GrooveLine

EASYMULTI CUT

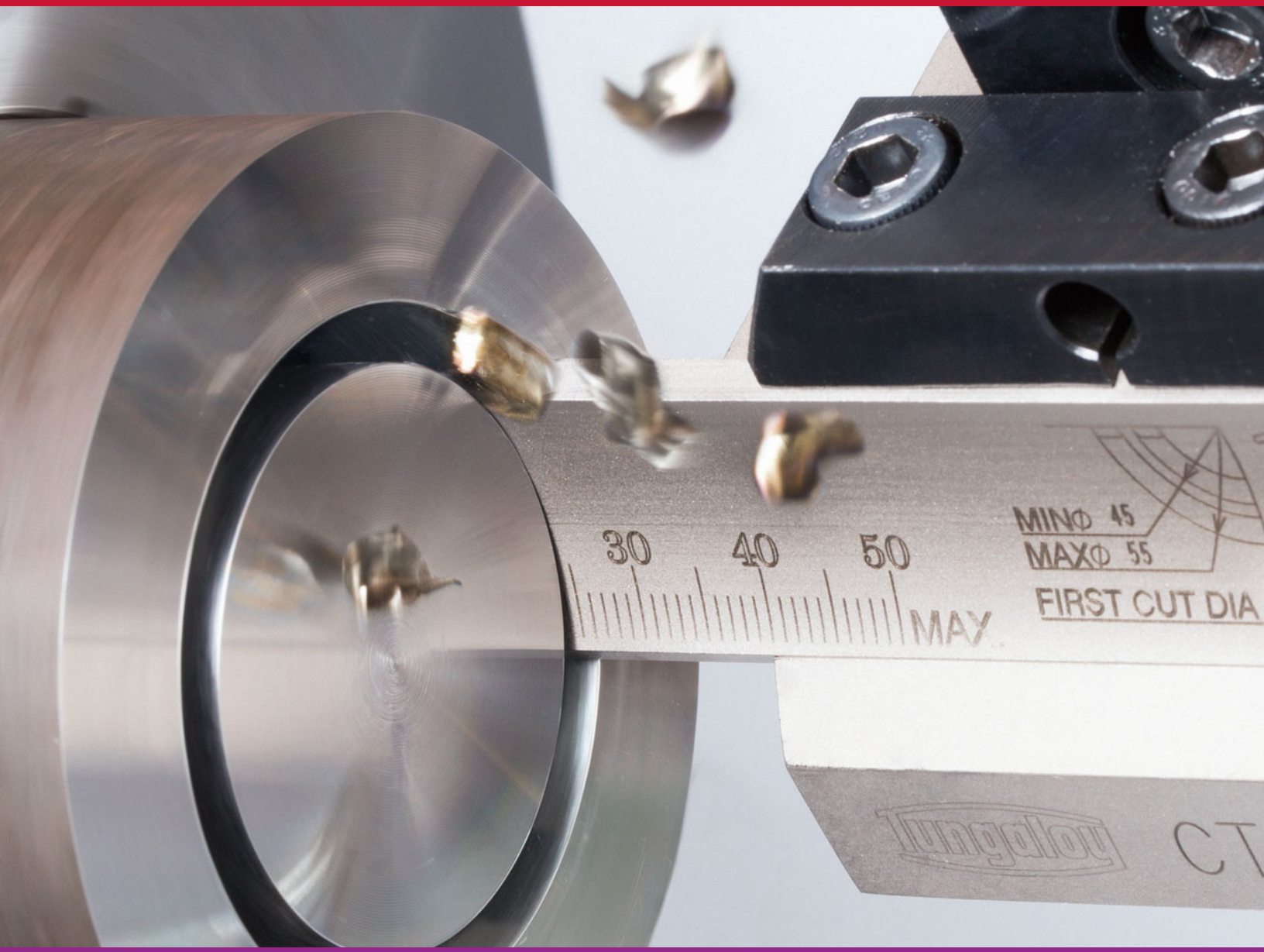
www.tungaloyamerica.com

Tungaloy Report No. 424-US

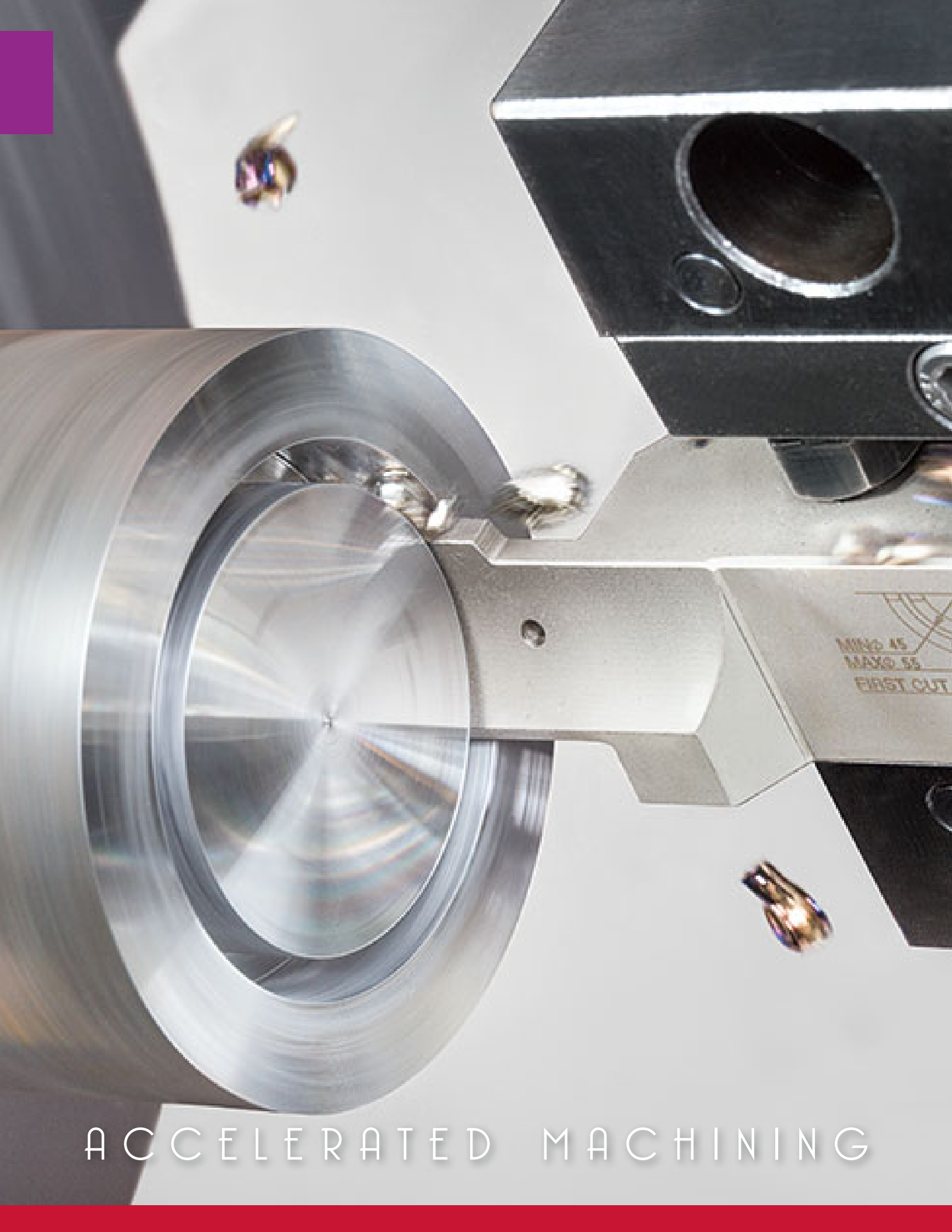
EASYMULTI-CUT

The most efficient multi-functional tool

for parting-off, grooving, and turning operations



Member IMC Group Tungaloy


ACCELERATED MACHINING

GrooveLine

EASY ULTI CUT

TUNGALOY

TUNGROOVE FORCE

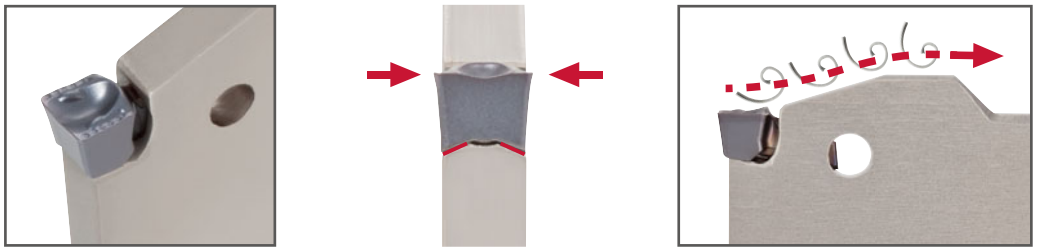
ACCELERATED MACHINING

Unique self-clamping system increases tool rigidity, resulting in excellent performance with high machining conditions.

The insert's secure & unique clamping guarantees reliable machining in grooving and turning

Unique insert clamping

- Easy indexing with highly reliable insert mounting
- High stability against side force
- Smooth chip flow in the groove due to the low profile holder



2 types of chipbreakers for machining a variety of materials and applications

ETX type

Grooving & Turning

Width:
0.157", 0.197", 0.236"
Grade: AH725

- Optimized protrusion smoothly controls chips in grooving and turning.

EGM type New

Grooving & Parting-off

