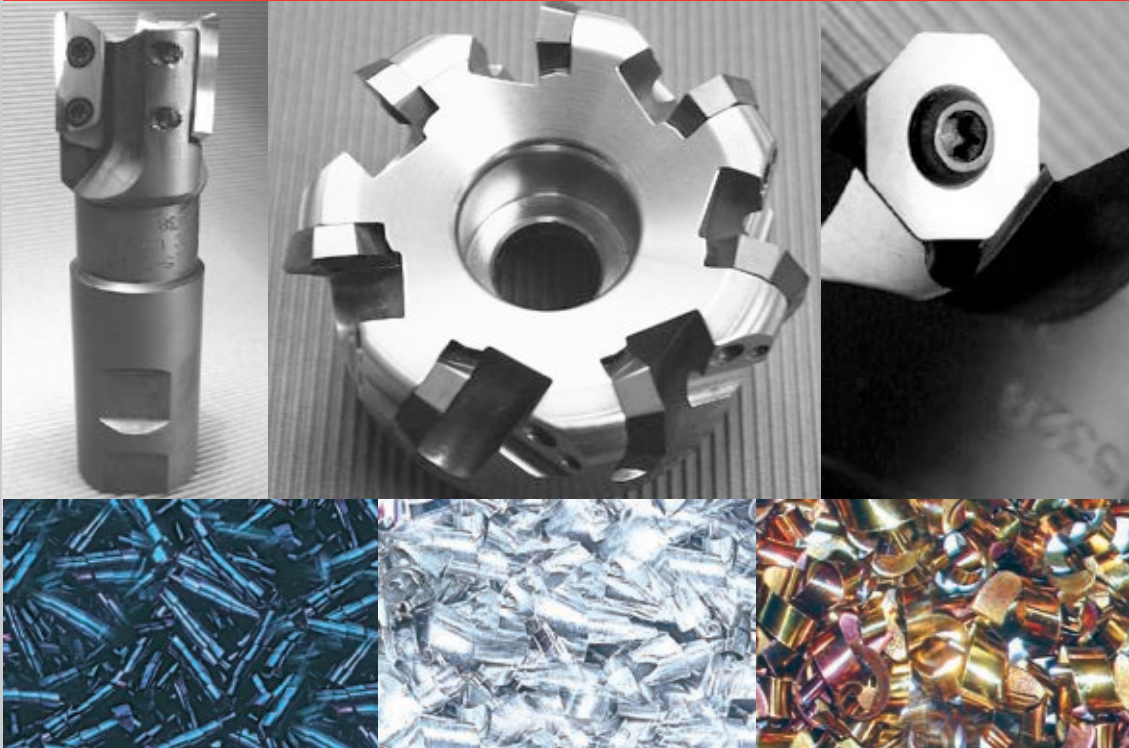




## 100% Precision Ground Indexable Carbide End Mills & Face Mills



**2008 Metric Catalog**



*Home of the Freedom Cutter®*

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Phone (800) 564-5832 Fax (866) 244-0298 miltecusa.com toolalliance.com e-mail: sales@miltecusa.com

*Home of the Freedom Cutter®*



"Reprogram your milling expectations."



Mil-Tec was created to bring the shearing action of traditional solid carbide machining to indexable carbide face & end milling. Along the way we pioneered and patented the Freedom Cutter® (allowing 3 insert shapes to fit into the same cutter body pocket) and the Mil-Loc (a positioning device allowing 8 indexes on a round insert). We use only the best technology available from throughout the world, combined into a product line that offers the ultimate in milling application productivity. All of our inserts are precision ground and are suitable for use on a diverse range of machine tools. Our toughest task in application training is getting prospective customers to run our product FAST ENOUGH to take full advantage of the Mil-Tec design. Once accomplished, a Mil-Tec customer is usually one for life.

We guarantee your satisfaction. This Company was created with a total "white-paper" approach; there are no compromises regarding performance. Either we'll meet or beat your current milling value, or we'll credit your tools.

We are extremely proud of the Mil-Tec product line, and are confident you will enjoy using it as much as we enjoy manufacturing it.

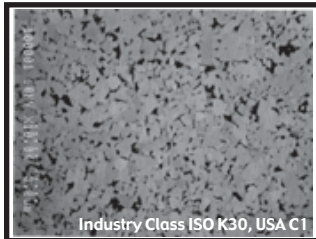
Sincerely,

David Povich  
President



# Components of Guaranteed Quality

**COMPONENT #1: Carbide Substrate** From being the first Company to introduce MicroGrain carbide to the mass-market round tool industry through the present day, Tool Alliance® has consistently innovated new powder and grade combinations for demanding applications. We recognize that our material is the very first Significant Characteristic. By creating partnerships with a limited number of tungsten powder and cemented-carbide material suppliers, we are able to guarantee that our customers receive precision-tolerance tools ground from only the purest, finest grades available worldwide. The following photograph of Ultra-Carb® 2 demonstrates the complexity of the compound we commonly refer to as Cemented Carbide. Taken at magnification of 10,000 X through an SEM (Scanning Electron Microscope), the visible grains are tungsten while the cobalt binder appears as dark shadows. The largest tungsten grains appearing in the Ultra-Carb photo are less than one micron in size.



## ULTRA-Carb® 1

Cobalt Percentage: 12%  
Grain Size (µm): ≤ 1.9  
Hardness: 90.2 HRa  
TRS (PSI): 540,000  
Density (gm/cc): 14.1  
Code C1 / K40

## ULTRA-Carb® 2

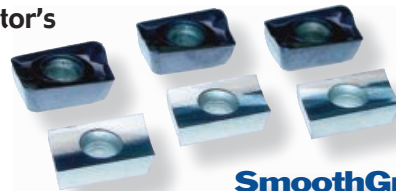
Cobalt Percentage: 10%  
Grain Size (µm): ≤ 1.0  
Hardness: 91.6 HRa  
TRS (PSI): 480,000  
Density (gm/cc): 14.5  
Code C1 / K30

## ULTRA-Carb® 5

Cobalt Percentage: 11.5%  
Grain Size (µm): ≤ 1.9  
Hardness: 91.0 HRa  
TRS (PSI): 350,000  
Density (gm/cc): 12.9  
Code C5 / P40 / M30

**COMPONENT #2: The Grinding Process** After selecting the best material available, Mil-Tec has perfected the manufacturing technology to optimize 100% of its physical properties. We call this process SmoothGrind®. Years in development, SmoothGrind is the result of a proprietary combination of material, abrasive, coolant, machine-tool, software, and grinding method technologies that produce cutting tools with superior qualitative characteristics. Sharper and longer lasting cutting edges, enhanced workpiece finishes, and improved lubricity are just some of the benefits brought to you by the latest indexable carbide rotary tooling advances from Mil-Tec. The following photograph displays a Mil-Tec insert featuring SmoothGrind (bottom) versus a major competitor's product (top). Our 100% precision-ground shearing, positive geometries create cutting forces much more similar to solid carbide milling than traditional pressed and sintered insert milling. Love your machine tool? Love your spindle? Treat them right and lower your maintenance costs at the same time you increase your throughput and improve your part finish.

Competitor's



SmoothGrind®



## SmoothCoat®



**COMPONENT #3: The Coating Process** The challenge of finding a coating method to leverage 100% of the inherent assets of our carbide grade and grinding technologies was difficult. What we finally discovered was such a perfect fit and so logical for our particular product line that we have invested heavily into the process we now call SmoothCoat®. Much more than simply the standard arc-deposited PVD coating, SmoothCoat involves sputter multi-layering and a multi-step prep & post operation called Micro-Blasting. The advantages of this procedure include relieving of tensile stresses prevailing underneath the cutting edge, increased stability of the coating on the cutting edge, and perhaps most importantly, elevating SmoothGrind even another notch by leveling and activating the cemented carbide substrate. The result is a smooth, shiny, tough, and durable surface that can withstand tomorrow's machining requirements and outlast competitive coatings. Additionally, we've made it a standard feature on thousands of our standard catalog items.

