MillLine

T/EFE & DPD & EDPD

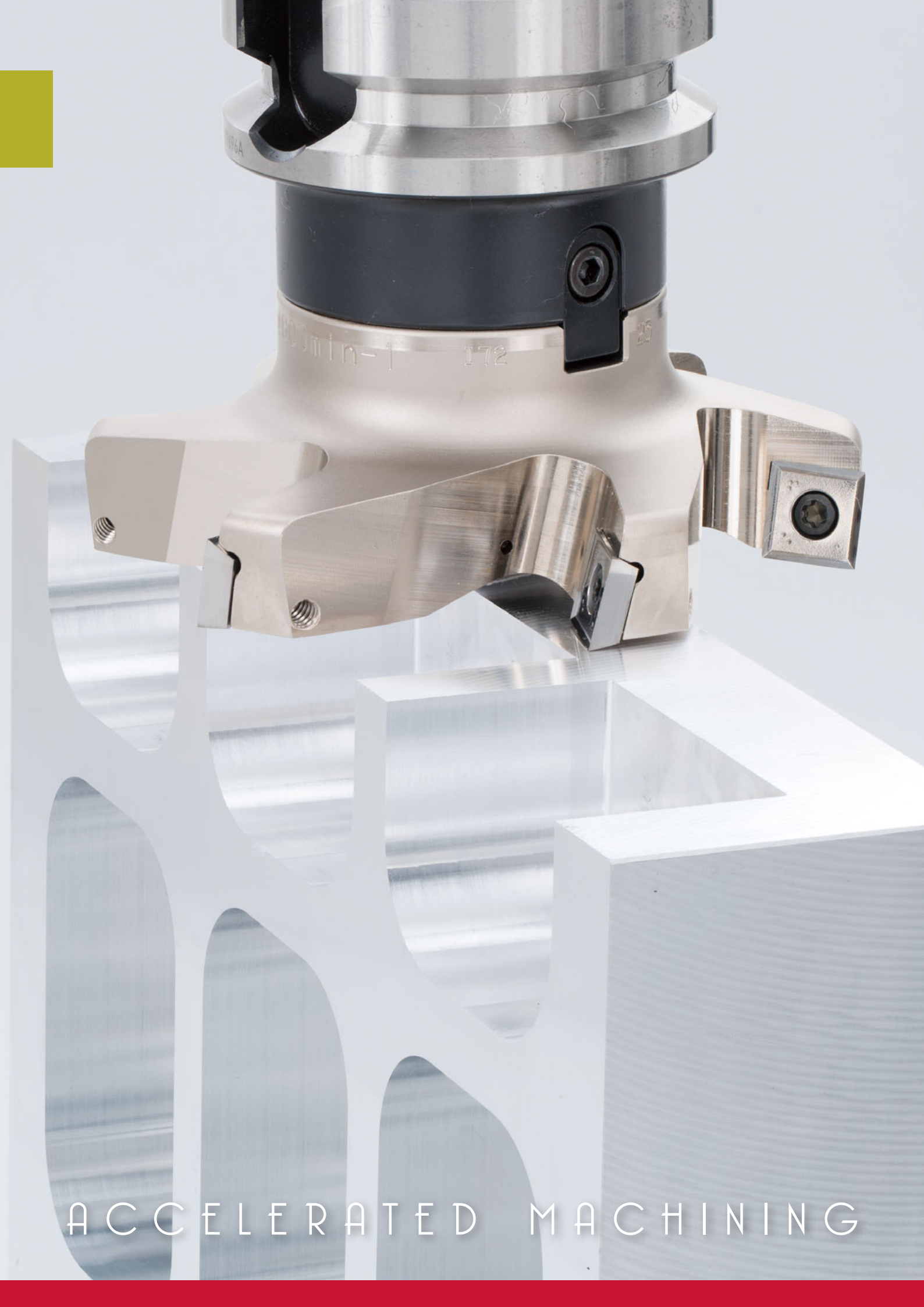
www.tungaloy.com

Tungaloy Report No. 348-G

High precision face milling series with lightweight and adjustable pocket bodies

INDUSTRY 4.0

FEED the SPEED!

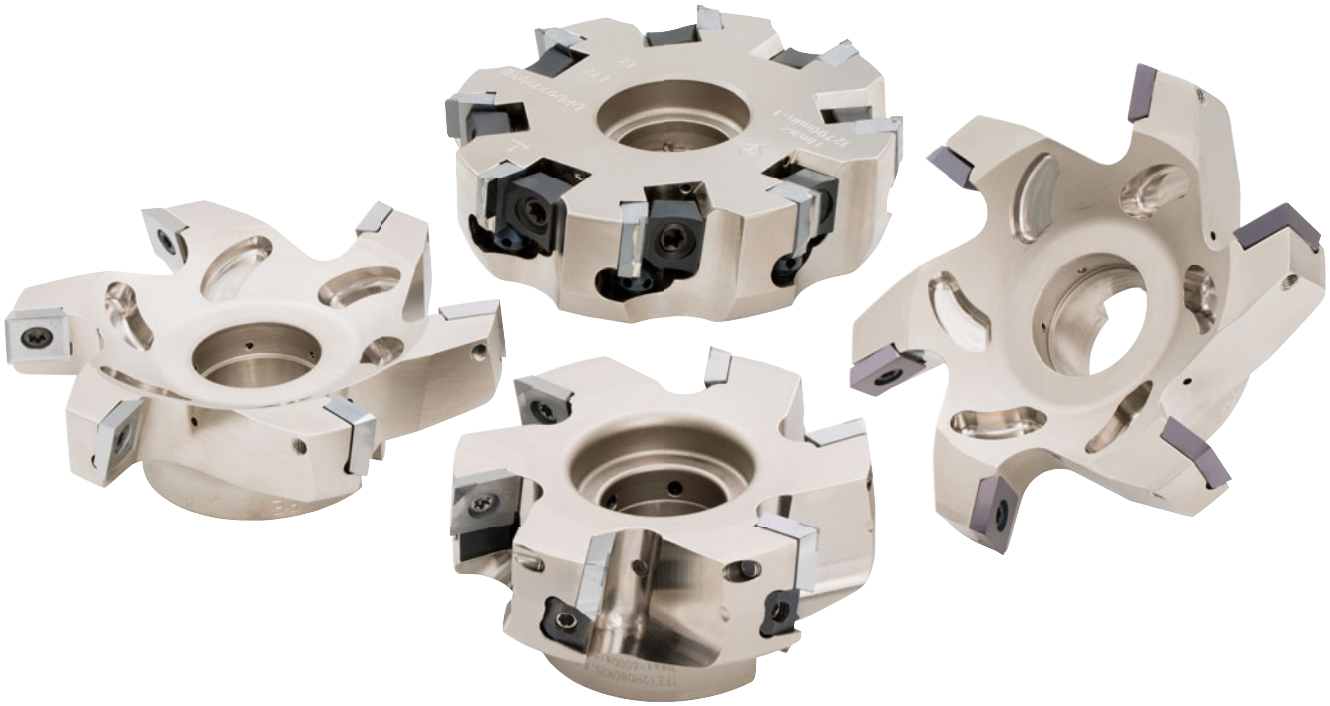


ACCELERATED MACHINING

MillLine

T/EFE & DPD & EDPD

TUNGALOY



Extremely lightweight facemill series now integrates adjustable pockets for an extra precision on the surface finish

