

GrooveLine

EASYMCUT^{ULTI}

www.tungaloy.com

Tungaloy Report No. 424-G

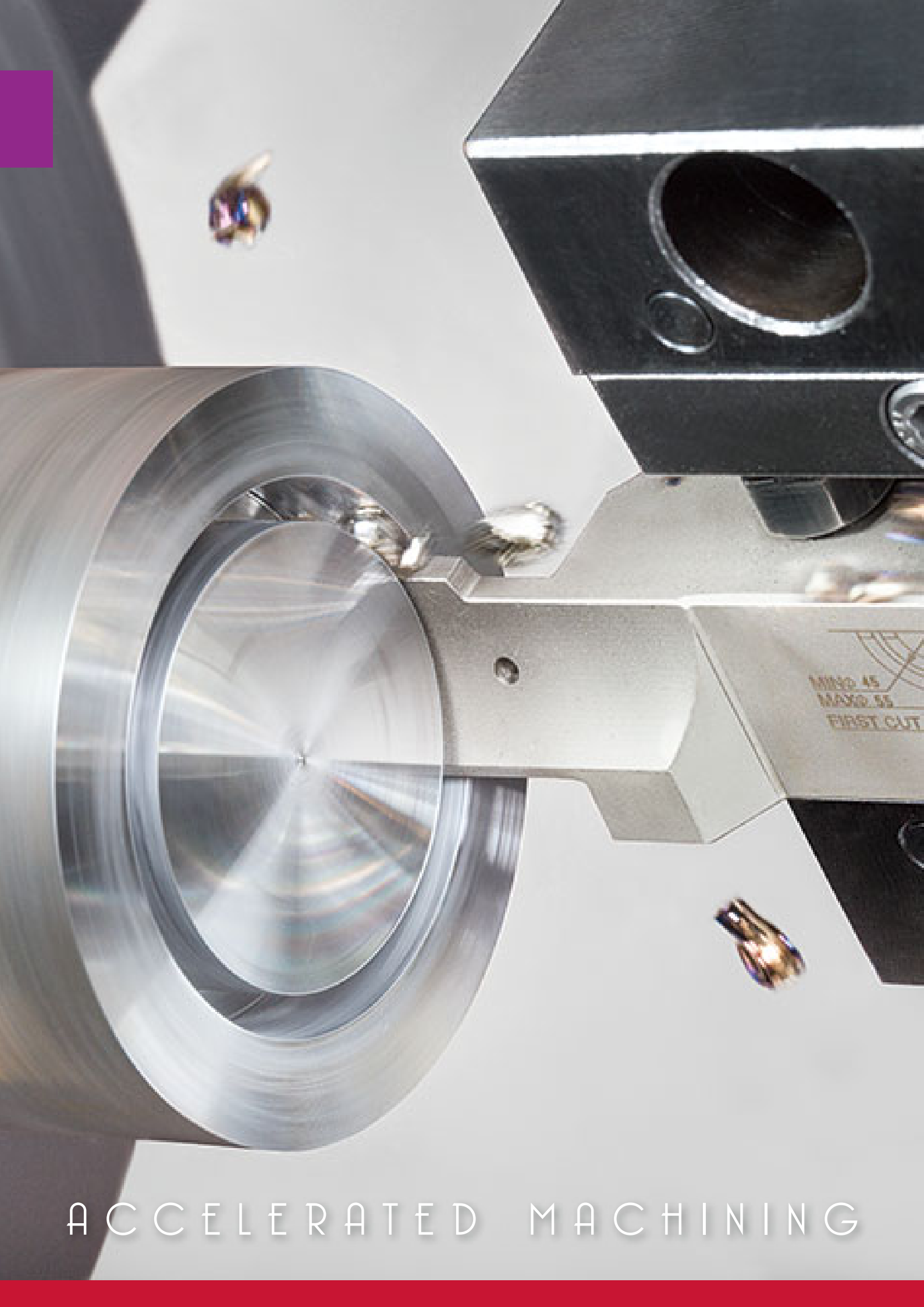
SM[★]TOOLS[®]

The most efficient multi-functional tool
for face grooving, and turning operations

Member IMC Group
Tungaloy



INDUSTRY 4.0
FEED the SPEED!



MIND: 45
MAX: 55
FIRST CUT

ACCELERATED MACHINING

GrooveLine

EASYM^{ULTI}CUT
TUNGALOY

TUNG FORCE
ROOVE
ACCELERATED MACHINING

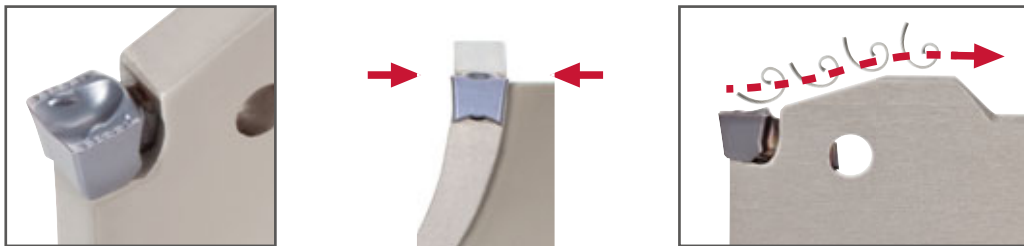


Unique self-clamping system increases tool rigidity, resulting in excellent performance with high machining conditions.

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

Unique insert clamping

- Easy indexing with highly reliable insert fixation
- High stability against side force
- Smooth chip flow in the groove due to the simple structure



2 types of chipbreakers for the wide application range

ETX type

Face grooving & Turning

Width: 4, 5, 6 mm

Grade: AH725

- Optimized protrusion smoothly controls chips in grooving and turning.



