

THE NEW VALUE FRONTIER



High efficiency milling cutter  
for finishing aluminum

**MFAH**

# MFAH



Low cutting force minimizes burr and chipping for high quality machining

Easily adjust runout for highly efficient machining

Large lineup for various milling applications

Steel body and light-weight hybrid body with internal coolant available

3 different cutting edge designs



Light-weight hybrid body



Steel body

High efficiency milling cutter for finishing aluminum

# MFAH

Low cutting force minimizes burr for high quality machining

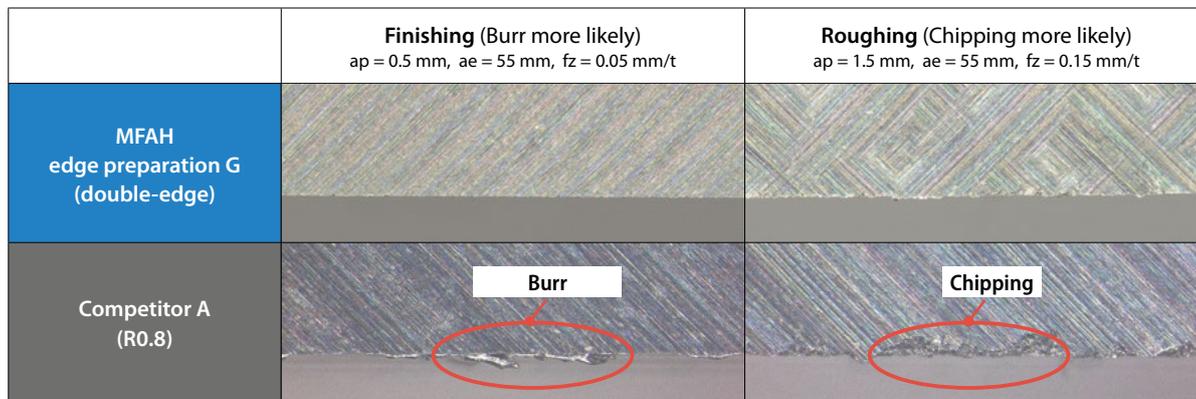
Easy runout adjustment

2 body types and 3 inserts for a variety of milling applications

## 1 Minimizes burr for high quality machining

Large rake angle and double-edge insert designs

Burr and chipping comparison (Internal evaluation)

