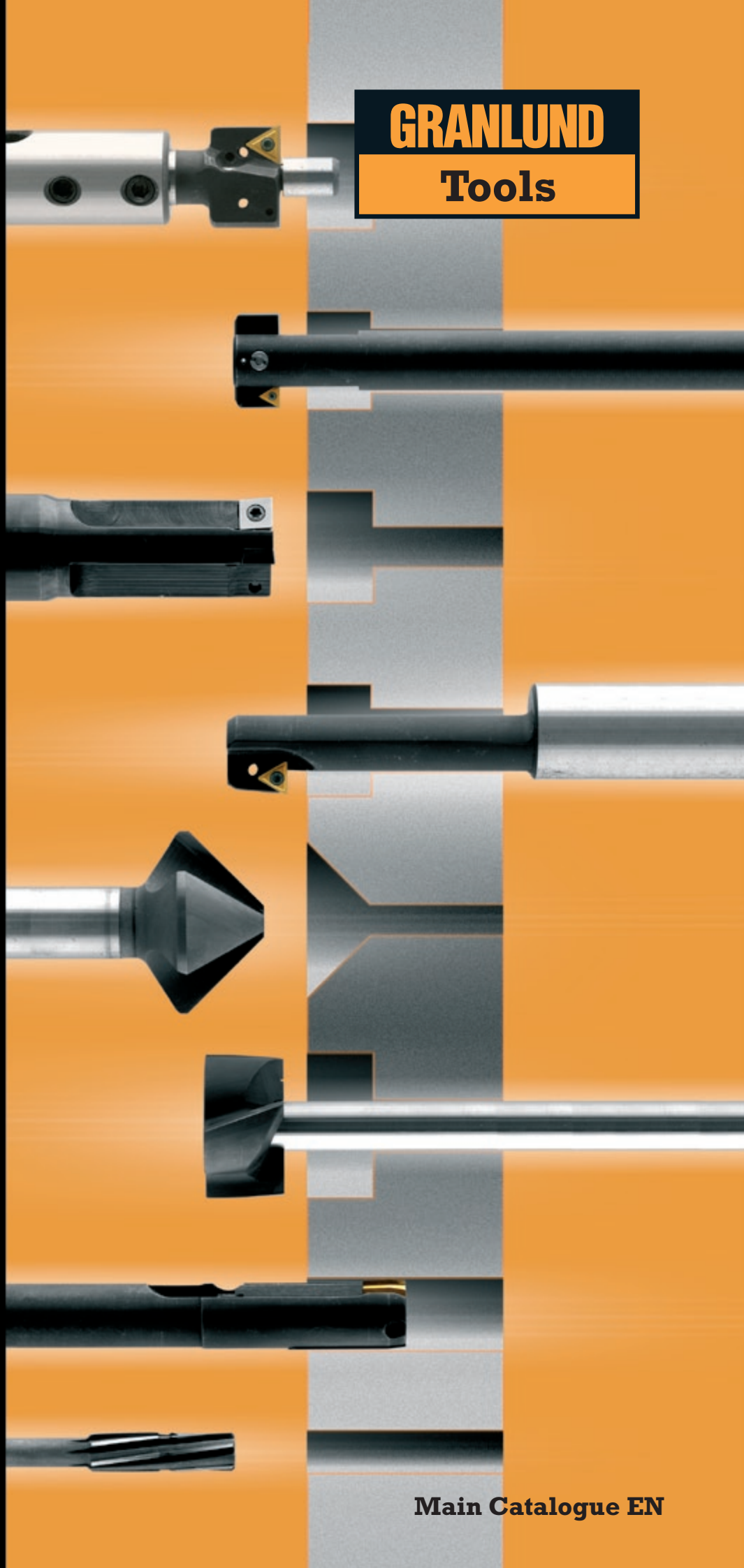


GRANLUND



GRANLUND
Tools



Main Catalogue EN

Holder for Handheld machines

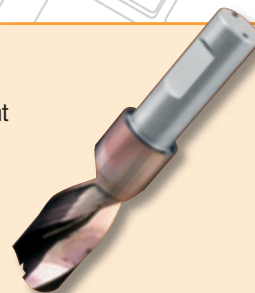
Type DS. Available in sizes 01, 0, and 1. All sizes have 10 mm shank with 3 ground flats for improved grip.



THUNDER – Drill for HARDOX

Drill in solid carbide. Dual internal coolant channels. Special geometry developed for machining HARDOX. THUNDER also has a special coating for this type of operation.

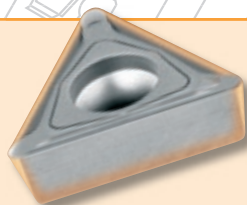
More information on page 37.



SHORTCUT – Insert for Aluminium

Uncoated insert with a geometry developed for machining Aluminium. Fits all Original Granlund Insert Holders.

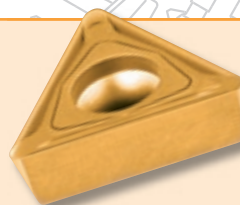
Types: TPMT-07K, TPMT-10K, TPMT-12K and TMPT-17K.



STAINLEY – Insert for Stainless

Coated insert with a geometry developed for machining Stainless steel. Fits all Original Granlund Insert Holders.

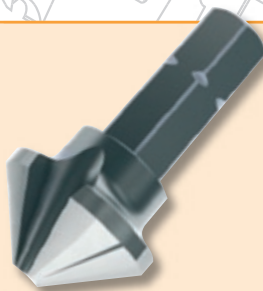
Types: TPMT-07M, TPMT-10M, TPMT-12M and TMPT-17M.



Countersink for Bit holder

Type 100TBI, available in 3 dimensions: 10,0 - 15,0 - 20,0 and as a set with all 3 dimensions.

More information on page 24.



New countersink for Stainless

Type 100TRHL. Granlund Tool's popular countersink 100TR for stainless is now also available from stock with the coating Balinit HARDLUBE, optimized for machining stainless.

More information on page 24.



TRANSFORMASTER™ – The multifunctional chamfer and face milling tool

With Transformaster you can countersink or chamfer 30, 60, 90 and 120 degrees with only one tool.

More information on page 24.



Carbide tipped Rotating Centre

Type 609. Excellent for e.g. Hard Turning.

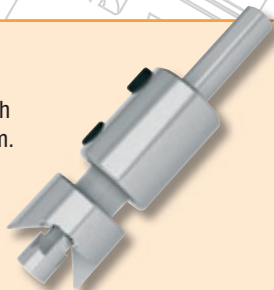
For more detailed information about tolerances etc. please look at page 31.



Modular system for deburring of tubes

Type 01RG, 0RG, 1RG. Fits together with the holders of the counterboring system. Can deburr tubes up to 25 mm.

More information on page 37.



New coated countersink

Type 100TA. The popular countersink type 100T now with the latest high end coating Alcrona Pro, optimized for increased efficiency and longer tool life.

More information on page 24.



We reserve the right to modify any specification and/or item shown in the present catalogue without notice.

Information, photos, drawings and technical data specified in the publication have been carefully examined and thoroughly checked. They cannot, however, bind our responsibility on their exactness.

GRANLUND TOOLS AB, SWEDEN

The company is certified according to ISO 9001 and ISO 14001.





When good is not enough!

Granlund Tools in Eskilstuna is a world-leading manufacturer of precision cutting tools for facing, counter-boring, chamfering and backspotfacing. Our program also offers other applications such as reaming, drilling and manufacture of special tools. Our wide tool program suits both modern and older machines.

Experience over generations

Granlund Tools is today a third generation family owned company. With over 65 years experience and representation in more than 30 countries we are a very experienced tool supplier. We have over the years built a well-trimmed and extensive network of distribution as well as a unique and well established trademark – an obliging trademark!

One plus one may make more than two

One of Granlund Tools' best known products is the interchangeable counterboring system. With only 1300 parts, consisting of holders, cutters, drills and pilots, it is possible to assemble combination tools in more than 1 500 000 separate variations.

Interchangeability is also applicable for other parts of the Granlund Tools' program. For example by the backspotfacing system, consisting of two parts, and the spirabor system with 4 parts. The interchangeability idea is very important also for the development of

new tools. We have indeed experienced that one plus one most often make more than two.

Your problem is our challenge

Granlund Tools face problematic machining every day. We have extensive and proven experience with difficult machining, tough materials, advanced special profiles etc. We are proud to say that we are among the best in the world at what we do.

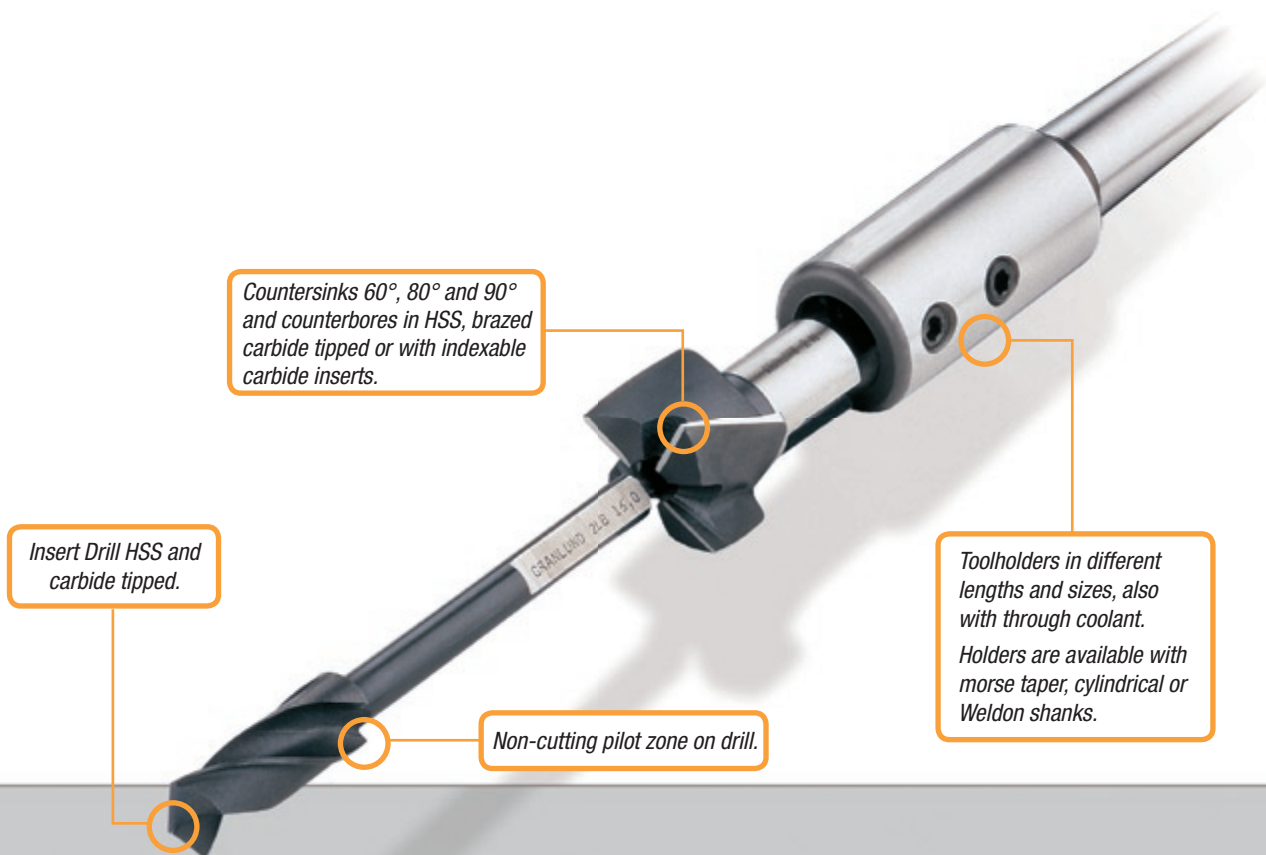
We take responsibility for our deliveries

Granlund Tools manufactures high quality precision tools. In the same spirit we aim to deliver with high quality and precision. Should you by any reason be dissatisfied with any of our products or services, we will always take our responsibility and fulfil our promises. We prefer mutually prosperous long term business relations before quick benefits.

Kind regards
 Granlund Tools AB

Christer Gyllhamr
 President





The Granlund System

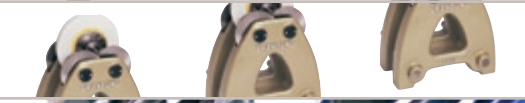
Granlund's unique tool system for countersinking and counterboring helps you to increase productivity and lower your costs.

Our toolholders, counterbores, insert drills and pilots may be combined to fit all types of machines and applications.

You can, with only 1300 parts, easily build more than 1 500 000 special tools.

The system is grouped into 4 sizes: size 01, size 0, size 1 and size 2. All combinations have to be made with elements belonging to the same group size. Groups are not interchangeable.

The range of tools available for each group size along with recommendations for correct tool selection and cutting data can be found in the following pages.

	Granlund Counterboring System 6	Counterboring / Countersinking
	Counterboring System Size 01 8 Insert drills, Pilots, Counterbores, Countersinks, Holders, Sets and Inserts	
	Counterboring System Size 0 10 Insert drills, Pilots, Counterbores, Countersinks, Holders, Sets and Inserts	
	Counterboring System Size 1 12 Insert drills, Pilots, Counterbores, Countersinks, Holders, Sets and Inserts	
	Counterboring System Size 2 16 Insert drills, Pilots, Counterbores, Countersinks, Holders, Sets and Inserts	
	CNC Tools 20 Counterbores, Boring, Chamfering and Face Milling Tools	Backspotfacing
	Countersinks 24 Countersinks type 100 and type FV	
	NEPTUNE 26 Cutting data, Inserts	
	Backspotfacing System 28	Centres
	CNC Backspotfacing / Chamfering Tools 30 CNC Backspotfacers, Back Spotchamfers and Front / Back Spotchamfers, Inserts	
	Centres 31 Rotating, Carbide tipped, Turning and grinding Centres	Reaming
	Single Flute Reamers RD, RA, RB 32	
	Carbide Reamers, fixed and re-sizeable 34 Reamers, Floating toolholders, Collets	Drilling
	Spirabore, Piloted Drill System 36	
	THUNDER 37 Drill for HARDOX	Deburring
	Tube Deburring 37	
	Balancing Stands 38	Special Tools
	Special Tools 38	Technical Data
	Technical data 39 Special Request form, Spare parts, Technical data	

Tool selection

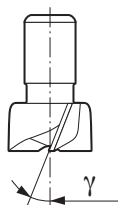
This table shows pictures of each type of tool and its diameter range within each size (01,0,1,2). Make your tool combination by choosing components from the same size.

Special editions: Insert drills and counterbores HSS all dimensions and system sizes are "Uncoated Blank" as standard. Coatings: TiN, TiCN, FUTURA, HARDLUBE are additional. For price and delivery time, contact your Granlund representative.



	Insert drills		Pilots		Counterbores				Countersinks						
	B Ø mm	LB Ø mm	BH Ø mm	F Ø mm	R Ø mm	N Ø mm	NA Ø mm	W Ø mm	H Ø mm	HA Ø mm	WHV Ø mm	T Ø mm	TH Ø mm	TK Ø mm	KV Ø mm
01	2,5-3,7	2,5-3,7		2,4-8				5-16				6-10,4			
0	4,2-7	4,2-7	5-6,8	4-5,8	6-14	7-24	7-24	7-16,5	10-24	10-24	18-24	8-16,5			18-25
1	6,5-12	6,5-12	6,5-12	6-6,8	7-24	10-38	10-38	10-25	12-38	12-38	20-38	11,5-30	20-30	16,5-34	20-30
2	11-25	11-25	11-21		10-50	16-85	16-85	16-40	18-75	18-75	34-75	20-85	40-60	30-75	32-60

Attention! Tool choice and cutting data can also be found at www.granlund.com/techcenter



Recommended choice of tool for working in different materials



	N	NA	W	H	HA	WHV	T	TH	TK	KV
Helix angle (γ)	24°	35°	28°	5°	24°	5°				
Steel	•	•	•			•	•		•	•
Stainless steel	•	•	•			•	•		•	•
Cast iron				•	•	•		•		•
Aluminium (Long chips)		•	•			•	•		•	•
Cast Aluminium (Short chips)					•	•		•		•
Plastics soft		•					•		•	
Plastics hard				•	•			•		
Copper	•	•	•				•		•	
Bronze/Brass				•	•	•		•		•
HARDOX						•				•


Tool holders

	A	AS	M	NS	DS	L	S	GS	
Morse Taper	MK 1						MK 1		01
Cylindrical Ø mm	6,0 10,0				10		10		
Morse Taper	MK 1-2					MK 1	MK 1		
Cylindrical Ø mm	8,0 10,0				10		10		0
Weldon				W 16					
Morse Taper	MK 1-2-3		MK 3	MK 2-3		MK 2	MK 2	MK 3	
Cylindrical Ø mm	10-12				10	20	10		1
Weldon	W 20	W 20	W 25	W 20				W 25	
Morse Taper	MK 2-3-4-5		MK 3-4	MK 3-4		MK 3	MK 3	MK 3	
Cylindrical Ø mm						32			2
Weldon	W 20	W 25	W 32	W 25				W 25	

Attention! Tool choice and cutting data can also be found at www.granlund.com/techcenter

Cutting data, counterbores and countersinks



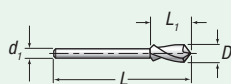
	N	NA	W	H	HA	WHV	KV*	T	TK	TH		
Tensile Strength N/mm² Hardness HB	HSS Speed m/min	HSS Feed mm/rev.		Carbide Speed m/min	Carbide Feed mm/rev.	Carbide Speed m/min	Carbide Feed mm/rev.	HSS Speed m/min	HSS Feed mm/rev.	Carbide Speed m/min	Carbide Feed mm/rev.	Material
<450 N/mm²	20 - 40	0,10 - 0,5		60 - 130	0,1 - 0,6	75 - 130	0,1 - 0,6	15 - 30	0,05 - 0,3	20 - 50	0,05 - 0,3	Steel
<600 N/mm²	15 - 30	0,10 - 0,4		50 - 110	0,1 - 0,5	65 - 120	0,1 - 0,5	10 - 25	0,05 - 0,3	15 - 45	0,05 - 0,3	Steel
<1000 N/mm²	10 - 25	0,05 - 0,3		40 - 110	0,1 - 0,3	55 - 100	0,1 - 0,4	10 - 20	0,05 - 0,3	10 - 40	0,05 - 0,3	Steel
>1000 N/mm²	5 - 20	0,05 - 0,3		30 - 90	0,1 - 0,2	45 - 90	0,1 - 0,4	5 - 15	0,05 - 0,3	10 - 35	0,05 - 0,3	Steel
<800 N/mm²	10 - 25	0,05 - 0,3		30 - 90	0,1 - 0,3	45 - 90	0,1 - 0,4	5 - 15	0,05 - 0,3	10 - 35	0,05 - 0,3	Cast Steel
	10 - 20	0,10 - 0,3		20 - 60	0,1 - 0,4	30 - 60	0,1 - 0,3	5 - 15	0,05 - 0,3	10 - 35	0,05 - 0,3	Stainless Steel
<180 HB	20 - 40	0,20 - 0,5		60 - 120	0,2 - 0,5	80 - 120	0,2 - 0,5	10 - 25	0,05 - 0,3	20 - 50	0,05 - 0,3	Cast Iron
<200 HB	20 - 35	0,20 - 0,4		50 - 100	0,2 - 0,4	80 - 120	0,2 - 0,5	10 - 20	0,05 - 0,3	10 - 40	0,05 - 0,3	Cast Iron
<220 HB	10 - 30	0,10 - 0,4		40 - 100	0,2 - 0,4	70 - 110	0,1 - 0,4	5 - 15	0,05 - 0,3	10 - 35	0,05 - 0,3	Cast Iron
<180 HB	20 - 40	0,10 - 0,4		60 - 120	0,2 - 0,5	80 - 120	0,1 - 0,5	15 - 25	0,05 - 0,3	20 - 45	0,05 - 0,3	Malleable Iron
<200 HB	15 - 35	0,10 - 0,4		50 - 110	0,2 - 0,5	75 - 110	0,1 - 0,5	10 - 20	0,05 - 0,3	15 - 40	0,05 - 0,3	Malleable Iron
<220 HB	10 - 30	0,10 - 0,4		40 - 100	0,2 - 0,5	60 - 110	0,1 - 0,4	5 - 15	0,05 - 0,3	10 - 35	0,05 - 0,3	Malleable Iron
	70 - 150	0,05 - 0,5		100 - 350	0,1 - 0,8	80 - 150	0,2 - 1,0	20 - 50	0,05 - 0,3	40 - 80	0,05 - 0,3	Aluminium Soft
	70 - 120	0,05 - 0,5		100 - 350	0,1 - 0,8	100 - 200	0,2 - 1,0	30 - 70	0,05 - 0,3	30 - 70	0,05 - 0,3	Aluminium Hard
	70 - 120	0,10 - 0,5		200 - 350	0,1 - 0,5	100 - 200	0,2 - 1,0	30 - 70	0,05 - 0,3	30 - 70	0,05 - 0,3	Cast Aluminium
	30 - 60	0,10 - 0,5		50 - 150	0,1 - 0,8	80 - 150	0,1 - 0,5	20 - 40	0,05 - 0,3	25 - 80	0,05 - 0,3	Bronze
	40 - 80	0,10 - 0,4		50 - 150	0,1 - 0,4	80 - 200	0,2 - 0,6	20 - 60	0,05 - 0,3	40 - 100	0,05 - 0,3	Brass
	30 - 60	0,10 - 0,4		50 - 150	0,1 - 0,4	50 - 120	0,2 - 0,4	20 - 50	0,05 - 0,3	30 - 80	0,10 - 0,3	Copper
						30 - 60	0,1 - 0,2					HARDOX
	50 - 100	0,10 - 0,5						40 - 80	0,05 - 0,3			Plastics Soft
				70 - 200	0,1 - 0,5	90 - 200	0,2 - 0,5			50 - 80	0,05 - 0,3	Plastics Hard

* Cutting data for type KV = 0,7 x WHV.