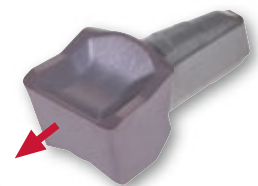
EGM type

Face grooving

Width: 4 mm

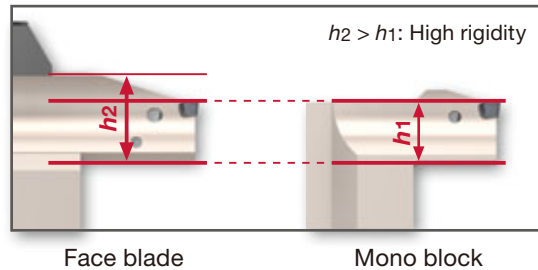
Grade: AH725

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



Face blade and tool block

- **Adjustable overhang** (Max. length = 65 mm)
- Easy setting with engraved scale
- Excellent performance in grooving and turning with high productivity
- Blade's high rigidity due to its tall dimension ($h_2 > h_1$) allows deep face grooving



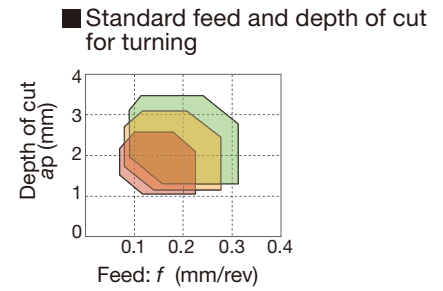
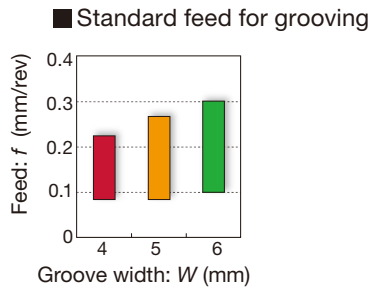
CHP type toolholders for high-pressure coolant

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

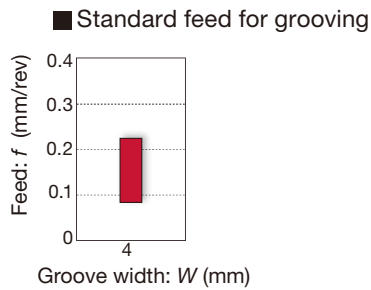


APPLICATION RANGE FOR INSERTS

ETX type



EGM type



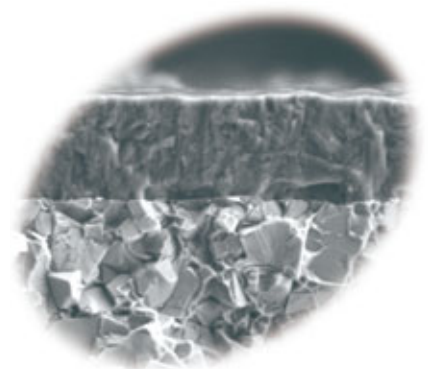
GRADE

AH725



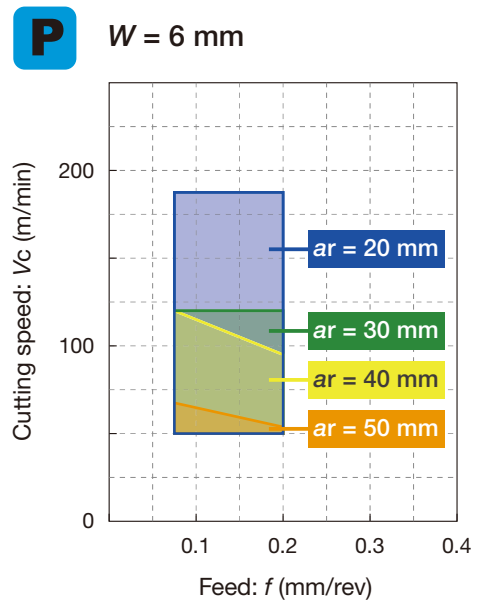
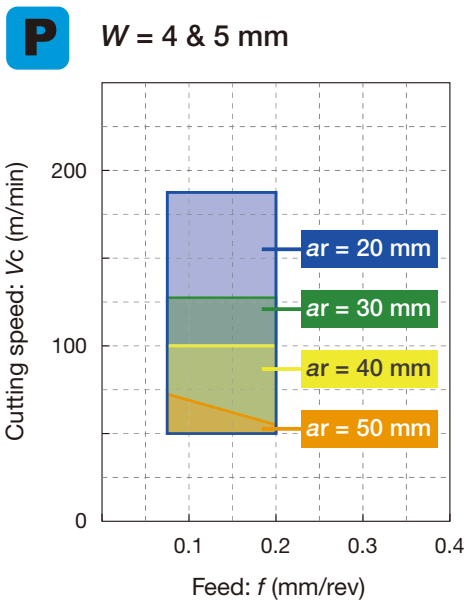
PREMIUM G/TEC FORCE