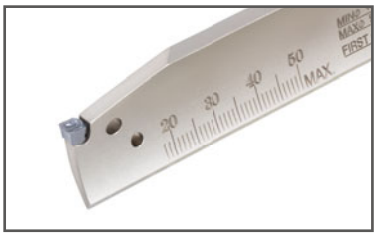
Width: 0.157"
Grade: AH725

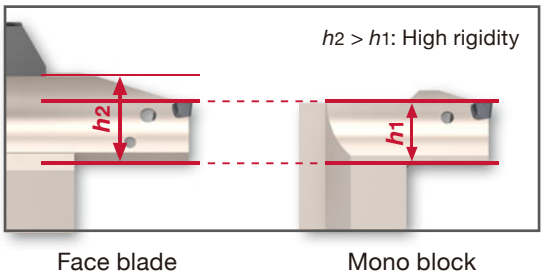
- Deep dimple makes chips narrower than the groove width for easy chip evacuation.
- Straight cutting edge makes the bottom of the machined groove flat.

New

Face blade and tool block

- **Adjustable groove depth** (Max. length = 2.55")
- Easy setting with engraved scale
- Excellent performance in grooving and turning with high productivity
- Blade's high rigidity due to its tall dimension ($h2 > h1$) allows deep face grooving





New

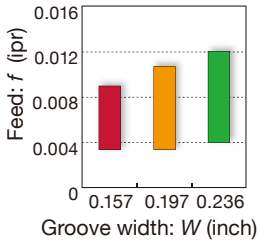
CHP type toolholders for high-pressure coolant

- The coolant is directed to the cutting edge, resulting in improved chip control and long tool life.

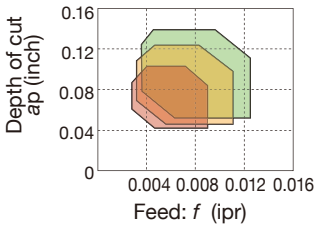
APPLICATION RANGE FOR INSERTS

ETX type

■Standard feed for grooving

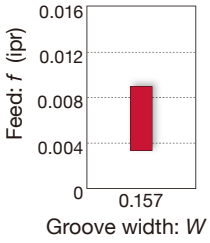


■Standard feed and depth of cut for turning



EGM type

■Standard feed for grooving



Insert	Application						
	Grooving			Parting-off	Turning		
	External	Internal	Face		External	Internal	Face
							