01	Insert drills		Pilots
	B	LB	F
	HSS	HSS	
	Tol.h8 Flute 12 mm	Tol.h8 Flute 17 mm	Tol.c9
Ø mm	Part No.	Part No.	Part No.
2,4			01F-02,4
2,5	01B-02,5	01LB-02,5	01F-02,5
2,6			01F-02,6
2,7	01B-02,7		01F-02,7
2,9			01F-02,9
3,0	01B-03,0	01LB-03,0	01F-03,0
3,2	01B-03,2	01LB-03,2	01F-03,2
3,3	01B-03,3	01LB-03,3	01F-03,3
3,4	01B-03,4		01F-03,4
3,5	01B-03,5	01LB-03,5	01F-03,5
3,6	01B-03,6		01F-03,6
3,7	01B-03,7	01LB-03,7	01F-03,7
3,9			01F-03,9
4,0			01F-04,0
4,2			01F-04,2
4,5			01F-04,5
4,8			01F-04,8
5,0			01F-05,0
5,3			01F-05,3
5,5			01F-05,5
6,0			01F-06,0
6,4			01F-06,4
6,5			01F-06,5
6,6			01F-06,6
6,8			01F-06,8
7,0			01F-07,0
7,5			01F-07,5
8,0			01F-08,0

01	Counterbores and countersinks	
	W	T
	HSS	HSS
	Tol.p8 Flute 16 mm	Tol.x9 Flute 16 mm
Ø mm	Part No.	Part No.
5,0	01W-05,0	
5,5	01W-05,5	
5,9	01W-05,9	
6,0	01W-06,0	01T9-06,0
6,3	01W-06,3	01T9-06,3
6,4	01W-06,4	
6,5	01W-06,5	
6,7	01W-06,7	01T9-06,7
6,8	01W-06,8	
7,0	01W-07,0	01T9-07,0
7,3		01T9-07,3
7,5	01W-07,5	
8,0	01W-08,0	01T9-08,0
8,3		01T9-08,3
8,5	01W-08,5	
8,6		01T9-08,6
9,0	01W-09,0	
9,4		01T9-09,4
9,5	01W-09,5	
10,0	01W-10,0	01T9-10,0
10,4	01W-10,4	01T9-10,4
10,5	01W-10,5	
11,0	01W-11,0	
12,0	01W-12,0	
12,5	01W-12,5	
13,0	01W-13,0	
14,0	01W-14,0	
15,0	01W-15,0	
16,0	01W-16,0	

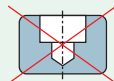
B and LB



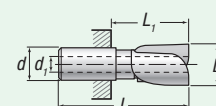
Important!

- It is important to note that when combining insert drills with countersinks, the drill must break through the work piece before secondary cutting commences and must not be used in blind holes.

Type	d_i	L	L_i
B	2,4	47,0	12,0
LB	2,4	52,0	17,0

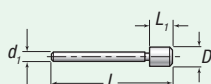


W



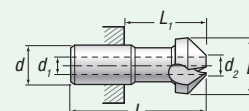
Type	d	d_i	L	L_i
W	7,0	2,4	28,0	16,0

F



Type	d_i	L	L_i
F	2,4	40,0	6,0

T



Type	d	d_i	d_{min}	L	L_i
T	7,0	2,4	2,7	28,0	16,0

Size 01

GRANLUND
Tools

Tool holders	
A	
Shank	Part No.
MK1	01A-MK1
Ø6	01A-06
Ø10	01A-10

Tool holders	
S	
With rotating depth-stop	
Shank	Part No.
MK1	01S-MK1
Ø10	01S-10

Tool holders	
DS	
Shank	Part No.
Ø10	01DS-10

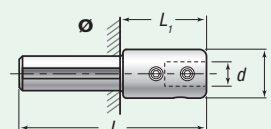


Set

Part No. 01P / M3-M6

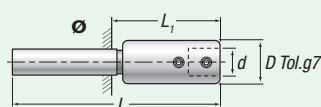
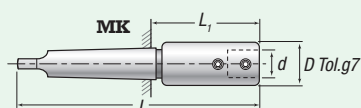
Counterbores type W, Ø mm	Pilots type F, Ø mm	Tool holders
5,0	2,4	01A-06 mm
5,5	2,5	
6,0	3,0	
6,5	3,2	
7,0	3,4	
7,5	3,5	
8,0	3,6	
8,5	4,0	
9,0	4,2	
9,5	4,5	
10,0	5,0	
10,5	5,5	
11,0	6,0	
	6,5	
	6,6	
	7,0	

01DS



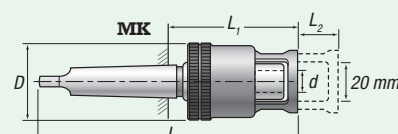
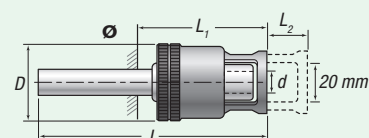
Type	D Tol. g7	d	L	L ₁	Shank
01DS-10	14	7	54	25	Ø10

01A



Type	D Tol. g7	d	L	L ₁	Shank
01A-MK1	14	7	120	58	MK1
01A-06	14	7	86	45	Ø6
01A-10	14	7	86	45	Ø10

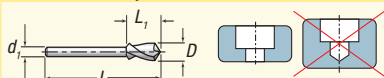
01S



Type	D	d	L	L ₁	L ₂	Shank
01S-MK1	30	7	120	59	16	MK1
01S-10	30	7	88	59	16	Ø10

Ø mm	Insert drills			Pilots		Counterbores and countersinks							
	B	LB	BH	F	R	N	NA	W	H	HA	WHV	T	KV
	HSS	HSS	Carbide K20 micrograin	Fixed	Roller	HSS	HSS	HSS	Carbide K40 micrograin	Carbide K10 micrograin	For carbide Inserts	HSS 90°	For carbide Inserts
	Tol.h8 Flute 15 mm	Tol.h8 Flute 27 mm	Tol.h8 Flute 15 mm	Tol. c9	Tol. c9	Tol.p8	Tol.p8	Tol.p8	Tol.p8	Tol.p8	Tol.±0,1	Tol.x9	+0,2 -0
Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
4,0				OF-04,0*									
4,2	OB-04,2*	OLB-04,2*		OF-04,2*									
4,3	OB-04,3*	OLB-04,3*		OF-04,3*									
4,5	OB-04,5*	OLB-04,5*		OF-04,5*									
4,8	OB-04,8*	OLB-04,8*		OF-04,8*									
5,0	OB-05,0*	OLB-05,0*	OBH-05,0*	OF-05,0*									
5,1	OB-05,1*	OLB-05,1*											
5,3	OB-05,3*	OLB-05,3*		OF-05,3*									
5,5	OB-05,5*	OLB-05,5*		OF-05,5*									
5,8	OB-05,8	OLB-05,8		OF-05,8									
6,0	OB-06,0	OLB-06,0	OBH-06,0	OF-06,0	OR-06,0								
6,4	OB-06,4	OLB-06,4		OF-06,4	OR-06,4								
6,5	OB-06,5	OLB-06,5	OBH-06,5	OF-06,5	OR-06,5								
6,6	OB-06,6	OLB-06,6		OF-06,6	OR-06,6								
6,8	OB-06,8	OLB-06,8	OBH-06,8	OF-06,8	OR-06,8								
7,0	OB-07,0	OLB-07,0		OF-07,0	OR-07,0	ON-07,0	ONA-07,0	OW-07,0					
7,4				OF-07,4		ON-07,4	ONA-07,4						
7,5	* Not to be used with carbide cutters.			OF-07,5	OR-07,5	ON-07,5	ONA-07,5	OW-07,5					
7,6				OF-07,6									
8,0				OF-08,0	OR-08,0	ON-08,0	ONA-08,0	OW-08,0				OT9-08,0	
8,3				OF-08,3	OR-08,3							OT9-08,3	
8,4				OF-08,4	OR-08,4								
8,5				OF-08,5	OR-08,5	ON-08,5	ONA-08,5	OW-08,5					
8,6												OT9-08,6	
9,0				OF-09,0	OR-09,0	ON-09,0	ONA-09,0	OW-09,0					
9,4						ON-09,4						OT9-09,4	
9,5				OF-09,5	OR-09,5	ON-09,5	ONA-09,5	OW-09,5					
10,0				OF-10,0	OR-10,0	ON-10,0	ONA-10,0	OW-10,0	OH-10,0			OT9-10,0	
10,2				OF-10,2									
10,4						ON-10,4		OW-10,4				OT9-10,4	
10,5				OF-10,5	OR-10,5	ON-10,5		OW-10,5	OH-10,5	OHA-10,5			
11,0				OF-11,0	OR-11,0	ON-11,0	ONA-11,0	OW-11,0	OH-11,0	OHA-11,0			
11,5				OF-11,5		ON-11,5	ONA-11,5	OW-11,5	OH-11,5	OHA-11,5		OT9-11,5	
12,0				OF-12,0	OR-12,0	ON-12,0	ONA-12,0	OW-12,0	OH-12,0	OHA-12,0		OT9-12,0	
12,4												OT9-12,4	
12,5				OF-12,5	OR-12,5	ON-12,5	ONA-12,5	OW-12,5	OH-12,5				
13,0				OF-13,0	OR-13,0	ON-13,0	ONA-13,0	OW-13,0	OH-13,0	OHA-13,0			
13,4												OT9-13,4	
13,5				OF-13,5	OR-13,5	ON-13,5	ONA-13,5						
14,0				OF-14,0	OR-14,0	ON-14,0	ONA-14,0	OW-14,0	OH-14,0	OHA-14,0		OT9-14,0	
14,5						ON-14,5	ONA-14,5		OH-14,5				
15,0						ON-15,0	ONA-15,0	OW-15,0	OH-15,0	OHA-15,0		OT9-15,0	
15,5						ON-15,5	ONA-15,5	OW-15,5					
16,0						ON-16,0	ONA-16,0	OW-16,0	OH-16,0	OHA-16,0		OT9-16,0	
16,4												OT9-16,4	
16,5								OW-16,5				OT9-16,5	
17,0						ON-16,5	ONA-16,5						
17,5						ON-17,0	ONA-17,0		OH-17,0				
18,0						ON-17,5	ONA-17,5						
18,5						ON-18,0	ONA-18,0		OH-18,0	OHA-18,0	OWHV-18,0		OKV9-18,0
19,0						ON-18,5							
19,5						ON-19,0	ONA-19,0		OH-19,0		OWHV-19,0		OKV9-19,0
20,0						ON-19,5							
20,5						ON-20,0	ONA-20,0		OH-20,0	OHA-20,0	OWHV-20,0		
21,0						ON-20,5	ONA-20,5						OKV9-20,5
21,5						ON-21,0	ONA-21,0		OH-21,0		OWHV-21,0		
22,0						ON-21,5	ONA-21,5						
22,5						ON-22,0	ONA-22,0		OH-22,0	OHA-22,0	OWHV-22,0		
23,0						ON-22,5	ONA-22,5						
23,5						ON-23,0	ONA-23,0		OH-23,0		OWHV-23,0		
24,0						ON-23,5	ONA-23,5						
24,0						ON-24,0	ONA-24,0		OH-24,0	OHA-24,0	OWHV-24,0		
25,0													OKV9-25,0

B, LB and BH

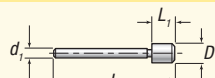


Type	d ₁	L	L ₁	L ₂
B, BH	4,0	70,0	15,0	8,0
LB	4,0	82,0	27,0	8,0

Important!

- It is important to note that when combining insert drills with countersinks, the drill must break through the work piece before secondary cutting commences and must not be used in blind holes.

F and R

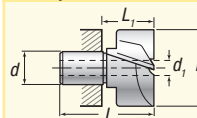


Type	d ₁	L	L ₁
F, R	4,0	64,0	9,0

Important!

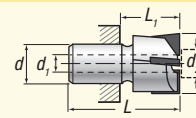
- When working "dry" type R roller pilots must be lubricated.

N, NA och W

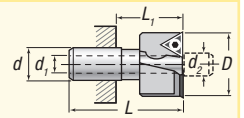


Type	d	d ₁	d _{2min}	L	L ₁
N, NA, W	10,0	4,0		40,0	22,0
H, HA, WH	10,0	4,0	5,8	40,0	22,0
WHV	10,0	4,0	5,2	40,0	22,0

H and HA



WHV



Important!

- The counterbore WHV Rotatip should always be used combined with type R roller pilots.



Set

Part No. 0P / M4-M8

Counterbores type N, Ø mm	Pilots type F, Ø mm	Tool holders
8,0	4,5	0A-MK2
9,0	5,0	
10,0	5,5	
11,0	6,0	
12,0	6,5	
13,0	6,6	
14,0	7,0	
15,0	7,5	
	8,0	
	8,5	
	9,0	
	10,0	



Set

Part No. 0D / M4-M12

Counterbores type N, Ø mm	Pilots type F, Ø mm	Tool holders
8,0	4,3	0A-MK2
10,0	4,5	
11,0	5,3	
15,0	5,5	
18,0	6,4	
20,0	6,6	
	8,4	
	9,0	
	10,5	
	11,0	
	13,0	
	13,5	

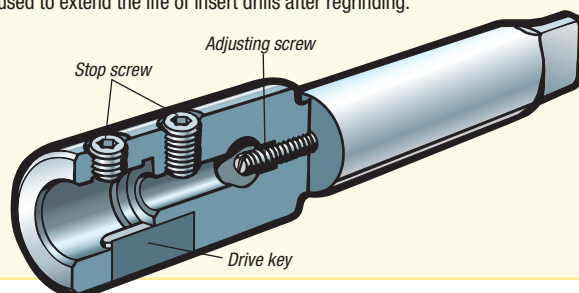
According to DIN 74, Form 1, 2, 3.

Important!

- When using carbide cutters – types TH, H and HA – set the axial adjusting screw to contact the shank of inserted pilot or drill.

Allow a gap between the shoulder of the pilot/drill and the carbide cutting edges to prevent damage by accidental impact.

The adjusting screw is also used to extend the life of insert drills after regrounding.



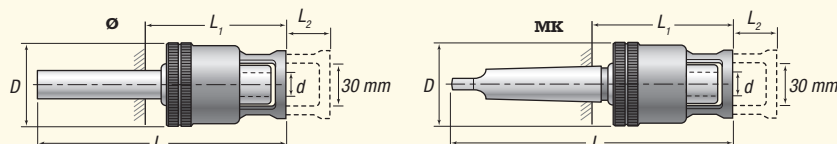
Insert for WHV and KV



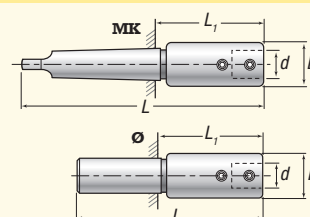
Type of insert					
Type of tools D mm	Size of insert	Part No.	Part No.	Radius mm	Suitable for
WHV 18,0 - 20,0 KV 20,0 - 25,0	07	TPMT-07T	TPMR-07T	0,4	Universal
	07		TPGR-07T	0,4	Universal
	07		TPMR-07H	0,4	HARDOX
	07	TPMT-07M		0,4	Stainless
	07	TPMT-07K		0,4	Aluminium

- The GRANLUND inserts have special chipbreaker angle for optimum chip control.

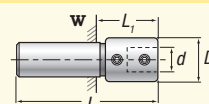
OS



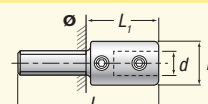
0A



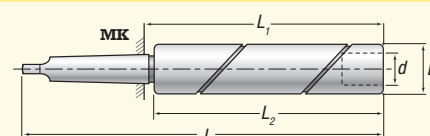
0NS



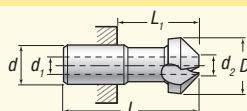
0DS



0L

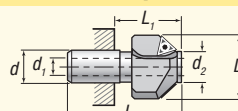


T



Type	d	d ₁	d _{2min}	L	L ₁
T	10,0	4,0	4,5	40,0	22,0

KV



Type	d	d ₁	d _{2min}	L	L ₁
KV	10,0	4,0	10,5	40,0	22,0

Important!

- The countersinks KV should always be used combined with type R roller pilots.

Type	D Tol. g7	d	L	L ₁	L ₂	Shank
0A-MK1	18	10	110	48		MK1
0A-MK2	18	10	132	57		MK2
0A-08	18	10	92	42		Ø8
0A-10	18	10	92	42		Ø10
0S-MK1	37	10	114	53	18	MK1
0S-10	37	10	96	53	18	Ø10
0L-100-MK1	20	10	168	106	100	MK1
0L-150-MK1	20	10	218	156	150	MK1
0L-200-MK1	20	10	268	206	200	MK1
0NS-W16	18	10	80	28		W16
0DS-10	18	10	58	30		Ø10

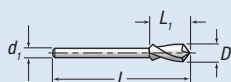
Size 1

GRANLUND
Tools

Ø mm	Insert drills			Pilots	
	B	LB	BH	F	R/RS**
	HSS	HSS	Carbide K20 micrograin	Fixed	Roller
	Tol. h8 Flute 25 mm	Tol. h8 Flute 40 mm	Tol. h8 Flute 25 mm	Tol. c9	Tol. c9
Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
6,0				1F-06,0*	
6,4				1F-06,4*	
6,5	1B-06,5*	1LB-06,5*	1BH-06,5*	1F-06,5*	
6,6	1B-06,6*	1LB-06,6*		1F-06,6*	
6,8	1B-06,8*	1LB-06,8*	1BH-06,8*	1F-06,8*	
7,0	1B-07,0*	1LB-07,0*	1BH-07,0*	1F-07,0*	1R-07,0*
7,4				1F-07,4*	
7,5	1B-07,5*	1LB-07,5*		1F-07,5*	1R-07,5*
7,6	1B-07,6*	1LB-07,6*		1F-07,6	
7,9	1B-07,9*	1LB-07,9*			
8,0	1B-08,0	1LB-08,0	1BH-08,0	1F-08,0	1R-08,0
8,2	1B-08,2	1LB-08,2			
8,3				1F-08,3	1R-08,3
8,4	1B-08,4	1LB-08,4		1F-08,4	1R-08,4
8,5	1B-08,5	1LB-08,5	1BH-08,5	1F-08,5	1R-08,5
8,8	1B-08,8	1LB-08,8			
9,0	1B-09,0	1LB-09,0	1BH-09,0	1F-09,0	1R-09,0
9,3	1B-09,3	1LB-09,3			
9,5	1B-09,5	1LB-09,5		1F-09,5	1R-09,5
10,0	1B-10,0	1LB-10,0	1BH-10,0	1F-10,0	1R-10,0
10,2	1B-10,2	1LB-10,2		1F-10,2	1R-10,2
10,5	1B-10,5	1LB-10,5	1BH-10,5	1F-10,5	1R-10,5
10,7	1B-10,7				
11,0	1B-11,0	1LB-11,0	1BH-11,0	1F-11,0	1R-11,0
11,5	1B-11,5	1LB-11,5	1BH-11,5	1F-11,5	1R-11,5
11,6	1B-11,6	1LB-11,6			
12,0	1B-12,0	1LB-12,0	1BH-12,0	1F-12,0	1R-12,0
12,5				1F-12,5	1R-12,5
13,0				1F-13,0	1R-13,0
13,5				1F-13,5	1R-13,5
14,0				1F-14,0	1R-14,0
14,5				1F-14,5	1R-14,5
15,0				1F-15,0	1R-15,0
15,5				1F-15,5	1R-15,5
16,0				1F-16,0	1R-16,0
16,5				1F-16,5	1R-16,5
17,0				1F-17,0	1R-17,0
17,5				1F-17,5	1R-17,5
18,0				1F-18,0	1R-18,0
18,5				1F-18,5	1R-18,5
19,0				1F-19,0	1R-19,0
20,0				1F-20,0	1R-20,0
20,5					1R-20,5
21,0					1R-21,0
22,0	* Not be used with carbide cutters.				1R-22,0
22,5					1R-22,5
23,0					1R-23,0
24,0					1R-24,0

Ø mm	Counterbores					
	N	NA	W	H	HA	WHV
	HSS	HSS	HSS	Carbide K40 micrograin	Carbide K10 micrograin	For carbide inserts
	Tol. p8	Tol. p8	Tol. p8	Tol. p8	Tol. p8	Tol. ± 0,1
Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
10,0	1N-10,0	1NA-10,0	1W-10,0			
10,4		1NA-10,4				
10,5	1N-10,5	1NA-10,5	1W-10,5			
11,0	1N-11,0	1NA-11,0	1W-11,0			
11,5	1N-11,5	1NA-11,5	1W-11,5			
12,0	1N-12,0	1NA-12,0	1W-12,0	1H-12,0	1HA-12,0	
12,5	1N-12,5	1NA-12,5	1W-12,5	1H-12,5	1HA-12,5	
13,0	1N-13,0	1NA-13,0	1W-13,0	1H-13,0	1HA-13,0	
13,5	1N-13,5	1NA-13,5	1W-13,5	1H-13,5	1HA-13,5	
14,0	1N-14,0	1NA-14,0	1W-14,0	1H-14,0	1HA-14,0	
14,5	1N-14,5	1NA-14,5			1HA-14,5	
15,0	1N-15,0	1NA-15,0	1W-15,0	1H-15,0	1HA-15,0	
15,5	1N-15,5	1NA-15,5		1H-15,5	1HA-15,5	
16,0	1N-16,0	1NA-16,0	1W-16,0	1H-16,0	1HA-16,0	
16,5	1N-16,5	1NA-16,5	1W-16,5	1H-16,5	1HA-16,5	
17,0	1N-17,0	1NA-17,0	1W-17,0	1H-17,0	1HA-17,0	
17,5	1N-17,5	1NA-17,5	1W-17,5	1H-17,5	1HA-17,5	
18,0	1N-18,0	1NA-18,0	1W-18,0	1H-18,0	1HA-18,0	
18,5	1N-18,5	1NA-18,5		1H-18,5	1HA-18,5	
19,0	1N-19,0	1NA-19,0	1W-19,0	1H-19,0	1HA-19,0	
19,5	1N-19,5	1NA-19,5		1H-19,5	1HA-19,5	
20,0	1N-20,0	1NA-20,0	1W-20,0	1H-20,0	1HA-20,0	1WHV-20,0
20,5	1N-20,5	1NA-20,5		1H-20,5	1HA-20,5	1WHV-20,5
21,0	1N-21,0	1NA-21,0	1W-21,0	1H-21,0	1HA-21,0	1WHV-21,0
21,5	1N-21,5	1NA-21,5	1W-21,5	1H-21,5	1HA-21,5	1WHV-21,5
22,0	1N-22,0	1NA-22,0	1W-22,0	1H-22,0	1HA-22,0	1WHV-22,0
22,5	1N-22,5	1NA-22,5		1H-22,5	1HA-22,5	
23,0	1N-23,0	1NA-23,0	1W-23,0	1H-23,0	1HA-23,0	1WHV-23,0
23,5	1N-23,5	1NA-23,5		1H-23,5	1HA-23,5	
24,0	1N-24,0	1NA-24,0	1W-24,0	1H-24,0	1HA-24,0	1WHV-24,0
24,5	1N-24,5	1NA-24,5		1H-24,5	1HA-24,5	
25,0	1N-25,0	1NA-25,0	1W-25,0	1H-25,0	1HA-25,0	1WHV-25,0
25,5	1N-25,5	1NA-25,5		1H-25,5	1HA-25,5	1WHV-25,5
26,0	1N-26,0	1NA-26,0		1H-26,0	1HA-26,0	1WHV-26,0
26,5	1N-26,5	1NA-26,5		1H-26,5	1HA-26,5	
27,0	1N-27,0	1NA-27,0		1H-27,0	1HA-27,0	1WHV-27,0
27,5	1N-27,5	1NA-27,5		1H-27,5	1HA-27,5	
28,0	1N-28,0	1NA-28,0		1H-28,0	1HA-28,0	1WHV-28,0
28,5	1N-28,5	1NA-28,5		1H-28,5	1HA-28,5	
29,0	1N-29,0	1NA-29,0		1H-29,0	1HA-29,0	1WHV-29,0
29,5	1N-29,5	1NA-29,5				
30,0	1N-30,0*	1NA-30,0*		1H-30,0*	1HA-30,0*	1WHV-30,0
30,5	1N-30,5*	1NA-30,5*			1HA-30,5*	1WHV-30,5
31,0	1N-31,0*	1NA-31,0*			1HA-31,0*	1WHV-31,0
32,0	1N-32,0*	1NA-32,0*		1H-32,0*	1HA-32,0*	1WHV-32,0
33,0	1N-33,0*	1NA-33,0*		1H-33,0*	1HA-33,0*	1WHV-33,0
34,0	1N-34,0*	1NA-34,0*		1H-34,0*	1HA-34,0*	1WHV-34,0
35,0	1N-35,0*	1NA-35,0*		1H-35,0*	1HA-35,0*	1WHV-35,0
36,0	1N-36,0*	1NA-36,0*		1H-36,0*	1HA-36,0*	1WHV-36,0
37,0	1N-37,0*	1NA-37,0*			1HA-37,0*	1WHV-37,0
38,0	1N-38,0*	1NA-38,0*		1H-38,0*	1HA-38,0*	1WHV-38,0

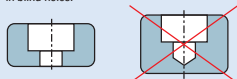
B, LB and BH



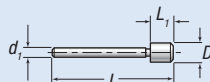
Type	d_1	L	L_1	L_2
B, BH	6,0	95,0	25,0	13,0
LB	6,0	110,0	40,0	13,0

Important!

