















Articolo Article	Tipo Type	Campo d'applicazione Application field	Angolo vertice Point angle	Materiale tipo Tool material	Superficie Surface	Standard	gamma dal (mm) diameter range (mm)	pag page
ALESATORI REAMERS								
ALESATORI A MANO CODOLO CILINDRICO HAND REAMERS SHANK								
 AL 111		Acciai comuni Standard steel		HSS	White	DIN 206/ B	3-40	86
 AS 115		Acciai comuni Standard steel		HSS	White	DIN 9/ A	5 -20	87
ALESATORI A MACCHINA MACHINE REAMERS								
 AM 117		Acciai tenaci Hardened steel		HSS+5%CO	White	DIN 212 B/ D	2 - 20	88
 AM 112		Acciai tenaci Hardened steel		HSS+5%CO	White	DIN 208/ B	5 - 40	90
ALESATORI A MACCHINA TIPO A MANICOTTO FORO CONICO 1:30 SHELL REAMERS, TAPER HOLE 1:30								
 AMM 113		Acciai tenaci Hardened steel		HSS+5%CO	White	DIN 219/ B	20 - 80	91
 AFE 116		Acciai tenaci Hardened steel		HSS+5%CO	White	DIN 219/ C	25 - 60	91
MANDRINI PER ALESATORI A MANICOTTO ARBOR FOR SHELL REAMERS								
 MAN 114				1.5990 - DIN16 CrNi4	White	DIN 217/ B	10 - 40	92
SVASATORI COUNTERSINKS								
CODOLO CILINDRICO SHANK								
 SV 74		Acciai tenaci Hardened steel		HSS+5%CO	White	DIN 335 C	10,4 - 31	93
 SV 74		Acciai tenaci Hardened steel		HSS+5%CO	Sapphire MULTI	DIN 335 C	10,4 - 31	93
CODOLO CONO MORSE MORSE TAPER SHANK								
 SV 72		Acciai tenaci Hardened steel		HSS+5%CO	White	DIN 334 B DIN 335 B	25 - 50	93
SVASATORI PER SEDI DI VITI A TESTA CILINDRICA COUNTERBORES FOR CAPSCREW								
CODOLO CILINDRICO SHANK								
 BR 51		Acciai comuni Standard steel		HSS+5%CO	White	DIN 373	M3 - M20	94
CODOLO CONO MORSE MORSE TAPER SHANK								
 BR 52		Acciai comuni Standard steel		HSS+5%CO	White	DIN 375	M6 - M24	95



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

 mm/min
 $= mm/rev \times rpm$

 = mt/min

 = mm/rev (vedi tabella - see table page pag. 67)

				ALEATORI A MANO HAND REAMERS		ALEATORI A MACCHINA MACHINE REAMERS						SVASATORI CONICI COUNTERSINKS			SVASATORI PER SEDI DI VITTA TESTA CILINDRICA COUNTER BORES FOR CAPSCREWS		
																	
				AL111	AS115	AM117	AM112	AMM113	AFE116	MAN114		SV74	SV74	SV72	BR51	BR52	
																	
				HSS		HSS+5%Co						HSS+5%Co					
																	
Pag. 330	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	mt/min mm/rev	mt/min mm/rev	mt/min mm/rev	
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	160			20 f	20 f	18 f	15 f		30 d	40 d	30 d	25 c	25 c	
	Acciai da costruzione Structural steel	2	700	220			18 f	18 f	15 f	12 e		25 c	35 c	25 c	20 c	20 c	
	Acciai da tempra Hardening steel	3	900	280			15 f	15 f	12 e	10 d		20 c	30 c	20 c	18 b	18 b	
	Acciaio automatico Automatic steel	4	1200	373			10 d	10 d	8 d	6 d		10 b	15 c	10 b	10 b	10 b	
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	268			12 e	12 e	10 d	8 d		12 b	22 b	12 b	8 b	8 b	
	Austenitico Austenitic	3	850	268			6 c	6 c	4 c	2 b		10 b	20 b	10 b	4 b	4 b	
	Ferritico+austenitico Ferritic austenitic	4	1000	317			4 c	4 c	2 b	2 a		5 a	10 a	5 a	4 a	4 a	
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	160			15 g	15 g	12 e	10 e		20 d	30 d	20 d	20 d	20 d	
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	220			12 e	12 e	10 d	8 d		12 d	20 d	12 d	10 c	10 c	
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	160			12 e	12 e	10 d	8 d		10 b	18 d	10 b	10 c	10 c	
	Leghe di titanio Titanium alloys	5	900	280			4 c	4 c	6 d	4 c		5 a	10 a	5 a	5 c	5 c	
RAME COPPER	Rame Copper	9	350	110			20 g	20 g	15 f	12 e		25 c	35 c	25 c	20 b	20 b	
	Ottone Brass	9	700	220			25 h	25 h	18 f	15 f		20 c	30 c	20 c	18 b	18 b	
	Bronzo Bronze	9	700	220			20 g	20 g	15 f	12 e		25 d	35 d	25 d	20 b	20 b	
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	220			6 c	6 c	4 c	2 b		5 a	10 a	5 a	5 c	5 c	
	Leghe di nichel Nichel alloys	6	900	280			4 c	4 c	2 b	1 a		1 a	3 a	1 a	1 a	1 a	
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110					20 h	18 h		30 e	40 e	30 e	25 d	25 d	
	Alluminio con leghe Alloyed aluminium	7	400	125					18 h	15 h		25 d	35 d	25 d	20 d	20 d	
	Alluminio con leghe Alloyed aluminium	7	500	160					15 f	12 e		20 c	30 c	20 c	18 d	18 d	

