KYOCERA

MFSE45

High Precision High Rake Milling

Rough and Finish in a Single Pass with Excellent Surface Finish

Roughing Condition (fz = 0.010ipt) Provides Excellent Surface Finish (0.8 µmRa or Less) *

Maintains Long Tool Life with High-Precision Inserts

Newly Developed Chipbreakers for Steel, Stainless Steel, and Aluminum

Improved Productivity with Excellent Chip Control

*Based on internal evaluation with wiper insert installed.

MFSE45

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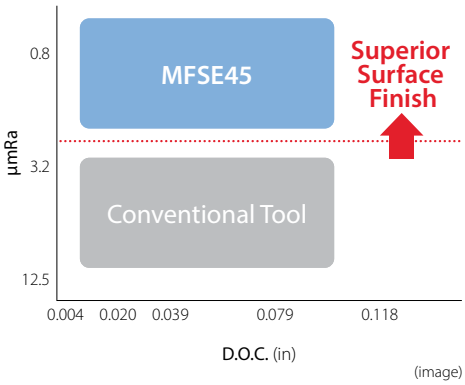
Roughing Condition (fz = 0.010ipt) Provides Excellent Surface Finish (0.8 µmRa or Less)

1 The MFSE45 Milling Solution

Delivers high-quality surfaces by roughing and finishing simultaneously

MFSE45 (Value)

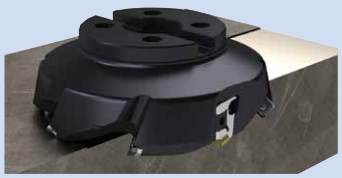


(image)

Machining Comparison Simulation (Example)

MFSE45 1 Pass and cutting time was cut by 1/3, with a good surface finish (0.8 µmRa or less)

fz = 0.010 ipt (D.O.C. = 0.039")

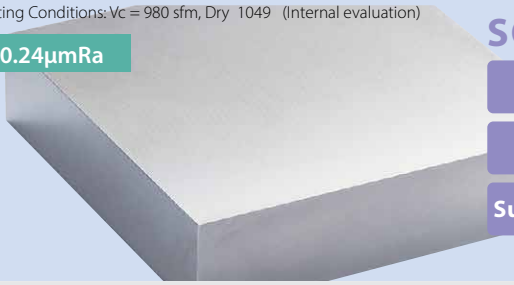


Ø160mm -8T GL Chipbreaker
(With Wiper Insert)

Cutting Time **Roughing + Finishing**

Cutting Conditions: Vc = 980 sfm, Dry 1049 (Internal evaluation)

0.24µmRa



SOLUTION

- 1 Pass
- Time = 1/3
- Surface Finish ✓

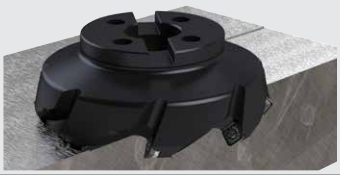
Conventional Machining

Two separate passes for roughing and finishing
Cutting time is longer due to low feed rates during finishing

fz = 0.006 ipt (D.O.C. = 0.032")

Ø160mm-8T

fz = 0.005 ipt (D.O.C. = 0.008")



Ø160mm-8T

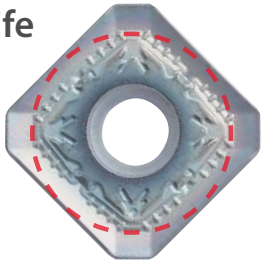
Cutting Time **Roughing** **Finishing**

CG image

2 Excellent Surface Finish and Long Tool Life

Tight I.C. tolerance of insert

Improved surface finish quality and longer tool life with reducing front edge runout



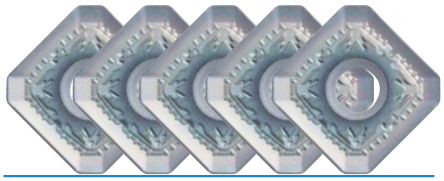
Inscribed Circle Tolerance ± 0.0008" or Less

