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We provide online tool selectors for the
COFA, **SNAP**, **DEFA** and **BSF** product groups.

Simply enter your application information and the correct tool will
be provided complete with order number and sample drawing.

We are also available on:



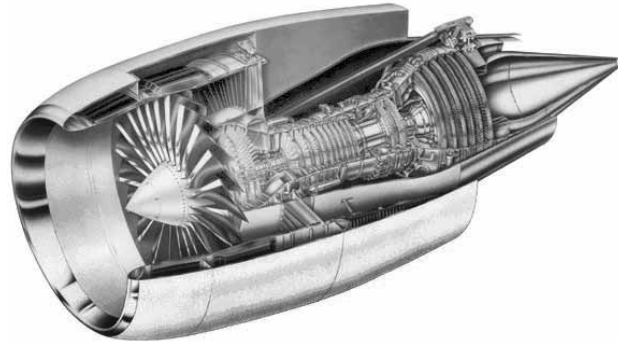
GH-Z/E



Automatic Front and Back Counterboring Tool for Large Parts

- Rigid locking of blades in cutting position
- No chip interference with blade activation
- Suitable for CNC machines
- Modular tool system

HEULE GH-Z Back Counterboring Tool is the strongest built automated back counterboring tool available on the market today. Used primarily for large part production and turbine industry, Heule's back counterbore tools can be used with any CNC Machining center, conventional and NC mill. The GH-Z back counterbore tooling is capable of producing forward and reverse spotfaces and counterbores as well as special form countersinks and other contour forms. Each tool is design and built to meet customer's specific needs and requirements.



Modular Cutting Tool with Coolant Through

Each GH-Z Reverser System is modular and is available with coolant through the center. Each unit consists of a tool head, control, housing and cutting blade or Cassette with indexable cutting inserts. There are three standard tool heads with weldon shanks. V-tapers adaptations or other precision HSK or ABS shanks are optional. The housing, control and cutting blade configuration is designed specifically for each hole and counterbore application to guarantee the strongest tool possible.

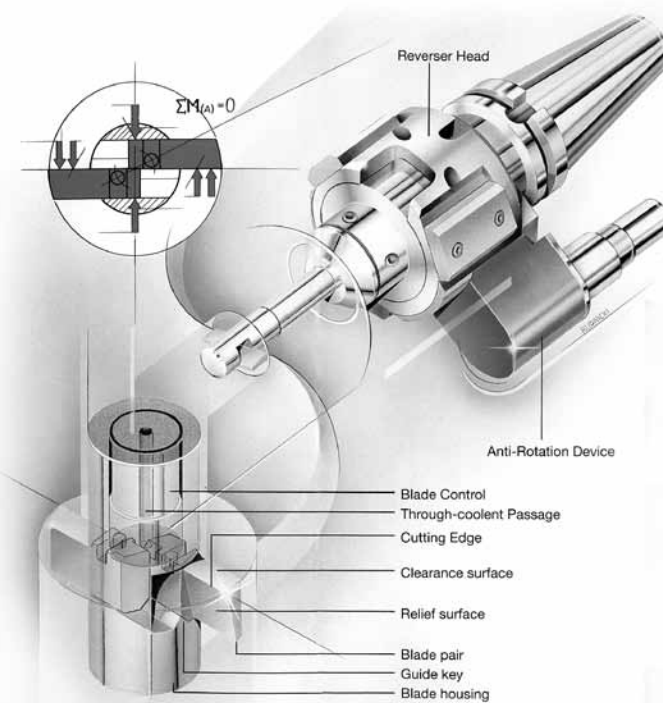
Balance Rigid Tooling

Cutting forces are distributed throughout the complete blade window guaranteeing an optimal balance cutting tool. Close tolerance tooling and balance force distribution adds stability and additional cutting capacity. Size and finish are maintained throughout each operation by the keyed blade cartridge system. No flip out or centrifugal force is used, which creates a reliable tool.

Large Ratio Cuts

Counterbore sizes are capable of reaching 2 times the bore diameter minus 1mm in almost any material and part configuration. Close tolerance insert cartridge holders and housing pockets have proven to add rigidity for exceptional surface finishes even in interrupted cuts. Large ratios require a single cutter for added stability.

