

REAMERS

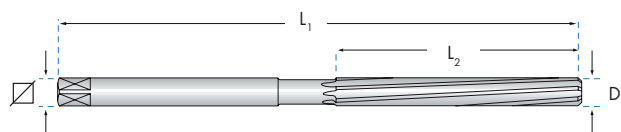


BLUE-MASTER[®]
by celesa

CUTTING TECHNOLOGIES

HSS HAND REAMERS DIN 206B

Ref. EM1

**DIN
206B**
HSS
**TOL
H7**


EM1					EM1					EM1					EM1				
D ₁ mm	L ₁ mm	L ₂ mm	∠	€	D ₁ mm	L ₁ mm	L ₂ mm	∠	€	D ₁ mm	L ₁ mm	L ₂ mm	∠	€	D ₁ mm	L ₁ mm	L ₂ mm	∠	€
1,50	41	20	1,12	31,59	8,75	124	62	7,10	42,74	19,50	201	100	16,00	139,52	35,00	284	142	28,00	331,02
2,00	50	25	1,60	23,82	9,00	124	62	7,10	30,33	20,00	201	100	16,00	117,82	35,50	284	142	28,00	451,50
2,25	54	27	1,80	30,13	9,25	124	62	7,10	44,74	20,50	201	100	16,00	170,30	36,00	284	142	28,00	346,69
2,50	58	29	2,00	23,82	9,50	124	62	7,10	37,14	13/16"	201	100	16,00	144,80	36,50	284	142	28,00	488,22
2,75	62	31	2,25	30,13	9,75	133	66	8,00	48,88	21,00	201	100	16,00	122,98	37,00	284	142	28,00	401,90
3,00	62	31	2,25	23,82	10,00	133	66	8,00	44,74	21,50	215	107	18,00	184,11	37,50	284	142	28,00	523,50
1/8	66	33	2,50	35,62	10,25	133	66	8,00	31,34	22,00	215	107	18,00	127,34	38,00	305	152	31,50	401,95
3,25	66	33	2,50	32,87	10,50	133	66	8,00	56,51	7/8"	215	107	18,00	206,48	38,50	305	152	31,50	523,50
3,50	71	35	2,80	24,97	10,75	142	71	9,00	41,54	22,50	215	107	18,00	197,49	39,00	305	152	31,50	401,95
3,75	71	35	2,80	32,87	11,00	142	71	9,00	56,51	23,00	215	107	18,00	132,91	39,50	305	152	31,50	523,50
5/32"	76	38	3,15	37,28	11,25	142	71	9,00	35,34	23,50	215	107	18,00	227,08	40,00	305	152	31,50	401,95
4,00	76	38	3,15	23,82	7/16"	142	71	9,00	66,56	24,00	231	115	20,00	147,20	40,50	305	152	31,50	603,49
4,25	76	38	3,15	34,34	11,25	142	71	9,00	60,90	24,50	231	115	20,00	250,22	41,00	305	152	31,50	484,39
4,50	81	41	3,55	24,86	11,50	142	71	9,00	46,67	25,00	231	115	20,00	156,16	41,50	305	152	31,50	658,31
4,75	81	41	3,55	29,82	11,75	142	71	9,00	60,90	1"	231	115	20,00	216,35	42,00	305	152	31,50	484,39
3/16"	87	44	4,00	37,57	12,00	152	76	10,00	46,43	25,50	231	155	20,00	273,33	42,50	305	152	31,50	682,13
5,00	87	44	4,00	24,86	12,50	152	76	10,00	59,42	26,00	231	115	20,00	170,40	43,00	326	163	35,50	579,15
5,25	87	44	4,00	34,34	1/2"	152	76	10,00	73,74	26,50	231	115	20,00	294,91	43,50	326	163	35,50	832,23
5,50	93	47	4,50	24,86	13,00	152	76	10,00	59,42	27,00	247	124	22,40	185,48	44,00	326	163	35,50	579,15
5,75	93	47	4,50	34,34	13,50	163	81	11,20	63,97	27,50	247	124	22,40	302,00	44,50	326	163	35,50	832,52
6,00	93	47	4,50	24,86	14,00	163	81	11,20	63,43	28,00	247	124	22,40	191,58	45,00	326	163	35,50	612,57
6,25	100	50	5,00	34,34	9/16"	163	81	11,20	94,41	28,50	247	124	22,40	317,55	45,50	326	163	35,50	891,31
1/4"	100	50	5,00	29,42	14,50	163	81	11,20	82,03	29,00	247	124	22,40	296,76	46,00	326	163	35,50	687,93
6,50	100	50	5,00	24,86	15,00	163	81	11,20	69,29	29,50	247	124	22,40	352,55	46,50	326	163	35,50	979,10
6,75	107	54	5,60	34,34	15,50	175	87	12,50	89,28	30,00	247	124	22,40	254,18	47,00	326	163	35,50	751,74
7,00	107	54	5,60	24,86	5/8"	175	87	12,50	99,68	30,50	265	133	25,00	392,88	47,50	326	163	35,50	1.198,52
9/32"	107	54	5,60	46,47	16,00	175	87	12,50	75,37	31,00	265	133	25,00	301,64	48,00	347	174	40,00	821,48
7,25	107	54	5,60	40,84	16,50	175	87	12,50	107,57	31,50	265	133	25,00	424,78	48,50	347	174	40,00	1.049,47
7,50	107	54	5,60	26,29	17,00	175	87	12,50	90,84	32,00	265	133	25,00	305,84	49,00	347	174	40,00	837,90
7,75	115	58	6,30	40,84	17,50	188	93	14,00	120,07	32,50	265	133	25,00	381,72	49,50	347	174	40,00	1.091,30
5/16"	115	58	6,30	37,27	18,00	188	93	14,00	108,92	33,00	265	133	25,00	320,76	50,00	347	174	40,00	908,98
8,00	115	58	6,30	26,29	18,50	188	93	14,00	128,95	33,50	265	133	25,00	400,32					
8,25	115	58	6,30	42,82	19,00	188	93	14,00	110,79	34,00	284	142	28,00	326,08					
8,50	115	58	6,30	27,62	3/4"	201	100	16,00	147,50	34,50	284	142	28,00	413,14					

DECIMAL HAND REAMERS

EM1	
D ₁ mm	€
3,10 - 3,90	34,96
4,10 - 6,90	36,58
7,10 - 7,90	43,47
8,10 - 8,90	45,63
9,10 - 9,90	47,61
10,10 - 10,90	61,99
11,10 - 11,90	66,70
12,10 - 12,90	105,44

H7 TOLERANCE (in μ m)

1-3	3-6	6-10	10-18	18-30	30-50	50-80	80-120	120-180
+8	+10	+12	+15	+17	+21	+25	+29	+34
+4	+5	+6	+8	+9	+12	+14	+16	+20

