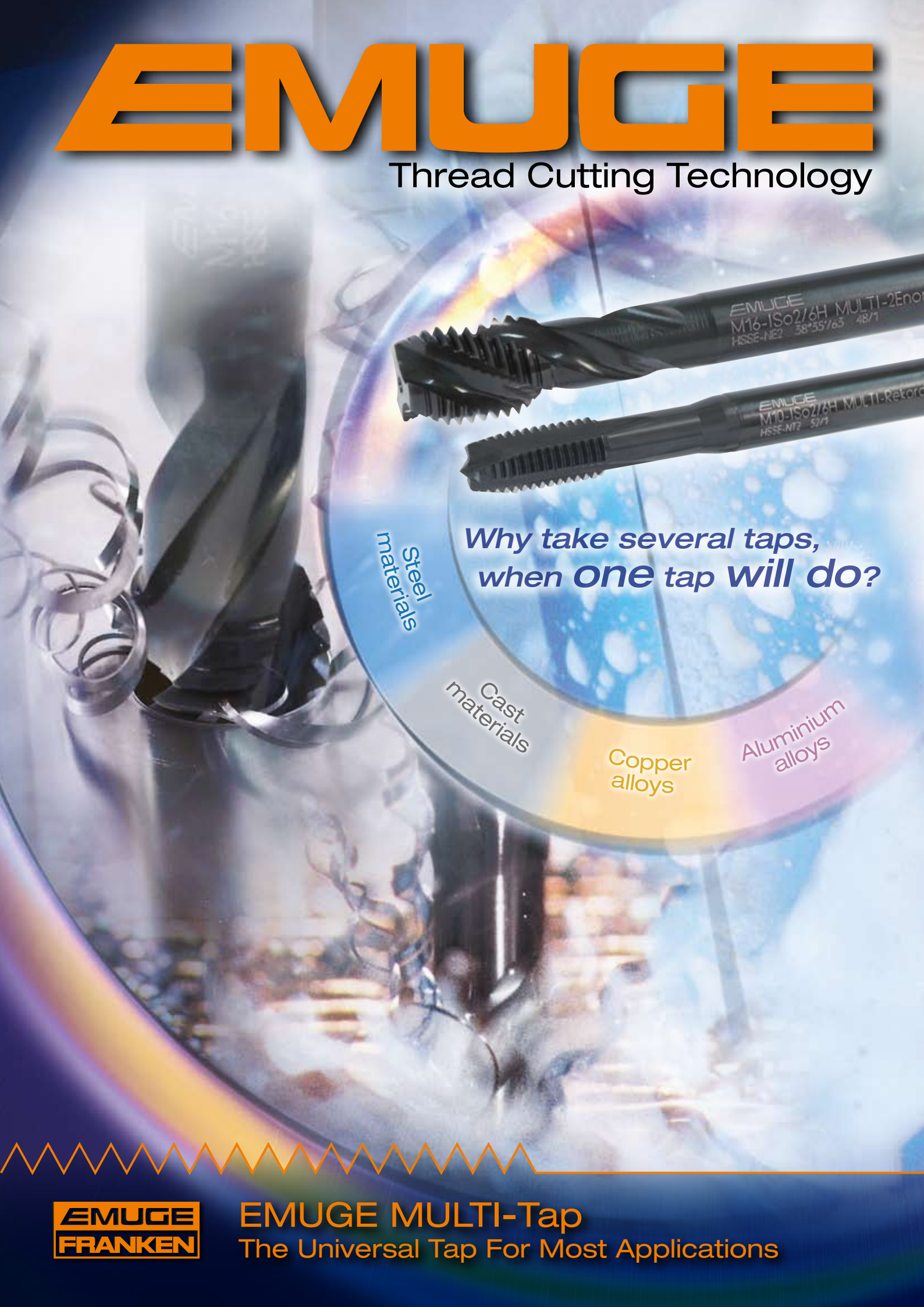
EMUGE

Thread Cutting Technology



EMUGE FRANKEN

EMUGE MULTI-Tap

The Universal Tap For Most Applications

The Universal Tap - a new idea? No, an old dream!

Over the last years, industrial manufacturers all over the world have made more and more efforts to increase the competitiveness of their products on the world market.

One of the many measures taken in this sense has always been to reduce stocks and to limit, wherever possible, the number of different types of precision tools used in production. This development has, of course, been received with enthusiasm by the tool trade.