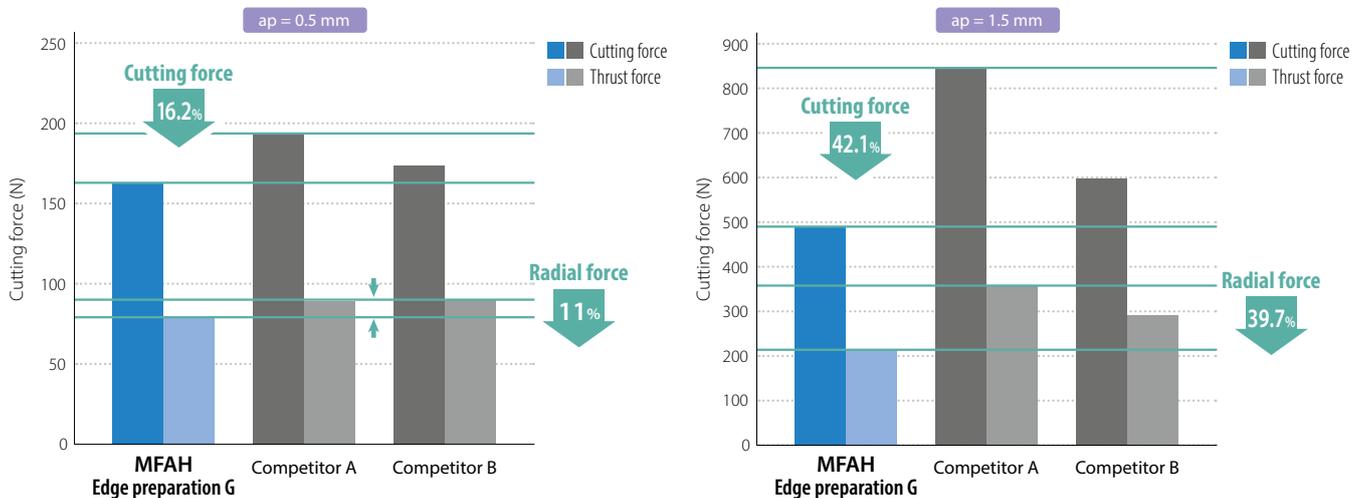


Cutting conditions: Vc = 2,500 m/min, wet, cutting diameter ø80  
MFAH080RS-10T-SF, ENET0905PAER-G KPD001  
Workpiece: AC-ALSi9Cu3(Fe)

## 2 Low cutting force design

Low cutting force, reduced chattering and high efficiency machining

Cutting force comparison (Internal evaluation)



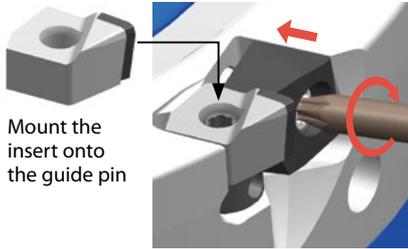
Cutting conditions: Vc = 2,500 m/min, ae = 55 mm, fz = 0.1 mm/t, wet, cutting diameter ø80  
MFAH080RS-10T-SF, ENET0905PAER-G KPD001 workpiece: AC-ALSi9Cu3(Fe)

# 3 Easy adjustable runout

## Easily install inserts and adjust runout

### Easy insert mounting

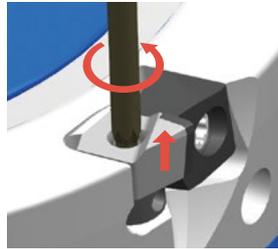
Guide pin allows for easier positioning



Mount the insert onto the guide pin

### Easily adjust runout

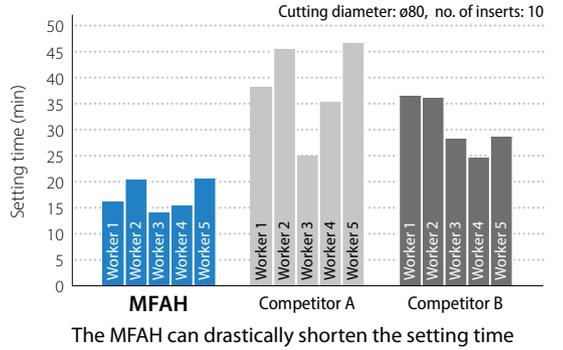
Adjustable from both the front and outer periphery



Unique design for easily adjusting from the front

### Runout setting time comparison (Internal evaluation)

Operation time of 5 workers comparison



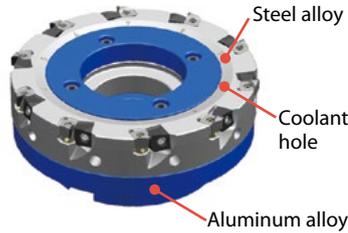
# 4 Large tooling lineup

## Steel body and light-weight hybrid body with internal coolant available

### 3 different edge designs offer a variety of machining applications



**Steel body**  
ø 50 mm - ø 125 mm

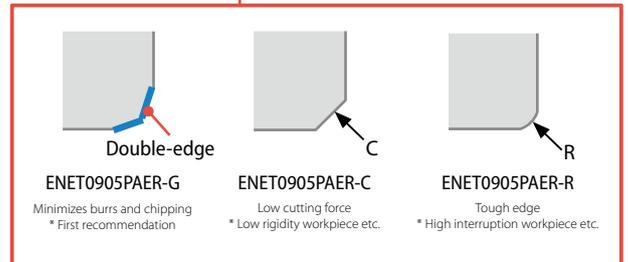


**Light-weight hybrid body**  
ø 80 mm - ø 315 mm

### Insert (edge design)

PCD (KPD001)