**COMPONENT #4: The Tooling Process** All the best physical ingredients are wasted unless they are all pulled together in a comprehensive system that maximizes their respective attributes. Mil-Tec calls this process SmoothContricity®. Our indexable products are designed to run more like solid carbide end mills versus the traditional pressed & sintered insert. SmoothContricity ensures that optimum results can be obtained by minimizing run-out (TIR), and providing industry-leading tolerances on diameter & radius. Combined, these attributes allow our consumers to reach full machining potential and position the cutting tool as a systematic contributor to process consistency and repeatability. Furthermore, you'll see benefits through the production stream like reduced maintenance costs, more uptime, better part finishes, and more.



SmoothContricity®



## The Mil-Tec Freedom Cutter® Series

The Freedom Cutter system features the ultimate in face-milling versatility. Each cutter body pocket accepts all three insert shapes, and each insert is available in a huge variety of geometries, radius sizes, carbide substrates, hones & coatings. Each cutter body is precision machined from hardened steel to exacting, repeatable tolerances. Special pocket geometry allows for 8 indexes on Octagon & Round inserts, and 4 on Square. The Freedom Cutter milling system allows you to maximize your capabilities while minimizing your investment in cutter bodies.

- Perfect for all material groups
- Precise tolerances
- Hardened steel
- 3 insert shapes fit each pocket
- Unbeatable versatility
- Torx screw system
- Works with wide range of HP
- Uses precision-ground Freedom Cutter inserts
- From 32 mm to 160 mm diameter



### Select a Freedom Cutter Face Mill Style Body:

All Freedom Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We manufacture standards & specials such as Fractional, Coolant-Thru, Cartridge style, aluminum, or other cutter bodies with lead times as quick as one week.

Cutter Diameter	Bore	Keyway	Height	Insert Pockets	FC Body Part Number	EDP Number	Body List Price USD
50.0 mm	22 mm	10 mm	43.8 mm	4	FC-50-4-22	05004	\$325.00
63.0 mm	22 mm	10 mm	47.6 mm	4	FC-63-4-22	05005	\$345.00
80.0 mm	27 mm	12 mm	47.6 mm	5	FC-80-5-27	05006	\$375.00
80.0 mm	27 mm	12 mm	47.6 mm	7	FC-80-7-27	05007	\$400.00
100.0 mm	32 mm	14 mm	47.6 mm	6	FC-100-6-32	05008	\$490.00
100.0 mm	32 mm	14 mm	47.6 mm	8	FC-100-8-32	05009	\$520.00
125.0 mm	40 mm	16 mm	53.6 mm	6	FC-125-6-40	05010	\$560.00
125.0 mm	40 mm	16 mm	53.6 mm	9	FC-125-9-40	05011	\$590.00
160.0 mm	40 mm	16 mm	53.6 mm	8	FC-160-8-40	05012	\$620.00
160.0 mm	40 mm	16 mm	53.6 mm	10	FC-160-10-40	05013	\$660.00



### Select a Freedom Cutter Face Mill Kit:

We've taken some of our most popular sized Freedom Cutters, included 10 inserts, wrenches, screws, anti-seize, technical data sheet, and placed them in a reusable case with special pricing. This deal is hard to beat! Specify which standard, coated insert to include in the kit when ordering.

Cutter Diameter	Bore	Keyway	Height	Insert Pockets	FC Kit Part Number	EDP Number	Body List Price USD
50.0 mm	22 mm	10 mm	43.8 mm	4	KT-FC50	05051	\$205.00
80.0 mm	27 mm	12 mm	47.6 mm	5	KT-FC80	05052	\$285.00
100.0 mm	32 mm	14 mm	47.6 mm	6	KT-FC100	05053	\$380.00



### Select a Freedom Cutter Face Mill with Shank Style Body:

All Freedom Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We manufacture standards & specials such as Fractional, Coolant-Thru, Extended Length, integrated R8 shank, or other cutter bodies with lead times as quick as one week.

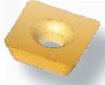
Cutter Diameter	Shank	Reach	OAL	Insert Pockets	FC Body Part Number	EDP Number	Body List Price USD
32.0 mm	32 mm	45.6 mm	101.6 mm	2	FC-32-2-32	05001	\$150.00
40.0 mm	32 mm	43.5 mm	101.6 mm	3	FC-40-3-32	05002	\$175.00
50.0 mm	32 mm	43.5 mm	101.6 mm	4	FC-50-4-32	05003	\$325.00



# The Mil-Tec Freedom Cutter® Plus+45 Series new!



The Freedom Cutter Plus+45 Milling System is a 45° lead angle face mill that utilizes square shaped Freedom Cutter Inserts. Because our inserts have precision ground geometries ranging from the SA Super Aluminum to our workhorse NP grind, the new Plus+45 is the most versatile 45° lead face mill in the industry. The Plus+45 powerful combination of attributes generates maximum metal removal rates in the toughest alloys!

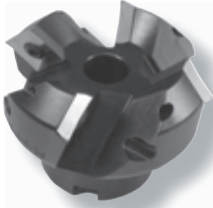


- 45° lead angle for smooth cut
- Perfect for all material groups including toughest alloys
- Precise tolerances
- Hardened steel
- Accepts standard square Freedom Cutter inserts
- Utilizes FC insert geometry
- Torx screw system
- Depths of cut up to 10 mm
- Unbeatable productivity
- From 50 mm to 160 mm diameter

The Plus+45 uses standard Square Freedom Cutter Inserts up to 125 maximum radius

## Select a Freedom Cutter Plus+45 Face Mill Style Body:

All Freedom Cutter Plus+45 Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We manufacture standards & specials such as Fractional, Coolant-Thru, Cartridge style, aluminum, or other cutter bodies with lead times as quick as one week.



Cutter Diameter	Bore	Keyway	Height	Insert Pockets	FC Body Part Number	EDP Number	Body List Price USD
50.0 mm	22 mm	10 mm	52 mm	4	FC-50-4-45-2	05101	\$325.00
80.0 mm	27 mm	12 mm	52 mm	6	FC-80-6-45-2	05102	\$400.00
100.0 mm	32 mm	14 mm	52 mm	8	FC-100-8-45-2	05103	\$520.00
125.0 mm	40 mm	16 mm	52 mm	9	FC-125-9-45-2	05104	\$590.00
160.0 mm	40 mm	16 mm	52 mm	10	FC-160-10-45-2	05105	\$660.00

## Select a Freedom Cutter Plus+45 Face Mill Kit:

We've taken some of our most popular sized Freedom Cutter Plus+45, included 10 inserts, wrenches, screws, anti-seize, technical data sheet, and placed them in a reusable case with special pricing. This deal is hard to beat! Specify which standard, coated insert to include in the kit when ordering.



Cutter Diameter	Bore	Keyway	Height	Insert Pockets	FC Kit Part Number	EDP Number	Body List Price USD
50.0 mm	22 mm	10 mm	52 mm	4	KT-Plus-50	05054	\$220.00
80.0 mm	27 mm	12 mm	52 mm	6	KT-Plus-80	05055	\$310.00
100.0 mm	32 mm	14 mm	52 mm	8	KT-Plus-100	05056	\$410.00

## Mil-Tec Freedom Cutter Plus+45 Performance:

Can you do this with your existing cutter body / insert combination? Freedom Cutters run at faster speeds and feeds than the competition. Precision ground and polished inserts, SmoothCoat PVD coatings, and positive geometries generate more cubic inches in less time. Want even more benefits? How about improved part finishes and less wear & tear on your spindle / machining center?



