

CM 300



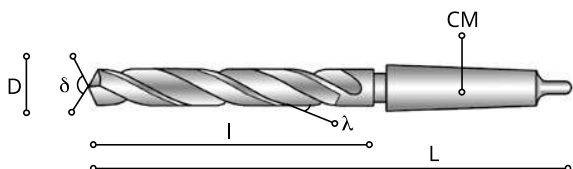
STANDARD



CM 303



STANDARD



CM300



CM303



CM 300 dal diametro 3 al diametro 5,9 fino ad esaurimento
CM 300 from diameter 3,00 to diameter 5,9 until stocks last.

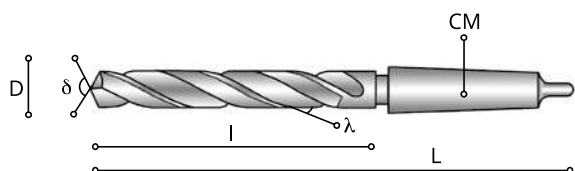
D h8	L	I	CM	CODE	HSS 5300..... €	HSS+5%Co 5303..... €	HSS+5%Co 6303..... € QUARTZ	HSS+5%Co 7303..... € TITANITE
3	114	33	1	....00300	19,04			
3,10	117	36	1	....00310	24,07			
3,20	117	36	1	....00320	24,07			
3,25	117	36	1	....00325	22,24			
3,30	117	36	1	....00330	25,81			
3,40	120	39	1	....00340	25,81			
3,50	120	39	1	....00350	18,28			
3,60	120	39	1	....00360	24,59			
3,70	120	39	1	....00370	24,59			
3,75	120	39	1	....00375	21,82			
3,80	124	43	1	....00380	24,72			
3,90	124	43	1	....00390	24,72			
4,00	124	43	1	....00400	17,36			
4,10	124	43	1	....00410	24,22			
4,20	124	43	1	....00420	24,22			
4,25	124	43	1	....00425	21,78			
4,30	128	47	1	....00430	24,22			
4,40	128	47	1	....00440	24,22			
4,50	128	47	1	....00450	17,21			
4,60	128	47	1	....00460	24,22			
4,70	128	47	1	....00470	24,22			
4,75	128	47	1	....00475	21,78			
4,80	133	52	1	....00480	24,67			
4,90	133	52	1	....00490	24,67			
5,00	133	52	1	....00500	15,69	34,80	44,23	49,40
5,10	133	52	1	....00510	25,67			
5,20	133	52	1	....00520	25,67			
5,25	133	52	1	....00525	21,59			
5,30	133	52	1	....00530	25,67			
5,40	138	57	1	....00540	25,67			
5,50	138	57	1	....00550	16,34	34,18	44,43	49,71
5,60	138	57	1	....00560	25,19			
5,70	138	57	1	....00570	25,19			
5,75	138	57	1	....00575	21,03			
5,80	138	57	1	....00580	25,19			
5,90	138	57	1	....00590	25,19			
6,00	138	57	1	....00600	14,68	34,18	44,43	49,71
6,10	144	63	1	....00610	25,25			
6,20	144	63	1	....00620	25,25			
6,25	144	63	1	....00625	21,81			

D h8	L	I	CM	CODE	HSS 5300..... €	HSS+5%Co 5303..... €	HSS+5%Co 6303..... € QUARTZ	HSS+5%Co 7303..... € TITANITE
6,30	144	63	1	....00630	25,25			
6,40	144	63	1	....00640	25,25			
6,50	144	63	1	....00650	14,36	31,73	43,40	49,93
6,60	144	63	1	....00660	25,25			
6,70	144	63	1	....00670	25,25			
6,75	150	69	1	....00675	17,25			
6,80	150	69	1	....00680	25,25			
6,90	150	69	1	....00690	25,25			
7,00	150	69	1	....00700	15,29	32,44	44,00	50,40
7,10	150	69	1	....00710	26,36			
7,20	150	69	1	....00720	26,36			
7,25	150	69	1	....00725	20,78			
7,30	150	69	1	....00730	26,36			
7,40	150	69	1	....00740	26,36			
7,50	150	69	1	....00750	16,20	34,97	46,94	53,48
7,60	156	75	1	....00760	26,83			
7,70	156	75	1	....00770	26,83			
7,75	156	75	1	....00775	20,78			
7,80	156	75	1	....00780	26,83			
7,90	156	75	1	....00790	26,83			
8,00	156	75	1	....00800	14,79	31,24	42,68	49,08
8,10	156	75	1	....00810	21,53			
8,20	156	75	1	....00820	21,53			
8,25	156	75	1	....00825	20,09			
8,30	156	75	1	....00830	21,53			
8,40	156	75	1	....00840	21,53			
8,50	156	75	1	....00850	15,11	35,07	46,94	53,60
8,60	162	81	1	....00860	23,04			
8,70	162	81	1	....00870	23,04			
8,75	162	81	1	....00875	21,26			
8,80	162	81	1	....00880	23,04			
8,90	162	81	1	....00890	23,04			
9,00	162	81	1	....00900	15,43	37,99	50,13	56,53
9,10	162	81	1	....00910	28,26			
9,20	162	81	1	....00920	28,26			
9,25	162	81	1	....00925	22,37			
9,30	162	81	1	....00930	28,26			
9,40	162	81	1	....00940	28,26			
9,50	162	81	1	....00950	15,43	39,35	51,60	57,99
9,60	168	87	1	....00960	28,26			
9,70	168	87	1	....00970	28,26			
9,75	168	87	1	....00975	23,69			
9,80	168	87	1	....00980	28,26			
9,90	168	87	1	....00990	28,26			
10,00	168	87	1	....01000	16,05	38,48	50,63	57,05
10,10	168	87	1	....01010	22,46			
10,20	168	87	1	....01020	22,46			
10,25	168	87	1	....01025	21,74			
10,30	168	87	1	....01030	22,99			
10,40	168	87	1	....01040	22,99			
10,50	168	87	1	....01050	19,21	41,23	53,67	60,07
10,60	168	87	1	....01060	25,03			
10,70	175	94	1	....01070	25,03			
10,75	175	94	1	....01075	22,78			
10,80	175	94	1	....01080	24,95			
10,90	175	94	1	....01090	24,95			
11,00	175	94	1	....01100	18,81	40,70	53,24	59,78
11,10	175	94	1	....01110	25,72			
11,20	175	94	1	....01120	25,72			
11,25	175	94	1	....01125	22,74			