It seems, therefore, as if the universal tap would be the perfect solution.

It is a known fact that a universal tool for all work operations does not exist: modern industry uses a broad range of different work materials with very different cutting characteristics, and tool geometries have to be adjusted accordingly.

These cutting characteristics are determined by the grain structure of the individual material, by the different properties of alloy components, by different cooling and lubrication methods and so on.

Materials with an inflexible grain structure which cannot be displaced or deformed by the cutting edge during work (like cast iron, or carbon construction and heat-treatable steels), are much easier to machine than elastic materials with a high chrome/nickel content.

The most economical way of cutting threads is, and has always been, to use the most appropriate cutting geometry, in combination with the proper surface treatment or hard coating.

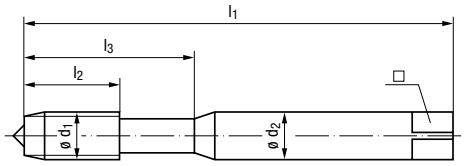
What if number and quality of the finished threads stop being the primary object, and are superseded by the importance of simplifying purchasing procedures and reducing stock costs? Of course it is easier for the user if he can do his work with just one tool type, but the result of such a development will not meet the expectations.

Our EMUGE sales staff and our service technicians have been at work for a long time, recommending the most suitable tools and the most efficient and economical working techniques to our customers: Their success and satisfaction is, and has always been, the main object of our production and sales policy.

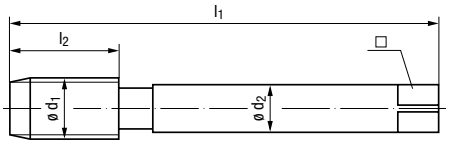
In order to meet the requirements outlined at the beginning of this brochure, EMUGE has developed a basic tap type which does not, of course, cover all work materials, but is at least suited for an unusually broad range of materials:

The EMUGE MULTI-Tap

EMUGE Thread Cutting Technology



DIN 371



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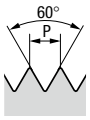
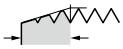


M **ISO Metric coarse thread**
DIN 13

Hole type			
Thread depth	b_{max}	3 x d_1	2.5 x d_1
Technical characteristics		NT2	NE2, R35
Coolant-lubricant		E / O / P	E / O / P
Range of application		**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4	**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4
Tolerance		ISO 2/6H	ISO 2/6H
DIN form/threads	l_A = 	B/4-5	C/2-3

DIN 371

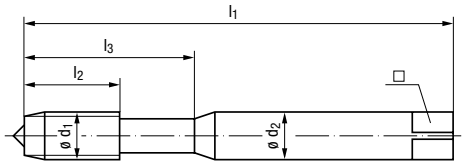
	ø d_1 mm	P mm	l_1	l_2	l_3	ø d_2	□		Dimens.-Ident	B5207300 B313 MULTI Rekord 1B NT2	B5503200 B520 MULTI 1 Enorm NE2
M	2	0.4	45	7	12	2.8	2.1	1.6	**0020**	●	●
	2.5	0.45	50	9	14	2.8	2.1	2.05	**0025**	●	●
	3	0.5	56	11	18	3.5	2.7	2.5	**0030**	●	●
	3.5	0.6	56	12	20	4	3	2.9	**0035**	●	●
	4	0.7	63	13	21	4.5	3.4	3.3	**0040**	●	●
	5	0.8	70	15	25	6	4.9	4.2	**0050**	●	●
	6	1	80	17	30	6	4.9	5	**0060**	●	●
	8	1.25	90	20	35	8	6.2	6.8	**0080**	●	●
	10	1.5	100	22	39	10	8	8.5	**0100**	●	●

DIN 376

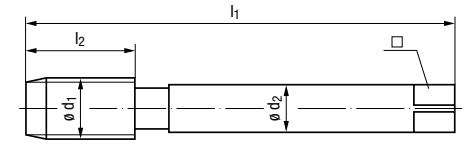
	ø d_1 mm	P mm	l_1	l_2	ø d_2	□		Dimens.-Ident	C5207300 C240 MULTI Rekord 2B NT2	C5503200 C466 MULTI 2 Enorm NE2
M	12	1.75	110	24	9	7	10.2	**0112**	●	●
	14	2	110	26	11	9	12	**0114**	●	●
	16	2	110	27	12	9	14	**0116**	●	●
	18	2.5	125	30	14	11	15.5	**0118**	●	●
	20	2.5	140	32	16	12	17.5	**0120**	●	●
	22	2.5	140	32	18	14.5	19.5	**0122**	●	●
	24	3	160	34	18	14.5	21	**0124**	●	●
	27	3	160	36	20	16	24	**0127**	●	●
	30	3.5	180	40	22	18	26.5	**0130**	●	●