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

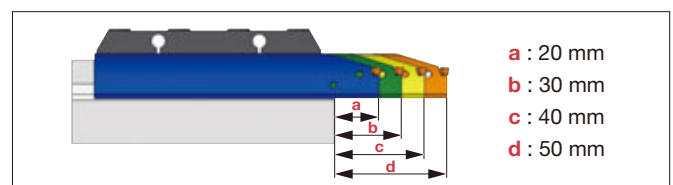
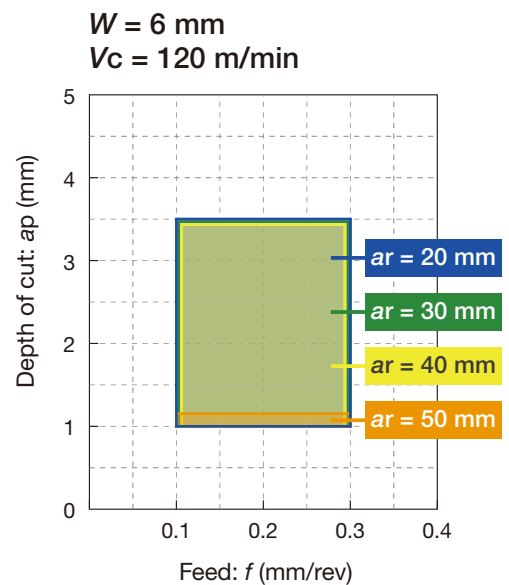
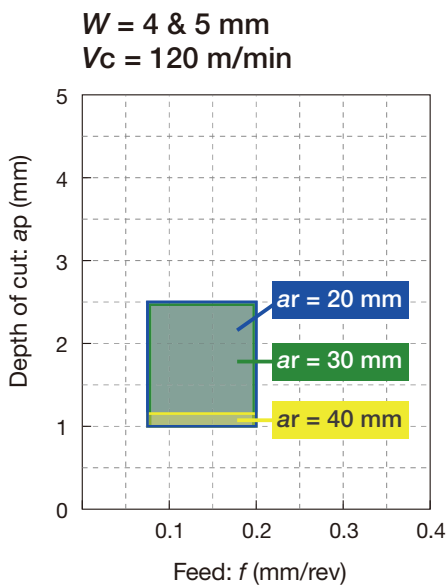


APPLICATION RANGE FOR NEW FACE BLADE

Grooving



Turning



CUTTING PERFORMANCE

Chip control - ETX type

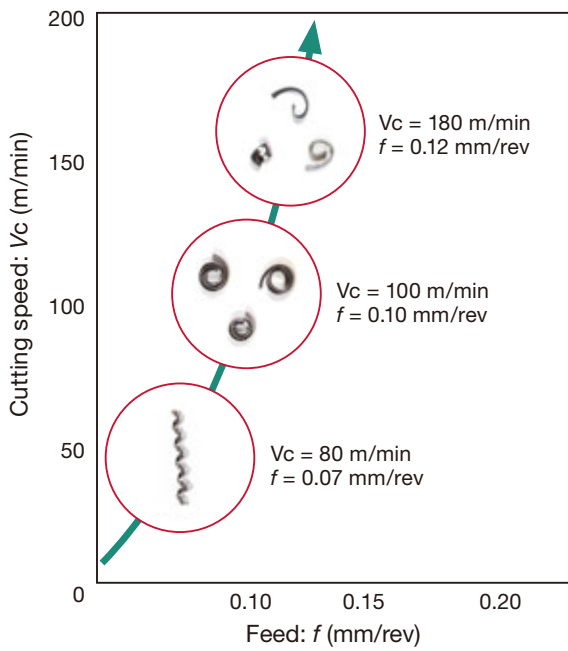


Face grooving

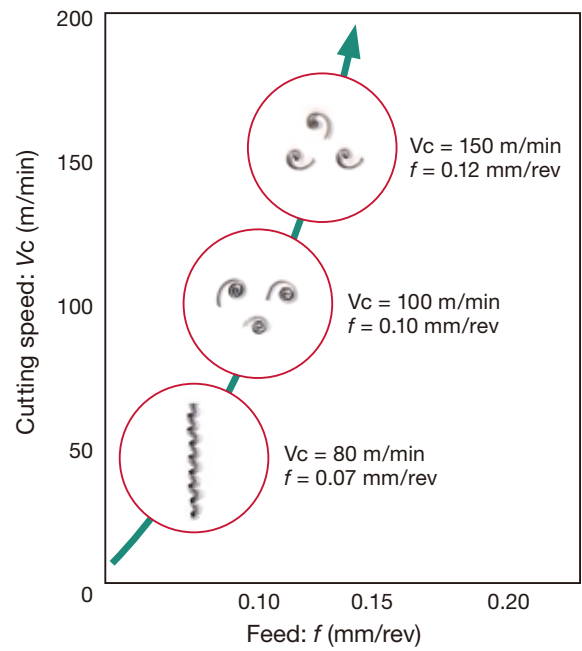
Insert : ETX4-040
Groove width : $W = 4$ mm

Coolant : Wet

P Carbon steel
(S45C / C45)



M Stainless steel
(SUS304 / X5CrNi18-9)

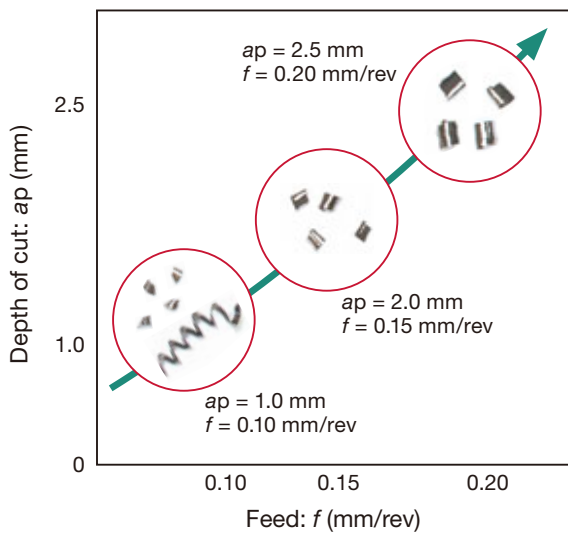


Face turning

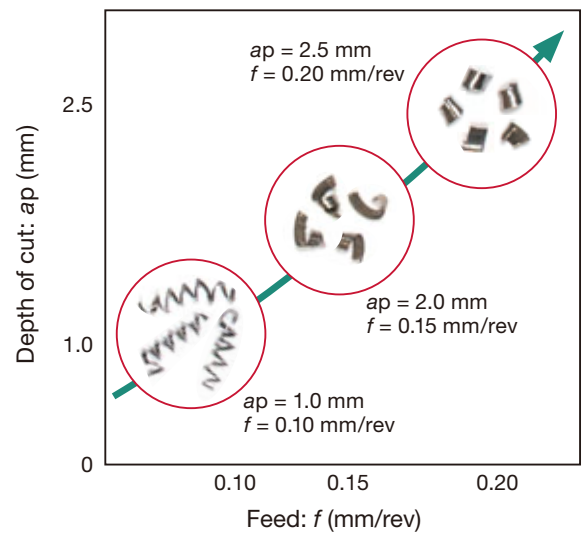
Insert : ETX4-040
Cutting speed : $V_c = 120$ m/min