- It is important to note that when combining insert drills with countersinks, the drill must break through the work piece before secondary cutting commences and must not be used in blind holes.



F and R/RS



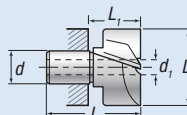
Type	d_1	L	L_1
F, R	6,0	80,0	14,0

Important!

- When working "dry" type R roller pilots must be lubricated.

** Pilots type RS must be combined with holders type AS.

N, NA and W

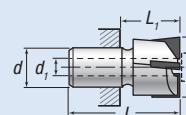


Type	d	d_1	d_{2min}	L	L_1
N, NA, W	14,0	6,0		48,0	28,0
H, HA, WH	14,0	6,0	8,0	48,0	28,0

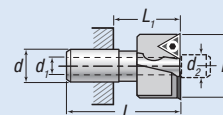
Important!

- Counterbores N, NA, H and HA Ø 30 mm and larger are all made with a driving lip. These sizes should be used in the appropriate type M toolholder.

H and HA



WHV



Type	d	d_1	d_{2min}	L	L_1
WHV	14,0	6,0	7,6	48,0	28,0

Important!

- The counterbore WHV Rotatip should always be used combined with type R or RS, roller pilots. The shank of the holder must not be smaller than MT2. The minimum size of the pilot should be Ø 11 mm for counterboring and Ø 6 mm for spotfacing.

Size 1



Ø mm	Countersinks					
	T	T	T	TH	TK	KV
	HSS	HSS	HSS	Carbide K 10	HSS	For carbide inserts
	Tol. x9 60°	Tol. x9 80°	Tol. x9 90°	Tol. x9 90°	Tol. x9 90°	Tol. + 0,2-0 90°
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
11,5			1T9-11,5			
12,0			1T9-12,0			
12,4			1T9-12,4			
13,4			1T9-13,4			
14,0	1T6-14,0	1T8-14,0	1T9-14,0			
15,0			1T9-15,0			
16,0	1T6-16,0		1T9-16,0			
16,4			1T9-16,4			
16,5			1T9-16,5		1TK9-16,5	
18,0	1T6-18,0		1T9-18,0			
19,0			1T9-19,0			
20,0	1T6-20,0		1T9-20,0	1TH9-20,0	1TK9-20,0	1KV9-20,0
20,5			1T9-20,5			
22,0			1T9-22,0			
23,0			1T9-23,0			
25,0	1T6-25,0	1T8-25,0	1T9-25,0		1TK9-25,0	
26,0			1T9-26,0			1KV9-26,0
28,0			1T9-28,0			
30,0	1T6-30,0	1T8-30,0	1T9-30,0	1TH9-30,0	1TK9-30,0	1KV9-30,0
34,0					1TK9-34,0	

Insert for WHV and KV

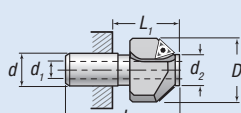
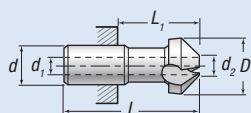


Type of insert					
Type of tools D mm	Size of insert	Part No.	Part No.	Radius mm	Suitable for
WHV 20,0 - 25,0 KV 20-26	07	TPMT-07T	TPMR-07T	0,4	Universal
	07		TPGR-07T	0,4	Universal
	07		TPMR-07H	0,4	HARDOX
	07	TPMT-07M		0,4	Stainless
	07	TPMT-07K		0,4	Aluminium
WHV 25,5 - 36,0 KV 30,0	10	TPMT-10T	TPMR-10T	0,4	Universal
	10		TPGR-10T	0,4	Universal
	10		TPMR-10H	0,4	HARDOX
	10	TPMT-10M		0,4	Stainless
	10	TPMT-10K		0,4	Aluminium
WHV 37,0 - 38,0	12	TPMT-12T	TPMR-12T	0,8	Universal
	12		TPGR-12T	0,8	Universal
	12		TPMR-12H	0,8	HARDOX
	12	TPMT-12M		0,8	Stainless
	12	TPMT-12K		0,8	Aluminium

- Carbide quality PK40. All inserts are multi-layered coated (TiCN-TiC-TiN).
- The GRANLUND inserts have special chipbreaker angle for optimum chip control.

T, TH and TK

KV



Type	d	d ₁	d _{2min}	L	L ₁	Typ	d	d ₁	d _{2min}	L	L ₁
T	14,0	6,0	6,6	48,0	28,0	KV (Ø26)	14,0	6,0	13,0	48,0	28,0
TH	14,0	6,0	10,0	48,0	28,0	KV (Ø30)	14,0	6,0	13,8	48,0	28,0
TK	14,0	6,0	4,0	48,0	28,0						

Important!

- The countersink KV conotip should always be used combined with type R or RS, roller pilots. Minimum shank size is MK3.

GRANLUND
Tools



Tool holders

A	
Shank	Part No.
MK1	1A-MK1
MK2	1A-MK2
MK3	1A-MK3
Ø10	1A-10
Ø12	1A-12
Weldon	1A-W20

Tool holders

NS and DS Short	
Shank	Part No.
MK2	1NS-MK2
MK3	1NS-MK3
Weldon	1NS-W20
Ø10	1DS-10

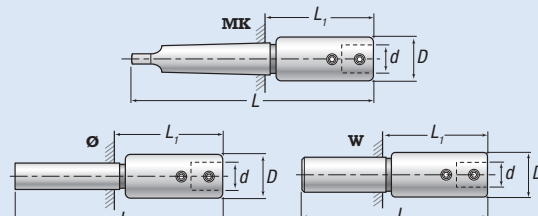
Tool holders

L Long	
Shank	Part No.
MK2	1L-100-MK2
MK2	1L-150-MK2
MK2	1L-225-MK2
Ø20	1L-500-20

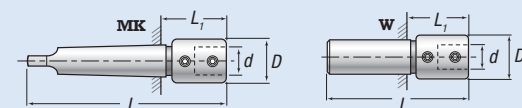
Important!

- When using carbide cutters – types TH, H and HA – set the axial adjusting screw to contact the shank of inserted pilot or drill.
Allow a gap between the shoulder of the pilot/drill and the carbide cutting edges to prevent damage by accidental impact.
The adjusting screw is also used to extend the life of insert drills after regrounding.

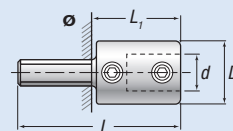
1A



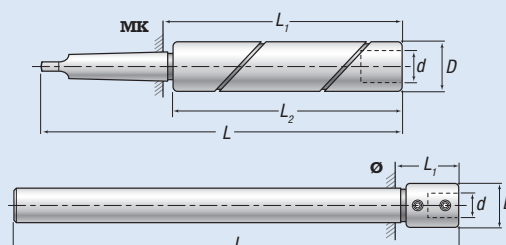
1NS



1DS



1L



Type	D Tol. g7	d	L	L ₁	L ₂	Shank
1A-MK1	24	14	123	62		MK1
1A-MK2	24	14	137	62		MK2
1A-MK3	24	14	160	66		MK3
1A-10	24	14	110	55		Ø10
1A-12	24	14	120	55		Ø12
1A-W20	24	14	110	55		W20
1NS-MK2	24	14	112	37		MK2
1NS-MK3	24	14	130	37		MK3
1NS-W20	24	14	86	32		W20
1DS-10	24	14	62	34		Ø10
1L-L100-MK2	26	14	183	108	100	MK2
1L-L150-MK2	26	14	233	158	150	MK2
1L-L225-MK2	26	14	308	233	225	MK2
1L-500-20	24	14	500	37		Ø20

Size 1



GRANLUND
Tools

Tool holders

GS/AS*

With through coolant

Shank	Part No.
MK3	1GS-MK3
Weldon	1GS-W25
Weldon	1AS-W20

Tool holders

S

With rotating depthstop

Shank	Part No.
MK2	1S-MK2
Ø10	1S-10

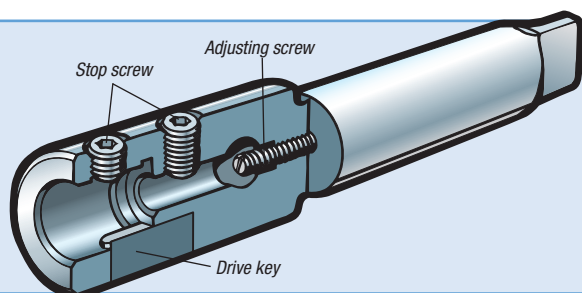
Tool holders

M

Slotted drive

Shank	Part No.
MK3	1M-MK3
W25	1M-W25

* Holders type AS must be combined with Pilots type RS.



Set

Part No. 1P / M8-M14

Counterbores type N, Ø mm	Pilots type F, Ø mm	Tool holders
14,0	8,0	1A-MK2
15,0	8,5	
16,0	9,0	
17,0	9,5	
18,0	10,0	
20,0	10,5	
22,0	11,0	
24,0	11,5	
	12,0	
	12,5	
	13,0	
	13,5	
	14,0	
	14,5	
	15,0	
	15,5	
	16,0	



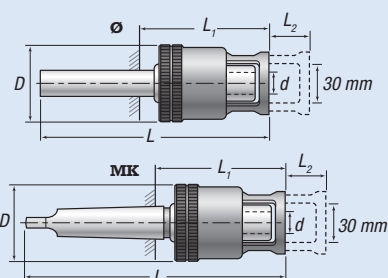
Set

Part No. 1D / M8-M16

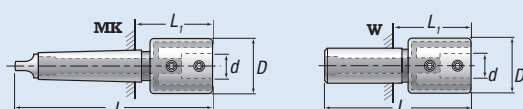
Counterbores type N, Ø mm	Pilots type F, Ø mm	Tool holders
15,0	8,4	1A-MK2
18,0	9,0	
20,0	10,5	
24,0	11,0	
26,0	13,0	
	13,5	
	15,0	
	15,5	
	17,0	
	17,5	

According to DIN 74, Form 1, 2, 3

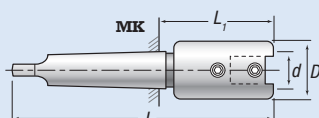
1S



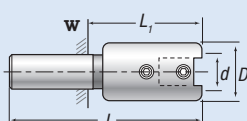
1GS



1M

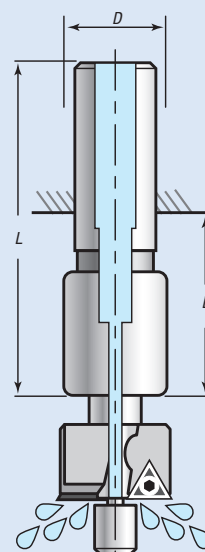


1M-W25



Type	D Tol. g7	d	L	L ₁	L ₂	Shank
1S-MK2	45	14	144	70	20	MK2
1S-10	45	14	128	70	20	Ø10
1GS-MK3	36	14	143	50		MK3
1GS-W25	36	14	105	40		W25
1M-MK3	28	14	166	72		MK3
1M-W25	28	14	122	66		W25
1AS-W20	24	14	86	36		W20

AS



Internal cooling

Holder type AS in combination with pilot type RS.

What about inch?

Selected ranges of the counterboring system in sizes 0,1 and 2 are also available in Inch.

Please contact your Granlund representative for more information or a brochure.



Did you know that...

selected parts of Granlund Tools tool-program are published on YouTube?

Enter www.granlund.com and select products to find the published YouTube movies.

Size 2

GRANLUND
Tools



Ø mm	Insert drills			Pilots	
	B	LB	BH	F	R/RS**
	HSS	HSS	Carbide K20 micrograin	Fixed	Roller
	Tol. h8 Flute 30 mm	Tol. h8 Flute 50 mm	Tol. h8 Flute 40 mm	Tol. c9	Tol. c9
Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
10,0	* Not to be used with carbide cutters.			2F-10,0*	2R-10,0*
10,2				2F-10,2*	2R-10,2*
10,5				2F-10,5*	2R-10,5*
11,0	2B-11,0*	2LB-11,0*	2BH-11,0*	2F-11,0*	2R-11,0*
11,5	2B-11,5*	2LB-11,5*	2BH-11,5*	2F-11,5*	2R-11,5*
11,6	2B-11,6*				
12,0	2B-12,0	2LB-12,0	2BH-12,0	2F-12,0	2R-12,0
12,2	2B-12,2				
12,5	2B-12,5	2LB-12,5	2BH-12,5	2F-12,5	2R-12,5
13,0	2B-13,0	2LB-13,0	2BH-13,0	2F-13,0	2R-13,0
13,5	2B-13,5	2LB-13,5	2BH-13,5	2F-13,5	2R-13,5
14,0	2B-14,0	2LB-14,0	2BH-14,0	2F-14,0	2R-14,0
14,5	2B-14,5	2LB-14,5	2BH-14,5	2F-14,5	2R-14,5
15,0	2B-15,0	2LB-15,0	2BH-15,0	2F-15,0	2R-15,0
15,1	2B-15,1				
15,5	2B-15,5	2LB-15,5	2BH-15,5	2F-15,5	2R-15,5
16,0	2B-16,0	2LB-16,0	2BH-16,0	2F-16,0	2R-16,0
16,5	2B-16,5	2LB-16,5	2BH-16,5	2F-16,5	2R-16,5
17,0	2B-17,0	2LB-17,0	2BH-17,0	2F-17,0	2R-17,0
17,5	2B-17,5	2LB-17,5		2F-17,5	2R-17,5
18,0	2B-18,0	2LB-18,0	2BH-18,0	2F-18,0	2R-18,0
18,5	2B-18,5	2LB-18,5		2F-18,5	2R-18,5
19,0	2B-19,0	2LB-19,0	2BH-19,0	2F-19,0	2R-19,0
19,5	2B-19,5			2F-19,5	2R-19,5
20,0	2B-20,0	2LB-20,0	2BH-20,0	2F-20,0	2R-20,0
20,5				2F-20,5	2R-20,5
21,0	2B-21,0	2LB-21,0	2BH-21,0	2F-21,0	2R-21,0
21,5				2F-21,5	2R-21,5
22,0	2B-22,0	2LB-22,0		2F-22,0	2R-22,0
22,5				2F-22,5	2R-22,5
23,0	2B-23,0			2F-23,0	2R-23,0
23,5				2F-23,5	
24,0	2B-24,0			2F-24,0	2R-24,0
24,5				2F-24,5	2R-24,5
25,0	2B-25,0	2LB-25,0		2F-25,0	2R-25,0
25,5				2F-25,5	2R-25,5
26,0				2F-26,0	2R-26,0
26,5				2F-26,5	2R-26,5
27,0				2F-27,0	2R-27,0
27,5					2R-27,5
28,0				2F-28,0	2R-28,0
29,0				2F-29,0	2R-29,0
30,0				2F-30,0	2R-30,0
30,5					2R-30,5
31,0					2R-31,0
32,0					2R-32,0
33,0					2R-33,0
34,0					2R-34,0
35,0					2R-35,0
36,0					2R-36,0
37,0					2R-37,0
38,0					2R-38,0
39,0					2R-39,0
40,0					2R-40,0
42,0					2R-42,0
44,0					2R-44,0
45,0					2R-45,0
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48,0					2R-48,0
50,0					2R-50,0

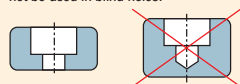
B, LB and BH



Type	d ₁	L	L ₁	L ₂
B, BH	10,0	125,0	30,0	15,0
LB	10,0	145,0	50,0	15,0

Important!

- It is important to note that when combining insert drills with countersinks, the drill must break through the work piece before secondary cutting commences and must not be used in blind holes.



F and R/RS



Type	d ₁	L	L ₁
F, R	10,0	110,0	20,0

Important!

- When working "dry" type R roller pilots must be lubricated.

- Pilots type RS must be combined with holders type AS.

Ø mm	Counterbores					
	N	NA	W	H	HA	WHV
	HSS	HSS	HSS	Carbide K40 micrograin	Carbide K10 micrograin	For carbide inserts
	Tol. p8	Tol. p8	Tol. p8	Tol. p8	Tol. p8	Tol. ± 0,1
Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
16,0	2N-16,0	2NA-16,0	2W-16,0			
16,5	2N-16,5					
17,0	2N-17,0	2NA-17,0				
17,5	2N-17,5					
18,0	2N-18,0	2NA-18,0	2W-18,0	2H-18,0	2HA-18,0	
18,5	2N-18,5					
19,0	2N-19,0	2NA-19,0	2W-19,0			
19,5	2N-19,5	2NA-19,5				
20,0	2N-20,0	2NA-20,0	2W-20,0	2H-20,0	2HA-20,0	
20,5	2N-20,5					
21,0	2N-21,0	2NA-21,0		2H-21,0		
21,5	2N-21,5					
22,0	2N-22,0	2NA-22,0	2W-22,0	2H-22,0	2HA-22,0	
22,5	2N-22,5	2NA-22,5				
23,0	2N-23,0	2NA-23,0	2W-23,0	2H-23,0	2HA-23,0	
23,5	2N-23,5					
24,0	2N-24,0	2NA-24,0	2W-24,0	2H-24,0		
24,5	2N-24,5					
25,0	2N-25,0	2NA-25,0	2W-25,0	2H-25,0	2HA-25,0	
25,5	2N-25,5					
26,0	2N-26,0	2NA-26,0	2W-26,0	2H-26,0	2HA-26,0	
26,5	2N-26,5					
27,0	2N-27,0	2NA-27,0	2W-27,0	2H-27,0		
27,5	2N-27,5					
28,0	2N-28,0	2NA-28,0	2W-28,0	2H-28,0	2HA-28,0	
28,5	2N-28,5					
29,0	2N-29,0	2NA-29,0	2W-29,0	2H-29,0	2HA-29,0	
29,5	2N-29,5					
30,0	2N-30,0	2NA-30,0	2W-30,0	2H-30,0	2HA-30,0	
30,5	2N-30,5					
31,0	2N-31,0	2NA-31,0	2W-31,0	2H-31,0	2HA-31,0	
32,0	2N-32,0	2NA-32,0	2W-32,0	2H-32,0	2HA-32,0	
33,0	2N-33,0	2NA-33,0	2W-33,0	2H-33,0	2HA-33,0	
34,0	2N-34,0	2NA-34,0	2W-34,0	2H-34,0	2HA-34,0	2WHV-34,0
35,0	2N-35,0	2NA-35,0	2W-35,0	2H-35,0	2HA-35,0	2WHV-35,0
36,0	2N-36,0	2NA-36,0	2W-36,0	2H-36,0	2HA-36,0	2WHV-36,0
37,0	2N-37,0	2NA-37,0		2H-37,0	2HA-37,0	2WHV-37,0
38,0	2N-38,0	2NA-38,0	2W-38,0	2H-38,0	2HA-38,0	2WHV-38,0
39,0	2N-39,0	2NA-39,0		2H-39,0		2WHV-39,0
40,0	2N-40,0	2NA-40,0	2W-40,0	2H-40,0	2HA-40,0	2WHV-40,0
41,0	2N-41,0	2NA-41,0		2H-41,0		2WHV-41,0
42,0	2N-42,0	2NA-42,0		2H-42,0	2HA-42,0	2WHV-42,0
43,0	2N-43,0	2NA-43,0		2H-43,0		2WHV-43,0
44,0	2N-44,0	2NA-44,0		2H-44,0	2HA-44,0	2WHV-44,0
45,0	2N-45,0	2NA-45,0		2H-45,0	2HA-45,0	2WHV-45,0
46,0	2N-46,0	2NA-46,0		2H-46,0	2HA-46,0	2WHV-46,0
47,0	2N-47,0				2HA-47,0	2WHV-47,0
48,0	2N-48,0	2NA-48,0		2H-48,0	2HA-48,0	2WHV-48,0
48,0	2N-49,0	2NA-49,0				2WHV-49,0
50,0	2N-50,0*	2NA-50,0*		2H-50,0*	2HA-50,0*	2WHV-50,0**
51,0	2N-51,0*	2NA-51,0*				2WHV-51,0**
52,0	2N-52,0*	2NA-52,0*		2H-52,0*	2HA-52,0*	2WHV-52,0**
53,0	2N-53,0*	2NA-53,0*				2WHV-53,0**
54,0	2N-54,0*	2NA-54,0*				2WHV-54,0**
55,0	2N-55,0*	2NA-55,0*		2H-55,0*	2HA-55,0*	2WHV-55,0**
56,0	2N-56,0*	2NA-56,0*		2H-56,0*	2HA-56,0*	2WHV-56,0**
57,0	2N-57,0*	2NA-57,0*				
58,0	2N-58,0*	2NA-58,0*		2H-58,0*	2HA-58,0*	2WHV-58,0**
60,0	2N-60,0*	2NA-60,0*		2H-60,0*	2HA-60,0*	2WHV-60,0**
62,0	2N-62,0*	2NA-62,0*		2H-62,0*	2HA-62,0*	2WHV-62,0**
64,0	2N-64,0*	2NA-64,0*			2HA-64,0*	2WHV-64,0**
65,0	2N-65,0*	2NA-65,0*		2H-65,0*	2HA-65,0*	2WHV-65,0**
66,0	2N-66,0*	2NA-66,0*		2H-66,0*		
68,0		2NA-68,0*			2HA-68,0*	2WHV-68,0**
70,0	2N-70,0*	2NA-70,0*		2H-70,0*	2HA-70,0*	2WHV-70,0**
72,0	2N-72,0*	2NA-72,0*		2H-72,0*	2HA-72,0*	2WHV-72,0**
74,0		2NA-74,0*			2HA-74,0*	
75,0	2N-75,0*	2NA-75,0*		2H-75,0*	2HA-75,0*	2WHV-75,0**
76,0	2N-76,0*	2NA-76,0*				
78,0		2NA-78,0*				
80,0	2N-80,0*	2NA-80,0*				
82,0	2N-82,0*					
84,0		2NA-84,0*				
85,0	2N-85,0*	2NA-85,0*				

* Use holders type M.

