Main characteristics of the knife according to DIN 8869:

1 Knife body - body

2 Cutting coating – steeling – hard-metal coating

3 Cutting surface = flank – cutting side

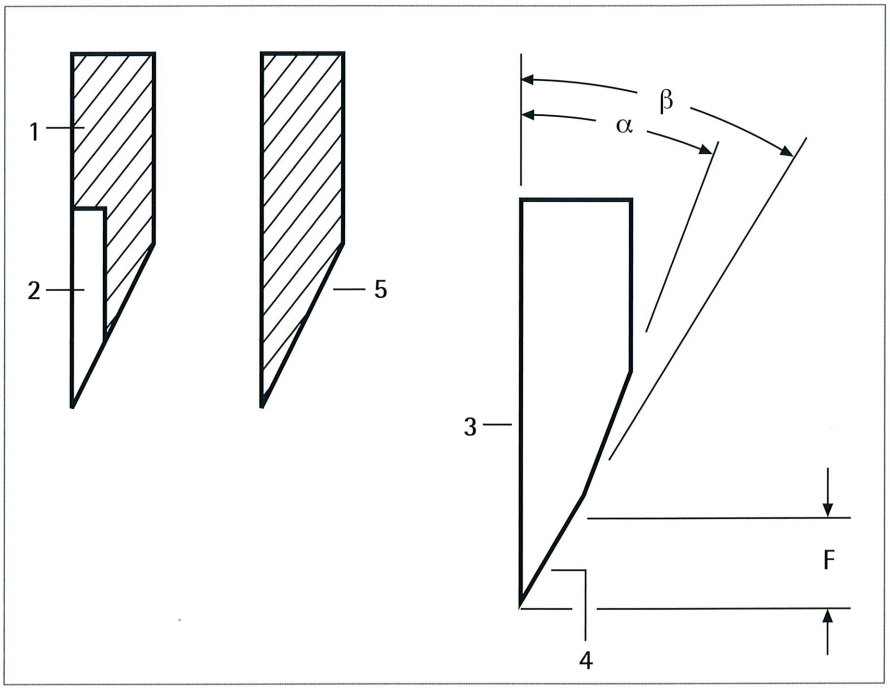
4 First face – bevel – first facet

5 Cutting surface = pressure surface – facet - face

b Faces – angle of the bevel – first facet

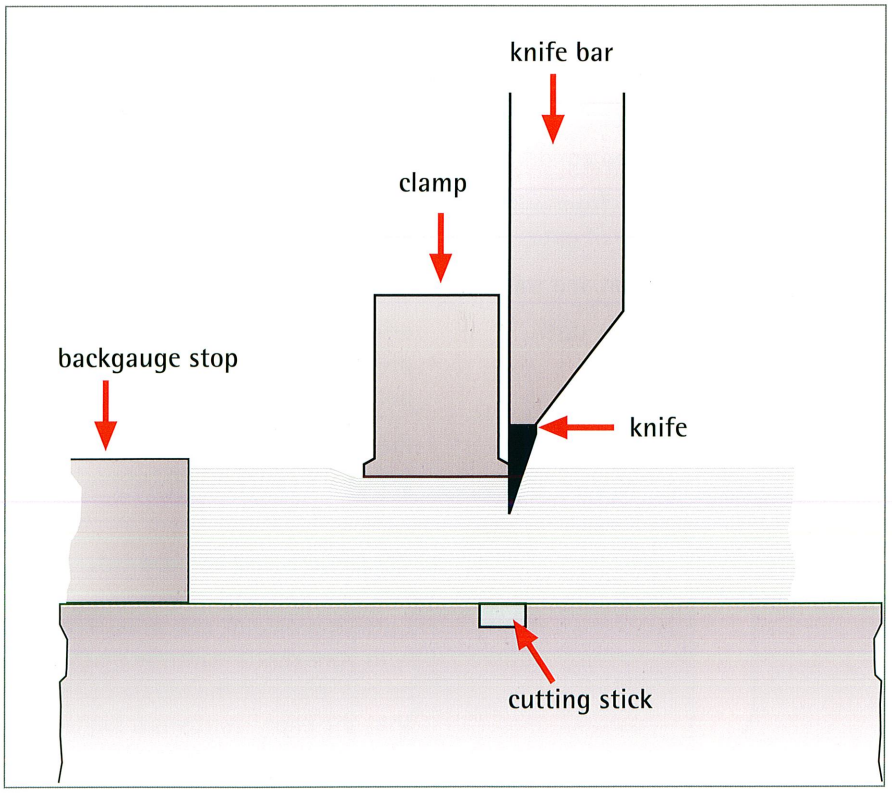
a Wedge angle – angle of facet

F Width of bevel



Sequence of cutting operation

1. Positioning
2. Clamping
3. Cutting (swing cut)



Cutting data on various materials

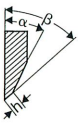
In the tables below we compiled the most common cutting materials in alphabetic order. The lists are divided into various groups to facilitate their use. The values indicated are based on our practical experience gained with POLAR high-speed cutters. The clamping pressure data refer to piles of paper of medium height and more than two thirds of the cutting width.

Higher or wider piles of paper require a higher clamping pressure. Lower or narrower piles need less pressure.

For delicate materials (thin, soft) use a standard false clamp.

Materialwhich is unequal in height or wavy (cardboard, stitched brochures) should be cut with flexible false clamp plate (special device).

You can as well use a standard false clamp fitted with a felt strip instead of a flexible false clamp. In this case the indicated clamping pressure in the table should be increased by 600 to 1000 daN!

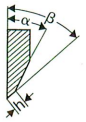


Paper:

Material to be cut	Knife	α	β	h (mm)	Pressure daN/kg	Remarks
Bible paper	HSS, HM, UFK *	24°			1500-2000	false clamp plate
Double waxed papers	HSS, HM, UFK	24°			3200	**
Printing papers, regular	HSS, HM, UFK	24°			2500	false clamp plate
Duplex papers	HSS, UFK	24°	26°	2,0	3000-3500	**
Flimsy	HSS, HM, UFK	19°			3000-4000	false clamp plate
Label papers	HSS, HM, UFK	24°			3500-4000	**
Felt-cardboard	HSS, HM, UFK	24°			2000-2500	false clamp plate
Photographic papers	HSS, HM, UFK	24°			2500-3000	**
Gummed papers	HSS, HM, UFK	24°			2500-3500	**
Carbonizing papers	HSS, HM, UFK	19°			400	false clamp plate
Carbon paper	HSS, HM, UFK	22°			800-1000	**
Art papers	HSS, HM, UFK	23°	25°	3,5	3000-4000	**
Plastic fiber paper	HSS, UFK	26°			2500-3000	
Blotting paper	HSS, HM, UFK	19°			2000-2500	**
Metallic papers	HSS, HM, UFK	24°			3000-3500	**
Parchment paper	HSS	24°			2500-3000	**
Glassine paper	HSS	24°	26°	3,0	4000-4500	
Stencil duplicator paper	HSS, HM, UFK	19°			3000	false clamp plate
Writing papers	HSS, HM, UFK	24°			2500-3000	
Tissue paper	HSS, HM, UFK	19°			2000	false clamp plate
Autocopying paper (NCR-Reacto or similar)	HSS, HM , UFK	24°			800-1000	**
Transparent papers	HSS, UFK	24°			3000-3800	**
Velours papers	HSS, HM, UFK	19°			2500	**
Wertpapiere (Geldscheine, Aktienvordrucke, usw.)	HSS, (HM), UFK	19°	22°		2500-3700	**

* HSS = high-speed steel knives
HM = carbide-tipped knives (normal: 23/25°)
UFK = ultra-finest grain hard metal (normal 22/25)

** Compensation of differences in height is necessary

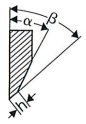


Cardboards:

Material to be cut	Knife	α	β	h (mm)	Pressure daN/kg	Remarks
Bristol board	HSS, UFK	24°			2000-2500	**
Chromolux	HSS, HM, UFK	24°	26°	2,0	3000-3500	**
Duplex board, two-layer board	HSS, UFK	24°			2500	
Finnboard, sheet-lined	HSS, UFK	19°	22°	3,5	2000-3000	**
Felt cardboard	HSS, HM, UFK	24°			2000-2500	false clamp plate
Gray board	HSS, UFK	24°			3000-3500	**
Handmade cardboard	HSS, UFK	24°			3000	**
Hard board	HSS, UFK	24°	26°	2,0	3000-3800	**
Wood pulp board, soft	HSS, UFK	21°	24°	2,0	3000	false clamp plate
Index cardboard	HSS, HM, UFK	22°	24°	2,0	3000-3500	**
Box board	HSS, UFK	22°	24°	2,0	3000-3500	**
Container board	HSS, UFK	22°	24°	2,0	3000-3500	**
Leather cardboard	HSS, HM, UFK	22°	24°	2,0	3000-3500	**
Manilla cardboard	HSS, UFK	22°	24°	2,0	3000-3500	
Multiplex board	HSS, UFK	22°	24°	2,0	2500	
Postcard board	HSS, HM, UFK	22°	24°	2,0	2500-3500	**
Triplexpappe, -karton	HSS , UFK	22°	24°	2,0	3000	

Plastic Materials
(please observe that the materials specified are processed at room temperature)
Due to the versatility of many plastic materials and the type of composition it is recommendable to have cutting testsperformed at POLAR.

Material to be cut	Knife	α	β	h (mm)	Pressure daN/kg	Remarks
Astralon transparent sheet	HSS	23°	26°	2,0	3000	**
Acetate films	HSS	25°			3000-3500	** slightly blunt new knives
Cellophane	HSS	23°	25°	2,0	3000-4000	**
Cellulose foils	HSS	24°			3000-4000	**
Cellulose acetate foils	HSS	23°	25°	2,0	3000-4000	**
Cellulose hydrate films	HSS	24°			3000-4000	**
Polyethylene foils	HSS, HM, UFK	23°	26°	2,0	3000-4000	**
PVC, hard	HSS	23°	28°	2,0	3000-4000	**
PVC, soft	HSS, HM, UFK	23°			3000-4000	**
PVC floor covering	HSS, HM, UFK	19°	22°	3,5	3000-4000	**
Cellophane	HSS	26°			3000-3500	**
Celluloid	HSS	23°			2500-3000	**



Rubber, textiles, wood, metal:

Material to be cut	Knife	α	β	h (mm)	Pressure daN/kg	Remarks
Rubber tubes	HSS	17°			from 150	option
Hart rubber	HSS	24°			from 1500	**
Raw rubber	HSS	17°			from 150	false clamp plate
Soft rubber	HSS	17°			from 150	false clamp plate
Emery cloth	HSS	24°			2500-3000	false clamp plate
Textiles	HSS, UFK	19°			from 150	false clamp plate
Veneers	HSS	19°	22°	3,5	1000-2000	**
Pressboard	HSS	24°			2500-3000	**
Transformer pressboard	HSS	24°			2500-3000	**
Aluminium foils	HSS, HM, UFK	24°			3000-3500	**
Aluminium foils, laminated	HSS, HM, UFK	24°			3000-3500	**
Lead foils	HSS, HM, UFK	24°			500-1500	false clamp plate
Offset plates	HM, UFK	26°	30°	1	4500	false clamp plate
Tin foils	HSS	19°			from 200	
Zinc foils	HSS	19°			from 200	false clamp plate

Other materials:

Material to be cut	Knife	α	β	h (mm)	Pressure daN/kg	Remarks
Packing materials	HSS, UFK	24°			2500-3000	false clamp plate
Felt	HSS, HM, UFK	19°			1000	false clamp plate
Glass papers	HSS	24°			2000	**
Cork	HSS, HM, UFK	19°			1000-2000	**
Leather	HSS, HM, UFK	24°			2000-3000	**
Linoleum	HSS, UFK	24°			1800-2500	**
Cellulose wadding	HSS, HM, UFK	19°			1500	false clamp plate

** Compensation of differences in height is necessary