

General information

All modern CNC-machines are now equipped with the option so-called "Rigid Tapping" (a tapping spindle with axial float is no longer needed).

The main objective is to simplify the programming of the tapping operation. The optimal synchronisation between the rotation and the spindle feed permits the correct pitch to be cut, whilst the tap is held rigidly in a toolholder.

Advantages



User friendly simplified programming



Economy of investment, since the traditional tapping spindle is unnecessary



Security of quality, as the pitch of the thread is NC-controlled

Disadvantages



Lack of constant cutting speed, causing inefficient swarf clearance during the spindle deceleration



Axial pressure applied to the tap cutting edges whilst cut starting and during the spindle reversal can cause reduced tap life up to 40 %

DC solution

DC has developed "multirange" taps **type RTS**, for through and blind holes, with and without internal coolant. These taps are designed to take advantage of "Rigid Tapping" and are capable of overcoming the negative



effects by incorporating the following features:

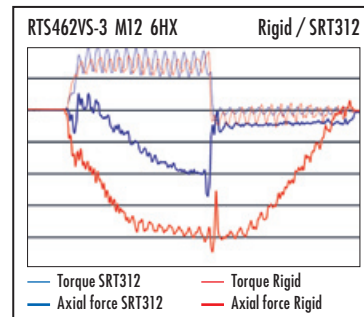
- Cutting geometry suitable for a wide range of current materials up to 1'150 N/mm² tensile strength, contributing to tool rationalisation and consequently to important cost reduction.
- Flute profile and double surface coating, which in spite of variable cutting speed ensure efficient swarf removal.

Tapping chuck SRT



DC offers a specific total solution adapted to this new machining method; a tapping chuck with axial shock absorber, **type SRT**, Soft Rigid Tapping (page 11).

This tapping chuck, suitable for quick change systems is able to overcome the axial pressure applied to the cutting edges when the spindle reverses, and therefore increasing the tap life.



The graphic shows very clearly the reduction of the force in Z-axis, especially while reversing the spindle rotation, by using the DC tapping chuck with axial shock absorber type SRT.

Caution



DC-threading taps **type RTS** should only be used on NC-machines with a "Rigid Tapping" option. Otherwise their correct function cannot be guaranteed.



Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado

CHARACTERISTICS

Pictographs



For material groups as per DC application chart

- DIN 371 (d₂h₆) Reinforced shank, ~DIN 371 (d₂ h₆)
- DIN 376 (d₂h₆) Reduced shank, ~DIN 376 (d₂ h₆)