FINE TOLERANCE (en μ m)

1,00-6	6,01-12
+4	+5
+0	+0



Centesimal precision reamers available on request

HSS PARIS TYPE HAND REAMERS

Ref. EMA

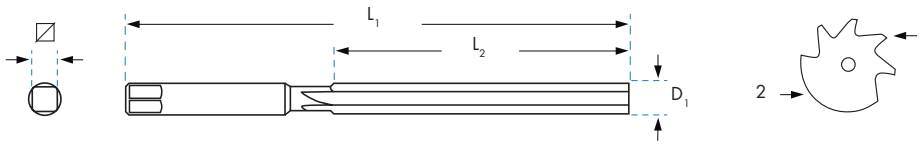
NFE
74112

HSS

TOL
K7



- 1.- Straight teeth
- 2.- Support side



EMA					
	D ₁ mm	L ₁ mm	L ₂ mm	∠	€
EMA0300	3,00	85	50	2,24	42,83*
EMA0400	4,00	100	60	3,15	42,83*
EMA0500	5,00	112	67	4,00	44,06*
EMA0600	6,00	118	71	4,50	44,06*
EMA0700	7,00	132	80	5,60	44,06*
EMA0800	8,00	140	85	6,30	48,46*
EMA0900	9,00	150	90	7,10	55,20*
EMA1000	10,00	160	95	8,00	55,20*
EMA1100	11,00	170	100	9,00	63,94*
EMA1200	12,00	180	106	10,00	63,94*
EMA1300	13,00	180	106	10,00	71,35*
EMA1400	14,00	190	112	11,20	71,35*
EMA1500	15,00	190	112	11,20	86,15*
EMA1600	16,00	200	118	12,50	86,15*
EMA1700	17,00	200	118	12,50	98,27*

EMA					
	D ₁ mm	L ₁ mm	L ₂ mm	∠	€
EMA1800	18,00	212	125	14,00	98,27*
EMA1900	19,00	212	125	14,00	114,43*
EMA2000	20,00	224	132	16,00	114,43*
EMA2100	21,00	224	132	16,00	131,92*
EMA2200	22,00	236	140	18,00	131,92*
EMA2300	23,00	236	140	18,00	154,20*
EMA2400	24,00	250	150	20,00	169,62*
EMA2500	25,00	250	150	20,00	169,62*
EMA2600	26,00	250	150	20,00	189,69*
EMA2700	27,00	265	160	22,40	189,69*
EMA2800	28,00	265	160	22,40	208,66*
EMA2900	29,00	265	160	22,40	235,58*
EMA3000	30,00	265	160	22,40	235,58*
EMA3200	32,00	280	170	25,00	267,89*
EMA3400	34,00	300	180	28,00	321,88*

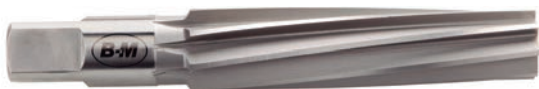
* Till end of stock

HAND REAMER FOR MORSE TAPER SHANK

Ref. ECM

DIN
204D

HSS



PRIOR NPT THREADING HAND REAMER

Ref. EMNPT

1:16

HSS

NPT



ECM					
	MT	∅ mm min. x max.	L ₁ mm	L ₂ mm	€
ECM0	0	6,547 - 9,722	93	61	84,33
ECM1	1	9,571 - 12,863	102	66	86,26
ECM2	2	14,733 - 18,679	121	79	119,00
ECM3	3	20,010 - 24,829	146	96	187,57
ECM4	4	26,229 - 32,410	179	119	322,33
ECM5	5	37,873 - 45,767	222	150	681,72

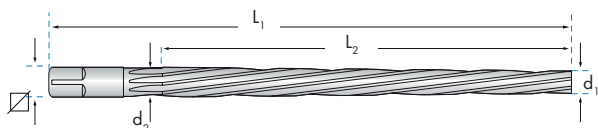
EMNPT						
	NPT Thread	∅ mm	∅ mm min. x max.	L ₁ mm	L ₂ mm	€
EMNPT1/16	NPT1/16	6,20	5,915 - 6,978	70	17	141,38
EMNPT1/8	NPT1/8	8,50	8,022 - 9,085	70	17	144,31
EMNPT1/4	NPT1/4	11,00	10,283 - 11,971	80	27	155,96
EMNPT3/8	NPT3/8	14,50	13,703 - 15,391	85	27	175,04
EMNPT1/2	NPT1/2	17,80	16,913 - 19,101	95	35	205,85

HSS HAND TAPER PIN REAMERS DIN 9B

Ref. EM2

**TOL
H9**
**DIN
9B**
HSS
**2%
1:50**

FOR TAPER PINS DIN 1



Sizes Ø 1-1,20-1,50-2 and 2,50
are manufactured with straight flutes

	D mm	Ø mm d ₁ x d ₂	L ₁ mm	L ₂ mm	∠	EM2	
						€	
EM20100	1,00	0,95 x 1,46	46	28	2,50	77,15	
EM20120	1,20	1,15 x 1,74	50	32	2,50	77,15	
EM20150	1,50	1,40 x 2,14	57	37	2,50	58,48	
EM20200	2,00	1,90 x 2,86	68	48	2,50	42,44	
EM20250	2,50	2,40 x 3,36	68	48	2,50	50,70	
EM20300	3,00	2,90 x 4,06	80	58	3,15	40,45	
EM20350	3,50	3,40 x 4,66	87	63	3,15	62,55	
EM20400	4,00	3,90 x 5,26	93	68	4,00	41,25	
EM20450	4,50	4,40 x 5,80	95	70	4,00	58,29	
EM20500	5,00	4,90 x 6,36	100	73	5,00	39,28	
EM20550	5,50	5,40 x 7,20	118	90	5,00	55,49	
EM20600	6,00	5,90 x 8,00	135	105	6,30	47,76	
EM20650	6,50	6,40 x 8,60	140	110	6,30	68,18	
EM20700	7,00	6,90 x 9,40	160	125	6,30	58,08	
EM20800	8,00	7,90 x 10,80	180	145	8,00	76,77	
EM21000	10,00	9,90 x 13,40	215	175	10,00	87,05	
EM21200	12,00	11,80 x 16,00	255	210	11,20	112,17	
EM21300	13,00	12,80 x 17,00	255	210	11,20	122,28	
EM21400	14,00	13,80 x 18,00	255	210	11,20	170,24	
EM21600	16,00	15,80 x 20,40	280	230	14,00	172,47	
EM22000	20,00	19,80 x 24,80	310	250	18,00	247,09	
EM22500	25,00	24,70 x 30,70	370	300	22,40	385,85	
EM23000	30,00	29,70 x 36,10	400	320	25,00	840,29	
EM24000	40,00	39,70 x 46,50	430	340	31,50	1.385,00	
EM25000	50,00	49,70 x 56,90	460	360	40,00	2.164,54	