(Class E Standard ± 0.0012" or less)

Excellent Front Edge Runout Accuracy

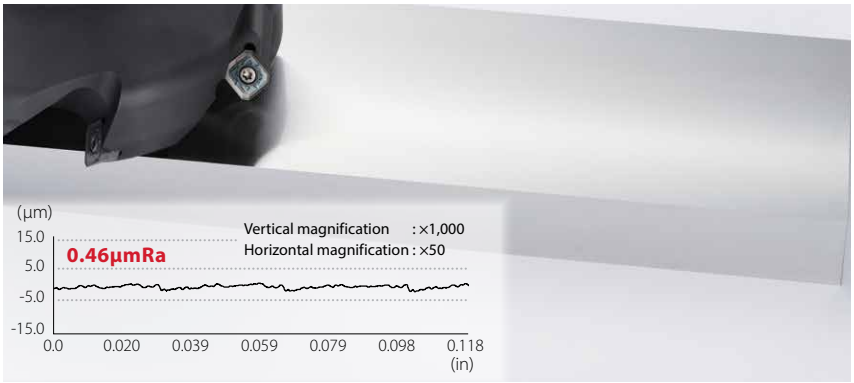
Advantage ① **Theoretical reduction of roughness on finished surface, excellent surface roughness**

Effect on surface finish
(Image)



Front Edge Runout: Small ⇒ Surface Roughness: Good

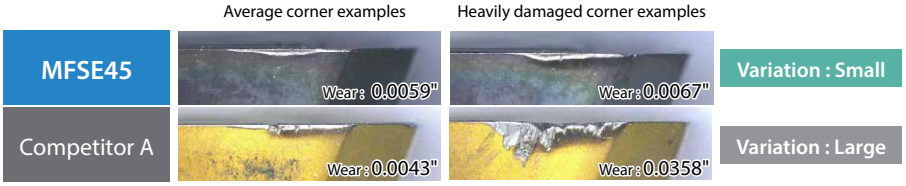
Surface roughness in stainless steel machining (Internal evaluation)



Cutting Conditions : Vc = 820 sfm, D.O.C. x ae = 0.039" x 3.937", fz = 0.006 ipt, Wet 304 Ø125mm (Standard 6 flutes) SL Chipbreaker

Advantage ② **Insert wear progresses evenly and tool life can be improved**

Effect on wear (User Evaluation)

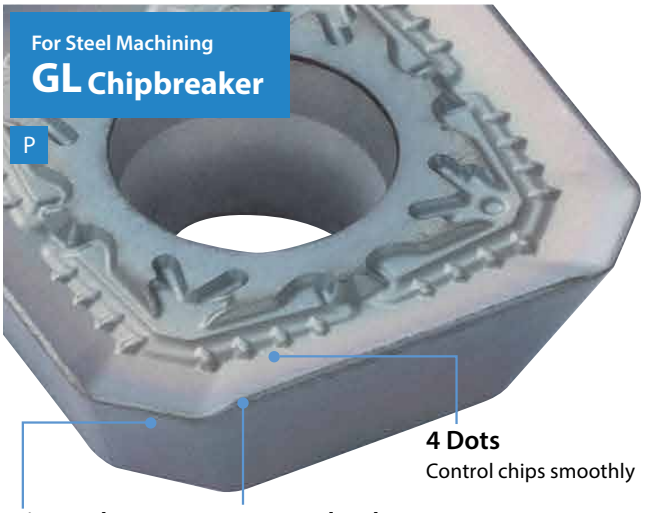


Cutting Conditions : Vc = 890 sfm, D.O.C. = ~ 0.059", fz = 0.008 ipt, Wet SS 400 Ø250mm (15 flutes) SL Chipbreaker (PR1535)

Due to the high wear rate of the insert, all inserts need to be replaced, which may result in shorter tool life.

