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KENNAMETAL®

MASTER CATALOG 2018

VOLUME TWO | **ROTATING** TOOLS

HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

Indexable Milling • Face Milling

Dodeka™ Series

Leader in Advanced Face Milling Applications

Primary Application

Dodeka Mini, Dodeka, and Dodeka MAX™ platform face milling boosters are the most comprehensive face milling boosters on the market today. Twelve true cutting edges per insert mean low cost-per-edge and high productivity. With Beyond™ premium milling grades, achieve up to 30% higher metal removal rates (MRR), 25% lower cutting forces due to soft cutting action, and up to 35% better tool life in light to heavy machining.

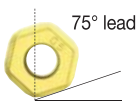
Features and Benefits

Dodeka Series • Most comprehensive face milling platform on the market. Providing an excellent cost-per-cutting edge with market leading performance. The Dodeka Series platform will cover all your face milling application needs.

All cutter body variations can be loaded with one insert style.

Dodeka Mini High-Feed 75°
Dodeka High-Feed 75°

12 True Cutting Edges

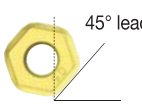


Dodeka Mini **Ap1 max = .065"**
Dodeka **Ap1 max = .087"**

Dodeka Mini HF and Dodeka HF can be loaded with all Dodeka Mini standard inserts, except wiper inserts.

Dodeka Mini 45°
Dodeka 45°
Dodeka MAX 45°

12 True Cutting Edges

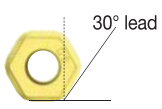


Dodeka Mini **Ap1 max = .127"**
Dodeka **Ap1 max = .178"**
Dodeka MAX **Ap1 max = .315"**

Best-in-class leader in face milling up to Ap1 max = .315".

Dodeka Mini 30°

12 True Cutting Edges



Dodeka Mini **Ap1 max = .171"**

Achieve a higher axial depth-of-cut capability up to Ap1 = .174" with standard Dodeka Mini inserts.

Dodeka™ Mini Series

insert size HN.J43
Ap1 max = .171"
pages S4–S16

Dodeka

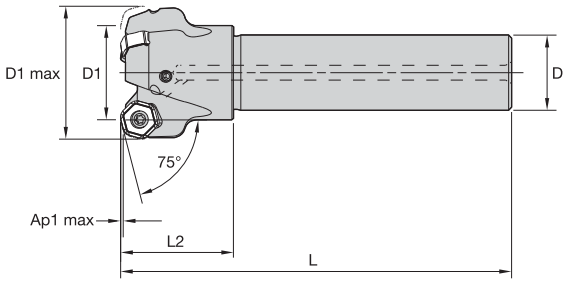
insert size HN.J535
Ap1 max = .178"
pages S17–S23

Dodeka MAX™

insert size HN.J75
Ap1 max = .315"
pages S24–S26

P M K N S — **Applicable in most material groups • Excellent results in machining titanium**

- High-feed capability.
- .06" depth-of-cut capability.
- Twelve cutting edges per insert.



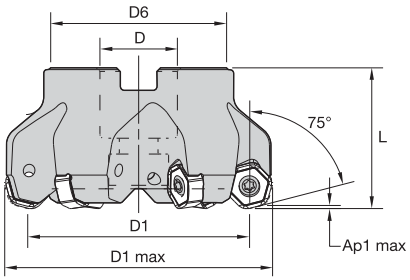
Dodeka Mini High-Feed 75° • Cylindrical End Mills

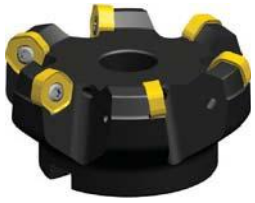
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4136407	**KSHRHF100D02C075HN43L480**	1.000	1.518	.750	4.800	1.250	.064	2	.73	19800
4136408	**KSHRHF100D03C075HN43L480**	1.000	1.518	.750	4.800	1.250	.064	3	.69	19800
4136410	**KSHRHF125D04C100HN43L520**	1.250	1.768	1.000	5.200	1.500	.065	4	1.28	17600

Spare Parts

D1	 insert screw	 in. lbs.	 wrench
1.000	**193.492**	31	**170.025**
1.250	**193.492**	31	**170.025**

- Twelve cutting edges per insert.
- High-feed capability.





Dodeka Mini High-Feed 75° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4136411	KSHRHF150HN43F3	1.500	2.018	.750	1.750	1.575	.065	5	.75	16700
4136412	KSHRHF200HN43M3	2.000	2.517	.750	1.750	1.575	.065	5	1.10	12500
4136413	KSHRHF250HN43M3	2.500	3.017	.750	1.750	1.575	.065	6	1.49	10000
4136414	KSHRHF300HN43M4	3.000	3.517	1.000	2.189	1.750	.065	8	2.21	8300

Spare Parts

D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw
1.500	193.492	31	170.025	S445
2.000	193.492	31	170.025	S445
2.500	193.492	31	170.025	S445
3.000	193.492	31	170.025	S458

Dodeka Mini High-Feed

First choice for long reach face milling applications or light fixtures.

Chip thinning effect due to lead angle 14,5°. Tremendous enlargement of feed rate and metal removal rate (MRR).

Up to 40% shorter machining cycle time versus conventional milling.

Insert Selection Guide

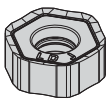
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

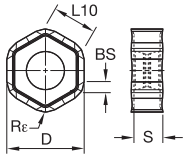
Indexable Inserts

- First choice for machining aluminum.

● first choice
○ alternate choice

	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		●	○	●
K			●	●	○		●	○		
N	●	●	○							
S					●	●				●
H										


HNGJ-LDJ

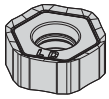


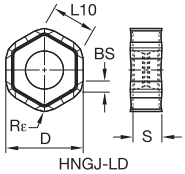
HNGJ-LDJ

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	–	–	–	–	–	–	–	–

- First choice for light machining.


HNGJ-LD

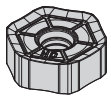


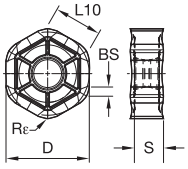
HNGJ-LD

HNGJ-LD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	–	–	●	●	●	●	●	●	●	–
HNGJ438ANENLD	.472	—	.253	.126	.177	.002	12	–	–	–	–	–	●	–	●	–	–

• First choice for high-performance heavy roughing.


HNGJ-HD



HNGJ-HD

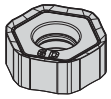
● first choice
○ alternate choice

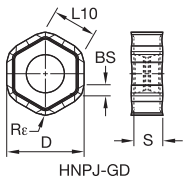
P					○	●		●	●	○
M					●	●		●	○	●
K			●	●	○		●	○		
N	●	●	○							
S					●	●				●
H										

HNGJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	–	●	–	●	●	●	●

• First choice for general purpose.


HNPJ-GD

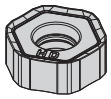


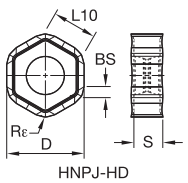
HNPJ-GD

HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	–	–	–	●	●	●	●	●	●	●

• First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	●	●	●	●	●	●	●
HNPJ438ANSNHD	.472	–	.253	.126	.174	.004	12	–	–	–	–	●	●	●	●	●	●

Recommended Starting Feeds

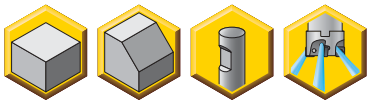
Recommended Starting Feeds [IPT]

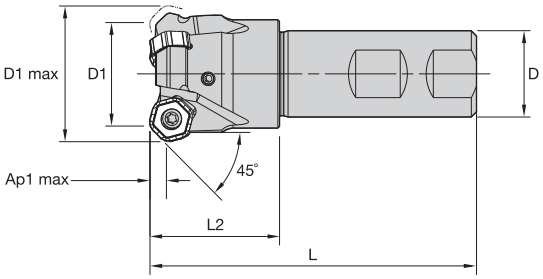
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.018	**.051**	.089	.013	**.036**	.063	.010	**.027**	.047	.008	**.024**	.041	.008	**.022**	.037	.F..LDJ
.E..LD	.020	**.066**	.112	.015	**.047**	.079	.011	**.035**	.058	.010	**.030**	.051	.009	**.028**	.046	.E..LD
.S..GD	.036	**.086**	.132	.026	**.061**	.092	.019	**.045**	.068	.017	**.039**	.059	.015	**.036**	.054	.S..GD
.S..HD	.036	**.093**	.153	.026	**.066**	.106	.019	**.049**	.078	.017	**.042**	.068	.015	**.039**	.062	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.





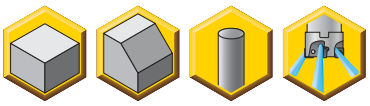
Dodeka Mini 45° • Weldon® End Mills

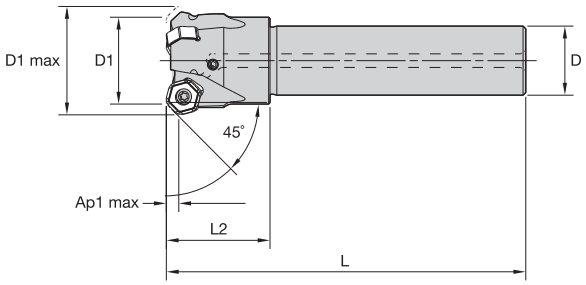
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130514	**KSHR100D02W075HN06**	1.000	1.322	.750	3.280	1.250	.127	2	.46	19800
4130515	**KSHR100D03W075HN06**	1.000	1.322	.750	3.280	1.250	.127	3	.44	19800
4130516	**KSHR125D03W100HN06**	1.250	1.572	1.000	3.780	1.500	.127	3	.88	17600
4130517	**KSHR125D04W100HN06**	1.250	1.572	1.000	3.780	1.500	.127	4	.89	17600

Spare Parts

D1	 insert screw	 in. lbs.	 wrench
1.000	**193.492**	31	**170.025**
1.250	**193.492**	31	**170.025**

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.





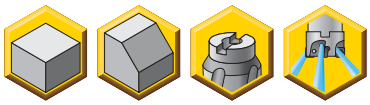
Dodeka Mini 45° • Cylindrical End Mills

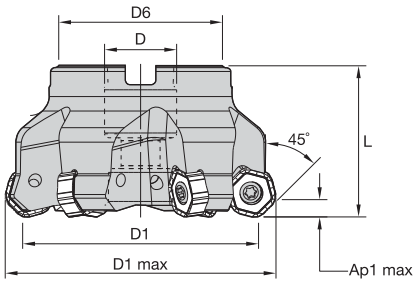
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130518	**KSHR100D02C075HN06L480**	1.000	1.322	.750	4.800	1.250	.127	2	.64	19800
4130519	**KSHR100D03C075HN06L480**	1.000	1.322	.750	4.800	1.250	.127	3	.62	19800
4130533	**KSHR100D03C100HN06L800**	1.000	1.322	1.000	8.000	1.250	.127	3	1.64	19800
4130520	**KSHR125D03C100HN06L520**	1.250	1.572	1.000	5.200	1.500	.127	3	1.19	17600
4130521	**KSHR125D04C100HN06L520**	1.250	1.572	1.000	5.200	1.500	.127	4	1.20	17600

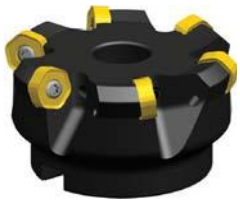
Spare Parts

D1	insert screw	in. lbs.	wrench
1.000	**193.492**	31	**170.025**
1.250	**193.492**	31	**170.025**

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







Dodeka Mini 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4130426	**KSHR150HN4345M3**	1.500	1.822	.500	1.440	1.575	.127	4	.57	16700
4130427	**KSHR150HN4345F2**	1.500	1.822	.500	1.440	1.575	.127	5	.56	16700
4130428	**KSHR200HN4345C3**	2.000	2.321	.750	1.750	1.575	.127	4	.93	12500
4130429	**KSHR200HN4345M3**	2.000	2.321	.750	1.750	1.575	.127	5	.93	12500
4130430	**KSHR200HN4345F3**	2.000	2.321	.750	1.750	1.575	.127	6	.97	12500
4130431	**KSHR250HN4345C3**	2.500	2.821	.750	1.750	1.575	.127	4	1.20	10000
4130432	**KSHR250HN4345M3**	2.500	2.821	.750	1.750	1.575	.127	6	1.27	10000
4130493	**KSHR250HN4345F3**	2.500	2.821	.750	1.750	1.575	.127	8	1.29	10000
4130494	**KSHR300HN4345C4**	3.000	3.321	1.000	2.189	1.750	.127	5	1.90	8300
4130495	**KSHR300HN4345M4**	3.000	3.321	1.000	2.189	1.750	.127	8	2.09	8300
4130496	**KSHR300HN4345F4**	3.000	3.321	1.000	2.189	1.750	.127	10	2.07	8300
4130497	**KSHR400HN4345C6**	4.000	4.321	1.500	3.661	1.750	.127	6	3.48	6300
4130498	**KSHR400HN4345M6**	4.000	4.321	1.500	3.661	1.750	.127	9	3.66	6300
4130499	**KSHR400HN4345F6**	4.000	4.321	1.500	3.661	1.750	.127	12	3.62	6300
4130500	**KSHR500HN4345C6**	5.000	5.320	1.500	3.652	2.380	.127	8	6.38	5000
4130501	**KSHR500HN4345M6**	5.000	5.320	1.500	3.652	2.380	.127	12	6.59	5000
4130502	**KSHR500HN4345F6**	5.000	5.320	1.500	3.652	2.380	.127	16	6.70	5000

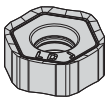
Spare Parts

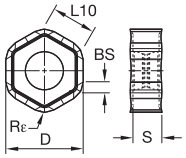
D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw	 coolant lock screw assembly
1.500	**193.492**	31	**170.025**	**S424**	**–**
2.000	**193.492**	31	**170.025**	**S445**	**–**
2.500	**193.492**	31	**170.025**	**S445**	**–**
3.000	**193.492**	31	**170.025**	**S458**	**–**
4.000	**193.492**	31	**170.025**	**–**	**S2165C**
5.000	**193.492**	31	**170.025**	**–**	**S2163C**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

- First choice for machining aluminum.


HNGJ-LDJ



HNGJ-LDJ

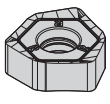
● first choice
○ alternate choice

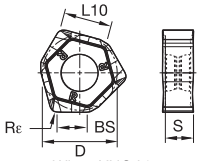
	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		●	○	●
K			●	●	○		●	○		
N	●	●	○							
S					●	●				●
H										

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	–	–	–	–	–	–	–	–

- Wiper insert for fine finishing aluminum.


Wiper XNGJ *



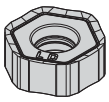
Wiper XNGJ *

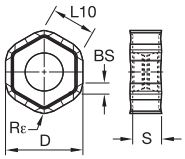
XNGJ-LDJ3W

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
XNGJ43ANFNLDJ3W	.472	.189	.283	.063	.178	.001	3	–	●	–	–	–	–	–	–	–	–

* For wiper insert XNGJ, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- First choice for light machining.


HNGJ-LD*



HNGJ-LD*

● first choice
○ alternate choice

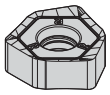
		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											

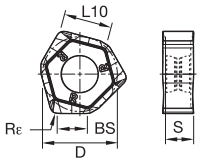
HNGJ-LD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	–	–	●	●	●	●	●	●	●	–
HNGJ438ANENLD	.472	—	.253	.126	.177	.002	12	–	–	–	–	–	●	–	●	–	–

* For wiper insert HNGJ-LD, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- Wiper insert for excellent floor finish.


Wiper XNGJ *

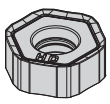


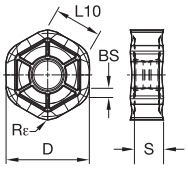
Wiper XNGJ *

XNGJ-LD3W

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
XNGJ43ANENLD3W	.472	.189	.283	.063	.178	.002	3	–	–	●	–	●	●	–	–	●	●

* For wiper insert XNGJ, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.


HNGJ-HD



HNGJ-HD

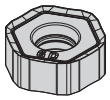
HNGJ-HD

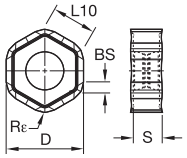
catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	–	●	–	–	–	●	●

- First choice for general purpose.

● first choice
○ alternate choice

		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											


HNPJ-GD

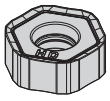


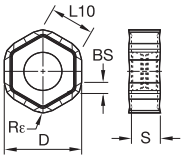
HNPJ-GD

HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	–	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	●	●	●	●	●	●	●
HNPJ438ANSNHD	.472	—	.253	.126	.174	.004	12	–	–	–	–	●	●	●	●	●	●

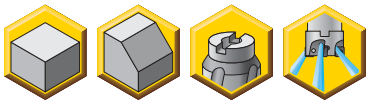
Recommended Starting Feeds [IPT]

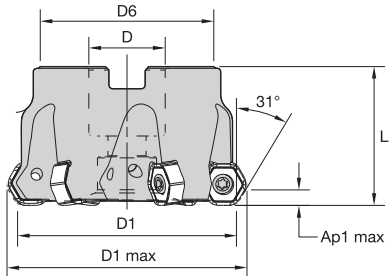
Light Machining	General Purpose	Heavy Machining

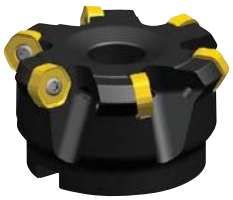
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.007	**.018**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.F..LDJ
.E..LD	.007	**.024**	.040	.005	**.017**	.029	.004	**.013**	.021	.003	**.011**	.019	.003	**.010**	.017	.E..LD
.S..GD	.013	**.031**	.046	.009	**.022**	.033	.007	**.016**	.025	.006	**.014**	.022	.006	**.013**	.020	.S..GD
.S..HD	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Higher Ap1 max with standard inserts.
- Productivity booster in all materials.







Dodeka Mini 30° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4136389	**KSHRHD150HN43M2**	1.500	1.750	.500	1.440	1.575	.171	4	.48	16700
4136390	**KSHRHD150HN43F2**	1.500	1.750	.500	1.440	1.575	.171	5	.48	16700
4136391	**KSHRHD200HN43C3**	2.000	2.250	.750	1.750	1.575	.171	4	.85	12500
4136392	**KSHRHD200HN43M3**	2.000	2.250	.750	1.750	1.575	.171	5	.87	12500
4136394	**KSHRHD250HN43M3**	2.500	2.750	.750	1.750	1.575	.171	6	1.21	10000
4136395	**KSHRHD300HN43C4**	3.000	3.250	1.000	2.189	1.750	.171	5	1.86	8300
4136396	**KSHRHD300HN43M4**	3.000	3.250	1.000	2.189	1.750	.171	8	1.96	8300
4136397	**KSHRHD400HN43C6**	4.000	4.249	1.500	3.661	1.750	.171	6	3.36	6300
4136399	**KSHRHD500HN43C6**	5.000	5.249	1.500	3.652	2.380	.171	8	6.31	5000
4136400	**KSHRHD500HN43M6**	5.000	5.249	1.500	3.652	2.380	.171	12	6.53	5000

Spare Parts

D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw	 coolant lock screw assembly
1.500	**193.492**	31	**170.025**	**S424**	**–**
2.000	**193.492**	31	**170.025**	**S445**	**–**
2.500	**193.492**	31	**170.025**	**S445**	**–**
3.000	**193.492**	31	**170.025**	**S458**	**–**
4.000	**193.492**	31	**170.025**	**–**	**S2165C**
5.000	**193.492**	31	**170.025**	**–**	**S2163C**

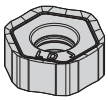
Insert Selection Guide

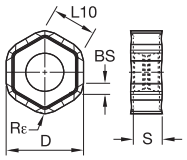
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

- First choice for machining aluminum.

● first choice
○ alternate choice

		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											


HNGJ-LDJ

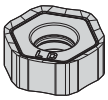


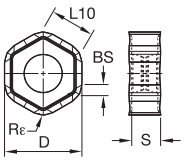
HNGJ-LDJ

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	–	–	–	–	–	–	–	–

- First choice for light machining.


HNGJ-LD



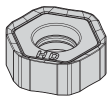
HNGJ-LD

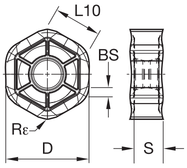
HNGJ-LD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	–	–	●	●	●	●	●	●	●	–
HNGJ438ANENLD	.472	–	.253	.126	.177	.002	12	–	–	–	–	–	●	–	●	–	–

P					○	●		●	●	○
M					●	●		●	○	●
K			●	●	○		●	○		
N	●	●	○							
S					●	●				●
H										

● first choice
○ alternate choice


HNGJ-HD

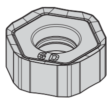


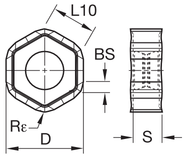
HNGJ-HD

HNGJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	–	●	–	●	●	●	●

- First choice for general purpose.


HNPJ-GD

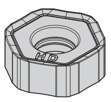


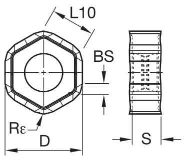
HNPJ-GD

HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	–	–	–	●	●	●	●	●	●	–

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	●	●	●	●	●	●	●
HNPJ438ANSNHD	.472	—	.253	.126	.174	.004	12	–	–	–	–	●	●	●	●	●	●

Recommended Starting Feeds

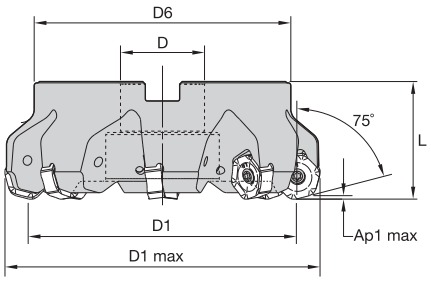
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae) 5%			10%			20%			30%			40–100%			Insert Geometry
.F..LDJ	.005	.015	.026	.004	.011	.019	.003	.008	.014	.003	.007	.012	.002	.006	.011	.F..LDJ
.E..LD	.006	.019	.032	.004	.014	.023	.003	.010	.017	.003	.009	.015	.003	.008	.014	.E..LD
.S..GD	.011	.025	.038	.008	.018	.027	.006	.013	.020	.005	.012	.018	.005	.011	.016	.S..GD
.S..HD	.011	.027	.043	.008	.019	.031	.006	.014	.023	.005	.013	.020	.005	.012	.018	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

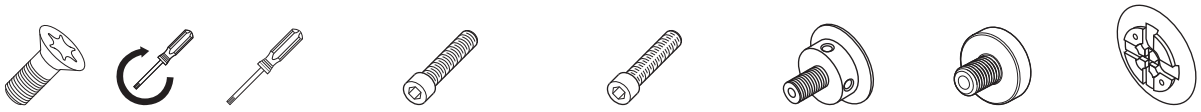
- High feed rates for rough face milling.
- .08" depth-of-cut capability.
- Twelve cutting edges per insert.



Dodeka High-Feed 75° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4047419	KSHRHF200HN5315C3	2.000	2.746	.750	1.750	1.595	.087	4	1.13	11300
4047420	KSHRHF250HN5315C3	2.500	3.245	.750	2.144	1.595	.087	5	1.60	8900
4047421	KSHRHF300HN5315C4	3.000	3.745	1.000	2.346	1.770	.087	6	2.23	7400
4047422	KSHRHF400HN5315C5	4.000	4.744	1.250	3.819	1.770	.087	8	3.91	5800
4047583	KSHRHF500HN5315C6	5.000	5.416	1.500	3.810	2.400	.087	9	6.87	4700
4047584	KSHRHF600HN5315C8	6.000	6.748	2.000	4.880	2.400	.087	12	10.51	4000

Spare Parts



D1	insert screw	in. lbs.	wrench	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw	coolant lock screw	coolant shower plate
2.000	193.492	31	170.025	S445	S445CG	–	–	–
2.500	193.492	31	170.025	S445	S445CG	–	–	–
3.000	193.492	31	170.025	S458	S458CG	–	–	–
4.000	193.492	31	170.025	–	–	S2162C	–	–
5.000	193.492	31	170.025	–	–	–	420.201	470.240
6.000	193.492	31	170.025	–	–	–	420.241	470.241

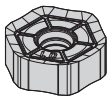
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KC520M
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	–	–	**–**	**–**	–	–

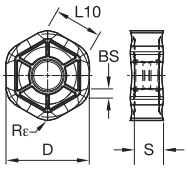
Indexable Inserts

beyond

- First choice for light machining and aluminum.



HNGJ-LD
HNGJ-LDJ



HNGJ-LD
HNGJ-LDJ

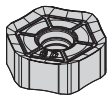
● first choice
○ alternate choice

P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N		●								
S				●	●				●	
H										

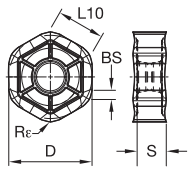
HNGJ-LDJ and -LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANFNLDJ	.625	.219	.338	.071	.047	.001	12	●	–	–	–	–	–	–	–	–
HNGJ535ANENLD	.625	.219	.338	.071	.047	.002	12	–	●	●	●	●	●	–	●	–

- First choice for general purpose.



HNGJ-GD



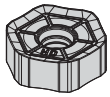
HNGJ-GD

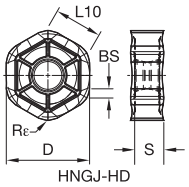
HNGJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	–	–	–	●	●	●	●	●	–

Face Milling

- First choice for heavy roughing.


HNGJ-HD



HNGJ-HD

● first choice
○ alternate choice

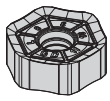
beyond

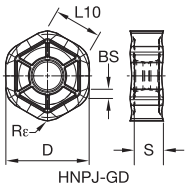
P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N	●									
S				●	●				●	
H										

HNGJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	–	●	●	●	●	●	–
HNGJ53511ANSNHD	.625	.214	.334	—	.171	.008	12	–	●	–	●	–	●	●	●	–

- First choice for general purpose.


HNPJ-GD

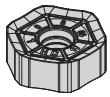


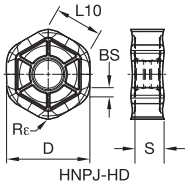
HNPJ-GD

HNPJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	–	●	●	●	●	●	●	–	–

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	●	●	●	●	●	●	–
HNPJ53511ANSNHD	.625	.214	.334	—	.171	.005	12	–	–	●	●	●	●	●	●	–

Recommended Starting Feeds

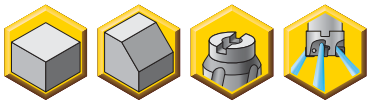
Recommended Starting Feeds [IPT]

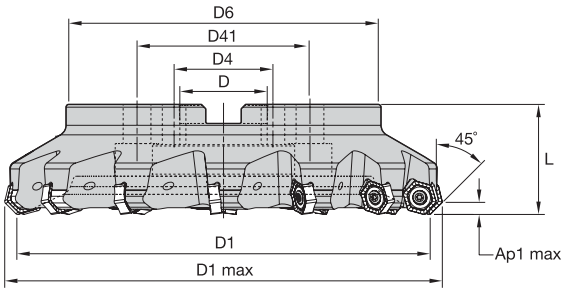
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.018	**.051**	.089	.013	**.036**	.063	.010	**.027**	.047	.008	**.024**	.041	.008	**.022**	.037	.F..LDJ
.E..LD	.025	**.073**	.112	.018	**.052**	.079	.014	**.039**	.058	.012	**.034**	.051	.011	**.031**	.046	.E..LD
.S..GD	.036	**.079**	.129	.026	**.056**	.090	.019	**.042**	.066	.017	**.036**	.058	.015	**.033**	.053	.S..GD
.S..HD	.036	**.093**	.153	.026	**.066**	.106	.019	**.049**	.078	.017	**.042**	.068	.015	**.039**	.062	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Through-coolant on cutters <4.0" diameter. 5.0" diameter cutters and above do not have through-coolant.
- Soft cutting action.

