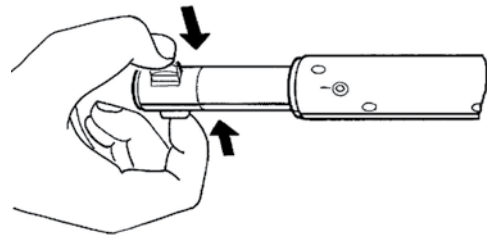


Setting Blade Force

How much Blade Force is enough?

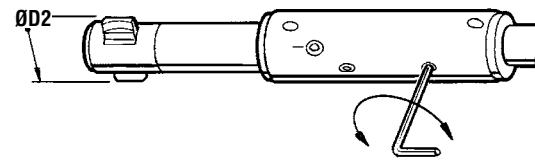
The blade force does not affect the chamfer size. The blade force merely ensures that the blades open to their full diameter after passing through the hole. It should be possible to press the blades into the tool easily with the fingers. When released, the blades should snap out to the diameter set as the ØD2.



How to adjust the Blade Force

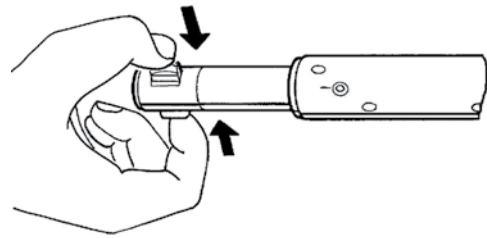
The tool body has a "tension screw" which can be used to adjust the force behind the blades. By turning this screw, the force will be increased or decreased.

- To increase the blade force, turn the "tension screw" clockwise.
- To decrease the blade force, turn the "tension screw" counter-clockwise.



How to check the Blade Force

If the DEFA tools are being setup by various operators and consistency in setting the blade force is desired, the HEULE DPM3 Force Caliper Gage is recommended.



The HEULE DPM3 Force Caliper Gage is battery operated and uses a digital readout to display the force required to push the blades into the tool.

Using the DPM3 assures consistency in tool setup when several operators are using the same tooling.

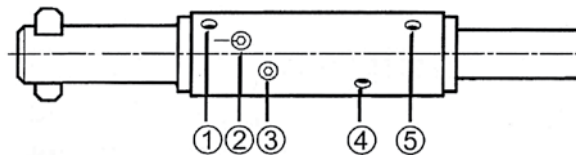
When measuring with the DPM3, the recommended force is 8-12 newtons for the DEFA tools.



DPM3 Order Number:
DPM3-US

What do the screws do?

- 1) Clamping Screw (Blade Housing) – Holds the blade housing to the tool body. It must seat at the tapered pocket in the housing for maximum holding force.
- 2) Eccentric Cam – Disengages and engages the blade control pins from the blades making it possible to exchange the blades easily.
- 3) Set Screw (Chamfer adjusting) – Adjusts ØD2 setting and chamfer ØD. Turn clockwise to decrease chamfer, counter-clockwise to increase chamfer.
- 4) Tension Screw – Adjusts the force behind the blades. Turn clockwise to increase tension, counter-clockwise to decrease tension.
- 5) Clamping Screw (Shank) – Holds the shank to the tool body. It must seat in the tapered pocket in the shank for maximum holding force.



GH-K



Interchangeable Blade
Countersink Tool For Large
Chatter-free Countersinks

- Replaceable blades simplify use
- Regrindable blades provide increased cost savings
- Chamfer milling capabilities
- Creates countersinks from 3mm-45mm (1/8"-1 3/4")

The GH-K tool is a precision inserted countersink tool with one or three effective cutting edges and large countersink range. Positive geometry allows for high shear cutting action. Carbide blades are best suited for cast iron, aluminum and other non-ferrous materials and HSS-Cobalt coated blades are used for stainless and steel applications.