Straight flutes with spiral point

40° right hand spiral flutes

PM HSSE-PM

Through holes, for long chipping materials

Blind holes, for long chipping materials < 2.5 x D

Blind holes, for long chipping materials > 2.5 x D

C 2 - 3 chamfered threads, form C

B 4 chamfered threads, form B

6HX Tolerance class 6HX

Internal coolant with radial outflow

Internal coolant with frontal outflow

Truncated thread

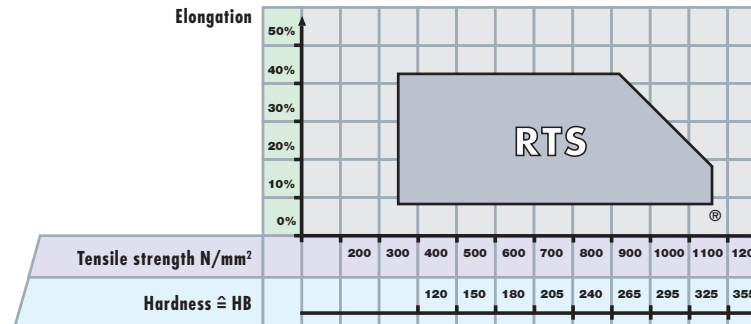
VS DC wear-protective coating

Availability of the articles

Price or Available from stock

APPLICATION CHART FOR RIGID

RTS Rigid Tapping



Material classification

Material groups	Material designation	Hardness (HB)
10 Steels	11 Free-cutting steels	< 200
	12 Structural / cementation steels	< 200
	13 Carbon steels	< 300
	14 Alloy steels <850 N/mm ²	< 250
	15 Alloy steels hard. / temp. >850 - <1150 N/mm ²	> 250
	16 High tensile alloy steels	> 250
20 Stainless Steels	21 Free machining stainless steels	< 250
	22 Austenitic stainless steels	< 250
	23 Ferritic and martensitic <850 N/mm ²	< 250
	24 Ferritic and martens. >850 - <1150 N/mm ²	> 250
30 Cast iron	31 Cast iron	< 250
	32 Spheroidal graphite + malleable cast iron	< 250
40 Titanium	41 Pure titanium	< 250
	42 Titanium alloys	> 250
50 Nickel	51 Nickel alloys 1 <850 N/mm ²	< 250
	52 Nickel alloys 2 >850 - <1150 N/mm ²	> 250
	53 Nickel alloys 3 >1150 - \leq 1600 N/mm ²	> 340
60 Copper	61 Pure copper (electrolytic copper)	< 120
	62 Short chip brass, phosphor bronze, gun metal	< 200
	63 Long chip brass	< 200
70 Aluminium Magnesium	71 Al / Mg unalloyed	< 100
	72 Al alloyed Si < 1.5 %	< 150
	73 Al alloyed Si > 1.5 % - < 10 %	< 120
	74 Al alloyed Si > 10 %, Mg-Alloys	< 120
80 Plastic compounds	81 Thermoplastics	-
	82 Duroplastics	-
	83 Glass fibre reinforced plastics	-

Page
M
MF
UNC NEW
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RTS				
4	4	5	5	6
8		8		
9		9		
		10		

Examples for application groups

11 Free-cutting steels	31 Cast iron
1.0711 9 S 20 1.0715 9 SMn 28 1.0718 9 SMnPb 28 1.0726 35 S 20 1.0737 9 SMnPb 36	0.6015 GG 15 0.6020 GG 20 0.6025 GG 25 0.6030 GG 30

12 Structural, cementation steels	32 Spheroidal graphite + malleable cast iron
1.0037 S1 37-2 (S235JR) 1.0050 S1 50-2 (E295) 1.0060 S1 60-2 (E335) 1.5919 15 CrNi6 1.7131 16 MnCr5	0.7040 GGG 40 0.7043 GGG 40.3 0.7050 GGG 50 0.7060 GGG 60 0.7080 GGG 80

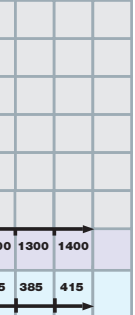
13 Carbon steels	61 Pure copper (electrolytic copper)
1.0503 C 45 1.0535 C 55 1.0601 C 60 1.1545 C 105 W1 1.2067 100 Cr 6	2.0060 E-Cu57 (E-Cu)

14 Alloy steels < 850 N/mm ²	63 Long chip brass
1.2363 X100CrMoV5-1 1.3551 80MoCrV42-16 1.4922 X20CrMoV12-1 1.7218 25CrMo4 1.7220 34CrMo4	2.0240 CuZn15 (Ms85) 2.0265 CuZn30 (Ms70) 2.0321 CuZn37 (Ms63)

15 Alloy steels hard./temp. >850 - <1150 N/mm ²	72 Al alloyed Si < 1.5 %
1.3553 X82WMoCrV6-5-4 1.6580 30CrNiMo8 1.7220 34CrMo4 1.7225 42CrMo4 1.8507 34CrAlMo5	3.1255 AlCuSiMn 3.1355 AlCuMg 2 3.2315 AlMgSi 1 3.3206 AlMgSi 0.5 3.4345 AlZnMgCu 0.5