TFE series is now available **with adjustable pockets**

New **With axial insert adjustment**
TFE12...-...A

Light-weight body
TFE12/EFE12type

New

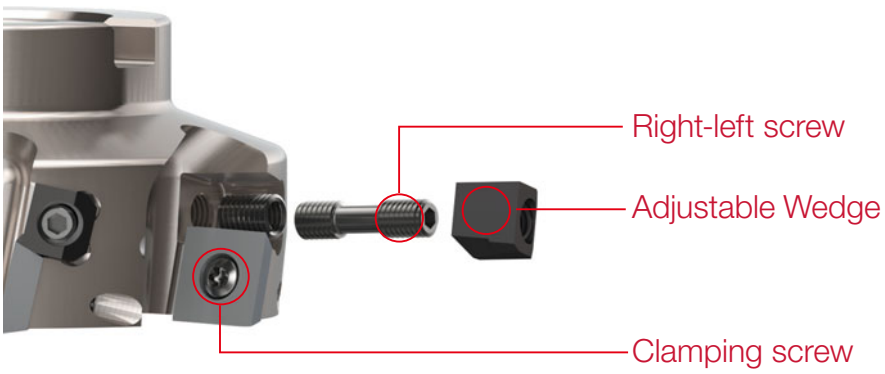
TFE12R...-...A

Axial adjustment of inserts ensures precision milling of non-ferrous materials. Grades and geometries for steel, stainless steel, and cast iron are also available.

Through-coolant system
Facilitates smooth chip evacuation and eliminates chip re-cutting

Axial adjustment system

- Easy tool setting and insert adjustment
- Fine adjustment of axial runouts to 5 µm or less
- Adjustment range : ±0.065 mm (±.00256")
- Simple cutter structure allows fewer comprising parts

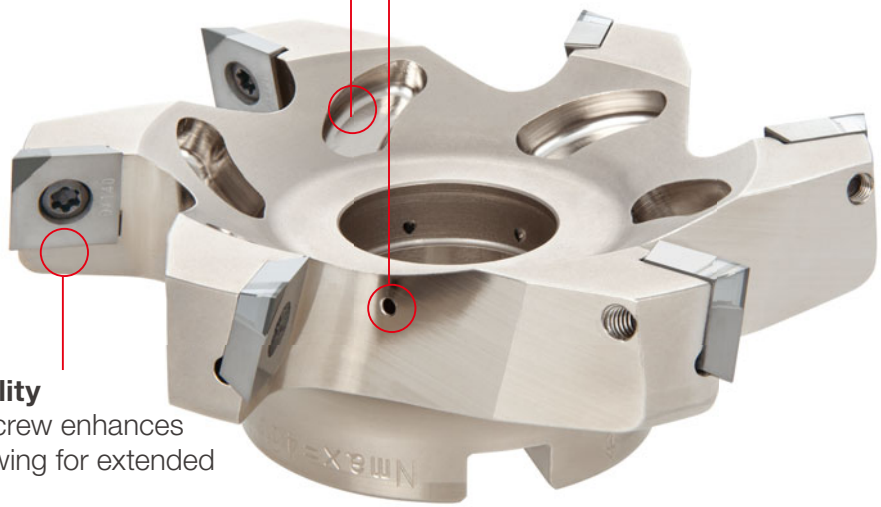


TFE12 / EFE12 type

Most suited for roughing to super-finishing of non ferrous components.
Insert grades are also available for steel, stainless steel, and cast iron applications.

Lightweight body
The cutter body, although made of steel, is designed and built for an extreme lightness. Therefore, the cutter is also suited for use on BT30 spindle machines

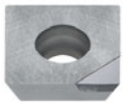
Through-coolant system
Facilitates smooth chip evacuation and eliminates chip re-cutting



High insert reliability
TORX Plus® drive screw enhances insert reliability, allowing for extended tool life

Insert density variations
Insert pitch variations allow the best possible tool to be selected for maximum economy in the milling process

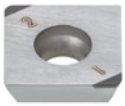
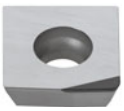
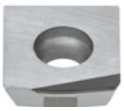
For aluminium and copper alloys N

Cemented carbide		PCD (Polycrystalline diamond)		
				
General purpose type	Low cutting force type (AJ)	Regular insert	Wiper insert	Deburring wiper insert

