High-Performance 90° Square Shoulder Precision Mills, SSPM Production Mills and Inserts

DAPRA®

NEW

12mm Cutters and Inserts

See Inside Cover for Details

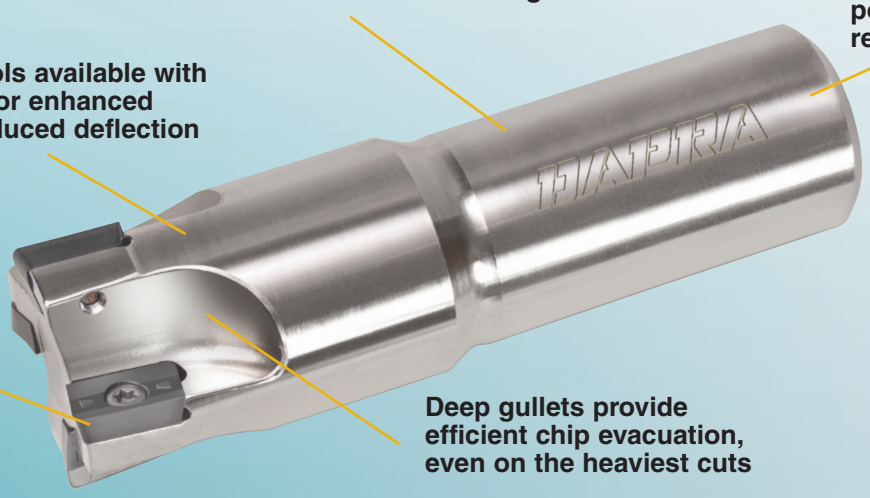
DAPRA CORPORATION
www.dapra.com

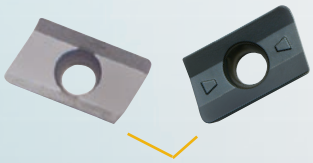
DAPRA® Square Shoulder EXTREME Metal Removal

Cutter bodies machined from hardened steel to minimize runout and create excellent surface finishes at high feed rates

Nickel plating provides a harder casing for improved pocket durability and resistance to chip galling

Long-reach tools available with Carbide Core for enhanced rigidity and reduced deflection





Precision cutter and insert combination provides longer tool life

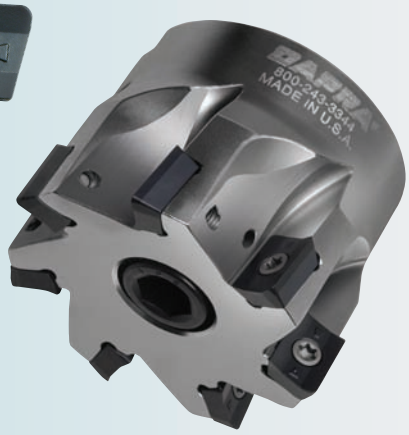
Deep gullets provide efficient chip evacuation, even on the heaviest cuts

Inserts offered in both pressed and lapped versions for a combination of economy and performance

NEW

12mm Square Shoulder Cutters and Inserts

- Smoother cutting action, generating less noise and pressure
- Stronger insert geometry for heavier cuts using smaller-diameter cutters
- More economical insert for larger tools at typical depths of cut – less expensive than the 16mm insert
- Fine pitch for faster feed rates and good surface finishes
- Utility cutters provide more usable edges per insert



See page 6 for Dapra's new 12mm cutters. Corresponding inserts are on page 7.

Index

APET & XPET CNC Pressed Inserts

The most economical, high-performance inserts available!

- ***APET and XPET*** inserts are manufactured using CNC press technology, providing reliable accuracy and repeatability.
- Feature a high positive pressed cutting geometry for aggressive material removal rates and low horsepower consumption.
- Have a strong edge preparation for heavy chiploads.
- Are available in a large variety of corner radii with a true tangential blend.
- Wiper geometry provides excellent surface finishes.

Insert Geometry Selection

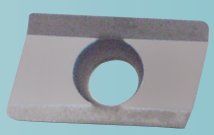
APET Geometry	Traits	XPET Geometry
Positive/negative cutting edge with T-land	*Cutting Edge*	Positive cutting edge with a light hone and no T-land
Somewhat free-cutting; meant for higher chiploads (>.005" IPT); creates medium burr	*Cutting Action*	Free-cutting, small burr; can run at lighter chiploads (>.002" IPT)
Higher force due to negative edge; will deflect more than XPET	*Force*	Lower force due to sharper edge; less deflection
Higher heat generation than XPET; creates more heat at higher speeds	*Heat*	Less heat generated due to positive edge
Very strong cutting edge; able to withstand more shock and interruptions	*Strength*	Weaker, due to edge sharpness; not able to withstand significant interruptions
Longer edge life due to strong cutting edge; will roll more burr and wear out rather than chip out	*Edge Life*	Shorter, due to edge sharpness; may chip out if run too long

***APET** inserts feature a high-strength cutting edge and are ideal for high-performance milling of most harder steels and cast irons.*

***XPET** inserts are ideal for high-performance milling of stainless steels, high-temp. alloys and nonferrous materials. Also good for gummy, softer, free-machining steels.*

XPET Lapped, Aluminum Cutting Inserts

- Ground and lapped rake face is ideally suited for machining aluminum and copper alloys, bronze, brass, etc. Built-up edge is virtually eliminated.
- Positive rake angle is higher than standard inserts, providing highest shear possible.
- Sharp cutting edge is configured specifically for cutting nonferrous materials, yielding the ultimate in low-torque material removal.
- Variety of corner radii available with a true tangential blend.



***XPET Lapped** inserts feature a ground and lapped rake face for machining aluminum and copper alloys.*

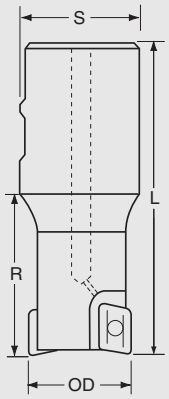
***PCD-Tipped** inserts provide the ultimate in wear resistance for high-volume aluminum or graphite milling. Available in 1/32" corner radius only.*

See pages 14-15 for grade selection information

Cutter Bodies for 10mm Inserts

End Mills

OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
.500"	SSEM0500-0625-R35-1	.350"	1	.625"	2.75"	.97"
.625"	SSEM0625-0625-R35-2	.350"	2	.625"	3.00"	1.09"
.750"	SSEM0750-0750-R35-2	.350"	2	.750"	3.50"	1.47"
.750"	SSEM0750-0750-R35-2C	.350"	2	.750"	3.50"	1.47"
.750"	SSEM0750-0750-R35-3	.350"	3	.750"	3.50"	1.47"
1.000"	SSEM1000-0750-R35-4	.350"	4	.750"	3.50"	1.47"
1.000"	SSEM1000-1000-R35-3C	.350"	3	1.000"	4.00"	1.72"
1.250"	SSEM1250-1250-R35-5C	.350"	5	1.250"	4.78"	2.50"
1.500"	SSEM1500-1250-R35-6C	.350"	6	1.250"	4.78"	2.50"

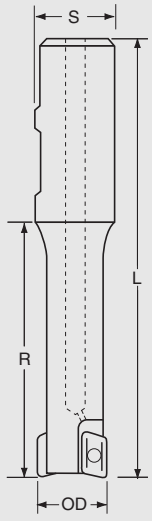


"C" denotes coolant thru tool.

1.25" cutters and smaller are available without Weldon flats in limited supplies. Add WOF to end of part number when ordering.

Extended Reach End Mills

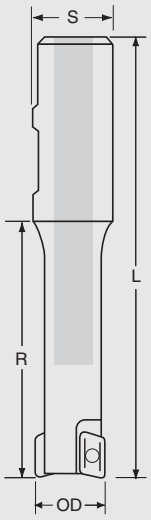
OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
.500"	SSER0500-2000-R35-1	.350"	1	.625"	3.91"	2.00"
.625"	SSER0625-2500-R35-2C	.350"	2	.750"	4.41"	2.50"
.625"	SSER0625-7000-SS-R35-2-WOF*	.350"	2	.625"	7.00"	1.25"
.750"	SSER0750-2500-R35-2C	.350"	2	1.000"	4.78"	2.50"
.750"	SSER0750-4000-R35-2C	.350"	2	1.000"	6.28"	4.00"
.750"	SSER0750-7000-SS-R35-2-WOF*	.350"	2	.750"	7.00"	1.13"



"C" denotes coolant thru tool.
**** Cylindrical shank – no Weldon flats.***

Extended Reach End Mills with Carbide Core

OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
.750"	CC-SSER0750-2500-R35-2	.350"	2	1.000"	4.78"	2.50"
.750"	CC-SSER0750-4000-R35-2	.350"	2	1.000"	6.28"	4.00"



