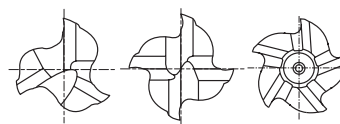


PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE
PREMIUM HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPFRÄSER - GROB

- ▶ Suitable for high-feed roughing milling.
- ▶ Designed to machine carbon steels, alloyed steels, stainless steels.
- ▶ YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- ▶ up to $\varnothing 20$: center cut, over $\varnothing 20$: non center cut

- ▶ Geeignet zum HSC - Schrupp - Fräsen.
- ▶ Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- ▶ Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- ▶ Bis $D \leq 20\text{mm}$: mit Zentrumschnitt, über $D > 20\text{mm}$: Ohne Zentrumschnitt.



up to $\varnothing 9$ $\varnothing 10 \sim \varnothing 20$ over $\varnothing 20$

P.1160, 1161

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED	js12	h6			
E9A33060	GAA33060	6.0	6	13	57	3
E9A33070	GAA33070	7.0	10	16	66	3
E9A33080	GAA33080	8.0	10	19	69	3
E9A33090	GAA33090	9.0	10	19	69	3
E9A33100	GAA33100	10.0	10	22	72	4
E9A33120	GAA33120	12.0	12	26	83	4
E9A33140	GAA33140	14.0	12	26	83	4
E9A33160	GAA33160	16.0	16	32	92	4
E9A33180	GAA33180	18.0	16	32	92	4
E9A33200	GAA33200	20.0	20	38	104	4
E9A33220	GAA33220	22.0	20	38	104	5
E9A33250	GAA33250	25.0	25	45	121	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70									
◎	◎	○				○		◎		◎				

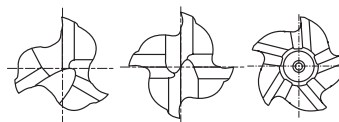


FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH ROUGHING - COARSE PREMIUM HSS-PM, MULTI SCHNEIDEN LANG SCHRUPFRÄSER - GROB

- ▶ Suitable for high-feed roughing milling.
- ▶ Designed to machine carbon steels, alloyed steels, stainless steels.
- ▶ YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- ▶ up to $\varnothing 20$: center cut, over $\varnothing 20$: non center cut
- ▶ Geeignet zum HSC - Schrump - Fräsen.
- ▶ Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- ▶ Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- ▶ Bis $D \leq 20\text{mm}$: mit Zentrumschnitt, über $D > 20\text{mm}$: Ohne Zentrumschnitt.



up to $\varnothing 9$ $\varnothing 10 \sim \varnothing 20$ over $\varnothing 20$



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED	js12	h6			
E9A34060	GAA34060	6.0	6	24	68	3
E9A34070	GAA34070	7.0	10	30	80	3
E9A34080	GAA34080	8.0	10	38	88	3
E9A34090	GAA34090	9.0	10	38	88	3
E9A34100	GAA34100	10.0	10	45	95	4
E9A34120	GAA34120	12.0	12	53	110	4
E9A34140	GAA34140	14.0	12	53	110	4
E9A34160	GAA34160	16.0	16	63	123	4
E9A34180	GAA34180	18.0	16	63	123	4
E9A34200	GAA34200	20.0	20	75	141	4
E9A34220	GAA34220	22.0	20	75	141	5
E9A34250	GAA34250	25.0	25	90	166	5

Tolerances according to DIN 7160 & 7161 Toleranzen nach DIN 7160 & 7161

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

◎ : Excellent ○ : Good

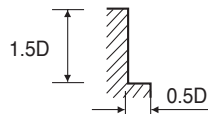
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRC30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER - SEITENFRÄSEN

GA941, GAA35, GAA33, GAA34 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRC20				HRC20 ~ HRC30			
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	2800	230	55	0.027	2200	180	40	0.027	1600	115	30	0.024
8.0	2400	290	60	0.040	1900	230	50	0.040	1400	160	35	0.038
10.0	1900	415	60	0.055	1500	315	45	0.053	1050	195	35	0.046
12.0	1600	415	60	0.065	1200	330	45	0.069	900	230	35	0.064
14.0	1400	415	60	0.074	1050	330	45	0.079	760	230	35	0.076
16.0	1200	415	60	0.086	950	330	50	0.087	660	230	35	0.087
18.0	1050	415	60	0.099	890	330	50	0.093	610	230	35	0.094
20.0	960	425	60	0.111	760	330	50	0.109	530	230	35	0.108
22.0	890	425	60	0.096	650	330	45	0.102	470	230	30	0.098
25.0	790	415	60	0.105	600	315	45	0.105	420	220	35	0.105

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRC30 ~ HRC40							
STRENGTH	1000 ~ 1300N/mm ²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1300	105	25	0.027	1450	110	25	0.025
8.0	1050	125	25	0.040	1200	140	30	0.039
10.0	890	160	30	0.045	950	170	30	0.045
12.0	740	180	30	0.061	800	205	30	0.064
14.0	630	180	30	0.071	690	205	30	0.074
16.0	550	180	30	0.082	600	205	30	0.085
18.0	490	180	30	0.092	550	205	30	0.093
20.0	440	180	30	0.102	480	205	30	0.107
22.0	400	180	30	0.090	430	205	30	0.095
25.0	360	180	30	0.100	390	200	30	0.103



※ The FEED, in long & long reach types, should be reduced by around 50%

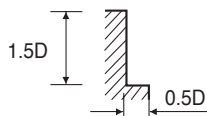
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER - SEITENFRÄSEN

E9941, E9A35, E9A33, E9A34 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRC20				HRC20 ~ HRC30			
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	1900	140	35	0.018	1500	110	30	0.018	1050	70	20	0.017
8.0	1600	180	40	0.028	1300	140	35	0.027	900	100	25	0.028
10.0	1300	260	40	0.050	1000	195	30	0.049	710	125	20	0.044
12.0	1100	260	40	0.059	820	205	30	0.063	600	140	25	0.058
14.0	930	260	40	0.056	710	205	30	0.058	510	140	20	0.055
16.0	820	260	40	0.063	640	205	30	0.064	450	140	25	0.062
18.0	710	260	40	0.061	610	205	35	0.056	410	140	25	0.057
20.0	660	265	40	0.067	510	205	30	0.067	360	140	25	0.065
22.0	610	265	40	0.072	440	205	30	0.078	320	140	20	0.073
25.0	540	260	40	0.080	400	195	30	0.081	280	135	20	0.080

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRC30 ~ HRC40							
STRENGTH	1000 ~ 1300N/mm ²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	900	65	15	0.018	1020	80	20	0.020
8.0	740	80	20	0.027	840	100	20	0.030
10.0	600	100	20	0.042	660	120	20	0.045
12.0	500	110	20	0.055	560	145	20	0.065
14.0	430	110	20	0.051	480	145	20	0.060
16.0	370	110	20	0.059	420	145	20	0.069
18.0	330	110	20	0.056	380	145	20	0.064
20.0	300	110	20	0.061	330	145	20	0.073
22.0	270	110	20	0.068	300	145	20	0.081
25.0	240	110	20	0.076	270	140	20	0.086



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t