

FRICTIONDRILL TECHNOLOGY

drabus[®]
THE FRICTIONDRILL MANUFACTURER



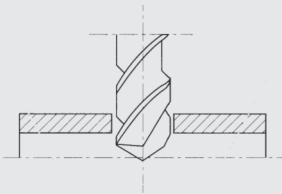


PRINCIPLE

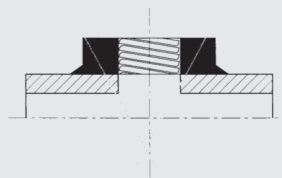
The DRABUS-frictiondrilling process creates the possibility of making holes in thin metal sheets and thin-walled tubes in just a few seconds without chips, while forming a bushing at the same time. This bushing can be used as a soldering or welding connection or as a bearing bushing. By tapping a screw-thread it can also be used as screw connection.

The DRABUS-frictiondrilling process replaces and eliminates the use of rivet or welding nuts as well as steel insert bushings. It accordingly saves time, work and material.

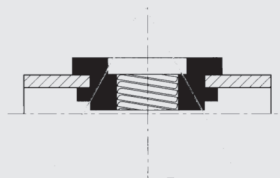
The DRABUS-frictiondrilling process is suitable for:
Making holes from 2-32 mm in all kinds of steel up to 1200 N/mm² tensile strength, including stainless steel, aluminium, brass and copper with a thickness of 0.5 to 6 mm depending on the material used and the hole diameter.



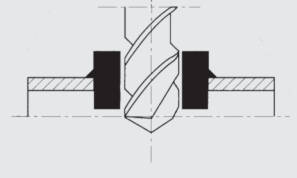
NO DRILLING



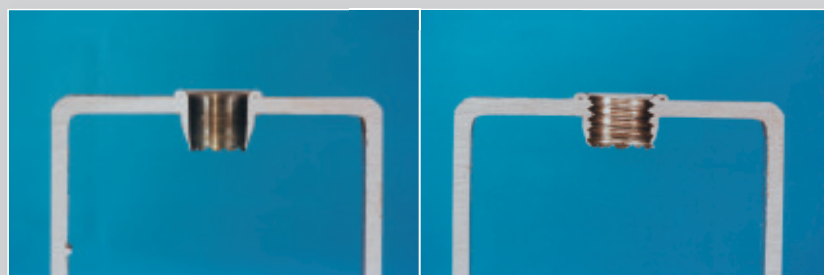
NO WELDING



NO INSERTS



NO CHIPS



FRICIONDRILLING

&

THREAD FORMING

WORKING PROCESS

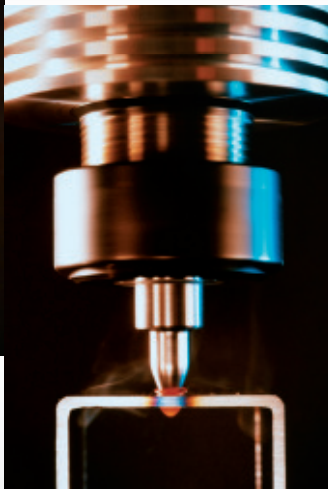
DRABUS frictiondrilling technology can be applied in one smooth movement. The process itself can be subdivided in the following steps. The example below describes the process of a type A DRABUS frictiondrill.

step 1



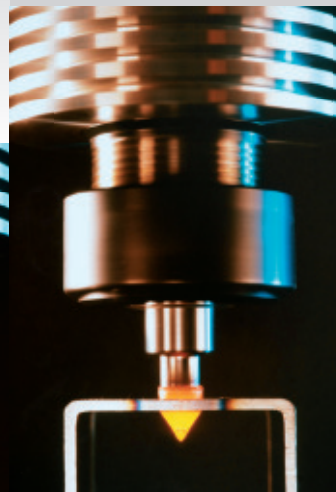
During step 1, the tool is pressed with a relatively high force against the workpiece in order to obtain an initial frictional heat generation. This causes a plastic deformation of a maximum 5% of the total deformed workpiece material.

step 2



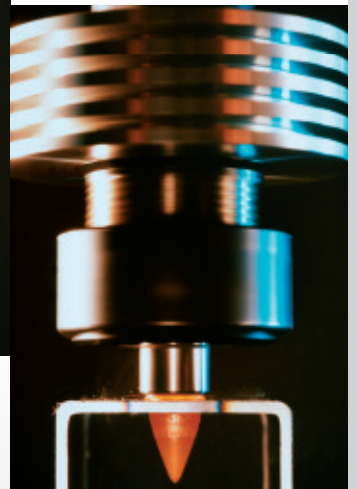
In step 2, the temperature of the tool and the workpiece increases substantially resulting in a decrease of the normal force required.

step 3

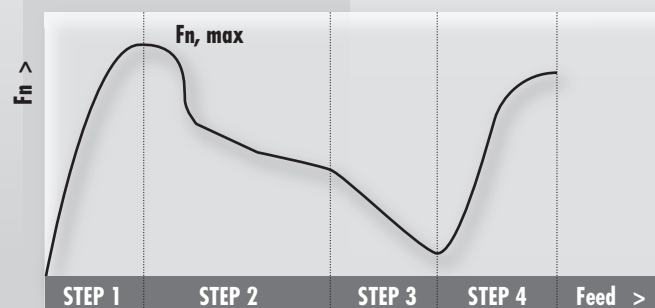


In step 3, the entire surface of the cone is in contact with the workpiece material and the temperature of the tool and workpiece reaches its maximum (depending on the workpiece material).

step 4



In the last step, the outer bush is deformed. For this deformation a relatively high force is also necessary. This step is also called 'the calibration step'.



REQUIREMENTS FOR THE DRABUS® FRICTIONDRILLING PROCESS



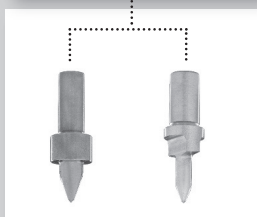
A suitable **toolholder** with outside cooling in which the Drabus friction-drill is concentrically chucked, is necessary to prevent the generated friction heat from reaching the bearings of the drill spindle.