** Recommended minimum shank size MT3.

Size 2



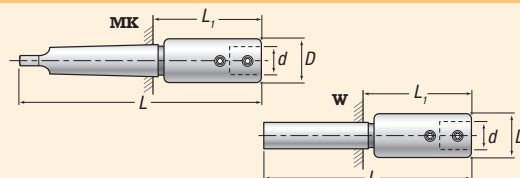
Ø mm	Countersinks						
	T	T	T	TH	TK	KV	KV
	HSS	HSS	HSS	Carbide K 10	HSS	For carbide inserts	For carbide inserts
	Tol. x9 60°	Tol. x9 80°	Tol. x9 90°	Tol. x9 90°	Tol. x9 90°	Tol. + 0,2-0 60°	Tol. + 0,2-0 90°
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
20,0	2T6-20,0		2T9-20,0				
22,0			2T9-22,0				
25,0	2T6-25,0		2T9-25,0				
28,0			2T9-28,0				
30,0	2T6-30,0	2T8-30,0	2T9-30,0		2TK9-30,0		
31,0			2T9-31,0				
32,0							2KV9-32,0
32,4			2T9-32,4				
34,0			2T9-34,0				
35,0	2T6-35,0		2T9-35,0				2KV9-35,0
36,0							
37,0			2T9-37,0		2TK9-37,0		
38,0							2KV9-38,0
39,0							
40,0	2T6-40,0	2T8-40,0	2T9-40,0	2TH9-40,0	2TK9-40,0		2KV9-40,0
41,0						2KV6-41,0	
42,0							
43,0							
44,0							
45,0			2T9-45,0		2TK9-45,0		2KV9-45,0
46,0							
47,0							
48,0							
48,0							
50,0	2T6-50,0		2T9-50,0	2TH9-50,0	2TK9-50,0	2KV6-50,0	2KV9-50,0
51,0							
52,0							
53,0							
55,0							
56,0							
58,0							
60,0	2T6-60,0		2T9-60,0	2TH9-60,0	2TK9-60,0	2KV6-60,0	2KV9-60,0
62,0							
64,0							
65,0							
68,0							
70,0							
72,0							
75,0			2T9-75,0		2TK9-75,0		
85,0			2T9-85,0				

GRANLUND
Tools

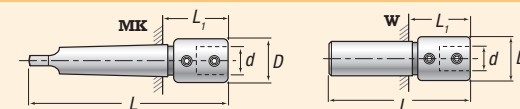


Tool holders		Tool holders		Tool holders	
A		NS Short		L Long	
Shank	Part No.	Shank	Part No.	Shank	Part No.
MK2	2A-MK2	MK3	2NS-MK3	MK3	2L-175-MK3
MK3	2A-MK3	MK4	2NS-MK4	MK3	2L-250-MK3
MK4	2A-MK4	Weldon	2NS-W25	Ø32	2L-500-32
MK5	2A-MK5				
Weldon	2A-W20				

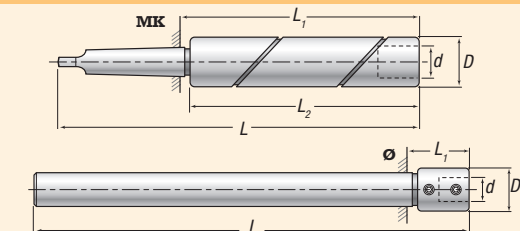
2A



2NS

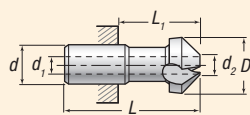


2L



Type	D Tol. g7	d	L	L ₁	L ₂	Shank
2A-MK2	36	22	160	85		MK2
2A-MK3	36	22	180	87		MK3
2A-MK4	36	22	206	89		MK4
2A-MK5	36	22	240	91		MK5
2A-W20	36	22	140	71		W20
2NS-MK3	36	22	145	51		MK3
2NS-MK4	36	22	170	53		MK4
2NS-W25	36	22	105	45		W25
2L-L175-MK3	40	22	280	186	175	MK3
2L-L250-MK3	40	22	355	261	250	MK3
2L-500-32	36	22	500	51		Ø32

T, TH and TK

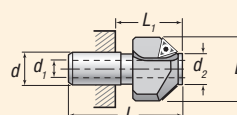


Important!

- Countersinks TH, TK, T Ø 50 are made with a driving lip. These sizes should be used in the appropriate type M holder.

Type	d	d ₁	d _{2min}	L	L ₁
T (-Ø50)	22,0	10,0	10,8	61,0	33,0
T (Ø60)	22,0	10,0	22,0	61,0	33,0
T (-Ø70)	22,0	10,0	37,0	61,0	33,0
T (Ø85)	22,0	10,0	44,0	61,0	33,0
TH (Ø40)	22,0	10,0	14,0	61,0	33,0
TH (Ø50)	22,0	10,0	14,0	61,0	33,0
TH (Ø60)	22,0	10,0	22,0	61,0	33,0
TK (Ø30,37)	22,0		5,0	61,0	33,0
TK (Ø40,45)	22,0		8,0	61,0	33,0
TK (Ø50-)	22,0		10,0	61,5	33,0
TK (Ø60)	22,0		13,0	65,0	33,0
TK (-Ø75)	22,0		25,0	67,0	33,0

KV



Important!

- The countersink KV conotip should always be used combined with type R or RS, roller pilots. Minimum shank size is MK3.

Type	d	d ₁	d _{2min}	L	L ₁
KV (Ø32)	22,0	10,0	17,0	61,0	33,0
KV (Ø38)	22,0	10,0	20,0	61,0	33,0
KV (Ø40)	22,0	10,0	18,0	61,0	33,0
KV (Ø41)	22,0	10,0	24,0	61,0	33,0
KV (Ø50,60)	22,0	10,0	22,0	61,0	33,0

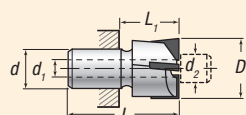
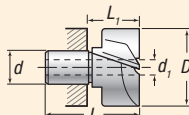
N, NA and W

H and HA

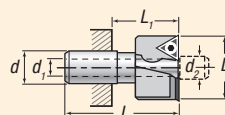
WHV

Important!

- Counterbores N, NA, H and HA Ø 50 mm and larger are all made with a driving lip. These sizes should be used in the appropriate type M toolholder.



Type	d	d ₁	d _{2min}	L	L ₁
N, NA, W	22,0	10,0		61,0	33,0
H, HA, WH	22,0	10,0	12,0	61,0	33,0



Type	d	d ₁	d _{2min}	L	L ₁
WHV 34-45	22,0	10,0	14,8*	61,0	33,0
WHV 46-75	22,0	10,0	15,5*	61,0	33,0
WHV 75	22,0	10,0	17,0*	61,0	33,0

Important!

- The counterbore WHV Rota-tip should always be used combined with type R or RS, roller pilots. The shank of the holder must not be smaller than MT3.

Size 2



Tool holders

GS/AS*

With through coolant

Shank	Part No.
MK3	2GS-MK3
Weldon	2GS-W25
Weldon	2AS-W25

* Hållare typ AS måste kombineras med styrtapp typ RS.

Tool holders

S

With rotating depthstop

Shank	Part No.
MK3	2S-MK3

Tool holders

M

Slotted drive

Shank	Part No.
MK3	2M-MK3
MK4	2M-MK4
W32	2M-W32

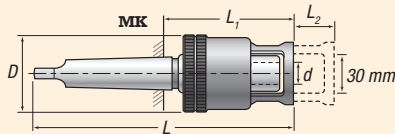
Insert for WHV and KV



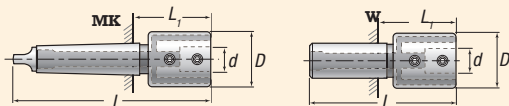
Type of insert	Size of insert	Part No.	Part No.	Radius mm	Suitable for
KV 32,0-41,0	10	TPMT-10T	TPMR-10T	0,4	Universal
	10		TPGR-10T	0,4	Universal
	10		TPMR-10H	0,4	HARDOX
	10	TPMT-10M		0,4	Stainless
	10	TPMT-10K		0,4	Aluminium
WHV 34,0-45,0 KV 45	12	TPMT-12T	TPMR-12T	0,8	Universal
	12		TPGR-12T	0,8	Universal
	12		TPMR-12H	0,8	HARDOX
	12	TPMT-12M		0,8	Stainless
	12	TPMT-12K		0,8	Aluminium
WHV 46,0- KV 50-	17	TPMT-17T		0,8	Universal
	17	TPMT-17H		0,8	HARDOX
	17	TPMT-17M		0,8	Stainless
	17	TPMT-17K		0,8	Aluminium

- Carbide quality PK40. All inserts are multi-layered coated (TiCN-TiC-TiN).
- The GRANLUND inserts have special chipbreaker angle for optimum chip control.

2S

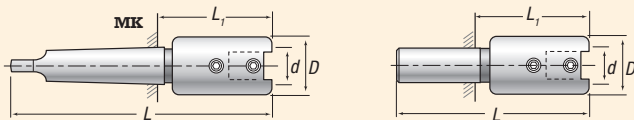


2GS



2M

2M-W32



Type	D Tol. g7	d	L	L ₁	L ₂	Shank
2S-MK3	63	22	187	94	25	MK3
2GS-MK3	44	22	154	61		MK3
2GS-W25	44	22	115	51		W25
2M-MK3	48	22	187	93		MK3
2M-MK4	48	22	212	95		MK4
2M-W32	48	22	148	88		W32
2AS-W25	35	22	105	49		W25

GRANLUND
Tools



Set

Part No. 2P / M14-M24

Counterbores type N, Ø mm	Pilots type F, Ø mm	Tool holders
24,0	13,0	2A-MK3
26,0	14,0	
28,0	15,0	
30,0	16,0	
32,0	17,0	
33,0	18,0	
34,0	19,0	
36,0	20,0	
40,0	21,0	
	22,0	
	23,0	
	24,0	
	25,0	
	26,0	



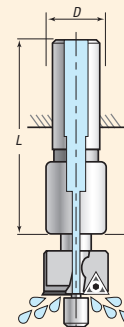
Set

Part No. 2D / M14-M24

Counterbores type N, Ø mm	Pilots type F, Ø mm	Tool holders
24,0	15,0	2A-MK3
26,0	15,5	
30,0	17,0	
33,0	17,5	
36,0	19,0	
40,0	20,0	
	21,0	
	22,0	
	23,0	
	24,0	
	25,0	
	26,0	

According to DIN 74, Form 1, 2, 3.

AS

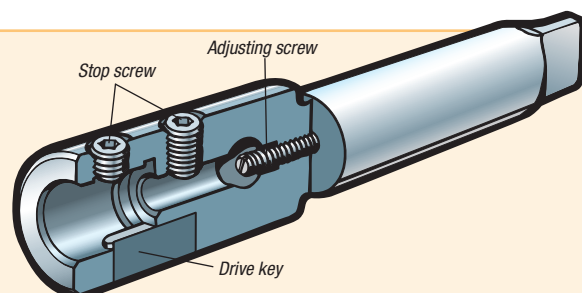


Internal cooling

Holder type AS in combination with pilot type RS.

Important!

- When using carbide cutters – types TH, H and HA – set the axial adjusting screw to contact the shank of inserted pilot or drill. Allow a gap between the shoulder of the pilot/drill and the carbide cutting edges to prevent damage by accidental impact. The adjusting screw is also used to extend the life of insert drills after regrinding.



Did you know that...

You can calculate cutting-data, find ISO tolerances and make your tool-choices on www.granlund.com/techcenter

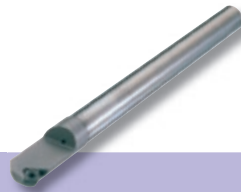
The screenshot shows the 'Tech center' web application. The main navigation bar includes 'Skärdata', 'Nomogram', 'ISO Tolerator', and 'Tool Selector'. The 'Skärdata' section is active, displaying a form for calculating cutting data for 'Skärdata, tappborrar och koniska försänkare' (Cutting data, reamers and conical countersinks). The form includes dropdown menus for 'Material' (set to 'Stål<450') and 'Verktyg' (set to 'N'). A 'Show data' button is present. Below the form, there are two tables. The left table, titled 'Skärdata', has columns for 'Valt material:', 'Valt verktyg:', 'Skärhastighet(m/min):', 'Matning(mm/varv):', 'Grupper:', and 'Räckvidd:'. The right table, titled 'Rekommenderade material' (Recommended materials), has a column for 'Utmärkt' (Excellent) with a checkbox and a column for 'Bra' (Good) with a radio button. The recommended materials listed are: Stål, Rostfritt, Gjutgods, Aluminium(långspånande), Gjuten aluminium(kortspånande), Plast mjuk, Plast hård, Koppar, Brons / Mässing, and HARDOX. The background of the interface features a grayscale image of a person working with a tool.

CNC Tools, sizes and dimensions

GRANLUND
Tools



FA, FAH Boring Tool							
D mm	Part No.	d _i	L	L _i	d	No. of inserts/ Size	
9,8	FA-09,8	9,3	85	20	8	1x06	
10,8	FA-10,8	10,3	95	20	10	1x06	
11,8	FA-11,8	11,3	100	25	10	1x06	
12,8	FA-12,8	12,3	105	30	10	1x06	
13,8	FA-13,8	13,3	110	35	10	1x06	
14,8	FA-14,8	14,3	120	30	12	1x06	
15,8	FA-15,8	15,3	125	35	12	1x06	
16,8	FA-16,8	15,8	133	30	16	1x06	
17,8	FA-17,8	16,8	138	35	16	1x06	
18,8	FA-18,8	17,8	143	40	16	1x06	
19,8	FA-19,8	18,8	148	45	16	1x06	
20,8	FA-20,8	19,8	153	50	16	1x06	
21,8	FA-21,8	20,8	158	55	16	1x06	
22,8	FA-22,8	21,0	165	41	20	1x06	
23,8	FA-23,8	22,0	170	46	20	1x06	
24,8	FA-24,8	23,0	175	51	20	1x06	
25,8	FA-25,8	24,0	180	56	20	1x06	
26,8	FA-26,8	25,0	185	41	20	1x06	
27,8	FA-27,8	26,0	190	46	20	1x06	
28,8	FA-28,8	27,0	195	51	20	1x06	
29,8	FA-29,8	28,0	195	51	20	1x06	
30,8	FA-30,8	29,0	195	51	20	1x06	
31,8	FA-31,8	30,0	195	51	20	1x06	
9,8	FAH-09,8	9,3	105	20	8	1x06	
10,8	FAH-10,8	10,3	105	20	8	1x06	
11,8	FAH-11,8	11,3	125	20	10	1x06	
12,8	FAH-12,8	12,3	125	20	10	1x06	
13,8	FAH-13,8	13,3	125	20	10	1x06	
14,8	FAH-14,8	14,3	140	20	12	1x06	
15,8	FAH-15,8	15,3	140	20	12	1x06	
16,8	FAH-16,8	16,3	150	30	12	1x06	
17,8	FAH-17,8	16,8	160	40	16	1x06	
18,8	FAH-18,8	17,8	160	40	16	1x06	
19,8	FAH-19,8	18,8	180	40	16	1x06	
20,8	FAH-20,8	19,8	180	40	16	1x06	
21,8	FAH-21,8	20,8	180	40	16	1x06	
22,8	FAH-22,8	21,0	195	40	20	1x06	
23,8	FAH-23,8	22,0	195	40	20	1x06	
24,8	FAH-24,8	23,0	210	40	20	1x06	
25,8	FAH-25,8	24,0	210	40	20	1x06	
26,8	FAH-26,8	25,0	210	40	20	1x06	
27,8	FAH-27,8	26,0	225	40	20	1x06	
28,8	FAH-28,8	27,0	225	40	20	1x06	
29,8	FAH-29,8	28,0	225	40	20	1x06	
30,8	FAH-30,8	29,0	225	40	20	1x06	
31,8	FAH-31,8	30,0	225	40	20	1x06	



F AE Boring and Chamfering Tool									
D mm	Part No.	d _i	L	L _i	F _{max}	d	No. of inserts/ Size		
9,8	FAE-09,8	9,3	105	20	0,6	8	1x06		
10,8	FAE-10,8	10,3	105	20	1,1	8	1x06		
11,8	FAE-11,8	11,3	125	20	0,6	10	1x06		
12,8	FAE-12,8	12,3	125	20	1,1	10	1x06		
13,8	FAE-13,8	13,3	125	20	1,6	10	1x06		
14,8	FAE-14,8	14,3	140	20	1,1	12	1x06		
15,8	FAE-15,8	15,3	140	20	1,6	12	1x06		
16,8	FAE-16,8	16,3	150	30	2,1	12	1x06		
17,8	FAE-17,8	16,8	160	40	0,6	16	1x06		
18,8	FAE-18,8	17,8	160	40	1,1	16	1x06		
19,8	FAE-19,8	18,8	180	40	1,6	16	1x06		
20,8	FAE-20,8	19,8	180	40	2,1	16	1x06		
21,8	FAE-21,8	20,8	180	40	2,1	16	1x06		
22,8	FAE-22,8	21,0	195	40	1,1	20	1x06		
23,8	FAE-23,8	22,0	195	40	1,6	20	1x06		
24,8	FAE-24,8	23,0	210	40	2,1	20	1x06		
25,8	FAE-25,8	24,0	210	40	2,1	20	1x06		
26,8	FAE-26,8	25,0	210	40	2,1	20	1x06		
27,8	FAE-27,8	26,0	225	40	2,1	20	1x06		
28,8	FAE-28,8	27,0	225	40	2,1	20	1x06		
29,8	FAE-29,8	28,0	225	40	2,1	20	1x06		
30,8	FAE-30,8	29,0	225	40	2,1	20	1x06		
31,8	FAE-31,8	30,0	225	40	2,1	20	1x06		



FM Counterbore								
D mm	Part No.	d _i	L	L _i	L ₂	Weldon	No. of inserts/ Size	
10,0	FM-10	4,0	80	23	45	12	1x06	
11,0	FM-11	4,0	80	23	45	12	1x06	
12,0	FM-12	4,0	80	26	45	12	1x06	
13,0	FM-13	5,0	80	26	45	12	1x06	
14,0	FM-14	5,0	80	26	45	12	1x06	
15,0	FM-15	5,0	80	26	45	12	1x06	
16,0	FM-16	5,0	90	31	48	16	1x06	
17,0	FM-17	6,0	90	31	48	16	1x06	
18,0	FM-18	8,0	90	31	48	16	1x06	
19,0	FM-19	8,0	90	31	48	16	1x06	
20,0	FM-20	5,0	100	36	50	20	1x09	
21,0	FM-21	5,0	100	36	50	20	1x09	
22,0	FM-22	6,0	100	36	50	20	1x09	
23,0	FM-23	6,0	100	36	50	20	1x09	
24,0	FM-24	8,0	100	36	50	20	1x09	
25,0	FM-25	8,0	120	43	56	25	1x09	
26,0	FM-26	10,0	120	43	56	25	1x09	

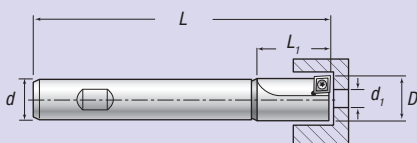


ES Collet						
D mm	Part No.	d	L	L _i	D _i	h
25,0	ES-25-08	8	61	56	29	23
25,0	ES-25-10	10	61	56	29	23
25,0	ES-25-12	12	61	56	29	23
25,0	ES-25-16	16	61	56	29	23
32,0	ES-32-08	8	65	60	36	30
32,0	ES-32-10	10	65	60	36	30
32,0	ES-32-12	12	65	60	36	30
32,0	ES-32-16	16	65	60	36	30
32,0	ES-32-20	20	65	60	36	30
32,0	ES-32-25	25	65	60	36	30

With ES to FA, FAH and F AE the diameter (D) can be adjusted $\pm 0,5$ mm.

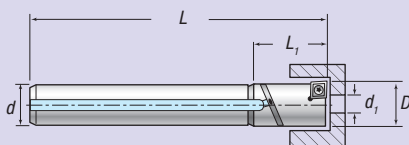
FA

Boring tool with steel shank.
DIN1835B.



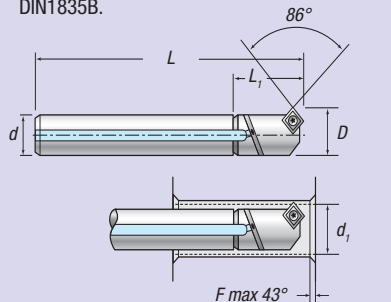
FAH

Boring tool with solid carbide shank and through coolant.



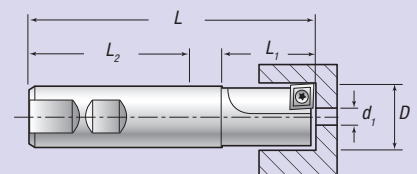
F AE

Boring and chamfering tool with solid carbide shank and through coolant.
DIN1835B.



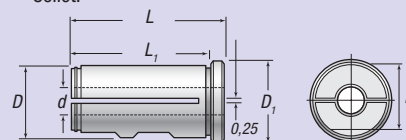
FM

Counterbore "mono" with steel shank.
DIN1835B.



ES

Collet.



CNC Tools, sizes and dimensions



FMK Counterbore							
D mm	Part No.	d ₁	L	L ₁	L ₂	Weldon	No. of inserts/ Size
10,0	FMK-10	4,0	80	23	45,0	12	1x06
11,0	FMK-11	4,0	80	23	45,0	12	1x06
12,0	FMK-12	4,0	80	26	45,0	12	1x06
13,0	FMK-13	5,0	80	26	45,0	12	1x06
14,0	FMK-14	5,0	80	26	45,0	12	1x06
15,0	FMK-15	5,0	80	26	45,0	12	1x06
16,0	FMK-16	5,0	90	31	48,0	16	1x06
17,0	FMK-17	6,0	90	31	48,0	16	1x06
18,0	FMK-18	8,0	90	31	48,0	16	1x06
19,0	FMK-19	8,0	90	31	48,0	16	1x06
20,0	FMK-20	5,0	100	36	50,0	20	1x09
21,0	FMK-21	5,0	100	36	50,0	20	1x09
22,0	FMK-22	6,0	100	36	50,0	20	1x09
23,0	FMK-23	6,0	100	36	50,0	20	1x09
24,0	FMK-24	8,0	120	36	50,0	20	1x09
25,0	FMK-25	8,0	120	43	56,0	20	1x09
26,0	FMK-26	10,0	120	43	56,0	25	1x09
27,0	FMK-27	10,0	120	43	56,0	25	1x09
28,0	FMK-28	12,0	120	43	56,0	25	1x09
29,0	FMK-29	12,0	120	43	56,0	25	1x09
30,0	FMK-30	14,0	120	43	56,0	25	1x09
31,0	FMK-31	14,0	120	43	56,0	25	1x09
32,0	FMK-32	16,0	120	43	56,0	25	1x09
33,0	FMK-33	16,0	120	43	56,0	25	1x09



FMU Counterbore							
D mm	Part No.	d ₁	L	L ₁	L ₂	Weldon	No. of inserts/ Size
15,0	FMU-15	4,0	100	40	30,0	20	2x06
18,0	FMU-18	6,0	100	40	30,0	20	2x06
20,0	FMU-20	8,0	100	40	30,0	20	2x06
22,0	FMU-22	10,0	100	40	30,0	20	2x06
24,0	FMU-24	6,0	136	68	50,0	25	2x09
26,0	FMU-26	8,0	136	68	50,0	25	2x09
28,0	FMU-28	10,0	136	68	50,0	25	2x09
30,0	FMU-30	12,0	136	66	50,0	32	3x09
33,0	FMU-33	15,0	136	66	50,0	32	3x09
36,0	FMU-36	18,0	136	66	50,0	32	3x09
40,0	FMU-40	16,0	136	66	50,0	32	3x12
43,0	FMU-43	19,0	136	66	50,0	32	3x12
48,0	FMU-48	24,0	146	81	60,0	32	3x12
53,0	FMU-53	29,0	146	81	60,0	32	3x12
57,0	FMU-57	33,0	146	81	60,0	32	3x12



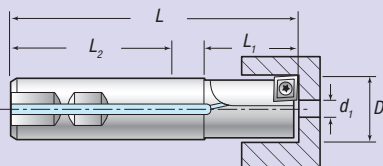
PK 15°, 30°, 45°, 60°, 75° Chamfer and face milling tool							
D mm	Part No.	d ₁	L	L ₁	L ₂	Weldon	No. of inserts/ Size
19,0	PK15-19	16,0	90	19	6,0	16	2x06
40,0	PK15-40	34,0	120	30	11,0	25	2x12
19,0	PK30-19	13,0	90	19	5,0	16	2x06
40,0	PK30-40	28,0	120	30	10,0	25	2x12
13,0	PK45-13	6,0	80	12	4,0	10	1x06
19,0	PK45-19	11,0	90	19	4,0	16	2x06
26,0	PK45-26	15,0	100	26	6,0	20	2x09
40,0	PK45-40	25,0	120	30	8,0	25	2x12
32,0	PK60-32	17,5	100	26	4,0	20	2x09
32,0	PK75-32	15,5	100	26	2,0	20	2x09



FF 2-flute chamfer tool							
D mm	Part No.	d ₁	L	L ₁	L ₂	Weldon	No. of inserts/ Size
30,0	FF-30	20,0	120	20	5,0	20	2x09
40,0	FF-40	30,0	150	20	5,0	25	2x09

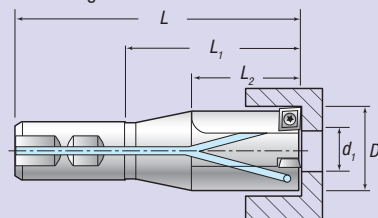
FMK

Counterbore "mono" with steel shank and through coolant. DIN1835B.