21 Free machining stainless steels	73 Al alloyed Si > 1.5 % - < 10 %
1.4005 X12CrS13 1.4006 X12Cr13 1.4016 X6Cr17 1.4104 X12CrMoS17 1.4305 X10CrNiS18 9	3.2161 G-AlSi8Cu3 3.2162 GD-AlSi8Cu3 3.2341 G-AlSi5Mg 3.2371 G-AlSi7 Mg

22 Austenitic stainless steels	74 Al alloyed Si > 10 % Mg-Alloys
1.4301 X5CrNi18 10 1.4406 X2CrNiMoN17 12 2 1.4435 X2CrNiMo18 14 3 1.4541 X6CrNiTi18 10 1.4571 X6CrNiMoTi17 12 2	3.2381 G-AlSi10Mg 3.2382 GD-AlSi10Mg 3.2581 G-AlSi 12 3.3583



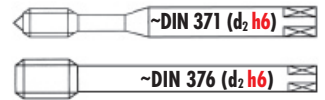
Use :
E suitable with emulsion



	RTS220VS	RTS420VS	RTS223VS	RTS423VS	RTS362VS	RTS462VS	RTS365VS	RTS465VS	
	E	E	E	E	E	E	E	E	11
	E	E	E	E	E	E	E	E	12
	E	E	E	E	E	E	E	E	13
	E	E	E	E	E	E	E	E	14
	E	E	E	E	E	E	E	E	15
									16
	E	E	E	E	E	E	E	E	21
	E	E	E	E	E	E	E	E	22
									23
									24
	E	E	E	E	E	E	E	E	31
	E	E	E	E	E	E	E	E	32
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									51
									52
									53
	E	E	E	E	E	E	E	E	61
	E	E	E	E	E	E	E	E	62
	E	E	E	E	E	E	E	E	63
									71
	E	E	E	E	E	E	E	E	72
	E	E	E	E	E	E	E	E	73
	E	E	E	E	E	E	E	E	74
									81
									82
									83

Tensile strength Rm (N/mm ²)	Elongation A (%)	Vc (m/min) < Ø 20 mm Guide line Coated VS
< 700	< 10	20 - 40
< 700	< 30	20 - 40
< 1000	< 20	16 - 24
< 850	< 30	16 - 24
> 850	< 30	6 - 12
> 850	< 12	
< 850	< 25	20 - 40
< 850	> 20	8 - 16
< 850	> 20	
> 850	> 15	
< 850	< 10	20 - 40
< 850	> 10	20 - 40
< 850	> 20	
> 850	< 20	
< 850	> 25	
> 850	< 25	
> 1150	< 20	
< 400	> 12	10 - 20
< 700	< 12	
< 700	> 12	20 - 40
< 350	> 15	
< 500	> 15	30 - 50
< 400	< 15	20 - 40
< 400	< 10	20 - 40
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-	-	
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Reference: DIN



RTS Rigid Tapping Synchro

RTS320VS-4



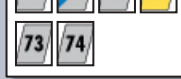
VS



RTS323VS-4



VS



RTS420VS-4



VS



RTS423VS-4



VS

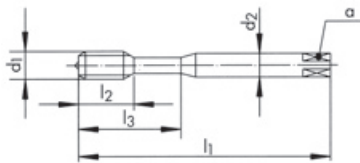


RTS320VS-4

RTS323VS-4

RTS420VS-4

RTS423VS-4



6HX

6HX

6HX

6HX

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	α mm		
*2	0.40	45	8.0		2.8 (h9)	2.1	2	1.60
2.5	0.45	50	10.0		2.8 (h9)	2.1	3	2.05
3	0.50	56	5.5	18	3.5 (h9)	2.7	3	2.50
4	0.70	63	7.5	21	4.5	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50
12	1.75	110	14.0		10.0	8.0	3	10.20
16	2.00	110	18.0		12.0	9.0	3	14.00
20	2.50	140	24.0		16.0	12.0	4	17.50

