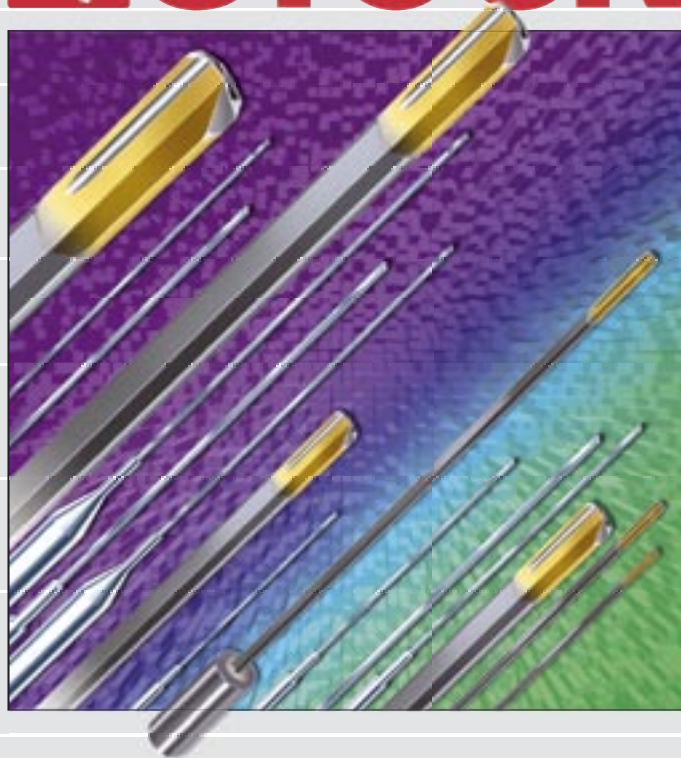


 **STOCK**



Gun Drills

Chip - by Chip - to the Top

Deep hole drilling: Increasingly popular

In the machining world, drilling depth of 10 x D and deeper are regarded as deep hole drilling operations, the domain of gun drills. Naturally smaller depth can also be produced with gun drills.

Up to a few years ago gun drills required special deep hole drilling machines. Thanks to high pressure coolant systems, today gun drills can be used in modern CNC machining centres.



Fig. 1: Drilling of cylinder bore hole in brake cylinder from Al cast.

Always gun drills offer these advantages:

- high precision, i. e. small tolerances
- great surface quality
- great alignment accuracy and exceptional concentricity

Deep hole drilling is not difficult, if you pay attention to the following rules:

1. Never use maximum speeds before drilling into the hole.
2. Always support the gun drill during drilling the pilot hole.
3. Use the optimal drill head geometry and length.

