



Machining titanium
STL.81 & STL.52



THREADING SOLUTIONS



AVAILABILITY OF THE ARTICLES

- ID Stock item
- ID Available at short notice

SOLUTION APPROACHES & FIELDS OF APPLICATION

Titanium tends to clamp due to its ductility. Clamping increases friction. This results in sticking and welding.

When cutting, the reactivity with oxygen is noticeable as a negative point. The low thermal conductivity of titanium produces localised heat build-up. The tendency to stick together quickly (diffusion) increases considerably due to heating. The heat dissipation through the chip is 4 times lower compared to steel.

Due to the relatively low modulus of elasticity, vibrations can occur during machining. Chatter marks often occur during milling.



AEROSPACE



MEDICAL

SOLUTION FOR THROUGH-HOLE MACHINING

GEOMETRIC FEATURES OF THE TAP **STL.81SUA-4**

- Innovative flute shape, **patent pending**
- Slow left-hand spiral flutes ~ 15°, with spiral point, for secure chip evacuation
- Conditioned, sharp-edged cutting edge, provides a clean and smooth cut
- Interrupted thread for good chip evacuation and to minimise the clamping effect
- Tribology - coating specially designed with our partner to prevent sticking, in rainbow colour



CUSTOMER BENEFITS **STL.81SUA-4**

- Innovative tool, **patent pending**
- High process reliability
- Through-hole thread up to 3 x D
- Stable thread quality over the entire tool life
- High, consistent tool performance

SOLUTION FOR BLIND-HOLE MACHINING

GEOMETRIC FEATURES OF THE TAP **STL.52SUA-3**

- Slow right-hand spiral flutes ~ 15°
- Conditioned, sharp-edged cutting edge, provides a clean and smooth cut
- Truncated thread, for good chip evacuation and minimisation of the clamping effect
- Tribology - coating specially designed with our partner to prevent sticking, in rainbow colour



CUSTOMER BENEFITS **STL.52SUA-3**

- High process reliability
- Blind hole thread up to 2 x D
- Stable thread quality over the entire tool life
- High, consistent tool performance

ALTERNATIVE MACHINING

THREAD MILLING



Types GF / GFS / GFM

THREAD WHIRLING



All these tools can be consulted online and in our catalogue "TM"!

THREAD CUTTING



TL.20VS-4

TL.51VS-3

Threading taps "TL" can be viewed online and in our catalogue "TC"!

APPLICATION CHART STL



STL381SUA-4



STL481SUA-4



STL352SUA-3



STL452SUA-3



41	Pure titanium
3.7024	Grad1
3.7034	Grad2
3.7055	Grad3
3.7065	Grad4

42	Titanium alloys
3.7124	TiCu2.5 Ti6Al7Nb
3.7164	TiAl6V4 (Grad5)
3.7174	TiAl6V6Sn2

For material groups as per

DC application chart

DC Material classification

Material groups	Material designation
40 Titanium	41 Pure titanium
	42 Titanium alloys

Hardness (HB)
< 250
> 250

Tensile strength Rm (N/mm²)
< 850
> 850

Elongation A (%)
> 20
< 20

Vc (m/min) < Ø 20 mm Guide Line Coated SUA
4 - 8
3 - 5

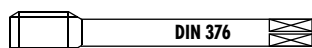
Optimal with cutting oil

Suitable with emulsion

PICTOGRAPHS



Reinforced shank as per DIN 371



Reduced shank as per DIN 376



HSSE-PM



Number of flutes (Z)



15° right-hand spiral flutes



~ 15° left-hand spiral flutes, with spiral point **NEW**



Truncated thread



Interrupted thread



Through hole, long chipping materials



Blind hole < 2 x D, long chipping materials



Core hole diameter



Radius on external diameter (J)



Thread EG (for wire screw thread inserts)



3.5 - 5.5 chamfered threads, lead form B



2 - 3 chamfered threads, lead form C



Tolerance class 6HX



"SUA"-coating **NEW**



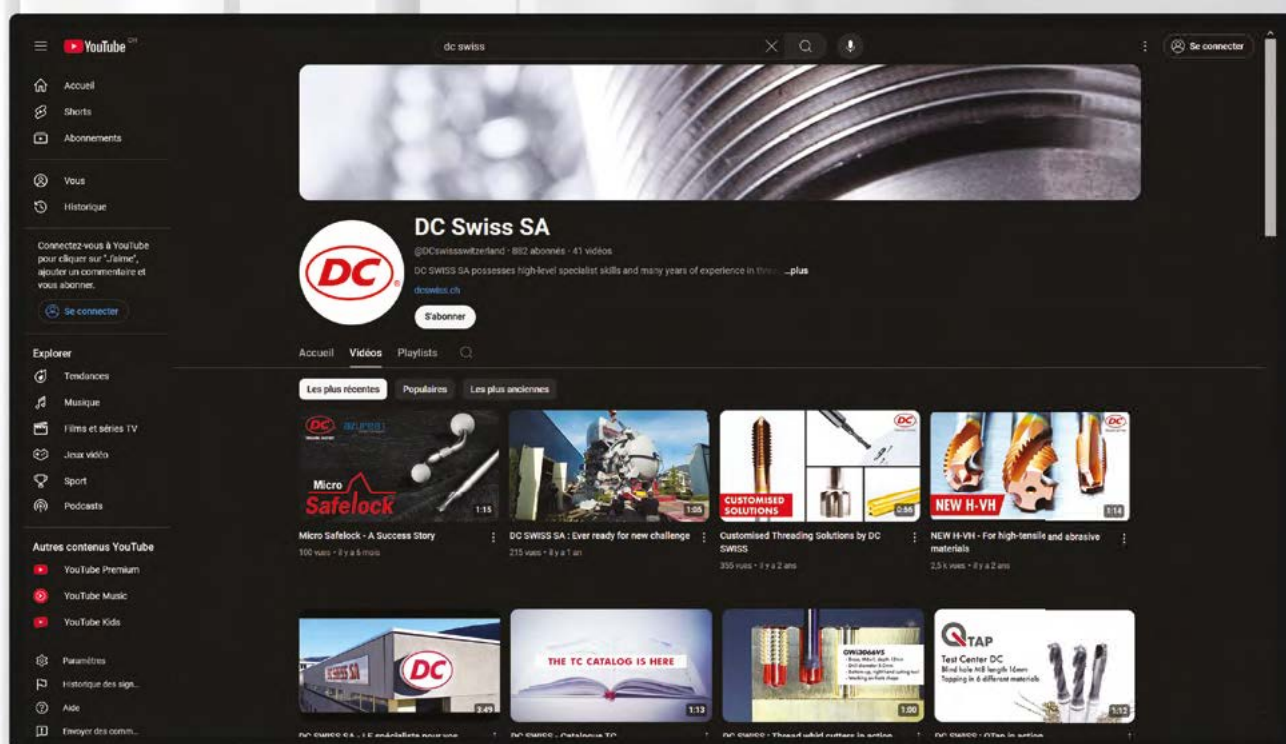
Stock item



Available at short notice

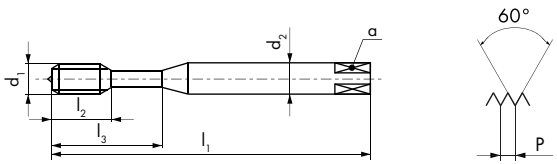


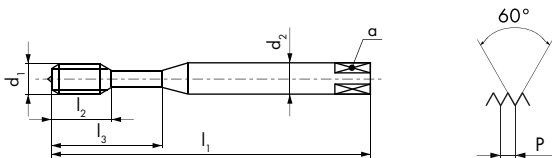
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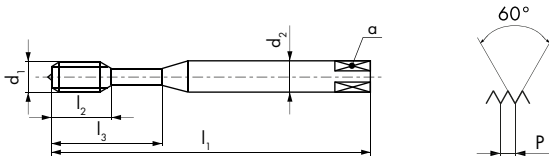