10mm Inserts and Grades

● *Stocked standard*
○ *Available upon request*

APET
Cutting Edge
(T-Land Edge)
High Strength

XPET
Cutting Edge
(Honed Edge)
High Shear

					Uncoated		Coated		*New Grade!*	
					DMP35	DMP353	DMP35-HP	DMP357	DMP35-TCI	DMP35-GLH
					DMK30 †	DMK303 †	DMK30-HP †	DMK307 †	DMK30-TCI †	DMK30-GLH †
					DMP30	DMP303	DMP30-HP	DMP307	DMP30-TCI	DMP30-GLH
	Insert Size	L	W	R	DMK25	DMK253	DMK25-HP	DMK257	DMK25-TCI	DMK25-GLH
APET	*APET Inserts feature a high-strength cutting edge and are ideal for high-performance milling of most harder steels and cast irons.*									
	APET100308	.380"	.250"	.031"	●	●	●	●	●	●
	APET100316	.380"	.250"	.062"	●	●	●	●	●	●
XPET	*XPET Inserts are ideal for high-performance milling of stainless steels and nonferrous materials such as copper alloys and aluminum. Also good for gummy, softer, free-machining steels.*									
	XPET100308	.380"	.250"	.031"	●	●	●	●	●	●
	XPET100316	.380"	.250"	.062"	●	●	●	●	●	●
XPET-ALU	*XPET-ALU lapped inserts feature a ground and lapped rake face for machining aluminum and copper alloys, bronze, brass, etc. Built-up edge is virtually eliminated.*									
	XPET100308-ALU	.380"	.250"	.031"	DMK25 ONLY	DMK253 ONLY	DMK25-HP ONLY	DMK257 ONLY	DMK25-TCI ONLY	DMK25-GLH ONLY
	XPET100316-ALU	.380"	.250"	.062"						

† *Available for XPET only.*

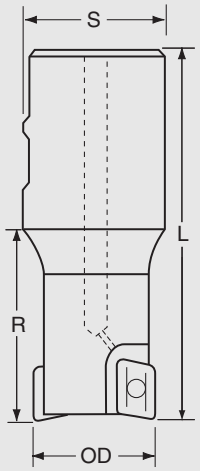
*See page **15** for insert grade descriptions.*
*See chart on page **18** for technical help on optimizing cutting performance.*
*See page **24** for recommended speeds/feeds.*

NEW

Cutter Bodies for 12mm Inserts

End Mills

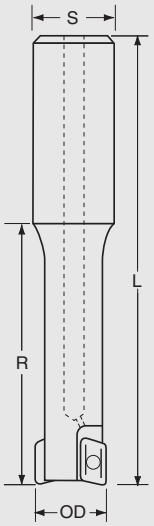
OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
.625"	SSEM0625-0625-R45-1C	.430"	1	.625"	3.00"	1.09"
.750"	SSEM0750-0750-R45-2C	.430"	2	.750"	3.50"	1.47"
.750"	SSEM0750-0750-R45-2LC	.430"	2	.750"	4.28"	2.25"
1.000"	SSEM1000-1000-R45-3SC	.430"	3	1.000"	3.28"	1.00"
1.000"	SSEM1000-1000-R45-3C	.430"	3	1.000"	4.28"	2.00"
1.000"	SSEM1000-1000-R45-3LC	.430"	3	1.000"	5.28"	3.00"
1.250"	SSEM1250-1250-R45-4C	.430"	4	1.250"	4.78"	2.50"
1.250"	SSEM1250-1250-R45-4LC	.430"	4	1.250"	6.03"	3.75"
1.500"	SSEM1500-1250-R45-5C	.430"	5	1.250"	4.78"	2.50"



Extended Reach End Mills

OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
.625"	SSER0625-7000-SS-R45-1C-WOF*	.430"	1	.625"	7.00"	1.09"
.750"	SSER0750-7000-SS-R45-2C-WOF*	.430"	2	.750"	7.00"	1.45"
1.000"	SSER1000-9000-SS-R45-2C-WOF*	.430"	2	1.000"	9.00"	2.00"
1.250"	SSER1250-10000-SS-R45-2C-WOF*	.430"	2	1.250"	10.00"	2.50"

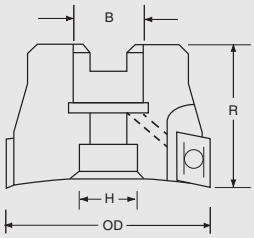
"C" denotes coolant thru tool.
**** Cylindrical shank – no Weldon flats.***



Standard Pitch Shell Mills

OD Diameter	Holder	Max DOC	Flutes	B Arbor Dia.	R Overall Length	H Counter Bore Dia.
1.500"	SSSM1500-0750-R45-5C	.430"	5	.750"	1.75"	.58"
2.000"	SSSM2000-0750-R45-5C	.430"	5	.750"	1.50"	.60"
2.000"	SSSM2000-0750-R45-7C	.430"	7	.750"	1.50"	.60"
2.500"	SSSM2500-1000-R45-8C	.430"	8	1.000"	1.75"	.80"
3.000"	SSSM3000-1000-R45-7C	.430"	7	1.000"	2.00"	.80"
3.000"	SSSM3000-1000-R45-10C	.430"	10	1.000"	2.00"	.80"
4.000"	SSSM4000-1500-R45-12	.430"	12	1.500"	2.00"	1.90"

"C" denotes coolant thru tool.



NEW

12mm Inserts and Grades

● *Stocked standard*

APET
Cutting Edge
(T-Land Edge)
High Strength

XPET
Cutting Edge
(Honed Edge)
High Shear

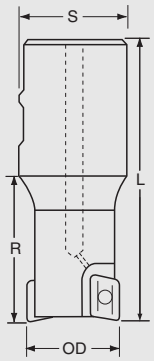
				Uncoated		Coated		*New Grade!*	
Insert Size	L	W	R	DMP35 DMP30 DMK25	DMP353 DMP303 DMK253	DMP35-HP DMP30-HP DMK25-HP	DMP357 DMP307 DMK257	DMP35-TCI DMP30-TCI DMK25-TCI	DMP35-GLH DMP30-GLH DMK25-GLH
APET	*APET Inserts feature a high-strength cutting edge and are ideal for high-performance milling of most harder steels and cast irons.*								
APET120408	.472"	.312"	.031"	●	●	●	●	●	●
APET120416	.472"	.312"	.062"	●	●	●	●	●	●
APET120431	.472"	.312"	.120"	●	●	●	●	●	●
XPET	*XPET Inserts are ideal for high-performance milling of stainless steels and nonferrous materials such as copper alloys and aluminum. Also good for gummy, softer, free-machining steels.*								
XPET120408	.472"	.312"	.031"	●	●	●	●	●	●
XPET120416	.472"	.312"	.062"	●	●	●	●	●	●
XPET120431	.472"	.312"	.120"	●	●	●	●	●	●
XPET-ALU	*XPET-ALU lapped inserts feature a ground and lapped rake face for machining aluminum and copper alloys, bronze, brass, etc. Built-up edge is virtually eliminated.*								
XPET120408-ALU	.472"	.312"	.031"	DMK25 ONLY	DMK253 ONLY	DMK25-HP ONLY	DMK257 ONLY	DMK25-TCI ONLY	DMK25-GLH ONLY
XPET120416-ALU	.472"	.312"	.062"						
XPET120431-ALU	.472"	.312"	.120"						
PCD-TIPPED	*PCD-tipped inserts provide the ultimate in wear resistance for high-volume aluminum or graphite milling. Available in 1/32" corner radius only.*								
XPET120408-PCD-150	.472"	.312"	.031"	DMK25 ONLY					

*See page **15** for insert grade descriptions.*
*See chart on page **18** for technical help on optimizing cutting performance.*
*See page **24** for recommended speeds/feeds.*

Cutter Bodies for 16mm Inserts

End Mills

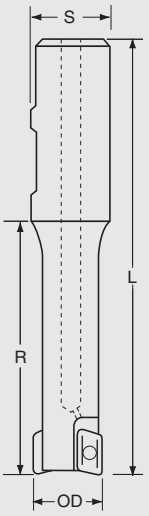
OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
.625"	SSEM0625-0750-R55-1	.600"	1	.750"	3.35"	1.15"
.750"	SSEM0750-0750-R55-1	.600"	1	.750"	3.49"	1.40"
1.000"	SSEM1000-1000-R55-2	.600"	2	1.000"	4.28"	2.00"
1.000"	SSEM1000-1000-R55-2C	.600"	2	1.000"	4.28"	2.00"
1.000"	SSEM1000-1000-R55-2LC	.600"	2	1.000"	5.28"	3.00"
1.250"	SSEM1250-1250-R55-3	.600"	3	1.250"	4.78"	2.50"
1.250"	SSEM1250-1250-R55-3C	.600"	3	1.250"	4.78"	2.50"
1.500"	SSEM1500-1250-R55-3	.600"	3	1.250"	4.78"	2.50"
1.500"	SSEM1500-1250-R55-4	.600"	4	1.250"	4.78"	2.50"
1.500"	SSEM1500-1250-R55-4C	.600"	4	1.250"	4.78"	2.50"



