

YE-XS13



Registered
ISO 9001:2008 / ISO 14001:2004



X-SPEED ROUGHER

CARBIDE & HSS-PM ROUGHING END MILL

- ▶ Cast iron, Carbon steels, Alloy steels
- ▶ Tool steels
- ▶ Pre-Hardened steels
- ▶ Stainless steels



YG YG-1 CO., LTD.

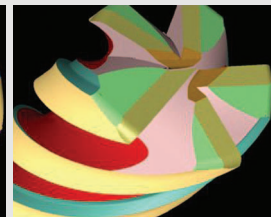
CHARACTERISTICS

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.

▶ 4 FLUTE



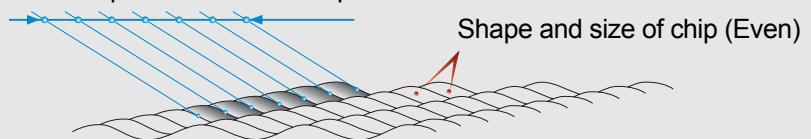
▶ 5 FLUTE



CHIP THICKNESS AND SHAPE

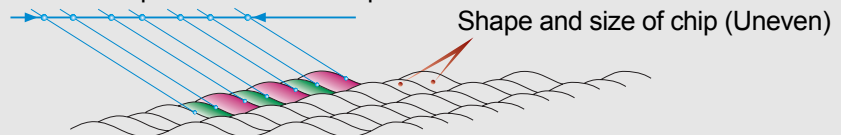
▶ Conventional Roughing

Even chip thickness and shape



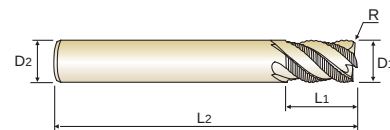
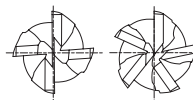
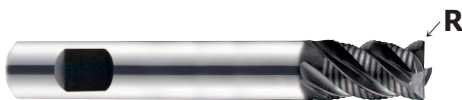
▶ X-SPEED Rougher

Uneven chip thickness and shape



HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS

NEW



SHORT LENGTH GAE53 series

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
FLAT	R	D1	D2	L1	L2	
GAE53060	R0.5	6.0	6	13	57	4
GAE53070	R0.5	7.0	10	16	66	4
GAE53080	R0.5	8.0	10	19	69	4
GAE53090	R0.5	9.0	10	19	69	4
GAE53100	R0.5	10.0	10	22	72	4
GAE53120	R0.5	12.0	12	26	83	4
GAE53140	R1.0	14.0	16	26	83	4
GAE53160	R1.0	16.0	16	32	92	5
GAE53180	R1.0	18.0	20	32	92	5
GAE53200	R1.0	20.0	20	38	104	5

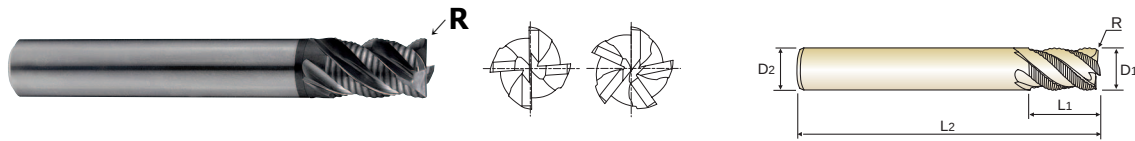
Tolerances according to DIN 7160 & 7161

Tolerance range in μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	$\begin{smallmatrix} 0 \\ -6 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -8 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -9 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -11 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -13 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -16 \end{smallmatrix}$

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○		◎		◎		

CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT & LONG LENGTH CORNER RADIUS



SHORT LENGTH **G9D75, G9D67** series

Unit : mm

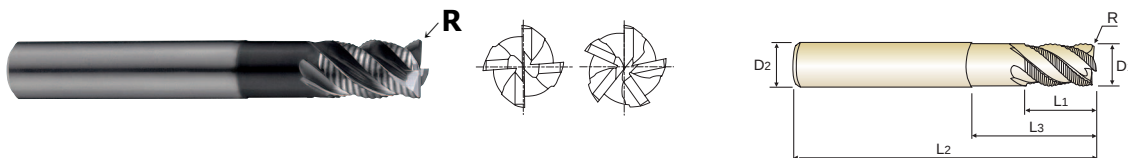
EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G9D75060	G9D67060	R0.5	6.0	6	9	57	4
G9D75080	G9D67080	R0.5	8.0	8	12	63	4
G9D75100	G9D67100	R0.5	10.0	10	15	72	4
G9D75120	G9D67120	R0.5	12.0	12	18	83	4
G9D75160	G9D67160	R1.0	16.0	16	24	92	5
G9D75200	G9D67200	R1.0	20.0	20	30	104	5

