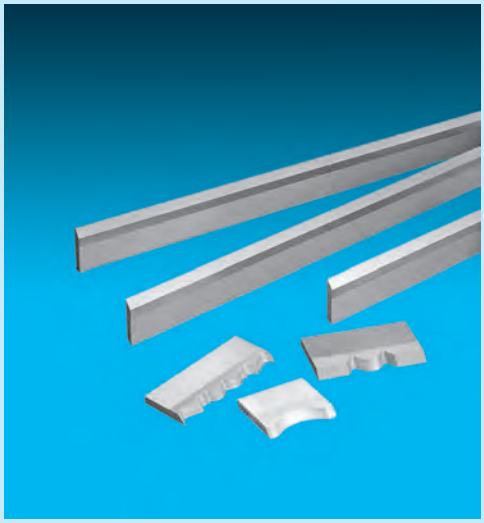
4 Profiling

KANEFUSA

Advanced Material Technology

ST-1

Corrugated Back Knives



APPLICATION

Profiling

MATERIAL

Softwoods, hardwoods

EDGE MATERIAL

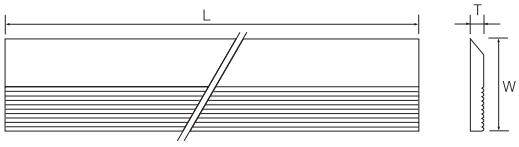
HS-HP

※HS-HP coating requires a special resharpening method

Features & Benefits

- Knife quality HS-HP provides up to 5 times longer edge life compared with regular HSS knives
- Longer lifetime increases machine run time and reduces grinding cost
- Because of its self-resharpening properties, consistent high surface quality is achieved reducing or even eliminating subsequent sanding
- Guarantees high process reliability
- Easier to grind than carbide knives

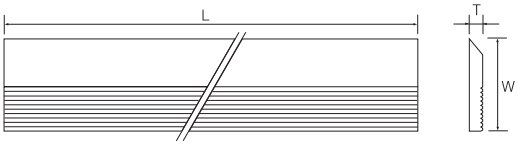
ST-1 Corrugated Back Knives



	Order no.	Size L [mm]		W [mm]		T [mm]
1	777-A269-619	40	×	50	×	8
2	777-A251-619	60	×	50	×	8
3	777-A249-619	80	×	50	×	8
4	777-A221-619	100	×	50	×	8
5	777-A344-619	130	×	50	×	8
6	777-A465-619	150	×	50	×	8
7	777-A508-619	180	×	50	×	8
8	777-A467-619	210	×	50	×	8
9	777-A468-619	260	×	50	×	8
10	777-A469-619	310	×	50	×	8
11	777-A470-619	460	×	50	×	8
12	777-A245-619	635	×	50	×	8
13	777-A270-619	40	×	60	×	8
14	777-A228-619	60	×	60	×	8
15	777-A271-619	80	×	60	×	8
16	777-A212-619	100	×	60	×	8
17	777-A140-619	130	×	60	×	8
18	777-A280-619	150	×	60	×	8
19	777-A471-619	180	×	60	×	8
20	777-A472-619	210	×	60	×	8
21	777-A473-619	260	×	60	×	8
22	777-A474-619	310	×	60	×	8
23	777-A475-619	460	×	60	×	8
24	777-A243-619	635	×	60	×	8
25	777-A158-619	60	×	70	×	8