HSSCo CHUCKING TAPER PIN REAMERS

Ref. EM29

**TOL
H9**
**DIN
2179E**
HSSCo
**2%
1:50**


FOR TAPER PINS DIN1



	D ₁ mm	D ₂ mm	Ø mm min. x max.	L ₁ mm	L ₂ mm	EM29	
						€	
EM290150	1,50	2,00	1,40 - 2,14	70	37	69,64	
EM290200	2,00	3,00	1,90 - 2,86	68	48	71,04	
EM290250	2,50	3,00	2,40 - 3,35	86	48	79,05	
EM290300	3,00	4,00	2,90 - 4,06	100	58	63,60	
EM290400	4,00	5,00	3,90 - 5,26	112	68	61,20	
EM290500	5,00	6,50	4,90 - 6,36	122	73	57,27	
EM290600	6,00	8,00	5,90 - 8,00	160	105	54,95	
EM290700	7,00	9,00	6,90 - 9,40	160	125	87,77	
EM290800	8,00	10,00	7,90 - 10,80	207	145	101,23	
EM291000	10,00	12,50	9,90 - 13,40	245	175	137,63	
EM291200	12,00	16,00	11,80 - 16,00	290	210	208,73	

HSSCo MACHINE CHUCKING REAMERS

DIN 212




				EM3	EM10					EM3	EM10					EM3	EM10
MATERIAL				HSSCo	HSSCo	D1	L1	L2	D2	€	€	D1	L1	L2	D2	€	€
NORM				DIN 212B	DIN 212E	mm	mm	mm	mm			mm	mm	mm	mm		
TOLERANCE				TOL H7	TOL H7												
HELIX ANGLE				8°	38°												
D1	L1	L2	D2	€	€	mm	mm	mm	mm	€	€	mm	mm	mm	mm	€	€
1,00	34	7	1,00	59,29		4,20	75	19	4,00	30,89		8,10	117	33	8,00	43,88	
1,20	34	7	1,20	52,69		4,30	80	21	4,50	30,89		8,20	117	33	8,00	43,88	
1,40	40	8	1,40	48,99		4,40	80	21	4,50	30,89		8,30	117	33	8,00	43,88	
1,50	40	8	1,50	24,82		4,50	80	21	4,50	23,22		8,40	117	33	8,00	43,88	
1,60	43	9	1,60	30,23		4,60	80	21	4,50	30,89		8,50	117	33	8,00	32,11	
1,70	43	9	1,70	29,98		4,70	80	21	4,50	30,89		8,60	117	33	9,00	48,34	
1,80	46	10	1,80	30,23		4,80	86	23	5,00	30,89		8,70	125	36	9,00	48,34	
1,90	46	10	1,90	30,23		4,90	86	23	5,00	30,89		8,80	125	36	9,00	48,34	
2,00	49	11	2,00	22,86		5,00	86	23	5,00	23,22	32,64	8,90	125	36	9,00	48,34	
2,10	49	11	2,10	25,54		5,10	86	23	5,00	33,18		9,00	125	36	9,00	33,99	43,50
2,20	53	12	2,20	25,54		5,20	86	23	5,00	33,18		9,10	125	36	9,00	48,34	
2,30	53	12	2,30	25,54		5,30	86	23	5,00	33,18		9,20	125	36	9,00	48,34	
2,40	57	14	2,40	25,54		5,40	93	26	5,60	33,18		9,30	125	36	9,00	48,34	
2,50	57	14	2,50	23,26		5,50	93	26	5,60	23,22		9,40	125	36	9,00	48,34	
2,60	57	14	2,60	25,54		5,60	93	26	5,60	35,67		9,50	125	36	9,00	40,37	
2,70	61	15	2,70	25,54		5,70	93	26	5,60	35,67		9,60	125	36	10,00	48,63	
2,80	61	15	2,80	25,54		5,80	93	26	5,60	35,67		9,70	133	38	10,00	48,63	
2,90	61	15	2,90	25,54		5,90	93	26	5,60	35,67		9,80	133	38	10,00	48,63	
3,00	61	15	3,00	22,86	32,05	6,00	93	26	5,60	25,45	32,64	9,90	133	38	10,00	48,63	
3,10	65	16	3,10	30,89		6,10	101	28	6,30	36,35		10,00	133	38	10,00	34,39	44,85
3,20	65	16	3,20	30,89		6,20	101	28	6,30	36,35		10,50	133	38	10,00	59,70	
3,30	65	16	3,30	30,89		6,30	101	28	6,30	36,35		11,00	133	38	10,00	40,65	52,23
3,40	70	18	3,40	30,89		6,40	101	28	6,30	36,35		11,50	142	41	10,00	79,20	
3,50	70	18	3,50	23,22		6,50	101	28	6,30	29,88		12,00	151	44	10,00	41,56	55,68
3,60	70	18	3,60	30,89		6,60	101	28	6,30	36,35		12,50	151	44	10,00	81,14	
3,70	70	18	3,70	30,89		6,70	101	28	6,30	36,35		13,00	151	44	10,00	68,28	84,10
3,80	75	19	4,00	30,89		6,80	109	31	7,10	36,35		13,50	151	44	12,50	110,30	
3,90	75	19	4,00	30,89		6,90	109	31	7,10	36,35		14,00	160	47	12,50	69,89	88,09
4,00	75	19	4,00	23,22	32,05	7,00	109	31	7,10	29,88	33,22	15,00	160	47	12,50	71,28	91,64
4,10	75	19	4,00	30,89		7,10	109	31	7,10	39,06		16,00	162	50	12,50	76,33	107,24
						7,20	109	31	7,10	39,06		17,00	170	52	14,00	88,02	128,78
						7,30	109	31	7,10	39,06		18,00	175	54	14,00	91,78	154,77
						7,40	109	31	7,10	39,06		19,00	182	56	16,00	97,51	
						7,50	109	31	7,10	30,81		20,00	189	58	16,00	98,21	
						7,60	117	33	8,00	39,34		21,00	195	60	18,00	143,19	
						7,70	117	33	8,00	39,34		22,00	225	60	18,00	144,52	
						7,80	117	33	8,00	39,34		23,00	230	60	18,00	157,19	
						7,90	117	33	8,00	39,34		24,00	240	60	20,00	177,39	
						8,00	117	33	8,00	29,85	36,50	25,00	245	60	20,00	201,02	