CM 300



CM 303



CM300



CM303



D h8	L	I	CM	CODE	HSS 5300..... €	HSS+5%Co 5303..... €	HSS+5%Co 6303..... € QUARTZ	HSS+5%Co 7303..... € TITANITE
11,30	175	94	1	....01130	26,89			
11,40	175	94	1	....01140	26,89			
11,50	175	94	1	....01150	20,46	43,42	56,24	62,79
11,60	175	94	1	....01160	25,32			
11,70	175	94	1	....01170	25,32			
11,75	175	94	1	....01175	22,74			
11,80	175	94	1	....01180	26,36			
11,90	182	101	1	....01190	26,36			
12,00	182	101	1	....01200	20,86	42,05	58,56	68,05
12,10	182	101	1	....01210	26,44			
12,20	182	101	1	....01220	26,44			
12,25	182	101	1	....01225	25,17			
12,30	182	101	1	....01230	26,44			
12,40	182	101	1	....01240	26,44			
12,50	182	101	1	....01250	22,11	47,58	64,64	74,13
12,60	182	101	1	....01260	26,44			
12,70	182	101	1	....01270	26,64			
12,75	182	101	1	....01275	23,37			
12,80	182	101	1	....01280	29,28			
12,90	182	101	1	....01290	29,28			
13,00	182	101	1	....01300	23,15	46,31	63,01	72,31
13,20	182	101	1	....01320	31,83			
13,25	189	108	1	....01325	26,19			
13,50	189	108	1	....01350	26,19	64,74	83,27	92,58
13,75	189	108	1	....01375	26,19			
13,80	189	108	1	....01380	31,83			
14,00	189	108	1	....01400	27,56	62,46	80,76	90,07
14,25	212	114	2	....01425	31,38			
14,50	212	114	2	....01450	30,38	70,06	97,11	112,59
14,75	212	114	2	....01475	32,44			
15,00	212	114	2	....01500	32,44	63,50	89,90	105,38
15,25	218	120	2	....01525	33,66			
15,50	218	120	2	....01550	34,49	71,58	98,79	114,27
15,75	218	120	2	....01575	33,97			
16,00	218	120	2	....01600	31,38	68,53	95,44	110,91
16,25	223	125	2	....01625	37,01			
16,50	223	125	2	....01650	35,49	72,81	100,14	115,61
16,75	223	125	2	....01675	37,01			
17,00	223	125	2	....01700	34,72	68,99	95,94	111,42
17,25	228	130	2	....01725	37,77			

D h8	L	I	CM	CODE	HSS 5300..... €	HSS+5%Co 5303..... €	HSS+5%Co 6303..... € QUARTZ	HSS+5%Co 7303..... € TITANITE
17,50	228	130	2	....01750	37,77	75,85	103,49	118,95
17,75	228	130	2	....01775	39,14			
18,00	228	130	2	....01800	39,24	71,29	98,47	113,94
18,25	233	135	2	....01825	42,34			
18,50	233	135	2	....01850	41,43	78,91	116,33	139,13
18,75	233	135	2	....01875	42,34			
19,00	233	135	2	....01900	42,40	74,57	111,54	134,33
19,25	238	140	2	....01925	45,23			
19,50	238	140	2	....01950	43,56	89,02	127,45	150,25
19,75	238	140	2	....01975	47,15			
20,00	238	140	2	....02000	44,46	87,27	124,95	147,30
20,25	243	145	2	....02025	50,73			
20,50	243	145	2	....02050	50,73	105,34	145,39	168,19
20,75	243	145	2	....02075	52,70			
21,00	243	145	2	....02100	50,73	101,72	141,27	163,96
21,25	248	150	2	....02125	56,36			
21,50	248	150	2	....02150	56,36	112,26	152,42	174,77
21,75	248	150	2	....02175	58,55			
22,00	248	150	2	....02200	58,55	106,82	146,86	169,57
22,25	248	150	2	....02225	59,70			
22,50	253	155	2	....02250	59,70	130,33	191,48	228,62
22,75	253	155	2	....02275	63,98			
23,00	253	155	2	....02300	63,82	126,23	186,96	224,11
23,25	276	155	3	....02325	67,47			
23,50	276	155	3	....02350	64,58	136,05	197,76	234,91
23,75	281	160	3	....02375	76,31			
24,00	281	160	3	....02400	67,62	139,45	201,52	238,66
24,25	281	160	3	....02425	77,52			
24,50	281	160	3	....02450	73,18	148,04	.	.
24,75	281	160	3	....02475	81,49			
25,00	281	160	3	....02500	71,25	143,33	.	.
25,25	286	165	3	....02525	86,66			
25,50	286	165	3	....02550	83,46	178,96	.	.
25,75	286	165	3	....02575	90,62			
26,00	286	165	3	....02600	84,83	169,83	.	.
26,25	286	165	3	....02625	91,54			
26,50	286	165	3	....02650	85,29	189,02	.	.
26,75	291	170	3	....02675	97,93			
27,00	291	170	3	....02700	91,23	187,03	.	.
27,25	291	170	3	....02725	101,90			
27,50	291	170	3	....02750	91,46	222,07	.	.
27,75	291	170	3	....02775	102,05			
28,00	291	170	3	....02800	93,82	192,06	.	.
28,25	296	175	3	....02825	108,75			
28,50	296	175	3	....02850	101,44	233,33	.	.
28,75	296	175	3	....02875	110,73			
29,00	296	175	3	....02900	98,24	201,20	.	.
29,25	296	175	3	....02925	112,41			
29,50	296	175	3	....02950	102,70	243,55	.	.
29,75	296	175	3	....02975	112,41			
30,00	296	175	3	....03000	102,06	212,93	.	.
30,25	301	180	3	....03025	128,09			
30,50	301	180	3	....03050	128,09	258,17	.	.
30,75	301	180	3	....03075	128,09			
31,00	301	180	3	....03100	122,46	258,17	.	.
31,25	301	180	3	....03125	134,34			
31,50	301	180	3	....03150	134,34	283,00	.	.
31,75	306	185	3	....03175	134,34			
32,00	334	185	4	....03200	134,03	282,23	.	.
32,50	334	185	4	....03250	144,24	341,17	.	.

