AHB TOOLING & MACHINERY

COMPLETE METALWORKING SOLUTIONS

(800) 991-4225
www.ahbinc.com
ISO Certified
customerservice@ahbinc.com

MEAS

KYOCERA

High Efficiency Milling Cutters for Aluminum Machining

High Consistency, High Speed and High Efficiency Machining for Aluminum

Grooved Insert Pockets Provide Secure Clamping to Ensure Stable, High Speed Machining

Sharp Cutting Edge with Low Cutting Force Design

Simultaneous 3-axis with a Max. Ramping Angle of 20° (Ø1.000" / Ø25mm)

Kyocera's Proprietary Hydrogen-free DLC Coated PDL025 Inserts

MEAS

High Efficiency Milling Cutters for Aluminum Machining

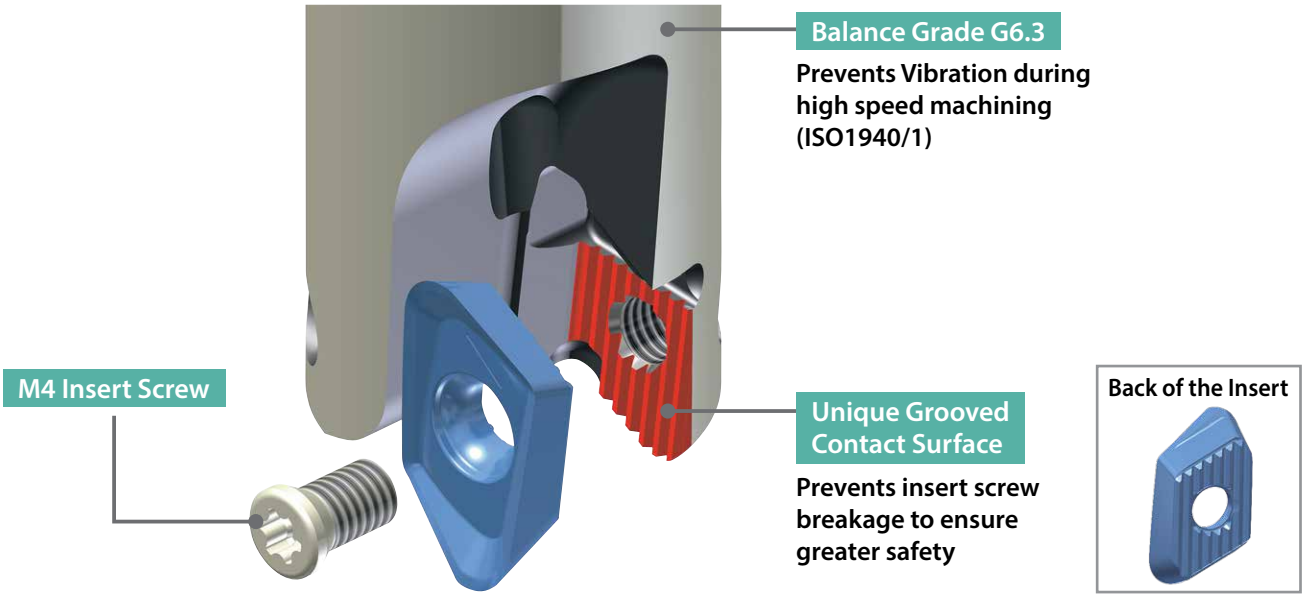
Product Video

Excellent Scatter Prevention to Ensure Stable, High Speed Aluminum Machining
Simultaneous 3-axis with Large Ramping Angle for a Wide Range of Machining Applications

1 Reliable High Efficiency Machining

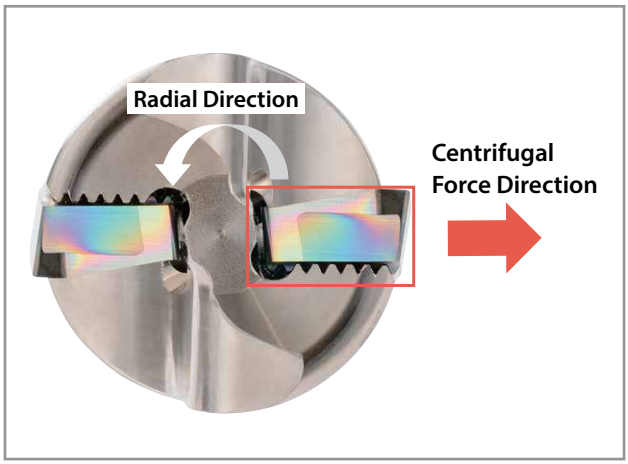
Grooved Connection Between the Insert and Holder for High Speed Aluminum Machining