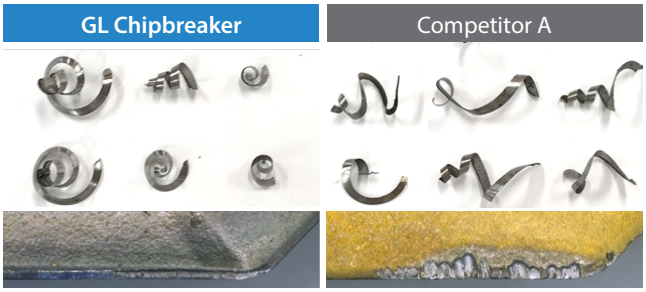
3 Kyocera's Newly Developed Unique Molded Chipbreaker

Excellent chip control. Eliminates chip entanglement in jigs, etc. and improves work efficiency



Delivers excellent chip evacuation, sharpness, strength and machining accuracy

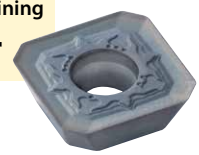
Chip control and cutting edge condition comparison (Internal evaluation)



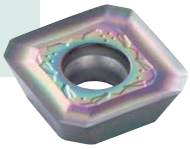
Cutting Conditions : Vc = 980 sfm, D.O.C. = 0.039"-0.059", fz = 0.008 ipt SS400 Ø100mm (15 Flutes)

Stainless Steel and Aluminum Machining

For Stainless Steel Machining
SL Chipbreaker
M
Micro-honing



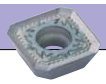
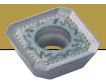
For Aluminum Machining
AL Chipbreaker
N
Sharp Edge



4 Various Holders Available for Multiple Applications

In addition to styles with a wiper insert, the standard type with only the standard inserts are also available

Toolholder Specifications

Type	With Wiper Insert 	Standard 
Surface roughness	Approx. 0.8µmRa	Approx. 1.6µmRa
Recommended feed	fz = 0.010 ipt 	fz = 0.005 ipt (Finish machining time)
Application	High efficiency finishing	General purpose (Uses 1 insert style)

Using wiper insert for MFF
(Cutting edge adjustment mechanism)

Note) See page 7 for details on how to adjust the cutting edge.

CG image

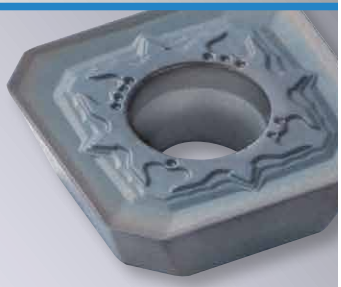
*Standard type only (Bore Dia. inch spec, Ø160mm ~)

MFSE45
Delivers Excellent Results

*Based on internal evaluation

Surface Finish

304 / Excellent Surface Finish



Ø125mm
SEET13T3AGSN-SL PR1535
Vc = 820 sfm, D.O.C. = 0.008"
fz = 0.006 ipt, 304 Wet BT50

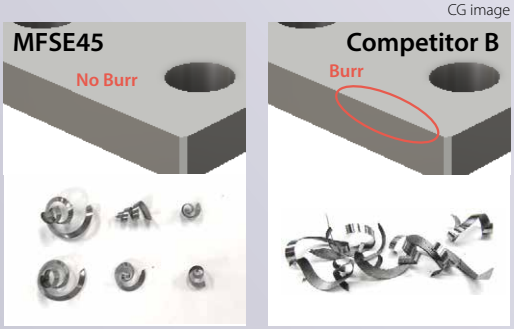
Excellent glossy finish even under high feed rates machining stainless steel

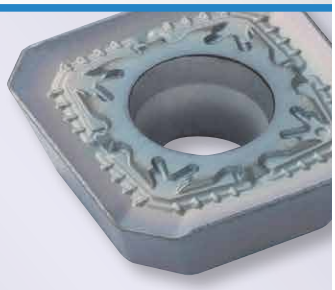
*User evaluation

Burrs and Chips

SS400 Rail / Reduced Machining Down-time

CG image





Ø100mm (Left hand)
SEET13T3AGSN-GL PR1535
Vc = 980 sfm, D.O.C. = 0.059"
fz = 0.008 ipt A36 Wet BT50