Material	Speed: Meters/minute	Feed: mm/minute
4140 Steel	365	2800
316 Stainless	450	4300
6Al-4V Titanium	90	685



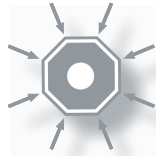
# Mil-Tec Freedom Cutter® Inserts

## Nomenclature Guide & Technical Information

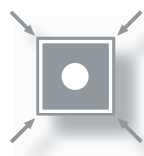
For educational purposes • All iterations not available • Ask sales desk for info regarding the most popular styles  
Mil-Tec Freedom Cutter inserts can be ordered in thousands of variations. The ability to match a specific application with geometry, coating, edge prep and carbide substrate make the Freedom Cutter the perfect application-specific milling system.



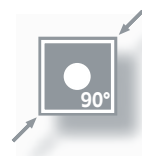
### Insert Shape Availability order as O, S, Z, or R



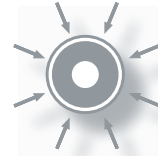
Octagon (O)



Square (S)



Square 90 (Z)



Round (R)

Each arrow represents a cutting edge index.

Octagon (O) = 8  
Square (S) = 4  
Square 90 (Z) = 2  
Round (R) = 8



### Geometry Availability order as SS, PS, NP, MS, GP, or SA



High positive grind available in all shapes. Ideal for aluminum, non-ferrous, plastic, & non-metals.



Medium positive grind for steel, stainless, and exotics. Ideal for limited horsepower applications.



Strongest insert and designed for heavy feed rates. Ideal for steel, stainless, & heat-treated alloys.



Molded and ground chip control; ideal for stainless & exotics including titanium and inconel.



Flat top grind for all materials.



Maximum high positive grind for square inserts with 90° shoulder.



### Radius Availability order as 000, 005, 016, 032, 047, 062, 093, 125, 187, 250, or 312

Octagon shape available in 062 only; Round is 312 by default.

Radius =	000	005	016	032	047	062	093	125	187	250	312
metric	0.00 mm	0.13 mm	0.40 mm	0.81 mm	1.20 mm	1.57 mm	2.36 mm	3.18 mm	4.75 mm	6.35 mm	7.92 mm
decimal	.000	.005	.016	.032	.047	.062	.093	.125	.187	.250	.312



### Carbide Grade Availability order as 1, 2, or 5



Toughest Grade  
All applications + Exotics



Hardest Grade  
Cast Iron, Stainless  
Low Carbon Steels



Tough + Hard  
Steels, Stainless  
Hard materials



### Edge Prep Availability order as 0, 1, or 2



No Hone, Upsharp = 0  
Razor sharp for max shearing  
Plastics, Aluminum, Non-Ferrous



Light Hone = 1  
Added edge strength w/high shear  
General Purpose for most materials



Heavy Hone = 2  
Strongest cutting edge  
Exotics, PH Stainless, Heat treated alloys



### Coating Availability order as UC, TA, TN, A1, AT, D1, D2, or TC



Uncoated



TiAlN



TiN



TiB2



HSN2



PVD Diamond



CVD Diamond



TiCN

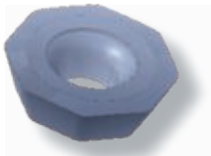
Example: 1 = Octagon, 2 = Super Shear, 3 = 1.57 mm, 4 = Ultra-Carb 5, 5 = SmoothEdge 1, 6 = TiAlN

Insert Grade Description = O-SS-062-5-1-TA, or OSS06251TA (every FC Insert has 10 characters total)

# Mil-Tec Freedom Cutter® Insert Pricing & Availability

All Freedom Cutter Inserts have a 15.9 mm (5/8") IC & are 4.8 mm (3/16") thick • Inserts are sold in packs of 10  
Prices displayed are for standard FC inserts with standard coating; premium prices apply for PCD, Silicon Nitride, & D1/D2 coatings

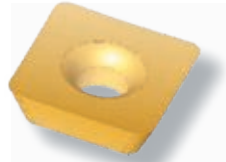
## Octagon



Coated: \$13.95 USD each  
Uncoated: \$11.95 USD each

- SS** Super Shear High Dish SmoothGrind®  
All Octagon Freedom Cutter inserts and geometries feature the 062 Radius on all 8 index corners.
- PS** Power Shear Medium Dish SmoothGrind®  
Sample Order: O-NP-062-5-1-TA or ONP06251TA
- GP** General Purpose Flat Top SmoothGrind®
- NP** Negative / Positive Frustricoconical Land SmoothGrind®
- MS** Mag-Na-Shear Pre-Formed Utility Ground

## Square



Coated: \$13.95 USD each  
Uncoated: \$11.95 USD each

- SS** Super Shear High Dish SmoothGrind®  
All Square Freedom Cutter inserts are available with 9 different corner radii.
- PS** Power Shear Medium Dish SmoothGrind®  
Sample Order: S-SS-005-1-0-UC or SSS00510UC
- GP** General Purpose Flat Top SmoothGrind®  
cuts 90° with 4 indexes
- NP** Negative / Positive Frustricoconical Land SmoothGrind®  
cuts 90° with 4 indexes
- MS** Mag-Na-Shear Pre-Formed Utility Ground

cuts 90° cutting with 2 indexes:

- SA90** Super Aluminum Extreme Dish SmoothGrind®
- SS90** Super Shear 90° High Dish SmoothGrind®
- PS90** Power Shear 90° Medium Dish SmoothGrind®

## Round



Coated: \$13.95 USD each  
Uncoated: \$11.95 USD each

- SS** Super Shear High Dish SmoothGrind®  
All Round Freedom Cutter inserts and geometries feature our patented Mil-Loc locating system, which assures solid pocket positioning and 8 total indexes. The Round insert by default features the 312 radius.
- PS** Power Shear Medium Dish SmoothGrind®
- GP** General Purpose Flat Top SmoothGrind®  
Sample Order: R-PS-312-2-1-TA or RPS31221TA
- NP** Negative / Positive Frustricoconical Land SmoothGrind®

## Additional Freedom Cutter Solutions

Spare Parts, Specialized Inserts & More



Part #	Description	Price USD	Package Q
FCS-1032T	T20 Torx insert screw	\$15.00	12
FCW-125T	T20 Torx wrench wire style	\$15.00	10
FCW-T20	T20 Torx wrench with handle	\$10.00	1
MLS-632	Mil-Loc screws	\$15.00	12
MLK-62	Mil-Loc wrench	\$15.00	10
HT-1	Hardness Tester	\$150.00	1

Part #	Description	Price USD
ONP062S1UC	Silicon Nitride for Cast Iron - Octagon	\$20.50 each
SNP032S1UC	Silicon Nitride for Cast Iron - Square	\$20.50 each
FC Insert-PCD	Single-Tip PCD insert	\$86.00 each
Insert Grade+D2	D2 CVD diamond coated	\$70.00 each
Insert Grade+D1	D1 PVD diamond coated	\$16.95 each





# Mil-Tec Freedom Cutter® Speeds and Feeds

Speeds and Feeds for the most common material groups plus typical insert selection.  
Recommendations based on cut using 2/3rds body width and 4.0 mm or less axial depth.  
Speed in Meters Per Minute. Feed in millimeters per tooth.



\*Grade references the last 4 characters of the complete 10 symbol insert name.