Coolant : Wet

P Carbon steel
(S45C / C45)



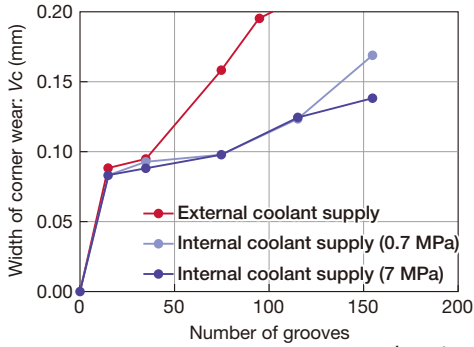
M Stainless steel
(SUS304 / X5CrNi18-9)



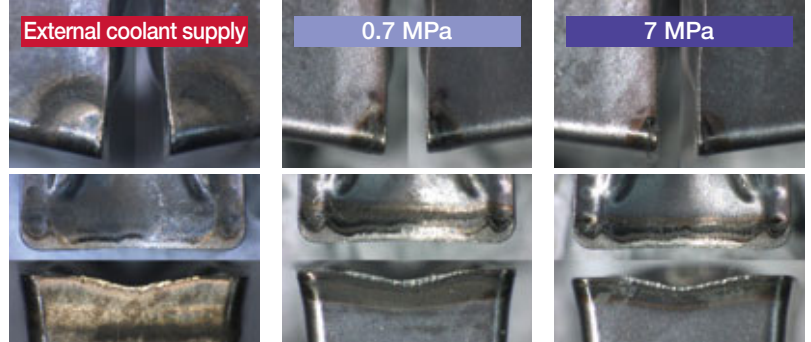
Tool life - Machining with high-pressure coolant (Data for reference)

P

SCM440



After machining 100 grooves

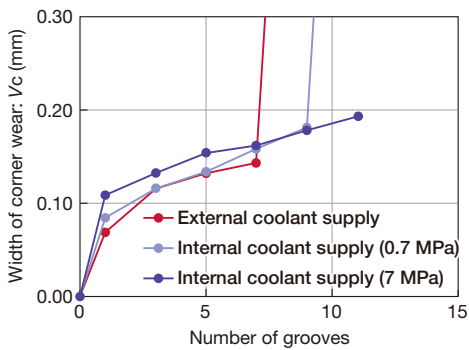


Insert : ETX4-040 / AH725
 Workpiece material : SCM440 / 42CrMo4
 Groove width : $W = 4$ mm

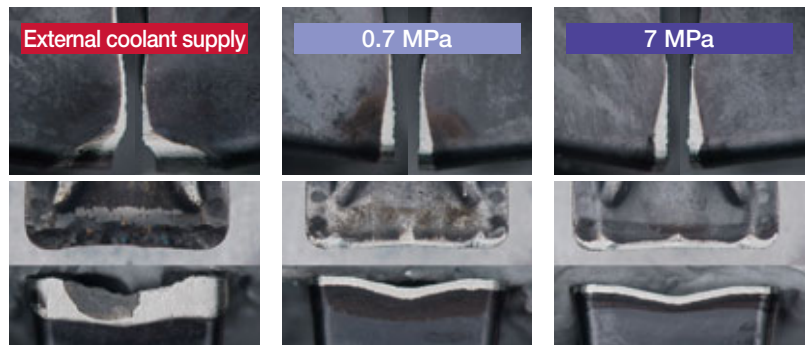
Groove depth : 25 mm
 Cutting speed : 160 m/min
 Feed : 0.15 mm/rev

S

Inconel 718



After machining 7 grooves



Insert : ETX4-040 / AH725
 Workpiece material : Inconel 718
 Groove width : $W = 4$ mm

Groove depth : 25 mm
 Cutting speed : 40 m/min
 Feed : 0.05 mm/rev

MAX GROOVE DEPTH

Comparison of face grooving depth (Mono block type)



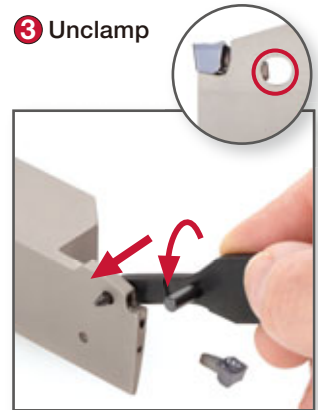
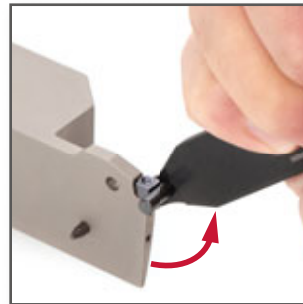
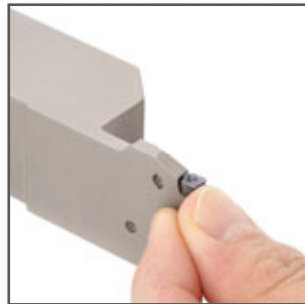
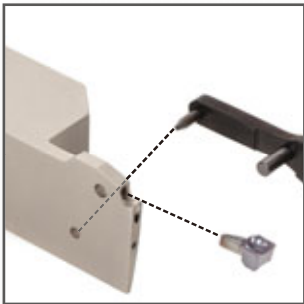
Type	Groove width: W (mm)	Max. groove depth: ar (mm)
EASYMULTI CUT Conventional	6	32
EASYMULTI CUT Conventional	5	25
EASYMULTI CUT Conventional	4	20