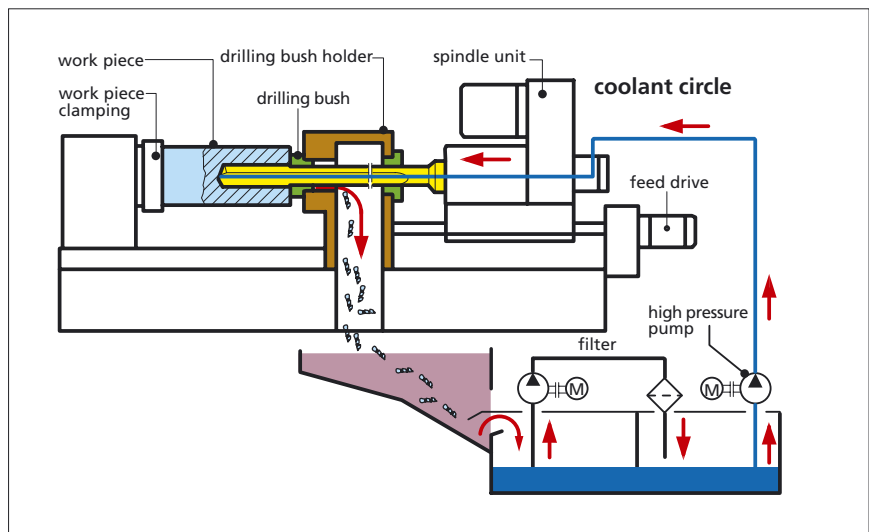


Fig. 2: Deep hole drilling with special application machines

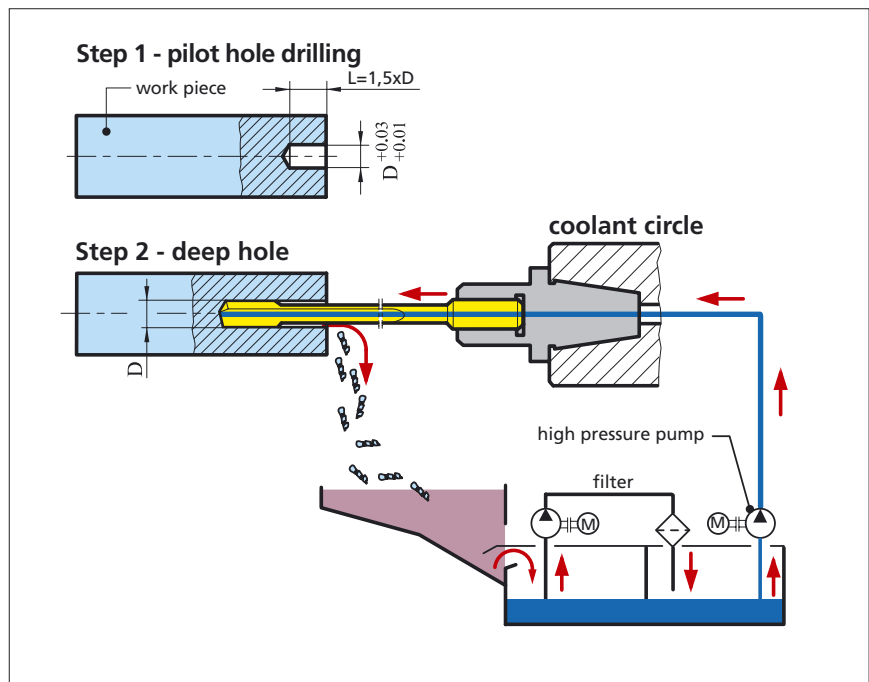


Fig. 3: Deep hole drilling with CNC machining centres

And it's this easy:

1. Drill the pilot hole (see fig. 3).
2. Start with low speed: appr. 200 rpm at appr. 500 mm/min.
3. Choose revolutions and coolant pressure.
4. Continuous drilling up to desired depths without chip removal.
5. When drilling depth is achieved, stop coolant supply.
6. Withdraw drill in top gear with stationary spindle.



Fig. 4: Control drive in a pump injection chamber from cast steel

Precision at its best. For example single fluted gun drills



Basic tolerances up to IT 7

Compared to conventional twist drills, gun drills show off with drastically improved basic tolerances. The cutting forces at the edges are absorbed by the supporting guides at the drilling heads. Additionally, differences in length of the two cutting edges on a twist drill immediately create a larger hole diameter. Single fluted gun drills do not carry this risk.

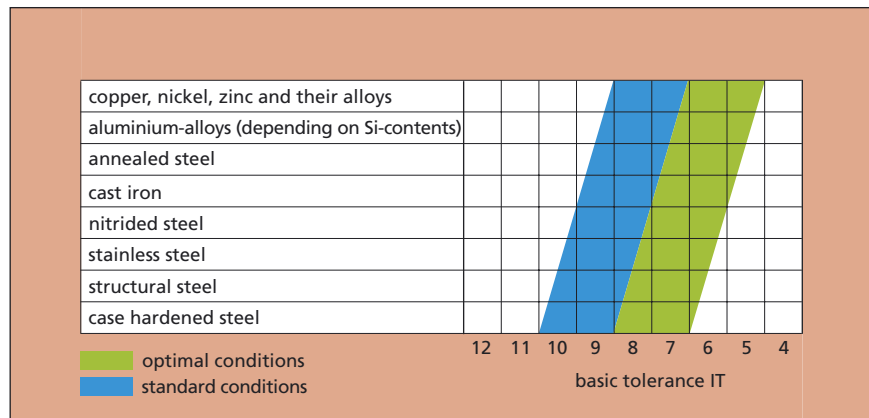


Fig. 5: Achievable tolerances

Supreme surface finish

Supporting guides specially ground at the drill head improve the centre accuracy and smooth the surface of the bore. An important factor for this effect is the coolant between supporting guides and surface: the better the coolant the better the surface finish!