(Ø1.250" / Ø32mm: Recommended Max. Cutting Speed Vc = 9,842 sfm)

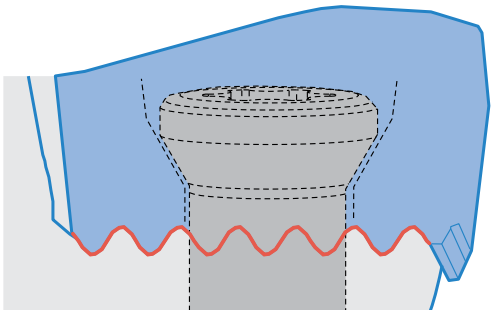


Grooved Insert Pocket

Centrifugal force is applied across the grooved surface to reduce pressure on the insert screw and to prevent insert screw breakage and safely secure the insert during high-speed revolutions



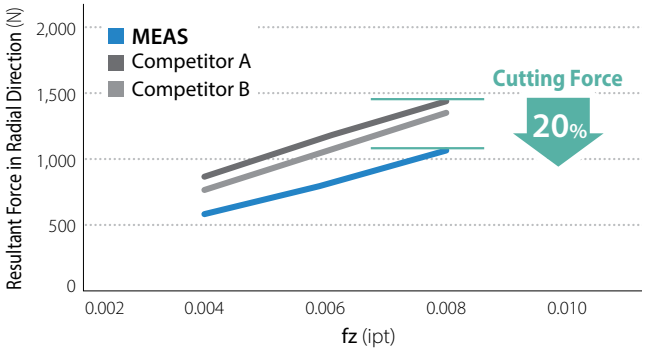
Grooved Contact Surface



2 Low Cutting Force with Sharp Cutting Edge

True Rake Angle Max. 20°
Low Cutting Force and Excellent Chattering Resistance

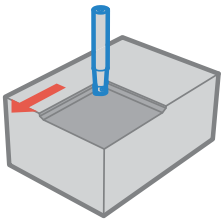
Cutting Force Comparison (Internal Evaluation)

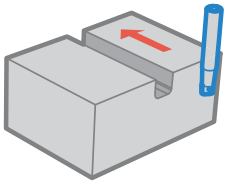


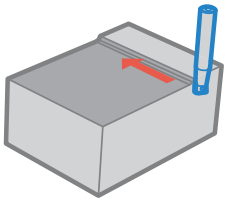
Cutting Conditions: Vc = 1280 sfm, D.O.C. × ae = 0.315" × 0.197", Dry
Cutter Diameter: Ø25mm (2 Inserts) Workpiece: 7075

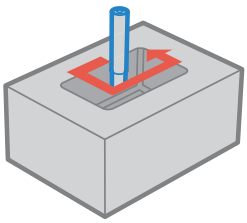
3 Machining for a Wide Variety of Applications

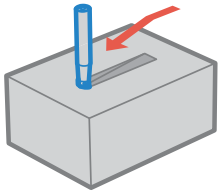
Max. Ramping Angle 20° (Ø1.000" / Ø25mm)
The MEAS can be used for shouldering, slotting, ramping, and helical milling applications

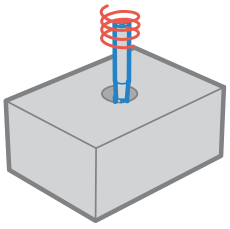

Face Milling & Shouldering

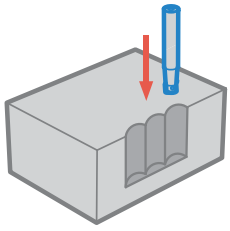

Slotting


Contouring


Pocketing


Ramping


Helical Milling


Plunging

MEAS | End Mill

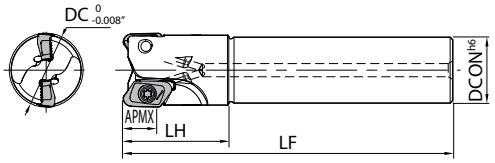


Fig. 1

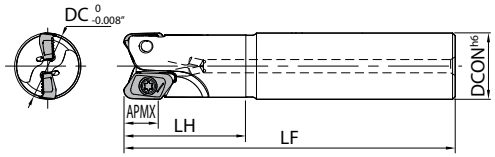


Fig. 2

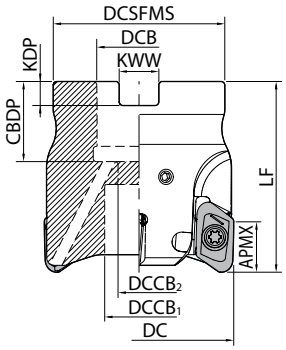
Toolholder Dimensions (Inch / Metric)