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

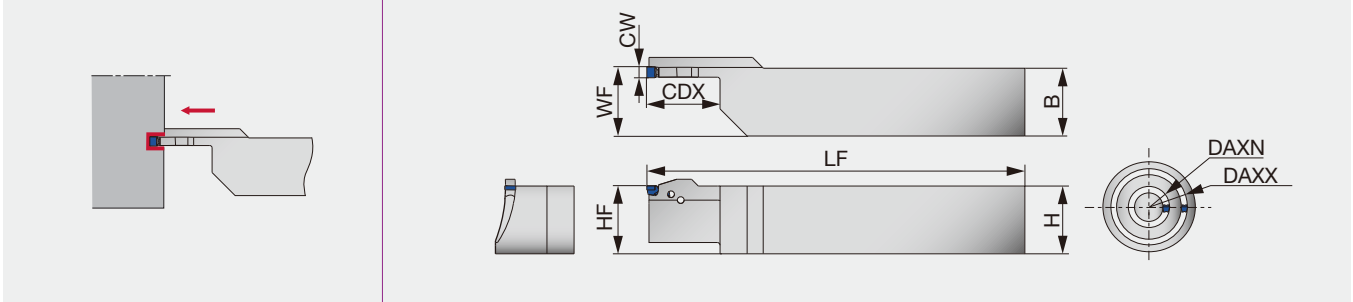
3 Unclamp



Toolholders for face grooving & turning

TOOLHOLDERS - FOR FACE GROOVING

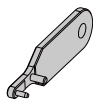
EasyMulti-Cut ETFR/L



Right-hand (R) shown.

Designation	CW	DAXN	DAXX	CDX	H	B	HF	LF	WF	Insert
ETFR/L2020-4T15-030035	4	30	35	15	20	20	20	125	20.5	E**4...
ETFR/L2525-4T15-030035	4	30	35	15	25	25	25	150	25.5	E**4...
ETFR/L2020-4T22-035045	4	35	45	22	20	20	20	125	20.5	E**4...
ETFR/L2525-4T22-035045	4	35	45	22	25	25	25	150	25.5	E**4...
ETFR/L2020-4T25-045055	4	45	55	25	20	20	20	125	20.5	E**4...
ETFR/L2525-4T25-045055	4	45	55	25	25	25	25	150	25.5	E**4...
ETFR/L2020-4T25-055075	4	55	75	25	20	20	20	125	20.5	E**4...
ETFR/L2525-4T25-055075	4	55	75	25	25	25	25	150	25.5	E**4...
ETFR/L2020-4T25-075120	4	75	120	25	20	20	20	125	20.5	E**4...
ETFR/L2525-4T25-075120	4	75	120	25	25	25	25	150	25.5	E**4...
ETFR/L2525-4T25-120200	4	120	200	25	25	25	25	150	25.5	E**4...
ETFR/L2525-4T25-200500	4	200	500	25	25	25	25	150	25.5	E**4...
ETFR/L2525-5T25-035045	5	35	45	25	25	25	25	150	25.5	ETX5...
ETFR/L2525-5T25-045055	5	45	55	25	25	25	25	150	25.5	ETX5...
ETFR/L2525-5T25-055075	5	55	75	25	25	25	25	150	25.5	ETX5...
ETFR/L2525-5T32-075120	5	75	120	32	25	25	25	150	25.5	ETX5...
ETFR/L2525-5T32-120200	5	120	200	32	25	25	25	150	25.5	ETX5...
ETFR/L2525-5T32-200500	5	200	500	32	25	25	25	150	25.5	ETX5...
ETFR/L2525-6T25-040055	6	40	55	25	25	25	25	150	25.5	ETX6...
ETFR/L2525-6T25-055075	6	55	75	25	25	25	25	150	25.5	ETX6...
ETFR/L2525-6T32-075120	6	75	120	32	25	25	25	150	25.5	ETX6...
ETFR/L2525-6T32-120200	6	120	200	32	25	25	25	150	25.5	ETX6...
ETFR/L2525-6T32-200500	6	200	500	32	25	25	25	150	25.5	ETX6...

SPARE PARTS



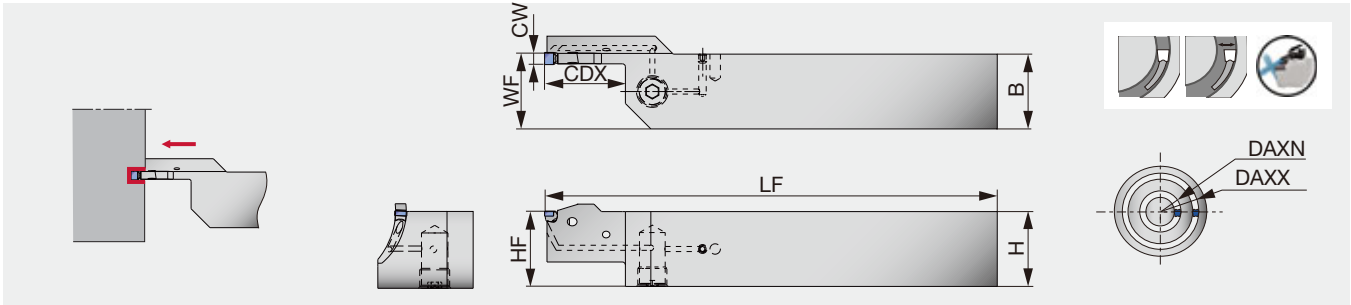
Designation	Wrench*
ETFR/L20...	ECW-456EF
ETFR/L25...	ECW-456EF

*Optional parts

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

TOOLHOLDERS - FOR FACE GROOVING

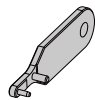
EasyMulti-Cut ETFR-CHP



Right-hand (R) shown.