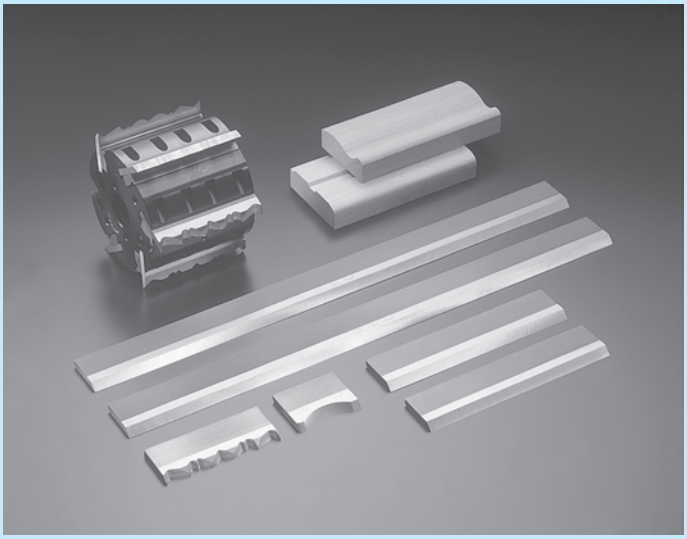
※other lengths are available upon request.

ST-1 Corrugated Back Knives



	Order no.	Size L [mm]		W [mm]		T [mm]
26	777-A476-619	80	×	70	×	8
27	777-A394-619	100	×	70	×	8
28	777-0000-619	130	×	70	×	8
29	777-A478-619	150	×	70	×	8
30	777-A479-619	180	×	70	×	8
31	777-A480-619	210	×	70	×	8
32	777-A481-619	310	×	70	×	8
33	777-A482-619	460	×	70	×	8
34	777-A211-619	635	×	70	×	8
35	777-A552-619	165.1	×	50.8	×	6.35
36	777-A555-619	177.8	×	31.75	×	3.9

※other lengths are available upon request.



Global Network

Our world-spanning network guarantees local user satisfaction

P.T. KANEFUSA INDONESIA, and KANEFUSA CHINA CORPORATION are offshore manufacturing sites. To ensure highest product quality, raw materials and semi-finished products are supplied from Japan and processed on state of the art machinery from Japan and Germany.

KANEFUSA USA, INC., KANEFUSA EUROPE B.V., Malaysia Office, P.T. KANEFUSA INDONESIA and KUNSHAN KANEFUSA CORPORATION support our distributor network in commercial and technical issues and carry out grinding services (except KFE, Malaysia Office and KANEFUSA DO BRASIL LTDA.) in order to ensure highest user satisfaction and customer retention.

KANEFUSA EUROPE B.V.

KANEFUSA CHINA CORPORATION
Tianjin Office

KANEFUSA USA, INC.

KANEFUSA CORPORATION JAPAN

- Chubu Office Head Office & Factory
- Kansai Office
- Kanto Office
- Sapporo Office
- Sendai Office
- Hiroshima Office
- Takamatsu Office
- Fukuoka Office

KANEFUSA INDIA PRIVATE LIMITED

Malaysia Office

KANEFUSA DO BRASIL LTDA.

P.T. KANEFUSA INDONESIA
Surabaya Service Center

History

1896	The blacksmith Kankichi Kamiya establishes "Uchihamonoshi Kanefusa" (Forging Master of Agricultural Tools) in Goheizou, Nagoya.
1931	Suzuo Watanabe, son of the founder, succeeds the business of his father and makes extensive improvements to High Speed Steel machine knives.
1937	Kanefusa Hamono Ltd. is established.
1948	A new factory is built in Rokuban-cho, Atsuta-ku, Nagoya and the company is renamed Kanefusa Hamono Kogyo Co., Ltd.
1957	Suzuo Watanabe travels to Europe to research European knife manufacturing and steel refining technologies.
1959	Kanefusa is the first Japanese machine tool manufacturer to use a High Frequency Induction Heating System for mass production of quality knives.
1964	A new state of the art factory is built in Ohguchi-cho, Niwa-gun, Aichi Prefecture.
1965	The main factory in Ohguchi-cho receives JIS certification (JIS = Japan Industrial Standards).
1967	The first Research and Development Center is completed.
1968	For product distribution, Kanefusa Knife & Saw Co., Ltd. is established.
1969	Kanefusa receives the Contribution Award from the Minister of International Trade and Industry.
1970	The capacity of the heat treatment facility is largely increased.
1971	Suzuo Watanabe is inaugurated as chairman of the Japan Saw Blade & Knife Industrial Association (JSK). Kanefusa receives the Contribution Award from the Minister of International Trade and Industry for the second time.
1972	The production capacity of the T.C.T. saw blade plant is expanded.
1976	The Ministry of International Trade and Industry acknowledges Kanefusa Hamono Ltd. as a factory of superior industrial standard.
1981	Hiroshi Watanabe becomes President. Suzuo Watanabe becomes Chairman. The production of PCD tooling begins.
1982	A new cold saw blade plant is completed. Production and sales of the ACE insert tooling system starts.
1985	The production capacity of the cold saw blade plant is expanded. The Head Office moves to Ohguchi-cho, where the Main Factory is located.