NT2 = nitrided
NE2 = neutralised
R35 = approx. 35° right-hand spiral flutes

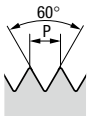
E = Emulsion
O = Thread cutting oil
P = Thread cutting paste



DIN 371

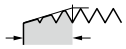


DIN 376



MF

ISO Metric fine thread
DIN 13

Hole type			
Thread depth	b_{max}	3 x d_1	2.5 x d_1
Technical characteristics		NT2	NE2, R35
Coolant-lubricant		E / O / P	E / O / P
Range of application		**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4	**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4
Tolerance		ISO 2/6H	ISO 2/6H
DIN form/threads	l_A = 	B/4-5	C/2-3

DIN 371

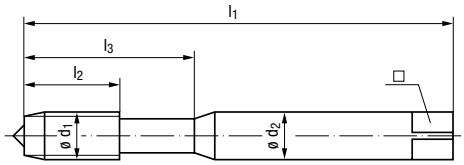
	ø d_1 mm		P mm	l_1	l_2	l_3	ø d_2	□		Tool ident Cat. no. Dimens.-Ident	B5207300 B314 MULTI Rekord 1B NT2	B5503200 B521 MULTI 1 Enorm NE2
M	4	x	0.5	63	10	21	4.5	3.4	3.5	**0210**	●	●
	5	x	0.5	70	11	25	6	4.9	4.5	**0218**	●	●
	6	x	0.5	80	13	30	6	4.9	5.5	**0228**	●	●
	6	x	0.75	80	13	30	6	4.9	5.2	**0229**	●	●
	8	x	1	90	17	35	8	6.2	7	**0251**	●	
	10	x	1	90	18	35	10	8	9	**0276**	●	

DIN 376

	ø d_1 mm		P mm	l_1	l_2	ø d_2	□		Tool ident Cat. no. Dimens.-Ident	C5207300 C241 MULTI Rekord 2B NT2	C5503200 C467 MULTI 2 Enorm NE2
M	6	x	0.75	80	13	4.5	3.4	5.2	**0229**	●	●
	8	x	0.75	80	14	6	4.9	7.2	**0250**	●	●
	8	x	1	90	17	6	4.9	7	**0251**	●	●
	10	x	0.75	90	18	7	5.5	9.2	**0275**	●	●
	10	x	1	90	18	7	5.5	9	**0276**	●	●
	12	x	1	100	18	9	7	11	**0301**	●	●
	12	x	1.5	100	22	9	7	10.5	**0303**	●	●
	14	x	1.5	100	22	11	9	12.5	**0331**	●	●
	16	x	1.5	100	22	12	9	14.5	**0359**	●	●
	18	x	1.5	110	25	14	11	16.5	**0390**	●	●
	20	x	1.5	125	25	16	12	18.5	**0422**	●	●
	22	x	1.5	125	25	18	14.5	20.5	**0438**	●	●
	24	x	1.5	140	27	18	14.5	22.5	**0452**	●	●
	26	x	1.5	140	28	18	14.5	24.5	**0464**	●	●
	28	x	1.5	140	28	20	16	26.5	**0476**	●	●
	30	x	1.5	150	28	22	18	28.5	**0490**	●	●

NT2 = nitrided
NE2 = neutralised
R35 = approx. 35° right-hand spiral flutes

E = Emulsion
O = Thread cutting oil
P = Thread cutting paste



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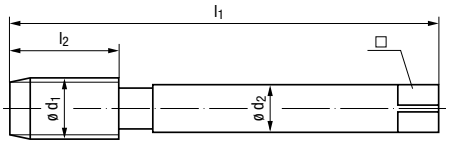

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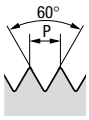


UNC

Unified coarse thread UNC
ASME B1.1

Hole type			
Thread depth	b_{max}	3 x d_1	2.5 x d_1
Technical characteristics		NT2	NE2, R35
Coolant-lubricant		E / O / P	E / O / P
Range of application		**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4	**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4
Tolerance		2B	2B
DIN form/threads	l_A =	B/4-5	C/2-3