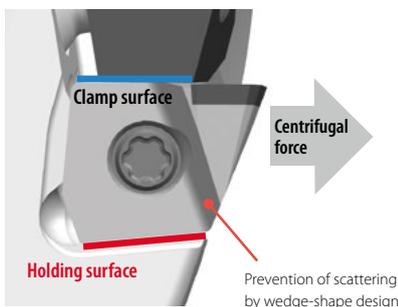
3 different edge designs offer a variety of machining applications



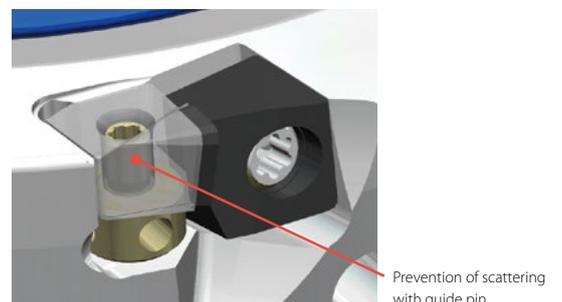
# 5 Safety enhancements during high-speed revolution

## Scattering prevention

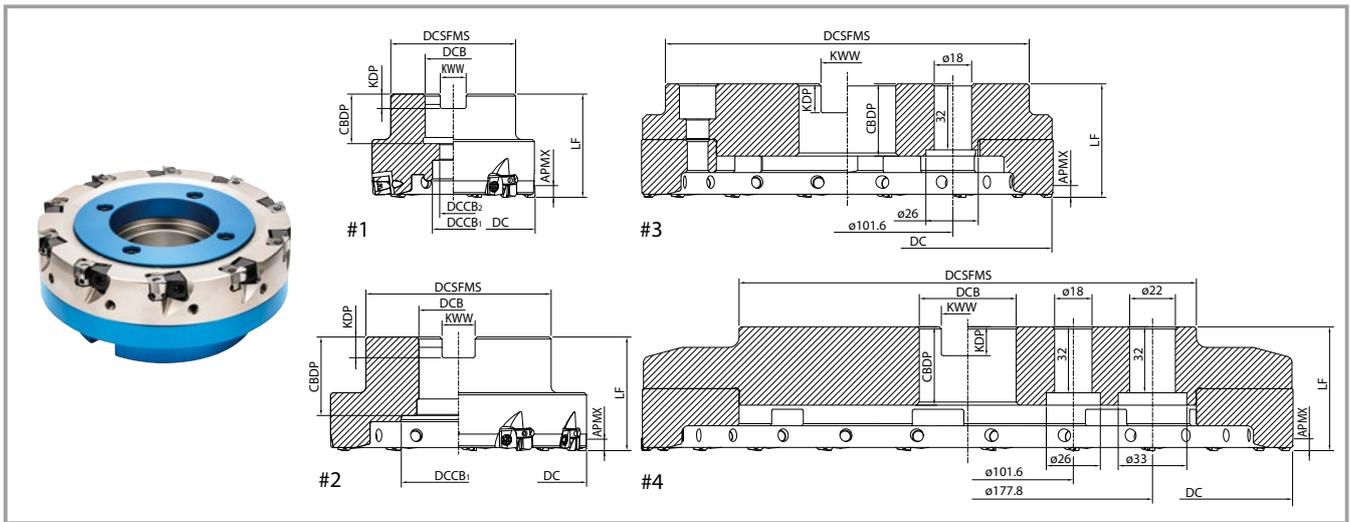
1 Prevention of scattering by wedge-shape design  
New feature holds insert firmly in place and reduces chattering