ETX	●	●	●	●	●	●	●
EGM	●	●		●			

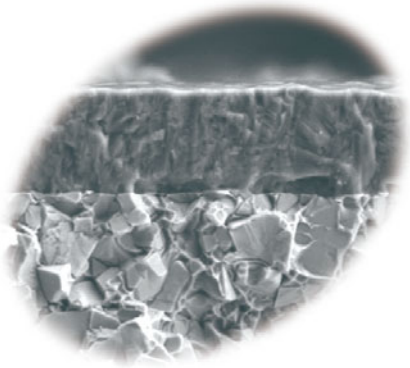
GRADE

AH725

P Steel M Stainless

PREMIUM G FORCE TEC

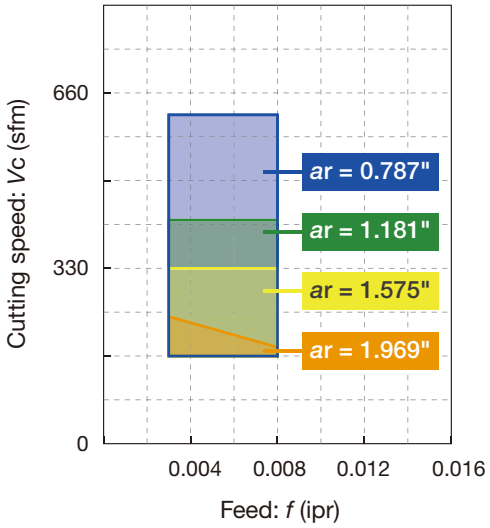
- Versatile PVD grade suitable for a wide range of workpiece materials
- Excellent balance between wear and fracture resistance



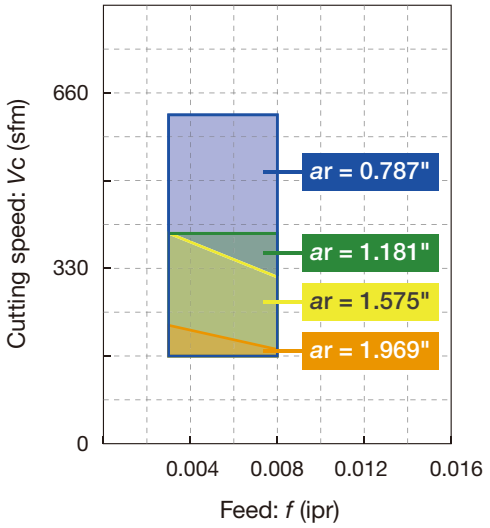
APPLICATION RANGE FOR NEW FACE BLADE

Grooving

P *W* = 0.157" (4mm) & 0.197" (5mm)

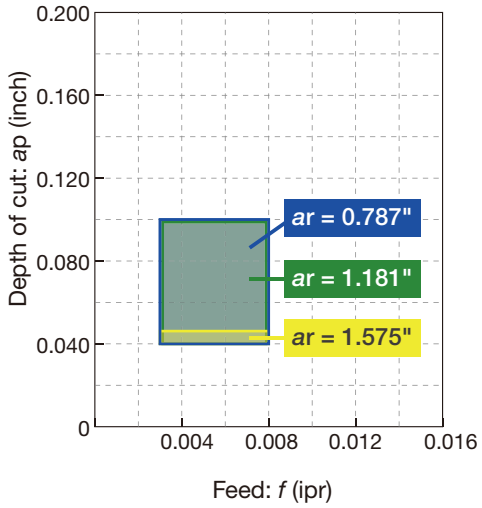


P *W* = 0.236" (6mm)