... AND DISCOVER THE WORLD OF DC SWISS SA



STL Titanium									STL381SUA-4		STL352SUA-3	STL452SUA-3
STL381SUA-4   												
STL352SUA-3   												
STL452SUA-3   												
									    			
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID		
3	0.5	56	12		3.5	2.7	3	2.5	● 208886	● 208950		
4	0.7	63	14		4.5	3.4	3	3.3	● 208887	● 208951		
5	0.8	70	15		6	4.9	3	4.2	● 208888	● 208952		
6	1	80	15	23	6	4.9	3	5	● 208889	● 208953		
8	1.25	90	18	29	8	6.2	3	6.8	● 208890	● 208954		
10	1.5	100	20	33	10	8	3	8.5	● 208891	● 208955		
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	
3	0.5	56	12		3.5	2.7	3	2.5	● 208892	● 208956		
4	0.7	63	14		4.5	3.4	3	3.3	● 208893	● 208957		
5	0.8	70	15		6	4.9	3	4.2	● 208894	● 208958		
6	1	80	15	23	6	4.9	3	5	● 208895	● 208959		
8	1.25	90	18	29	8	6.2	3	6.8	● 208896	● 208960		
10	1.5	100	20	33	10	8	3	8.5	● 208897	● 208961		
12	1.75	110	24		9	7	4	10.2				● 208962
14	2	110	28		11	9	4	12				● 208963
16	2	110	30		12	9	4	14				● 208964

STL Titanium									STL381SUA-4	STL352SUA-3		
STL381SUA-4 L15 SUA 41 42												
STL352SUA-3 R15 SUA 41 42												
									<3 x D <2 x D			
									B 4 x P C 2.5 x P 4H5H 4H5H			
Ø d ₁ MJ	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID		
3	0.5	56	12		3.5	2.7	3	2.55	• 208878	• 208942		
4	0.7	63	14		4.5	3.4	3	3.4	• 208879	• 208943		
5	0.8	70	15		6	4.9	3	4.3	• 208880	• 208944		
6	1	80	15	23	6	4.9	3	5.1	• 208881	• 208945		
8	1	90	18	29	8	6.2	3	7.1	• 208882	• 208946		
8	1.25	90	18	29	8	6.2	3	6.9	• 208883	• 208947		
10	1.25	100	20	33	10	8	3	8.9	• 208884	• 208948		
10	1.5	100	20	33	10	8	3	8.6	• 208885	• 208949		
									≤MJ5x0.8 = 4H6H			

STL Titanium									STL381SUA-4	STL352SUA-3				
STL381SUA-4														
STL352SUA-3														
									 					
									 		 			
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID				
4	0.5	63	14		4.5	3.4	3	3.5	● 208898	● 208965				
5	0.5	70	15		6	4.9	3	4.5	● 208899	● 208966				
6	0.5	80	15	23	6	4.9	3	5.5	● 208900	● 208967				
8	1	90	18	29	8	6.2	3	7	● 208901	● 208968				
10	1	100	20	33	10	8	3	9	● 208902	● 208969				
														
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID				
4	0.5	63	14		4.5	3.4	3	3.5	● 208903	● 208970				
5	0.5	70	15		6	4.9	3	4.5	● 208904	● 208971				
6	0.5	80	15	23	6	4.9	3	5.5	● 208905	● 208972				
8	1	90	18	29	8	6.2	3	7	● 208906	● 208973				
10	1	100	20	33	10	8	3	9	● 208907	● 208974				

STL

Titanium

STL381SUA-4



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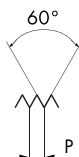
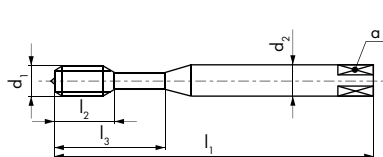
STL352SUA-3



41/42

STL381SUA-4

STL352SUA-3



2B

2B

Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	40	2.84	56	12		3.5	2.7	3	2.25
5	40	3.17	56	12		3.5	2.7	3	2.55
6	32	3.5	56	13		4	3	3	2.75
8	32	4.16	63	14		4.5	3.4	3	3.4
10	24	4.82	70	15		6	4.9	3	3.8
1/4	20	6.35	80	15	23	7	5.5	3	5.1
5/16	18	7.93	90	18	29	8	6.2	3	6.5
3/8	16	9.52	100	20	33	10	8	3	8

ID

ID

• 208912

• 208979

• 208913

• 208980

• 208914

• 208981

• 208915

• 208982

• 208916

• 208983

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• 208918

• 208985

• 208919

• 208986

STL

Titanium

STL381SUA-4

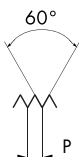
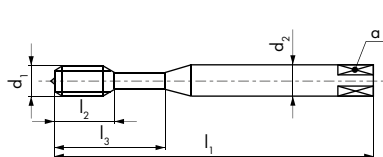


STL352SUA-3



STL381SUA-4

STL352SUA-3



3B

3B

Ø" d ₁ UNJC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
6	32	3.5	56	13		4	3	3	2.8
8	32	4.16	63	14		4.5	3.4	3	3.45
10	24	4.82	70	15		6	4.9	3	3.9
1/4	20	6.35	80	15	23	7	5.5	3	5.2