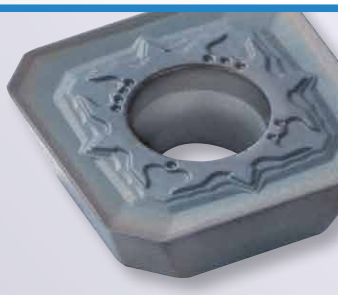
Reduces down-time and reduces burrs. Excellent chip control and extended automatic continuous operation time

*User evaluation

Strain

SUS 630 Equivalent Plate / Strain and Chatter Suppression

CG image



Ø63mm
SEET13T3AGSN-SL PR1535
Vc = 390 sfm, D.O.C. = 0.012"
fz = 0.003 ipt, Equivalent to S17400 Wet BT40

Reducing chatter by suppressing strain in stainless steel plate machining with a total length of 3.28 ft or more

Coolant Holes: None

Standard

With Wiper Insert

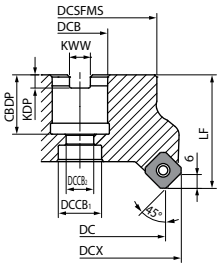


Fig.1

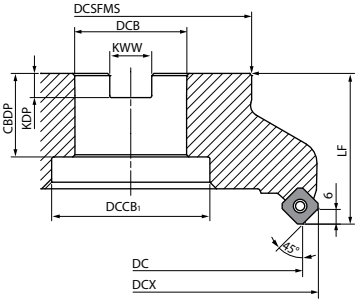


Fig.2

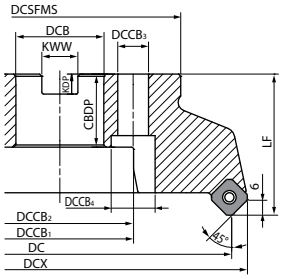
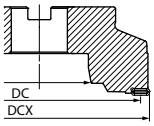


Fig.3



Wiper Insert Pocket

Toolholder Dimensions

		Part Number	Stock	No. of Inserts	Dimensions (mm)											Cartridge	Drawing	Weight (kg)	Max. Revolution (RPM)
					DC	DCX	DCB	$DCCB_1$	$DCCB_2$	$DCCB_3$	$DCCB_4$	LF	CBDP	KDP	KWW				
Standard	Inch Bore Dia.	**MFSE 45080R-5T**	□	5	80	88.7	1.000"	20	13	-	-	50	1.063"	0.236"	0.375"	No	Fig.1	1.4	12,800
		45100R-5T	□	5	100	108.7	1.250"	48	-	-	-	50	1.260"	0.315"	0.500"		Fig.2	1.9	11,500
		45125R-6T	□	6	125	133.7	1.500"	55	-	-	-	63	1.496"	0.394"	0.625"			3.3	10,200
		45160R-7T	□	7	160	168.7	2.000"	72	-	-	-		1.496"	0.433"	0.750"			5.3	9,000
		45200R-8T	□	8	200	208.7	1.875"	100	-	18	26		1.575"	0.551"	1.000"		Fig.3	7.3	8,100
		45250R-10T	□	10	250	258.7		110	-	18	26		1.575"	0.551"	1.000"			15.8	7,200
	Metric Bore Dia.	**MFSE 45063R-5T-M**	□	5	63	71.7	22	-	5	-	-	50	21	6.3	10.4	No	Fig.1	0.6	14,400
		45080R-5T-M	□	5	80	88.7	27	-	5	-	-		24	7	12.4			1.4	12,800
		45100R-5T-M	□	5	100	108.7	32	-	5	-	-		30	8	14.4		Fig.2	1.8	11,500
		45125R-6T-M	□	6	125	133.7	40	-	6	-	-	63	33	9	16.4			3.2	10,200
		45160R-7T-M	□	7	160	168.7	40	-	7	14	20		32	9	16.4		Fig.3	5.4	9,000
		45200R-8T-M	□	8	200	208.7	60	-	8	18	26		40	14	25.7			7.0	8,100
		45250R-10T-M	□	10	250	258.7		-	10	18	26		40	14	25.7			15.5	7,200
Wiper Insert	Inch Bore Dia.	**MFSE 45160R-8T-W**	□	8	160	168.7	2.000"	72	-	-	-	63	1.496"	0.433"	0.750"	Yes (Wiper Insert Only)	Fig.2	5.5	1,000
		45200R-9T-W	□	9	200	208.7	1.875"	133	-	18	26		1.575"	0.551"	1.000"		Fig.3	7.6	800
		45250R-11T-W	□	11	250	258.7		133	-	18	26		1.496"	0.551"	1.000"			12.3	800
	Metric Bore Dia.	**MFSE 45160R-8T-W-M**	□	8	160	168.7	40	1	8	-	-	63	33	9	16.4	Yes (Wiper Insert Only)	Fig.3	5.5	1,000
		45200R-9T-W-M	□	9	200	212.8	60	1	9	18	26		40	14	25.7			7.3	800
		45250R-11T-W-M	□	11	250	262.7		1	11	18	26		38	14	25.7			12.0	800