Material	Alloy Grade	Mil-Tec Geometry	Speed M/min	Octagon Feed	Square Feed	Round Feed	Mil-Tec Grade* (last 4 characters)	Coolant
Non-Ferrous	6061	Super Shear SS	300 - 1500	0.07 - 0.46	0.07 - 0.46	0.07 - 0.46	20UC or 20A1	Wet
	Copper, Brass	Super Shear SS	250 - 600	0.07 - 0.25	0.07 - 0.15	0.07 - 0.25	20UC or 20A1	Wet
	Plastics	Super Shear SS	150 - 900	0.07 - 0.46	0.07 - 0.46	0.07 - 0.46	20UC or 20A1	Dry
Steels	1018, 1020	Power Shear PS	250 - 450	0.10 - 0.20	0.07 - 0.15	0.10 - 0.25	51TA	Dry
	4140, 4340, P20	Power Shear PS	180 - 370	0.10 - 0.15	0.05 - 0.15	0.10 - 0.20	51TA or 52TA	Dry
	A2, D2, H13	Power Shear PS	120 - 370	0.07 - 0.15	0.07 - 0.10	0.07 - 0.15	52TA	Dry
Steels	1018, 1020	Neg / Positive NP	250 - 450	0.20 - 0.46	0.15 - 0.20	0.20 - 0.46	51TA	Dry
	4140, 4340, P20	Neg / Positive NP	180 - 370	0.20 - 0.30	0.15 - 0.20	0.20 - 0.30	51TA or 52TA	Dry
	A2, D2, H13	Neg / Positive NP	120 - 370	0.20 - 0.30	0.15 - 0.20	0.20 - 0.30	52TA	Dry
Stainless Steel	13-8, 15-5, 17-4	Power Shear PS	150 - 370	0.10 - 0.25	0.05 - 0.20	0.10 - 0.25	52TA or 22TA	Dry
	303, 304, 316	Power Shear PS	250 - 500	0.20 - 0.38	0.05 - 0.30	0.20 - 0.38	51TA or 21TA	Dry
	420, 440C	Power Shear PS	250 - 450	0.10 - 0.30	0.05 - 0.15	0.10 - 0.30	51TA or 52TA	Dry
Stainless Steel	13-8, 15-5, 17-4	Neg / Positive NP	150 - 370	0.20 - 0.30	0.15 - 0.25	0.20 - 0.30	52TA or 22TA	Dry
	303, 304, 316	Neg / Positive NP	250 - 500	0.25 - 0.46	0.15 - 0.20	0.25 - 0.46	51TA or 21TA	Dry
	420, 440C	Neg / Positive NP	250 - 450	0.25 - 0.35	0.15 - 0.20	0.25 - 0.35	51TA or 52TA	Dry
High Temp	Inconel	Power Shear PS	15 - 55	0.05 - 0.15	0.05 - 0.10	0.05 - 0.15	12TA or 52TA	Wet
	Titanium	Power Shear PS	21 - 90	0.10 - 0.15	0.05 - 0.15	0.10 - 0.15	12TA or 52TA	Wet
High Temp	Inconel	Mag Na Shear MS	15 - 75	0.05 - 0.10	0.05 - 0.07	0.05 - 0.10	12TA or 52TA	Wet
	Titanium	Mag Na Shear MS	21 - 90	0.05 - 0.10	0.05 - 0.07	0.05 - 0.10	12TA or 52TA	Wet
Cast Iron	Gray Iron	Power Shear PS	150 - 370	0.10 - 0.25	0.10 - 0.15	0.10 - 0.25	22TA or 52TA	Dry
	Ductile Iron	Power Shear PS	180 - 370	0.10 - 0.25	0.10 - 0.15	0.10 - 0.25	22TA or 52TA	Dry
Cast Iron	Gray Iron	Neg / Positive NP	150 - 370	0.25 - 0.35	0.15 - 0.20	0.25 - 0.35	22TA or 52TA	Dry
	Ductile Iron	Neg / Positive NP	180 - 370	0.25 - 0.35	0.15 - 0.20	0.25 - 0.35	22TA or 52TA	Dry

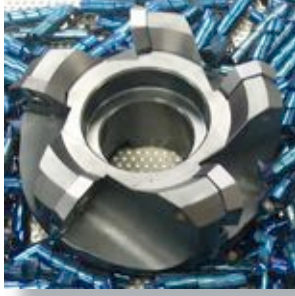
Material	Operating Tips
Non-Ferrous	Our 20UC grade is ideal in aluminum and plastics. The polished surface provides a smooth cutting face with a low coefficient of friction. This grade also features an extremely sharp cutting edge for free cutting in soft or gummy materials. The 20A1 grade includes A1 coating. A1 adds additional lubricity and dramatically reduces chip welding. 20A1 is ideal in low coolant or dry machining applications.
Steels	We feature 2 primary grades for steel alloys, 51TA and 52TA. Both use a wear resistant carbide substrate that has been designed for performance in high heat applications. SmoothCoat TA provides further wear resistance, thermal protection, and lubricity. Our TA (a hybrid version of TiAlN) is well suited for dry machining of steel alloys. The difference between the 51TA and 52TA is the edge preparation; 52TA's heavier hone adds strength in the toughest alloys and heat treated steels, and is effective in reducing edge chipping in applications where vibration is a concern.
Stainless Steel	Variations of stainless steel are immense. 15-5 PH and 440C can be heat treated and have increased hardness. Others such as 304 and 316 will work harden and are gummy to machine. The challenge is to find the optimal combination of hardness and wear resistance that is balanced with toughness to prevent excessive chipping. We offer several grades that feature our SmoothEdge hone and TA coating to obtain the perfect balance.
High Temp	Titanium, Inconel, and other chromium / nickel alloys can be a challenge to machine. They were developed specifically for airframe applications where strength and toughness are primary goals. Insert toughness and wear characteristics are critical due to the slower speeds these materials are machined at. Our 12TA provides an excellent balance of both. For finishing applications, our 52TA can be highly effective due to outstanding wear abilities.
Cast Iron	Materials featuring short chips like cast iron require high cutting edge toughness. Casted materials can feature voids and inclusions that are destructive to cutting tools. Our 22TA and 52TA grades are designed to withstand these attributes. 22TA, the first choice, exhibits great toughness while 52TA has better wear resistance.





# The Mil-Tec HD (Heavy Duty) Face Mill Series new!

- Large 25 mm Insert
- 6.4 mm Axial DOC
- 8 indexes for Value
- Positive Geometry / Free Cutting
- NP, PS and SS Geometry
- SmoothGrind® surfaces
- SmoothCoat® PVD hard coating availability
- From 80 mm to 250 mm diameter



The Mil-Tec Heavy Duty Series features a huge 25 mm IC carbide insert for increased capacity and strength. The HD allows for heavier depth of cuts and higher feed rates for maximum stock removal. The Mil-Tec HD Series Inserts are available in our NP (Negative / Positive), PS (Power Shear), and SS (Super Shear) geometries.

1 First, select a Cutter Body. 2 Second, select an Insert by Radius & Geometry. 3 Third, select an Insert Grade.



## Select a Heavy Duty Face Mill Cutter Body:

All HD (Heavy Duty) Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Fractional, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.



Cutter Diameter	Bore	Keyway	Insert Pockets	Heavy Duty Body Part Number	EDP Number	Body List Price USD
80.0 mm	32 mm	12 mm	4	HDFC-80-4-27	05151	\$360.00
100.0 mm	32 mm	14 mm	5	HDFC-100-5-32	05152	\$490.00
125.0 mm	40 mm	16 mm	5	HDFC-125-5-40	05153	\$560.00
160.0 mm	40 mm	16 mm	5	HDFC-160-5-40	05154	\$620.00
200.0 mm	60 mm	25 mm	7	HDFC-200-7-60	05155	\$980.00
250.0 mm	60 mm	25 mm	8	HDFC-250-8-60	05156	\$1200.00



## Select a Radius & Geometry:

All HD inserts are Octagon-shaped and measure 25 mm inscribed circle, with precision ground & polished SmoothGrind® and Mil-Tec's unique NP, PS or SS geometry.



### About our Geometry:

Mil-Tec's Power Shear (PS) has higher edge strength than the Super Shear (SS). The PS is engineered for use in steels, stainless, titanium & inconel, while the SS is ideal for aluminum and other non-ferrous material groups. The Negative/Positive (NP) is a workhorse design for a wide range of applications. All geometries are 100% precision ground and feature Tool Alliance's proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity.



