VIDEO OF CUTTING

■ General Features

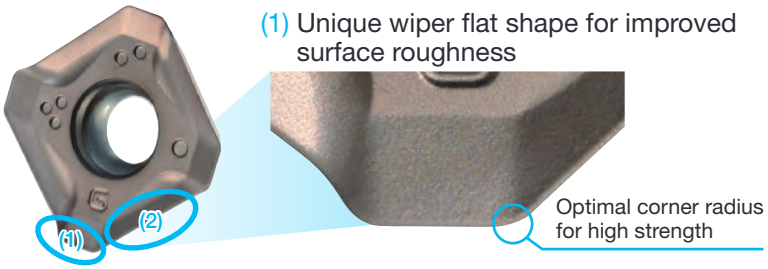
SEC-WaveMill WGX Type employs a unique chipbreaker design to provide lower cutting force and higher-quality surface finish than conventional cutters.
Lineup of insert grades and chipbreakers has been significantly expanded, and employment of the ACM series enables machining of stainless steel and exotic alloys.
Also applicable to any work material using the general-purpose grade ACU2500 or the new generation coated carbide grades XCU2500/XCK2000.

■ Features

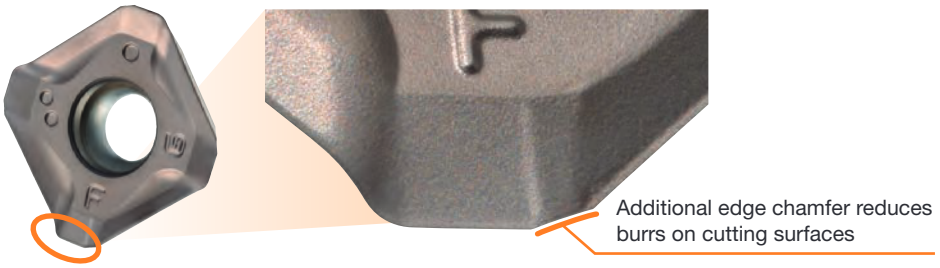
- Reduced Cutting Force
  · High-rake chipbreaker designed for use with the WGX type achieves low cutting force
- High Quality
  · Improved runout precision and unique wiper flat shape ensure excellent surface finish quality
  · Additional edge chamfer reduces burrs and edge chipping
- Wide Ranging Product Lineup
  · A wide selection of grades along with 4 types of chipbreakers and wiper inserts are available.
  · Can be used for a wide variety of machining applications.

■ Insert Shape Features

- General-purpose G Type Chipbreaker



- FG Type Chipbreaker with Low-Burr Design



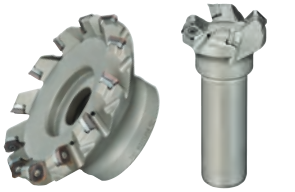
■ Product Range

Type	Cat. No.	Description	Dia. (mm)									
			ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
Shell	WGX13000R (Inch)	Standard Pitch					4	5	6	7	8	10
	WGX13000RS	Standard Pitch		3	3	4	4	5	6	7	8	10
	WGXM13000R (Inch)	Fine Pitch					6	7	8	10	12	14
	WGXM13000RS	Fine Pitch			4	5	6	7	8	10	12	14
	WGXF13000R (Inch)	Extra Fine Pitch					8	10	12	16	20	24
	WGXF13000RS	Extra Fine Pitch			5	6	8	10	12	16	20	24
Shank	WGX13000EW	Shank Type	3	3	4	5						

Number in ● shows the number of teeth (Inch) Inch Bore Sizes of ø125mm and below have coolant holes

WGX 13000R(S) Standard Pitch

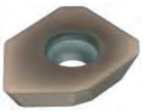
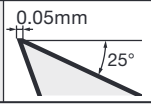
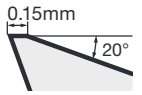
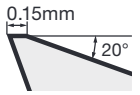
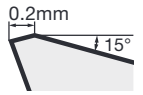
WGXM 13000R(S) Fine Pitch