For steels,cast irons and stainless steel P K M


General purpose type

For cast irons K

CBN		
		
Regular insert	Wiper insert	Deburring wiper insert

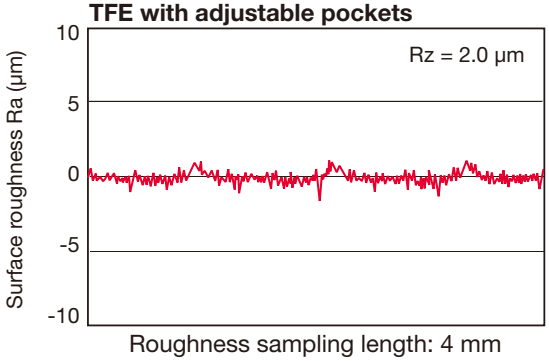
CUTTING PERFORMANCE

New TFE12R...-...A and TFE12...R

N

Surface roughness

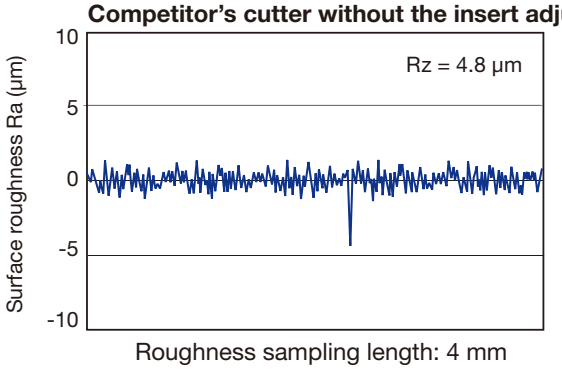
TFE with adjustable pockets



Roughness sampling length: 4 mm

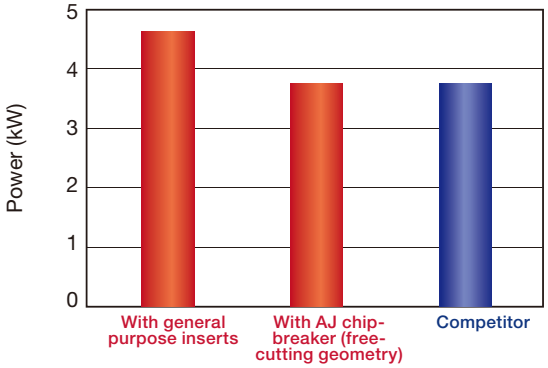
Cutter : TFE12R080M25.4-06A (ø80 mm, z = 6)
Insert : SEGW12X4ZEFR-D DX140
Machine : Vertical 5-axis M/C
BT40 15/22 kW (Max. 12,000 min^{-1})
Parameters : *Vc* = 1,500 m/min, n = 5,968 min^{-1}
fz = 0.2 mm/t, *Vf* = 7,162 mm/min
ap = 2.0 mm, *ae* = 67 mm
Wet / Dry : Wet
Material : AC4C-T6
Application : Face milling

Competitor's cutter without the insert adjustment



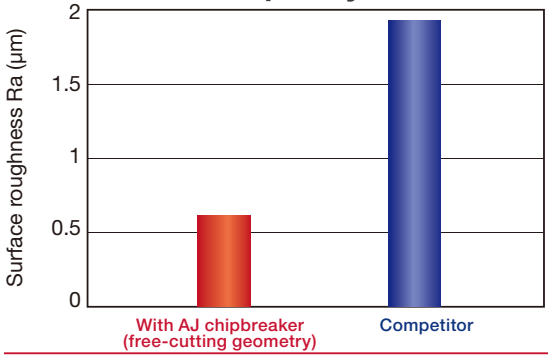
Roughness sampling length: 4 mm

Power requirement - AJ breaker



Cutter : TFE12125R (ø125 mm, z = 6)
Insert : SEGW12X4ZEFR-D DX140
: SEGT12X4-AJ KS05F
Machine : Vertical 5-axis M/C
BT40 15/22kW (Max. 12,000 min^{-1})
Parameters : *Vc* = 1,500 m/min, n = 5,968 min^{-1}
fz = 0.2 mm/t, *Vf* = 7,162 mm/min
ap = 2.0 mm, *ae* = 60 mm
Wet / Dry : Wet
Material : AC4C-T6
Application : Face milling

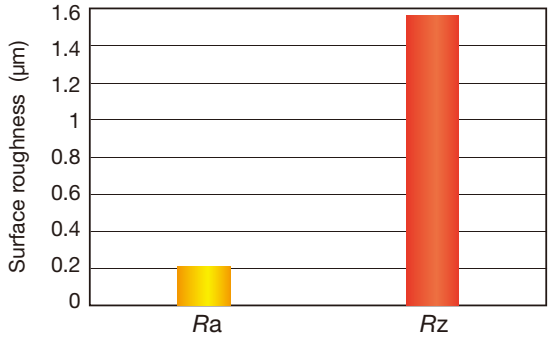
Surface finish quality - AJ breaker



CUTTING PERFORMANCE

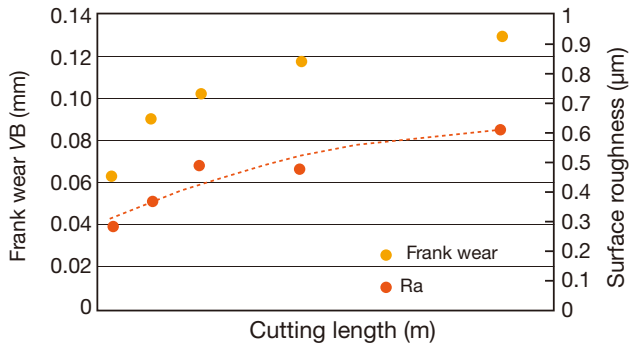
New TFE12R...-...A and TFE12...R

Surface roughness



Cutter : TFE12R100M25.4-08A (ø100 mm, z = 8)
Insert : 2QP-SECW12X412ZETR BX480
Machine : BT50 30/25 kW (Max. 10,000 min^{-1})
Parameters : *Vc* = 1,500 m/min, n = 4,777 min^{-1}
fz = 0.3 mm/t, *Vf* = 11,456 mm/min
ap = 0.5 mm, *ae* = 65 mm
Insert axial runout : < 2 µm
Wet / Dry : Dry
Material : FC250 (200x100)
Application : Face milling

Cutting performance



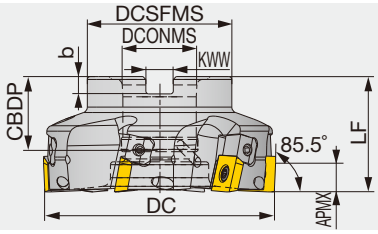
Cutter : TFE12R080M25.4-06A (ø80 mm, z = 6)
Insert : 2QP-SECW12X412ZETR BX480
Machine : BT50 30/22 kW (Max. 15,000 min^{-1})
Parameters : *Vc* = 1,200 m/min, n = 4,777 min^{-1}
fz = 0.3 mm/t, *Vf* = 8,599 mm/min
ap = 0.3 mm, *ae* = 50 mm
Insert axial runout : < 2 µm
Wet / Dry : Dry
Material : FC300 (200x100)
Application : Face milling

New

TFE12R...-...A

85.5° face mills for aluminum machining, with screw clamped inserts and adjustable pockets for axial runout

GAMP = +13°, GAMF = +7°



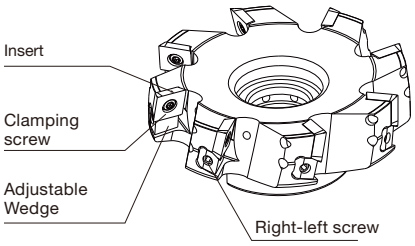
Air through type

Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TFE12R080M25.4-06A	8	80	6	50	40	25.4	26	9.5	6	0.70	with	SEG*12X4...
TFE12R080M27.0E06A	8	80	6	55	40	27	22	12.4	7	0.69	with	SEG*12X4...
TFE12R100M25.4-08A	8	100	8	50	40	25.4	26	9.5	6	1.15	with	SEG*12X4...
TFE12R100M27.0E08A	8	100	8	55	40	27	22	12.4	7	1.11	with	SEG*12X4...
TFE12R125M31.7-10A	8	125	10	70	50	31.75	32	12.7	8	2.24	with	SEG*12X4...
TFE12R125M32.0E10A	8	125	10	70	50	32	28.5	14.4	8	2.14	with	SEG*12X4...

