ALFRA - Precision Multi-Step Drills

- Spiral grooved, each step with axial and radial relief grinding according to its diameter
- Laser-etched scale in the chip space
- Special drill tip enables centering and drilling even through thin-walled materials
- Burr-free drilling with no deformation of the sheet
- Regrindable
- Available in HSS and HSS with TiAlN coating

Multi-Step Drills – HSS DM 05

More precise hole diameter through cylindrical steps. Hole deburring through the next step.

Application area:
The ideal tool for sheet metal forming, for the electrical industry, HVAC or the common engineering or the switchboard industry.

Suitable for all materials such as nonferrous metals, stainless steel sheets, thermoplastic and thermosetting plastics, as well as for steel sheets up to a max. material thickness of 6 mm.

With the Multi-Step Drills, sheet metals can be centered, drilled and subsequently deburred in one work step.

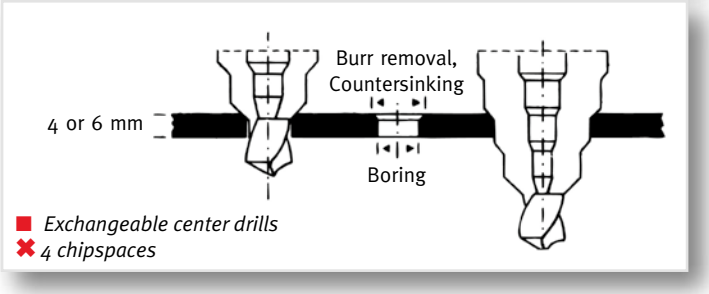
- A break of the drill tip mostly occurs through high feed forces at the start of the drilling operation. Multi-step drills with fixed drill tips are worthless then. A broken center drill in an ALFRA multi-step drill can be easily replaced. This more than compensates for the higher price.
- Each stage is equipped with a radially adjusted relief grinding corresponding to its diameter.
- Each stage is provided with an axial relief grinding and a relief angle on its cutting edge.
- All step diameters are laser marked on the tool.

Benefits of multi-step drills with keyway and 3 cutting edges:
- The keyway allows the drill to make a chipping cut during drilling for better chip removal.
- The special keyway geometry, arranged around the drill, makes for a longer cutting edge compared to the usual straight groove and noticeably easier cutting.
- Spiral cut chip spaces guarantee an absolute running smoothness and a high cutting capacity.

Tip:
The tool life can be considerably prolonged by using of ALFRA Cutting Spray or ALFRA Coolant Stick.

Advantages of TiAlN hard coating:
- Suitable for use on very hard materials (VA).
- Offers optimal tool life with the same use at the highest cutting speeds.
- Very high microhardness HV 0.05 of 3200 – so that the blue-black hard coating is more than 20% harder than conventional gold-yellow TIN coating.
- Maximum working temperature: 800°C.

Description	Shank Ø	Prod.-No.
AMS	10.0	08080
For general machine construction, drills circular holes in metals up to 4 mm thick, through application with hand drills, indispensable on the work-site. 3 chip spaces, spiral grooved, replaceable center drill **Steps Ø 9 - 12 - 15 - 18 - 21 - 24 - 27 - 30 - 33 - 36 mm (Step „40" is for deburring)**		
AMS – TiAlN coated	10.0	08081
3 chip spaces, spiral grooved, replaceable center drill TiAlN coated **Steps Ø 9 - 12 - 15 - 18 - 21 - 24 - 27 - 30 - 33 - 36 mm (Step „40" is for deburring)**		
AM 1	12.0	08002
Steps Ø 25 - 28 - 31 - 34 - 37 - 40 - 43 - 46 - 49 - 52 - 55 - 58 mm		
PVD	10.0	08003
For the electrical industry, matched to holes for armoured conduit thread clearance holes, saves considerable time when producing borings for PG **Steps Ø PG 7 - PG 9 - PG 11 - PG 13 - PG 16 - PG 21 - 33 mm - PG 29 - 40 mm**		



■ *Exchangeable center drills*
✖ *4 chipspaces*

Prod.-No. 08080 ■

Prod.-No. 08081 ■

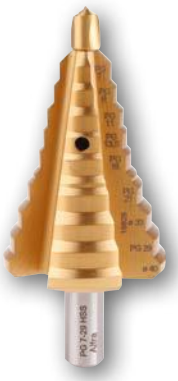
Prod.-No. 08002 ■ ✖

Prod.-No. 08003 ■ ✖

Multi-Step Drills – HSS DM 05

More precise hole diameter through cylindrical steps. Hole deburring through the next step.

