

Troy industries inc.

MODULAR MILLING PRODUCTS
"INTERLOC DRIVE SYSTEM"



The cutting edge of technology



100% American Made



MISSION

Provide customers with guaranteed Quality, Maximum Machining efficiency, and lowest manufacturing costs. We are committed to continuous improvement and strive to improve through the utilization of the most current manufacturing methods available today.

ABOUT US

Established in 1977, Troy Industries Inc. has been serving a wide cross-section of manufacturers with the designing and manufacturing of cutting tools for every industry. Troy Industries holds several patents to their credit. The development of the Interloc Drive and Interloc Rigid Tooling systems came from the Die & Mold Industry. Filling their needs to push cutters to the extreme and requiring more versatile solid and rugged tool holder systems, The Interloc Drive and Interloc Rigid provides the most powerful & complete quick change tooling systems available.

Serving A Wide Cross-Section Of Industries Including:

- Automotive
- Aircraft/Aerospace
- Defense
- Farm/Heavy Equipment
- Petroleum

At Troy Industries we design and manufacture the most effective special indexable tooling possible, with high versatility and superior wear resistance.

The tools we design can be applied to every industry for many machining operations from rough milling and turning to drilling and precision boring.

Benefits of Troy Industries Products

- Powerful Quick Change Tooling
- Modular & Indexable Tooling
- Long Reach Tooling
- Helps Speed Production & Quality
- Helps Decrease Tooling Costs
- Better & Longer Insert Life
- Friendly Customer Service

Troy Industries also provides a wide line of milling products. We cater your milling needs by offering a wide line of cutter-heads, holders, inserts, shanks, extensions, reducers, adaptors, face mills, ball mills, button cutters, end mills, gauges, checking fixtures, customized tools, and much more.

Among Our Full Service Specialties Include:

- Design & Build
- Tooling Specials
- Alteration of Standard Tooling
- Rebuild & Repair of Tooling
- Full Inspection Capabilities
- On-Time Delivery

If you are doing a rough, semi-finish, or finishing cut Troy Industries has the solution. With a wide range of inserts and cutter tooling Troy Industries products allows you to cut a variety of materials such as:

Carbon steel, Alloy steel, Cast Iron, High Nickel Alloys, High Nickel Base Materials, Aluminum, Kirksite, Remboard, Titanium, Non-Ferrous Metals, and etc.

SPECIAL TOOLING

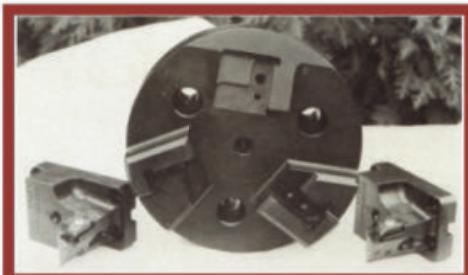
Over 30 Years Of Experience In Designing & Building Special Tools

Designing and building new tools is rapidly becoming a major portion of our business. Our ability to work with process and tool engineers helps provide you with a productive solution to nearly any application. Communication and the exchange of ideas between Troy and plant engineering has worked time and time again.

The tools we design can be applied to every industry for many machining operations from rough milling and turning to drilling and precision boring.



Boring Bar complete with
High Density Mallory and
Steel Construction



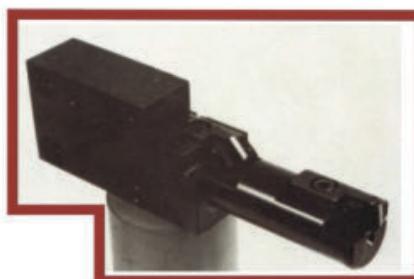
Head for Hollow Milling and Indexable Tool Blocks



Upper and Lower Piston Grooving
Toolblocks



Boring Head Multiple Step
Boring and Chamfering



Boring and Chamfering Bar,
Designed to use
Standard Cartridges



Eight inch indexable Milling Cutter



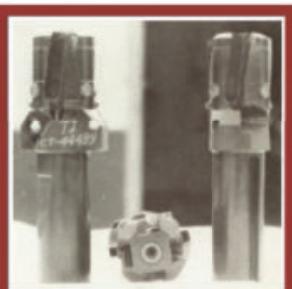
Indexable Milling Cutter



Hollow Mill for Turning, Facing,
Chamfering OD & ID when
assembled with cartridges



Reamer Holder, complete with Ampco
Bronze and Carbide Brushings



Serrated Reamer Combined
with indexable chamfering



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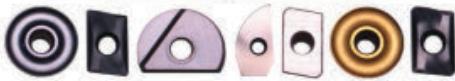
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Troy Industries Product Overview

Advantages Of The Interloc System

The Interloc Drive System is a unique, powerful, and effective modular system which is designed to have the equal strength to a solid piece tool. Being modular the Interloc System gives you the flexibility in changing various tooling lengths and cutter heads.

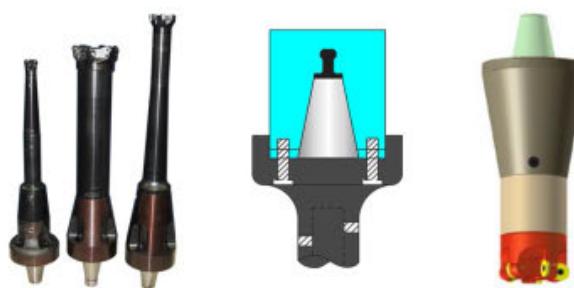
The flexibility of the Interloc System allows the user to mix and match various stocked shanks, extensions, reducers, adapters, holders, cutter heads, and inserts which gives the Interloc System the advantage of cutting tooling costs.

Benefits & Advantages Of Troy Industries Products & Services

- Increase Production Speed
- Improve Quality & Stability
- Lower Tooling Costs
- Powerful Quick Change Tooling
- Friendly Customer Service
- Modular & Interchangeable System
- Long Reach Tooling Capability
- Better & Longer Insert Life
- Reduce Inventory
- Precise, Accurate, & Quality Tools



Interloc Drive System
A modular tooling system allowing the user to combine various tooling lengths & cutterbodies



Interloc Rigid System
Extremely rigid & modular system that allows a holder to mount onto a machine spindle. With a Solid Triple Contact on the Spindle, Taper, & Face Interloc Rigid MFH holders allows no gap on the gage line.



Interloc ER Collet Extensions
Allows the user to use collet holders with the Interloc Modular System.



Ultra Fit System
Is a system that auto adjusts to your CAT spindle allowing no gap on the gage line. The Ultra Fit holders are modular & have a Solid Dual contact with the spindle taper & face.



Interloc Extension, Reducer, Adapters, & Indexable Cutters
Various modular extensions, reducers, adapters, & indexable cutters available giving the user a wide range of combinations.

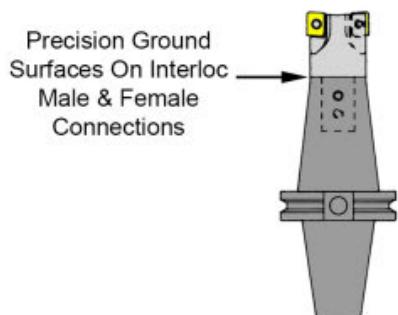


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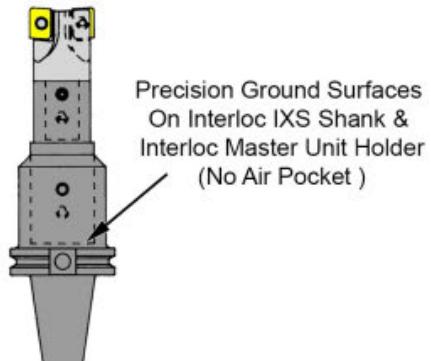
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INTERLOC DRIVE SYSTEM

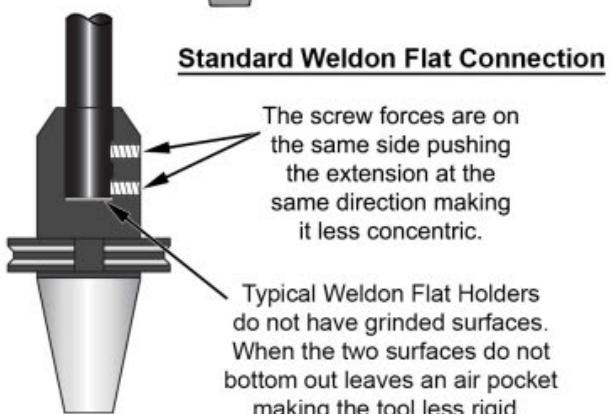
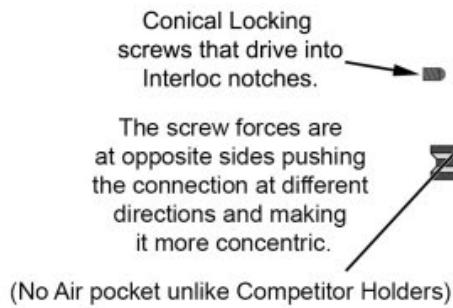
Interloc female connections have two conical locking screws distinctly aligned on each opposing side. While the Interloc male connections have notches distinctly aligned on each opposing side. The notches are slightly offset so the conical locking screws can drive the connections downward and lock it securely.



Interloc tools always stay concentric and secure because connection surfaces are precision ground. When the connections surfaces come together and are locked by the screws, this allows the piece to be air tight and equivalent to a solid piece.



Interloc Connection System



Connect directly with an Interloc CAT 40, CAT 50, & HSK Holders
Use an IXS Shank to connect with an Interloc Master Unit CAT 40 or 50 Holder

Connect Directly To Interloc Holders



Combine Various cutters and extensions directly to the holder without using a shank.
Performs more as a solid tool for operations that need more rigid tooling

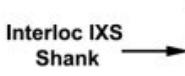


Both connection types take various Interloc extensions, reducers, adapter, or cutterheads & perform well on long or short reach cuts, deep narrow pockets, and 90° bank walls.

Connect IXS Shank With Master Unit Holders



Interloc Master Unit Holder



Interloc IXS Shank

The Interloc Master Unit System: is a system that uses a shank that fits directly to the Interloc Master Unit Holder. You must place an Interloc IXS shank style first to the holder before combining any other connections.

The Interloc IXS Extension Shank: has both Interloc notches and weldon flats on it. Which gives you the benefit to connect with Interloc CAT 40 or CAT 50 holders or any standard Weldon Flat CAT 40 or CAT 50 holders.



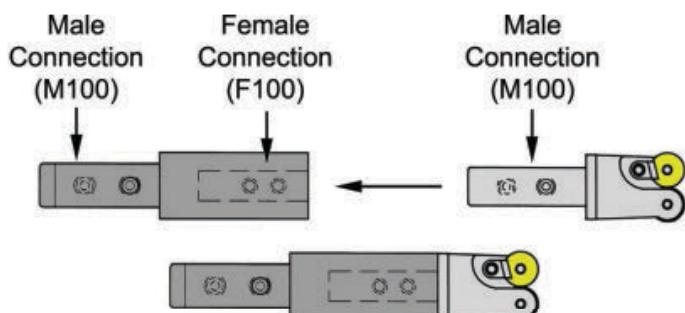
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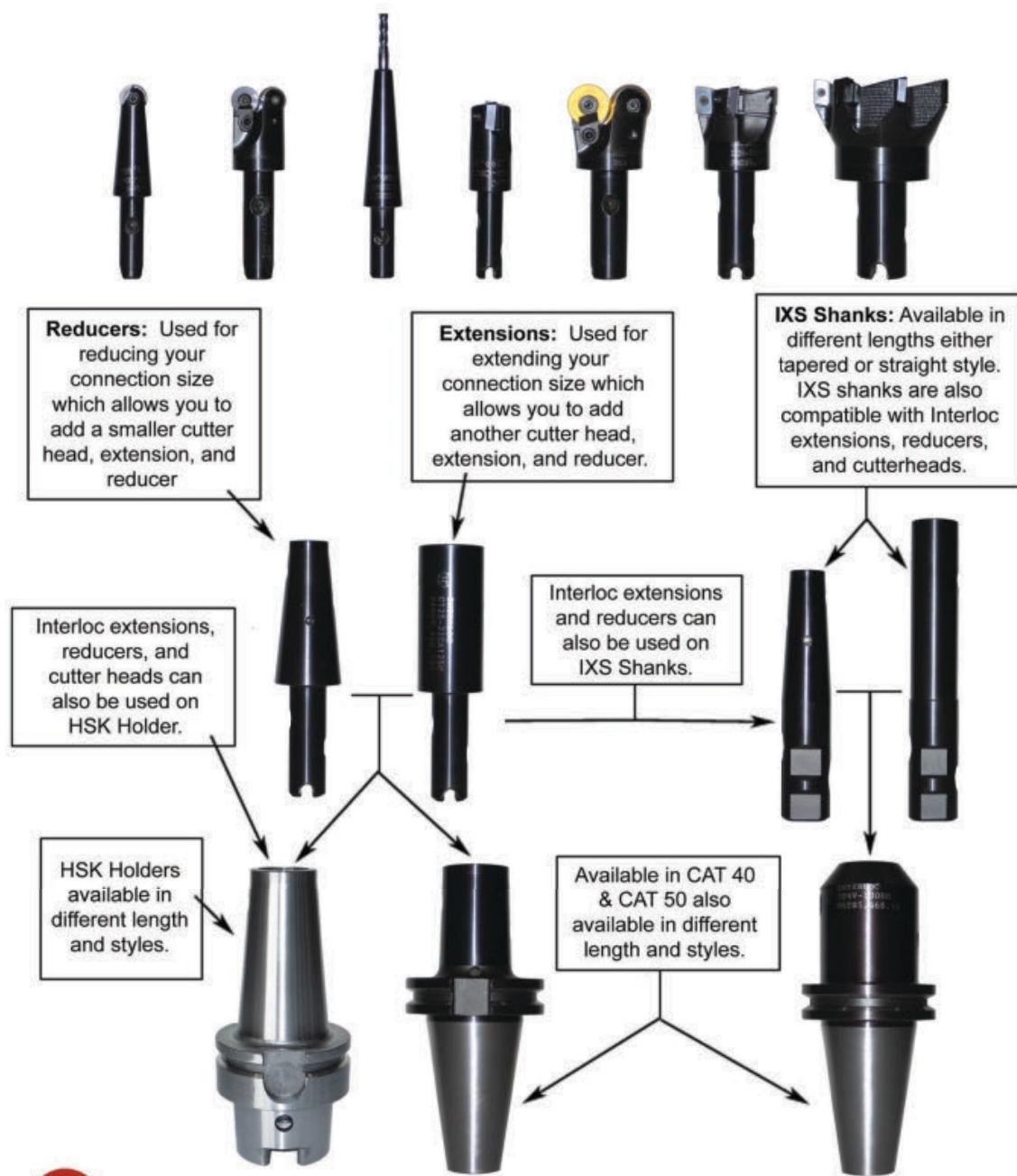
INTERLOC DRIVE SYSTEM

INTERLOC CONNECTION CHART	
Male Connection	Female Connection
M75	F75
M100	F100
M125	F125
M200	F200
M400	F400

Example: M100 Connects With F100



The Interloc System is a quick & user friendly system with infinite amount of tooling combinations.

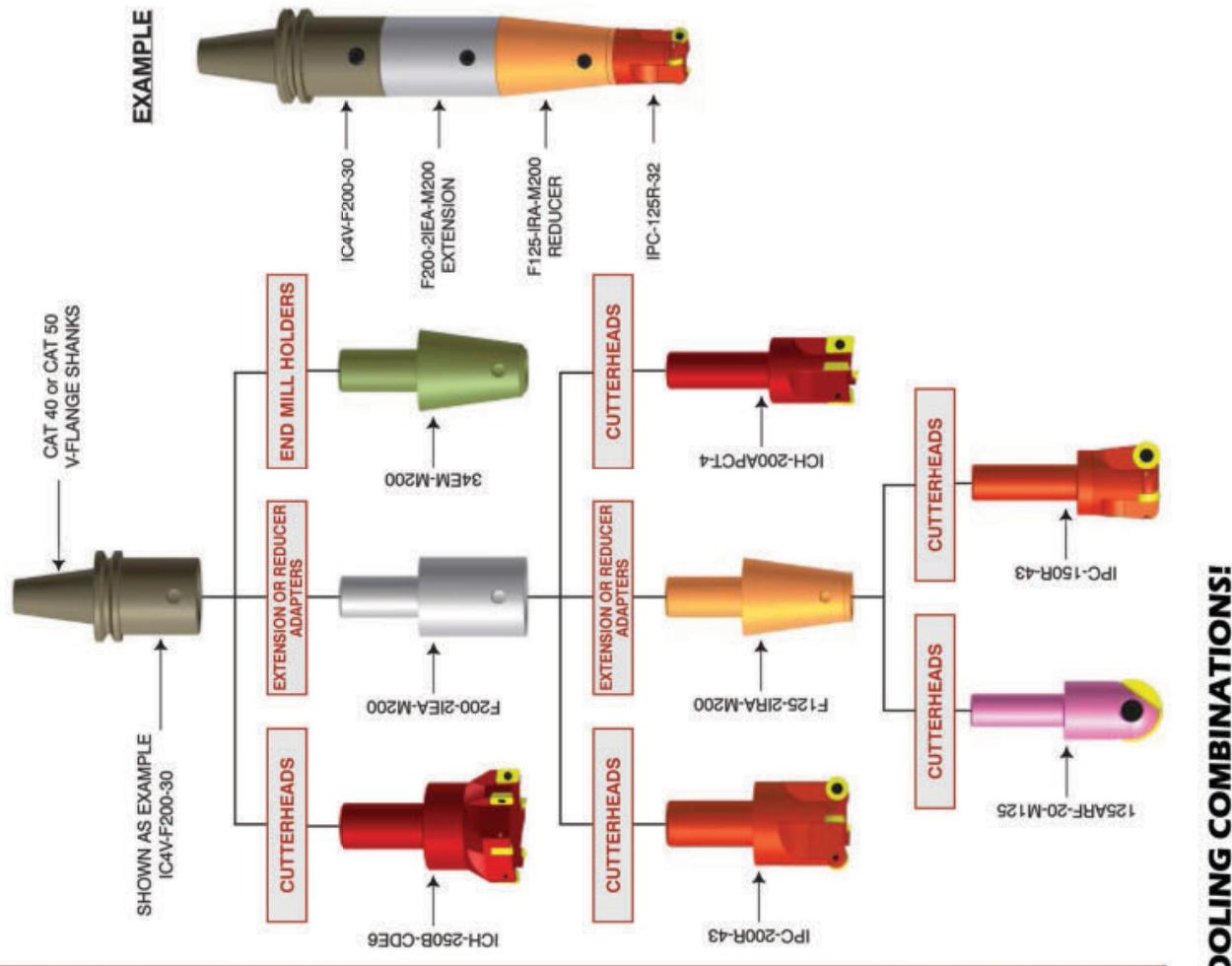


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COMBINING THE INTERLOC MASTER UNIT SYSTEM

COMBINING THE INTERLOC CONNECTION SYSTEM



INFINITE AMOUNT OF TOOLING COMBINATIONS!

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CAT 40 V-INTERLOC MASTER UNIT

* Assembles with IXS shanks *

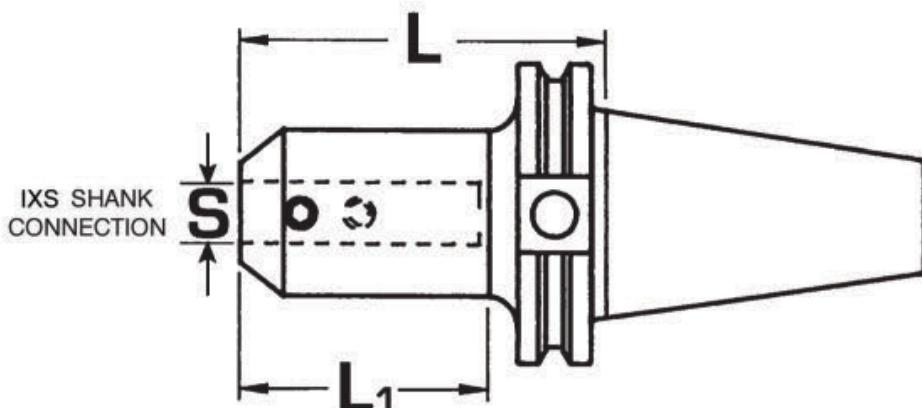
"INTERLOC DRIVE SYSTEM"



INTERLOC
CAT 40V
FLANGE

SHANK SIZE
DIAMETER

IC4V-S750



CONNECTS WITH IXS SHANKS (IXS SHANKS PAGES 10-11)

❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	SHANK SIZE (S)	LENGTH (L)	LENGTH (L ₁)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
IC4V-S750	.750	2.750	1.900	TS-375	3/16
IC4V-S100	1.000	2.950	2.150	TS-500S	1/4
IC4V-S125	1.250	3.050	2.300		



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CAT 40 V-INTERLOC SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC DRIVE SYSTEM"



INTERLOC
CAT 40V
FLANGE

IC4V-F100T-40

INTERLOC
"F" - FEMALE
CONNECTION

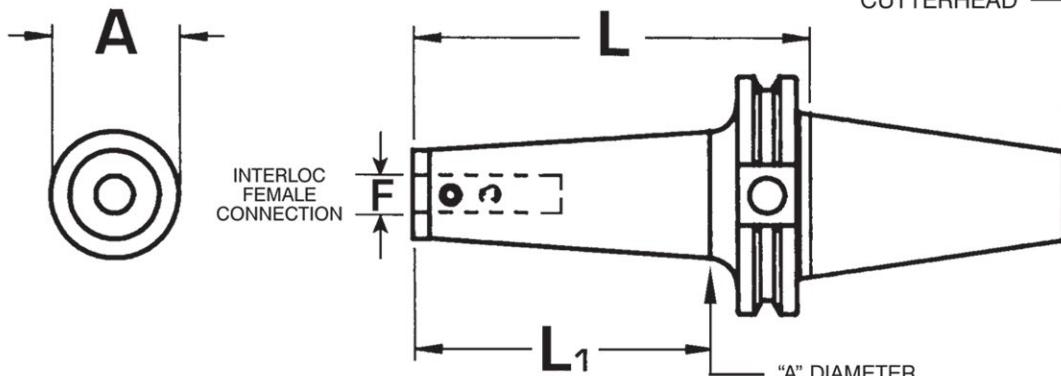
TAPER (or "S" for straight)
STYLE

LENGTH
"L"

CAT 40 SHANK →

assemble with

CUTTERHEAD →



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	DIAMETER (A)	LENGTH (L)	LENGTH (L1)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
IC4V-F75T-20	F75 INTERLOC	0.850	2.750	1.650	TS-250S	1/8
IC4V-F75T-30		0.950	3.750	2.650		
IC4V-F75T-40		1.025	4.750	3.650		
IC4V-F100T-20	F100 INTERLOC	1.100	2.750	1.750	TS-516S	5/32
IC4V-F100S-20		0.950		1.625		
IC4V-F100T-30		1.250	3.750	2.750		
IC4V-F100S-30		0.950		2.625		
IC4V-F100T-40		1.300	4.750	3.750		
IC4V-F100S-40		0.950		3.625		
IC4V-F125T-20	F125 INTERLOC	1.300	2.750	1.800	TS-516S	5/32
IC4V-F125S-20		1.200		1.625		
IC4V-F125T-30		1.400	3.750	2.800		
IC4V-F125S-30		1.200		2.625		
IC4V-F125T-40		1.400	4.750	3.800		
IC4V-F125S-40		1.200		3.625		
IC4V-F200S-30	F200 INTERLOC	1.900	2.900	2.150	TS-375	3/16
IC4V-F200S-40			3.900	3.150		
IC4V-F200S-50			4.900	4.150		



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CAT 50 V-INTERLOC MASTER UNIT

* Assembles with IXS shanks *

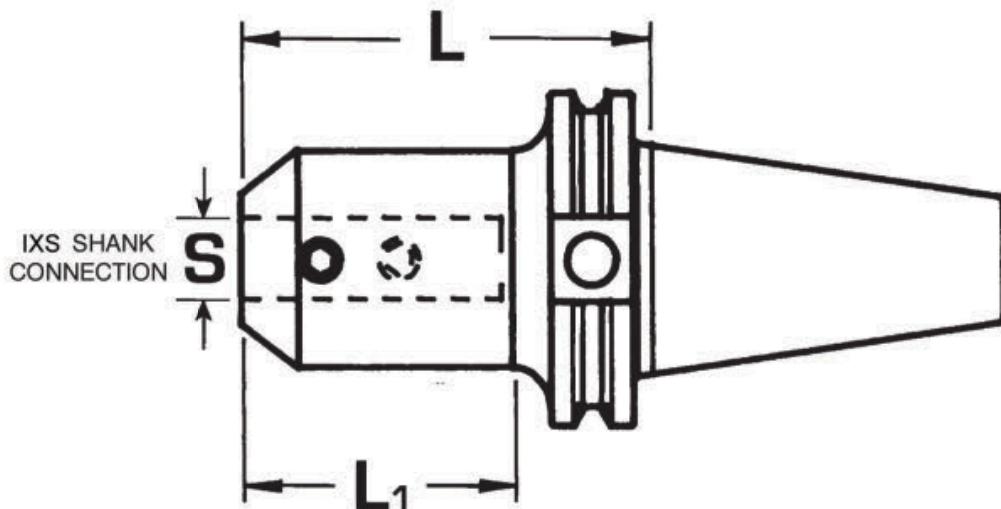
"INTERLOC DRIVE SYSTEM"



INTERLOC
CAT 50V
FLANGE

SHANK SIZE
DIAMETER

IC5V-S750



CONNECTS WITH IXS SHANKS (IXS SHANKS PAGES 10-11)

❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	SHANK SIZE (S)	LENGTH (L)	LENGTH (L ₁)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
IC5V-S750	.750	2.750	1.600	TS-375	3/16
IC5V-S100	1.000	2.950	1.800	TS-500S	1/4
IC5V-S125	1.250	3.050	1.900		



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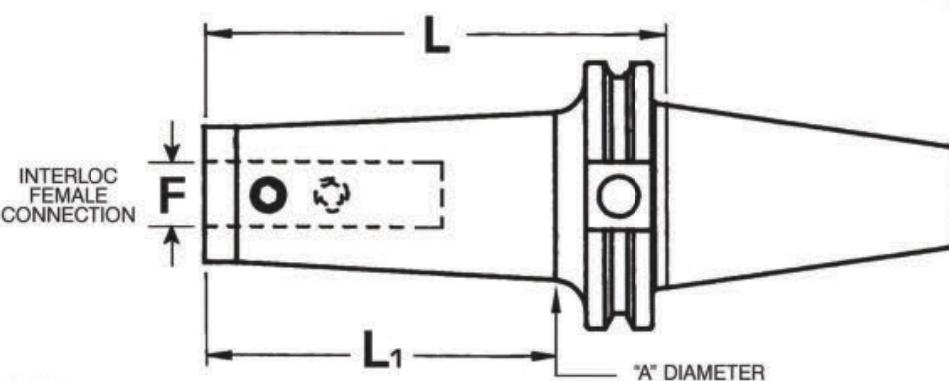
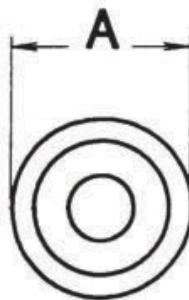
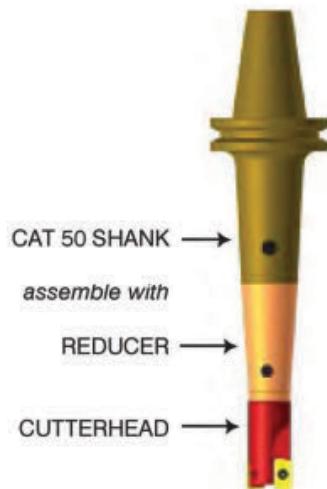
CAT 50 V-INTERLOC SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC DRIVE SYSTEM"