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

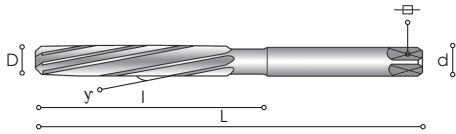
AL 111



7°- 10°



AL111



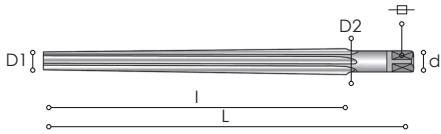
D H7	L	l	d e9		z	CODE	HSS 1111..... €
3	62	31	3	2,1	4	...03000	28,18
4	76	38	4	3	6	...04000	28,76
5	87	44	5	3,8	6	...50000	32,19
6	93	47	6	4,3	6	...60000	31,53
7	107	54	7	5,5	6	...70000	36,28
8	115	58	8	6,2	6	...80000	39,56
9	124	62	9	7	6	...90000	40,84
10	133	66	10	8	6	...10000	41,78
11	142	71	11	9	6	...11000	47,91
12	152	76	12	10	8	...12000	46,91
13	152	76	13	10	8	...13000	56,36
14	163	81	14	11	8	...14000	54,94
15	163	81	15	11	8	...15000	59,92
16	175	87	16	12	8	...16000	61,34
17	175	87	17	12	8	...17000	76,08
18	188	93	18	14,5	8	...18000	73,84
19	188	93	19	14,5	8	...19000	84,25
20	201	100	20	16	8	...20000	88,58
21	201	100	21	16	8	...21000	103,09
22	215	107	22	18	8	...22000	96,41
23	215	107	23	18	8	...23000	121,43
24	231	115	24	20	8	...24000	114,85
25	231	115	25	20	10	...25000	122,78
26	231	115	26	20	10	...26000	132,79
27	247	124	27	22	10	...27000	169,14
28	247	124	28	22	10	...28000	154,66
29	247	124	29	22	10	...29000	176,92
30	247	124	30	22	10	...30000	168,75
32	265	133	32	24	10	...32000	188,17
34	284	142	34	29	10	...34000	207,24
35	284	142	35	29	10	...35000	219,15
36	284	142	36	29	10	...36000	230,78
38	305	152	38	32	12	...38000	267,79
40	305	152	40	32	12	...40000	297,69

ALESATOKI A MANO HAND KEAMERKS HAND-REIBAHLEN ALESOIKS A MAIN ESCARIADOR DE MANO

AS 115
 CONICITÀ 1:50
 TAPER 1:50



AS115



D Norm.	D1	D2	L	l	dh11		z	CODE	HSS 1115..... €
5	4,9	6,36	100	73	6,3	4,9	5	....50000	42,85
6	5,9	8	135	105	8	6,2	5	....60000	53,03
6,5	6,4	8,6	140	110	8	6,2	5	....65000	56,84
8	7,9	10,8	180	145	10	8	5	....80000	61,21
10	9,9	13,4	215	175	12,5	10	7	....10000	78,75
12	11,8	16	255	210	14	11	7	....12000	107,35
16	15,8	20,4	280	230	18	14,5	9	....16000	164,49
20	19,8	24,8	310	250	22,4	18	9	....20000	342,49