## Select an Insert Grade:

Our proprietary carbide substrates and in-house SmoothCoat® PVD SuperNitride hard coatings are scientifically mated for Application-Specific usage. EDP numbers are listed below.

Radius Size	Geometry	Edges	Insert	20UC	20A1	22TA	52TA	12AT
2.5 mm	Negative / Positive (NP)	8	HDNP45L	-	-	05157	05158	05159
2.5 mm	Power Shear (PS)	8	HDPS45L	-	-	-	05160	-
2.5 mm	Super Shear (SS)	8	HDSS45L	05161	05162	-	-	-

Note HD inserts are sold in packs of 10. List prices are for individual inserts.

Uncoated	A1 Coated TiB2	TA Coated TiAlN	TA Coated TiAlN	AT Coated HSN <sup>2</sup>
\$22.00 List	\$25.00 List	\$25.00 List	\$25.00 List	\$25.00 List



**Applications:**  
• Aluminum  
• Non-Ferrous

**Tough carbide substrate for superior wear characteristics.**

**Applications:**  
• Aluminum  
• Non-Ferrous  
• Non-Metals

Exclusive Tool Alliance coating offers incredible tool life & lubricity!

**Applications:**  
• Cast Iron  
• Nodular Iron  
• Titanium

Chip carries away work-piece heat when properly applied.

**Applications:**  
• Steel  
• Stainless  
• Exotics

Higher wear capability versus 12AT.

**Applications:**  
• Stainless  
• Exotics

Adds more toughness than 52TA and thicker coating.

### HD Series Spare Parts

Part #	Description	Price USD	Package Q
HDS-28	Insert screw, HD Heavy Duty	\$16.50	6



# new! The Mil-Tec HV3HD High-Velocity End Mill Series



Heavy Duty, High-Velocity. The new HV3HD is the perfect mix of performance and versatility. The 100% ground and polished insert features both positive axial and radial rake, allowing the HV3HD to literally shear through the toughest materials and allowing the chip to carry away a high percentage of the generated heat. If you've been an APKT user, get ready to step up to the high-performance plate. Also available in kit form and special requirements. Let's get started!

- Perfect for all material groups
- Positive Geometry
- Free Cutting
- Cuts a 90° shoulder
- PS and SS Geometry
- SmoothGrind® surface polish
- SmoothCoat® PVD hard coatings
- Cuts more like solid carbide than APKT style end mills
- From 16 mm to 25 mm diameter



1 First, select a Cutter Body. 2 Second, select an Insert by Radius & Geometry. 3 Third, select an Insert Grade.



## Select an HV3HD Cutter Body:

All HV3HD Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Fractional, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.



Cutter Diameter	LOC	LOR	OAL	Shank Diameter	Insert Pockets	HV3HD Body Part Number	EDP Number	Body List Price USD
16.0 mm	9.15 mm	34 mm	90 mm	16.0 mm	2	HV3HD-16-2	05201	\$97.50
16.0 mm	9.15 mm	69 mm	125 mm	16.0 mm	2	HV3HD-16-2L	05202	\$115.00
20.0 mm	9.15 mm	34 mm	90 mm	20.0 mm	2	HV3HD-20-2	05203	\$97.50
20.0 mm	9.15 mm	94 mm	150 mm	20.0 mm	2	HV3HD-20-2L	05204	\$115.00
25.0 mm	9.15 mm	54 mm	110 mm	25.0 mm	3	HV3HD-25-3	05205	\$102.50
25.0 mm	9.15 mm	144 mm	200 mm	25.0 mm	3	HV3HD-25-3L	05206	\$145.00



## Select a Radius & Geometry:

All HV3HD inserts are parallelogram-shaped and measure 6.35 mm wide by 9.15 mm in length, with precision ground & polished SmoothGrind® and Mil-Tec's unique Power Shear or Super Shear geometry.



## Select an Insert Grade:

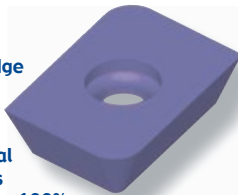
Our proprietary carbide substrates and in-house SmoothCoat® PVD SuperNitride hard coatings are scientifically mated for Application-Specific usage. EDP numbers are listed below.

Radius Size	Geometry	Edges	Insert Part Number	20UC	20A1	21TA	51TA	11AT
0.5 mm	Power Shear (PS)	2	HV3HD-0.5P	05210	05220	05230	05240	05250
1.0 mm	Power Shear (PS)	2	HV3HD-1.0P	05211	05221	05231	05241	05251
2.0 mm	Power Shear (PS)	2	HV3HD-2.0P	05212	05222	05232	05242	05252
3.0 mm	Power Shear (PS)	2	HV3HD-3.0P	05213	05223	05233	05243	05253
0.5 mm	Super Shear (SS)	2	HV3HD-0.5S	05214	05224	05234	05244	05254
1.0 mm	Super Shear (SS)	2	HV3HD-1.0S	05215	05225	05235	05245	05255
2.0 mm	Super Shear (SS)	2	HV3HD-2.0S	05216	05226	05236	05246	05256
3.0 mm	Super Shear (SS)	2	HV3HD-3.0S	05217	05227	05237	05247	05257

Note HV3HD inserts are sold in packs of 10. List prices are for individual inserts.

### About our Geometry:

Mil-Tec's Power Shear has higher edge strength than the Super Shear. The Power Shear is engineered for use in steels, stainless, titanium & inconel, while the Super Shear is ideal for aluminum and other non-ferrous material groups. Both geometries are 100% precision ground and feature Tool Alliance's proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity.



Uncoated	A1 Coated TiB2	TA Coated TiAlN	TA Coated TiAlN	AT Coated HSN <sup>2</sup>
\$8.95 List	\$10.95 List	\$10.95 List	\$10.95 List	\$10.95 List



Applications:  
• Aluminum  
• Non-Ferrous

Tough carbide substrate for superior wear characteristics.

Applications:  
• Aluminum  
• Non-Ferrous  
• Non-Metals  
Exclusive Tool Alliance coating offers incredible tool life & lubricity!

Applications:  
• Cast Iron  
• Nodular Iron  
• Titanium  
Chip carries away work-piece heat when properly applied.

Applications:  
• Steel  
• Stainless  
• Exotics  
Triple the cubic material removal rate versus APKT!

Applications:  
• Stainless  
• Exotics  
Adds more toughness to the 51TA and thicker coating.



# The Mil-Tec HV5HD High-Velocity End Mill Series new!

- Perfect for all material groups
- Positive Geometry / Free Cutting
- Cuts a 90° shoulder
- PS and SS Geometry
- SmoothGrind® surface polish
- SmoothCoat® PVD hard coatings
- Cuts more like solid carbide than APKT style end mills
- From 25 mm to 40 mm diameter



Heavy Duty, High-Velocity. The new HV5HD is the perfect mix of performance and versatility. The 100% ground and polished insert features both positive axial and radial rake, allowing the HV5HD to literally shear through the toughest materials and allowing the chip to carry away a high percentage of the generated heat. If you've been an APKT user, get ready to step up to the high-performance plate. Also available in kit form and special requirements. Let's get started!

1 First, select a Cutter Body. 2 Second, select an Insert by Radius & Geometry. 3 Third, select an Insert Grade.



## Select an HV5HD Cutter Body:

All HV5HD Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Fractional, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.