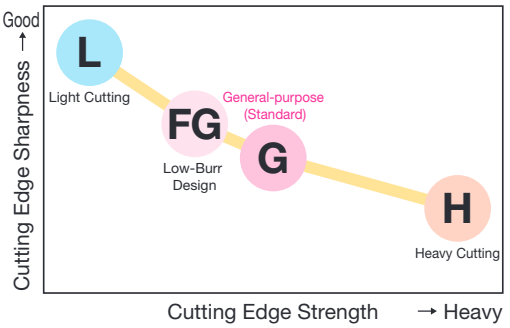
WGXF 13000R(S) Extra Fine Pitch

WGX 13000EW Shank Type

■ Chipbreaker Selection

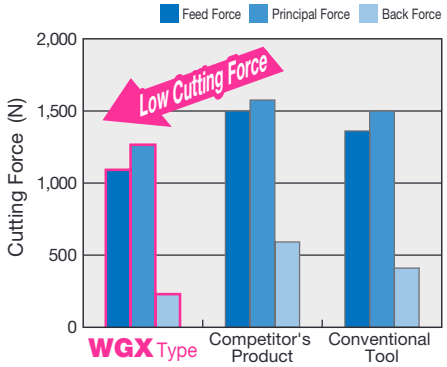
Work Material	P M K S N	P M K S			P K
Applications	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Surface Finish Emphasised
Features	Low Cutting Force	Standard / With Chamfer	Standard	High Strength	Wiper
	L Type	FG Type	G Type	H Type	W Type
Chipbreaker					
Cutting Edge Cross Section					

■ Chipbreaker Selection Guide



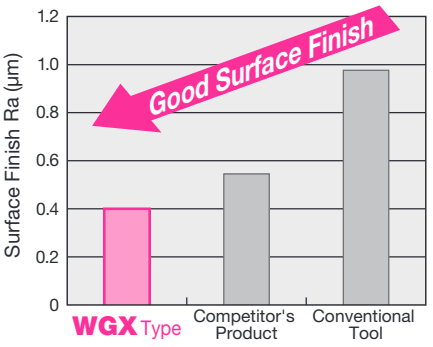
■ General-purpose G Type Chipbreaker

● Comparison of Cutting Force



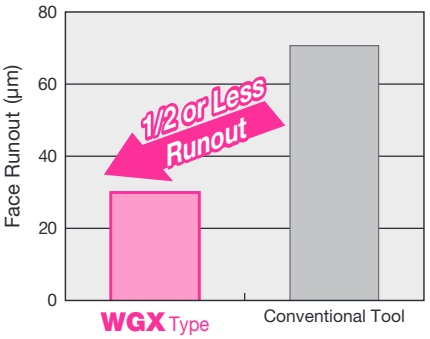
Work Material: S50C, Tool: ø100
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3.0mm

● Surface Finish Comparison



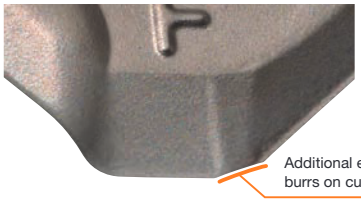
Work Material: S50C, Tool: ø100
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3.0mm

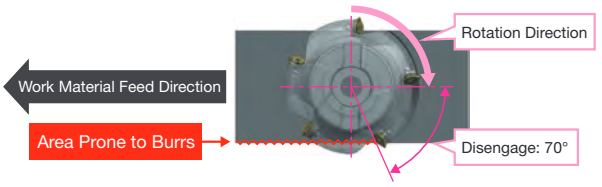
● Runout with Insert Attached



Tool: WGXM13100R (ø100)
Number of Teeth: 7

■ FG Type Chipbreaker with Low-Burr Design





● Machined Surface Comparison

Work Material	FG Type	G Type	Conventional Tool	Competitor's Product
S50C	○	○	○	× Burr Formation
SUS304	○	○	× Burr Formation	× Burr Formation
SCM440	○	× Burr Formation	× Burr Formation	× Burr Formation

Machine: Machining Centre BT50
Tool: WGX13100R (ø100),
Insert Grade: ACP200
Cutting Conditions:
v_c = 200m/min,
f_z = 0.2mm/t,
a_p = 3.0mm,
a_e = 80mm Dry

■ Precautions when Using Wiper Inserts with Holes

- When mounting the wiper insert, attach it as shown in Fig 1. When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.
- The wiper insert has a single corner specification.
- For milling with wiper inserts, see "The Basics of Milling, Milling Edition" in Chapter N of the General Catalogue.