≈ DIN 371

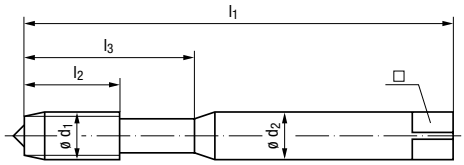
Tool ident										B5207300	B5503200
Cat. no.									Dimens.-Ident	UK01	UK03
ø d_1 inch	inch	P thr./1"	l_1	l_2	l_3	ø d_2	□			MULTI Rekord 1B NT2	MULTI 1 Enorm NE2
No. 6	0.1380	32	56	12	20	4	3	2.85	5005	●	●
No. 8	0.1640	32	63	13	21	4.5	3.4	3.5	5006	●	●
No. 10	0.1900	24	70	15	25	6	4.9	3.9	5007	●	●
1/4	0.2500	20	80	17	30	7	5.5	5.1	5009	●	●
5/16	0.3125	18	90	20	35	8	6.2	6.6	5010	●	●
3/8	0.3750	16	100	22	39	10	8	8	5011	●	●

≈ DIN 376

Tool ident								Dimens.-Ident	C5207300	C5503200
Cat. no.									UK02	UK04
ø d_1 inch	inch	P thr./1"	l_1	l_2	ø d_2	□			MULTI Rekord 2B NT2	MULTI 2 Enorm NE2
7/16	0.4375	14	100	22	8	6.2	9.4	5012	●	●
1/2	0.5000	13	110	25	9	7	10.8	5013	●	●
9/16	0.5625	12	110	26	11	9	12.2	5014	●	●
5/8	0.6250	11	110	27	12	9	13.5	5015	●	●
3/4	0.7500	10	125	30	14	11	16.5	5016	●	●
7/8	0.8750	9	140	32	18	14.5	19.5	5017	●	●
1"	1.0000	8	160	36	18	14.5	22.25	5018	●	●

NT2 = nitrided
NE2 = neutralised
R35 = approx. 35° right-hand spiral flutes

E = Emulsion
O = Thread cutting oil
P = Thread cutting paste



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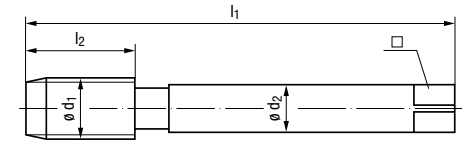

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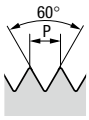
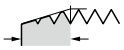
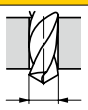


UNF

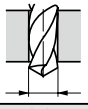
Unified fine thread UNF
ASME B1.1

Hole type			
Thread depth	b_{max}	3 x d_1	2.5 x d_1
Technical characteristics		NT2	NE2, R35
Coolant-lubricant		E / O / P	E / O / P
Range of application		**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4	**1**.1-4, 10-11 **2**.1-4 **3**.4 **5**.2-4
Tolerance		2B	2B
DIN form/threads	l_A = 	B/4-5	C/2-3

≈ DIN 371

										Tool ident	B5207300	B5503200
										Cat. no.	UK05	UK07
ø d_1 inch	inch	P thr./1"	l_1	l_2	l_3	ø d_2	□		Dimens.-Ident		MULTI Rekord 1B NT2	MULTI 1 Enorm NE2
No. 6	0.1380	40	56	12	20	4	3	2.95	**5039**		●	●
No. 8	0.1640	36	63	13	21	4.5	3.4	3.5	**5040**		●	●
No. 10	0.1900	32	70	15	25	6	4.9	4.1	**5041**		●	●
1/4	0.2500	28	80	17	30	7	5.5	5.5	**5043**		●	●
5/16	0.3125	24	90	17	35	8	6.2	6.9	**5044**		●	●
3/8	0.3750	24	90	18	35	10	8	8.5	**5045**		●	●

≈ DIN 376

								Tool ident	C5207300	C5503200
								Cat. no.	UK06	UK08
ø d_1 inch	inch	P thr./1"	l_1	l_2	ø d_2	□		Dimens.-Ident		MULTI Rekord 2B NT2	MULTI 2 Enorm NE2
7/16	0.4375	20	100	22	8	6.2	9.9	**5046**		●	●
1/2	0.5000	20	100	22	9	7	11.5	**5047**		●	●
9/16	0.5625	18	100	22	11	9	12.9	**5048**		●	●
5/8	0.6250	18	100	22	12	9	14.5	**5049**		●	●
3/4	0.7500	16	110	25	14	11	17.5	**5050**		●	●
7/8	0.8750	14	125	25	18	14.5	20.4	**5051**		●	●
1"	1.0000	12	140	28	18	14.5	23.25	**5052**		●	●