Cutter Diameter	LOC	LOR	OAL	Shank Diameter	Insert Pockets	HV5HD Body Part Number	EDP Number	Body List Price USD
25.0 mm	15.25 mm	54 mm	110 mm	25.0 mm	2	HV5HD-25-2	05301	\$102.50
25.0 mm	15.25 mm	94 mm	150 mm	25.0 mm	2	HV5HD-25-2L	05302	\$150.00
32.0 mm	15.25 mm	54 mm	110 mm	32.0 mm	3	HV5HD-32-3	05303	\$132.50
32.0 mm	15.25 mm	144 mm	200 mm	32.0 mm	3	HV5HD-32-3L	05304	\$175.00
40.0 mm	15.25 mm	59 mm	115 mm	40.0 mm	4	HV5HD-40-4	05305	\$145.00
40.0 mm	15.25 mm	144 mm	200 mm	40.0 mm	4	HV5HD-40-4L	05306	\$196.00



## Select a Radius & Geometry:

All HV5HD inserts are parallelogram-shaped and measure 9.5 mm wide by 15.25 mm in length, with precision ground & polished SmoothGrind® and Mil-Tec's unique Power Shear or Super Shear geometry.



## Select an Insert Grade:

Our proprietary carbide substrates and in-house SmoothCoat® PVD SuperNitride hard coatings are scientifically mated for Application-Specific usage. EDP numbers are listed below.

Radius Size	Geometry	Edges	Insert Part Number	20UC	20A1	21TA	51TA	11AT
0.5 mm	Power Shear (PS)	2	HV5HD-0.5P	05310	05322	05334	05346	05358
1.0 mm	Power Shear (PS)	2	HV5HD-1.0P	05311	05323	05335	05347	05359
2.0 mm	Power Shear (PS)	2	HV5HD-2.0P	05312	05324	05336	05348	05360
3.0 mm	Power Shear (PS)	2	HV5HD-3.0P	05313	05325	05337	05349	05361
4.0 mm	Power Shear (PS)	2	HV5HD-4.0P	05314	05326	05338	05350	05362
5.0 mm	Power Shear (PS)	2	HV5HD-5.0P	05315	05327	05339	05351	05363
0.5 mm	Super Shear (SS)	2	HV5HD-0.5S	05316	05328	05340	05352	05364
1.0 mm	Super Shear (SS)	2	HV5HD-1.0S	05317	05329	05341	05353	05365
2.0 mm	Super Shear (SS)	2	HV5HD-2.0S	05318	05330	05342	05354	05366
3.0 mm	Super Shear (SS)	2	HV5HD-3.0S	05319	05331	05343	05355	05367
4.0 mm	Super Shear (SS)	2	HV5HD-4.0S	05320	05332	05344	05356	05368
5.0 mm	Super Shear (SS)	2	HV5HD-5.0S	05321	05333	05345	05357	05369

Note HV5HD inserts are sold in packs of 10.  
List prices are for individual inserts.

### About our Geometry:

Mil-Tec's Power Shear has higher edge strength than the Super Shear. The Power Shear is engineered for use in steels, stainless, titanium & inconel, while the Super Shear is ideal for aluminum and other non-ferrous material groups. Both geometries are 100% precision ground and feature Tool Alliance's proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity.



**PS**  
Power Shear  
Medium Dish  
SmoothGrind®



**SS**  
Super Shear  
High Dish  
SmoothGrind®

Uncoated	A1 Coated TiB2	TA Coated TiAlN	TA Coated TiAlN	AT Coated HSN <sup>2</sup>
\$11.35 List	\$13.35 List	\$13.35 List	\$13.35 List	\$13.35 List



Applications:  
• Aluminum  
• Non-Ferrous

Tough carbide substrate for superior wear characteristics.



Applications:  
• Aluminum  
• Non-Ferrous  
• Non-Metals  
Exclusive Tool Alliance coating offers incredible tool life & lubricity!



Applications:  
• Cast Iron  
• Nodular Iron  
• Titanium  
Chip carries away work-piece heat when properly applied.



Applications:  
• Steel  
• Stainless  
• Exotics  
Triple the cubic material removal rate versus APKT!



Applications:  
• Stainless  
• Exotics  
Adds more toughness to the 51TA and thicker coating.



# The New Mil-Tec HV10 High-Velocity End Mill Series



The new HV10 is the perfect choice for High Velocity, high performance milling in aluminum and non-ferrous alloys. The 100% ground and polished insert features both positive axial and radial rake, allowing the HV10 to literally shear through the work piece material. The long 25 mm insert length is ideal for deep axial cuts. A two screw design generates superior holding strength. The razor sharp cutting edge generates smooth, clean cuts resulting in excellent part finishes.

- Perfect for Aluminum & Non-Ferrous Alloys
- Positive Geometry / Free Cutting
- Long 25 mm cutting length
- SS Super Shear Geometry
- SmoothGrind® surface polish
- SmoothCoat® A1 TiB2 hard coating for dry machining
- 2 screws for strength
- Available in both Shank and Shell Mill style bodies
- From 32 mm to 100 mm diameter

new!



1 First, select a Cutter Body. 2 Second, select an Insert by Radius & Geometry. 3 Third, select an Insert Grade.



## Select an HV10 Cutter Body (Shank & Shell Mill Styles):

All HV10 Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Fractional, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.



Cutter Diameter	LOC	LOR	OAL	Shank Diameter	Insert Pockets	HV10 Shank Body Part Number	EDP Number	Body List Price USD
32.0 mm	25.0 mm	50 mm	115 mm	20.0 mm	2	HV10-32-2-20	05401	\$157.50
32.0 mm	25.0 mm	50 mm	115 mm	25.0 mm	2	HV10-32-2-25	05402	\$157.50
32.0 mm	25.0 mm	50 mm	115 mm	32.0 mm	2	HV10-32-2-32	05403	\$157.50
40.0 mm	25.0 mm	50 mm	115 mm	25.0 mm	3	HV10-40-3-25	05404	\$180.00
40.0 mm	25.0 mm	50 mm	115 mm	32.0 mm	3	HV10-40-3-32	05405	\$180.00
50.0 mm	25.0 mm	50 mm	115 mm	32.0 mm	3	HV10-50-3-32	05406	\$245.00



Cutter Diameter	LOC	Height	Keyway	Bore	Insert Pockets	HV10 Shell Body Part Number	EDP Number	Body List Price USD
50.0 mm	25.0 mm	54.6 mm	10 mm	22.0 mm	3	HV10-50-3-22	05407	\$245.00
63.0 mm	25.0 mm	54.6 mm	10 mm	22.0 mm	4	HV10-63-4-22	05408	\$375.00
80.0 mm	25.0 mm	54.6 mm	12 mm	27.0 mm	5	HV10-80-5-27	05409	\$375.00
100.0 mm	25.0 mm	54.6 mm	14 mm	32.0 mm	5	HV10-100-5-32	05410	\$490.00



## Select a Radius & Geometry:

All HV10 inserts are parallelogram-shaped and measure 11 mm wide by 25 mm in length, with precision ground & polished SmoothGrind® and Mil-Tec's unique Super Shear geometry.

Radius Size	Geometry	Edges	Insert Part Number	20UC	20A1
1.0 mm	Super Shear (SS)	2	HV10-11-1.0S	05411	05415
2.0 mm	Super Shear (SS)	2	HV10-11-2.0S	05412	05416
3.0 mm	Super Shear (SS)	2	HV10-11-3.0S	05413	05417
5.0 mm*	Super Shear (SS)	2	HV10-11-5.0S	05414	05418

\*Large 5.0 mm radius may require additional body clearance. Note HV10 inserts are sold in packs of 10. List prices are for individual inserts.

## About our Geometry:

Mil-Tec's Super Shear is ideal for aluminum and other non-ferrous material groups. The geometry is 100% precision ground and feature Tool Alliance's proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity.



## Select an Insert Grade:

Our proprietary carbide substrates and in-house SmoothCoat® PVD SuperNitride hard coatings are scientifically mated for Application-Specific usage. EDP numbers are listed below.