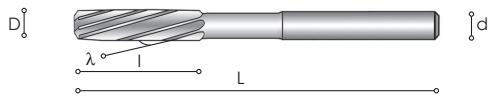
AM 117



7°- 10



AM117



DH7	L	l	d h9	Z	CODE	HSS+5%Co 1117..... €
2	49	11	2	4	...02000	24,60
2,1	49	11	2,1	4	...21000	28,99
2,2	53	12	2,2	4	...22000	28,99
2,3	53	12	2,3	4	...23000	28,99
2,4	57	14	2,4	4	...24000	28,99
2,5	57	14	2,5	4	...25000	23,28
2,6	57	14	2,6	4	...26000	27,18
2,7	61	15	2,7	4	...27000	27,18
2,8	61	15	2,8	4	...28000	27,18
2,9	61	15	2,9	4	...29000	27,18
3	61	15	3	4	...30000	23,28
3,1	65	16	3,1	4	...31000	28,39
3,2	65	16	3,2	4	...32000	28,39
3,3	65	16	3,3	4	...33000	28,39
3,4	70	18	3,4	4	...34000	28,39
3,5	70	18	3,5	6	...35000	24,60
3,6	70	18	3,6	6	...36000	30,05
3,7	70	18	3,7	6	...37000	30,05
3,8	75	19	4	6	...38000	30,05
3,9	75	19	4	6	...39000	30,05
4	75	19	4	6	...40000	24,60
4,1	75	19	4	6	...41000	30,81
4,2	75	19	4	6	...42000	30,81
4,3	80	21	4,5	6	...43000	30,81
4,4	80	21	4,5	6	...44000	30,81
4,5	80	21	4,5	6	...45000	27,33
4,6	80	21	4,5	6	...46000	32,19
4,7	80	21	4,5	6	...47000	32,19
4,8	86	23	5	6	...48000	32,19
4,9	86	23	5	6	...49000	32,19
5	86	23	5	6	...50000	27,33
5,1	86	23	5	6	...51000	35,65
5,2	86	23	5	6	...52000	35,65
5,3	86	23	5	6	...53000	35,65
5,4	93	26	5,6	6	...54000	35,65
5,5	93	26	5,6	6	...55000	29,40
5,6	93	26	5,6	6	...56000	33,93
5,7	93	26	5,6	6	...57000	33,93
5,8	93	26	5,6	6	...58000	33,93
5,9	93	26	5,6	6	...59000	33,93

D H7	L	I	d h9	Z	CODE	HSS+5%Co 1117..... €
6	93	26	5,6	6	....60000	28,74
6,1	101	28	6,3	6	....61000	38,18
6,2	101	28	6,3	6	....62000	38,18
6,3	101	28	6,3	6	....63000	38,18
6,4	101	28	6,3	6	....64000	38,18
6,5	101	28	6,3	6	....65000	30,13
6,6	101	28	6,3	6	....66000	36,26
6,7	101	28	6,3	6	....67000	36,26
6,8	109	31	7,1	6	....68000	36,26
6,9	109	31	7,1	6	....69000	36,26
7	109	31	7,1	6	....70000	30,13
7,1	109	31	7,1	6	....71000	40,22
7,2	109	31	7,1	6	....72000	40,22
7,3	109	31	7,1	6	....73000	40,22
7,4	109	31	7,1	6	....74000	40,22
7,5	109	31	7,1	6	....75000	31,46
7,6	117	33	8	6	....76000	37,73
7,7	117	33	8	6	....77000	37,73
7,8	117	33	8	6	....78000	37,73
7,9	117	33	8	6	....79000	37,73
8	117	33	8	6	....80000	31,46
8,1	117	33	8	6	....81000	44,89
8,2	117	33	8	6	....82000	44,89
8,3	117	33	8	6	....83000	44,89
8,4	117	33	8	6	....84000	44,89
8,5	117	33	8	6	....85000	35,57
8,6	125	36	9	6	....86000	40,84
8,7	125	36	9	6	....87000	40,84
8,8	125	36	9	6	....88000	40,84
8,9	125	36	9	6	....89000	40,84
9	125	36	9	6	....90000	36,90
9,1	125	36	9	6	....91000	46,77
9,2	125	36	9	6	....92000	46,77
9,3	125	36	9	6	....93000	46,77
9,4	125	36	9	6	....94000	46,77
9,5	125	36	9	6	....95000	38,30
9,6	133	38	10	6	....96000	43,52
9,7	133	38	10	6	....97000	43,52
9,8	133	38	10	6	....98000	43,52
9,9	133	38	10	6	....99000	43,52
10	133	38	10	6	....10000	38,30
11	142	41	10	6	....11000	43,75
12	151	44	10	6	....12000	48,81
13	151	44	10	6	....13000	52,62
14	160	47	12,5	6	....14000	53,31
15	162	50	12,5	8	....15000	57,45
16	170	52	12,5	8	....16000	68,43
17	175	54	14	8	....17000	80,95
18	182	56	14	8	....18000	82,87
19	189	58	16	8	....19000	97,70
20	195	60	16	8	....20000	89,79