Extended Reach End Mills

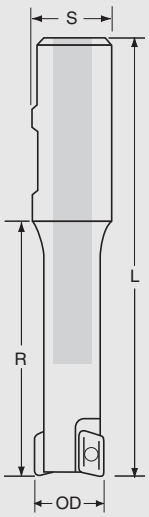
OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
1.000"	SSER1000-4000-R55-2C	.600"	2	1.250"	6.28"	4.00"
1.000"	SSER1000-6000-R55-2C	.600"	2	1.250"	8.28"	6.00"
1.000"	SSER1000-9000-SS-R55-2-WOF*	.600"	2	1.000"	9.00"	1.50"
1.250"	SSER1250-4000-R55-3C	.600"	3	1.250"	6.28"	4.00"
1.250"	SSER1250-10000-SS-R55-2-WOF*	.600"	2	1.250"	10.00"	1.88"
1.500"	SSER1500-4000-R55-3C	.600"	3	1.500"	6.69"	4.00"

"C" denotes coolant thru tool.
**** Cylindrical shank – no Weldon flats.***



Extended Reach End Mills with Carbide Core

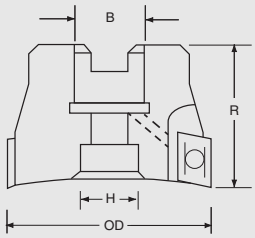
OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length
1.000"	CC-SSER1000-4000-R55-2	.600"	2	1.250"	6.28"	4.00"
1.000"	CC-SSER1000-6000-R55-2	.600"	2	1.250"	8.28"	6.00"
1.000"	CC-SSER1000-8000-R55-2	.600"	2	1.250"	10.28"	8.00"
1.250"	CC-SSER1250-3200-R55-3	.600"	3	1.250"	5.50"	2.62"
1.250"	CC-SSER1250-4000-R55-3	.600"	3	1.250"	6.28"	4.00"
1.250"	CC-SSER1250-6000-R55-2	.600"	2	1.500"	8.70"	6.00"
1.250"	CC-SSER1250-8000-R55-2	.600"	2	1.500"	10.70"	8.00"
1.500"	CC-SSER1500-6000-R55-2	.600"	2	1.500"	8.69"	6.00"



SQUARE SHOULDER Ordering Information

Standard & Coarse Pitch Shell Mills

OD Diameter	Holder	Max DOC	Flutes	B Arbor Dia.	R Overall Length	H Counter Bore Dia.
Standard Pitch Shell Mills						
1.500"	SSSM1500-0750-R55-4	.600"	4	.750"	1.75"	.58"
2.000"	SSSM2000-0750-R55-4C	.600"	4	.750"	1.50"	.60"
2.000"	SSSM2000-0750-R55-5C	.600"	5	.750"	1.50"	.60"
2.500"	SSSM2500-1000-R55-5C	.600"	5	1.000"	1.75"	.80"
3.000"	SSSM3000-1000-R55-6C	.600"	6	1.000"	2.00"	.80"
4.000"	SSSM4000-1500-R55-8	.600"	8	1.500"	2.00"	1.90"
5.000"	SSSM5000-1500-R55-8	.600"	8	1.500"	2.00"	2.10"
6.000"	SSSM6000-2000-R55-7	.600"	7	2.000"	2.00"	2.75"
8.000"	SSSM8000-FM-R55-9	.600"	9	2.500"	2.50"	4.00" BC
Coarse Pitch Shell Mills						
2.000"	SSSM2000-0750-R55-3C	.600"	3	.750"	1.50"	.60"
3.000"	SSSM3000-1000-R55-3C	.600"	3	1.000"	2.00"	.80"



"C" denotes coolant thru tool.

16mm Inserts and Grades

● *Stocked standard*
○ *Available upon request*

APET Cutting Edge (T-Land Edge) High Strength

XPET Cutting Edge (Honed Edge) High Shear

					Uncoated		Coated		*New Grade!*	
					DMP35 DMK30 † DMP30 DMK25	DMP353 DMK303 † DMP303 DMK253	DMP35-HP DMK30-HP † DMP30-HP DMK25-HP	DMP357 DMK307 † DMP307 DMK257	DMP35-TCI DMK30-TCI † DMP30-TCI DMK25-TCI	DMP35-GLH DMK30-GLH † DMP30-GLH DMK25-GLH
	Insert Size	L	W	R						
APET	*APET Inserts feature a high-strength cutting edge and are ideal for high-performance milling of most harder steels and cast irons.*									
	APET160408	.625"	.375"	.031"	●	●	●	●	●	●
	APET160412	.625"	.375"	.047"	●	●	●	●	●	●
	APET160416	.625"	.375"	.062"	●	●	●	●	●	●
	APET160431*	.625"	.375"	.120"	●	●	●	●	●	●
XPET	*XPET Inserts are ideal for high-performance milling of stainless steels and nonferrous materials such as copper alloys and aluminum. Also good for gummy, softer, free-machining steels.*									
	XPET160404‡	.625"	.375"	.015"	●	●	●	●	●	●
	XPET160408	.625"	.375"	.031"	●	●	●	●	●	●
	XPET160412	.625"	.375"	.047"	●	●	●	●	●	●
	XPET160416	.625"	.375"	.062"	●	●	●	●	●	●
	XPET160424	.625"	.375"	.094"	DMP35 ONLY	○	DMP35-HP ONLY	○	○	DMP35-GLH ONLY
	XPET160431*	.625"	.375"	.120"	●	●	●	●	●	●
XPET-ALU	*XPET-ALU lapped inserts feature a ground and lapped rake face for machining aluminum and copper alloys, bronze, brass, etc. Built-up edge is virtually eliminated.*									
	XPET160404-ALU	.625"	.375"	.015"	DMK25 ONLY	DMK253 ONLY	DMK25-HP ONLY	DMK257 ONLY	DMK25-TCI ONLY	DMK25-GLH ONLY
	XPET160408-ALU	.625"	.375"	.031"						
	XPET160412-ALU	.625"	.375"	.047"						
	XPET160416-ALU	.625"	.375"	.062"						
	XPET160431-ALU*	.625"	.375"	.120"						
PCD-TIPPED	*PCD-tipped inserts provide the ultimate in wear resistance for high-volume aluminum or graphite milling. Available in 1/32" corner radius only.*									
	XPET160408-PCD-225	.625"	.375"	.031"	DMK25 ONLY					

** This insert is designed for heavy roughing and has a corner radius that actually measures closer to .115" than .125" (.010" difference) due to distortion by the positive radial insert angle.*

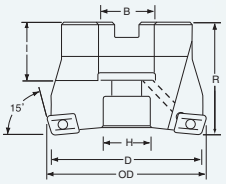
† *Available for XPET only.*

‡ *XPET160404 is unavailable in DMK30 grades.*

Utility Cutters

Make the most of your APET and XPET Inserts!

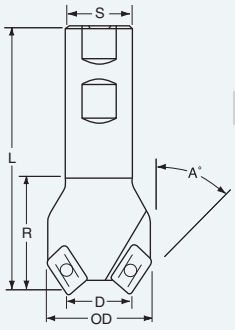
- ***BCSM*** shell mills allow the unused corner of the APET/XPET inserts to be used for general face milling – this means you get 4 usable edges per insert instead of 2!
- ***CMEM*** end mills are perfect for chamfer milling, providing a free-cutting positive geometry for both 30˚ and 45˚ chamfering.
- ***HREM*** end mills are designed for high performance in long-edge profiling and step milling applications.



BCSM
Back Corner Shell Mill

D Cutting Dia.	Holder	Max DOC	Flutes	OD	B Arbor Dia.	R Overall Length	H Counter Bore Dia.	Inserts
15˚ Back Corner Shell Mills								
2.000"	BCSM2000-0750-R35-4	.250"	4	2.11"	.750"	1.50"	.60"	*10mm (page 5)*
2.000"	BCSM2000-0750-R45-4	.312"	4	2.13"	.750"	1.50"	.60"	*12mm (page 7)*
3.000"	BCSM3000-1000-R45-6	.312"	6	3.13"	1.00"	2.00"	.80"	*12mm (page 7)*
2.000"	BCSM2000-0750-R55-4	.375"	4	2.16"	.750"	1.50"	.60"	*16mm (page 9)*
3.000"	BCSM3000-1000-R55-5	.375"	5	3.16"	1.00"	2.00"	.80"	*16mm (page 9)*
4.000"	BCSM4000-1500-R55-6	.378"	6	4.16"	1.50"	2.25"	.77"	*16mm (page 9)*
5.000"	BCSM5000-1500-R55-6	.375"	6	5.16"	1.50"	2.00"	2.06"	*16mm (page 9)*

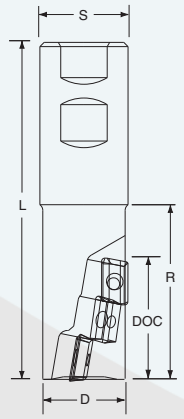
Dapra is transitioning to thru-coolant on all shell mills 3" and smaller. To specify the thru-coolant option, add a "C" to the end of the part number. Stock not guaranteed. Once the non-coolant cutter supply is exhausted, the thru-coolant option will be the only one available.



