



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 TiAIN COATING

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MULTI-STEP DRILLS – HSS DM 03



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:

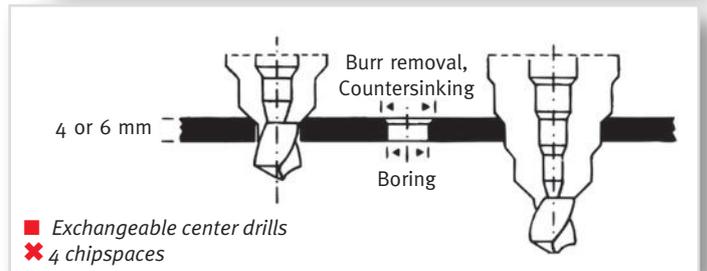
- The keyway allows the drill to make a chipping cut during drilling for better chip removal.
- The special keyway geometry, arranged around the drill, makes for a longer cutting edge compared to the usual straight groove and noticeably easier cutting.
- Spiral cut chip spaces guarantee an absolute running 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
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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
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Steps Ø 25 - 28 - 31 - 34 - 37 - 40 - 43 - 46 - 49 - 52 - 55 - 58 mm

PVD	10.0	08003
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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



Prod.-No. 08080 ■



Prod.-No. 08081 ■



Prod.-No. 08002 ■ ✗



Prod.-No. 08003 ■ ✗



MULTI-STEP DRILLS - HSS DM 03

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 ■ ✘



Prod.-No. 08016

Pre-drill specifically for punches & dies



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 03



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	4 - 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

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



Prod.-No. 08073

B



PRECISION CONICAL ONE-LIP BITS - HSS DM 05

With laser-etched scale

ALFRA Precision Conical One-Lip Bits are the ideal tools for general sheet metal working. Fields of applications include HVAC, electronic industries, engineering and panel building.

To be used on non-ferrous metals, stainless steels, thermo- and duroplastic plastics, as well as on all common sheet steels up to a material thickness of max. 4 mm. With ALFRA Conical One-Lip Bits, you can center, spot drill and bore up in one work step.

If treated carefully, can be reground many times.

The tool life can considerably be prolonged by using ALFRA Cutting Oil or Coolant Stick.

Packing: separately in plastic box with operation manual.

Size	Range	Shank-Ø	Prod.-No.
1	3.0 - 14.0	6.0	09001
2	6.0 - 20.0	8.0	09002
3	16.0 - 30.5	10.0	09003
4	26.0 - 40.0	12.0	09004
5	35.0 - 50.0	12.0	09005
6	46.0 - 60.0	13.0	09006
7 L	4.0 - 30.5	10.0	09007
8*	6.0 - 22.5	8.0	09008
Set 1	Size. 1 + 2 + 3 + Stiff		09009

Coolant stick, separately 09011

*Special Antenna-Bit

- Conical one-lip bit with cylindrical end section to drill holes for car antennas.
- Burr-free, no deformation, no countersinking, dimensional accuracy
- Size 6.0 - 22.5 mm.

Precision Conical One-Lip Bit Set

Prod.-No. 09009

Contents:
1 x Size 1
1 x Size 2
1 x Size 3



Prod.-No. 09001

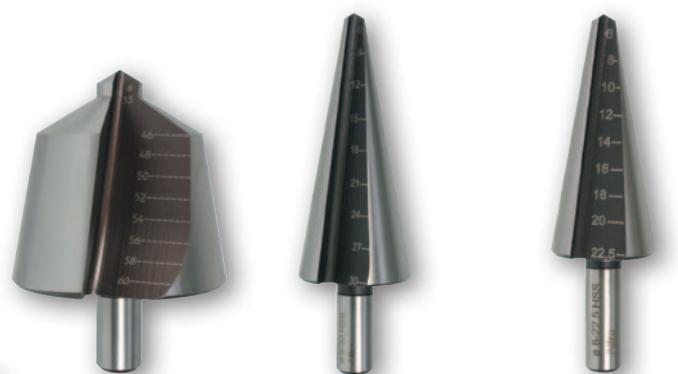
Prod.-No. 09002

Prod.-No. 09003



Prod.-No. 09004

Prod.-No. 09005



Prod.-No. 09006

Prod.-No. 09007

Prod.-No. 09008*



Prod.-No. 09009