See page 11 for Insert setting procedure

SPARE PARTS

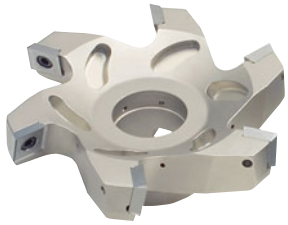
Designation	Clamping screw	Adjustable Wedge	Lubricant	Shell locking bolt	Right-left screw	Wrench	Wrench
TFE12R**A	CSTB-4	FW-701R	M-1000	TMBA-M12H	MCS520-2.5	P-2.5T	T-15LB

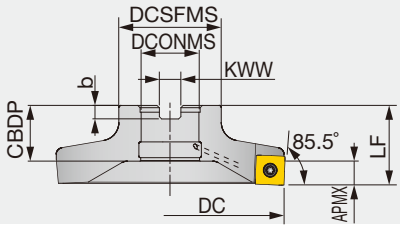


TFE12R

85.5° face mills with screw clamped inserts for aluminum machining

GAMP = +13°, GAMF = +7°



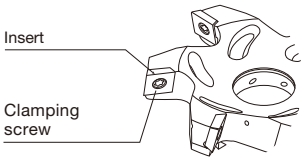


Air through type

Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TFE12063R	8	63	3	45	35	22	19	10	6	0.34	with	SEG*12X4...
TFE12080R	8	80	4	50	35	25.4	24.5	9.5	6	0.45	with	SEG*12X4...
TFE12100R	8	100	6	50	35	25.4	24.5	9.5	6	0.59	with	SEG*12X4...
TFE12125R	8	125	6	50	35	25.4	24.5	9.5	6	0.9	with	SEG*12X4...

SPARE PARTS

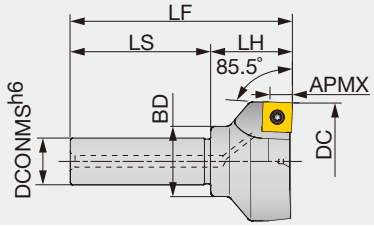
Designation	Clamping screw	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Wrench
TFE12063R	CSPB-4S	M-1000	-	CM10X30H	IP-15D
TFE12080R	CSPB-4S	M-1000	TMBA-M12H	-	IP-15D
TFE12100R	CSPB-4S	M-1000	TMBA-M12H	-	IP-15D
TFE12125R	CSPB-4S	M-1000	TMBA-M12H	-	IP-15D



EFE12R

85.5° endmills with screw clamped inserts for aluminum machining

GAMP= +13°, GAMF= +7°

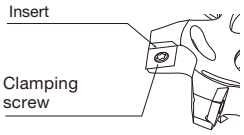


Air through type

Designation	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	with	SEG*12X4...

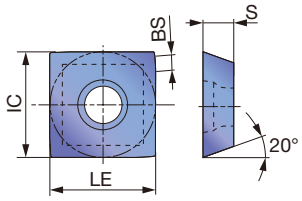
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
EFE12000R	CSPB-4S	M-1000	IP-15D

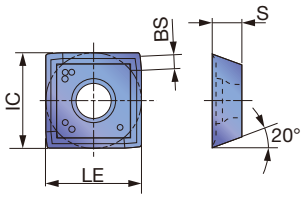


INSERTS

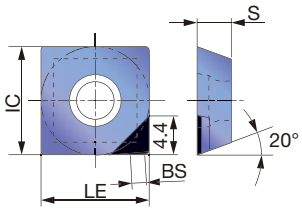
SEGW12X4ZEPR / ZEFR



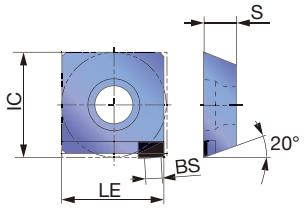
SEGT12X4-AJ



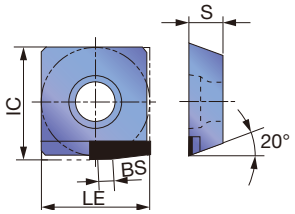
SEGW12X4ZEFR-D



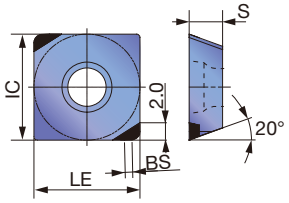
SEGW12X4ZEFR-WD



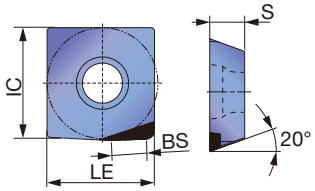
SEGW12X4ZEFR-BD



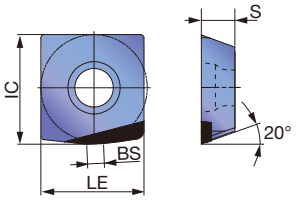
2QP-SECW12X412ZETR



1QP-SECW12X4ZETR-W



1QP-SECW12X4ZETR-B



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

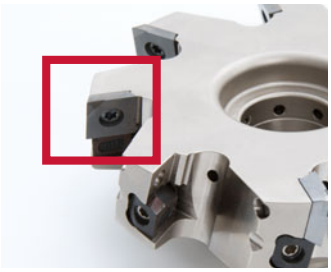
★ : First choice

Designation	APMX	Coated			Cermet	Un-coated	PCD	CBN				
		AH120	AH140	DS1100	NS740	KS05F	DX140	BX480	IC	LE	S	BS
SEGW12X4ZEFR	8					●			12.7	12.7	4	1.8
SEGW12X4ZEPR	8	●	●		●				12.7	12.7	4	1.4
SEGT12X4ZEFR-AJ	8			●		●			12.7	12.7	4	1.8
SEGW12X4ZEFR-D	3.5						●		12.7	12.7	4	1.8
SEGW12X4ZEFR-WD	-						●		12.8	12.4	4	2
SEGW12X4ZEFR-BD	-						●		13.1	12.4	4	1.8
2QP-SECW12X412ZETR	1.5							●	12.7	12.7	4	0.9
1QP-SECW12X4ZETR-W	-							●	12.9	12.3	4	4
1QP-SECW12X4ZETR-B	-							●	13.1	12.3	4	2

●: Line-up
DX140 : Package quantity = 2pc.
BX480 : Package quantity = 1pc.

Insert setting procedure – adjustable-type TFE face milling cutter

1 Cleaning insert pockets



Remove all the inserts. Use air pressure to thoroughly clean the pockets of dust and chips.

2 Loosening wedges

Use the included key for wedge adjustment to loosen all the wedges so that they do not exceed the cutter's outer diameter.

3 Clamping inserts for adjustments

Place the insert in the pocket and lightly tighten the clamping screw with the included key. Suggested method: Tighten the screw first with the straight end of the key (Fig A) until finger tight, then use the angled end to further tighten the screw for insert steadiness (Fig B). Do NOT fully tighten the screw at this moment as this procedure is prior to insert adjustment. Repeat the procedure for all inserts.

