

CARBIDE



Being the best through innovation



X-POWER

X-POWER FRÄSER

- Medium Steels to High Hardened Steels up to HRc65
- Für mittlere und gehärtete Stähle bis HRc65

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
EM810		CARBIDE, 2 FLUTE MINIATURE VOLLHARTMETALL, 2 SCHNEIDEN MINI	D0.4	D1.5	610
EM810 EM820		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D1.0	D25.0	611
EM816 EM826		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D2.0	D25.0	613
EM836 EM846		CARBIDE, 3 FLUTE MINIATURE VOLLHARTMETALL, 3 SCHNEIDEN MINI	D1.0	D20.0	614
EM895 EM896		CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 38° RECHTSSPIRALE KURZ	D1.0	D20.0	615
EM811 EM821		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D2.0	D25.0	616
EM817 EM827		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D2.0	D25.0	618
EM812 EM822		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG	D6.0	D25.0	619
EM834 EM844		CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG LENGTH VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG	D6.0	D25.0	620
EM876 EM877		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R0.5	R12.5	621
EM813 EM823		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS	R0.5	R12.5	622
EM899 EM900		CARBIDE, 2 FLUTE, MEDIUM, BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN MEDIUM STIRNRADIUS mit ABGESETZTEM SCHAFTTEIL	R1.5	R12.5	623
EM838 EM848		CARBIDE, 2 FLUTE LONG REACH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN GROÙE REICHWEITE STIRNRADIUS	R1.0	R10.0	624
EM902 EM904		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL	R0.5	R6.0	625
EM878 EM879		CARBIDE, 2 FLUTE STUB LENGTH HIGH PRECISION BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ PRÄZISER STIRNRADIUS	R0.5	R12.5	626
G4953 G4954		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE for OVER HRc55 VOLLHARTMETALL, 2 SCHNEIDEN, STIRNRADIUS, EXTRA KURZ für ÜBER HRc55	R0.5	R12.5	627
EM865		CARBIDE, 2 FLUTE MINIATURE BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS	R0.3	R1.5	628
EM669		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-ECONOMIC VERSION VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS-KOSTENGÜNSTIG	R1.5	R8.0	630
EM673		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-ECONOMIC VERSION VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-KOSTENGÜNSTIG	R2.5	R8.0	631

X-POWER END MILLS

◎ : Excellent, ○ : Good

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

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
EM863		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-SPHERE VERSION VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS-KUGELFORM	R1.5	R8.0	632
EM864		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-SPHERE VERSION VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-KUGELFORM	R2.5	R8.0	633
EM815 EM825		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS	R0.5	R12.5	634
EM832 EM842		CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH ROUGHING VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE KURZ SCHRUPPFÄSER	D6.0	D25.0	635
EM814 EM824		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFÄSER	D6.0	D25.0	636
EM833 EM843		CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH ROUGHING BALL NOSE VOLLHARTMETALL, 3&4 SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFÄSER STIRNRADIUS	R3.0	R10.0	637
EM818 EM828		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS	D3.0	D20.0	638
EM905		CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE KURZ ECKENRADIUS	D10.0	D22.0	639
EM819 EM829		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS	D3.0	D20.0	640
EM897 EM898		CARBIDE, 6 FLUTE 45° HELIX STUB LENGTH CORNER RADIUS VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA KURZ ECKENRADIUS	D6.0	D12.0	641
EM835 EM845		CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE LANG ECKENRADIUS	D6.0	D20.0	642
EM839 EM849		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS	D2.0	D16.0	643
EM837 EM847		CARBIDE, 2 FLUTE TAPER VOLLHARTMETALL, 2 SCHNEIDEN KONISCH	D2.0	D8.0	644
EM883		CARBIDE, 2 FLUTE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN	D0.4	D6.0	645
EM886		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN	R0.2	R3.0	649
EM889		CARBIDE, 4 FLUTE 25° HELIX TAPER for RIB PROCESSING VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH für SCHMALE RIPPEN	D1.0	D2.0	652
EM890		CARBIDE, 4 FLUTE 25° HELIX TAPER BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH STIRNRADIUS für SCHMALE RIPPEN	R0.5	R1.0	654
RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN					656



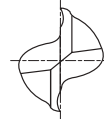
EM810 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE
VOLLHARTMETALL, 2 SCHNEIDEN MINI

- ▶ High precision milling in medical, optical, electronics and aero space industries.
- ▶ Excellent performance on high hardened steel

- ▶ Hochpräzises Fräsen für Medizintechnik, Optik, Elektronik und Raumfahrt.
- ▶ Ausgezeichnete Leistung bei der Bearbeitung von gehärtetem Stahl.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN				
EM810004	0.4	3	0.8	40
EM810005	0.5	3	1	40
EM810006	0.6	3	1.2	40
EM810007	0.7	3	1.4	40
EM810008	0.8	3	1.6	40
EM810009	0.9	3	2	40
EM810010	1.0	4	2.5	40
EM810011	1.1	4	2.5	40
EM810012	1.2	4	4	40
EM810013	1.3	4	4	40
EM810014	1.4	4	4	40
EM810015	1.5	4	4	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

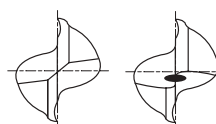
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

◎ : Excellent ○ : Good

CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Vorschübe.



up to Ø3mm over Ø3mm



P.656

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM810901	EM820901	1.0	6	2.5	40
EM810902	EM820902	1.5	6	4	40
EM810020	—	2.0	4	6	40
EM810903	EM820020	2.0	6	6	40
EM810025	—	2.5	4	8	40
EM810904	EM820903	2.5	6	8	40
EM810030	EM820030	3.0	6	8	45
EM810035	EM820035	3.5	6	10	45
EM810040	EM820040	4.0	6	11	45
EM810045	EM820045	4.5	6	11	45
EM810050	EM820050	5.0	6	13	50
EM810055	EM820055	5.5	6	13	50
EM810060	EM820060	6.0	6	13	50
EM810065	EM820065	6.5	8	16	60
EM810070	EM820070	7.0	8	16	60
EM810075	EM820075	7.5	8	16	60
EM810080	EM820080	8.0	8	19	60
EM810085	EM820085	8.5	10	19	70
EM810090	EM820090	9.0	10	19	70
EM810095	EM820095	9.5	10	19	70
EM810100	EM820100	10.0	10	22	70
EM810105	EM820105	10.5	12	22	75
EM810110	EM820110	11.0	12	22	75
EM810115	EM820115	11.5	12	22	75

◎ : 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							
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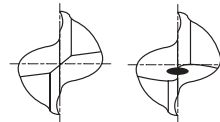


PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.
- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Vorschübe.



up to Ø3mm over Ø3mm



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM810120	EM820120	12.0	12	26	75
EM810906	EM820906	13.0	12	26	85
EM810140	EM820140	14.0	14	26	85
EM810905	EM820905	14.0	16	26	85
EM810908	EM820908	15.0	16	26	90
EM810160	EM820160	16.0	16	32	100
EM810909	EM820909	17.0	16	32	100
EM810180	EM820180	18.0	18	32	100
EM810911	EM820911	19.0	20	32	100
EM810200	EM820200	20.0	20	38	105
EM810220	EM820220	22.0	20	38	105
EM810240	EM820240	24.0	25	45	120
EM810250	EM820250	25.0	25	45	120

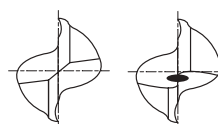
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

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							
○	◎	◎	◎	○				○		○		

◎ : Excellent ○ : Good

CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.
- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Bessere Werkstückoberflächen
- ▶ Höhere Vorschübe.



up to Ø3mm over Ø3mm



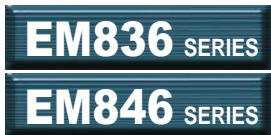
Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM816020	—	2.0	4	8	40
EM816030	EM826030	3.0	6	12	50
EM816040	EM826040	4.0	6	15	50
EM816050	EM826050	5.0	6	20	60
EM816060	EM826060	6.0	6	20	60
EM816080	EM826080	8.0	8	25	70
EM816100	EM826100	10.0	10	30	90
EM816120	EM826120	12.0	12	30	90
EM816140	EM826140	14.0	16	40	110
EM816160	EM826160	16.0	16	50	110
EM816180	EM826180	18.0	20	50	110
EM816200	EM826200	20.0	20	55	110
EM816250	EM826250	25.0	25	75	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
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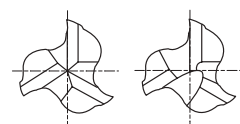
PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE MINIATURE VOLLHARTMETALL, 3 SCHNEIDEN MINI

► The MINIATURE END MILL developed by Y.G-1 is universally adopted as the most cost effective system for small milling cutters and possesses the advantage of 2 flute and 4 flute end mill.

► Der von YG-1 entwickelte Miniature-Fräser gilt als eins der wirtschaftlichsten Frässysteme und besitzt die Vorteile von 2 und 4 Schneiden Fräsern.



up to Ø3mm over Ø3mm

MG HM 3 30° PLAIN FLAT P.658

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM836010	—	1.0	4	2	35
EM836020	—	2.0	4	4	35
EM836030	EM846030	3.0	6	5	36
EM836040	EM846040	4.0	6	7	38
EM836050	EM846050	5.0	6	8	39
EM836060	EM846060	6.0	6	8	39
EM836080	EM846080	8.0	8	11	43
EM836100	EM846100	10.0	10	13	50
EM836120	EM846120	12.0	12	15	55
EM836140	EM846140	14.0	14	15	58
EM836160	EM846160	16.0	16	18	62
EM836180	EM846180	18.0	18	20	70
EM836200	EM846200	20.0	20	22	75

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

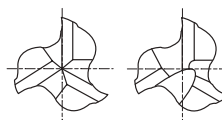
◎ : Excellent ○ : Good

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							
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CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 38° RECHTSSPIRALE KURZ

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Possesses the advantage of 2 flute and 4 flute end mill.
- ▶ Superior workpiece finishes.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Besitzt die Vorteile von 2 und 4 Schneiden Fräsern
- ▶ Bessere Werkstückoberflächen



up to Ø3mm over Ø3mm



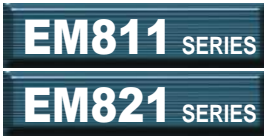
Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM895010	—	1.0	3	2.5	38
EM895015	—	1.5	4	5	50
EM895025	—	2.5	3	7	38
EM895030	—	3.0	3	10	38
EM895901	EM896901	3.0	6	10	50
EM895035	—	3.5	4	12	50
EM895902	EM896902	3.5	6	12	50
EM895040	—	4.0	4	12	50
EM895903	EM896040	4.0	6	12	50
EM895045	EM896045	4.5	6	14	57
EM895050	—	5.0	5	14	50
EM895904	EM896903	5.0	6	14	57
EM895060	EM896060	6.0	6	16	57
EM895080	EM896080	8.0	8	20	63
EM895100	EM896100	10.0	10	22	72
EM895120	EM896120	12.0	12	25	73
EM895140	EM896140	14.0	14	25	75
EM895160	EM896160	16.0	16	32	82
EM895180	EM896180	18.0	18	32	92
EM895200	EM896200	20.0	20	38	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
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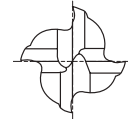
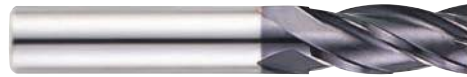
PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- ▶ Höhere Produktivität.



