

Shoulder milling tool

TUNGREC

Tungaloy Report No. 380S2-G

**Now available in DX110 PCD grade
for long tool life and high precision
aluminum machining**

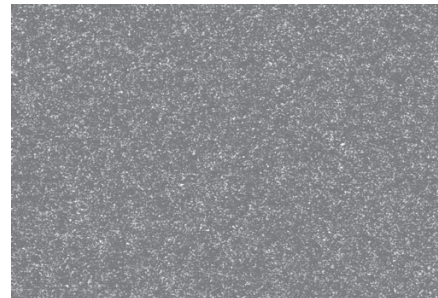




PCD grade for finish machining of ISO N materials

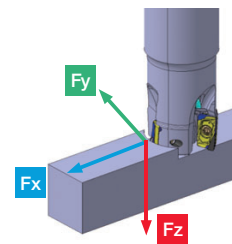
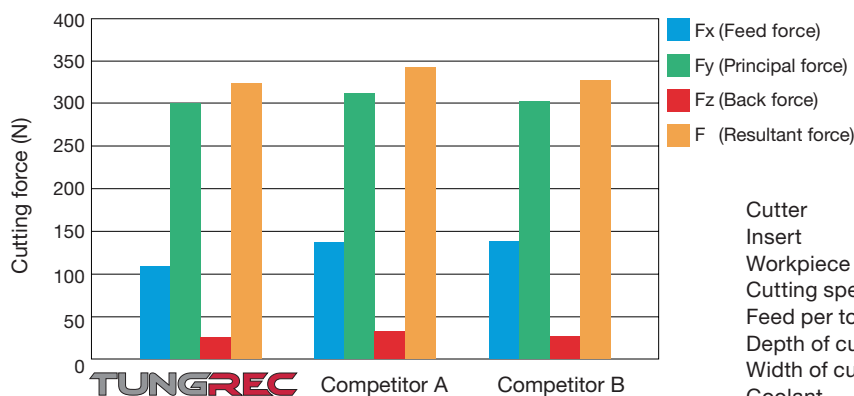
DX110

- Polycrystalline diamond (PCD) grade with ultrafine grain microstructure provides superior surface finishing quality
- Excellent cutting edge integrity that maintains sharpness over long period of time



Microstructure image of DX110

Cutting forces

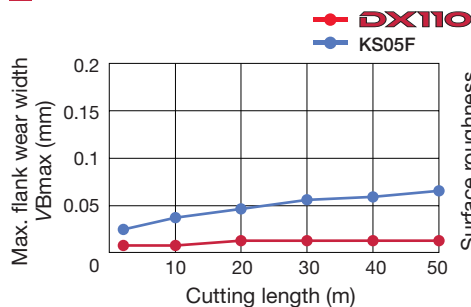


Cutter : EPO11R025M25.0-03 (ø25 mm, z = 3)
 Insert : ASGW11T304PDFR-D DX110 (PCD)
 Workpiece material : ADC12
 Cutting speed : $V_c = 1,000$ m/min
 Feed per tooth : $f_z = 0.1$ mm/t
 Depth of cut : $a_p = 4$ mm
 Width of cut : $a_e = 15$ mm
 Coolant : Wet
 Machine : Vertical M/C, BT40

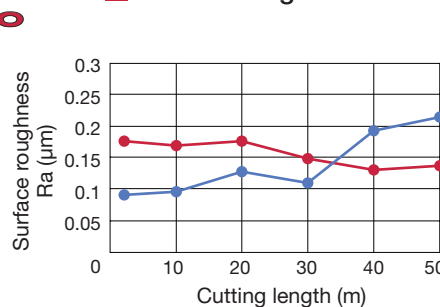
TungRec PCD inserts provide lower cutting forces during machining compared with competitors' PCD tools, making it suitable for long tool overhang applications where chatter is likely to occur.