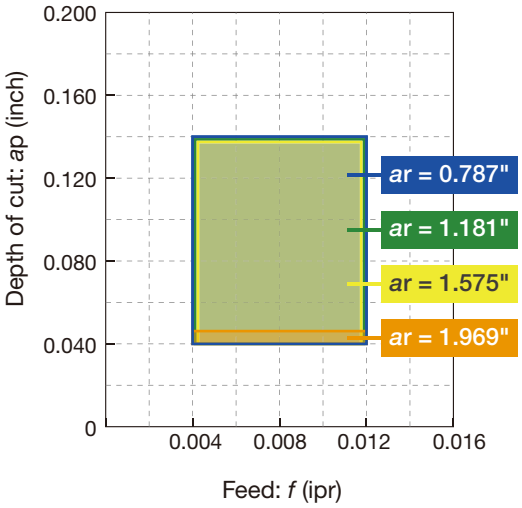


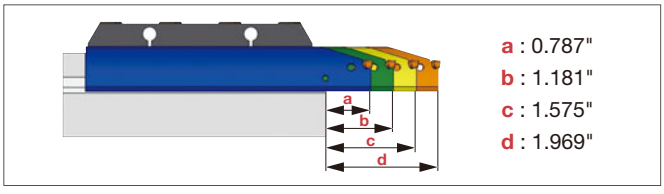
Turning

W = 0.157" (4mm) & 0.197" (5mm)
Vc = 390 sfm



W = 0.236" (6mm)
Vc = 390 sfm





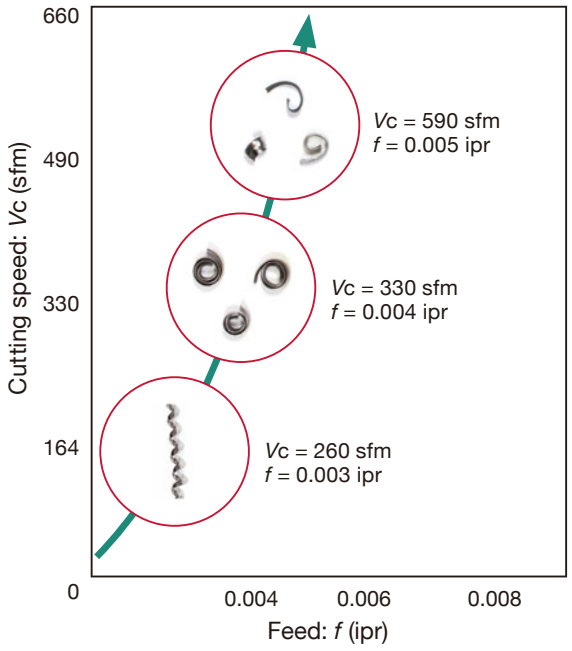
CUTTING PERFORMANCE

Chip control - ETX type

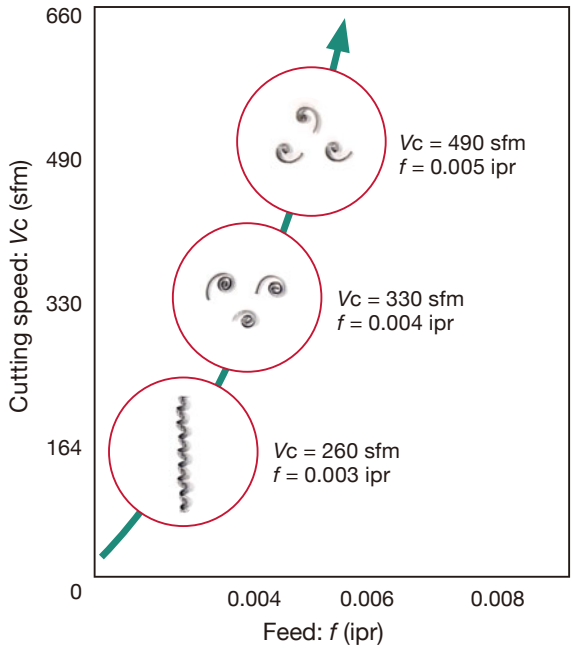
Face grooving

Insert : ETX4-040 Coolant : Wet
Groove width : *W* = 0.157"

P Carbon steel (1045)



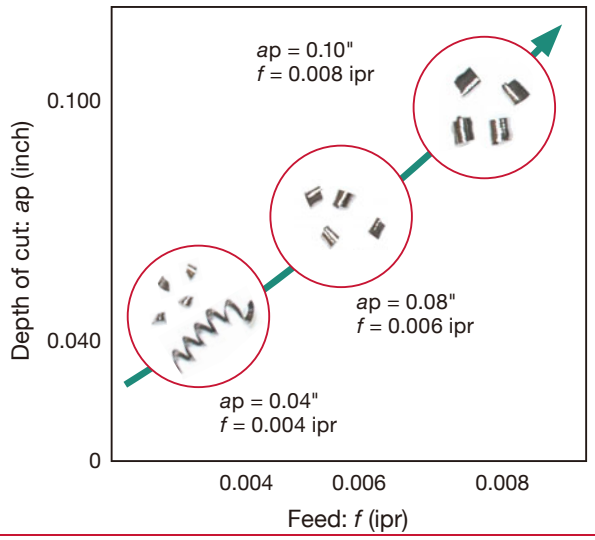
M Stainless steel (S30400)



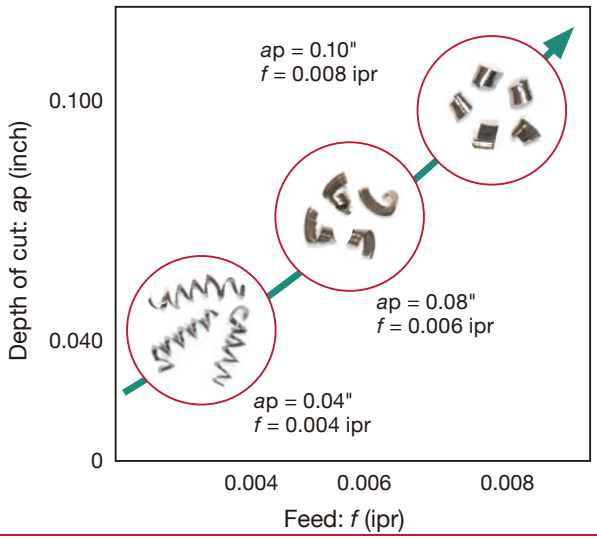
Face turning

Insert : ETX4-040 Coolant : Wet
Cutting speed : *Vc* = 390 sfm

P Carbon steel (1045)

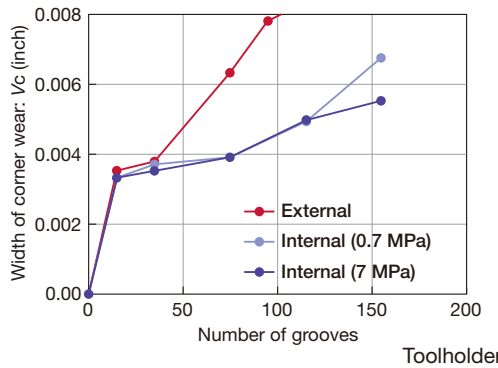


M Stainless steel (S30400)