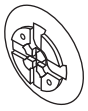




Dodeka 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
3326850	KSHR200HN5345C3	2.000	2.434	.750	–	–	1.593	1.570	.178	4	.81	12500
3326851	KSHR200HN5345M3	2.000	2.434	.750	–	–	1.593	1.570	.178	5	.82	12500
3747124	KSHR250HN5345XC3	2.500	2.933	.750	–	–	1.986	1.570	.177	5	1.25	10000
3326852	KSHR250HN5345C3	2.500	2.933	.750	–	–	1.986	1.570	.178	6	1.32	10000
3326923	KSHR250HN5345M3	2.500	2.933	.750	–	–	1.986	1.570	.178	7	1.34	10000
3747125	KSHR300HN5345XC4	3.000	3.433	1.000	–	–	2.189	1.750	.177	5	1.86	8300
3326924	KSHR300HN5345C4	3.000	3.433	1.000	–	–	2.189	1.750	.178	6	1.79	8300
3326925	KSHR300HN5345M4	3.000	3.433	1.000	–	–	2.032	1.750	.178	9	1.97	8300
3747126	KSHR400HN5345XC5	4.000	4.232	1.250	–	–	2.722	1.750	.177	6	3.17	6300
3326926	KSHR400HN5345C5	4.000	4.432	1.250	–	–	2.722	1.750	.178	8	2.93	6300
3326927	KSHR400HN5345M5	4.000	4.432	1.250	–	–	2.722	1.750	.178	11	3.14	6300
3747127	KSHR500HN5345XC6	5.000	5.431	1.500	–	–	3.652	2.380	.177	8	6.20	5000
3326928	KSHR500HN5345C6	5.000	5.431	1.500	–	–	3.652	2.380	.178	10	5.94	5000
3326929	KSHR500HN5345M6	5.000	5.431	1.500	–	–	3.652	2.380	.178	14	6.21	5000
3747128	KSHR600HN5345XC8	6.000	6.432	2.000	–	–	4.722	2.380	.177	10	9.01	4100
3326930	KSHR600HN5345C8	6.000	6.432	2.000	–	–	4.722	2.380	.178	12	9.10	4100
3326931	KSHR600HN5345M8	6.000	6.432	2.000	–	–	4.722	2.380	.178	16	9.36	4100
3494648	KSHR800HN5345C10	8.000	8.432	2.500	4.000	–	5.118	2.380	.177	16	13.14	3130
3494649	KSHR1000HN5345C10	10.000	10.433	2.500	4.000	–	7.120	2.380	.177	20	24.52	2510
3494650	KSHR1200HN5345C10	12.000	12.433	2.500	4.000	7.000	9.016	3.150	.177	24	42.66	2090

Spare Parts

D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw	 socket-head cap screw with coolant groove	 coolant lock screw	 coolant lock screw assembly	 coolant shower plate
2.000	193.492	31	170.025	S445	S445CG	–	–	–
2.500	193.492	31	170.025	S445	S445CG	–	–	–
3.000	193.492	31	170.025	S458	S458CG	–	–	–
4.000	193.492	31	170.025	–	–	–	S2162C	–
5.000	193.492	31	170.025	–	–	420.201	–	470.240
6.000	193.492	31	170.025	–	–	420.241	–	470.241
8.000	193.492	31	170.025	–	–	–	–	470.242
10.000	193.492	31	170.025	–	–	–	–	470.243
12.000	193.492	31	170.025	–	–	–	–	470.244

NOTE: Please order all spare parts separately.

Insert Selection Guide

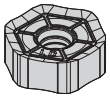
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KC520M
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	–	–	–	–	–	–

beyond

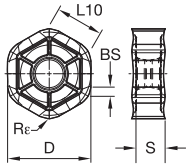
- First choice for light machining and aluminum.

● first choice
○ alternate choice

P			○	●		●	●	○	
M			●	●		●	○	●	
K		●	○		●	○			●
N	●								
S			●	●				●	
H									



HNGJ-LD
HNGJ-LDJ

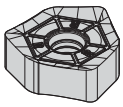


HNGJ-LD
HNGJ-LDJ

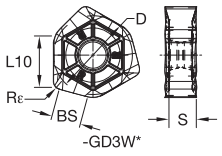
HNGJ-LDJ and -LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANFNLDJ	.625	.219	.338	.071	.047	.001	12	●	–	–	–	–	–	–	–	–
HNGJ535ANENLD	.625	.219	.338	.071	.047	.002	12	–	●	●	●	●	●	–	●	–

- Wiper insert for excellent surface floor finish.



-GD3W*



-GD3W*

XNGJ-LDJ3W and -GD3W

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
XNGJ535ANFNLDJ3W	.625	.217	.377	.230	.063	.001	3	●	–	–	–	–	–	–	–	–
XNGJ535ANSNGD3W	.625	.217	.377	.230	.063	.004	3	–	–	–	●	●	●	–	●	–

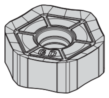
*3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

beyond™

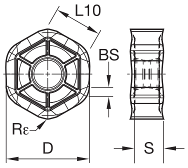
		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N		●								
S				●	●				●	
H										

● first choice
○ alternate choice

- First choice for general purpose.



HNGJ-GD

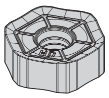


HNGJ-GD

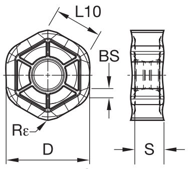
HNGJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	–	–	–	●	●	●	●	●	–

- First choice for heavy roughing.



HNGJ-HD

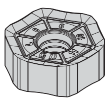


HNGJ-HD

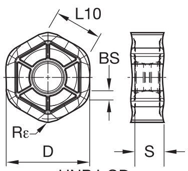
HNGJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	–	●	●	●	●	●	–
HNGJ53511ANSNHD	.625	.214	.334	—	.171	.008	12	–	●	–	●	–	●	●	●	–

- First choice for general purpose.



HNPJ-GD



HNPJ-GD

HNPJ-GD

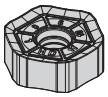
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	–	●	●	●	●	●	●	–	–

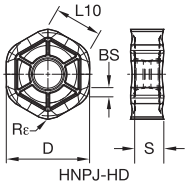
beyond

- First choice for heavy roughing.

● first choice
○ alternate choice

P				○	●		●	●	○	
M					●	●		●	○	●	
K			●	○		●	○			●
N	●									
S					●	●				●	
H										


HNPJ-HD

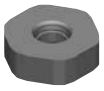


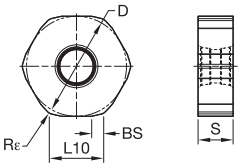
HNPJ-HD

HNPJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	●	●	●	●	●	●	–
HNPJ53511ANSNHD	.625	.214	.334	—	.171	.005	12	–	–	●	●	●	●	●	●	–

- Ceramic KYON 3500 for machining gray cast iron with high cutting speed.


HNEC-ANSN



HNEC-ANSN

HNEC-ANSN Ceramic Insert

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNEC535ANSN	.625	.219	.361	.077	.047	.008	12	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

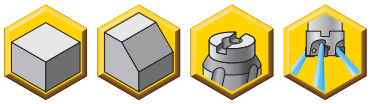
Recommended Starting Feeds [IPT]

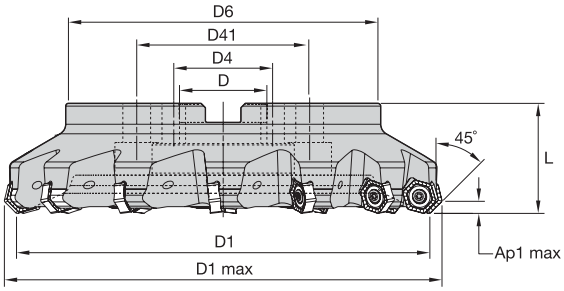
Light Machining	General Purpose	Heavy Machining

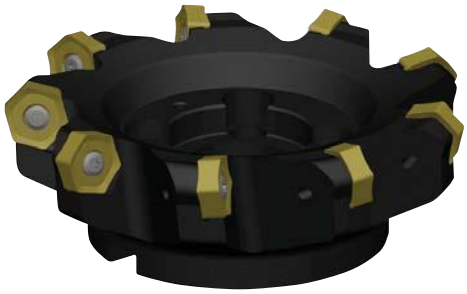
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.007	**.018**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.F..LDJ
.E..LD	.009	**.026**	.040	.007	**.019**	.029	.005	**.014**	.021	.004	**.012**	.019	.004	**.011**	.017	.E..LD
.S..GD	.013	**.028**	.045	.009	**.020**	.032	.007	**.015**	.024	.006	**.013**	.021	.006	**.012**	.019	.S..GD
.S..HD	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- 25% lower cutting forces.
- Laser-hardened pocket seats.







Dodeka MAX 45° • Shell Mills

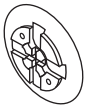
order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
4057578	**KSHR300HN7545M4**	3.000	3.682	1.000	—	2.188	1.750	.315	4	2.14	8300
4057579	**KSHR400HN7545M5**	4.000	4.682	1.250	—	2.875	1.750	.315	5	3.18	6300
4057580	**KSHR500HN7545M6**	5.000	5.682	1.500	—	3.812	2.375	.315	6	6.40	5000
4057581	**KSHR600HN7545M8**	6.000	6.682	2.000	—	5.000	2.375	.315	9	9.87	4100
4057582	**KSHR800HN7545M10**	8.000	8.682	2.500	4.000	5.000	2.375	.315	12	13.55	3130
4057576	**KSHR1000HN7545C10**	10.000	10.682	2.500	4.000	6.963	2.375	.315	12	25.80	2510
4057583	**KSHR1000HN7545M10**	10.000	10.682	2.500	4.000	6.963	2.375	.315	14	13.55	2510

Spare Parts







D1	insert screw	in. lbs.	Torx Plus wrench	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw assembly	coolant lock screw	coolant shower plate
3.000	**193.531**	71	**TTP25**	**S458**	**S458CG**	—	—	—
4.000	**193.531**	71	**TTP25**	—	—	**S2162C**	—	—
5.000	**193.531**	71	**TTP25**	—	—	—	**420.201**	**470.240**
6.000	**193.531**	71	**TTP25**	—	—	—	**420.241**	**470.241**
8.000	**193.531**	71	**TTP25**	—	—	—	—	**470.242**
10.000	**193.531**	71	**TTP25**	—	—	—	—	**470.243**

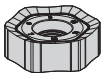
NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus bit (order number 6205892 BTQTP25L90) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

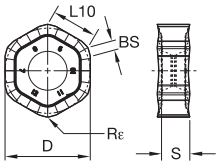
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD**	**KCPK30**	.S..HD	KCPM40
P3–P4	.E..GD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
M3	.E..GD	KCPM40	**.S..GD**	**KC725M**	.S..HD	KCSM40
K1–K2	.E..GD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..GD	KCK15	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
S3	.E..GD	KCPM40	**.S..GD**	**KC725M**	.S..HD	KCSM40
S4	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
H1	–	–	–	–	–	–

Indexable Inserts

- First choice for light machining.



HNGJ-GD



HNGJ-GD

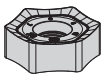
● first choice
○ alternate choice

P			●		●	●	○
M			●		○	○	●
K	●		●		●		
N							
S			●				●
H							

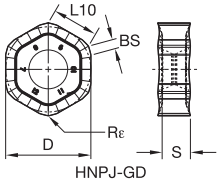
HNGJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ75ANENGD	.875	.292	.505	.074	.047	.002	12	–	●	–	●	●	–

- First choice for general purpose.



HNPJ-GD

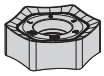


HNPJ-GD

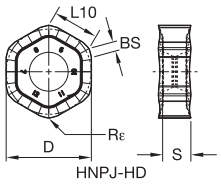
HNPJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ755ANSNGD	.875	.296	.505	—	.079	.005	12	●	●	–	●	–	–

- First choice for heavy roughing.



HNPJ-HD



HNPJ-HD

● first choice
○ alternate choice

		KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P			●		●	●	○
M			●		○	○	●
K		●		●	●		
N							
S			●				●
H							

HNPJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ75ANSNHD	.875	.288	.505	.074	.047	.010	12	–	●	●	●	●	●
HNPJ755ANSNHD	.875	.292	.505	—	.079	.009	12	–	●	–	●	●	–
HNPJ759ANSNHD	.875	.289	.505	—	.138	.009	12	●	–	●	●	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GD	.009	**.026**	.046	.007	**.019**	.033	.005	**.014**	.025	.004	**.012**	.022	.004	**.011**	.020	.E..GD
.S..GD	.013	**.029**	.050	.009	**.021**	.036	.007	**.016**	.027	.006	**.014**	.023	.006	**.013**	.021	.S..GD
.S..HD	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HD

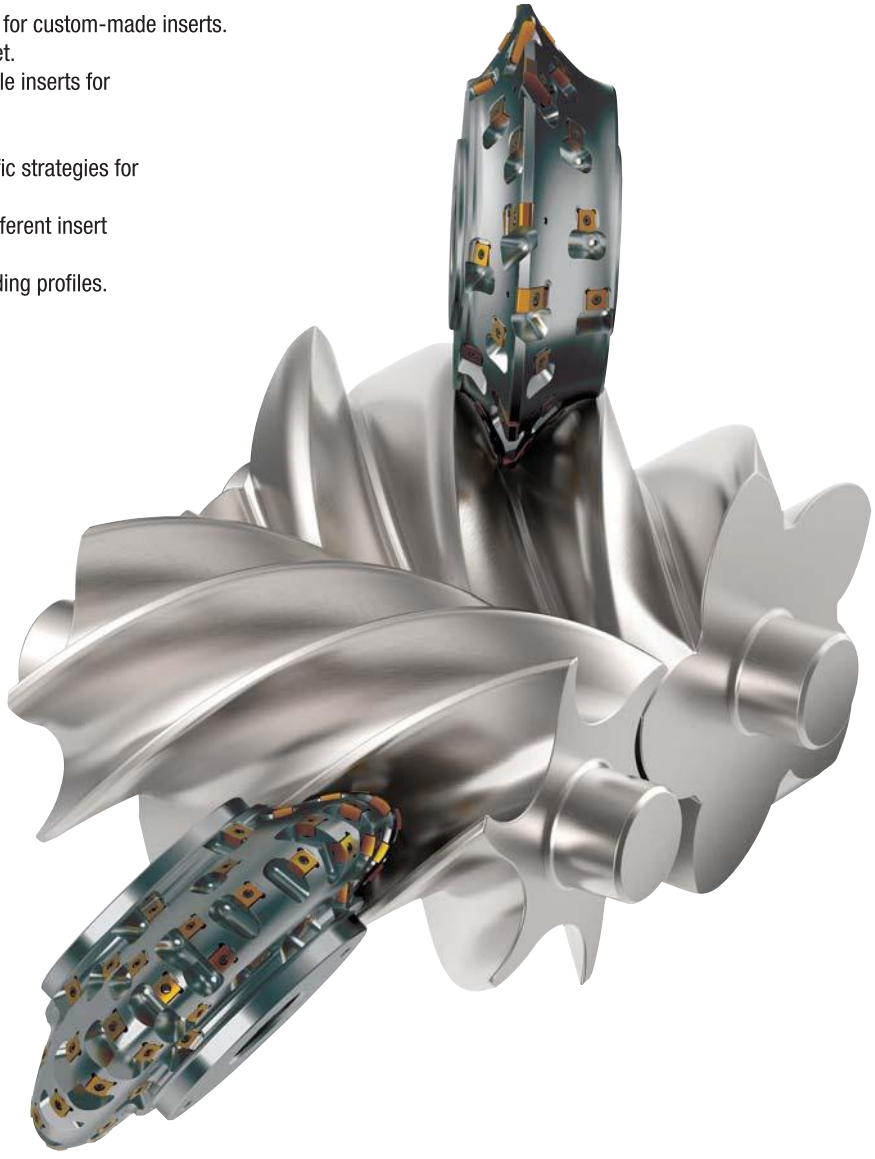
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Solution Capabilities

SCREW-ROTOR MILLING

Kennametal customers benefit from the highest service levels, our long-term experience, and application knowledge in milling of screw-rotors.

- Faster availability due to standardized processes for custom-made inserts.
- Solutions for all machines currently on the market.
- Very close contour profile with standardized profile inserts for minimum grinding allowance.
- Tools can be used in many different materials.
- Increased productivity through application-specific strategies for optimized milling.
- Smooth cutting action due to multiple rows of different insert alignments for optimum performance.
- Innovative solutions for small rotors with demanding profiles.



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KENNAMETAL®

kennametal.com

Mill 16™

Face Mills for Cast Iron Machining.

Screw-On Clamping

Wedge Clamping

Features

- 16 effective cutting edges per insert.
- Ap1 max = .216" (5,5mm).
- Coarse, medium and fine pitch cutters.
- Cutter bodies with pocket seat numbering system.
- Cutter diameter range = 1.969–9.843" (50–250mm).
- High-precision periphery ground inserts.
- Inserts with cutting edge numbering system.
- Lower cutting forces.
- Clearance on second main cutting edge.

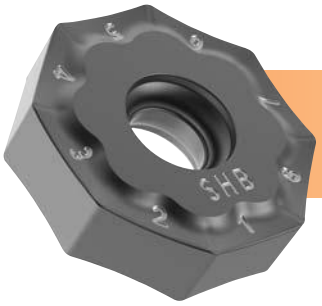
Benefits

- Low cost per edge to cut cost per part (CPP).
- Perfect fit for most cast iron face milling requirements.
- High feed rates to boost productivity and reduce cycle time.
- Comprehensive standard offering to address most needs of the shop floor.
- Improved axial runout and tool life.
- Very smooth cutting action and lower cutting forces.
- Orientated edge positioning to support axial and radial runout.
- Reliable cutting above Ap1 = .216" (5,5mm) addresses castings with varying skin thickness.

Primary Application

The new Mill 16™ series is a specially-made platform for rough milling of components like engine heads and blocks, housings and gear boxes in cast iron materials (CGI, DCI, GCI), and all other cast iron face milling jobs. Best-in-class for machining CGI materials.

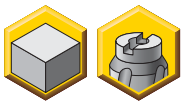
Split Case Design

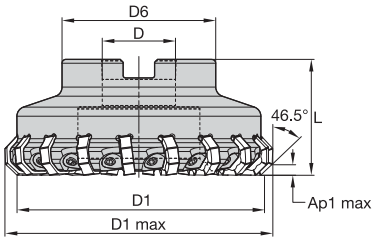


Innovative insert design to reduce cutting forces and increase productivity at lower cost per edge.

- Semi-finishing and light machining
- Medium roughing
- Heavy roughing

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.





Mill 16 • Shell Mills • Wedge Clamping

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
6001979	MILL16E200Z05ON08W	2.000	2.495	.750	2.000	2.000	.215	5	1.45	11100
6001980	MILL16E250Z06ON08W	2.500	2.995	.750	2.000	2.000	.215	6	2.03	9300
6134103	MILL16E300Z08ON08W	3.000	3.495	1.000	2.189	1.750	.215	8	2.17	8200
6002121	MILL16E300Z10ON08W	3.000	3.495	1.000	2.189	1.750	.215	10	2.06	8200
6134104	MILL16E400Z10ON08W	4.000	4.494	1.250	3.150	2.000	.215	10	4.27	6800
6002122	MILL16E400Z14ON08W	4.000	4.494	1.250	3.150	2.000	.215	14	4.09	6800
6134105	MILL16E500Z14ON08W	5.000	5.494	1.500	3.150	2.375	.215	14	6.55	5900
6002123	MILL16E500Z18ON08W	5.000	5.494	1.500	3.150	2.375	.215	18	6.38	5900
6134106	MILL16E600Z16ON08W	6.000	6.494	2.000	3.937	2.381	.215	16	8.68	5300
6002124	MILL16E600Z22ON08W	6.000	6.494	2.000	3.937	2.381	.215	22	8.39	5300
6134107	MILL16E800Z20ON08W	8.000	8.494	2.500	5.118	2.400	.215	20	14.60	4500
6002125	MILL16E800Z28ON08W	8.000	8.494	2.500	5.118	2.400	.215	28	14.29	4500
6134108	MILL16E1000Z24ON08W *	10.000	10.494	2.500	5.512	2.400	.215	24	22.08	4000
6019339	MILL16E1000Z34ON08W	10.000	10.494	2.500	5.512	2.400	.215	34	21.69	4000

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



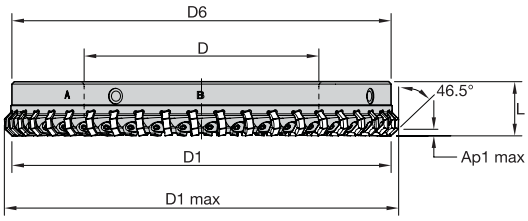




D1	wedge	wedge screw	in. lbs.	wrench	mounting screw with coolant grooves	adjustable torque wrench	bit SW3 for adjustable torque wrench
2.000	CW16	12748601000	62	12148044900	KLSS0714C	DTQ50140	BTQSW3L90
2.500	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90
3.000	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90
4.000	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90
5.000	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90
6.000	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90
8.000	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90
10.000	CW16	12748601000	62	12148044900	–	DTQ50140	BTQSW3L90

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.



Mill 16 • Split Case Design

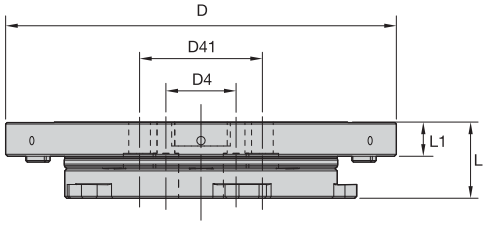
order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
6202190	MILL16E1200Z42ON08WSC *	12.000	12.494	7.677	12.000	1.772	.215	42	22.48	3600
6202291	MILL16E1400Z48ON08WSC *	14.000	14.494	9.055	14.000	1.772	.215	48	30.97	3300
6202292	MILL16E1600Z56ON08WSC *	16.000	16.494	11.024	16.000	1.772	.215	56	37.15	3100
6202293	MILL16E2000Z70ON08WSC *	20.000	20.494	14.961	20.000	1.772	.215	70	48.45	2800

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	wedge	wedge screw	in. lbs.	wrench
12.000	CW16	12748601000	62	12148044900
14.000	CW16	12748601000	62	12148044900
16.000	CW16	12748601000	62	12148044900
20.000	CW16	12748601000	62	12148044900

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

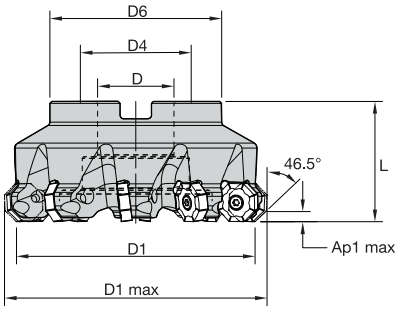


Carrier Flange Assembly

order number	catalog number	D	D4	D41	L1	L	lbs
6152251	D315CFA *	12.402	4.000	7.000	1.339	3.071	59.29
6152252	D355CFA *	13.976	4.000	7.000	1.378	3.071	81.99
6152253	D400CFA *	15.748	4.000	7.000	1.378	3.071	112.34
6152254	D500CFA *	19.685	4.000	7.000	1.378	3.071	192.59

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

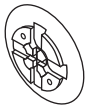
- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.



Mill 16 • Screw-On Clamping

order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
6159069	MILL16E200Z04ON08SC	2.000	2.498	.750	–	1.969	1.580	.216	4	.90	14500
6159070	MILL16E250Z04ON08SC	2.500	2.973	.750	–	1.969	1.576	.220	4	1.29	12200
6159072	MILL16E300Z05ON08SC	3.000	3.473	1.000	–	2.362	1.751	.220	5	2.17	10700
6159074	MILL16E400Z06ON08SC	4.000	4.473	1.250	–	3.150	2.001	.220	6	4.11	8900
6159076	MILL16E500Z08ON08SC	5.000	5.473	1.500	–	3.543	2.376	.220	8	6.85	7700
6159078	MILL16E600Z10ON08SC	6.000	6.472	2.000	–	3.937	2.382	.220	10	8.07	7000
6159080	MILL16E800Z10ON08SC	8.000	8.472	2.500	4.000	5.118	2.401	.220	10	14.17	5900
6159082	MILL16E1000Z12ON08SC	10.000	10.472	2.500	4.000	5.512	2.401	.220	12	23.86	5200

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench	 socket-head cap screw	 socket-head cap screw with coolant groove	 coolant lock screw	 coolant shower plate
2.000	MS2060	40	TTP20	–	KLSS0714C	–	–
2.500	MS2060	40	TTP20	S445	–	–	–
3.000	MS2060	40	TTP20	S458	–	–	–
4.000	MS2060	40	TTP20	–	–	420.162	–
5.000	MS2060	40	TTP20	–	–	420.201	470.232
6.000	MS2060	40	TTP20	–	–	420.241	470.241
8.000	MS2060	40	TTP20	–	–	–	470.242
10.000	MS2060	40	TTP20	–	–	–	470.243

Insert Selection Guide

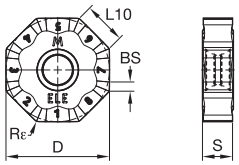
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KC514M	.S..GP	KC514M	.S..HB	KC514M
K3	.E..LE	KCK20	.S..GP	KCK20	.S..HB	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts

- ...ANENLE = semi-finishing with improved surface floor finish.
- ...ENLE = light machining.

● first choice
○ alternate choice


ONGX08-LE



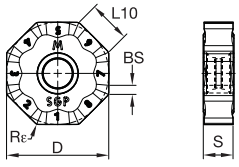
ONGX08-LE

ONGX-LE • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX64ANENLE	.787	.229	.323	.059	.031	.002	●	●	●	–	–
ONGX645ENLE	.787	.229	.326	—	.079	.002	●	●	●	–	–

- ...ANSNGP = medium roughing with improved surface floor finish.
- ...SNGP = medium roughing with low cutting forces.


ONGX-GP



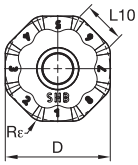
ONGX-GP

ONGX-GP • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX64ANSNGP	.787	.229	.323	.059	.031	.006	●	●	●	–	–
ONGX645SNGP	.787	.229	.326	—	.079	.006	●	●	●	●	–

- First choice for heavy roughing.


ONGX-HB



ONGX-HB

● first choice
○ alternate choice

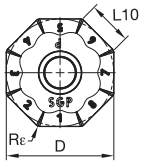
P	
M	
K	●
N	
S	
H	

ONGX-HB • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX642SNHB	.787	.229	.326	–	.032	.007	●	●	–	–	–
ONGX645SNHB	.787	.229	.326	–	.079	.007	●	●	●	●	–
ONGX648SNHB	.787	.229	.326	–	.118	.007	●	●	●	–	–

- Medium roughing with lower cutting forces.


ONPX-GP



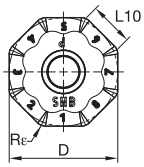
ONPX-GP

ONPX-GP • Precision Pressed and Sintered to Size

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONPX642SNGP	.787	.229	.326	–	.032	.006	–	●	●	●	–

- Heavy roughing with regular performance.