Description	Shank Ø	Prod.-No.
PVD-TiN-coated	10.0	08004
PVK Like PVD, but for armoured conduit thread **core hole PG** **Steps Ø PG 7 - PG 9 - PG 11 - PG 13 - PG 16 - PG 21**	10.0	08005
SVB Pre-drill specifically for punches & dies **Steps Ø 8.5 - 11.5 - 12.5 - 16.5 - 21.0**	10.0	08016
DKS 32 3 chip spaces, spiral grooved, replaceable center drill **Clearance holes Ø 12.5 - 16.5 - 20.5 - 25.5 - 32.5** **Core holes Ø 10.5 - 14.5 - 18.5 - 23.5 - M12 - M16 - M20 - M25 - M32**	12.0	08082
DKS 32 TiAlN coated 3 chip spaces, spiral grooved, replaceable center drill **Clearance holes Ø 12.5 - 16.5 - 20.5 - 25.5 - 32.5** **Core holes Ø 10.5 - 14.5 - 18.5 - 23.5 - M12 - M16 - M20 - M25 - M32**	12.0	08083
DKS 40 3 chip spaces, spiral grooved, replaceable center drill, for metric borings acc. to EN, **Core - and clearance holes M 10 - M 40** **Steps Ø 10.5 - 12.5 - 14.5 - 16.5 - 18.5 - 20.5 - 25.5 - 32.5 - 38.5 - 40.5**	10.0	08084
DKS 40 – TiAlN coated 3 chip spaces, spiral grooved, replaceable center drill For metric borings acc. to EN 50262 **Core - and clearance holes M 10 - M 40** **Steps Ø 10.5 - 12.5 - 14.5 - 16.5 - 18.5 - 20.5 - 23.5 - 25.5 - 32.5 - 38.5 - 40.5**	10.0	08085
DKI-VA 4 chip spaces, replaceable center drill of HSS-Co 5 steel. For stainless steel to 3 mm thick **Core - and clearance holes M 10 - M 40** **Steps Ø 10.5 - 12.5 - 14.5 - 16.5 - 18.5 - 20.5 - 23.5 - 25.5 - 32.5 - 38.5 - 40.5**	10.0	08032
Spare center drill suitable for AMS – PVD – PVK – DKI – DKS		08007
Spare center drill TiAlN suitable for AMS – PVD – PVK – DKI – DKS		08008



Prod.-No. 08004 ■ ✖

Prod.-No. 08005 ■ ✖

Pre-drill specifically for punches & dies

Prod.-No. 08016

Prod.-No. 08082 ■

Prod.-No. 08083 ■

Prod.-No. 08084 ■

Prod.-No. 08085 ■

Prod.-No. 08032 ■ ✖

Prod.-No. 08007

Prod.-No. 08008

■ *Replaceable center drill* ✖ *6 With 4 chip spaces*

Multi-Step Drills – HSS DM 05

More precise hole diameter through cylindrical steps. Hole deburring through the next step.

Standard execution with 2 chip spaces, spiral grooved.

- More precise hole diameter through cylindrical steps.
- Immediate deburring through the next step
- Drilling of sheet metals as thin as 4 mm possible.
- Use coolant stick!
- The keyway allows the drill to make a chipping cut during drilling for better chip removal.
- Longer cutting edge compared to the usual straight groove and noticeably easier cutting.
- Laser-etched scale in the chip space to indicate the bore diameter achieved.

Description	Bore range	Shank Ø	Length	Prod.-No.
AM-12	4 - 12 mm x 1 mm	6.0	70 mm	08070
AM-20	6 - 20 mm x 2 mm	9.0	77 mm	08071
AM-30	6 - 30 mm x 2 mm	10.0	98 mm	08072
Set in plastic case				08073
Contents: 1 of each Type AM-12/AM-20/AM-30				
High-performance coolant stick				09012

Prod.-No. 08072

Prod.-No. 09012

Prod.-No. 08073

Standard values for the use of ALFRA Multi-step drills

This drill was developed to bore perfectly round and deburred holes in sheet metal from 4 - 6 mm thick. The transition forms a radius which serves to deburr or bevel the hole at the same time. While conical one-lip bits drill a slightly tapered hole, our ALFRA multi-step drill achieves a cylindrical hole. The tools have axial-radial relief grindings and can be lightly reground on the breast of the cutting tooth.

We recommend the use of pillar drilling machines, however, the small ALFRA Multi-step drills can be used on adjustable hand drilling machines. Sufficient cooling using ALFRA coolant stick or a bore emulsion is imperative.

Speed chart rpm

Type		sheet steel S235	stainless steel sheets	non-ferrous metals	plastics (soft)
AM	drill	800	360	1000	1000
	countersink	500 - 180	50 - 70	800 - 400	1000 - 400
AM-1	drill	800	360	1000	1000
	countersink	200 - 100	100 - 50	500 - 200	600 - 250
PVD+PVK+DKI	drill	800	360	1000	1000
PVD-VA + SVB	countersink	400 - 200	200 - 100	800 - 500	1000 - 600