CENTESIMAL CHUCKING REAMERS

EM3		EM3		EM3	
D1	€	D1	€	D1	€
mm		mm		mm	
2,37 - 2,65	56,68	6,71 - 7,29	65,61	12,03 - 13,02	151,57
2,66 - 3,35	52,47	7,30 - 8,50	73,77	13,03 - 14,02	184,33
3,36 - 4,25	58,91	8,51 - 9,25	83,26	14,03 - 15,02	224,73
4,26 - 5,30	58,91	9,26 - 10,60	95,05	15,03 - 16,02	240,58
5,31 - 5,95	59,01	10,61 - 11,25	107,36		
5,96 - 6,70	59,57	11,26 - 12,02	110,20		

EXTRA-FINE TOLERANCE (µ m)

1,00-6	6,01-12
+4	+5
+0	+0

CHUCKING REAMERS HSSCo LONG SERIES
CHUCKING REAMERS HSSCo EXTRALONG SERIES

Ref. EM44

DIN
212L

HSSCo

TOL
H7

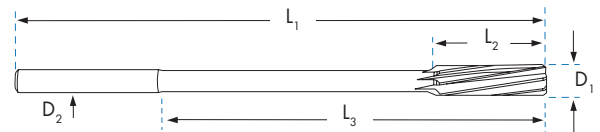
EM44

	D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	L ₃ mm	€
EM440150	1,50	1,50	55	12	35	144,88
EM440200	2,00	2,00	65	14	45	114,61
EM440250	2,50	2,50	75	14	55	130,86
EM440300	3,00	3,00	90	14	70	100,02
EM440350	3,50	3,50	90	14	70	148,63
EM440400	4,00	4,00	105	16	80	100,02
EM440450	4,50	4,50	105	16	80	154,22
EM440500	5,00	5,00	115	16	90	105,62
EM440550	5,50	5,50	115	16	90	163,58
EM440600	6,00	6,00	130	16	100	109,35
EM440650	6,50	6,00	130	16	100	169,18
EM440700	7,00	7,00	140	18	110	117,76
EM440750	7,50	7,00	140	18	110	172,91
EM440800	8,00	8,00	160	18	130	114,02
EM440850	8,50	8,00	160	18	130	174,79
EM440900	9,00	9,00	175	18	140	128,98
EM440950	9,50	9,00	175	18	140	183,20
EM441000	10,00	10,00	190	20	150	130,86
EM441100	11,00	11,00	200	20	160	153,30
EM441200	12,00	12,00	210	20	160	144,88

Ref. EM33

DIN
212XL

HSSCo

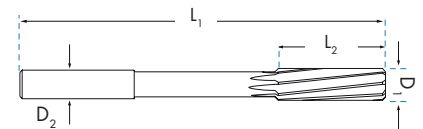
TOL
H7

EM33

	D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	L ₃ mm	HSSCo €
EM330200	2,0	2,0	90	11	70	132,70
EM330300	3,0	3,0	120	15	100	132,70
EM330400	4,0	4,0	140	19	115	139,94
EM330500	5,0	5,0	170	23	140	142,78
EM330600	6,0	5,6	200	26	175	145,45
EM330700	7,0	7,0	250	35	220	184,41
EM330800	8,0	8,0	250	33	220	207,03
EM330900	9,0	9,0	250	35	220	206,26
EM331000	10,0	10,0	250	38	220	227,41
EM331200	12,0	10,0	250	44	220	273,39

SOLID CARBIDE CHUCKING REAMERS

Ref. EM35

DIN
8093BSOLID
CARBIDETOL
H7

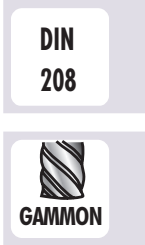
EM35

	D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	€
EM350200	2,00	2,00	49	11	68,54
EM350250	2,50	2,50	57	14	78,82
EM350300	3,00	3,00	61	15	74,82
EM350350	3,50	3,50	70	18	83,79
EM350400	4,00	4,00	75	19	79,47
EM350450	4,50	4,50	80	21	91,36
EM350500	5,00	5,00	86	23	84,16
EM350550	5,50	5,50	93	26	102,28
EM350600	6,00	6,00	93	26	101,25
EM350650	6,50	6,00	101	28	124,17
EM350700	7,00	7,00	109	31	130,87
EM350750	7,50	7,00	109	31	143,97
EM350800	8,00	8,00	117	33	149,56
EM350850	8,50	8,00	117	33	172,01
EM350900	9,00	9,00	125	36	171,38
EM350950	9,50	9,00	125	36	191,96
EM351000	10,00	10,00	133	38	190,05
EM351050	10,50	10,00	133	38	212,85
EM351100	11,00	10,00	142	41	283,56
EM351150	11,50	12,00	142	41	311,90
EM351200	12,00	12,00	151	44	299,21



Special sizes on request

HSSCo TAPER SHANK REAMERS



Ref. EM7

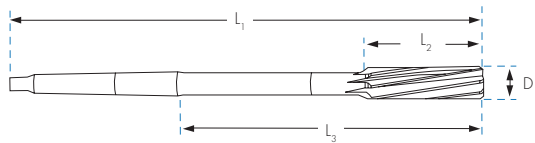


DIN 208B

Ref. EM9



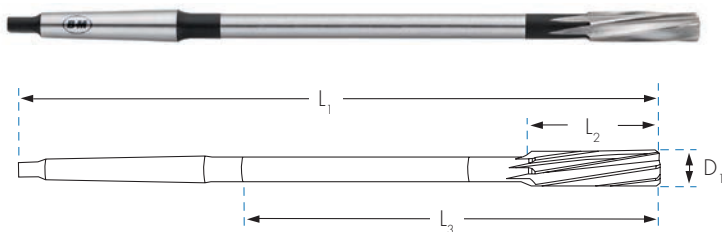
DIN 208C



					EM7	EM9
MATERIAL					HSSCo	HSSCo
NORM					DIN 208B	DIN 208C
TOLERANCE					TOL H7	TOL H7
HELIX					10°	38°
D1 mm	L2 mm	L3 mm	L1 mm	MT	€	€
4,00	19	58	129	1	61,13	
5,00	23	62	133	1	47,46	81,56
5,50	26	67	138	1	62,21	
6,00	26	67	138	1	45,99	81,56
6,50	28	73	144	1	63,44	
7,00	31	79	150	1	47,04	81,56
7,50	31	79	150	1	64,88	
8,00	33	85	156	1	48,59	81,56
8,50	33	85	156	1	68,81	
9,00	36	91	162	1	51,83	78,61
9,50	36	91	162	1	74,60	
10,00	38	97	168	1	50,76	78,61
10,50	38	97	168	1	75,59	
11,00	41	104	175	1	51,72	82,09
11,50	41	104	175	1	79,62	
12,00	44	111	182	1	51,72	82,09
12,50	44	111	182	1	86,95	
13,00	44	111	182	1	65,38	122,10
13,50	47	118	189	1	89,52	
14,00	47	118	189	1	67,17	125,89
14,50	50	118	204	2	94,27	
15,00	50	118	204	2	69,37	137,84
15,50	52	124	210	2	99,09	
16,00	52	124	210	2	75,52	144,45
16,50	54	128	214	2	110,07	
17,00	54	128	214	2	85,04	156,40
17,50	56	133	219	2	125,58	