2 Prevention of scattering with guide pin  
Guide pins improve safety at high speeds



# MFAH (Light-weight hybrid body)



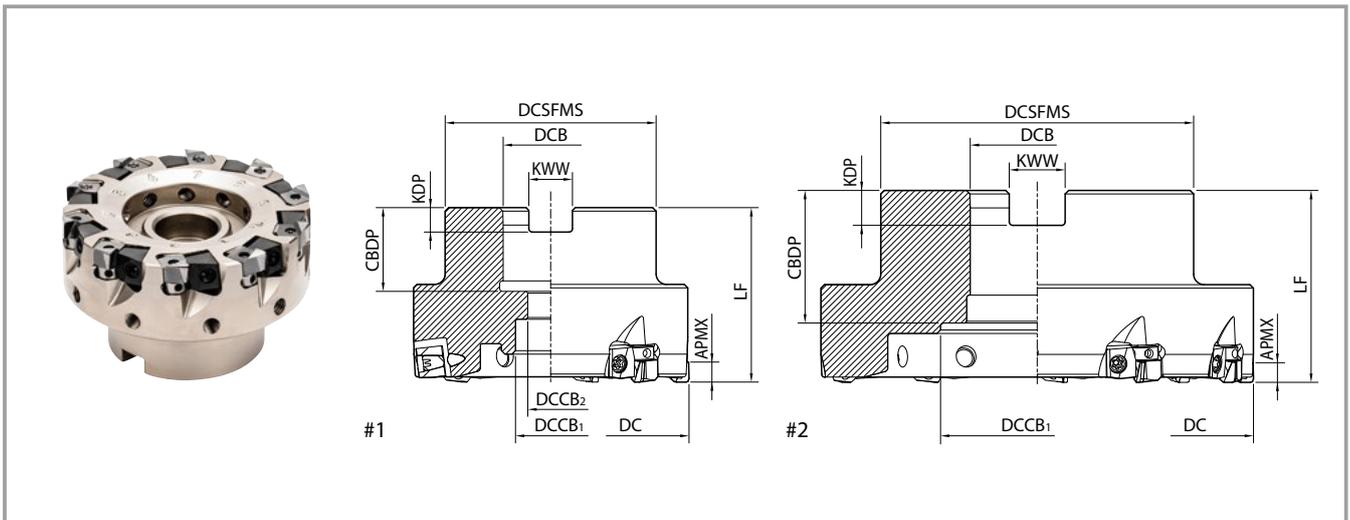
## Toolholder dimensions

Description	Availability	No. of inserts	Dimension (mm)										Coolant hole	Drawing	Max. revolution (min <sup>-1</sup> )	Weight (kg)	Arbor bolt (Attachment)	Coolant cover (Attachment)	Coolant cover (Optional)
			DC	DCSFMS	DCB	DCCB <sub>1</sub>	DCCB <sub>2</sub>	LF	CBDP	KDP	KWW	APMX							
MFAH 080RA-6T-M-SF	●	6	80	62	27	20	13	27	7.0	12.4				#1	14,600	0.82	HH12X35HC	-	
MFAH 080RA-10T-M-SF	●	10						24								0.78			
MFAH 100RA-8T-M27-SF	●	8	100	85	32	42	-	50	8.0	14.4			#2	13,000	1.20	HF16X48HC	-		
MFAH 100RA-12T-M27-SF	●	12						30							1.15				
MFAH 100RA-8T-M-SF	●	8	125	60	27	20	13	55	9.0	16.4	4.6	Yes	#1	11,400	1.80	HH12X35H	CC-125-MFAH		
MFAH 100RA-12T-M-SF	●	12													24				1.32
MFAH 125RA-10T-M27-SF	●	10	125	94	40	55		55	9.0	16.4	4.6	Yes	#2	8,000	1.73	HF20X53HA	CC-160-MFAH		
MFAH 125RA-16T-M27-SF	●	16													33				1.27
MFAH 125RA-10T-M-SF	●	10	160	125	57		55	55	9.0	16.4	4.6	Yes	#1	11,400	2.1	HF20X53HA	CC-160-MFAH		
MFAH 125RA-16T-M-SF	●	16													33				2.1
MFAH 160RA-12T-M-SF	●	12	160	125	57		55	55	9.0	16.4	4.6	Yes	#2	8,000	3.5	HF24X60HA	CC-160-MFAH		
MFAH 160RA-20T-M-SF	●	20													3.4				
MFAH 200RA-16T-M-SF	△	16	200	175	126	-	55	55	14.0	25.7	4.6	Yes	#3	5,600	4.7	-	-	CC-200-MFAH	
MFAH 200RA-24T-M-SF	△	24													4.6				
MFAH 250RA-20T-M-SF	△	20	250	140	60	165	55	55	14.0	25.7	4.6	Yes	#3	4,500	6.9	-	-	CC-250-MFAH	
MFAH 250RA-32T-M-SF	△	32													6.8				
MFAH 315RA-24T-M-SF	△	24	315	220	220		55	55	14.0	25.7	4.6	Yes	#4	3,500	11.7	-	-	CC-315-MFAH	
MFAH 315RA-40T-M-SF	△	40													11.5				