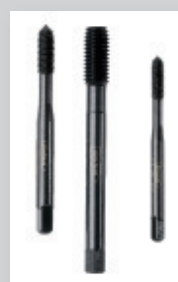
To clamp the Drabus frictiondrill into the toolholder, we advise an **ER collet** with a conical form.



Nut



Of course, you need a **Drabus frictiondrill**. Those are classified in groups according to their form.



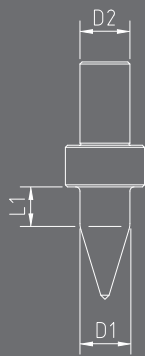
In combination with a **Drabus friction-drill**, it is possible to use a formtap for thread forming. (for thread cutting there are also Drabus frictiondrills)



Lubricate the Drabus frictiondrill with **VTP-paste** when frictiondrilling in steel, and with **VTF-fluid** when frictiondrilling copper and brass. The VTP- and VTF-lubricant is heat resistant up to 1100°C. Other materials require proper lubricant to frictiondrill in optimal conditions (to be specified in advance of the application).

TIP: We suggest a **rigid column drilling machine** or a **drilling unit with a suitable speed range and sufficient motorpower**. By new investment, we advise a frictiondrilling machine with a hydro-pneumatic control of the frictiondrilling cycle. Please contact us for more information.

FORM A

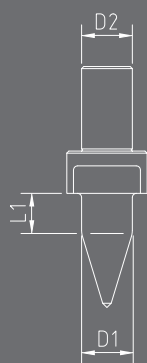


Group 11 Drabus-Frictiondrills

	Type Thread	M - Thread for formtap recommended	M - Thread for cuttingtap	Form	Ø D1 in mm	Material thickness Min. - Max.	Working length L1 in mm	Ø D2 in mm	rpm	Article number	Formtap
METRIC THREAD	M		M3*0,5	A	2,50	0,5-1,0	3,00	4,00	7000	1102500703	
	M	M3*0,5		A	2,70	0,5-1,0	3,00	4,00	7000	1102700703	16VTA80M03
	M		M4*0,7	A	3,30	0,7-1,5	3,00	6,00	5300	1103300903	
	M	M4*0,7		A	3,70	0,7-1,5	3,00	6,00	5300	1103700903	16VTA80M04
	M		M5*0,8	A	4,20	1,5-2,0	4,50	8,00	4100	1104201203	
	M	M5*0,8		A	4,60	1,5-2,0	4,50	8,00	4100	1104601203	16VTA80M05
	M		M6*1,0	A	5,00	1,5-2,0	5,00	8,00	3500	1105001303	
	M	M6*1,0		A	5,50	1,5-2,0	5,00	8,00	3500	1105501303	16VTA80M06
	M		M8*1,25	A	6,80	1,5-2,5	6,00	8,00	3300	1106801503	
	M	M8*1,25		A	7,30	1,5-2,5	6,00	8,00	3300	1107301503	16VTA80M08
	M		M10*1,5	A	8,50	2,0-3,0	7,50	12,00	2750	1108501903	
	M	M10*1,5		A	9,30	2,0-3,0	7,50	12,00	2750	1109301903	16VTA80M10
	M		M12*1,75	A	10,20	2,5-3,5	9,50	12,00	2300	1110202503	
	M	M12*1,75		A	11,20	2,5-3,5	9,50	12,00	2300	1111202503	16VTA80M12
	M		M14*2,0	A	12,00	2,5-4,0	10,50	12,00	2000	1112002903	
	M	M14*2,0		A	13,10	2,5-4,0	10,50	14,00	1950	1113102903	16VTA80M14
METRIC FINE THREAD	MF	MF3*0,35		A	2,85	0,5-1,0	3,00	4,00	7000	1102850703	16VTA81M03.035
	MF	MF4*0,5		A	3,80	0,7-1,5	3,00	6,00	5300	1103800903	16VTA81M04.050
	MF	MF5*0,5		A	4,80	1,0-2,0	4,50	8,00	4100	1104801203	16VTA81M05.050
	MF	MF6*0,75		A	5,60	1,0-2,0	5,00	8,00	3500	1105601303	16VTA81M06.075
	MF	MF8*1,0		A	7,50	1,5-2,5	6,00	8,00	3300	1107501503	16VTA81M08.100
	MF	MF10*1,25		A	9,40	2,0-3,0	7,50	12,00	2750	1109401503	16VTA81M10.125
	MF	MF10*1,0		A	9,50	2,0-3,0	7,50	12,00	2750	1109501903	16VTA81M10.100
	MF	MF12*1,5		A	11,30	2,0-3,5	9,50	12,00	2300	1111302503	16VTA81M12.150
	MF	MF12*1,25		A	11,40	2,0-4,0	9,50	12,00	2300	1111402903	16VTA81M12.125
	MF	MF14*1,5		A	13,30	2,0-4,0	10,50	14,00	1950	1113302903	16VTA81M14.150
	MF	MF14*1,25		A	13,40	2,0-4,0	10,50	14,00	1950	1113402903	16VTA81M14.125
GAS THREAD	G		1/8"Gas	A	8,80	2,0-3,0	7,50	12,00	2750	1108801903	
	G	1/8"Gas		A	9,20	2,0-3,0	7,50	12,00	2750	1109201903	16VTA82125
	G		1/4" Gas	A	11,90	2,5-4,0	9,50	12,00	2100	1111902903	
	G	1/4"Gas		A	12,40	2,0-4,0	9,50	12,00	2000	1112402903	16VTA82250
	G		3/8" Gas	A	15,30	3,0-4,5	11,50	16,00	1600	1115303503	
	G	3/8"Gas		A	15,90	2,0-4,5	11,50	16,00	1600	1115903503	16VTA82375
	G		1/2" Gas	A	19,00	3,5-5,0	11,50	18,00	1200	1119004103	
	G	1/2"Gas		A	19,80	3,0-5,0	15,00	18,00	1200	1119804103	16VTA82500