CMEM
Chamfering End Mill

D Cutting Dia.	Holder	Max DOC	Flutes	OD	S Shank Dia.	L Overall Length	R Effective Length	A	Inserts
Chamfering End Mills									
.500"	CMEM0500-30-R35-2	.300"	2	.80"	.750"	3.50"	1.45"	30˚	*10mm (page 5)*
.500"	CMEM0500-45-R35-2	.245"	2	.94"	.750"	3.50"	1.45"	45˚	*10mm (page 5)*
.750"	CMEM0750-30-R45-3	.355"	3	1.14"	.750"	3.50"	1.45"	30˚	*12mm (page 7)*
.750"	CMEM0750-45-R45-3	.290"	3	1.31"	.750"	3.50"	1.45"	45˚	*12mm (page 7)*
.625"	CMEM0625-45-R55-2	.245"	2	1.40"	.750"	3.50"	1.45"	45˚	*16mm (page 9)*
.700"	CMEM0700-30-R55-2	.475"	2	1.25"	.750"	3.50"	1.45"	30˚	*16mm (page 9)*
.750"	CMEM0750-30-R35-3	.300"	3	1.05"	.750"	3.50"	1.45"	30˚	*10mm (page 5)*
.750"	CMEM0750-45-R35-3	.245"	3	1.18"	.750"	3.50"	1.45"	45˚	*10mm (page 5)*
1.000"	CMEM1000-30-R55-3	.475"	3	1.53"	1.000"	4.00"	1.72"	30˚	*16mm (page 9)*
1.000"	CMEM1000-45-R55-3	.390"	3	1.76"	1.000"	4.00"	1.72"	45˚	*16mm (page 9)*

Dapra is transitioning to thru-coolant on CMEM cutters. To specify the thru-coolant option, add a "C" to the end of the part number. Stock not guaranteed. Once the non-coolant cutter supply is exhausted, the thru-coolant option will be the only one available.



HREM
Helical Roughing End Mill

D Cutting Dia.	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length	# of Inserts	Inserts
Helical Roughing End Mills								
1.000"	HREM1000-1000-R35-2-120	1.200"	2	1.000"	4.50"	2.04"	8	*10mm (page 5)*
1.000"	HREM1000-1000-R45-2-110	1.100"	2	1.000"	4.50"	2.00"	6	*12mm (page 7)*
1.250"	HREM1250-1250-R45-3-150	1.480"	3	1.250"	4.83"	2.50"	12	*12mm (page 7)*
1.250"	HREM1250-1250-R55-2-165	1.650"	2	1.250"	4.88"	2.44"	6	*16mm (page 9)*
1.500"	HREM1500-1250-R55-3-215	2.150"	3	1.250"	5.65"	3.15"	12	*16mm (page 9)*
40mm	HREM40mm-1250-R55-2-165	1.650"	2	1.250"	4.80"	2.44"	6	*16mm (page 9)*

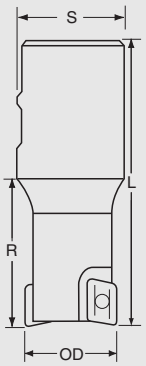
Helical ("stacked") cutters create much more tool pressure than standard end mills, due to the increased number of engaged inserts. Dapra recommends not exceeding 10% of the tool diameter in width of cut (WOC) with these HREM tools; irreversible cutter damage may occur.

It is recommended that the more positive XPET insert geometry be used with Helical Roughing End Mills.

Metric Cutter Bodies

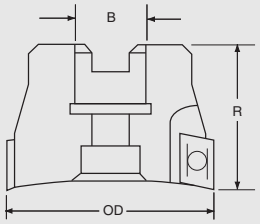
Metric End Mills

OD Diameter	Holder	Max DOC	Flutes	S Shank Dia.	L Overall Length	R Effective Length	Inserts
16mm	SSEM16-16-R35-2	10mm	2	16mm	80mm	31mm	
20mm	SSEM20-20-R35-2	10mm	2	20mm	90mm	39mm	*10mm (page 5)*
25mm	SSEM25-20-R35-4	10mm	4	20mm	90mm	39mm	
25mm	SSEM25-25-R55-2	16mm	2	25mm	100mm	44mm	*16mm (page 9)*
32mm	SSEM32-32-R35-5	10mm	5	32mm	100mm	44mm	*10mm (page 5)*
32mm	SSEM32-32-R55-3	16mm	3	32mm	100mm	44mm	*16mm (page 9)*
40mm	SSEM40-32-R55-4	16mm	4	32mm	115mm	55mm	



Standard Pitch Metric Shell Mills

OD Diameter	Holder	Max DOC	Flutes	B Arbor Dia.	R Overall Length	Mounting Screw	Inserts
50mm	SSSM50-22-R55-4	16mm	4	22mm	38mm	M10	
50mm	SSSM50-22-R55-5	16mm	5	22mm	38mm	M10	*16mm (page 9)*
63mm	SSSM63-27-R55-5	16mm	5	27mm	38mm	M12	
80mm	SSSM80-27-R55-6	16mm	6	27mm	50mm	M12	



Spare Parts and Tools

For inch and metric Square Shoulder

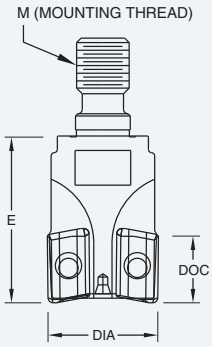
Part Description	Order Number for all ..1003.. Inserts	for all ..1204.. Inserts	for all ..1604.. Inserts
Clamping Screw	SSTX-08-S	SSTX-10-S	SSTX-15-S
Wrench	T8-F	T10-T	T15-T
Tightening Torque for Clamping Screw	12 in-lbs (1.0 Nm)	20 in-lbs (2.25 Nm)	30 in-lbs (3.5 Nm)

New cutter bodies may require additional torque to fully seat the inserts. Once the new cutter's pockets are "broken in," the recommended torque specs in the chart can be followed regularly.

Screw-On Modular Heads and Extensions

Screw-On Heads Fit Industry Standard Cutting Systems

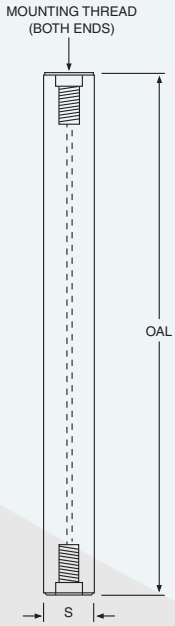
- Compatible with ISO standard modular cutting systems
- Close-tolerance mounting of heads minimizes runout and maximizes rigidity
- Provide significantly more effective reach than solid end mills
- Use standard inch wrench flats, no special metric wrenches needed



Square Shoulder Screw-On Heads

Dia.	Holder	M	Max DOC	E	Flutes	Inserts	Open-End Wrench
.750"	SSEM0750-MOD-R35-2C	M10	.350"	1.50"	2	*10mm (page 5)*	9/16"
.750"	SSEM0750-MOD-R45-2C	M10	.430"	1.50"	2	*12mm (page 7)*	9/16"
1.000"	SSEM1000-MOD-R45-3C	M12	.430"	1.50"	3	*12mm (page 7)*	11/16"
1.250"	SSEM1250-MOD-R45-4C	M16	.430"	1.75"	4	*12mm (page 7)*	15/16"
1.000"	SSEM1000-MOD-R55-2C	M12	.600"	1.50"	2	*16mm (page 9)*	11/16"
1.250"	SSEM1250-MOD-R55-2C	M16	.600"	1.75"	2	*16mm (page 9)*	15/16"
1.500"	SSEM1500-MOD-R55-2C	M16	.600"	1.75"	2	*16mm (page 9)*	15/16"

"C" denotes coolant thru tool.



Heavy Metal Modular Extensions Provide Even More Cutting Options

- Made of high-density tungsten, providing extra resistance to vibration and deflection
- Machined on both ends; can be cut in half and used with two different modular heads
- Metric shank diameter provides clearance for each inch size modular head
- Thru-coolant equipped

Modular Extensions

Modular Head Dia.	Part No.	OAL	M	Shank Dia.
.750" / 20mm	ME-0750-18MM-900C	9"	M10	18mm
1.000" / 25mm	ME-1000-25MM-1100C	11"	M12	25mm
1.250"	ME-125/150-25MM-1200C	12"	M16	25mm
1.500"	ME-125/150-25MM-1200C	12"	M16	25mm

Carbide Core Modular Extensions

See previous page for standard line of Modular Heads.