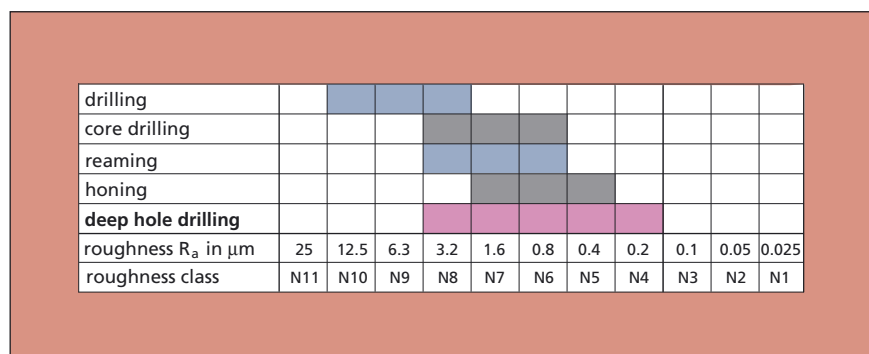


Fig. 6: Achievable surface qualities

Great alignment accuracy

Regardless of any possible misalignment of the spindle, single fluted gun drills achieve holes of great alignment accuracy, because the carbide head is brazed to the flexible tube. However, extreme material fluctuations or unsuitable coolants can impair the alignment accuracy.

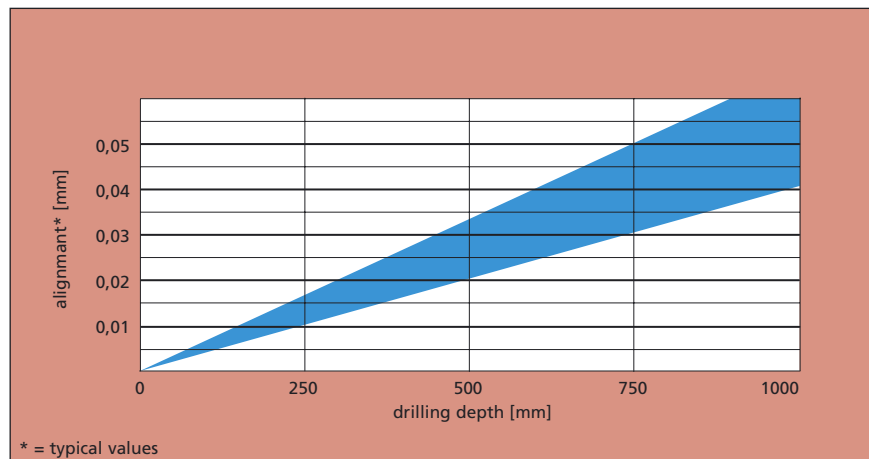


Fig. 7: Alignment in relation to drilling depth

Exceptional concentricity

For the most part the unequal balance of power at the head of a conventional twist drill has major influence to the concentricity of a hole. With single fluted gun drills, the supporting guides absorb these cutting forces as mentioned above. The result is an exceptional concentricity.

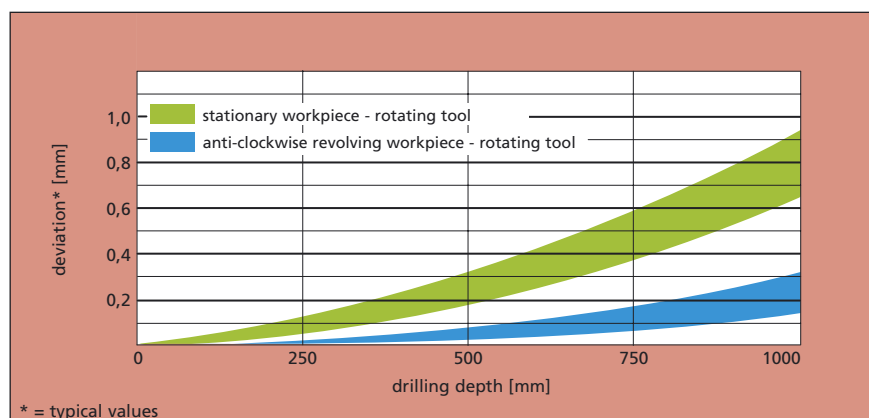


Fig. 8: Concentricity in relation to drilling depth

Single fluted gun drills with solid carbide head: dimensions, contours, standard point geometries