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM811020	—	2.0	4	6	40
EM811901	EM821901	2.0	6	6	40
EM811025	—	2.5	4	8	40
EM811902	EM821902	2.5	6	8	40
EM811030	EM821030	3.0	6	8	45
EM811035	EM821035	3.5	6	10	45
EM811040	EM821040	4.0	6	11	45
EM811045	EM821045	4.5	6	11	45
EM811050	EM821050	5.0	6	13	50
EM811055	EM821055	5.5	6	13	50
EM811060	EM821060	6.0	6	13	50
EM811065	EM821065	6.5	8	16	60
EM811070	EM821070	7.0	8	16	60
EM811075	EM821075	7.5	8	16	60
EM811080	EM821080	8.0	8	19	60
EM811085	EM821085	8.5	10	19	70
EM811090	EM821090	9.0	10	19	70
EM811095	EM821095	9.5	10	19	70
EM811100	EM821100	10.0	10	22	70
EM811105	EM821105	10.5	12	22	75
EM811110	EM821110	11.0	12	22	75
EM811115	EM821115	11.5	12	22	75
EM811120	EM821120	12.0	12	26	75
EM811904	EM821904	13.0	12	26	85

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							
○	◎	◎	◎	○				○		○		

◎ : Excellent ○ : Good

CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- ▶ Höhere Produktivität.



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM811140	EM821140	14.0	14	26	85
EM811905	EM821905	14.0	12	26	85
EM811903	EM821903	14.0	16	26	85
EM811906	EM821906	15.0	16	26	90
EM811160	EM821160	16.0	16	32	100
EM811907	EM821907	17.0	16	32	100
EM811180	EM821180	18.0	18	32	100
EM811908	EM821908	18.0	16	32	100
EM811909	EM821909	19.0	20	32	100
EM811200	EM821200	20.0	20	38	105
EM811220	EM821220	22.0	20	38	105
EM811240	EM821240	24.0	25	45	120
EM811250	EM821250	25.0	25	45	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○				○		○		



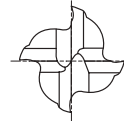
PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- ▶ Höhere Produktivität.



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EM817020	—	2.0	4	8	40
EM817030	EM827030	3.0	6	12	50
EM817040	EM827040	4.0	6	15	50
EM817050	EM827050	5.0	6	20	60
EM817060	EM827060	6.0	6	20	60
EM817080	EM827080	8.0	8	25	70
EM817100	EM827100	10.0	10	30	90
EM817120	EM827120	12.0	12	30	90
EM817140	EM827140	14.0	16	40	110
EM817160	EM827160	16.0	16	50	110
EM817180	EM827180	18.0	20	50	110
EM817200	EM827200	20.0	20	55	110
EM817250	EM827250	25.0	25	75	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

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							
○	◎	◎	◎	○				○				

◎ : Excellent ○ : Good

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG

- ▶ Designed to machine high hardened materials.
- ▶ High speed cutting and finish milling with high feed rates.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.

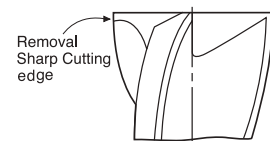
- ▶ Geeignet zum Fräsen von hochgehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- ▶ Bessere Werkstückoberflächen
- ▶ Höhere Verschleißfestigkeit.
- ▶ Geeignet zum Trocken-Fräsen.



Unit : mm

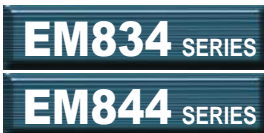
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT					
EM812060	EM822060	6.0	6	13	57	6
EM812070	EM822070	7.0	8	16	63	6
EM812080	EM822080	8.0	8	19	63	6
EM812090	EM822090	9.0	10	19	72	6
EM812100	EM822100	10.0	10	22	72	6
EM812120	EM822120	12.0	12	26	83	6
EM812140	EM822140	14.0	14	26	83	6
EM812901	EM822901	14.0	16	26	83	6
EM812160	EM822160	16.0	16	32	92	6
EM812180	EM822180	18.0	18	32	92	8
EM812200	EM822200	20.0	20	38	104	8
EM812250	EM822250	25.0	25	44	104	8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○								



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG LENGTH VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG

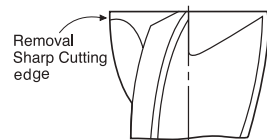
- ▶ Designed to machine high hardened materials.
- ▶ High speed cutting and finish milling with high feed rates.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.
- ▶ Geeignet zum Fräsen von hochgehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- ▶ Bessere Werkstückoberflächen
- ▶ Höhere Verschleißfestigkeit.
- ▶ Geeignet zum Trocken-Fräsen.



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT					
EM834060	EM844060	6.0	6	26	70	6
EM834080	EM844080	8.0	8	36	90	6
EM834100	EM844100	10.0	10	46	100	6
EM834120	EM844120	12.0	12	56	110	6
EM834160	EM844160	16.0	16	66	130	6
EM834200	EM844200	20.0	20	76	140	6
EM834250	EM844250	25.0	25	92	180	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6



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							
○	◎	◎	◎	○								

◎ : Excellent ○ : Good

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

- ▶ Economic type with short overall length.
- ▶ Radius tolerance $\pm 0.02\text{mm}$ & short length of cut.

- ▶ Günstige Variante, kurze Gesamtlänge.
- ▶ Radius Toleranz $\pm 0.02\text{mm}$ und kurze Schneidenlänge.



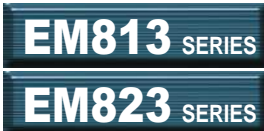
Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (± 0.02)				
EM876010	—	R0.5	1.0	3	3	38
EM876012	—	R0.6	1.2	3	3	38
EM876015	—	R0.75	1.5	3	3	38
EM876020	EM877020	R1.0	2.0	6	3	50
EM876025	EM877025	R1.25	2.5	6	4	50
EM876030	EM877030	R1.5	3.0	6	4	50
EM876040	EM877040	R2.0	4.0	6	5	54
EM876050	EM877050	R2.5	5.0	6	6	54
EM876060	EM877060	R3.0	6.0	6	7	54
EM876070	EM877070	R3.5	7.0	8	8	58
EM876080	EM877080	R4.0	8.0	8	9	58
EM876090	EM877090	R4.5	9.0	10	10	66
EM876100	EM877100	R5.0	10.0	10	11	66
EM876120	EM877120	R6.0	12.0	12	12	73
EM876140	EM877140	R7.0	14.0	14	14	75
EM876160	EM877160	R8.0	16.0	16	16	82
EM876180	EM877180	R9.0	18.0	18	18	84
EM876200	EM877200	R10.0	20.0	20	20	92
EM876250	EM877250	R12.5	25.0	25	25	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○	○			○				



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ For copy - milling machines.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Kopierbearbeitungen.



Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±0.02)				
EM813010	—	R0.5	1.0	4	2.5	50
EM813901	EM823901	R0.5	1.0	6	2.5	50
EM813012	—	R0.6	1.2	4	3	50
EM813015	—	R0.75	1.5	4	4	50
EM813902	EM823902	R0.75	1.5	6	4	50
EM813020	EM823020	R1.0	2.0	6	5	50
EM813025	EM823025	R1.25	2.5	6	6	60
EM813030	EM823030	R1.5	3.0	6	8	60
EM813035	EM823035	R1.75	3.5	6	8	70
EM813040	EM823040	R2.0	4.0	6	8	70
EM813050	EM823050	R2.5	5.0	6	10	80
EM813060	EM823060	R3.0	6.0	6	12	90
EM813070	EM823070	R3.5	7.0	8	14	90
EM813080	EM823080	R4.0	8.0	8	14	100
EM813090	EM823090	R4.5	9.0	10	18	100
EM813100	EM823100	R5.0	10.0	10	18	100
EM813120	EM823120	R6.0	12.0	12	22	110
EM813140	EM823140	R7.0	14.0	14	26	110
EM813903	EM823903	R7.0	14.0	16	26	110
EM813160	EM823160	R8.0	16.0	16	30	140
EM813180	EM823180	R9.0	18.0	18	34	140
EM813200	EM823200	R10.0	20.0	20	38	160
EM813250	EM823250	R12.5	25.0	25	50	180

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

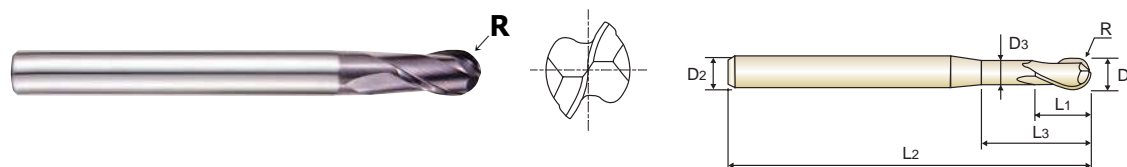
◎ : Excellent ○ : Good

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							
○	◎	◎	◎	○	○			○				

CARBIDE, 2 FLUTE MEDIUM BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MEDIUM STIRNRADIUS mit ABGESETZTEM SCHAFTTEIL

- ▶ Deep slotting milling is possible by reduced neck.
- ▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.

- ▶ Mit abgesetztem Schaftteil ist Tiefnutenfräsen möglich.
- ▶ Effizientes Tiefnutenfräsen von tiefliegenden Bereichen möglich.



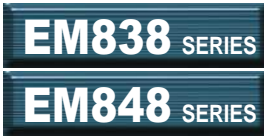
Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R (±0.02)	D1	D2	L1	L3	L2	D3
EM899030	EM900030	R1.5	3.0	6	8	—	70	—
EM899040	EM900040	R2.0	4.0	6	8	—	70	—
EM899050	EM900050	R2.5	5.0	6	12	—	80	—
EM899060	EM900060	R3.0	6.0	6	12	22	80	5.8
EM899070	EM900070	R3.5	7.0	8	14	—	90	—
EM899080	EM900080	R4.0	8.0	8	14	27	90	7.8
EM899100	EM900100	R5.0	10.0	10	18	31	100	9.8
EM899120	EM900120	R6.0	12.0	12	22	35	110	11.8
EM899140	EM900140	R7.0	14.0	12	26	—	120	—
EM899160	EM900160	R8.0	16.0	16	30	50	140	15.8
EM899180	EM900180	R9.0	18.0	16	34	—	140	—
EM899200	EM900200	R10.0	20.0	20	38	58	160	19.8
EM899250	EM900250	R12.5	25.0	25	55	75	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○	○			○				



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG REACH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN GROÙE REICHWEITE STIRNRADIUS

► Longer overall length than EM813, EM823 types and suitable for machining deeply located area.

► Längere Gesamtlänge als bei EM813, EM823 Typen und geeignet für extrem tiefliegende Bohrungen.