! Other dimensions can be offered as a Special (see page 25-26)

FORM B



Group 12 Drabus-Frictiondrills

	Type Thread	M - Thread for formtap recommended	M - Thread for cuttingtap	Form	Ø D1 in mm	Material thickness Min. - Max.	Working length L1 in mm	Ø D2 in mm	rpm	Article number	Formtap
METRIC THREAD	M	M3*0,5		B	2,70	0,5-1,0	3,00	4,00	7000	1202700703	16VTA80M03
	M		M4*0,7	B	3,30	0,7-1,5	3,00	6,00	5300	1203300903	
	M	M4*0,7		B	3,70	0,7-1,5	3,00	6,00	5300	1203700903	16VTA80M04
	M		M5*0,8	B	4,20	1,5-2,0	4,50	8,00	4100	1204201203	
	M	M5*0,8		B	4,60	1,0-2,0	4,50	8,00	4100	1204601203	16VTA80M05
	M		M6*1,0	B	5,00	1,5-2,0	5,00	8,00	3500	1205001303	
	M	M6*1,0		B	5,50	1,0-2,0	5,00	8,00	3500	1205501303	16VTA80M06
	M		M8*1,25	B	6,80	1,5-2,5	6,00	8,00	3300	1206801503	
	M	M8*1,25		B	7,30	1,5-2,5	6,00	8,00	3300	1207301503	16VTA80M08
	M		M10*1,5	B	8,50	2,0-3,0	7,50	12,00	2750	1208501903	
	M	M10*1,5		B	9,30	2,0-3,0	7,50	12,00	2750	1209301903	16VTA80M10
	M		M12*1,75	B	10,20	2,5-3,5	9,50	12,00	2300	1210202503	
	M	M12*1,75		B	11,20	2,0-3,5	9,50	12,00	2300	1211202503	16VTA80M12
	M		M14*2,0	B	13,10	2,0-4,0	10,50	14,00	1950	1213102903	16VTA80M14
	M	M16*2,0		B	15,00	2,0-4,5	11,50	16,00	1600	1215003503	16VTA80M16
METRIC FINE THREAD	MF	MF3*0,35		B	2,85	0,5-1,0	3,00	4,00	7000	1202850703	16VTA81M03.035
	MF	MF4*0,5		B	3,80	0,7-1,5	3,00	6,00	5300	1203800903	16VTA81M04.050
	MF	MF5*0,5		B	4,80	1,0-2,0	4,50	8,00	4100	1204801203	16VTA81M05.050
	MF	MF6*0,75		B	5,60	1,0-2,0	5,00	8,00	3500	1205601303	16VTA81M06.075
	MF	MF8*1,0		B	7,50	1,5-2,5	6,00	8,00	3300	1207501503	16VTA81M08.100
	MF	MF10*1,25		B	9,40	2,0-3,0	7,50	12,00	2750	1209401503	16VTA81M10.125
	MF	MF10*1,0		B	9,50	2,0-3,0	7,50	12,00	2750	1209501903	16VTA81M10.100
	MF	MF12*1,5		B	11,30	2,0-3,5	9,50	12,00	2300	1211302503	16VTA81M12.150
	MF	MF12*1,25		B	11,40	2,0-4,0	9,50	12,00	2300	1211402903	16VTA81M12.125
	MF	MF14*1,5		B	13,30	2,0-4,0	10,50	14,00	1950	1213302903	16VTA81M14.150
	MF	MF14*1,25		B	13,40	2,0-4,0	10,50	14,00	1950	1213402903	16VTA81M14.125
GAS THREAD	G		1/8" Gas	B	8,80	2,0-3,0	7,50	12,00	2750	1208801903	
	G	1/8" Gas		B	9,20	2,0-3,0	7,50	12,00	2750	1209201903	16VTA82125
	G		1/4" Gas	B	11,90	2,5-4,0	9,50	12,00	2100	1211902903	
	G	1/4" Gas		B	12,40	2,0-4,0	9,50	12,00	2000	1212402903	16VTA82250
	G		3/8" Gas	B	15,30	3,0-4,5	11,50	16,00	1600	1215303503	
	G	3/8" Gas		B	15,90	2,0-4,5	11,50	16,00	1600	1215903503	16VTA82375
	G		1/2" Gas	B	19,00	3,5-5,0	11,50	18,00	1200	1219004103	
	G	1/2" Gas		B	19,80	3,0-5,0	15,00	18,00	1200	1219804103	16VTA82500

! Other dimensions can be offered as a Special (see page 25-26)