● a richiesta - on demand

CM 300



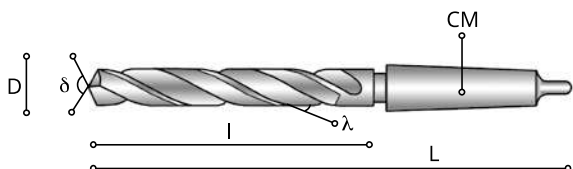
STANDARD



CM 303



STANDARD



CM300



CM303



D h8	L	I	CM	CODE	HSS 5300..... €	HSS+5%Co 5303..... €	HSS+5%Co 6303..... € QUARTZ	HSS+5%Co 7303..... € TITANITE
33,00	334	185	4	....03300	143,17	341,17	•	•
33,50	334	185	4	....03350	160,23	388,54	•	•
34,00	339	190	4	....03400	160,07	370,87	•	•
34,50	339	190	4	....03450	179,88	370,87	•	•
35,00	339	190	4	....03500	160,07	370,87	•	•
35,50	339	190	4	....03550	181,40	447,03	•	•
36,00	344	195	4	....03600	182,47	447,03	•	•
36,50	344	195	4	....03650	195,87	466,83	•	•
37,00	344	195	4	....03700	188,71	466,83	•	•
37,50	344	195	4	....03750	207,60	535,37	•	•
38,00	349	200	4	....03800	206,08	535,37	•	•
38,50	349	200	4	....03850	249,48	556,08	•	•
39,00	349	200	4	....03900	206,04	556,08	•	•
39,50	349	200	4	....03950	251,77	556,08	•	•
40,00	349	200	4	....04000	221,61	538,41	•	•
40,50	354	205	4	....04050	264,87	553,39	•	•
41,00	354	205	4	....04100	245,52	553,57	•	•
41,50	354	205	4	....04150	283,15	580,65	•	•
42,00	354	205	4	....04200	256,03	578,27	•	•
42,50	354	205	4	....04250	289,54	650,59	•	•
43,00	359	210	4	....04300	280,86	641,58	•	•
43,50	359	210	4	....04350	319,09	665,26	•	•
44,00	359	210	4	....04400	287,26	662,96	•	•
44,50	359	210	4	....04450	341,79	723,98	•	•
45,00	359	210	4	....04500	304,77	709,60	•	•
45,50	364	215	4	....04550	345,59	724,95	•	•
46,00	364	215	4	....04600	308,13	717,91	•	•
46,50	364	215	4	....04650	388,08	759,08	•	•
47,00	364	215	4	....04700	325,64	754,30	•	•
47,50	364	215	4	....04750	397,68	783,37	•	•
48,00	369	220	4	....04800	355,49	778,47	•	•
48,50	369	220	4	....04850	412,46	800,13	•	•
49,00	369	220	4	....04900	364,93	800,13	•	•
49,50	369	220	4	....04950	417,48	838,46	•	•
50,00	369	220	4	....05000	373,15	838,46	•	•
50,50	374	225	4	....05050	438,50			
51	412	225	5	....05100	457,84			
52	412	225	5	....05200	473,99			
53	412	225	5	....05300	479,78			
54	417	230	5	....05400	516,17			

• a richiesta - on demand

D h8	L	I	CM	CODE	HSS 5300..... €	HSS+5%Co 5303..... €	HSS+5%Co 6303..... € QUARTZ	HSS+5%Co 7303..... € TITANITE
55	417	230	5	....05500	524,56			
56	417	230	5	....05600	524,56			
57	422	235	5	....05700	555,62			
58	422	235	5	....05800	587,15			
59	422	235	5	....05900	587,15			
60	422	235	5	....06000	608,18			
61	427	240	5	....06100	649,68			
62	427	240	5	....06200	672,06			
63	427	240	5	....06300	712,98			
64	432	245	5	....06400	730,53			
65	432	245	5	....06500	772,77			
66	432	245	5	....06600	828,31			
67	432	245	5	....06700	828,31			
68	437	250	5	....06800	889,60			
69	437	250	5	....06900	944,48			
70	437	250	5	....07000	973,05			
71	437	250	5	....07100	993,43			
72	442	255	5	....07200	1062,31			
73	442	255	5	....07300	1105,40			
74	442	255	5	....07400	1155,94			
75	442	255	5	....07500	1185,64			
76	447	260	5	....07600	1284,88			
77	514	260	6	....07700	1437,48			
78	514	260	6	....07800	1465,67			
79	514	260	6	....07900	1533,49			
80	514	260	6	....08000	1568,15			
85	519	265	6	....08500	2017,01			
90	524	270	6	....09000	2154,09			
95	529	275	6	....09500	2608,93			
100	534	280	6	....10000	2859,58			



rpm
 $= (\text{mt/min} \times 1000) / (D \times 3,14)$



mm/min
 $= \text{mm/rev} \times \text{rpm}$



= mt/min



= mm/rev

(vedi tabella - see table page pag. 23)