ID

ID

• 208908

• 208975

• 208909

• 208976

• 208910

• 208977

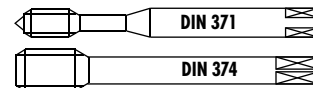
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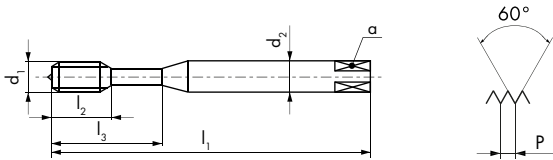
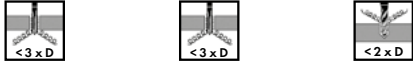
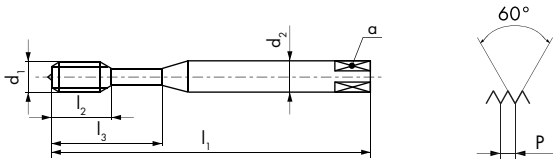
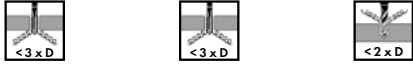
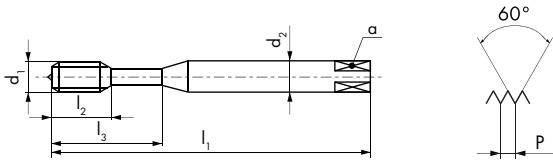
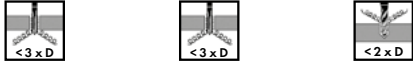
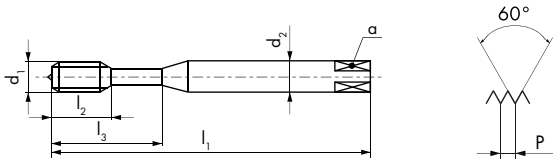
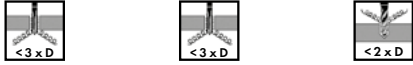
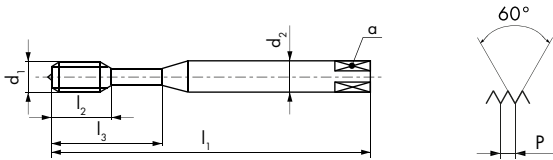
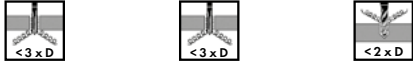
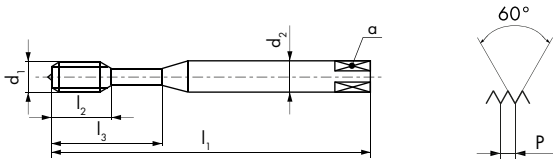
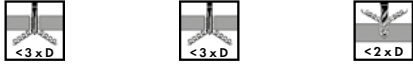
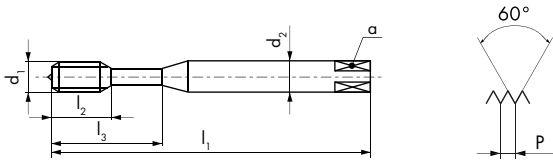
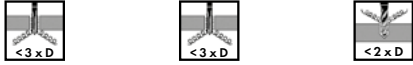
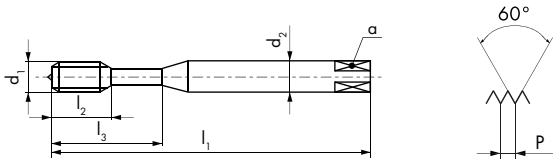
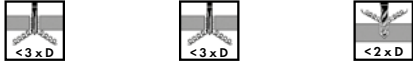
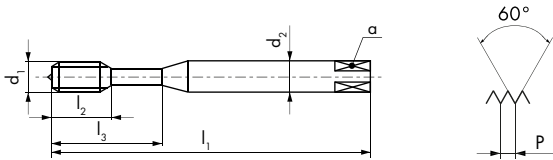
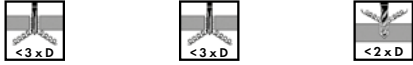
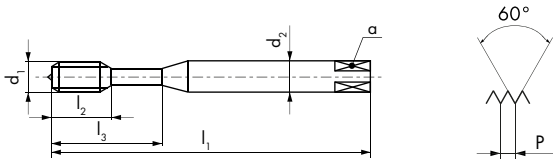
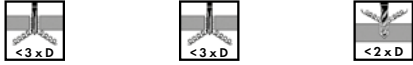
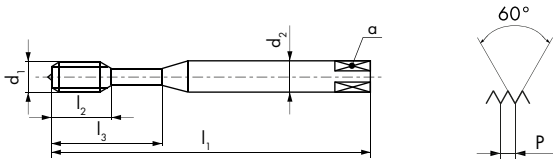
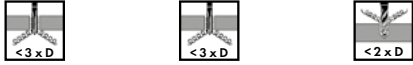
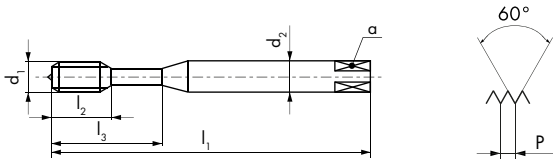
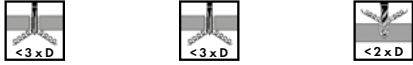
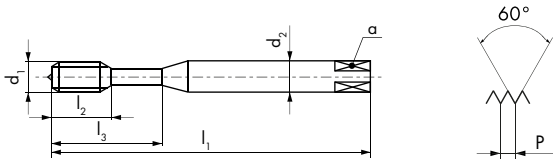
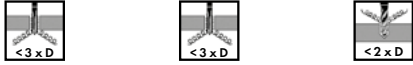
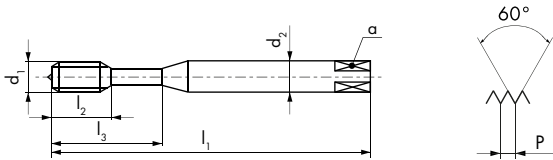
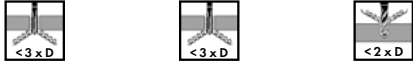
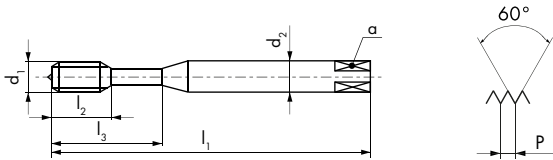
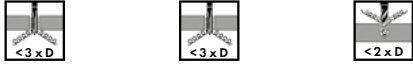
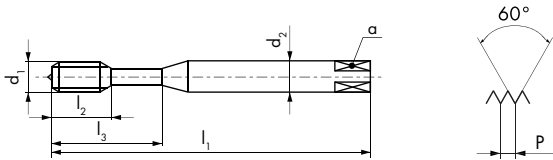
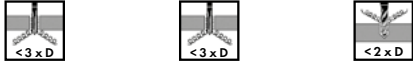
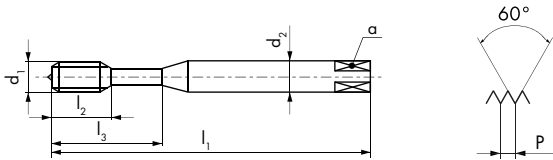
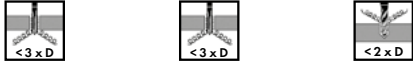
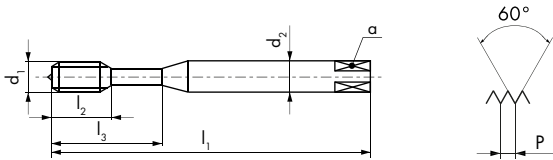
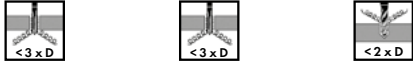