FORM E

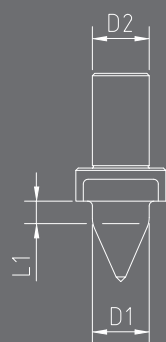


Group 15 Drabus-Frictiondrills

	Type Thread	M - Thread for formtap	Form	Ø D1 in mm	Material	Working length thickness Min. - Max.	Ø D2 in mm L1 in mm	rpm	Article number	Formtap
METRIC THREAD	M	M4*0,7	E	3,70	<0,7	3,00	6,00	5300	15037007A3	16VTA80M04
	M	M5*0,8	E	4,60	<1,0	4,50	8,00	4100	15046008A3	16VTA80M05
	M	M6*1,0	E	5,40	<1,0	5,00	8,00	3500	15054010A3	16VTA80M06
	M	M8*1,25	E	7,30	<1,5	6,00	8,00	3300	15073012A3	16VTA80M08
	M	M10*1,5	E	9,20	<2,0	7,50	12,00	2750	15092017A3	16VTA80M10
METRIC FINE THREAD	MF	MF4*0,5	E	3,80	<0,7	3,00	6,00	5300	15038007A3	16VTA81M03.035
	MF	MF5*0,5	E	4,80	<1,0	4,50	8,00	4100	15048008A3	16VTA81M05.050
	MF	MF6*0,75	E	5,60	<1,0	5,00	8,00	3500	15056010A3	16VTA81M06.075
	MF	MF8*1,0	E	7,50	<1,5	6,00	8,00	3300	15075012A3	16VTA81M08.125
	MF	MF10*1,25	E	9,40	<2,0	7,50	12,00	2750	15094017A3	16VTA81M10.125
	MF	MF10*1,0	E	9,50	<2,0	7,50	12,00	2750	15095017A3	16VTA81M10.100
GAS THREAD	G	1/8" Gas	E	9,20	<2,0	4,50	12,00	2750	15092017A3	16VTA82125
	G	1/4" Gas	E	12,40	<2,0	6,30	12,00	2000	15124023A3	16VTA82250
	G	3/8" Gas	E	15,90	<2,0	7,50	16,00	1600	15159030A3	16VTA82375
	G	1/2" Gas	E	19,80	<2,0	9,00	20,00	1200	15198037A3	16VTA82500

! Other dimensions can be offered as a Special (see page 25-26)

FORM F



Group 10 Drabus-Frictiondrills

	Type Thread	M - Thread for formtap	Form	Ø D1 in mm	Material thickness Min. - Max.	Working length L1 in mm	Ø D2 in mm	rpm	Article number	Formtap
METRIC THREAD	M	M2*0,4	F	1,80	<0,5	2,00	4,00	8000	10018005A3	16VTA80M02
	M	M3*0,5	F	2,80	<0,5	2,50	4,00	7000	10028007A3	16VTA80M03
	M	M4*0,7	F	3,70	<0,7	3,00	6,00	5300	10037007A3	16VTA80M04
	M	M5*0,8	F	4,50	<1,0	4,50	8,00	4100	10046008A3	16VTA80M05
	M	M6*1,0	F	5,40	<1,0	5,00	8,00	3500	10054010A3	16VTA80M06
	M	M8*1,25	F	7,30	<1,5	6,00	8,00	3300	10073012A3	16VTA80M08
	M	M10*1,5	F	9,20	<2,0	7,50	12,00	2750	10092017A3	16VTA80M10
METRIC FINE THREAD	MF	MF3*0,35	F	2,85	<0,5	2,50	4,00	7000	10028507A3	16VTA81M03.035
	MF	MF4*0,5	F	3,80	<0,7	3,00	6,00	5300	10038007A3	16VTA81M04.050
	MF	MF5*0,5	F	4,80	<1,0	4,50	8,00	4100	10048008A3	16VTA81M05.050
	MF	MF6*0,75	F	5,60	<1,0	5,00	8,00	3500	10056560A3	16VTA81M06.075
	MF	MF8*1,0	F	7,50	<1,5	6,00	8,00	3300	10075012A3	16VTA81M08.100
	MF	MF10*1,25	F	9,40	<2,0	7,50	12,00	2750	10094017A3	16VTA81M10.125
	MF	MF10*1,0	F	9,50	<2,0	7,50	12,00	2750	10095017A3	16VTA81M10.100
GAS THREAD	G	1/8" Gas	F	9,20	<2,0	4,50	12,00	2750	10092017A3	16VTA82125
	G	1/4" Gas	F	12,40	<2,0	6,30	12,00	2000	10124023A3	16VTA82250
	G	3/8" Gas	F	15,90	<2,0	7,50	16,00	1600	10159030A3	16VTA82375
	G	1/2" Gas	F	19,80	<2,0	9,00	20,00	1200	10198037A3	16VTA82500

! Other dimensions can be offered as a Special (see page 25-26)

FORM D

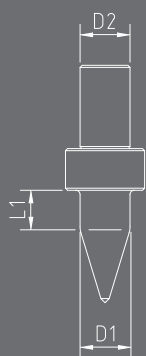


Group 14 Drabus-Frictiondrills

These frictiondrills are equal to the form B - group 12, except for the counter-sink angle (in °) which has to be specified by order.

The first 2 digits in the article number are now 14 instead of 12.

FORM C



Group 13 Drabus-Frictiondrills

These XL- frictiondrills are equivalent to the form A - group 11, except for the length L1 that is longer and which has to be specified by order.

The first 2 digits in the article number are now 13 instead of 11.

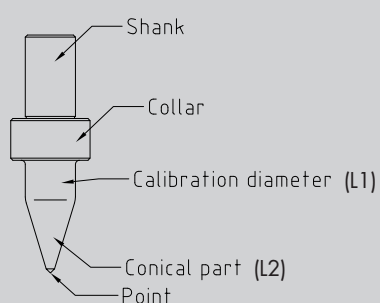
IDENTIFICATION SYSTEM FOR THE DRABUS® FRICTIONDRILLS

The Drabus frictiondrill and accessories article number consists of 10 digits, subdivided in 5 groups:

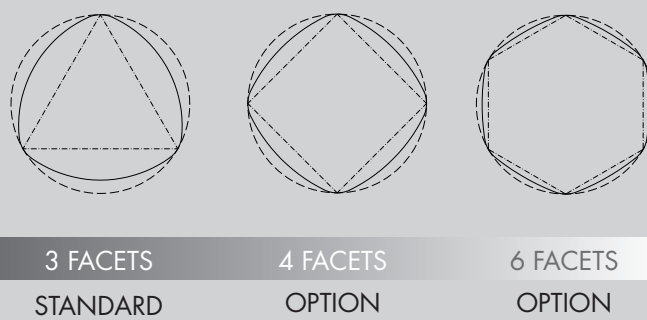
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1	2	3	4	5