4 Axial height adjustment of inserts

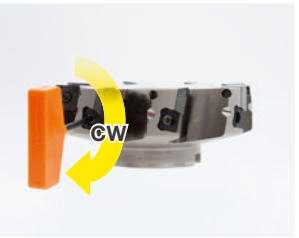
Mount the cutter in Step ③ on the setting fixture of the pre-setter. Determine the highest insert, and, while carefully monitoring each insert's axial position, rotate the wedge screw in the CW direction to raise the insert in the axial direction, as close as possible to that of the highest insert. Repeat this procedure for all inserts.

Note:
Since the insert is clamped, loosening the wedge screw will not bring down the insert. To lower insert height, both the insert and wedge screws need to be loosened. Start the adjusting procedure for this insert again from Step 1.

5 Tighten insert screws

Tighten the insert clamping screw at 3.5 Nm, using the key as shown to the left. Repeat the procedure for all inserts.

6 Final adjustments



After final tightening of all insert screws, measure to ensure all inserts are at the desired axial heights. If necessary, further tighten any wedge screws in the CW direction for the final few microns. For inserts exceeding the required runout, re-start the adjustment procedure from Step ① .

Note:
Do not re-tighten the insert screw after insert adjustment is completed. Additional tightening may weaken wedge clamping torque.

Cautions:

① Always clean all the insert pockets thoroughly of dust and chips. Any objects present in the pocket may shift the insert's position during machining and cause poor surface finishing quality.
② Always loosen the wedge screw before installing the insert as described in Step ② . If the wedge is left tightened in the cutter, the adjustment range of the wedge will be limited, and insert height may not be as freely adjustable as possible.
③ With a finger, firmly press and hold the insert into the wedge while tightening the insert screw. If the insert is not in contact, the wedge has to be driven until the gap in between is closed, with no actual insert movement.
④ Loosening the wedge will not lower the insert. When the insert height exceeds the desired setting during adjustment, loosen both the insert and wedge screws and re-start the adjustment procedure from Step ① . If the insert slides downward when the wedge screw is loosened, the clamping torque of the insert screw is too low. Tighten the insert screw with a slightly higher torque. Suggested clamping method: First use the straight end of the key to tighten the screw until finger tight, then switch the key to the angled side and turn an additional 45°.
⑤ Do not exceed the recommended clamping torque when fixing the insert. This may damage or fracture the insert screw.

HOW TO PUT EACH INSERT TOGETHER

			For general	Accuracy of machining surface priority	Burr reduction priority
Applicable insert	General insert	SEGW12X4ZEFR-D DX140 2QP-SECW12X412ZETR BX480	◎	◎	◎
	Wiper insert	SEGW12X4ZEFR-WD DX140 1QP-SECW12X4ZETR-W BX480	–	◎	–
	Wiper insert for burr reduction	SEGW12X4ZEFR-BD DX140 1QP-SECW12X4ZETR-BX480	–	–	◎
	Number of Inserts by type		All general	1 or 2 wiper inserts in cutter body	General insert : Burr wiper insert = 1 : 1
Accuracy of machining surface (roughness and undulation)			△	◎	○
Burr of machining surface			△	○	◎

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Carbon steels and alloy steels < 300HB	AH120	SEGW12X4ZEPR	100 - 180	0.03 - 0.15
		NS740	SEGW12X4ZEPR	100 - 180	0.03 - 0.15
M	Stainless steels < 250HB	AH140	SEGW12X4ZEPR	80 - 180	0.03 - 0.15
K	Grey and ductile cast irons	AH120	SEGW12X4ZEPR	100 - 200	0.03 - 0.15
	Grey cast irons	BX480	2QP-SECW12X412ZETR	800 - 1500	0.05 - 0.3
	Ductile cast irons	BX480	2QP-SECW12X412ZETR	500 - 800	0.05 - 0.2
N	Cast aluminium alloy / Die-cast Si < 13%	KS05F	SEGT12X4ZEFR-AJ	200 - 1500	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Cast aluminium alloy / Die-cast Si ≥ 13%	KS05F	SEGT12X4ZEFR-AJ	80 - 200	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 500	0.05 - 0.2
	Aluminium alloy Tensile strength < 350 N/mm²	KS05F	SEGT12X4ZEFR-AJ	200 - 1500	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Aluminium alloy Tensile strength > 350 N/mm²	KS05F	SEGW12X4ZEFR	200 - 1500	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Copper alloy	KS05F	SEGT12X4ZEFR-AJ	200 - 500	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 500	0.05 - 0.2

Notes:
- In milling aluminium and copper alloys:
  (1) For improved surface finish, use together with wiper insert SEGW12X4ZEFR-WD
  (2) For reducing burr occurrence, use together with deburring inserts SEGW12X4ZEFR-BD
- When milling aluminium and copper alloys, use of a water soluble cutting fluid is recommended. When milling steels, cast irons, and stainless steels, dry cutting is recommended.
- When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

DPD09 / EDPD09

Most suitable for roughing to super-finishing of non-ferrous components

Through-coolant
Through-coolant. Facilitates smooth chip evacuation and eliminates chip re-cutting

Insert geometry variations
Three standard types of insert geometries are available. Reconditioning service is available.

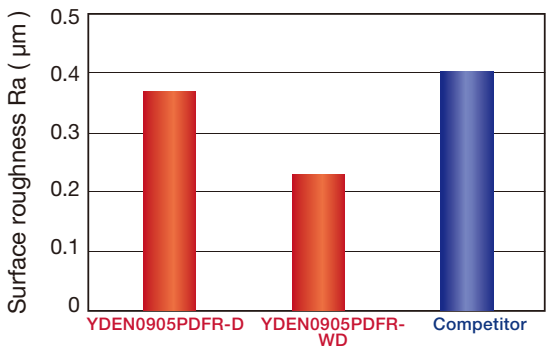
Enormously high balancing quality for high-speed milling
Balancing grade: G16. (ISO1940/1)
Maximum cutting speed:
Vc = 4000 m/min

Lightweight body
The cutter body, although made of steel, is designed and built for an extreme lightness. The cutter is also suited for use on BT30 spindle machines

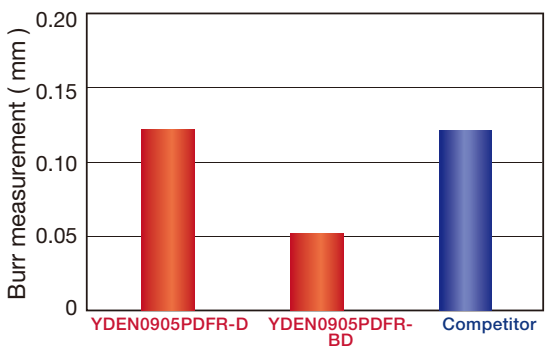
High-precision adjustment system
Precise axial adjustment of all inserts is possible to a range of ≤ 5 µm