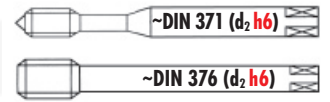
*RTS320VS-3



Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado



sur demande
auf Anfrage
on request
su richiesta
sobre pedido



RTS Rigid Tapping Synchro

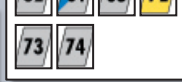
RTS362VS-3	RTS365VS-3	RTS462VS-3	RTS465VS-3
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RTS362VS-3



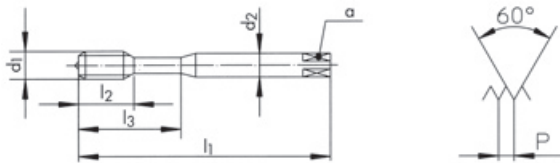
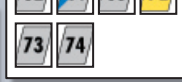
RTS365VS-3



RTS462VS-3



RTS465VS-3



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h ₆ mm	α mm		
*2	0.40	45	7.0		2.8 (h9)	2.1	3	1.60
*2.5	0.45	50	9.0		2.8 (h9)	2.1	3	2.05
3	0.50	56	5.5	18	3.5 (h9)	2.7	3	2.50
4	0.70	63	7.5	21	4.5	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50
12	1.75	110	14.0		10.0	8.0	3	10.20
14	2.00	110	14.0		12.0	9.0	3	12.00
16	2.00	110	18.0		12.0	9.0	3	14.00
20	2.50	140	24.0		16.0	12.0	4	17.50
24	3.00	160	27.0		16.0	12.0	4	21.00

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*RTS360VS-3

Uniquement pour taraudage synchrone
Nur für Synchrobearbeitung
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Solo para roscado sincronizado

sur demande
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sobre pedido

RTS Rigid Tapping Synchro

RTS565VS-3



VS

11	12	13	14
15	21	22	31
32	61	63	72
73	74		

RTS665VS-3



VS

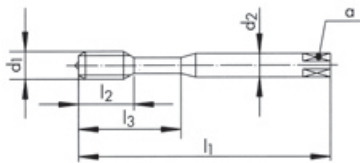
RTS565VS-3

RTS665VS-3



6HX

6HX



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	α mm		
6	1.00	125	11.0	30	6.0	4.9	3	5.00
8	1.25	140	12.5	35	8.0	6.2	3	6.80
10	1.50	160	14.0	39	10.0	8.0	3	8.50
12	1.75	180	14.0		10.0	8.0	3	10.20
16	2.00	200	18.0		12.0	9.0	3	14.00

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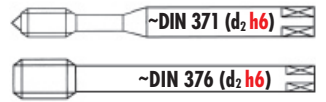
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RTS Rigid Tapping Synchro

RTS362VS-3

RTS462VS-3

RTS362VS-3



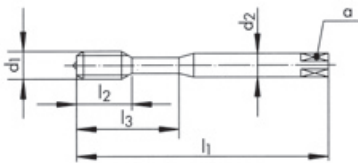
VS



RTS462VS-3



VS



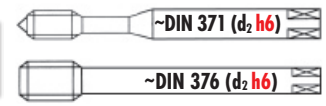
∅ d ₁	P	l ₁	l ₂	l ₃	d ₂ h6	α		
MF	mm	mm	mm	mm	mm	mm		
8	1.00	90	12.5	35	8.0	6.2	3	7.00
10	1.00	100	14.0	39	10.0	8.0	3	9.00
12	1.50	110	14.0		10.0	8.0	3	10.50
14	1.50	110	14.0		12.0	9.0	3	12.50
16	1.50	110	14.0		12.0	9.0	3	14.50