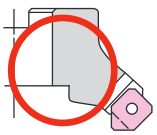
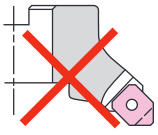
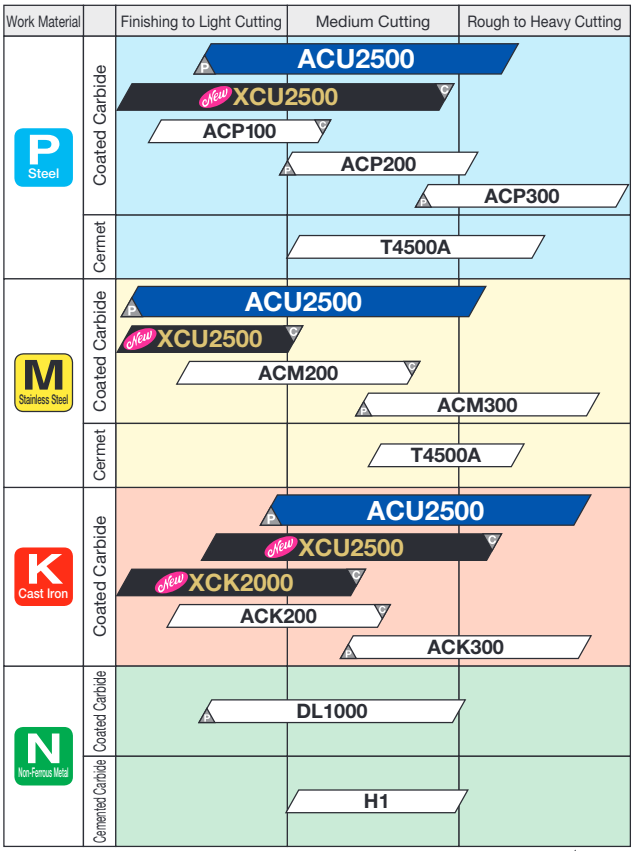
Fig 1 

Fig 2 

■ Insert Grades Selection Guide

New-generation coated carbide grades
XCU2500/XCK2000 now available!
Enhanced lineup of coated grades in addition to cemented carbide and cermet for milling steel, stainless steel, cast iron, and aluminum alloy

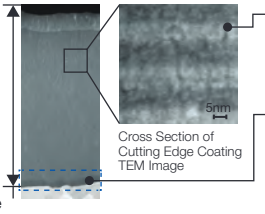


The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD P: PVD

■ Grade Features

New ABSOTECH™ (absolute technology) coating technology that realises absolute stability

ABSOTECH PVD

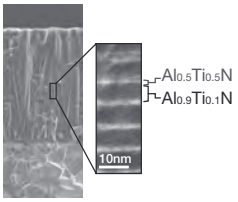


New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Coating adhesion significantly increased for twice or more the conventional chipping resistance

Applicable Grades: **ACU2500**

ABSOTECH X CVD



Pure Cubic Crystal AlTiN with High Al Content
With proprietary structural control technology, differently composed layers of AlTiN are stacked at the nanometre level.
With a high-Al composition containing over 80% Al on average, it also maintains a cubic crystalline structure to achieve excellent thermal resistance and high hardness.
Vastly improved wear resistance.

Special Surface Treatment
Proprietary surface treatment introduces high compression stress to the coating, suppressing the development of cracks.
Greatly improved fracture and thermal crack resistance.

Applicable Grades: **XCU2500, XCK2000**

P ACP200/ACP300/ACK300/ACM300 — NEW SUPER ZX COAT

Realises superb stability due to a carbide substrate optimised for steel, cast iron, and stainless steel with a highly chipping-resistant coating.

ACP100/ACK200/ACM200 C — SUPER FF COAT

Realises superb stability in high-efficiency machining due to a carbide substrate optimised for steel, cast iron, and stainless steel with a highly wear-resistant coating.

P DL1000 — AURORA Coat (DLC (Diamond-like Carbon))

Second only to diamond in terms of hardness, this flat and smooth coating has a low coefficient of friction and provides excellent adhesion resistance to deliver better machined surface quality.