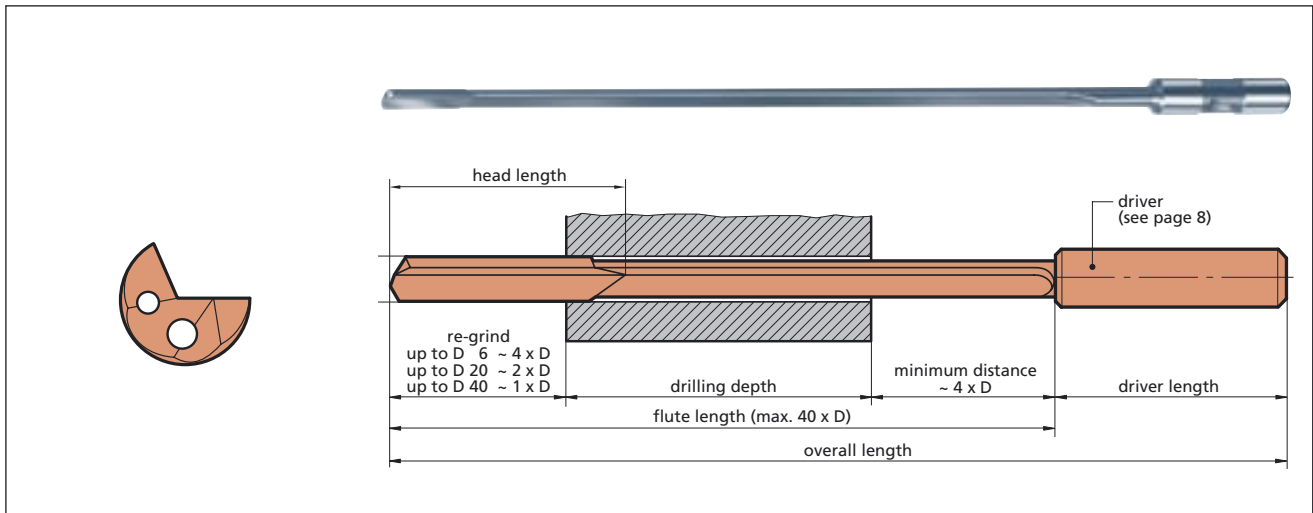
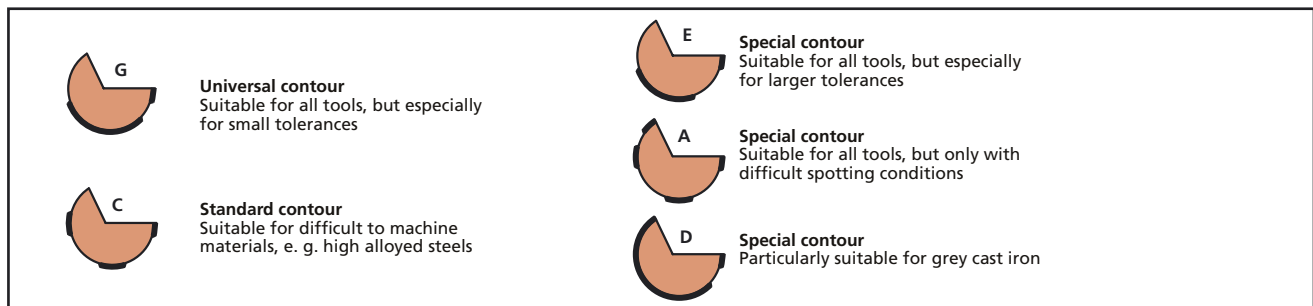


Fig. 9: Length design for modern CNC machining centres. Maximum flute length = 40 x D.
For larger drilling depth use two gun drills, e.g. for overall drilling depth of 1300 mm:
Ø 10 x 450 mm plus Ø 9,95 x 850 mm.

Stock delivers single fluted gun drills with solid carbide head with a diameter range from 2,0 to 40,0 mm and with a length up to max. 3000 mm. Moreover, from Ø 6,0 to 20,0 mm we offer PCD or PCB cutting edges on request. They increase tool life multifold especially machining AISi-alloys. To machine certain materials a coating is required. Therefore, for special applications we offer gun drills with TiN, FIRE and MolyGlide coating.

