

CL 104



25°-30°



STANDARD



CL 104R



25°-30°



DIN 1412 C



CL 107

OTTONE-BRONZO  
BRASS-BRONZE



12°-15°



STANDARD



CL 108

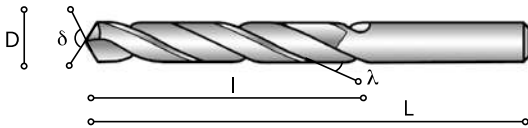
ALLUMINIO  
ALUMINIUM



35°-40°



STANDARD



CL104



CL104R



CL107



CL108



Dal Ø 0,3 al Ø 6 = 10 pz  
Dal Ø 6,1 al Ø 13 = 5 pz  
Dal Ø 13,25 al Ø 20 = 1 pz

D h8	L	l	CODE	HSS 5104..... €	HSS 6104..... € QUARTZ	HSS 5107..... €	HSS 5108..... €
0,3	19	3	....00030	4,65			
0,35	19	4	....00035	3,87			
0,4	20	5	....00040	3,23			
0,45	20	5	....00045	3,23			
0,5	22	6	....00050	3,23			
0,55	24	7	....00055	3,23			
0,6	24	7	....00060	3,23			
0,65	26	8	....00065	2,68			
0,7	28	9	....00070	2,60			
0,75	28	9	....00075	2,60			
0,8	30	10	....00080	2,46			
0,85	30	10	....00085	2,46			
0,9	32	11	....00090	2,46			
0,95	32	11	....00095	2,46			
1	34	12	....00100	1,59	1,83		
1,05	34	12	....00105	1,59			
1,1	36	14	....00110	1,59	1,83		
1,15	36	14	....00115	1,66			
1,2	38	16	....00120	1,74	1,89		
1,25	38	16	....00125	1,27	1,89		
1,3	38	16	....00130	1,42	1,89		
1,35	40	18	....00135	1,51			
1,4	40	18	....00140	1,42	1,89		
1,45	40	18	....00145	1,51			
1,5	40	18	....00150	1,27	1,83	3,76	3,54
1,55	43	20	....00155	1,51			
1,6	43	20	....00160	1,34	1,97	3,76	3,54
1,65	43	20	....00165	1,51			
1,7	43	20	....00170	1,34	1,97	3,76	3,54
1,75	46	22	....00175	1,11	1,97		