INTERLOC
CAT 50V
FLANGE
IC5V-F100T-60
INTERLOC
"F" - FEMALE
CONNECTION
TAPER (or "S" for straight)
STYLE
LENGTH
"L"



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	DIAMETER (A)	LENGTH (L)	LENGTH (L1)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
IC5V-F100T-60	F100 INTERLOC	1.220	6.000	4.500	TS-516	5/32
IC5V-F100T-80		1.280	8.000	6.400		
IC5V-F100T-100		1.530	10.000	8.400		
IC5V-F125T-60	F125 INTERLOC	1.460	6.000	4.400	TS-375	3/16
IC5V-F125T-80		1.400	8.000	6.400		
IC5V-F125T-100		1.770	10.000	8.400		
IC5V-F200T-60	F200 INTERLOC	2.300	6.000	4.500	TS-375	3/16
IC5V-F200T-80		2.350	8.000	6.500		
IC5V-F200T-100		2.450	10.000	8.500		
IC5V-F200S-30		3.000	1.850			
IC5V-F200S-60		6.000	4.500			
IC5V-F200S-80		8.000	6.500			
IC5V-F200S-100		10.000	8.500			



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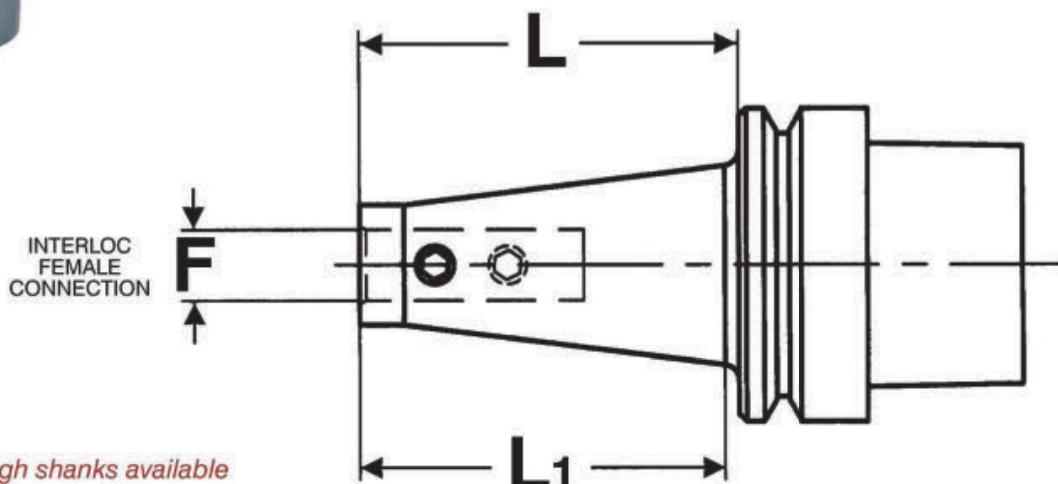
HSK63A INTERLOC SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC DRIVE SYSTEM"



INTERLOC
"F" - FEMALE
CONNECTION LENGTH
"L"
HSK STYLE
TAPER
STYLE
F75-15T2-HSK63A



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	LENGTH (L)	LENGTH (L1)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
F75-15T2-HSK63A	F75 INTERLOC	1.500	1.250	TS-250S	1/8
F75-30T2-HSK63A		3.000	2.750		
F75-45T2-HSK63A		4.500	4.250		
F100-20T2-HSK63A	F100 INTERLOC	2.000	1.850	TS-516	5/32
F100-30T2-HSK63A		3.000	2.850		
F100-45T2-HSK63A		4.500	4.350		
F125-20T2-HSK63A	F125 INTERLOC	2.000	1.850	TS-375	3/16
F125-30T2-HSK63A		3.000	2.850		
F125-45T2-HSK63A		4.500	4.350		
F200-20S-HSK63A	F200 INTERLOC	2.000	1.850	TS-375	3/16
F200-30S-HSK63A		3.000	2.850		
F200-45S-HSK63A		4.500	4.350		



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HSK100A INTERLOC SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC DRIVE SYSTEM"



INTERLOC
"F" - FEMALE
CONNECTION

LENGTH
"L"

TAPER
STYLE

F100-30T2-HSK100A

HSK STYLE

HSK100A SHANK →

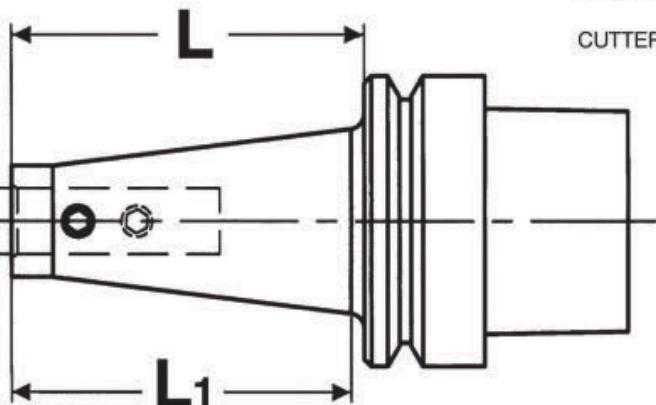
assemble with

CUTTERHEAD →



INTERLOC
FEMALE
CONNECTION

F



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	LENGTH (L)	LENGTH (L1)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
F100-30T2-HSK100A	F100 INTERLOC	3.000	2.500	TS-516	5/32
F100-40T2-HSK100A		4.000	3.500		
F100-50T2-HSK100A		5.000	4.500		
F100-75T2-HSK100A		7.500	7.000		
F125-30T2-HSK100A	F125 INTERLOC	3.000	2.500	TS-375	3/16
F125-40T2-HSK100A		4.000	3.500		
F125-50T2-HSK100A		5.000	4.500		
F125-75T2-HSK100A		7.500	7.000		
F200-35T-HSK100A	F200 INTERLOC	3.500	3.300	TS-375	3/16
F200-45T-HSK100A		4.500	4.300		
F200-55T-HSK100A		5.500	5.300		
F200-75T-HSK100A		7.500	7.300		
F200-30S-HSK100A		3.000	1.800		
F200-40S-HSK100A		4.000	2.800		
F200-50S-HSK100A		5.000	3.800		
F200-75S-HSK100A		7.500	6.300		



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INTERLOC-TAPER REACH SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC DRIVE SYSTEM"



INTERLOC
EXTENSION
SHANK
IXS-F75T-40U
INTERLOC
"F" - FEMALE
CONNECTION

TAPER
STYLE

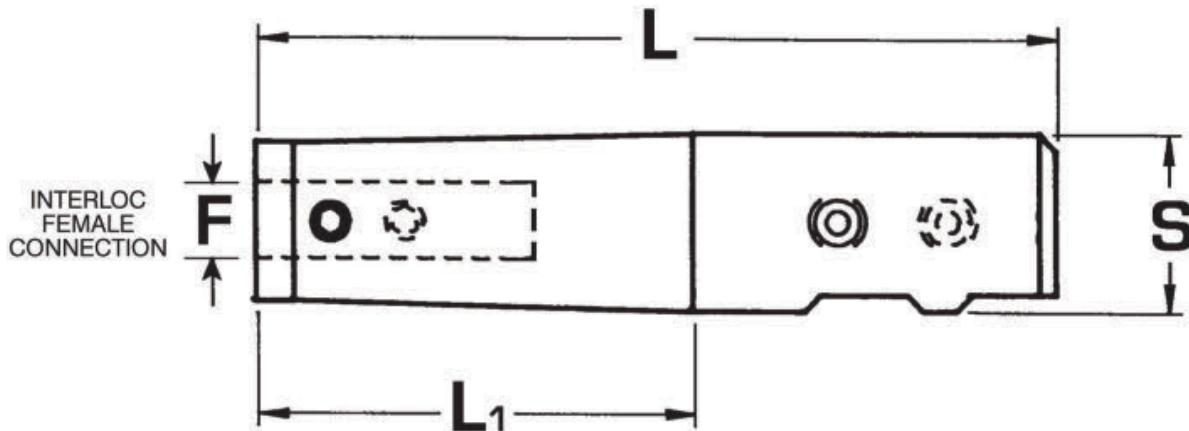
LENGTH
"L"

UNIVERSAL TOOL
• INTERLOC SHANK STYLE
OR WELDON FLAT HOLDING

SHANK →

assemble with

CUTTERHEAD →



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	SHANK DIAMETER (S)	LENGTH (L)	LENGTH (L1)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH	
IXS-F75T-40U	F75 INTERLOC	1.000	4.000	1.750	TS-250S	1/8	
IXS-F75T-50U			5.000	2.700	TS-250		
IXS-F75T-60U			6.000	3.500	TS-250S		
IXS-F75T-70U			7.000	4.650			
IXS-F75T-80U			8.000	5.650			
IXS-F100T-50U	F100 INTERLOC	1.250	5.000	2.600	TS-516	5/32	
IXS-F100T-60U			6.000	3.400	TS-516S		
IXS-F100T-75U			7.500	4.800			
IXS-F100T-95U			9.500	6.650			



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INTERLOC-STRAIGHT SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC DRIVE SYSTEM"

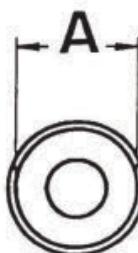
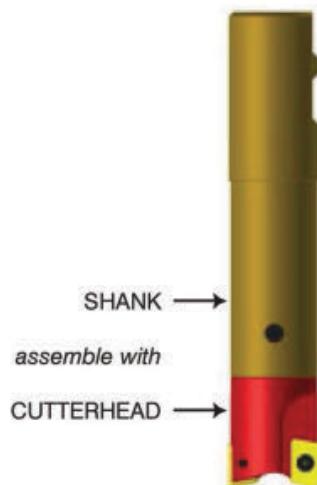


INTERLOC
EXTENSION
SHANK
IXS-F75S-45U

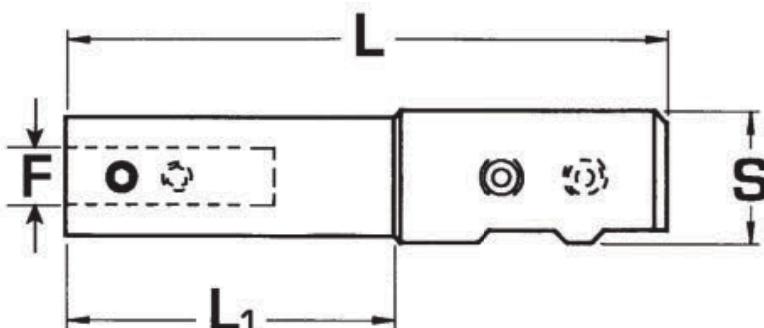
INTERLOC
"F" - FEMALE
CONNECTION

STRAIGHT
STYLE
LENGTH
"L"

UNIVERSAL TOOL
• INTERLOC SHANK STYLE
OR WELDON FLAT HOLDING



INTERLOC
FEMALE
CONNECTION



❖ Cooling through shanks available

* Semi-special

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	DIAMETER (A)	SHANK DIAMETER (S)	LENGTH (L)	LENGTH (L1)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
IXS-F75S-35U*	F75 INTERLOC	.710	.750	3.500	1.200	TS-250S	1/8
IXS-F75S-45U				4.500	2.200		
IXS-F75S-575U				5.750	3.000		
IXS-F75S-75U				7.500	5.200		
IXS-F100S-35U*	F100 INTERLOC	.950	1.000	3.500	1.200	TS-516S	5/32
IXS-F100S-45U				4.500	2.200		
IXS-F100S-60U				6.000	3.500		
IXS-F100S-75U				7.500	4.500		
IXS-F125S-45U	F125 INTERLOC	1.200	1.250	4.500	2.200	TS-516	
IXS-F125S-60U				6.000	3.500		
IXS-F125S-75U				7.500	4.750		
IXS-F125S-95U				9.500	6.500		
IXS-F200S-50U	F200 INTERLOC	1.900	2.000	5.000	1.700	TS-375	3/16
IXS-F200S-70U				7.000	3.700		
IXS-F200S-90U				9.000	5.700		



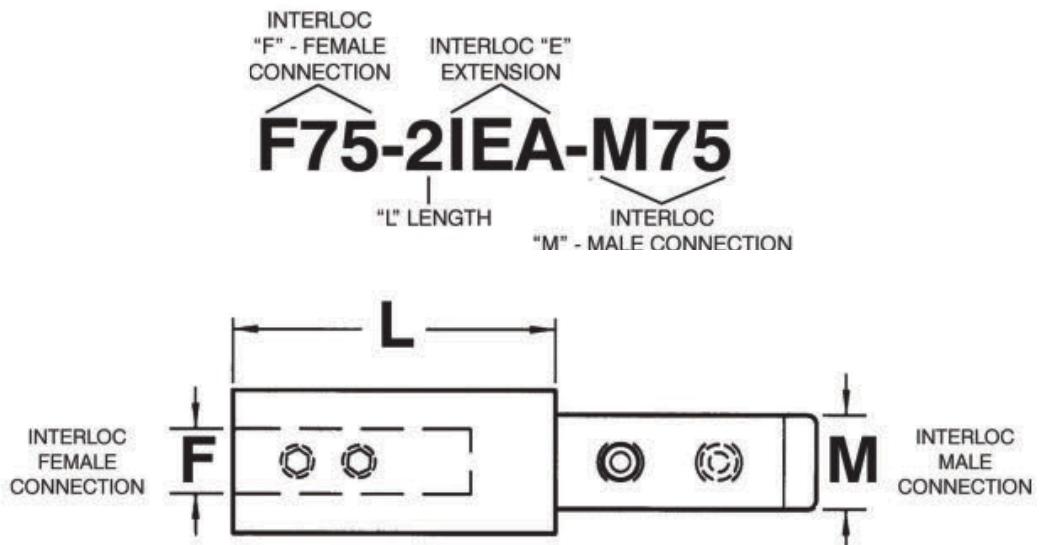
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INTERLOC EXTENSION ADAPTERS

* Assembles with shanks, endmills, cutterheads, reducers and extensions *

"INTERLOC DRIVE SYSTEM"



EXTENSION



REDUCER



TAPER-T2



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	INTERLOC MALE CONNECTION (M)	LENGTH (L)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH	
F75-2IEA-M75	F75 INTERLOC	M75 INTERLOC	2.000	TS-250S	1/8	
F75-3IEA-M75			3.000			
F100-2IEA-M100	F100 INTERLOC	M100 INTERLOC	2.500	TS-516S	5/32	
F100-3IEA-M100			3.500			
F125-2IEA-M125	F125 INTERLOC	M125 INTERLOC	2.625	TS-516		
F125-3IEA-M125			3.625			
F200-2IEA-M200	F200 INTERLOC	M200 INTERLOC	2.625	TS-375	3/16	
F200-5IEA-M200			5.000			
F400-4IEA-M400	F400 INTERLOC	M400 INTERLOC	3.900	TS-625	5/16	



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INTERLOC REDUCER ADAPTERS

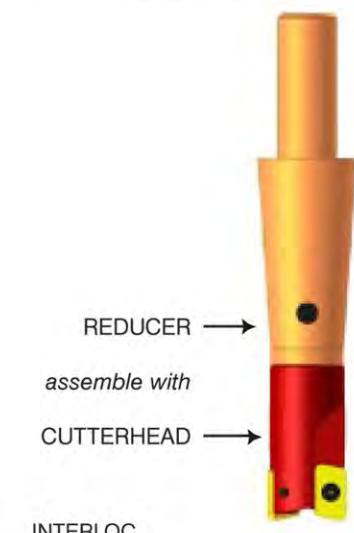
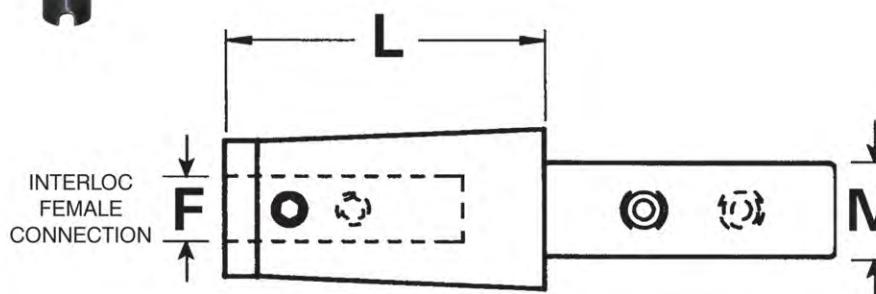
* Assembles with shanks, endmills, cutterheads, reducers and extensions *

"INTERLOC DRIVE SYSTEM"

REDUCER TAPER-T2



INTERLOC "F" - FEMALE CONNECTION INTERLOC "R" REDUCER ADAPTER
F75-2IEA-M75
 "L" LENGTH INTERLOC "M" - MALE CONNECTION



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	INTERLOC MALE CONNECTION (M)	LENGTH (L)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
F75-2IRA-M100	M75 INTERLOC	M100 INTERLOC	2.000	TS-250S	1/8
F75-3IRA-M100		3.000			
F75-2IRA-M125		2.500			
F75-3IRA-M125		3.500			
F100-2IRA-M125		2.500			
F100-3IRA-M125	F100 INTERLOC	3.500		TS-516S	5/32
F100-2IRA-M200		2.625			
F100-3IRA-M200		3.625			
F100-4IRA-M200		4.625			
F100-5IRA-M200		5.625			
F100-6IRA-M200	F125 INTERLOC	6.625		TS-516	5/32
F125-2IRA-M200		2.625			
F125-3IRA-M200		3.625			
F125-4IRA-M200		4.625			
F125-5IRA-M200		5.625			
F125-6IRA-M200		6.625			
F75-2IRA-M200	M75 INTERLOC	M200 INTERLOC	2.625	TS-250S	1/8
TAPER STYLE 2					
F125-25T2-M200	F125 INTERLOC	F200 INTERLOC	2.500	TS-516	5/32
F125-35T2-M200			3.500		
F125-45T2-M200			4.500		
F125-55T2-M200			5.500		
F125-65T2-M200			6.500		



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INTERLOC SHELL MILL ADAPTER

* Assembles with shanks, extensions and reducers *

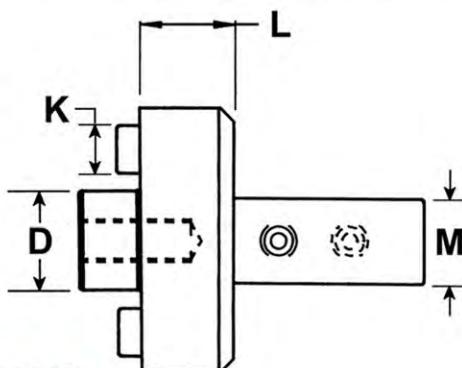
"INTERLOC DRIVE SYSTEM"



BUTTON CUTTER
ADAPTER
DIAMETER

INTERLOC
"M" MALE
CONNECTION

500SME-M200



IC5V-F200S-30
CAT50 HOLDER

125SME-M200
SHELL MILL
ADAPTER

BUTTON CUTTER



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	ADAPTER DIAMETER (D)	LENGTH (L)	KEYWAY (K)
500SME-M200	M200 INTERLOC	0.500	0.750	0.250
750SME-M200		0.750		0.312
100SME-M200		1.000		0.375
125SME-M200		1.250	0.850	0.500

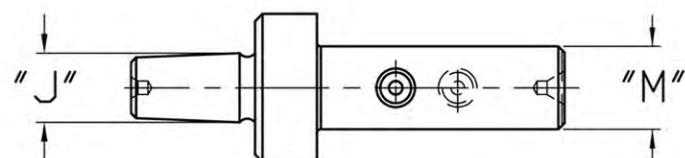
INTERLOC CHUCK MOUNT ADAPTERS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"



Long Reach Drilling
Capability



CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	CHUCK MOUNT
ICH-100-2JT	M100	2JT
ICH-125-2JT	M125	
ICH-200-3JT	M200	3JT
ICH-200-4JT		4JT

Introducing Troy Industries Interloc Chuck Mount Adapters:
Modular chuck mounts for short or long reach applications.



Troy industries inc.

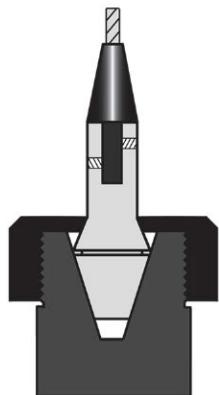
(586) 739-7760 Fax (586) 739-7769

ER25 - ER32 - 100TG - INTERLOC SHANKS

* Assembles with extensions, reducers, endmill holders and cutterheads *

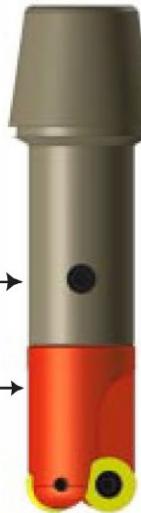
"INTERLOC DRIVE SYSTEM"

Interloc ER collet extensions allows you to use
your existing collet holders with the Modular Interloc System.



Collet nut locks the Interloc ER extension
holder and at the same time drives
the tapered edge downwards to make
it more secure & concentric

INTERLOC
"F" - FEMALE
CONNECTION ER
STYLE
F75-ER25



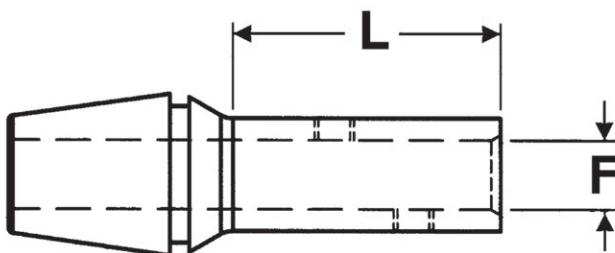
Being modular the Interloc ER extension
holder allows you to interchange &
add various cutter bodies & extensions.

ER25 SHANK →

assemble with

CUTTERHEAD →

INTERLOC
FEMALE
CONNECTION



- ❖ Cooling through shanks available
- ◆ Custom sizes available

ER-25

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	LENGTH (L)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
F75-ER25	F75 INTERLOC	1.650	TS-250S	1/8

ER-32

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	LENGTH (L)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
F75-ER32	F75 INTERLOC	1.550	TS-250S	1/8
F100-ER32	F100 INTERLOC	2.000	TS-516S	5/32

TG100 & ER32 COLLAR CHUCK ADAPTERS

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	LENGTH (L)	COLLETS SERIES
100TG-M200	M200 INTERLOC	3.500	TG-100
ER32-M200	M200 INTERLOC	3.500	ER-32



ER32-M200 Connected With Interloc Holder →



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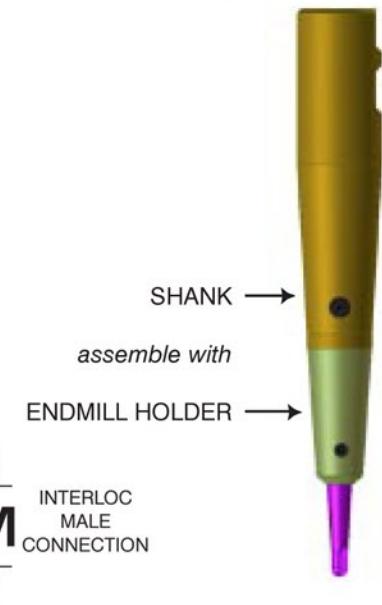
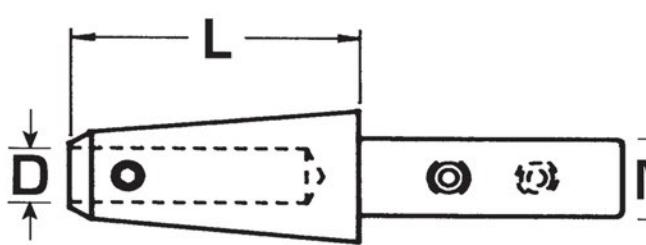
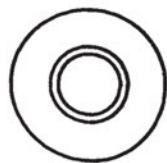
INTERLOC END MILL HOLDER

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"



ENDMILL
SIZE
38EM-M100
ENDMILL
HOLDER
INTERLOC
"M" - MALE CONNECTION



❖ Cooling through shanks available

◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	END MILL DIAMETER (D)	LENGTH (L)	END MILL LOCK SCREW #	ALLEN WRENCH
125EM-M75	M75 INTERLOC	1/8"	2.500	TS-125E	1/16
187EM-M75		3/16"		TS-187E	3/32
250EM-M75		1/4"		TS-250E	1/8
38EM-M75		3/8"		TS-38E	3/16
125EM-M100	M100 INTERLOC	1/8"	3.250	TS-125E	1/16
187EM-M100		3/16"		TS-187E	3/32
250EM-M100		1/4"		TS-250E	1/8
38EM-M100		3/8"		TS-38E	3/16
12EM-M100		1/2"		TS-12E	7/32
125EM-M125	M125 INTERLOC	1/8"	3.250	TS-125E	1/16
187EM-M125		3/16"		TS-187E	3/32
250EM-M125		1/4"		TS-250E	1/8
38EM-M125		3/8"		TS-38E	3/16
12EM-M125		1/2"		TS-12E	7/32
125EM-M200	M200 INTERLOC	1/8"	3.250	TS-125E	1/16
187EM-M200		3/16"		TS-187E	3/32
250EM-M200		1/4"		TS-250E	1/8
38EM-M200		3/8"		TS-38E	3/16
12EM-M200		1/2"		TS-12E	7/32
58EM-M200		5/8"		TS-58E	1/4
34EM-M200		3/4"		TS-34E	5/16
100EM-M200		1.000	3.250	TS-100E	3/8
125EM-M200		1.250			



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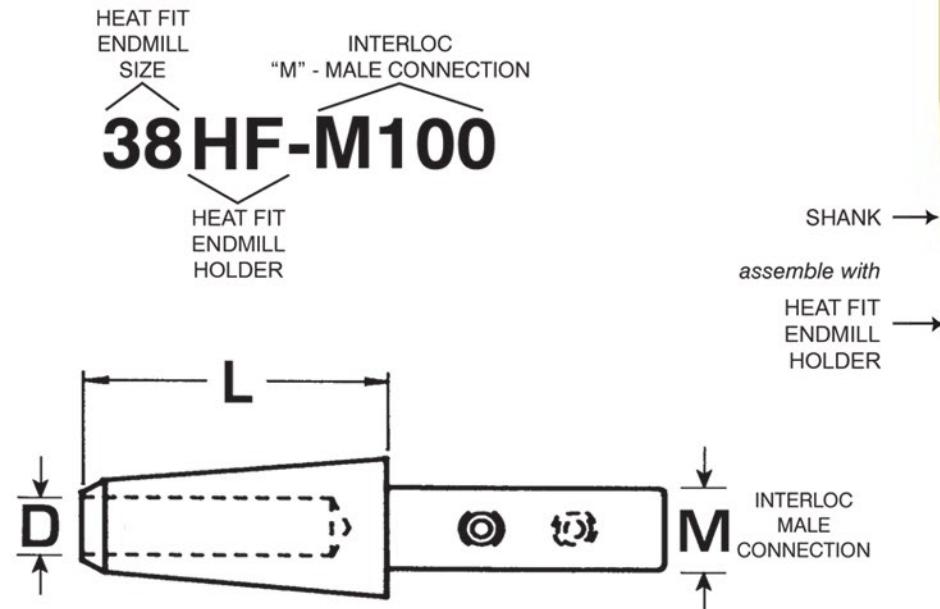
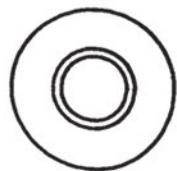
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INTERLOC HEAT FIT END MILL HOLDER

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

Just heat the tip of the end mill holder with a hot air heater for several minutes and insert the end mill. The end mill is securely locked in place when the holder is cooled down after a few minutes.