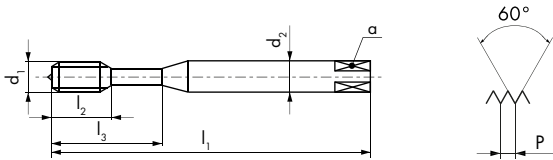
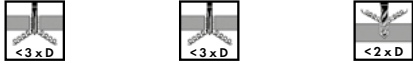
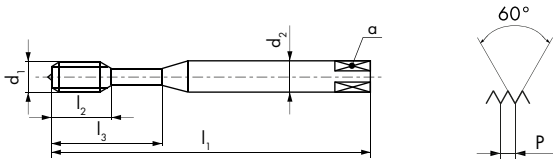
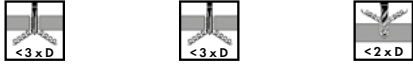
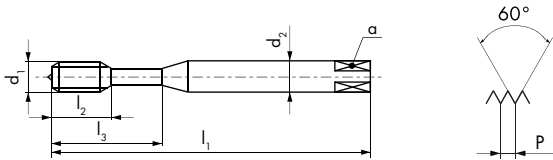
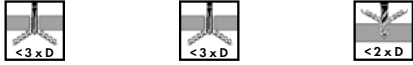
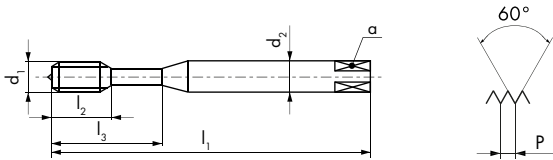
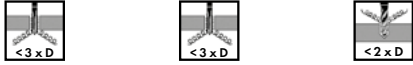
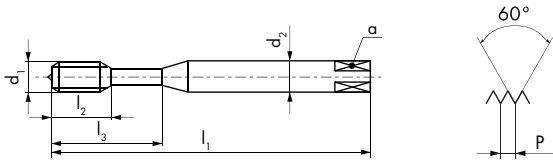
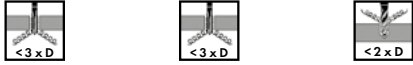
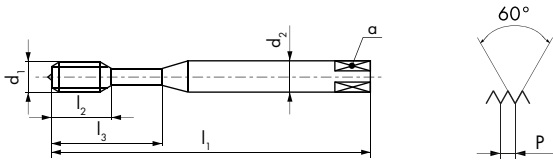
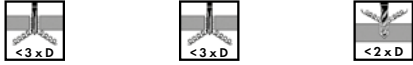
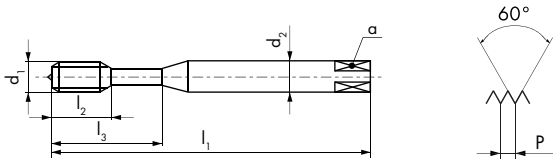
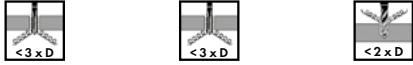
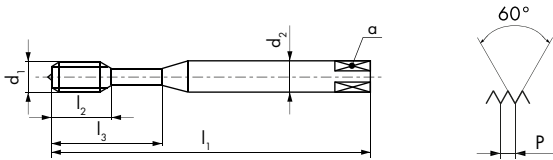
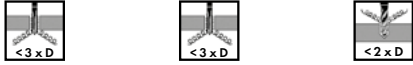
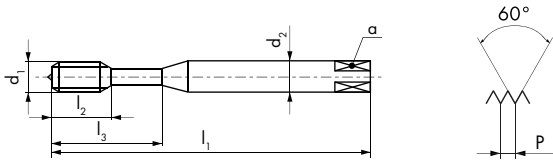
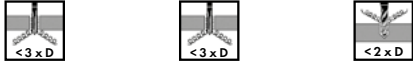
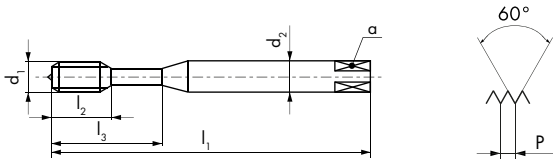
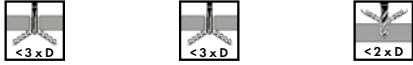
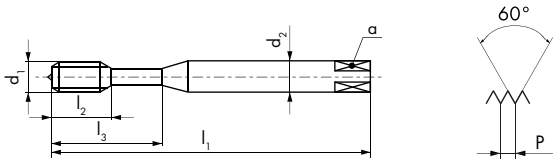
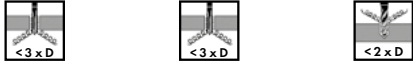
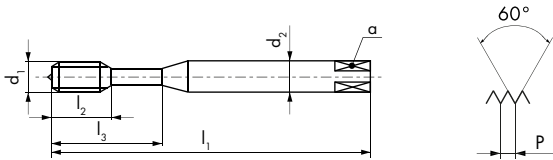
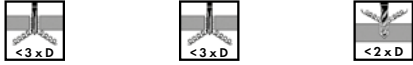
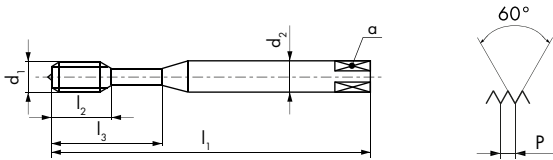
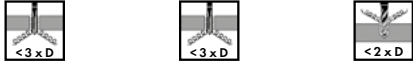
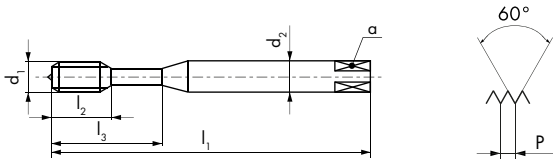
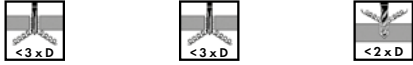
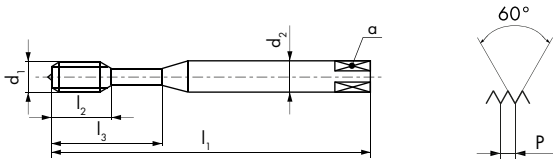
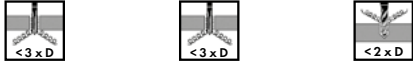
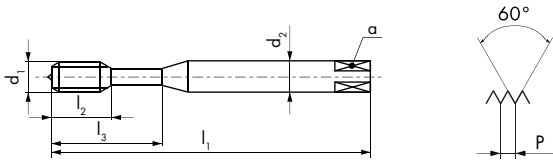
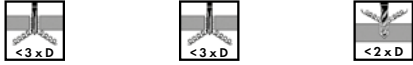
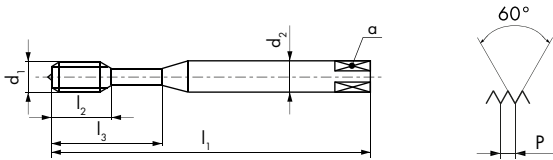
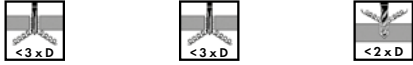
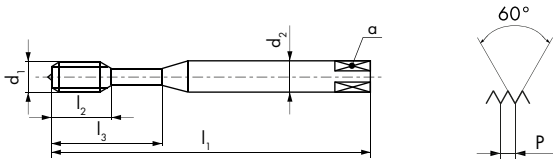
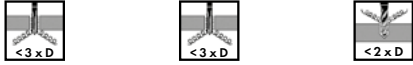
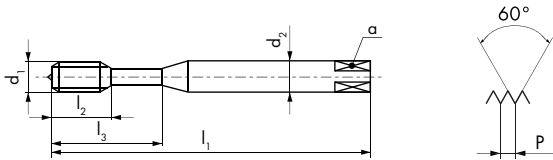
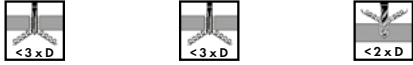
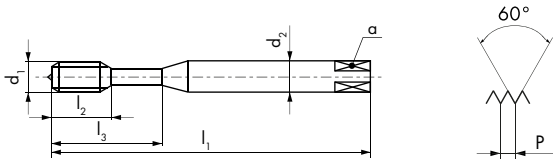