ONPX-HB



ONPX-HB

ONPX-HB • Precision Pressed and Sintered to Size

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONPX645SNHB	.787	.229	.326	–	.079	.007	–	●	●	●	–

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LE	.009	**.026**	.046	.007	**.019**	.033	.005	**.014**	.025	.004	**.012**	.022	.004	**.011**	.020	.E..LE
.S..GP	.013	**.029**	.049	.009	**.021**	.035	.007	**.016**	.026	.006	**.014**	.023	.006	**.012**	.021	.S..GP
.S..HB	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HB

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

User Information

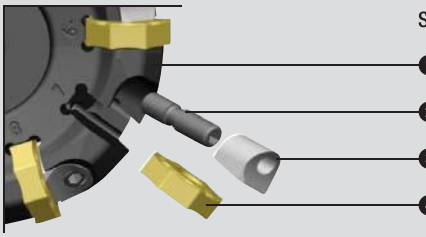
- Only use with indexable inserts ONPX0806**/ONGX0806** (ONPX64**/ONGX64**).
- Only use original Kennametal spare parts as per the current catalog.

- Maintenance and repair of cutters should only be carried out by Kennametal.
- The tools must only be used in combination with suitable tool adapters and machine spindles.
- Use only the recommended torque settings when assembling the cutters for use. For further information contact the KMT CAS Team.

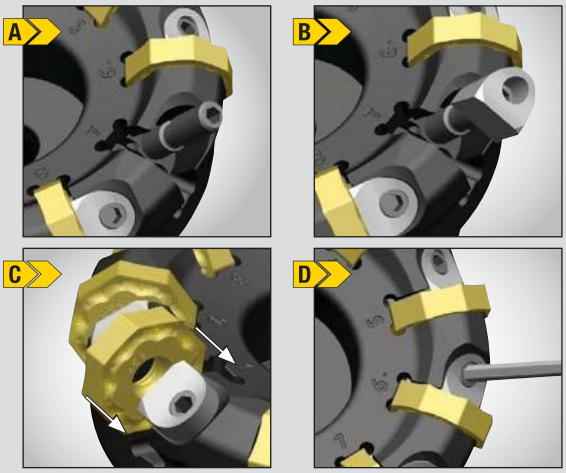
* These assembly instructions relate only to the Kennametal Mill 16 Face Mill family and not to its connection to a spindle or spindle adapter.

Preparation

- Prior to use, ensure the cutter is thoroughly cleaned and remove all dirt, grease, and anti-corrosive protection.
- Carefully grease the differential screws with copper grease. Ensure the rest of the cutter is clean.
- When loading the inserts into the cutter, please ensure that they are inserted in the clean pocket seat in the correct position.
- Mounting position: The flat side of the clamping wedge sits on top of the insert face. We recommend to mount the inserts by following the insert's edge numbering system for orientated insert seating. Active cutting edges shall all have the same cutting edge number.



Insert Clamping and Adjusting



Pre-setting of Inserts

A. Screw the differential screw ❷ into the cutter body ❶ by approximately 2 turns using a 3mm hex wrench.

B. Place wedge ❸ on differential screw ❷ and fasten into the cutter body.

C. Push insert ❹ into the pocket seat by hand in the direction shown.

D. Clamp insert ❹ with wedge ❸ by rotating the differential screw with a clamping force of MA = 18 in/lbs (2 Nm). The differential screw must not stick out of wedge.

E. Repeat steps A–D for all inserts.

Tightening the Inserts

F. Tighten all inserts of the pockets with the wedge using the differential screw with a clamping torque of MA = 62 in/lbs (7 Nm).

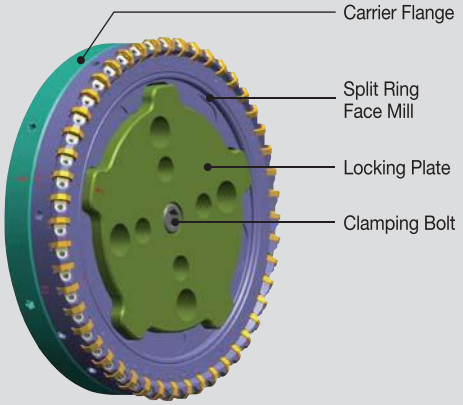
Split Cutter Assembly Instructions

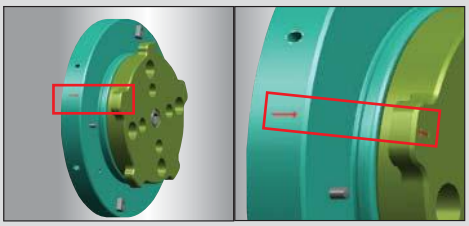
Please read and follow the instructions below for safe and productive application.

User Information

These assembly instructions relate only to Kennametal split-case milling cutters and not to its connection to a spindle or spindle adapter.

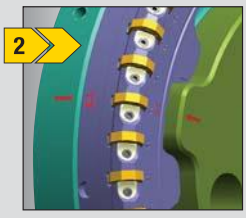
System Components





Initial position must be in such a way that the arrows in the carrier flange and locking plate coincide with each other.

Place the split ring face mill over the carrier flange in such a way that arrows in the locking plate and carrier flange coincide with the marking "A" in the cutter.



Turn the cutter ring clockwise from marking "A" to marking "B".

Tighten the clamping bolt with a torque of 100 Nm.

Extended Kennametal Service

Adjustable Torque Wrenches

When working with inserts, it is especially important to use the correct torque. Kennametal offers extended service levels by assuring best tightening with adjustable torque wrenches. Please order separately as needed.

Adjustable torque wrenches • 5.3–47.8 in. lbs (0,6–5,4 Nm)

3641463

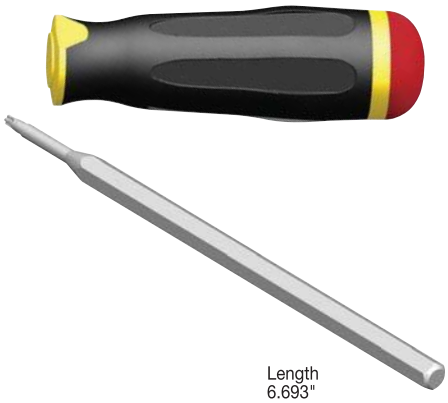
3641464

3641465

Order Number	ANSI/ISO Catalog Number	Description	Nm range	in. lbs range
3641463	**DTQ0615**	Torque control wrench handle	0,7–1,5 Nm	5.4–13.3
3641464	**DTQ1530**	Torque control wrench handle	1,6–3,0 Nm	13.4–26.6
3641465	**DTQ3054**	Torque control wrench handle	3,1–5,4 Nm	26.7–47.8

Blades

Order Number	Description	Drive	Max Torque
3641466	Blade Screw Driver TORX	BTQT6	0,8 Nm
3641467	Blade Screw Driver TORX	BTQT7	1,4 Nm
3641468	Blade Screw Driver TORX	BTQT8	2,4 Nm
3641469	Blade Screw Driver TORX	BTQT9	3,3 Nm
3641470	Blade Screw Driver TORX	BTQT10	4,0 Nm
3641471	Blade Screw Driver TORX	BTQT15	7,0 Nm
3641472	Blade Screw Driver TORX	BTQT20	10,5 Nm
3641473	Blade Screw Driver TORX	BTQT25	20,0 Nm
3641474	Blade Screw Driver TORX PLUS	BTQ6IP	0,9 Nm
3641475	Blade Screw Driver TORX PLUS	BTQ7IP	1,7 Nm
3641476	Blade Screw Driver TORX PLUS	BTQ8IP	2,8 Nm
3641477	Blade Screw Driver TORX PLUS	BTQ9IP	3,6 Nm
3641478	Blade Screw Driver TORX PLUS	BTQ10IP	5,0 Nm



Length
6.693"
(170mm)

Adjustable torque wrenches • 3.7–10.3 in. lbs (5–14 Nm)

Order Number	ANSI/ISO Catalog Number	Description
6197561	DTQ50140	Torque Wrench Handle 5-14Nm + bitholder
6205876	BTQSW3L90	Bit SW3 L=90mm
6205877	BTQT15L90	Bit Torx 15 L=90mm
6205878	BTQT20L90	Bit Torx 20 L=90mm
6205879	BTQT25L90	Bit Torx 25 L=90mm
6205880	BTQTP15L90	Bit Torx Plus 15 L=90mm
6205891	BTQTP20L90	Bit Torx Plus 20 L=90mm
6205892	BTQTP25L90	Bit Torx Plus 25 L=90mm

NOTE: For a complete overview of our screw drivers, bits, torque wrenches, and bit drivers, see pages X2–X3.

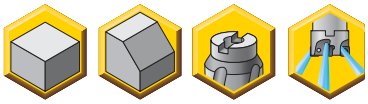
KSSM™ 45°

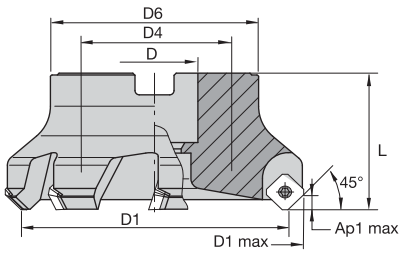
Universal face mill for conventional machining.

Features and Benefits

- Insert SE.T1404.
- Ap1 max = .260".
- Four true cutting edges.
- Pocket seat protection with carbide shims.
- Easy handling and rapid insert change.

- Consumes less power.
- Rapid insert changes.





KSSM 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
1817866	**KSSISR197SE44345C3**	1.970	2.515	.750	–	1.750	1.575	.260	3	.87	22500
1817867	**KSSISR197SE44345M3**	1.970	2.515	.750	–	1.750	1.575	.260	4	.88	22500
1817868	**KSSISR248SE44345C4**	2.480	3.024	1.000	–	2.190	1.575	.260	4	1.31	20200
1817869	**KSSISR248SE44345M4**	2.480	3.024	1.000	–	2.190	1.575	.260	5	1.30	20200
1817870	**KSSISR315SE44345C4**	3.150	3.691	1.000	–	2.190	1.969	.260	4	2.16	18000
1817871	**KSSISR315SE44345M4**	3.150	3.691	1.000	–	2.190	1.969	.260	6	2.19	18000
1817872	**KSSISR394SE44345C5**	3.940	4.477	1.250	–	2.880	1.969	.260	5	3.58	16000
1817933	**KSSISR394SE44345M5**	3.940	4.477	1.250	–	2.880	1.969	.260	7	3.60	16000
1817934	**KSSISR492SE44345C6**	4.920	5.460	1.500	–	3.810	2.480	.260	6	6.50	14400
1817935	**KSSISR492SE44345M6**	4.920	5.460	1.500	–	3.810	2.480	.260	8	6.56	14400
1817936	**KSSISR630SE44345C6**	6.300	6.836	1.500	–	3.810	2.480	.260	7	9.91	12500
1817937	**KSSISR630SE44345M6**	6.300	6.836	1.500	–	3.810	2.480	.260	10	10.03	12500
1817938	**KSSISR787SE44345C10**	7.870	8.410	2.500	4.000	6.125	2.480	.260	8	13.24	11300
1817939	**KSSISR787SE44345M10**	7.870	8.410	2.500	4.000	6.125	2.480	.260	12	13.37	11300

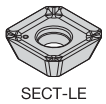
Spare Parts

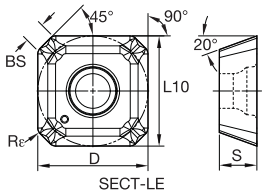
D1	insert screw	in. lbs.	Torx Plus driver	shim	shim screw	hex driver	in. lbs.	socket-head cap screw
1.970	**MS2078**	35	**DT15IP**	–	–	–	–	**S2043**
2.480	**MS2078**	35	**DT15IP**	–	–	–	–	**S2044**
3.150	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
3.940	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
4.920	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
6.300	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
7.870	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..GP2	KCPK30	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..GP2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GP2**	**KC725M**	.S..GP2	KC725M
M3	.E..GP2	KCPM40	**.E..GB2**	**KCPM40**	.S..GP2	KCPM40
K1–K2	.E..GP2	KCK15	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..GP2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GP2**	**KC725M**	.S..GP2	KC725M
S3	.E..GB2	KC725M	**.S..GP2**	**KC725M**	.S..GB2	KC725M
S4	.E..GB2	KC725M	**.S..GP2**	**KC725M**	.S..GB2	KC725M
H1	–	–	–	–	–	–

Indexable Inserts


SECT-LE



SECT-LE

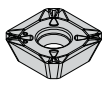
● first choice
○ alternate choice

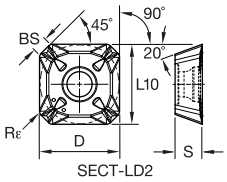
beyond

		KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
P				●		●		○	●	
M				●		○	○	●	○	
K			●		●	○		○		●
N		●								
S				●			●	●		
H										

SECT-LE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECT443AEFN7LE	.551	.188	.551	.104	.039	.001	4	●	–	–	–	–	–	–	–	–


SECT-LD2

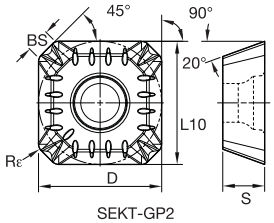


SECT-LD2

SECT-LD2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECT443AEEN7LD2	.551	.188	.551	.104	.039	.002	4	–	–	●	–	–	–	–	–	–


SEKT-GP2

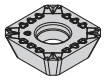


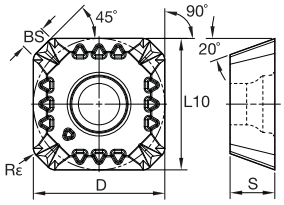
SEKT-GP2

SEKT-GP2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SEKT443AEEN7GP2	.551	.188	.551	.104	.039	.002	4	–	●	●	●	●	–	–	●	–
SEKT443AESN7GP2	.551	.188	.551	.104	.039	.004	4	–	●	●	●	●	–	–	●	–

Face Milling


SEPT-GB2



SEPT-GB2

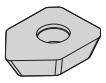
beyond

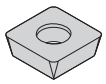
● first choice
○ alternate choice

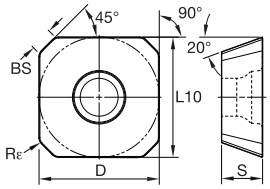
P			●		●		○	●		
M			●		○	○	●	○		
K		●		●	○		○		●	
N	●									
S			●			●	●			
H										

SEPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SEPT443AEEN7GB2	.551	.188	.551	.104	.039	.003	4	–	–	●	●	●	–	–	–	–
SEPT443AESN7GB2	.551	.188	.551	.104	.039	.005	4	–	–	●	●	●	–	–	–	–


SECW-GNW


SECW-GN



SECW-GNW
SECW-GN

SECW-GN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECW443AESN7GN	.551	.188	.551	.104	.039	.006	4	–	–	–	–	–	–	–	–	●

SECW-GNW

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECW443AEEN22GNW	.551	.188	.325	.325	.063	.002	2	–	–	●	–	–	–	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.007	**.024**	.040	.005	**.017**	.029	.004	**.013**	.021	.003	**.011**	.019	.003	**.010**	.017	.F..LE
.E..LD2	.007	**.025**	.045	.005	**.018**	.032	.004	**.013**	.024	.003	**.012**	.021	.003	**.011**	.019	.E..LD2
.E..LD	.009	**.026**	.046	.007	**.019**	.033	.005	**.014**	.024	.004	**.012**	.021	.004	**.011**	.020	.E..LD
.E..GP	.007	**.025**	.050	.005	**.018**	.036	.004	**.013**	.027	.003	**.012**	.023	.003	**.011**	.021	.E..GP
.E..GP2	.009	**.029**	.050	.007	**.021**	.036	.005	**.016**	.027	.004	**.014**	.023	.004	**.012**	.021	.E..GP2
.E..GB2	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.E..GB2
.S..GP2	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GP2
.S..GB2	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GB2
.S..GN	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

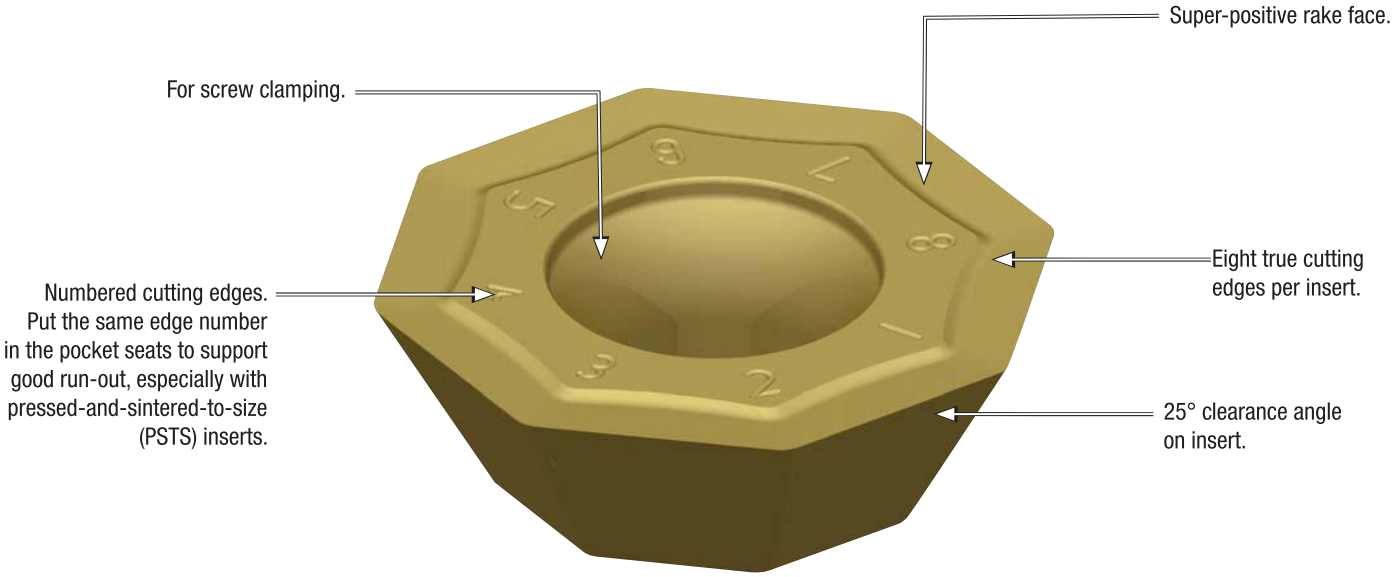
KSOM™ Mini • KSOM Milling Tools

Primary Application

High-positive face mills with eight cutting edges for use in most workpieces materials. Due to its design, face milling, plunging, helical interpolation, and ramping are possible with KSOM mills.

Features and Benefits

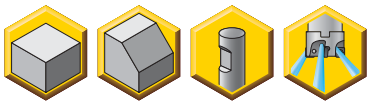
- Super-positive rake face for soft cutting action.
- Low cutting forces deliver higher feed capability.
- 25° clearance angle on insert allows excellent free cutting.
- Excellent performance in stainless steel and super alloys.
- First choice solution for machining turbocharger materials like 1.4826, 1.4838, 1.4848, and 1.4849.

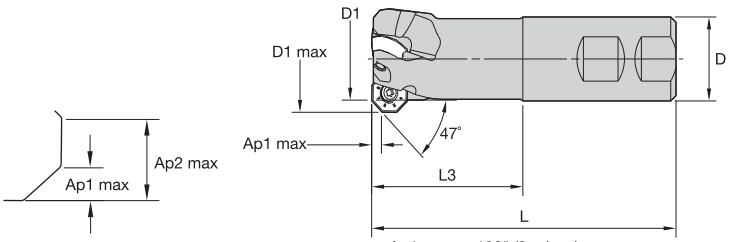


KSOM Mini: insert OF*T53
— Ap1 max = .138" (8 indexes)
— Ap2 max = .354" (4 indexes)

KSOM insert OF*T64
— Ap1 max = .197" (8 indexes)
— Ap2 max = .461" (4 indexes)

- Eight cutting edges per insert.
- Super soft cutting.





Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

KSOM Mini • Weldon® End Mills

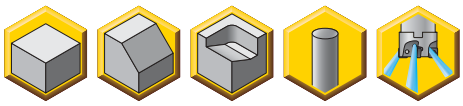
order number	catalog number	D1	D1 max	D	L	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
3093625	**KSOM125OF5345M3**	1.250	1.610	.750	3.047	1.000	.138	2	11.0°	.53	20050
3093600	**KSOM125OF5345F5**	1.250	1.610	1.250	4.530	2.250	.138	3	11.0°	1.45	20050
3093627	**KSOM150OF5345M3**	1.500	1.856	.750	3.047	1.000	.138	3	8.0°	.60	16710
3093623	**KSOM150OF5345F3**	1.500	1.856	.750	3.047	1.000	.138	4	8.0°	.56	16710

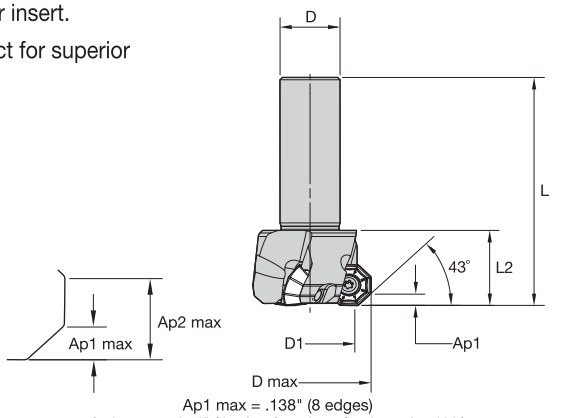
Spare Parts

D1	insert screw	in. lbs.	Torx Plus wrench
1.250	**193.433**	53	**TTP15**
1.500	**193.433**	53	**TTP15**

NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus15 (order number 6205880) may be purchased separately in order to ensure proper torque setting.

- Eight cutting edges per insert.
- Super soft cutting effect for superior surface floor finishing.





Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

Cylindrical End Mills

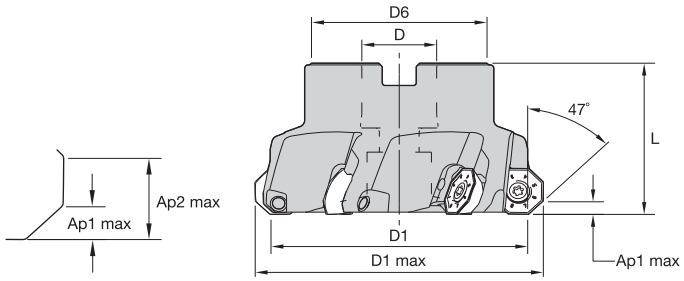
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
5358938	**KSOM125Z03C100OF53X**	1.250	1.603	1.000	3.280	1.000	.138	3	11.0°	.74	20050

Spare Parts

D1	insert screw	in. lbs.	Torx Plus wrench
1.250	**193.433**	53	**TTP15**

NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus20 (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- Eight cutting edges per insert.
- Super soft cutting.



Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

KSOM Mini • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
5359020	KSOM150Z04OF53S050X	1.500	1.850	.500	1.440	1.575	.138	4	8.0°	.58	16710
3093634	KSOM200OF5345M3	2.000	2.350	.750	1.593	1.570	.138	4	5.2°	.85	12530
5359021	KSOM200Z06OF53S075X	2.000	2.346	.750	1.750	1.570	.138	6	5.2°	.88	12530
3093635	KSOM250OF5345M3	2.500	2.846	.750	1.986	1.570	.138	5	3.8°	1.38	10030
5359023	KSOM250Z07OF53S075X	2.500	2.843	.750	2.144	1.570	.138	7	3.8°	1.43	10030
3093636	KSOM300OF5345M4	3.000	3.343	1.000	2.031	1.750	.138	6	3.0°	1.88	8350
5359024	KSOM300Z09OF53S100X	3.000	3.341	1.000	2.188	1.750	.138	9	3.0°	1.98	8350
3093637	KSOM400OF5345M5	4.000	4.340	1.250	2.722	1.750	.138	7	2.1°	2.77	6270
3093638	KSOM500OF5345M6	5.000	5.340	1.500	3.652	2.380	.138	8	1.6°	5.63	5010
3093632	KSOM500OF5345F6	5.000	5.340	1.500	3.652	2.380	.138	12	1.6°	6.07	5010

NOTE: "X" in the catalog number stands for improved finishing capabilities.

Spare Parts

D1	insert screw	in. lbs.	Torx Plus wrench	socket-head cap screw	coolant lock screw	coolant lock screw	coolant shower plate
1.500	193.433	53	TTP15	S424	–	–	–
2.000	193.433	53	TTP15	S445	–	–	–
2.500	193.433	53	TTP15	S445	–	–	–
3.000	193.433	53	TTP15	S458	–	–	–
4.000	193.433	53	TTP15	–	S2162C	–	–
5.000	193.433	53	TTP15	–	–	420.201	470.240

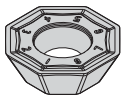
NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus15 (order number 6205880) may be purchased separately in order to ensure proper torque setting.

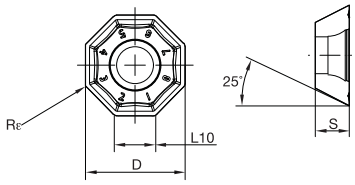
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LB	KCPK30	**.E..GB**	**KCPM40**	.S..HB	KCPK30
P3–P4	.E..LB	KCPK30	**.E..GB**	**KCPK30**	.S..HB	KCPK30
P5–P6	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M1–M2	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
M3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
K1–K2	.E..LB	KCK15	**.E..GB**	**KC520M**	.E..GB	KCK15
K3	.E..LB	KCPK30	**.E..GB**	**KC520M**	.S..HB	KCPK30
N1–N2	.F..LBJ	KC410M	**.E..LBJ**	**KC422M**	.E..LBJ	KC422M
N3	.F..LBJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
S1–S2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
S3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
S4	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for machining aluminum with low feed rate.


OF.T-LNJ



OF.T-LNJ

● first choice
○ alternate choice

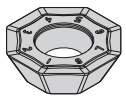
beyond

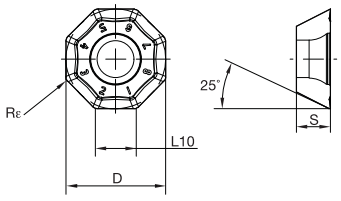
		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N		●	●							
S					●	●				●
H										

OFKT-LNJ

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFFN4LNJ	.579	.197	.236	–	.031	.001	8	●	–	–	–	–	–	–	–	–

- First choice for machining aluminum.


OF.T-LBJ

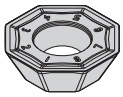


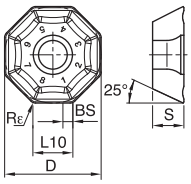
OF.T-LBJ

OFKT-LBJ

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFEN4LBJ	.579	.197	.236	–	.031	.001	8	–	●	–	–	–	–	–	–	–
OFKT53AFFN4LBJ	.579	.197	.236	–	.031	.001	8	●	–	–	–	–	–	–	–	–

- First choice for light machining.
- -LB light geometry is the first choice for turbine blade applications.


OF.T-LB



OF.T-LB

beyond

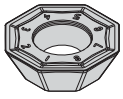
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N	●	●								
S					●	●				●
H										

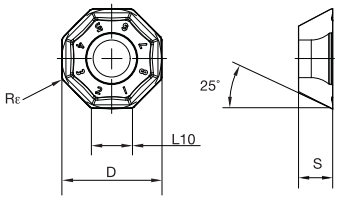
● first choice
○ alternate choice

OFKT-LB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFEN6LB	.579	.197	.236	.048	.031	.004	8	–	–	–	●	●	●	●	–	●
OFKT53AFSN6LB	.579	.197	.236	.048	.031	.009	8	–	–	●	●	●	–	●	–	–

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.