CUTTING PERFORMANCE

Surface finish quality



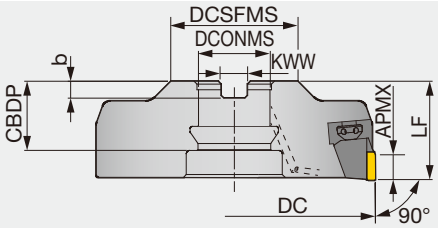
Burr generation



DPD09

Light-weight square mills with PCD inserts in adjustable pockets, for alminum machining

GAMP = +8.5°, GAMF = +3° ~ +5°

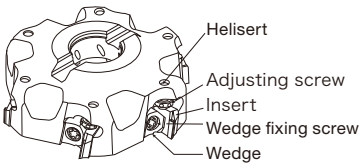


Air through type

Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
DPD09080R	7	80	4	50	41	25.4	23	9.5	6	0.8	with	YDEN0905...
DPD09080RB	7	80	6	50	41	25.4	28.5	9.5	6	0.82	with	YDEN0905...
DPD09100R	7	100	6	50	35	25.4	24.5	9.5	6	1.13	with	YDEN0905...
DPD09100RB	7	100	8	50	35	25.4	24.5	9.5	6	1.17	with	YDEN0905...
DPD09125R	7	125	6	50	35	25.4	24.5	9.5	6	1.7	with	YDEN0905...
DPD09125RB	7	125	10	50	35	25.4	24.5	9.5	6	1.77	with	YDEN0905...
DPD09160R	7	160	8	60	52	31.75	40	12.7	8	3.28	with	YDEN0905...
DPD09160RB	7	160	12	60	52	31.75	40	12.7	8	3.25	with	YDEN0905...

SPARE PARTS

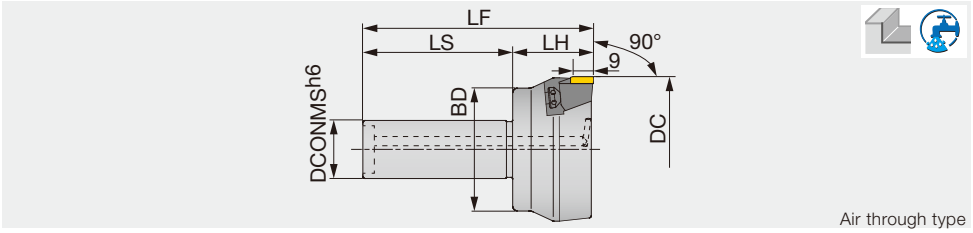
Designation	Wedge	Wedge fixing screw	Adjusting screw	Helisert	Shell locking bolt 1	Shell locking bolt 2	Wrench 1	Wrench 2
DPD09080R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	-	CM12X30H	T-27T	T-7F
DPD09100R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	TMBA-M12H	-	T-27T	T-7F
DPD09125R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	TMBA-M12H	-	T-27T	T-7F
DPD09160R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	TMBA-M16H	-	T-27T	T-7F



EDPD09

Light weight square endmills with PCD inserts in adjustable pockets, for alminum machining

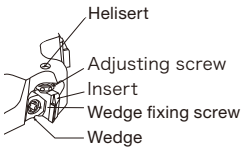
GAMP = +8.5°, GAMF = +3°



Designation	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EDPD09063R	8	63	3	25	37	60	40	100	0.75	with	YDEN0905...

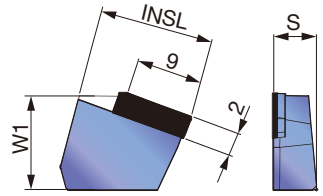
SPARE PARTS

Designation	Wedge	Wedgte fixing screw	Adjusting screw	Helisert	Wrench 1	Wrench 2
EDPD09063R	FW-304R-T	FDS-8SST	AJM5	LM5-0.8X1DNS	T-27T	T-7F

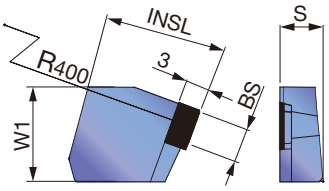


INSERTS

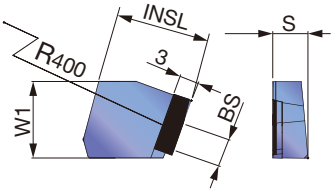
YDEN0905PDFR-D



YDEN0905PDFR-WD



YDEN0905PDFR-BD



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

★ : First choice

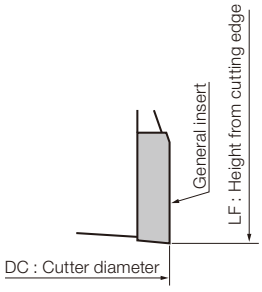
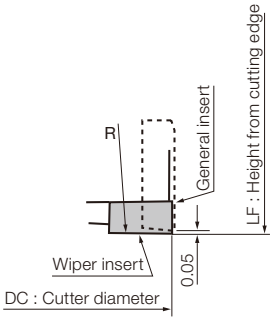
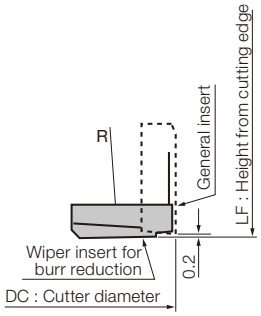
Designation	APMX	PCD	W1	INSL	S	BS
		DX140				
YDEN0905PDFR-D	7	●	12.4	15.1	5.7	-
YDEN0905PDFR-WD	-	●	12.4	15.2	5.7	4.5
YDEN0905PDFR-BD	-	●	12.4	15.2	5.7	4.5

Note: As a principle, our company re-grinds these inserts.

●: Line up

Package quantity = 1pc.