MG HM 2 30° ±0.02 PLAIN FLAT P.664

Unit : mm

EDP No.		Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT					
EM838020	—	R1.0	2.0	3	6	80
EM838030	—	R1.5	3.0	3	8	100
EM838040	—	R2.0	4.0	4	8	100
EM838050	EM848050	R2.5	5.0	6	10	120
EM838060	EM848060	R3.0	6.0	6	10	120
EM838080	EM848080	R4.0	8.0	8	14	140
EM838100	EM848100	R5.0	10.0	10	18	180
EM838120	EM848120	R6.0	12.0	12	22	200
EM838160	EM848160	R8.0	16.0	16	30	250
EM838200	EM848200	R10.0	20.0	20	38	250

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

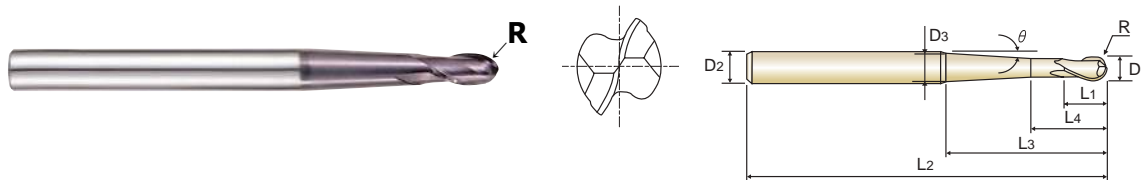
◎ : Excellent ○ : Good

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							
○	◎	◎	◎	○	○			○				

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL

► High efficiency milling is possible in deep slotting with projection of the end mill being long

► Effizientes Tiefnutenfräsen von tiefliegenden Bereichen möglich.



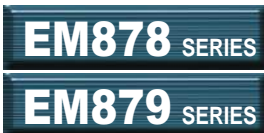
Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Diameter	Neck Taper Angle
PLAIN	FLAT	R (±0.01)	D1	D2	L1	L4	L3	L2	D3	θ
EM902010	EM904010	R0.5	1.0	6	2	4	23	60	2	1°30'
EM902901	EM904901	R0.5	1.0	6	2	4	23	60	4.3	5°
EM902902	EM904902	R0.5	1.0	6	2	4	42	80	5	3°
EM902020	EM904020	R1.0	2.0	6	4	6	23	60	2.9	1°30'
EM902903	EM904903	R1.0	2.0	6	4	6	23	60	5	5°
EM902904	EM904904	R1.0	2.0	6	4	6	41	80	5.7	3°
EM902030	EM904030	R1.5	3.0	6	6	8	32	70	5.6	3°
EM902905	EM904905	R1.5	3.0	6	6	8	52	90	5.3	1°30'
EM902040	EM904040	R2.0	4.0	6	8	10	28	70	6	3°
EM902906	EM904906	R2.0	4.0	6	8	10	49	90	6	1°30'
EM902050	EM904050	R2.5	5.0	8	10	12	41	90	8	3°
EM902907	EM904907	R2.5	5.0	8	10	12	61	110	7	1°30'
EM902060	EM904060	R3.0	6.0	8	12	15	34	90	8	3°
EM902908	EM904908	R3.0	6.0	8	12	15	53	110	8	1°30'
EM902080	EM904080	R4.0	8.0	10	14	17	36	100	10	3°
EM902909	EM904909	R4.0	8.0	10	14	17	55	120	10	1°30'
EM902100	EM904100	R5.0	10.0	12	18	21	40	110	12	3°
EM902910	EM904910	R5.0	10.0	12	18	21	59	130	12	1°30'
EM902120	EM904120	R6.0	12.0	16	22	25	63	140	16	3°
EM902911	EM904911	R6.0	12.0	16	22	25	83	160	15	1°30'

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	○	◎	◎	○								

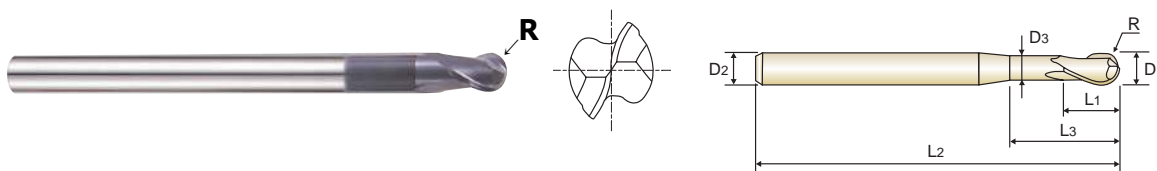


PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE STUB LENGTH HIGH PRECISION BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN EXRTA KURZ PRÄZISER STIRNRADIUS

- ▶ Designed for high precision milling operation.
- ▶ Radius toleracne ± 0.01mm and improved surface roughness.
- ▶ Geeignet zum Hochpräzisem Fräsen
- ▶ Radius Toleranz ± 0.01mm und höhere Oberflächengüte.



Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R (±0.01)	D1	D2	L1	L3	L2	D3
EM878010	—	R0.5	1.0	4	1	2.2	50	0.95
EM878901	—	R0.5	1.0	6	1	2.2	50	0.95
EM878012	—	R0.6	1.2	4	1.2	2.6	50	1.1
EM878015	—	R0.75	1.5	4	1.5	3	50	1.4
EM878020	EM879020	R1.0	2.0	6	2	4	50	1.9
EM878025	EM879025	R1.25	2.5	6	2.5	5	60	2.4
EM878030	EM879030	R1.5	3.0	6	3	6	60	2.9
EM878040	EM879040	R2.0	4.0	6	4	8	70	3.9
EM878050	EM879050	R2.5	5.0	6	5	10	80	4.9
EM878060	EM879060	R3.0	6.0	6	6	12	90	5.9
EM878070	EM879070	R3.5	7.0	8	7	14	90	6.9
EM878080	EM879080	R4.0	8.0	8	8	16	100	7.9
EM878090	EM879090	R4.5	9.0	10	9	18	100	8.9
EM878100	EM879100	R5.0	10.0	10	10	20	100	9.9
EM878120	EM879120	R6.0	12.0	12	12	24	110	11.9
EM878140	EM879140	R7.0	14.0	14	14	28	110	13.8
EM878160	EM879160	R8.0	16.0	16	16	32	140	15.8
EM878180	EM879180	R9.0	18.0	18	18	36	140	17.8
EM878200	EM879200	R10.0	20.0	20	20	40	160	19.8
EM878250	EM879250	R12.5	25.0	25	25	50	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

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							
	○	◎	◎	○	○			○				

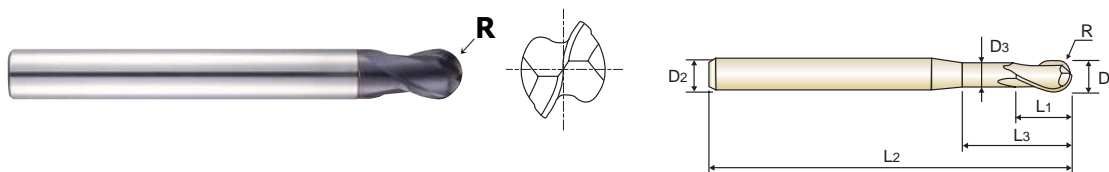
◎ : Excellent ○ : Good

CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE for OVER HRc55

VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ STIRNRADIUS für ÜBER HRc55

- ▶ Suitable for HRc55~HRc70 high hardened materials.
- ▶ Strong cutting edges and higher tool rigidity.
- ▶ Radius tolerance ± 0.01 mm.

- ▶ Geeignet zum Fräsen von HRc55 – HRc70
- ▶ Robuste Schneidkanten und hohe Werkzeughärte.
- ▶ Radius Toleranz ± 0.01 mm.



Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R (± 0.01)	D1	D2	L1	L3	L2	D3
G4953010	—	R0.5	1.0	4	1	2.2	50	0.95
G4953012	—	R0.6	1.2	4	1.2	2.6	50	1.1
G4953015	—	R0.75	1.5	4	1.5	3	50	1.4
G4953020	G4954020	R1.0	2.0	6	2	4	50	1.9
G4953030	G4954030	R1.5	3.0	6	3	6	60	2.9
G4953040	G4954040	R2.0	4.0	6	4	8	70	3.9
G4953050	G4954050	R2.5	5.0	6	5	10	80	4.9
G4953060	G4954060	R3.0	6.0	6	6	12	90	5.9
G4953070	G4954070	R3.5	7.0	8	7	14	90	6.9
G4953080	G4954080	R4.0	8.0	8	8	16	100	7.9
G4953090	G4954090	R4.5	9.0	10	9	18	100	8.9
G4953100	G4954100	R5.0	10.0	10	10	20	100	9.9
G4953120	G4954120	R6.0	12.0	12	12	24	110	11.9
G4953140	G4954140	R7.0	14.0	14	14	28	110	13.8
G4953160	G4954160	R8.0	16.0	16	16	32	140	15.8
G4953180	G4954180	R9.0	18.0	18	18	36	140	17.8
G4953200	G4954200	R10.0	20.0	20	20	40	160	19.8
G4953250	G4954250	R12.5	25.0	25	25	50	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

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							
			○	◎	◎							

◎ : Excellent ○ : Good



EM865 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS

- ▶ High precision milling in medical, optical, electronics and aerospace industrials.
- ▶ Excellent performance at dry cutting condition.
- ▶ Excellent performance on high hardened steel

- ▶ Hochpräzises Fräsen für Medizintechnik, Optik, Elektronik und Raumfahrt.
- ▶ Ausgezeichnete Leistung bei der trockenen Schneidbedingung.
- ▶ Ausgezeichnete Leistung bei der Bearbeitung von gehärtetem Stahl.



MG HM 2 30° ±0.01 PLAIN P.657

Unit : mm

EDP No. PLAIN	Radius of Ball Nose R (±0.01)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM865006	RO.3	0.6	3	1.1	40
EM865007	RO.35	0.7	3	1.5	40
EM865008	RO.4	0.8	3	2	40
EM865009	RO.45	0.9	3	2.2	40
EM865010	RO.5	1.0	3	2.5	40
EM865011	RO.55	1.1	3	3	40
EM865012	RO.6	1.2	3	3	40
EM865013	RO.65	1.3	3	3.5	40
EM865014	RO.7	1.4	3	3.5	40
EM865015	RO.75	1.5	3	4	40
EM865020	R1.0	2.0	3	5	40
EM865030	R1.5	3.0	3	8	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○				○				

X-POWER BALL NOSE END MILLS-MMC

X-POWER STIRNRADIUS FRÄSER-MMC

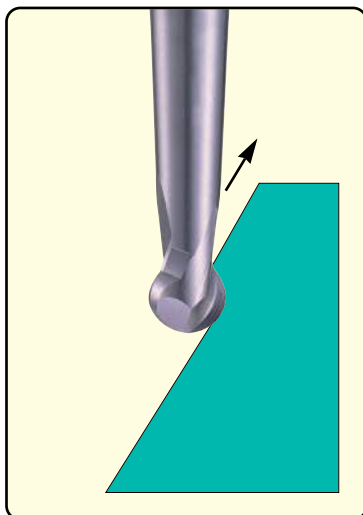
Useful Field Area / Geeignete Anwendungsgebiete

- Die & Mold making, Turbine manufacturing and Aircraft Industry, etc.
Vorrichtungsbau, Turbinenherstellung, Luftfahrtindustrie, etc.
- Difficult 3-D Forms.
Schwierige 3-D Formen.
- Profiling of up to HRc 60 high hardened steels and Alloy steels, Nickelbase alloys, Titanium alloys.
Profilfräsen von bis zu HRc 60 gehärtetem Stahl und Stahllegierungen Nickellegierungen, Titanlegierungen.