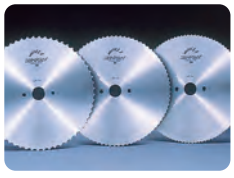
Kankichi Kamiya

Inside the factory in Rokuban-cho (1957)

Prayer for safety before construction of the Main Factory (Early 1960's)

20th Anniversary (1968)

Suzuo Watanabe



FM Cold Saw Blade

1986	P.T. Kanefusa Indonesia, the first offshore production facility, is established in Jakarta, Indonesia. An office in Singapore is set up.
1990	Kanefusa Hamono Ltd. and Kanefusa Knife and Saw Co., Ltd. merge to become KANEFUSA CORPORATION. A new T.C.T. saw blade production site is completed.
1995	Kanefusa Corporation is listed at the Nagoya Stock Exchange, Second Section. The production capacity of P.T. Kanefusa Indonesia is sharply increased.
1996	The new Technical Center for comprehensive Research and Development is completed.
1998	A liaison office in Eindhoven, The Netherlands, is set up.
1999	Kanefusa U.S.A. is established. Kanefusa Head Office and factory receive ISO 9001 certification.
2000	Masato Watanabe becomes President. Hiroshi Watanabe becomes Chairman.
2001	Kanefusa EUROPE B.V. is founded in Eindhoven, The Netherlands.
2002	Kanefusa China Corporation, the second offshore production facility, is established in Kunshan city, near Shanghai.
2003	Kunshan Kanefusa Corporation is set up. Kanefusa Head Office and Factory receive ISO 14001 certification.
2004	Kanefusa China Corporation receives ISO 9001 certification. The office in Singapore moves to Kuala Lumpur, Malaysia. A liaison office in Germany, which is under the jurisdiction of Kanefusa Europe B.V., is established. P.T. Kanefusa Indonesia receives ISO 9001 certification.
2005	Kanefusa China Corporation receives ISO 14001 certification.
2006	Kanefusa Corporation is listed at the Tokyo Stock Exchange, second Section. Kunshan Kanefusa Corporation acquires sales rights in China.
2008	Kanefusa Corporation celebrates its 60th anniversary of the establishment.
2009	Kanefusa India Pvt.Ltd. is established in India.
2010	Kanefusa Do Brasil LTDA. is established in Brasil.
2011	Kanefusa China Corporation merged Kunshan Kanefusa Corporation
2012	「Kanefusa U.S.A.」 New office and service building is completed


Outside view of KFI (1986)


R&D Technical Center (1996)

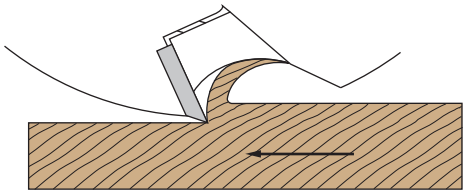

Ceremony of the 60th Anniversary (2008)


Hiroshi Watanabe

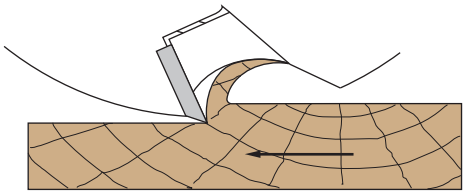

Masato Watanabe

General Technical Information

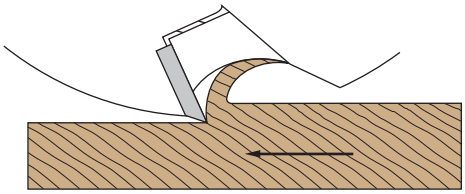
Cutting with grain leaves a smooth surface.



