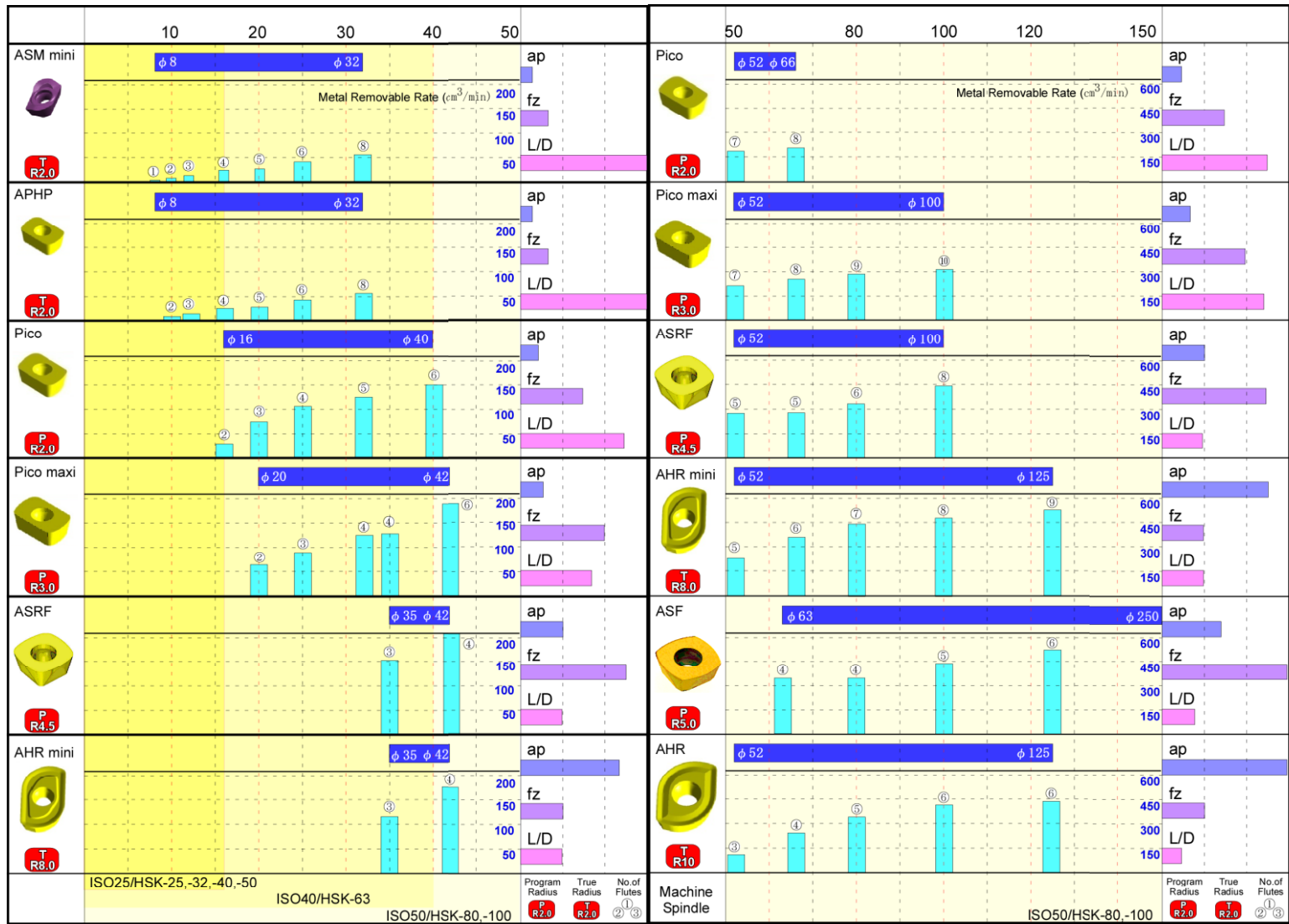




## Hitachi Indexable Family


Hitachi Tool Engineering Europe GmbH, Tadahiro Hibata

## Hitachi High Feed Family

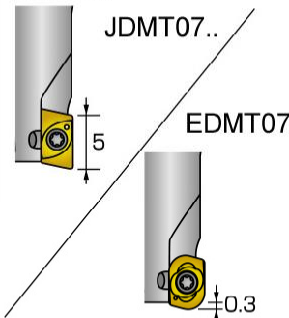


## ASM / AHUmini

**Tool**



**Insert**



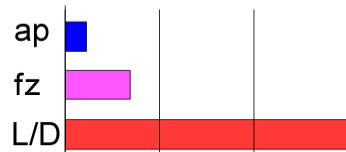
JDMT07..  
EDMT07..