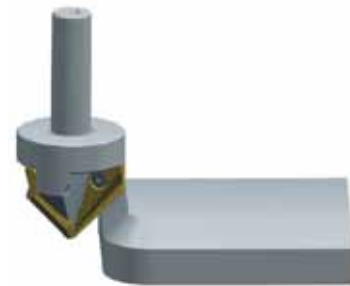
Replaceable Blades

Replaceable blades are an economical choice and the GH-K blades can be reground using the available fixture. Three bladed sets are ground in sets and numerically marked and should not be separated. Each blade cuts at the same time reducing any chance of chatter.



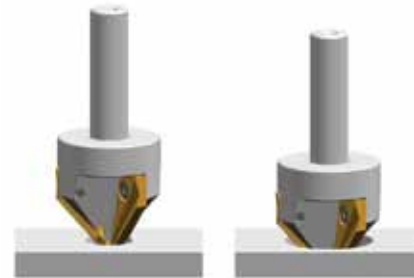
Chamfer Milling

GH-K can be used to conventional mill chamfers around the perimeter of a larger hole or the entire part. The short radial clearance reduces chatter and improves surface finish. Three bladed tools are suited for manual or CNC applications while the economical single bladed tool is designed for all machining centers.



Large Chamfer Range

GH-K tooling can be used for hole sizes as small as .118" (3mm) diameter and produce countersinks as large as 1.771" (45mm) diameter. Standard tooling is available from stock.



How Does It Work?

Feed the tool into the part. The blade(s) start cutting once the tip reaches the part. Continue to feed the tool until the desired countersink size is achieved, then rapid the tool out of the part. The GH-K tool provides precision cut countersinks without chatter due to the shallow radial clearance which may require controlled feed rates. Shims can be added when more aggressive feed rates are required.

Typical Parts



How to Order

1. Select the appropriate tool body based on the required countersink size.
2. Select the appropriate blades based on the material and desired countersink angle.

NOTE: Choose the triple bladed tool in all manual feed operations.

Regrindable Cutting Blades

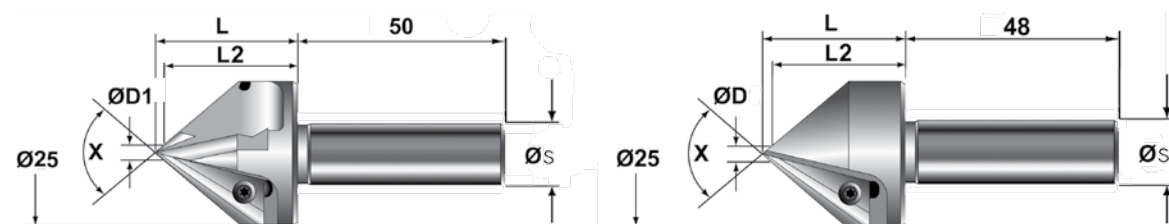
To increase the economy of the precision countersinking tool, the single and triple blades can be reground to original accuracy using available re-grind fixtures. When regrinding pay attention to the following details:

- Triple blade sets are matched and numbered. These numbered sets should be kept as a set of three.
- Regrind the 30° radial rake only enough to renew a sharp edge. The maximum regrind depth is 1.0mm for GH-K25 and 1.4mm for GH-K45.
- Appropriate safety measures should be used when grinding Carbide.



! Grinding may produce hazardous dust. To avoid adverse effects, use adequate ventilation and read MSDS. Cutting tools may break during use. To avoid injury, use proper safety precautions and protective equipment. Use the machine tool with sufficient rigidity and horsepower. Use a cover on a machine tool and protector, such as glasses, against shattering chips and broken tools due to misuse. Do not use insoluble oil because there is a danger of causing fire.