1	GROUP
10	FORM F (SHORT/FLAT)
11	FORM A (LONG)
12	FORM B (LONG/FLAT)
13	FORM C (EXTRA LONG)
14	FORM D (WITH COUNTERSINK)
15	FORM E (SHORT)
16	FORMTAP
17	LUBRICANT PASTE & FLUID
18	TOOLHOLDERS & COLLETS
19	SPECIAL DRABUS FRICTIONDRILLS
2	DIAMETER IN 0.01MM
0550	D = 5,50MM
3	LENGTH FRICTIONDRILL
13	L1 + L2 = 13MM
4	POINT TYPE
0	ROUND TOP
A	90° TOP EDGE
B	SKY-EXECUTION (coating for longer lifetime)
5	N° OF FACETS
3	3 FACETS
4	4 FACETS
6	6 FACETS

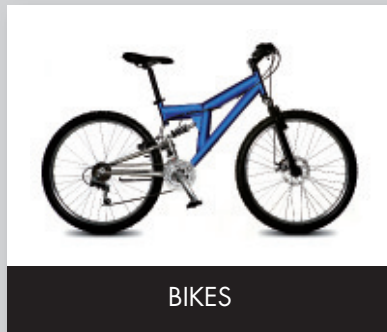
NOMENCLATURE



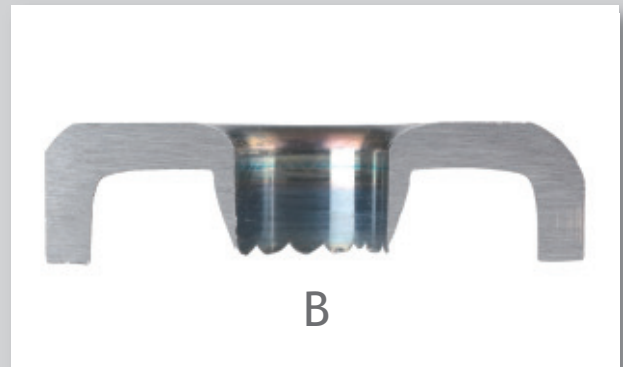
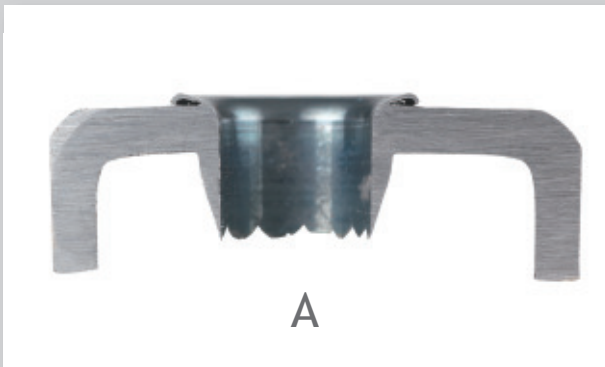
FACETS



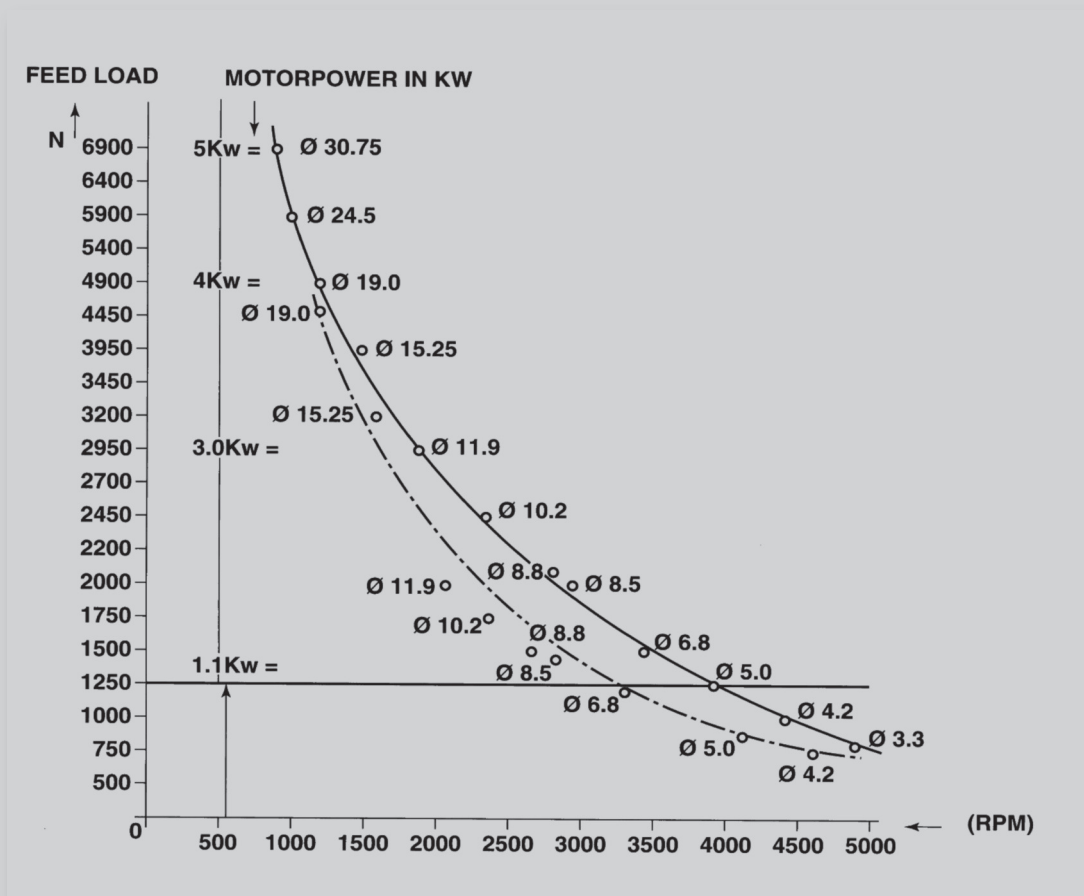
SAMPLES AND APPLICATIONS



DIFFERENCE BETWEEN FORM "A" AND "B"



NECESSARY FORCE IN RELATION TO RPM, DIAMETER AND MATERIAL



The above mentioned values are indicative values for standard frictiondrills.
 These values have to be adapted for larger thicknesses of the sheet or tube material.
 Changes reserved.