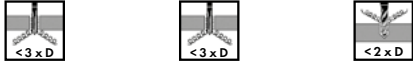
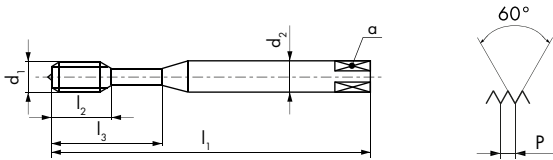
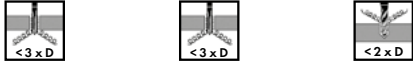
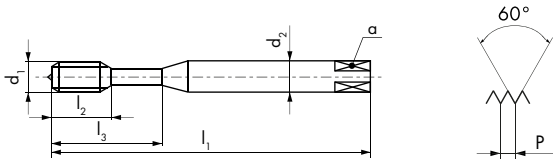
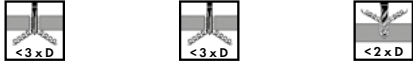
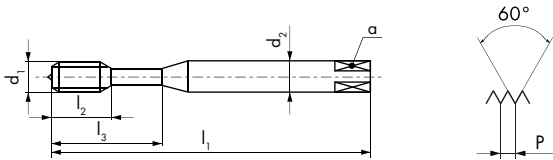
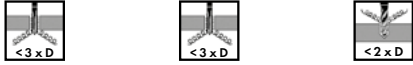
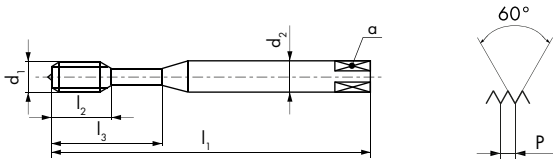
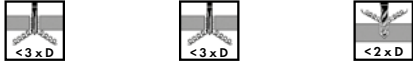
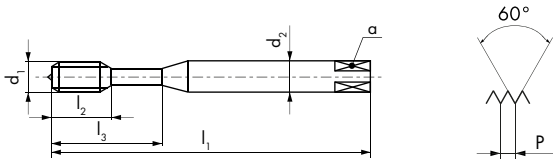
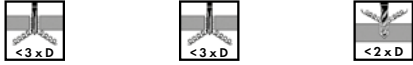
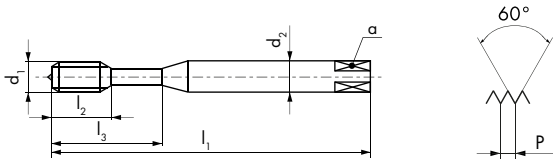
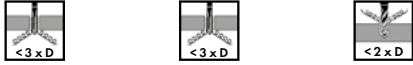
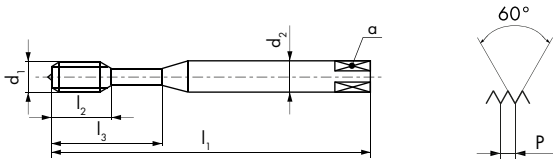
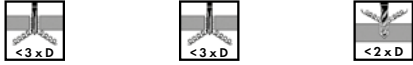
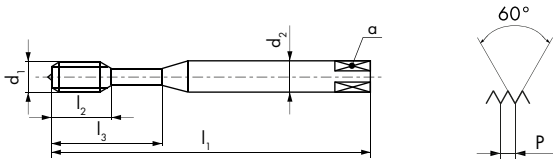
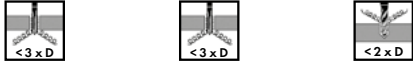
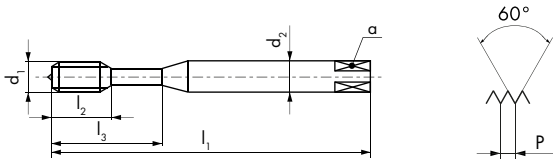
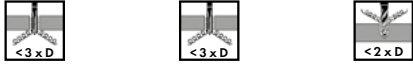
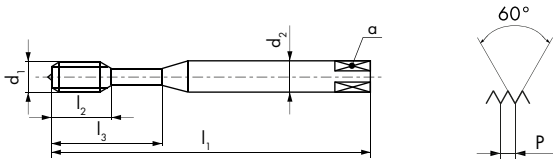
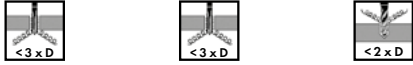
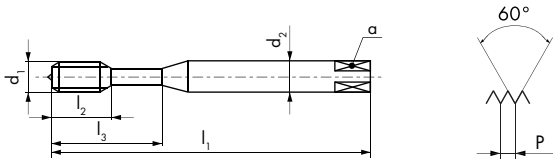
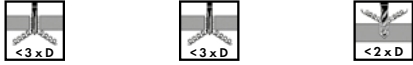
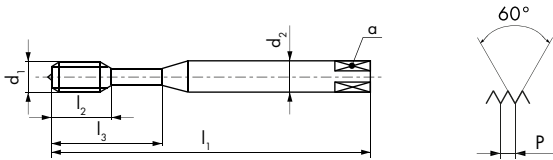
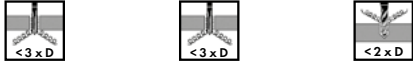
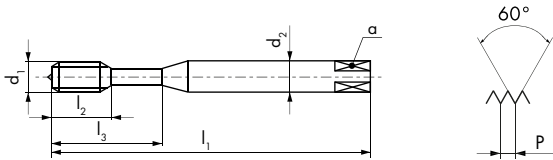
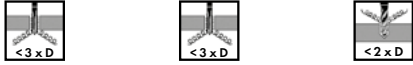
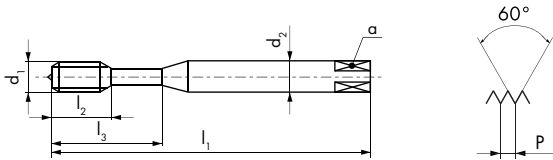
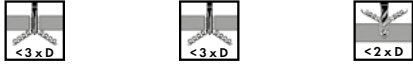
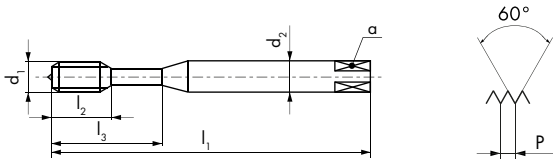
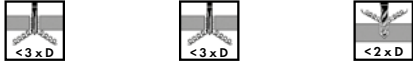
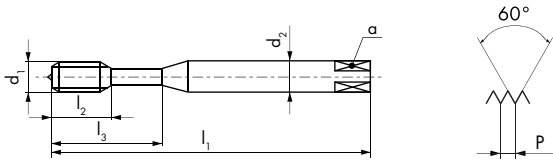
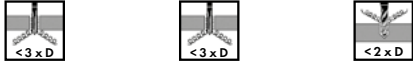
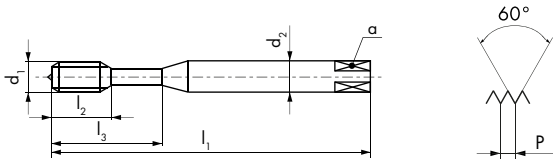
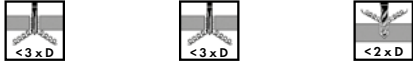
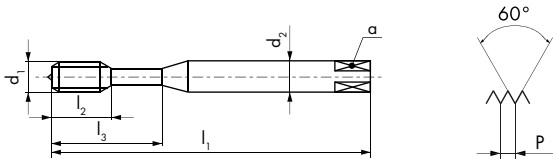
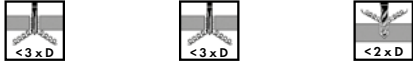
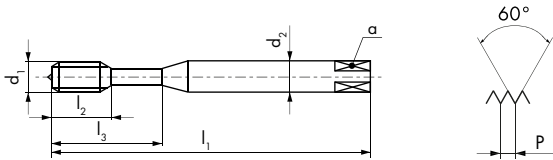
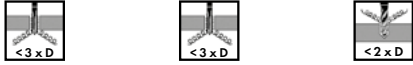
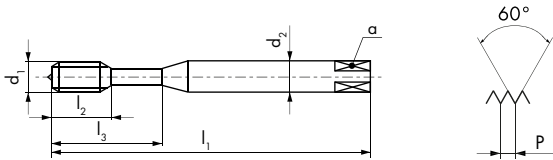