Confirm the total weight of the cutter and the arbor is within the machine's acceptable range

● : Available    △ : Made to Order

# MFAH (Steel body)



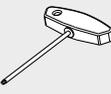
## Toolholder dimensions

Description	Availability	No. of inserts	Dimension (mm)									Coolant hole	Drawing	Max. revolution (min <sup>-1</sup> )	Weight (kg)	Arbor bolt (Attachment)		
			DC	DCSFMS	DCB	DCCB <sub>1</sub>	DCCB <sub>2</sub>	LF	CBDP	KDP	KWW						APMX	
MFAH 050RS-4T-M-SF	●	4	50	48	16	13.6	9	40	19	5.6	8.4	4.6	No	19,200	0.44	HH8X25		
MFAH 050RS-5T-M-SF	●	5													0.43			
MFAH 063RS-5T-M-SF	●	5	63	61	22	23	11		21	6.3	10.4				16,800		0.69	HH10X30
MFAH 063RS-6T-M-SF	●	6															0.68	
MFAH 080RS-6T-M-SF	●	6	80	60	27	20	13	24	7.0	12.4	14,600						1.16	
MFAH 080RS-10T-M-SF	●	10													1.11			
MFAH 100RS-8T-M-SF	●	8	100	70	32	45	50	30	8.0	14.4	13,000			1.56	-			
MFAH 100RS-12T-M-SF	●	12												1.51				
MFAH 125RS-10T-M-SF	●	10	125	89	40	55	55	33	9.0	16.4	11,400			2.6				
MFAH 125RS-16T-M-SF	●	16												2.5				

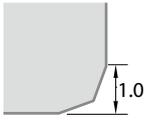
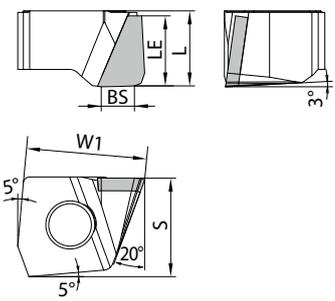
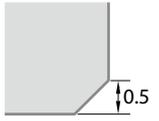
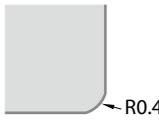
Confirm the total weight of the cutter and the arbor is within the machine's acceptable range

● : Available

## Spare parts

Description		Clamp	Clamp screw	Wrench	Adjust screw	Wrench	Balance screw	Anti-seize compound	Applicable inserts
									
Light-weight hybrid body	MFAH080RA- ... ? MFAH315RA- ...	C08R	WSX13L	TTW-15	AJ-4170	DTPM-8	HS6X4	P-37	ENET0905***
Steel body	MFAH050RS- ... ? MFAH125RS- ...								