PUNTE EXTRA CORTE TWIST DRILLS, STUB LENGHT										PUNTE CORTE TWIST DRILLS, JOBBER LENGHT	
CL100	CL101			CL118				CL104	CL104R		
HSS		HSS+8%Co			HSS+5%Co			HSS			

Pag. 378	TIPO DI ACCIAIO TYPE OF STEEL	N/mm ²	HV	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	30 b	42 d	55 c	60 c	38 c	50 c	57 c	30 b	37 c
	Acciai da costruzione Structural steel	2	700	219	22 c	35 c	45 b	55 b	30 c	40 b	50 b	22 c	30 b
	Acciai da tempra Hardening steel	3	900	280	13 c		35 b	40 b		30 b	38 b	13 c	20 b
	Acciaio automatico Automatic steel	4	1200	373									
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	17 b	26 c	32 b	36 b	22 b	28 b	34 b	17 b	22 b
	Austenitico Austenitic	3	850	265	8 c	18 d	18 c	22 c	12 c	15 c	20 c	8 c	12 c
	Ferritico+austenitico Ferritic austenitic	4	1000	311	10 b		22 c	26 c	15 b	18 c	24 c	10 b	15 b
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	30 d	38 d	45 c	48 d	36 d	42 c	45 d	30 d	37 d
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	20 b	28 c	32 c	35 d	26 b	30 c	32 d	20 b	25 b
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157	22 b	33 d	36 d	40 d	28 c	31 c	38 d	22 b	26 b
	Leghe di titanio Titanium alloys	5	900	280	10 a	24 d	27 d	30 d	18 c	21 c	28 d	10 a	14 a
RAME COPPER	Rame Copper	9	350	110	30 c	42 d			40 c			30 c	40 c
	Ottone Brass	9	700	219	33 c	45 d	55 c		43 b	50 c		33 c	43 b
	Bronzo Bronze	9	700	219	15 c	24 d	50 c		22 b	45 c		15 c	23 b
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219	10 b	18 c	22 c	26 d	16 c	20 c	24 d	10 b	16 c
	Leghe di nichel Nichel alloys	6	900	280	5 a	15 c	12 c	16 d	12 b	10 c	14 d	5 a	11 b
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	35 d	40 d	70 d		38 d	60 d		35 d	39 d
	Alluminio con leghe Alloyed aluminium	7	400	125	30 d	35 d	60 d		33 d	55 d		30 d	34 d
	Alluminio con leghe Alloyed aluminium	7	500	157	25 c	30 c	45 c		28 c	40 c		25 c	29 c

PUNTE CORTE TWIST DRILLS, JOBBER LENGTH



CL107 CL108 CL104CR CL106 CL105 CL109 CL119



HSS HSS+5%Co HSS+8%Co HSS+5%Co



HSS		HSS+5%Co				HSS+8%Co				HSS+5%Co					
mt/min	mm/rev	mt/min	mm/rev	mt/min	mm/rev	mt/min	mm/rev	mt/min	mm/rev	mt/min	mm/rev	mt/min	mm/rev	mt/min	mm/rev
		30 b	35 c	50 c	57 c	42 d	55 c	60 c	38 c	50 c	57 c	38 c	50 c	57 c	
		22 c	28 b	40 b	50 b	35 c	45 b	55 b	30 c	40 b	50 b	30 c	40 b	50 b	
		13 c	18 b	30 b	38 b		35 b	40 b		30 b	38 b		30 b	38 b	
		17 b	20 b	28 b	34 b	26 c	32 b	36 b	22 b	28 b	34 b	22 b	28 b	34 b	
		8 c	10 c	15 c	20 c	18 d	18 c	22 c	12 c	15 c	20 c	12 c	15 c	20 c	
		10 b	13 b	18 c	24 c		22 c	26 c	15 b	18 c	24 c	15 b	18 c	24 c	
		30 d	35 d	42 c	45 d	38 d	45 c	48 d	36 d	42 c	45 d	36 d	42 c	45 d	
		20 b	23 b	30 c	32 d	28 c	32 c	35 d	26 b	30 c	32 d	26 b	30 c	32 d	
		22 b	24 b	31 c	38 d	33 d	36 d	40 d	28 c	31 c	38 d	28 c	31 c	38 d	
		10 a	12 a	21 c	28 d	24 d	27 d	30 d	18 c	21 c	28 d	18 c	21 c	28 d	
	30 c	30 c	38 c			42 d			40 c			40 c			
33 c		33 c	41 b	50 c		45 d	55 c		43 b	50 c		43 b	50 c		
15 c		15 c	20 b	45 c		24 d	50 c		22 b	45 c		22 b	45 c		
		10 b	14 c	20 c	24 d	18 c	22 c	26 d	16 c	20 c	24 d	16 c	20 c	24 d	
		5 a	9 b	10 c	14 d	15 c	12 c	16 d	12 b	10 c	14 d	12 b	10 c	14 d	
	35 d	35 d	37 d	60 d		40 d	70 d		38 d	60 d		38 d	60 d		
	30 d	30 d	32 d	55 d		35 d	60 d		33 d	55 d		33 d	55 d		
	25 c	25 c	27 c	40 c		30 c	45 c		28 c	40 c		28 c	40 c		



rpm
 $= (\text{mt/min} \times 1000) / (D \times 3,14)$



mm/min
 $= \text{mm/rev} \times \text{rpm}$



= mt/min



= mm/rev

(vedi tabella - see table page pag. 23)