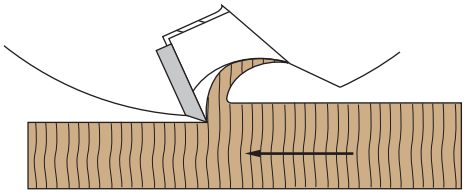
Cutting across grain is easily done but leaves a rough finish.



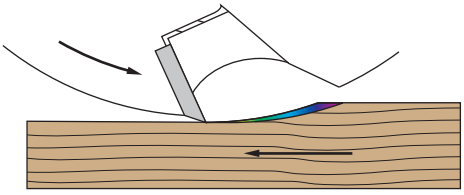
Cutting against grain gives a raw surface due to pre-splitting of the wood in front of the cutting edge.



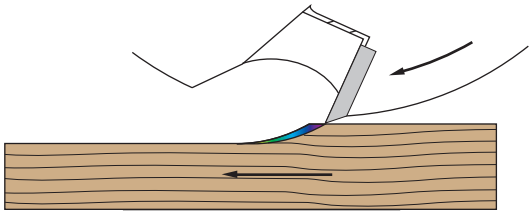
Cutting end grain requires most horsepower and gives rough finish.



Abrasive Cutting / Cutting against the feed
In abrasive cutting the cutting edge motion is against the feed direction of the material. The cutting edge enters into the work piece shaving and pushing. The cutting process creates a long chip with increasing thickness. The direction of the cutting force is up from the table, trying to lift up the work piece. Especially when machining against the grain, tear-outs are inevitable.



Climb Cutting / Cutting with the feed
In climb cutting the cutting edge motion is with the feed direction of the material. The cutting edge enters into the work piece. The cutting process creates a short chip with decreasing thickness. The direction of the cutting forces are into the material and pre-splitting of the grain is omitted. Smooth surface even when machining against the grain can be achieved.



General Technical Information

Cutting Speed V_C

The cutting speed is the velocity of the blade at its outmost diameter. It is an important performance characteristic of tooling. The cutting speed of the tool should match material cut. The cutting speed can be manipulated by changing the spindle speed or outer tool diameter.

$$V_C = \frac{D \times \pi \times n}{1000 \times 60} \text{ [m/s]}$$

D = Outer tool diameter [mm]
π = Pi (3.141592...)
n = Spindle speed [RPM]

Recommended cutting speeds [m/s]

Type of tool	Cutter	Saw Blades
Cutting edge material	HS-HP , HC-UP HW , DP	HW , HC-UP DP
Softwood	60 - 90	70 - 100
Hardwood	50 - 90	70 - 90
Particleboard, MDF	60 - 90	60 - 90
Laminated boards	40 - 70	60 - 100

Chipload S_Z

The chipload is another important performance characteristic. It describes the feed rate per tooth. In a simplified way, the feed rate per tooth is used to describe the cut quality. The feed rate, number of teeth and spindle speed can manipulate the feed per tooth and therefore also the cut quality. In actual situation, the obtained surface is a one-knife finish, since there are many tolerances in the machine, tool and interface, that don't allow running all teeth on the exact same cut circle. Hydro sleeves and jointing enable to reduce the difference between the max and min swing of the knives of a cutter enabling a better cut finish or to run higher feed rates.