Dapra's Carbide Core Modular Extensions Are Ideal for Standard Inch End Mill Holders

- Cylindrical inch shanks, providing adaptation for end mill holders, milling chucks and heat-shrink holders
- 3 sizes to accommodate modular head sizes from 3/4" to 1 1/2"
- Carbide core for enhanced vibration dampening capability; reduced deflection and improved rigidity
- Optional add-on extensions for additional 2" reach – screw on to base extensions (for 3/4" to 1 1/2" modular heads)
- Thru-coolant for delivery of air or coolant right at the cutting edge

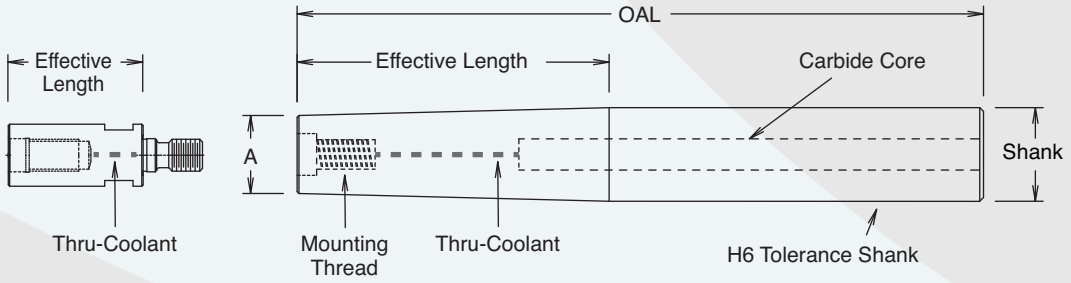
Carbide Core Modular Extensions

For Head Dia.	Extension Part No.	Shank Dia.	Effective Length	OAL	Thread	CC	A
.750"/20mm	CC-ME-0750-3500-C-SS-WOF	0.750"	3.7"	5.8"	M10	3/8" x 4.0"	.660"
.750"/20mm	CC-ME-0750-3500-C-WOF	1.000"	3.7"	6.0"	M10	7/16" x 4.0"	.660"
1.000"/25mm	CC-ME-1000-4500-C-WOF	1.000"	4.7"	7.0"	M12	7/16" x 5.0"	.935"
1.250"/1.500"	CC-ME-1250-5500-C-WOF	1.250"	5.7"	8.0"	M16	1/2" x 6.0"	1.175"

Extensions feature a cylindrical shank, with no Weldon flats. Hold with high-performance milling chucks or heat/mechanical shrink holders, or mill Weldon flats and use a short-length solid end mill holder.

2" Add-On Extensions

For Head Dia.	Extension Part No.	Effective Length	Thread
.750"/20mm	ME-0750-2C EXTENSION ADAPTER	2.0"	M10
1.000"/25mm	ME-1000-2C EXTENSION ADAPTER	2.0"	M12
1.250"/1.500"	ME-1250-2C EXTENSION ADAPTER	2.0"	M16



Carbide (Uncoated) Grade Selection

Traits	DMP35	DMK30	DMP30	DMK25
Toughness (Fracture)	Very tough, able to withstand shock and interruptions	Tough and hard; not as tough as DMP35, but tougher than DMK25	Tough and hard; not as tough as DMP35, but tougher than DMK25	Not as tough; may fracture in abusive applications
Wear Resistance (Edge Life)	Softer carbide, will not last as long as DMK25	Good – harder than DMP35 but not as hard as DMK25	Longer life than DMP35, but shorter than DMK25	Longer edge life due to higher carbide hardness
Heat Resistance	Lower heat resistance due to lower hardness of carbide	Good heat resistance – more than DMP35 but less than DMK25	Higher heat resistance than DMP35, less than DMK25	Highest heat resistance
Resistance to Built-Up Edge	Fair resistance to built-up edge; some buildup may occur – use coolant as a preventative	Good resistance	Poorer resistance to built-up edge; not typically a stainless steel grade	Good resistance
Feed Capability	High, due to toughness	Average – less feed than DMP35 but more than DMK25	Strong feed capabilities, approx. 20% lower than DMP35	Lower, due to brittleness; run at higher speeds and lower feeds
Coolant Capability	Good; toughness gives it more resistance to thermal shock	Good on high-temp. alloys and some tough stainless steels	Fairly tough; will allow machining with good coolant flow	Not as high; may experience thermal shock unless coolant flow is very good

Choose the Best Grade for Your Application

Material	Operating Speed	Geometry	1st Choice Grade*	Coolant
Free machining, low-carbon steels	*Low to Medium*	XPET	DMP30-HP / DMP30-TCI	*Air/Flood*
Free machining, low-carbon steels	*Higher*	XPET	DMP30-GLH	*Air*
Medium-carbon steels, tool steels	*Low to Medium*	APET/XPET**	DMP30-HP / DMK30-HP	*Air*
Medium-carbon steels, tool steels	*Higher*	APET/XPET**	DMP30-TCI / DMK30-TCI	*Air*
All steels – interrupted cuts and heavy roughing cuts	*All*	APET	DMP35-HP / DMP35-GLH	*Air*
Heat-treated steels (48-62 Rc)	*Low to Medium*	APET	DMK25-GLH	*Air*
Soft stainless steels (303, 304)	*Low to Medium*	XPET	DMP35-HP / DMK30-HP	*Air/Flood*
Soft stainless steels	*Higher*	XPET	DMP35-TCI / DMK30-TCI	*Air/Flood*
Tough stainless steels (304L, 316, 400 series and PH series)	*Low to Medium*	XPET	DMP35-HP / DMK30-HP	*Air/Flood*
Tough stainless steels	*Higher*	XPET	DMP35-TCI / DMK30-TCI	*Air/Flood*
Cast iron	*All*	APET	DMK30-HP / DMK25-HP	*Air*
Aluminum alloys, copper alloys	*All*	XPET-ALU XPET-PCD	DMK25-GLH / DMK253-GLH	*Flood*
High-temperature alloys, titanium	*All*	XPET	DMK30-GLH	*Flood*

** Contact Applications Specialist if first choice doesn't work.*
*** Customer preference. Both are acceptable – see cutting edge differences on page 3.*

APET & XPET Grade Description

Shock & Wear Resistance	Uncoated (Base Grade)	with Coating	Description	Specifications
TOUGHEST Shock Resistance	DMP35		Moderate wear resistance/high shock resistance. Recommended for interrupted or unstable steel applications, most stainless steel and high-temperature alloy applications.	ANSI C1-C2 ISO K25-K40, M25-M35
		DMP353	PVD TiCN – low to medium-temperature applications.	
	NEW	DMP35-HP	PVD AlCrN – premium low- to medium-temperature coating. Best choice when coolant is required.	
		DMP35-TCI	Modified AlTiN – premium medium- to high-temperature coating.	
		DMP357	PVD AlTiN – basic higher-temperature coating, moderate friction characteristics.	
		DMP35-GLH	Premium AlTiN – higher-temperature coating, very low friction characteristics.	
MEDIUM Shock and Wear	DMK30†		Micro-grain carbide providing higher wear resistance and moderate shock resistance for applications in tough stainless steels, high-temperature alloys, irons and many tool steels.	ANSI C2-C3 ISO K15-K30 M15-M30
		DMK303	PVD TiCN – low- to medium-temperature applications.	
	NEW	DMK30-HP	PVD AlCrN – premium low- to medium-temperature coating. Best choice when coolant is required.	
		DMK30-TCI	Modified AlTiN – premium medium- to high-temperature coating.	
		DMK307	PVD AlTiN – basic higher-temperature coating, moderate friction characteristics.	
		DMK30-GLH	Premium AlTiN – higher-temperature coating, very low friction characteristics.	
MEDIUM Shock and Wear	DMP30		High wear resistance/moderate shock resistance, recommended for most steel and some ductile iron applications.	ANSI C5-C6 ISO P25-P40
		DMP303	PVD TiCN – low- to medium-temperature applications.	
	NEW	DMP30-HP	PVD AlCrN – premium low- to medium-temperature coating. Best choice when coolant is required.	
		DMP30-TCI	Modified AlTiN – premium medium- to high-temperature coating.	
		DMP307	PVD AlTiN – basic higher-temperature coating, moderate friction characteristics.	
		DMP30-GLH	Premium AlTiN – higher-temperature coating, very low friction characteristics.	
HARDEST Wear Resistance	DMK25		Highest wear resistance with reduced shock-absorption capabilities. Suitable for all materials where cutting conditions are very stable. First choice for hardened steel (> 52 Rc).	ANSI C2-C3 ISO K15-K25, M15-M25
		DMK253	PVD TiCN – low- to medium-temperature applications.	
	NEW	DMK25-HP	PVD AlCrN – premium low- to medium-temperature coating. Best choice when coolant is required.	
		DMK25-TCI	Modified AlTiN – premium medium- to high-temperature coating.	
		DMK257	PVD AlTiN – basic higher-temperature coating, moderate friction characteristics.	
		DMK25-GLH	Premium AlTiN – higher-temperature coating, very low friction characteristics.	

† ***DMK30 grades are available in XPET only.***

SQUARE SHOULDER Application Information

Technical Considerations

- Always use anti-seize compound on screws.
- Thoroughly clean pocket at each insert change.
- Change insert screw every 10 inserts.
- Use the shortest-length tool holder (end mill holder) for maximum rigidity. The shank of the cutting tool should be up inside the machine spindle taper whenever possible.
- Use tool holders appropriate for roughing operations: end mill holders and power chucks *are* recommended; collets *are not* recommended.