		Part Number	Stock	Unit	No. of Inserts	Dimensions (mm)					Rake Angle		Coolant Hole	Drawing	Spare Parts			Weight (kg)	Max RPM
						DC	DCON	LF	LH	APMX	A.R. (MAX.)	R.R.			Clamp Screw	Wrench	Anti-seize Compound		
Cylindrical Shank	Standard	MEAS 1000-S1000-13-2T	●	inch	2	1.000	1.000	5.000	2.000	0.472	+10°	14°	Yes	Fig.2	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 Nm	P-37	0.4	59,000
		1250-S1250-13-2T	●		2	1.250	1.250	6.000	2.750	0.472	+10°	13°		Fig.2	SB-4090TRP			0.8	49,000
		1500-S1250-13-3T	●		3	1.500	1.250	6.000	2.000	0.472	+10°	12°		Fig.1				0.9	42,000
	Long	MEAS 1000S1000132T675	●		2	1.000	1.000	6.750	3.550	0.472	+10°	14°		Fig.2	SB-4075TRP			0.6	49,000
		1250S1250132T800	●		2	1.250	1.250	8.000	4.800	0.472	+10°	13°		Fig.2	SB-4090TRP			1.1	39,000
	Standard	MEAS 25-S25-13-2T	●	mm	2	25	25	125	49	12	+10°	-14°	Yes	Fig. 2	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 Nm	P-37	0.4	59,000
		28-S25-13-2T	●		2	28	25	125	40	12	+10°	-13°		Fig. 1	SB-4090TRP			0.4	54,000
		32-S32-13-2T	●		2	32	32	150	69	12	+10°	-13°		Fig. 2				0.8	49,000
		35-S32-13-2T	●		2	35	32	150	50	12	+10°	-13°		Fig. 1				0.9	46,000
		40-S32-13-3T	●		3	40	32	150	50	12	+10°	-12°		Fig. 1				0.9	42,000
	Long	MEAS 25-S25-13-2T-170	●		2	25	25	170	89	12	+10°	-14°		Fig. 2	SB-4075TRP			0.5	49,000
		32-S32-13-2T-200	●		2	32	32	200	119	12	+10°	-13°		Fig. 2	SB-4090TRP			1.1	39,000

When using inserts with a corner-R (RE) of 1/8" (3.2mm). or larger, additional modifications (R0.138" (3.5mm) or larger) on the corner of cutter body is necessary
(If corner-radius is 0.118" (3.0mm) or smaller, additional modifications are not needed)
Coat Anti-seize Compound (P-37) thinly on portion of taper and thread when insert is mounted.

● : Standard Item

MEAS | Face Mill



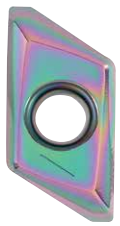
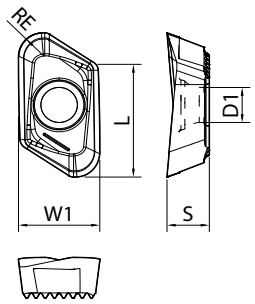
Toolholder Dimensions (Inch / Metric)

Part Number	Stock	Unit	No. of Inserts	Dimensions (mm)										Rake Angle		Coolant Hole	Spare Parts				Weight (kg)	Max. RPM
				DC	DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	A.R. (MAX.)	R.R.		Clamp Screw	Arbor Bolt	Wrench	Anti-seize Compound		
MEAS 2000R-13-4T	●	inch	4	2.000	1.750	0.750	0.669	0.433	1.969	0.750	0.187	0.313	0.472	+10°	-10°	Yes	SB-4090TRP	HH3/8-1.25	DTPM-15 Recommended Torque for Insert Clamp 3.5N·m	P-37	0.4	36,000
MEAS 050R-13-4T-M	●	mm	4	50	45	22	18	11	50	21	6.3	10.4	12	+10°	-11°	Yes	SB-4090TRP	HH10X30H		P-37	0.4	36,000

When using inserts with a corner-R (RE) of 1/8" (3.2mm). or larger, additional modifications (R0.138" (3.5mm) or larger) on the corner of cutter body is necessary
(If corner-radius is 0.118" (3.0mm) or smaller, additional modifications are not needed)
Coat Anti-seize Compound (P-37) thinly on portion of taper and thread when insert is mounted.