Dia. Tolerance  
-0.1  
-0.2

T<sub>RADIUS</sub>  
2.0

Screw  
0.5Nm

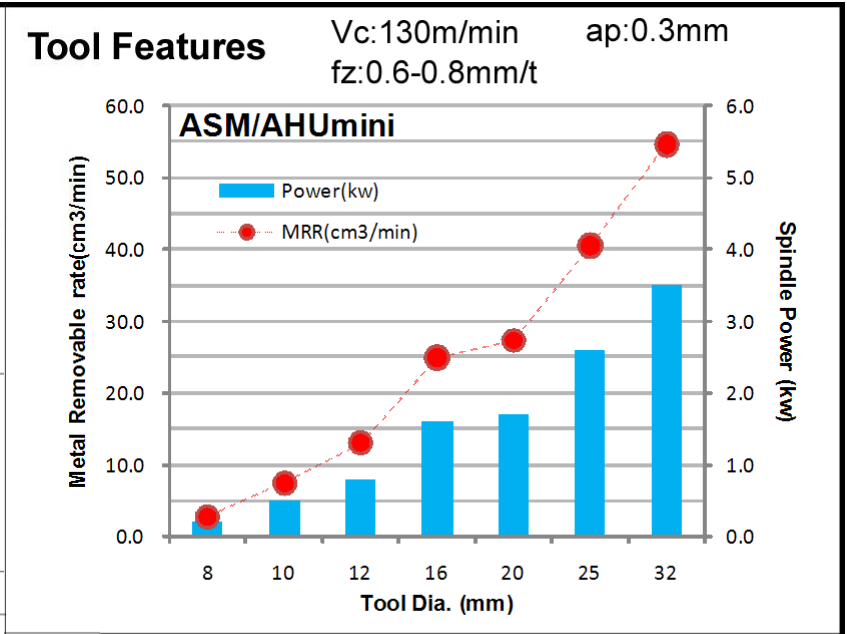
**Tool character**



ap  
fz  
L/D

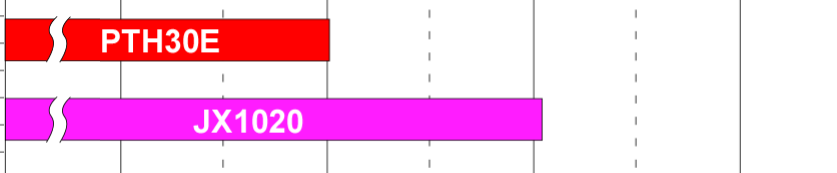
**Range**

Dia	8	10	12	16	20	25	32	
flutes	1	2	3	4	5	6	8	
Total length (mm)	100	100	100	100	100	100	100	
	200	200	200	200	200	200	200	
	300	300	300	300	300	300	300	
Ramp angle	J	8.3	7.3	5.0	2.9	2.0	1.5	1.0
	E	6.4	6.6	4.1	2.2	1.4	1.0	0.8
Helical Bore	10-15	13-19	17-23	25-31	33-39	43-49	57-63	



**Insert grade** K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>

HRc 30 40 50 60




PTH30E  
JX1020

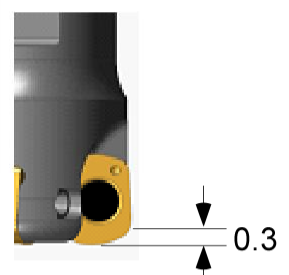
**Remarks**  
Exchangeable to Solid endmill

## APHP

**Tool**



**Insert** EPHW04..



0.3

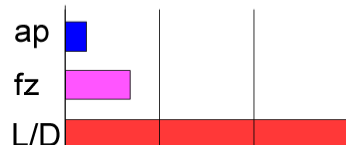
**Dia. Tolerance**  
-0.046  
-0.096

**T RADIUS**  
2.0

**Screw**  
0.5Nm

**Tool Features** Vc:75m/min ap:0.2mm  
fz:0.3-0.4mm/t

**Tool character**

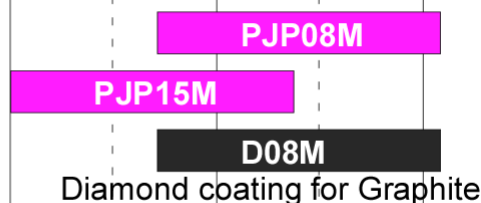


**Range**

Dia	8	10	12	16	20	25	32
flutes	1	2	3	4	5	6	8

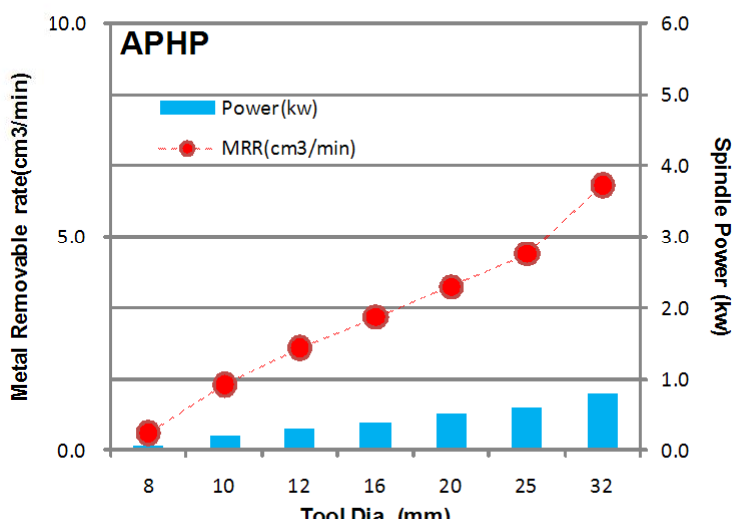
**Insert grade** K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>

HRc 30 40 50 60



**Remarks**  
Target: Hardened steel.

**Graph: APHP**



Tool Dia. (mm)	Power (kw)	MRR (cm <sup>3</sup> /min)
8	0.1	0.2
10	0.2	0.5
12	0.3	1.0
16	0.4	1.8
20	0.5	2.5
25	0.6	3.2
32	0.7	4.0

**Total length (mm)**

	8	10	12	16	20	25	32
100	Yes	Yes	Yes	Yes	Yes	Yes	Yes
200					Yes	Yes	Yes
300						Yes	Yes

**Ramp angle**


	8	10	12	16	20	25	32
	6.4	6.6	4.1	2.2	1.4	1.0	0.8

**Helical Bore**

	8	10	12	16	20	25	32
	10-15	13-19	17-23	25-31	33-39	43-49	57-63

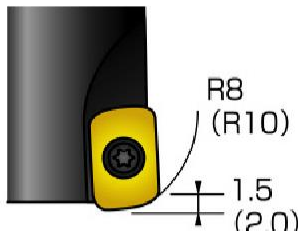
## Pico

**Tool**



**Insert**

EPNW06..  
EPMT06..



R8 (R10)  
1.5 (2.0)

**Dia. Tolerance**  
0  
-0.2

**P RADIUS**  
2.0

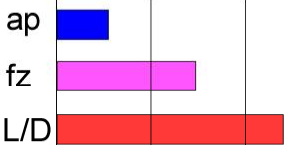
**Screw**  
1.1Nm

**Tool Features**

Vc:130m/min  
fz:0.8-1.0mm/t

ap:0.6-0.8mm

**Tool character**



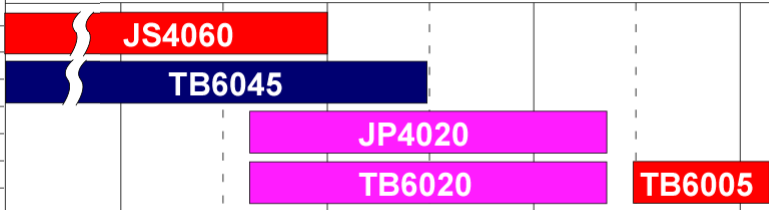
**Range**

Dia	16	20	25	32	40	52	66
flutes	2	3	4	5	6	7	8
Total length (mm)	100						
	200						
	300						
Ramp angle	4.0	3.0	2.0	2.0	1.5	1.0	0.5
Helical Bore	22-30	30-38	40-48	54-62	70-78	94-102	122-130