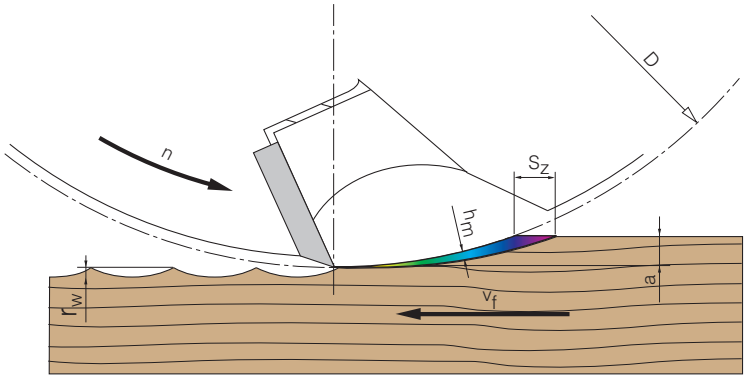
$$S_Z = \frac{v_f \times 1000}{n \times z} \text{ [mm]}$$

v_f = Feed rate [m/min]
Z = Number of teeth
n = Spindle speed [RPM]

Recommended chiploads [mm]

Type of tool	Cutter	Saw Blades
Solid wood along the grain	0.6 - 2.5	0.2 - 1.5
Solid wood across the grain	0.3 - 0.8	0.1 - 0.2
Particleboard, MDF	0.8 - 1.5	0.05 - 0.2
Plastic laminated board	0.6 - 1.2	0.03 - 0.06

General Technical Information



Cutting Arc Depth

$$r_w = \frac{S_z^2}{4 \times D} \text{ [mm]}$$

S_Z = Chipload [mm]
D = Outer tool diameter [mm]

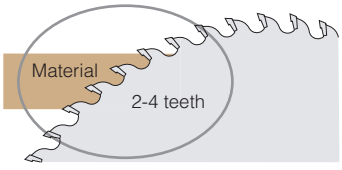
Average Chip Thickness h_m

$$h_m = S_z \times \sqrt{\frac{a}{D}} \text{ [mm]}$$

S_Z = Chipload [mm]
D = Outer tool diameter [mm]
a = Cutting depth [mm]

Number of Teeth in the Cut

As a rule of the thumb, in case of a saw blade, there should be not more or less than 2-4 teeth at the same time in the material.



Tooth Pitch & Number of Teeth

$$t = \frac{h \times 1.45}{k} \text{ [mm]}$$

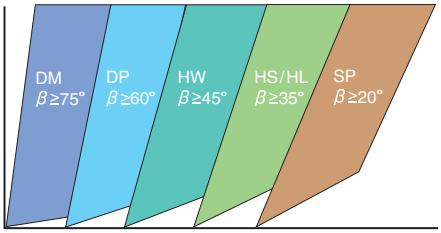
t = Tooth pitch [mm]
h = Thickness of the material
k = Number of teeth in cut

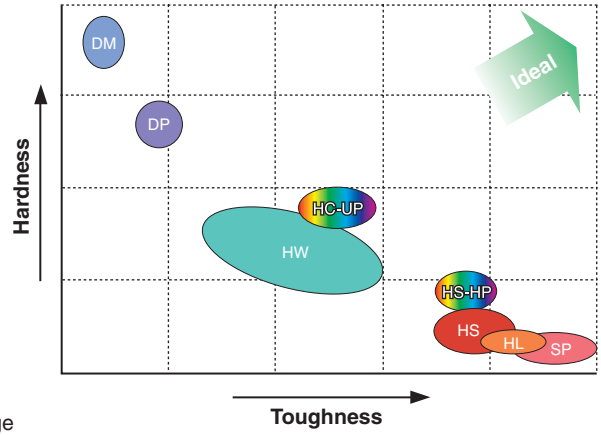
$$Z = \frac{D \times \pi}{t}$$

z = Number of teeth
t = Tooth pitch [mm]
D = Outer diameter of the saw blade [mm]
π = Pi (3.141592)