● : Standard Item

Applicable Inserts

Shape		Part Number		Dimensions (in)					DLC Coating
				W1	S	D1	L	RE	PDL025
		KCGT	130504FR-AL	0.390	0.201	0.173	0.555	1/64	●
			130508FR-AL				0.547	1/32	●
			130512FR-AL				0.543	3/64	●
			130516FR-AL				0.524	1/16	●
			130520FR-AL					5/64	●
			130524FR-AL					3/32	●
			130530FR-AL					0.118	●
			130532FR-AL				0.504	1/8	●
			130540FR-AL					0.157	●
			130550FR-AL					0.197	●

● : Standard Item

Recommended Cutting Conditions

Recommended Cutting Conditions

Workpiece	Property	Cutting Speed Vc (sfm)	Feed fz (ipt)
Aluminum Alloy	Si Ratio ≤ 12.5%	660 ~ 3,280 ~ 9,840	0.002" ~ 0.006" ~ 0.010"
	Si Ratio ≥ 12.5%	660 ~ 980 ~ 1,310	0.002" ~ 0.004" ~ 0.008"

- 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 exceed the maximum cutting speed limit (see **page 6**)
- Regularly changing the insert screw is recommended
  Use appropriate safety covers to protect from tool breakage and chip scattering
- When using at a higher revolution (10,000 RPM or over), refer to the table below to adjust the balance of the MEAS and arbor

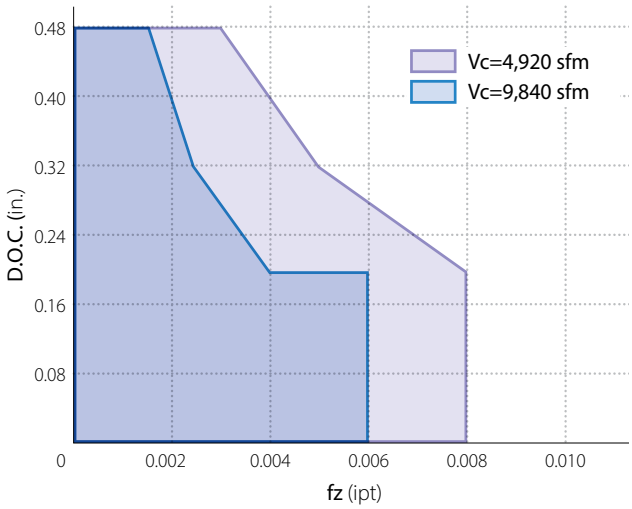
Spindle Revolution (RPM)	ISO Balance Grade ISO 1940-1/8821 (B0905)
~ 20,000	G16
~ 30,000	G6.3
30,000 ~	G2.5

Max. Revolution for Each Cutting Diameter

Cutting Diameter ØDC (mm)	Cutter Max. Revolutions (RPM)
Ø1.000" Ø25mm	59,000 (Long Shank: 49,000)
Ø28mm	54,000
Ø1.250" Ø32mm	49,000
Ø35mm	46,000 (Long Shank: 39,000)
Ø1.500" Ø40mm	42,000
Ø2.000" Ø50mm	36,000

MEAS Cutting Performance

ø50mm (4 Inserts) Shouldering ae = 0.984" Workpiece: 7175



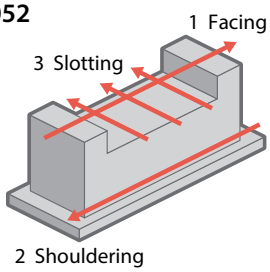
- Reduce the feed rate when machining at high speeds

Case Study

Industrial Machine Parts 5052

Vc = 4920 sfm (n = 9,550 rpm)
1. D.O.C. x ae = 0.118" x 1.575"
   fz = 0.008 ipt (Vf = 300 ipm)
2. D.O.C. x ae = 0.315" x 0.197"
   fz = 0.008 ipt (Vf =300 ipm)
3. D.O.C. x ae = 0.079" x ~ 1.97"
   fz = 0.006 ipt (Vf = 225 ipm)
   Wet

MEAS050R-13-4T-M
KCGT130504FR-AL PDL025



Cutting Time

MEAS ø50-4T **190 Sec**

Cutting Time 50%

Competitor C ø50-3T **430 Sec**

MEAS showed 50% faster cycle time or more compared to Competitor C
(User Evaluation)