					EM7	EM9
D1 mm	L2 mm	L3 mm	L1 mm	MT	€	€
18,00	56	133	219	2	89,06	166,13
18,50	58	137	223	2	133,99	
19,00	58	137	223	2	94,53	176,21
19,50	60	142	228	2	142,91	
20,00	60	142	228	2	93,41	185,33
20,50	62	146	232	2	148,67	
21,00	62	146	232	2	111,16	200,24
21,50	64	151	237	2	192,69	
22,00	64	151	237	2	124,13	213,76
22,50	66	155	241	2	192,69	
23,00	66	155	241	2	129,86	229,14
23,50	66	163	241	3	223,86	
24,00	68	163	268	3	137,01	241,70
24,50	68	163	268	3	231,32	
25,00	68	163	268	3	149,04	256,60
25,50	70	168	273	3	269,77	
26,00	70	168	273	3	173,49	270,81
26,50	70	168	273	3	285,78	
27,00	71	172	277	3	200,30	365,10
28,00	71	172	277	3	185,06	299,37
29,00	73	176	281	3	209,37	411,24
30,00	73	176	281	3	201,30	317,96
31,00	75	180	285	3	275,22	
32,00	77	187	317	4	277,51	518,55
33,00	77	187	317	4	446,69	
34,00	78	191	321	4	303,01	780,32
35,00	78	191	321	4	349,05	
36,00	79	195	325	4	448,47	871,57
37,00	79	195	325	4	615,17	
38,00	81	199	329	4	477,50	991,35
39,00	81	199	329	4	823,46	
40,00	81	199	329	4	487,19	1.048,05
41,00	82	203	333	4	823,46	
42,00	82	203	333	4	870,79	
44,00	83	206	336	4	946,77	
45,00	83	206	336	4	947,45	
48,00	86	214	344	4	1.003,77	
50,00	86	214	344	4	1.066,73	

HSSCo TAPER SHANK REAMERS, LONG SERIES

 Ref. EM41
DIN 208B/L
HSSCo
TOL H7


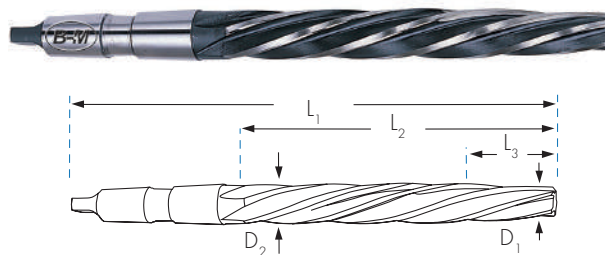
EM41						
	D ₁ mm	L ₂ mm	L ₃ mm	L ₁ mm	MT	€
EM411300	13	22	180	245	1	186,99
EM411400	14	22	180	245	1	186,99
EM411500	15	25	180	260	2	197,50
EM411600	16	25	180	260	2	220,62
EM411800	18	28	180	260	2	229,02
EM412000	20	28	190	270	2	247,93
EM412200	22	32	200	280	2	279,44
EM412400	24	32	200	300	3	365,60
EM412500	25	32	220	320	3	443,33
EM412600	26	32	230	330	3	521,05
EM412800	28	36	240	340	3	525,26
EM413000	30	36	250	350	3	535,77
EM413200	32	36	250	375	4	619,82
EM413400	34	40	250	375	4	720,66
EM413600	36	40	250	375	4	744,54
EM413800	38	40	270	395	4	799,62
EM414000	40	40	270	395	4	844,50
EM414200	42	40	280	405	4	891,41
EM414500	45	45	280	405	4	1.046,45
EM415000	50	45	290	415	4	1.258,59

HSSCo TAPER SHANK REAMERS, EXTRALONG SERIES

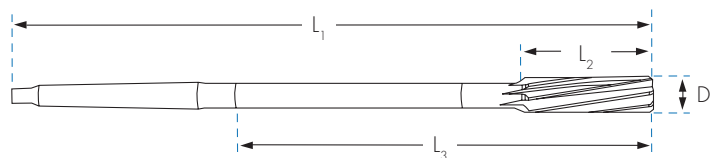
 Ref. EM42
DIN 208B/XL
HSSCo
TOL H7


EM42						
	D ₁ mm	L ₂ mm	L ₃ mm	L ₁ mm	MT	€
EM421200	12	40	250	315	1	302,84
EM421400	14	40	250	315	1	330,88
EM421600	16	45	270	350	2	345,83
EM421800	18	45	270	350	2	374,33
EM422000	20	45	270	350	2	396,31
EM422200	22	45	270	350	2	532,77
EM422400	24	70	350	450	3	607,56
EM422500	25	70	350	450	3	644,93
EM422600	26	70	350	450	3	747,75
EM422800	28	70	350	450	3	822,53
EM423000	30	70	350	450	3	887,95
EM423500	35	70	350	475	4	1.121,63
EM424000	40	70	350	475	4	1.308,57

HSS BRIDGE REAMERS

 Ref. EM8
DIN 311
HSS
TOL H7
 FOR BOIL WORKS
 Conicity
 1:10 on L₃


EM8							
	D ₂ mm	D ₁ mm	L ₁ mm	L ₂ mm	L ₃ mm	MT	€
EM81000	10,00	6,6	171	95	38	1	81,65
EM81100	11,00	7,0	176	100	40	1	83,89
EM81200	12,00	7,8	199	105	42	2	86,89
EM81300	13,00	8,8	199	105	42	2	94,60
EM81400	14,00	9,4	209	115	46	2	103,26
EM81500	15,00	10,0	219	125	50	2	109,51
EM81600	16,00	10,6	229	135	54	2	114,95
EM81700	17,00	11,6	251	135	54	3	128,80
EM81800	18,00	12,2	261	145	58	3	139,50
EM81900	19,00	13,2	261	145	58	3	157,99
EM82000	20,00	13,8	271	155	62	3	160,87
EM82100	21,00	14,8	271	155	62	3	176,99
EM82200	22,00	15,4	281	165	66	3	184,72
EM82300	23,00	16,4	281	165	66	3	198,06
EM82400	24,00	16,8	296	180	72	3	211,90
EM82500	25,00	17,8	296	180	72	3	225,86
EM82600	26,00	18,8	296	180	72	3	246,66
EM82700	27,00	19,2	311	195	78	3	264,78
EM82800	28,00	20,2	311	195	78	3	289,20
EM82900	29,00	21,2	311	195	78	3	310,44
EM83000	30,00	22,2	311	195	78	3	311,01
EM83100	31,00	23,2	326	210	78	3	316,23
EM83200	32,00	23,6	354	210	84	4	344,24
EM83300	33,00	24,6	354	210	84	4	459,49
EM83400	34,00	25,6	364	220	88	4	565,06
EM83600	36,00	27,2	364	220	88	4	593,33