PUNTE LUNGHE TWIST DRILLS, LONG SERIES				PUNTE EXTRA LUNGHE TWIST DRILLS, EXTRA LONG SERIES					
CL200	CL230			CL111/1	CL110/1			CL111/2	
DIN 340				DIN 1869/1					DIN 1869/2
HSS		HSS+5%Co			HSS		HSS+5%Co		HSS

Pag. 378	TIPO DI ACCIAIO TYPE OF STEEL	N/mm ²	HV	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	30 b	38 c	50 c	57 c	30 b	38 c	50 c	57 c	30 b
	Acciai da costruzione Structural steel	2	700	219	22 c	30 c	40 b	50 b	22 c	30 c	40 b	50 b	22 c
	Acciai da tempra Hardening steel	3	900	280	13 c		30 b	38 b	13 c		30 b	38 b	13 c
	Acciaio automatico Automatic steel	4	1200	373									
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	17 b	22 b	28 b	34 b	17 b	22 b	28 b	34 b	17 b
	Austenitico Austenitic	3	850	265	8 c	12 c	15 c	20 c	8 c	12 c	15 c	20 c	8 c
	Ferritico+austenitico Ferritic austenitic	4	1000	311	10 b	15 b	18 c	24 c	10 b	15 b	18 c	24 c	10 b
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	30 d	36 d	42 c	45 d	30 d	36 d	42 c	45 d	30 d
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	20 b	26 b	30 c	32 d	20 b	26 b	30 c	32 d	20 b
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157	22 b	28 c	31 c	38 d	22 b	28 c	31 c	38 d	22 b
	Leghe di titanio Titanium alloys	5	900	280	10 a	18 c	21 c	28 d	10 a	18 c	21 c	28 d	10 a
RAME COPPER	Rame Copper	9	350	110	30 c	40 c			30 c	40 c			30 c
	Ottone Brass	9	700	219	33 c	43 b	50 c		33 c	43 b	50 c		33 c
	Bronzo Bronze	9	700	219	15 c	22 b	45 c		15 c	22 b	45 c		15 c
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219	10 b	16 c	20 c	24 d	10 b	16 c	20 c	24 d	10 b
	Leghe di nichel Nichel alloys	6	900	280	5 a	12 b	10 c	14 d	5 a	12 b	10 c	14 d	5 a
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	35 d	38 d	60 d		35 d	38 d	60 d		35 d
	Alluminio con leghe Alloyed aluminium	7	400	125	30 d	33 d	55 d		30 d	33 d	55 d		30 d
	Alluminio con leghe Alloyed aluminium	7	500	157	25 c	28 c	40 c		25 c	28 c	40 c		25 c

PUNTE EXTRA LUNGHE TWIST DRILLS, EXTRA LONG SERIES							PUNTE DOPPIE DOUBLE TWIST DRILLS	PUNTE PER CENTRI NC NC-SPOTTING DRILLS									
QUARTZ			TITANITE			QUARTZ			TITANITE			QUARTZ			TITANITE		
CL110/2			CL111/3			CL110/3			CL150			CL102			CL103		
DIN 1869/2			DIN 1869/3			CARMON NORM.			CARMON NORM.								
HSS+5%Co			HSS			HSS+5%Co			HSS			HSS+8% Co					
[Symbol]			[Symbol]			[Symbol]			[Symbol]			[Symbol]					
mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	
38 c	50 c	57 c	30 b	38 c	50 c	57 c		35 c	50 c	57 c	35 c	50 c	57 c				
30 c	40 b	50 b	22 c	30 c	40 b	50 b		28 b	40 b	50 b	28 b	40 b	50 b				
	30 b	38 b	13 c		30 b	38 b		18 b	30 b	38 b	18 b	30 b	38 b				
22 b	28 b	34 b	17 b	22 b	28 b	34 b		20 b	28 b	34 b	20 b	28 b	34 b				
12 c	15 c	20 c	8 c	12 c	15 c	20 c		10 c	15 c	20 c	10 c	15 c	20 c				
15 b	18 c	24 c	10 b	15 b	18 c	24 c		13 b	18 c	24 c	13 b	18 c	24 c				
36 d	42 c	45 d	30 d	36 d	42 c	45 d		35 d	42 c	45 d	35 d	42 c	45 d				
26 b	30 c	32 d	20 b	26 b	30 c	32 d		23 b	30 c	32 d	23 b	30 c	32 d				
28 c	31 c	38 d	22 b	28 c	31 c	38 d		24 b	31 c	38 d	24 b	31 c	38 d				
18 c	21 c	28 d	10 a	18 c	21 c	28 d		12 a	21 c	28 d	12 a	21 c	28 d				
40 c			30 c	40 c				38 c			38 c						
43 b	50 c		33 c	43 b	50 c			41 b	50 c		41 b	50 c					
22 b	45 c		15 c	22 b	45 c			20 b	45 c		20 b	45 c					
16 c	20 c	24 d	10 b	16 c	20 c	24 d		14 c	20 c	24 d	14 c	20 c	24 d				
12 b	10 c	14 d	5 a	12 b	10 c	14 d		9 b	10 c	14 d	9 b	10 c	14 d				
38 d	60 d		35 d	38 d	60 d			37 d	60 d		37 d	60 d					
33 d	55 d		30 d	33 d	55 d			32 d	55 d		32 d	55 d					
28 c	40 c		25 c	28 c	40 c			27 c	40 c		27 c	40 c					



rpm
 $= (\text{mm/min} \times 1000) / (D \times 3,14)$



mm/min
 $= \text{mm/rev} \times \text{rpm}$




























= mt/min



= mm/rev
 (vedi tabella - see table page pag. 23)

PUNTE DA CENTRO CENTER DRILLS									PUNTE A GRADINO CON ELICHE INDIPENDENTI SUBLAND DRILLS WITH INDEPENDENT SPIRAL					
CL910			CL920			CL930			CL270	CL271	CL272			
DIN 333/A			DIN 333/R			DIN 333/B			DIN 8376	DIN 8374	DIN 8378			
HSS									HSS					