Ø25 Three and Single Bladed Countersink Tool with Through Coolant



THREE BLADED TOOL BODY & CUTTING BLADES							
Size	Angle (X)	ØD	L	L2	Shank Øs	Three Bladed Description	Order Number
GHK 25	100°	3	25.82	24.56	10mm	Tool Body GH-K25/100° w/10mm shank	GH-K-O-0109
						Blade Set*, HSS-TiN	GH-K-M-0001
						Blade Set*, Carbide	GH-K-M-0007
						Blade Set*, Carbide-TiN	GH-K-M-0017
						Shim, 0.05mm thick, trio	GH-K-U-0001
GHK 25	90°	3	26.37	24.87	10mm	Tool Body GH-K25/90° w/10mm shank	GH-K-B-0001
						Blade Set*, HSS-TiN	GH-K-M-0001
						Blade Set*, Carbide	GH-K-M-0007
						Blade Set*, Carbide-TiN	GH-K-M-0017
						Shim, 0.05mm thick, trio	GH-K-U-0001
GHK 25	82°	5	28.45	25.57	12mm	Tool Body GH-K25/82° w/12mm shank	GH-K-O-0016
						Blade Set*, Carbide	GH-K-M-0070
						Blade Set*, Carbide-TiALN	GH-K-M-0074
						Shim, 0.05mm thick, trio	GH-K-U-0001
GHK 25	60°	3	35.65	33.05	10mm	Tool Body GH-K25/60° w/10mm shank	GH-K-B-0601
						Blade Set*, Carbide	GH-K-M-0607
						Blade Set*, Carbide-TiN	GH-K-M-0617
						Shim, 0.05mm thick, trio	GH-K-U-0004
SINGLE BLADED TOOL BODY & CUTTING BLADES							
Size	Angle (X)	ØD	L	L2	Shank Øs	Single Bladed Description	Order Number
GHK 25	90°	3	26.32	24.82	10mm	Tool Body GH-K25/90° w/10mm shank	GH-K-B-0010
						Blade*, HSS-TiN	GH-K-M-0022
						Blade*, Carbide	GH-K-M-0023
						Blade*, Carbide-TiN	GH-K-M-0024
						Shim, 0.05mm thick, trio	GH-K-U-0001

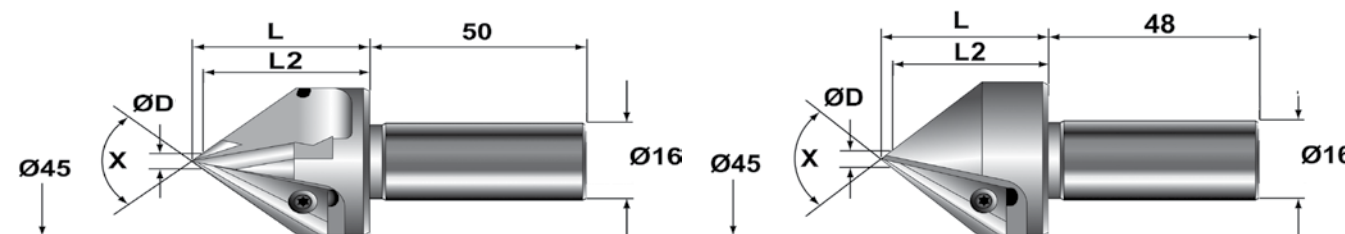
*** IMPORTANT NOTE:** All tool bodies are sold without cutting blades.
 Single bladed countersink tools; cutting blades are sold per piece.
 Three bladed countersink tools; cutting blades are sold and packaged in sets of three (trio) i.e. 1 set = 3pcs.
 Max 82° cutting diameter Ø23.5

Spare Parts				
GH-K 25	90° regrind fixture	GH-K-V-0020	Torx screw GH-K25 GH-H-S-0008	Torx driver T9 GH-H-S-2014
	82° regrind fixture	GH-K-V-0133		
	60° regrind fixture	GH-K-V-0023		

*** NOTE:** 100° holders use standard 90° blades.
 Uncoated carbide can be requested with alternative coatings.
 Contact Heule Tool Engineering for more information.

