,1 ± 0,3	1001,6 ± 0,3	2000,4 ± 0,3	2999,3 ± 0,3
1,5	17 ⁰ _{-0,110}	17 ⁰ _{-0,180}	3	15,5	18,09 ⁻⁰ _{-0,35}	2,59	503,6 ± 0,3	1003,1 ± 0,3	2002,0 ± 0,3	3000,8 ± 0,3
2	20 ⁰ _{-0,130}	20 ⁰ _{-0,210}	4	18	21,43 ⁻⁰ _{-0,35}	3,43	502,1 ± 0,3	1004,6 ± 0,3	2003,6 ± 0,3	3002,4 ± 0,3
2,5	25 ⁰ _{-0,130}	25 ⁰ _{-0,210}	5	22,5	26,81 ⁻⁰ _{-0,40}	4,31	502,1 ± 0,3	1004,6 ± 0,3	2001,8 ± 0,3	2999,1 ± 0,3
3	30 ⁰ _{-0,130}	30 ⁰ _{-0,210}	6	27	32,2 ⁻⁰ _{-0,40}	5,2	508,3 ± 0,3	1007,7 ± 0,3	2006,4 ± 0,3	3005,4 ± 0,3
4	30 ⁰ _{-0,130}	30 ⁰ _{-0,210}	8	26	32,92 ⁻⁰ _{-0,40}	6,92	502,1 ± 0,3	1004,6 ± 0,3	2009,7 ± 0,3	3002,3 ± 0,3
4	40 ⁰ _{-0,160}	40 ⁰ _{-0,250}	8	36	42,92 ⁻⁰ _{-0,40}	6,92	502,1 ± 0,3	1004,6 ± 0,3	2009,7 ± 0,3	3002,3 ± 0,3
5	50 ⁰ _{-0,160}	50 ⁰ _{-0,250}	10	45	53,66 ⁻⁰ _{-0,40}	8,66	502,1 ± 0,3	1004,6 ± 0,3	2009,7 ± 0,3	2999,1 ± 0,3
6	60 ⁰ _{-0,190}	60 ⁰ _{-0,300}	12	54	64,6 ⁻⁰ _{-0,40}	10,6	508,3 ± 0,3	1017,0 ± 0,3	2016,0 ± 0,3	3014,8 ± 0,3
8	80 ⁰ _{-0,190}	80 ⁰ _{-0,300}	14	72	82,2 ⁻⁰ _{-0,40}	10,2	-	-	2035,3 ± 0,3	-
10	80 ⁰ _{-0,190}	80 ⁰ _{-0,300}	18	70	83,74 ⁻⁰ _{-0,40}	13,74	-	-	2009,7 ± 0,3	-



Racks for gates with buttonhole, for continuous mounting and zinc-plated, including screws, washers and bushes.

M	A x B	L	
		cod. 1000 mm	cod. 2000 mm
4	30 x 12	30900100	30900200

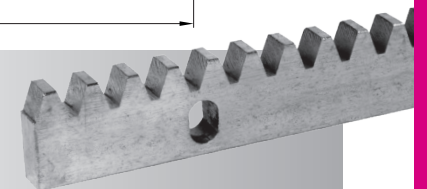
CONTINUOUS MOUNTING



MATERIAL **C 40**
NORMALIZE

CAD drawings available on our site
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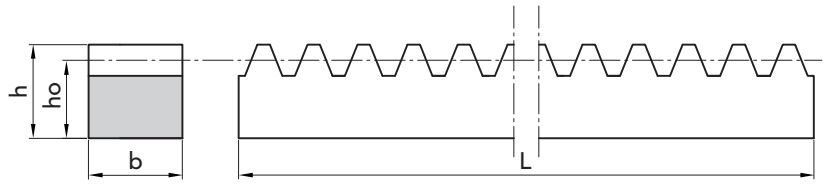
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Pressure angle: 20°

All the racks provided by Chiaravalli Group SpA are realized for continuous mounting.



DIMENSIONS b x h

M	PART NUMBER	b	h	ho	L	Kg
1	30910050	15	15	14	500	0,82
	30910100				1000	1,64
	30910200				2000	3,20
	30910300				3000	4,80
1,5	30915050	17	17	15,5	500	1,00
	30915100				1000	2,05
	30915200				2000	4,00
	30915300				3000	6,00
2	30920050	20	20	18	500	1,41
	30920100				1000	2,75
	30920200				2000	5,50
	30920300				3000	8,20
2,5	30925050	25	25	22,5	500	2,10
	30925100				1000	4,50
	30925200				2000	9,00
	30925300				3000	13,40
3	30930050	30	30	27	500	3,10
	30930100				1000	6,50
	30930200				2000	13,00
	30930300				3000	19,40
4	30939050	30	30	26	500	3,05
	30939100				1000	6,10
	30939200				2000	12,50
4	30940050	40	40	36	500	5,50
	30940100				1000	11,00
	30940200				2000	23,00
	30940300				3000	34,00
5	30950050	50	50	45	500	8,30
	30950100				1000	17,50
	30950200				2000	35,00
	30950300				3000	52,40
6	30960050	60	60	54	500	12,65
	30960100				1000	25,50
	30960200				2000	51,00
	30960300				3000	76,40
8	30980200	80	80	72	2000	90,00
10	30999200	80	80	70	2000	87,90