LONG LENGTH **G9D76, G9D68** series

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G9D76060	G9D68060	R0.5	6.0	6	12	57	4
G9D76080	G9D68080	R0.5	8.0	8	16	63	4
G9D76100	G9D68100	R0.5	10.0	10	20	72	4
G9D76120	G9D68120	R0.5	12.0	12	24	83	4
G9D76160	G9D68160	R1.0	16.0	16	32	92	5
G9D76200	G9D68200	R1.0	20.0	20	40	104	5

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH CORNER RADIUS



LONG REACH **G9D77, G9D69** series

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L3	L2	
G9D77060	G9D69060	R0.5	6.0	6	9	18	57	4
G9D77080	G9D69080	R0.5	8.0	8	12	24	63	4
G9D77100	G9D69100	R0.5	10.0	10	15	30	72	4
G9D77120	G9D69120	R0.5	12.0	12	18	36	83	4
G9D77160	G9D69160	R1.0	16.0	16	24	48	100	5
G9D77200	G9D69200	R1.0	20.0	20	30	60	110	5

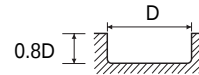
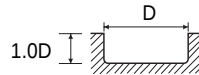
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

◎ : Excellent ○ : Good

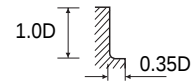
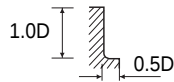
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		

G9D75, G9D67, G9D77, G9D69 series

MATERIAL	ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON				ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS			
HARDNESS	~ HRc 25				HRc 25 ~ HRc 40			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	12000	1550	225	0.032	10600	1100	200	0.026
8.0	9000	1650	225	0.046	8100	1180	205	0.036
10.0	7200	1650	225	0.057	6400	1180	200	0.046
12.0	6000	1540	225	0.064	5400	1140	205	0.053
16.0	4500	1500	225	0.067	4100	1050	205	0.051
20.0	3600	1330	225	0.074	3200	900	200	0.056



MATERIAL	ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON				ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS			
HARDNESS	~ HRc 25				HRc 25 ~ HRc 40			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15800	2570	300	0.041	14300	1850	270	0.032
8.0	11900	2700	300	0.057	10700	1950	270	0.046
10.0	9500	2700	300	0.071	8500	1950	265	0.057
12.0	8000	2570	300	0.080	7100	1850	270	0.065
16.0	6000	2450	300	0.082	5400	1750	270	0.065
20.0	4800	2140	300	0.089	4300	1500	270	0.070

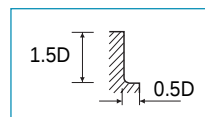


RPM = rev./min.
FEED = mm/min.

GAE53 series

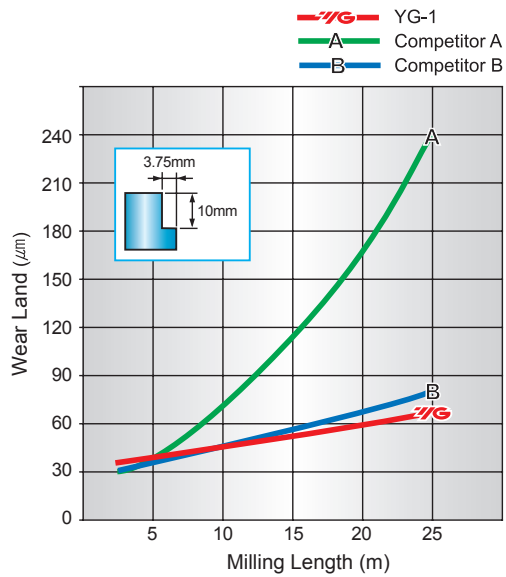
MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS, CAST IRONS				CARBON STEELS ALLOY STEELS, TOOL STEELS			
HARDNESS					~ HRc 20				HRc 20 ~ 30			
STRENGTH	~ 500N/mm ²				500 ~ 800N/mm ²				800 ~ 1000N/mm ²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3250	240	60	0.019	2500	185	48	0.018	1800	120	34	0.017
8.0	2750	300	70	0.027	2150	240	54	0.028	1550	170	38	0.027
10.0	2150	430	70	0.050	1700	330	54	0.049	1200	205	38	0.043
12.0	1800	430	70	0.060	1400	350	54	0.063	1000	240	38	0.059
14.0	1550	430	70	0.055	1200	350	54	0.073	850	240	38	0.069
16.0	1400	430	70	0.063	1100	350	54	0.081	750	240	38	0.080
18.0	1200	430	70	0.072	1000	350	54	0.085	700	240	38	0.086
20.0	1100	445	70	0.080	850	350	54	0.101	600	240	38	0.100