CL 104



25°-30°



STANDARD



CL 104R



25°-30°



DIN 1412 C



CL 107

OTTONE-BRONZO  
BRASS-BRONZE



12°-15°



STANDARD



CL 108

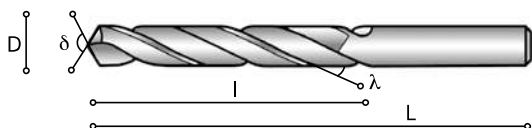
ALLUMINIO  
ALUMINIUM



35°-40°



STANDARD



Dal Ø 0,3 al Ø 6 = 10 pz  
Dal Ø 6,1 al Ø 13 = 5 pz  
Dal Ø 13,25 al Ø 20 = 1 pz

CL104



CL104R



CL107



CL108



D h8	L	l	CODE	HSS 5104..... €	HSS 6104..... € QUARTZ	HSS 5107..... €	HSS 5108..... €
1,8	46	22	....00180	1,27	1,86	3,76	3,54
1,85	46	22	....00185	1,34			
1,9	46	22	....00190	1,27	1,86	3,76	3,54
1,95	49	24	....00195	1,34			
2	49	24	....00200	1,11	1,71	3,44	3,37
2,05	49	24	....00205	1,42			
2,1	49	24	....00210	1,27	1,93	3,44	3,37
2,15	53	27	....00215	1,51			
2,2	53	27	....00220	1,27	1,93	3,44	3,37
2,25	53	27	....00225	1,42	1,89		
2,3	53	27	....00230	1,27	1,93	3,44	3,37
2,35	53	27	....00235	1,42			
2,4	57	30	....00240	1,42	1,93	3,77	3,69
2,45	57	30	....00245	1,66			
2,5	57	30	....00250	1,42	1,89	3,52	3,46
2,55	57	30	....00255	1,66			
2,6	57	30	....00260	1,51	2,20	3,77	3,69
2,65	57	30	....00265	1,66			
2,7	61	33	....00270	1,42	2,20	3,93	3,85
2,75	61	33	....00275	1,42	2,02		
2,8	61	33	....00280	1,42	2,16	3,93	3,85
2,85	61	33	....00285	1,74			
2,9	61	33	....00290	1,42	2,16	3,93	3,85
2,95	61	33	....00295	1,66			
3	61	33	....00300	1,42	1,93	3,93	3,85
3,05	65	36	....00305	1,82			
3,1	65	36	....00310	1,66	2,61	4,10	4,02
3,15	65	36	....00315	1,82			
3,2	65	36	....00320	1,47	2,61	4,10	4,02
3,25	65	36	....00325	1,59	2,61		
3,3	65	36	....00330	1,66	2,61	4,10	4,02
3,35	65	36	....00335	1,82			
3,4	70	39	....00340	1,66	2,61	4,35	4,25
3,45	70	39	....00345	1,98			

D h8	L	I	CODE	HSS 5104..... €	HSS 6104..... € QUARTZ	HSS 5107..... €	HSS 5108..... €
3,5	70	39	....00350	1,66	2,31	4,35	4,25
3,55	70	39	....00355	1,98			
3,6	70	39	....00360	1,74	2,83	4,42	4,34
3,65	70	39	....00365	1,98			
3,7	70	39	....00370	1,74	2,83	4,42	4,34
3,75	70	39	....00375	1,89	2,88		
3,8	75	43	....00380	1,74	2,98	4,67	4,59
3,85	75	43	....00385	2,20			
3,9	75	43	....00390	1,98	2,98	4,67	4,59
3,95	75	43	....00395	2,20			
4	75	43	....00400	1,89	2,61	4,67	4,59
4,05	75	43	....00405	2,20			
4,1	75	43	....00410	2,06	3,14	4,75	4,67
4,15	75	43	....00415	2,20			
4,2	75	43	....00420	2,14	3,14	4,98	4,67
4,25	75	43	....00425	2,14	3,10		
4,3	80	47	....00430	2,14	3,34	5,73	5,63
4,35	80	47	....00435	2,60			
4,4	80	47	....00440	2,14	3,42	5,73	5,63
4,45	80	47	....00445	2,60			
4,5	80	47	....00450	2,06	2,95	5,73	5,63
4,55	80	47	....00455	2,60			
4,6	80	47	....00460	2,20	3,49	6,02	5,79
4,65	80	47	....00465	2,60			
4,7	80	47	....00470	2,20	3,49	6,02	5,79
4,75	80	47	....00475	2,28	3,49		
4,8	86	52	....00480	2,28	3,49	6,02	5,79
4,85	86	52	....00485	3,39			
4,9	86	52	....00490	2,28	3,49	6,02	5,79
4,95	86	52	....00495	3,39			
5	86	52	....00500	2,20	3,27	6,02	5,79
5,05	86	52	....00505	3,39			
5,1	86	52	....00510	2,52	4,54	6,53	6,12
5,15	86	52	....00515	4,10			
5,2	86	52	....00520	2,52	4,54	6,53	6,12
5,25	86	52	....00525	3,00	4,44		
5,3	86	52	....00530	2,62	4,54	6,53	6,12
5,35	93	57	....00535	4,10			
5,4	93	57	....00540	3,00	4,54	7,63	7,63
5,45	93	57	....00545	4,10			
5,5	93	57	....00550	3,00	4,21	7,30	7,30
5,55	93	57	....00555	4,25			
5,6	93	57	....00560	3,00	4,72	8,42	7,87
5,65	93	57	....00565	4,25			
5,7	93	57	....00570	3,00	4,72	8,42	7,87
5,75	93	57	....00575	3,00	4,72		
5,8	93	57	....00580	3,00	4,72	8,42	7,87
5,85	93	57	....00585	4,25			
5,9	93	57	....00590	3,00	4,72	8,42	7,87
5,95	93	57	....00595	3,00			
6	93	57	....00600	3,00	4,22	7,98	7,48
6,05	101	63	....00605	4,42			
6,1	101	63	....00610	3,47	5,57	9,01	8,44
6,15	101	63	....00615	4,42			
6,2	101	63	....00620	3,47	5,57	9,01	8,44
6,25	101	63	....00625	3,70	5,57		
6,3	101	63	....00630	3,47	5,57	9,01	8,44
6,35	101	63	....00635	3,47			
6,4	101	63	....00640	3,70	5,57	9,61	9,00
6,45	101	63	....00645	5,67			