Caution with Max. Revolution
Set the number of revolutions per minute within the recommended cutting speed on **P8**
When running an end mill or a cutter at the maximum revolution, the insert or the cutter may be damaged by centrifugal force.

□ : Made to Order

Common for Standard/Wiper Insert

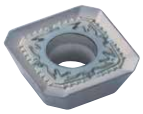
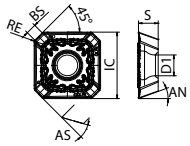
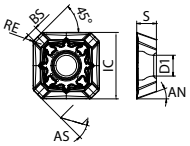
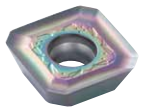
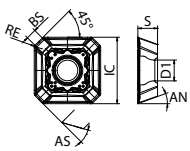
Clamp Screw	Wrench	Shim	Shim Screw	Shim Wrench	Anti-seize Compound
					
SB-35120TRP	DTPM-15	MFSE-105	SPW-5035	LW-3.5	P-37
Fastening Torque for Insert Clamp 4 Nm		Fastening Torque for Shim Clamp 5 Nm			

For Wiper Insert

Clamp Screw	Wrench	Wedge	Cartridge	Cartridge Clamp Screw	Wrench	Adjustment Screw
						
SB-3592TR	DTM-10	AD-MFF	CR-MFF	HH5X15L	TTW-15	W6X18N
Fastening Torque for Wiper Insert Clamp 1.2 Nm						

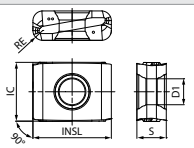
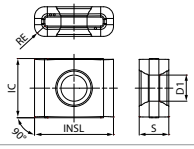
Applicable Inserts

Usage Classification						
★ : 1st Choice ☆ : 2nd Choice	P	Carbon Steel • Alloy Steel	★	☆	☆	
		Mold Steel	☆	★	☆	
	M	Austenitic Stainless Steel	★	☆	☆	
		Martensitic Stainless Steel	★	☆	☆	
	K	Gray Cast Iron	☆	☆	☆	
		Nodular Cast Iron	☆	☆	★	
	N	Non-ferrous Material				★
	S	Heat Resistant Alloy	☆			
		Titanium Alloy	☆			

Insert		Part Number	Dimensions (mm)					Angle		MEGACOAT NANO		CVD Coating	DLC Coating
			IC	S	D1	RE	BS	AN	AS	PR1535	PR1525	CA6535	PDL025
		**SEET 13T3AGSN-GL**	13.4	3.97	4.2	1.5	2.1	20°	29°	●	●	●	
		**SEET 13T3AGSN-SL**	13.4	3.97	4.2	1.5	2.1	20°	29°	●	●	●	
		**SEET 13T3AGFN-AL**	13.4	3.97	4.2	1.5	2.1	20°	29°				●