Recommendations

- Square Shoulder milling allows heavier Depths of Cut (DOC), but Dapra recommends that no more than 2/3 of the insert length should be engaged to reduce the chance for screw breakage.
- Although the cutter is capable of the heavier cut, take care to allow for the machine tool's capabilities in horsepower and rigidity.
- Utilize as much of the cutting edge per pass (DOC) as possible, to get the most metal removal within the insert's tool life.
- Feed rates should not go significantly below or above the recommended ranges (see page 24), or premature failure can occur.

- Square Shoulder tools can not plunge; instead, use up to a 2° ramp angle for full diameter cut. Greater ramp angles possible with partial width cut.
- ***Climb milling*** is recommended whenever possible.
- Use the larger corner radii for the strongest cutting edge during roughing applications.
- Compensate for radial chip thinning (see chart on page 18) when Width of Cut (WOC) is less than 50% of the cutter diameter.
- Because our Square Shoulder tools cut a true 90°, they are a good choice for a wide range of finishing applications.
- Use Coarse Pitch cutters for slotting cuts or when cutting pressure needs to be reduced; use Fine Pitch cutters for lighter profiling cuts or when feed rates can be maximized.
- Most of Dapra's high-performance grades run best without coolant. Coolant in most milling applications creates a high potential for thermal shock, which can produce premature, and sometimes catastrophic, failure. *Use air pressure to provide adequate cooling and chip evacuation.*
- For long-reach applications, utilize the Carbide Core cutting tools for increased rigidity and reduced chatter.

Troubleshooting

Concern	Possible Cause	Solutions
Insert wear appears high (flank wear)	-Not enough chip load -Surface footage is high -Incorrect grade or coating	❑ Verify correct speed and feed ❑ Increase feed rate ❑ Decrease RPM ❑ Consider different insert
Insert chipping	-Surface footage is low -Incorrect grade or coating -Using sharp edge insert incorrectly -Feed too high	❑ Verify correct speed and feed ❑ Increase spindle speed ❑ Decrease feed rate ❑ Change insert selection ❑ Decrease DOC
Built-up edge on insert	-Low surface footage -Light chip load (feed per tooth) -Incorrect coating	❑ Verify correct speed and feed ❑ Increase cutting speed ❑ Increase feed rate ❑ Select different coating
Poor finish/chatter	-Cutter hung out too far -Excessive runout -Inadequate tool holding	❑ Use Carbide Core cutter body ❑ Reduce tool gage length ❑ Check tool holder wear ❑ Use high-rigidity tool holder
Tool shank breaks	-Tool pressure too great -Fatigued cutter body	❑ Decrease DOC ❑ Reduce tool gage length ❑ Decrease feed rate

Safety

Modern metal cutting techniques involve the potential use of very high operating parameters (speeds, feeds, depths of cut, etc.). This creates the potential for flying chips and debris, and can also create tool breakage due to a variety of causes. As such, any metal cutting operation should be executed in a completely enclosed (shielded) environment to protect against injury from flying objects. Dapra does not assume responsibility for any loss, damage or expense incurred in any use or handling of our products after purchase.

Grinding produces hazardous dust. To avoid adverse health effects, use adequate ventilation and read material safety data sheet first.

Optimizing Cutting Performance

Dapra's high-performance cutters work best when allowed to perform within their designed operating parameters. Adhering to the following steps will ensure that you are getting the most from your investment.

1. Refer to the Feed and Speed Chart (see page 24) to find the recommended Surface Feet per Minute (**SFM**) and Feed per Tooth (**FPT**) at which to run your cutter, based on the material to be machined.
2. Use the following formula to determine the Revolutions per Minute (**RPM**) for your cutting tool:

   (**SFM** x 3.82) / Tool Dia. = **RPM**

   Example: A 2" diameter tool operating at 900 **SFM** (900 x 3.82) / 2 = 1720 **RPM**
3. Use the following formula to determine the feed in Inches per Minute (**IPM**) to be programmed into the machine tool:

   FPT x **RPM** x **N** (number of teeth in cutter) = Feed

   Example: A 5-flute cutter at .008" **FPT** (.008 x 1720) x 5 = 69 **IPM**
4. If the Width of Cut (**WOC**) < 1/2 the cutter diameter, use the feed rate compensation chart (below) to compensate for chip thinning.

Width of Cut (WOC) (% of tool Ø)	50% or >	40%	30%	20%	10%
Feed Rate Multiplier	1	1.02	1.1	1.25	1.7

After determining the percentage of **WOC** for the tool diameter, multiply the desired feed rate by the corresponding factor shown in the chart. This will be the Adjusted Feed per Tooth (**AFPT**) resulting in a true chip thickness of the desired amount.

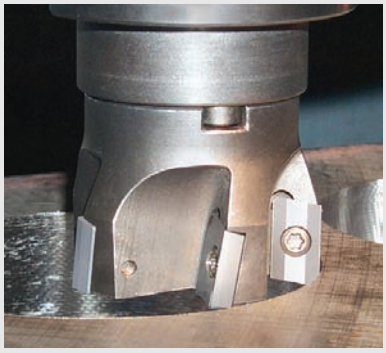
Example: If using a 1" dia. end mill @ .100" **WOC**, the **WOC** = 10% of the cutter diameter. Using the chart above, the factor for the chip thickness = 1.7.If a chip thickness of .005" is desired, a feed rate of .0085" (.005 x 1.7) should be programmed into the machine tool.

or

Adjusted Feed per Tooth (**AFPT**) = desired chip thickness x chip thinning factor (from chart).

Hole Diameter Calculation

Helical Interpolation for Larger-Diameter Hole Making



Larger-diameter hole making can be quick and easy when a Square Shoulder Cutter is used in combination with Helical Interpolation. This technique resembles thread milling in that all three axes (X, Y and Z) are in motion simultaneously. It differs from thread milling in that the tool is introduced into the material without a start hole of any kind.

The tool simply is positioned at the inside diameter of the hole to begin its helix from there, achieving complete material removal from the hole by ramping down to the final depth. This smooth operation tends to avoid the high horsepower consumption characteristic of large diameter hole making. The quick and easy process offers the added advantage of allowing many different hole sizes to be generated with the same diameter tool. Hole size variation is all in the programming.

For more information on how Helical Interpolation can improve your manufacturing efficiency, contact your Dapra Applications Specialist.

Part Number	Min. Hole Dia.*	Max. Hole Dia.
SSEM0500-R35-1	0.63"	1.00"
SSEM0625-R35-2	0.78"	1.25"
SSEM0750-R35-2	1.03"	1.50"
SSEM0625-R45-1	0.75"	1.25"
SSEM0750-R45-2	0.88"	1.50"
SSEM1000-R45-3	1.38"	2.00"
SSEM1250-R45-4	1.88"	2.50"
SSEM1500-R45-5	2.38"	3.00"
SSEM1000-R55-2	1.28"	2.00"
SSEM1250-R55-3	1.78"	2.50"
SSEM1500-R55-3	2.28"	3.00"
SSSM2000-R55-5	3.28"	4.00"
SSSM2500-R55-5	4.28"	5.00"
SSSM3000-R55-6	5.28"	6.00"
SSSM4000-R55-8	7.28"	8.00"
SSSM5000-R55-8	9.28"	10.00"
SSSM6000-R55-7	11.28"	12.00"

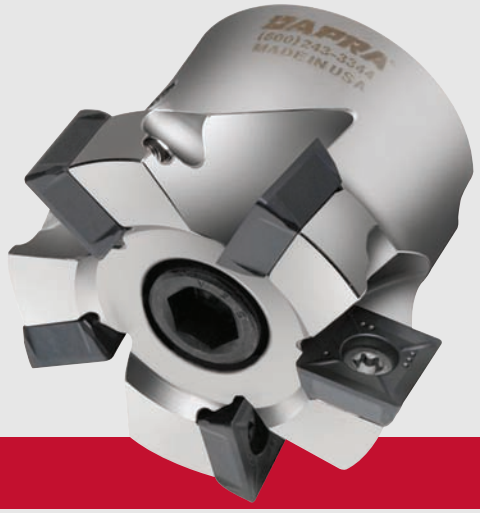
** Smaller holes may be interpolated by pre-drilling.*

Typical recommended ramp angle = 1 degree or less.