HV10 Shell Mill Style



Uncoated	A1 Coated TiB2
\$20.00 List	\$23.00 List



Applications:  
• Aluminum  
• Non-Ferrous

Tough carbide substrate for superior wear characteristics.



Applications:  
• Aluminum  
• Non-Ferrous  
• Non-Metals  
Exclusive Tool Alliance coating offers incredible tool life & lubricity!



Our A1 (TiB2) coating allows for dry machining of many aluminum and non-ferrous applications. Enjoy the cost and environmental benefits of dry machining today!



# Mil-Tec HV3HD, HV5HD, & HV10 Speeds and Feeds

Speeds and Feeds for the most common material groups plus typical insert selection.  
Recommendations based on normal slotting & peripheral milling with DOC < 2.5 mm  
Speed in Meters Per Minute. Feed in millimeters per tooth.



Material	Alloy Grade	Speed M/min	HV3HD feed per tooth	HV5HD feed per tooth	HV10 feed per tooth	Mil-Tec Grade* (last 4 characters)	Coolant
Non-Ferrous	6061 Aluminum	300 - 1000+	0.07 - 0.25	0.07 - 0.25	0.07 - 0.60	20UC or 20A1	Wet
	Copper, Brass	240 - 450	0.07 - 0.20	0.07 - 0.25	0.07 - 0.45	20UC or 20A1	Wet
	Plastics	150 - 1000+	0.07 - 0.38	0.07 - 0.38	0.07 - 0.38	20UC or 20A1	Dry
Steels	1018, 1020	240 - 450	0.05 - 0.15	0.05 - 0.20	-	51TA	Dry
	4140, 4340, P20	180 - 365	0.05 - 0.12	0.05 - 0.18	-	51TA	Dry
	A2, D2, H13	120 - 300	0.05 - 0.10	0.05 - 0.15	-	51TA	Dry
Stainless Steel	13-8, 15-5, 17-4	150 - 365	0.025 - 0.10	0.025 - 0.15	-	51TA or 11AT	Dry
	303, 304, 316	240 - 450	0.05 - 0.15	0.05 - 0.15	-	51TA or 11AT	Dry
	420, 440C	240 - 450	0.05 - 0.12	0.05 - 0.12	-	51TA or 11AT	Dry
High Temp	Inconel	30 - 90	0.025 - 0.10	0.025 - 0.10	-	11AT	Wet
	Titanium	21 - 76	0.025 - 0.10	0.025 - 0.10	-	11AT	Wet
Cast Iron	Gray Iron	150 - 365	0.05 - 0.10	0.05 - 0.15	-	21TA	Dry
	Ductile Iron	180 - 365	0.05 - 0.10	0.05 - 0.15	-	21TA	Dry

## Additional HV Series Solutions

Spare Parts & More



Part #	Description	Price USD	Package Q
HVW-7T	Torx wrench for HV3HD	\$3.00	1
HVW-10T	Torx wrench for HV5HD	\$3.00	1
HVW-15T	Torx wrench for HV10	\$3.00	1
HVS-440T	Torx insert screw / HV3HD	\$15.00	9
HVS-832T	Torx insert screw / HV5HD	\$15.00	9
HV10-1032T	Torx insert screw / HV10	\$30.00	9

## About the Mil-Tec HV End Mill Series:

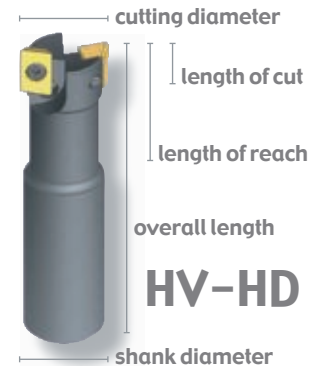
The new Mil-Tec HV (High Velocity) successfully bridges the performance gap between solid carbide end mills and indexable carbide face mills. The combination of positive axial & radial rake geometries, precision & polished grinding, hardened cutter bodies, and SuperNitride PVD hard coatings makes the HV run like a solid carbide end mill, yet the inherent modular makeup allows for flexibility in design, application, and diameter. The HV can be made in special sizes & configurations, including coolant-thru. Call the factory today!

- Positive Axial Geometry = Free cutting with maximized work piece engagement.
- Positive Radial Geometry = Superb chip formation transfers heat away from tool and work piece.
- 100% Precision Ground Insert = Sharp cutting edges, tight tolerances, and excellent coating adhesion.

### Applications:



Face Milling      End Milling      Slot Milling      Pocket Milling\*      Peripheral Milling



\*Note: The HV Series are not designed for plunge milling. Ramp milling or starter hole necessary for pocket milling.



The Tool Alliance® Advantage. Unequalled quality at a great value. How do we do it? By combining resources such as:

- Design
- Engineering
- Manufacturing
- Research and Development

For information on any of our brands e-mail: sales@toolalliance.com

World's largest variety of carbide tooling, from .005 to 24" in diameter. Manufactured exclusively in the United States of America. Learn more at toolalliance.com, or call (800) 854-2431.

Sharing knowledge, working together...that's the Tool Alliance advantage, resulting in newer and better carbide substrates, surface finishes, tool designs, coatings, production equipment, grinding methods and operations software. In addition, customers benefit from shared resources including:

- Consolidated order-entry. No need to fill out multiple purchase orders - our single-source ordering allows for "one-stop shopping."
- Billing. Receive one single bill for simpler accounting and record-keeping.
- Shipping. Save on multiple shipping costs. Whether you order from one brand or all five, packages are combined to save money.
- Warranty. The power of Tool Alliance means a guarantee on the quality of every product we manufacture. It's our promise.
- Sales. Have a question on one of the Tool Alliance brands? Our sales department is ready to answer your questions, all with a single call.
- Technical support. Have a problem? Need guidance? Our tech support staff can help, whether it's an Ultra-Tool, Mil-Tec, RoundTool, Tungsten ToolWorks, or Routco product.

Finally, our products are represented and sold by the world's most qualified Industrial Distributors. Tool Alliance considers our Value-Added Partners as vital to helping create the ultimate cutting tool user experience.

The Tool Alliance family of premier quality carbide companies:

RoundTool Laboratories® is the flagship brand of Tool Alliance. The Company was created in 1998 to design, engineer, manufacture, and market the finest application-specific solid carbide round tools available anywhere in the World. RoundTool Labs represents the best technologies from throughout the globe combined in a high-performance product proudly built in the United States. Available from Elite level distribution only.



RoundTool Labs: "Not just where machining is, but where machining will be."™

Ultra-Tool® International in 2003 celebrates 30 years of providing the highest value in solid carbide standards and blueprint specials to customers throughout the World. The Company's products present an unbeatable combination of quality and affordability, and a legacy that includes such industry advancements as the mass introduction of micrograin carbides and SmoothGrind® surface finishes. Available from Premier level distribution only.



Ultra-Tool: "The Total Value carbide solution."™

Tungsten ToolWorks® was unveiled at IMTS 2000 as the industry's first ever real-time, on-line design, blueprint, quotations, and ordering system. The Company's patent-pending technology brings incredible efficiency to the process of procuring special carbide tooling, with significant improvements in lead time & cost combined with the highest quality tooling available anywhere. Available from any Tool Alliance distributor and on-line at tungstentoolworks.com.



Tungsten ToolWorks: "Customize Yourself."™

Routco® was introduced in late 2002 to bring the Tool Alliance principles of Performance and Value to the woodworking and plastics industries. The Company has extended core competencies in substrate technology, design, and manufacturing to set new standards in the routing of non-ferrous materials. Available from Elite level distribution, Routco, and our Industry Master Distributor.



Routco: "Proven daily by the linear foot."™

Mil-Tec® developed and patented the Freedom Cutter® milling system in 1991 to bring unprecedented versatility and efficiency to factory tool management. Any Freedom Cutter body holds three different shaped inserts (round, octagonal, and square), all ground to application-specific geometries and of proprietary carbide grades. Available from Elite level distribution only.