OF.T-GB

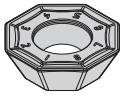


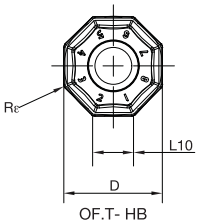
OF.T-GB

OFKT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFEN4GB	.579	.197	.236	—	.031	.006	8	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.


OF.T- HB

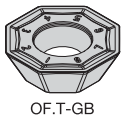


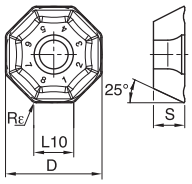
OF.T- HB

OFKT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFSN4HB	.579	.197	.236	—	.031	.008	8	–	–	–	●	●	–	●	–	●

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.


OF.T-GB



OF.T-GB

● first choice
○ alternate choice

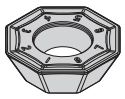
beyond

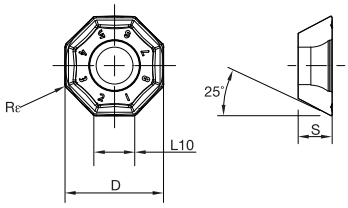
		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P				○	●	●		●	●	○
M				●	●			○	○	●
K				●	○		●	○		
N		●	●							
S				●	●					●
H										

OFPT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFPT53AFEN4GB	.579	.197	.236	—	.031	.006	8	–	–	●	–	●	●	●	●	–

- First choice for heavy roughing.


OF.T- HB



OF.T- HB

OFPT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFPT53AFSN4HB	.579	.197	.236	—	.031	.008	8	–	–	●	–	●	●	●	–	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

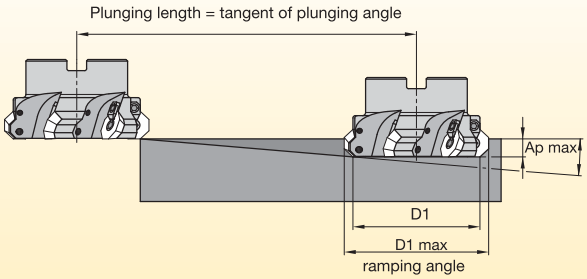
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LBJ	.007	**.025**	.041	.005	**.018**	.030	.004	**.013**	.022	.003	**.012**	.019	.003	**.011**	.018	.F..LBJ
.F..LNJ	.007	**.025**	.041	.005	**.018**	.030	.004	**.013**	.022	.003	**.012**	.019	.003	**.011**	.018	.F..LNJ
.E..LBJ	.007	**.025**	.045	.005	**.018**	.033	.004	**.013**	.024	.003	**.012**	.021	.003	**.011**	.019	.E..LBJ
.E..LB	.014	**.029**	.047	.010	**.021**	.034	.007	**.016**	.025	.006	**.014**	.022	.006	**.013**	.020	.E..LB
.S..LB	.014	**.029**	.051	.010	**.021**	.037	.007	**.016**	.027	.006	**.014**	.024	.006	**.012**	.022	.S..LB
.E..GB	.014	**.034**	.055	.010	**.025**	.039	.007	**.018**	.029	.006	**.016**	.025	.006	**.015**	.023	.E..GB
.S..HB	.014	**.034**	.059	.010	**.025**	.042	.007	**.018**	.031	.006	**.016**	.027	.006	**.015**	.025	.S..HB

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM Mini Application • OF.T06L5

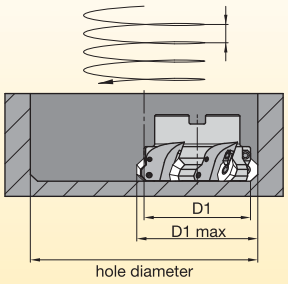
Ramping



Inch version

D1 inch	D1 max inch	Ap max inch	ramping angle (°)	ramping length inch
1.25	1.61	.354	11,0	1.82
1.50	1.85	.354	8,0	2.52
2.00	2.35	.354	5,2	3.89
2.50	2.85	.354	3,8	5.34
3.00	3.34	.354	3,0	6.76
4.00	4.34	.354	2,1	9.66
5.00	5.34	.354	1,6	12.69
6.00	6.34	.354	1,3	15.61

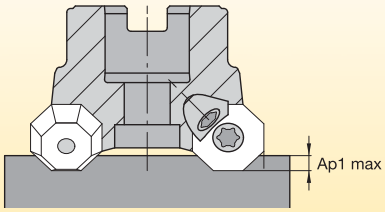
Helical Interpolation



Inch version

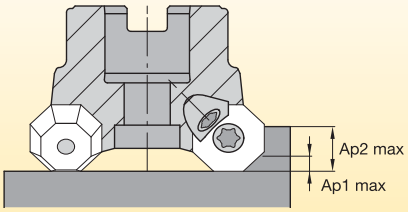
D1 inch	D1 max inch	hole diameter min inch	hole diameter max inch	Ap/Rev inch
1.25	1.61	2.41	3.20	.185
1.50	1.85	2.91	3.69	.185
2.00	2.35	3.90	4.68	.185
2.50	2.85	4.93	5.68	.185
3.00	3.34	5.89	6.68	.185
4.00	4.34	7.89	8.67	.185
5.00	5.34	9.89	10.67	.185
6.00	6.34	11.89	12.67	.185

Plunging



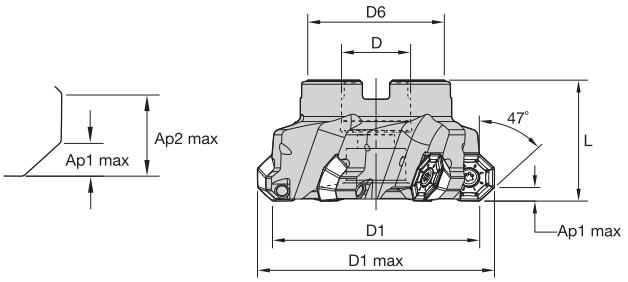
max plunging depth	inch
Ap1 max	.13

Face Milling



max DOC Ap	inch	chipload (fz)
Ap1 max	.14	1 x fz
Ap2 max	.35	0,6 x fz

- Eight cutting edges per insert.
- Super soft cutting.

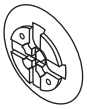


Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

KSOM • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
3093645	**KSOM250OF6445M3**	2.500	2.945	.750	1.986	1.750	.197	4	5.5°	1.47	10100
3093640	**KSOM250OF6445F3**	2.500	2.945	.750	1.986	1.750	.197	5	5.5°	1.29	10100
3093646	**KSOM300OF6445M4**	3.000	3.441	1.000	2.031	1.750	.197	4	4.2°	1.83	7900
3093641	**KSOM300OF6445F4**	3.000	3.441	1.000	2.031	1.750	.197	6	4.2°	1.68	7900
3093647	**KSOM400OF6445M5**	4.000	4.436	1.250	2.722	1.750	.197	5	2.9°	2.69	6300
3093642	**KSOM400OF6445F5**	4.000	4.436	1.250	2.722	1.750	.197	8	2.9°	2.79	6300
3093648	**KSOM500OF6445M6**	5.000	5.433	1.500	3.652	2.380	.197	6	2.2°	5.54	5000
3093643	**KSOM500OF6445F6**	5.000	5.433	1.500	3.652	2.380	.197	10	2.2°	5.94	5000
3093649	**KSOM600OF6445M8**	6.000	6.431	2.000	4.722	2.380	.197	7	1.8°	8.51	3900
3093644	**KSOM600OF6445F8**	6.000	6.431	2.000	4.722	2.380	.197	12	1.8°	8.66	3900

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench	 socket-head cap screw	 coolant lock* screw assembly	 coolant* lock screw	 coolant* shower plate
2.500	**193.409**	53	**TTP20**	**S445**	–	–	–
3.000	**193.409**	53	**TTP20**	**S458**	–	–	–
4.000	**193.409**	53	**TTP20**	–	**S2162C**	–	–
5.000	**193.409**	53	**TTP20**	–	–	**420.201**	**470.240**
6.000	**193.409**	53	**TTP20**	–	–	**420.241**	**470.241**

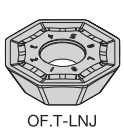
* Coolant clamping screw and coolant cap must be purchased separately.

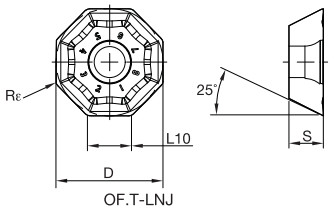
NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus20 (order number 6205891) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LB	KCPK30	**.E..GB**	**KCPM40**	.S..HB	KCPM40
P3–P4	.E..LB	KCPK30	**.E..GB**	**KCPK30**	.S..HB	KCPK30
P5–P6	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M1–M2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
K1–K2	.E..LB	KCK15	**.E..GB**	**KC520M**	.S..HB	KCK15
K3	.E..LB	KC520M	**.E..GB**	**KC520M**	.S..HB	KC520M
N1–N2	.F..LNJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
N3	.F..LNJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
S1–S2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
S3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
S4	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
H1	–	–	**–**	**–**	–	–

- First choice for machining aluminum.


OF.T-LNJ



OF.T-LNJ

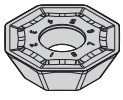
● first choice
○ alternate choice

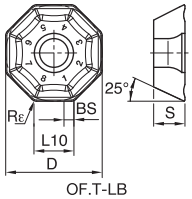
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										

OFKT-LNJ

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT64AFFN6LNJ	.736	.236	.295	–	.047	.001	8	●	–	–	–	–	–	–	–	–

- First choice for light machining.


OF.T-LB



OF.T-LB

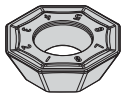
OFKT-LB

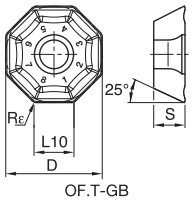
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT64AFEN6LB	.736	.236	.295	.083	.047	.004	8	–	–	●	●	–	●	–	–	●
OFKT64AFSN6LB	.736	.236	.295	.083	.047	.009	8	–	–	–	●	–	●	–	–	–

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.

● first choice
○ alternate choice

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										


OF.T-GB

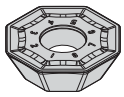


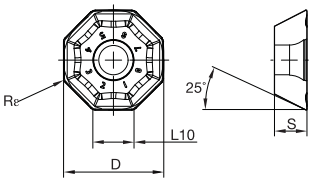
OF.T-GB

OFKT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFKT64AFEN6GB	.736	.236	.295	—	.047	.006	8

- First choice for heavy roughing.


OF.T- HB

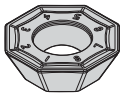


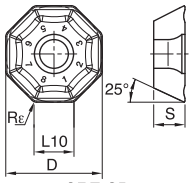
OF.T- HB

OFKT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFKT64AFSN6HB	.736	.236	.295	—	.047	.008	8

- First choice for general purpose.


OF.T-GB

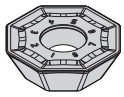


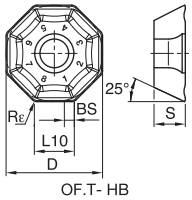
OF.T-GB

OFPT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFPT64AFEN6GB	.736	.236	.295	—	.047	.006	8

- First choice for heavy roughing.


OF.T- HB



OF.T- HB

OFPT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFPT64AFSN6HB	.736	.236	.295	—	.047	.008	8

Face Milling

Recommended Starting Feeds [IPT]

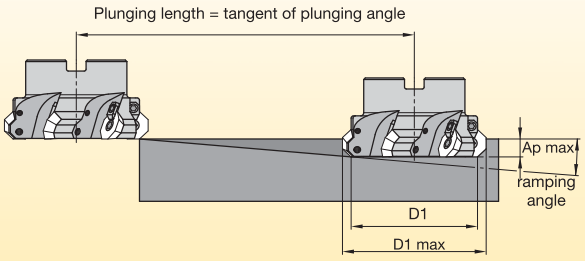
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LNJ	.007	**.027**	.048	.005	**.019**	.035	.004	**.015**	.026	.003	**.013**	.022	.003	**.012**	.021	.F..LNJ
.E..LB	.014	**.029**	.047	.010	**.021**	.034	.007	**.016**	.025	.006	**.014**	.022	.006	**.013**	.020	.E..LB
.S..LB	.014	**.029**	.053	.010	**.021**	.038	.007	**.016**	.028	.006	**.014**	.025	.006	**.012**	.022	.S..LB
.E..GB	.014	**.034**	.055	.010	**.025**	.039	.007	**.018**	.029	.006	**.016**	.026	.006	**.015**	.023	.E..GB
.S..HB	.014	**.034**	.059	.010	**.025**	.042	.007	**.018**	.031	.006	**.016**	.027	.006	**.015**	.025	.S..HB

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM Application • OF.T07L6

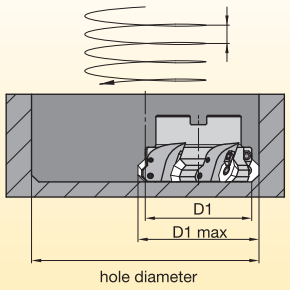
Ramping



Inch version

D1 inch	D1 max inch	Ap max inch	ramping angle (°)	ramping length inch
2.50	2.94	.46	5.5	4.78
3.00	3.44	.46	4.2	6.27
4.00	4.43	.46	2.9	9.09
5.00	5.43	.46	2.2	11.99
6.00	6.43	.46	1.8	14.65

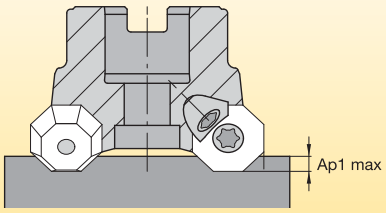
Helical Interpolation



Inch version

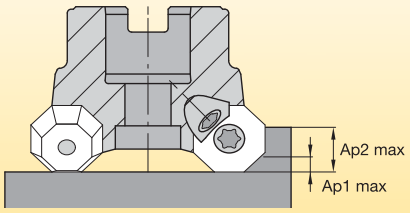
D1 inch	D1 max inch	hole diameter min inch	hole diameter max inch	Ap/Rev inch
2.50	2.94	4.872	5.748	.248
3.00	3.44	5.868	6.744	.248
4.00	4.43	7.863	8.739	.248
5.00	5.43	9.859	10.736	.248
6.00	6.43	11.857	12.733	.248

Plunging



max plunging depth	inch
Ap1 max	.17

Face Milling



max DOC Ap	inch	chipload (fz)
Ap1 max	.20	1 x fz
Ap2 max	.46	0,6 x fz

KSSM8+™ Face Milling Platform

Primary Application

The KSSM8+ platform is a first-choice face milling platform for **versatility** and a **reduced cost per edge**. This platform just got better with the latest pressing technology from Kennametal, which delivers pressed and sintered-to-size (PSTS) inserts ideal for general machining in **cast iron and steel**. With our latest KCPM40™ grade offering, PSTS inserts deliver exceptional performance. Now more than ever, the KSSM8+ platform is the economical solution for applications requiring a **near 0° shoulder**.

Features and Benefits

Features

- Double-sided insert with 8 cutting edges.
- Face mill with close to a 0° shoulder.
  - IC 10 (2° lead)
  - IC 12,7 (3° lead)
- Medium and fine density cutters.
- -LD and -GD geometry inserts.

Benefits

- Maximized number of cutting edges.
- Lower cost-per-edge.
- Reduced power consumption.
- Reduced deformation/chatter.
- Exceptional surface finish.
- Stronger edge for roughing.

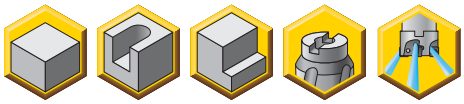
Versatile Platform with Multiple Insert Options and Grades

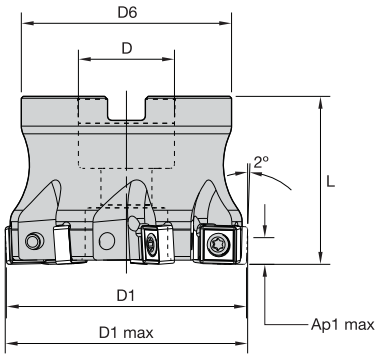
Cost per Edge
Double-sided square inserts, 8 cutting edges.

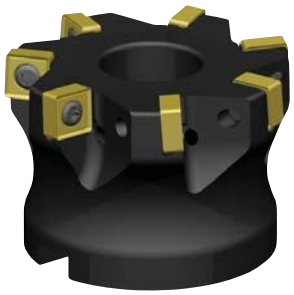
Optimized Cutting Forces
4° axial and 10° radial rake angles reduce power consumption.

Through Tool Coolant/Air
Directed to the cutting edge for optimum cooling.

- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.







KSSM8+ • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
5420251	**KSSM88D200SN3125S075Z05**	2.000	2.025	.750	1.750	1.750	.361	5	.85	32500
5420252	**KSSM88D200SN3125S075Z06**	2.000	2.025	.750	1.750	1.750	.361	6	.85	32500
5420255	**KSSM88D300SN3125S100Z07**	3.000	3.025	1.000	2.190	1.750	.361	7	1.82	25500
5420257	**KSSM88D300SN3125S100Z09**	3.000	3.419	1.000	2.190	1.750	.361	9	1.82	25500
5420258	**KSSM88D400SN3125S150Z08**	4.000	4.025	1.500	3.380	2.000	.361	8	3.73	21700

NOTE: Standard milling cutters will accept insert nose radii up to .078" without modification.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx driver	 socket-head cap screw	 coolant lock screw assembly
2.000	**193.492**	35.000	**DT15**	**S445**	**–**
3.000	**193.492**	35.000	**DT15**	**S458**	**–**
4.000	**193.492**	35.000	**DT15**	**–**	**S-2165-C**

NOTE: For coolant shower plates (MCC..), only use low-presssure coolant.

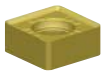
Insert Selection Guide

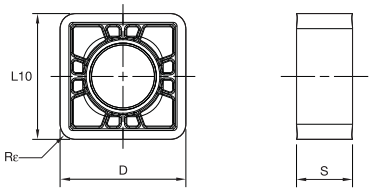
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KC725M	**.E..LD**	**KCPK30**	.S..GD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
P5–P6	.E..LD	KC725M	**.S..GD**	**KCPK30**	.S..GD	KCPM40
M1–M2	.E..LD	KC725M	**.E..LD**	**KC725M**	.S..GD	KCPM40
M3	.E..LD	KC725M	**.S..GD**	**KCPK30**	.S..GD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KC520M**	.S..GD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..GD	KCK15
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.E..LD**	**KC725M**	.E..LD	KC725M
S3	.E..LD	KC725M	**.E..LD**	**KC725M**	.S..GD	KCPM40
S4	.E..LD	KC725M	**.E..LD**	**KC725M**	.E..LD	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for light machining of cast iron and steel.
- Low cutting forces.

● first choice
○ alternate choice


SNHJ-LD

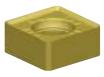


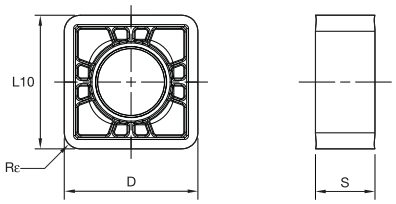
SNHJ-LD

SNHJ-LD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ31252ENLD	.394	.157	.394	.031	.002	8	●	–	●	●	–	●	–	–
SNHJ31253ENLD	.394	.157	.394	.047	.002	8	–	–	●	●	–	–	–	–

- First choice for general purpose machining.


SNPJ-GD



SNPJ-GD

SNPJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNPJ31252SNGD	.394	.157	.394	.031	.003	8	●	–	–	●	–	●	●	–
SNPJ31253SNGD	.394	.157	.394	.047	.003	8	–	–	–	●	–	–	●	–

Recommended Starting Feeds

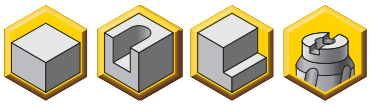
Recommended Starting Feeds [IPT]

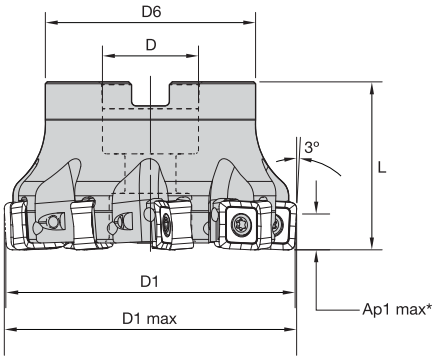
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	.007	**.016**	.028	.005	**.012**	.020	.004	**.009**	.015	.003	**.008**	.013	.003	**.007**	.012	.E..LD
.S..GD	.009	**.020**	.032	.007	**.015**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.S..GD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.





KSSM8+ • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max*	Z	lbs	max RPM
5420150	**KSSM87D200SN440S075Z05**	2.000	2.045	.750	1.750	1.750	.236	5	.81	22500
5420154	**KSSM87D300SN440S100Z07**	3.000	3.045	1.000	2.190	1.750	.236	7	1.86	17400
5420155	**KSSM87D300SN440S100Z09**	3.000	3.045	1.000	2.190	1.750	.236	9	1.83	17400
5420156	**KSSM87D400SN440S150Z08**	4.000	4.045	1.500	3.380	2.000	.236	8	3.69	14700
5420157	**KSSM87D400SN440S150Z11**	4.000	4.045	1.500	3.380	2.000	.236	11	3.68	14700
5420160	**KSSM87D600SN440S150Z12**	6.000	6.045	1.500	3.380	2.380	.236	12	8.17	11700
5420161	**KSSM87D600SN440S150Z16**	6.000	6.045	1.500	3.380	2.380	.236	16	8.16	11700

NOTE: Standard milling cutters will accept insert nose radii up to .078" without modification.
*Ap1 max. .236" using insert SNHJ442ENLD.
*Ap1 max. .467" using insert SNPJ442SNGD.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx driver	 socket-head cap screw	 coolant lock screw assembly
2.000	**193.492**	35.000	**DT15**	**S445**	**–**
3.000	**193.492**	35.000	**DT15**	**S458**	**–**
4.000	**193.492**	35.000	**DT15**	**–**	**S2165C**
6.000	**193.492**	35.000	**DT15**	**–**	**S2163C**

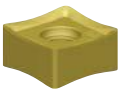
NOTE: For coolant shower plates (MCC..), only use low-pressure coolant.

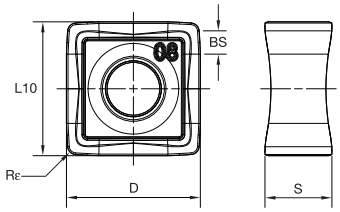
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KC725M	**.E..LD**	**KCPK30**	.S..GD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
P5–P6	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
M1–M2	.E..LD	KC725M	**.S..GD**	**KC522M**	.S..GD	KCSM40
M3	.E..LD	KC725M	**.S..GD**	**KCPM40**	.S..GD	KCSM40
K1–K2	.E..LD	KC520M	**.E..LD**	**KCK15**	.S..GD	KC520M
K3	.E..LD	KCK15	**.S..GD**	**KC520M**	.S..GD	KCK15
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KC522M
S3	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KCPM40
S4	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KC522M
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for light machining of cast iron and steel.


SNHJ-LD



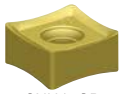
SNHJ-LD

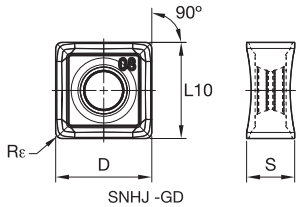
● first choice
○ alternate choice

SNHJ-LD

catalog number	D	S	BS	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ442ENLD	.500	.250	.086	.500	.031	.002	8	●	–	●	●	–	●	–	–
SNHJ444ENLD	.500	.250	.059	.500	.063	.002	8	●	–	●	●	–	●	–	–

- First choice for high-performance roughing.


SNHJ -GD



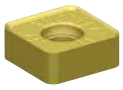
SNHJ -GD

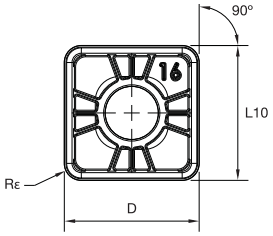
SNHJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ442SNGD	.500	.250	.500	.031	.005	8	●	●	–	●	–	●	●	●

Face Milling

- First choice for regular roughing.


SNPJ-GD



SNPJ-GD

● first choice
○ alternate choice

beyond

	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
P	○	●	●			●	●	○
M		●	●			○	●	●
K	●	○		●	●	○		
N								
S		●	●				○	●
H								

SNPJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNPJ442SNGD	.500	.178	.500	.031	.005	8	●	–	–	●	–	●	●	–
SNPJ444SNGD	.500	.178	.500	.063	.005	8	–	–	–	●	–	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	.007	**.018**	.033	.005	**.013**	.024	.004	**.010**	.018	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.S..GD	.009	**.023**	.036	.007	**.017**	.026	.005	**.013**	.019	.004	**.011**	.017	.004	**.010**	.016	.S..GD

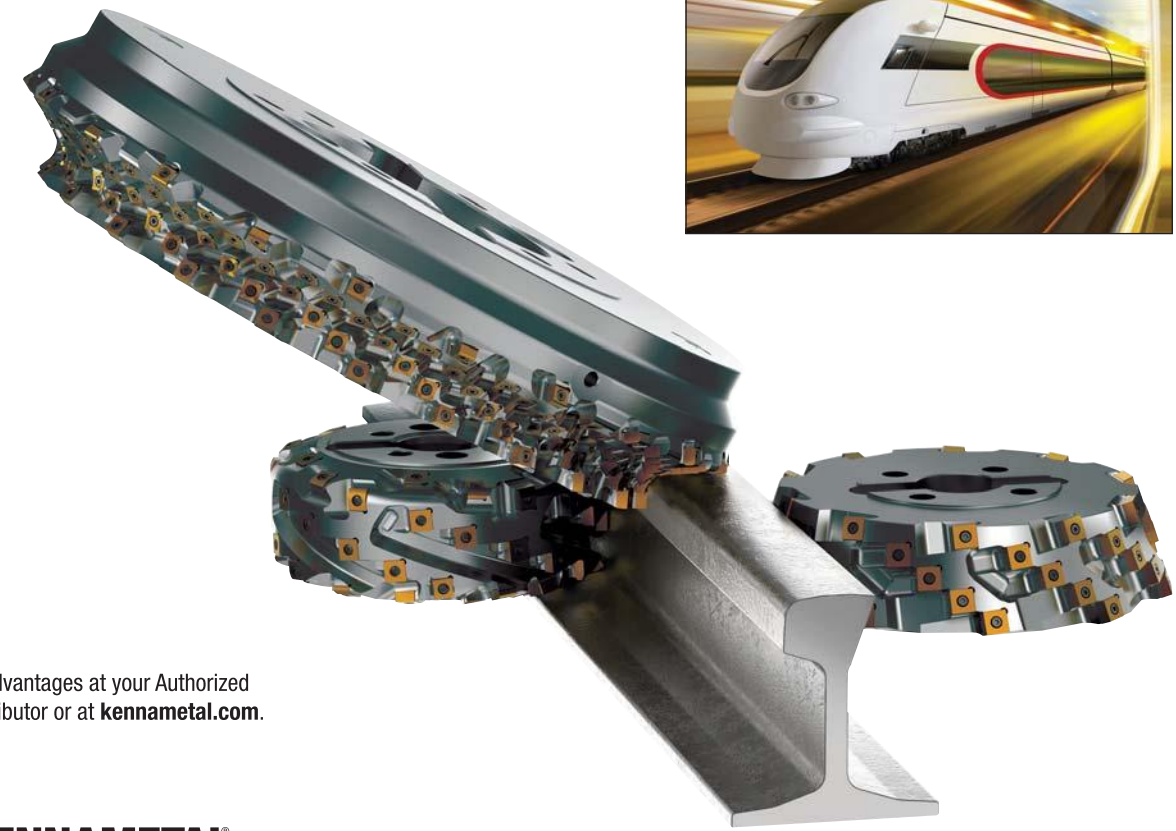
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Solution Capabilities

RAIL MILLING

Kennametal customers benefit from the highest service levels, our long-term experience, and application knowledge in the rail milling industry.