Most Heat Fit End Mill Holders Are Not Standard Stock Items Contact Us For Availability.

- ❖ Cooling through shanks available
- ◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	END MILL DIAMETER (D)	LENGTH
125HF-M75	M75 INTERLOC	1/8"	2.500
187HF-M75		3/16"	
250HF-M75		1/4"	
312HF-M75		5/16"	
38HF-M75		3/8"	
187HF-M100	M100 INTERLOC	3/16"	2.500
250HF-M100		1/4"	
312HF-M100		5/16"	
38HF-M100		3/8"	
12HF-M100		1/2"	
250HF-M125	M125 INTERLOC	1/4"	2.500
38HF-M125		3/8"	
12HF-M125		1/2"	
38HF-M200	M200 INTERLOC	3/8"	2.500
12HF-M200	1/2"		



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ICH INTERLOC - BALL NOSE CUTTERHEADS

* Assembles with shanks, extensions and reducers *

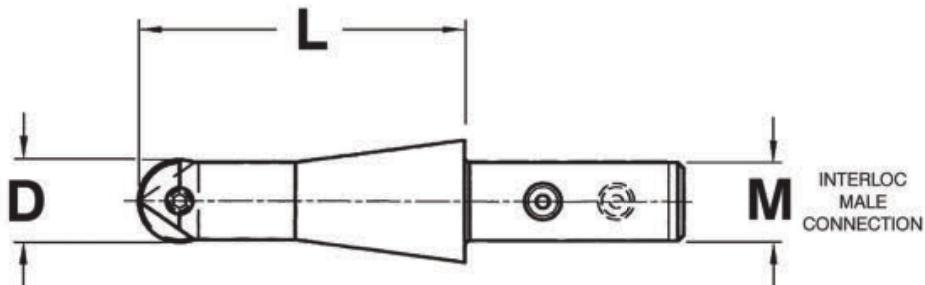
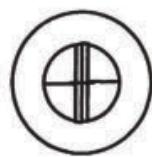
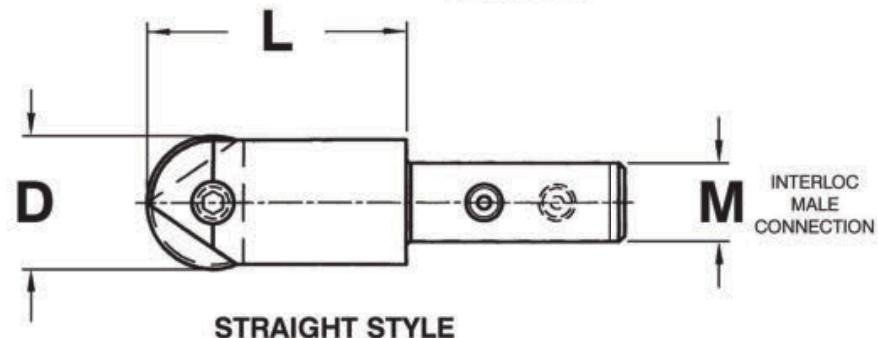
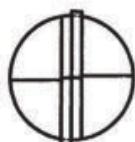
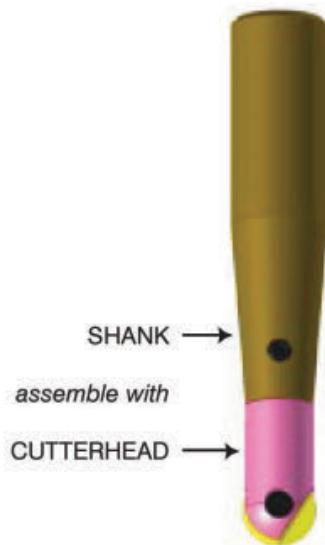
"INTERLOC DRIVE SYSTEM"



USES ARF
INSERTS

CUTTING STYLE
PROFILING
APPLICATIONS
FINISHING

CUTTING DIAMETER
50ARF-20-M75
LENGTH
INSERT STYLE
INTERLOC "M" - MALE CONNECTION



❖ Cooling through shanks available

◆ Custom sizes available

NOTE: ARF Ball Nose Cutters Take Both Inch & Metric Inserts

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #	
38ARF-20-M75	M75 INTERLOC	.375	2.000	2	ARF-380	TS-38A	T-8	
50ARF-20-M75		.500			ARF-500	TS-50A	T-10	
75ARF-15-M75		.750	1.500		ARF-750	TS-75A	T-20	
100ARF-20-M100	M100 INTERLOC	1.000	2.000		ARF-100	TS-100A	T-30	
125ARF-20-M125	M125 INTERLOC	1.250			ARF-125	TS-125A	T-40	



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IBC INTERLOC - BALL NOSE CUTTERHEADS

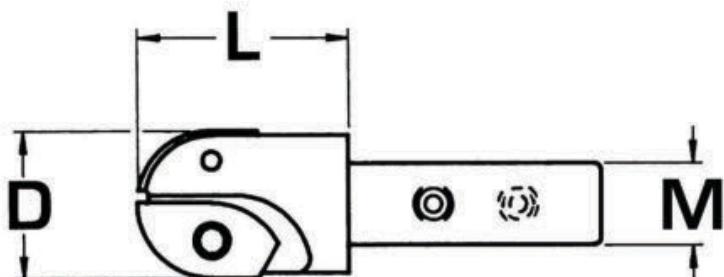
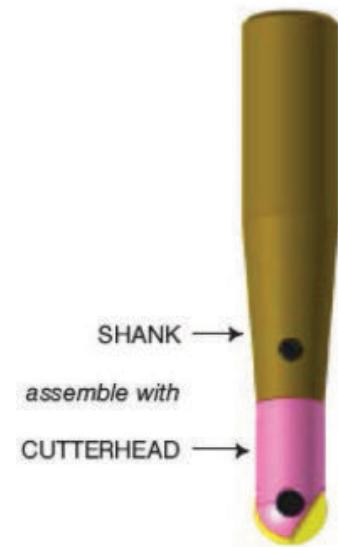
* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"



CUTTING STLYE
Grooving, Pocket Cutting, & Profiling
APPLICATIONS
Roughing, Semi-finishing, & Finishing

INTERLOC
BALL NOSE CUTTER INSERT
STYLED
IBC-75BI-2
CUTTING DIAMETER NUMBER OF FLUTES



BI-750 BI-751

NOTE: IBC cutters take two different insert types

EXAMPLE: An IBC-75BI-2 cutter will need a BI-750 insert & a BI-751 insert.

❖ Cooling through shanks available

◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #
IBC-75BI-2	M75 INTERLOC	0.750	1.500	2	BI-750 / BI-751	TS-75B	T-15
IBC-100BI-2	M100 INTERLOC	1.000			BI-100 / BI-101	TS-10B	
IBC-125BI-2	M125 INTERLOC	1.250			BI-125 / BI-126	TS-12B	T-20
IBC-200BI-2	M200 INTERLOC	2.000			BI200 / BI-201	TS-20S	1/8



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ICH INTERLOC - AECW CUTTERHEADS

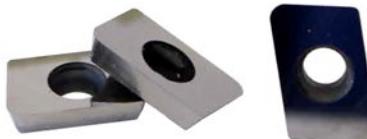
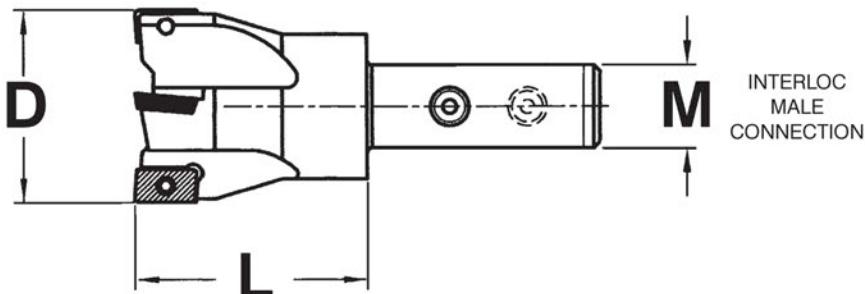
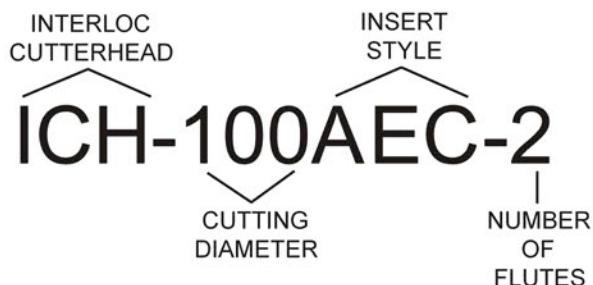
* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

NEW! High Performance Aluminum Cutters



CUTTING STLYE
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



- ★ REF. SPEED & FEED
2,000 CUTTING DIAMETER 3 FLUTE
3,000 R.P.M.
.200 DEPTH OF CUT
300 I.P.M.

- ◆ Cooling through shanks available
 - ◆ Custom sizes available

AECW INSERTS				
CATALOG NUMBER	WIDTH (W)	LENGTH (L)	RADIUS (R)	AVAILABLE GRADES
AECW-422	0.360	0.625	0.0312	TI-8J
AECW-424			0.0625	
AECW-428			0.1250	

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	LOCK SCREW #	TORX WRENCH #
ICH-100AEC-2	M100 INTERLOC	1.000	1.500	2	AECW-432 TO AECW-438	TS-75BS	T-15
ICH-125AEC-2	M125 INTERLOC	1.250		3		TS-75B	
ICH-200AEC-3	M200 INTERLOC	2.000					



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THP - AECW SHELL MILL CUTTERS

* Assembles with facemill extensions *

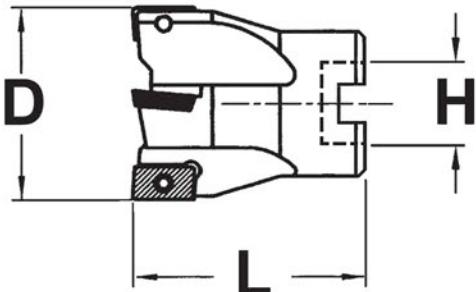
"INTERLOC DRIVE SYSTEM"

NEW! High Performance Aluminum Cutters

CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



INTERLOC
CUTTERHEAD
THP-300AEC-5
CUTTING DIAMETER
NUMBER OF FLUTES



★ REF. SPEED & FEED
2,000 CUTTING DIAMETER 3 FLUTE
3,000 R.P.M.
.200 DEPTH OF CUT
300 I.P.M.

- ❖ Cooling through available
- ◆ Custom sizes available

AECW INSERTS				
CATALOG NUMBER	WIDTH (W)	LENGTH (L)	RADIUS (R)	AVAILABLE GRADES
AECW-422	0.360	0.625	0.0312	TI-8J
AECW-424			0.0625	
AECW-428			0.1250	

CATALOG NUMBER	EFFECTIVE CUTTING DIAM. (D)	HOLE DIAMETER (H)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	LOCK SCREW #	TORX WRENCH #				
THP-300AEC-5	3.000	1.250	2.500	5	AECW-432 TO AECW-438	TS-75B	T-15				
THP-400AEC-5	4.000	1.500									
THP-400AEC-6		6									



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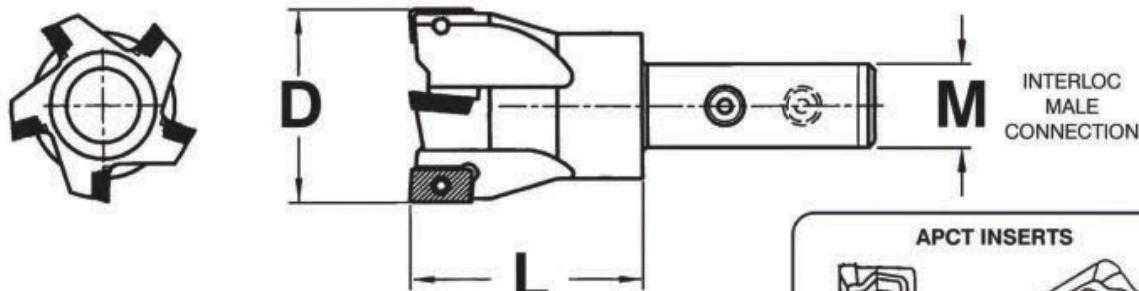
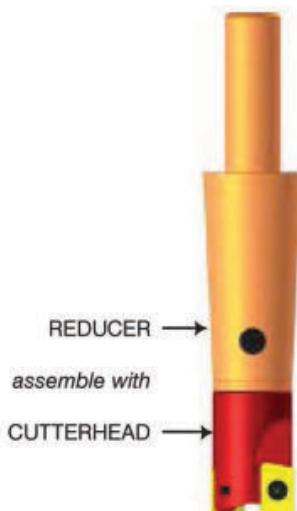
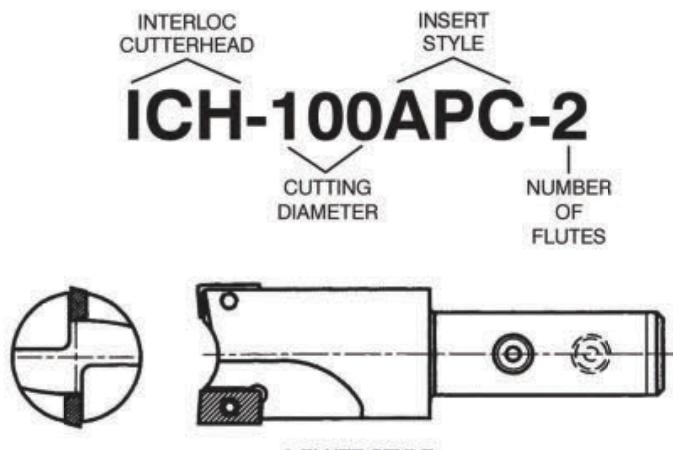
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ICH INTERLOC - APCT CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

CUTTING STYLE
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



- ❖ Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #	
ICH-100APC-2	M100 INTERLOC	1.000	1.500	2	APCT-432 TO APCT-438	TS-10I	T-15	
ICH-125APC-2		1.250		2				
ICH-125APC-3				3				
ICH-150APC-2				2				
ICH-150APC-3		1.500		3				
ICH-200APC-4	M200 INTERLOC		2.000	4				
ICH-275APC-5	2.750	5						

ICH INTERLOC - BD-APCT CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

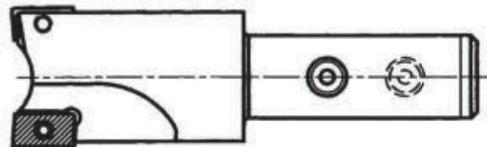
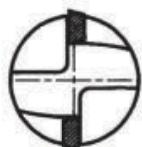
CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



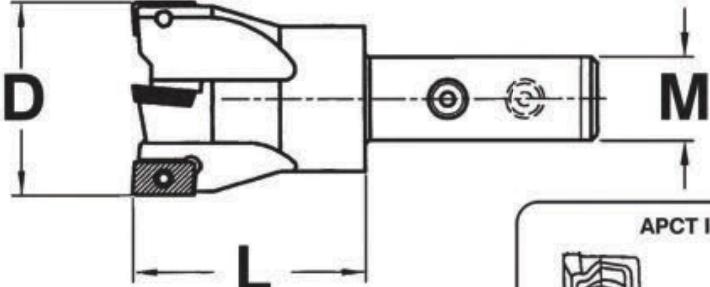
INTERLOC
CUTTERHEAD
ICH-100B-APC-2

CUTTING
DIAMETER

NUMBER
OF
FLUTES



Back Draft Angle = 3°



INTERLOC
MALE
CONNECTION

APCT INSERTS



PRECISION GROUND INSERT

- ◆ Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	LOCK SCREW #	TORX WRENCH #
ICH-75B-APC-1	M75 INTERLOC	0.750		1			
ICH-100B-APC-2	M100 INTERLOC	1.000		2			
ICH-125B-APC-2							
ICH-125B-APC-3	M125 INTERLOC	1.250	1.500	3	APCT-434	TS-10I	T-15
ICH-150B-APC-2				2			
ICH-150B-APC-3		1.500		3			
ICH-200B-APC-4	M200 INTERLOC	2.000		4			
ICH-275B-APC-4		2.750		5			
ICH-275B-APC-5							



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ICH INTERLOC - CDEW MULTI FLUTES CUTTERHEADS

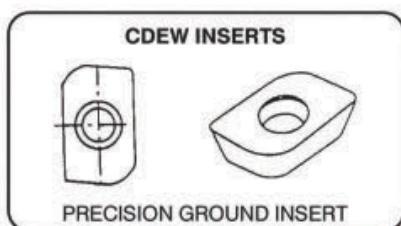
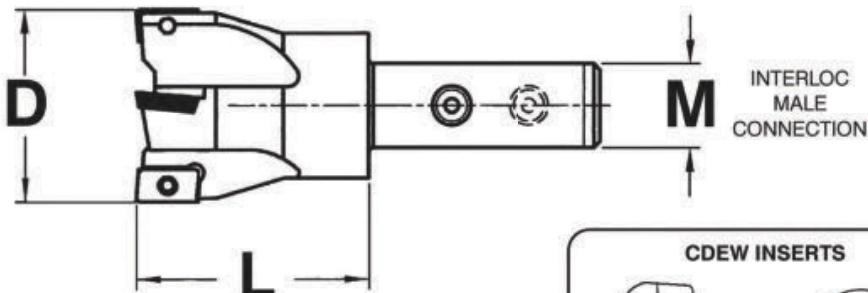
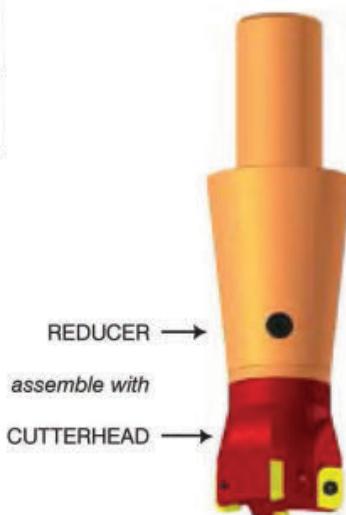
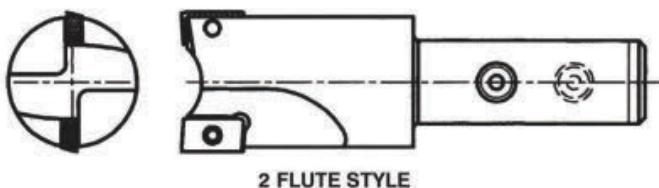
* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"



CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing

INTERLOC
CUTTERHEAD
ICH-75CDE-2
CUTTING DIAMETER INSERT STYLE
NUMBER OF FLUTES



- ◆ Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	LOCK SCREW #	TORX WRENCH #
ICH-75CDE-2	M75 INTERLOC	0.750	1.500	2	CDEW-322 TO CDEW-328	TS-3CD	T-9
ICH-100CDE-3-M75				3			
ICH-100CDE-2	M100 INTERLOC	1.000	1.500	2			
ICH-100CDE-3				3			
ICH-125CDE-4	M125 INTERLOC	1.250	2.000	4		TS-3CD	T-9
ICH-150CDE-4		1.500					
ICH-200CDE-5	M200 INTERLOC	2.000	2.000	5	CDEW-322 TO CDEW-328	TS-3CD	T-9
ICH-250CDE-6		2.500		6			
ICH-275CDE-7		2.750		7			



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ICH INTERLOC - BD-CDEW MULTI FLUTES CUTTERHEADS

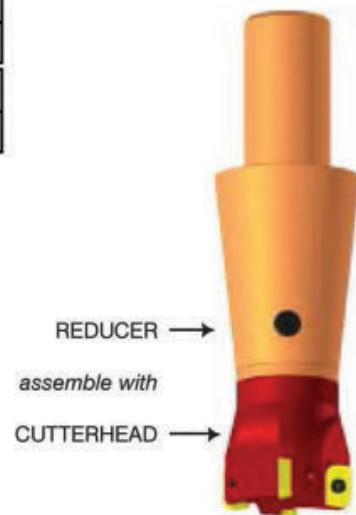
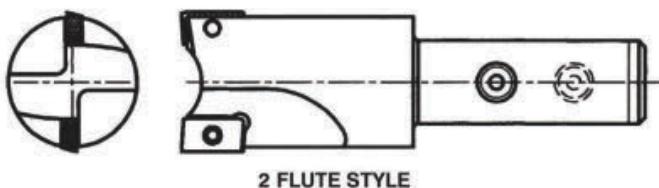
* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

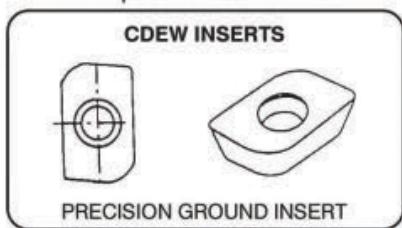
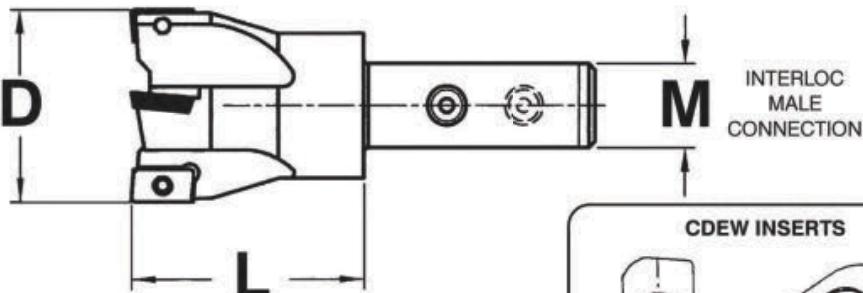


CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing

INTERLOC
CUTTERHEAD
ICH-75B-CDE-2
CUTTING DIAMETER INSERT STYLE
NUMBER OF FLUTES



Back Draft Angle = 3°



- ◆ Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	LOCK SCREW #	TORX WRENCH #					
ICH-50B-CDE-1	M75 INTERLOC	0.500	2.000	1	CDEW-324	TS-3CDS	T-9					
ICH-75B-CDE-2		0.750		2								
ICH-100B-CDE-3-M75		1.000		3								
ICH-100B-CDE-2	M100 INTERLOC		1.500	2	TS-3CD	T-9	T-9					
ICH-100B-CDE-3				3								
ICH-125B-CDE-4	1.250	4										
ICH-150B-CDE-4	M125 INTERLOC	1.500	2.000		CDEW-324	TS-3CD	T-9					
ICH-200B-CDE-4		2.000										
ICH-200B-CDE-5												
ICH250B-CDE-6	M200 INTERLOC	2.500	2.000	5	TS-3CD	T-9	T-9					
ICH-275B-CDE-6		2.750		6								
ICH-275B-CDE-7				7								



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IPC INTERLOC - PLUNGE CUTTERHEADS

* Assembles with shanks, extensions and reducers *

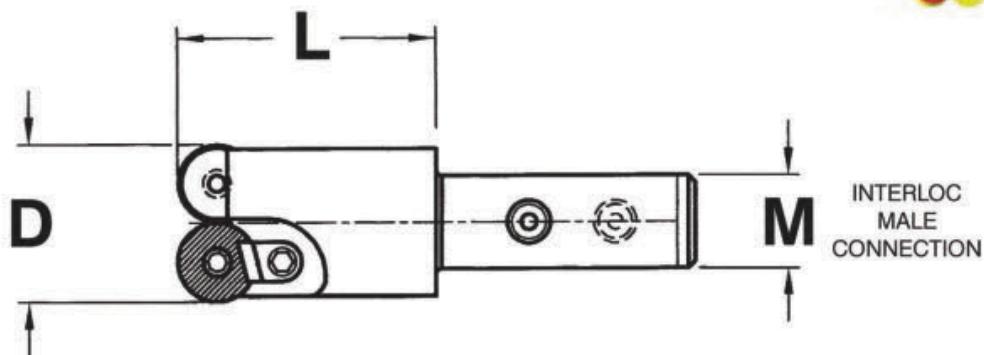
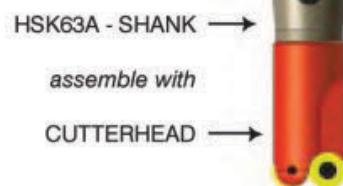
"INTERLOC DRIVE SYSTEM"



CUTTING STYLED
Face Milling, Grooving, Profiling, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing

INTERLOC PLUNGE
CUTTERHEAD
IPC-100R-43
CUTTING
DIAMETER

INSERT
STYLE



CHIP BREAKER INSERTS



RPGW



INTERLOC
MALE
CONNECTION

FLAT TOP INSERTS



RPG



◆ Cooling through shanks available

◆ Custom sizes available

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	ALLEN OR TORX WRENCH #	CLAMP #	CLAMP SCREW #	CLAMP SCREW WRENCH
IPC-75R-32	M75 INTERLOC	.750			RPG-32	TS-32	T-9			
IPC-100R-43	M100 INTERLOC	1.000			RPG-43	TS-10I	T-15	TC-1		
IPC-125R-53	M125 INTERLOC	1.250			RPG-53	TS-12B	T-20		6 x 3/8	7/64
IPC-150R-64		1.500			RPG-64	TS-20S		TC-2		
IPC-200R-84	M200 INTERLOC	2.000	2.000		RPG-84	TS-20	1/8	TC-4	10 x 1/2	5/32



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IPC MULTI FLUTE PLUNGING CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"



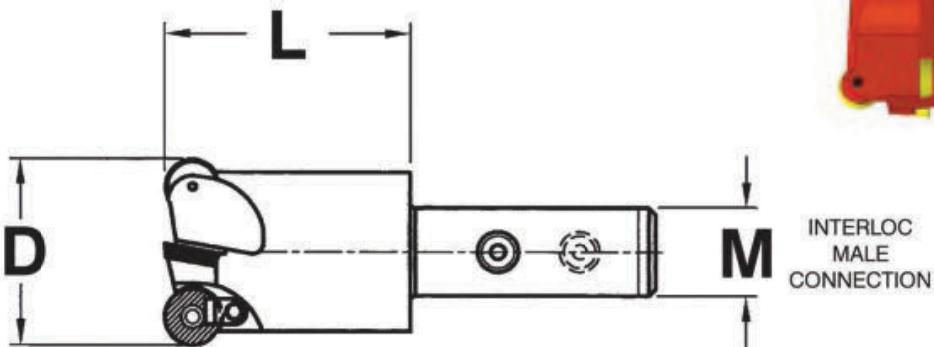
CUTTING STYIE
Face Milling, Grooving, Profiling, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing

INTERLOC
PLUNGE
CUTTERHEAD

IPC-125R-43

INSERT
STYLE

CUTTING
DIAMETER



- ❖ Cooling through shanks available
- * Semi-special
- ◆ Custom sizes available

CHIP BREAKER INSERTS



RPGW

FLAT TOP INSERTS



RPG

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	ALLEN OR TORX WRENCH #	CLAMP #	CLAMP SCREW #	CLAMP SCREW WRENCH
IPC-100R-32	M100 INTERLOC	1.000								
IPC-125R-32										
IPC-125R-43	M125 INTERLOC	1.250	1.500	3	RPG-32	TS-32	T-9			
IPC-150R-43										
IPC-200R-43				4						
IPC-200R-64				3	RPG-64	TS-20S	1/8			
IPC-275R-43	M200 INTERLOC		2.000	5	RPG-43	TS-10I	T-15			
IPC-275R-64*				4	RPG-64	TS-20S				
IPC-275R-84*			2.750	3	RPG-84	TS-20	1/8	TC-4	10 x 1/2	5/32



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BUTTON CUTTERS

* Assembles with facemill extensions *

"POSITIVE BUTTON CUTTERS"

CUTTING STLYE
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



TROY POSITIVE CUTTER

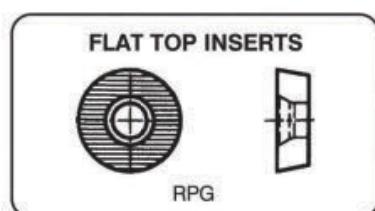
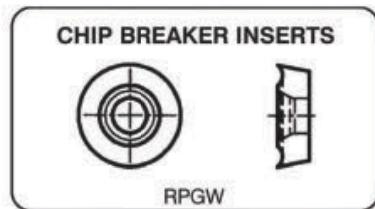
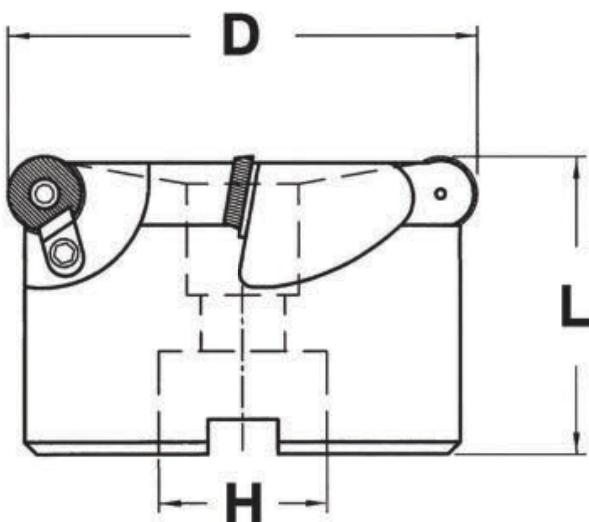
TPC-300R-64

CUTTING DIAMETER

IFM - EXTENSION →

assemble with

BUTTON CUTTER →



❖ Cooling through shanks available

* Semi-special

◆ Custom sizes available

CATALOG NUMBER	EFFECTIVE CUTTING DIAM. (D)	HOLE DIAMETER (H)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	ALLEN WRENCH #	CUTTER HEADS LOCK SCREW	CLAMP #	CLAMP SCREW #	CLAMP SCREW WRENCH
TPC-300R-64	3.000	1.250			RPG-64	TS-20S		5/8 S.H.C.S.	TC-2	6 x 3/8	7/32
TPC-400R-64	4.000			5	RPG-84	TS-20		1/8			
TPC-400R-84	4.000		2.500		RPG-64	TS-20S		3/4 S.H.C.S.	TC-4	10 x 1/2	5/32
TPC-500R-64	5.000			6	RPG-84	TS-20					
TPC-600R-84*	6.000										



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ICH INTERLOC - BALL NOSE CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

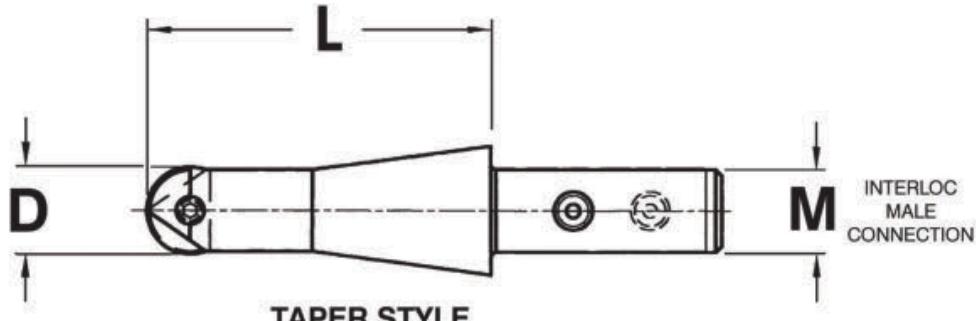
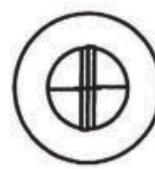
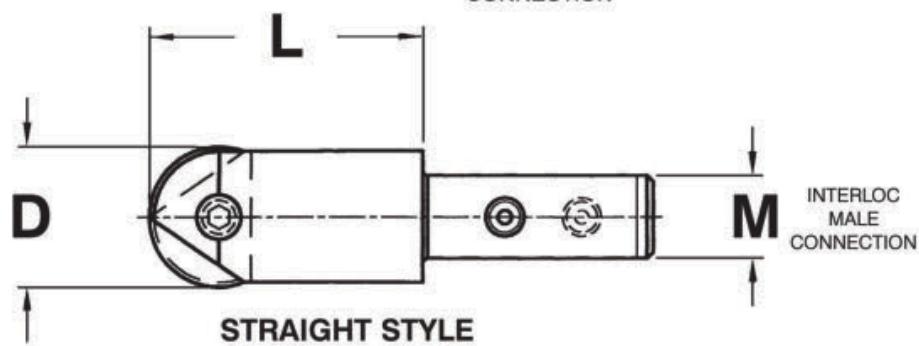
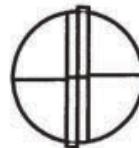
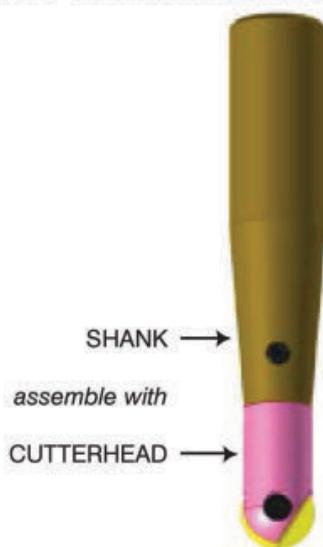
Metric

CUTTING STYLE
PROFILING
APPLICATIONS
FINISHING



USES ARF
INSERTS

CUTTING DIAMETER
10
LENGTH
20
INSERT STYLE
ARF
INTERLOC "M" - MALE CONNECTION
M75



❖ Cooling through shanks available

◆ Custom sizes available

NOTE: ARF Ball Nose Cutters Take Both Inch & Metric Inserts

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #
10ARF-20-M75	M75 INTERLOC	10	50	2	ARF-10	TS-38A	T-8
12ARF-20-M75		12			ARF-12	TS-50A	T-10
16ARF-20-M75		16			ARF-16	TS-625A	T-15
20ARF-15-M75		20			ARF-20	TS-75A	T-20
25ARF-20-M100	M100 INTERLOC	25	38	50	ARF-25	TS-100A	T-30
32ARF-20-M125	M125 INTERLOC	30 or 32			ARF-32	TS-125A	T-40



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ICH INTERLOC - APC CUTTERHEADS

* Assembles with shanks, extensions and reducers *

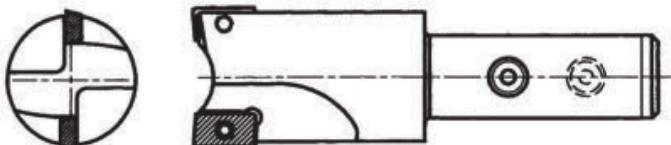
"INTERLOC DRIVE SYSTEM"

Metric

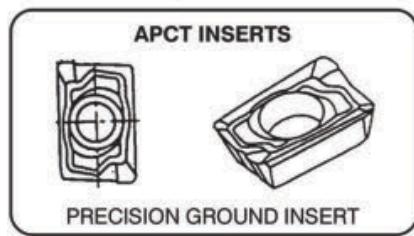
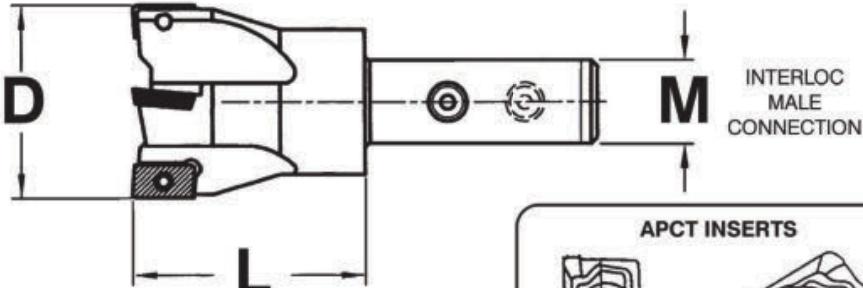
CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



INTERLOC
CUTTERHEAD
ICH-25APC-2
CUTTING DIAMETER INSERT STYLE
NUMBER OF FLUTES



2 FLUTE STYLE



- ◆ Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #
ICH-25APC-2	M100 INTERLOC	25	38	2	APCT-432 TO APCT-438	TS-10I	T-15
ICH-32APC-2		32		3			
ICH-32APC-3				2			
ICH-38APC-2		38		3			
ICH-38APC-3							
ICH-50APC-4	M200 INTERLOC	50	50	4			
ICH-63APC-4		63					
ICH-70APC-5*		70		5			



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ICH INTERLOC - BD - APC CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

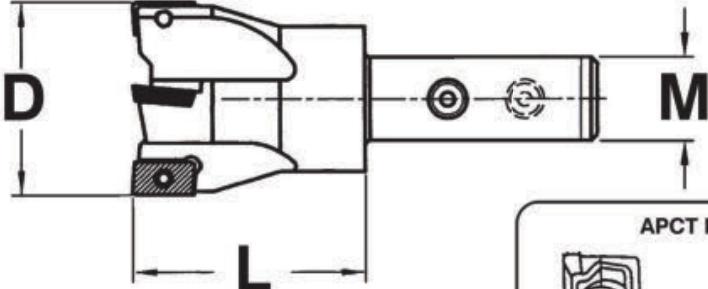
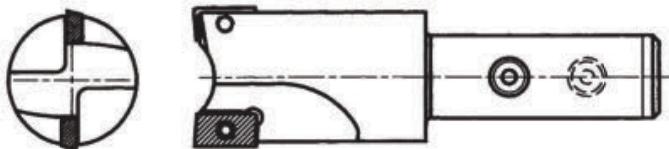
Metric

CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



Back Draft Angle = 3°

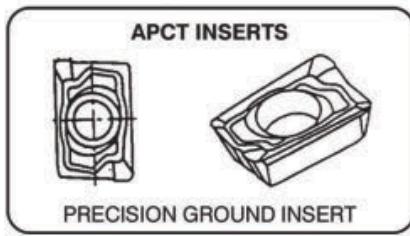
INTERLOC
CUTTERHEAD
ICH-25B-APC-2
CUTTING DIAMETER INSERT STYLE
NUMBER OF FLUTES



INTERLOC
MALE
CONNECTION

- Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.



PRECISION GROUND INSERT

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #			
ICH-25B-APC-2	M100 INTERLOC	25	38	2	APCT-438	TS-10I	T-15			
ICH-32B-APC-2		32								
ICH-32B-APC-3		38		3						
ICH-38B-APC-2				2						
ICH-38B-APC-3				3						
ICH-50B-APC-4	M200 INTERLOC	50	50	4						
ICH-63B-APC-4		63								
ICH-70B-APC-5*		70		5						



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ICH INTERLOC - CDEW MULTI FLUTES CUTTERHEADS

* Assembles with shanks, extensions and reducers *

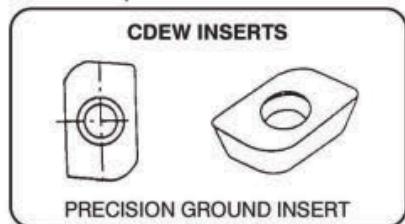
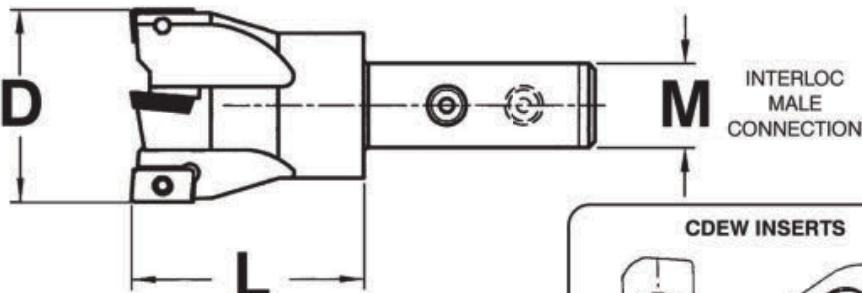
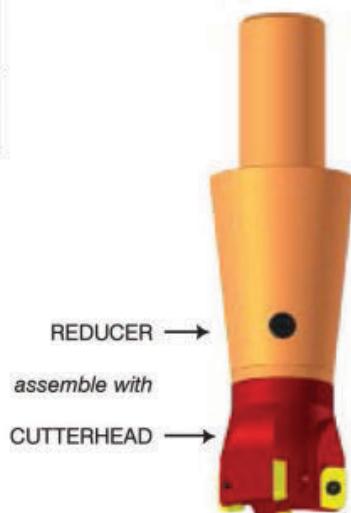
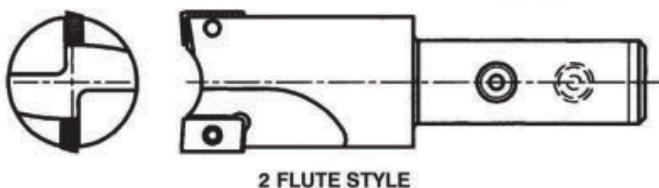
"INTERLOC DRIVE SYSTEM"

Metric



CUTTING STYLED
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing

INTERLOC
CUTTERHEAD INSERT
CUTTING DIA. STYLE
ICH-19CDE-2 NUMBER
CUTTING OF
DIA. FLUTES



- ❖ Cooling through shanks available
- Cutting diameter and insert clearance is based on .062 R insert.
- ◆ Custom sizes available

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #
ICH-19CDE-2	M75 INTERLOC	19	38	2	CDEW-322 TO CDEW-328	TS-3CDS TS-3CD	T-9
ICH-25CDE-3		25		3			
ICH-32CDE-4		32		4			
ICH-38CDE-4		38					
ICH-50CDE-5	M125 INTERLOC	50	50	5			
ICH-63CDE-6		63		6			
ICH-70CDE-7		70		7			



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ICH INTERLOC - BD-CDEW MULTI FLUTES CUTTERHEADS

* Assembles with shanks, extensions and reducers *

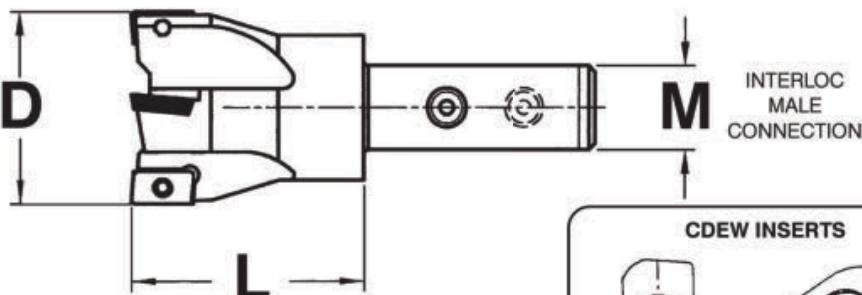
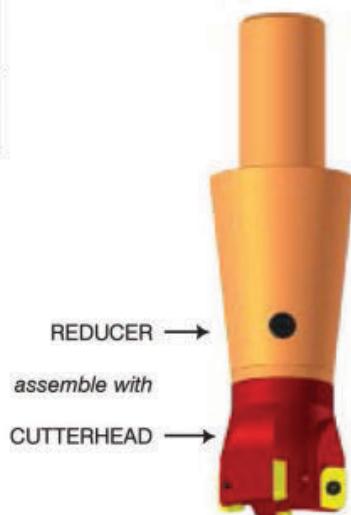
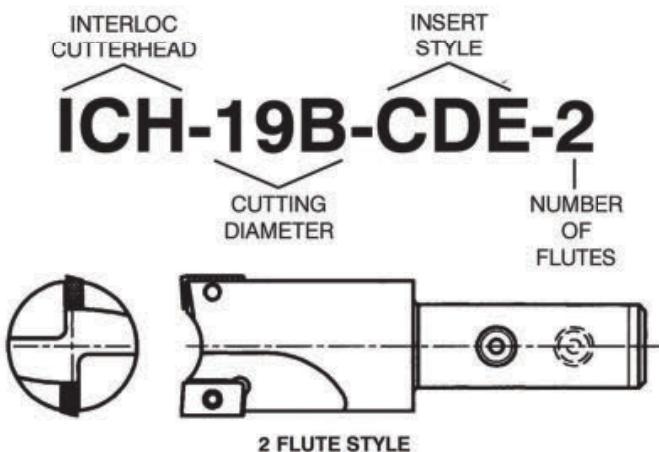
"INTERLOC DRIVE SYSTEM"

Metric



Back Draft Angle = 3°

CUTTING STYLÉ
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



◆ Cooling through shanks available

• Cutting diameter and insert clearance is based on .062 R insert.

◆ Custom sizes available

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #
ICH-19B-CDE-2	M75 INTERLOC	19	38	2	CDEW-324	TS-3CDS	T-9
ICH-25B-CDE-3		25		3			
ICH-32B-CDE-4		32		4			
ICH-38B-CDE-4	M125 INTERLOC	38	50	5	TS-3CD		
ICH-50B-CDE-5		50		6			
ICH-63B-CDE-6		63		7			
ICH-70B-CDE-7	M200 INTERLOC	70					



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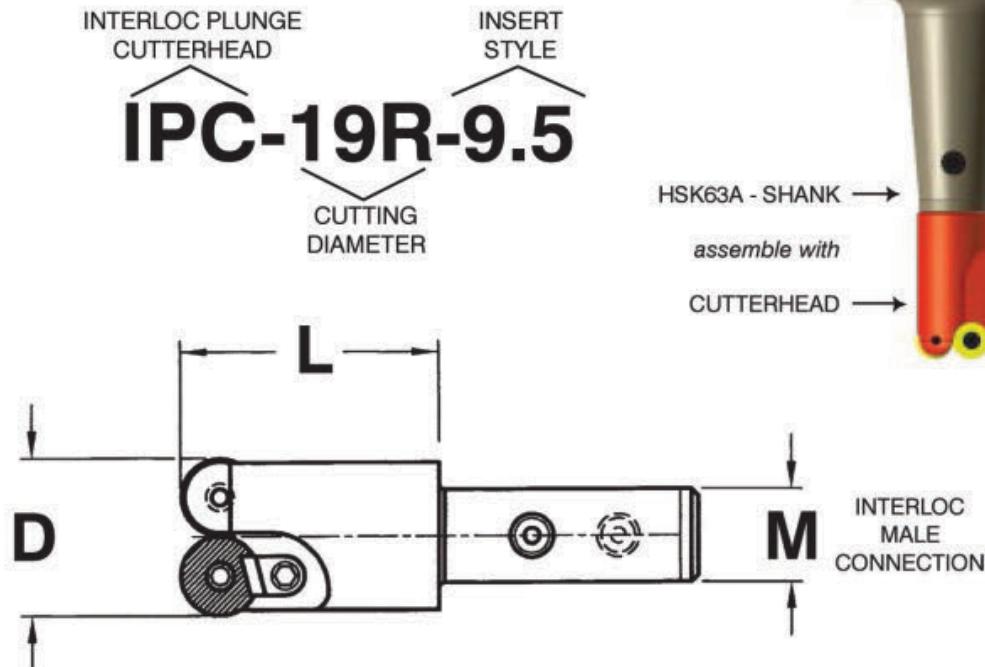
IPC INTERLOC - PLUNGE CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

Metric

CUTTING STLYE
Face Milling, Grooving, Profiling, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



CHIP BREAKER INSERTS



RPGW

FLAT TOP INSERTS



RPG

❖ Cooling through shanks available

◆ Custom sizes available

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	ALLEN OR TORX WRENCH #	CLAMP #	CLAMP SCREW #	CLAMP SCREW WRENCH
IPC-19R-9.5	INTERLOC	19	38	2	RPG-9.5	TS-32	T-9			
IPC-25R-12		25			RPG-12	TS-10I	T-15	TC-1		
IPC-32R-16		32			RPG-16	TS-12B	T-20	TC-2	6 x 3/8	7/64
IPC-38R-19		38			RPG-19	TS-20S	1/8			
IPC-50R-25	M200 INTERLOC	50	50		RPG-25	TS-20	TC-4	10 x 1/2	5/32	



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IPC MULTI FLUTE PLUNGING CUTTERHEADS

* Assembles with shanks, extensions and reducers *

"INTERLOC DRIVE SYSTEM"

Metric

CUTTING STYIE
Face Milling, Grooving, Profiling, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing

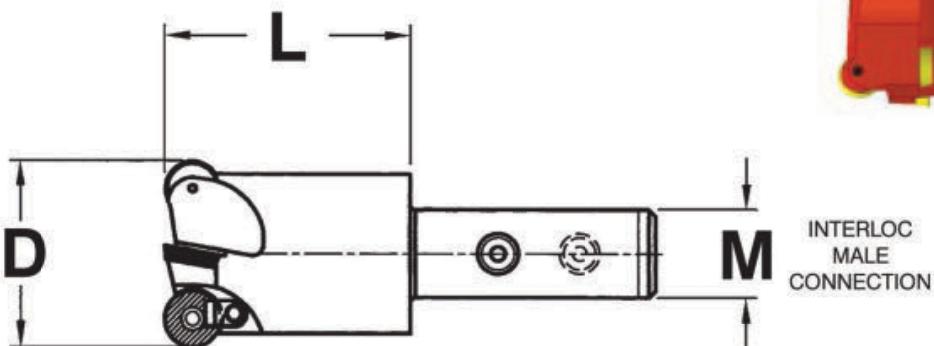
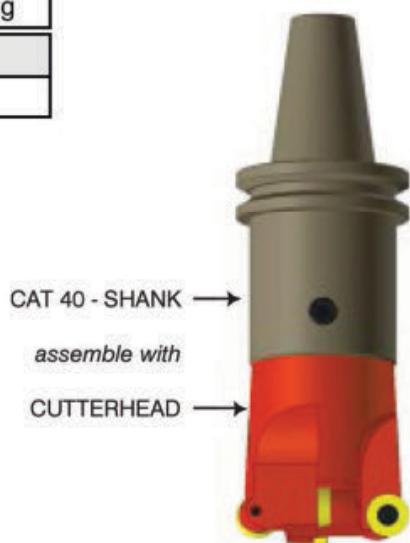


INTERLOC
PLUNGE
CUTTERHEAD

IPC-32R-9.5

CUTTING DIAMETER

INSERT STYLE



- ❖ Cooling through shanks available
- * Semi-special
- ◆ Custom sizes available

CHIP BREAKER INSERTS



RPGW

FLAT TOP INSERTS



RPG

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	EFFECTIVE CUTTING DIAM. (D)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	ALLEN OR TORX WRENCH #	CLAMP #	CLAMP SCREW #	CLAMP SCREW WRENCH
IPC-32R-9.5	M125 INTERLOC	32	38	3	RPG-9.5	TS-32	T-9	TC-1	6 x 3/8	7/64
IPC-38R-12		38			RPG-12	T-10I	T-15			
IPC-50R-12	M200 INTERLOC	50	50	4	RPG-12	T-10L	TC-2	6 x 3/8	7/64	
IPC-50R-16		50		3	RPG-16	TS-12B	T-20			
IPC-63R-12	M200 INTERLOC	63	50	5	RPG-12	TS-10I	T-15	TC-2	6 x 3/8	7/64
IPC-63R-16		63		4	RPG-16	TS-12B	T-20			
IPC-70R-12	M200 INTERLOC	70	50	5	RPG-12	TS-10I	T-15	TC-2	6 x 3/8	7/64
IPC-70R-16		70		4	RPG-16	TS-12B	T-20			



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BUTTON CUTTERS

* Assembles with facemill extensions *

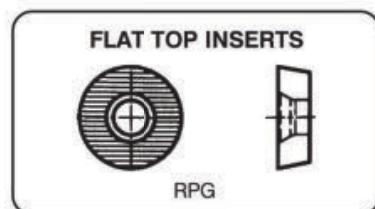
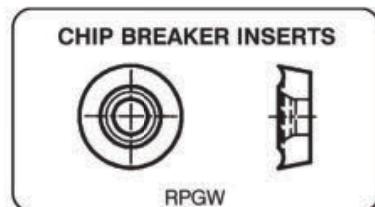
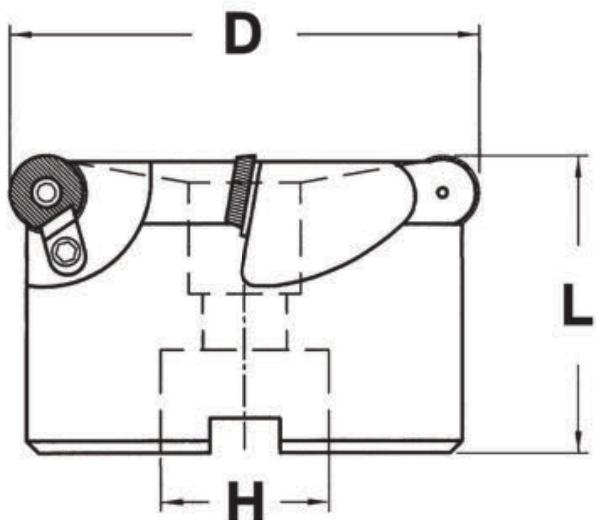
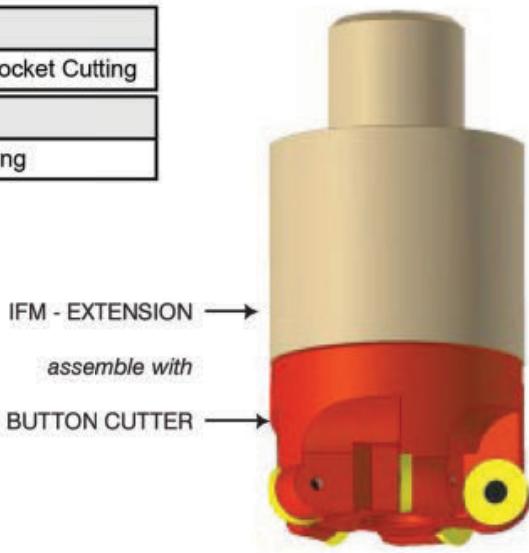
"POSITIVE BUTTON CUTTERS"

Metric

CUTTING STLYE
Face Milling, Shoulder Cutting, Grooving, & Pocket Cutting
APPLICATIONS
Roughing, Semi-finishing, & Finishing



TROY POSITIVE CUTTER
TPC-76R-16
 INSERT STYLE
 CUTTING DIAMETER



◆ Cooling through shanks available

* Semi-special

◆ Custom sizes available

Most Metric Cutters Are Not Standard Stock Items Contact Us For Availability.