SOLID CARBIDE 3 TEETH DRILL-REAMERS

Ref. BC45

3Z

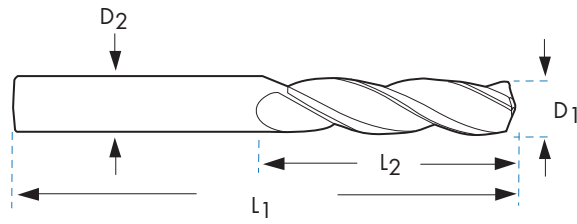
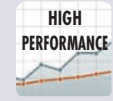
DIN 1897

SOLID CARBIDE

150°

30° "N"

TOL H8



BC45					
	D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	€
BC450350	3,5	3,5	52	20	28,69*
BC450400	4,0	4,0	55	22	29,57*
BC450500	5,0	5,0	62	26	33,28*
BC450550	5,5	5,5	66	28	42,09*
BC450600	6,0	6,0	66	28	40,28*
BC450650	6,5	6,5	70	31	58,28*
BC450700	7,0	7,0	74	34	56,77*
BC450800	8,0	8,0	79	37	66,68*
BC450850	8,5	8,5	79	37	70,65*
BC450900	9,0	9,0	84	40	86,32*
BC450950	9,5	9,5	84	40	91,72*
BC451000	10,0	10,0	89	43	91,42*
BC451050	10,5	10,5	89	43	108,25*
BC451100	11,0	11,0	95	47	124,49*
BC451150	11,5	11,5	95	47	129,06*
BC451300	13,0	13,0	102	51	170,00*
BC451350	13,5	13,5	104	54	272,83*
BC451400	14,0	14,0	107	54	199,69*
BC451450	14,5	14,5	111	56	309,88*
BC451500	15,0	15,0	111	56	236,32*
BC451550	15,5	15,5	115	58	268,13*
BC451600	16,0	16,0	115	58	291,54*
BC451650	16,5	16,5	119	60	416,64*
BC451700	17,0	17,0	119	60	428,69*
BC451750	17,5	17,5	123	62	438,62*
BC451800	18,0	18,0	123	62	478,30*
BC451850	18,5	18,5	127	64	521,25*
BC451900	19,0	19,0	127	64	531,00*
BC451950	19,5	19,5	131	66	570,74*
BC452000	20,0	20,0	131	66	564,71*

* Till end of stock

HSS DRILL REAMERS

STRAIGHT SHANK

3Z
**DIN
344**
HSS

**TOL
H8**

Ref. EM22

TAPER SHANK

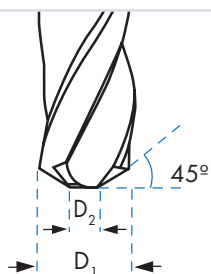
3Z
**DIN
343**
HSS

**TOL
H8**

Ref. EM23

APPLICATIONS: Specially recommended to enlarge holes and compensate non concentric holes.

The finishing obtained with 3 fluted drill reamers is better than with conventional drills which are not recommended to enlarge holes, to avoid cutting edge damage.



EM22					
	D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	€
EM220500	5,00	3,00	108	74	36,41
EM220600	6,00	4,00	116	80	36,41
EM220700	7,00	5,00	133	93	36,41
EM220800	8,00	5,60	142	100	38,40
EM220900	9,00	6,30	151	107	45,32
EM221000	10,00	7,00	162	116	47,32
EM221100	11,00	7,70	173	125	52,19
EM221200	12,00	8,40	184	134	56,03
EM221300	13,00	9,10	184	134	71,44
EM221400	14,00	9,80	194	142	76,36
EM221500	15,00	10,50	202	147	83,35
EM221600	16,00	11,20	211	153	89,52

EM23						
	D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	MT	€
EM230900	9,00	6,30	162	81	1	86,00
EM231000	10,00	7,00	168	87	1	76,98
EM231100	11,00	7,70	175	94	1	79,61
EM231200	12,00	8,40	182	101	1	82,42
EM231300	13,00	9,10	182	101	1	86,07
EM231400	14,00	9,80	189	108	1	91,20
EM231500	15,00	10,50	212	114	2	92,93
EM231600	16,00	11,20	218	120	2	103,66
EM231700	17,00	11,90	223	125	2	112,80
EM231800	18,00	12,60	228	130	2	122,44
EM231900	19,00	13,30	233	135	2	144,08
EM232000	20,00	14,00	238	140	2	147,58
EM232100	21,00	15,00	243	145	2	158,95
EM232200	22,00	15,50	248	150	2	171,87
EM232300	23,00	16,00	253	155	2	177,34
EM232400	24,00	17,00	281	160	3	187,39
EM232500	25,00	17,50	281	160	3	201,39
EM232600	26,00	18,00	286	165	3	216,40
EM232700	27,00	19,00	291	170	3	243,40
EM232800	28,00	19,50	291	170	3	276,01
EM233000	30,00	21,00	296	175	3	305,51
EM233200	32,00	22,00	334	185	4	363,37
EM233400	34,00	24,00	339	190	4	402,14
EM233500	35,00	25,00	339	190	4	423,04
EM233600	36,00	25,50	344	195	4	444,27
EM233800	38,00	26,50	349	200	4	502,29
EM234000	40,00	28,00	349	200	4	542,01
EM234500	45,00	31,00	359	210	4	648,45
EM235000	50,00	34,50	369	220	4	925,78