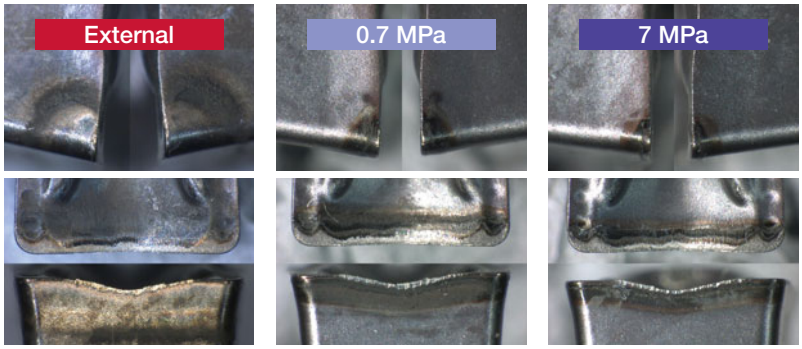


Tool life - Machining with high-pressure coolant

P 4140



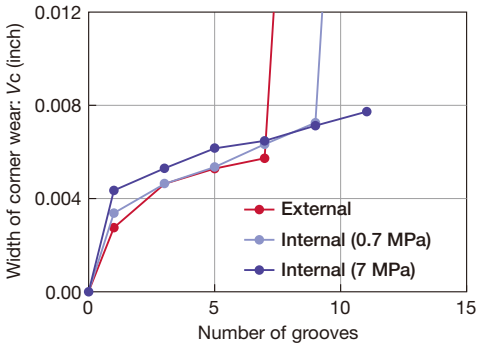
After machining 100 grooves



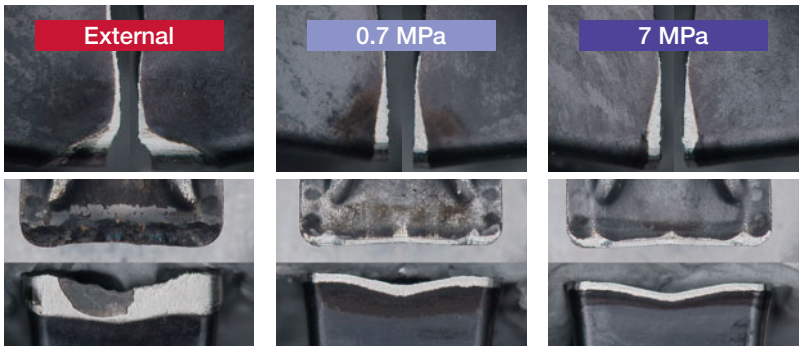
Toolholder : EGP32-4D-CHP + CTBU25-32-CHP
Insert : ETX4-040 / AH725
Workpiece material : 4140 (ø4.73")

Groove width : *W* = 0.157"
Groove depth : 1.00"
Cutting speed : 520 sfm
Feed : 0.006 ipr

S Inconel 718



After machining 7 grooves



Toolholder : EGP32-4D-CHP + CTBU25-32-CHP
Insert : ETX4-040 / AH725
Workpiece material : Inconel 718 (ø120)

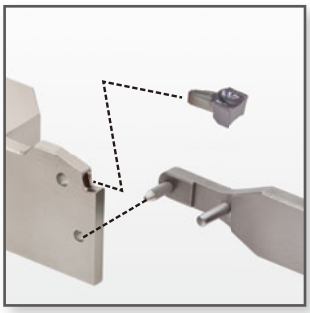
Groove width : *W* = 0.157"
Groove depth : 1.00"
Cutting speed : 130 sfm
Feed : 0.002 ipr

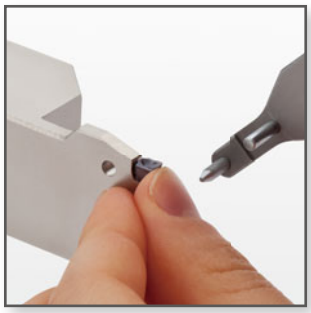
MAX GROOVE DEPTH

Comparison of face grooving depth (Mono block type)

Type	Groove width: *W* (inch)	Max. groove depth: *ar* (inch)
EASYMULTI CUT Conventional	0.236"	
EASYMULTI CUT Conventional	0.197"	
EASYMULTI CUT Conventional	0.157"	

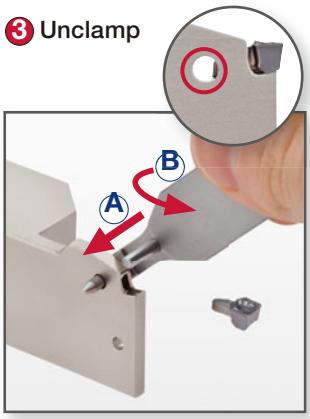
PROCEDURE TO CLAMP AND UNCLAMP INSERTS





1 Put the insert in the pocket

2 Turn the wrench and push the insert into the pocket to clamp



3 Unclamp

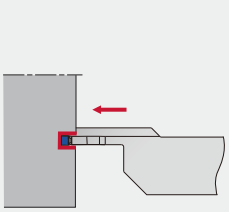
A Twist the wrench

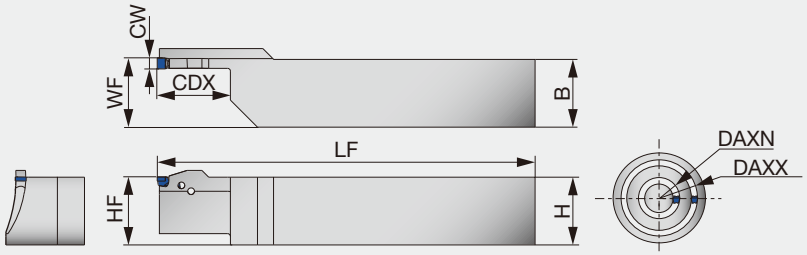
B Push out the insert from the pocket to unclamp

Toolholders for face grooving & turning

TOOLHOLDERS - FOR FACE GROOVING

EasyMulti-Cut ETFR/L

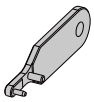




Right-hand (R) shown.

Inch	CW	DAXN	DAXX	CDX	H	B	LF	HF	WF	Insert
ETFR/L12-4T15-030035	0.157	1.181	1.378	0.591	0.750	0.750	5.000	0.750	0.770	E**4...
ETFR/L16-4T15-030035	0.157	1.181	1.378	0.591	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L12-4T22-035045	0.157	1.378	1.772	0.866	0.750	0.750	5.000	0.750	0.770	E**4...
ETFR/L16-4T22-035045	0.157	1.378	1.772	0.866	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L12-4T25-045055	0.157	1.772	2.165	0.984	0.750	0.750	5.000	0.750	0.770	E**4...
ETFR/L16-4T25-045055	0.157	1.772	2.165	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L12-4T25-055075	0.157	2.165	2.953	0.984	0.750	0.750	5.000	0.750	0.770	E**4...
ETFR/L16-4T25-055075	0.157	2.165	2.953	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L12-4T25-075120	0.157	2.953	4.724	0.984	0.750	0.750	5.000	0.750	0.770	E**4...
ETFR/L16-4T25-075120	0.157	2.953	4.724	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L16-4T25-120200	0.157	4.724	7.874	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L16-4T25-200500	0.157	7.874	19.685	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR/L16-5T25-035045	0.197	1.378	1.772	0.984	1.000	1.000	6.000	1.000	1.020	ETX5...
ETFR/L16-5T25-045055	0.197	1.772	2.165	0.984	1.000	1.000	6.000	1.000	1.020	ETX5...
ETFR/L16-5T25-055075	0.197	2.165	2.953	0.984	1.000	1.000	6.000	1.000	1.020	ETX5...
ETFR/L16-5T32-075120	0.197	2.953	4.724	1.260	1.000	1.000	6.000	1.000	1.020	ETX5...
ETFR/L16-5T32-120200	0.197	4.724	7.874	1.260	1.000	1.000	6.000	1.000	1.020	ETX5...
ETFR/L16-5T32-200500	0.197	7.874	19.685	1.260	1.000	1.000	6.000	1.000	1.020	ETX5...
ETFR/L16-6T25-040055	0.236	1.575	2.165	0.984	1.000	1.000	6.000	1.000	1.020	ETX6...
ETFR/L16-6T25-055075	0.236	2.165	2.953	0.984	1.000	1.000	6.000	1.000	1.020	ETX6...
ETFR/L16-6T32-075120	0.236	2.953	4.724	1.260	1.000	1.000	6.000	1.000	1.020	ETX6...
ETFR/L16-6T32-120200	0.236	4.724	7.874	1.260	1.000	1.000	6.000	1.000	1.020	ETX6...
ETFR/L16-6T32-200500	0.236	7.874	19.685	1.260	1.000	1.000	6.000	1.000	1.020	ETX6...