Pag. 378	TIPO DI ACCIAIO TYPE OF STEEL	N/mm ²	HV	mt/min		mm/rev		mt/min		mm/rev		mt/min		mm/rev		mt/min		mm/rev		
				b	c	b	c	b	c	b	c	b	c	b	c	b	c			
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	30	37	30	37	30	37	30	37	30	37	30	37	30	37	30	37
	Acciai da costruzione Structural steel	2	700	219	22	30	22	30	22	30	22	30	22	30	22	30	22	30	22	30
	Acciai da tempra Hardening steel	3	900	280	13	20	13	20	13	20	13	20	13	20	13	20	13	20	13	20
	Acciaio automatico Automatic steel	4	1200	373																
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	17	22	17	22	17	22	17	22	17	22	17	22	17	22	17	22
	Austenitico Austenitic	3	850	265	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	Ferritico+austenitico Ferritic austenitic	4	1000	311	10	15	10	15	10	15	10	15	10	15	10	15	10	15	10	15
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	30	37	30	37	30	37	30	37	30	37	30	37	30	37	30	37
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157	22	26	22	26	22	26	22	26	22	26	22	26	22	26	22	26
	Leghe di titanio Titanium alloys	5	900	280	10	14	10	14	10	14	10	14	10	14	10	14	10	14	10	14
RAME COPPER	Rame Copper	9	350	110	30	40	30	40	30	40	30	40	30	40	30	40	30	40	30	40
	Ottone Brass	9	700	219	33	43	33	43	33	43	33	43	33	43	33	43	33	43	33	43
	Bronzo Bronze	9	700	219	15	23	15	23	15	23	15	23	15	23	15	23	15	23	15	23
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16
	Leghe di nichel Nichel alloys	6	900	280	5	11	5	11	5	11	5	11	5	11	5	11	5	11	5	11
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	35	39	35	39	35	39	35	39	35	39	35	39	35	39	35	39
	Alluminio con leghe Alloyed aluminium	7	400	125	30	34	30	34	30	34	30	34	30	34	30	34	30	34	30	34
	Alluminio con leghe Alloyed aluminium	7	500	157	25	29	25	29	25	29	25	29	25	29	25	29	25	29	25	29

PUNTE CODOLO CONICO TAPER SHANK TWIST DRILLS				PUNTE LUNGHE CODOLO CONICO TAPER SHANK DRILLS, LONG SERIES				PUNTE EXTRA LUNGHE CODOLO CONICO TWIST DRILLS TAPER SHANK EXTRALONG						
														
CM300	CM303			CM301	CM302			CM304	CM306			CM305	CM307	
														
HSS	HSS+5% Co			HSS	HSS+5% Co			HSS	HSS+5% Co			HSS	HSS+5% Co	
														
mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	
30 c	35 c	50 c	57 c	30 c	38 c	50 c	57 c	30 c	38 c	50 c	57 c	30 c	38 c	
22 b	28 b	40 b	50 b	22 b	30 c	40 b	50 b	22 b	30 c	40 b	50 b	22 b	30 c	
13 b	18 b	30 b	38 b	13 b		30 b	38 b	13 b		30 b	38 b	13 b		
17 b	20 b	28 b	34 b	17 b	22 b	28 b	34 b	17 b	22 b	28 b	34 b	17 b	22 b	
8 c	10 c	15 c	20 c	8 c	12 c	15 c	20 c	8 c	12 c	15 c	20 c	8 c	12 c	
10 b	13 b	18 c	24 c	10 b	15 b	18 c	24 c	10 b	15 b	18 c	24 c	10 b	15 b	
30 d	35 d	42 c	45 d	30 d	36 d	42 c	45 d	30 d	36 d	42 c	45 d	30 d	36 d	
20 b	23 b	30 c	32 d	20 b	26 b	30 c	32 d	20 b	26 b	30 c	32 d	20 b	26 b	
22 b	24 b	31 c	38 d	22 b	28 c	31 c	38 d	22 b	28 c	31 c	38 d	22 b	28 c	
10 a	12 a	21 c	28 d	10 a	18 c	21 c	28 d	10 a	18 c	21 c	28 d	10 a	18 c	
18 c	30 c	40 c		18 c	38 c	40 c		18 c	38 c	40 c		18 c	38 c	
20 c	33 c	43 b	50 c	20 c	41 b	43 b	50 c	20 c	41 b	43 b	50 c	20 c	41 b	
12 c	15 c	22 b	45 c	12 c	20 b	22 b	45 c	12 c	20 b	22 b	45 c	12 c	20 b	
10 b	14 c	20 c	24 d	10 b	16 c	20 c	24 d	10 b	16 c	20 c	24 d	10 b	16 c	
5 a	9 b	10 c	14 d	5 a	12 b	10 c	14 d	5 a	12 b	10 c	14 d	5 a	12 b	
35 d	37 d	60 d		35 d	38 d	60 d		35 d	38 d	60 d		35 d	38 d	
30 d	32 d	55 d		30 d	33 d	55 d		30 d	33 d	55 d		30 d	33 d	
25 c	27 c	40 c		25 c	28 c	40 c		25 c	28 c	40 c		25 c	28 c	



rpm
 $= (\text{mt/min} \times 1000) / (D \times 3,14)$



mm/min
 $= \text{mm/rev} \times \text{rpm}$



= mt/min



= mm/rev
 (vedi tabella - see table page pag. 23)