FORMTAPS



Metric thread

M-thread for formtap	Step	Total length in mm	Thread length in mm	Shank $\varnothing$	Size of Square	Article number
M2	0.4	45	7	2.8	2.1	16VTA80M02
M3	0.5	56	10	3.5	2.7	16VTA80M03
M3.5	0.6	56	11	4	3	16VTA80M035
M4	0.7	63	12	4.5	3.4	16VTA80M04
M5	0.8	70	14	6	4.9	16VTA80M05
M6	1.0	80	16	6	4.9	16VTA80M06
M8	1.25	90	18	8	6.2	16VTA80M08
M10	1.50	100	20	10	8	16VTA80M10
M12	1.75	110	25	9	7	16VTA80M12
M14	2.00	110	25	11	9	16VTA80M14
M16	2.00	110	28	12	9	16VTA80M16

Metric fine thread

M-thread for formtap	Step	Total length in mm	Thread length in mm	Shank $\varnothing$	Size of Square	Article number
M3	0.35	56	10	3.5	2.7	16VTA81M03.035
M4	0.50	63	12	4.5	3.4	16VTA81M04.050
M5	0.50	70	14	6	4.9	16VTA81M05.050
M6	0.75	80	16	6	4.9	16VTA81M06.075
M8	1.00	90	18	8	6.2	16VTA81M08.100
M10	1.00	100	20	10	8	16VTA81M10.100
M10	1.25	100	20	10	8	16VTA81M10.125
M12	1.00	100	22	9	7	16VTA81M12.100
M12	1.25	100	22	9	7	16VTA81M12.125
M12	1.50	100	22	9	7	16VTA81M12.150
M14	1.25	100	22	11	9	16VTA81M14.125
M14	1.50	100	22	11	9	16VTA81M14.150
M16	1.50	100	22	12	9	16VTA81M16.150

Gas thread

G-thread for formtap	Step	Total length in mm	Thread length in mm	Shank $\varnothing$	Size of Square	Article number
1/8" Gas	28	59	15.00	8	6.30	16VTA82125
1/4" Gas	19	67	19	10	8	16VTA82250
3/8" Gas	19	75	21	12.50	10	16VTA82375
1/2" Gas	14	87	26	16	12.50	16VTA82500

FORMTAPS



nc/unc thread

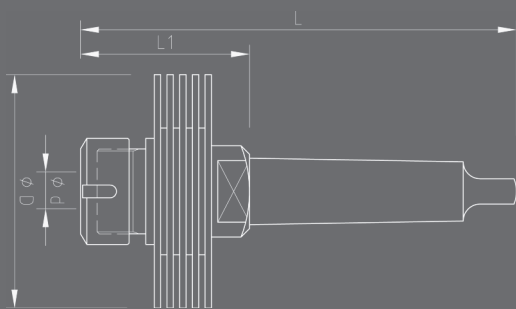
Thread NC/UNC for formtap	PITCH	DRABUS® FRICTIONDRILL DIAM. IN MM	Art. no standard M42
No.4 UNC	40	2.50	160UNC0004
No.5 UNC	40	2.85	160UNC0005
No.6 UNC	32	3.10	160UNC0006
No.8 UNC	32	3.80	160UNC0008
No.10 UNC	24	4.30	160UNC01935
No.12 UNC	24	5.00	160UNC0012
1/4 UNC	20	5.70	160UNC0250
5/16 UNC	18	7.20	160UNC0312
3/8 UNC	16	8.70	160UNC0375
7/16 UNC	14	10.20	160UNC0437
1/2 UNC	13	11.70	160UNC0500
9/16 UNC	12	13.30	160UNC0562
5/8 UNC	11	14.80	160UNC0625
3/4 UNC	10	17.80	160UNC0750

nf/unf thread

Thread NF/UNF for formtap	PITCH	DRABUS® FRICTIONDRILL DIAM. IN MM	Art. no standard M42
No. 4 UNF	48	2.60	160UNF0004
No. 5 UNF	44	2.90	160UNF0005
No. 6 UNF	40	3.20	160UNF0006
No. 8 UNF	36	3.80	160UNF0008
No. 10 UNF	32	4.40	160UNF0010
No. 12 UNF	28	5.10	160UNF0012
1/4 UNF	28	5.90	160UNF0250
5/16 UNF	24	7.40	160UNF0312
3/8 UNF	24	9.00	160UNF0375
7/16 UNF	20	10.50	160UNF0437
1/2 UNF	20	12.10	160UNF0500
9/16 UNF	18	13.70	160UNF0562
5/8 UNF	18	15.30	160UNF0625
3/4 UNF	16	18.30	160UNF0750

npt thread

Thread NPT for formtap	PITCH	DRABUS® FRICTIONDRILL DIAM. IN MM	Art. no standard M42
1/16 NPT	27	7.00	160NPT0062
1/8 NPT	27	9.40	160NPT0125
1/4 NPT	18	12.40	160NPT0250
3/8 NPT	18	15.80	160NPT0375
1/2 NPT	14	19.60	160NPT0500



TOOL HOLDERS



During the frictiondrilling process, the material glows light-red and the Drabus frictiondrill itself should glow dark-red. So, the tool holder has two functions. The first function is to clamp the Drabus frictiondrill. The Drabus frictiondrill does not centre itself. From the moment that the Drabus frictiondrill makes contact with the cold workpiece surface, it has the tendency to walk sideways. So, the position of the Drabus frictiondrill should be determined by the rigidity of the machine and the precision of the rotation of the tool holder and the machine. The second function of the tool holder is to discharge the generated friction heat. This is necessary to prevent the friction heat from warming up the spindle and the bearings of the drilling machine. The outside cooling is a fixed part of the tool holder and is able to discharge the heat in a continual or interrupted process.