NT2 = nitrided
NE2 = neutralised
R35 = approx. 35° right-hand spiral flutes

E = Emulsion
O = Thread cutting oil
P = Thread cutting paste

EMUGE Thread Cutting Technology

Range of application – Material groups

☐ = suitable

			MULTI Rekord B NT2	MULTI Enorm NE2	v_c m/min
1	**Steel materials**				
1.1	Cold-extrusion steels, Magnetic soft iron	≤ 400 N/mm²	☐	☐	5 - 25
1.2	Free-cutting steels, General construction steels	≤ 600 N/mm²	☐	☐	5 - 25
1.3	Free-cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 850 N/mm²	☐	☐	5 - 20
1.4	Cementation steels, Heat-treatable steels, Nitriding steels, Cold work steels	≤ 1100 N/mm²	☐	☐	2 - 10
1.5	Heat-treatable steels, Nitriding steels, Hot work steels, Hardened steels up to 44 HRC, Cold work steels	≤ 1400 N/mm²			–
1.6	Hardened steels > 44 - 55 HRC				–
1.7	Hardened steels > 55 - 60 HRC				–
1.8	Hardened steels > 60 - 63 HRC				–
1.9	Hardened steels > 63 - 66 HRC				–
1.10	Corrosion-proof steels, Acid-proof steels, Heat-resistant steels	≤ 850 N/mm²	☐	☐	2 - 10
1.11	Corrosion-/Acid-proof steels, Heat-resistant steels	≤ 1100 N/mm²	☐	☐	1 - 8
1.12	Corrosion-/Acid-proof steels, Heat-resistant steels	≤ 1400 N/mm²			–
1.13	Special steel materials	≤ 1400 N/mm²			–
2	**Cast materials**				
2.1	Cast iron		☐	☐	10 - 20
2.2	Cast iron with nodular graphite		☐	☐	5 - 20
2.3	Cast iron with vermicular graphite		☐	☐	5 - 15
2.4	Malleable cast iron		☐	☐	10 - 20
2.5	Hard castings up to 400 HB				–
3	**Copper, Copper alloys, Bronze, Brass**				
3.1	Pure copper and low-alloyed copper	≤ 500 N/mm²			–
3.2	Copper-zinc alloys (brass, long-chipping)				–
3.3	Copper-zinc alloys (brass, short-chipping)				–
3.4	Copper-aluminium alloys (alubronze, long-chipping) Copper-tin alloys (bronze, long-chipping)		☐	☐	2 - 10
3.5	Copper-tin alloys (bronze, short-chipping)				–
3.6	Special copper alloys, up to Q18				–
3.7	Special copper alloys, over Q18				–
4	**Nickel/Cobalt alloys**				
4.1	Nickel/Cobalt alloys heat-resistant	≤ 850 N/mm²			–
4.2	Nickel/Cobalt alloys high-heat resistant	850 - 1400 N/mm²			–
4.3	Nickel/Cobalt alloys high-heat resistant	> 1400 N/mm²			–
5	**Aluminium alloys**				
5.1	Aluminium wrought alloys				–
5.2	Aluminium cast alloys, Si ≤ 5%		☐	☐	10 - 20
5.3	Aluminium cast alloys, 5% < Si ≤ 12%		☐	☐	10 - 20
5.4	Aluminium cast alloys, 12% < Si ≤ 17 %		☐	☐	5 - 15
6	**Magnesium alloys**				
6.1	Magnesium wrought alloys				–
6.2	Magnesium cast alloys				–
7	**Titanium, Titanium alloys**				
7.1	Pure titanium, Titanium alloys	≤ 900 N/mm²			–
7.2	Titanium alloys	900 - 1250 N/mm²			–
8	**Synthetics**				
8.1	Duroplastics (short-chipping)				–
8.2	Thermoplastics (long-chipping)				–
8.3	Fibre-reinforced synthetics				–
9	**Materials for special applications**				
9.1	Graphite				–
9.2	Tungsten-copper alloys				

The recommendations listed here are standard values, and have to be adjusted to individual work conditions.

20090623-01 GB 2T 072009 FI

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