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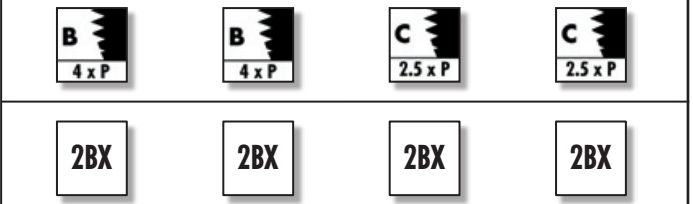
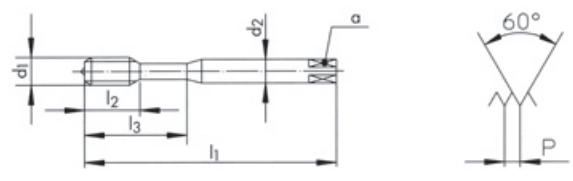
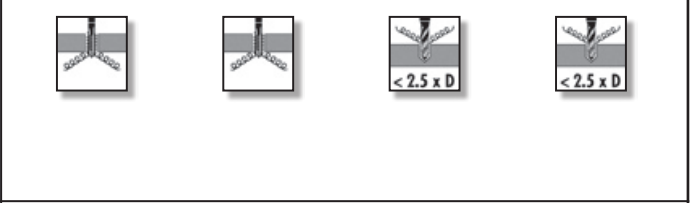
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RTS Rigid Tapping Synchro

RTS320VS-4	RTS420VS-4	RTS362VS-3	RTS462VS-3
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RTS320VS-4		VS	
RTS420VS-4		VS	
RTS362VS-3		VS	
RTS462VS-3		VS	



Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		
6	32	3.50	56	6.5	20.0	4.0	3.0	3	2.70
8	32	4.16	63	7.5	21.0	4.5	3.4	3	3.50
10	24	4.82	70	9.0	25.0	6.0	4.9	3	3.80
1/4	20	6.35	80	11.0	30.0	6.0	4.9	3	5.10
5/16	18	7.93	90	12.5	35.0	8.0	6.2	3	6.50
3/8	16	9.52	100	14.0	39.0	10.0	8.0	3	7.90
1/2	13	12.70	110	14.0		10.0	8.0	3	10.70

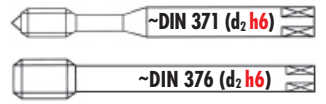
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sobre pedido

UNF ANSI B1.1

PM



RTS Rigid Tapping Synchro

RTS320VS-4



VS

11	12	13	14
15	21	22	31
32	61	63	72
73	74		

RTS420VS-4



VS

RTS362VS-3



VS

11	12	13	14
15	21	22	31
32	61	63	72
73	74		

RTS462VS-3



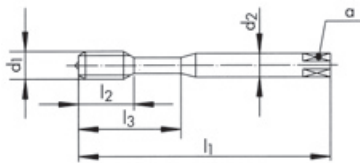
VS

RTS320VS-4

RTS420VS-4

RTS362VS-3

RTS462VS-3



Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	α mm		
10	32	4.82	70	9.0	25.0	6.0	4.9	3	4.00
1/4	28	6.35	80	11.0	30.0	6.0	4.9	3	5.40
5/16	24	7.93	90	12.5	35.0	8.0	6.2	3	6.90
3/8	24	9.52	100	14.0	39.0	10.0	8.0	3	8.40
1/2	20	12.70	110	14.0		10.0	8.0	3	11.50

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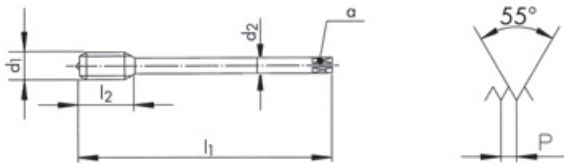
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sobre pedido

RTS Rigid Tapping Synchro

RTS462VS-3



RTS462VS-3



\varnothing " d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm		
1/8	28	9.72	90	14.0	8.0	6.2	3	8.70
1/4	19	13.15	110	14.0	12.0	9.0	3	11.60
3/8	19	16.66	110	14.0	12.0	9.0	4	15.25
1/2	14	20.95	125	20.0	16.0	12.0	4	19.00