**Insert grade**

HRc 30    **K<sub>grade</sub>**    **P<sub>grade</sub>**    **Z<sub>grade</sub>**

40                      50                      60

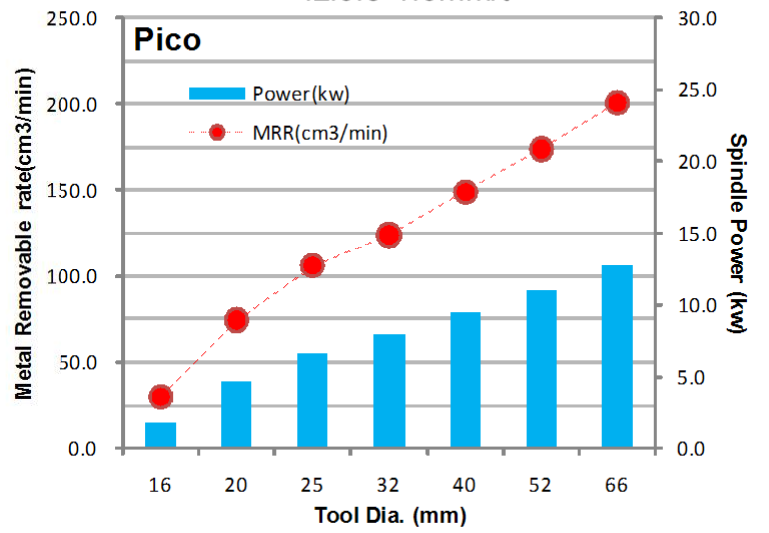


JS4060  
TB6045  
JP4020  
TB6020  
TB6005

**Remarks**

New grade and chip breaker are now available.


**Metric Performance Graph**



Tool Dia. (mm)	Power (kw)	MRR (cm <sup>3</sup> /min)
16	~15	~3
20	~40	~8
25	~55	~11
32	~65	~13
40	~80	~15
52	~95	~18
66	~110	~21

## Pico maxi

**Tool**



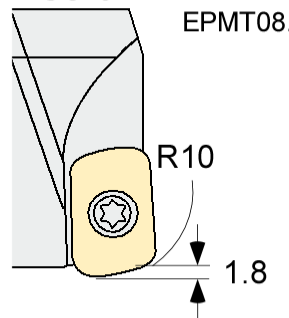
**Insert**

EPNW08..  
EPMT08..

Dia. Tolerance  
-0.1  
-0.2

**P** RADIUS  
**3.0**


Screw  
**2.0Nm**



**Tool Features**

Vc:130m/min    ap:1.0mm  
fz:1.0mm/t

**Tool character**

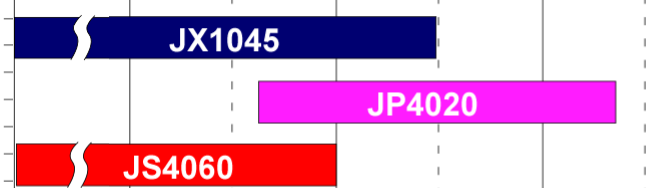


**Range**

Dia	20	25	32	35	42	52	66	80	100
flutes	2	3	4	4	6	7	8	9	10
Total length (mm)	100								
	200								
	300								
Ramp angle	4.5	4.5	4.5	3.5	2.5	1.5	1.0	0.5	0.5
Helical Bore	26-38	36-48	50-62	56-68	70-82	90-102	118-130	146-158	186-198

**Insert grade** K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>

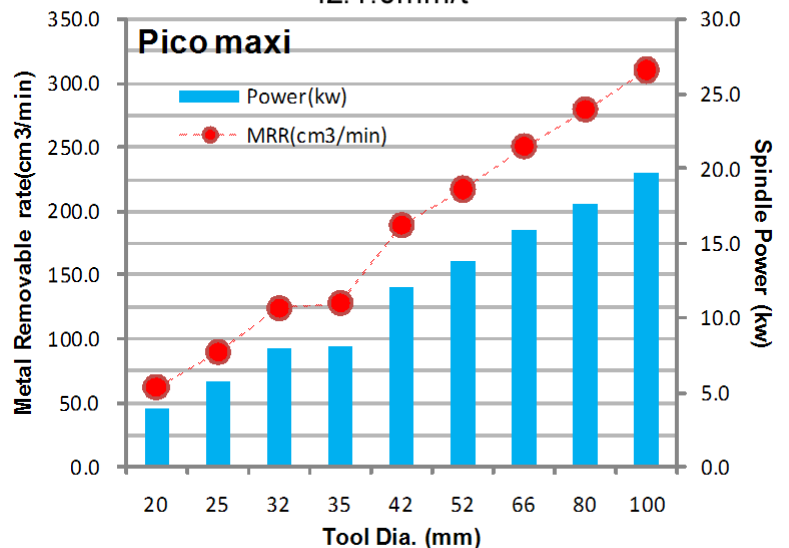
HRc 30                      40                      50                      60



**Remarks**

The insert with chip breaker is available.  
Expand the range (Dia 20, 25)


**Pico maxi**



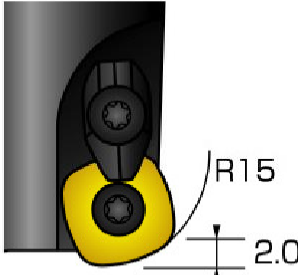
Tool Dia. (mm)	Power (kw)	MRR (cm <sup>3</sup> /min)
20	~45	~60
25	~70	~90
32	~95	~125
35	~95	~125
42	~140	~185
52	~165	~220
66	~185	~250
80	~205	~280
100	~230	~310