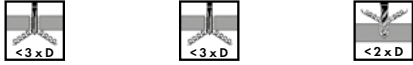
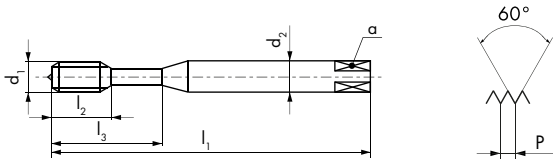
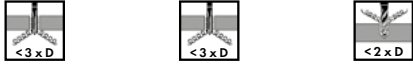
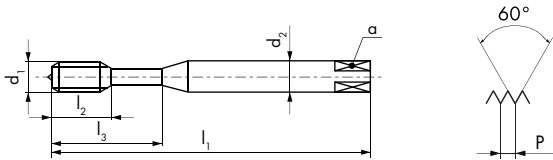
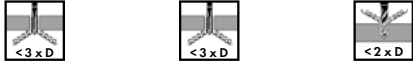
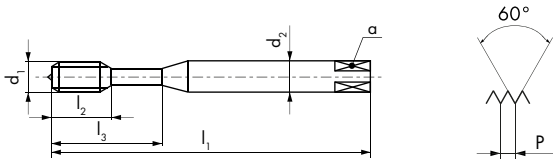
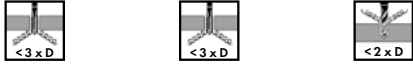
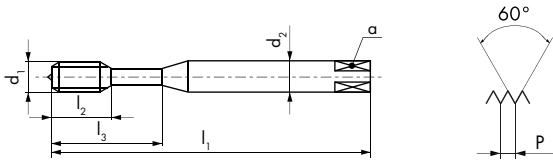
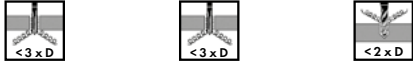
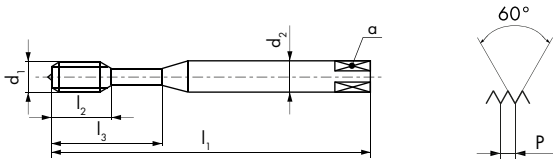
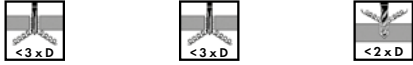
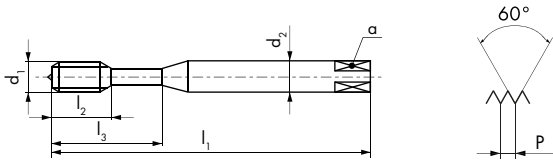
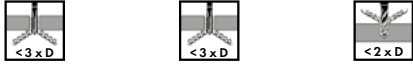
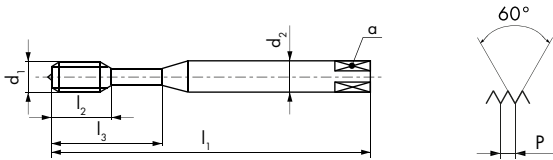
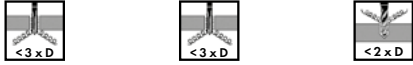
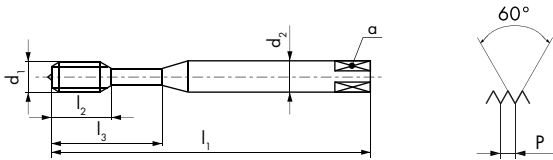
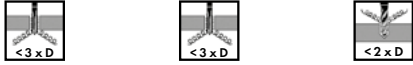
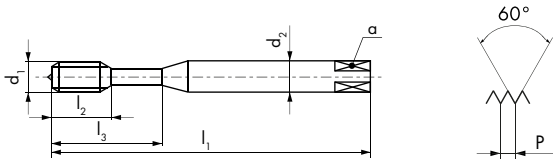
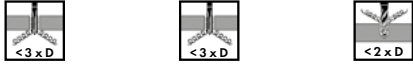
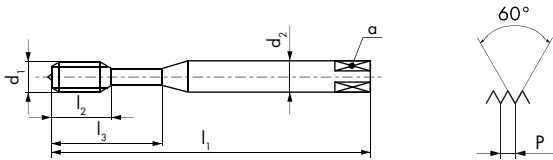
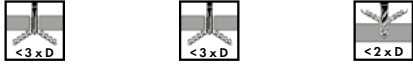
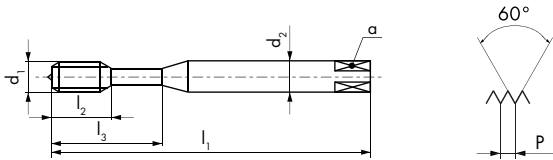
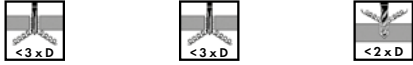
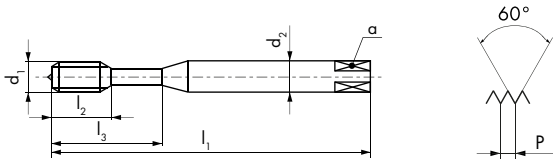
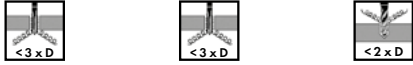
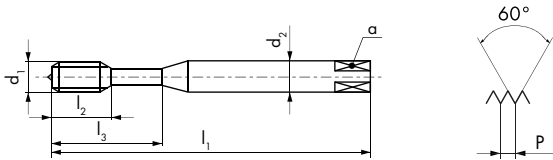
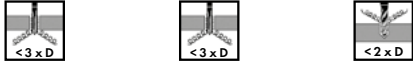
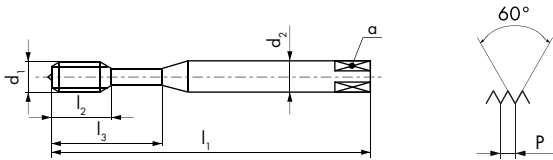
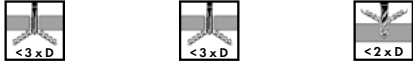
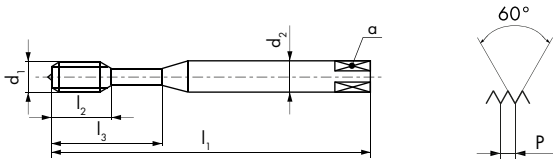
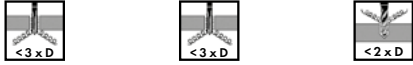
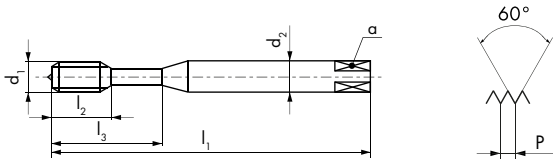
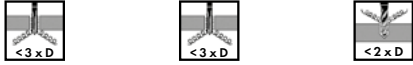
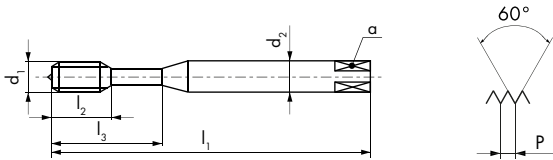
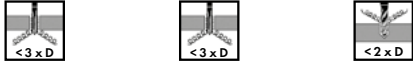
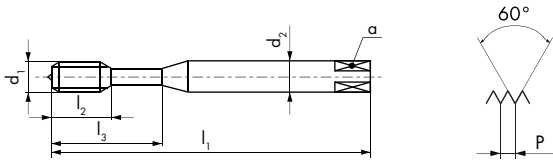
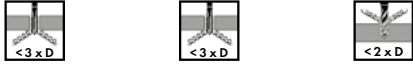
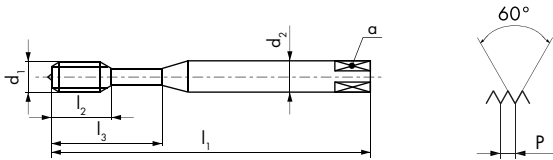
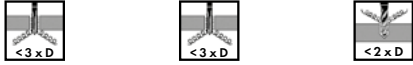