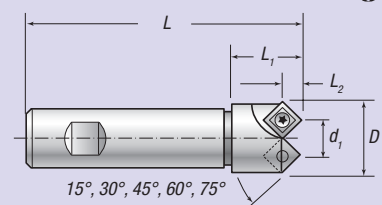
FMU

Counterbore "multi" with steel shank and through coolant. DIN1835B.



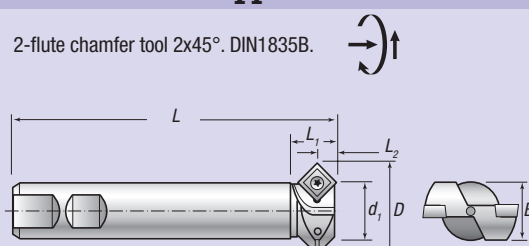
PK

Chamfer and face milling tool.



FF

2-flute chamfer tool 2x45°. DIN1835B.





Part No.	Working piece				Free cutting steel	Tool steels alloyed	High alloyed steel	Stainless steels	Titanium alloys	High temp resistant steel and alloys	Grey cast iron	Aluminium
	Size	Chip breaker	Grade	Radius	HB 175-225 <800N/mm	HB 200-300 <1000N/mm	HB 200-300 <1000N/mm	HB 175-245 <700N/mm	HB 215-500 <1000N/mm	HB 200-400 <1200N/mm	HB 175-225 <800N/mm	HB <160
MPHT-N12-D	06	N12	DX6	0,2	● 90-140	● 90-140	● 50-100	● 70-120				
MPHT-N12-P	06	N12	PMK92*	0,2	● 160-300	● 140-220	● 90-150	● 50-180				
MPHT-N13-C	06	N13	CH1	0,2					○ 40-60		● 160-200	● 300-1000
MPHT-N13-K	06	N13	KM22*	0,2					○ 40-70	○ 15-70	● 180-300	● 300-600
MPHT-N14-D	06	N14	DX6	0,2	● 90-140			● 70-120	○ 40-60	○ 15-20		
MPHT-N14-P	06	N14	PMK92*	0,2	● 160-300	● 140-220	● 90-150	● 90-180				
MPHT-N14-P	06	N15	CT50**	0,2	● 250-400	● 200-350	● 180-250	● 150-240		○ 15-70	● 250-400	● 300-1000
MPMT-N12-C	06	N12	CH1	0,4					○ 40-60		● 160-200	● 300-1000
MPMT-N12-D	06	N12	DX6	0,4	● 90-140	● 80-140	● 50-100	● 70-120				
MPMT-N12-P	06	N12	PMK92*	0,4	● 160-300	● 140-220	● 90-150	● 90-180				
MPMT-N12-K	06	N12	KM22*	0,4					○ 40-70	○ 15-70	● 180-300	
MCHT-N12-D	09	N12	DX6	0,4	● 90-140							
MCHT-N12-P	09	N12	PMK92*	0,4	● 160-300	● 140-220	● 90-150	● 90-180				
MCHT-N13-C	09	N13	CH1	0,4					○ 40-60		● 160-300	● 300-1000
MCHT-N13-K	09	N13	KM22*	0,4				● 150-300	○ 40-70	○ 15-70		● 300-600
MCHT-N14-D	09	N14	DX6	0,4	● 90-140	● 90-140	● 50-100	● 70-120				
MCHT-N14-P	09	N14	PMK92*	0,4	● 160-300	● 140-220	● 90-150	● 90-180				
MCHW-N15-C	09	N15	CT50**	0,4	● 250-400	● 200-350	● 180-250	● 150-240			● 250-400	
MCMT-N12-C	09	N12	CH1	0,8					○ 40-70	○ 15-70	● 160-200	● 300-1000
MCMT-N12-P	09	N12	PMK92*	0,8	● 160-300	● 140-220	● 90-150	● 90-180				
MCMT-N12-K	09	N12	KM22*	0,8					○ 40-70	○ 15-70	● 180-300	
MBHT-N12-P	12	N12	PMK92*	0,4	● 160-300	● 140-220	● 90-150	● 90-180		○ 20-60		
MBHT-N13-C	12	N13	CH1	0,4					○ 40-60		● 160-200	● 300-1000
MBHT-N13-K	12	N13	KM22*	0,4				● 150-300	○ 40-70	○ 15-70		● 300-600
MBHT-N14-P	12	N14	PMK92*	0,4	● 160-300	● 140-220	● 90-150	● 90-180				
MBMT-N12-D	12	N12	DX6	0,8	● 90-140	● 90-140	● 50-100	● 70-120				
MBMT-N12-P	12	N12	PMK92*	0,8	● 160-300	● 140-220	● 90-150	● 90-180		○ 20-60		
	Chipbreaker for FM-FMK-FMU-PK					N12	N13	N14	N15	R16		

*=(TiAlN), **=(Cermet)



Part No.	FA - FAH - FAE ● = Excellent ○ = Good m/min fz=0,03-0,1												
	Working piece				Free cutting steel	Tool steels alloyed	High alloyed steel	Stainless steels	Titanium alloys	High temp resistant steel and alloys	Grey cast iron	Aluminium	
	Size	Chip breaker	Grade	Radius	HB 175-225 <800N/mm	HB 200-300 <1000N/mm	HB 200-300 <1000N/mm	HB 175-245 <700N/mm	HB 215-500 <1000N/mm	HB 200-400 <1200N/mm	HB 175-225 <800N/mm	HB <160	
MPHT-N12-D	06	N12	DX6	0,2	● 90-140	● 90-140	● 50-100	● 70-120					
MPHT-N12-P	06	N12	PMK92*	0,2	● 160-300	● 140-220	● 90-150	● 50-180					
MPHT-N13-C	06	N13	CH1	0,2					○ 40-60	○ 15-60	● 160-200	● 150-190	
MPHT-N13-K	06	N13	KM22*	0,2					○ 40-70	○ 15-70	● 180-300	● 170-270	
MPHT-N14-D	06	N14	DX6	0,2	● 100-150	● 80-180	● 50-100	● 70-120					
MPHT-N14-P	06	N14	PMK92*	0,2	● 180-300	● 160-300	● 90-150	● 80-160					
MPHW-N15-C	06	N15	CT50**	0,2	● 250-400	● 250-400	● 180-250		○ 15-70		● 250-400	● 300-1000	
MPHX-R16-C	06	R16	CT50**	0,4	● 00-500	● 250-400	● 180-250		○ 15-70		● 250-400	● 300-1000	
	Chipbreaker for FM-FMK-FMU-PK					N12		N13		N14		N15	R16

*=(TiAlN), **=(Cermet)



Part No.	FF ● = Excellent ○ = Good m/min fz=0,05-0,3												
	Working piece				Free cutting steel	Tool steels alloyed	High alloyed steel	Stainless steels	Titanium alloys	High temp resistant steel and alloys	Grey cast iron	Aluminium	
	Size	Chip breaker	Grade	Radius	HB 175-225 <800N/mm	HB 200-300 <1000N/mm	HB 200-300 <1000N/mm	HB 175-245 <700N/mm	HB 215-500 <1000N/mm	HB 200-400 <1200N/mm	HB 175-225 <800N/mm	HB <160	
SDHT-N17-C	09	N17	CH1						○ 40-60	○ 15-60	● 160-200	● 300-1000	
SDLT-N19-P	09	N19	PMK63***		● 150-250	● 200-250	● 90-180	○ 90-150	● 100-200	○ 40-60			
	Chipbreaker for FF									N17		N19	

***=(TiN)

06 = Screw SSK-06 M2,5x4,5 Torx TN-8. 09 = Screw SSK-09 M4x7,5 Torx TN-15. 12 = Screw SSK-12 M4x9,5 Torx TN-15. Screw only FF SSK-08 M3,5x8,5 Torx TN-15.

Did you know that...

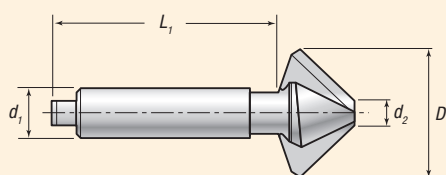
...Granlund Tools also constructs and manufactures special tools
in solid carbide, high speed steel, brazed carbide etc.
We welcome your request.

Countersinks Type 100, with cylindrical shanks

GRANLUND
Tools

Ø mm	100T				100TT			100TA			100TBI
	HSS				HSS TiN			HSS ALCRONA PRO			Bit
	Tol.x9 60°	Tol.x9 80°	Tol.x9 90°	Tol.x9 120°	Tol.x9 60°	Tol.x9 80°	Tol.x9 90°	Tol.x9 60°	Tol.x9 80°	Tol.x9 90°	Tol.x9 90°
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
4,3			100T9-04,3								
5,0			100T9-05,0								
6,0			100T9-06,0				100TT9-06,0			100TA9-06,0	
6,3			100T9-06,3				100TT9-06,3			100TA9-06,3	
6,5		100T8-06,5	100T9-06,5								
7,0			100T9-07,0								
7,3			100T9-07,3								
8,0	100T6-08,0	100T8-08,0	100T9-08,0				100TT9-08,0			100TA9-08,0	
8,3			100T9-08,3				100TT9-08,3			100TA9-08,3	
8,6			100T9-08,6								
9,4			100T9-09,4								
10,0	100T6-10,0	100T8-10,0	100T9-10,0		100TT6-10,0	100TT8-10,0	100TT9-10,0	100TA6-10,0	100TA8-10,0	100TA9-10,0	100TBI9-10,0
10,4		100T8-10,4	100T9-10,4	105T12-10,4			100TT9-10,4			100TA9-10,4	
11,5			100T9-11,5								
12,0	100T6-12,0	100T8-12,0	100T9-12,0		100TT6-12,0		100TT9-12,0	100TA6-12,0		100TA9-12,0	
12,4		100T8-12,4	100T9-12,4	105T12-12,4			100TT9-12,4			100TA9-12,4	
13,4			100T9-13,4								
15,0			100T9-15,0				100TT9-15,0			100TA9-15,0	100TBI9-15,0
16,0	100T6-16,0	100T8-16,0	100T9-16,0		100TT6-16,0		100TT9-16,0	100TA6-16,0		100TA9-16,0	
16,4			100T9-16,4								
16,5			100T9-16,5	105T12-16,5			100TT9-16,5			100TA9-16,5	
18,0			100T9-18,0								
19,0			100T9-19,0								
20,0	100T6-20,0	100T8-20,0	100T9-20,0		100TT6-20,0	100TT8-20,0	100TT9-20,0	100TA6-20,0	100TA8-20,0	100TA9-20,0	100TBI9-20,0
20,5			100T9-20,5	105T12-20,5			100TT9-20,5			100TA9-20,5	
22,0			100T9-22,0								
23,0			100T9-23,0								
25,0	100T6-25,0	100T8-25,0	100T9-25,0	105T12-25,0	100TT6-25,0	100TT8-25,0	100TT9-25,0	100TA6-25,0	100TA8-25,0	100TA9-25,0	
26,0			100T9-26,0								
28,0			100T9-28,0								
30,0	100T6-30,0	100T8-30,0	100T9-30,0		100TT6-30,0	100TT8-30,0	100TT9-30,0	100TA6-30,0	100TA8-30,0	100TA9-30,0	
31,0			100T9-31,0	105T12-31,0							
34,0			100T9-34,0								
35,0			100T9-35,0				100TT9-35,0			100TA9-35,0	
37,0			100T9-37,0								
40,0	100T6-40,0	100T8-40,0	100T9-40,0				100TT9-40,0			100TA9-40,0	

Dimension table



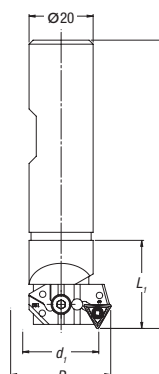
Type 100 60°, 80°, 90°	D x9	d ₁	d ₂	L ₁
T, TT, TA	4,3 - 8,3	6,0	1,5	40
TR, TRHL	8,6 - 13,4	6,0	2,0	40
THS	15,0 - 19,0	10,0*	3,0	45
	20,0 - 31,0	10,0*	4,0	45
	34,0 - 40,0	16,0	8,0	50
100TL	12,0	10,0*	2,0	104
	16,0	10,0*	3,0	106
	20,0 - 30,0	10,0*	4,0	106
100TH	12,0 - 15,0	6,0	4,0	40
	16,0 - 30,0	10,0*	4,0	45
	40,0	16,0	8,0	50
100E	8,0 - 20,0	6,0	1,0	30
	25,0 - 30,0	10,0*	2,0	45
105T12	10,4 - 12,4	6,0	2,0	48
	16,5 - 25,0	10,0	2,0	48
	31,0	12,0	2,5	50
TBI	10,0	Bits	2,0	19
	15,0	Bits	3,0	19
	20,0	Bits	4,0	19

* Cylindrical shank with 3 facets.

TRANSFORMASTER™

– The universal chamfer mill

Transformaster™, developed by Granlund Tools is a universal chamfer and face milling tool for countersinking, facing and interpolation. Transformaster™ consists of a shank and an insert holder with four fixed positions for the insert. With these positions, you are able to face or countersink 30, 60, 90 and 120 degrees. Transformaster™ has also got internal coolant supply for optimal machining conditions.



TM1 30°, 60°, 90°, 120°

Part No.	D mm	d ₁	L	L ₁	Weldon	No. of inserts	Degrees
TM1	25	22	100	22	16	1	30
TM1	25	19	100	22	16	1	60
TM1	25	16,5	100	22	16	1	90
TM1	25	14,5	100	22	16	1	120

Countersinks Type 100, with cylindrical shanks

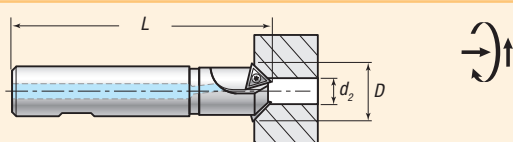
GRANLUND
Tools

	100TR for Stainless steel	100TRHL for Stainless steel	100TH		100THS	100TL Extra long	100E Single flute	100TG Hand deburring tool
	HSS	HSS HARDLUBE	Carbide K10	Carbide K10	Solid Carbide K20	HSS	HSS	HSS
	Tol.x9 90°	Tol.x9 90°	Tol.x9 60°	Tol.x9 90°	Tol.x9 90°	Tol.x9 90°	Tol.x9 90°	Tol.x9 90°
Ø mm	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
6,3					100THS9-06,3			
8,0	100TR9-08,0	100TRHL9-08,0					100E9-08,0	
8,3	100TR9-08,3	100TRHL9-08,3			100THS9-08,3			
10,0	100TR9-10,0	100TRHL9-10,0					100E9-10,0	
10,4	100TR9-10,4	100TRHL9-10,4			100THS9-10,4			
12,0	100TR9-12,0	100TRHL9-12,0		100TH9-12,0		100TL9-12,0	100E9-12,0	100TG9-12,0
12,4	100TR9-12,4	100TRHL9-12,4			100THS9-12,4			
15,0	100TR9-15,0	100TRHL9-15,0						
16,0	100TR9-16,0	100TRHL9-16,0	100TH6-16,0	100TH9-16,0		100TL9-16,0	100E9-16,0	
16,5	100TR9-16,5	100TRHL9-16,5			100THS9-16,5			
20,0	100TR9-20,0	100TRHL9-20,0	100TH6-20,0	100TH9-20,0		100TL9-20,0	100E9-20,0	100TG9-20,0
20,5	100TR9-20,5	100TRHL9-20,5						
25,0	100TR9-25,0	100TRHL9-25,0	100TH6-25,0	100TH9-25,0		100TL9-25,0	100E9-25,0	
30,0	100TR9-30,0	100TRHL9-30,0	100TH6-30,0	100TH9-30,0		100TL9-30,0	100E9-30,0	100TG9-30,0
35,0	100TR9-35,0	100TRHL9-35,0						
40,0	100TR9-40,0	100TRHL9-40,0		100TH9-40,0				100TG9-40,0



FV 90°, Chamfer and face milling tool

D mm	Part No.	Weldon Shank mm	d ₂ min mm	L mm	Chamfers maximum depth mm	No. of inserts
12,0	FV9-12,0	16	6,0	90	5,0	1
12,4	FV9-12,4	16	6,0	90	5,0	1
16,0	FV9-16,0	16	8,0	90	7,5	1
16,5	FV9-16,5	16	8,0	90	7,5	1
20,0	FV9-20,0	20	8,5	100	10,0	2
20,5	FV9-20,5	20	8,5	100	10,0	2
25,0	FV9-25,0	20	13,0	100	12,0	2
30,0	FV9-30,0	20	18,0	100	12,0	2



Inserts for FV / Transformaster

Type of insert					
Type of tool D mm	Size of insert	Part No.	Part No.	Radius mm	Suitable for
FV9 12,0-16,5 Transformaster	07	TPMT-07T	TPMR-07T	0,4	Universal
	07		TPGR-07T	0,4	Universal
	07		TPMR-07H	0,4	HARDOX
	07	TPMT-07M		0,4	Stainless
	07	TPMT-07K		0,4	Aluminium
	10	TPMT-10T	TPMR-10T	0,4	Universal
FV 20,0 - 30,0	10		TPGR-10T	0,4	Universal
	10		TPMR-10H	0,4	HARDOX
	10	TPMT-10M		0,4	Stainless
	10	TPMT-10K		0,4	Aluminium

- Carbide quality PK40. All inserts are coated in several layers (TiCN-TiC-TiN).
- The GRANLUND inserts have special chipbreaker angle for optimum chip control.

Cutting data for Chamfering

Material	Speed	Feed	Material	Speed	Feed
Steel <450 N/mm ²	75 -120 m/min	0,1 - 0,5 mm/rev.	Cast Iron	80 - 110 m/min	0,1-0,5 mm/rev.
Steel <600 N/mm ²	65 -110 m/min	0,1 - 0,4 mm/rev.	Cast Aluminium	80 - 150 m/min	0,1-1,0 mm/rev.
Steel <1000 N/mm ²	55 -100 m/min	0,1 - 0,3 mm/rev.			

Cutting data for face milling = 1,5 x Cutting data for Chamfering.



100TSK/100TRSK*		100TB							100TTSK**	
Sets type	Type of Counterbores	Composition: Countersinks type 100 90° HSS - Ø mm							Part No.	
100TSK	100T	10,0	16,0	20,0	25,0	30,0			100TSK	
100TB**	100T	6,3	8,3	10,4	12,4	16,5	20,5	25,0	100TB	
100TRSK*	100TR	10,0	16,0	20,0	25,0	30,0			100TRSK	
100TTSK	100TT (TiN)	10,0	16,0	20,0	25,0	30,0			100TTSK	

* For stainless. **According to DIN 74, Form B fine.



powered by water



The waterdriven backspotfacer developed by Granlund Tools

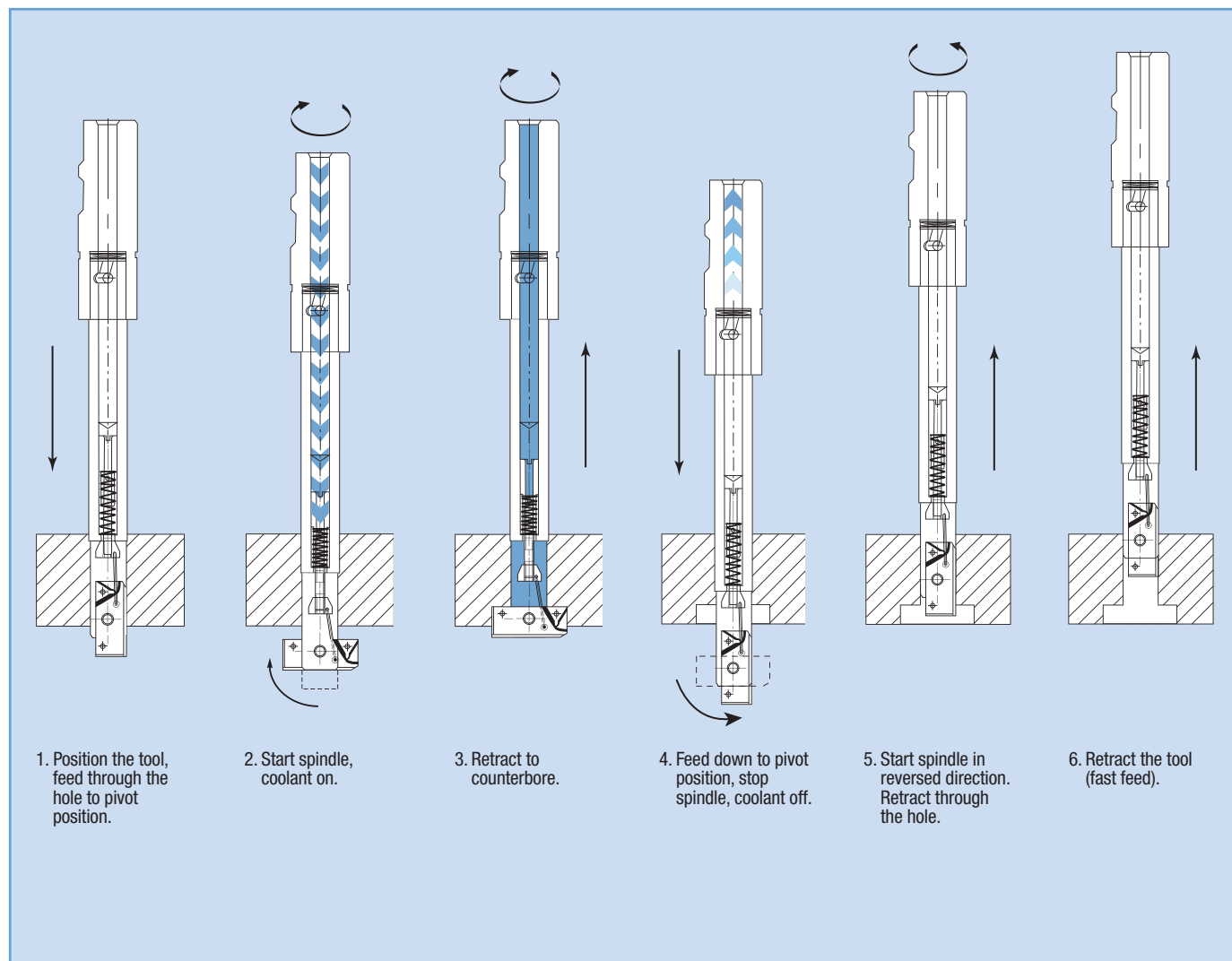
With the Neptune backspotfacer you can produce spotfaces of up to 2 times the diameter of the hole. As a special the tool can be manufactured for an even wider range.