- Solutions for all applications in rail and wheel machining.
- Technical support to find the right tools for the application and to learn how to use them the best way.
- Highly productive tooling solutions, including indexable inserts up to eight cutting edges.
- High-performance tools with helix-like partitions and long tool life.
- Solutions available to optimize vibration, performance, and cutting action, depending on the application.



Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

Fix-Perfect™ Cast Iron Rougher and Finisher

Primary Application

Performance booster in machining cast iron materials. Based on workpiece requirements, Fix-Perfect roughers and finishers cover all face and shoulder milling applications when machining cast iron materials with best-in-class productivity. Eight true cutting edges per insert deliver low cost per edge and best cost per part (CPP) ceramic inserts available as standard line items.

Features and Benefits

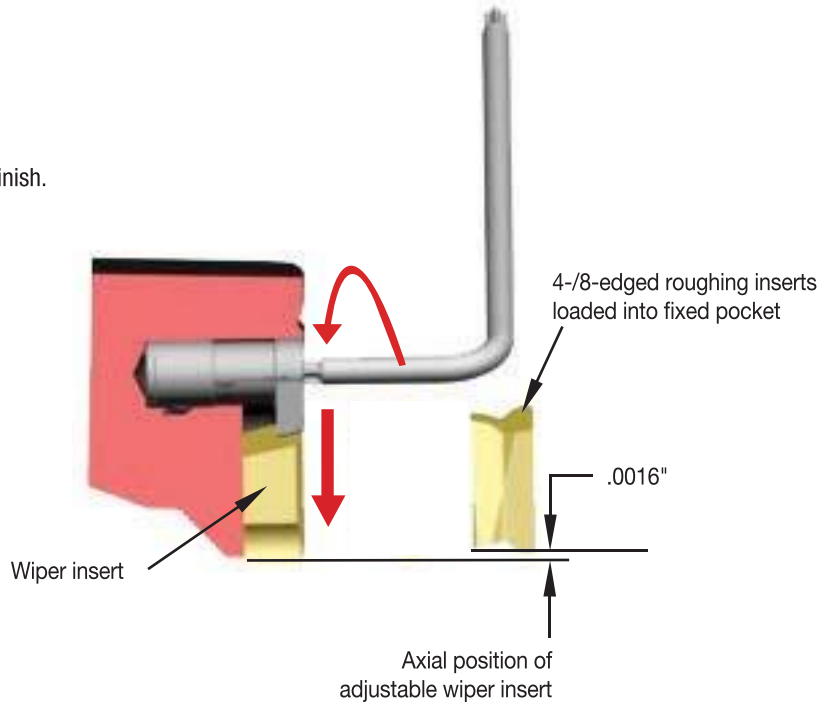
Fix-Perfect Cast Iron 20° and 0° Roughing and Finishing in One Tool

- Innovative tangential insert clamping.
- First choice for high feed rates.
- Protection of non-cutting edges.
- Adjustable element for fine finishing with wiper inserts.
- PCBN-tipped wiper inserts available for excellent floor finish.
- Micro-precise runout setup.

Fix-Perfect Cast Iron *Finisher Best-in-Class Fine-Finishing Concept

- Rigid and stable cutter design.
- High-precision pocket seat.
- Perfect axial runout without insert adjustment.
- Reliable, excellent floor finish and flatness.
- Easy handling and low-cost cutter setup.

*Finisher inch cutters available as custom solution



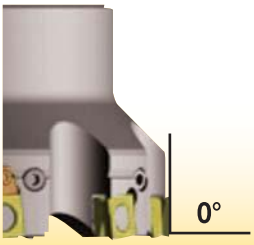
Fix-Perfect™ *Finisher

Fix-Perfect Cast Iron

Fix-Perfect Cast Iron 20° and 0°

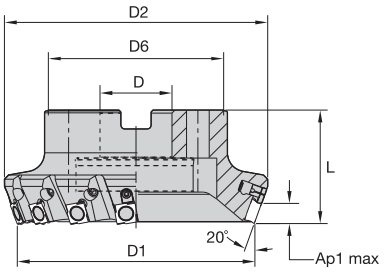
Fix-Perfect 20°

Fix-Perfect 0°



*Finisher inch cutters available as custom solution

- Eight cutting edges per insert.
- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Adjustable pockets (D1 = 3–10").

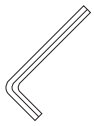


Ap1max: .232" (8 edges)
Ap2 max: .374" (4 edges); reduce feed rate by 30%

Fix-Perfect 20° • Shell Mills

order number	catalog number	D1	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1724429	**50A04RP70SP12CUFP**	2.000	.750	2.504	—	1.750	1.750	.232	4	0	1.24	8595
1724378	**50A05RP70SP12CUFP**	2.000	.750	2.504	—	1.750	1.750	.232	5	0	1.19	8595
1724379	**63A07RP70SP12CUFP**	2.500	.750	2.988	—	1.750	1.750	.232	7	0	1.55	6876
1724432	**80A06RP70SP12C1WUFP**	3.000	1.000	3.504	—	2.190	1.750	.232	6	1	2.21	5730
1724380	**80A08RP70SP12C2WUFP**	3.000	1.000	3.504	—	2.190	1.750	.232	8	2	2.43	5730
1532258	**100B08RP70SP12C2WUFP**	4.000	1.500	4.488	—	2.880	1.750	.232	8	2	3.30	4298
1724391	**100B12RP70SP12C3WUFP**	4.000	1.500	4.488	—	2.880	1.750	.232	12	3	3.10	4298
1532257	**125B10RP70SP12C2WUFP**	5.000	1.500	5.504	—	3.810	2.375	.232	10	2	6.50	3438
1724434	**160B12RP70SP12C3WUFP**	6.000	2.000	6.504	—	4.882	2.375	.232	12	3	10.10	2865
1724395	**160B18RP70SP12C3WUFP**	6.000	2.000	6.504	—	4.882	2.375	.232	18	3	10.10	2865
1532255	**200C16RP70SP12C4WUFP**	8.000	2.500	8.504	4.000	5.120	2.375	.232	16	4	14.10	2149
1532254	**250C20RP70SP12C4WUFP**	10.000	2.500	10.504	4.000	7.120	2.375	.232	20	4	29.30	1719

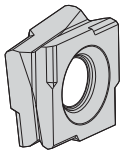
Spare Parts

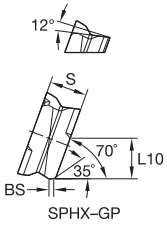
D1	 adjusting element	 adjusting element screw	 Torx wrench	 clamp stud	 set screw	 hex wrench	 in. lbs.	 socket-head cap screw
2.000	—	—	—	**410.081**	**121.612**	**170.003**	45	**S445**
2.500	—	—	—	**410.081**	**121.612**	**170.003**	45	**S445**
3.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	**S458**
4.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
5.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
6.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
8.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
10.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—

NOTE: Please order spare parts separately.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCK15
K3	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX–GP



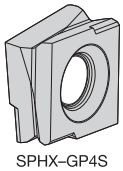
SPHX–GP

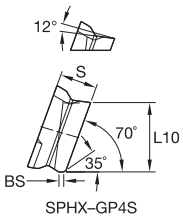
● first choice
○ alternate choice

P								
M								
K	●	●	●	○	○	●	●	
N								
S								
H								

SPHX-GP • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCELGP	.213	.217	.028	.002	8	–	●	●	–	–	–	–
SPHX1205ZCERGP	.213	.217	.028	.002	8	–	●	●	–	●	–	–
SPHX1205ZCSRGP	.213	.217	.028	.006	8	–	–	●	–	●	–	–
SPHX1205ZCTLGPK	.213	.217	.028	.009	8	–	–	–	–	–	–	●
SPHX1205ZCTRGP	.213	.217	.028	.009	8	–	–	–	●	–	–	–
SPHX1205ZCTRGPK	.213	.217	.028	.009	8	–	–	–	–	–	–	●

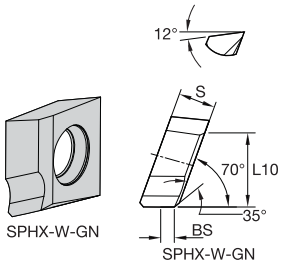

SPHX–GP4S



SPHX–GP4S

SPHX-GP4S • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCERGP4S	.395	.217	.028	.002	4	–	–	●	–	–	–	–
SPHX1205ZCTRGP4SK	.396	.217	.028	.009	4	–	–	–	–	–	–	●

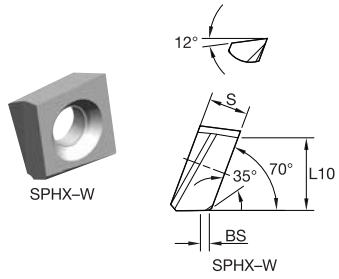


● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-W • Finishing • GN

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCERGNT1W	.394	.217	.079	.001	1	–	–	–	–	–	●	–
SPHX1205ZCFRGN1W	.394	.217	.079	.001	1	–	●	●	–	–	–	–
SPHX1205ZCFRGN1WK	.394	.217	.079	.001	1	–	–	–	–	–	–	●



SPHX-W • Finishing • GP

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCER-GP1W	.394	.217	.079	.001	1	–	●	●	–	–	–	–
SPHX1205ZCTR-GP1WK	.394	.217	.079	.009	1	–	–	–	–	–	–	●

NOTE: SPHX-W: Wiper Facet BS = .08".

Recommended Starting Feeds

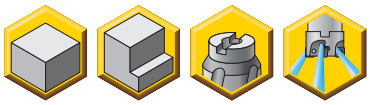
Recommended Starting Feeds [IPT]

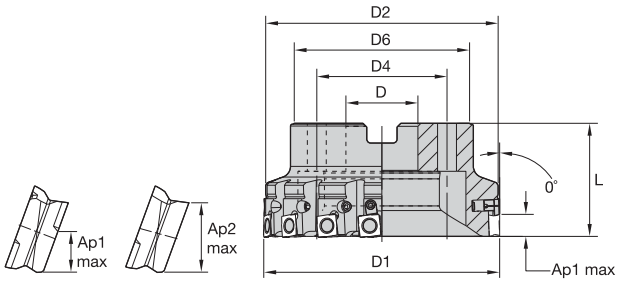
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	.006	**.020**	.038	.004	**.014**	.027	.003	**.011**	.020	.003	**.009**	.018	.002	**.009**	.016	.E..GP
.T..GP	.010	**.025**	.040	.007	**.018**	.029	.005	**.013**	.021	.005	**.012**	.019	.004	**.011**	.017	.T..GP
.S..GP	.010	**.025**	.040	.007	**.018**	.029	.005	**.013**	.021	.005	**.012**	.019	.004	**.011**	.017	.S..GP

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Eight cutting edges per insert.
- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Adjustable pockets (D1 = 3–6").





Ap1 max = .236" (8 edges)
Ap2 max = .394" (4 edges); reduce feed rate by 30%

Fix-Perfect 0° • Shell Mills

order number	catalog number	D1	D	D2	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1724407	**50A04RP90SP12CUFP**	2.000	.750	1.929	1.750	1.750	.236	4	0	.93	8595
1514498	**50A05RP90SP12CUFP**	2.000	.750	1.929	1.750	1.750	.236	5	0	.93	8595
1724409	**63A05RP90SP12CUFP**	2.500	.750	2.433	1.750	1.750	.236	5	0	1.24	6876
1724417	**80A06RP90SP12C1WUFP**	3.000	1.000	2.906	2.190	1.750	.236	6	1	1.81	5730
1724339	**80A08RP90SP12C2WUFP**	3.000	1.000	2.906	2.190	1.750	.236	8	2	1.90	5730
1724419	**100B08RP90SP12C2WUFP**	4.000	1.500	3.906	2.882	1.750	.236	8	2	2.60	4298
1724351	**100B12RP90SP12C3WUFP**	4.000	1.500	3.906	2.882	1.750	.236	12	3	2.86	3130
1724421	**125B10RP90SP12C2WUFP**	5.000	1.500	4.906	3.811	2.375	.236	10	2	6.30	3438
1724353	**125B15RP90SP12C3WUFP**	5.000	1.500	4.906	3.811	2.375	.236	15	3	6.40	3438
1724424	**160B12RP90SP12C3WUFP**	6.000	2.000	5.906	4.882	2.375	.236	12	3	9.10	2865

Spare Parts

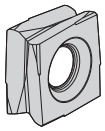
D1	adjusting element	Torx wrench	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw
2.000	–	–	**410.081**	**121.612**	**170.003**	45	**S446**
2.500	–	–	**410.081**	**121.612**	**170.003**	45	**S445**
3.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	**S458**
4.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	–
5.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	–
6.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	–

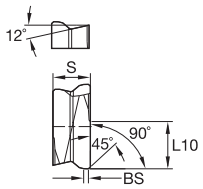
NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GPB	KC520M	**.E..GPB**	**KCK15**	.S..GPB	KCK15
K3	.E..GPB	KC520M	**.E..GPB**	**KCK15**	.S..GPB	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • SPHX1205... • Roughing


SPHX-GPB



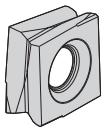
SPHX-GPB

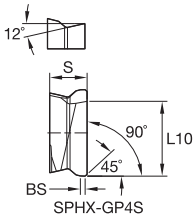
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P							○	●		
M							○	●		
K		●	●	●	○	○			●	●
N										
S							○	●		
H										

SPHX-GPB • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX120508PCSRGP	.256	.217	–	.002	8	–	–	●	–	–	–	–	–	–
SPHX1205PCELGPB	.259	.217	.028	.001	8	–	–	●	–	–	–	–	–	–
SPHX1205PCERGPB	.259	.217	.028	.001	8	–	●	●	–	●	–	–	–	–
SPHX1205PCSRGPB	.259	.217	.028	.006	8	–	–	●	–	●	–	●	–	–
SPHX1205PCTLGPBK	.259	.217	.028	.009	8	–	–	–	–	–	–	–	–	●
SPHX1205PCTRGPB	.259	.217	.028	.009	8	–	–	–	●	–	–	–	–	–
SPHX1205PCTRGPBK	.259	.217	.028	.009	8	–	–	–	–	–	–	–	–	●


SPHX-GP4S

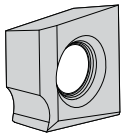


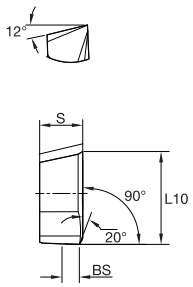
SPHX-GP4S

SPHX-GP4S • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCERGP4SB	.436	.217	.028	.001	4	–	●	●	–	–	–	–	–	–
SPHX1205PCTRGP4SBK	.436	.217	.028	.009	4	–	–	–	–	–	–	–	–	●

Face Milling


SPHX-GN1WB
SPHX-GN1WBK



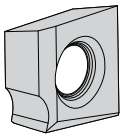
SPHX-GN1WB
SPHX-GN1WBK

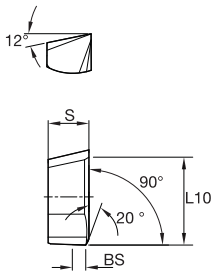
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P							○	●		
M							○	●		
K		●	●	●	○	○			●	●
N										
S							○	●		
H										

SPHX-W • Finishing • GN

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCERGN1WB	.433	.205	.079	.002	1	–	–	–	–	●	–	–	–	–
SPHX1205PCERGNT1WB	.500	.217	.079	.001	1	–	–	–	–	–	–	–	●	–
SPHX1205PCFLGN1WB	.433	.217	.079	.001	1	–	–	●	–	–	–	–	–	–
SPHX1205PCFRGN1WB	.433	.205	.079	.001	1	–	●	●	●	–	–	●	–	–
SPHX1205PCFRGN1WBK	.433	.205	.079	.001	1	–	–	–	–	–	–	–	–	●


SPHX-GP1WB



SPHX-GP1WB

SPHX-W • Finishing • GP

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCELGPB	.259	.217	.028	.001	8	–	–	●	–	–	–	–	–	–
SPHX1205PCER-GP1WB	.433	.217	.079	.001	1	–	●	●	–	–	–	–	–	–
SPHX1205PCTR-GP1WBK	.433	.217	.079	.009	1	–	–	–	–	–	–	–	–	●

NOTE: SPHX-W-GP: Wiper Facet BS = .08".

Recommended Starting Feeds

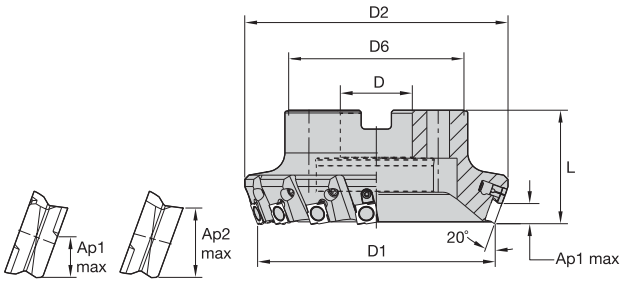
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GPB	.005	**.019**	.033	.003	**.013**	.023	.003	**.010**	.018	.002	**.009**	.015	.002	**.008**	.014	.E..GPB
.T..GPB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.T..GPB
.S..GPB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GPB

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Eight cutting edges per insert.



Ap1max: .256" (8 edges)
Ap2 max: .374" (4 edges); reduce feed rate by 30%

Fix-Perfect 20° • Shell Mills

order number	catalog number	D1	D	D2	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1806847	**125B08RP70SP15C2WUFP**	5.000	1.500	5.559	3.807	2.375	.256	8	2	7.00	3500
1806848	**160B10RP70SP15C2WUFP**	6.000	2.000	6.559	4.877	2.375	.256	10	2	10.40	2800

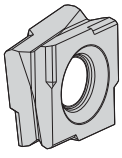
Spare Parts

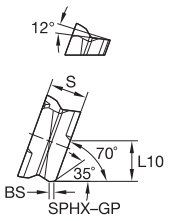
D1	adjusting element	adjusting element screw	Torx wrench	clamp stud	clamp screw	hex wrench	in. lbs.
5.000	**479.100**	**193.300**	**KT9**	**410.084**	**121.616**	**170.003**	45
6.000	**479.100**	**193.300**	**KT9**	**410.084**	**121.616**	**170.003**	45

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KCK15	**.E..GP**	**KCK15**	.E..GP	KCK15
K3	.E..GP	KCK15	**.E..GP**	**KCK15**	.S..GP	KCPK30
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX–GP



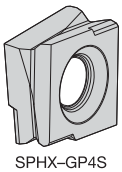
SPHX–GP

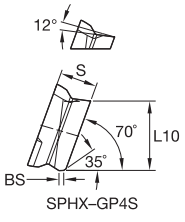
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-GP • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCERGP	.257	.260	.047	.001	8	–	–	●	–	●	–	–
SPHX15T6ZCSRGP	.257	.260	.047	.006	8	●	–	–	–	●	–	–
SPHX15T6ZCTRGPK	.256	.260	.047	.009	8	–	–	–	–	–	–	●

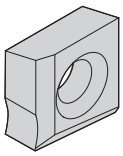

SPHX–GP4S

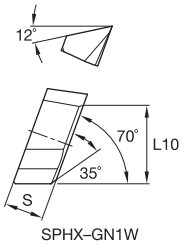


SPHX–GP4S

SPHX-GP4S • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCERGP4S	.492	.260	.047	.002	4	–	–	●	–	–	–	–
SPHX15T6ZCTRGP4SK	.493	.260	.047	.009	4	–	–	–	–	–	–	●


SPHX–GN1W



SPHX–GN1W

● first choice
○ alternate choice

	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P							
M							
K	●	●	●	○	○	●	●
N							
S							
H							

SPHX-GN1W • Finishing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCFRGN1W	.433	.260	.106	.001	1	–	–	●	–	–	–	–

Recommended Starting Feeds

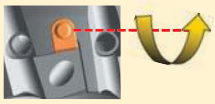
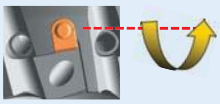
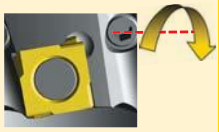
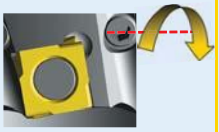
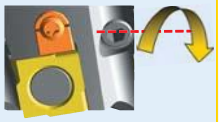
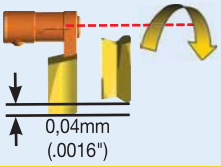
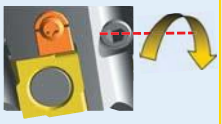
Recommended Starting Feeds [IPT]

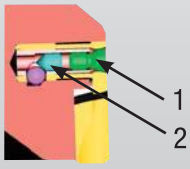
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	.005	**.020**	.035	.004	**.014**	.025	.003	**.011**	.019	.002	**.009**	.016	.002	**.009**	.015	.E..GP
.S..GP	.010	**.025**	.040	.007	**.018**	.029	.005	**.013**	.021	.005	**.012**	.019	.004	**.011**	.017	.S..GP

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Introduction to Fitting Cutting Bodies

procedures:	roughing		roughing/finishing	
	 fixed pocket	 adjustable pocket	 fixed pocket	 adjustable pocket
1 Reset adjusting element T x T9	–		–	
2 Insert roughing insert Tighten SW 3 M_{An} = 44 in. lbs.				–
3 Tighten adjusting element gently	–		–	–
4 Insert finishing insert and pre-tighten SW 3 M_{VG} = 9 in. lbs.	–	–	–	
5 The finishing insert is positioned .0016" in front of the highest roughing insert	–	–	–	
6 Tighten the finishing insert M_{An} = 44 in. lbs.	–	–	–	



NOTE: This process must be repeated whenever an indexable insert is changed. The ball is loose.

Changing the adjusting element
1. Remove the taper screw①
2. Loosen the SW 1,5 screw②
3. Remove the adjusting element.

ATTENTION: The maximum permissible cutting speed of the milling cutter heads is vc max = 3000 SFM. Only use original parts when clamping the indexable inserts.

Next Generation of HexaCut™

Milling Inserts Are Now Available for Roughing and Semi-Finishing of Cast Iron Materials

Primary Application

The Kennametal HexaCut face milling program is specifically engineered for rough and semi-finish face milling of cast, ductile, and compacted graphite iron. Twelve cutting edges drastically reduce your cost per edge and increase tool life. Shorter setup times and excellent cutter accuracy allow you to apply the HexaCut program to the most demanding jobs. One ceramic and eight carbide grades with six insert geometries deliver high feed rates and will enable you to reach optimum horsepower.

Features and Benefits

- New insert topographies for existing HexaCut platform with latest cutting edge design.
- Specifically engineered for rough and semi-finish face milling of cast, ductile, and compacted graphite iron.
- Up to 20% better tool life and 10% less power consumption.
- High precision ground on insert IC to achieve a better axial and radial runout.
- First HexaCut roughing insert with integrated wiper facet for better floor finish.

New Standard Insert Offering for HexaCut™ Series

Roughing and semi-finishing of automotive engine blocks and other cast iron face milling operations.

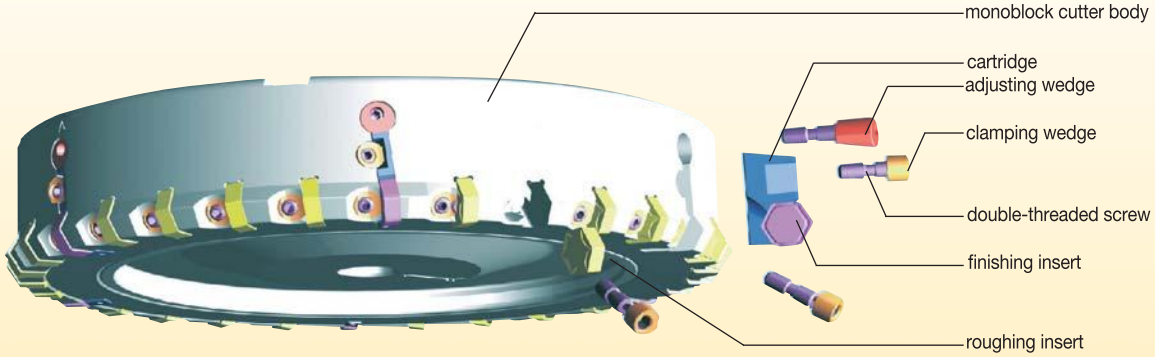
HNHX0905..ENLE
New geometry for semi-finishing and light roughing operations.

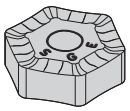
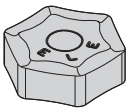
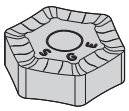
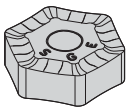
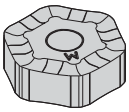
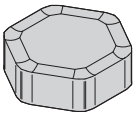
HNHX0905ANSNGE
New geometry for roughing; integrated wiper facet for advanced floor finish.

HNHX0905..SNGE
New geometry with improved rake and edge prep design for roughing operations.

HNPX0905..SNGE
New stable geometry for heavy roughing in severe machining conditions.

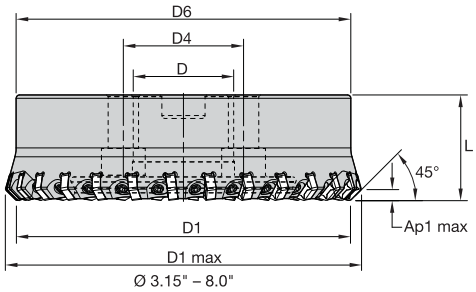
HexaCut 30° Cutter Body Design with Fixed and Adjustable Pocket Seats



			▼= roughing indexable insert						▼▼ = finishing indexable insert
									
Recommended combination of standard indexable inserts and geometries			HNGX 090516 -SNGE Z = 12	HNHX 090516 - ENLE Z = 12	HNHX 090520 -ENLE Z = 12	HNHX 090520 -SGE Z = 12	HNHX 090530 -SNGE Z = 12	HNHX 0905 -ANSNGE Z = 12	HNGF 090504 -MF Z = 12
Operation	Lead	Ap max							
▼/▼▼	45°	.256"	■ OR	■ OR	■ OR	■	■	■	
▼	30°	.315"	■ OR	■ OR	■ OR	■	■		
▼▼	30°	.040"		■	■ OR	■ OR	■		■
▼/▼▼	30°	.315"	■ OR	■ OR	■ OR	■	■		

NOTE: Z = number of cutting edges.

- Monoblock cutter design.
- Twelve cutting edges per insert.
- High feed rates.
- CGI milling solution.



HexaCut Shell Mills • Monoblock Cutter Design • Right Hand

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
2402838	**K400B14RF45HN09C**	4.000	4.500	1.250	4.000	1.970	.256	14	5.00	3400
2402839	**K500B18RF45HN09C**	5.000	5.500	1.500	5.000	2.380	.256	18	10.00	3000

NOTE: Split case design with adapter flange for D1 = 10" and D1 = 12" can be ordered as preferred custom solution standard.