HSSCo SHELL REAMERS

DIN
219



Ref. EM17



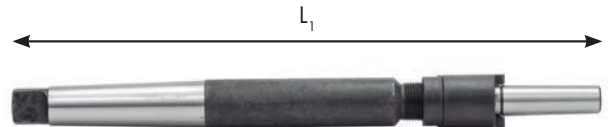
Ref. EM18



				EM17		EM18	
MATERIAL				HSSCo		HSSCo	
NORM				DIN 219B		DIN 219C	
TOLERANCE				TOL H7		TOL H7	
HELIX ANGLE				10°		38°	
D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm			€	€
25,00	13,00	45	32	EM172500	136,17	EM182500	216,49
26,00	13,00	45	32	EM172600	137,32	EM182600	218,88
27,00	13,00	45	32	EM172700	153,36	EM182700	224,77
28,00	13,00	45	32	EM172800	155,42	EM182800	229,39
30,00	13,00	45	32	EM173000	156,86	EM183000	235,82
32,00	16,00	50	36	EM173200	167,37	EM183200	243,55
34,00	16,00	50	36	EM173400	187,39	EM183400	251,55
35,00	16,00	50	36	EM173500	190,06	EM183500	275,91
36,00	19,00	56	40	EM173600	195,40	EM183600	288,20
38,00	19,00	56	40	EM173800	207,21	EM183800	304,04
40,00	19,00	56	40	EM174000	217,58	EM184000	331,41
42,00	19,00	56	40	EM174200	231,58		
45,00	22,00	63	45	EM174500	245,91	EM184500	395,69
47,00	22,00	63	45	EM174700	308,22	EM184700	462,05
48,00	22,00	63	45	EM174800	308,22		
50,00	22,00	63	45	EM175000	309,72	EM185000	478,92
52,00	27,00	71	50	EM175200	327,48	EM185200	518,56
55,00	27,00	71	50	EM175500	355,29	EM185500	577,43
58,00	27,00	71	50	EM175800	401,34		
60,00	27,00	71	50	EM176000	416,48	EM186000	643,21
62,00	32,00	80	56	EM176200	478,40	EM186200	691,14
65,00	32,00	80	56	EM176500	533,33	EM186500	702,32
70,00	32,00	80	56	EM177000	650,16	EM187000	719,65
72,00	40,00	90	63	EM177200	726,27	EM187200	763,23
75,00	40,00	90	63	EM177500	780,91		
80,00	40,00	90	63	EM178000	850,50	EM188000	903,92
85,00	40,00	90	63	EM178500	987,73		
90,00	50,00	100	71	EM179000	1.076,49		
95,00	50,00	100	71	EM179500	1.235,10		
100,00	50,00	100	71	EM1710000	1.408,51		

TAPER SHANK ARBORS FOR SHELL REAMERS

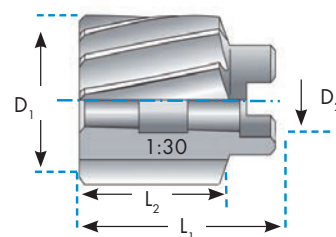
DIN
217



Ref. EM19

				EM19	
	D ₂ mm	L ₁ mm	MT	€	
EM19CM313X300	13,00	300	3	192,50	
EM19CM313X500	13,00	500	3	359,38*	
EM19CM316X300	16,00	300	3	214,19	
EM19CM316X400	16,00	400	3	341,95*	
EM19CM419X300	19,00	300	4	254,12	
EM19CM419X400	19,00	400	4	359,11*	
EM19CM419X500	19,00	500	4	401,99*	
EM19CM422X300	22,00	300	4	318,24	
EM19CM422X400	22,00	400	4	398,16*	
EM19CM422X500	22,00	500	4	446,90*	
EM19CM527X350	27,00	350	5	453,86	
EM19CM527X450	27,00	450	5	529,96*	
EM19CM527X550	27,00	550	5	612,35*	
EM19CM527X650	27,00	650	5	655,56*	
EM19CM532X350	32,00	350	5	557,98	
EM19CM532X400	32,00	400	5	672,13*	
EM19CM532X500	32,00	500	5	714,23*	
EM19CM532X600	32,00	600	5	785,26*	
EM19CM540X450	40,00	450	5	791,81	
EM19CM540X550	40,00	550	5	843,59*	
EM19CM540X650	40,00	650	5	880,68*	
EM19CM540X750	40,00	750	5	948,54*	
EM19CM540X850	40,00	850	5	999,54*	
EM19CM540X950	40,00	950	5	1.071,28*	
EM19CM550X450	50,00	450	5	1.023,24	
EM19CM550X550	50,00	550	5	1.011,87*	
EM19CM550X650	50,00	650	5	1.056,56*	
EM19CM550X750	50,00	750	5	1.107,12*	
EM19CM550X850	50,00	850	5	1.181,64*	
EM19CM550X950	50,00	950	5	1.217,62	

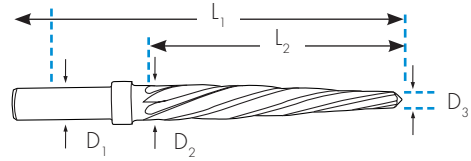
* Till end of stock



5 FLUTES HSS REAMERS
5Z

Ref. EM14

HSS

10%
1:10
25°


	D ₂ mm	Ø mm	D ₁ mm	D ₃ mm	L ₁ mm	L ₂ mm	EM14 €
EM141000	10,00	6,00 - 10,00	9,50	5,20	127	76	152,98
EM141200	12,00	7,00 - 12,00	12,70	5,60	152	102	168,22
EM141400	14,00	9,00 - 14,00	12,70	7,80	152	102	178,41
EM141800	18,00	10,00 - 18,00	12,70	9,20	178	125	219,22
EM142200	22,00	14,00 - 22,00	12,70	13,00	184	132	259,99
EM142600	26,00	18,00 - 26,00	12,70	17,20	184	132	280,43

HSSCo SPRUE REAMERS 45° HELIX

Ref. EM30

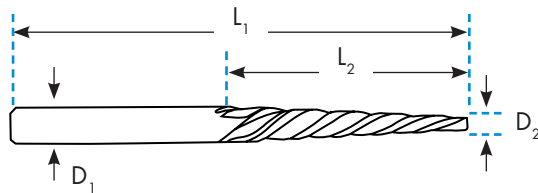
Ref. EM31

Ref. EM32

HSSCo


TOL
± 0,05
TOL
h8
TOL
± 1
TOL
± 2

FOR MOULDS


5%
1:20
8%
2:25
10%
1:10

EM30				
D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	€
6,00	3,00	110	60	130,41
8,00	4,00	130	80	179,77
10,00	5,00	155	100	213,42
12,00	6,00	180	120	260,84
14,00	7,00	200	140	332,48

EM31				
D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	€
8,00	3,00	110	62	130,41
10,00	4,00	130	75	170,75
12,00	5,00	150	90	197,79
14,00	6,00	160	100	287,85

EM32				
D ₁ mm	D ₂ mm	L ₁ mm	L ₂ mm	€
8,00	3,00	100	50	123,74
10,00	4,00	115	60	130,41
12,00	5,00	130	70	159,79
14,00	6,00	140	80	276,49