MATERIAL	PREHARDENED STEELS ALLOY STEELS, TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc 30 ~ 40							
STRENGTH	1000 ~ 1300N/mm ²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1500	110	28	0.018	1750	130	33	0.019
8.0	1200	130	32	0.028	1450	170	36	0.029
10.0	1000	170	32	0.041	1150	200	36	0.045
12.0	850	190	32	0.055	950	245	36	0.064
14.0	700	190	32	0.065	850	245	36	0.074
16.0	600	190	32	0.075	700	245	36	0.085
18.0	550	190	32	0.082	650	245	36	0.093
20.0	500	190	32	0.092	600	245	36	0.107

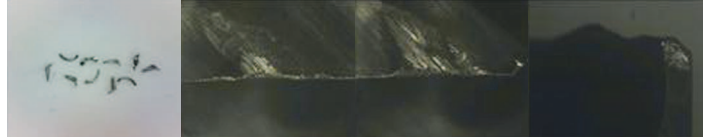


RPM = rev./min.
FEED = mm/min.

● TEST REPORT (DOWN & SIDE CUTTING)



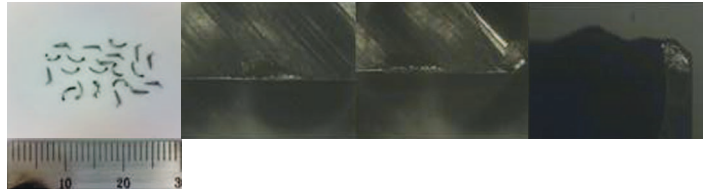
COMPETITOR A



COMPETITOR B



X-SPEED ROUGHER

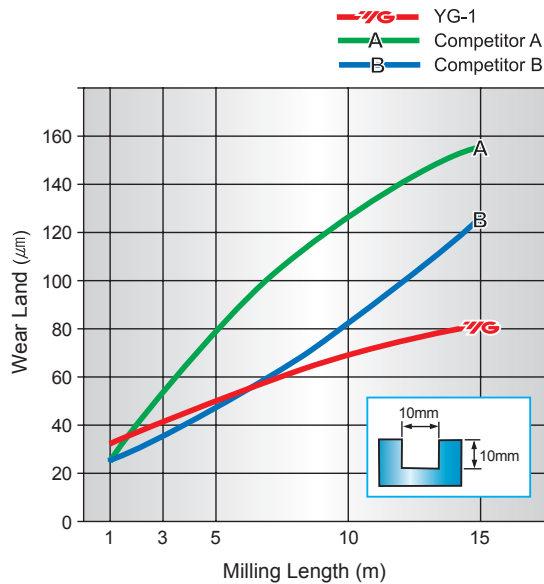


CUTTING CONDITION

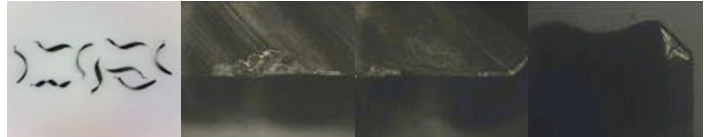
SIZE : X-SPEED ROUGHER : $\varnothing 10 \times 10 \times 15 \times 72$
 COMPETITOR A : $\varnothing 10 \times 10 \times 20 \times 72$
 COMPETITOR B : $\varnothing 10 \times 10 \times 15 \times 80$
Work Material : DIN : X40CrMoV51(1.2344)
 JIS : SKD61 (HRC30)
 AISI : H13

R.P.M : 5000rev./min. (157.08m/min.)
FEED : 1300mm/min.
Milling Method : Down & Side Cutting
Coolant : Wet Cut
Overhang : 32mm
Machine : Machining Center

● TEST REPORT (SLOTING)



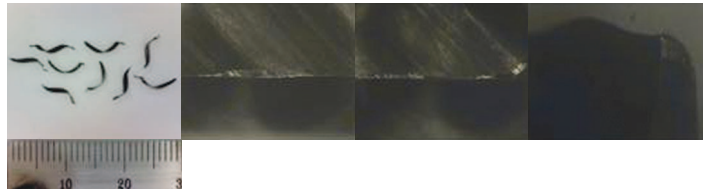
COMPETITOR A



COMPETITOR B



X-SPEED ROUGHER



CUTTING CONDITION

SIZE : X-SPEED ROUGHER : $\varnothing 10 \times 10 \times 15 \times 72$
 COMPETITOR A : $\varnothing 10 \times 10 \times 20 \times 72$
 COMPETITOR B : $\varnothing 10 \times 10 \times 15 \times 80$
Work Material : DIN : X40CrMoV51(1.2344)
 JIS : SKD61 (HRC20)
 AISI : H13

R.P.M : 4000rev./min. (125.66m/min.)
FEED : 1000mm/min.
Milling Method : Slotting
Coolant : Wet Cut
Overhang : 32mm
Machine : Machining Center



X-SPEED ROUGHER

CORNER RADIUS

- ▶ SHORT LENGTH
- ▶ LONG LENGTH
- ▶ LONG REACH

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Tool specifications are subject to change without notice.