Neptune is powered by coolant through the spindle. It operates using a piston in the shank, which pushes the insert holder out.

The Neptune is a combination tool, where you can strip, and clean the parts, change insert holder for another dimension etc.

The tool is also equipped with an “emergency” function. The shank separates from the holder in case the insert holder doesn't retract properly. The spindle needs to be reversed during retraction after the spotfacing to ensure that the emergency function operates.

All friction parts are coated with a low friction coating to ensure the function of the tool.



Cutting data for backspotfacer type NE

Workpiece	Speed	Feed
Steel <450 N/mm	50-100 m/min	0,05-0,15 mm/rev.
Steel <600 N/mm	60-110 m/min	0,05-0,15 mm/rev.
Steel <1000 N/mm	50-100 m/min	0,05-0,15 mm/rev.
Cast iron	80-100 m/min	0,10-0,15 mm/rev.
Cast aluminium	80-150 m/min	0,05-0,15 mm/rev.

Operating reversed during retraction

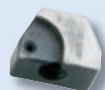
Speed	Feed
400 rpm	500 mm/min

N240 G73 Z600 M5
 N250 G73 X710
 N260 M6
 N270 G57 H901
 N280 G43 Z100. H3 S770
 N290 X0 Y0
 N300 Z50.
 N310 G1 Z-50. F500
 N320 M50
 N330 M3
 N340 G1 Z-33. F200
 N350 G1 Z-27. F77
 N360 G0 Z-50. M9
 N370 G4 P5
 N380 S400 M4
 N390 G1 Z50. F500
 N400 G73 Z600 M5
 N410 M60
 N420 G53
 N430 M30
 %

Application example:

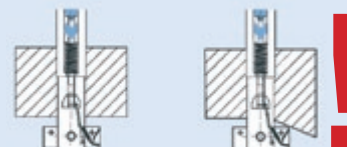
Tool:
NE-17,0/33,0
 Workpiece:
SS 1672 t=33 mm
 Spotface: 3 mm

Sparepart kit

Typ	1 set contains:
NESK-13	 2 x Link  1 x Distributor
NESK-15	
NESK-17	
NESK-19	 1 x Spring  1 x Screw
NESK-21	
NESK-23	
NESK-25	 2 x Axle  4 x Nut
NESK-33	

CAUTION!

Do not operate the tool as single flute. If there is to be any intermittent cutting the feed rate should be reduced by at least 50%.

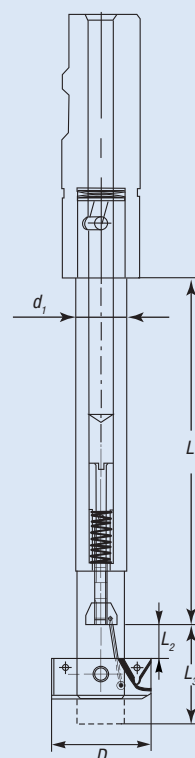


NEPTUNE

Part No.	Inserts	Screws	d_1	D	L_1	L_2	L_3	Shank Weldon
NE-13,0/26,0	TPMT-07T	SSK-20-S	13	26	90	10	26	25
NE-15,0/30,0		SSK-20-S	15	30	90	10	30	25
NE-17,0/26,0		SSK-20	17	26	110	10	26	25
NE-17,0/33,0	TPMT-10T	SSK-22-S	17	33	110	10	33	25
NE-19,0/36,0		SSK-22-S	19	36	110	10	36	25
NE-21,0/33,0		SSK-22	21	33	110	10	33	25
NE-21,0/40,0		SSK-22	21	40	110	10	40	25
NE-23,0/43,0		SSK-22	23	43	110	10	43	32
NE-25,0/40,0		SSK-22	25	40	125	15	40	32
NE-25,0/48,0	TPMT-17T	SSK-40	25	48	125	15	48	32
NE-33,0/61,0		SSK-40	33	61	140	30	61	40

Important!

- Coolant through the spindle or by means of a coolant adapter is required to operate the tool. For reliable operation the pressure should be ≥ 3 bars and the flow ≥ 30 l/min. Before using the tool, make sure that the insert holder pivots freely, lubricate and clean if necessary.

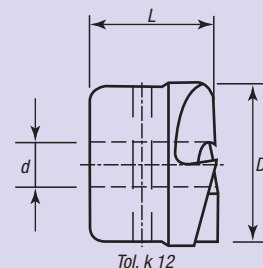




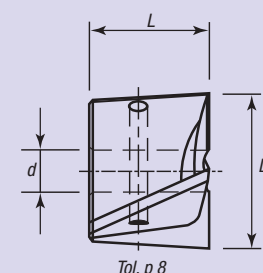
Size d mm			U	UD	UH	UDH
	D mm	L mm	HSS Tol. k12	HSS Tol. p8	Carbide K40 Tol. p8	Carbide K40 Tol. p8
	Part No.		Part No.	Part No.	Part No.	Part No.
6	12,0	17	U-06/12	UD-06/12	UH-06/12	UDH-06/12
	13,0	17	U-06/13	UD-06/13	UH-06/13	UDH-06/13
	13,5	17	U-06/13,5		UH-06/13,5	
	14,0	17	U-06/14	UD-06/14	UH-06/14	UDH-06/14
	14,5	17	U-06/14,5	UD-06/14,5		UDH-06/14,5
	15,0	17	U-06/15	UD-06/15	UH-06/15	UDH-06/15
	16,0	17	U-06/16	UD-06/16	UH-06/16	UDH-06/16
	17,0	17	U-06/17	UD-06/17	UH-06/17	UDH-06/17
	18,0	17	U-06/18	UD-06/18	UH-06/18	UDH-06/18
	19,0	17	U-06/19		UH-06/19	
	20,0	17	U-06/20	UD-06/20	UH-06/20	UDH-06/20
	22,0	17	U-06/22	UD-06/22	UH-06/22	UDH-06/22
	24,0	17	U-06/24			
	26,0	17	U-06/26			
	16,0	21	U-09/16		UH-09/16	
	17,0	21	U-09/17		UH-09/17	
9	17,5	21		UD-09/17,5		UDH-09/17,5
	18,0	21	U-09/18	UD-09/18	UH-09/18	UDH-09/18
	19,0	21	U-09/19	UD-09/19	UH-09/19	UDH-09/19
	20,0	21	U-09/20	UD-09/20	UH-09/20	UDH-09/20
	21,0	21	U-09/21	UD-09/21	UH-09/21	UDH-09/21
	22,0	21	U-09/22	UD-09/22	UH-09/22	UDH-09/22
	23,0	21	U-09/23	UD-09/23	UH-09/23	UDH-09/23
	24,0	21	U-09/24	UD-09/24	UH-09/24	UDH-09/24
	25,0	21	U-09/25	UD-09/25	UH-09/25	UDH-09/25
	26,0	21	U-09/26	UD-09/26	UH-09/26	UDH-09/26
	28,0	21	U-09/28	UD-09/28	UH-09/28	UDH-09/28
	30,0	21	U-09/30	UD-09/30	UH-09/30	UDH-09/30
	32,0	21	U-09/32	UD-09/32	UH-09/32	UDH-09/32
	33,0	21	U-09/33			
	34,0	21	U-09/34	UD-09/34	UH-09/34	UDH-09/34
14	24,0	27	U-14/24	UD-14/24	UH-14/24	UDH-14/24
	25,0	27	U-14/25	UD-14/25		UDH-14/25
	26,0	27	U-14/26	UD-14/26	UH-14/26	UDH-14/26
	27,0	27	U-14/27		UH-14/27	
	28,0	27	U-14/28	UD-14/28	UH-14/28	UDH-14/28
	30,0	27	U-14/30	UD-14/30	UH-14/30	UDH-14/30
	32,0	27	U-14/32	UD-14/32	UH-14/32	UDH-14/32
	33,0	27	U-14/33	UD-14/33	UH-14/33	UDH-14/33
	34,0	27	U-14/34	UD-14/34	UH-14/34	UDH-14/34
	35,0	27	U-14/35	UD-14/35	UH-14/35	UDH-14/35
	36,0	27	U-14/36	UD-14/36	UH-14/36	UDH-14/36
	38,0	27	U-14/38	UD-14/38	UH-14/38	UDH-14/38
	40,0	27	U-14/40	UD-14/40	UH-14/40	UDH-14/40
	41,0	27	U-14/41	UD-14/41	UH-14/41	UDH-14/41
	32,0	31	U-20/32		UH-20/32	
	32,0	31	U-20/33		UH-20/33	
20	34,0	31	U-20/34		UH-20/34	
	35,0	31	U-20/35	UD-20/35	UH-20/35	UDH-20/35
	36,0	31	U-20/36	UD-20/36	UH-20/36	UDH-20/36
	38,0	31	U-20/38	UD-20/38	UH-20/38	UDH-20/38
	40,0	31	U-20/40	UD-20/40	UH-20/40	UDH-20/40
	42,0	31	U-20/42	UD-20/42	UH-20/42	UDH-20/42
	43,0	31	U-20/43			
	44,0	31	U-20/44	UD-20/44		UDH-20/44
	45,0	31	U-20/45	UD-20/45	UH-20/45	UDH-20/45
	46,0	31	U-20/46	UD-20/46	UH-20/46	UDH-20/46
	48,0	31	U-20/48	UD-20/48	UH-20/48	UDH-20/48
	50,0	31	U-20/50	UD-20/50	UH-20/50	UDH-20/50
	52,0	31	U-20/52	UD-20/52	UH-20/52	UDH-20/52
	55,0	31	U-20/55	UD-20/55	UH-20/55	UDH-20/55
	57,0	31	U-20/57	UD-20/57	UH-20/57	UDH-20/57
	60,0	38	U-30/60	UD-30/60	UH-30/60	UDH-30/60
30	62,0	38	U-30/62	UD-30/62	UH-30/62	UDH-30/62
	64,0	38	U-30/64	UD-30/64		UDH-30/64
	65,0	38	U-30/65	UD-30/65	UH-30/65	UDH-30/65
	68,0	38	U-30/68	UD-30/68	UH-30/68	UDH-30/68
	70,0	38	U-30/70	UD-30/70	UH-30/70	UDH-30/70
	71,0	38	U-30/71			
	72,0	38	U-30/72	UD-30/72	UH-30/72	UDH-30/72
	75,0	38	U-30/75	UD-30/75	UH-30/75	UDH-30/75
	76,0	38		UD-30/76	UH-30/76	UDH-30/76
	80,0	38	U-30/80	UD-30/80	UH-30/80	UDH-30/80
	82,0	38	U-30/82			
	83,0	38	U-30/83			

Larger and intermediate sizes available on request.

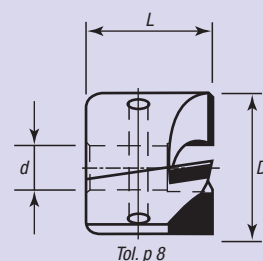
Type U, UD, UH and UDH



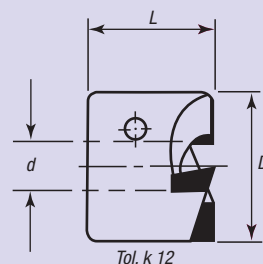
Type U



Type UD



Type UDH



Type UH

Backspotfacing system

GRANLUND
Tools

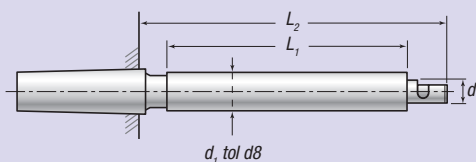


Size d mm	US MT				
	d ₁ mm	L ₁ mm	L ₂ mm	Shank	Type US
Part No.					
6	6,0*	55	92	MK1	US-06/06,0-MK1
	6,5*	55	92	MK1	US-06/06,5-MK1
	7,0*	55	92	MK1	US-06/07,0-MK1
	7,5	55	92	MK1	US-06/07,5-MK1
	8,0	55	92	MK1	US-06/08,0-MK1
	8,5	55	92	MK1	US-06/08,5-MK1
	9,0	55	92	MK1	US-06/09,0-MK1
	9,5	55	92	MK1	US-06/09,5-MK1
9	10,0	55	92	MK1	US-06/10,0-MK1
	9,0*	75	116	MK2	US-09/09,0-MK2
	9,5*	75	116	MK2	US-09/09,5-MK2
	10,0*	75	116	MK2	US-09/10,0-MK2
	10,5	75	116	MK2	US-09/10,5-MK2
	11,0	75	116	MK2	US-09/11,0-MK2
	11,5	75	116	MK2	US-09/11,5-MK2
	12,0	75	116	MK2	US-09/12,0-MK2
	12,5	75	116	MK2	US-09/12,5-MK2
	13,0	75	116	MK2	US-09/13,0-MK2
	13,5	75	116	MK2	US-09/13,5-MK2
	14,0	75	116	MK2	US-09/14,0-MK2
	14,5	75	116	MK2	US-09/14,5-MK2
	15,0	75	116	MK2	US-09/15,0-MK2
14	14,0*	90	143	MK3	US-14/14,0-MK3
	14,5*	90	143	MK3	US-14/14,5-MK3
	15,0*	90	143	MK3	US-14/15,0-MK3
	16,0	90	143	MK3	US-14/16,0-MK3
	17,0	90	143	MK3	US-14/17,0-MK3
	18,0	90	143	MK3	US-14/18,0-MK3
	19,0	90	143	MK3	US-14/19,0-MK3
	20,0	90	143	MK3	US-14/20,0-MK3
	21,0	90	143	MK3	US-14/21,0-MK3
	22,0	90	143	MK3	US-14/22,0-MK3
20	20,0*	90	147	MK3	US-20/20,0-MK3
	21,0*	90	147	MK3	US-20/21,0-MK3
	22,0	90	147	MK3	US-20/22,0-MK3
	23,0	90	147	MK3	US-20/23,0-MK3
	24,0	90	147	MK3	US-20/24,0-MK3
	25,0	110	169	MK4	US-20/25,0-MK4
	26,0	110	169	MK4	US-20/26,0-MK4
	27,0	110	169	MK4	US-20/27,0-MK4
	28,0	110	169	MK4	US-20/28,0-MK4
	30,0	110	169	MK4	US-20/30,0-MK4
30	32,0	110	169	MK4	US-20/32,0-MK4
	30,0*	130	205	MK4	US-30/30,0-MK4
	32,0	130	205	MK4	US-30/32,0-MK4
	33,0	130	205	MK4	US-30/33,0-MK4
	34,0	130	205	MK4	US-30/34,0-MK4
	35,0	130	205	MK4	US-30/35,0-MK4
	36,0	130	205	MK4	US-30/36,0-MK4
	38,0	130	205	MK4	US-30/38,0-MK4
	39,0	130	205	MK4	US-30/39,0-MK4
	40,0	130	205	MK4	US-30/40,0-MK4
	43,0	130	205	MK4	US-30/42,0-MK4
	45,0	130	205	MK4	US-30/45,0-MK4

Size d mm	US Weldon				
	d ₁ mm	L ₁ mm	L ₂ mm	Shank	Type US
Part No.					
6	6,0*	55	99	Weldon 12	US-06/06,0-W12
	6,5*	55	99	Weldon 12	US-06/06,5-W12
	7,0*	55	99	Weldon 12	US-06/07,0-W12
	8,0	55	99	Weldon 12	US-06/08,0-W12
	8,5	55	99	Weldon 12	US-06/08,5-W12
	9,0	55	99	Weldon 12	US-06/09,0-W12
	9,5	55	99	Weldon 12	US-06/09,5-W12
	10,0	55	99	Weldon 12	US-06/10,0-W12
9	9,0*	75	128	Weldon 16	US-09/09,0-W16
	9,5*	75	128	Weldon 16	US-09/09,5-W16
	10,0*	75	128	Weldon 16	US-09/10,0-W16
	10,5	75	128	Weldon 16	US-09/10,5-W16
	11,0	75	128	Weldon 16	US-09/11,0-W16
	11,5	75	128	Weldon 16	US-09/11,5-W16
	12,0	75	128	Weldon 16	US-09/12,0-W16
	12,5	75	128	Weldon 16	US-09/12,5-W16
	13,0	75	128	Weldon 16	US-09/13,0-W16
	14,0	75	128	Weldon 16	US-09/14,0-W16
	15,0	75	128	Weldon 16	US-09/15,0-W16
	14,0*	90	143	Weldon 20	US-14/14,0-W20
	14,5*	90	143	Weldon 20	US-14/14,5-W20
	15,0*	90	143	Weldon 20	US-14/15,0-W20
14	16,0	90	143	Weldon 20	US-14/16,0-W20
	17,0	90	143	Weldon 20	US-14/17,0-W20
	18,0	90	143	Weldon 20	US-14/18,0-W20
	19,0	90	143	Weldon 20	US-14/19,0-W20
	20,0	90	143	Weldon 20	US-14/20,0-W20
	21,0	90	143	Weldon 20	US-14/21,0-W20
	22,0	90	143	Weldon 20	US-14/22,0-W20
	20,0*	90	147	Weldon 20	US-20/20,0-W20
	21,0*	90	147	Weldon 20	US-20/21,0-W20
	22,0	90	147	Weldon 20	US-20/22,0-W20
20	23,0	90	147	Weldon 20	US-20/23,0-W20
	24,0	90	147	Weldon 20	US-20/24,0-W20
	25,0	110	169	Weldon 20	US-20/25,0-W20
	26,0	110	169	Weldon 20	US-20/26,0-W20
	27,0	110	169	Weldon 20	US-20/27,0-W20
	28,0	110	169	Weldon 20	US-20/28,0-W20
	30,0	110	169	Weldon 20	US-20/30,0-W20
	32,0	110	169	Weldon 20	US-20/32,0-W20
	30,0*	130	205	Weldon 25	US-30/30,0-W25
	32,0	130	205	Weldon 25	US-30/32,0-W25
30	33,0	130	205	Weldon 25	US-30/33,0-W25
	34,0	130	205	Weldon 25	US-30/34,0-W25
	35,0	130	205	Weldon 25	US-30/35,0-W25
	36,0	130	205	Weldon 25	US-30/36,0-W25
	38,0	130	205	Weldon 25	US-30/38,0-W25
	39,0	130	205	Weldon 25	US-30/39,0-W25
	40,0	130	205	Weldon 25	US-30/40,0-W25
	42,0	130	205	Weldon 25	US-30/42,0-W25
	45,0	130	205	Weldon 25	US-30/45,0-W25

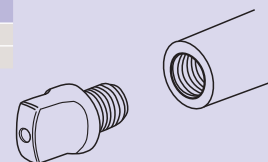
* Not to be used combined with carbide cutters.

US



Removable tang

For shank	Thread	Part. No.
MK3	M12	GR1801-12-2
MK4	M16	GR1801-12-1



Backspotfacing/chamfering tools



**BV
Backspotfacer**

Shank Weldon						
D mm	d _{min} mm	Part No.	Shank Weldon	L ₁ mm	L ₂ mm	E* mm
18,0	10,5	BV-18,0/10,5	16	35	13	4,10
20,0	13,0	BV-20,0/13,0	16	40	13	3,85
24,0	15,0	BV-24,0/15,0	20	50	13	4,65
26,0	17,0	BV-26,0/17,0	20	50	13	4,85
30,0	19,0	BV-30,0/19,0	25	60	16	5,65
33,0	21,0	BV-33,0/21,0	25	70	16	6,40
36,0	23,0	BV-36,0/23,0	25	70	16	6,65
40,0	25,0	BV-40,0/25,0	25	80	16	7,90
48,0	31,0	BV-48,0/31,0	32	90	16	8,90

* = Position place.



**BFV 90°
Backspotfacer**

Shank Weldon						
D mm	d _{min} mm	Part No.	Shank Weldon	L ₁ mm	L ₂ mm	E* mm
15,0	10,0	BFV-15,0/10,0	16	35	13	2,70
20,0	14,0	BFV-20,0/14,0	16	40	13	3,20
23,0	17,0	BFV-23,0/17,0	20	50	13	3,20
27,0	21,0	BFV-27,0/21,0	25	70	13	3,20
31,0	24,0	BFV-31,0/24,0	25	80	13	3,70

* = Position place.

Special dimension available on request.



**DFV 90°
Front/Backspotfacer**

Shank Weldon						
D mm	d _{min} mm	Part No.	Shank Weldon	L ₁ mm	L ₂ mm	E* mm
15,0	10,0	DFV-15,0/10,0	16	35	13	2,70
20,0	14,0	DFV-20,0/14,0	16	40	13	3,20
23,0	17,0	DFV-23,0/17,0	25	50	13	3,20
27,0	21,0	DFV-27,0/21,0	32	70	13	3,20
31,0	24,0	DFV-31,0/24,0	32	80	13	3,70

* = Position place.

Insert for BV, BFV, DFV and FV

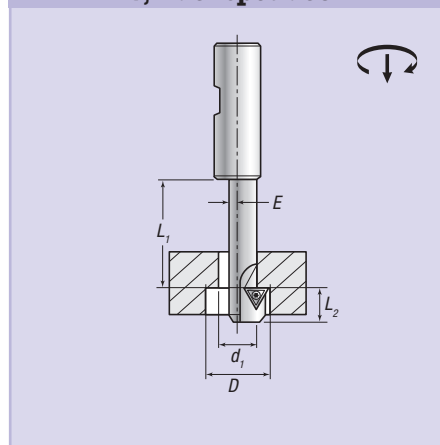
Type of insert					
Type of tools D mm	Size of insert	Part No.	Part No.	Radius mm	Suitable for
BV 18,0 - 27,0 DFV 15,0 - 31,0 BFV 15,0 - 31,0	07	TPMT-07T	TPMR-07T	0,4	Universal
	07		TPGR-07T	0,4	Universal
	07		TPMR-07H	0,4	HARDOX
	07	TPMT-07M		0,4	Stainless
	07	TPMT-07K		0,4	Aluminium
BV >27,0 - 48,0	10	TPMT-10T	TPMR-10T	0,4	Universal
	10		TPGR-10T	0,4	Universal
	10		TPMR-10H	0,4	HARDOX
	10	TPMT-10M		0,4	Stainless
	10	TPMT-10K		0,4	Aluminium

- Carbide quality PK40. All inserts are multi-layered coated (TiCN-TiC-TiN).
- The GRANLUND inserts have special chipbreaker angle for optimum chip control.