CATALOG NUMBER	EFFECTIVE CUTTING DIAM. (D)	HOLE DIAMETER (H)	LENGTH (L)	NUMBER OF FLUTES	INSERT NUMBER	INSERT SCREW #	TORX WRENCH #	CUTTER HEADS LOCK SCREW	CLAMP #	CLAMP SCREW #	CLAMP SCREW WRENCH
TPC-76R-16	76	1.250		5				5/8 S.H.C.S.			
TPC-100R-16	100		63	6	RPG-16	TS-15B	T-20	3/4 S.H.C.S.	TC-2	6 x 3/8	7/32
TPC-125R-16	125		1.500	6							



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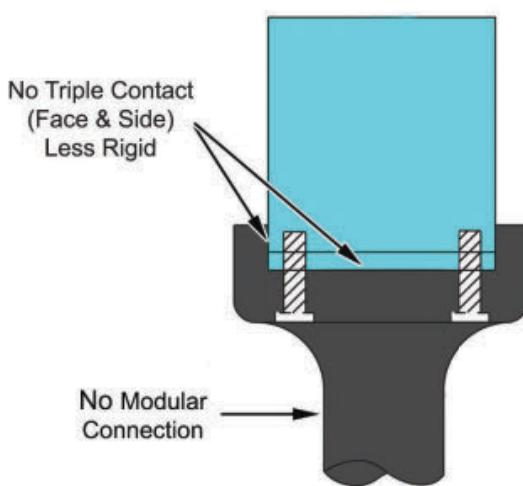
INTERLOC RIGID SYSTEM

"INTERLOC RIGID"

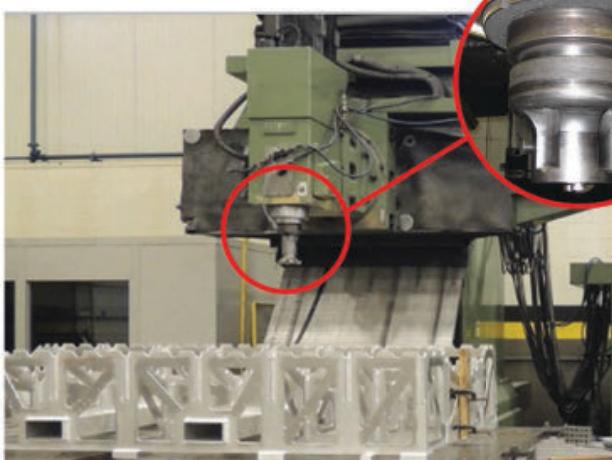
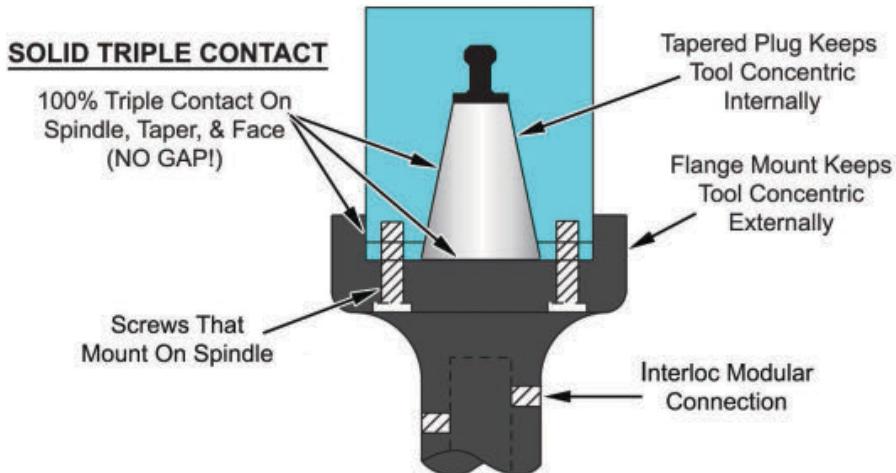
The Interloc Rigid System is designed for very long reach tooling to utilize maximum strength and rigidity when machining steel, aluminum, or other exotic materials. With a triple contact on the spindle the Interloc Rigid helps reduce the amount of wear on the machine and the machine spindle. This triple contact also increases tooling life, feed rates, and depth of cut when machining. The Interloc Rigid System is also modular and allows you to interchange with various Interloc extensions, adapters, reducers, and cutters.

MFH Holders have a 4" bolt down circle & a 5.062" flange diameter that bolts down to your machine spindle head which gives you the benefit of being more rigid than the conventional CAT 40 or CAT 50 Holders. MFH Holders are part of the "Interloc Rigid System" which allows you to combine and interchange a wide range of tooling solutions using the modular Interloc connection system.

Standard Flange Mount Holders



Interloc Rigid Flange Mount Holders



Interloc Rigid MFH holders will fit most standard bolt down machine spindle heads & have a tapered plug available in CAT-50 or CAT-50 NMTB.

Interloc MFH Holders will attach directly to spindle making it more stable & rigid allowing you to take a heavy depth of cut & having less vibration.



INTERLOC RIGID BENEFITS

- Triple Contact On Spindle, Taper, & Face
- Up To 50% Feed Rate Increase
- Increase Depth of Cut
- Extremely Rigid & Stable
- Decrease Vibration
- Increase Tooling Life & Accuracy

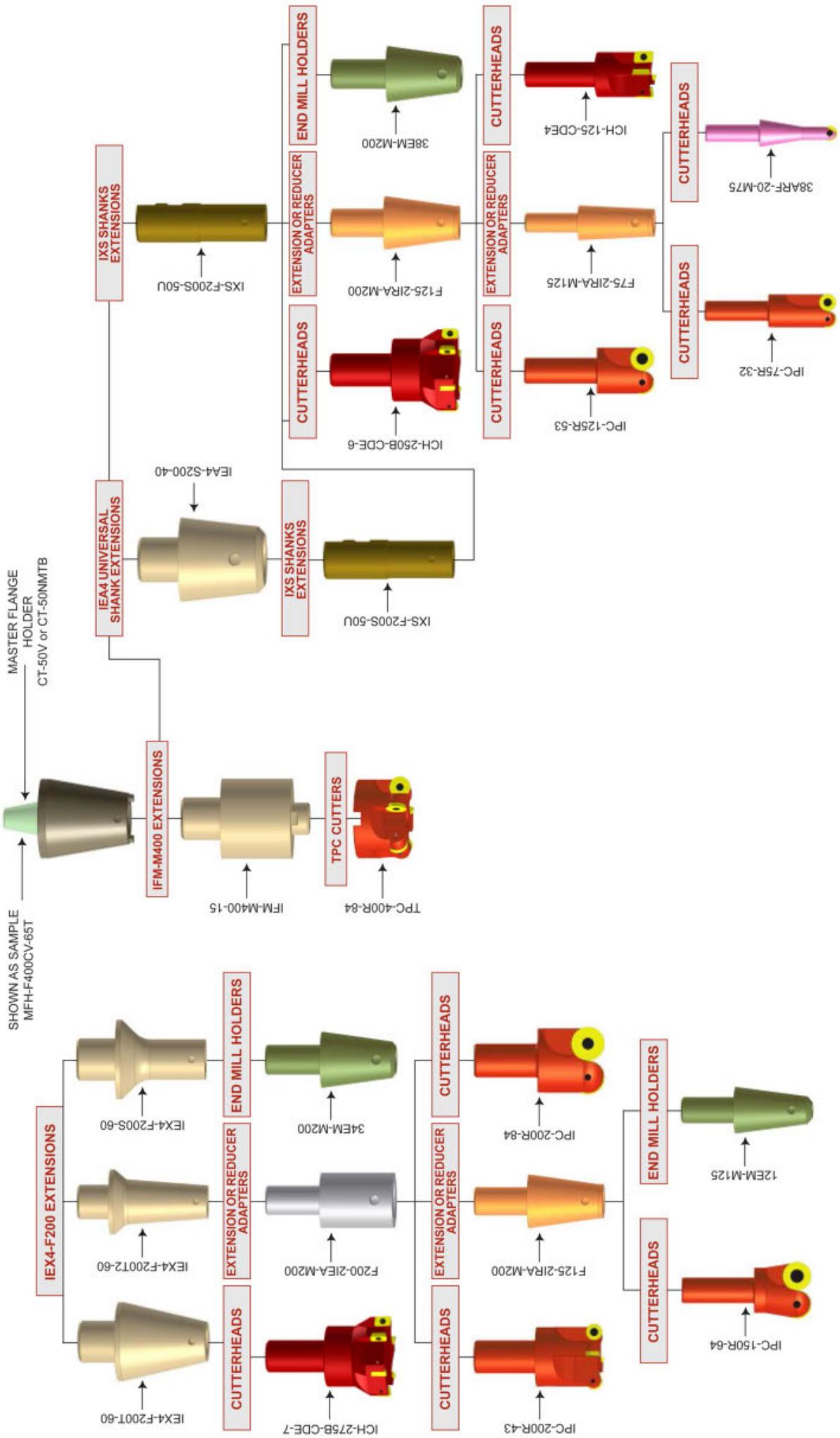
LONG REACH: Interloc Rigid Can Extend Over 30 Inches



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COMBINING THE INTERLOC RIGID CONNECTION SYSTEM

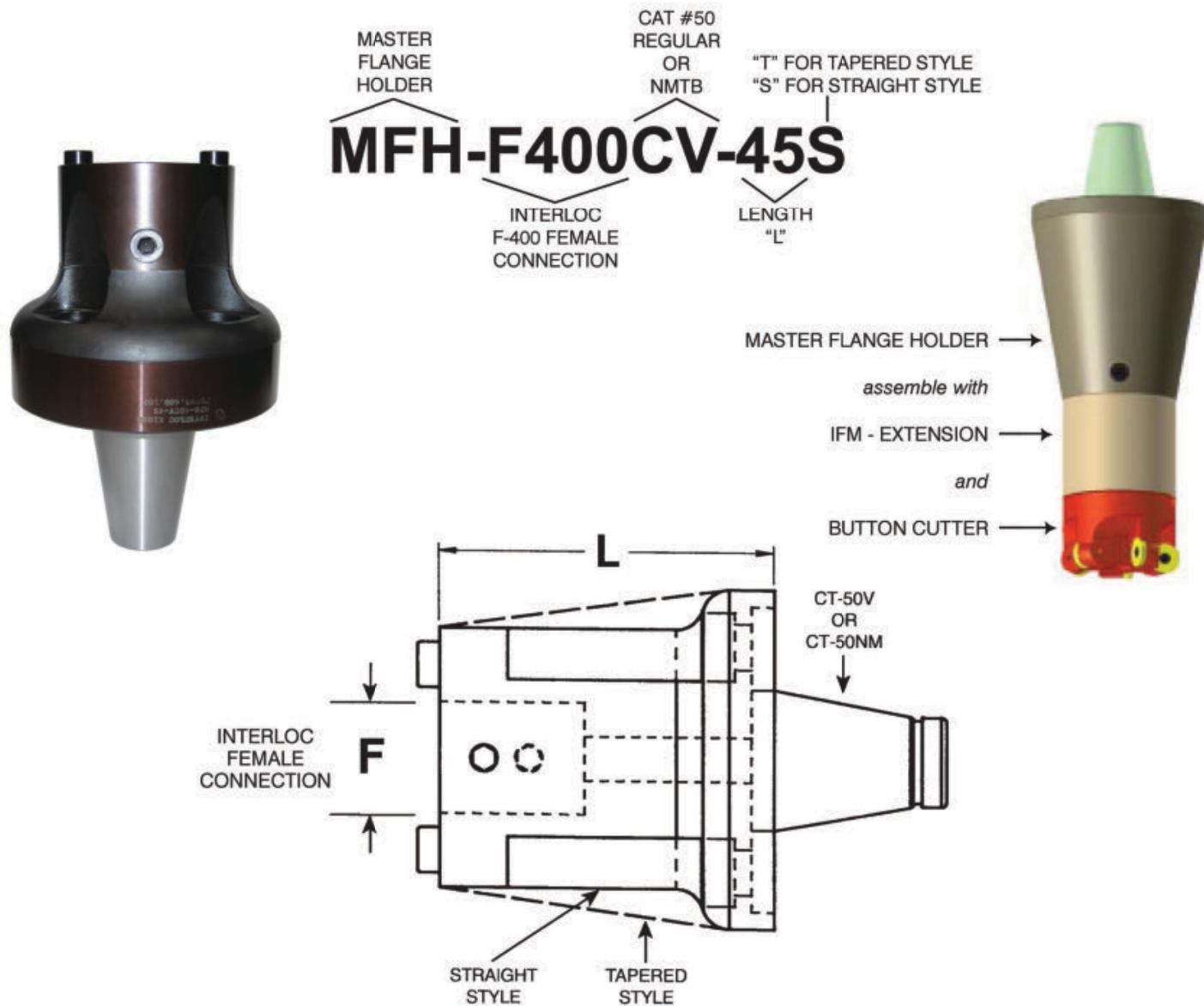


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INTERLOC MASTER FLANGE HOLDER

"INTERLOC RIGID"



❖ Cooling through shanks available

* Semi-special

◆ Custom sizes available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	LENGTH (L)	LOCK SCREW	KEYWAY	KEYWAY SCREW
MFH-F400CV-45S	F400 INTERLOC	4.500	TS-625	TK-625	10 x 1.00
MFH-F400CV-65T		6.500			
MFH-F400CV-85T		8.500			
MFH-F400CV-105T		10.500			
MFH-F400CV-130T		13.000			



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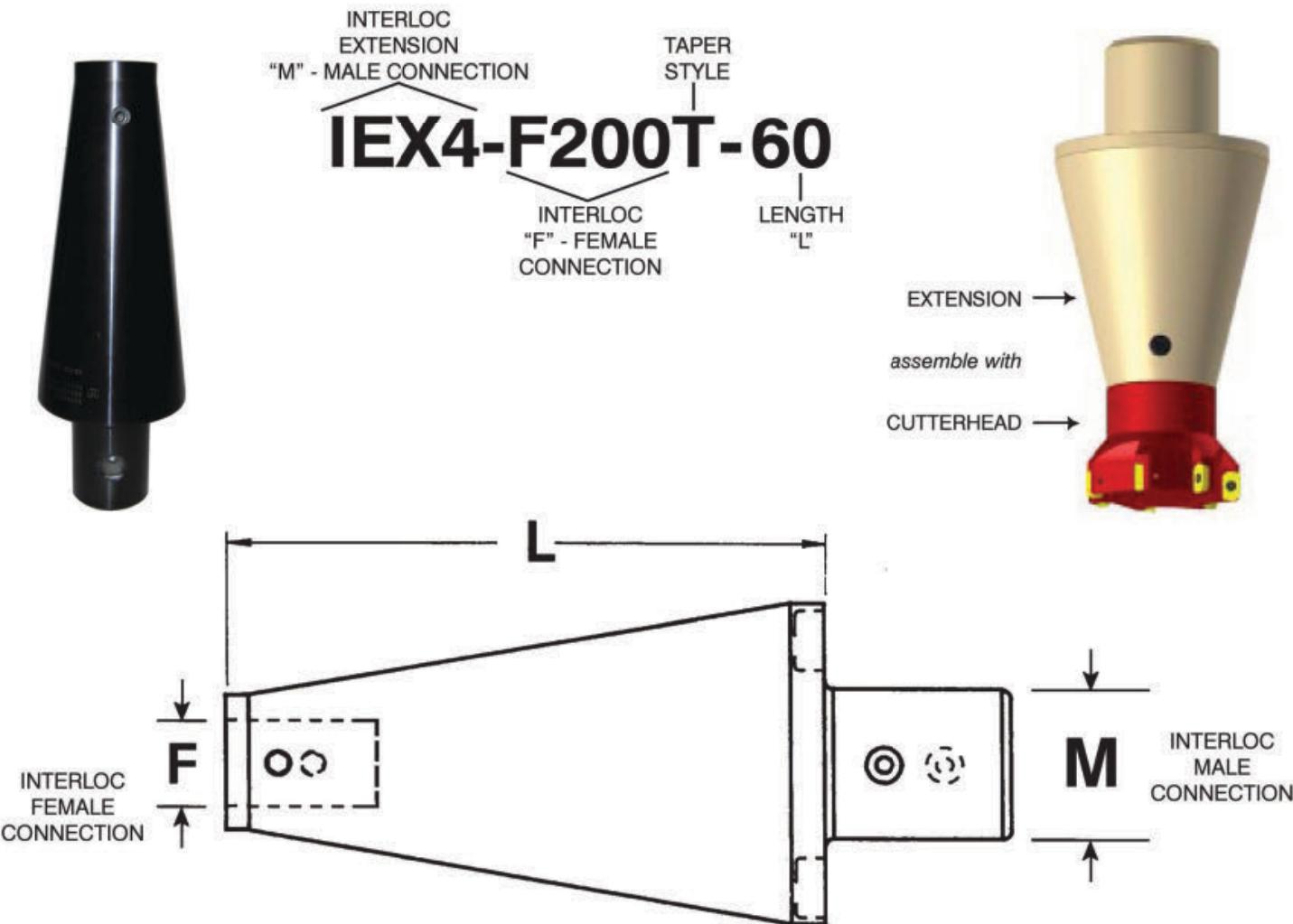
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INTERLOC TAPERED REACH EXTENSION

* Assemble with Master Flanges *

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC RIGID"



❖ Cooling through shanks available

* Semi-special

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	INTERLOC MALE CONNECTION (M)	LENGTH (L)	LOCK SCREW	"T" HANDLE ALLEN WRENCH
IEX4-F200T-60	F200 INTERLOC	M400 INTERLOC	6.000	TS-375	3/16
IEX4-F200T-80			8.000		
IEX4-F200T-100			10.000		
IEX4-F200T-130			13.000		
IEX4-F200T-180*			18.000		



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INTERLOC TAPERED II REACH EXTENSION

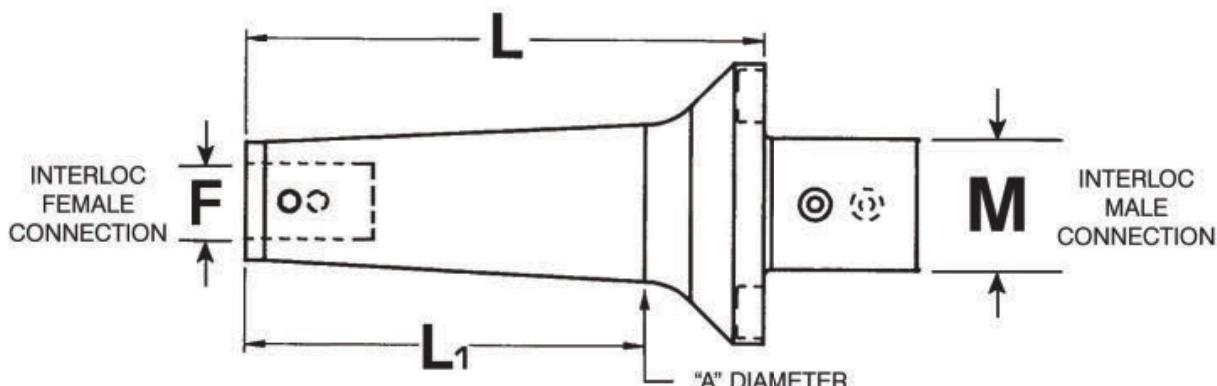
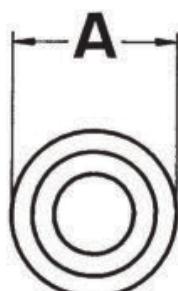
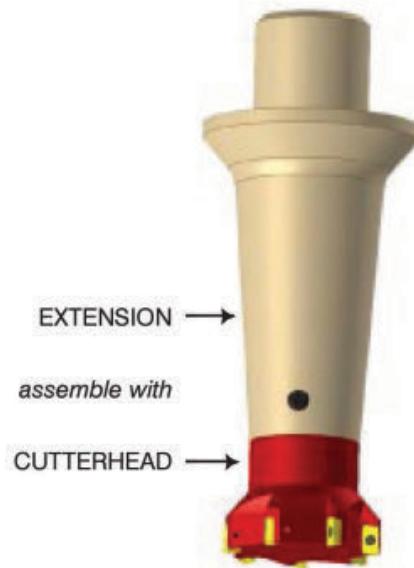
* Assembles with Master Flange *

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC RIGID"



INTERLOC
EXTENSION
"M" - MALE CONNECTION
IEX4-F200T2-60
INTERLOC
"F" - FEMALE
CONNECTION
TAPER
STYLE #2
LENGTH
"L"



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	INTERLOC MALE CONNECTION (M)	LENGTH (L)	LENGTH (L1)	DIAMETER (A)	LOCK SCREW	"T" HANDLE ALLEN WRENCH
IEX4-F200T2-60	F200 INTERLOC	M400 INTERLOC	6.000	4.650	2.700	TS-375	3/16
IEX4-F200T2-80			8.000	6.650			
IEX4-F200T2-100			10.000	8.650			
IEX4-F200T2-130			13.000	11.650			



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INTERLOC STRAIGHT REACH EXTENSION

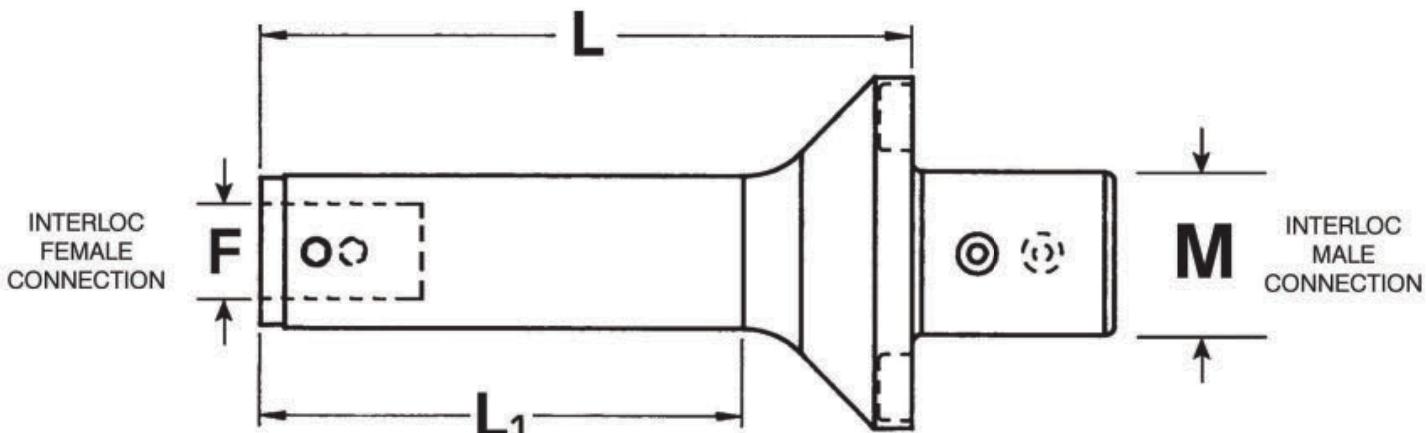
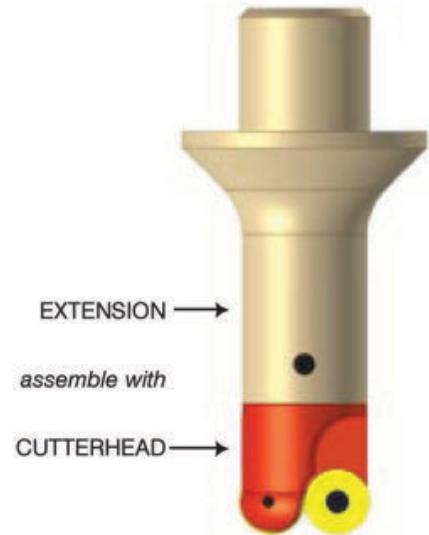
* Assembles with Master Flange *

* Assembles with extensions, reducers, endmill holders and cutterheads *

"INTERLOC RIGID"



INTERLOC
EXTENSION
"M" - MALE CONNECTION
IEX4-F200S-60
INTERLOC
"F" - FEMALE
CONNECTION
STRAIGHT
STYLE
LENGTH
"L"



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	INTERLOC MALE CONNECTION (M)	LENGTH (L)	LENGTH (L1)	LOCK SCREW	"T" HANDLE ALLEN WRENCH
IEX4-F200S-25	F200 INTERLOC	M400 INTERLOC	2.500	0.700	TS-375	3/16
IEX4-F200S-60			6.000	4.200		
IEX4-F200S-80			8.000	6.200		
IEX4-F200S-100			10.000	8.200		
IEX4-F200S-130			13.000	11.200		



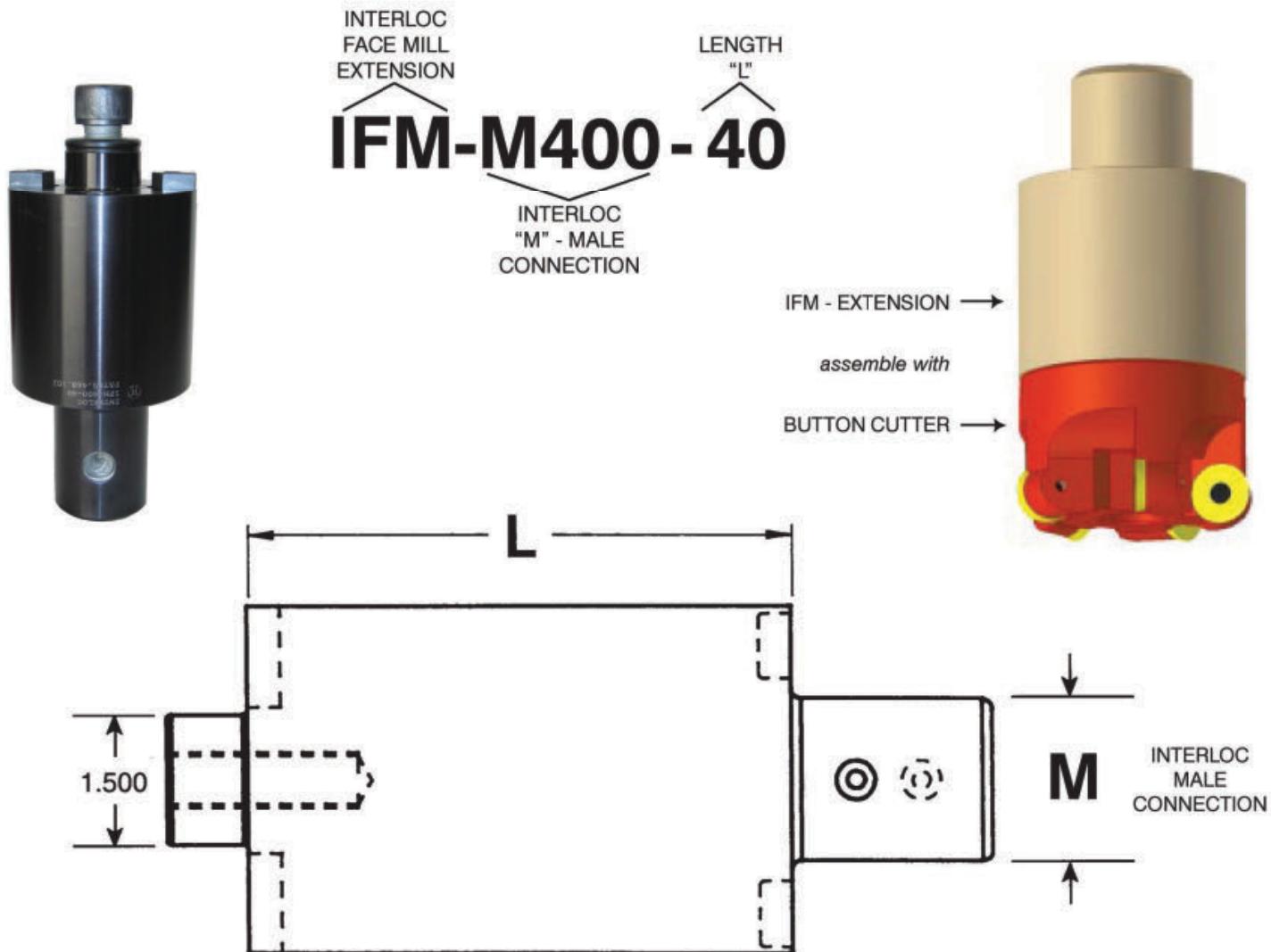
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INTERLOC FACE MILL EXTENSION