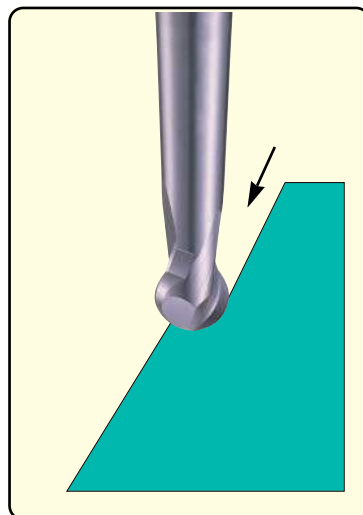
Characteristic / Eigenschaften

- Ultra micro grain carbide which increase both toughness and hardness.
Ultra micro grain Vollhartmetall, erhöht sowohl Zähigkeit wie auch Härte.
- YG-1's unique X-POWER coating suitable for dry cutting and high speed cutting.
YG-1's einzigartige X-POWER-Beschichtung, geeignet zum Trockenfräsen und HSC-Fräsen.
- Outstanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.
Aussergewöhnliche Werkzeug-Geometrie und Kugelform ergeben eine längere Standzeit sowie eine höhere Geschwindigkeit und Vorschubbewegung.

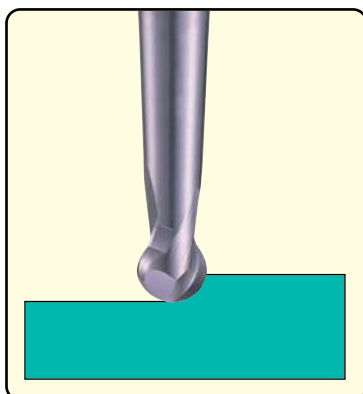
Surpassing Milling Operation / Fräsvorgang



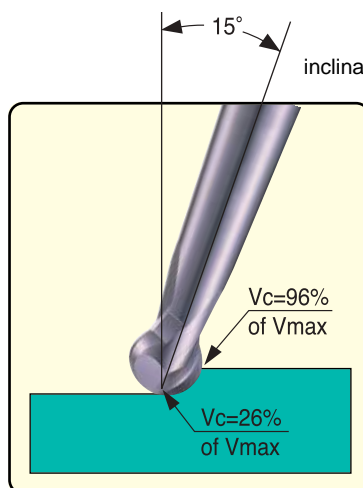
Favorable Back Milling
Vorteilhaftes Rückwärtsfräsen



Unfavorable Drilling
Unvorteilhaftes Fräsen



Unfavorable Profiling
Unvorteilhaftes Profilfräsen



Favorable Profiling
Vovorteilhaftes Profilfräsen

- Operating angle $14^\circ \sim 16^\circ$, higher speed and feed are possible by decreased cutting resistance at the cutting edges contacting the workpiece.

Bearbeitungswinkel $14^\circ \sim 16^\circ$, höhere Geschwindigkeit und Vorschub sind möglich durch geringeren Fräswiderstand an der Schneidkante des Werkstückes.

- Excellent surface finish and faster milling process.

Ausgezeichnete Oberflächengüte und Schnellere Bearbeitung.

- Enable to milling with higher speed and feed when Back Milling.

Ermöglicht Fräsen mit grösserer Geschwindigkeit und höherem Vorschub beim Rückwärtsfräsen.

- When 15° inclination milling operation, more productivity and higher speed and feed are possible.

Beim Fräsvorgang mit 15° Neigung ergibt sich eine höhere Produktivität, sowie eine grössere Geschwindigkeit und ein höherer Vorschub sind möglich.

- Decreased cutting force.

Reduzierte Fräskraft.

- Excellent surface roughness and brightness.

Ausgezeichnete Oberflächengüte und Glanz.

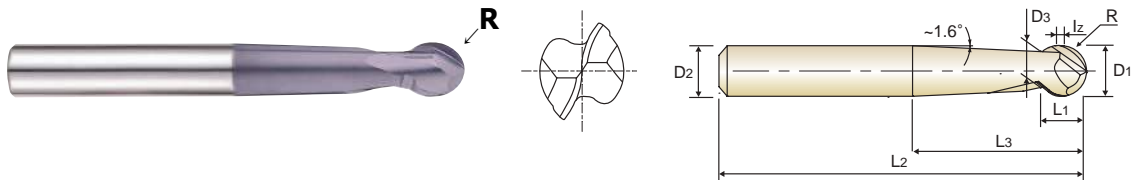


PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ± 0.01 mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ± 0.01 mm.



● **2 FLUTE LONG LENGTH- ECONOMIC VERSION**
● **2 SCHNEIDEN LANG-KOSTENGÜNSTIG**

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	lz
PLAIN	R (± 0.01)	D1	D2	L1	L3	L2	D3	
EM669030	R1.5	3.0	6	4	30	80	2.5	1.5
EM669040	R2.0	4.0	6	5	30	80	3.3	1.5
EM669050	R2.5	5.0	6	6	43	80	4.1	2
EM669060	R3.0	6.0	6	7	30	100	4.7	2
EM669080	R4.0	8.0	8	9	36	100	6.5	3
EM669100	R5.0	10.0	10	11	43	100	8.2	3
EM669120	R6.0	12.0	12	13	52	100	9.8	3
EM669160	R8.0	16.0	16	15	61	150	13.4	3

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

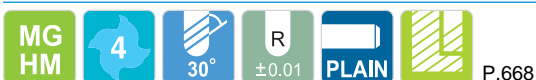
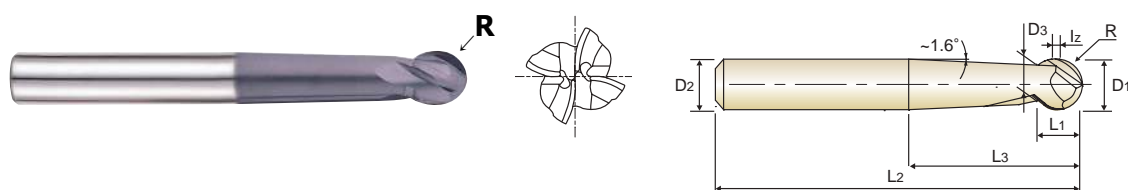
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

◎ : Excellent ○ : Good

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ± 0.01 mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ± 0.01 mm.


● 4 FLUTE LONG LENGTH- ECONOMIC VERSION
● 4 SCHNEIDEN LANG-KOSTENGÜNSTIG

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	lz
PLAIN	R (± 0.01)	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃	
EM673050	R2.5	5.0	6	6	43	80	4.1	2
EM673060	R3.0	6.0	6	7	30	100	4.7	2
EM673080	R4.0	8.0	8	9	36	100	6.5	3
EM673100	R5.0	10.0	10	11	43	100	8.2	3
EM673120	R6.0	12.0	12	13	52	100	9.8	3
EM673160	R8.0	16.0	16	15	61	150	13.4	3

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○	○			○				



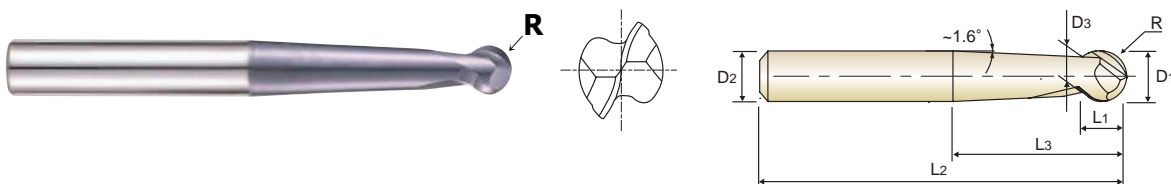
EM863 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRANRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ±0.01mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ±0.01 mm.



MG HM 2 30° R ±0.01 PLAIN P.667

● **2 FLUTE LONG LENGTH- SPHERE VERSION**
● **2 SCHNEIDEN LANG-KUGELFORM**

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3
EM863030	R1.5	3.0	6	2.3	30	80	2.5
EM863040	R2.0	4.0	6	3.1	30	80	3.3
EM863050	R2.5	5.0	6	3.9	38	80	4.1
EM863060	R3.0	6.0	6	4.9	28	100	4.7
EM863080	R4.0	8.0	8	6.3	33	100	6.5
EM863100	R5.0	10.0	10	7.9	40	100	8.2
EM863120	R6.0	12.0	12	9.5	49	100	9.8
EM863160	R8.0	16.0	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

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							
○	◎	◎	◎	○	○			○				

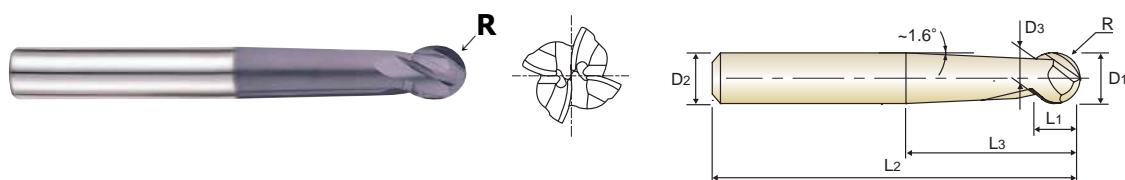
◎ : Excellent ○ : Good

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-MMC

VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance $\pm 0.01\text{mm}$.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz $\pm 0.01\text{ mm}$.



● 4 FLUTE LONG LENGTH- SPHERE VERSION

● 4 SCHNEIDEN LANG-KUGELFORM

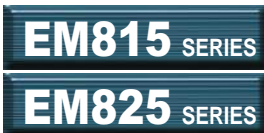
Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (± 0.01)	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃
EM864050	R2.5	5.0	6	3.9	38	80	4.1
EM864060	R3.0	6.0	6	4.9	28	100	4.7
EM864080	R4.0	8.0	8	6.3	33	100	6.5
EM864100	R5.0	10.0	10	7.9	40	100	8.2
EM864120	R6.0	12.0	12	9.5	49	100	9.8
EM864160	R8.0	16.0	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○	○			○				



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ For copy - milling machines.
- ▶ 4 Flute design - higher feed than EM813, EM823 series

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Kopierbearbeitungen.
- ▶ 4 Schneiden - Höherer Vorschub als bei EM 813, EM 823 serien.



Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±0.01)				
EM815010	—	R0.5	1.0	4	2.5	50
EM815901	EM825901	R0.5	1.0	6	2.5	50
EM815015	—	R0.75	1.5	4	4	50
EM815902	EM825902	R0.75	1.5	6	4	50
EM815020	EM825020	R1.0	2.0	6	5	50
EM815030	EM825030	R1.5	3.0	6	8	60
EM815040	EM825040	R2.0	4.0	6	8	70
EM815050	EM825050	R2.5	5.0	6	10	80
EM815060	EM825060	R3.0	6.0	6	12	90
EM815070	EM825070	R3.5	7.0	8	14	90
EM815080	EM825080	R4.0	8.0	8	14	100
EM815090	EM825090	R4.5	9.0	10	18	100
EM815100	EM825100	R5.0	10.0	10	18	100
EM815120	EM825120	R6.0	12.0	12	22	110
EM815140	EM825140	R7.0	14.0	14	26	110
EM815903	EM825903	R7.0	14.0	16	26	110
EM815160	EM825160	R8.0	16.0	16	30	140
EM815180	EM825180	R9.0	18.0	18	34	140
EM815200	EM825200	R10.0	20.0	20	38	160
EM815250	EM825250	R12.5	25.0	25	50	180

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

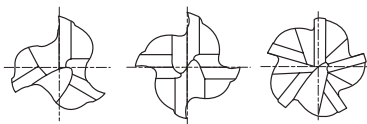
◎ : Excellent ○ : Good

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							
○	◎	◎	◎	○	○			○				

CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE KURZ SCHRUPPFRÄSER - FEIN

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- ▶ Für Trocken - und Naßfräsen.
- ▶ Schnelle Spanausfuhr.