SPARE PARTS



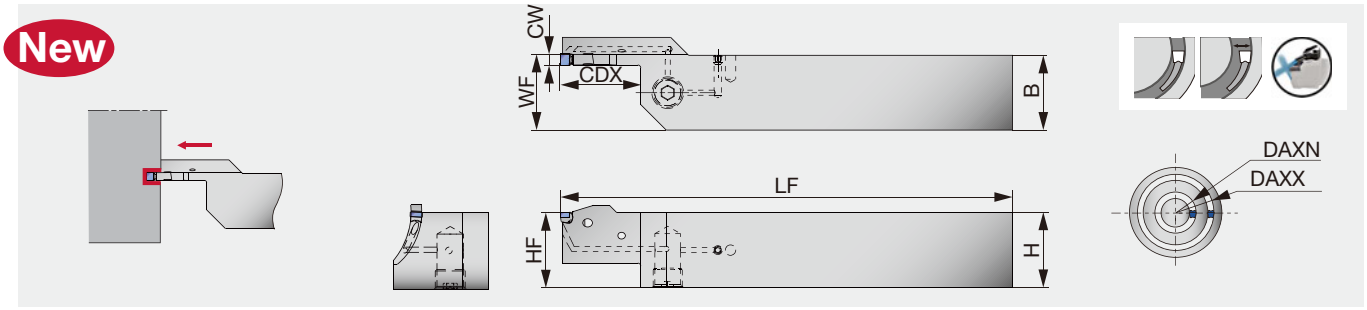
Designation	Wrench*
ETFR/L...	ECW-456EF

*Optional parts

Toolholders for face grooving & turning with channels for high-pressure coolant

TOOLHOLDERS - FOR FACE GROOVING

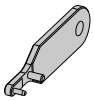
EasyMulti-Cut ETFR-CHP



Right-hand (R) shown.

Inch	CW	DAXN	DAXX	CDX	H	B	LF	HF	WF	Insert
ETFR16-4T15-030035-CHP	0.157	1.181	1.378	0.591	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR16-4T22-035045-CHP	0.157	1.378	1.772	0.866	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR16-4T25-045055-CHP	0.157	1.772	2.165	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR16-4T25-055075-CHP	0.157	2.165	2.953	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR16-4T25-075120-CHP	0.157	2.953	4.724	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR16-4T25-120200-CHP	0.157	4.724	7.874	0.984	1.000	1.000	6.000	1.000	1.020	E**4...
ETFR16-4T25-200500-CHP	0.157	7.874	19.685	0.984	1.000	1.000	6.000	1.000	1.020	E**4...

SPARE PARTS



Designation	Wrench*
ETFR...-CHP	ECW-456EF

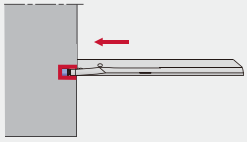
*Optional parts

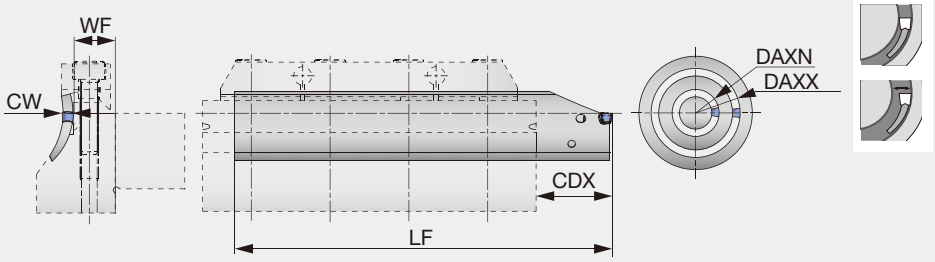
Adjustable blade for face grooving

BLADES - FOR FACE GROOVING

Face Blade EFPR/L

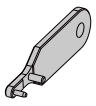
New





Right-hand (R) shown.