* Assembles with Master Flange *

"INTERLOC RIGID"



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	INTERLOC FEMALE CONNECTION (F)	LENGTH (L)	KEYWAY	KEYWAY SCREW	CUTTER LOCK SCREW
IFM-M400-15	M400 INTERLOC	1.500	TK-6	10 x 5/8	3/4 - 16 x 1.75
IFM-M400-25		2.500			
IFM-M400-40		4.000			
IFM-M400-80		8.000			
IFM-M400-120		12.000			
IFM-M400-130		13.000			
IFM-M400-140		14.000			



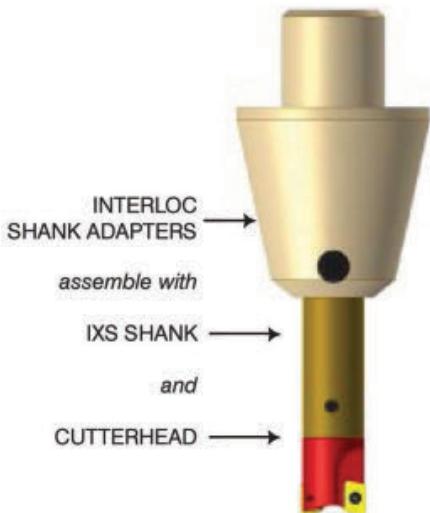
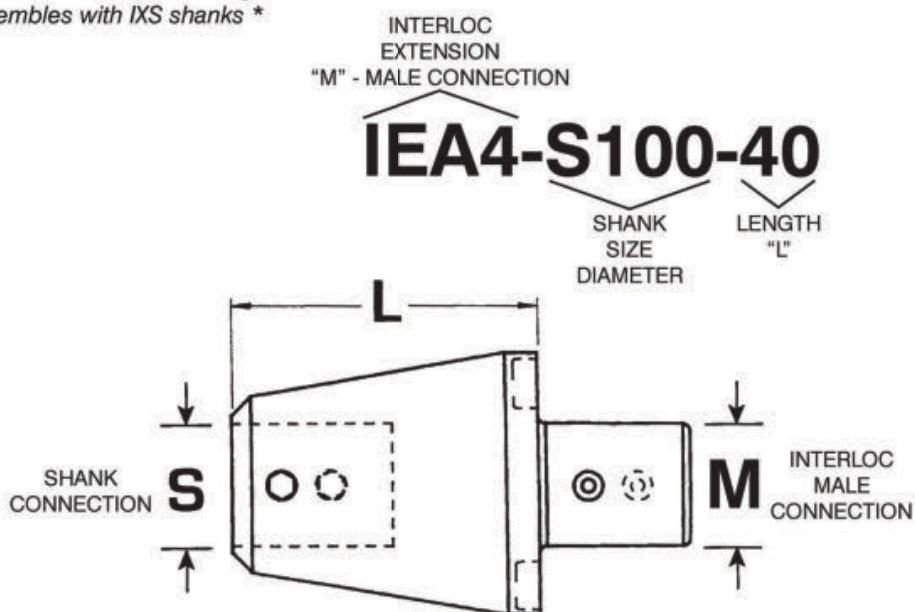
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UNIVERSAL SHANK - INTERLOC SHANK ADAPTERS

* Assemble with Master Flange *
 * Assembles with IXS shanks *

"INTERLOC RIGID"



- ❖ Cooling through shanks available
- ▲ Custom lengths available

INTERLOC EXTENSION - INTERLOC SHANK ADAPTER

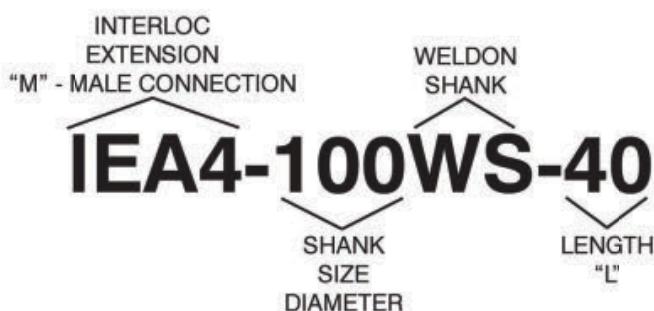
CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	SHANK SIZE (S)	LENGTH (L)	LOCK SCREW NUMBER
IEA4-S100-40	M400 INTERLOC	1.000	4.000	TS-500
IEA4-S125-40		1.250		
IEA4-S200-40		2.000		TS-625S



Interloc Shank Adapter



Weldon Flats Shank Adapter



INTERLOC EXTENSION - WELDON FLATS SHANK ADAPTER

CATALOG NUMBER	INTERLOC MALE CONNECTION (M)	SHANK SIZE (S)	LENGTH (L)	ENDMILL SCREW NUMBER
IEA4-100WS-40*	M400 INTERLOC	1.000	4.000	TS-100E
IEA4-125WS-40*		1.250		
IEA4-200WS-40*		2.000		TS-200E

*Semi-special

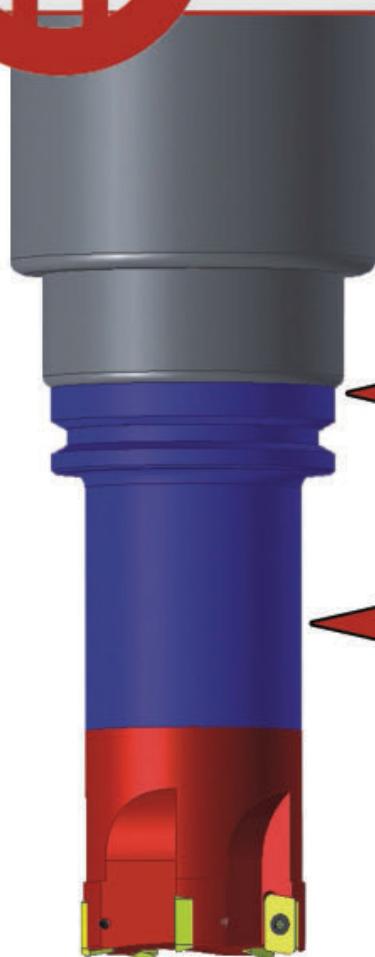


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ULTRA FIT SYSTEM



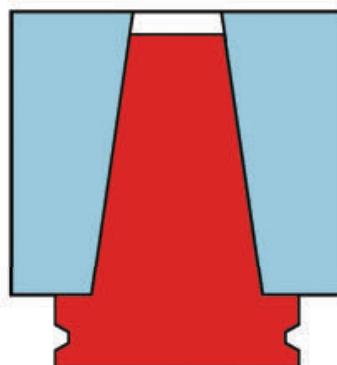
SPINDLE
GAGE LINE
NO GAP!
ULTRA FIT
HOLDER



No additional assembly or machining is needed on the spindle which is required with other dual contact holders in the market.

SOLID DUAL CONTACT

Automatically Adjusts
1/8" Spindle Gap Distance
Between Spindle Face
& Tool Holder



100% Contact With
Spindle Taper & Face



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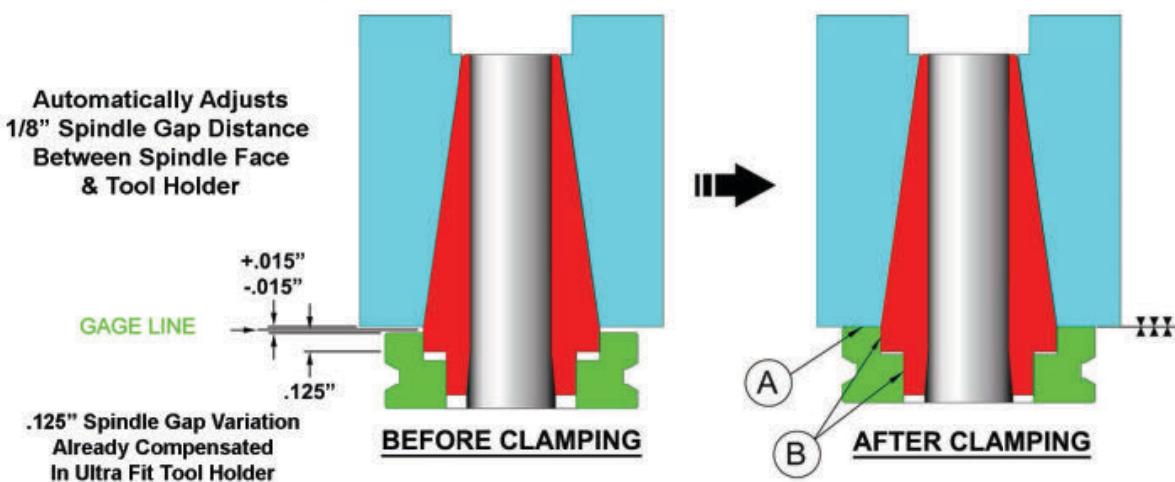
(586) 739-7760 Fax (586) 739-7769



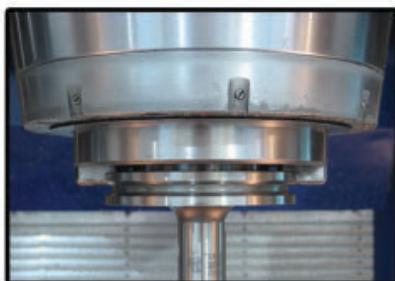
ULTRA FIT SYSTEM

The "ULTRA FIT" has been field tested and has provided exceptional and satisfying results to users nationwide. With the key benefit of leaving no gage line gap, it also allows the user to use these holders immediately with no aftermarket alterations or machining to their machine spindle.

The ULTRA FIT system will adapt by auto adjusting to your existing CAT spindle if it is within manufacturer's tolerances of $\pm 0.015"$ (.125" spindle gap variation already compensated in tool holder). As a result leaving no gage line gap between the spindle and holder and making your cutting tool extremely rigid. Plus no additional assembly or machining is needed on the spindle which is required with other dual contact holders in the market.



This system is extremely rigid when fully seated in the machine and has 100% full contact with the machine spindle and face. All axial and lateral forces are transmitted from the tool to the spindle minimizing cutting vibration and extending cutting tool life. The primary forces are transmitted from surface A and surface B which is perpendicular to surface A. The ULTRA FIT system eliminates chatter of cutting tools when using long reach tooling or from heavy roughing applications.



STANDARD HOLDERS



ULTRA FIT HOLDERS



ULTRA FIT BENEFITS

- Dual Contact On Spindle Taper & Face
- Up To 25% Feed Rate Increases or More
- Increase Rigidity & Stability
- Decrease Vibration & Chattering
- Increase Tooling Life & Accuracy
- Auto Adjusting
(No Assembly or Machining Required On Spindle)

No additional assembly or machining is needed on the spindle which is required with other dual contact holders in the market.



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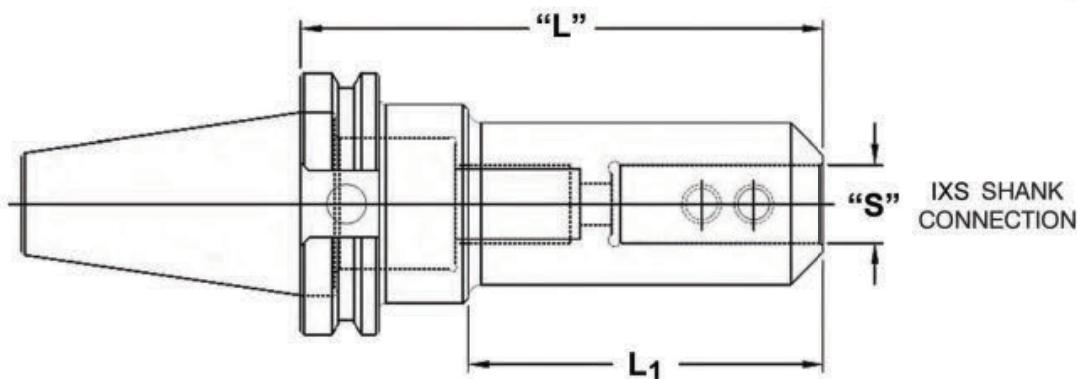
ULTRA FIT: CAT 40 V-INTERLOC MASTER UNIT

* Assembles with IXS shanks *

"INTERLOC DRIVE SYSTEM"
WITH
"ULTRA FIT SYSTEM"



"ULTRA FIT"
INTERLOC
CAT 40V
FLANGE
UFC4V-S750
SHANK SIZE
DIAMETER



CONNECTS WITH IXS SHANKS (IXS SHANKS PAGES 10-11)

❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	SHANK SIZE (S)	LENGTH (L)	LENGTH (L ₁)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
UFC4V-S750	0.750		3.400	TS-375	3/16
UFC4V-S100	1.000	5.000		TS-500S	
UFC4V-S125	1.250		4.250		1/4



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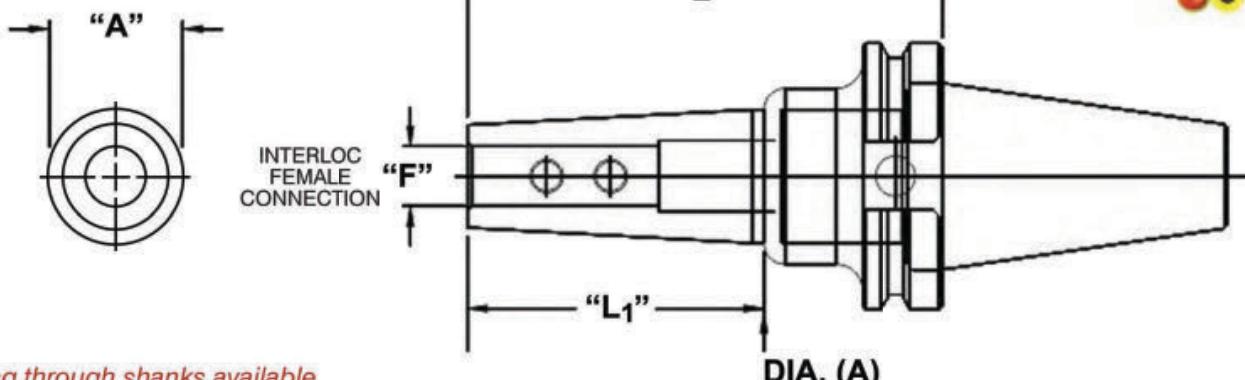
ULTRA FIT: CAT 40 V-INTERLOC HOLDER

* Assembles with extensions, reducers, endmill holders and cutterheads *

**"INTERLOC DRIVE SYSTEM"
WITH
"ULTRA FIT SYSTEM"**



"ULTRA FIT"
INTERLOC
CAT 40V
FLANGE
UFC4V-F100T-65
INTERLOC
"F" - FEMALE
CONNECTION
TAPER (or "S" for straight)
STYLE
LENGTH
"L"



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	FEMALE CONNECTION (F)	DIAMETER (A)	LENGTH (L)	LENGTH (L ₁)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
UFC4V-F75T-45	F75 INTERLOC	1.062	4.500	2.750	TS-250S	1/8
UFC4V-F75T-55			5.500	3.750		
UFC4V-F75T-65			6.500	4.750		
UFC4V-F100T-45	F100 INTERLOC	1.250	4.500	2.750	TS-516S	5/32
UFC4V-F100T-55			5.500	3.750		
UFC4V-F100T-65			6.500	4.750		
UFC4V-F125T-45	F125 INTERLOC	1.480	4.500	2.750	TS-516S	
UFC4V-F125T-55			5.500	3.750		
UFC4V-F125T-65			6.500	4.750		
UFC4V-F200S-45	F200 INTERLOC	1.900	4.500	3.750	TS-375	3/16
UFC4V-F200S-525			5.500	4.500		
UFC4V-F200S-625			6.500	5.500		



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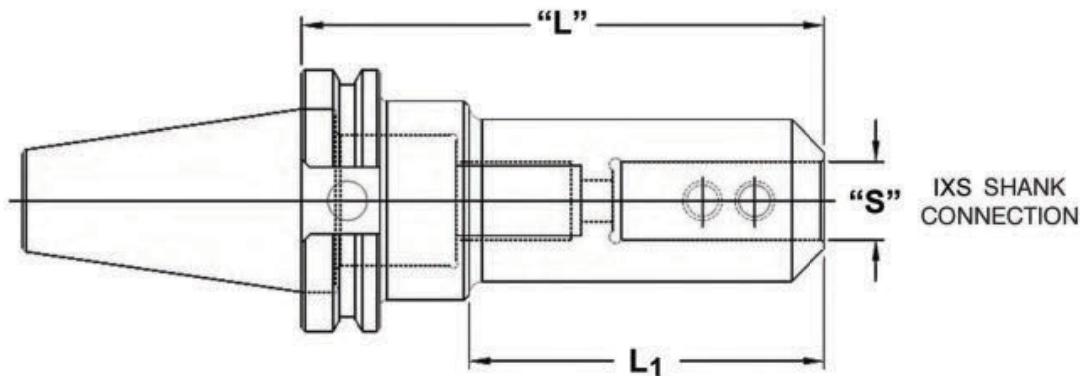
ULTRA FIT: CAT 50 V-INTERLOC MASTER UNIT

* Assembles with IXS shanks *

"INTERLOC DRIVE SYSTEM"
WITH
"ULTRA FIT SYSTEM"



"ULTRA FIT"
INTERLOC
CAT 50V
FLANGE
UFC5V-S750
SHANK SIZE
DIAMETER



CONNECTS WITH IXS SHANKS (IXS SHANKS PAGES 10-11)

❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	SHANK SIZE (S)	LENGTH (L)	LENGTH (L ₁)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
UFC5V-S750	0.750	6.000	4.000	TS-375	3/16
UFC5V-S100	1.000			TS-500S	
UFC5V-S125	1.250				1/4



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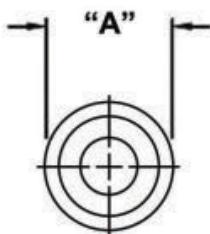
ULTRA FIT: CAT 50 V-INTERLOC HOLDER

* Assembles with extensions, reducers, endmill holders and cutterheads *

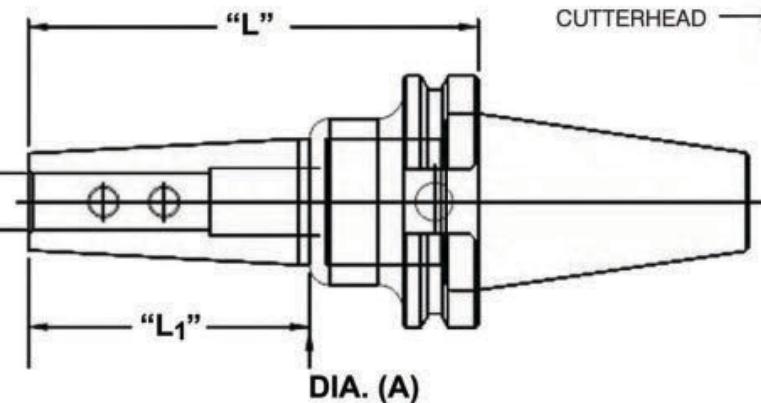
**"INTERLOC DRIVE SYSTEM"
WITH
"ULTRA FIT SYSTEM"**



"ULTRA FIT"
INTERLOC
CAT 50V
FLANGE
UFC5V-F100T-65
INTERLOC
"F" - FEMALE
CONNECTION
TAPER (or "S" for straight)
STYLE
LENGTH
"L"



INTERLOC
FEMALE
CONNECTION



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	FEMALE CONNECTION (F)	DIAMETER (A)	LENGTH (L)	LENGTH (L ₁)	LOCK SCREW NUMBER	"T" HANDLE ALLEN WRENCH
UFC5V-F100T-525	F100 INTERLOC	1.480	5.250	3.250	TS-516	5/32
UFC5V-F100T-65			6.500	4.500		
UFC5V-F100T-85			8.500	6.500		
UFC5V-F100T-105			10.500	8.500		
UFC5V-F125T-525	F125 INTERLOC	1.460	5.250	3.250		
UFC5V-F125T-65			6.500	4.500		
UFC5V-F125T-85			8.500	6.500		
UFC5V-F125T-105			10.500	8.500		
UFC5V-F200T-525	F200 I INTERLOC	2.740	5.250	3.250	TS-375	3/16
UFC5V-F200T-65			6.500	4.500		
UFC5V-F200T-85			8.500	6.500		
UFC5V-F200T-105			10.500	8.500		
UFC5V-F200S-525			5.250	3.250		
UFC5V-F200S-65		1.900	6.500	4.500		
UFC5V-F200S-85			8.500	6.500		
UFC5V-F200S-105			10.500	8.500		



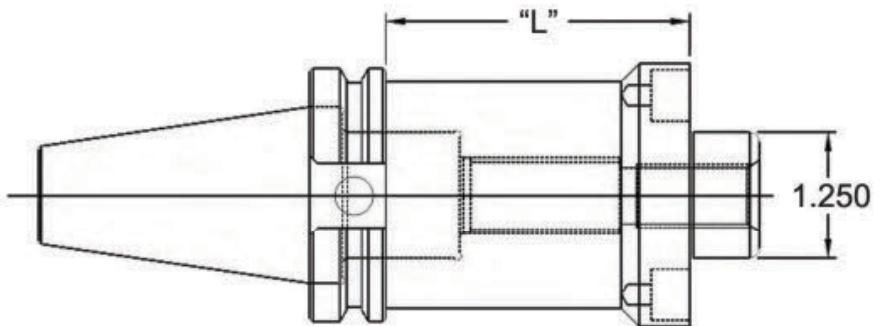
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ULTRA FIT: CAT 40 FACE MILL HOLDER

* Assembles with facemill *

"ULTRA FIT SYSTEM"



❖ Cooling through shanks available

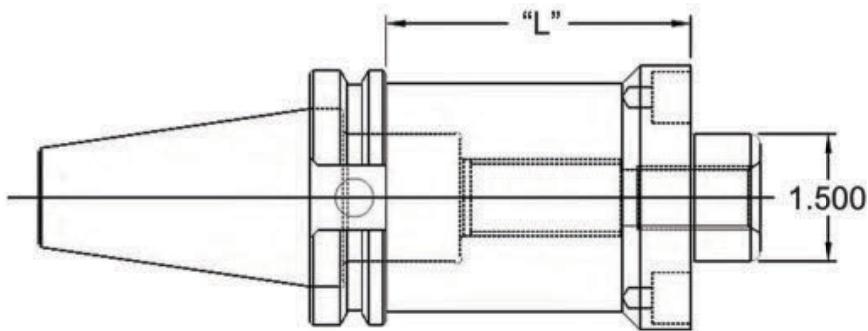
▲ Custom lengths available

CATALOG NUMBER	LENGTH (L)	PILOT
UFC4V-125SME-30	3.000	1.250
UFC4V-125SME-40	4.000	
UFC4V-125SME-50	5.000	

ULTRA FIT: CAT 50 FACE MILL HOLDER

* Assembles with facemill *

"ULTRA FIT SYSTEM"



❖ Cooling through shanks available

▲ Custom lengths available

CATALOG NUMBER	LENGTH (L)	PILOT
UFC5V-150SME-35	3.500	1.500
UFC5V-150SME-45	4.500	
UFC5V-150SME-55	5.500	



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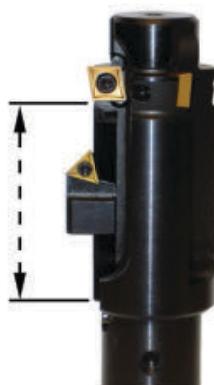
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INEXABLE COUNTERBORES

Inch & Metric Indexable Cap Screw Counterbores

Available With:
Adjustable
Chamfering Unit



INDEXABLE SPOT FACERS



Center Cutting Spot Facers

Available With:
Interloc Connection
Or
Weldon Flats



Plunge cut straight in up to .500" deep
& peck drill up to 1.000" deep. Good
for waterline counterbores or any
areas that need to have a flat
surface up to 1.000" deep.