Ramping Reference Data

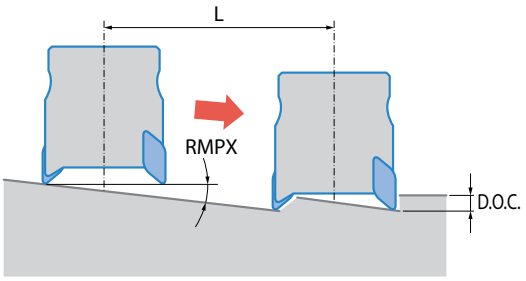
Cutting Dia. DC	1.000"	1.250"	1.500"	2.000"	25mm	28mm	32mm	35mm	40mm	50mm
Max. Ramping Angle RMPX	20°	12.5°	8.5°	6°	20°	16°	12.5°	11°	8.5°	6°
tan RMPX	0.363	0.221	0.149	0.105	0.363	0.287	0.221	0.194	0.149	0.105

Ramping Tips

Recommended ramping angle is ≤ RMPX
(see chart above for recommended ramp angle)
Reduce recommended feed rate by 50%

Formula for Max. Cutting max Length (L) at Max. Ramping Angle

$$L = \frac{D.O.C.}{\tan RMPX}$$



Plunging Tips

* Reduce feed rate to fz ≤ 0.004 ipt when plunging

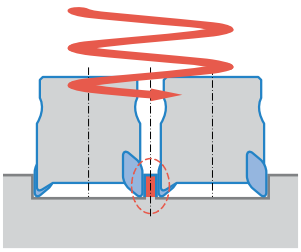
Insert	Maximum Width of Cut (ae)
KCGT13...	0.315"

Helical Milling Tips

For Helical milling, use between Min. Drilling Dia. and Max. Drilling Dia.

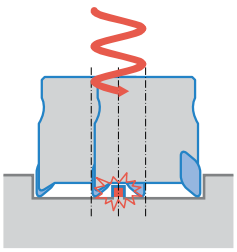
Exceeding Max. Machining Dia.

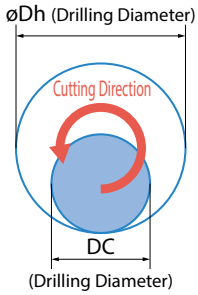
Center Core Remains After Machining



Under Min. Machining Dia.

Center Core Hits Holder Body



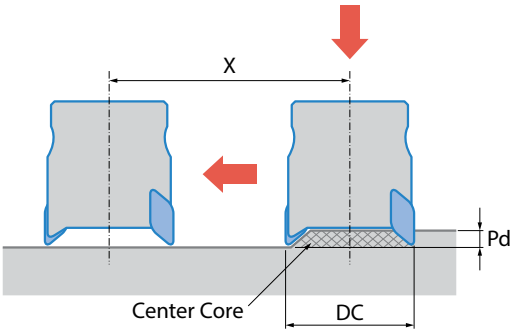


Cutter	Min. Drilling Dia.	Max. Drilling Dia.	Maximum Ramping Depth per Cycle
MEAS···13···	2 × DC - 0.630"	2 × DC - 0.118"	0.138"

Unit: inch

- Use climb milling. (Refer to detail on right above)
- Feed rates should be reduced to 50% of recommended cutting conditions
- Use caution to eliminate incidences caused by producing long chips

Drilling Tips



Drilling Depth

Please refer to the figure on the left (Pd: Max. Drilling depth)

Traversing after Drilling

1. It is recommended to reduce feed by fz = 0.006 ipt or less until the center core is removed
2. Axial feed rate recommendation per revolution is f = 0.004 ipr or less

Cutter	Max. Drilling Depth (Pd)	Min. Cutting Length (X) for Flat Bottom Surface
MEAS····-13-····	0.138"	DC - 0.630"

Unit: inch

How to Mount Inserts

1. Completely eliminate chips and dust from the insert mounting side
2. Insert Screw
   - Coat anti-seize compound (P-37) thinly on portion of taper and thread
   - Attach screw to the magnetized wrench tip and tighten while gently pressing the outside edge of the insert toward the insert pocket surface (grooved surface) (see picture on the right)
     (Recommended Torque 3.5Nm)

Cautions

While in Use

⚠Caution

Please use within recommended cutting conditions

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

- Inserts 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 is damaged

Please wear protective equipment such as gloves when changing inserts

- 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) G6.3

When using at a higher revolution (10,000 RPM or above), refer to the table below to adjust the balance of MEAS and arbor

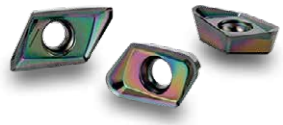
Do not operate the balance adjustment screw on the outer periphery of the cutter. This could lead to improper dynamic balance.