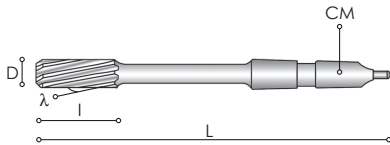
AM 112



7°- 10°



AM112



DH7	L	l	CM	Z	CODE	HSS+5%Co 1112..... €
5	133	23	1	6	...50000	45,24
6	138	26	1	6	...60000	45,83
7	150	31	1	6	...70000	48,57
8	156	33	1	6	...80000	48,57
9	162	36	1	6	...90000	52,72
10	168	38	1	6	...10000	52,48
11	175	41	1	6	...11000	55,49
12	182	44	1	8	...12000	55,49
13	182	44	1	8	...13000	61,06
14	189	47	1	8	...14000	59,37
15	204	50	2	8	...15000	62,11
16	210	52	2	8	...16000	67,60
17	214	54	2	8	...17000	73,17
18	219	56	2	8	...18000	73,17
19	223	58	2	8	...19000	80,45
20	228	60	2	8	...20000	73,52
21	232	62	2	10	...21000	85,22
22	237	64	2	10	...22000	78,96
23	241	66	2	10	...23000	87,09
24	268	68	3	10	...24000	91,11
25	268	68	3	10	...25000	95,37
26	273	70	3	10	...26000	105,89
27	277	71	3	10	...27000	118,42
28	277	71	3	10	...28000	124,12
29	281	73	3	10	...29000	128,04
30	281	73	3	10	...30000	129,04
32	317	77	4	10	...32000	158,27
34	321	78	4	10	...34000	173,19
35	321	78	4	12	...35000	187,83
36	325	79	4	12	...36000	208,51
38	329	81	4	12	...38000	223,62
40	329	81	4	12	...40000	239,10

ALESATORI A MACCHINA TIPO A MANICOTTO, FORO CONICO 1:30 SHELL REAMERS, TAPER HOLE 1:30 AUFSTECK-REIBAHLEN, KEGELBOHRUNG 1:30 ALESOIRS CREUX, ALESAGE CONIQUE 1:30 ESCARIADOR DE MAQUINA HUECO, AGUJERO CONICO 1:30

AMM 113

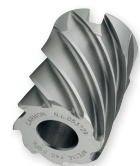
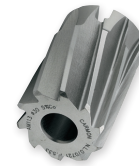
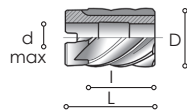
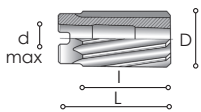


AFE 116



AMM113

AFE116



				AMM113		AFE116			
D H7	L	l	d max	Z	Z	CODE	HSS+5%Co 1113..... €	HSS+5%Co 1116..... €	
20	40	28	10	8		....20000	114,85		
21	40	28	10	8		....21000	116,59		
22	40	28	10	8		....22000	119,50		
23	40	28	10	8		....23000	120,88		
24	45	32	13	10		....24000	126,07		
25	45	32	13	10	8	....25000	127,46	128,74	
26	45	32	13	10	8	....26000	132,79	132,79	
27	45	32	13	10	8	....27000	138,95	138,95	
28	45	32	13	10	8	....28000	138,95	138,95	
29	45	32	13	10	8	....29000	146,91	146,91	
30	45	32	13	10	8	....30000	146,91	146,91	
31	50	36	16	10		....31000	157,32		
32	50	36	16	10	8	....32000	152,69	157,32	
33	50	36	16	10		....33000	167,54		
34	50	36	16	10	8	....34000	167,54	167,54	
35	50	36	16	12		....35000	167,54		
36	56	40	19	12	8	....36000	177,86	183,88	
37	56	40	19	12		....37000	187,99		
38	56	40	19	12	8	....38000	187,99	187,99	
39	56	40	19	12		....39000	201,26		
40	56	40	19	12	8	....40000	197,44	201,26	
42	56	40	19	12	8	....42000	212,47	212,47	
44	63	45	22	12		....44000	232,93		
45	63	45	22	12	8	....45000	239,05	239,05	
46	63	45	22	14		....46000	246,22		
48	63	45	22	14	8	....48000	257,44	257,44	
50	63	45	22	14	8	....50000	259,51	269,63	
52	71	50	27	14	8	....52000	298,28	298,28	
55	71	50	27	14	8	....55000	314,66	314,66	
56	71	50	27	16	10	....56000	395,52	395,52	
58	71	50	27	16	10	....58000	335,12	335,12	
60	71	50	27	16	10	....60000	353,50	367,27	
62	80	56	32	16		....62000	427,54		
65	80	56	32	16		....65000	478,98		
68	80	56	32	16		....68000	502,55		
70	80	56	32	16		....70000	511,63		
72	90	63	40	16		....72000	571,79		
75	90	63	40	16		....75000	607,06		
78	90	63	40	16		....78000	647,66		
80	90	63	40	20		....80000	686,12		