Spare Parts

				
D1	**wedge**	**wedge screw**	**in. lbs.**	**wrench**
4.000	**12748358200**	**12748600900**	62	**12148044900**
5.000	**12748358200**	**12748600900**	62	**12148044900**

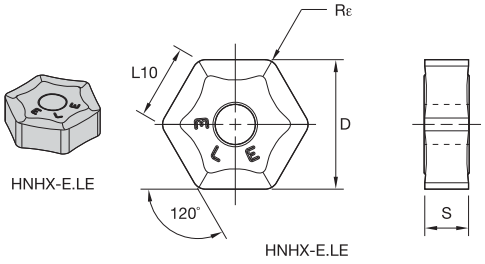
NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KCK15	**.S..GE**	**KCK15**	.S..GE	KCK15
K3	.E..LE	KCK15	**.S..GE**	**KC514M**	.S..GE	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • HexaCut • HN..0905...

- For semi-finishing and light roughing operations.



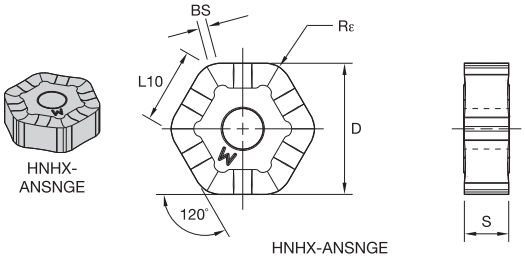
● first choice
○ alternate choice

P							
M							
K	●	●	●	●	●	●	●
N							
S							
H							

HNHX-E.LE

catalog number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX5354ENLE	.638	.219	.368	.063	.002	12	●	●	–	–	–	–
HNHX5355ENLE	.638	.219	.368	.079	.002	12	●	●	–	–	–	–

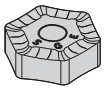
- Roughing geometry with integrated wiper facet for advanced floor finish.

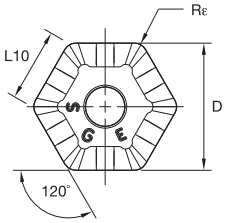


HNHX-ANSNGE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX53ANSNGE	.638	.219	.351	.044	.047	.006	12	●	●	–	–	–	–

• Roughing geometry with improved rake design for lower cutting forces.


HNHX-S.GE



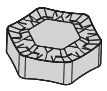
HNHX-S.GE

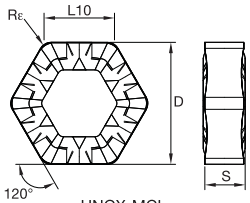
● first choice
○ alternate choice

P	
M	
K	● ● ● ● ● ●
N	
S	
H	

HNHX-S.GE

catalog number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX5354SNGE	.638	.219	.368	.063	.006	12	●	●	–	–	–	–
HNHX5355SNGE	.638	.219	.368	.079	.006	12	●	●	–	–	–	–
HNHX5358SNGE	.638	.219	.368	.118	.006	12	–	●	–	–	–	–

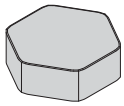

HNGX-MCI

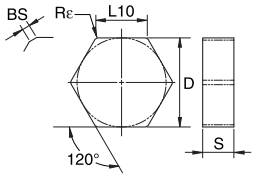


HNGX-MCI

HNGX-MCI

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNGX5358MCI	.638	.219	.368	—	.118	.002	12	–	●	–	–	–	–


HNEN-SN

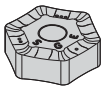


HNEN-SN

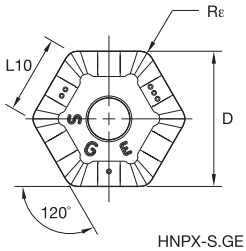
HNEN-SN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNEN090508S	.625	.219	.361	—	.031	.008	12	–	–	–	–	–	●
HNEN0905ANSN	.625	.222	.361	—	—	.008	12	–	–	–	–	●	●
HNEN0905XNSN	.638	.219	.368	.051	—	.008	12	–	–	–	–	–	●

- Heavy roughing geometry for severe machining conditions.



HNPX-S.GE



HNPX-S.GE

● first choice
○ alternate choice

		KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
P							
M							
K		●	●	●	●	●	●
N							
S							
H							

HNPX-S.GE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNPX5354SNGE	.638	.219	.368	–	.063	.006	12	–	●	–	–	–	–
HNPX5355SNGE	.638	.219	.368	–	.079	.006	12	–	●	–	–	–	–
HNPX5358SNGE	.638	.219	.368	–	.118	.006	12	–	●	–	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...MCI	.010	**.026**	.046	.007	**.019**	.033	.006	**.014**	.025	.005	**.012**	.021	.004	**.011**	.020	...MCI
.E..LE	.010	**.025**	.046	.007	**.018**	.033	.006	**.014**	.025	.005	**.012**	.021	.004	**.011**	.020	.E..LE
.S..GE	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GE
...SN	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	...SN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Adjustment Instructions

Before Being Used for the First Time

- The milling cutter must be carefully cleaned of anti-corrosive materials, dust, etc.
- The milling cutter should only be washed when all components have been dismantled.
- Only the double-threaded screws of the clamping or adjusting wedge should be lubricated with copper grease; all other components must have clean metallic surfaces.
- A torque wrench is recommended to tighten the double-threaded screws.
- When fitting indexable inserts on the milling cutter, ensure that they are inserted in the correct position in a clean insert seat and that they are held in position during clamping.

For 45° Roughing Mills without Anvils

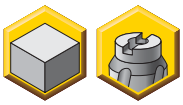
- The double-threaded screws on the clamping wedges for the indexable inserts are first pre-tightened to approximately 17 in. lbs. and then tightened to a final torque of 62 in. lbs.

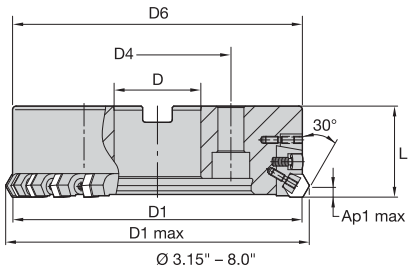
ATTENTION

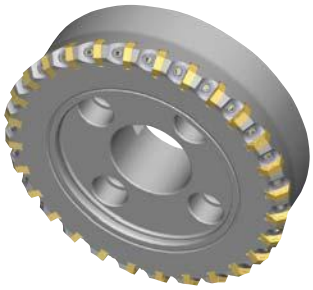
At each tool adjustment, the body, indexable inserts, and spare parts must be checked and replaced, if necessary. Before each tool use, the double-threaded screws of the indexable inserts and the stops must be tightened in the specified order to a torque of 62 in. lbs. In addition, even if the cartridges have not been adjusted, the double-threaded screws of the adjusting wedges must be checked to see if these have been tightened to a torque of 26 in. lbs. If not, they must be re-tightened to this torque.

NOTE: The tools must only be used in accordance with their function. We accept no liability for their improper use. Changes of any kind and/or printing errors are not valid grounds for claims.

- CGI milling solution.
- Monoblock cutter design.
- High feed rates.
- Twelve cutting edges.



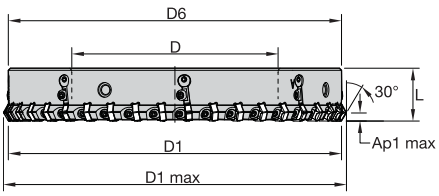




HexaCut Shell Mills • Monoblock Cutter Design with Adjustable Pockets • Right Hand

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
2430830	**K315A62RF60HN09C**	3.150	3.490	1.000	3.150	2.000	.315	8	2	3.50	3900
2430931	**K600B164RF60HN09C**	6.000	6.340	2.000	6.000	2.380	.315	20	4	15.80	2600

NOTE: Split case design with adapter flange for D1=10" and D1=12" can be ordered as preferred custom solution standard.



HexaCut Shell Mills • Split Case Design

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
6202335	**K1200Z328RF60HN09WSC**	12.000	12.369	7.677	12.000	1.969	.300	40	8	25.87	1800

NOTE: For carrier flange assembly order number, please see page S31.

Spare Parts

D1	clamp wedge	axial adjustment wedge	wedge screw	lbs	wrench
3.150	**12748358200**	**12748308500**	**12748600900**	4	**12148044900**
6.000	**12748358200**	**12748308500**	**12748600900**	16	**12148044900**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

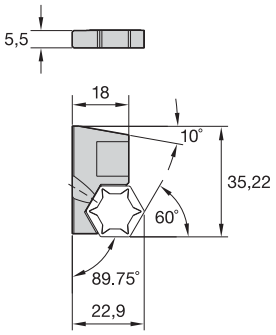
Setup for Roughing:

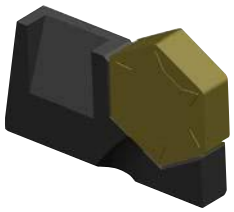
For a cutting depth of <.315" and an achievable surface finish of Ra >3,2.

High-performance roughing:
HNHX0905ANSNGE, HNHX090516SNGE,
HNHX090520SNGE, HNHX090530SNGE, HNPX090516SNGE,
HNPX090520SNGE HNPX090530SNGE, HNEN0905XNSN.

Semi-finishing and light machining:
HNHX090516ENLE, HNHX090520ENLE, HNHX090530ENLE.

Same inserts to be loaded into fixed and adjustable (cartridges) pockets.





order number	catalog number
2018164	12748500200

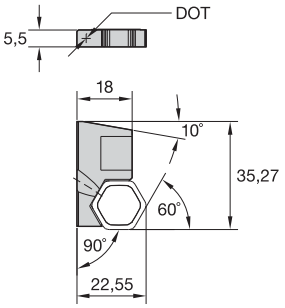
NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

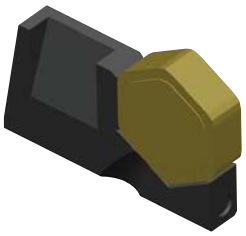
Setup for Finishing:

For a cutting depth of <.039" and an achievable surface finish of Ra 1,6.

Semi-finishing insert:
HNHX090520ENLE (loaded into fixed pocket seats) .

Finishing wiper insert:
HNGF090504MF, HNGF090512MF (loaded into finishing cartridge).





order number	catalog number
2018166	12748500400

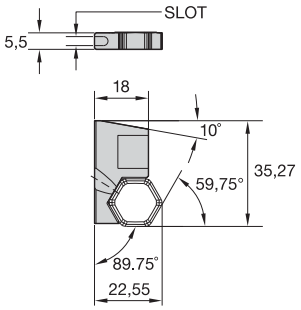
NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

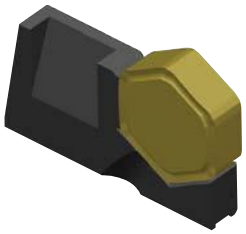
Setup for Finishing Cartridge for Low Axial Cutting Forces: (Reduced Lead Angle to Support Increased Clearance on the Wiper Edge).

For a cutting depth of <.039" and an achievable surface finish of Ra 1,6.

Semi-finishing insert:
HNHX090520ENLE (loaded into fixed pocket seats)

Finishing wiper insert:
HNGF090504MF, HNGF090512MF (loaded into finishing cartridge).





order number	catalog number
2033468	12748503400

NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

CBN Cartridge

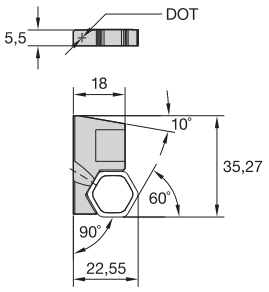
For a cutting depth of <1mm and an achievable surface finish of Ra 1,6.

Semi-finishing insert:

HNEN0905AMSN KY3500 (loaded into fixed pocket seats).

Finishing wiper insert:

HNEN905ANSN KD200 (loaded into finishing cartridge).

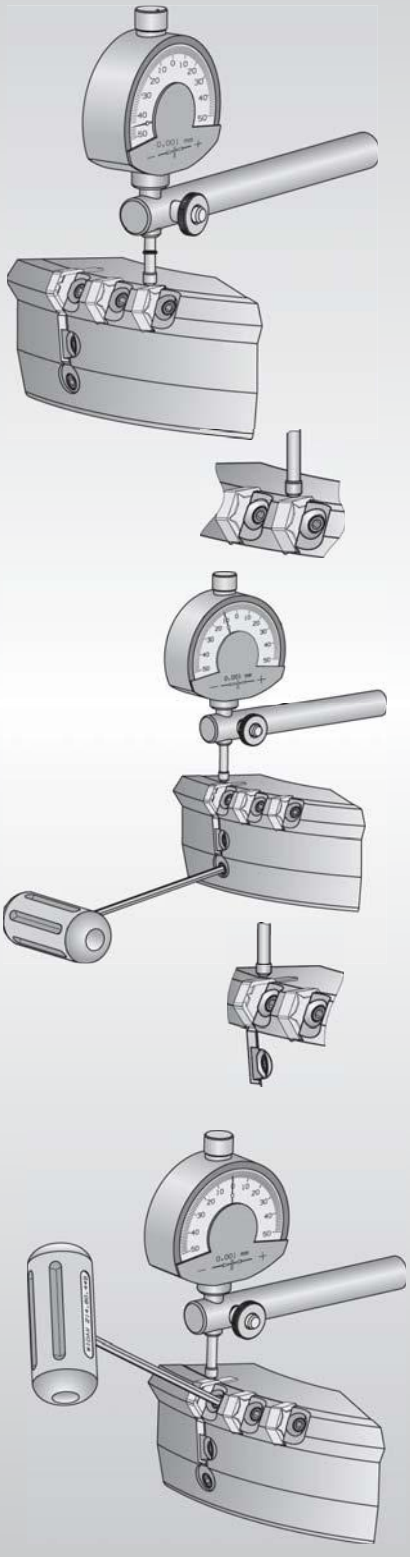


order number	catalog number
3400879	12748500500

Insert setting procedure

This procedure is to be used on all 30° lead roughing/finishing mills using the unmarked roughing cartridge, the finishing cartridge (marked •) and the corrected edge cartridge (marked ▬). These steps must be followed when adjusting the cutters for finishing inserts.

1. Clean all insert pockets.
2. Mount all wedges and cartridges. Torque the cartridge lock wedge screw to 26 in. lbs.
3. Mount all inserts, making sure they are seated properly in the pocket, and torque the insert lock wedge screws to 26 in. lbs.
4. Torque the wedge screws for all fixed pocket inserts to 62 in. lbs.
5. Loosen the cartridge insert wedge screw and the cartridge lock wedge screw.
6. Pressing the insert into the cartridge pocket, adjust the cartridge to .008–.012" below the fixed pocket inserts.
7. Torque the insert lock wedge screw and the cartridge lock wedge screw to 26 in. lbs.
8. Adjust the axial position to .0010–.0015" above the fixed pocket inserts.
9. Loosen the cartridge insert lock wedge screws and then re-torque to 26 in. lbs.
10. Adjust the axial position to the final dimension, .0015–.0020" above the highest fixed pocket insert.
11. Torque the insert lock wedge screws and the cartridge lock wedge screws to 62 in. lbs.
12. Conduct a final check of the axial runout and position.



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The KSSR™ 6° Inserts

Primary Application

The Kennametal new line of KSSR 6° inserts are versatile, easy to use, and right- or *left-hand neutral, making them ideal for automotive machining operations or any other industry that relies on transfer line manufacturing. Available in carbide and ceramic grades for applications in cast and ductile irons and alloy steels, KSSR 6° inserts can be used for all fine and coarse pitch styles.

*Left-hand cutters are available as non-stock standard.

Features and Benefits

KSSR 6° Features

- Available in metric and inch products, diameters from 2.5–4"; for larger diameter custom solution is available.
- Fine and coarse pitch styles.
- Easy to use and to adjust with shorter setup time.
- Wiper inserts in carbide and ceramic provide excellent surface quality.

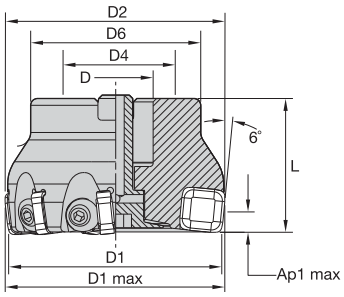
Improved Versatility

- Proven solution for the automotive segment.
- Right- and *left-hand cutters, ideal for transfer lines.
- Premium grades in carbide and ceramic for applications in cast and ductile irons and alloy steels.
- Inserts are neutral and can be used for right- or left-hand cutting.

Unrivaled Benefits

- Capability: .20" maximum depth of cut.
- Excellent accuracy:
  Radial = +/- .0001"
  Axial = adjustable +/- .0001"
- Inserts have eight true cutting edges.

- Eight cutting edges per insert.
- Fast and easy insert indexing.
- Highest feed rates.
- CGI specialist.



KSSR 6° • Shell Mills • Right Hand • Fixed Pockets

order number	catalog number	D1	D1 max	D	D2	D6	L	Ap1 max	Z	lbs	max RPM
2476832	**KSSR250SN434M3**	2.500	2.579	.750	2.520	1.770	1.500	.200	9	1.10	7500
2476963	**KSSR300SN434M4**	3.000	3.079	1.000	3.017	2.200	1.750	.200	11	1.98	6300
2476964	**KSSR400SN434M5**	4.000	4.079	1.250	4.014	2.870	1.750	.200	15	3.08	4700

NOTE: Coolant screw and coolant cap must be ordered separately.
2466094 and 2466095 are non-stock standard.

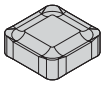
Spare Parts

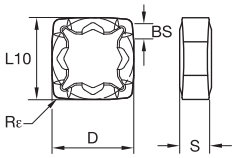
D1	 clamp wedge	 wedge screw	 in. lbs.	 wrench
2.500	**12748358200**	**12748600900**	62	**12148044900**
3.000	**12748358200**	**12748600900**	62	**12148044900**
4.000	**12748358200**	**12748600900**	62	**12148044900**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LD	KCK15	**.S..GP**	**KCK15**	.S..HE	KCK15
K3	.E..LD	KCK20	**.S..GP**	**KCK20**	.S..HE	KCK20
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SNXF-LD



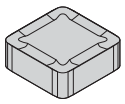
SNXF-LD

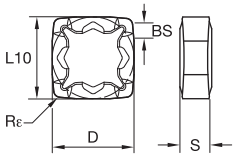
● first choice
○ alternate choice

P	
M	
K	●
N	
S	
H	

SNXF-LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433ENLD	.500	.180	.500	–	.047	.002	8	●	●	●	●	●	–
SNXF43ZNENLD	.500	.174	.500	.067	.063	.002	8	●	●	●	●	●	–

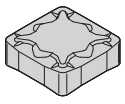

SNXF-GP

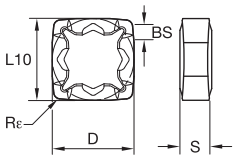


SNXF-GP

SNXF-GP

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433SNGP	.500	.184	.500	–	.047	.002	8	●	●	●	●	●	–
SNXF43ZNSNGP	.500	.184	.500	.040	.047	.003	8	●	●	●	●	●	–

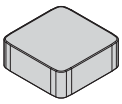

SNXF-HE

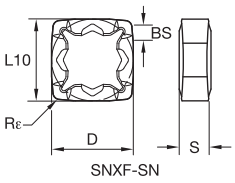


SNXF-HE

SNXF-HE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433SNHE	.500	.183	.500	–	.047	.002	8	–	●	●	●	●	–
SNXF43ZNSNHE	.500	.183	.500	.039	.047	.002	8	●	–	●	●	●	–


SNXF-SN



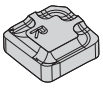
SNXF-SN

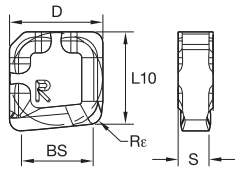
● first choice
○ alternate choice

P	
M	
K	
N	
S	
H	

SNXF-SN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433AMSN	.500	.187	.500	—	.047	.008	8	–	–	–	–	–	●
SNXF43ZNAMSN	.500	.187	.500	.039	.047	.008	8	–	–	–	–	–	●

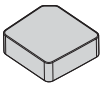

XNXF-LDW

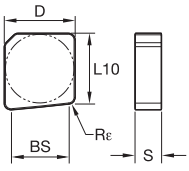


XNXF-LDW

XNXF-LDW

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
XNXF43ZNENLDW	.500	.174	.500	.374	.063	.002	2	–	–	●	–	–	–


XNXF-ENW



XNXF-ENW

XNXF-ENW

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
XNXF43ZNENW	.500	.188	.500	.374	.047	.008	2	–	–	–	–	–	●

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	.007	**.018**	.033	.005	**.013**	.024	.004	**.010**	.018	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.S..GP	.008	**.020**	.036	.006	**.015**	.026	.004	**.011**	.019	.004	**.009**	.017	.003	**.009**	.015	.S..GP
.S..HE	.007	**.020**	.038	.005	**.015**	.027	.004	**.011**	.020	.003	**.010**	.018	.003	**.009**	.016	.S..HE
.A..SN	.009	**.023**	.038	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.018	.004	**.010**	.016	.A..SN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Kennametal Tools for **Railways** and **Wheel Machining**

Kennametal offers a complete line of tooling for wheel and axle maintenance in railroad shops. All tools incorporate the latest technology for maximum metal removal and higher productivity. They are proven performers in actual use over extended periods of time, under a wide range of operating conditions. Standard off-the-shelf inserts and fewer pieces of hardware reduce inventory and operating costs. Included in this range are tools for reconditioning mounted wheel sets, wheel boring, wheel truing, axle turning, and journal burnishing.

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KENNAMETAL®

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MEGA 45°

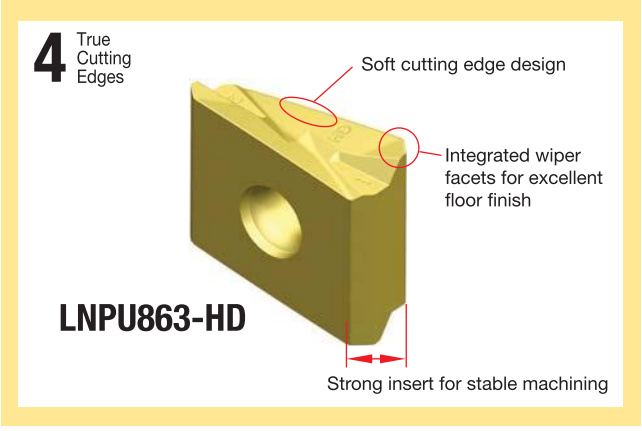
Superior Heavy-Duty Milling

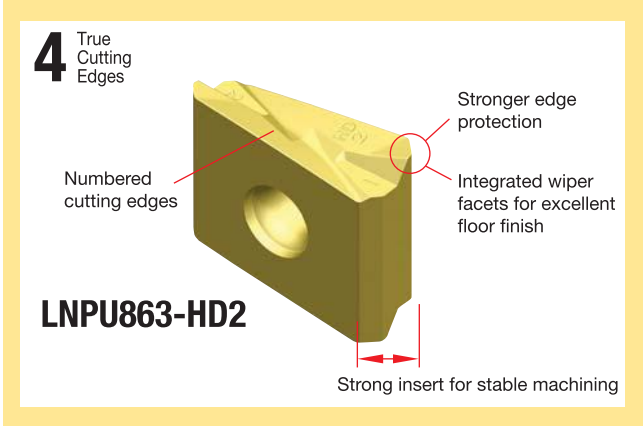
Primary Application

With four true cutting edges per heavy-duty MEGA 45° insert, you are getting the low cost per edge and high productivity you need and have come to expect from Kennametal. The soft cutting edge design enables 30% lower cutting forces, and the carbide shim provides protection to the cutter body. Choose MEGA 45° inserts for all steel and cast iron indexable milling needs.

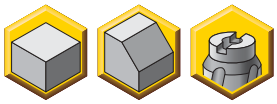
Features and Benefits

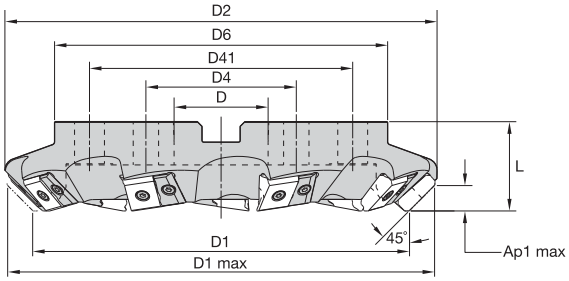
Features	Benefits
• Four true cutting edges per heavy-duty MEGA 45° insert.	• Low cost per edge and high productivity.
• Soft cutting edge design.	• 30% lower cutting forces.
• Up to 30% increased Metal Removal Rates (MRR).	• Performance leader in steel and cast iron materials.
• Carbide pocket shims.	• Excellent cutter body protection.
• Cutting edge numbering system.	• Improved run out for better tool life and floor finish.
• HD2 geometry.	• Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.

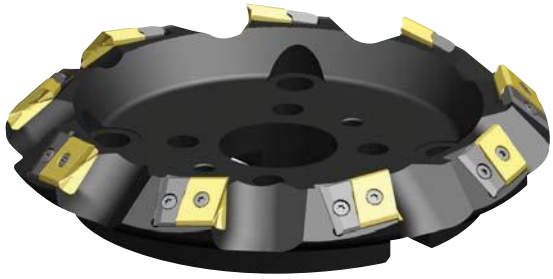

4 True Cutting Edges
Soft cutting edge design
Integrated wiper facets for excellent floor finish
LNPU863-HD
Strong insert for stable machining


4 True Cutting Edges
Stronger edge protection
Numbered cutting edges
Integrated wiper facets for excellent floor finish
LNPU863-HD2
Strong insert for stable machining

- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.