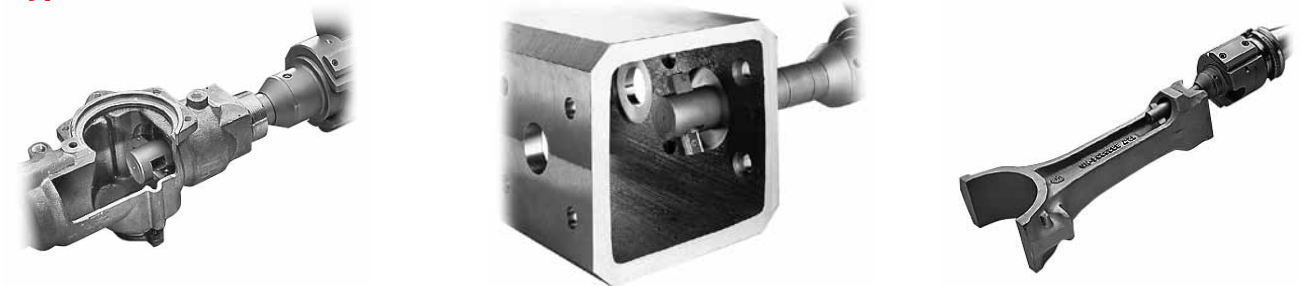
GH-Z = 2 effective cutters
GH-E = single cutter



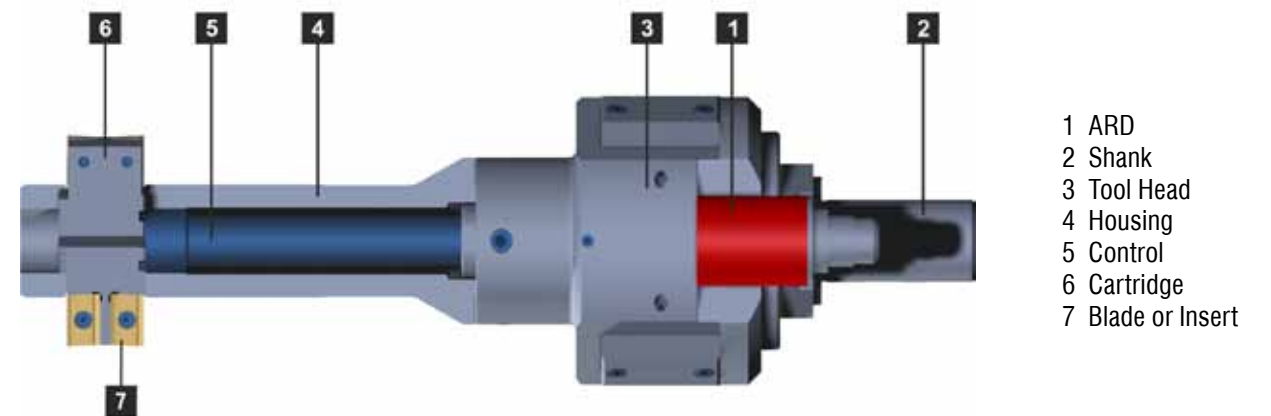
How Does It Work?

The compact tool head contains the mechanical control for blade activation. The integrated braking system, which is fixed by the anti-rotation device to the machine, guarantees a defined position of the blades. Depending on spindle rotation, the cutting blades will extend or retract perpendicular to the bore axis. Pass through the bore with counterclockwise rotation. After the blades pass beyond the workpiece and any side wall, activate the spindle clockwise. The blades extend automatically. Feed back into the work piece to counterbore depth, push out of the bore and reverse the spindle to retract the cutting blades. The back spotface is now finished.