Designation	CW	DAXN	DAXX	CDX	H	B	LF	HF	WF	Insert
ETFR2525-4T15-030035-CHP	4	30	35	15	25	25	150	25	25.5	E**4
ETFR2525-4T22-035045-CHP	4	35	45	22	25	25	150	25	25.5	E**4
ETFR2525-4T25-045055-CHP	4	45	55	25	25	25	150	25	25.5	E**4
ETFR2525-4T25-055075-CHP	4	55	75	25	25	25	150	25	25.5	E**4
ETFR2525-4T25-075120-CHP	4	75	120	25	25	25	150	25	25.5	E**4
ETFR2525-4T25-120200-CHP	4	120	200	25	25	25	150	25	25.5	E**4
ETFR2525-4T25-200500-CHP	4	200	500	25	25	25	150	25	25.5	E**4

SPARE PARTS



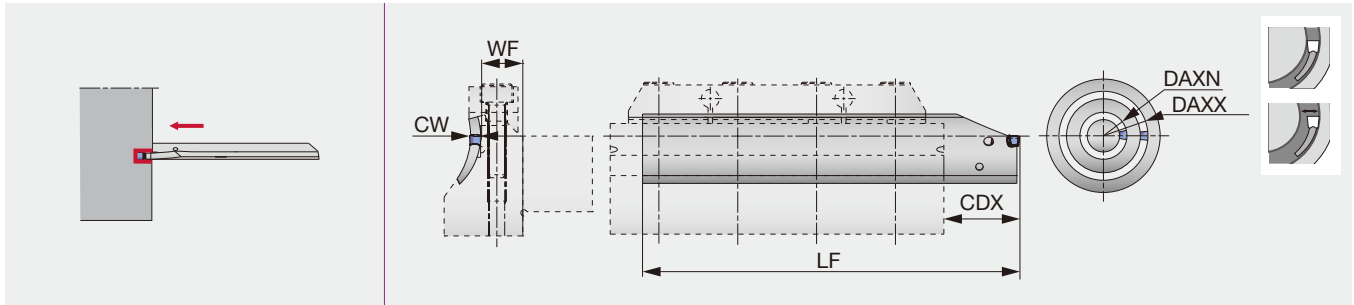
Designation	Wrench*
ETFR...-CHP	ECW-456EF

*Optional parts
See page 20 for connections and coolant hoses.

Adjustable blade for face grooving

BLADES - FOR FACE GROOVING

Face Blade EFPR/L



Right-hand (R) shown.

Designation	CW	DAXN	DAXX	WF	LF	Min. CDX	Max. CDX	Insert
EFPR/L-4-030035	4	30.0	35.0	13.6	125.0	18	50	E**4
EFPR-4-035045	4	35.0	45.0	13.6	125.0	18	50	E**4
EFPR-4-045055	4	45.0	55.0	13.6	125.0	18	50	E**4
EFPR-4-055075	4	55.0	75.0	13.6	125.0	18	50	E**4
EFPR-4-075120	4	75.0	120.0	13.6	140.0	18	65	E**4
EFPR-4-120200	4	120.0	200.0	13.6	140.0	18	65	E**4
EFPR-4-200500	4	200.0	500.0	13.6	140.0	18	65	E**4
EFPR-5-035045	5	35.0	45.0	13.6	125.0	19	50	ETX5
EFPR-5-045055	5	45.0	55.0	13.6	125.0	19	50	ETX5
EFPR-5-055075	5	55.0	75.0	13.6	125.0	19	50	ETX5
EFPR-5-075120	5	75.0	120.0	13.6	140.0	19	65	ETX5
EFPR-5-120200	5	120.0	200.0	13.6	140.0	19	65	ETX5
EFPR-5-200500	5	200.0	500.0	13.6	140.0	19	65	ETX5
EFPR-6-045055	6	45.0	55.0	13.6	125.0	20	50	ETX6
EFPR-6-055075	6	55.0	75.0	13.6	125.0	20	50	ETX6
EFPR-6-075120	6	75.0	120.0	13.6	140.0	20	65	ETX6
EFPR-6-120200	6	120.0	200.0	13.6	140.0	20	65	ETX6
EFPR/L-6-200500	6	200.0	500.0	13.6	140.0	20	65	ETX6