SSPM Production Milling Tools

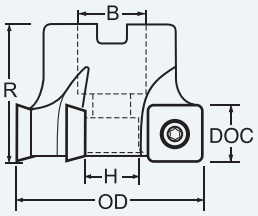
FACE MILLING • PROFILING • SLOTTING • STEP MILLING
PLUNGE ROUGHING • HELICAL INTERPOLATION OF CORED HOLES

- *Square SXEH inserts provide an excellent combination of 90˚ performance and economy for a full range of production milling applications*
- *Reinforced insert corners for high feed rates*
- *Positive cutting geometry for smooth cutting action*
- *Fine pitch for aggressive metal removal and excellent surface finishes*
- *3 carbide substrates (toughest, medium and hardest) for easy grade selection*
- *2" through 6" diameters*



Ordering Information

SSPM Tool

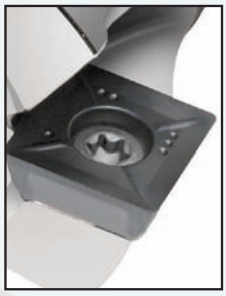


OD Diameter	Holder	R Overall Length	B Arbor Dia.	H Counter Bore Dia.	Flutes	Max DOC
SSPM Tools						
2.000"	SSPM2000-0750-R4-5S	1.500"	.750"	.590"	5	.500"
3.000"	SSPM3000-1000-R4-8S	2.000"	1.000"	.790"	8	.500"
4.000"	SSPM4000-1500-R4-10S	2.000"	1.500"	2.060"	10	.500"
5.000"	SSPM5000-1500-R4-12S	2.000"	1.500"	2.060"	12	.500"
6.000"	SSPM6000-1500-R4-12S	2.000"	1.500"	2.060"	12	.500"

Dapra is transitioning to thru-coolant on all shell mills 3" and smaller. To specify the thru-coolant option, add a "C" to the end of the part number. Stock not guaranteed. Once the non-coolant cutter supply is exhausted, the thru-coolant option will be the only available.

Square Inserts

● ***Stocked standard***



Square SXEH inserts provide an excellent combination of performance and economy. Utilize 4-sided inserts for these 90˚ milling applications:

- Profiling
- Slotting
- Step milling
- Helical interpolation of cored holes
- Face milling
- Plunge roughing

D = Dished Face Geometry

T = T-Land Edge Geometry

Insert	IC	Thickness	Corner Radius	Uncoated: DMK30 DMP25 DMK15	Coated: DMK303 DMP253 DMK153	Coated: DMK30-HP DMP25-HP DMK15-HP	Coated: DMK307 DMP257 DMK157	Coated: DMK30-GLH DMP25-GLH DMK15-GLH
SXEH-432-T	.500"	.200"	.031"	●	●	●	●	●
SXEH-432-D*	.500"	.200"	.031"	●	●	●	●	●

***SXEH-432-D available in DMK30 and DMP25 grades only.**

SXEH Insert Grade Selection

Grades on this chart apply to SXEH inserts ONLY. See page 15 for APET/XPET insert grade selection.

Shock & Wear Resistance	Uncoated (Base Grade)	with Coating	Description	Specifications
TOUGHEST Shock Resistance	DMK30		Moderate wear resistance/high shock resistance. Recommended for interrupted or unstable steel, most 300 series stainless steel, high-temperature alloys and cast iron applications.	ANSI C1-C2 ISO K25-K40, M25-M35
		DMK303	PVD TiCN coating. Excellent wear resistance for low-to-medium operating temperatures.	
		DMK30-HP	High-performance medium-temperature grade. Optimum performance and wear resistance in most soft steels, soft stainless steels and cast irons.	
		DMK307	PVD AlTiN coating. For higher-temp. applications including tougher stainless steels, high-temp. alloys, high-speed machining and heat-treated materials.	
		DMK30-GLH	Premium high-temperature grade. Unbeatable performance and wear resistance in high-heat applications such as harder steels, tough stainless steels and high-temperature alloys.	
MEDIUM Shock and Wear	DMP25		High wear resistance/moderate shock resistance, recommended for most steel and 400 series stainless steel applications.	ANSI C5-C6 ISO P25-P40
		DMP253	PVD TiCN coating. Excellent wear resistance for low-to-medium operating temperatures.	
		DMP25-HP	High-performance medium-temperature grade. Optimum performance and wear resistance in most soft steels, soft stainless steels and cast irons.	
		DMP257	PVD AlTiN coating. For higher-temperature applications including high-speed machining and heat-treated materials.	
		DMP25-GLH	Premium high-temperature grade. Unbeatable performance and wear resistance in high-heat applications such as harder steels, tough stainless steels and high-temperature alloys.	
HARDEST Wear Resistance	DMK15		Highest wear resistance with reduced shock absorption capabilities. Micro-grain carbide provides excellent edge strength for abrasive applications in nonferrous materials. Suitable for castings, aluminum and smoother cuts in tough stainless steels, high-temperature alloys and hardened steel.	ANSI C2-C3 ISO K15-K25, M15-M25
		DMK153	PVD TiCN coating. Excellent wear resistance for low-to-medium operating temperatures. Good resistance to built-up edge for aluminum machining.	
		DMK15-HP	High-performance medium-temperature grade. Optimum performance and wear resistance in most soft steels, soft stainless steels and cast irons.	
		DMK157	PVD AlTiN coating. Appropriate for higher-temperature applications such as high-velocity cast iron machining, tough stainless steels, high-temperature alloys and hardened steel.	
		DMK15-GLH	Premium high-temperature grade. Unbeatable performance and wear resistance in high-heat applications such as harder steels, tough stainless steels and high-temperature alloys.	

DMP25-HP is a good first choice for most applications. ***Additional coatings available on request. Contact Dapra for details.***

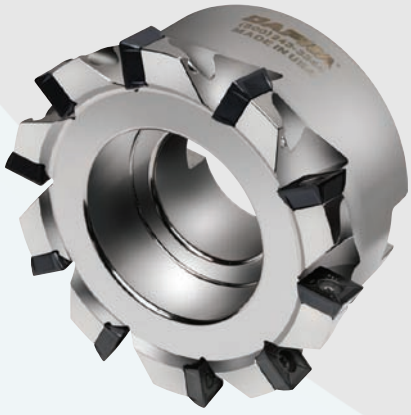
Spare Parts & Tools

For All SSPM Production Milling Tools:

Insert Screw: TRS-4

Wrench: T-15T
(Torque recommendation: 30 in-lbs)

Anti-Seize Grease: ASG-120



New cutter bodies may require additional torque to fully seat the inserts. Once the new cutter's pockets are "broken in," the recommended torque specs in the chart can be followed regularly.

Production Milling Speeds & Feeds

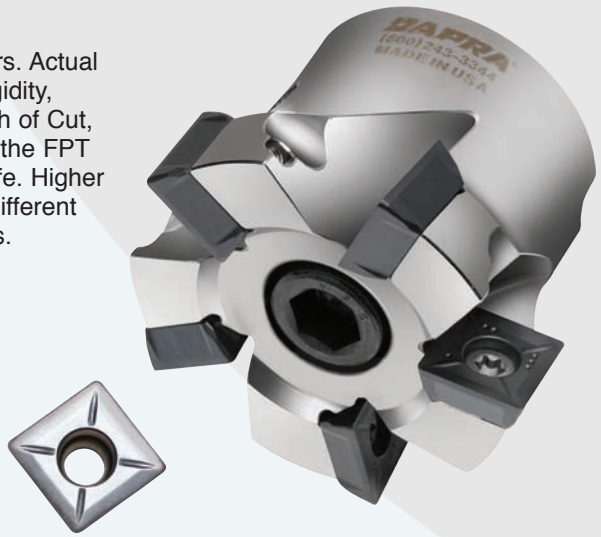
Speeds and feeds on this chart are ONLY for SSPM tools. See catalog back cover for APET/XPET speeds and feeds.

Speeds and Feeds for Dapra SSPM Cutters			1018, 12L14, 1041, 1045 LOW-TO-MEDIUM CARBON STEELS	4140, 4150 4340, H13, P20, A2, D2 TOOL STEELS, HIGH-ALLOY STEELS (SOFT)	4140, 4150 4340, H13, P20, A2, D2 TOOL STEELS, HIGH-ALLOY STEELS (HARDENED)	303, 304 LOW 400 SERIES FREE MACHINING STAINLESS	316, 347, PH STAINLESS TOUGHER STAINLESS	GRAY, MALLEABLE, DUCTILE CAST IRONS	6061, 7075 ALUMINUM ALLOYS	AMPCO, WEARITE COPPER ALLOYS	INCONEL, WASPALOY, MONEL HIGH-TEMP. ALLOYS/ TITANIUM	PLASTICS, NON-FERROUS
TOUGHEST Shock Resistance	▲ LOWER TEMPS ▼ HIGHER TEMPS	DMK30	**255-383**	**213-340**		**128-255**	**106-213**	255-383	1000+	200-600	50-150 ROUGHING	1000+
		DMK303	**340-595**	**255-510**		**255-510**	**128-340**					1000+
		DMK30-HP	**425-680**	**340-595**		**425-680**	**213-425**	425-680		400-1200		1000+
		DMK307	**510-765**	**425-680**		**510-765**	**255-510**	510-765			**75-300 ROUGHING**	1000+
		DMK30-GLH	**595-850**	**425-765**		**510-935**	**255-680**	510-1020			**75-450 ROUGHING**	1000+
MEDIUM Shock & Wear	▲ LOWER TEMPS ▼ HIGHER TEMPS	DMP25	**383-680**	**319-595**		213-340		**298-468 DUCTILE**	1000+	200-600		1000+
		DMP253	**425-723**	**340-680**		340-595				400-1200		1000+
		DMP25-HP	**510-850**	**425-765**		425-765		**425-765 DUCTILE**				1000+
		DMP257	**595-1020**	**510-850**	213-425	510-850		**425-935 DUCTILE**				1000+
		DMP25-GLH	**680-1360**	**510-1020**	213-595	510-1020		**425-1105 DUCTILE**				1000+
HARDEST Wear Resistance	▲ LOWER TEMPS ▼ HIGHER TEMPS	DMK15				213-340	**106-213 FINISHING**	**298-510 GRAY**	**1000+**	**200-600**	50-150 FINISHING	1000+
		DMK153				340-595	**128-340 FINISHING**		**1000+**	**400-800**	50-250 FINISHING	1000+
		DMK15-HP	510-850	425-765		425-765	**213-425 FINISHING**	**510-765 GRAY**		**400-900**	50-250 FINISHING	1000+
		DMK157	595-1020	510-850	**213-595**	510-850	**255-510 FINISHING**	**595-935 GRAY**			**75-250 FINISHING**	1000+
		DMK15-GLH	680-1360	510-1020	**255-680**	510-1020	**255-680 FINISHING**	**680-1105 GRAY**		**400-1200**	**75-350 FINISHING**	1000+
1st CHOICE GEOMETRY			T-Land	T-Land	T-Land	T-Land	Dished	T-Land	Dished	Dished	Dished	Dished
RECOMMENDED IPT			.006-.015	.006-.012	.003-.008	.004-.012	.003-.010	.006-.015	.005-.030	.005-.020	.003-.007	.005-.030