## ASRF

**Tool**



**Insert** SDNW12.. SDMT12..



Dia. Tolerance 0 -0.2

P RADIUS 4.5

Screw 3.0Nm

**Tool Features** Vc:130m/min ap:1.5mm  
fz:1.2mm/t

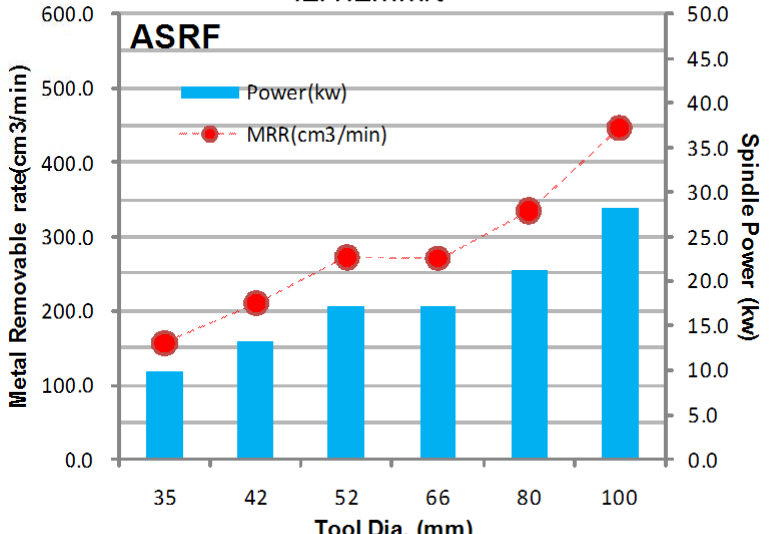
**Tool character**

ap	Blue bar
fz	Pink bar
L/D	Red bar

**Range**

Dia	35	42	52	66	80	100
flutes	3	4	5	5	6	8
Total length (mm)	100, 200, 300	100, 200, 300				
Ramp angle	5.5	4.0	2.5	1.5	1.0	1.0
Helical Bore	48-66	63-80	83-100	112-128	142-156	179-196

**ASRF Performance Graph**



Tool Dia. (mm)	MRR (cm3/min)	Power (kw)
35	~150	~12
42	~220	~18
52	~280	~22
66	~280	~22
80	~350	~28
100	~450	~35


**Insert grade** K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>

HRc 30	40	50	60
JX1045			
GX2030			
JX1060			
JX1020			
JX1005			

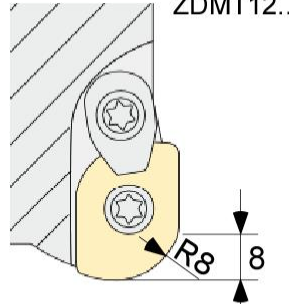
**Remarks**

## AHR mini

**Tool**



**Insert** ZDNW12.. ZDMT12..





**Dia. Tolerance** -0.1 -0.2


**T RADIUS** 8.0

**Screw** 3.0Nm

**Tool character**

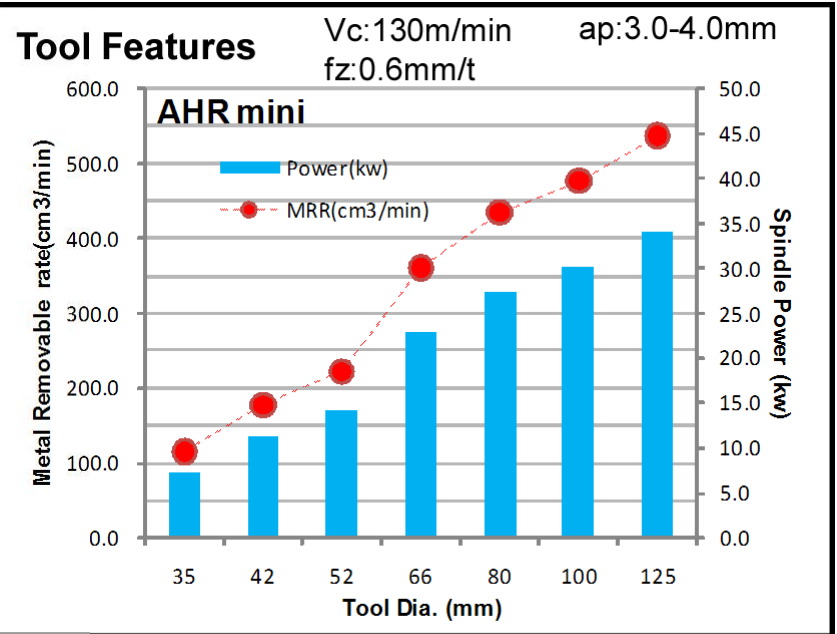
ap 

fz 

L/D 

**Range**

Dia	35	42	52	66	80	100	125
flutes	3	4	5	6	7	8	9
Total length (mm)	100						
	200						
	300						
Ramp angle	10	5.0	3.5	2.5	2.0	1.5	1.0
Helical Bore	47-68	61-82	81-102	109-130	137-158	177-198	227-248