Typical contours

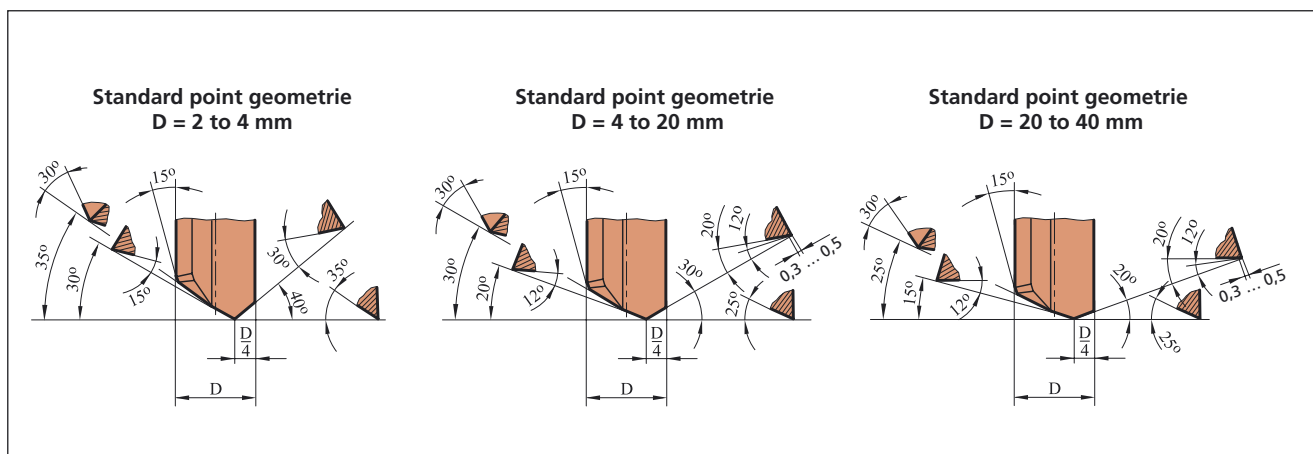


Special contours available on request.

Standard point geometries

Special point geometries available on request.

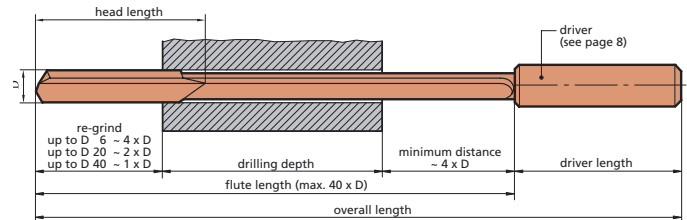
For your inquiry for a tool optimized to your special application please use the fax form page 9.



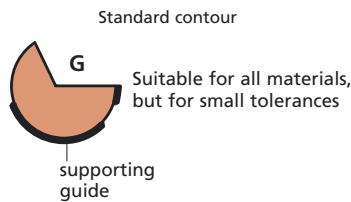
STOCK single fluted gun drills with solid carbide head, Ø 5,0 ... 12,0 mm



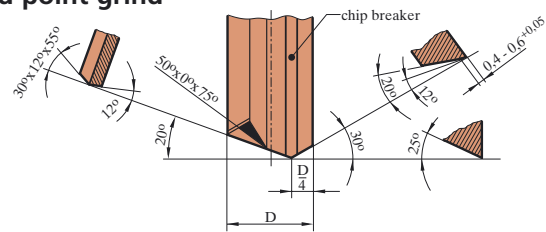
- from Ø 5,0 to 12,0 mm
- for drilling depth 20xD, 40xD or 80xD
- with standard TiN coating and chip breakers
- with standard point grind (see below)
- with contour G, suitable for all materials
- especially economic at small numbers
- highest precision
- outstanding cost-performance ratio



Contour
(position of supporting guides)