● : Standard Item

Wiper Insert

Insert		Part Number	Dimensions (mm)					MEGACOAT NANO Cermet	MEGACOAT NANO
			IC	S	D1	INSL	RE	PV60M	PR1525
 For Steel and Stainless (Low Cutting Force)		**LNGX 120916R-TT**	9.525	4.76	4.2	12.7	1.6	●	●
 For Cast Iron		**LNGX 120916**	9.525	4.76	4.2	12.7	1.6	●	●

● : Standard Item

Cutting Edge Adjustment

1. Use the supplied TTW-15 wrench to rotate the screw and easily adjust the cutting edge position.
2. Thread in one direction clockwise (Fig.1) when adjusting.
   If the adjustment is completed with the screw rotated counterclockwise, the screw will become loose and chatter due to backlash.
   *Since the insert cutting edge of this product has an arc shape, it cannot be adjusted correctly if the measurement position is different.
3. To adjust, start with the screw turned counterclockwise about two rotations (lowering the cutting edge).
   Tighten the screws clockwise (raising the cutting edge) until the insert with the highest edge (Fig. 2) catches 60 µm. (Fig. 3)
   *Use a dial gauge to measure protrusion amount.

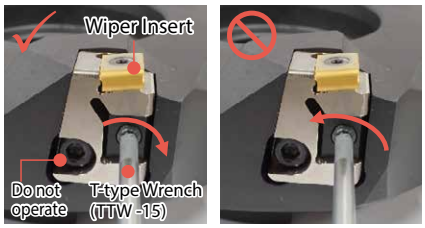


Fig. 1 Adjustment Direction

Fig. 2

Fig. 3

Chipbreaker	Workpiece	fz (ipt)	Recommended Insert Grade (Cutting Speed Vc: sfm)			
			PR1535	PR1525	CA6535	PDL025
GL	Carbon Steel	0.004 - **0.006** - 0.012	★ 490 - **660** - 980	☆ 490 – **660** – 980	☆ 490 – **660** – 980	–
	Alloy Steel	0.004 - **0.006** - 0.012	★ 490 - **660** - 980	☆ 490 – **660** – 980	☆ 490 – **660** – 980	–
	Mold Steel	0.004 - **0.006** - 0.010	☆ 330 - **490** - 820	★ 330 - **490** - 820	☆ 330 - **490** - 820	–
	Austenitic Stainless Steel*	0.004 - **0.006** - 0.010	★ 330 - **660** - 820	☆ 330 - **660** - 820	☆ 330 - **660** - 820	–
	Martensitic Stainless Steel*	0.004 - **0.006** - 0.010	★ 330 - **660** - 820	☆ 330 - **660** - 820	☆ 330 - **660** - 820	–
	Gray Cast Iron	0.004 - **0.006** - 0.010	☆ 330 - **660** - 820	☆ 330 - **660** - 820	☆ 330 - **660** - 820	–
	Nodular Cast Iron	0.004 - **0.006** - 0.010	☆ 330 - **660** - 820	☆ 330 - **660** - 820	★ 330 - **660** - 820	–
SL	Carbon Steel	0.004 - **0.005** - 0.006	☆ 490 - **660** - 980	☆ 490 – **660** – 980	☆ 490 – **660** – 980	–
	Alloy Steel	0.004 - **0.005** - 0.006	☆ 490 - **660** - 980	☆ 490 – **660** – 980	☆ 490 – **660** – 980	–
	Mold Steel	–	–	–	–	–
	Austenitic Stainless Steel*	0.004 - **0.006** - 0.008	★ 330 - **660** - 820	☆ 330 - **660** - 820	☆ 330 - **660** - 820	–
	Martensitic Stainless Steel*	0.004 - **0.006** - 0.008	★ 330 - **660** - 820	☆ 330 - **660** - 820	☆ 330 - **660** - 820	–
AL	Aluminum Alloy (Si 13% or less)	0.004 - **0.006** - 0.012	–	–	–	★ 660 - **1,310** - 1,640

*Machining with coolant is recommended for stainless steel machining.
Bold text in the table indicates recommended values. Adjust the cutting speed and feed within the above conditions according to the actual machining situation.

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