**Insert grade** K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>

HRc 30 40 50 60

JX1045 JX1015

JS4060

JX1060 JX1005


JP4020

**Remarks**

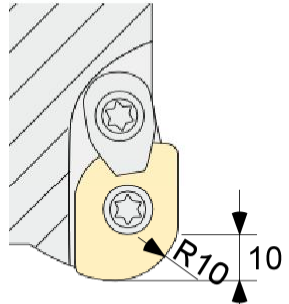


## AHR

**Tool**



**Insert** ZDNW15..





**Dia. Tolerance**  
0  
-0.2


**T RADIUS**  
10.0

**Screw**  
7.5Nm

**Tool character**

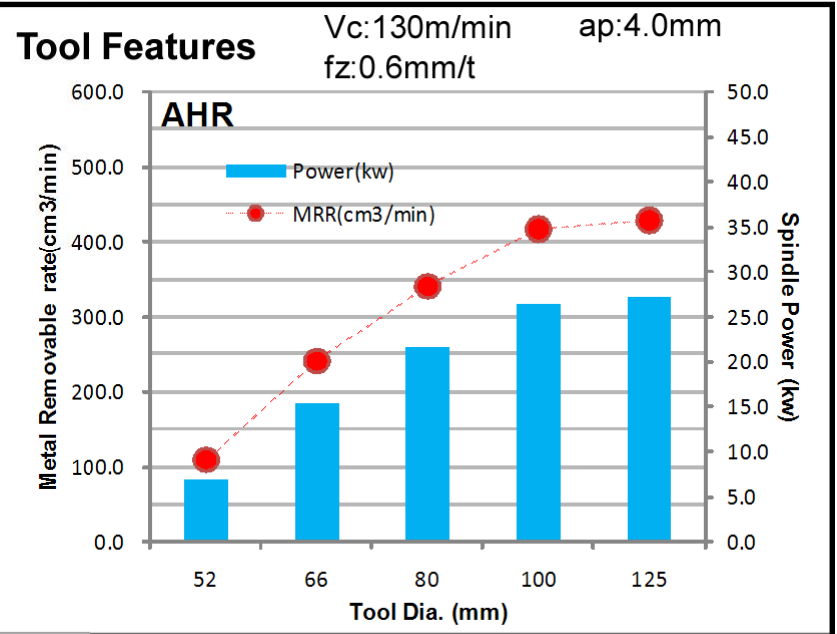
ap 

fz 

L/D 

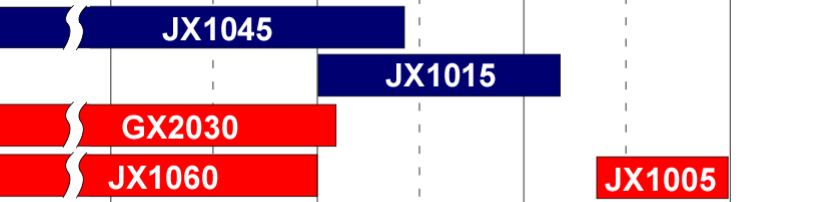
**Range**

Dia	52	66	80	100	125			
flutes	3	4	5	6	6			
Total length (mm)	100							
	200							
	300							
Ramp angle	2.9	1.9	1.3	1.0	0.7			
Helical Bore	80-102	108-130	136-158	176-198	226-248			



**Insert grade** K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>


HRc 30 40 50 60



**Remarks**

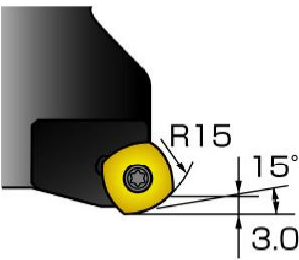
## ASF

### Tool



### Insert

SDNW15..  
SDMT15..



**Dia. Tolerance**  
0  
-0.2

**P RADIUS**  
5.0

**Screw**  
7.5Nm

### Tool Features

Vc:130m/min  
fz:2.0mm/t  
ap:1.5mm

### Tool character

ap	
fz	
L/D	

### Range

Dia	63	80	100	125	160	200	250
flutes	4	4	5	6	8	10	12
Total length (mm)	100	100	100	100	100	100	100
200							
300							
Ramp angle							
Helical Bore	107-124	141-158	181-198	231-248	301-318	381-398	481-498

### Insert grade

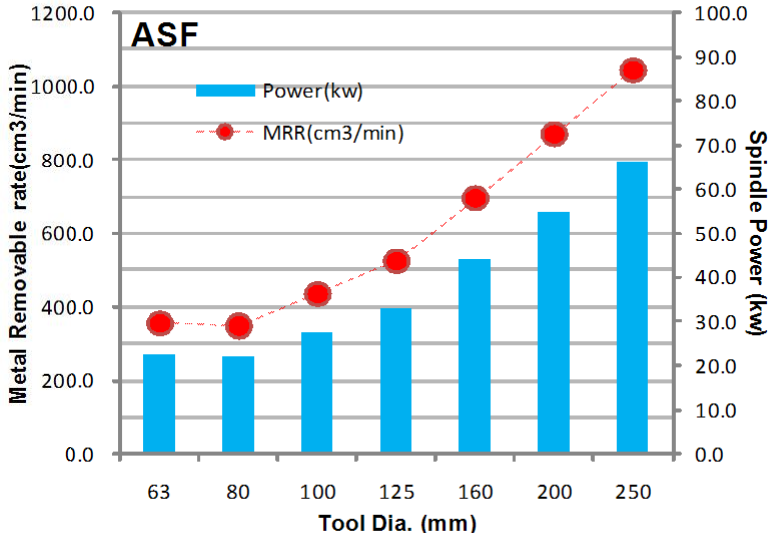
K<sub>grade</sub> P<sub>grade</sub> Z<sub>grade</sub>