MATERIAL **C 40**
NORMALIZE

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RIGHT-ANGLE

CHQ

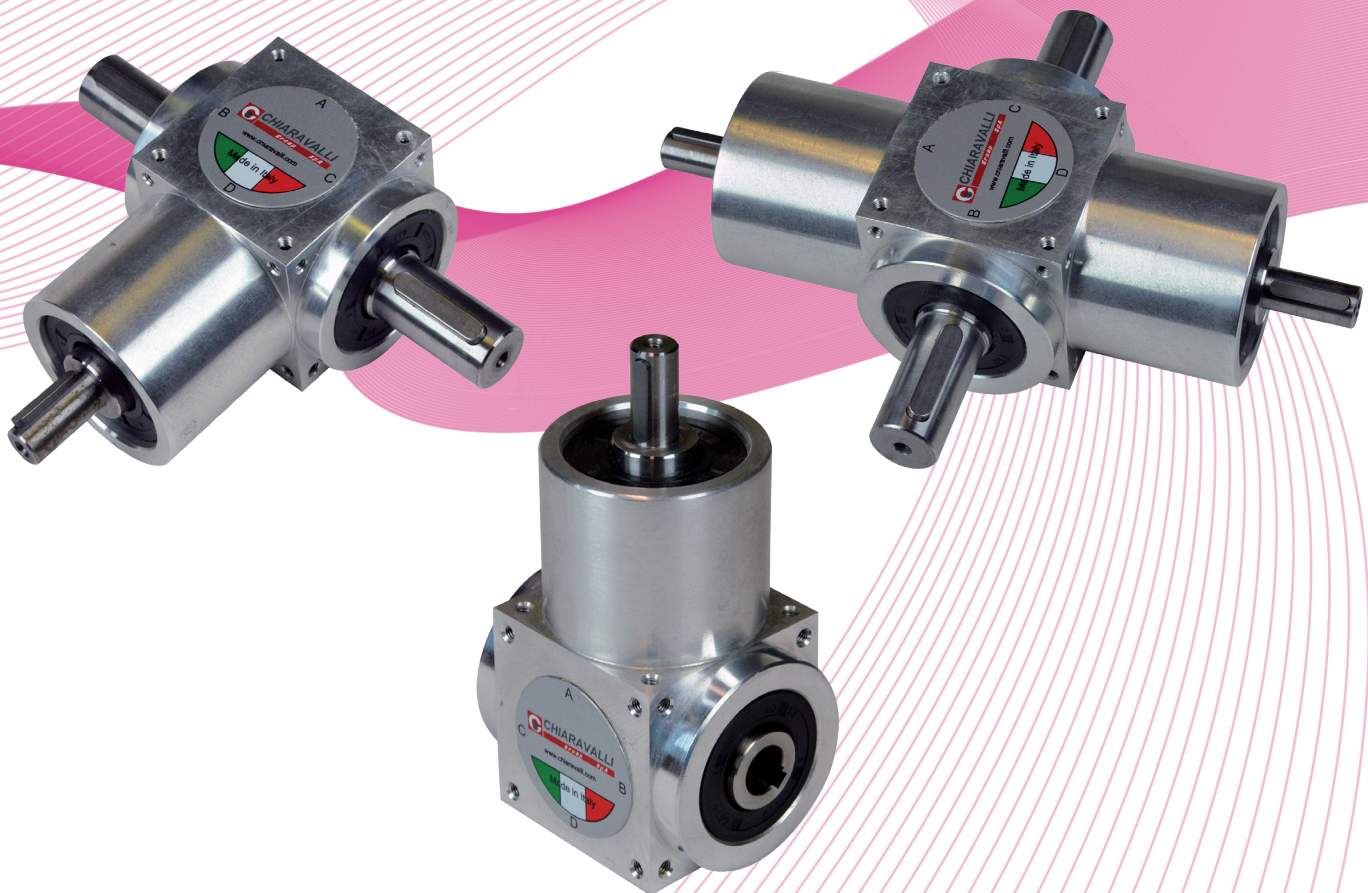
The right-angle gear drives of the CHQ series were designed for industrial applications, where it is necessary to transmit rotary power motion between axes arranged perpendicularly.

Eight different sizes, five gear ratios (or speed multipliers) 1:1 - 1:1.5 - 1:2 - 1:3 - 1:4, shafts with diameters ranging from 11 to 85 mm, through hollow shafts with diameters from 12 to 80 mm with splines

from 4 to 22 mm, or hollow shafts with UNI 8953 NT grooved profile from 6x11x14 to 10x72x82.

Also available are hollow shafts set-up for driving with locking set, and flanges with hollow shaft and spline seat for electric motor coupling in B5 and B14 versions, size from 86 to 160.

Powers up to 1,074 kW, torques up to 9,516 Nm, rotation speed up to 3,000 rpm and even faster.





SPECIAL

COMPONENTS MANUFACTURING

We produce high precision Gears and Special Mechanical Components.

A large and varied range of modern CNC machine tools assures large capacity production at high quality level.

Chiaravalli Group SpA co-workers, highly skilful and motivated by a great spirit of belonging to the company,

operate using the most modern CAE and CAD-CAM technologies. The production is certified and assured using three-dimensional high precision measuring machines.

Chiaravalli Group SpA your technological partner for high quality production.