## Applicable inserts

Shape		Description	Dimension (mm)					PCD	
			W1	S	L	BS	LE	KPD001	
			ENET 0905PAER-G	9.61	7.9	6.02	2.6	5.6	●
			ENET 0905PAER-C	9.61	7.9	6.02	3.0	5.6	●
			ENET 0905PAER-R	9.61	7.9	6.02	3.1	5.6	●

●: Available

## Recommended cutting conditions

### Recommended cutting conditions

Workpiece	Property	Vc (m/min)	fz (mm/t)	Recommended grade
Aluminum alloy	Si ratio 12.5% or below	1,000 – 2,500 – 3,000	0.05 – 0.10 – 0.20	KPD001
	Si ratio 12.5% or above	400 – 600 – 800	0.05 – 0.10 – 0.20	

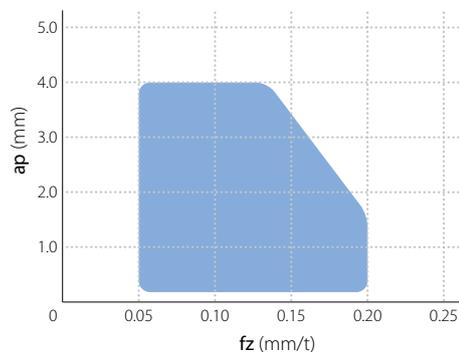
Recommended cutting conditions are reference values

Please adjust cutting speed and feed rate according to actual machining conditions taking into account machine and workpiece rigidity

Do not use the cutter at speeds exceeding the maximum cutting speed limit

### Cutting performance

#### BT50 M/C (Machine power 30 kw)



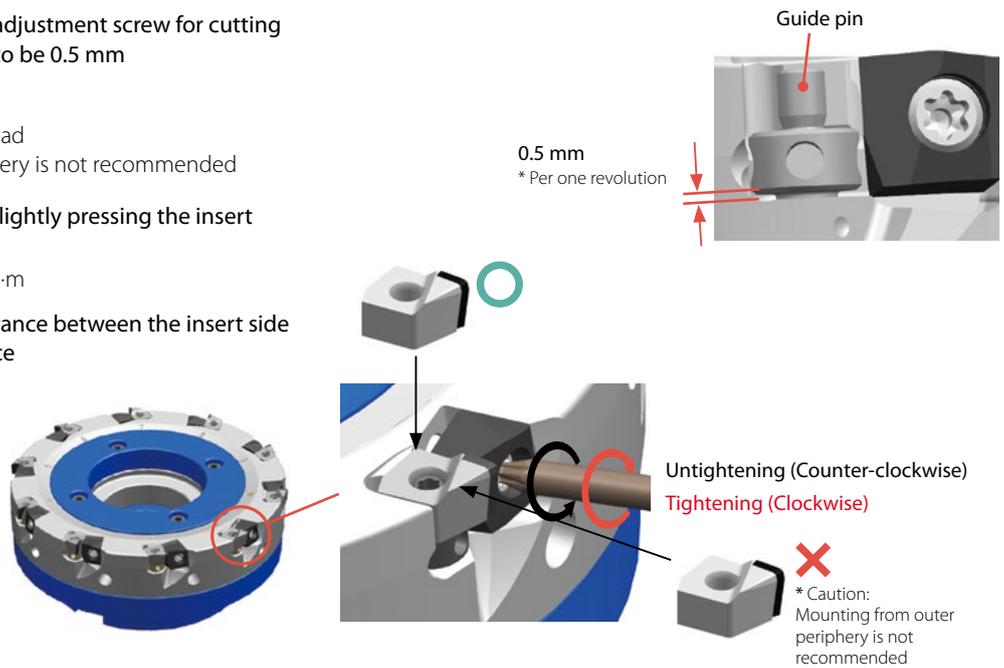
Cutting conditions: Vc = 2,500 m/min, ae = 55 mm, wet, cutting diameter ø80  
MFAH080RS-10T-SF ENET0905PAER-G KPD001 Workpiece: AC-AISI9Cu3(Fe)