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SRT TAPPING CHUCKS "SOFT RIGID TAPPING" COLLETS AND QUICK-CHANGE SYSTEMS



Uniquement pour taraudage synchrone
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SRT054		SRT312		SRT520			
Collet tapping chuck with axial shock absorber, M0.5 - M4.		Quick-change tapping chuck with axial shock absorber, M3 - M12. Internal coolant.		Quick-change tapping chuck with axial shock absorber, M5 - M20. Internal coolant.			
Capacity	D	D ₁	L	L ₁	L ₂	Weldon DIN 1835	Internal coolant
M0.5 - M4	12	20	53	56	73.0	B	
M3 - M12	25	39	53	90	97.5	B+E	✓
M5 - M20	25	56	53	110	122.0	B+E	✓
D9865-		D9820-		D9825-			
Collets type ER8 for SRT054. For taps DIN 371.		Quick-change adaptor for SRT312. For taps type RTS, DIN.		Quick-change adaptor for SRT520. For taps type RTS, DIN.			
Order number	D ₂ mm	L ₃ mm	d ₂ mm	a mm	SRT054	SRT312	SRT520
D9865-0250	8.5	13.5	2.5		✓		
D9865-0300	8.5	13.5	3.0		✓		
D9865-0350	8.5	13.5	3.5		✓		
D9865-0400	8.5	13.5	4.0		✓		
D9865-0450	8.5	13.5	4.5		✓		
D9820-0035	19.0	21.5	3.5	2.7		✓	
D9820-0045	19.0	21.5	4.5	3.4		✓	
D9820-0060	19.0	21.5	6.0	4.9		✓	
D9820-0070	19.0	21.5	7.0	5.5		✓	
D9820-0080	19.0	21.5	8.0	6.2		✓	
D9820-0090	19.0	21.5	9.0	7.0		✓	
D9820-0100	19.0	21.5	10.0	8.0		✓	
D9820-0110	19.0	21.5	11.0	9.0		✓	
D9825-0060	31.0	35.0	6.0	4.9			✓
D9825-0070	31.0	35.0	7.0	5.5			✓
D9825-0080	31.0	35.0	8.0	6.2			✓
D9825-0090	31.0	35.0	9.0	7.0			✓
D9825-0100	31.0	35.0	10.0	8.0			✓
D9825-0110	31.0	35.0	11.0	9.0			✓
D9825-0120	31.0	35.0	12.0	9.0			✓
D9825-0160	31.0	35.0	16.0	12.0			✓
D9825-0180	31.0	35.0	18.0	14.5			✓

TECHNICAL QUESTIONNAIRE - THREAD CUTTING

for photocopying

Quotation Inquiry

Test result

Complaint

Agency : _____

Your reference : _____

Customer : _____

E-mail : _____

Phone or fax : _____

Date : _____

1. Tool type : _____

Thread size : _____

Particularity : _____

Class of tolerance : _____

2. Material group : _____

Material N° : _____

Hardness : _____ N/mm² /HB/HRC

Norm : _____

Elongation : _____ %

3. Thread : blind through

Threaded length : _____ mm

Pilot hole Ø : _____

Depth : _____ mm

Counter-bore Ø : _____

Depth : _____ mm

4. Cutting speed (V_c) : _____ m/min _____ 1/min

Feed (f) : _____ %

5. Machine : _____ internal coolant

Working position : horizontal vertical

Rigid Tapping : "Soft Rigid Tapping"

Tapping spindle : axial compensation

collet

de-clutching

Weldon

reversible

hot / cold shrunk

sliding clutch

6. Lubricant : emulsion oil air mist

Product : _____

7. Tool change reason tool wear

tool breakage

thread not correct (checked with thread plug gauge)

tooth breakage in the chamfer lead

machine error

tooth breakage in the guiding thread

8. Efficiency comparison

Tool under test : _____

Performance and observations : _____

Remarks : _____