SPARE PARTS

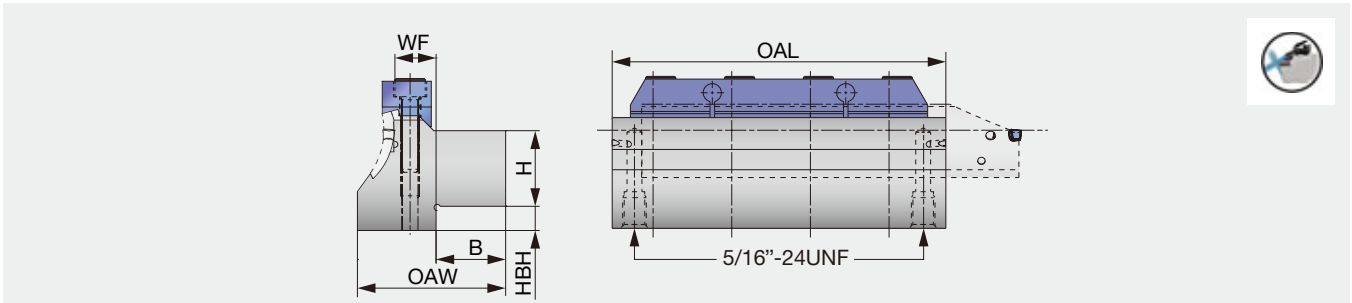
Designation	Wrench*
EFPR/L...	ECW-456I

*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



Designation	CW	DAXN	H	B	HBH	OAW	OAL	Blade
CTBU25-030-4-CHP	4	30.0	25.0	23.0	8	49.0	110.0	EFPR/L-4-030035
CTBU25-035-4/5-CHP	4, 5	35.0	25.0	23.0	8	49.0	110.0	EFPR/L-4/5-035045
CTBU25-045-4/5-CHP	4, 5	45.0	25.0	23.0	8	49.0	110.0	EFPR/L-4/5-045055
CTBU25-055-4/5-CHP	4, 5	55.0	25.0	23.0	8	47.0	110.0	EFPR/L-4/5-055075
CTBU25-075-4/5-CHP	4, 5	75.0	25.0	23.0	8	45.0	110.0	EFPR/L-4/5-075120
CTBU25-120-4/5-CHP	4, 5	120.0	25.0	23.0	8	44.0	110.0	EFPR/L-4/5-120200
CTBU25-200-4/5-CHP	4, 5	200.0	25.0	23.0	8	41.5	110.0	EFPR/L-4/5-200500
CTBU25-045-6-CHP	6	45.0	25.0	23.0	8	51.0	110.0	EFPR/L-6-045055
CTBU25-055-6-CHP	6	55.0	25.0	23.0	8	49.0	110.0	EFPR/L-6-055075
CTBU25-075-6-CHP	6	75.0	25.0	23.0	8	47.0	110.0	EFPR/L-6-075120
CTBU25-120-6-CHP	6	120.0	25.0	23.0	8	46.0	110.0	EFPR/L-6-120200
CTBU25-200-6-CHP	6	200.0	25.0	23.0	8	43.5	110.0	EFPR/L-6-200500

SPARE PARTS



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

* See page 20 for connections and coolant hoses.

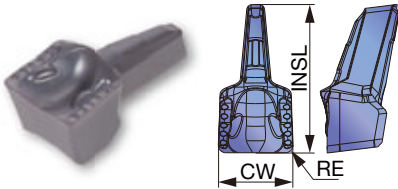
Single-ended inserts for face grooving & turning

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Hardness	Grades	Chip-breaker	Cutting speed Vc (m/min)
P	Low carbon steel (C15, C20, etc.)	- 300 HB	AH725	ETX	80 - 180
		- 300 HB	AH725	EGM	80 - 180
	Carbon steel, Alloy steel (C55, 42CrMoS4, etc.)	- 300 HB	AH725	ETX	80 - 180
		- 300 HB	AH725	EGM	80 - 180
	Prehardened steel (NAK80, PX5, etc.)	- 300 HB	AH725	ETX	80 - 180
		- 300 HB	AH725	EGM	80 - 180
M	Stainless steel (X5CrNi18-9, X5CrNiMo17-12-2, etc)	-	AH725	ETX	50 - 120
		-	AH725	EGM	50 - 120

INSERTS

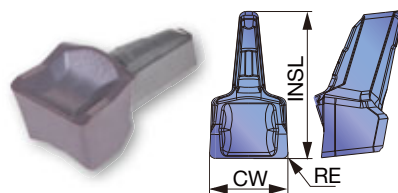
ETX



Description	Grade AH725	CW±0.05	INSL	RE
ETX4-040	✓	4	8	0.4
ETX5-040	✓	5	10	0.4
ETX6-040	✓	6	12	0.4

✓ : Stocked items

EGM



Description	Grade AH725	CW±0.05	INSL	RE
EGM4-030	✓	4	8	0.3

✓ : Stocked items

PARTS FOR COOLANT HOSE

Connecting hose

Fig. 1

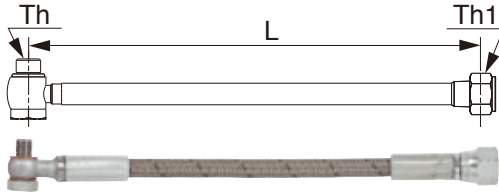
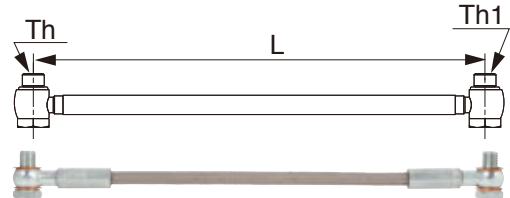
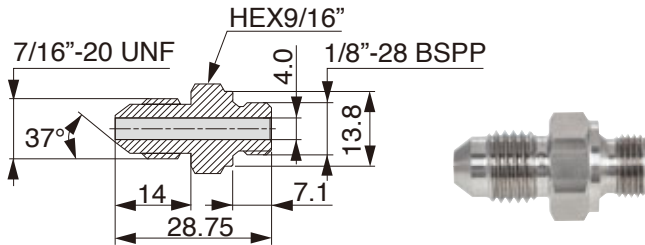


Fig. 2



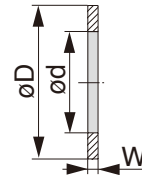
Designation	Length L	Threading size		Max. pressure (MPa)	Fig.
		Th	Th1		
CHP-HOSE-G1/8-7/16-200BS	200	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-G1/8-7/16-250BS	250	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-5/16-7/16-200BS	200	5/16"-24UNF	7/16"-20 UNF	20	1
CHP-HOSE-5/16-G1/8-200BS	200	5/16"-24UNF	G1/8"-28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