### Max. revolution and max. cutting speed for each cutting diameter

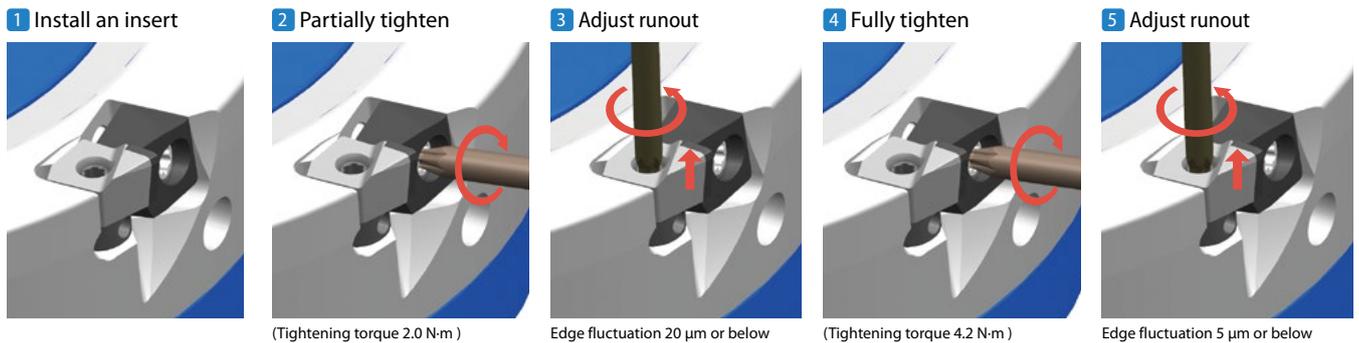
Cutting diameter øD (mm)	Cutter max. revolution n (min <sup>-1</sup> )	Max. cutting speed Vc max (m/min)
ø50	19,200	3,016
ø63	16,800	3,325
ø80	14,600	3,669
ø100	13,000	4,084
ø125	11,400	4,477
ø160	8,000	4,021
ø200	5,600	3,519
ø250	4,500	3,534
ø315	3,500	3,464

## How to mount insert

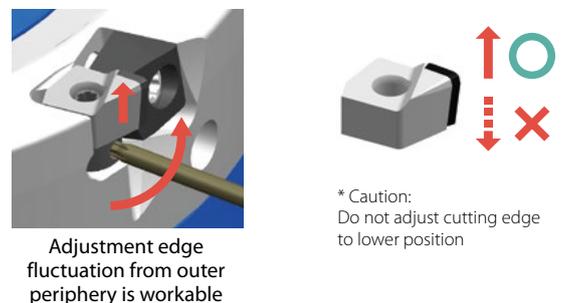
- 1 Adjust the clearance between adjustment screw for cutting edge and the surface of insert to be 0.5 mm
- 2 Mount insert on guide pin
  - Be sure to install from the head
  - Mounting from outer periphery is not recommended
- 3 Tighten the clamp screw while lightly pressing the insert against the holding surface
  - Recommended Torque 4.2 N·m
- 4 Make sure that there is no clearance between the insert side surfaces and the holding surface



## How to adjust runout



- 1 Install inserts into all pockets
- 2 Partially tighten the clamp screw
  - Recommended torque 2.0 N·m
- 3 Turn the screw with the wrench to adjust and make sure that all screw heights are within 20 μm of each other (Recommended)
- 4 Fully tighten the clamp screw with tightening torque 4.2 N·m
- 5 Slightly adjust position of cutting edge
  - Recommended position difference: 5 μm or below
  - All inserts should be fine-tuned



## Cautions

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### While in use

Please use within recommended cutting conditions

Do not run the cutter at revolutions exceeding the printed maximum revolution limit of the cutter body

- Inserts or cutter body may be damaged due to the centrifugal force and cutting load

Please do not use under the following conditions:

- When cutter is not fully loaded with inserts
- If the body and/or clamp is damaged
- If a clamp or clamp screw is removed
- If inserts that have different regrind amounts are mounted

Please wear protective equipment such as protective glove when changing inserts or adjusting edge fluctuation

- Injury can occur when touching the cutting edge

### Dynamic balance

Balance adjustment on the cutter is completed before shipping

Balance adjustment has been made with special high precision inserts to be ISO balance grade (ISO1940/1) G2.5

- See P5 for recommended cutting conditions at max. revolution

Do not operate the balance adjustment screw at the outer periphery of cutter

- This could lead to improper dynamic balance

Do not completely remove clamp and clamp screw from cutter

- This requires additional balance adjustment