CL 104



25°-30°



STANDARD



CL 104R



25°-30°



DIN 1412 C



CL 107

OTTONE-BRONZO  
BRASS-BRONZE



12°-15°



STANDARD



CL 108

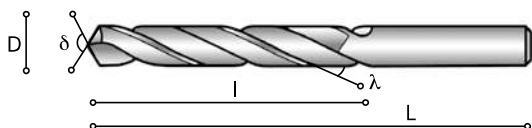
ALLUMINIO  
ALUMINIUM



35°-40°



STANDARD



Dal  $\varnothing$  0,3 al  $\varnothing$  6 = 10 pz  
Dal  $\varnothing$  6,1 al  $\varnothing$  13 = 5 pz  
Dal  $\varnothing$  13,25 al  $\varnothing$  20 = 1 pz

CL104



CL104R



CL107



CL108



D h8	L	l	CODE	HSS 5104..... €	HSS 6104..... € QUARTZ	HSS 5107..... €	HSS 5108..... €
6,5	101	63	....00650	3,62	5,16	9,45	8,84
6,55	101	63	....00655	5,67			
6,6	101	63	....00660	3,70	6,39	9,86	9,23
6,65	101	63	....00665	5,67			
6,7	101	63	....00670	3,70	6,39	9,86	9,23
6,75	109	69	....00675	4,42	6,39		
6,8	109	69	....00680	4,17	6,39	9,86	9,23
6,85	109	69	....00685	6,77			
6,9	109	69	....00690	4,65	6,39	9,86	9,23
6,95	109	69	....00695	6,77			
7	109	69	....00700	4,34	6,15	9,69	9,08
7,05	109	69	....00705	7,25			
7,1	109	69	....00710	4,81	7,28	13,09	13,09
7,15	109	69	....00715	7,25			
7,2	109	69	....00720	4,97	7,28	13,09	13,09
7,25	109	69	....00725	4,57	7,01		
7,3	109	69	....00730	4,97	7,34	13,09	13,09
7,35	109	69	....00735	7,25			
7,4	109	69	....00740	4,97	7,34	13,09	13,09
7,45	109	69	....00745	5,99			
7,5	109	69	....00750	4,49	6,46	10,87	10,67
7,55	117	75	....00755	8,58			
7,6	117	75	....00760	5,36	8,34	14,60	14,60
7,65	117	75	....00765	8,58			
7,7	117	75	....00770	5,36	8,34	14,60	14,60
7,75	117	75	....00775	5,36	8,18		
7,8	117	75	....00780	5,36	8,18	14,60	14,60
7,85	117	75	....00785	8,58			
7,9	117	75	....00790	5,36	8,18	13,01	14,60
7,95	117	75	....00795	8,58			
8	117	75	....00800	4,81	7,23	12,01	11,24
8,1	117	75	....00810	5,76	8,73	15,33	15,33
8,2	117	75	....00820	5,76	8,73	15,33	15,33
8,25	117	75	....00825	5,59	8,51		