HOW TO PUT EACH INSERT TOGETHER

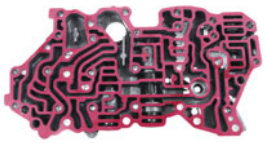
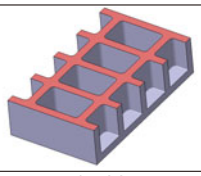
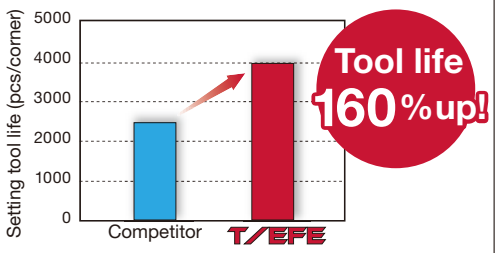
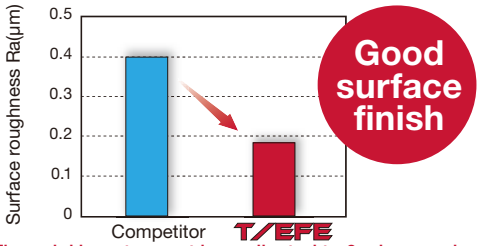
			For general	Accuracy of machining surface priority	Burr reduction priority
Applicable insert	General insert	YDEN0905PDFR-D	◎	◎	◎
	Wiper insert	YDEN0905PDFR-WD	–	◎	–
	Wiper insert for burr reduction	YDEN0905PDFR-BD	–	–	◎
	Number of Inserts by type		All general	1 or 2 wiper inserts in cutter body	General insert : Burr wiper insert = 1 : 1
Specification of insert setting					
Accuracy of machining surface (roughness and undulation)			△	◎	○
Burr of machining surface			△	○	◎

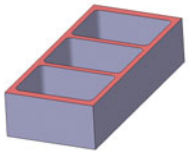
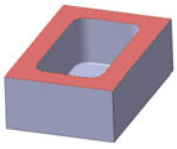
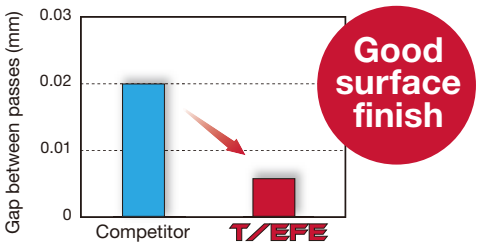
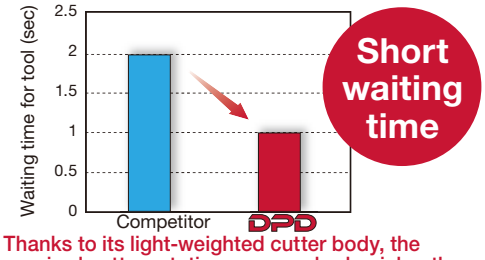
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
N	Aluminium alloy castings & die castings Si < 13%	DX140	YDEN0905PDFR-D	500 - 4000	0.05 - 0.2
	Aluminium alloy castings & die castings Si ≥ 13%	DX140	YDEN0905PDFR-D	200 - 500	0.05 - 0.2
	Rolled aluminium alloys	DX140	YDEN0905PDFR-D	500 - 4000	0.05 - 0.2
	Copper alloys	DX140	YDEN0905PDFR-D	200 - 500	0.05 - 0.2

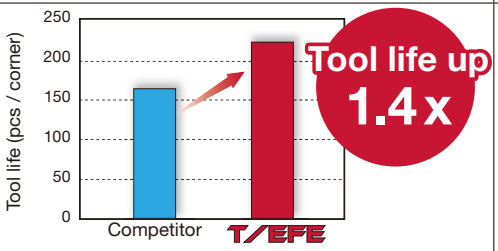
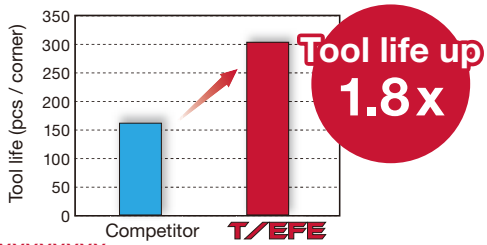
Notes:
(1) When requiring improved surface finish, use the wiper insert together with regular inserts YDEN0905PDFR-WD.
(2) When requiring reduced burr occurrence, use the deburring inserts together with regular inserts YDEN0905PDFR-BD.
(3) When using the cutter at speeds over 1500m/min, use an arbor or tool-holder balanced to within G16.
(4) Wet cutting, using a water soluble cutting fluid, is recommended.
(5) When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

PRACTICAL EXAMPLES

	Workpiece type	Valve body	Plate
	Cutter	TFE12R125M31.7-10A (ø125 mm, z = 10)	TFE12R080M25.4-06A (ø80 mm, z = 6)
	Insert	SEGW12X4ZEFR-D	SEGW12X4ZEFR-D
	Grade	DX140	DX140
	Workpiece material	ADC12  N	AC4C-T6  N
Cutting conditions	Cutting speed: *Vc* (m/min)	2,000	1,500
	Feed per tooth: *fz* (mm/t)	0.06	0.2
	Feed speed: *Vf* (m/min)	2,400	7,200
	Depth of cut: *ap* (mm)	0.5	2.0
	Width of cut: *ae*(mm)	100	60
	Application	Face milling	Face milling
	Coolant	Wet	Wet
	Machine	Vertical M/C,BT40	Vertical M/C、BT40
	Results	 Inserts were replaced after 2,500 units for the competitor's cutter. Tool life of the TFE cutter has achieved 4,000 units.	 The axial insert runout has adjusted to 2 microns, dramatically improving the surface quality over the competitor's non-adjustable style. (Rz=4.8 μm vs Rz=2.0 μm)

	Workpiece type	Plate	Housing
	Cutter	TFE12125R (ø125 mm, z = 4)	DPD09100R (ø100 mm, z = 6)
	Insert	SEGT12X4ZEFR-AJ	YDEN0905PDFR-D
	Grade	KS05F	DX140
	Workpiece material	AC4B-T6  N	AC3A  N
Cutting conditions	Cutting speed: *Vc* (m/min)	1500	1,900
	Feed per tooth: *fz* (mm/t)	0.2	0.04
	Feed speed: *Vf* (m/min)	4,600	1,450
	Depth of cut: *ap* (mm)	2.0	1.0
	Width of cut: *ae*(mm)	80	40
	Application	Face milling	Face milling
	Coolant	Wet	Wet
	Machine	Vertical M/C,BT30	Vertical M/C, BT30
	Results	 Steps were removed between the two passes, eventually improving the total surface finish quality.	 Thanks to its light-weighted cutter body, the required cutter rotation was reached quicker than the competitor, reducing the total cutting time. The surface roughness was also improved.