Cutting Edge Materials

Abbreviation	Material	Area of Application	Kanefusa' s Product Range
DM	Single Crystal Diamond (MCD)	Laminate flooring Machining plastics like PMMA	Custom made tooling
DP	Polycrystalline Diamond (PCD)	Various flooring materials Panel based furniture Cement-fiber board Various plastics Non-ferrous metals	Board Pro DIA saw blades DIA-Vtech saw blades Cosmobit router bits Cutters Routers
HC-UP	Advanced Material Technology treated Tungsten Carbide	Solid wood based products such as - Furniture and chairs - Stairs and windows - Structural lumber	SF-saw blades E-Bit router bits Finger joint cutters Profile cutters and routers
HW	Tungsten Carbide	Panel based products Solid wood products Non-ferrous metals Various plastics	Board Pro saw blades Timber Max saw blades Sash Pro saw blades Yield Pro saw blades
HS-HP	Advanced Material Technology treated High Speed Steel	Planing, profiling and finger jointing of solid wood	ST-1 knives ENSHIN knives Finger Joint Cutters
HS	High Speed Steel (HSS)	Veneer and chip production	Industrial knives
HL	Alloy Steel	Veneer and chip production	Timber Tec Knives Industrial knives
SP	Tool Steel	Veneer and chip production	Industrial knives





Suitable edge angle [β] according to cutting edge material

KANEFUSA

http://www.kanefusa.net

KANEFUSA CORPORATION

Head Office / Factory
1-1 Nakaoguchi, Ohguchi-cho, Niwa-Gun
Aichi-ken, Japan, Postal Code 480-0192
Te l :+81 587 95 7221
Fax :+81 587 95 7226
E-mail:sales-ex@kanefusa.co.jp

PT. KANEFUSA INDONESIA

EJIP Industrial Park, Plot 8D, Cikarang Selatan,
Bekasi 17550, West Java, Indonesia
Tel : +62 21 897 0360
Fax: +62 21 897 0286
+62 21 897 0287
E-mail : sales@kanefusa.co.id

KANEFUSA EUROPE B.V.

De Witbogt 12, 5652 AG, Eindhoven, The Netherlands
Tel : +31 40 2900901
Fax: +31 40 2900908
E-mail : info@kanefusa.nl

KANEFUSA USA, INC.

621 Dolwick Drive, Erlanger, KY 41018, USA
Tel : +1 859 283 1450
Fax: +1 859 283 5256
E-mail : sales@kanefusa-na.com

KANEFUSA CHINA CORPORATION

NO.50 Zhuzhu Road, Lujia Town Kunshan city, Jiangsu, China
Tel : +86 512 57875072
Fax: +86 512 57875073
E-mail : yy@kanefusa-cn.com

TIANJIN OFFICE

Sanjinglu No.5 Dongli economic development zone Tianjin city CHINA
Tel : +86 22 5823 7633
Fax: +86 22 5823 7632
E-mail : tjkfc03@kanefusa-cn.com

KANEFUSA INDIA PRIVATE LIMITED

Plot No.232, Sector-8, IMT Manesar, Gurgaon,
Haryana PIN 122-050 India
Tel : +91 124 420 8440
Fax: +91 124 420 8441
E-mail : info@kanefusa.co.in

KANEFUSA DO BRASIL LTDA.

Rua Joaquim de Almeida,75,Sao Paulo,SP,Brasil,CEP04050-010
Tel : +55 11 2372 7664
Fax: +55 11 2372 7663
E-mail : vendas@kanefusa.net.br

MALAYSIA OFFICE

Suite 839 Level 8, Pavilion KL 168 Jalan Bukit Bintang
55100 Kuala Lumpur, Malaysia
Tel : +60 3 92057721
Fax: +60 3 92057720
E-mail : kanefusamal@myjaring.net

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