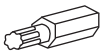


MEGA 45 • Shell Mills

order number	catalog number	D1	D1 max	D	D2	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4032274	**MEGA45D500LN863M6**	5.000	6.391	1.500	6.700	—	—	3.810	2.375	.675	6	9.18	12520
4032277	**MEGA45D800LN863M10**	8.000	9.392	2.500	9.550	4.000	—	6.500	2.375	.675	9	19.86	9890
4105177	**MEGA45D1000LN863C10**	10.000	11.392	2.500	11.500	4.000	7.000	8.858	2.375	.675	9	28.04	8850
4032278	**MEGA45D1000LN863M10 ***	10.000	11.392	2.500	11.500	4.000	7.000	8.858	2.375	.675	11	29.05	8850
4105178	**MEGA45D1200LN863C10**	12.000	13.392	2.500	13.500	4.000	7.000	8.858	3.150	.675	10	47.50	8080
4032279	**MEGA45D1200LN863M10**	12.000	13.392	2.500	13.500	4.000	7.000	8.858	3.150	.675	13	48.82	8080

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	 insert screw	 in. lbs.	 shim	 universal bit torque driver	 drive bit
5.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
8.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
10.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
12.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim

catalog number
SM-906LH

NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions. Please refer to the Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

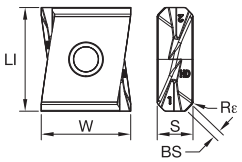
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPK30**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPK30	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
S3	.S..HD	KC725M	**.S..HD2**	**KCPM40**	.S..HD2	KCSM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–

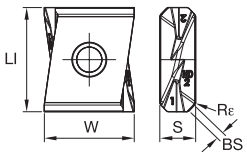
Indexable Inserts


LNPU-HD


LNPU-HD2



LNPU-HD



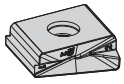
LNPU-HD2

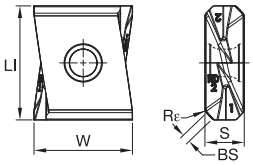
● first choice
○ alternate choice

P			●		●	●	○
M						○	●
K		●		●	○		
N							
S							●
H							

LNPU-HD

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU863ANSRHD	1.142	.088	.985	.047	.394	.009	4	–	●	●	●	–	–
LNPU863ANSRHD2	1.142	.088	.986	.047	.394	.009	4	–	–	–	●	●	●


LNPU-HD2



LNPU-HD2

LNPU-HD2 • Left Hand

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU863ANSLHD	1.142	.088	.985	.047	.394	.009	4	–	–	–	●	●	–
LNPU863ANSLHD2	1.142	.088	.986	.047	.394	.009	4	–	–	–	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	.013	**.033**	.053	.009	**.023**	.038	.007	**.018**	.028	.006	**.015**	.024	.006	**.014**	.022	.S..HD
.S..HD2	.013	**.036**	.060	.009	**.026**	.043	.007	**.019**	.032	.006	**.017**	.028	.006	**.015**	.025	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

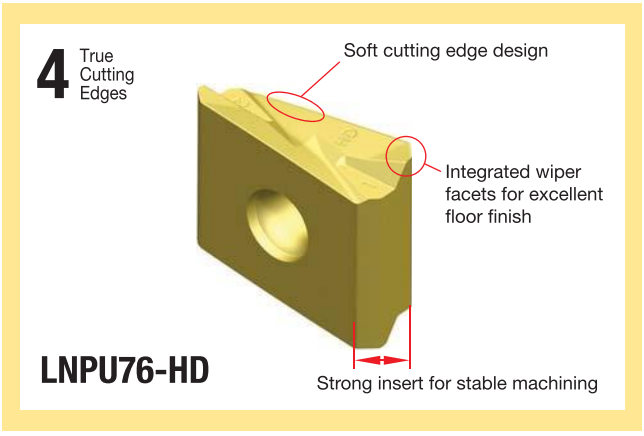
MEGA 60 and 90

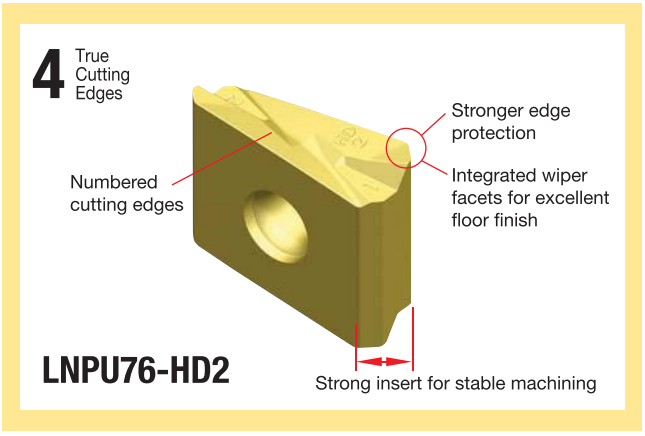
Primary Application

The real performance booster in heavy-duty milling. With four true cutting edges per heavy-duty insert, you are getting the low cost per edge and high productivity you need and have come to expect from Kennametal. The soft cutting edge design enables 30% lower cutting forces, and the carbide shim provides protection to the cutter body. Choose MEGA 60 and MEGA 90 for all steel and cast iron indexable milling needs.

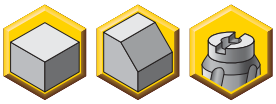
Features and Benefits

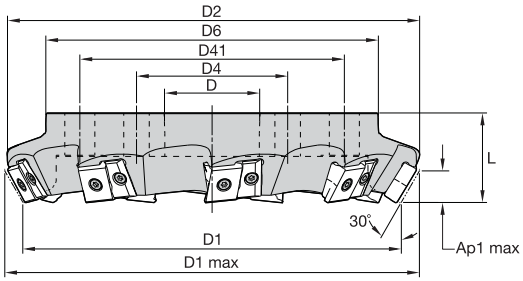
Features	Benefits
• Four true cutting edges per heavy-duty MEGA 60 and 90 insert.	• Low cost per edge and high productivity.
• Soft cutting edge design.	• 30% lower cutting forces.
• Up to 30% increased Metal Removal Rates (MRR).	• Performance leader in steel and cast iron materials.
• Carbide pocket shims.	• Excellent cutter body protection.
• Cutting edge numbering system.	• Improved runout for better tool life and floor finish.
• HD2 geometry.	• Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.


4 True Cutting Edges
Soft cutting edge design
Integrated wiper facets for excellent floor finish
LNPU76-HD
Strong insert for stable machining


4 True Cutting Edges
Stronger edge protection
Numbered cutting edges
Integrated wiper facets for excellent floor finish
LNPU76-HD2
Strong insert for stable machining

- Up to 30% higher metal removal rate (MRR).
- Cutter body protection with carbide shims.





MEGA 60 • Shell Mills

order number	catalog number	D1	D1 max	D	D2	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4147496	**MEGA60D500LN76M6**	5.000	5.982	1.500	6.181	—	—	3.810	2.375	.843	6	8.03	11040
4147497	**MEGA60D600LN76M8**	6.000	6.982	2.000	7.126	—	—	5.000	2.375	.842	7	11.07	10080
4147499	**MEGA60D800LN76M10**	8.000	8.981	2.500	8.976	4.000	—	6.500	2.375	.842	9	17.83	8720
4147523	**MEGA60D1200LN76M10** *	12.000	12.981	2.500	12.953	4.000	7.000	8.858	3.150	.841	13	41.92	7120

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	insert screw	in. lbs.	shim	universal bit torque driver	drive bit
5.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
6.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
8.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
12.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim

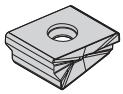
catalog number
SM-906LH

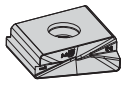
NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions. Please refer to the Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

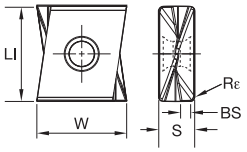
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPM40**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD**	**KC725M**	.S..HD2	KCSM40
S3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–

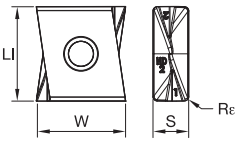
Indexable Inserts


LNPU-HD


LNPU-HD2



LNPU-HD



LNPU-HD2

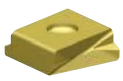
● first choice
○ alternate choice

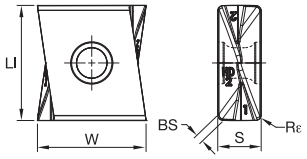
beyond

P			●		●	●	○
M						○	●
K		●		●	○		
N							
S							●
H							

LNPU-HD/-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSRHD	1.043	.091	.985	.047	.394	.009	4	–	●	●	●	●	–
LNPU763PNSRHD2	1.043	.091	.984	.047	.394	.009	4	–	–	–	●	●	●


LNPU-HD



LNPU-HD

LNPU-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSLHD2	1.043	.091	.984	.047	.394	.009	4	●	–	–	●	●	–

Recommended Starting Feeds

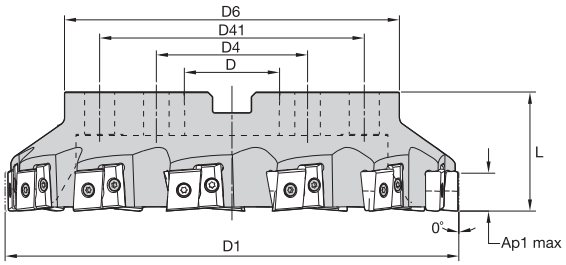
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	.011	**.027**	.043	.008	**.019**	.031	.006	**.014**	.023	.005	**.013**	.020	.005	**.012**	.018	.S..HD
.S..HD2	.011	**.027**	.048	.008	**.019**	.034	.006	**.014**	.025	.005	**.013**	.022	.005	**.012**	.020	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

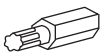
- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.



MEGA 90 • Shell Mills

order number	catalog number	D1	D	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4136381	**MEGA90D500LN76M6**	5.000	1.500	—	—	3.810	2.375	1.002	6	6.86	9990
4136382	**MEGA90D600LN76M8**	6.000	2.000	—	—	5.000	2.375	1.002	7	10.23	9120
4136385	**MEGA90D1000LN76C10**	10.000	2.500	4.000	—	6.500	2.375	1.002	9	22.48	7060
4136387	**MEGA90D1200LN76C10**	12.000	2.500	4.000	7.000	8.858	3.150	1.002	10	38.12	6440
4136388	**MEGA90D1200LN76M10**	12.000	2.500	4.000	7.000	8.858	3.150	1.002	13	38.21	6440

Spare Parts

D1	 insert screw	 in. lbs.	 shim	 universal bit torque driver	 drive bit
5.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
6.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
10.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
12.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

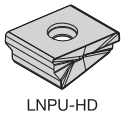
Left-handed shim

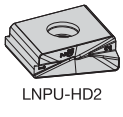
catalog number
SM-906LH

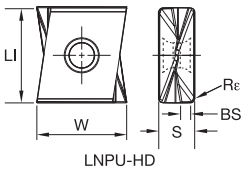
NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions. Please refer to the Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

Insert Selection Guide

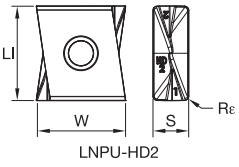
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPM40**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD**	**KC725M**	.S..HD2	KCSM40
S3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–


LNPU-HD


LNPU-HD2



LNPU-HD



LNPU-HD2

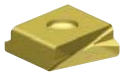
● first choice
○ alternate choice

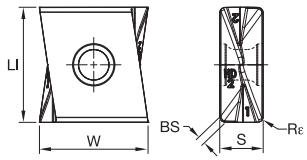
beyond

P			●		●	●	○
M						○	●
K		●		●	○		
N							
S							●
H							

LNPU-HD/-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSRHD	1.043	.091	.985	.047	.394	.009	4	–	●	●	●	●	–
LNPU763PNSRHD2	1.043	.091	.984	.047	.394	.009	4	–	–	–	●	●	●


LNPU-HD



LNPU-HD

LNPU-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSLHD2	1.043	.091	.984	.047	.394	.009	4	●	–	–	●	●	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	.009	**.023**	.037	.007	**.017**	.026	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..HD
.S..HD2	.009	**.023**	.041	.007	**.017**	.029	.005	**.013**	.022	.004	**.011**	.019	.004	**.010**	.018	.S..HD2

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KBDM PCD Face Mills

Indexable Milling

Application

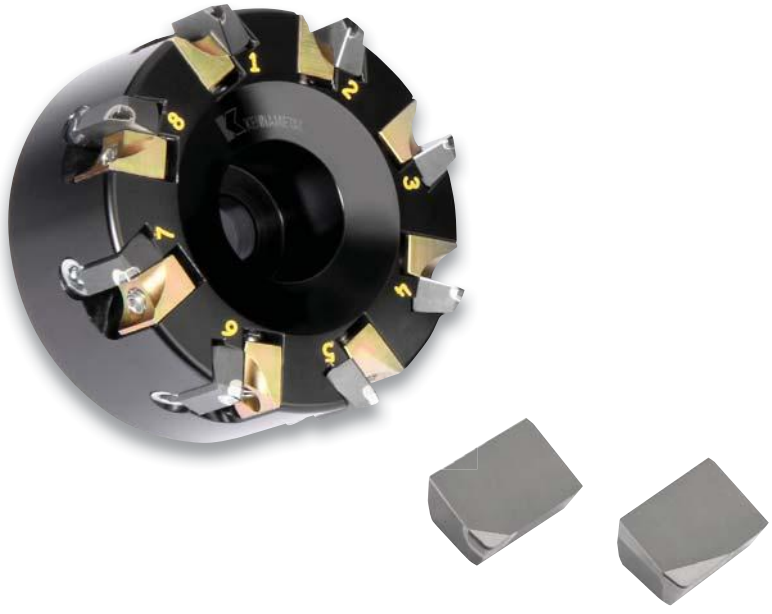
The new KBDM PCD milling platform is designed and engineered for aluminum face milling applications, targeting automotive requirements.

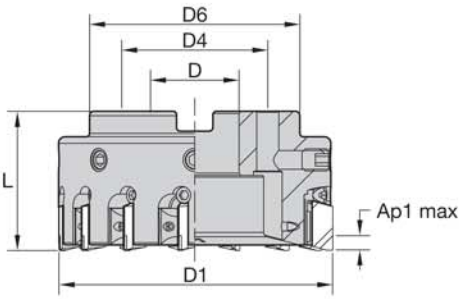
This proven design delivers consistent performance time and time again, and has done so for 20+ years. KBDM's new look, black anodized aluminum with yellow wedges, gives it a unique appearance. However, it's what is behind the cover that really matters. Performance is key, and KBDM does not disappoint.

Features and Benefits

- Cutter bodies manufactured from hard anodized aluminum provide lighter weight and excellent wear and erosion resistance.
- High-density platform geared toward faster machining cycles to help lower overall costs.
- All pockets are adjustable. Very-user friendly for axial adjustment less than 0.0002" (0,005mm), with a total adjustment of 0.032" (0,8mm).
- Two grades, KD1400™ and KD1425™, provide options in maximizing efficiencies based upon application.
- Roughing, semi-finishing, and fine-finishing with one platform.
- Two corner radii — 0.031 and 0.093" (0,8 and 2,4mm).
- Mini-tip insert for finishing applications.
- All standard inserts have a 0.06" (1,5mm) wiper facet for better surface qualities.
- Full face wiper available as a standard item.

Delivering Customer-Driven Performance for 20+ Years.





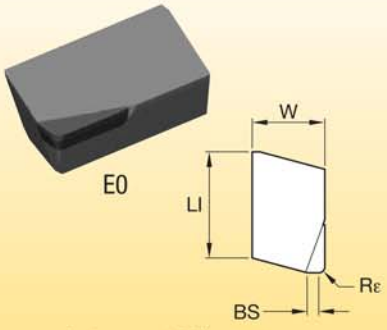
Face Mills

order number	catalog number	D1	D	D4	D6	L	Z	Z ADJ	lbs	max RPM
6044579	**KBDM250SD06**	2.500	1.000	–	2.441	2.000	6	6	1.00	20000
6044580	**KBDM300SD08**	3.000	1.000	–	2.190	2.000	8	8	1.40	20000
6044711	**KBDM400SD12**	4.000	1.250	–	2.875	2.000	12	12	2.50	17320
6044712	**KBDM500SD16**	5.000	1.500	–	3.812	2.375	16	16	4.40	15500
6044713	**KBDM600SD18**	6.000	1.500	–	3.812	2.375	18	18	7.00	14150
6044714	**KBDM800SD24**	8.000	2.500	4.000	5.000	2.375	24	24	1.40	12240

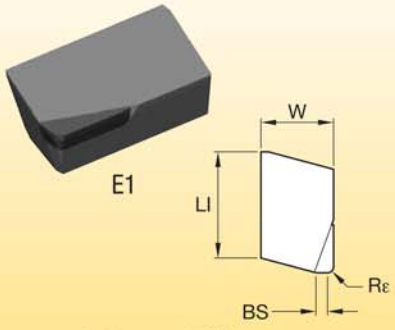
Spare Parts

D1	screw	wedge	wedgelock screw	coolant lock screw	coolant shower plate
2.500	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS25**	**–**
3.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS30**	**–**
4.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS40**	**–**
5.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS50**	**–**
6.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS6150**	**–**
8.000	**LS103**	**HDWM5EUS**	**SWSM515**	**–**	**SSP8**

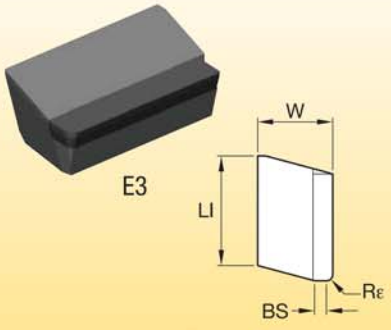
Technical Information • Ap1 max for PCD Inserts



Ap1 max .100"



Ap1 max .250"

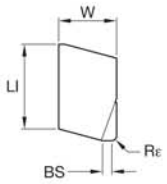


Ap1 max .500"

Insert Selection Guide • KBDM • Inch

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.KSDR.....	KD1400	**.KSDR.....**	**KD1400**	.KSDR.....	KD1400
N3	.KSDR.....	KD1400	**.KSDR.....**	**KD1425**	.KSDR.....	KD1425
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

E0



E0

● first choice
○ alternate choice

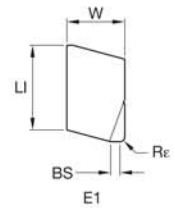
P		
M		
K		
N	●	●
S		
H		

PCD Inserts • KSDR Mini-Tip • E0

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E0W0S	.624	.375	—	.031	.001	●	●
KSDR100031E0W4S	.625	.375	.060	.031	.001	●	●

NOTE: For Mini-tip (E0), Ap1 max = .100".

E1



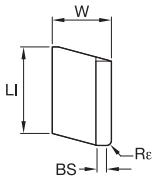
E1

PCD Inserts • KSDR • E1

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E1W4S	.625	.375	.060	.031	.001	●	●
KSDR100093E1W4S	.625	.375	.060	.093	.001	●	●

NOTE: For E1 inserts, Ap1 max = .250".

E3



E3

● first choice
○ alternate choice

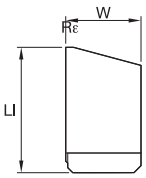
P			
M			
K			
N		●	●
S			
H			

PCD Inserts • KSDR • E3

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E3W4S	.625	.375	.060	.031	.001	●	●

NOTE: For Full Edge (E3), Ap1 max = .500".

KSDR



KSDR

PCD Inserts • KSDR Wiper

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR102S	.625	.375	.035	–	.001	●	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.KSDR.....	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.KSDR.....

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

PCD Custom Solutions for Indexable Milling

- Diameters up to 21.65" (550mm).
- Integral shank options, ie, HSK.
- Left-hand rotation.
- Internal coolant capable.
- PCD lengths up to 0.50" (12,7mm).
- Specific edge preps and nose radii available.

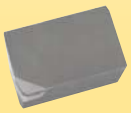
Insert Setting and Fine Adjustment Procedure

Face Mills

- Apply a small amount of lubricant to the following areas:
  - — Pocket area where the wedge slides.
  - — Threads of the insert locking screw.
  - — Threads of the axial adjustment screw.
- Install cartridges applying light torque to the wedge assembly locking screw.
- Turn axial adjustment screw until the cartridge is .0004–.0006" (0,01–0,015mm) below the final set height.
- Tighten the wedge assembly locking screw to 31 In/lbs and (4 Nm) to (3,5 Nm).
  - — 170.170 — Torque Screwdriver mm #**1138787**.
  - — 170.181 — 1/4" Drive Bit — 4mm Hex mm #**1138857**.
- Repeat for all inserts/pockets before final axial setting.
- Final Setting: Turn the axial adjustment screw moving the PCD insert 0.0002" (0,005um) to the final set height. Repeat for all pockets.

General

- Non-contact gages are preferred.
- Contact gages can be used with the following precautions:
  - — Indicator point must be flat and parallel to the base.
  - — Always approach the PCD insert from the relief angle under the PCD segment.
  - — Do NOT let the indicator drop on the PCD segment.
- Remove all worn PCD inserts.
- Clean the pockets of the cutter completely.



KBDM Wiper Setup

- Set Wiper 0.0006–0.0008" (15–20 microns) higher than standard PCD inserts. The KSDR102S Wiper is designed to be used only with 0.031 corner radius standard inserts in the other pockets.
- At this setting, the wiper radius will cover 0.28" (7,1mm) advancement before another wiper would be needed.
- Wiper radius is 30.0" (762mm).
- Ideal setup is to use only 1 wiper to achieve best surface quality. Use when Wt is a requirement.

Example: KBDM200SD24 Face Mill
Feed per tooth: 0.008" (0,2mm)
# of inserts: 24
Advancement per revolution:
Metric: 0,2 x 24 = 4,8mm
Inch: 0.008 x 24 = 0.192"
4,8mm < 7,1mm wiper length

NOTE: Large diameter cutters 10.0" (250mm) and up would be candidates for more than 1 wiper. Due to more inserts in the cutter, the advancement per revolution might exceed the coverage of 1 wiper.

The KSCM™ AluMill™ System

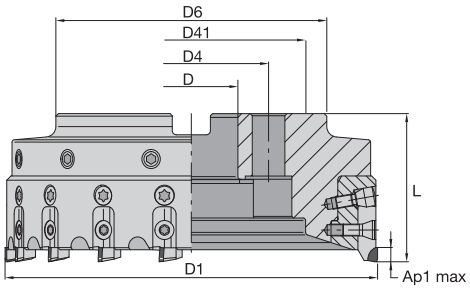
Primary Application

The KSCM AluMill face milling program is specifically engineered to deliver best-in-class performance in high-volume aluminum machining operations. Runs at higher speeds with no chatter while still easy to adjust. KD1420™ grade materials provide long tool life, and with the Kennametal Blue Box™ program for reconditioning worn cartridges, you can reduce inventory costs as well!

Features and Benefits

- Anti-vibration cutter design.
- Best rigidity for high feed rates.
- Unique dovetail wedge clamping design.
- No radial movement of cartridges.
- Centrifugal force protection cartridge design.
- Integrated chip gash into cartridge.
- Quick setup and easy adjust concept.
- Flexible cartridge configuration.
- No bur cartridges for fine finishing.
- Blue Box™ service.

- PCD cartridge face mill for high production aluminum face milling.
- Rough and finish in one operation.
- Precision balanceable cutter bodies produce mirror-finish surfaces.

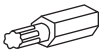


KSCM AluMill • Shell Mills

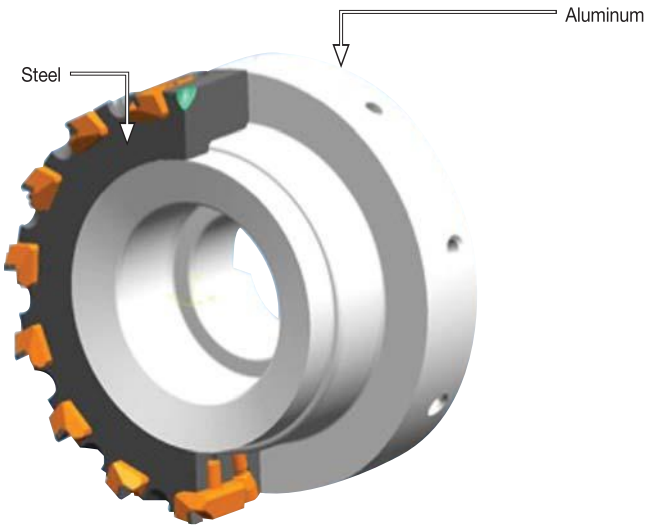
order number	catalog number	D1	D	D6	L	Z	Z ADJ	lbs	max RPM
2982056	KSCM125R16CAB40U	5.000	1.500	3.772	2.380	16	16	5.46	19100

NOTE: Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.

Spare Parts

D1	 cartridge screw	 drive bit	 coolant lock screw	 balancing screw
5.000	193.465	170.279	420.042	193.462

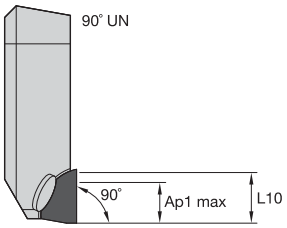
NOTE: All cutters are bi-metallic except the 3.00" (80mm) diameter.
Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.
Please order KSCM cutters bodies and cartridges separately.



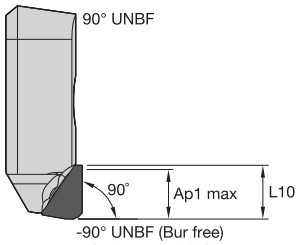
Cartridge Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	KCSM…	KD1420	**KCSM…**	**KD1420**	KCSM…	KD1420
N3	KCSM…	KD1420	**KCSM…**	**KD1420**	KCSM…	KD1420
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

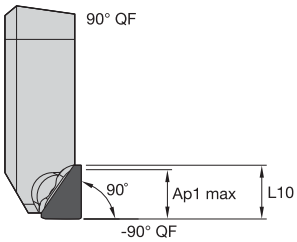
Cartridges • KSCM AluMill



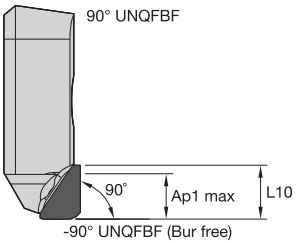
-90° UN
Ap1 max = .118"



-90° UNBF (Bur free)
Ap1 max = .118"



-90° QF
Ap1 max = .118"



-90° UNQFBF (Bur free)
Ap1 max = .118"

cartridge combination	ratio	max ap	surface quality
UN	—	.118	Rz 2–Rz 4
UN + QF	3:1	.118	Rz 1,5–Rz 2,5
PT + UN	X:1	.118	Rz 3,2–Rz 17

● first choice
○ alternate choice

		KD1400	KD1420
P			
M			
K			
N		●	●
S			
H			

Cartridges • KSCM AluMill • 90° -UN

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA90UN	0	.240	.001	–	●

Cartridges • KSCM AluMill • 90° -UNBF

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMA90UNBF	—	.244	—	●	●
KSCMCA90UNBF	0	.242	.001	–	●

NOTE: KSCMA90UNBF & KSCMA90QFBF should be the 1st choice solutions for KSCM PCD milling applications.
For setup instructions reference pages S117-S118.

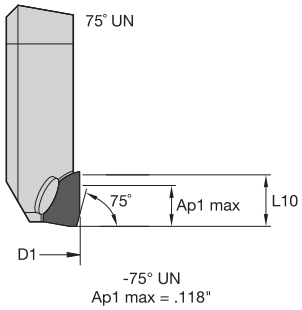
Cartridges • KSCM AluMill • 90° -QF

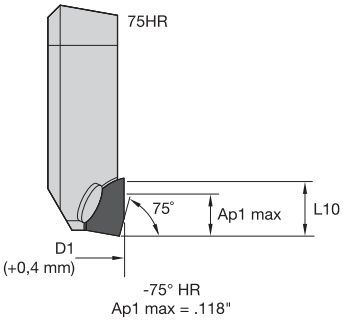
catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA90QF	0	.244	.001	–	●

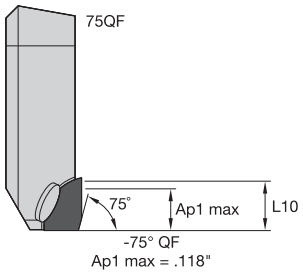
Cartridges • KSCM AluMill • 90° -QFBF

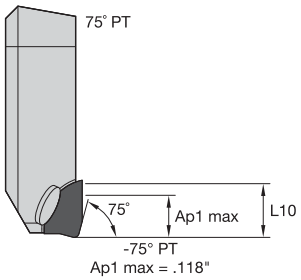
catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMA90QFBF	—	.244	—	●	●
KSCMCA90QFBF	0	.244	.001	–	●

NOTE: KSCMA: Blanks without PCD segment, if cutter is not fully loaded with cartridges.
For low horsepower machines and cutter configurations with less effective teeth.