PUNTE A DUE DIAMETRI SUBLAND TWIST DRILLS



Pag. 378	TIPO DI ACCIAIO TYPE OF STEEL	N/mm ²	HV	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	30 c	30 c	30 c
	Acciai da costruzione Structural steel	2	700	219	22 b	22 b	22 b
	Acciai da tempra Hardening steel	3	900	280	13 b	13 b	13 b
	Acciaio automatico Automatic steel	4	1200	373			
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	17 b	17 b	17 b
	Austenitico Austenitic	3	850	265	8 c	8 c	8 c
	Ferritico+austenitico Ferritic austenitic	4	1000	311	10 b	10 b	10 b
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	30 d	30 d	30 d
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	20 b	20 b	20 b
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157	22 b	22 b	22 b
	Leghe di titanio Titanium alloys	5	900	280	10 a	10 a	10 a
RAME COPPER	Rame Copper	9	350	110	18 c	18 c	18 c
	Ottone Brass	9	700	219	20 c	20 c	20 c
	Bronzo Bronze	9	700	219	12 c	12 c	12 c
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219	10 b	10 b	10 b
	Leghe di nichel Nichel alloys	6	900	280	5 a	5 a	5 a
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	35 d	35 d	35 d
	Alluminio con leghe Alloyed aluminium	7	400	125	30 d	30 d	30 d
	Alluminio con leghe Alloyed aluminium	7	500	157	25 c	25 c	25 c

FORATURA DRILLING	TABELLA PARAMETRI DI AVANZAMENTO mm/giro RECOMMENDED FEED DATA mm/rev.																
	DIAMETRO DELLA PUNTA DRILL DIAMETER																
LETTERA DI RIFERIMENTO REFERENCE LETTER	D. 1	D. 2	D. 3	D. 4	D. 5	D. 6	D. 8	D. 10	D. 12	D. 14	D. 16	D. 20	D. 25	D. 30	D. 35	D. 40	D. 50
a	0,015	0,030	0,038	0,047	0,053	0,060	0,075	0,090	0,100	0,120	0,127	0,160	0,200	0,230	0,250	0,300	0,350
b	0,020	0,050	0,070	0,085	0,100	0,120	0,150	0,180	0,200	0,230	0,250	0,270	0,290	0,330	0,350	0,380	0,400
c	0,023	0,080	0,100	0,130	0,150	0,180	0,250	0,270	0,280	0,300	0,330	0,370	0,420	0,450	0,470	0,500	0,550
d	0,030	0,100	0,160	0,180	0,220	0,240	0,300	0,370	0,400	0,450	0,480	0,500	0,530	0,550	0,580	0,600	0,630
e	0,035	0,120	0,200	0,250	0,270	0,300	0,350	0,450	0,470	0,500	0,530	0,550	0,600	0,640	0,680	0,700	0,730
f	0,050	0,150	0,220	0,250	0,320	0,400	0,490	0,620	0,650	0,720	0,850	0,900	1,100	1,130	1,170	1,200	1,250
g	0,070	0,160	0,250	0,270	0,360	0,470	0,620	0,830	0,900	0,950	1,100	1,200	1,280	1,330	1,400	1,470	1,520
h	0,090	0,200	0,270	0,300	0,400	0,520	0,750	1,000	1,100	1,200	1,300	1,350	1,430	1,500	1,650	1,700	1,800

CLASSIFICAZIONE DEI MATERIALI GROUPS OF MATERIALS

ESEMPI DI MATERIALI - MATERIAL EXAMPLE

		W. - Nr.	DIN	EN	B.S.	AISI/SAE	SS
- Acciai sino a 500 N/mm2	- Steels up to 500 N/mm2	1.0037	ST 37-2	EN 10025	FE 360 B	M 1010	1311
- Acciai da costruzione	- Construction steels	1.0044	ST 44-2	EN 10025	FE 430 B FN	M 1015	1412
- Acciai alta velocità	- Steels for automatic lathes	1.0711	9 S 20	1651	220 M 07		
		1.0715	9 SMn 28	1651	230 M 07	1213	1912
		1.0718	9 MnPb 28	1651		12 L 13	1914

1

- Acciai sopra 500 - 800 N/mm2	- Steels more than 500 - 800 N/mm2	1.0060	St 60-2	EN 10025	4360-55E; 55C	A572 GR.65	1650
- Acciai da costruzione	- Construction steels	1.0503	C 45	EN 10083-2	080 M 46	1045	1672
- Acciai alta velocità	- Steels for automatic lathes	1.0570	St 52-3	EN 10025	4360-50 D		2134
- Acciai da cementazione	- Case hardening steels	1.0727	45 S 20	1651		1146	
- Acciai da bonifica	- Tempering steels	1.1141	Ck 15	1652T.3	080 M15	1015	1370
- Acciai da utensili nonlegati	- Non-alloyed tools steels	1.1191	Ck 45		080 M 46	1045	1672
- Titanio non legato	- Non-alloyed titanium						
- Ghisa grigia < 180 HB	- Cast iron < 180 HB						

2

- Acciai sopra 800 - 1000 N/mm2	- Steels more than 800 - 1000 N/mm2	0.6020	GG 20		GRADE 220	A48-30B	0120-00
		0.7040	GGG 40		420/12	60-40-18	0717-02
- Acciai da cementazione	- Case hardening steels	0.8035	GTW-35				
- Acciai da bonifica	- Tempering steels	0.8135	GTS-35		B 340/12	32510	
- Acciai da nitrurazione	- Nitriding steels	1.1167	36 Mn 5	17204	150 M 36	1335	2120
- Acciai da costruzione resistenti al calore	- Heat resistant construction steels	1.1221	Ck 60	EN 10083-1	060 A 62	1060	1665
- Ghisa grigia > 180 HB	- Cast iron > 180 HB	1.2312	40 CrMnMoS 8 6	17350			
		1.5732	14 NiCr 10				3415
		1.5775	31 NiCr 14		653 M 31		
		1.7131	16 MnCr 5		572 M 17	5115	2173
		1.7225	42 CrMo 4	EN 10083-1	708 M 40	4140	2244
		1.8504	34 CrAl 6				
		1.8507	34 CrAlMo 5	17211		A355 Cl.D	
		1.8509	41 CrAlMo 7		905 M 39	A355 Cl.A	2940
		1.8515	31 CrMo 12	17211	722 M 24		2240