Surface quality

Wear resistance



Surface roughness

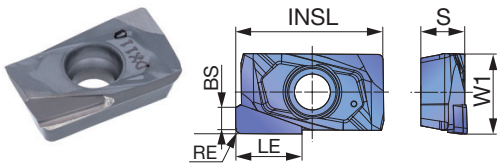


Cutter : EPO11R025M25.0-03 (ø25 mm, z = 3)
 Insert : ASGW11T304PDFR-D DX110 (PCD)
 ASGT11T304PDFR-AJ KS05F (Uncoated carbide)
 Workpiece material : ADC12
 Cutting speed : $V_c = 1,000$ m/min
 Feed per tooth : $f_z = 0.1$ mm/t
 Depth of cut : $a_p = 1$ mm
 Width of cut : $a_e = 15$ mm
 Coolant : Wet
 Machine : Vertical M/C, BT40

PCD grade provides better wear resistance than carbide grade, enabling good surface quality over long period of time.

INSERT

ASGW11-D



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

★ : First choice

Designation	RE	APMX	PCD					LE	INSL	W1	S	BS
			DX110									
ASGW11T302PDFR-D	0.2	4.5	●					5.2	11.8	6.4	3.7	1.8
ASGW11T304PDFR-D	0.4	4.5	●					5.2	11.8	6.4	3.7	1.6

Caution: PCD inserts listed above are not designed to be re-ground and re-used

● : Line up

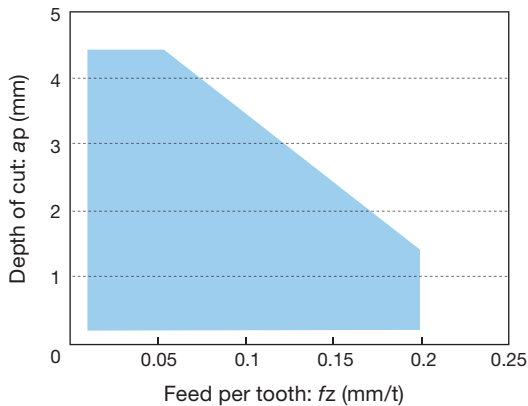
STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grades	Cutting speed V _c (m/min)	Feed per tooth f _z (mm/t)
N	Cast aluminum alloy / Die-cast (Si < 13%)	DX110	500 - 2,000	0.05 - 0.2
	Cast aluminum alloy / Die-cast (Si ≥ 13%)	DX110	200 - 800	0.05 - 0.2
	Aluminum alloy	DX110	500 - 2,000	0.05 - 0.2
	Copper alloy	DX110	200 - 500	0.05 - 0.2

- The values in the above list are of standard recommendations and may require adjustments in consideration with cutting depths and/or workpiece/machine rigidity

- Always use wet cutting (emulsion coolant) for machining aluminum or copper alloys

APPLICATION RANGE



Cutter : EPO11R025M25.0-03 (ø25 mm, z = 3)
 Insert : ASGW11T304PDFR-D DX110
 Workpiece material : ADC12
 Cutting speed : V_c = 1,000 m/min
 Coolant : Wet
 Machine : Vertical M/C, BT40, 18.5 kW

Cautions when using at high RPM

1. Maximum RPMs designated for cutter diameters (DC) are shown in the table on the right. Do not use the cutter at a speed exceeding the designated maximum RPM. The cutter and inserts may be damaged by strong centrifugal force, causing property damages and possible personal injury or death.
2. When using at $10,000 \text{ min}^{-1}$ or higher, make sure to dynamically balance the cutter coupled with the arbor according to the balancing quality grades on the right.

DC (mm)	Max. number of revolutions Max. n (min^{-1})
ø12	28,000
ø16	43,000
ø18	41,000
ø20	39,000
ø22	37,000
ø25	35,000
ø28	33,000
ø30	31,000
ø32	30,000
ø35	29,000
ø40	27,000
ø50	24,000
ø63	22,000
ø80	19,000
ø100	17,000

Number of revolutions n (min^{-1})	Balancing quality grade G
- 20,000	G16
- 30,000	G6.3
30,000 -	G2.5



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