INDEXABLE BORING BARS

Indexable Boring Bars

Available In:
Left Hand
Or
Right Hand

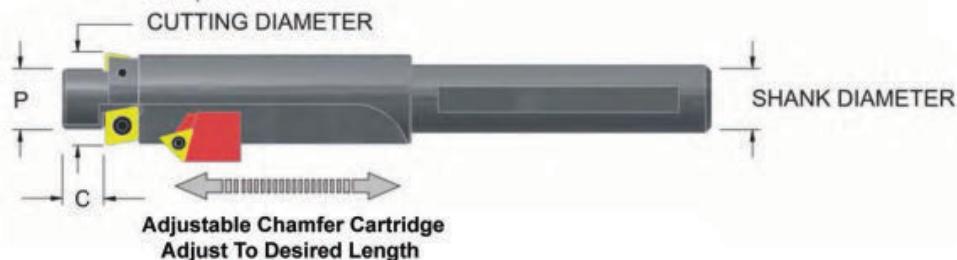


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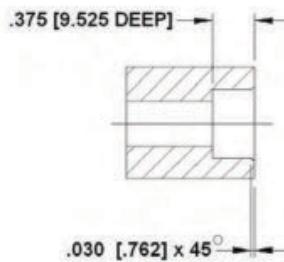
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INDEXABLE COUNTERBORES WITH CHAMFER CARTRIDGE

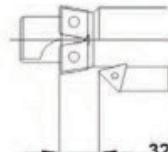
"INDEXABLE COUNTERBORES WITH PILOT"



CHAMFER CARTRIDGE



PART



SETUP

❖ Cooling through shanks available

▲ Custom lengths available

INCH INDEXABLE CAP SCREW COUNTERBORES

CATALOG NUMBER	CAP SCREW SIZE	PILOT DIAMETER (P)	PILOT LENGTH (C)	CUTTING DIAMETER	CARTRIDGE STYLE	SHANK DIA.	O.A.L	NUMBER OF FLUTES
TCB - 38C	3/8	0.406	0.344	0.604	TCC-10	0.500	4.500	2
TCB - 716C	7/16	0.468		0.700		0.625		
TCB - 12C	1/2	0.531		0.790		4.750		
TCB - 58C	5/8	0.656		0.978		0.750	5.000	3
TCB - 75C	3/4	0.781		1.172	TCC-20	5.000		
TCB - 78C	7/8	0.906		1.360				
TCB - 100C	1.000	1.031		1.548				

METRIC INDEXABLE CAP SCREW COUNTERBORES

CATALOG NUMBER	CAP SCREW SIZE	PILOT DIAMETER (P)	PILOT LENGTH (C)	CUTTING DIAMETER	CARTRIDGE STYLE	SHANK DIA.	O.A.L	NUMBER OF FLUTES
TCB - 10MC	10	10.50	9.00	17.00	TCC-10	16.00	114.00	2
TCB - 12MC	12	12.50		19.00		20.00		
TCB - 14MC	14	14.50		22.00		127.00		
TCB - 16MC	16	16.50		25.00				
TCB - 20MC	20	20.50		31.00	TCC-20			
TCB - 24MC	24	24.50		37.00				



CCMT-06T02 INSERTS



TCMT-06T102 INSERTS

ADJUSTABLE CHAMFER CARTRIDGE

PART NAME	INSERT NUMBER	TORX SCREW NUMBER	SCREW NUMBER
INDEXABLE COUNTER BORE CHAMFER CARTRIDGE	TCMT - 06T102	TS-1C	TS-54
INDEXABLE NC COUNTER BORE	CCMT - 060204	TS-21C	



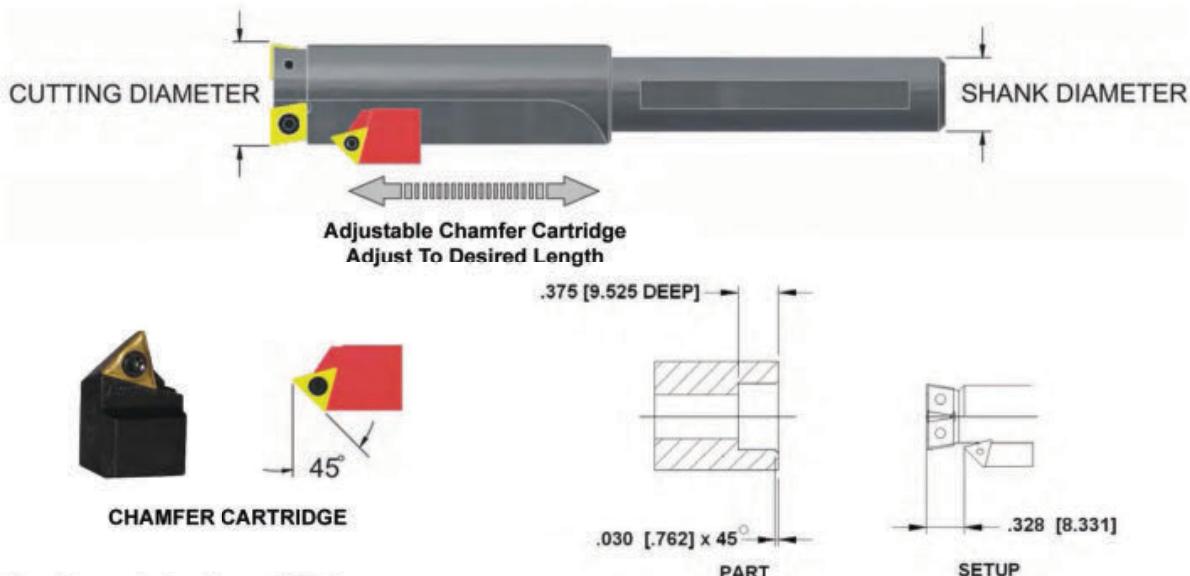
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INDEXABLE COUNTERBORES WITH CHAMFER CARTRIDGE



"INDEXABLE COUNTERBORES WITH OUT PILOT"



- ❖ Cooling through shanks available
 - ▲ Custom lengths available

INCH INDEXABLE CAP SCREW NC COUNTERBORES						
CATALOG NUMBER	CAP SCREW SIZE	CUTTING DIAMETER	CARTRIDGE STYLE	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES
TNCB - 38C	3/8	0.604	TCC-10	0.500	4.500	2
TNCB - 716C	7/16	0.700		0.625		
TNCB - 12C	1/2	0.790		0.750		3
TNCB - 58C	5/8	0.978		4.750		
TNCB - 75C	3/4	1.172		5.000	4	
TNCB - 78C	7/8	1.360	TCC-20			
TNCB - 100C	1.000	1.548				

METRIC INDEXABLE CAP SCREW NC COUNTERBORES						
CATALOG NUMBER	CAP SCREW SIZE	CUTTING DIAMETER	CARTRIDGE STYLE	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES
TNCB - 10MC	10	17.00	TCC-10	16.00	114.00	2
TNCB - 12MC	12	19.00		20.00	127.00	
TNCB - 14MC	14	22.00			3	
TNCB - 16MC	16	25.00				
TNCB - 20MC	20	31.00			4	
TNCB - 24MC	24	37.00	TCC-20			



CCMT-06T02 INSERTS



TCMT-06T102 INSERTS

ADJUSTABLE CHAMFER CARTRIDGE			
PART NAME	INSERT NUMBER	TORX SCREW NUMBER	SCREW NUMBER
INDEXABLE COUNTER BORE CHAMFER CARTRIDGE	TCMT - 06T102	TS-1C	TS-54
INDEXABLE NC COUNTER BORE	CCMT - 060204	TS-21C	



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INDEXABLE COUNTERBORES

"INDEXABLE COUNTERBORES WITH PILOT"



❖ Cooling through shanks available

▲ Custom lengths available

INCH INDEXABLE CAP SCREW COUNTERBORES								
CATALOG NUMBER	CAP SCREW SIZE	PILOT DIAMETER (P)	PILOT LENGTH (C)	CUTTING DIAMETER	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES	
TCB - 38	3/8	0.406	0.344	0.604	0.500	4.500	2	
TCB - 716	7/16	0.468		0.700	0.625			
TCB - 12	1/2	0.531		0.790	0.750		3	
TCB - 58	5/8	0.656		0.978				
TCB - 75	3/4	0.781		1.172				
TCB - 78	7/8	0.906		1.360				
TCB -100	1.000	1.031		1.548			4	

METRIC INDEXABLE CAP SCREW COUNTERBORES

CATALOG NUMBER	CAP SCREW SIZE	CUTTING DIAMETER (P)	PILOT LENGTH (C)	CUTTING DIAMETER	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES
TCB - 10M	10	10.50	9.00	17.00	16.00	114.00	2
TCB - 12M	12	12.50		19.00			
TCB - 14M	14	14.50	10.00	22.00	20.00	127.00	3
TCB - 16M	16	16.50		25.00			
TCB - 20M	20	20.50	13.00	31.00			
TCB - 24M	24	24.50		37.00			4



CCMT-06T02 INSERTS

PART NAME	INSERT NUMBER	TORX SCREW NUMBER
INDEXABLE COUNTER BORE	CCMT - 060204	TS-21C



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INDEXABLE COUNTERBORES

"INDEXABLE COUNTERBORES WITH OUT PILOT"



❖ Cooling through shanks available

▲ Custom lengths available

INCH INDEXABLE CAP SCREW COUNTERBORES					
CATALOG NUMBER	CAP SCREW SIZE	CUTTING DIAMETER	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES
TNCB - 38	3/8	0.604	0.500	4.500	2
TNCB - 716	7/16	0.700	0.625		
TNCB - 12	1/2	0.790	0.750	4.750	3
TNCB - 58	5/8	0.978			
TNCB - 75	3/4	1.172		5.000	4
TNCB - 78	7/8	1.360			
TNCB - 100	1.000	1.548			

METRIC INDEXABLE CAP SCREW COUNTERBORES					
CATALOG NUMBER	CAP SCREW SIZE	CUTTING DIAMETER	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES
TNCB - 10M	10	17.00	16.00	114.00	2
TNCB - 12M	12	19.00			
TNCB - 14M	14	22.00			
TNCB - 16M	16	25.00		127.00	3
TNCB - 20M	20	31.00			
TNCB - 24M	24	37.00			



CCMT-06T02 INSERTS

PART NAME	INSERT NUMBER	TORX SCREW NUMBER
INDEXABLE COUNTER BORE	CCMT - 060204	TS-21C

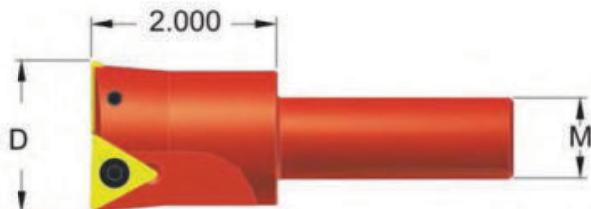


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INDEXABLE SPOT FACERS

"INDEXABLE SPOT FACERS"



INTERLOC SPOT FACER TOOL

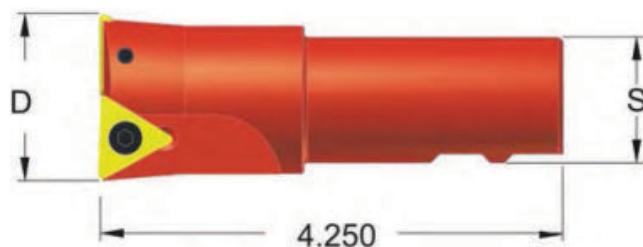


❖ Cooling through shanks available

▲ Custom lengths available

TPGW-2.522 INSERTS

INTERLOC INDEXABLE INCH SPOT FACER						
CATALOG NUMBER	CUTTING DIAMETER	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES	INSERT #	TORX SCREW #
ISF - 100	1.000	M100	3.750	2	TPGW 2.522	TS - 75I
ISF - 1125	1.125				TPGW 322	TS - 10I
ISF - 125	1.250					
ISF - 150	1.500	M125				



WELDON FLATS SPOT FACER TOOL



TPGW-322 INSERTS

❖ Cooling through shanks available

▲ Custom lengths available



WELDON FLATS INDEXABLE INCH SPOT FACER								
CATALOG NUMBER	CUTTING DIAMETER	SHANK DIAMETER	O.A.L	NUMBER OF FLUTES	INSERT #	TORX SCREW #		
TSF - 100	1.000	0.750	4.250	2	TPGW 2.522	TS - 75I		
TSF - 1125	1.125	1.000			TPGW 322	TS - 10I		
TSF - 125	1.250							
TSF - 150	1.500							



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INDEXABLE BORING BARS

"INDEXABLE BORING BARS"



LEFT HAND
BORING BAR

Troy Boring Bar

TBB-281-40R

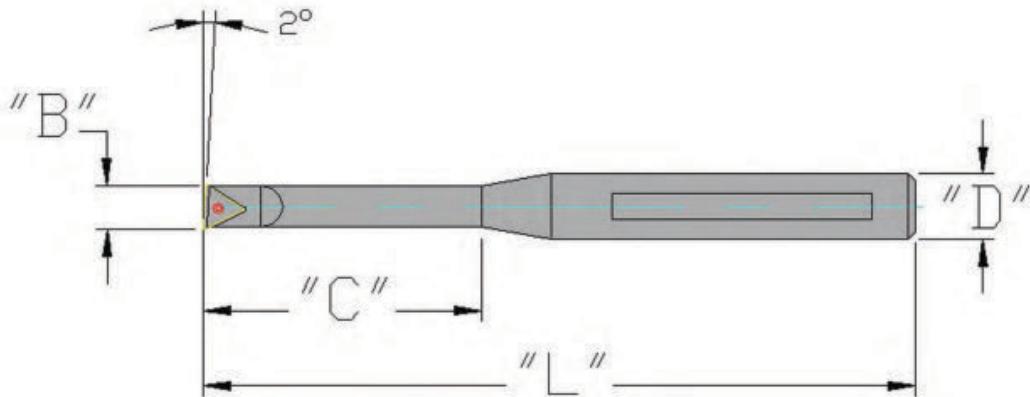
Cutting Dia.

Length

Right Hand
"L" Left Hand



RIGHT HAND
BORING BAR



❖ Cooling through shanks available

▲ Custom lengths available

RIGHT HAND INDEXABLE BORING BARS

CATALOG NUMBER	BORE DIA. (B)	SHANK DIA. (D)	O.A.L	INSERT #	TORX SCREW #	TORX WRENCH
TBB - 281 - 40R	0.281			TPMT 06T102	TS - 281	T - 6
TBB - 354 - 40R	0.354	3/8	4.000			
TBB - 375 - 48R	0.375			TPMT 90202	TS - 375	
TBB - 500 - 48R	0.500	1/2	4.800			
TBB - 531 - 55R	0.531			TPMT 110204	TS - 561	T - 7
TBB - 561 - 55R	0.561	5/8	5.500			

LEFT HAND INDEXABLE BORING BARS

CATALOG NUMBER	BORE DIA. (B)	SHANK DIA. (D)	O.A.L	INSERT #	TORX SCREW #	TORX WRENCH
TBB - 281 - 40L	0.281			TPMT 06T102	TS - 281	T - 6
TBB - 354 - 40L	0.354	3/8	4.000			
TBB - 375 - 48L	0.375			TPMT 90202	TS - 375	
TBB - 500 - 48L	0.500	1/2	4.800			
TBB - 531 - 55L	0.531			TPMT 110204	TS - 561	T - 7
TBB - 561 - 55L	0.561	5/8	5.500			



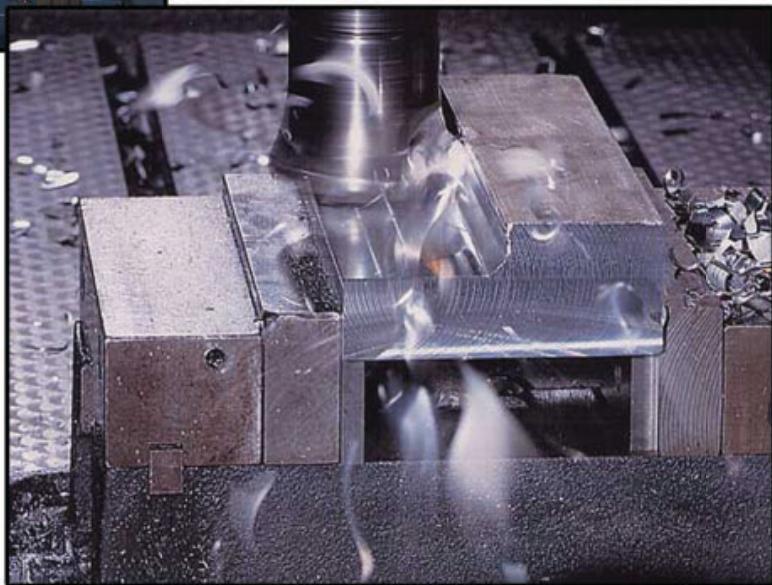
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CUTTING APPLICATIONS

Insert Selection Feeds & Speeds Technical Information



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INSERT GRADE SELECTION

INSERT GRADE SELECTION

COATED CARBIDE INSERTS

IAN5	General purpose & heavy duty milling grade with excellent wear resistance for machining at low speeds & interrupted cuts	Low speed cutting for carbon steel or alloyed steel & higher speeds for cast iron
R5	Premium milling grade recommended for heavy roughing	Machining unalloyed & alloyed steels Preferably used for P20 - P40 applications
HN	Premium multi-purpose high speed machining grade	Machining high strength aerospace alloys, high nickel base materials, cast iron, & stainless
TA	Ultra fine submicron grade for general purpose milling	Machining titanium but can be used to machine high-temp. alloys & hard steels (up to <54 HRc)
TI-8	Premium milling grade for general purpose milling	Machining aluminum, kirksite, & remboard
TI-8J	Premium milling grade for general purpose milling (Uncoated carbide with J-Polish)	Machining aluminum, kirksite, & remboard
CERMET INSERTS		
TI-300	Cermet milling grade for high speed finishing	High speed machining semi-finishing & finishing for unalloyed & alloyed steels, cast iron, & harden steels ("RC" 50/60)

RECOMMENDED CUTTING GRADES

MATERIAL	INSERT GRADE
▲ Unalloyed	IAN5, R5, & TI-300
△ Alloyed	
◆ Stainless Steels	HN, TA
◆ PH Stainless	
◆ Cast Irons	IAN5, HN, TA, & TI-300
◆ Aluminum & Alloys	TI-8 & TI-8J
◆ High Temp. Alloys	HN & TA
◆ Harden Steels	HN, TA, & TI-300



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BI & ARF INSERTS

BI INSERTS



NOTE: IBC cutters take two different insert types. Example: A IBC-75BI-2 cutter will need a BI-750 insert and a BI-751 insert.

CATALOG NUMBER	CUTTING DIAMETER	AVAILABLE GRADES
BI-750-IAN5	0.750	IAN5
BI-751-IAN5		
BI-100-IAN5		
BI-101-IAN5		
BI-125-IAN5		
BI-126-IAN5		
BI-200-IAN5		
BI-201-IAN5		

ARF INSERT



CATALOG NUMBER	CUTTING DIAMETER	AVAILABLE GRADES
ARF-375	0.375	JC5015
ARF-500		
ARF-750		
ARF-100		
ARF-125		

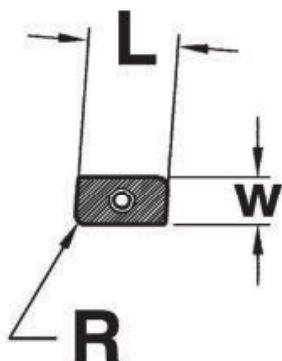


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APCT & CDEW INSERTS

APCT INSERTS



APCT INSERTS AVAILABLE IN:
HELICAL WITH CHIP GROOVE CUTTING EDGE
FLAT-TOP CUTTING EDGE



APCT - 432



APCT - 434



APCT - 438

APCT FLAT-TOP



PRECISION GROUND INSERT

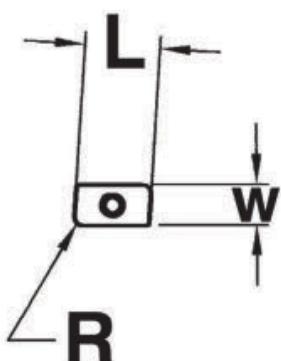
APCT HELICAL WITH CHIP GROOVE INSERTS

CATALOG NUMBER	WIDTH (W)	LENGTH (L)	RADIUS (R)	AVAILABLE GRADES
APCT-432	0.394	0.590	0.0312	IAN5, R5, HN, TA, TI-8J, & TI-300
APCT-434			0.0625	
APCT-438			0.1250	

APCT FLAT-TOP INSERTS

CATALOG NUMBER	WIDTH (W)	LENGTH (L)	RADIUS (R)	AVAILABLE GRADES
APCT-432-FT	0.394	0.590	0.0312	IAN5, R5, HN, TA, TI-8J, & TI-300
APCT-434-FT			0.0625	
APCT-438-FT			0.1250	

CDEW INSERTS



CDEW - 322



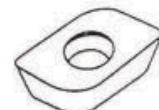
CDEW - 324



CDEW - 328



CDEW INSERTS



PRECISION GROUND INSERT

CDEW INSERTS HAVE A FLAT-TOP CUTTING EDGE

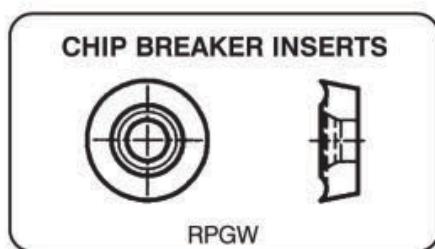
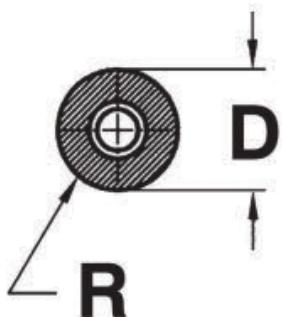
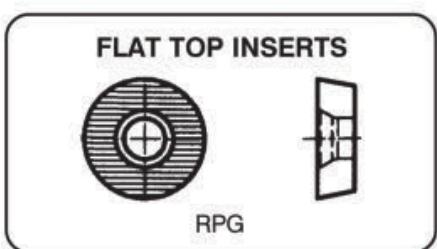
CATALOG NUMBER	WIDTH (W)	LENGTH (L)	RADIUS (R)	AVAILABLE GRADES
CDEW-322	0.314	0.500	0.0312	IAN5, R5, HN, TA, TI-8J, & TI-300
CDEW-324			0.0625	
CDEW-328			0.1250	



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RPG & RPGW INSERTS



RPG INSERTS



RPG INSERTS HAVE A FLAT TOP

CATALOG NUMBER	DIAMETER (D)	RADIUS (R)	AVAILABLE GRADES
RPG-43	0.5000	0.2500	IAN5, R5, HN & TA
RPG-53	0.6250	0.3125	
RPG-64	0.7500	0.3750	
RPG-84	1.0000	0.5000	

RPGW INSERTS



RPGW INSERTS HAVE A CHIP BREAKER

CATALOG NUMBER	DIAMETER (D)	RADIUS (R)	AVAILABLE GRADES
RPGW-21	0.2500	0.1250	IAN5, HN, TA, & TI-8
RPGW-22			
RPGW-32			
RPGW-43			
RPGW-53			
RPGW-64			
RPGW-84			



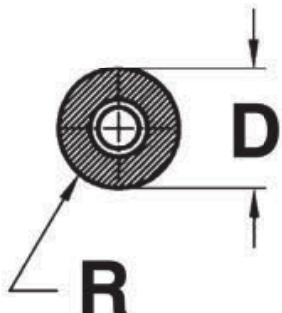
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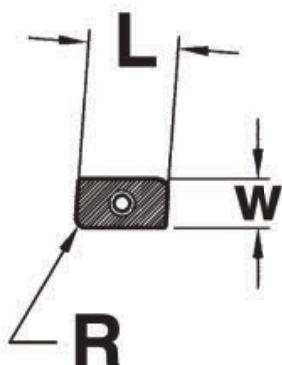
METRIC SECTION

RPG, APCT, CDEW INSERTS

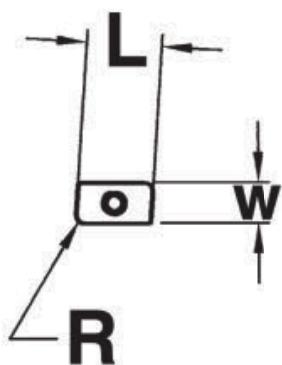
Most Metric Inserts Are Not Standard Stock Items Contact Us For Availability.



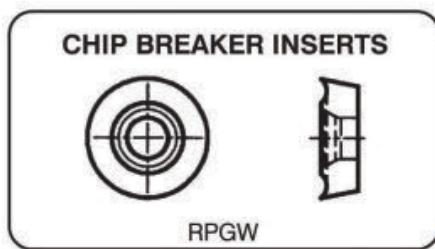
CATALOG NUMBER	D	R
RPG-9.5	9.50	4.75
RPG-12.3	12.00	6.00
RPG-12.4	12.00	6.00
RPG-16.4	16.00	8.00
RPG-16.5	16.00	8.00
RPG-19	19.00	9.50
RPG-25	25.00	12.50



CATALOG NUMBER	w	L	R
APCT-432	10.00	15.00	.792
APCT-434	10.00	15.00	1.587
APCT-438	10.00	15.00	3.175



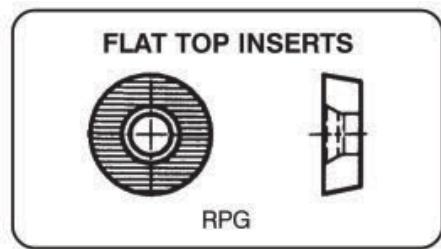
CATALOG NUMBER	w	L	R
CDEW-322	8.00	12.50	.792
CDEW-324	8.00	12.50	1.587
CDEW-328	8.00	12.50	3.175



CHIP BREAKER INSERTS



RPGW



FLAT TOP INSERTS



RPG



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RECOMMENDED CUTTING CONDITIONS

RECOMMENDED CUTTING CONDITIONS FOR: COATED INSERTS

ISO	MATERIAL	MATERIAL STRENGTH	CARBIDE						CERMET TI-300
			IANS	R5	HN	TA	TI-8	TI-8 (μ -Polished)	
SURFACE SPEED FEET PER MINUTE									
P	UNALLOYED STEELS	< 180 HBN	795 - 340	795 - 340	920 - 420	920 - 420	-	-	1140 - 770
		< 180 HBN	700 - 300	700 - 300	830 - 370	830 - 370	-	-	1010 - 670
		210-280 HBN	650 - 300	650 - 300	790 - 320	790 - 320	-	-	890 - 590
		280-360 HBN	550 - 200	550 - 200	630 - 260	630 - 260	-	-	680 - 450
		360-415 HBN	325 - 130	325 - 130	360 - 160	360 - 160	-	-	430 - 290
M	STAINLESS STEELS	AUSTENIC + FERRITIC	-	-	920 - 420	920 - 420	710 - 390	-	1010 - 670
		MARTENSITIC	-	-	830 - 370	830 - 370	640 - 360	-	910 - 620
		REFRACTORY P.H.	-	-	380 - 180	380 - 180	300 - 160	-	-
		GREY GG-FIT	840 - 360	840 - 360	970 - 470	970 - 470	-	-	1200 - 820
		SPHEROIDAL-DUCTILE GGG-FGS	655 - 280	655 - 280	780 - 370	780 - 370	-	-	940 - 630
K	CAST IRONS	MALLEABLE GTS-MN/MP	595 - 255	595 - 255	710 - 340	710 - 340	-	-	860 - 570
		< 16% SILICON	-	-	-	-	3290 - 1300	3290 - 1300	-
		> 16% SILICON	-	-	-	-	1560 - 800	1560 - 800	-
		IRON BASED	-	-	300 - 130	300 - 130	250 - 130	-	-
		COBALT BASED	-	-	170 - 80	170 - 80	140 - 80	-	-
N	ALUMINUM & ALLOYS	NICKEL BASED	-	-	190 - 80	190 - 80	150 - 80	-	-
		TITANIUM BASED	-	-	220 - 90	220 - 90	170 - 90	-	-
		48 - 52 HRC	300 - 130	300 - 130	200 - 450	200 - 450	-	-	200 - 360
		52 - 56 HRC	285 - 120	285 - 120	170 - 320	170 - 320	-	-	170 - 320
		56 - 58 HRC	265 - 115	265 - 115	70 - 130	70 - 130	-	-	70 - 130
H	HARD STEELS	46 - 50 HRC	235 - 100	235 - 100	235 - 100	235 - 100	-	-	235 - 100
		SURFACE SPEED FEET PER MINUTE						*SURFACE SPEED FEET PER MINUTE*	

Surface Speed Feet Per Minute

Surface Speed =

3.142 x Cutter Dia. x R.P.M.

R.P.M. = Surface Speed x 12

12

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(Cutter Dia. x 3.142)

RECOMMENDED CUTTING CONDITIONS

CUTTING CONDITIONS FOR ARF INSERTS



AVAILABLE INSERTS
ARF-375
ARF-500
ARF-750
ARF-100
ARF-125

Note: Reduce Feeds & Speeds For Extended Tooling Lengths & Reduce RPM's If Chattering Occurs.