3

- Acciai sopra 1000 - 1300 N/mm2	- Steels more than 1000 - 1300 N/mm2	0.6030	GG 30		GRADE 300	A48-45B	0130-00
		0.7050	GGG 50		500/7	65-45-12	0727-02
- Acciai da cementazione	- Case hardening steels	0.7060	GGG 60		600/3	80-55-06	0732-03
- Acciai da bonifica	- Tempering steels	0.8065	GTW-65				
- Acciai da nitrurazione	- Nitriding steels	0.8170	GTS-70		P 690		
- Acciai da utensili per lavorazioni a caldo	- Hot working steels	1.2067	102 Cr 6	17350	BL 3	L 3	
- Acciai inossidabili ferritici	- Ferritic Stainless steel	1.2311	40 CrMnMo 7				
- Leghe di titanio	- Titanium alloys	1.2312	40 CrMnMoS 8 6	17350			
		1.2343	X 38 CrMoV 5-1	17350	BH 11	H 11	
		1.2344	X40CrMoV 5-1	17350	BH13	H13	HARDOX600
		1.2510	100 MnCrW 4		BO 1	O 1	HARDOX400 500
		1.2710	45 NiCr 6				
		1.2711	54 NiCrMo V 6				
		1.2714	56 NiCrMoV 7	17350			
		1.2833	100 V 1		BW 2	W 210	
		1.2842	90 MnCrV 8	17350	BO 2	O 2	
		1.3565	48 CrMo 4	17230	817 M40		
		1.4002	X 6 CrAl 13	E EN 10088	405 S 17	405	2302
		1.4006	X 10 Cr 13	E EN 10088	410 S21	410	
		1.4028	X 30 Cr 13	E EN 10088	420 S 45	420F	2304
		1.6587	17 CrNiMo 6	1672 T.3	820 A 16		
		1.8519	31 CrMoV 9	17211			
		1.8550	34 CrAlNi 7	17211			
		1.8550	34 CrAlNi 7	172111.4301	X 5 CrNi 18 10	E EN 10088	304 S 15

4

CLASSIFICAZIONE DEI MATERIALI GROUPS OF MATERIALS

ESEMPI DI MATERIALI - MATERIAL EXAMPLE

		W. - Nr.	DIN	EN	B.S.	AISI/SAE	SS
- Acciai da utensili per lavorazioni a freddo 12% Cr	- Tool steels for cold machining 12% Cr	1.2080	X 210 Cr 12	17350	BD 3	D 3	
- Acciai resistenti al calore = 17% Ni e 17% Cr	- High temperature steels = 17% Ni and 17% Cr	1.2379	X 155 CrVMo 12-1	17350	BD 2	D 2	2310
- Acciai inossidabili austenitici	- Austenitic stainless steel	1.2436	X 210 CrW 12	17350			2312
- Leghe di titanio indurite	- Titanium alloys hardened	1.2601	X 165 CrMoV 12	17350			
- Leghe a base di nichel non indurenti	- Nickel-based alloys	1.4301	X 5 CrNi 18 10	E EN 10088	304 S 15	304	2332
		1.4305	X 12 CrNi S 18 9	E EN 10088	303 S 22	303	2346
		1.4571	X 6CrNiMoTi 17-12-2	E EN 10088	320 S 18	316 Ti	2350
		1.4876	Incoloy 800	SEW 470	NA 15	B 163	
		1.4923	X 22 CrMoV 12-1	17240			
		1.4945	X 6 CrNiWNb 16 16				
		1.4962	X 12 CrNiWTi 16-13				
		1.5920	18 CrNi 8				
		1.6582	34 CrNiMo 6	EN 10083-1			
		2.4632	Nimonic 90	LW			
		2.4654	Waspalloy	LW			
		2.4665	Hastelloy X	LW			
		2.4670	Inconel 713	LW			
		2.4816	Inconel 600	17742			
		2.4856	Inconel 625	17744			
5							
- Leghe resistenti al calore	- Higt temperature alloys	2.4636	Udimet 700				
- Leghe a base di nichel indurenti	- Nickel-based alloys	2.4668	Inconel 718				
		2.4973	René 41				
			Astroloy				
			René 95				
			Stellite 6				
6							
- Alluminio puro	- Pure aluminium	3.0255	Al 99,5				
- Leghe d'alluminio non bonificato	- Non-hardened aluminium	3.2315	AlMgSi 1				
- Materiali malleabili	- Forging materials	3.3211	AlMg 1 SiCu				
		3.3535	AlMg 3				
		3.4365	AlZnMgCu 1,5				
7							
- Leghe d'alluminio bonificato	- Hardened aluminium	3.2151	G-Al Si6 Cu 4				
- Materiali malleabili	- Forging materials	3.2341	G-AlSi 5 Mg				
- Getti in lega leggera Si ≤ 10%	- Aluminium cast material Si ≤ 10%	3.2373	G-AlSi 9 Mg				
8							
- Getti in lega leggera Si > 10%	- Aluminium cast material Si > 10%	3.2381	G-AlSi 10 Mg				
- Leghe rame - zinco (ottone)	- Copper - zinc alloys (brass)	3.2581	G-AlSi 12				
- Leghe rame - stagno (bronzo)	- Copper - zinc alloys (bronze)		AlSi 17 Cu 4				
- Duroplastica laminata	- Duroplast laminated		Al Si 21 CuNiMg				
			AlSi 25 CuNiMg				
9							