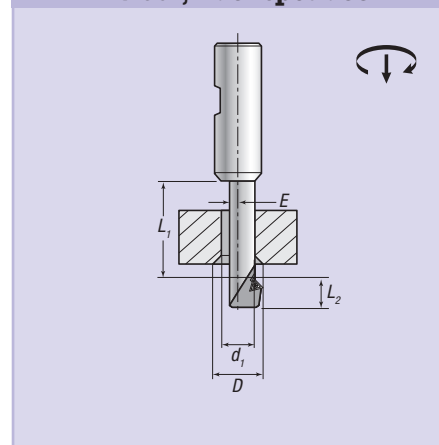
Cutting data for type BV, BFV and DFV

Material	Speed	Feed	Material	Speed	Feed
Steel <450 N/mm ²	80 -120 m/min	0,05 - 0,15 mm/rev.	Cast Iron	80 - 110 m/min	0,05 - 0,15 mm/rev.
Steel <600 N/mm ²	60 -110 m/min	0,05 - 0,15 mm/rev.	Cast Aluminium	80 - 150 m/min	0,05 - 0,15 mm/rev.
Steel <1000 N/mm ²	50 -100 m/min	0,05 - 0,15 mm/rev.			

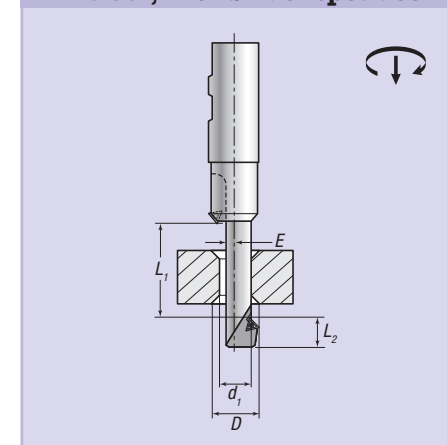
BV, Backspotfacer



BFV 90°, Backspotfacer



DFV 90°, Front/Backspotfacer

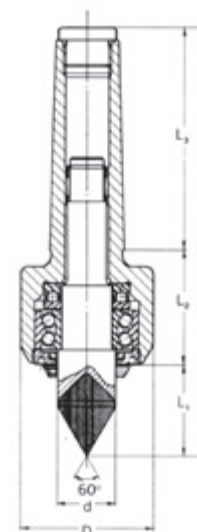


Rotating and fixed precision centres – carbide tipped

Carbide tipped Rotating centre type 609

Rotating centre type 609 is excellent for applications such as hard turning, where you want a steady operation with a minimum of heat spreading. 609 is a high quality and tough centre that Granlund Tools has a long going experience of manufacturing. We also use our rotating centre in our own production.

- Roundness of 0,002 mm
- Extra long tip allowing more space for machining
- Grinded house and spindle in hardened steel
- High tolerance ball bearings
- Fluid resistant



Part No.	Shank MK	D mm	d mm	L mm	L1 mm	L2 mm	L3 mm
609-MK2	2	46	19	145	35	45	65
609-MK3	3	60	25	183	45	55	83
609-MK4	4	68	27	216	50	60	106
609-MK5	5	80	34	260	55	70	135

Load table for type 609							
Shank MK	Axial preas- sure kg	r/min					
		40	200	400	1000	2000	4000
		Radial load – kg					
2	600	240	160	120	90	70	50
3	950	500	340	270	200	160	130
4	1300	1000	600	480	350	280	220
5	1700	1400	800	640	470	380	300

The loading values has been calculated with a high safety factor and are calculated at a runtime of 2500 hours. At lower runtimes, these values can be exceeded. Please contact your Granlund representative if you need more information.

Turning and grinding centres type 610A and 611 – carbide tipped

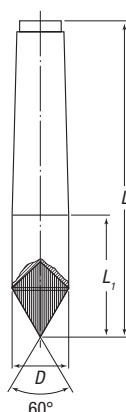


Typ 610 A
Turning centre with
Solid carbide tip.

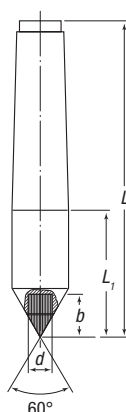
Typ 611
Grinding centre with
sliced carbide tip

Part No.	Part No.	Shank MK	Type 610-611 d mm	Type 610-611 b mm	L mm	L1 mm	Type 611 K mm	Type 611 K mm
610A-MK2	611-MK2	2	8	16	110	41	3,2	18,0
610A-MK3	611-MK3	3	10	20	130	44,5	4	24,0
610A-MK4	611-MK4	4	12	22	160	51,5	5	31,5
610A-MK5	611-MK5	5	14	25	200	62	6	*44,4

* Carbide Ø 35 mm



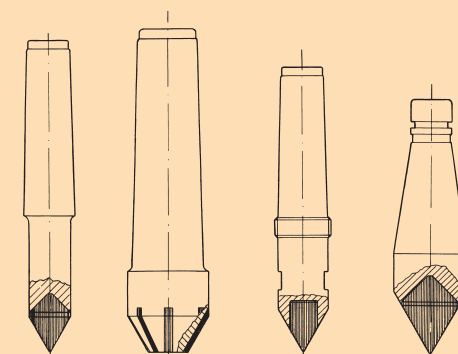
Typ 610 A



Typ 611

Special centres

Granlund Tools manufactures special centres on request. Please contact your Granlund representative for a quotation.



Indexable insert reamers type RD, RA and RB



Ø D mm					RD For through and blind holes	RA For through holes	RB For blind holes
	Tol. h6 d mm	L ₁ mm	L ₂ mm	Insert size	Part No.	Part No.	Part No.
10	16	85	48	04	RD-10,0*		
11	16	85	48	04	RD-11,0*		
12	16	120	48	04	RD-12,0		
13	16	120	48	04	RD-13,0		
14	16	120	48	04	RD-14,0		
15	20	120	50	04	RD-15,0		
16	20	120	50	08		RA-16,0	RB-16,0
17	20	120	50	08		RA-17,0	RB-17,0
18	20	120	50	08		RA-18,0	RB-18,0
19	20	120	50	08		RA-19,0	RB-19,0
20	20	120	50	08		RA-20,0	RB-20,0
21	20	120	50	11		RA-21,0	RB-21,0
22	20	120	50	11		RA-22,0	RB-22,0
23	20	120	50	11		RA-23,0	RB-23,0
24	20	120	50	11		RA-24,0	RB-24,0
25	20	120	50	11		RA-25,0	RB-25,0
26	20	120	50	11		RA-26,0	RB-26,0
27	20	120	50	11		RA-27,0	RB-27,0
28	20	120	50	11		RA-28,0	RB-28,0
29	20	120	50	11		RA-29,0	RB-29,0
30	20	120	50	11		RA-30,0	RB-30,0
31	20	120	50	11		RA-31,0	RB-31,0
32	20	120	50	11		RA-32,0	RB-32,0
33	20	120	50	11		RA-33,0	RB-33,0
34	20	120	50	11		RA-34,0	RB-34,0
35	20	120	50	11		RA-35,0	RB-35,0
36	20	120	50	11		RA-36,0	RB-36,0
37	20	120	50	11		RA-37,0	RB-37,0
38	25	120	56	11		RA-38,0	RB-38,0
39	25	120	56	11		RA-39,0	RB-39,0
40	25	120	56	11		RA-40,0	RB-40,0
41	25	120	56	11		RA-41,0	RB-41,0
42	25	120	56	11		RA-42,0	RB-42,0
43	25	120	56	11		RA-43,0	RB-43,0
44	25	120	56	11		RA-44,0	RB-44,0
45	25	120	56	11		RA-45,0	RB-45,0
46	25	120	56	11		RA-46,0	RB-46,0
47	25	120	56	11		RA-47,0	RB-47,0
48	25	120	56	11		RA-48,0	RB-48,0
49	25	120	56	11		RA-49,0	RB-49,0
50	25	120	56	11		RA-50,0	RB-50,0

RD adjustment range -0 +0,03. RA, RB adjustment range -0 +0,05. * = Internal coolant standard except for RD Ø 10, 11.

Guide to quick reamer selection

Select diameter and tolerance

Standard sizes are delivered preset to +0,008 mm from min. diameter of tolerance H7 with an uncoated insert.
The standard sizes will produce holes according to the nominal diameter of the reamer and with H7 tolerance.
The adjustability of the reamer can be used to increase the tolerance band or for fine- adjustment within a certain tolerance.
Intermediate diameters are manufactured and preset to your requirements.

Guide to quick insert selection

Uncoated DC, BC, AC

Non ferrous alloys.
Where a sharp cutting edge is required.



TiN coated DCT, BCT, ACT

High cutting data. Long tool-life.
Not suitable for aluminium.

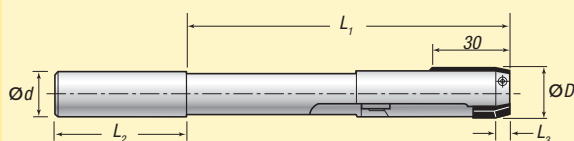


Cermet DCC, BCC, ACC

For steel and grey cast iron.
High cutting speed. Durable. Wear resistant.
Other coatings can be offered on request.



RD, RA and RB



Insert	For type	ØD range	
DC-04 DCT-04 DCC-04	RD	09,90 - 15,90	
BC-08 BCT-08 BCC-08	RB	15,91 - 21,60	
BC-11 BCT-11 BCC-11	RB	21,61 - 120,0	
AC-08 ACT-08 ACC-08	RA	15,91 - 21,60	
AC-11 ACT-11 ACC-11	RA	21,61 - 120,0	

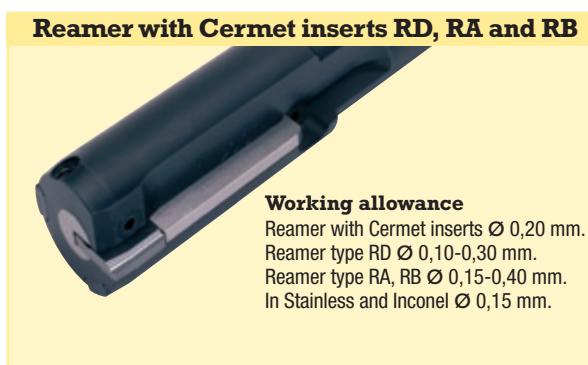
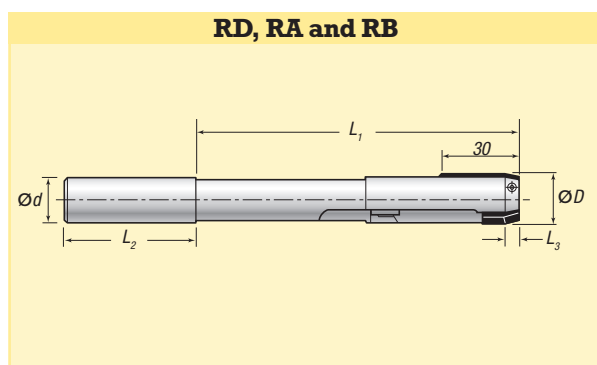
Material	Cutting data indexable insert reamer						
		Feed	Uncoated Coolant supply		TiN coated Coolant supply		Cermet Coolant
		mm/rev.	Internal	External	Internal	External	Internal
1. Steel	<700N/mm ²	0,1 - 0,4	20 - 60	12 - 25	25 - 70	15 - 30	100 - 300
1. Steel	<1000 N/mm ²	0,1 - 0,4	15 - 40	10 - 18	25 - 45	15 - 25	100 - 200
1. Steel	>1000 N/mm ²	0,1 - 0,4	20 - 40	8 - 15	25 - 45	10 - 20	100 - 130
2. Cast steel	>800 N/mm ²	0,1 - 0,4	20 - 50	10 - 20	25 - 60	10 - 25	-
3. Stainless		0,1 - 0,3	15 - 30	7 - 15	10 - 30	7 - 15	-
4. Inconel		0,1 - 0,3	10 - 20	5 - 15	10 - 20	5 - 15	-
5. Cast Iron	<210 HB	0,15 - 0,4	30 - 70	15 - 35	20 - 70	15 - 35	100 - 300
5. Cast Iron	>210 HB	0,15 - 0,4	30 - 50	15 - 35	20 - 50	15 - 35	100 - 250
6. Malleable iron		0,1 - 0,3	30 - 50	12 - 25	15 - 50	12 - 25	-
7. Aluminium	Short chip	0,1 - 0,3	30 - 70	12 - 30	-	-	-
7. Aluminium	Long chip	0,1 - 0,3	20 - 70	12 - 30	-	-	-
8. Bronze	Hard	0,1 - 0,3	15 - 50	6 - 20	15 - 50	6 - 20	-
8. Bronze	Soft	0,1 - 0,3	15 - 50	10 - 20	15 - 50	10 - 20	-
9. Brass	Short chip	0,1 - 0,4	25 - 70	10 - 50	25 - 70	10 - 50	-
9. Brass	Long chip	0,1 - 0,3	20 - 45	8 - 25	20 - 45	10 - 25	-
10. Copper	Hard	0,1 - 0,4	20 - 60	10 - 30	20 - 60	10 - 30	-
10. Copper	Soft	0,1 - 0,3	20 - 50	10 - 20	20 - 60	10 - 20	-
11. Plastic		0,1 - 0,4	30 - 70	10 - 30	30 - 70	10 - 30	-

Coolant with minimum 6% concentration recommended.

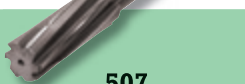
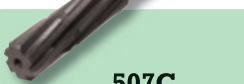
Diameter part range mm	Spare parts for reamers type RA, RB, RD					
	Eccentric screw	Adjusting screw	Wedge	Pivot	Hexagon key	Spare set
						2 pcs ecc screws 2 pcs adj screws 2 pcs wedges
9,90-12,90	ES-3	AS-3	W-1	F-04	SN-1,5 SN-2,0	RSB-01
12,91-15,90	ES-3	AS-3	W-2	F-04	SN-1,5 SN-2,0	RSB-02
15,91-17,90	ES-3	AS-3	W-2	F-08	SN-1,5 SN-2,5	RSB-02
17,91-21,60	ES-4	AS-5	W-3	F-08	SN-2,5	RSB-04
21,61-23,60	ES-4	AS-5	W-3	F-11	SN-2,5	RSB-05
23,61-30,60	ES-4	AS-5	W-4	F-11	SN-2,5	RSB-06
30,61-34,60	ES-4	AS-5	W-5	F-11	SN-2,5	RSB-07
34,61-50,00	ES-4	AS-5	W-6	F-11	SN-2,5	RSB-08

	Special				
		No internal coolant		With internal coolant	
		MIN. mm	MAX. mm	MIN. mm	MAX. mm
Ls = Length of guide pad	Ls	30,0	120	30	120
L ₁ = Reamer working length	L ₁	60,0	1000	60	1000
D = Reamer diameter	D*	9,9	120	12	120
d = Shank diameter	d	10,0	50	16	50

*Cylindrical Shank is standard, can also be manufactured with Weldon Shank.

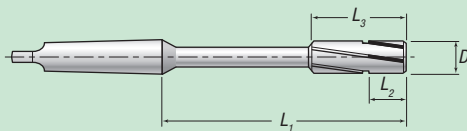
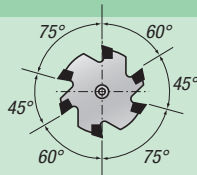


Carbide reamers, re-sizeable and fixed

H7 D mm	 507					 507C					 509					 509C					 509CC					
	Carbide K10					Carbide K10					Carbide K10					Carbide K10					Cermet					
	L ₁	L ₂	L ₃	Shank MT	Part No.	L	L ₁	L ₂	L ₃	Shank cyl. d	Part No.	L ₁	L ₂	Shank MT	Part No.	L	L ₁	L ₂	Shank cyl. d	Part No.	L	L ₁	L ₂	Shank cyl. d	Part No.	
6,0	73	32		1	507-06	102	57	32		10	507C-06															
7,0	85	32		1	507-07	114	69	32		10	507C-07															
8,0	91	32		1	507-08	122	75	32		10	507C-08	91	16	1	509-08	122	75	16	10	509C-08						
9,0	97	36		1	507-09	130	81	36		10	507C-09	97	20	1	509-09	130	81	20	10	509C-09						
10,0	103	40		1	507-10	140	87	40		10	507C-10	103	20	1	509-10	140	87	20	10	509C-10						
11,0	110	40		1	507-11	149	96	40		10	507C-11	110	20	1	509-11	149	96	20	10	509C-11						
12,0	117	20	45	1	507-12	158	105	20	45	10	507C-12	117	20	1	509-12	158	105	20	10	509C-12	158	105	20	10	509CC-12	
13,0	117	20	45	1	507-13	158	105	20	45	10	507C-13	117	20	1	509-13	158	105	20	10	509C-13	158	105	20	10	509CC-13	
14,0	124	20	45	1	507-14	166	110	20	45	16	507C-14	124	20	2	509-14	166	110	20	16	509C-14	166	110	20	16	509CC-14	
15,0	124	20	50	2	507-15	182	112	20	50	20	507C-15	124	30	2	509-15	182	112	30	20	509C-15	182	112	30	20	509CC-15	
16,0	130	20	50	2	507-16	190	120	20	50	20	507C-16	130	30	2	509-16	190	120	30	20	509C-16	190	120	30	20	509CC-16	
17,0	134	20	50	2	507-17	193	123	20	50	20	507C-17	134	30	2	509-17	193	123	30	20	509C-17	193	123	30	20	509CC-17	
18,0	139	20	56	2	507-18	200	130	20	56	20	507C-18	139	30	2	509-18	200	130	30	20	509C-18	200	130	30	20	509CC-18	
19,0	143	20	56	2	507-19	201	131	20	56	20	507C-19	143	30	2	509-19	201	131	30	20	509C-19	201	131	30	20	509CC-19	
20,0	148	20	60	2	507-20	207	137	20	60	20	507C-20	148	30	2	509-20	207	137	30	20	509C-20	207	137	30	20	509CC-20	
22,0	157	20	64	2	507-22	227	157	20	64	20	507C-22	157	30	2	509-22	227	157	30	20	509C-22						
23,0	161	20	64	2	507-23	231	161	20	64	20	507C-23	161	30	2	509-23	231	161	30	20	509C-23						
24,0	169	20	70	3	507-24	239	169	20	70	20	507C-24	169	30	3	509-24	239	169	30	20	509C-24						
25,0	169	20	70	3	507-25	239	169	20	70	20	507C-25	169	30	3	509-25	239	169	30	20	509C-25						
26,0	174	20	70	3	507-26	244	174	20	70	20	507C-26	174	30	3	509-26	244	174	30	20	509C-26						
28,0	178	30	70	3	507-28	248	178	30	70	25	507C-28	178	30	3	509-28	248	178	30	25	509C-26						
30,0	182	30	70	3	507-30	252	182	30	70	25	507C-30	182	30	3	509-30	252	182	30	25	509C-30						
35,0	197	30	78	4	507-35	267	197	30	78	25	507C-35															
40,0	205	30	78	4	507-40	275	205	30	78	25	507C-40															

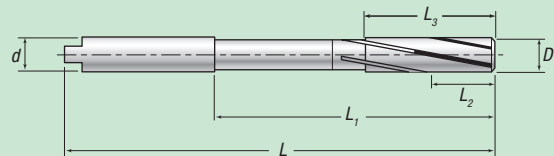
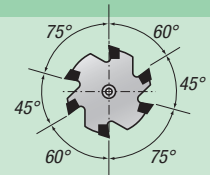
Typ 507 Reamer

Solid reamer, left hand spiral 8-10°, extreme differential pitch. Solid carbide tip 6-11 mm, brazed flutes Ø 12-40 mm. Grade ISO K10. DIN8094 Form B.



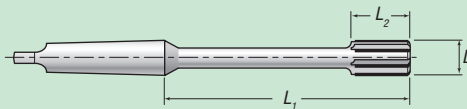
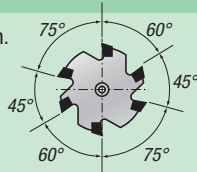
Type 507C Reamer

Solid reamer, left hand spiral 8-10°, extreme differential pitch. Solid carbide tip 6-11 mm, brazed flutes Ø 12-40 mm. Grade ISO K10.



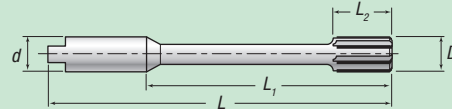
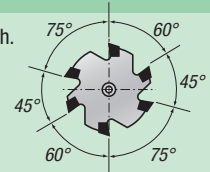
Type 509 Reamer

Solid reamer, straight flutes, extreme differential pitch. Grade ISO K10. DIN 8051 Form A.



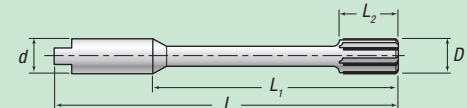
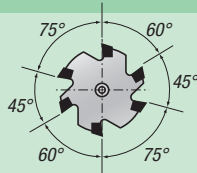
Type 509C Reamer

Solid reamer, straight flutes, extreme differential pitch. Grade ISO K10.



Type 509CC Reamer

Solid reamer, straight flutes, extreme differential pitch. Cermet: high cutting speed and wear resistance in steel and cast iron applications. The optimum solution when the cutting conditions are stable.



Common features:

- Reamers are stocked in tolerance H7 and also semi-finished for quick conversion to customers' requirements.
- Differential pitched flutes, for round holes and elimination of vibration.
- Lapped flutes for a better surface finish.

Fully floating toolholders for reamers

GRANLUND
Tools

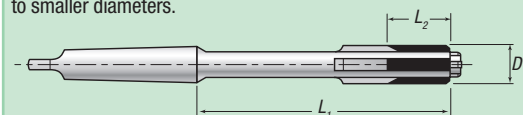
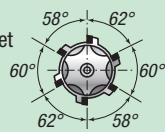
H7 D mm	510C				511 (Re-sizeable)			
	Carbide K10				Carbide K10			
	L ₁	L ₂	Shank cyl. d	Part No.	L ₁	L ₂	No. of flute	Shank MT
4,0	90	16	4,0	510C-04				
5,0	90	16	5,0	510C-05				
6,0	110	16	5,0	510C-06				
7,0	120	16	6,0	510C-07				
8,0	120	16	7,0	510C-08	100	20	4	1
9,0	120	20	8,0	510C-09	100	20	4	1
10,0	130	20	9,0	510C-10	100	20	4	1
11,0	130	20	10,0	510C-11	100	20	4	1
12,0	130	20	11,0	510C-12	100	20	4	1
13,0	140	30	12,0	510C-13	115	20	6	1
14,0	140	30	12,0	510C-14	115	20	6	1
15,0					116	20	6	2
16,0					116	30	6	2
17,0					116	30	6	2
18,0					116	30	6	2
19,0					136	30	6	2
20,0					136	30	6	2
22,0					156	30	6	2
24,0					162	30	6	3
25,0					162	30	6	3
26,0					162	30	8	3
28,0					162	30	8	3
30,0					182	30	8	3

Type	520		522	
	Shank	Internal fitting	d	D
520	MK2	MK1	18	51
	MK2	MK2	23	51
	MK3	MK2	23	51
	MK3	MK3	33	57
	MK4	MK3	33	57
	MK4	MK4	41	75
522*	MK2	Ø 2,8-13 mm	37	57

* The holder is delivered with collet 440.