Inch	CW	DAXN	DAXX	WF	LF	Min. CDX	Max. CDX	
EFPR/L-4-030035	0.157	1.181	1.378	0.535	4.921	0.709	1.968	E**4...
EFPR-4-035045	0.157	1.378	1.772	0.535	4.921	0.709	1.968	E**4...
EFPR-4-045055	0.157	1.772	2.165	0.535	4.921	0.709	1.968	E**4...
EFPR-4-055075	0.157	2.165	2.953	0.535	4.921	0.709	1.968	E**4...
EFPR-4-075120	0.157	2.953	4.724	0.535	5.512	0.709	2.559	E**4...
EFPR-4-120200	0.157	4.724	7.874	0.535	5.512	0.709	2.559	E**4...
EFPR-4-200500	0.157	7.874	19.685	0.535	5.512	0.709	2.559	E**4...
EFPR-5-035045	0.197	1.378	1.772	0.535	4.921	0.748	1.968	ETX5...
EFPR-5-045055	0.197	1.772	2.165	0.535	4.921	0.748	1.968	ETX5...
EFPR-5-055075	0.197	2.165	2.953	0.535	4.921	0.748	1.968	ETX5...
EFPR-5-075120	0.197	2.953	4.724	0.535	5.512	0.748	2.559	ETX5...
EFPR-5-120200	0.197	4.724	7.874	0.535	5.512	0.748	2.559	ETX5...
EFPR-5-200500	0.197	7.874	19.685	0.535	5.512	0.748	2.559	ETX5...
EFPR-6-045055	0.236	1.772	2.165	0.535	4.921	0.787	1.968	ETX6...
EFPR-6-055075	0.236	2.165	2.953	0.535	4.921	0.787	1.968	ETX6...
EFPR-6-075120	0.236	2.953	4.724	0.535	5.512	0.787	2.559	ETX6...
EFPR-6-120200	0.236	4.724	7.874	0.535	5.512	0.787	2.559	ETX6...
EFPR/L-6-200500	0.236	7.874	19.685	0.535	5.512	0.787	2.559	ETX6...



SPARE PARTS

Designation	Wrench*
EFPR/L...	ECW-456I

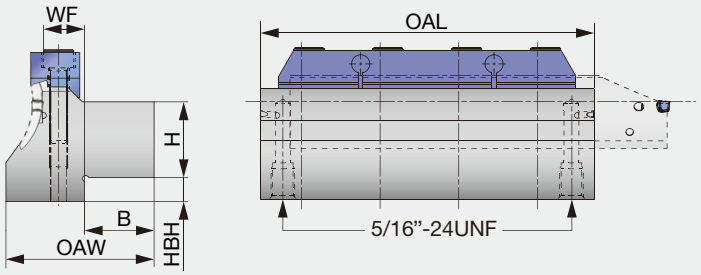
*Optional parts

Tool block for EasyMulti-Cut face blade series with channels for high-pressure coolant

TOOL BLOCK - FOR EFP BLADES

CTBU-CHP for EFPR/L

New



Inch	CW	DAXN	WF	H	B	HBH	OAW	OAL	Blade
CTBU16-030-4U-CHP	0.157	1.181	0.535	1.000	0.905	0.299	1.929	4.331	EFPR/L-4-030035
CTBU16-035-4/5U-CHP	0.157, 0.197	1.378	0.535	1.000	0.905	0.299	1.929	4.331	EFPR/L-4/5-035045
CTBU16-045-4/5U-CHP	0.157, 0.197	1.772	0.535	1.000	0.905	0.299	1.929	4.331	EFPR/L-4/5-045055
CTBU16-055-4/5U-CHP	0.157, 0.197	2.165	0.535	1.000	0.905	0.299	1.850	4.331	EFPR/L-4/5-055075
CTBU16-075-4/5U-CHP	0.157, 0.197	2.953	0.535	1.000	0.905	0.299	1.771	4.331	EFPR/L-4/5-075120
CTBU16-120-4/5U-CHP	0.157, 0.197	4.724	0.535	1.000	0.905	0.299	1.732	4.331	EFPR/L-4/5-120200
CTBU16-200-4/5U-CHP	0.157, 0.197	7.874	0.535	1.000	0.905	0.299	1.633	4.331	EFPR/L-4/5-200500
CTBU16-045-6U-CHP	0.236	1.772	0.535	1.000	0.905	0.299	2.007	4.331	EFPR/L-6-045055
CTBU16-055-6U-CHP	0.236	2.165	0.535	1.000	0.905	0.299	1.929	4.331	EFPR/L-6-055075
CTBU16-075-6U-CHP	0.236	2.953	0.535	1.000	0.905	0.299	1.850	4.331	EFPR/L-6-075120
CTBU16-120-6U-CHP	0.236	4.724	0.535	1.000	0.905	0.299	1.811	4.331	EFPR/L-6-120200
CTBU16-200-6U-CHP	0.236	7.874	0.535	1.000	0.905	0.299	1.712	4.331	EFPR/L-6-200500

SPARE PARTS



Designation	Clamping screw	Clamp	Wrench
CTBU...-CHP	CM6X30-S	CT-110	P-5

Single-ended inserts for external / internal / face grooving & turning

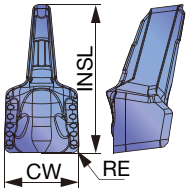
STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Hardness	Grades	Chip-breaker	Cutting speed *Vc* (sfm)
P	Low carbon steels (1015, etc.)	- 300 HB	AH725	ETX	160 - 600
		- 300 HB	AH725	EGM	160 - 600
	Carbon steels, Alloy steels (1055, etc.)	- 300 HB	AH725	ETX	160 - 600
		- 300 HB	AH725	EGM	160 - 600
	Prehardened steels (NAK80, PX5 etc.)	- 300 HB	AH725	ETX	160 - 600
		- 300 HB	AH725	EGM	160 - 600
M	Stainless steels (S30400, etc)	-	AH725	ETX	160 - 400
		-	AH725	ETX	160 - 400

Note: See page 9 for more information about grades.

INSERTS

ETX



		Coated
		AH725
P	Steel	★
M	Stainless	★
K	Cast iron	☆
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

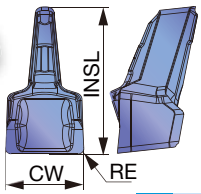
★ : First choice
☆ : Second choice

Designation	CW±0.05 (mm)	CW±0.002 (in)	RE (in)	AH725	INSL (in)
ETX4-040	4	0.157	0.016	●	0.315
ETX5-040	5	0.197	0.016	●	0.394
ETX6-040	6	0.236	0.016	●	0.472

● : Line up

EGM

New



		Coated
		AH725
P	Steel	★
M	Stainless	★
K	Cast iron	☆
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

★ : First choice
☆ : Second choice

Designation	CW±0.05 (mm)	CW±0.002 (in)	RE (in)	AH725	INSL (in)
EGM4-030	4	0.157	0.012	●	0.315