Mil-Tec: "Home of the Freedom Cutter®."™

Our customers have access to a common database for viewing application data on a wide range of materials at Tool Alliance's exclusive SpeedsAndFeeds.com. Recommendations and posted results are available on the large variety of styles from RoundTool Labs, Ultra-Tool, Tungsten ToolWorks, Routco, and Mil-Tec as well as offerings from other suppliers. Another industry first at speedsandfeeds.com.



SpeedsAndFeeds.com: "Ready. Set. Cut."™

# Terms & Conditions

Our goal is to delight our customers.

**Ordering Information:** All Mil-Tec® products have an alphanumeric, EDP, and / or grade description for use when entering orders via e-mail, fax, phone, or postal mail communications. Mil-Tec documents may bear an "MT" suffix to differentiate themselves from other Tool Alliance product lines. This suffix is not displayed in the catalog but will be printed on all official correspondence.

**Availability:** Mil-Tec® products are available only through select Industrial Distributors worldwide. Locally, your Industrial Distributor can provide communication, technical assistance, and inventory support. Standard products are subject to prior sale.

**Pricing:** All prices shown are effective September 1, 2007, supersede and cancel all previous listed prices, and are subject to change without notice. The amount of any present or future sales tax, value-added tax, or similar tax applicable to the products listed herein shall be added to the purchase price and paid by the customer. All sales made at list price less standard applicable distributor discount. Contract pricing must be obtained in writing via current quotation, with stated pricing, effective date, and expiration date, to be valid.

**Shipping:** Within the USA preferred carriers are UPS Ground, Federal Express 'Express Saver' (Guaranteed 3-Day), and Federal Express premium services. Major carriers and freight forwarders are available for international shipments.

**Terms:** U.S. Dollars, Domestic and Export Net 30 Days. Prices quoted herein are F.O.B. our Factory in Lehigh Acres, Florida, U.S.A.

**Minimum Charge:** \$50.00 Net (U.S. Dollar).

**Returned Items:** Current catalog items are returnable subject to a 25% handling charge and approval by the Mil-Tec® Inspection Department. Credit cannot be issued for any product that has in any way been modified, machined, altered, coated, marked, or displaying other characteristics that render it in a "used" condition. A Return Authorization (RA) number must be obtained from the Mil-Tec Sales Department prior to return. Returned product must be sent to the Factory for credit; consignment locations are not capable of issuing either RA's or credit memos. Special tools are not returnable. Within strict 30 days of shipment we will accept unopened standard product returns without fee for credit on account.

**Specials Policy:** We reserve the right to over-ship or under-ship and invoice special tools up to a 10% variance per item. Quantities under 10 are subject to a one-piece variance. Any variations to this policy must be stated in advance as it will effect pricing upon quotation. Special orders cannot be cancelled without prior approval and proper consideration.

**Product Warranty:** Mil-Tec® warrants that products sold by it shall be free from defects in materials and workmanship. Mil-Tec will replace, repair, or grant credit for any product which does not comply with this warranty. This warranty does not apply to any products which have been in any way modified, machined, misused, subjected to accident, or used beyond normal life. Warranty claims should be made through the distributor from whom the product was purchased. There are no other warranties, expressed or implied, made by us except as expressed above, and we neither assume nor authorize any other firm or person to assume for it any other obligation or liability in connection with our products.

**Cooperative Advertising:** Mil-Tec® does not participate in any cooperative advertising programs with either industrial distributors or manufacturer's representatives. This policy allows us to avoid any possible favoritism or conflicts of interest, and keeps costs and sales prices as low as possible.



is friendly to the environment. All paper products are separated for reuse and shredded for packaging materials. Shipping boxes are reused when possible. Conservation programs are in place for reduced energy use (additionally, our coastal location minimizes the need for artificial heating or cooling on many days through the winter, spring, and fall). All displaced materials during the manufacturing process are collected, separated, and returned to a materials recycler. Coolants are recycled when appropriate. Mop water is evaporated and resultant sediment is properly disposed. Skylights provide natural lighting and reduce electricity usage, while low voltage lighting is used within the factories.



**VISIT OUR FACTORIES** on your next trip to the greater Los Angeles / San Diego, CA area (solid carbide) or Fort Myers / Naples, FL (indexable). View our automated facilities, meet our Associates, and tell us how we can better grow our relationship together. Huntington Beach is officially "Surf City" with miles of open beach on the Pacific Ocean, and we're minutes away from attractions such as Disneyland, Knott's, Universal Studios, Reagan and Nixon Presidential Libraries, Getty Museum, Dodger Stadium, Staples Center, Angel Stadium, Honda Center, The Tool Alliance Club, and the list goes on. The closest airport is Orange County (SNA), followed by Long Beach (LGB), Los Angeles (LAX), and then Ontario (ONT). Fort Myers is on the beautiful Gulf of Mexico coast, a recreational haven, home to Major League Baseball spring training, and within a 3-hour drive to Orlando, Tampa Bay, Sarasota, Miami, Fort Lauderdale, the Everglades, and more.



## Mil-Tec® and Tool Alliance® sales features:

- The Company created and patented the Freedom Cutter, allowing square, octagon, and round inserts to seat in the same cutter body.
- Our 100% precision ground carbide inserts provide incredible shearing via positive geometries & work excellent within a wide machine tool spectrum.
- Mil-Tec is dedicated solely to the indexable carbide tooling industry.
- We are privately-owned, operate with long-term focus and goals, and manufacture 100% of our products within our ISO 9001:2000 Registered factories.
- Our substrate, geometry, and coating are specially selected for each application and Series.
- Our cutting tools have extremely accurate diameter, radius, and concentricity characteristics.
- Our honing process provides toughness and strength.
- Our grinding method and coating process yields an extremely sharp & long-lasting cutting edge.
- We perform in-house, 5-axis cutter body machining and testing.
- We offer proprietary coatings such as TiB2 and HSN<sup>2</sup>, all performed in-house for quick delivery.
- We can stock firm blanket orders.
- We are able to quickly quote and manufacture print specials.
- Both fractional and metric size ranges are offered.
- We have sales offices in both coastal time zones (Florida and California).
- We strongly support traditional Industrial Distribution.



Our web site is constantly updated with new products, services and features.

## About the technology of Mil-Tec® and Tool Alliance®:

We obsess over details that create the finest cutting tools available. Our reward is customer satisfaction via increasing their factory productivity. We cannot be the best without thinking differently, so over a thirty-year operating history we've developed proprietary technologies that yield significant characteristics of cutting tools unlike any you'll find elsewhere:

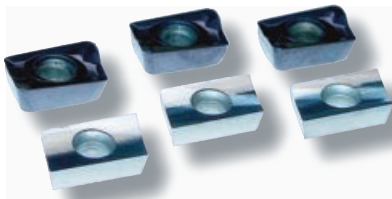
- SmoothGrind® = Polished cutting edges for extreme sharpness and lubricity.
- SmoothContricity® = Precision grinding, tool holding, and tolerances for minimized TIR.
- SmoothCoat® = Sputter-based SuperNitride PVD coating for superior surface hardness & uniformity.



Tool Alliance®

**Sharpness & Lubricity.**  
No wonder it works better.

Sintered APKT geometry (top) versus  
Mil-Tec precision ground (bottom).



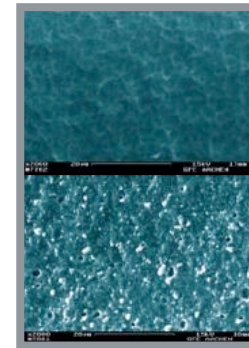
**SmoothGrind®**

**Tight tolerances.**  
Minimized run-out.



**SmoothContricity®**

**Our coating @ 2,000X (top).**  
Everybody else's (bottom).



**SmoothCoat®**



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