HRc 30 40 50 60

TB6045				
	TB6020			
GF30				
TB6060				
			TB6005	

### Remarks

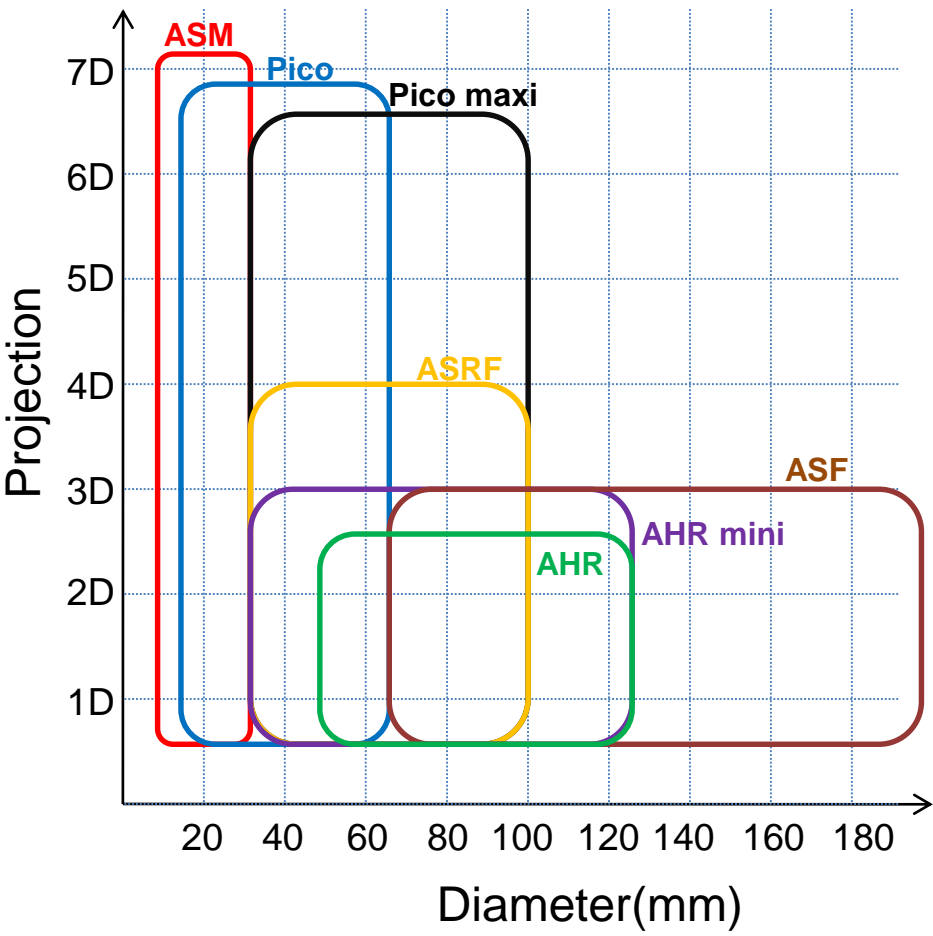
### ASF Performance Graph



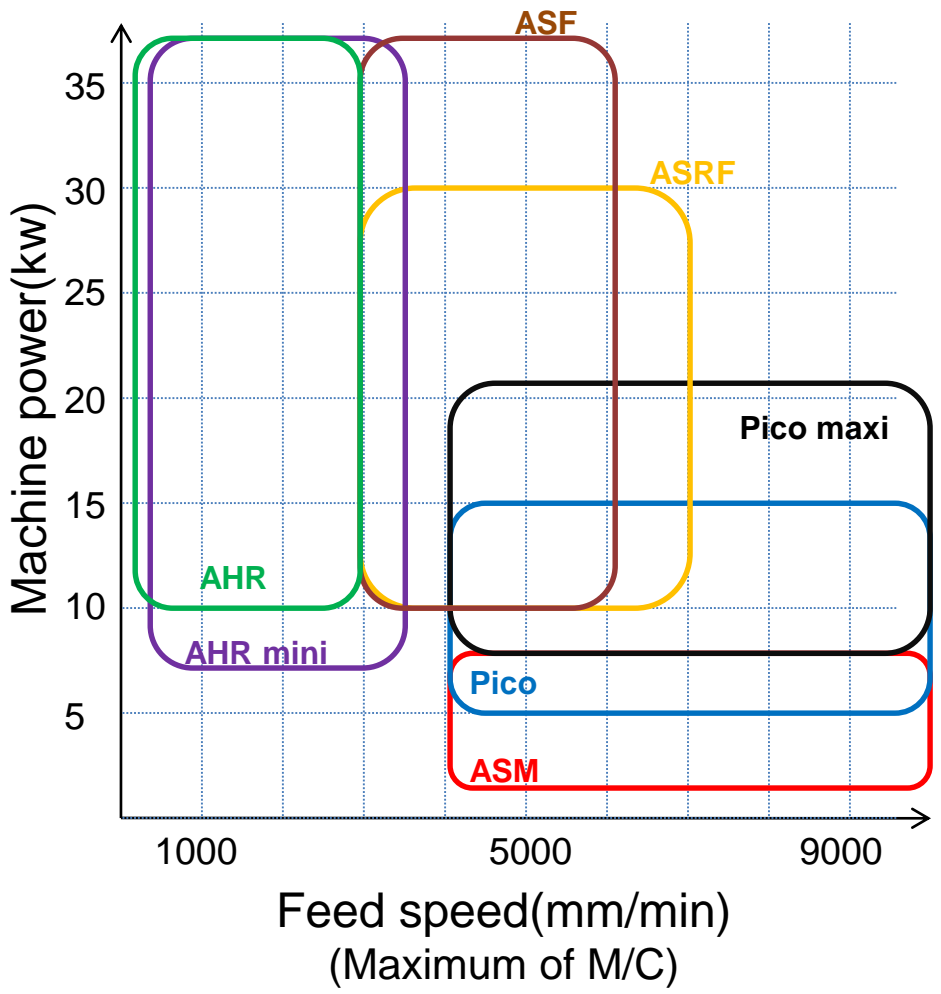
Tool Dia. (mm)	MRR (cm <sup>3</sup> /min)	Power (kw)
63	350	25
80	350	25
100	450	35
125	550	45
160	700	60
200	850	70
250	1050	80