CM-holders



CM	Type	L	L1	d	D	Article number
2	ER25	140	60	2-16	65	18ER25MT02
3	ER32	172	72	2-20	80	18ER32MT03
4	ER32	210	86	2-20	110	18ER32MT04
4	ER40	208	80	3-26	110	18ER40MT04

ISO-Holders DIN2080



SK	Type	L	L1	d	D	Article number
30	ER25	148	80	2 – 16	75	18ER25SK30
30	ER32	149	80	2 – 20	85	18ER32SK30
40	ER32	188	95	2 – 20	85	18ER32SK40

MAS-BT-Holders



BT	Type	L	L1	d	D	Article number
40	ER40	185	90	3 – 26	85	18ER32BT40

CNC-Holders DIN 69871 A



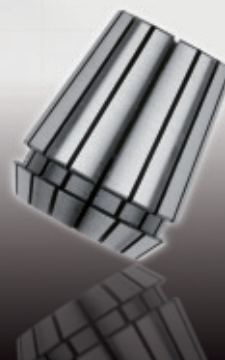
SK	Type	L	L1	d	D	Article number
40	ER25	196	98	2 – 16	59	18ER25CN40
40	ER32	173	105	2 – 20	69	18ER32CN40

WELDON-Holders DIN1835B



	Type	L	L1	d	D	Article number
Ø16	ER25	117	63	2 – 16	65	18ER25WD16
Ø20	ER25	117	63	2 – 16	65	18ER25WD20
Ø25	ER32	134	72	2 – 20	80	18ER32WD25

COLLETS



The correct use of the collet is very important. Before putting the collet into the tool holder, the collet must first be put into the coupling nut. After that, the coupling nut and the collet must be assembled together into the tool holder. Before tightening the coupling nut, the shank of the Drabus frictiondrill must be put into the collet with the collar against the outside of the collet. The coupling nut must be tightened firmly with the correct tool.

Remark: All the tangent planes, namely the inside (spindle) and outside (tool holder) tapers, have to be cleaned before assembling the parts.

Type ER25 with D=26 mm and L=35 mm for Ø (mm)	Article number	Accessories	Article number
4	18ER2500040	WRENCH ER25	18ER25CH42
6	18ER2500060		
8	18ER2500080	NUT ER25	18ER25 MOER
12	18ER2500120		
16	18ER2500160		

Type ER32 with D=33 mm and L=40 mm for Ø (mm)	Article number	Accessories	Article number
4	18ER3200040	WRENCH ER32	18ER32CH50
6	18ER3200060		
8	18ER3200080	NUT ER32	18ER32 MOER
12	18ER3200120		
16	18ER3200160		
18	18ER3200180		

Type ER40 with D=41 mm and L=46 mm for Ø (mm)	Article number	Accessories	Article number
4	18ER4000040	WRENCH ER40	18ER40CH63
6	18ER4000060		
8	18ER4000080	NUT ER40	18ER40 MOER
12	18ER4000120		
16	18ER4000160		
18	18ER4000180		
22	18ER4000220		
24	18ER4000240		

PASTE OR FLUID

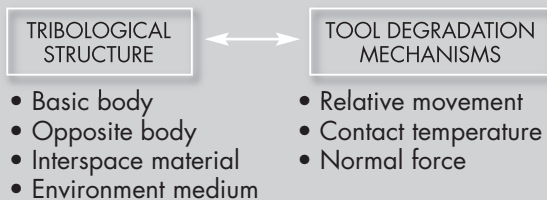


Most important wear aspects.

Wear is a surface phenomenon that occurs by the displacement and detachment of material. Because wear implies a loss of weight over a period of time, it generally differs from breakage, fractures and plastic deformation.

WEAR-SOCA SYSTEM PROPERTY.

THE TRIBOLOGICAL SYSTEM:

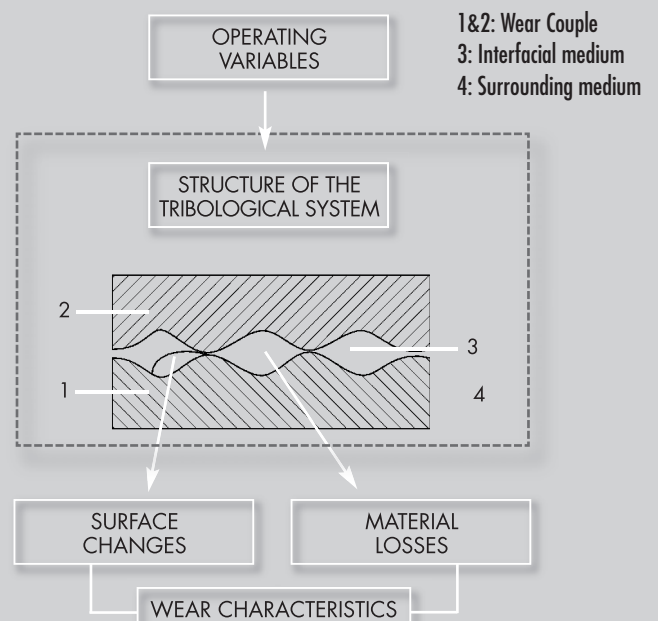


THE EFFECTS OF THE TRIBOLOGICAL INTERACTIONS:

- Friction
- Wear
- Surface quality loss

THE FOUR BASIC WEAR MECHANISMS:

- Adhesive wear
- Abrasive wear
- Tribochemical interactions
- Fatigue (Surface fatigue)



Lubricant paste or fluid.