HSS EXTENSIBLE REAMERS

HSS WITH GUIDE



TOL H11	Ø mm	Ø mm min. x max.	EM4G	EM4-6C	EM4-6T
			REAMERS €	BLADES €	SCREWS €
EM4G0800	8,00	8,00 - 9,00	140,40*	77,69*	3,50*
EM4G0900	9,00	9,00 - 10,00	140,40*	77,69*	3,50*
EM4G1000	10,00	10,00 - 11,00	140,40*	77,69*	3,50*
EM4G1100	11,00	11,00 - 12,00	140,40*	77,69*	3,50*
EM4G1200	12,00	12,00 - 13,50	143,19*	77,75*	3,70*
EM4G1350	13,50	13,50 - 15,50	148,95*	77,75*	3,70*
EM4G1550	15,50	15,50 - 18,00	156,01*	81,44*	4,09*
EM4G1800	18,00	18,00 - 21,00	165,83*	84,27*	4,09*
EM4G2100	21,00	21,00 - 24,00	180,91*	96,99*	4,09*
EM4G2400	24,00	24,00 - 27,50	202,46*	102,12*	4,28*
EM4G2750	27,50	27,50 - 31,50	239,05*	112,32*	4,48*
EM4G3150	31,50	31,50 - 37,00	329,76*	138,16*	4,48*
EM4G3700	37,00	37,00 - 45,00	461,33*	213,83*	4,48*
EM4G4500	45,00	45,00 - 55,00	661,23*	328,87*	4,74*
EM4G5500	55,00	55,00 - 67,00	1.074,54*	508,86*	4,74*
EM4G6700	67,00	67,00 - 80,00	1.577,50*	773,18*	4,74*

* Till end of stock

HSS REINFORCED



TOL H11	Ø mm	Ø mm min. x max.	EM6	EM4-6C	EM4-6T
			REAMERS €	BLADES €	SCREWS €
EM60640	6,40	6,40 - 7,20	119,60*		
EM60720	7,20	7,20 - 8,00	119,60*		
EM60800	8,00	8,00 - 9,00	119,60*	77,69*	3,50*
EM60900	9,00	9,00 - 10,00	119,60*	77,69*	3,50*
EM61000	10,00	10,00 - 11,00	119,60*	77,69*	3,50*
EM61100	11,00	11,00 - 12,00	119,60*	77,69*	3,50*
EM61200	12,00	12,00 - 13,50	119,60*	77,75*	3,70*
EM61350	13,50	13,50 - 15,50	119,60*	77,75*	3,70*
EM61550	15,50	15,50 - 18,00	127,27*	81,44*	4,09*
EM61800	18,00	18,00 - 21,00	131,76*	84,27*	4,09*
EM62100	21,00	21,00 - 24,00	153,31*	96,99*	4,09*
EM62400	24,00	24,00 - 27,50	166,91*	102,12*	4,28*
EM62750	27,50	27,50 - 31,50	182,51*	112,32*	4,48*
EM63150	31,50	31,50 - 37,00	237,92*	138,16*	4,48*
EM63700	37,00	37,00 - 45,00	354,76*	213,83*	4,48*
EM64500	45,00	45,00 - 55,00	510,48*	328,87*	4,74*
EM65500	55,00	55,00 - 67,00	936,86*	508,86*	4,74*
EM66700	67,00	67,00 - 80,00	1.437,74*	773,18*	4,74*

* Till end of stock

HSS EXTENSIBLE REAMER WITH GUIDE SET



(Reamers Ref. EM4G)

HSS	REFERENCE	EM5E8	EM5E14
	QUANTITY		8
QUALITY		HSS	HSS
CONTENT		Ø 11 - 31,50 mm	Ø 8 - 55 mm
PRICE €		1.709,02	3.723,86

CUTTING SPEED & FEED CHART FOR REAMERS

	C/S	m/min	DIAMETER Ø (mm)											
			2	3	5	7	10	12	15	18	20	22	25	30
STEEL EM3	12	RPM	1911	1274	764	546	382	318	255	212	191	174	153	127
	mm / rev mm / min	FEED	0,10	0,10	0,11	0,12	0,15	0,18	0,20	0,22	0,23	0,24	0,25	0,29
			191	127	84	66	57	56	51	47	44	42	38	37
HARDENED STEEL EM3+TiAlN	7	RPM	1115	743	446	318	223	186	149	124	111	101	89	74
	mm / rev mm / min	FEED	0,08	0,080	0,08	0,09	0,10	0,11	0,12	0,15	0,20	0,21	0,22	0,26
			89	59	36	29	22	20	18	19	22	21	20	19
STAINLESS STEEL EM3+TiN	5	RPM	796	531	318	227	159	133	106	88	80	72	64	53
	mm / rev mm / min	FEED	0,08	0,08	0,09	0,10	0,10	0,12	0,14	0,16	0,18	0,20	0,21	0,24
			64	42	29	23	16	16	15	14	14	14	13	13
ALUMINIUM EM3	37	RPM	5892	3928	2357	1683	1178	982	786	655	589	536	471	393
	mm / rev mm / min	FEED	0,15	0,16	0,18	0,20	0,21	0,23	0,25	0,28	0,29	0,30	0,35	0,38
			884	628	424	337	247	226	196	183	171	161	165	149
CAST IRON EM3+TiCN	9	RPM	1433	955	573	409	287	239	191	159	143	130	115	96
	mm / rev mm / min	FEED	0,15	0,16	0,18	0,18	0,20	0,22	0,24	0,26	0,28	0,29	0,30	0,33
			215	153	103	74	57	53	46	41	40	38	34	32
BRASS EM3	17	RPM	2707	1805	1083	773	541	451	361	301	271	246	217	180
	mm / rev mm / min	FEED	0,10	0,12	0,14	0,18	0,20	0,25	0,28	0,28	0,30	0,30	0,35	0,41
			271	217	152	139	108	113	101	84	81	74	76	74

REMARKS:

- If we know the reamer size and workpiece material, the speed and feed are quickly found.

Example:

Material: Steel RPM= 382

Ø reamer: 10 mm. Vf= 57 mm/min

- After several holes you must adjust the speed and feed again.

EASY USING CHART FOR DRILLING THE CORRECT DIAMETER BEFORE REAMING

REAMING Ø	DRILL DIAMETER		
	STEEL	STAINLESS STEEL	ALUMINIUM
1<Ø<10 mm	Ø final - 0,2 mm	Ø final - 0,2 mm	Ø final - 0,3 mm
11<Ø<20 mm	Ø final - 0,3 mm	Ø final - 0,3 mm	Ø final - 0,4 mm
21<Ø<30 mm	Ø final - 0,4 mm	Ø final - 0,4 mm	Ø final - 0,45 mm
Ø>30 mm	Ø final - 0,5 mm	Ø final - 0,5 mm	Ø final - 0,6 mm