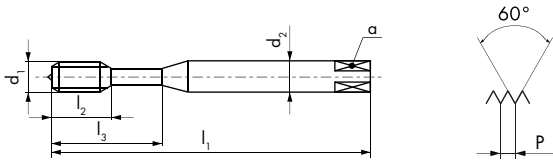
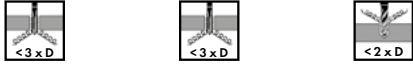
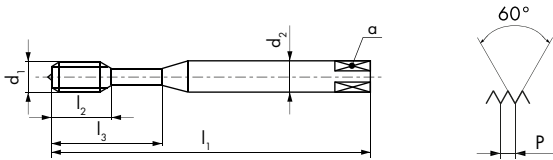
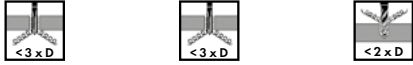
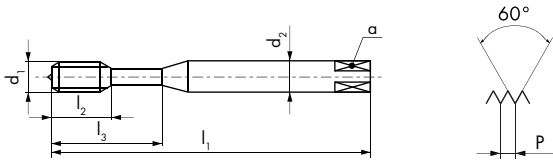
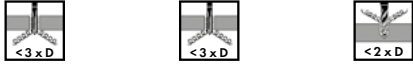
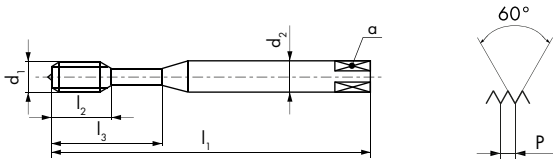
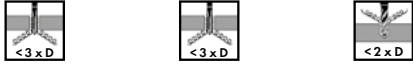
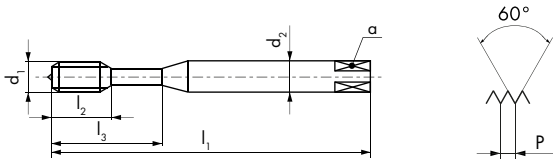
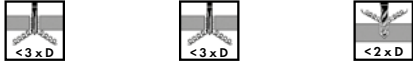
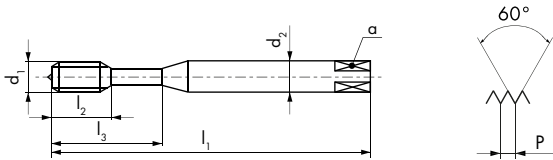
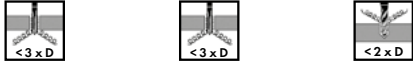
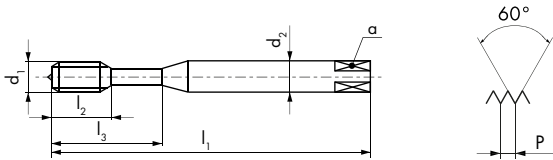
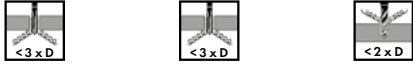
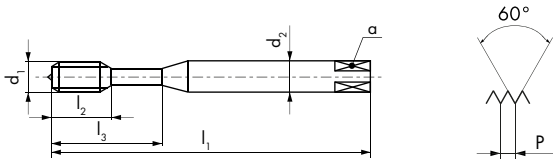
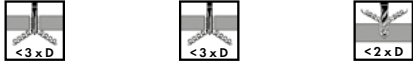
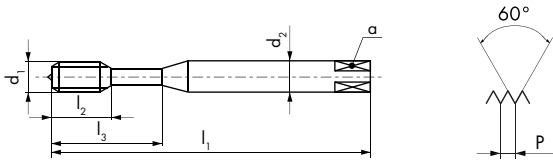
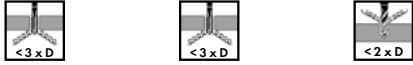
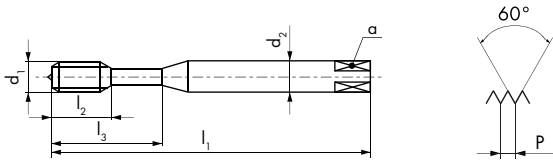
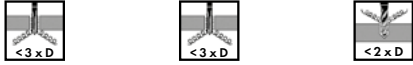
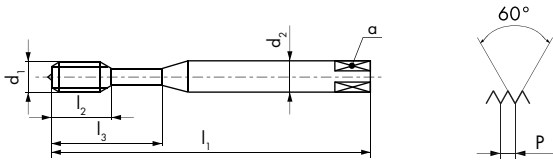
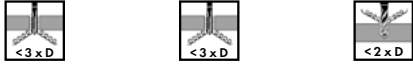
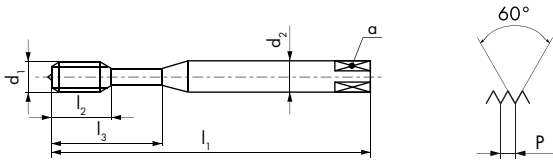
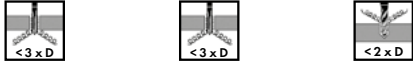
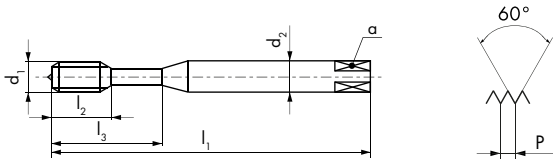
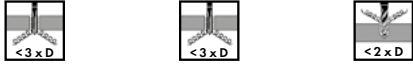
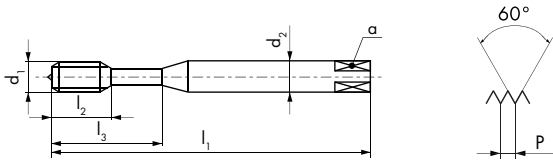
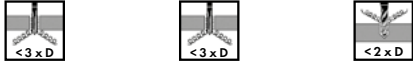
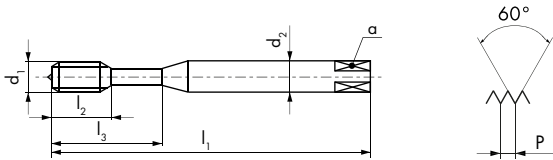
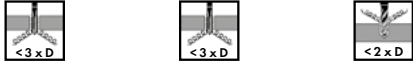
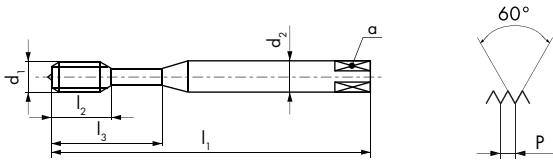
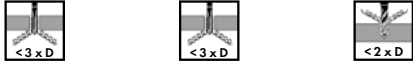
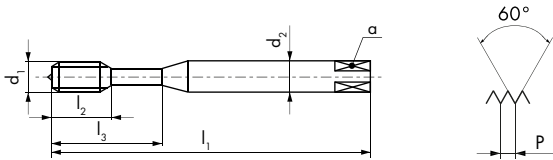
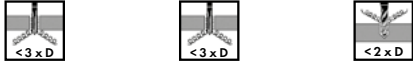
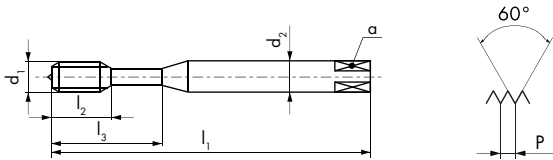
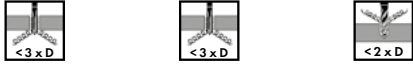
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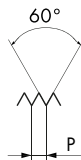
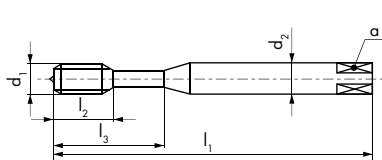
STL352SUA-3