D h8	L	I	CODE	HSS 5104..... €	HSS 6104..... € QUARTZ	HSS 5107..... €	HSS 5108..... €
8,3	117	75	....00830	5,76	8,73	15,33	15,33
8,4	117	75	....00840	5,76	8,73	15,33	15,33
8,5	117	75	....00850	5,52	7,85	12,69	11,88
8,6	125	81	....00860	6,93	10,61	17,97	17,97
8,7	125	81	....00870	6,93	10,61	17,97	17,97
8,75	125	81	....00875	6,93	10,66		
8,8	125	81	....00880	6,93	10,82	17,97	17,97
8,9	125	81	....00890	6,93	10,82	17,97	17,97
9	125	81	....00900	6,77	9,74	13,72	12,85
9,1	125	81	....00910	7,00	11,99	20,39	20,39
9,2	125	81	....00920	7,00	11,99	20,39	20,39
9,25	125	81	....00925	7,48	11,39		
9,3	125	81	....00930	7,48	11,99	20,39	20,39
9,4	125	81	....00940	7,48	11,99	20,39	20,39
9,5	125	81	....00950	7,40	10,68	15,19	14,22
9,6	133	87	....00960	7,87	13,05	22,79	22,79
9,7	133	87	....00970	7,87	13,05	22,79	22,79
9,75	133	87	....00975	8,19	12,75		
9,8	133	87	....00980	8,19	12,79	22,79	22,79
9,9	133	87	....00990	8,19	12,79	22,79	22,79
10	133	87	....01000	8,03	11,46	16,45	16,14
10,1	133	87	....01010	8,58	15,71		
10,2	133	87	....01020	8,58	15,71		
10,25	133	87	....01025	10,31	16,99		
10,3	133	87	....01030	11,73	16,99		
10,4	133	87	....01040	11,73	16,99		
10,5	133	87	....01050	10,23	14,39	22,19	21,76
10,6	133	87	....01060	11,73	18,13		
10,7	142	94	....01070	14,31	18,13		
10,75	142	94	....01075	13,30	17,28		
10,8	142	94	....01080	14,31	19,24		
10,9	142	94	....01090	14,31	19,24		
11	142	94	....01100	11,88	16,66	22,87	22,87
11,1	142	94	....01110	15,26	20,15		
11,2	142	94	....01120	15,11	20,15		
11,25	142	94	....01125	13,94	18,58		
11,3	142	94	....01130	15,26	20,15		
11,4	142	94	....01140	15,26	20,15		
11,5	142	94	....01150	12,44	17,51	27,59	25,83
11,6	142	94	....01160	15,26	22,03		
11,7	142	94	....01170	15,26	22,03		
11,75	142	94	....01175	14,08	21,61		
11,8	142	94	....01180	15,26	22,03		
11,9	151	101	....01190	17,25	22,03		
12	151	101	....01200	13,69	19,33	28,53	26,71
12,1	151	101	....01210	17,16	24,13		
12,2	151	101	....01220	18,41	24,13		
12,25	151	101	....01225	15,35	24,07		
12,3	151	101	....01230	15,35	24,13		
12,4	151	101	....01240	18,41	24,13		
12,5	151	101	....01250	15,11	20,79	29,69	30,50
12,6	151	101	....01260	18,41	25,32		
12,7	151	101	....01270	15,58	25,32		
12,75	151	101	....01275	15,58	24,17		
12,8	151	101	....01280	18,09	25,32		
12,9	151	101	....01290	21,87	25,32		
13	151	101	....01300	14,71	21,96	28,98	29,69
13,25	160	108	....01325	23,76	40,10		
13,5	160	108	....01350	19,36	40,10		
13,75	160	108	....01375	23,76	40,41		

CL 104



25°-30°



STANDARD



CL 104R



25°-30°



DIN 1412 C



CL 107

OTTONE-BRONZO  
BRASS-BRONZE



12°-15°



STANDARD



CL 108

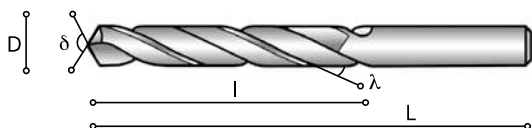
ALLUMINIO  
ALUMINIUM



35°-40°



STANDARD



Dal  $\varnothing$  0,3 al  $\varnothing$  6 = 10 pz  
Dal  $\varnothing$  6,1 al  $\varnothing$  13 = 5 pz  
Dal  $\varnothing$  13,25 al  $\varnothing$  20 = 1 pz