Spindle Revolution (RPM)	ISO Balance Grade ISO 1940-1/8821 (B0905)
~ 20,000	G16
~ 30,000	G6.3
30,000 ~	G2.5

DLC Coating

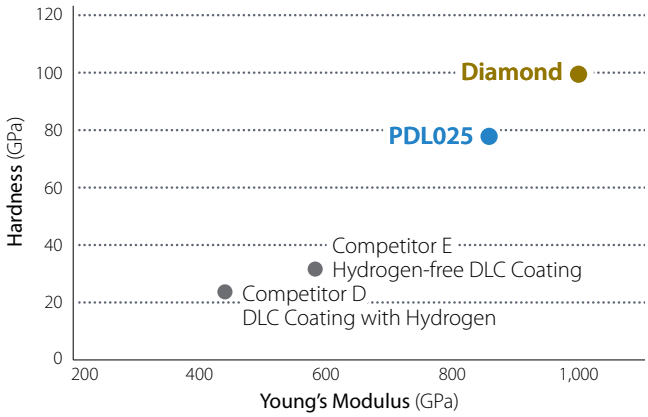
PDL025

Kyocera's Proprietary Hydrogen-free DLC Coating Achieves Long Tool Life with Hardness Close to that of Diamond

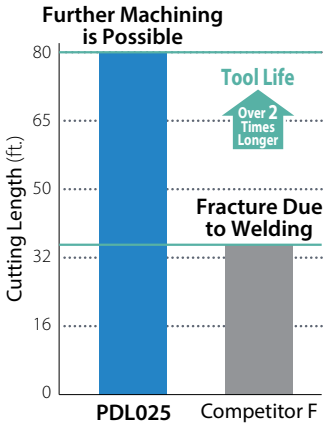


1 Long and Stable Tool Life

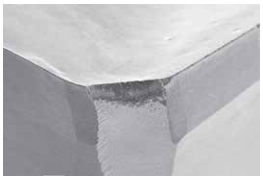
Coating Properties (Internal Evaluation)



Tool Life (Internal Evaluation)



PDL025 After Machining 25 min



Competitor F After Machining 11 min.

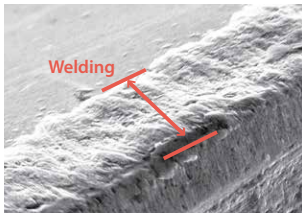
Cutting Conditions: Vc = 1640 sfm, fz = 0.008 ipt, D.O.C. × ae = 0.118" × 0.197", Dry
Cutter Dia.: ø25 mm Workpiece: 7175

2 Excellent Surface Finish

Excellent Surface Finish with Aluminum Welding Resistance

Welding Resistance Comparison (Internal Evaluation)

PDL025



Competitor G

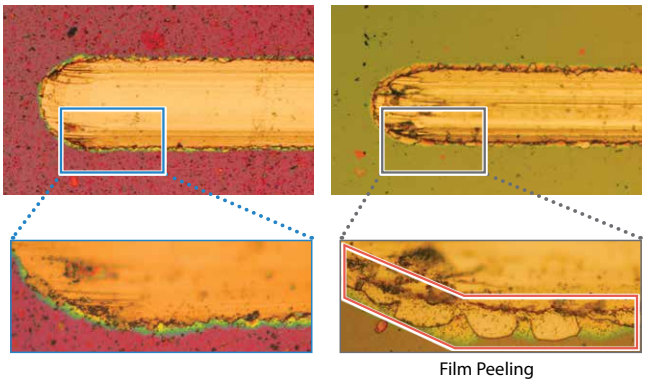
Cutting Conditions: Vc = 2,625 sfm, fz = 0.004 ipt, D.O.C. × ae = 0.118" × 0.197" Dry
Cutter Dia. ø25 mm, Workpiece: 5052, Cutting Length: 57 min.

3 Stable Machining

Stable Machining Due to DLC Coating Layer with Excellent Peeling Resistance and Improved Chip Evacuation Due to High Lubrication

Scratch Test: Coating Conditions Comparison with Load 80 N (Internal Evaluation)

PDL025 | Competitor H (DLC Coating)



Film Peeling

KYOCERA