PRACTICAL EXAMPLES

	Workpiece type	Machine part	Pipe exhaust
	Cutter	TFE12R080M27.0E06A (ø80 mm, z = 6)	TFE12R125M31.7-10A (ø125 mm, z = 10)
	Insert	2QP-SECW12X412ZETR	2QP-SECW12X412ZETR
	Grade	BX480	BX480
	Workpiece material	FC200  K	FCD500  K
Cutting conditions	Cutting speed: *Vc* (m/min)	750	800
Cutting conditions	Feed per tooth: *fz* (mm/t)	0.02	0.02
Cutting conditions	Feed speed: *Vf* (m/min)	900	407
Cutting conditions	Depth of cut: *ap* (mm)	0.15	0.4
Cutting conditions	Width of cut: *ae*(mm)	66	90
Cutting conditions	Application	Face milling / Interrupted	Face milling / Interrupted
Cutting conditions	Coolant	Dry	Wet
Cutting conditions	Machine	Horizontal MC	Vertical MC
	Results	 XXXXXXXXX	 XXXXXXXXX

Tungaloy Corporation (Head office)
11-1 Yoshima-Kogyodanchi
Iwaki-city, Fukushima, 970-1144 Japan
Phone: +81-246-36-8501
Fax: +81-246-36-8542
www.tungaloy.co.jp

Tungaloy America, Inc.
3726 N Ventura Drive
Arlington Heights,IL 60004, U.S.A.
Phone: +1-888-554-8394
Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada
432 Elgin St. Unit 3
Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779
Fax: +1-519-758-5791
www.tungaloy.com/ca

Tungaloy de Mexico S.A.
C Los Arellano 113,
Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone: +52-449-929-5410
Fax: +52-449-929-5411
www.tungaloy.com/mx

Tungaloy do Brasil Ltda.
Avd. Independencia N4158 Residencial Flora
13280-000 Vinhedo, São Paulo, Brasil
Phone: +55-19-38262757
Fax: +55-19-38262757
www.tungaloy.com/br

Tungaloy Germany GmbH
An der Alten Ziegelei 1
D-40789 Monheim, Germany
Phone: +49-2173-90420-0
Fax: +49-2173-90420-19
www.tungaloy.de

Tungaloy France S.A.S.
ZA Courtaboeuf - Le Rio
1 rue de la Terre de feu
F-91952 Courtaboeuf Cedex, France
Phone: +33-1-6486-4300
Fax: +33-1-6907-7817
www.tungaloy.fr

Tungaloy Italia S.r.l.
Via E. Andolfato 10
I-20126 Milano, Italy
Phone: +39-02-252012-1
Fax: +39-02-252012-65
www.tungaloy.it

Tungaloy Czech s.r.o.
Turanka 115
CZ-627 00 Brno, Czech Republic
Phone: +420-532 123 391
Fax: +420-532 123 392
www.tungaloy.cz

Tungaloy Ibérica S.L.
C/Miquel Servet, 43B, Nau 7
Pol. Ind. Bufalvent
ES-08243 Manresa (BCN), Spain
Phone: +34 93 113 1360
Fax: +34 93 876 2798
www.tungaloy.es

Tungaloy Scandinavia AB
Bultgatan 38
442 40 Kungälv, Sweden
Phone: +46-462119200
www.tungaloy.se

Tungaloy Rus, LLC
115432, Moscow, Andropov Avenue, 18,
building 7, 11th floor (office 3). Metro station
"Technopark". Business center «I-Land».
Phone: +7-499-683-01-80/81
www.tungaloy.com/ru

Tungaloy Polska Sp. z o.o.
ul. Genewska 24
03-963 Warszawa, Poland
Phone: +48-22-617-0890
Fax: +48-22-617-0890
www.tungaloy.com/pl

Tungaloy U.K. Ltd
The Technology Centre,
Wolverhampton Science Park
Glaisher Drive, Wolverhampton
West Midlands WV10 9RU, UK
Phone: +44 121 4000 231
Fax: +44 121 270 9694
www.tungaloy.com/uk
salesinfo@tungaloyuk.co.uk

Tungaloy Hungary Kft
Erzsébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-6846
Fax: +36 1 781-6866
www.tungaloy.com/hu
info@tungaloytools.hu

Tungaloy Turkey
Dudullu OSB 4. Cad No:4
34776 Umraniye Istanbul, TURKEY
Phone: +90 216 540 04 67
Fax: +90 216 540 04 87
www.tungaloy.com.tr
info@tungaloy.com.tr

Tungaloy Benelux b.v.
Tjalk 70
NL-2411 NZ Bodegraven, Netherlands
Phone: +31 172 630 420
Fax: +31 172 630 429
www.tungaloy-benelux.com

Tungaloy Croatia
Ulica bana Josipa Jelačića 87,
10430 Samobor
Phone: +385 1 3326 604
Fax: +385 1 3327 683
www.tungaloy.hr

Tungaloy Cutting Tool (Shanghai) Co.,Ltd.
Rm No 401 No.88 Zhabei
Jiangchang No.3 Rd
Shanghai 200436, China
Phone: +86-21-3632-1880
Fax: +86-21-3621-1918
www.tungaloy.com/cn

Tungaloy Cutting Tool (Thailand) Co.,Ltd.
Interlink tower 4th Fl.
1858/5-7 Bangna-Trad Road
km.5 Bangna, Bangna, Bangkok 10260
Thailand
Phone: +66-2-751-5711
Fax: +66-2-751-5715
www.tungaloy.co.th

Tungaloy Singapore (Pte.), Ltd.
62 Ubi Road 1, #06-11 Oxley BizHub 2
Singapore 408734
Phone: +65-6391-1833
Fax: +65-6299-4557
www.tungaloy.com/sg

Tungaloy Vietnam
LE 04-38, Lexington Residence
67 Mai Chi Tho, Dist. 2,
Ho Chi Minh City, Vietnam
Phone: +84-8-37406660
Fax: +84-8-37406662
www.tungaloy.com/sg

Tungaloy India Pvt. Ltd.
Indiabulls Finance Centre,
Unit # 902-A, 9th Floor,
Tower 1, Senapati Bapat Marg,
Elphinstone Road (West),
Mumbai -400013, India
Phone: +91-22-6124-8804
Fax: +91-22-6124-8899
www.tungaloy.com/in

Tungaloy Korea Co., Ltd
#1312, Byucksan Digital Valley 5-cha
Beotkkot-ro 244, Geumcheon-gu
153-788 Seoul, Korea
Phone: +82-2-2621-6161
Fax: +82-2-6393-8952
www.tungaloy.com/kr

Tungaloy Malaysia Sdn Bhd
50 K-2, Kelana Mall, Jalan SS6/14
Kelana Jaya, 47301
Petaling Jaya, Selangor Darul Ehsan
Malaysia
Phone: +603-7805-3222
Fax: +603-7804-8563
www.tungaloy.com/my

Tungaloy Australia Pty Ltd
PO Box 2232, 68/1470
Ferntree Gully Road, Knoxfield
Victoria 3180, Australia
Phone: +61-3-9755-8147
Fax: +61-3-9755-6070
www.tungaloy.com.au

PT. Tungaloy Indonesia
Kompleks Grand Wisata Block AA-10 No.3-5
Cibitung
Bekasi 17510, Indonesia
Phone: +62-21-8261-5808
Fax: +62-21-8261-5809
www.tungaloy.com/id

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