To reduce or eliminate the above mentioned adhesive wear, the friction drilling process can be done using the Drabus friction-drill paste HTP or -fluid HTF. The HTP is a paste that is composed of a fixed lubricant and a mineral oil. HTF is a fluid mixture composed of the same components as the paste, but it can also be used as a spray. During the frictiondrilling process, both the

HTP and HTF products produce a fixed grease- and dividing film which is high pressure resistant. The dividing and lubricating properties are maintained within the temperature range from -20°C to +1150°C. The mineral oil evaporates at high temperature, so there is no or only a small remainder left on the workpiece.

THESE PRODUCTS (HTP AND HTF) HAVE ALREADY IN PRACTICE THEIR INFLUENCE ON THE TOOL LIFE, BUT IT IS ALSO POSSIBLE TO FRICTIONDRILL DRY IN SOME SITUATIONS.

How to use these lubricants ? How to order ?

HTP: bring a thin film of the paste with a small brush to the surface of the Drabus frictiondrill.

On a CNC-machine, the Drabus frictiondrill can be programmed to automatically dip into the paste, between two friction-drill operations.

HTF: The fluid can be applied with a spray or haze system.

Name	Quantity	Article number
Brush	1	1700162-08
Alu Paste	100 gr	170ALP0100
HTF Fluid	5 L	170VTF5000
HTP Paste	200 g	170VTP0200
HTP Paste	5 kg	170VTP5000



Combidrill



The Drabus® Combidrill is a two-in-one tool that makes it possible to make a friction drilled bush with a thread in it all at once. So, instead of making a friction drilled hole and afterwards using a form trap, now you can do it with one tool: the Drabus® Combidrill!

With this new technology there are 2 remarks: first, the Combidrill has to leave the formed hole with the same step and reversed anti-clockwise speed, otherwise it will deform the threaded hole.

Second, until now Drabus® Combidrills are only available for the dimensions M6, M8 and M10.

See the table below for the article numbers.

For more information about this new technology, do not hesitate to contact us.

Alu-frictiondrill



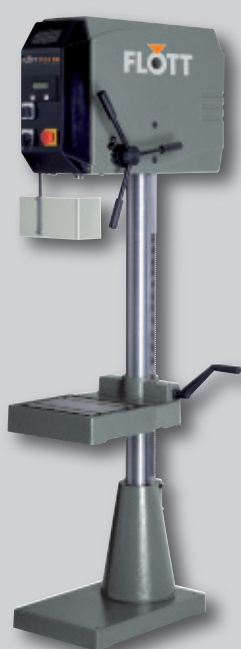
The Drabus® Alu-Frictiondrill is a new developed frictiondrill with a special geometry to make holes in thin Alu-material (plates, profiles, tubes, etc.). These Drabus® Alu-Frictiondrills have a special coated surface and go perfectly with Drabus® Alu-paste. They are available now for the dimensions M4, M5, M6 and M8.

See the table below for the article numbers. For more information about this new technology, do not hesitate to contact us.

DRILLING MACHINES



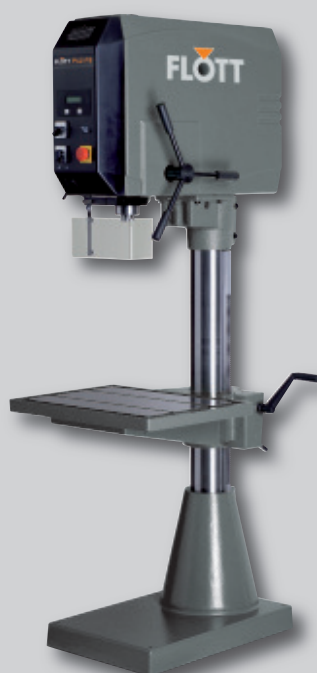
In 2008, the companies Drabus and Flott signed a joint venture intention to work together in order to make the frictiondrill technology better known and to develop new possibilities with combined forces.



TECHNICAL SPECIFICATIONS

Flow drilling capacity for 3 mm steel	8mm
Spindle	MK II
Drilling depth	100mm
Throat	240mm
Useful table surface (BxL)	340 x 280mm
Rotational speed display	digital
Drilling depth display	digital
Stop bracket	high-speed adjustable ring
Feed	manuall
Engine 230/400 V, 1 tour	1.5 kW
Rotational speed of spindle (without step)	500-4000 1/min

SP P 23 ST-FB



TECHNICAL SPECIFICATIONS

Flow drilling capacity for 3 mm steel	20mm
Spindle	MK IV
Drilling depth	160mm
Throat	300mm
Useful table surface (BxL)	590 x 450mm
Rotational speed display	digital
Drilling depth display	digital
Stop bracket	according to accurate settings
Feed	manual
Engine 230/400 V, 1 tour	3.0 kW
Rotational speed of spindle (without step)	500-4000 1/min
Rotational speed R2	1.5/3.0 kW
Engine 400V, exchangeable poles	1.5/3.0 kW
Rotational speed of spindle (without step)	250-4000 1/min
Rotational speed R2	

SP P 40 ST-FB

SP P 40 STG-FB PV electronic

Feed without step	0-300 mm/min
Incl. electromagnetical coupling; digital display	



Starterkits



To have a quick start with the Drabus® Frictiondrill Technology, Drabus® has (configured) a few "Starterkits" as sets. All these sets have 3 different frictiondrills, 3 different forming taps, 1 toolholder with at least 1 ER-collet, 1 flacon lub-paste and their accessories. Please find herewith the possible configuration of our starterkits.

Drabus® Test Center



Because Drabus® has its own research department at its production-plant, we can make any special Frictiondrill tailor made for each customer. To help our distributors and our customers, we have started our own Drabus®-Test Center special built machines and Flott frictiondrilling machines. So, in order to test your possible friction-drill application, you may send us samples and we will do the test for free! Also frictiondrilling work for third parties can be carried out in our production plant, from small (less than 100 pcs) to large series (until 1 million pcs and more). Feel free to contact us for more information.





www.drabus.com • www.frictiondrill.eu