(Increasing & Decreasing Depth of Cut Depends On Tooling, Insert Geometry, Insert Coating, & Cutting Material)

MATERIAL	CUTTING SPEED (FT/MIN)	GENERAL CUTTING DATA									MAX D.O.C. FINISH	
		TOOL DIAMETER										
		0.250"	0.3125"	0.375"	0.500"	0.625"	0.750"	1.000"	1.250"			
GRAY CAST IRON (HB 200 - 250)	1,000	R.P.M	8,000	8,000	8,000	7,500	6,100	5,100	3,850	2,052	0.012	
		INCH/MIN	256	272	288	285	244	204	154	122		
NODULAR CAST IRON (HB 180 - 250)	900	R.P.M	8,000	8,000	8,000	6,900	5,500	4,600	3,450	2,750	0.012	
		INCH/MIN	256	272	317	362	220	184	138	110		
CARBON STEEL (HRc - 55)	750	R.P.M	8,000	8,000	7,650	5,570	4,600	3,850	2,850	2,300	0.012	
		INCH/MIN	256	272	275	219	184	154	114	92		
LOW ALLOY STEEL (HRc - 55)	600	R.P.M	8,000	7,350	6,100	4,600	3,700	3,050	2,300	1,850	0.012	
		INCH/MIN	256	250	220	175	148	122	92	74		
TOOL & DIE STEEL (HRc - 45)	750	R.P.M	8,000	8,000	7,650	5,750	4,600	3,850	2,850	2,300	0.012	
		INCH/MIN	128	136	138	109	92	77	57	46		
HARDENED DIE STEEL (HRc 50 - 60)	600	R.P.M	8,000	7,350	6,150	4,600	3,700	3,050	2,300	1,850	0.008	
		INCH/MIN	128	125	111	87	74	61	46	37		
STAINLESS STEEL (HRc - 45)	400	R.P.M	6,150	4,900	4,100	3,050	2,450	2,050	1,550	1,250	0.012	
		INCH/MIN	98	83	74	58	49	41	31	25		
INCONEL, TITANIUM (HRc - 45)	150	R.P.M	2,293	1,834	1,529	1,146	917	764	573	459	0.006	
		INCH/MIN	9.2	7.8	6.9	5.4	4.6	3.8	2.9	2.3		
ALUMINUM ALLOY (HB 30 - 100)	1,000	R.P.M	8,000	8,000	8,000	7,650	6,150	5,100	3,850	3,050	0.012	
		INCH/MIN	256	272	288	291	246	204	154	122		

MATERIAL	CUTTING SPEED (FT/MIN)	HIGH SPEED MACHINING CUTTING DATA									MAX D.O.C. FINISH	
		TOOL DIAMETER										
		0.250"	0.3125"	0.375"	0.500"	0.625"	0.750"	1.000"	1.250"			
GRAY CAST IRON (HB 200 - 250)	1,000	R.P.M	20,000	20,000	20,000	15,000	12,500	10,000	7,500	6,000	0.012	
		INCH/MIN	800	800	800	600	500	400	300	240		
NODULAR CAST IRON (HB 180 - 250)	900	R.P.M	20,000	20,000	18,000	13,500	11,000	9,000	7,000	5,500	0.012	
		INCH/MIN	800	800	720	540	440	360	280	220		
CARBON STEEL (HRc - 55)	750	R.P.M	20,000	18,000	15,000	11,500	9,000	7,500	5,500	4,500	0.012	
		INCH/MIN	800	720	600	460	360	300	220	180		
LOW ALLOY STEEL (HRc - 55)	600	R.P.M	18,000	15,000	12,000	9,000	7,500	6,000	4,500	3,600	0.012	
		INCH/MIN	720	600	480	360	300	240	180	144		
TOOL & DIE STEEL (HRc - 45)	750	R.P.M	20,000	18,000	15,000	11,500	9,000	7,500	5,500	4,500	0.012	
		INCH/MIN	400	360	300	230	180	150	110	90		
HARDENED DIE STEEL (HRc 50 - 60)	600	R.P.M	18,000	15,000	12,000	9,000	7,500	6,000	4,500	3,600	0.008	
		INCH/MIN	360	300	240	180	150	120	90	72		
STAINLESS STEEL (HRc - 45)	400	R.P.M	11,500	9,000	7,500	5,500	4,500	3,800	2,800	2,300	0.012	
		INCH/MIN	230	180	150	110	90	76	56	46		
INCONEL, TITANIUM (HRc - 45)	150	R.P.M	2,300	1,800	1,500	1,150	900	750	550	450	0.006	
		INCH/MIN	11.5	9.00	7.50	5.75	4.50	3.75	2.75	2.25		
ALUMINUM ALLOY (HB 30 - 100)	1,000	R.P.M	20,000	20,000	20,000	20,000	18,000	15,000	11,500	9,000	0.012	
		INCH/MIN	800	800	800	800	720	6000	460	360		

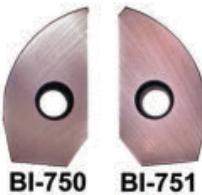


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RECOMMENDED CUTTING CONDITIONS

CUTTING CONDITIONS FOR BI INSERTS



AVAILABLE INSERTS	AVAILABLE INSERTS
BI-750-IAN5	BI-751-IAN5
BI-100-IAN5	BI-101-IAN5
BI-125-IAN5	BI-125-IAN5
BI-200-IAN5	BI-201-IAN5

Note: IBC cutters take two different insert types
Example: IBC-75BI-2 cutter will need a BI-750 & BI-751 insert

Note: Reduce Feeds & Speeds For Extended Tooling Lengths & Reduce RPM's If Chattering Occurs.
(Increasing & Decreasing Depth of Cut Depends On Tooling, Insert Geometry, Insert Coating, & Cutting Material)

MATERIAL	CUTTING DIAMETER					
	0.750"	1.000"	1.250"	1.500"	2.000"	
GRAY CAST IRON (HB 160 - 200)	SFM	450 - 550	500 - 630	520 - 690	510 - 720	520 - 730
	RPM	2,300 - 3,100	1,900 - 2,600	1,800 - 2,300	1,300 - 2,000	1,000 - 1,500
	INCH/MIN	33 - 46	32 - 45	30 - 43	27 - 40	22 - 33
	INCH/REV	0.012 - 0.016	0.014 - 0.022	0.016 - 0.024	0.016 - 0.026	0.016 - 0.028
GRAY CAST IRON (HB 200 - 240)	SFM	450 - 550	500 - 630	520 - 690	510 - 720	520 - 730
	RPM	2,300 - 3,100	1,900 - 2,600	1,800 - 2,300	1,300 - 2,000	1,000 - 1,500
	INCH/MIN	30 - 42	30 - 42	27 - 40	25 - 35	20 - 29
	INCH/REV	0.011 - 0.016	0.013 - 0.020	0.014 - 0.022	0.014 - 0.022	0.014 - 0.024
NODULAR CAST IRON (HB 140 - 190)	SFM	450 - 550	500 - 630	520 - 690	510 - 720	520 - 730
	RPM	2,300 - 3,100	1,900 - 2,400	1,800 - 2,300	1,300 - 2,000	1,000 - 1,500
	INCH/MIN	32 - 44	30 - 42	29 - 41	25 - 38	22 - 33
	INCH/REV	0.012 - 0.017	0.014 - 0.020	0.016 - 0.022	0.016 - 0.024	0.016 - 0.028
NODULAR CAST IRON (HB 190 - 240)	SFM	410 - 510	450 - 580	460 - 660	470 - 660	470 - 680
	RPM	2,100 - 2,900	1,700 - 2,400	1,350 - 1,900	1,200 - 1,850	900 - 1,400
	INCH/MIN	26 - 38	26 - 38	25 - 37	21 - 32	18 - 28
	INCH/REV	0.010 - 0.015	0.012 - 0.020	0.014 - 0.022	0.014 - 0.022	0.014 - 0.024
CAST STEEL (HB 180 - 220)	SFM	410 - 510	450 - 580	460 - 660	470 - 660	470 - 680
	RPM	2,100 - 2,900	1,700 - 2,400	1,400 - 2,200	1,200 - 1,850	900 - 1,400
	INCH/MIN	23 - 38	23 - 33	20 - 32	16 - 27	13 - 21
	INCH/REV	0.009 - 0.016	0.011 - 0.017	0.012 - 0.018	0.012 - 0.018	0.012 - 0.020
TOOL & DIE STEEL (HB 180 - 225)	SFM	390 - 490	420 - 550	450 - 600	470 - 680	470 - 680
	RPM	2,000 - 2,800	1,600 - 2,300	1,400 - 2,000	1,000 - 1,500	900 - 1,300
	INCH/MIN	18 - 30	17 - 28	16 - 26	14 - 19	12 - 19
	INCH/REV	0.008 - 0.013	0.009 - 0.015	0.010 - 0.016	0.010 - 0.016	0.010 - 0.018
LOW ALLOY STEEL (HB 180 - 280)	SFM	490 - 590	520 - 650	560 - 720	550 - 750	630 - 780
	RPM	2,500 - 3,300	2,000 - 2,700	1,700 - 2,400	1,400 - 2,000	1,200 - 1,600
	INCH/MIN	26 - 38	26 - 38	25 - 35	20 - 30	17 - 26
	INCH/REV	0.009 - 0.014	0.011 - 0.017	0.012 - 0.018	0.012 - 0.018	0.012 - 0.020
STAINLESS STEEL (HB 130 - 190)	SFM	310 - 410	340 - 480	360 - 540	350 - 540	370 - 580
	RPM	1,600 - 2,400	1,300 - 2,000	1,100 - 1,800	900 - 1,500	700 - 1,200
	INCH/MIN	15 - 26	14 - 25	13 - 23	12 - 20	9 - 17
	INCH/REV	0.008 - 0.013	0.009 - 0.015	0.010 - 0.016	0.010 - 0.016	0.010 - 0.018



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RECOMMENDED CUTTING CONDITIONS

CUTTING CONDITIONS FOR APCT, CDEW, RPG, & RPGW INSERTS



Note: Reduce Feeds & Speeds For Extended Tooling Lengths & Reduce RPM's If Chattering Occurs.

(Increasing & Decreasing Depth of Cut Depends On Tooling, Insert Geometry, Insert Coating, & Cutting Material)

MATERIAL	SURFACE FEET/MIN (SFM)			INCHES PER TOOTH (IPT)	
	ROUGHING	SEMI-FINISHING	FINISHING	APCT & CDEW	RPG & RPGW
▲ Unalloyed	600 - 700	730 - 850	730 - 980	0.003 - 0.015	0.006 - 0.015
△ Alloyed	230 - 360	330 - 630	330 - 630	0.003 - 0.015	0.006 - 0.015
▲ Stainless Steels	400 - 450	600 - 750	600 - 750	0.003 - 0.012	0.004 - 0.012
▲ PH Stainless	190 - 220	270 - 320	270 - 320	0.003 - 0.010	0.003 - 0.010
▲ Cast Irons	460 - 910	600 - 980	660 - 1140	0.003 - 0.015	0.006 - 0.015
▲ Aluminum & Alloys	910 - 1470	1320 - 2460	2300 - 3280	0.003 - 0.025	0.005 - 0.030
▲ High Temp. Alloys	90 - 130	120 - 160	150 - 190	0.003 - 0.008	0.003 - 0.008
▲ Hard Steels (52 - 56 HRc)	-	170 - 320	170 - 320	0.003 - 0.008	0.003 - 0.008

ADDITIONAL CUTTING DATA FOR LONGER TOOLS						
REACH/DIA.	< 4	4.10 - 4.50	4.60 - 5.30	5.40 - 5.70	5.80 - 6.20	6.30 - 6.80
RPM %	100	90	80	80	75	70
FEED %	100	90	90	80	75	70

NOTE: The above percentages should be applied, according to tool radio



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RECOMMENDED CUTTING CONDITIONS

FEEDS & SPEED FOR: MILLING CUTTERHEADS (USING CARBIDE INSERTS)

General Feeds & Speeds For: APCT Cutters CDEW Cutters, Plunge Cutters, & Button Cutters

Increasing & Decreasing Dept of Cut Depends On Tooling, Insert Geometry, Insert Coating, & Cutting Material

NOTE: Reduce Feeds & Speeds For Extended Tooling Lengths & Reduce RPM's If Chattering Occurs

MATERIAL REFERENCE DATA

MATERIALS	SFFPM	CHIPLOAD IPT	STARTING RPM FOR MILLING DIAMETERS												
			1/2	5/8	3/4	1"	1 1/4	1 1/2	1 3/4	2"	2 1/2	3"	4"	5"	6"
Die Steel 50 - 60 Rc	80	0.003	600	500	400	300	250	200	175	150	125	100	75	60	50
Tool Steel 42 - 50 Rc	200	0.004	1500	1200	1000	800	600	500	430	375	300	250	190	150	125
Die Steel 32 -42 RC	220	0.004	1600	1350	1100	850	670	550	480	420	330	280	210	170	140
Tool Steel (Annealed)	300	0.01	2300	1900	1500	1200	900	750	650	575	450	380	300	230	190
Mold Die Steel (28 - 32 Rc)	400	0.01	3000	2400	2000	1500	1200	1000	850	750	600	500	375	300	250
4340 (Annealed)	450	0.008	3400	2700	2300	1700	1400	1150	1000	850	700	580	430	350	300
Steel (Medium Carbon)	400	0.006	3000	2400	2000	1500	1200	1000	850	750	600	500	375	300	250
Steel (Low Carbon)	850	0.008	6500	5200	4300	3200	2500	2100	1800	1600	1300	1100	800	650	550
Cast Iron (Hard)	200	0.006	1500	1200	1000	800	600	500	430	400	300	250	200	150	125
Cast Iron (Soft)	400	0.01	3000	2400	2000	1500	1200	1000	850	750	600	500	375	300	250
Malleable Iron	400	0.01	3000	2400	2000	1500	1200	1000	850	750	600	500	375	300	250
Cast Steel	500	0.008	3800	3000	2500	1900	1500	1300	1100	950	750	650	475	375	300
Steel (Low Alloy -High Carbon)	400	0.005	3000	2400	2000	1500	1200	1000	850	750	600	500	375	300	250
Chrome Nickel Alloys	300	0.005	2300	1900	1500	1200	900	750	650	575	450	380	300	230	190

USE NEGATIVE-POSITIVE INSERTS FOR:

MATERIALS	SFFPM	CHIPLOAD IPT	GRADE CHART												
			C-1	C-2	C-3	C-5	Roughing & General Purpose	Semi-Finishing	C-6	C-7					
Stainless Steel 400 Series	500	0.010	3800	3000	2500	1900	1500	1300	1100	950	750	650	475	380	300
Stainless Steel 300 Series	800	0.010	6100	4900	4000	3000	2400	2000	1750	1500	1200	1000	750	600	500

CARBIDE CLASS	Roughing	General Purpose	Semi-Roughing	Roughing & General Purpose	Semi-Finishing	Light Finishing
METAL REMOVAL APPLICATIONS						



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RECOMMENDED CUTTING CONDITIONS

FEEDS & SPEED DATA USING CARBIDE INSERTS WHEN CUTTING: 4130 OR P-20 (4130 MODIFIED)

General Feeds & Speeds For: APCT Cutters CDEW Cutters, Plunge Cutters, & Button Cutters

Increasing & Decreasing Dept of Cut Depends On Tooling, Insert Geometry, Insert Coating, & Cutting Material

NOTE: Reduce Feeds & Speeds For Extended Tooling Lengths & Reduce RPM's If Chattering Occurs

CUTTING DIA (INCHES)	NUMBER OF FLUTES	MIN. RPM	STARTING DEPTH	STEP 1		STEP 2		STEP 3				STEP 4	
				5 - 7.5 HP	10 - 15 HP	20 - 40 HP	FEED RATE TO INCREASE	GRADUALLY	5 HP	7.5 HP	10 HP	15 HP	20 HP
1 ¹ / ₂	2	3000	7"/MIN	0.050	0.100	14"/MIN	0.200	0.200	0.200	0.200	0.200	0.200	0.200
5 ¹ / ₈	2	2400	7"/MIN	0.050	0.100	14"/MIN	0.200	0.200	0.200	0.200	0.200	0.200	0.200
3 ¹ / ₄	2	2000	7"/MIN	0.050	0.100	14"/MIN	0.200	0.200	0.250	0.250	0.300	0.300	0.300
1"	2	1500	14"/MIN	0.050	0.100	24"/MIN	0.200	0.200	0.250	0.250	0.300	0.300	0.300
1 ¹ / ₄	2	1200	14"/MIN	0.100	0.125	24"/MIN	0.200	0.300	0.400	0.450	0.450	0.450	0.450
1 ¹ / ₂	2	1000	14"/MIN	0.100	0.125	24"/MIN	0.170	0.250	0.330	0.450	0.450	0.450	0.450
1 ³ / ₄	3	850	14"/MIN	0.100	0.125	24"/MIN	0.150	0.210	0.300	0.375	0.375	0.375	0.375
2"	3	750	14"/MIN	0.100	0.125	24"/MIN	0.125	0.190	0.250	0.300	0.350	0.400	0.400
2 ¹ / ₂	3	600	14"/MIN	0.100	0.125	24"/MIN	-	0.150	0.200	0.300	0.350	0.400	0.400
3"	4	500	14"/MIN	0.080	0.100	24"/MIN	-	0.125	0.170	0.250	0.300	0.350	0.350
4"	5	375	14"/MIN	0.075	0.125	24"/MIN	-	-	0.180	0.250	0.300	0.350	0.350
5"	8	300	14"/MIN	0.060	0.100	24"/MIN	-	-	0.150	0.200	0.250	0.300	0.400
6"	8	250	14"/MIN	0.050	0.080	24"/MIN	-	-	-	0.160	0.200	0.250	0.300

METAL REMOVAL FORMULAS

FORMULA TO ESTABLISH FEED RATE RPM x CHIPLOAD (IPT) x NUMBER OF FLUTES = FEED RATE	FORMULA TO CALCULATE SFPM SFPM x 3.82 DIA. X 0.262 x RPM = SFPM
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METAL REMOVAL RATE	
Depth x Width of Cut or Radial Depth	Table Feed x Rate = Cubic Inches Per Minute



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RECOMMENDED CUTTING CONDITIONS

General Feeds & Speeds For: Uncertain Coated Carbide & Uncoated Carbide

MATERIAL	HIGH SPEED STEEL	COBALT TOOL STEEL	UNCOATED CARBIDE	COATED CARBIDE	
NON-FERROUS MATERIAL					
ALUMINUM ALLOY	600+ FT./MIN.	-	1200+ FT./MIN.	650+ FT./MIN	
MAGNESIUM ALLOYS	600+ FT./MIN.	-	1000+ FT./MIN.		
BRASS	300+ FT./MIN	-	800+ FT./MIN.		
BRONZE	80 - 100 FT./MIN.	-	250 - 300 FT./MIN.		
TITANIUM (DOUBLE STRATING FEED RATES)					
COMMERCIALLY PURE	115 - 140 FT./MIN.	-	275 - 325 FT./MIN	650+ FT./MIN	
ALPHA & ALPHA-BETA ALLOYS		30 - 50 FT./MIN	200 - 225 FT./MIN		
FERRROUS MATERIAL					
STEELS					
FREE MACHINING CARBON STEEL	130 - 180 FT./MIN.	-	450 - 500 FT./MIN.	750 - 900 FT./MIN.	
LOW CARBON STEEL	120 - 170 FT./MIN.	-	400 - 450 FT./MIN.	600 - 650 FT./MIN.	
MEDIUM CARBON STEEL	100 - 120 FT./MIN.	-	375 - 425 FT./MIN.	550 - 600 FT./MIN.	
ALLOY STEEL	100 - 120 FT./MIN.	-	375 - 425 FT./MIN.	550 - 600 FT./MIN.	
ALLOY & MEDIUM CARBON HEATED TREATED (Rc 26 - 32)	75 - 100 FT./MIN.	-	250 -300 FT./MIN.	450 - 500 FT./MIN.	
ALLOY & MEDIUM CARBON HEATED TREATED (Rc 36 - 40)	-	50 - 60 FT./MIN.	180 - 200 FT./MIN.	225 - 275 FT./MIN.	
ALLOY & MEDIUM CARBON HEATED TREATED (Rc 40 - 48)	-	40 - 50 FT./MIN.	150 - 180 FT./MIN.	220 - 250 FT./MIN.	
ALLOY & MEDIUM CARBON HEATED TREATED (Rc 48+)	-	20 - 30 FT./MIN.	100 - 120 FT./MIN.	-	
TOOL STEEL (WROUGHT)	40 - 60 FT./MIN.	-	180 - 200 FT./MIN.	350 FT./MIN.	
STAINLESS STEAL					
FREE MACHINING	80 - 110 FT./MIN.	-	100 - 140 FT./MIN.	140+ FT./MIN.	
STAINLESS (300 SERIES)	50 - 70 FT./MIN.	-	80 - 100 FT./MIN.	100+ FT./MIN.	
17-4PH ANNEALLED	50 - 80 FT./MIN.	-	150 - 190 FT./MIN.	190+ FT./MIN.	
17-4PH 200,00 PSI	30 - 50 FT./MIN.	-	100 - 140 FT./MIN.	140+ FT./MIN.	
HIGH TEMPERATURE ALLOYS					
HASTELOY X., INCONEL	15 - 20 FT./MIN.	-	45 - 55 FT./MIN.	-	
INCONEL X	-	20 - 25 FT./MIN.	-	-	
MONEL NICKEL ALLOY	-	20 - 25 FT./MIN.	-	-	
CAST IRON					
MALLEABLE IRON	100 - 140 FT./MIN.	-	400 - 450 FT./MIN.	540 - 700 FT./MIN.	
GRAY CAST IRON	65 - 110 FT./MIN.	-	220 - 300 FT./MIN.	340 - 450 FT./MIN.	
DUCTILE IRON	80 - 125 FT./MIN	-	300 - 350 FT./MIN.	460 - 550 FT./MIN.	



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RECOMMENDED CUTTING CONDITIONS

FORMULAS	
Surface Feet Per Minute	SFM = .262 x RPM x D
Revolutions Per Minute	RPM = 3.82 x SFM ÷ D
Inch Per Revolution	IPR = IPM ÷ RPM
Inch Per Minute (Feed Rate)	IPM = IPT x NT x RPM
Feed Per Tooth (Chip Load)	FPT = IPM ÷ (NT x RPM)
Metal Removal Rate	MRR = DOC x WOC x IPM = Cubic Inches/Min
Horse Power At Cutter	HPc = MRR ÷ K
Horse Power At Motor	HPm = HPC ÷ E

VARIABLES	
DOC	Axial Depth of Cut
WOC	Radial Width of Cut
E	Spindle Efficiency (Varies 75% to 90%)
K	A power factor that represents the number of cubic inches of metal per minute that can be removed by one horsepower
NT	Number of effective teeth or inserts in a cutter
D	Cutter Diameter

"K" FACTORS		
WORK MATERIAL	Hardness BHN	"K" Factor
Steel, Wrought & Cast Iron (Plain Carbon, Alloy Steels, & Tool Steels)	85 - 200	1.64
	201 - 253	1.58
	254 - 288	1.28
	287 - 327	1.10
	328 - 371	0.88
	372 - 481	0.69
	492 - 550	0.59
Precipitation, Hardening Stainless Steels	561 - 515	0.54
	150 - 450	1.27 - .42
	150 - 175	2.27
	110 - 190	2.00
	176 - 200	1.89
	201 - 250	1.52
	251 - 300	1.27
Cast Irons (Grey, Ductile & Malleable)	301 - 320	1.19
	135 - 275	1.54 - .76
	288 - 421	.75 - .50
	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
Stainless Steels Wrought & Cast (Ferritic, Austenitic, & Martensitic)	150	3.33
	100 - 150	3.33
	151 - 240	2
	250 - 375	1.33 - .87
	200 - 380	.83 - .48
	180 - 320	.91 - .53
	80 - 360	.91 - .53
Titanium	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
	200 - 380	.83 - .48
	180 - 320	.91 - .53
High-Temperature Alloys Nickel, & Cobalt Based	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
	200 - 380	.83 - .48
Iron Base	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
Nickel Alloys	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
Aluminum Alloys	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
Magnesium Alloys	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
Copper	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2
Copper Alloys	180 - 320	.91 - .53
	80 - 360	.91 - .53
	30 - 150 (500 kg)	6.25 - 3.33
	40 - 90 (500 kg)	10.0 - 6.67
	150	3.33
	100 - 150	3.33
	151 - 240	2

Specific Cutting Resistance As Per Work Piece Material

WORK PIECE	5 HP	10 HP	20 HP	30 HP	40 HP	50 HP
STEEL	Soft	32	75	163	295	425
	Medium	26	55	127	212	310
	Hard	18	41	93	163	228
CAST IRON	Soft	52	116	260	455	670
	Medium	32	75	163	295	425
	Hard	26	55	127	212	310
BRASS BRONZE	Soft	77	163	390	670	980
	Medium	54	118	275	490	700
	Hard	26	55	127	245	325
ALUMINUM	90	195	440	780	1110	1500

Chip Volume As Per Horse Power cm³/min

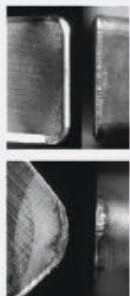
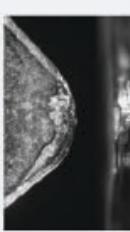
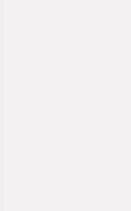
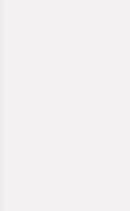
MATERIAL	Tensile Strength & Hardness	Specific Cutting Resistance ks(kg/mm ²)				
		0.004 (IPT)	0.008 (IPT)	0.012 (IPT)	0.016 (IPT)	0.024 (IPT)
Soft Steel	52	220	195	182	170	158
Medium Steel	62	198	180	173	160	157
Hard Steel	72	252	220	204	185	174
Tool Steel	67	198	180	173	170	160
Tool Steel	77	203	180	175	170	158
Chrome Manganese Steel	77	230	200	188	175	166
Chrome Manganese Steel	63	275	230	206	180	178
Chrome Molybdenum Steel	73	254	225	214	200	180
Chrome Molybdenum Steel	60	218	200	186	180	167
Nickel Chrome Molybdenum Steel	94	200	180	168	160	150
Nickel Chrome Molybdenum Steel	Hb352	210	190	176	170	153
Cast Steel	52	280	250	232	220	204
Hard Cast Iron	HbC46	300	270	250	240	220
Cast Iron	36	218	200	175	160	147
Gray Cast Iron	Hb200	175	140	124	105	97
Brass	50	115	95	80	70	63
Aluminum Alloy (Al-Mg)	16	58	48	40	35	32
Aluminum Alloy (Al-Si)	20	70	60	52	45	39



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TROUBLE SHOOTING: INSERT WEAR

PROBLEM	CAUSE	SOLUTION
	<ul style="list-style-type: none"> Cutting Speed Too High Incorrect Grade Or Coating Poor Wear Resistance Feed Rate Too Low 	<ul style="list-style-type: none"> Reduce Cutting Speed Select a more sufficient Wear Resistance grade or coating Increase Feed Rate Decrease RPM
	<ul style="list-style-type: none"> Cutting Speed Is To Low Incorrect Grade Or Coating Feed Rate Too High 	<ul style="list-style-type: none"> Increase Cutting Speed Decrease Feed Rate Decrease DOC Use Large Hone Or T-Land Insert Select A More Tougher Grade Of Coating
	<ul style="list-style-type: none"> Poor Chip flow Incorrect Grade Or Coating Feed Rate too High Cutting Speed Too High 	<ul style="list-style-type: none"> Reduce Cutting speed Reduce Feed per Tooth Select a more sufficient Wear Resistance grade or coating Depending on application: Use plenty of coolant or shut coolant off
	<ul style="list-style-type: none"> Low Cutting Speeds Feed Rate To Low Negative Cutting Geometry Incorrect Coating 	<ul style="list-style-type: none"> Increase Cutting Speed Increase Feed Rate Select A More Tougher Grade Or Coating Use Coolant
	<ul style="list-style-type: none"> Feed Rate Too High Wrong Insert Position Improper Tool Holding Cutter Length Out Too Far 	<ul style="list-style-type: none"> Reduce Feed Change Insert Position Check Reduce Tool Length Use More Rigid Tooling
	<ul style="list-style-type: none"> Wrong Cutting Data Bad Stability 	<ul style="list-style-type: none"> Reduce Cutting Speed Increase Feed Decrease DOC Reduce Tooling Length Use More Rigid Tooling



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