Unit : mm

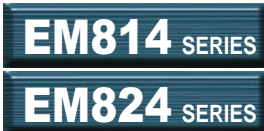
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	h10	h6			
EM832060	EM842060	6.0	6	7	54	3
EM832070	EM842070	7.0	8	8	58	3
EM832080	EM842080	8.0	8	9	58	3
EM832090	EM842090	9.0	10	13	66	4
EM832100	EM842100	10.0	10	14	66	4
EM832120	EM842120	12.0	12	16	73	4
EM832140	EM842140	14.0	14	18	75	4
EM832160	EM842160	16.0	16	22	82	4
EM832180	EM842180	18.0	18	24	84	4
EM832200	EM842200	20.0	20	26	92	4
EM832250	EM842250	25.0	25	25	110	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
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : 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							
○	◎	◎	◎	○				○		○		



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING- FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFRÄSER - FEIN

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.
- ▶ Longer flute length than EM832, EM842 series.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- ▶ Für Trocken - und Nabfräsen.
- ▶ Schnelle Spanausfuhr.
- ▶ Längere Schneiden als bei EM832 und EM842 Serien.



Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	h10	h6			
EM814060	EM824060	6.0	6	16	57	3
EM814070	EM824070	7.0	8	16	63	3
EM814080	EM824080	8.0	8	16	63	3
EM814090	EM824090	9.0	10	19	72	4
EM814100	EM824100	10.0	10	22	72	4
EM814120	EM824120	12.0	12	26	83	4
EM814140	EM824140	14.0	14	26	83	4
EM814901	EM824901	14.0	16	26	83	4
EM814160	EM824160	16.0	16	32	92	4
EM814180	EM824180	18.0	18	32	92	4
EM814200	EM824200	20.0	20	38	104	4
EM814250	EM824250	25.0	25	45	121	5

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

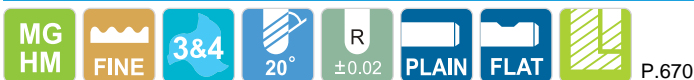
Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : 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, 3&4 FLUTE 20° HELIX LONG LENGTH ROUGHING BALL NOSE - FINE
VOLLHARTMETALL, 3&4 SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFRÄSER STIRNRADIUS - FEIN

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.
- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- ▶ Für Trocken und Naßfräsen.
- ▶ Schnelle Spanausfuhr.



Unit : mm

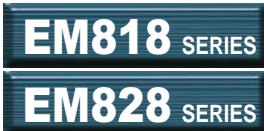
EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R (±0.02)	h10	h6			
EM833060	EM843060	R3.0	6.0	6	16	57	3
EM833080	EM843080	R4.0	8.0	8	16	63	3
EM833100	EM843100	R5.0	10.0	10	22	72	4
EM833120	EM843120	R6.0	12.0	12	26	83	4
EM833140	EM843140	R7.0	14.0	14	26	83	4
EM833160	EM843160	R8.0	16.0	16	32	92	4
EM833180	EM843180	R9.0	18.0	18	32	92	4
EM833200	EM843200	R10.0	20.0	20	38	104	4

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
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : 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							
○	◎	◎	◎	○				○		○		



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Bessere Werkstückoberflächen.
- ▶ Gesteigerte Vorschubrate.



Unit : mm

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT					
EM818030	EM828030	RO.3	3.0	6	12	50
EM818040	EM828040	RO.3	4.0	6	15	50
EM818911	EM828911	RO.5	4.0	6	15	50
EM818050	EM828050	RO.3	5.0	6	20	60
EM818912	EM828912	RO.5	5.0	6	20	60
EM818913	EM828913	RO.3	6.0	6	20	60
EM818060	EM828060	RO.5	6.0	6	20	60
EM818901	EM828901	R1.0	6.0	6	20	70
EM818914	EM828914	RO.3	8.0	8	25	70
EM818080	EM828080	RO.5	8.0	8	25	70
EM818902	EM828902	R1.0	8.0	8	25	70
EM818903	EM828903	R1.5	8.0	8	25	70
EM818904	EM828904	R2.0	8.0	8	25	70
EM818915	EM828915	RO.3	10.0	10	30	90
EM818100	EM828100	RO.5	10.0	10	30	90
EM818905	EM828905	R1.0	10.0	10	30	90
EM818906	EM828906	R1.5	10.0	10	30	90
EM818907	EM828907	R2.0	10.0	10	30	90
EM818120	EM828120	RO.5	12.0	12	30	90
EM818908	EM828908	R1.0	12.0	12	30	90
EM818909	EM828909	R1.5	12.0	12	30	90
EM818910	EM828910	R2.0	12.0	12	30	90
EM818160	EM828160	RO.5	16.0	16	50	110
EM818916	EM828916	R1.0	16.0	16	50	110
EM818917	EM828917	R1.5	16.0	16	50	110
EM818918	EM828918	R2.0	16.0	16	50	110
EM818200	EM828200	RO.5	20.0	20	55	110
EM818919	EM828919	R1.0	20.0	20	55	110
EM818920	EM828920	R1.5	20.0	20	55	110
EM818921	EM828921	R2.0	20.0	20	55	110

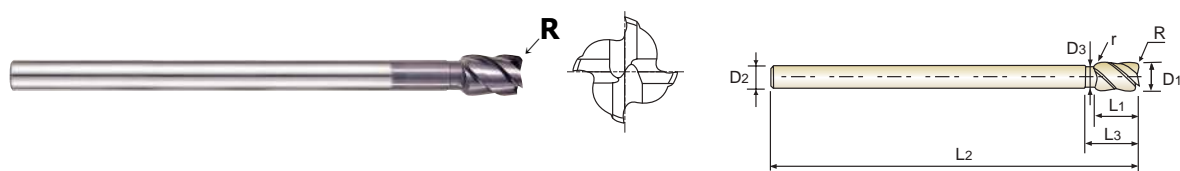
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : 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							
○	◎	◎	◎	○								

CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE KURZ ECKENRADIUS

- ▶ No line is marked on the boundary section during step milling because this tool has radius on the end faces of the shank
- ▶ High speed cutting in wide deep wall with step milling
- ▶ Suitable for deep side milling, Helical Milling, Contour Milling
- ▶ Hohe Oberflächengüte, auch an den Übergangsfächen, durch Radien am Auslauf der Schneidkanten.
- ▶ Hochgeschwindigkeitsfräsen auch bei grosser Auskraglänge.
- ▶ Geeignet für tiefes Seitenfräsen, Spiralfräsen und Konturfräsen.



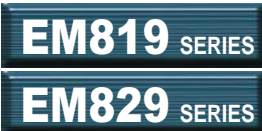
Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R	D1	D2	L1	L3	L2	D3
EM905100	RO.5	10.0	8	19.2	15	130	7.5
EM905901	R1.0	10.0	8	19.2	15	130	7.5
EM905120	RO.5	12.0	10	22.2	18	150	9.5
EM905902	R1.0	12.0	10	22.2	18	150	9.5
EM905140	RO.5	14.0	12	25.2	21	160	11.5
EM905903	R1.0	14.0	12	25.2	21	160	11.5
EM905180	RO.5	18.0	16	31.2	27	180	15.5
EM905904	R1.0	18.0	16	31.2	27	180	15.5
EM905220	RO.5	22.0	20	37.2	33	200	19.5
EM905905	R1.0	22.0	20	37.2	33	200	19.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○				○		○		



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ 4 Schneiden erlauben bessere Oberflächengüte des Werkstücks.
- ▶ Gesteigerte Produktivität.



Unit : mm

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT					
EM819030	EM829030	RO.3	3.0	6	12	50
EM819040	EM829040	RO.3	4.0	6	15	50
EM819911	EM829911	RO.5	4.0	6	15	50
EM819050	EM829050	RO.3	5.0	6	20	60
EM819912	EM829912	RO.5	5.0	6	20	60
EM819913	EM829913	RO.3	6.0	6	20	60
EM819060	EM829060	RO.5	6.0	6	20	60
EM819901	EM829901	R1.0	6.0	6	20	70
EM819914	EM829914	RO.3	8.0	8	25	70
EM819080	EM829080	RO.5	8.0	8	25	70
EM819902	EM829902	R1.0	8.0	8	25	70
EM819903	EM829903	R1.5	8.0	8	25	70
EM819904	EM829904	R2.0	8.0	8	25	70
EM819915	EM829915	RO.3	10.0	10	30	90
EM819100	EM829100	RO.5	10.0	10	30	90
EM819905	EM829905	R1.0	10.0	10	30	90
EM819906	EM829906	R1.5	10.0	10	30	90
EM819907	EM829907	R2.0	10.0	10	30	90
EM819120	EM829120	RO.5	12.0	12	30	90
EM819908	EM829908	R1.0	12.0	12	30	90
EM819909	EM829909	R1.5	12.0	12	30	90
EM819910	EM829910	R2.0	12.0	12	30	90
EM819160	EM829160	RO.5	16.0	16	50	110
EM819916	EM829916	R1.0	16.0	16	50	110
EM819917	EM829917	R1.5	16.0	16	50	110
EM819918	EM829918	R2.0	16.0	16	50	110
EM819200	EM829200	RO.5	20.0	20	55	110
EM819919	EM829919	R1.0	20.0	20	55	110
EM819920	EM829920	R1.5	20.0	20	55	110
EM819921	EM829921	R2.0	20.0	20	55	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

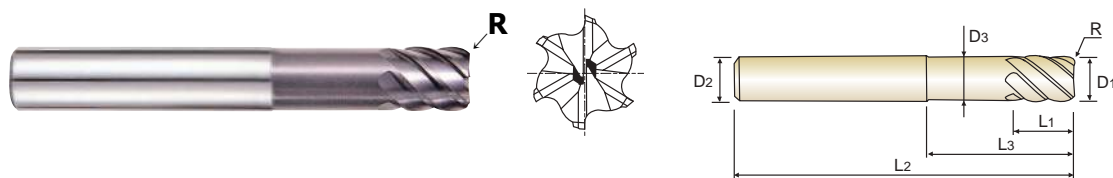
◎ : Excellent ○ : Good

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							
○	◎	◎	◎	○				○		○		

CARBIDE, 6 FLUTE 45° HELIX STUB LENGTH CORNER RADIUS
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA KURZ ECKENRADIUS

- ▶ High speed cutting
- ▶ Excellent performance in dry cutting
- ▶ Cutting up to the dimension three times as much as the diameter by reduced Neck

- ▶ Hochgeschwindigkeitsfräsen.
- ▶ Ausgezeichnete Leistung bei Trocken - Zerspanung.
- ▶ Fräst bis Zur dreifachen Größe des Durchmessers des abgesetzten Schaftteils.



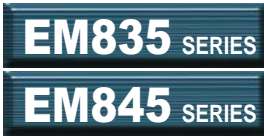
Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D1	D2	L1	L3	L2	D3
EM897060	EM898060	RO.5	6.0	6	6	14	50	5.7
EM897080	EM898080	RO.5	8.0	8	8	24	60	7.65
EM897100	EM898100	R1.0	10.0	10	10	30	70	9.65
EM897120	EM898120	R1.0	12.0	12	12	30	75	11.6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○				○				



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE LANG ECKENRADIUS

- ▶ Designed to machine high hardened materials.
- ▶ High speed cutting and finish milling with high feed rates.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.
- ▶ Geeignet zum Fräsen von Hochgehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Verschleißfestigkeit.
- ▶ Geeignet zum Trocken-Fräsen.