Type 511 Reamer

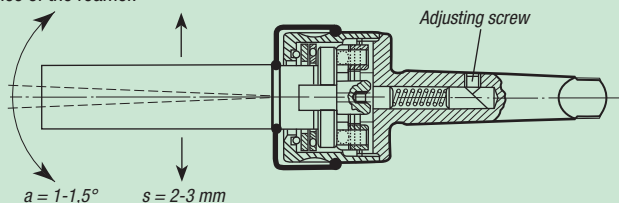
Re-sizeable reamer, straight flutes, differential pitch, for through holes. Grade ISO K10. The expanding reamer can be resized to offset wear by driving the expansion plug further into the reamer. Resizing can normally be done 2-3 times with regrinding. Driving the plug 1 mm further into the reamer will increase the diameter by 0,033 mm. Note: Type 511 reamer cannot be resized to smaller diameters.



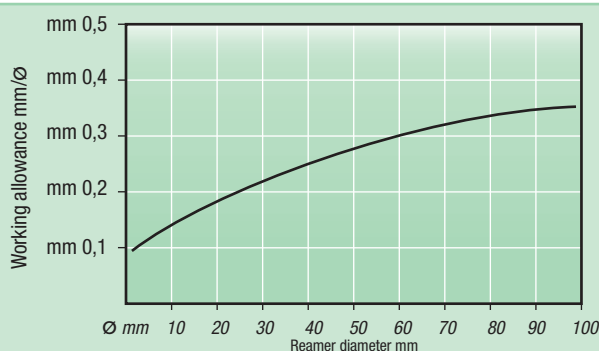
Floating holders for reamers

These have been designed to compensate parallel and angular mis-alignment of the reamer and the workpiece. Using a floating holder for reaming will improve surface finish and the life expectancy of the reamer.

The stiffness can be adjusted by a screw to obtain a perfect balance to compensate the weight of the reamer. This is of utmost importance when the machine spindle works horizontally.



Working allowance

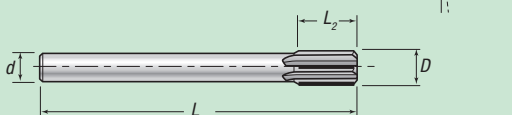
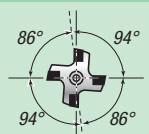


Cutting data for carbide reamers

Material	Tensile strength N/mm ²	Cutting speed m/min.	Feed mm/rev.
	Hardness HB		
Steel	< 600	10,0 - 15,0	0,20 - 0,50
Steel	< 1000	5,0 - 12,0	0,10 - 0,40
Stainless steel	> 1000	5,0 - 10,0	0,10 - 0,25
Cast steel	< 500	15,0 - 20,0	0,20 - 0,50
Cast steel	> 500	10,0	0,15 - 0,40
Cast iron	< 200 HB	20,0 - 30,0	0,30 - 0,80
Cast iron	> 200 HB	15,0 - 20,0	0,20 - 0,40
Brass		30,0 - 40,0	0,20 - 0,80
Alu. Alloys		60,0 - 80,0	0,40 - 0,80
Plastic, hard		20,0	0,20 - 0,40

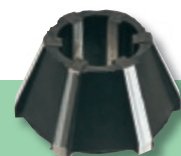
Type 510C Straight Shank Reamer

Solid reamer, straight flutes, differential pitch. Grade ISO K10. Solid carbide tip 4-8 mm, brazed flutes 9-14 mm.



Collets

Type	Jacobs		
	Range mm	For holder type	Part No.
Jacobs	2,8 - 7,0	522	443
Jacobs	7,0 - 13,0	522	440



Spirabor System

Interchangeable within the same system size

GRANLUND
Tools

Granlunds spirabor is a flexible and cost effective tool system for drilling large holes in different types of metal. E.g. Steel, Cast iron, Cast steel.

A complete Spirabor consists of a spring steel holder, a cutter head, a roller pilot bush and a retaining pin.

Cutter head sizes $\varnothing$ 32–100 mm are standard
Specials up to $\varnothing$ 200 mm can be offered.

The diameter range $\varnothing$ 32–100 is divided into seven groups 11–17. As described in the table (right) several diameter cutter heads can be used within the same group in each group.

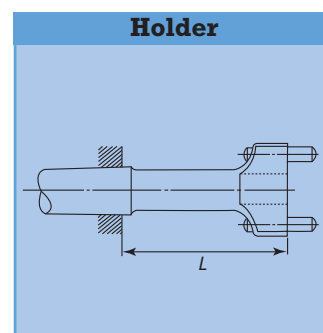
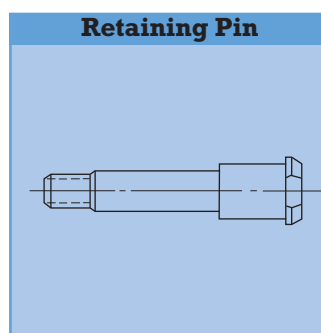
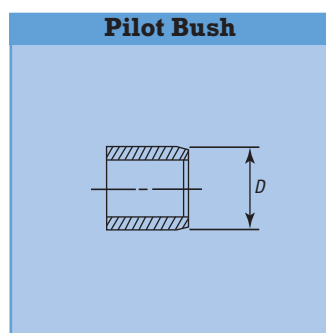
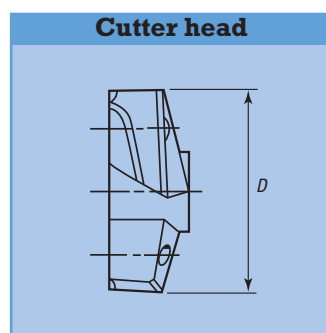


Cutting data		
Speed		
Material	Tensile strength N/mm ²	Speed m/min
Steel	< 500	15 - 20
Steel	500-900	10 - 15
Cast steel		5 - 12
Cast iron		10 - 15
Stainless steel		5 - 15

Feed	
Diameter range mm	Feed mm/rev.
32 - 45	0,2 - 0,3
46 - 65	0,3 - 0,4
66 - 100	0,4 - 0,6

	Cutter head Type B		Pilot Bush Type R		Retaining Pin Type RT	Holder Type A		
Size	D mm tol. h10	Part No.	D mm Tol. c9	Part No.	Part No.	L mm	MK	Part No.
11	32	11B-32	14	11R-14	11RT	65	3	11A-065-MK3
	34	11B-34	15	11R-15		65	4	11A-065-MK4
	35	11B-35	18	11R-18		180	3	11A-180-MK3
	36	11B-36	20	11R-20		180	4	11A-180-MK4
12	38	12B-38	20	12/13R-20	12/13RT	80	3	12A-080-MK3
	39	12B-39	22	12/13R-22		80	4	12A-080-MK4
			24	12/13R-24		200	3	12A-200-MK3
			25	12/13R-25		200	4	12A-200-MK4
13	40	13B-40	20	12/13R-20	12/13RT	80	3	13A-080-MK3
	41	13B-41	22	12/13R-22		80	4	13A-080-MK4
	42	13B-42	24	12/13R-24		200	3	13A-200-MK3
	43	13B-43	25	12/13R-25		200	4	13A-200-MK4
	44	13B-44						
14	45	13B-45						
	46	14B-46	24	14R-24	14RT	90	3	14A-090-MK3
	47	14B-47	25	14R-25		90	4	14A-090-MK4
	48	14B-48	26	14R-26		225	3	14A-225-MK3
	49	14B-49	28	14R-28		225	4	14A-225-MK4
	50	14B-50	30	14R-30				
	51	14B-51						
	52	14B-52						
15	53	15B-53	28	15R-28	15RT	100	4	15A-100-MK4
	54	15B-54	30	15R-30		100	5	15A-100-MK5
	55	15B-55	32	15R-32		250	4	15A-250-MK4
	56	15B-56	35	15R-35		250	5	15A-250-MK5
	57	15B-57	40	15R-40				
	58	15B-58						
	59	15B-59						
	60	15B-60						
	61	15B-61						
	62	15B-62						
	63	15B-63						
	64	15B-64						
	65	15B-65						
16	66	16B-66	32	16R-32	16RT	110	4	16A-110-MK4
	68	16B-68	34	16R-34		110	5	16A-110-MK5
	69	16B-69	35	16R-35		260	4	16A-260-MK4
	70	16B-70	38	16R-38		260	5	16A-260-MK5
	71	16B-71	40	16R-40				
	72	16B-72	50	16R-50				
	74	16B-74						
	75	16B-75						
	76	16B-76						
	77	16B-77						
	78	16B-78						
17	79	16B-79						
	80	16B-80						
	81	16B-81						
	82	17B-82	38	17R-38	17RT	130	4	17A-130-MK4
	84	17B-84	40	17R-40		130	5	17A-130-MK5
	85	17B-85	42	17R-42		280	4	17A-280-MK4
	86	17B-86	45	17R-45		280	5	17A-280-MK5
	88	17B-88	50	17R-50				
	90	17B-90	55	17R-55				
	92	17B-92	60	17R-60				
	94	17B-94	65	17R-65				
	95	17B-95	70	17R-70				
	96	17B-96	80	17R-80				
	98	17B-98						
	100	17B-100						

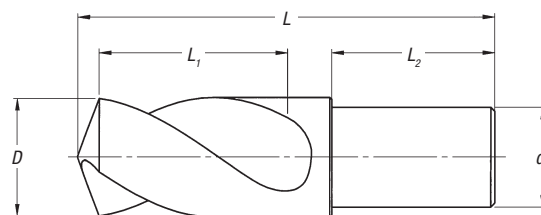
Special dimension available on request.





T80 is a solid carbide drill with internal coolant supply and a drill bit specially developed for drilling in HARDOX. T80 also has a special coating for optimum performance. T80 stands for maximum recommended speed in HARDOX 500 (80 m/min).

With T80 Granlund Tools is able to offer a complete tool palette for drilling, counterboring and counter-sinking in HARDOX. This is possible together with the existing "H"-insert for our indexable counterbores and countersinks WHV and KV.



Part No.	D	d	L ₁ (cutting length)	L ₂	L
T80-10,0	10,0	10,0	36,0	41,0	82,0
T80-12,0	12,0	12,0	36,0	41,0	82,0
T80-13,5	13,5	12,0	36,0	41,0	82,0
T80-14,0	14,0	14,0	36,0	41,0	82,0
T80-15,5	15,5	14,0	36,0	41,0	82,0
T80-17,5	17,5	16,0	55,0	41,0	103,0
T80-18,0	18,0	16,0	60,0	41,0	110,0
T80-20,0	20,0	20,0	57,0	41,0	110,0
T80-22,0	22,0	20,0	55,0	41,0	110,0
T80-24,0	24,0	20,0	55,0	41,0	110,0
T80-26,0	26,0	25,0	55,0	41,0	110,0
T80-28,0*	28,0	25,0	55,0	41,0	110,0
T80-30,0*	30,0	25,0	55,0	41,0	110,0

* Not standard stock

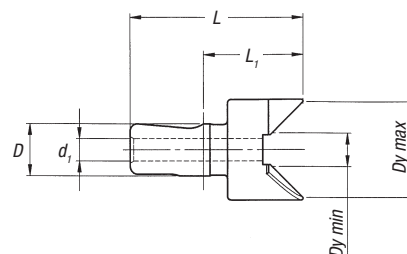
Recommended cutting data

Material:	Hardox 400	Hardox 500	Hardox 600
Speed m/min:	30 - 80	30 - 80	25 - 70
Feed mm/rev:	0,10 - 0,25	0,05 - 0,15	0,04 - 0,12

Pipe deburring

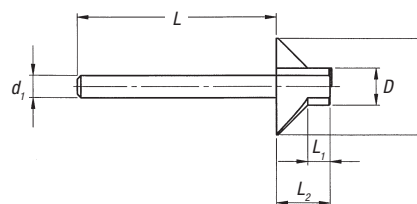
Granlund Tools newly developed system for pipe deburring is a modular system fully compatible with the counterboring system. It consists of an external 2-flute deburring tool (RGY) and an internal 2-flute deburring tool with a pilot (RGI). The two tools operate 90 degrees from each other and therefore you can machine with a very good stability. Also the inner tool has got a pilot that enhances the stability. This pilot is also equipped with a cutting edge, that removes burrs when entering the pipe. With three system sizes, you can deburr pipes between 5 and 25 mm.

The outside tool is standard and is available in three system sizes: 01RGY-15,0, 0RGY-20,0 and 1RGY-30,0. The inside tool is semi finished in stock and will be finished after order. The inner tools 01RGI, 0RGI, and 1RGI will be ground to your request, and therefore the delivery time is 2 weeks from order. Minimum order of inner tools is 3 pcs. Please state the inner dimension of the pipe when ordering, and the inner tool will be delivered with a pilot diameter of -0,1 mm from the dimension.



Outside deburring tool

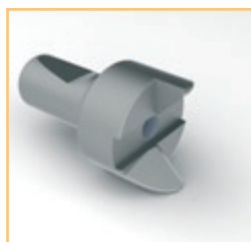
Part No.	Dy max	Dy min	d	d ₁	L	L ₁
01RGY-15,0	15	5	7	2,4	32,5	20,5
0RGY-20,0	20	7	10	4	41,5	20,5
1RGY-25,0	25	9	14	6	46,5	20,5



Inside deburring tool semi finished

Part No.	D	d	d ₁	L	L ₁	L ₂
01RGI	Tube inside diam. -0,1	*	2,4	35	*	*
0RGI	Tube inside diam. -0,1	*	4	48	*	*
1RGI	Tube inside diam. -0,1	*	6	54	*	*

* Will be adapted to D





Granlund Tools balancing stands for balancing of grinding wheels. Our balancing stands are also excellent for balancing axles, propellers, etc.

The balancing stands are manufactured for highest precision and accuracy when balancing. A good balanced grinding wheel results in less wear on the machine, a better grinding result and of course longer life of your grinding wheel.

- Hardened and ground balancing discs are run on ball bearings.
- Suitable for static balancing of grinding wheels, axles and other rotating machine elements.

Part No.	Max. diameter of grinding wheel with balance Ø 25 mm	Minimum and maximum length for balancing*	Loading range
500	540 mm	80 - 500 mm	0,3 - 500 kg
800	810 mm	100 - 800 mm	0,3 - 700 kg

* Longer workpieces may be balanced with longer guiding bars.

Instruction for balancing of grinding wheels

General

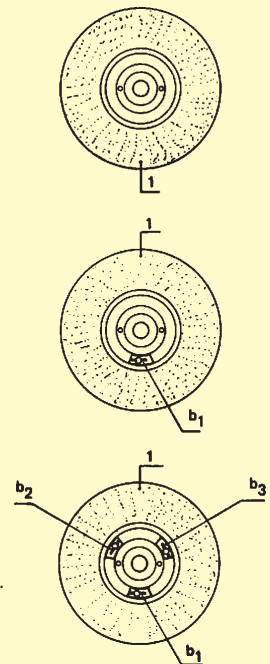
Grinding wheels that are used for fine grinding, should be well balanced. If the wheel is unbalanced, vibrations will occur and cause a poor surface finish. The bearings in the grinding machine will also be affected and in worst case damaged.

Control of the grinding wheel

Check if wheel is broken by knocking on a freely hanging wheel. If the tone is clean, the wheel is intact.

Balancing

1. Remove the balancing weights from the centre of the wheel.
2. Put the wheel on a balancing axle and place it in the balancing stand.
3. Let the wheel swing back and forth until it stops. Mark the bottom part of the wheel with a chalk stick (1).
4. Place one of the weights (b1) on the opposite side, making the wheel rotate 180 degrees.
5. Thereafter put the weights b2 and b3 uniformly in relation to b1.
6. Move the weights b2 and b3 gradually from each other until the wheel stops to swing. The wheel is now balanced.



Special Tools

Granlund specials department offers construction, manufacturing, modifications and regrinding of special tools. Our deliverytimes from order to delivery lies between 1-3 weeks.

Some samples of our product line:

- **Flat drills** – Granlund specials department manufactures profiled flat drills in HSS, brazed carbide or solid carbide for operations in brass and aluminium.
- **Step drills** – We offer tailor made drills and step drills in HSS and solid carbide.
- **Mills** – Mills, radius mills, etc. in HSS, brazed carbide and solid carbide.
- **Reamers** – Reamers, step reamers in HSS, brazed or solid carbide.

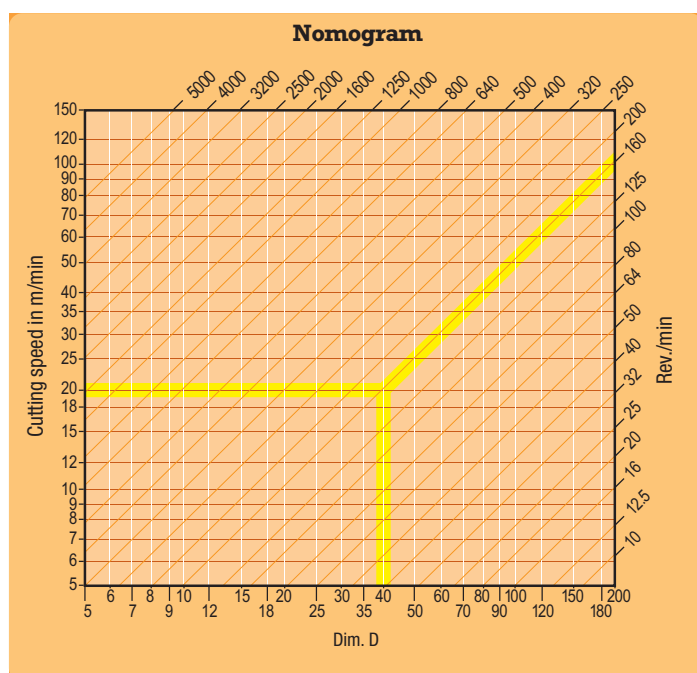
Modifications

We also modify and adjust tools to your need.

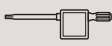
Construction

Granlund specials department also offers construction of your tailor made tools on request.





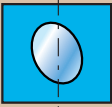
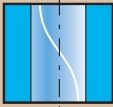
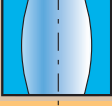
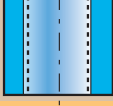
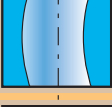
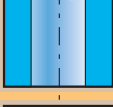
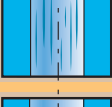
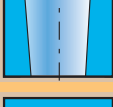
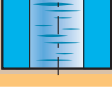
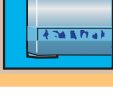
Attention! Tool choice and cutting data can also be found at www.granlund.com/techcenter

Type of tools D mm	Spare parts				
	Centre lock		Solid inserts		
	Screw 	Torx key 	Clamp 	Screw 	Key 
	Part No.	Part No.	Part No.	Part No.	Part No.
WHV 18,0 - 25,0 KV 20,0 - 25,0 BV 18,0 - 27,0 FV 12,0 - 19,5 DFV 15,0 - 31,0 BFV 15,0 - 31,0			SK-01*	**	SN-1,5*
	SSK-20	TN-6	SK-3	SSK-3	TN-9
WHV >25,0 - 34,0 KV >26,0 - 40,0 BV >27,0 - 48,0 FV >19,5 - 30,0	SSK-22	TN-7	SK-01*	**	SN-1,5*
			SK-3	SSK-3	TN-9
WHV >35,0 - 45,0	SSK-25	TN-7	SK-2*	**	SN-2,5*
WHV >46,0 - KV >41,0 - 60,0	SSK-40	TN-15			

* Only for type WHV.

** Screw included with clamp. The tools are supplied with clamps, screws and key, centre lock screws and key.

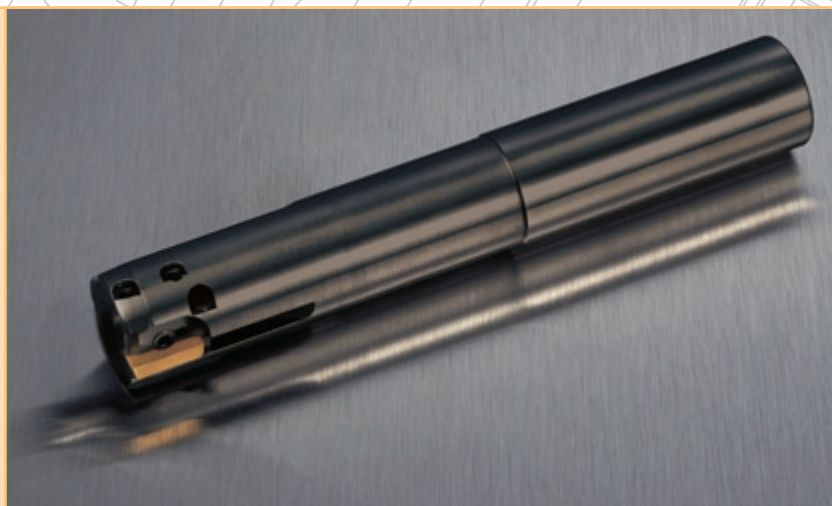
Troubleshooting

	1 Ovality	Reamer off centre or deformed workpiece due to poor fixture of workpiece.		6 Retraction marks	Back taper too large, or reamer off centre.
	2 Deformed hole	Too high feedrate in thin walled workpiece or poor fixture of workpiece.		7 Too large diameter	Adjusted diameter too large, poor fixture of workpiece.
	3 Curved hole	Axial misalignment of blade.		8 Vibrations at entry	Feedrate too low.
	4 Vibration marks	Too low feedrate or back taper too small.		9 Tapered hole	Reamer off centre, back taper too small.
	5 Poor surface finish	Too high cutting speed, poor coolant pressure, wrong coolant type or poor location of blade.		10 Pick up on pads	Wrong or too weak coolant mixture.

Other products from Granlund

Hard Part Reaming

- Reaming in hardened Steel and HSS up to 68 HRC.
- Replaces internal grinding with improved geometry and surface finish.
- Time savings of up to 90%.
- Straightens holes after hardening.



Single flute End Mill type EF

Single flute end mills in solid carbide, for milling, contour-milling and boring in Aluminium, Plastics and Wood. Granlund has developed 3 models: EFT, EFA and EFP (see below).

The single flute mills are recommended for High Speed Cutting. All three models are available in the sizes 4, 5, 6, 8 and 10 mm. Specials are available on request.



HM



DIN
6535 HA

15°

HSC

UNIMETER

- For internal and external precision measurements.
- Indicator reading for comparative measurements.
- Robust, flexible and easy to handle.
- UNIMETER consists of a precision cylinder on which two measuring jaws are placed.
- UNIMETER is set by means of gauge blocks, reference rings or similar to the required gauge size.
- Measuring range can be increased by extension bars.
- UNIMETER can easily be adapted to unique applications.



Other products from Granlund can be ordered at www.granlund.com



GRANLUND

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Granlund Tools AB

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