● : Line up

PARTS FOR COOLANT HOSE

Connecting hose

Fig. 1

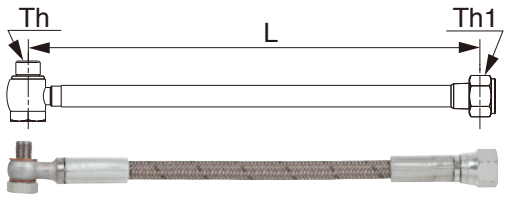
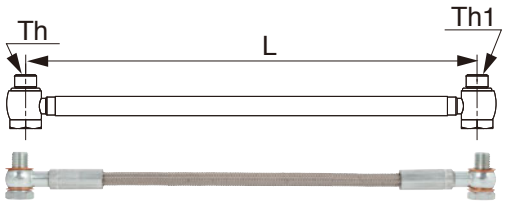
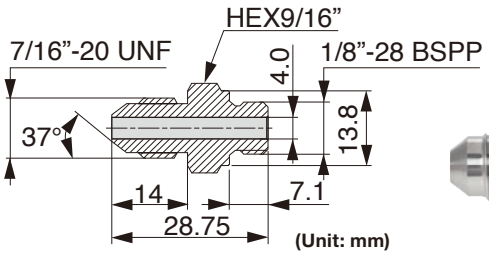


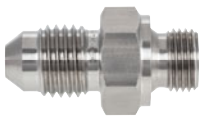
Fig. 2



Designation	Length	Threading size		Max. pressure	Fig.
	L	Th	Th1	(MPa)	
CHPHOSEG1/8-7/16-200BS	200	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHPHOSEG1/8-7/16-250BS	250	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHPHOSE5/16-7/16-200BS	200	5/16"-24UNF	7/16"-20 UNF	20	1
CHPHOSE5/16-G1/8-200BS	200	5/16"-24UNF	G1/8"-28 BSPP	20	1
CHPHOSEG1/8-G1/8-200BB	200	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2
CHPHOSEG1/8-G1/8-250BB	250	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2

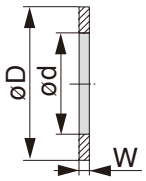
Connector





Designation
CHPNIPPLEG1/8-7/16UNF

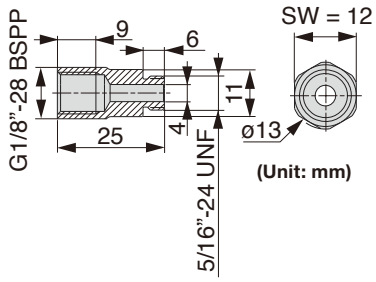
Seal washer



Designation	øD	ød	W
CHPCOPPERSEAL1/8	15	8	1
CHPCOPPERSEAL5/16	11	8	1
CHPCOPPERSEAL5/16-2.5	11	8	2.5

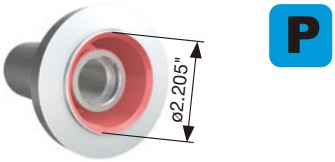
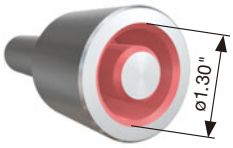
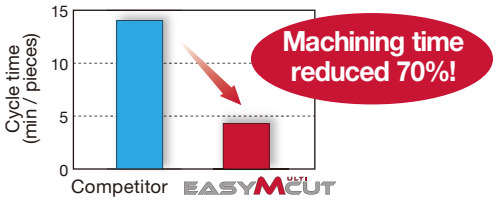
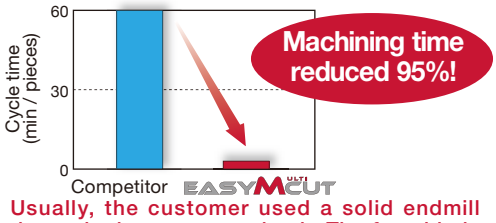
(Unit: mm)

Connector for small lathe with seal washer



Designation
CHPCONECTOR5/16-G1/8

PRACTICAL EXAMPLES

	Workpiece type	Puncher part	Endcap
	Toolholder	CTBU16-045-6U-CHP + EFPR-6-045055	CTBU16-030-6U-CHP + EFPR-4-030035
	Insert	ETX6-040	ETX4-040
	Grade	AH725	AH725
	Workpiece material	4140 	1045 
Cutting conditions	Groove width : *W* (inch)	0.236	0.157
Cutting conditions	Groove depth : *ar* (inch)	2.09	2.00
Cutting conditions	Cutting speed: *Vc* (sfm)	210	330
Cutting conditions	Feed : *f* (ipr)	0.003	0.004
Cutting conditions	Machining	Face grooving	Face grooving
Cutting conditions	Coolant	Wet	Wet
	Results	 When machining with EasyMulti-Cut, the feed rate can be increased to 300% due to its high rigidity. Also, ETX type insert provides stable chip control even in deep face grooving.	 Usually, the customer used a solid endmill due to its large groove depth. The face blade of EasyMulti-Cut can be used for grooving operation on the lathe without any trouble with chip control

MEMO

Check our site and our App to get more info!

www.tungaloyamerica.com

Tungaloy America, Inc.

3726 N Ventura Drive, Arlington Heights, IL 60004, U.S.A.
Inside Sales: +1-888-554-8394
Technical Support: +1-888-554-8391
Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada

432 Elgin St. Unit 3, Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779 Fax: +1-519-758-5791
www.tungaloy.com/ca

Tungaloy de Mexico S.A.

C Los Arellano 113, Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone:+52-449-929-5410 Fax:+52-449-929-5411
www.tungaloy.com/mx

Scan for instant web access

Member IMC Group Tungaloy

www.tungaloyamerica.com

follow us at:
facebook.com/tungaloyamerica
twitter.com/tungaloy

To see this product in action visit:

Tung-TV

www.youtube.com/tungaloycorporation

Distributed by:

DOWNLOAD Dr. Carbide App

Dr. Carbide Tungaloy

Available on the App Store

GET IT ON Google play

Apr. 2016 (TA)