P.661

Unit : mm

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT					
EM835060	EM845060	RO.5	6.0	6	13	70
EM835080	EM845080	RO.5	8.0	8	19	90
EM835100	EM845100	RO.5	10.0	10	22	100
EM835901	EM845901	R1.0	10.0	10	22	100
EM835120	EM845120	RO.5	12.0	12	26	110
EM835902	EM845902	R1.0	12.0	12	26	110
EM835160	EM845160	R1.0	16.0	16	32	130
EM835903	EM845903	R1.5	16.0	16	32	130
EM835200	EM845200	R1.0	20.0	20	38	140
EM835904	EM845904	R1.5	20.0	20	38	140
EM835905	EM845905	R2.0	20.0	20	38	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

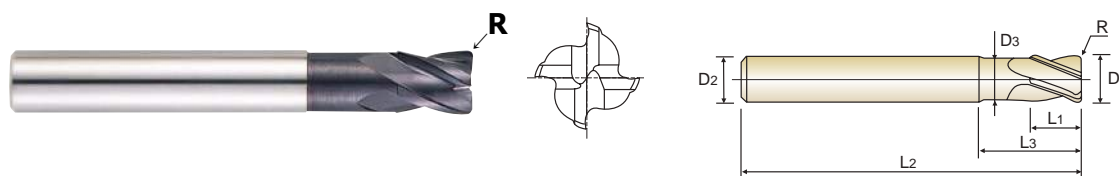
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

◎ : Excellent ○ : Good

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.

- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Bessere Werkstückoberflächen.
- ▶ Gesteigerte Vorschubrate.



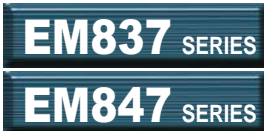
Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D1	D2	L1	L3	L2	D3
EM839020	EM849020	RO.2	2.0	6	2.5	5	50	1.9
EM839025	EM849025	RO.25	2.5	6	3	6	50	2.4
EM839030	EM849030	RO.3	3.0	6	4	7	50	2.8
EM839035	EM849035	RO.35	3.5	6	4.5	8	50	3.2
EM839040	EM849040	RO.4	4.0	6	5	9	50	3.7
EM839050	EM849050	RO.5	5.0	6	6	12	50	4.6
EM839060	EM849060	RO.6	6.0	6	7	14	55	5.6
EM839080	EM849080	RO.8	8.0	8	10	18	60	7.4
EM839100	EM849100	R1.0	10.0	10	12	25	70	9.4
EM839120	EM849120	R1.2	12.0	12	15	30	80	11.4
EM839160	EM849160	R1.6	16.0	16	18	35	90	15.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	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							
○	◎	◎	◎	○				○				



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE TAPER VOLLHARTMETALL, 2 SCHNEIDEN KONISCH

- ▶ Designed for milling die cavity.
- ▶ Suitable for machining tool steel alloy steel, mold steel and other high hardened materials.
- ▶ Entworfen zur Gußformbearbeitung.
- ▶ Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.



MG HM 2 30° PLAIN FLAT P.676

Unit : mm

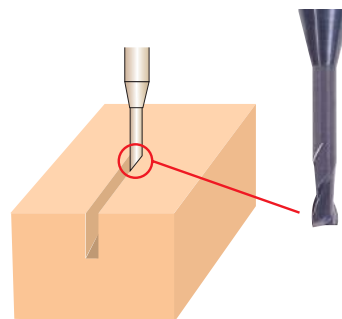
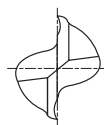
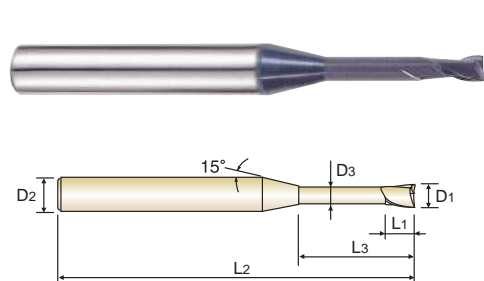
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	TAPER ANGLE
PLAIN	FLAT					
EM837913	—	2.0	4	6	45	30°
EM837020	—	2.0	4	6	45	1°
EM837901	—	2.0	4	6	45	2°
EM837902	—	2.0	4	6	45	3°
EM837914	EM847914	3.0	6	10	55	30°
EM837030	EM847030	3.0	6	10	55	1°
EM837903	EM847903	3.0	6	10	55	2°
EM837904	EM847904	3.0	6	10	55	3°
EM837915	EM847915	4.0	6	15	55	30°
EM837040	EM847040	4.0	6	15	55	1°
EM837905	EM847905	4.0	6	15	55	2°
EM837906	EM847906	4.0	6	15	55	3°
EM837916	EM847916	5.0	6	15	60	30°
EM837050	EM847050	5.0	6	15	60	1°
EM837907	EM847907	5.0	6	15	60	2°
EM837908	EM847908	5.0	6	15	60	3°
EM837917	EM847917	6.0	6	20	60	30°
EM837060	EM847060	6.0	6	20	60	1°
EM837909	EM847909	6.0	6	20	60	2°
EM837910	EM847910	6.0	8	20	65	3°
EM837918	EM847918	8.0	8	25	70	30°
EM837080	EM847080	8.0	8	25	70	1°
EM837911	EM847911	8.0	8	25	70	2°
EM837912	EM847912	8.0	10	25	75	3°

▶ We can supply various sizes and taper angle.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~-0.03	h6	±5'

◎ : 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, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN


Unit : mm

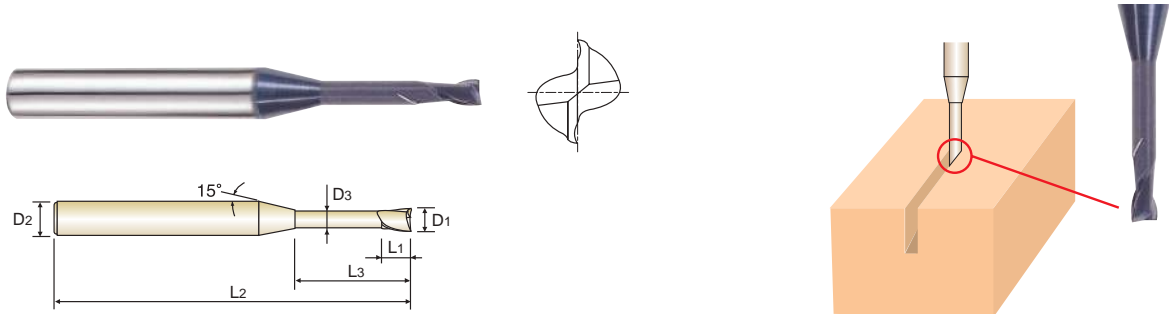
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
EM883004	0.4	4	0.6	2	45	0.37
EM883984	0.4	4	0.6	3	45	0.37
EM883985	0.4	4	0.6	4	45	0.37
EM883986	0.4	4	0.6	5	45	0.37
EM883005	0.5	4	0.7	2	45	0.45
EM883988	0.5	4	0.7	4	45	0.45
EM883989	0.5	4	0.7	6	45	0.45
EM883990	0.5	4	0.7	8	45	0.45
EM883006	0.6	4	0.9	2	45	0.55
EM883991	0.6	4	0.9	4	45	0.55
EM883992	0.6	4	0.9	6	45	0.55
EM883993	0.6	4	0.9	8	45	0.55
EM883819	0.6	4	0.9	10	45	0.55
EM883007	0.7	4	1.0	2	45	0.65
EM883820	0.7	4	1.0	3	45	0.65
EM883906	0.7	4	1.0	4	45	0.65
EM883907	0.7	4	1.0	6	45	0.65
EM883821	0.7	4	1.0	8	45	0.65
EM883822	0.7	4	1.0	10	45	0.65
EM883008	0.8	4	1.2	4	45	0.75
EM883908	0.8	4	1.2	6	45	0.75
EM883909	0.8	4	1.2	8	45	0.75
EM883994	0.8	4	1.2	10	45	0.75
EM883995	0.8	4	1.2	12	45	0.75
EM883009	0.9	4	1.35	6	45	0.85
EM883910	0.9	4	1.35	8	45	0.85
EM883911	0.9	4	1.35	10	45	0.85
EM883823	0.9	4	1.35	15	50	0.85
EM883996	1.0	4	1.5	4	45	0.95
EM883010	1.0	4	1.5	6	45	0.95
EM883912	1.0	4	1.5	8	45	0.95
EM883913	1.0	4	1.5	10	45	0.95

◎ : 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, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

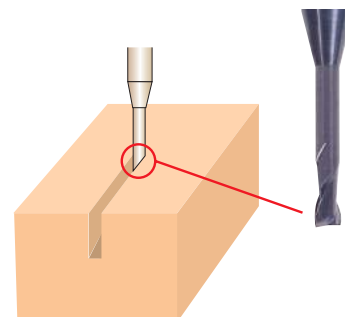
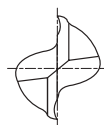
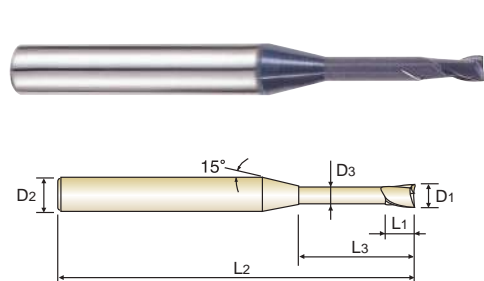


Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883914	1.0	4	1.5	12	45	0.95
EM883997	1.0	4	1.5	16	50	0.95
EM883998	1.0	4	1.5	20	55	0.95
EM883012	1.2	4	1.8	6	45	1.15
EM883915	1.2	4	1.8	8	45	1.15
EM883916	1.2	4	1.8	10	45	1.15
EM883917	1.2	4	1.8	12	45	1.15
EM883999	1.2	4	1.8	16	50	1.15
EM883824	1.4	4	2.1	6	45	1.35
EM883918	1.4	4	2.1	8	45	1.35
EM883919	1.4	4	2.1	10	45	1.35
EM883920	1.4	4	2.1	12	45	1.35
EM883921	1.4	4	2.1	14	50	1.35
EM883922	1.4	4	2.1	16	50	1.35
EM883825	1.4	4	2.1	22	55	1.35
EM883015	1.5	4	2.3	6	45	1.45
EM883923	1.5	4	2.3	8	45	1.45
EM883924	1.5	4	2.3	10	45	1.45
EM883925	1.5	4	2.3	12	45	1.45
EM883926	1.5	4	2.3	14	50	1.45
EM883927	1.5	4	2.3	16	50	1.45
EM883928	1.5	4	2.3	18	55	1.45
EM883810	1.5	4	2.3	20	55	1.45
EM883930	1.6	4	2.4	6	45	1.55
EM883016	1.6	4	2.4	8	45	1.55
EM883931	1.6	4	2.4	10	45	1.55
EM883932	1.6	4	2.4	12	45	1.55
EM883826	1.6	4	2.4	14	50	1.55
EM883827	1.6	4	2.4	16	50	1.55
EM883828	1.6	4	2.4	18	55	1.55
EM883829	1.6	4	2.4	20	55	1.55
EM883830	1.6	4	2.4	26	60	1.55