## High feed tool application map


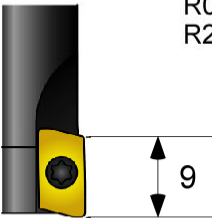



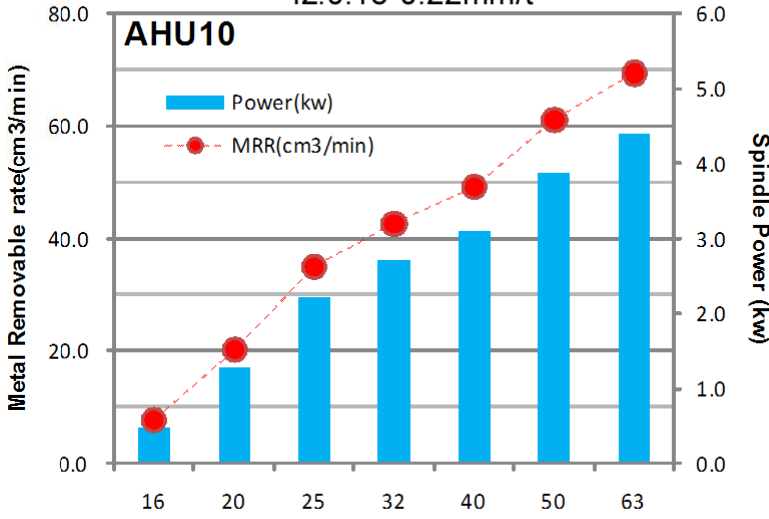




View point: Application




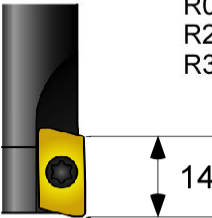



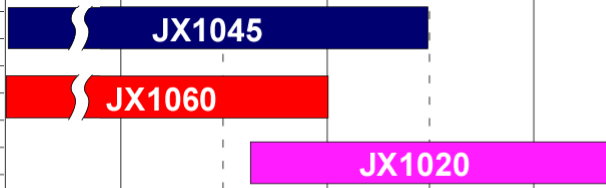
View point: Machine

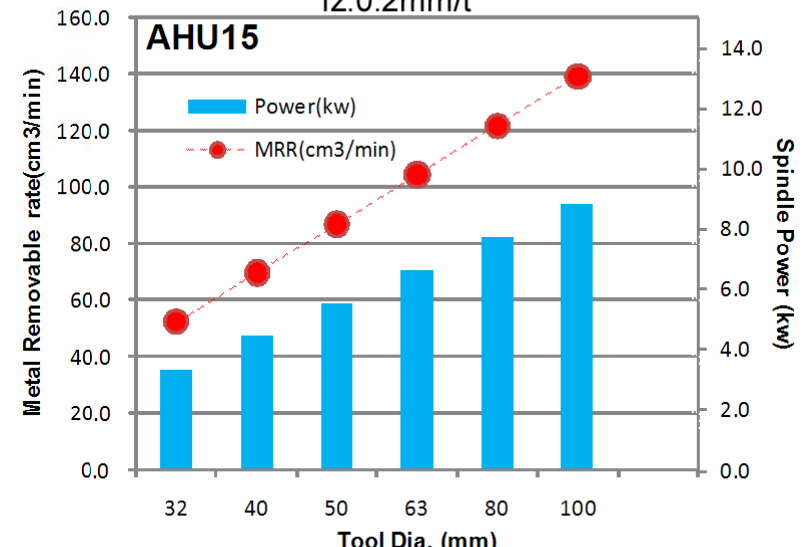


## AHU10

<b>Tool</b> 		<b>Insert</b> JDMT10.. Corner R R0.4 R0.8 R2.0 		Dia. Tolerance -0.2 -0.05 T RADIUS 0.4, 0.8 2.0 Screw 1.1Nm		<b>Tool Features</b> Vc:130m/min    ap:2.5-3mm fz:0.18-0.22mm/t	
<b>Tool character</b> ap  fz  L/D 							
<b>Range</b>							
Dia	16	20	25	32	40	50	63
flutes	2	3	4	5	6	7	8
Total length (mm)	100						
	200						
	300						
Ramp angle	4.0	3.0	2.5	2.0	1.5	1.0	1.0
Helical Bore	21-29	29-37	39-47	53-61	68-80	85-100	107-126
<b>Insert grade</b>		K <sub>grade</sub> P <sub>grade</sub> Z <sub>grade</sub>		HRc 30    40    50    60			
							
<b>Remarks</b>							


## AHU15

<b>Tool</b> 		<b>Insert</b> JDMT15.. Corner R R0.4 R0.8 R2.0 R3.0 		Dia. Tolerance -0.2 -0.05 T RADIUS 0.4, 0.8 2.0, 3.0 Screw 1.1Nm		<b>Tool Features</b> Vc:130m/min fz:0.2mm/t ap:7mm																																														
<b>Tool character</b> ap  fz  L/D 		<b>Range</b> <table border="1"> <tr> <td>Dia</td> <td>32</td> <td>40</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> <td></td> <td></td> </tr> <tr> <td>flutes</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td></td> <td></td> </tr> <tr> <td>Total length (mm)</td> <td>100 200 300</td> <td>100 200 300</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ramp angle</td> <td>4.0</td> <td>3.0</td> <td>2.0</td> <td>1.5</td> <td>1.0</td> <td>1.0</td> <td></td> <td></td> </tr> <tr> <td>Helical Bore</td> <td>47-60</td> <td>64-76</td> <td>83-96</td> <td>109-122</td> <td>143-156</td> <td>183-196</td> <td></td> <td></td> </tr> </table>						Dia	32	40	50	63	80	100			flutes	3	4	5	6	7	8			Total length (mm)	100 200 300	100 200 300							Ramp angle	4.0	3.0	2.0	1.5	1.0	1.0			Helical Bore	47-60	64-76	83-96	109-122	143-156	183-196		
Dia	32	40	50	63	80	100																																														
flutes	3	4	5	6	7	8																																														
Total length (mm)	100 200 300	100 200 300																																																		
Ramp angle	4.0	3.0	2.0	1.5	1.0	1.0																																														
Helical Bore	47-60	64-76	83-96	109-122	143-156	183-196																																														
		<b>Insert grade</b> Kgrade Pgrade Zgrade HRc 30 40 50 60																																																		
																																																				
		<b>Remarks</b>																																																		



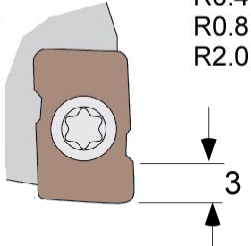
## ASPV

### Tool



### Insert

MPHW06..  
Corner R  
R0.4  
R0.8  
R2.0



3

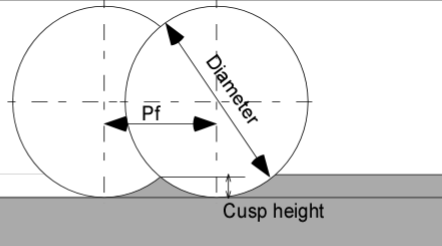
**Dia. Tolerance**  
0  
-0.1

**T RADIUS**  
0.4, 0.8  
2.0.

**Screw**  
1.1Nm

### Tool Features :

Cusp height chart for plunging ( $\mu\text{m}$ )



### Tool character

ap				
fz				
L/D				

### Range

Dia	16	20	25	32	35	42	52	66
flutes	2	3	4	5	5	6	7	8
Total length (mm)	100	200	300	200	200	200		
Ramp angle	2.5	2.5	2.1	1.6	1.4	1.2	1.0	0.5
Helical Bore	22-30	30-38	40-48	54-62	60-68	74-82	94-102	122-130

D \ Pf	0.4	0.5	0.6	0.7	0.8	0.9	1	1.2	1.5
16	2.5	3.9	5.6	7.7	10.0	12.7	15.6	22.5	35.2
20	2.0	3.1	4.5	6.1	8.0	10.1	12.5	18.0	28.2
25	1.6	2.5	3.6	4.9	6.4	8.1	10.0	14.4	22.5
32	1.3	2.0	2.8	3.8	5.0	6.3	7.8	11.3	17.6
35	1.1	1.8	2.6	3.5	4.6	5.8	7.1	10.3	16.1
42	1.0	1.5	2.1	2.9	3.8	4.8	6.0	8.6	13.4
52	0.8	1.2	1.7	2.4	3.1	3.9	4.8	6.9	10.8
66	0.6	0.9	1.4	1.9	2.4	3.1	3.8	5.5	8.5