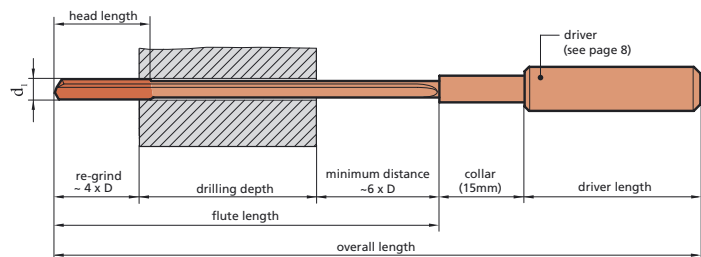
Standard point grind



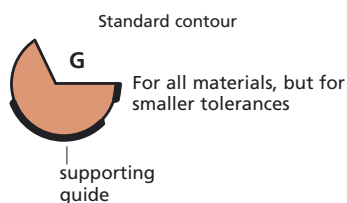
STOCK solid carbide single fluted gun drill, Ø 1,0 ... 8,0 mm, flute length max. 290 mm



- from Ø 1,2 to 3,2 mm with flute length 45 mm
- from Ø 1,2 to 5,0 mm with flute length 80 mm
- from Ø 1,5 to 5,0 mm with flute length 120 mm
- from Ø 1,5 to 5,0 mm with flute length 160 mm
- with standard point grind (see below)
- with contour G, suitable for all materials
- with driver acc. to DIN 6535 HA, form HB or HE available on request within short delivery times
- to machine different materials

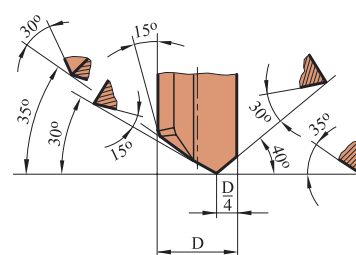


Contour
(position of supporting guides)



Standard point grind

Ø 1,2...5,0 mm



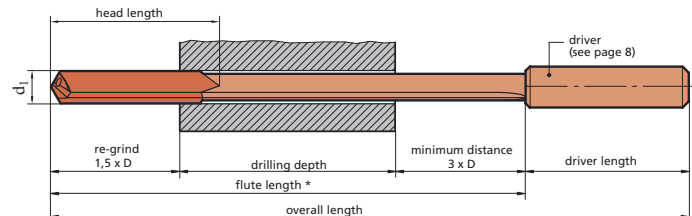
Gun drills as semi-finished standard and special tools



STOCK two fluted gun drills with solid carbide head, Ø 6,0 ... 27,0 mm, length max. 1000 mm

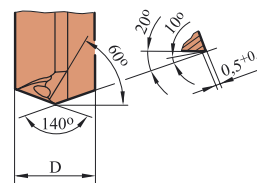
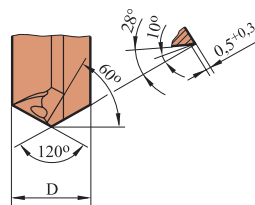


- two cutting edges and two flutes
- highest feeds for high speed machining
- for cast iron, aluminium and short chipping non-ferrous metals
- with MolyGlide coating for chilled cast iron and Al-alloys with a Si-content above 10 %



Point grind G
to machine cast iron

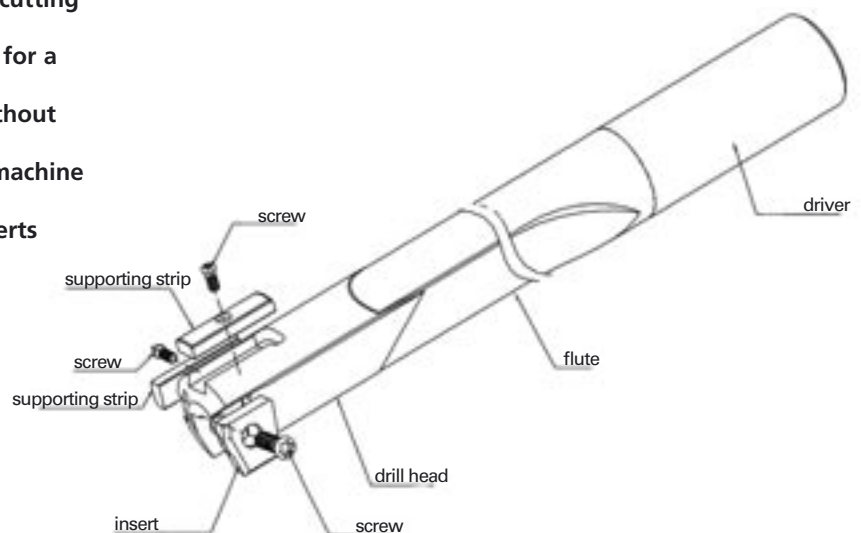
Point grind A
to machine aluminium



STOCK gun drill with interchangeable inserts, Ø 16,0 ... 40,0 mm, length max. 3000 mm