Connector



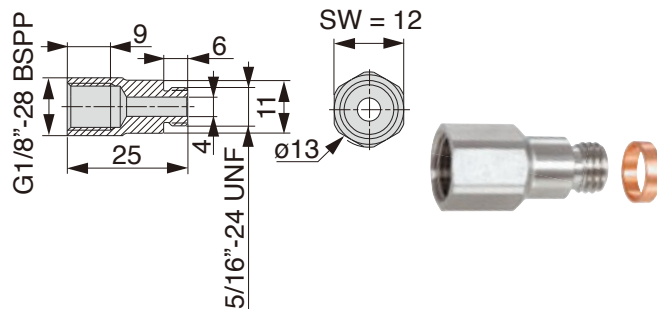
Designation
CHP-NIPPLE-G1/8-7/16UNF

Seal washer



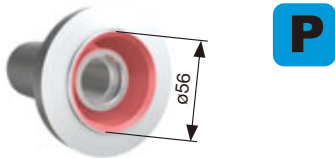
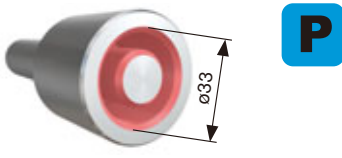
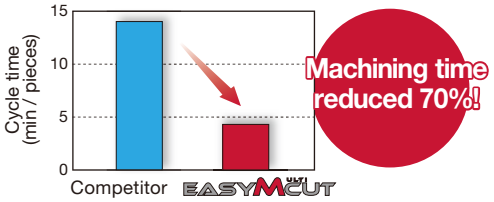
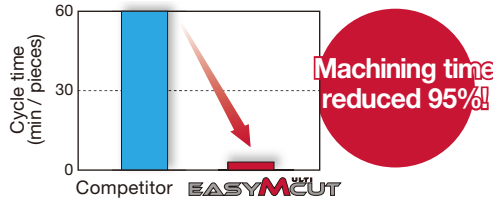
Designation	øD	ød	W
CHP-COPPER-SEAL1/8	15	10	1
CHP-COPPER-SEAL5/16	11	8	1
CHP-COPPER-SEAL5/16-2.5	11	8	2.5

Connector for small lathe with seal washer



Designation
CHP-CONNECTOR/5/16-G1/8

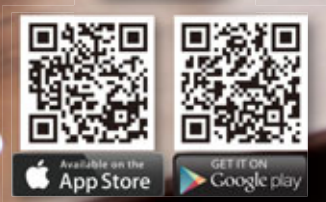
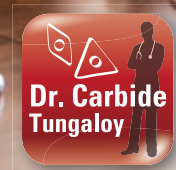
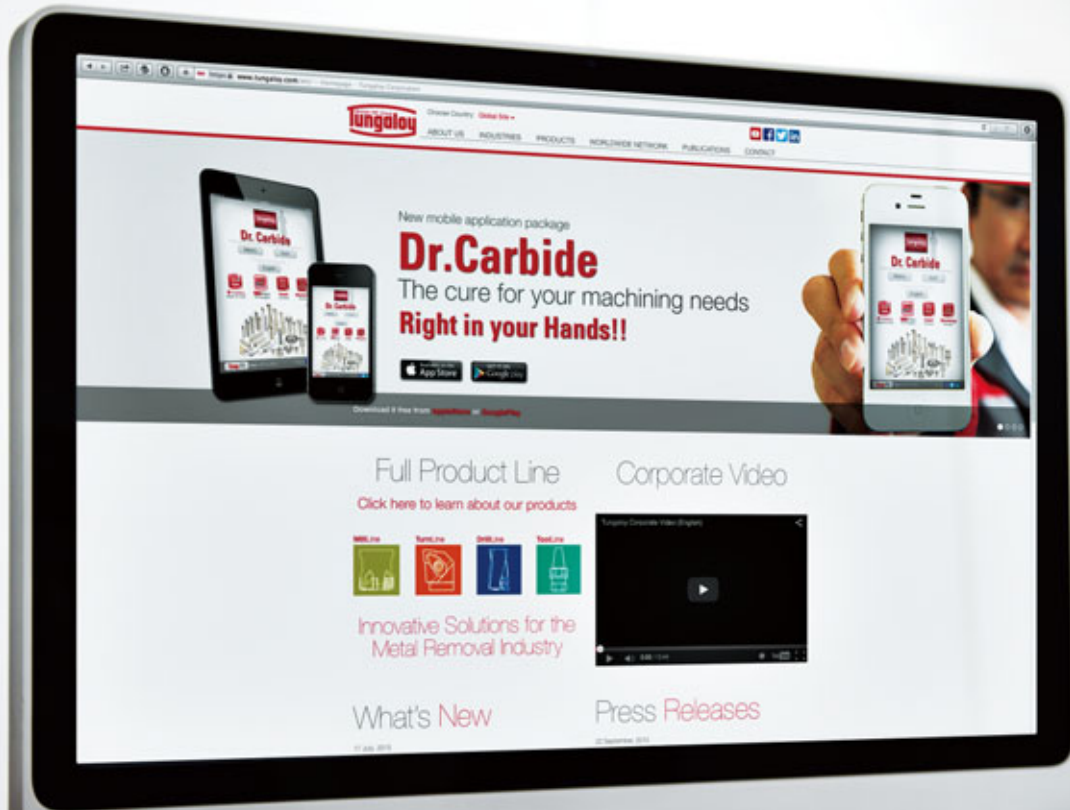
PRACTICAL EXAMPLES

Workpiece type		Puncher part	Endcap
Toolholder		CTBU25-055-6-CHP + EFPR-6-045055	CTBU25-030-4-CHP + EFPR-4-030035
Insert		ETX6-040	ETX4-040
Grade		AH725	AH725
Workpiece material		SCM435 / 34CrMo4	S45C / C45
			
Cutting conditions	Groove width : W (mm)	6	4
	Groove depth : a_r (mm)	53	50
	Cutting speed : V_c (m/min)	65	100
	Feed : f (mm/rev)	0.07	0.1
	Machining	Face grooving	Face grooving
Coolant		Wet	Wet
Results		 <p>Machining time reduced 70%! </p>	 <p>Machining time reduced 95%! </p>
		<p>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.</p>	<p>Usually, the customer used 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 in chip control.</p>

MEMO

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares. The grid is positioned below the 'MEMO' header and occupies most of the page area.

Check our site and our App to get more info!



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