### Insert grade

HRc 30      40      50      60

**K<sub>grade</sub>**   **P<sub>grade</sub>**   **Z<sub>grade</sub>**


JX1045      JX1020      ATH08M

SD5010      DLC coating for Aluminium

### Remarks

## ABPF

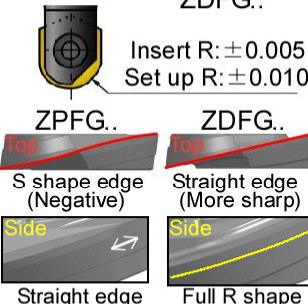
### Tool



### Insert

ZPFG..  
ZDFG..

Insert R: ±0.005  
Set up R: ±0.010



ZPFG..  
S shape edge (Negative)

ZDFG..  
Straight edge (More sharp)

Straight edge      Full R shape

**Radius Tolerance**  
-0.01  
0.01

**T<sub>R</sub>RADIUS**  
R4  
- R16

**Screw**  
1.5 - 7  
Nm

### Tool Features :

Depth of cut for Cusp height **2 μm**

	0 degree		15 degree		30 degree		45 degree		90 degree	
	ap	ae	ap	ae	ap	ae	ap	ae	ap	ae
8	-	0.252	0.065	0.243	0.126	0.218	0.178	0.178	0.252	-
10	-	0.282	0.073	0.272	0.141	0.244	0.199	0.199	0.282	-
12	-	0.309	0.080	0.298	0.155	0.268	0.218	0.218	0.309	-
16	-	0.357	0.092	0.345	0.179	0.309	0.252	0.252	0.357	-
20	-	0.399	0.103	0.385	0.200	0.346	0.282	0.282	0.399	-
25	-	0.447	0.116	0.432	0.224	0.387	0.316	0.316	0.447	-
32	-	0.505	0.131	0.488	0.253	0.437	0.357	0.357	0.505	-

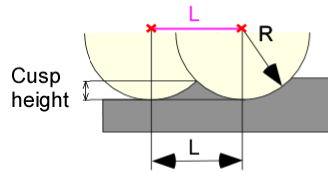
### Tool character

ap				
fz				
L/D				

### Range

Dia	8	10	12	16	20	25	32
flutes	2	2	2	2	2	2	2
Total length (mm)	100	150	200	250	300	350	400
Torque for screw (Nm)	1.5	2.0	5.0	5.0	7.0	7.0	7.0

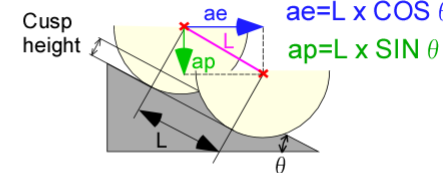
### Flat face (L=ae)



Cusp height

L will be fixed by cusp height and tool R

### Tapered face



Cusp height

$ae = L \times \cos \theta$   
 $ap = L \times \sin \theta$

L is same as flat surface.  
ap and ae will be determined by angle

### Insert grade

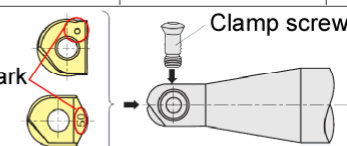
**K<sub>grade</sub>** **P<sub>grade</sub>** **Z<sub>grade</sub>**

HRc 30      40      50      60

PCA12M			
	PCA08M		
		PTH08M	
			ATH80D

### Remarks


To achieve the R tolerance ±0.01mm  
**Check the top mark**



Top mark      Clamp screw

## ARPF

**Tool**



**Insert**

ZCFW..  
Corner R  
R0.3  
R0.5  
R1.0  
R1.5  
R2.0  
R3.0

2.5~10  
(R+wiper)

R±0.015

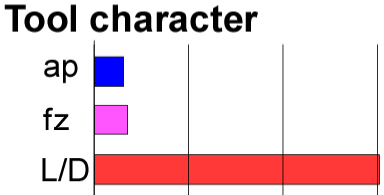
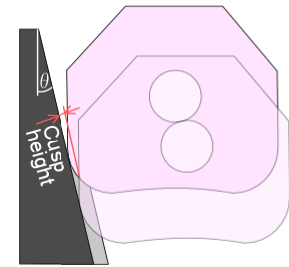
Dia. Tolerance  
-0.01  
0.01

T RADIUS  
R0.3  
- R3.0

Screw  
1.5 - 7  
Nm

**Tool Features :** Depth of cut for Cusp height **2 μm**  
Taper angle  $\theta$

	0.5 degree	1.0 degree	2.0 degree	3.0 degree	5.0 degree
	ap	ap	ap	ap	ap
Corner R					
0.3	0.265	0.152	0.097	0.081	0.071
0.5	0.276	0.164	0.111	0.096	0.089
1	0.297	0.187	0.138	0.128	0.126
1.5	0.313	0.205	0.161	0.155	0.154
2	0.327	0.221	0.182	0.179	0.178
3	0.352	0.250	0.219	0.219	0.218



**Range**

	8	10	12	16	20	25	32
Dia	8	10	12	16	20	25	32
flutes	2	2	2	2	2	2	2
Total length (mm)	100	100	100	100	100	100	100
Length R+wiper	2.5 mm	3.0 mm	4.0 mm	5.0 mm	6.0 mm	8.0 mm	10.0 mm
Torque for screw	1.5 Nm	2.0 Nm	5.0 Nm	5.0 Nm	7.0 Nm	7.0 Nm	7.0 Nm

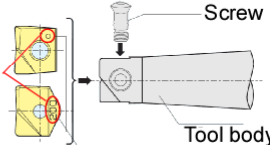
**Insert grade** **Kgrade** **Pgrade** **Zgrade**

HRc 30 40 50 60

**PCA12M**

**Remarks**

To achieve the Runout tolerance  $\pm 0.01\text{mm}$   
**Check the top mark**



Screw

Top mark

Tool body