PROGRAMMING PG. 160
 CHANGE BLADES PG. 160

Ø45 Three and Single Bladed Countersink Tool with Through Coolant



THREE BLADED TOOL BODY & CUTTING BLADES							
Size	Angle (X)	ØD	L	L2	Shank Øs	Three Bladed Description	Order Number
GHK 45	100°	5	46.1	44.0	16mm	Tool Body GH-K45/100° w/16mm shank	GH-K-O-0108
						Blade Set*, HSS-TiN	GH-K-M-0002
						Blade Set*, Carbide	GH-K-M-0008
						Blade Set*, Carbide-TiN	GH-K-M-0018
						Shim, 0.05mm thick, trio	GH-K-U-0002
GHK 45	90°	4	46.56	44.56	16mm	Tool Body GH-K45/90° w/16mm shank	GH-K-B-0012
						Blade Set*, HSS-TiN	GH-K-M-0002
						Blade Set*, Carbide	GH-K-M-0008
						Blade Set*, Carbide-TiN	GH-K-M-0018
						Shim, 0.05mm thick, trio	GH-K-U-0002
GHK 45	60°	9	63.03	55.23	16mm	Tool Body GH-K45/60° w/16mm shank	GH-K-B-0612
						Blade Set*, Carbide	GH-K-M-0608
						Blade Set*, Carbide-TiN	GH-K-M-0618
						Shim, 0.05mm thick, trio	GH-K-U-0005
						SINGLE BLADED TOOL BODY & CUTTING BLADES	
Size	Angle (X)	ØD	L	L2	Shank Øs	Single Bladed Description	Order Number
GHK 45	90°	4	46.6	44.6	16mm	Tool Body GH-K45/90° w/16mm shank	GH-K-B-0011
						Blade*, HSS-TiN	GH-K-M-0028
						Blade*, Carbide	GH-K-M-0029
						Blade*, Carbide-TiN	GH-K-M-0030
						Shim, 0.05mm thick, trio	GH-K-U-0002

*** IMPORTANT NOTE:** All tool bodies are sold without cutting blades.
 Single bladed countersink tools; cutting blades are sold per piece.
 Three bladed countersink tools; cutting blades are sold and packaged in sets of three (trio) i.e. 1 set = 3pcs.

ØD = Minimum recommended countersink

*Use single blade design only with power feed and stable ridge set-up

Spare Parts				
GH-K 45	90° regrind fixture	GH-K-V-0021	Torx screw GH-K45 GH-H-S-0009	Torx driver T15 GH-H-S-2016
	60° regrind fixture	GH-K-V-0024		

*** NOTE:** 100° holders use standard 90° blades.
 Uncoated carbide can be requested with alternative coatings.
 Contact Heule Tool Engineering for more information.

PROGRAMMING PG. 160
 CHANGE BLADES PG. 160

Programming Information

Power feed control is suggested to prevent overfeeding the single blade tool. Overfeeding the tool can damage the cutting blade and possibly the tool. Shims can be added behind the cutting blade to increase front clearance.

GH-K Programming				
Feed:	0.002" (0.05mm) per blade. Depending upon the material and machine rigidity, or with the use of shims, the feed rate can be increased.			
Speed:	Material	HSS-TiN	Carbide	Carbide-TiN
(SFM)*	Aluminum	80-230	80-360	100-450
	Cast Iron	50-100	65-125	100-250
	Carbon Steel	33-65	50-100*	82-125*
	Stainless Steel	30-50	35-65*	45-80*

*based on countersink diameter

*Optional Geometry available on request, contact Heule Tool Engineering

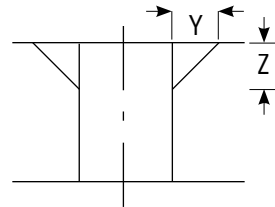
Replacing GH-K Blades

1. Unscrew the screw for each blade that attaches it to the tool body.
 2. Place the new blade on the tool body and insert the screw.
- Repeat for each blade.

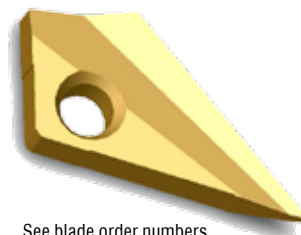
NOTE: Be sure to replace the entire set of blades and not just one single blade as they come in sets and are



Calculation Reference



	Z	Y
60°	1	.577
82°	1	.869
90°	1	1.00
100°	1	1.191



See blade order numbers on pages 158 and 159

BSF



Large Ratio Automatic Back Counterboring & Spotfacing Tool

- Counterbores up to 2.3xd
- Replaceable carbide coated blades for extended life
- Very simple to use
- Suitable for CNC machines with through coolant
- Sizes 6.5-20.5mm (.256-.807") available from stock