● first choice
○ alternate choice

P	
M	
K	
N	● ●
S	
H	

Cartridges • KSCM AluMill • 75° -UN

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75UN	15	.240	.001	–	●

Cartridges • KSCM AluMill • 75° -HR

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75HR	15	.213	.001	–	●

Cartridges • KSCM AluMill • 75° -QF

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75QF	15	.240	.001	–	●

Cartridges • KSCM AluMill • 75° -PT

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75PT	15	.240	.001	–	●

NOTE: KSCMA: Blanks without PCD segment, if cutter is not fully loaded with cartridges.
For low horsepower machines and cutter configurations with less effective teeth.

cartridge combination	ratio	max ap	surface quality
UN	–	.118	Rz 2–Rz 4
UN + QF	3:1	.118	Rz 1,5–Rz 2,5
PT + UN	X:1	.118	Rz 3,2–Rz 17

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

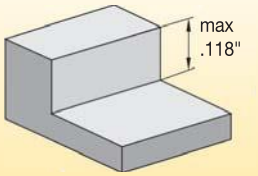
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
KCSM…	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	KCSM…

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

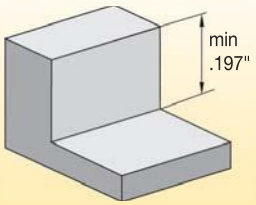
Tool Configuration • Universal Cartridge

Face milling cutter fitted entirely with universal cartridges.



Depth of Cut:
max .118"

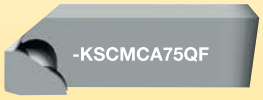
Surface Quality:
Rz2 - Rz4



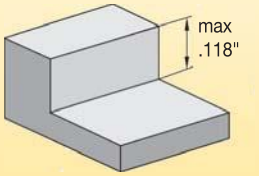
Contouring:
PCD cutting edge length = .197"

Tool Configuration • Universal Cartridge

+ Finishing Cartridge

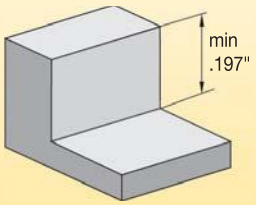


Fitting the face milling cutter with universal and finishing cartridges in a ratio of approximately 3:1.



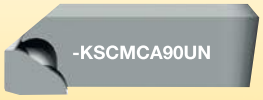
Depth of Cut:
max .118"

Surface Quality:
Rz1,5 - Rz2,5

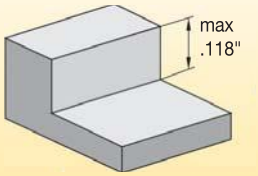


Contouring:
PCD cutting edge length = .197"

Tool Configuration • Edge Cartridge

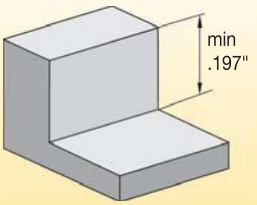


Fitting the face milling cutter entirely with edge cartridges.



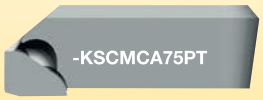
Depth of Cut:
max .118"

Surface Quality:
Rz2 - Rz4

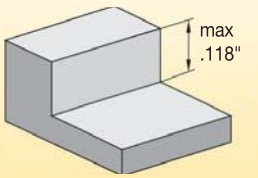


Contouring:
PCD cutting edge length = .197"

Tool Configuration • Cartridge for Defined Surfaces

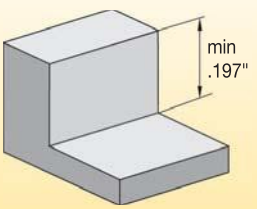


Fitting the face milling cutter entirely with cartridges for defined surfaces.



Depth of Cut:
max .118"

Surface Quality:
Rz3,2 - Rz17



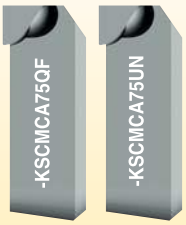
Contouring:
PCD cutting edge length = .197"

Tool Configuration • Universal Cartridge, 75° Face Milling

1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 88 in. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

Tool Configuration • Universal Cartridge + Finishing Cartridge (Ratio Approx. 3:1), 75°



1. Insert universal cartridges at ratio of approximately 4:1 in the body. Make sure they are evenly distributed!
2. Screw in the clamping screws (RH), and tighten to 88 in. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

6. Insert finishing cartridges as described in Steps 1–5 but with an axial advance of .0003" + .0008". Max permitted runout error of 3 µm with finishing cartridges.

Tool Configuration • Edge Cartridges, 90° Shoulder Milling

1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 88 in. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

Tool Configuration • Cartridge for Defined Surface, 75°

1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 7 ft. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs.

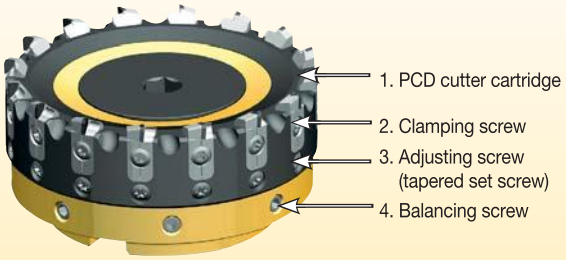
4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

NOTE: The process must be repeated when the cartridges are changed. To dismantle, remove the adjusting element (Part 3), clamping screw (Part 2), and cartridge (Part 1).

Instruction for Mounting the Face Milling Cutter on the Appropriate Toolholder

User Information:

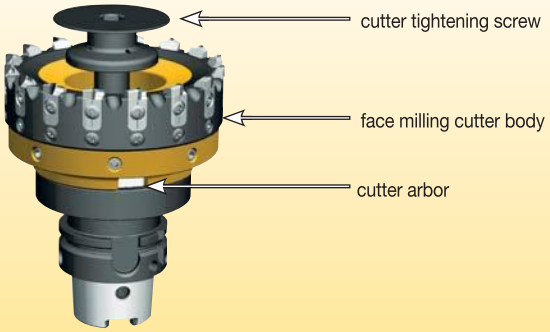
- Tools conform to EN ISO 15641.
- Absolute cleanliness must be observed when assembling the face milling cutter.
- An optimum cutting result will only be achieved by adjusting and balancing the complete tool system (face milling cutter + toolholder).
- Balancing is achieved with the aid of the balancing screws. Quality class G2.5 DIN-ISO 1940.
- The balancing screw must not protrude above the body.
- The balancing and adjustment screws have an adhesive coating according to DIN 267, Part 28. If, after repeated use, the coating is no longer adequate to secure the screws, the screws must be replaced.
- The maximum permitted operating speed (quoted on the tool) must not be exceeded.
- The maximum permitted operating speed is only permitted with clamping systems manufactured by Kennametal in accordance with DIN 69982 Form B with enlarged plane bearing surface. Reduce the operating speed if clamping systems with increased projection length or made by other manufacturers are used.
- Tools and fittings are to be serviced and repaired by Kennametal.
- Screws sealed with lacquer have been adjusted by the manufacturer, and must not be moved.



Instructions for Fitting the Cutter Cartridge • Tool Construction

When mounting the face milling cutter (dimensions similar to DIN 8030 Form B), place the body of the face milling cutter on the arbor. Ensure that the contact faces are clean. Screw in the cutter fastening bolt (RH) and tighten with the appropriate torque.

Tightening torque for the central cutter tightening screw:
M20 (adapter diameter 40): **184 ft. lbs.**
M16 (adapter diameter 32): **110 ft. lbs.**
M12 (adapter diameter 27): **59 ft. lbs.**

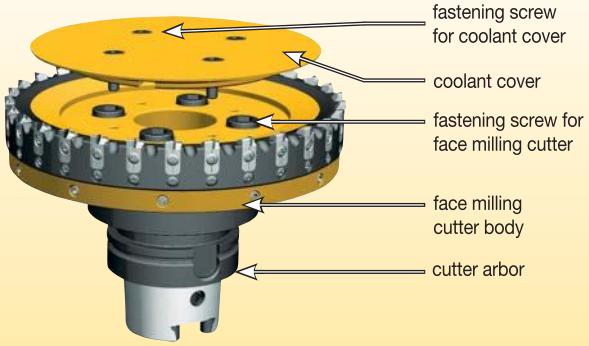


Mounting the Face Milling Cutter (Dimensions Similar to DIN 8030 Form C)

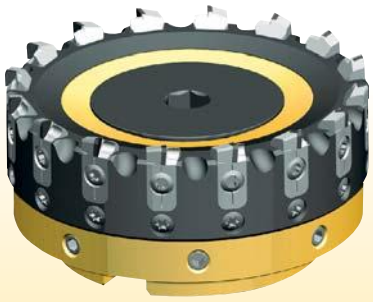
Place the body of the face milling cutter on the arbor. Ensure that the contact faces are clean. Screw in the fastening bolt (RH) and tighten with the appropriate torque. Put the aluminum coolant cover in place and fasten with the Torx fastening screws.

Tightening torque for the face milling cutter fastening screws:
M20: 184 ft. lbs.
M16: 81 ft. lbs.
M12: 36 ft. lbs.

Tightening torque for the coolant cover fastening screws:
M8: 13 ft. lbs.



KSCM AluMill
Reconditioning Service



New Supply

On request, the face mill will be delivered with cartridges already mounted and adjusted.

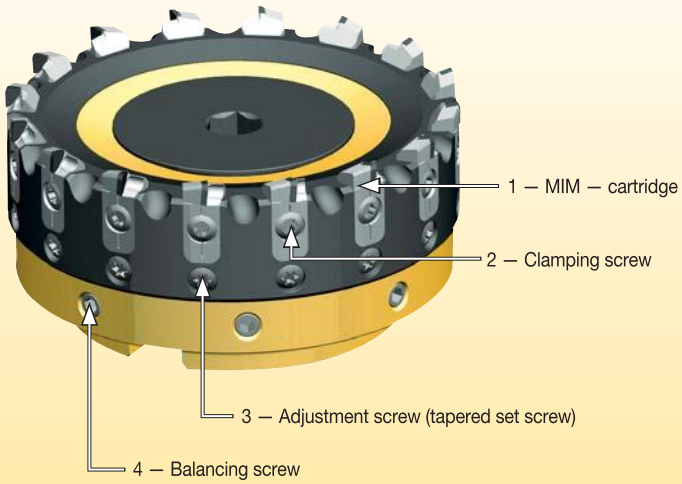
Service Level • PCD Insert Reconditioning

Reconditioning of PCD cartridges up to three times.

• Tool diameter and length remain constant.

Face mill will be delivered with exchanged cartridges already mounted, adjusted, and balanced.

Tool Design



Information:

- KSCM tools conform to EN ISO 15641.
- Absolute cleanliness is needed when assembling the cutter.
- For optimum results, adjust and balance the complete tool system (face milling cutter + toolholder).
- Balancing is achieved with the aid of balancing screws. Quality class G2.5 DIN-ISO 1940.
- The balancing screw must not protrude above the body. The balancing and adjustment screws have an adhesive coating according to DIN 267, Part 28. After repeated use, the coating may no longer be adequate to secure the screws; the screws must be replaced.
- Do not exceed the maximum operating speed.
- Maximum operating speed is only permitted with clamping systems manufactured by Kennametal in accordance with DIN 69982 Form B with enlarged plane bearing surface. Reduce the operating speed if clamping systems with increased projection length or made by other manufacturers are used.
- Tools and fittings are to be serviced and repaired by Kennametal.
- Screws sealed with lacquer have been adjusted by the manufacturer, and must not be moved.
- A centrifugal force test was done.
- If the tools will be used for HSC, referred to in DIN EN ISO 15641, machines have to fulfill the special safety requirements.

Assembling

1 Lubricate small cove on the MIM cartridge with copper paste of Liqui Moly.

2 Insert universal cartridges at approximate ratio 3:1 into the body. Make sure that they are distributed evenly!

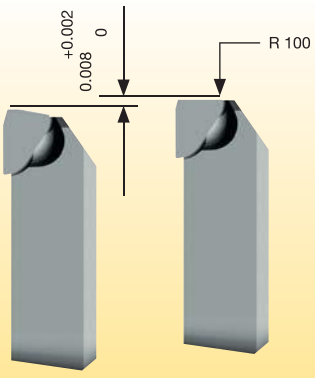
3 Screw in the clamping screws (RH) and tighten to 8 Nm.

4 Screw in the adjusting screws (RH) and tighten to 3 Nm.

5 Determine which cartridge is in the highest axial position.

6 By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

7 Insert finishing cartridges as described in steps 1–6 with an axial advance of 0,008 +0,002mm. Max permitted runout error of 3 µm with finishing cartridges.



NOTE:
- The process must be repeated when the cartridges are changed. To dismantle, remove the adjusting element (Part 3), clamping screw (Part 2), and cartridge (Part 1).
- For special requirements, e.g. surface quality, the configuration and the adjustment of the tool and inserts have to be done in relation with these requirements.
- If spare parts have to be ordered, reference the drawing.

Leader in Advanced Face Milling Applications

Dodeka™ Mini

The Dodeka Mini series is the most comprehensive face milling booster on the market today and offers fast, accurate indexing — with only one screw!

It is the first choice for long-reach face milling applications, or light fixtures with up to 40% shorter machining cycle time. With a standard offering of 15°, 45°, and 60° in combination with Beyond™ premium milling grades, expect up to 35% better tool life in light to heavy machining.

Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

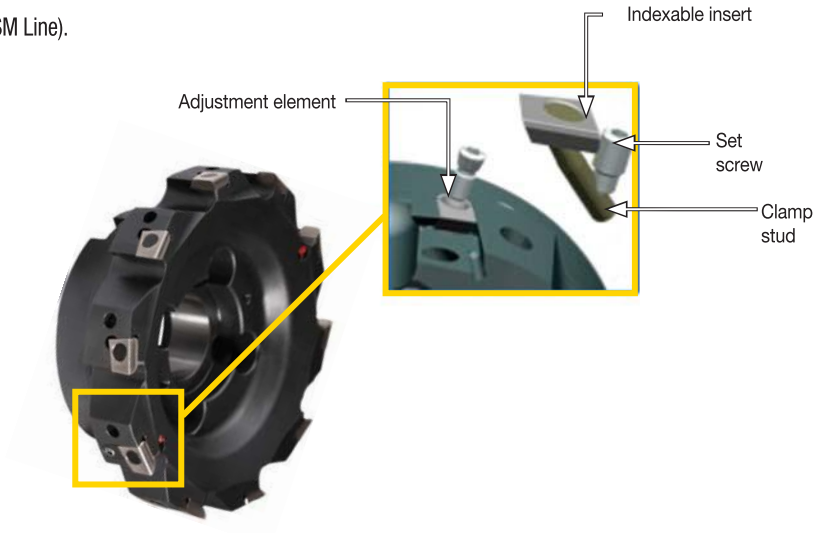
Fix-Perfect™ 0° Aluminum

Primary Application

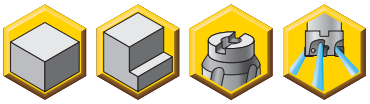
The Fix-Perfect 0° milling cutter is excellent for machining aluminum and non-ferrous materials. The 24° positive rake provides free cutting action while producing superior finishes and flatness.

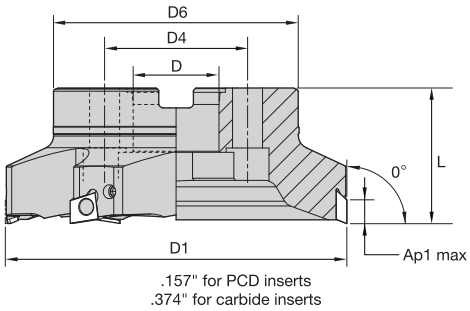
Features and Benefits

- Achieve true 0º shoulder.
- Roughing and finishing in one tool.
- Full safety first insert clamping.
- Easy adjustable pocket seats for fine finishing (PM, HPM, HSM Line).
- Achievable floor surface quality: Ra = 0.5.
- Very soft cutting action.
- Axial depth of cut Ap1 max = 3.74".



- Excellent for milling aluminum and non-ferrous materials.
- Good choice for thin-wall or poorly fixtured workpieces.
- 24° positive rake enables free cutting action.
- Produces excellent finish and flatness.
- Maximum speed is 6,500 SFM.





.157" for PCD inserts
.374" for carbide inserts

Fix-Perfect • Shell Mills • M Line • Fixed Pockets

order number	catalog number	D1	D	D6	L	Ap1 max	Z	lbs	max RPM
2235052	**50A03RP90BG15CUM**	2.000	.750	1.750	1.570	.374	3	.90	12530
2235053	**63A03RP90BG15CUM**	2.500	.750	1.750	1.570	.374	3	1.10	10030
2235054	**80A03RP90BG15CUM**	3.000	1.000	2.189	1.750	.374	3	1.60	8350
2235055	**100B04RP90BG15CUM**	4.000	1.250	2.880	1.750	.374	4	2.80	6270
2235056	**125B05RP90BG15CUM**	5.000	1.500	3.810	2.380	.374	5	5.40	5010
2235057	**160B06RP90BG15CUM**	6.000	2.000	4.880	2.380	.374	6	8.50	4180

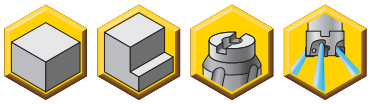
* 8-, 10-, and 12-inch diameter cutters are non-stock standards.

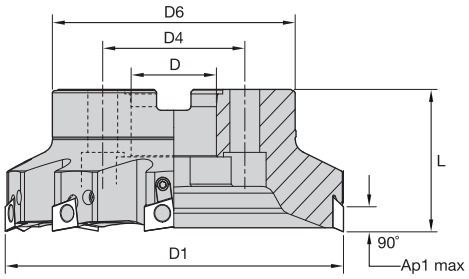
Spare Parts

D1	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw	coolant lock screw	coolant shower plate
2.000	**410.083**	**420.060**	**170.003**	45	**S446**	**420.101 SCREW**	–
2.500	**410.083**	**420.060**	**170.003**	45	**S445**	**420.101 SCREW**	–
3.000	**410.083**	**420.060**	**170.003**	45	**S458**	**420.121**	–
4.000	**410.083**	**420.060**	**170.003**	45	–	**420.161**	–
5.000	**410.083**	**420.060**	**170.003**	45	–	**420.201**	**470.240**
6.000	**410.083**	**420.060**	**170.003**	45	–	**420.241**	**470.241**

NOTE: Please order spare parts separately.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

- High-speed Machining.
- Produces excellent surface finish and flatness.
- Fixed and adjustable pockets.





Fix-Perfect • Shell Mills • PM Line • Fixed and Adjustable Pockets

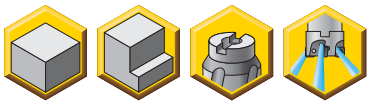
order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1803174	**40A02RP90BG15CUPM**	1.500	.500	1.250	1.570	.375	2	0	.49	33418
1803175	**50A03RP90BG15CUPM**	2.000	.750	1.750	1.570	.375	3	0	.84	25063
1803177	**63A04RP90BG15C1WUPM**	2.500	.750	1.750	1.570	.375	4	1	1.17	22750
1803178	**80A05RP90BG15C1WUPM**	3.000	1.000	2.032	1.750	.375	5	1	1.85	16710
1805715	**80A06RP90BG15C2WUPM**	3.000	1.000	2.032	1.750	.375	6	2	1.85	16710
1803179	**100B06RP90BG15C2WUPM**	4.000	1.250	2.724	1.750	.375	6	2	3.22	12500
1805716	**100B08RP90BG15C2WUPM**	4.000	1.250	2.724	1.750	.375	8	2	3.22	12500
1806465	**125B08RP90BG15C2WUPM**	5.000	1.500	3.810	2.375	.375	8	2	5.95	10000
1806466	**160B10RP90BG15C2WUPM**	6.000	2.000	4.880	2.375	.394	10	2	9.26	8500

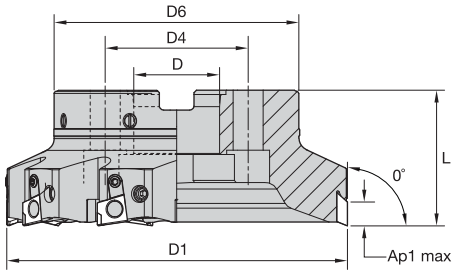
Spare Parts

D1	Torx wrench	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw	coolant lock screw	coolant shower plate
1.500	**KT15**	**410.083**	**420.060**	**170.003**	45	**S425**	**420.081**	–
2.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**S446**	**420.101 SCREW**	–
2.500	**KT15**	**410.083**	**420.060**	**170.003**	45	**S445**	**420.101 SCREW**	–
3.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**S458**	**420.121**	–
4.000	**KT15**	**410.083**	**420.060**	**170.003**	45	–	**420.161**	–
5.000	**KT15**	**410.083**	**420.060**	**170.003**	45	–	**420.201**	**470.240**
6.000	**KT15**	**410.083**	**420.060**	**170.003**	45	–	**420.241**	**470.241**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw 193.337.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Torque wrench (KTW45 and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

- Produces excellent surface finish and flatness.
- High-speed machining.

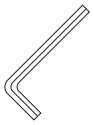




Fix-Perfect • Shell Mills • HPM Line • All Pockets Adjustable

order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1805720	**63A04RP90BG15C4WUHPM**	2.500	.750	1.750	1.570	.374	4	4	1.17	20051
1805745	**80A05RP90BG15C5WUHPM**	3.000	1.000	2.190	1.750	.374	5	5	1.83	16710

Spare Parts

D1	 adjusting element screw	 Torx wrench	 clamp stud	 set screw	 hex wrench	 in. lbs.	 socket-head cap screw	 coolant lock screw
2.500	**193.326**	**KT15**	**410.083**	**420.060**	**170.003**	45	**S445**	**420.101 SCREW**
3.000	**193.326**	**KT15**	**410.083**	**420.060**	**170.003**	45	**S458**	**420.121**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw 193.326.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Cutters with 4" have an aluminum body.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

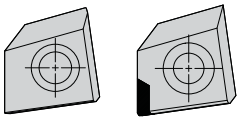
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	BGHX...	K110M	**BGHX...**	**KC510M**	BGHX...	KD1415
N3	BGHX...	K110M	**BGHX...**	**KD1410**	BGHX...	KD1410
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts for Fix-Perfect • BGHX15L5...

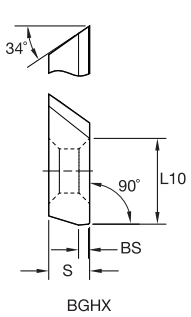
- Roughing Fix-Perfect inserts for aluminum and non-ferrous materials.
- 0.374" (9,5mm) max depth of cut.
- Two cutting edges.

● first choice
○ alternate choice

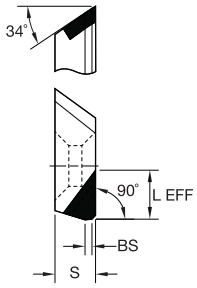
	K110M	KC510M	KD1410	KD1415
P				
M				
K				
N	●	●	●	●
S				
H				


BGHX

BGHX



BGHX



BGHX

Face Milling

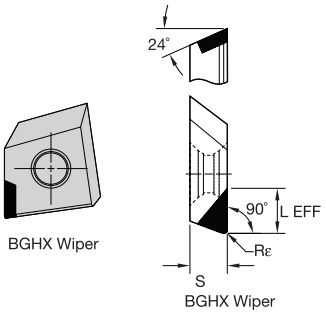
BGHX • Roughing

catalog number	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L5PCERGGT	.205	.197	.035	–	.001	1	–	–	●	●
BGHX15L5PCFRGG	.413	.197	.048	–	.001	2	●	●	–	–
BGHX15L5PCTRGG	.413	.197	.048	–	.001	2	●	●	–	–
BGHX15L5PCERGGTM	–	.197	.047	–	.001	1	–	–	●	–

- Roughing Fix-Perfect inserts for aluminum and non-ferrous materials.
- 0.374" (9,5mm) max depth of cut.
- Two cutting edges with corner radii.

● first choice
○ alternate choice

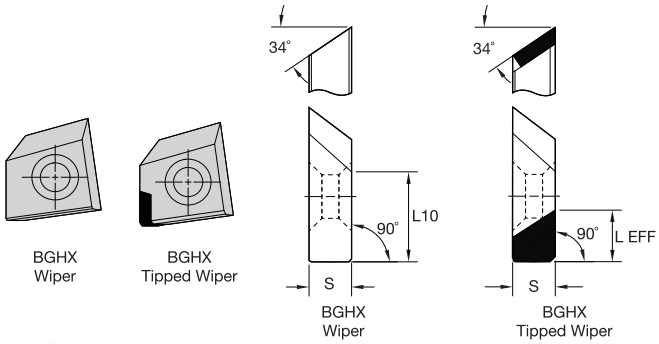
P					
M					
K					
N	●	●	●	●	
S					
H					



BGHT • Roughing with Radius

catalog number	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L504ERGET	.205	.197	—	.016	.001	1	–	–	–	●
BGHX15L504PCFRGG	.413	.197	.047	.016	.001	2	●	–	–	–
BGHX15L508PCFRGG	.413	.197	.047	.031	.001	2	●	●	–	–
BGHX15L515PCFRGG	.413	.197	.047	.059	.001	2	●	●	–	–

- Roughing Fix-Perfect inserts for aluminum and non-ferrous materials.
- 0.374" (9,5mm) max depth of cut.
- Two cutting edges.



BGHX-ET • Finishing

catalog number	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L5PCSRLET	.236	.197	.035	—	.001	1	–	–	●	●
BGHX15L5PCTRHET	.236	.197	.035	—	.001	1	–	–	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

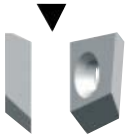
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
BGHX...	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	BGHX...

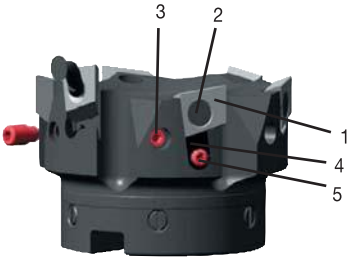
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Introduction to Fitting Cutting Bodies

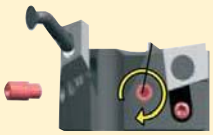
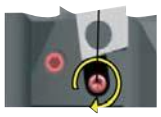
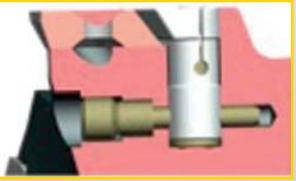
Roughing indexable inserts
BGHX15L5PC..GG.



Finishing indexable inserts
BGHX15L5PC..GG.1W



Clean dust, grease, etc., from the insert seat, insert (1), and clamp stud (2).

	PM	HPM/HSM	PM/HPM/HSM
1	Loosen the adjusting element (4).  Loosen the adjusting screw (5).	Loosen the adjusting element (4).  Loosen the adjusting screw (5).	Loosen the adjusting element (4).  Loosen the adjusting screw (5).
2	Insert the indexable inserts and tighten with the clamping screw (3) 44 in. lbs.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat.	Insert the indexable inserts and pre-tighten with the clamping screw (3) 13 in. lbs.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat. Determine which cutting body is the highest on the axis.	Insert the indexable inserts and pre-tighten with the clamping screw (3) 9 in. lbs.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat. Determine which cutting body is the highest on the axis.
3	Tension the adjusting element (4) by tightening the adjusting screw (5) to the specified torque of 4.5 in. -lbs. 	Extract by .0008" the insert that is axially the highest by turning the adjusting screw (5).  Adjust the remaining inserts to the desired runout with maximum travel of the inserts .008".	Adjust the finishing indexable insert(s) to the desired projection, preferably .0015" by turning the adjusting screw (5).  ATTENTION: Ensure that the insert is correctly positioned in the insert seat.
4	 **Adjustment element to be replaced by Kennametal Service Center only.**	Clamp the insert by tightening the clamping screw (3) to the specified torque of 44 in. lbs. 	Clamp the insert by tightening the clamping screw (3) to the specified torque of 44 in. lbs.