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STL352SUA-3



3B

3B

Ø" d ₁ UNJF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	4.82	70	15		6	4.9	3	4.1
1/4	28	6.35	80	15	23	7	5.5	3	5.55
5/16	24	7.93	90	18	29	8	6.2	3	7
3/8	24	9.52	100	20	33	10	8	3	8.6

ID

ID

208920

208987

208921

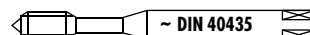
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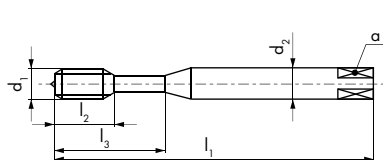
STL352SUA-3



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STL381SUA-4

STL352SUA-3



Ø d ₁ EG M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.7	4.91	70	15		6	4.9	3	4.2
5	0.8	6.04	80	15	23	6	4.9	3	5.25
6	1	7.3	80	15	23	7	5.5	3	6.3
8	1.25	9.62	100	20	33	10	8	3	8.4

ID

ID

● 208935

● 208999

● 208936

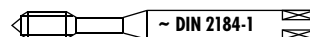
● 209000

● 208937

● 209001

● 208938

● 209002



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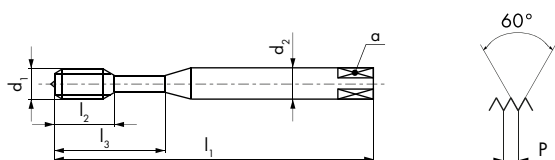
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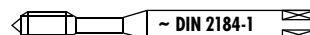


3B

Ø d ₁ EG UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
4	40	3.67	56	13	4	3	3	3.05
6	32	4.53	70	15	6	4.9	3	3.75
8	32	5.19	70	15	6	4.9	3	4.45

ID

- 209003
- 209004
- 209005



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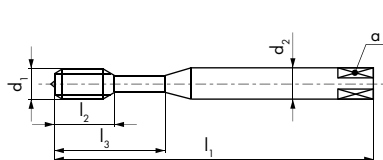
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STL352SUA-3



3B

3B

Ø ^h d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	5.85	80	15	23	6	4.9	3	5.1
1/4	28	7.52	90	18	29	8	6.2	3	6.65
5/16	24	9.31	90	20	31	9	7	3	8.2

ID

ID

208939

209006

208940

209007

208941

209008

DELIVERY AND PAYMENT CONDITIONS

Orders	Orders, which cannot be delivered from stock, will be acknowledged. Items, which do not belong any more to our standard programme, although still featured in the catalogue, will be invoiced as «specials». Orders may only be cancelled by mutual written agreement.
Quotations and acknowledgements	For reasons of constant development in this field, all descriptions mentioned in our quotations, annexed documents, weight indications, measurements as well as illustrations and drawings are approximate indications. These technical data have binding value only if expressly specified.
Prices	Our prices are quoted for deliveries ex works Malleray, excluding VAT, packing, insurance, freight, customs' and legalisation duties. Should prices increase, we reserve the right to invoice tools already acknowledged at the new prices.
Payment	Payments must be made in advance or against irrevocable and confirmed documentary credit to be opened in our favour with a Swiss bank. All banking commissions and charges have to be borne by the buyer.
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Delivery	Confirmed delivery dates are non-binding. We will do our utmost to maintain them. However, we cannot accept responsibility of direct or consequential losses due to delayed deliveries.
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Guarantee	Tools recognised to be defective by DC will be replaced free of charge, but without prejudice.
Complaints	Complaints will be considered only within 15 days after receipt of the goods.
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Special conditions	In the case of partial or total disruption of our production; we reserve the right to partially or totally cancel our delivery commitments.
Tribunal	All disputes are subject to Swiss Law. The seat of court of law will be Moutier (Switzerland).

TECHNICAL QUESTIONNAIRE

Thread cutting and thread forming

Enquiry ☐

Test result ☐

Complaint ☐

Agency: _____
Customer: _____
Phone or fax: _____

Contact: _____
E-mail: _____
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 hole ☐ through hole **Threaded length:** _____ mm
Core 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 ☐ cutting 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: _____

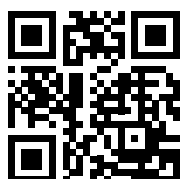
Remarks: _____



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THREADING SOLUTIONS



dcswiss.com



WARNING

Thread tools can break or shatter either through technical failure or negligence, and can endanger the health of the operator. Always obey the safety and health regulations, also the wearing of safety glasses is compulsory.

The grinding of threading tools causes hazardous particles, and must be performed only under most rigorous safety standards.

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