Typical Parts



Tool Description



How to Select a Tool

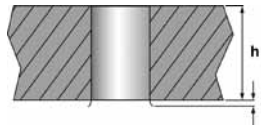
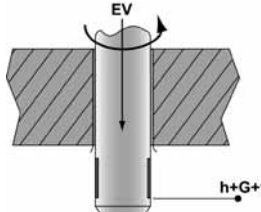
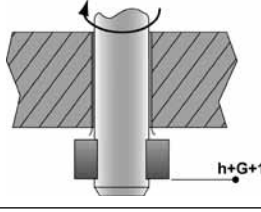
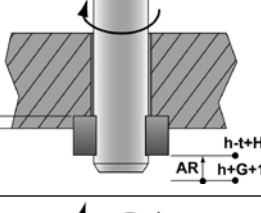
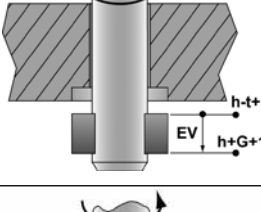
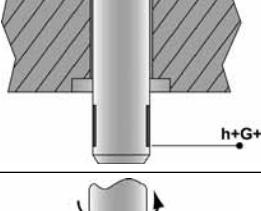
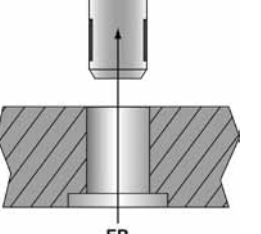
Each tool is built to the needs and requirements of the customer. Typical variables to consider: Counterbore (ØD) to hole (Ød) ratio (Max 2x hole diameter minus 1mm (0.040")), in process hole diameter and tolerance, over all tool length, interrupted cut or weldments, material quality, machine or part rigidity, surface finish, cast surfaces or machined surface. Tooling options may include manual or automated tool changer (ARD) arm, guide & wear bushings, and front & back cutters.

Please note large ratios and difficult applications require a single blade or cartridge cutter for added stability. The tool head is modified to accommodate the single blade application (GH-E). (Max ratio = Ød x 2 - 1mm)

Please fill out the application data sheet on page 162 with each application request and include your part print and/or configuration.



Programming Information

	Step 1: After each tool change the start position of the tool has to be newly defined. This can be achieved by minimum two spindle rotations clockwise and afterwards counter-clockwise. This changeover guarantees the perfect function of the tool. G = Burr Length.
	Step 2: Spindle rotating counter-clockwise passing through the bore with rapid-feed, forwards (blades retracted). h = Workpiece Height H = Blade Height EV = Rapid-feed, forwards
	Step 3: Change the direction of the spindle rotation to clockwise (blades extended).
	Step 4: Machine the workpiece with working-feed, backwards. t = Countersink Depth AR = Working-feed, backwards (0.05-0.1mm/rev)
	Step 5: Travel out of the workpiece with rapid-feed, forwards (direction of spindle rotation: clockwise).
	Step 6: Change the direction of the spindle rotation counter-clockwise (blades retracted). Note: Most machines require a .5 second dwell following step 6.
	Step 7: Withdraw the tool from the workpiece with rapid-feed, backwards. ER = Rapid-feed, backwards.

Programming Information – Feeds and Speeds

The compact tool head contains the mechanical control for blade activation. The integrated braking system, which is fixed by the anti-rotation device to the machine, guarantees a defined position of the blades. Depending on spindle rotation, the cutting blades will extend or retract perpendicular to the bore axis. Pass through the bore with counterclockwise rotation. After the blades pass beyond the workpiece and any side wall, activate the spindle clockwise. The blades extend automatically. Feed back into the work piece to counterbore depth, push out of the bore and reverse the spindle to retract the cutting blades. The back spotface is now finished.

Cutting speeds: Based on twin-bladed cutting tools in the corresponding material and with the equivalent counterbore diameter.

Feed Rate: 0,04 to 0,1 mm/rev. The feed is based on the relation between the counterbore diameter (D) and the bore diameter (d) (as diameter (D) approaches 2x that of diameter (d) – the slower the feed).

Material	Speed Surface footage are recommendations only (reduce for interrupted cuts).	Feed (IPR) Based on bore Ød : Counterbore ØD ratio Rt=ØD/Ød	
		Rt<1.6	Rt>1.6
Aluminum	260-400	.004-.008	.0020-.0030
Stainless Steel	80-240	.003-.005	.0008-.0015
Titanium	40-120	.001-.003	.0008-.0015
Inconel	15-50	.001-.002	.0007-.0012
Cast Iron	220-340	.004-.007	.0010-.0025
Carbon Steel	180-290	.003-.006	.0010-.0020