CL104



CL104R



CL107



CL108

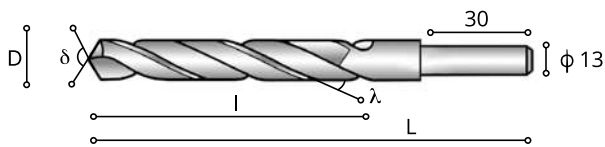


D h8	L	I	CODE	HSS 5104..... €	HSS 6104..... € QUARTZ	HSS 5107..... €	HSS 5108..... €
14	160	108	....01400	19,36	40,41		
14,25	169	114	....01425	25,96	51,13		
14,5	169	114	....01450	22,51	51,13		
14,75	169	114	....01475	25,96	52,17		
15	169	114	....01500	22,51	52,17		
15,25	178	120	....01525	37,13	57,40		
15,5	178	120	....01550	26,51	57,40		
15,75	178	120	....01575	37,13	62,82		
16	178	120	....01600	28,17	62,82		
16,25	184	125	....01625	52,87	68,56		
16,5	184	125	....01650	30,84	68,56		
16,75	184	125	....01675	54,68	69,54		
17	184	125	....01700	30,84	69,54		
17,25	191	130	....01725	58,69	75,88		
17,5	191	130	....01750	34,85	75,88		
17,75	191	130	....01775	58,69	82,74		
18	191	130	....01800	34,85	82,74		
18,25	198	135	....01825	62,16	92,27		
18,5	198	135	....01850	40,51	92,27		
18,75	198	135	....01875	62,16	92,52		
19	198	135	....01900	40,51	92,52		
19,25	205	140	....01925	79,76	102,32		
19,5	205	140	....01950	44,07	102,32		
19,75	205	140	....01975	79,76	102,97		
20	205	140	....02000	47,92	102,97		

CL 104 CR 



STANDARD



CL 104CR



A richiesta anche con codolo ridotto diam 10 x 30 mm di lunghezza. Con quantità min 10pz il prezzo è uguale al diam. 13x30  
 On request also with reduced shank diam 10 x 30 mm length. With Min quantity of 10 pcs the price will be the same as per diam 13x30

D h8	L	I	CODE	HSS 5104..... €
13,5	160	108	....01350R	23,84
14	160	108	....01400R	23,84
14,5	169	114	....01450R	26,99
15	169	114	....01500R	26,99
15,5	178	120	....01550R	31,00
16	178	120	....01600R	32,65
16,5	184	125	....01650R	35,32
17	184	125	....01700R	35,32
17,5	191	130	....01750R	39,34
18	191	130	....01800R	39,34
18,5	198	135	....01850R	44,99
19	198	135	....01900R	44,99
19,5	205	140	....01950R	48,55
20	205	140	....02000R	52,40



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 <sup>2</sup>	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



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		



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



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



$$= \text{mt/min}$$



$$= \text{mm/rev}$$

(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 <sup>2</sup>	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		
	QUARTZ		QUARTZ		QUARTZ			
CL910		CL920		CL930		CL270	CL271	CL272
HSS						HSS		

Pag. 378	TIPO DI ACCIAIO TYPE OF STEEL	N/mm <sup>2</sup>	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  
 $= (\text{mm/min} \times 1000) / (D \times 3,14)$



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

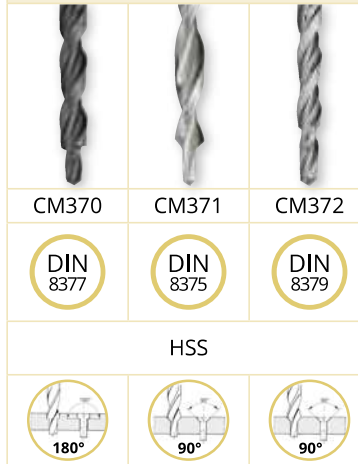


= mt/min



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

## PUNTE A DUE DIAMETRI SUBLAND TWIST DRILLS



Pag. 378	TIPO DI ACCIAIO TYPE OF STEEL	N/mm <sup>2</sup>	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
<b>a</b>	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>b</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
<b>c</b>	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
<b>d</b>	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
<b>e</b>	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
<b>f</b>	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
<b>g</b>	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
<b>h</b>	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