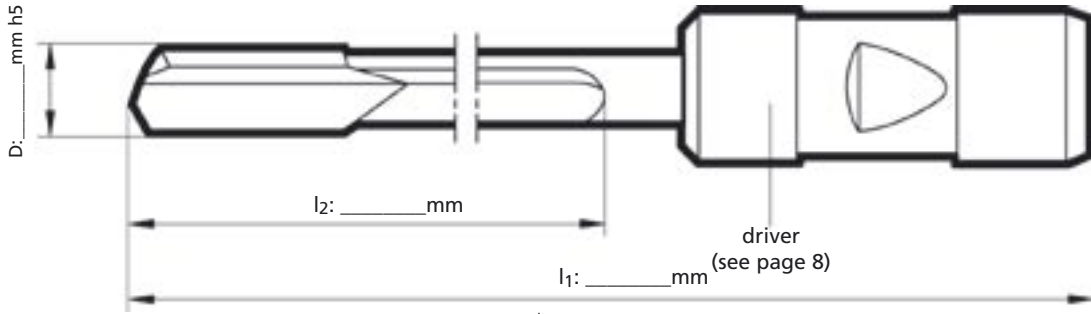
- rigid holder for interchangeable inserts and interchangeable supporting guides
- for the application orientated combination of cutting material and coating
- small number of interchangeable components for a very rigid tool
- easy replacement of interchangeable parts without removing the tool from the machine
- thanks to interchangeable inserts suitable to machine most of all materials
- no difficult adjustment of interchangeable inserts and supporting guides



This questionnaire makes the handling of your inquiry much more easy.
 Just copy, complete and fax.


Tool

Quantity required _____



Coating:
 TiN FIRE MolyGlide TiAIN _____

Type and position of supporting guides:

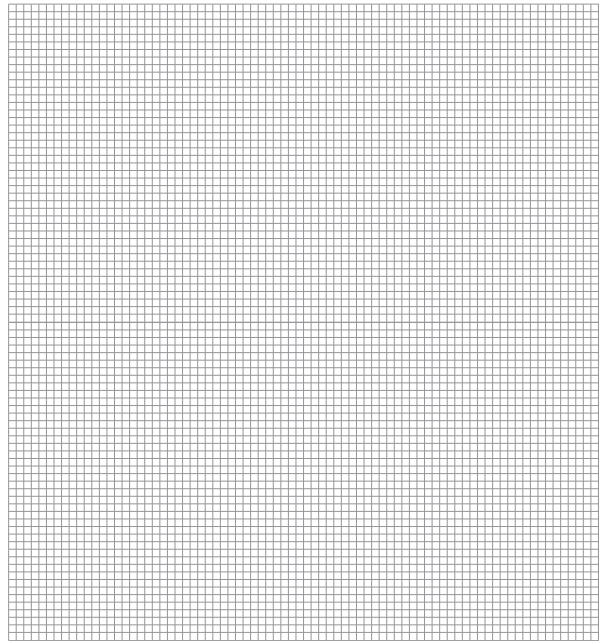


Machining conditions:
 Deep hole drilling machine Mach. Centre

Coolant:
 Neat Oil Soluble Oil

Coolant pressure: _____ bar

Sketch of drilling application / Further information:



Material description (Mat. No. acc. to DIN):

Hardness: _____
 tough |-----| brittle

Drilling depth _____ mm Hole Tolerance _____

Our contact for technical queries: _____

Phone _____

Company / Organization (stamp) _____

Date, Signature _____

Our products:

Twist Drills

Taps

Milling Cutters

Reamers

Countersinks & -bores

Carbide Tools

Coated Tools

Special HSS and Carbide Tools

(to your specifications, or our solutions)



R. STOCK AG

Precision Cutting Tools

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