** Best choice for material shown in bold text.

The parameters provided are suggested operating parameters. Actual speeds and feeds will depend on many variables, such as rigidity, workpiece hardness, tool extension, machine accuracy, Depth of Cut, etc. Start at the middle of the SFM range and the low end of the FPT range. Next, increase FPT to optimize productivity and tool life. Higher SFM will provide higher output but may reduce tool life. Try different combinations to find the parameters that best suit your needs.

- The -3 and -HP coatings are best suited for low-to-medium operating speeds (temperatures) and softer materials.
- The -7 and -GLH coatings are best suited for high operating speeds (temperatures) and harder materials.



TITAN 125 High-Pressure Vise

"Nothing is Beyond its Grasp!"

With the TITAN 125 High-Pressure Vise, two clamping systems provide the versatility needed to hold even the most complex workpiece. Powered positive closure is achieved with the unique relationship between the pivot jaws and support jaw grid plate. Gripper height and workpiece support height is easily adjusted.

Variable Ground Step Jaws

- Precise control for high-quality workpiece machining
- Various jaw options for customization according to workpiece shape and type of machining
- Pivot jaws rotate 360˚ to compensate for non-parallel clamping surfaces
- Threaded for supports, rear is serrated
- "Click Quick" change system for Click supports

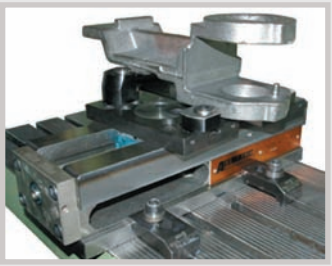
Modular Gripper Clamping Jaw System

- Accepts a wide variety of support jaws hold gripper inserts that can be screwed into grid plates to securely clamp a wide variety of workpiece geometries
- Support jaw options are:

  Fixed

  Movable Pivoting to compensate for non-parallel clamping surfaces and irregular workpieces

  Movable Rigid is ideal for clamping oversize workpieces across multiple clamping points or 3-point clamping
- A universal gripper set is available for clamping unmachined parts



With the addition of the ALLMATIC TITAN 125 to our comprehensive line of workholding tools, we continue to offer our customers extremely reliable, versatile and cost-effective clamping. Contact us today to learn more.

Square Shoulder APET/XPET Recommended Cutting Speeds/Feeds

Speeds and Feeds for Dapra Square Shoulder Cutters			1018, 12L14, 1041, 1045	4140, 4150 4340, H13, P20, A2, D2	4140, 4150 4340, H13, P20, A2, D2	303, 304 LOW 400 SERIES	316, 347, PH STAINLESS	GRAY, MALLEABLE, DUCTILE	6061, 7075	AMPCO, WEARITE	INCONEL, WASPALOY, MONEL	
			LOW-TO-MEDIUM CARBON STEELS	TOOL STEELS, HIGH-ALLOY STEELS (SOFT)	TOOL STEELS, HIGH-ALLOY STEELS (HARDENED)	FREE MACHINING STAINLESS	TOUGHER STAINLESS	CAST IRONS	ALUMINUM ALLOYS	COPPER ALLOYS	HIGH-TEMP. ALLOYS/ TITANIUM	PLASTICS, NON-FERROUS
TOUGHEST Shock Resistance	LOWER TEMPS ▲ HIGHER TEMPS ▼	DMP35	300-450	250-400		**150-300**	**125-250**	300-450		200-600	50-150 ROUGHING	1000+
		DMP353	400-700	300-600		**240-480**	**150-400**				50-150 ROUGHING	1000+
		DMP35-HP/TCI	500-800	400-700		**400-640**	**250-500**	500-800		400-1200		1000+
		DMP357	600-900	500-800		**480-720**	**300-600**	600-900			**75-200 ROUGHING**	1000+
		DMP35-GLH	700-1000	500-900		**480-880**	**300-800**	600-1200			**75-300 ROUGHING**	1000+
MEDIUM Shock & Wear	LOWER TEMPS ▲ HIGHER TEMPS ▼	DMK30	400-700	300-600		200-320	**140-275**	**350-550**			**55-165**	
		DMK303	400-700	300-700		320-560	**165-440**				**55-165**	
		DMK30-HP/TCI	500-900	500-800		400-720	**275-550**	**500-900**				
		DMK307	600-1000	500-900	200-400	480-800	**330-660**	**500-1100**			**90-220**	
		DMK30-GLH	700-1400	500-1000	200-600	480-960	**330-880**	**500-1300**			**90-330**	
MEDIUM Shock & Wear	LOWER TEMPS ▲ HIGHER TEMPS ▼	DMP30	**400-700**	**300-600**				**350-550 DUCTILE**		200-600		1000+
		DMP303	**400-700**	**300-700**						400-1200		1000+
		DMP30-HP/TCI	**500-900**	**400-800**				**500-900 DUCTILE**			50-150 FINISHING	1000+
		DMP307	**600-1000**	**500-900**	200-400			**500-1100 DUCTILE**			50-200 FINISHING	1000+
		DMP30-GLH	**700-1400**	**500-1000**	200-600			**500-1300 DUCTILE**			50-250 FINISHING	1000+
HARDEST Wear Resistance	LOWER TEMPS ▲ HIGHER TEMPS ▼	DMK25				250-400	**125-250 FINISHING**	**350-600 GRAY**	**1500+**	**200-600**	50-150 FINISHING	**1000+**
		DMK253				400-700	**150-400 FINISHING**		**1500+**	**400-800**	50-250 FINISHING	1000+
		DMK25-HP/TCI	500-900	400-800		500-900	**250-500 FINISHING**	**600-900 GRAY**		**400-900**	50-250 FINISHING	1000+
		DMK257	600-1000	500-900	**200-600**	600-1000	**300-600 FINISHING**	**700-1100 GRAY**			**75-250 FINISHING**	1000+
		DMK25-GLH	700-1400	500-1000	**300-700**	600-1200	**300-800 FINISHING**	**800-1300 GRAY**		**400-1200**	**75-350 FINISHING**	1000+
		PCD							**2000+**			
RECOMMENDED GEOMETRY			XPET / APET	APET	APET	XPET	XPET	APET	XPET / ALU	XPET	XPET	XPET / ALU
RECOMMENDED FPT – 10mm			.003-.008	.003-.008	.003-.005	.003-.008	.003-.007	.003-.010	.003-.020	.003-.010	.003-.006	.003-.025
NEW RECOMMENDED FPT – 12mm			.004-.012	.004-.010	.003-.006	.003-.010	.003-.010	.004-.012	.003-.020	.003-.015	.003-.007	.003-.025
RECOMMENDED FPT – 16mm			.006-.015	.006-.012	.003-.008	.005-.012	.004-.010	.006-.015	.003-.025	.003-.020	.003-.008	.003-.025

- First choice grade shown in bold text.
- For heavy WOC and/or DOC, use the lower end of the FPT range.
- For light WOC and DOC, the higher end of the FPT range may be possible.

The parameters provided are suggested operating parameters. Actual speeds and feeds will depend on many variables, such as rigidity, workpiece hardness, tool extension, machine accuracy, Depth of Cut, etc. Start at the middle of the SFM range and the low end of the IPT range. Next, increase IPT to optimize productivity and tool life. Higher SFM will provide higher output but will reduce tool life. Try different combinations to find the parameters that best suit your needs.

DAPRA® CORPORATION

Bringing Better Ideas to the Cutting Edge™

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