◎ : 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, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN


Unit : mm

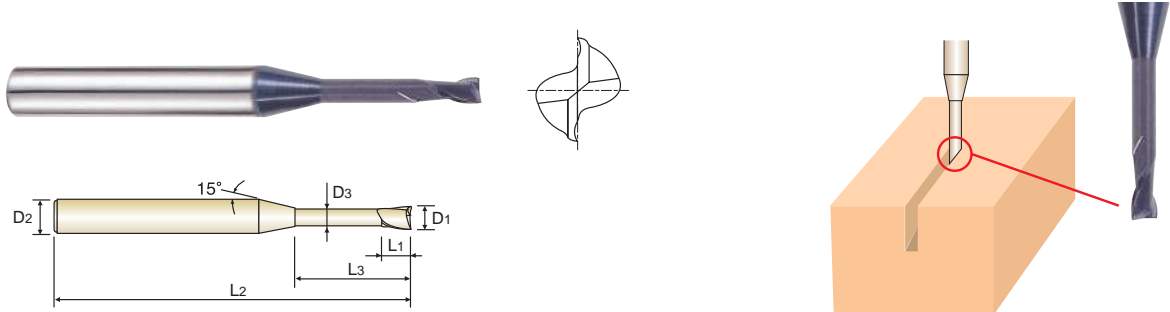
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
EM883018	1.8	4	2.7	6	45	1.75
EM883944	1.8	4	2.7	8	45	1.75
EM883945	1.8	4	2.7	10	45	1.75
EM883946	1.8	4	2.7	12	45	1.75
EM883947	1.8	4	2.7	14	50	1.75
EM883948	1.8	4	2.7	16	50	1.75
EM883949	1.8	4	2.7	18	55	1.75
EM883950	1.8	4	2.7	20	55	1.75
EM883831	1.8	4	2.7	25	60	1.75
EM883958	2.0	4	3.0	6	45	1.95
EM883020	2.0	4	3.0	8	45	1.95
EM883959	2.0	4	3.0	10	45	1.95
EM883960	2.0	4	3.0	12	45	1.95
EM883961	2.0	4	3.0	14	50	1.95
EM883962	2.0	4	3.0	16	50	1.95
EM883963	2.0	4	3.0	18	55	1.95
EM883964	2.0	4	3.0	20	55	1.95
EM883966	2.0	4	3.0	25	60	1.95
EM883814	2.0	4	3.0	30	70	1.95
EM883967	2.5	4	3.7	8	45	2.40
EM883025	2.5	4	3.7	10	45	2.40
EM883968	2.5	4	3.7	12	45	2.40
EM883969	2.5	4	3.7	14	50	2.40
EM883970	2.5	4	3.7	16	55	2.40
EM883971	2.5	4	3.7	18	55	2.40
EM883972	2.5	4	3.7	20	60	2.40
EM883973	2.5	4	3.7	25	70	2.40
EM883974	2.5	4	3.7	30	80	2.40
EM883030	3.0	6	4.5	8	45	2.85
EM883975	3.0	6	4.5	10	45	2.85
EM883976	3.0	6	4.5	12	45	2.85
EM883977	3.0	6	4.5	14	50	2.85

◎ : 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, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN



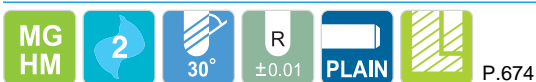
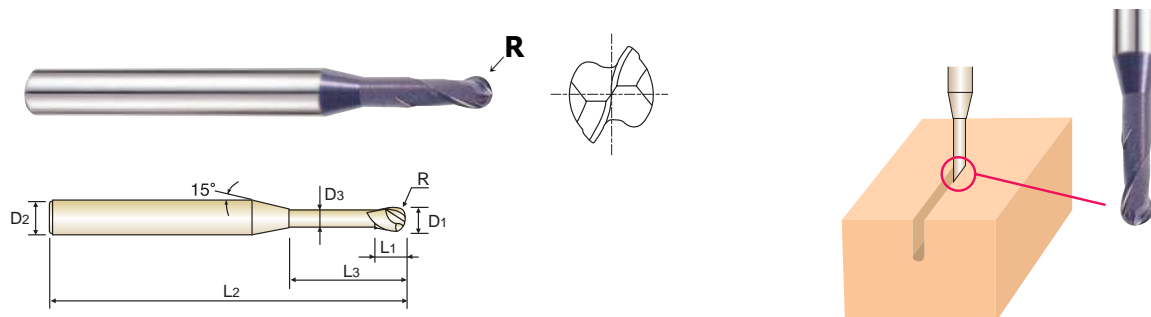
Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883978	3.0	6	4.5	16	55	2.85
EM883979	3.0	6	4.5	18	55	2.85
EM883980	3.0	6	4.5	20	60	2.85
EM883981	3.0	6	4.5	25	65	2.85
EM883832	3.0	6	4.5	30	70	2.85
EM883833	3.0	6	4.5	35	80	2.85
EM883983	3.0	6	4.5	40	90	2.85
EM883040	4.0	6	6	12	50	3.85
EM883801	4.0	6	6	16	60	3.85
EM883802	4.0	6	6	20	60	3.85
EM883803	4.0	6	6	25	70	3.85
EM883834	4.0	6	6	30	70	3.85
EM883835	4.0	6	6	35	80	3.85
EM883836	4.0	6	6	40	90	3.85
EM883837	4.0	6	6	45	90	3.85
EM883838	4.0	6	6	50	100	3.85
EM883050	5.0	6	7.5	16	60	4.85
EM883804	5.0	6	7.5	20	60	4.85
EM883805	5.0	6	7.5	25	70	4.85
EM883806	5.0	6	7.5	30	80	4.85
EM883839	5.0	6	7.5	35	80	4.85
EM883840	5.0	6	7.5	40	80	4.85
EM883841	5.0	6	7.5	50	110	4.85
EM883060	6.0	6	9	20	80	5.85
EM883807	6.0	6	9	30	90	5.85
EM883808	6.0	6	9	40	100	5.85
EM883809	6.0	6	9	50	110	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.015	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							
○	◎	◎	◎	○				○				

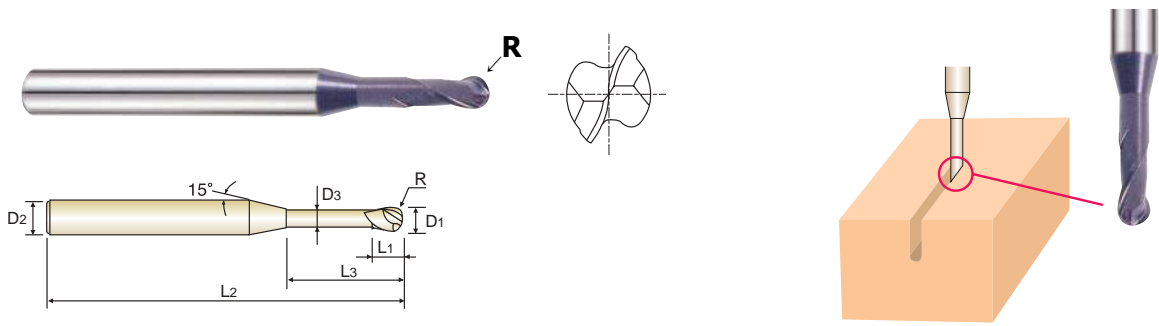
CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN


Unit : mm							
EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (± 0.01)	D1	D2	L1	L3	L2	D3
EM886004	RO.2	0.4	4	0.6	1	45	0.37
EM886960	RO.2	0.4	4	0.6	2	45	0.37
EM886961	RO.2	0.4	4	0.6	3	45	0.37
EM886005	RO.25	0.5	4	0.7	2	45	0.45
EM886962	RO.25	0.5	4	0.7	4	45	0.45
EM886963	RO.25	0.5	4	0.7	6	45	0.45
EM886964	RO.25	0.5	4	0.7	8	45	0.45
EM886957	RO.3	0.6	4	0.9	2	45	0.55
EM886915	RO.3	0.6	4	0.9	4	45	0.55
EM886006	RO.3	0.6	3	0.9	6	35	0.55
EM886916	RO.3	0.6	4	0.9	6	45	0.55
EM886917	RO.3	0.6	4	0.9	8	45	0.55
EM886918	RO.4	0.8	4	1.2	2	45	0.75
EM886919	RO.4	0.8	4	1.2	4	45	0.75
EM886008	RO.4	0.8	4	1.2	6	45	0.75
EM886901	RO.4	0.8	4	1.2	8	45	0.75
EM886965	RO.4	0.8	4	1.2	10	45	0.75
EM886920	RO.5	1.0	4	1.5	3	45	0.95
EM886921	RO.5	1.0	4	1.5	4	45	0.95
EM886923	RO.5	1.0	4	1.5	5	45	0.95
EM886010	RO.5	1.0	4	1.5	6	45	0.95
EM886924	RO.5	1.0	4	1.5	7	45	0.95
EM886902	RO.5	1.0	4	1.5	8	45	0.95
EM886925	RO.5	1.0	4	1.5	9	45	0.95
EM886903	RO.5	1.0	4	1.5	10	45	0.95
EM886904	RO.5	1.0	4	1.5	12	45	0.95
EM886926	RO.5	1.0	4	1.5	14	50	0.95
EM886927	RO.5	1.0	4	1.5	16	50	0.95
EM886966	RO.5	1.0	4	1.5	20	55	0.95
EM886012	RO.6	1.2	4	1.8	8	45	1.15
EM886905	RO.6	1.2	4	1.8	12	45	1.15
EM886928	RO.7	1.4	4	2.1	8	45	1.35

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, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

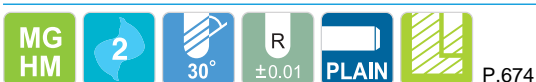
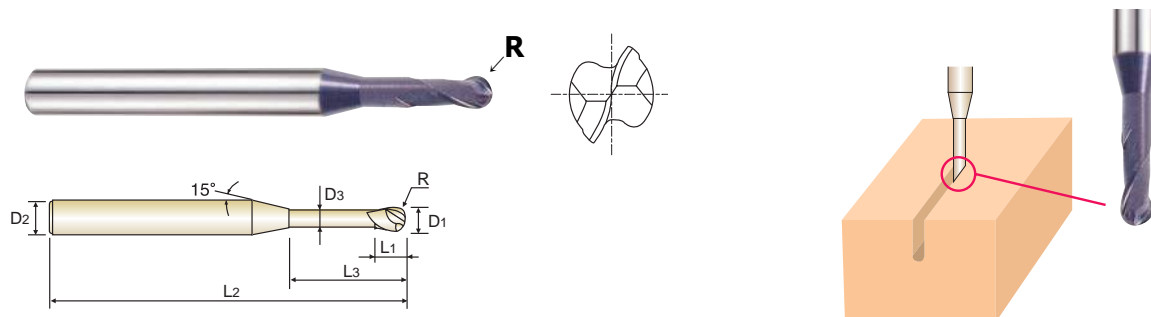


Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3
EM886014	RO.7	1.4	4	2.1	12	45	1.35
EM886929	RO.7	1.4	4	2.1	16	50	1.35
EM886930	RO.75	1.5	4	2.3	6	45	1.45
EM886015	RO.75	1.5	4	2.3	8	45	1.45
EM886931	RO.75	1.5	4	2.3	10	45	1.45
EM886906	RO.75	1.5	4	2.3	12	45	1.45
EM886907	RO.75	1.5	4	2.3	16	50	1.45
EM886932	RO.75	1.5	4	2.3	20	55	1.45
EM886933	RO.8	1.6	4	2.4	8	45	1.55
EM886934	RO.8	1.6	4	2.4	12	45	1.55
EM886016	RO.8	1.6	4	2.4	16	50	1.55
EM886935	RO.8	1.6	4	2.4	20	55	1.55
EM886936	RO.9	1.8	4	2.7	8	45	1.75
EM886937	RO.9	1.8	4	2.7	12	45	1.75
EM886018	RO.9	1.8	4	2.7	16	50	1.75
EM886938	RO.9	1.8	4	2.7	20	55	1.75
EM886939	R1.0	2.0	4	3	4	45	1.95
EM886940	R1.0	2.0	4	3	6	45	1.95
EM886020	R1.0	2.0	4	3	8	45	1.95
EM886941	R1.0	2.0	4	3	10	45	1.95
EM886942	R1.0	2.0	4	3	12	50	1.95
EM886943	R1.0	2.0	4	3	14	50	1.95
EM886909	R1.0	2.0	4	3	16	50	1.95
EM886910	R1.0	2.0	4	3	20	55	1.95
EM886944	R1.0	2.0	4	3	22	60	1.95
EM886945	R1.0	2.0	4	3	25	60	1.95
EM886967	R1.0	2.0	4	3	30	70	1.95
EM886946	R1.5	3.0	6	4.5	8	50	2.85
EM886947	R1.5	3.0	6	4.5	10	50	2.85
EM886948	R1.5	3.0	6	4.5	12	50	2.85
EM886030	R1.5	3.0	6	4.5	16	55	2.85
EM886911	R1.5	3.0	6	4.5	20	60	2.85

© : 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, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN


Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (± 0.01)	D1	D2	L1	L3	L2	D3
EM886968	R1.5	3.0	6	4.5	25	65	2.85
EM886969	R1.5	3.0	6	4.5	30	70	2.85
EM886970	R1.5	3.0	6	4.5	35	80	2.85
EM886949	R2.0	4.0	6	6	10	60	3.85
EM886950	R2.0	4.0	6	6	12	60	3.85
EM886040	R2.0	4.0	6	6	16	60	3.85
EM886912	R2.0	4.0	6	6	20	65	3.85
EM886913	R2.0	4.0	6	6	25	70	3.85
EM886971	R2.0	4.0	6	6	30	70	3.85
EM886972	R2.0	4.0	6	6	35	80	3.85
EM886973	R2.0	4.0	6	6	40	90	3.85
EM886974	R2.0	4.0	6	6	45	90	3.85
EM886975	R2.0	4.0	6	6	50	100	3.85
EM886050	R2.5	5.0	6	7.5	16	60	4.85
EM886951	R2.5	5.0	6	7.5	20	60	4.85
EM886952	R2.5	5.0	6	7.5	25	70	4.85
EM886953	R2.5	5.0	6	7.5	30	80	4.85
EM886976	R2.5	5.0	6	7.5	35	80	4.85
EM886060	R3.0	6.0	6	9	20	80	5.85
EM886954	R3.0	6.0	6	9	30	90	5.85
EM886955	R3.0	6.0	6	9	40	100	5.85
EM886956	R3.0	6.0	6	9	50	110	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.02	h6

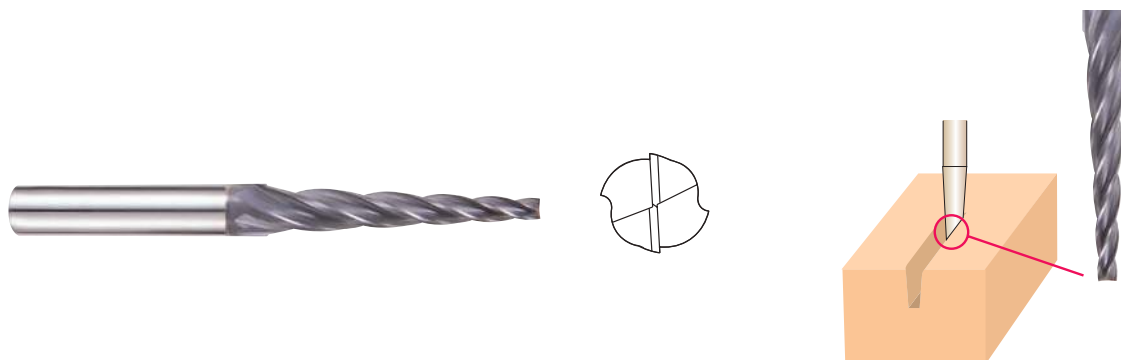
◎ : Excellent ○ : Good

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							
○	◎	◎	◎	○				○				



PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 25° HELIX TAPER for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH für SCHMALE RIPPEN

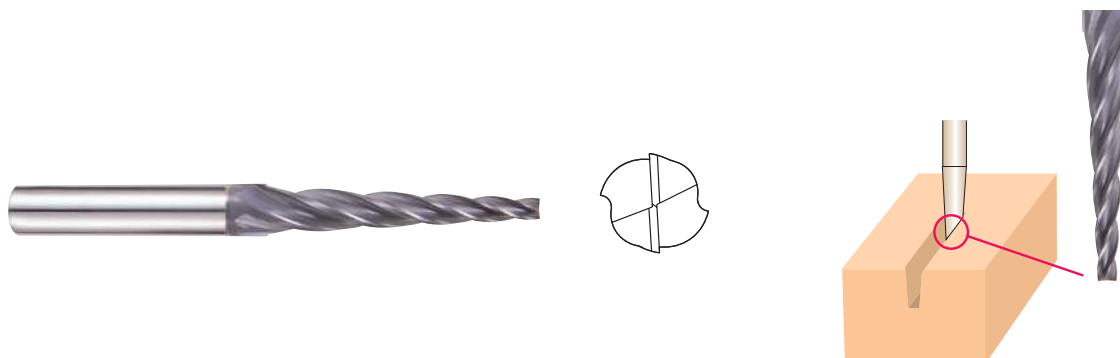


Unit : mm

EDP No. PLAIN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM889952	1.0	4	8	45	30'
EM889954	1.0	4	12	45	30'
EM889010	1.0	4	8	45	1°
EM889959	1.0	4	12	45	1°
EM889960	1.0	4	8	45	1° 30'
EM889962	1.0	4	12	45	1° 30'
EM889963	1.0	4	8	45	2°
EM889965	1.0	4	12	45	2°
EM889968	1.2	4	8	45	30'
EM889970	1.2	4	12	45	30'
EM889012	1.2	4	8	45	1°
EM889977	1.2	4	12	45	1°
EM889979	1.2	4	8	45	1° 30'
EM889981	1.2	4	12	45	1° 30'
EM889983	1.2	4	8	45	2°
EM889985	1.2	4	12	45	2°
EM889987	1.5	4	8	45	30'
EM889991	1.5	4	12	45	30'
EM889992	1.5	4	16	50	30'
EM889015	1.5	4	8	45	1°
EM889801	1.5	4	12	45	1°
EM889802	1.5	4	16	50	1°
EM889804	1.5	4	8	45	1° 30'
EM889806	1.5	4	12	45	1° 30'
EM889807	1.5	4	16	50	1° 30'
EM889809	1.5	4	8	45	2°
EM889811	1.5	4	12	45	2°
EM889812	1.5	4	16	50	2°

◎ : 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 FLUTE 25° HELIX TAPER for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH für SCHMALE RIPPEN


Unit : mm

EDP No. PLAIN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM889869	2.0	4	12	45	30'
EM889870	2.0	4	16	50	30'
EM889878	2.0	4	12	45	1°
EM889879	2.0	4	16	50	1°
EM889883	2.0	4	12	45	1° 30'
EM889884	2.0	4	16	50	1° 30'
EM889888	2.0	4	12	45	2°
EM889889	2.0	4	16	50	2°

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~-0.015	0~-0.008	±5'

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							
○	◎	◎	◎	○				○				

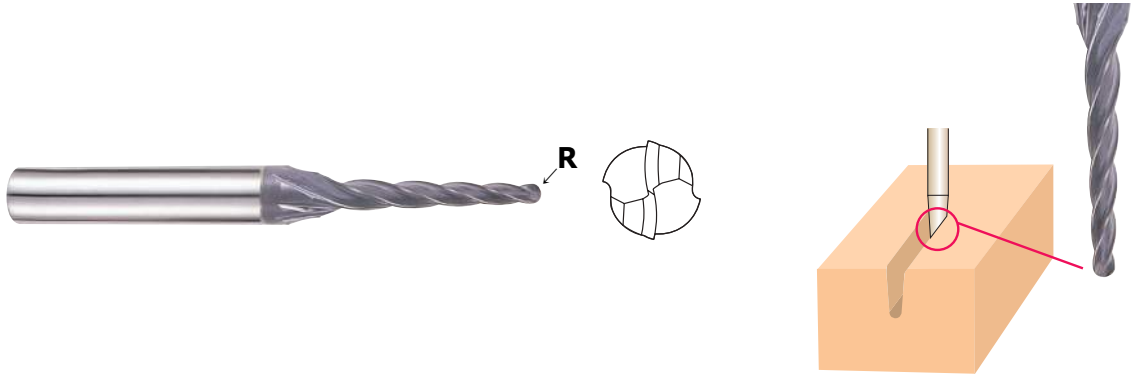
◎ : Excellent ○ : Good



EM890 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 25° HELIX TAPER BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH STIRNRADIUS für SCHMALE RIPPEN

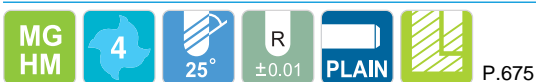
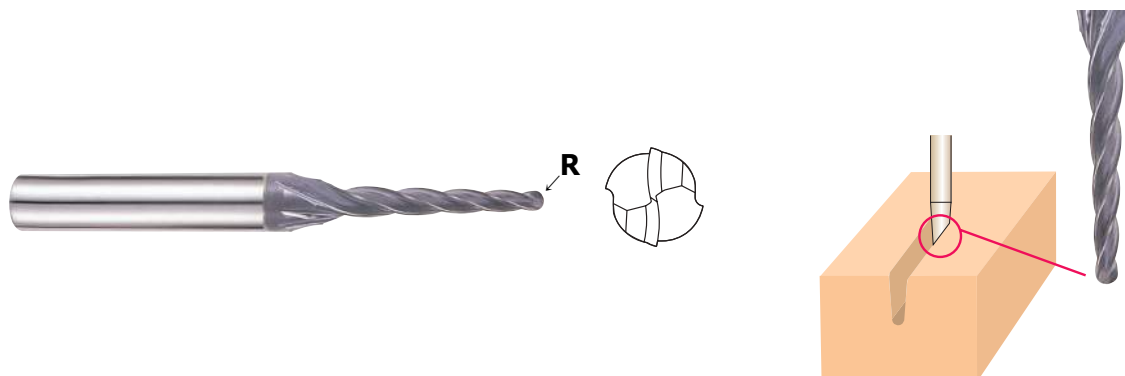


Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
PLAIN	R (±0.01)					
EM890909	RO.5	1.0	4	8	45	30'
EM890911	RO.5	1.0	4	12	45	30'
EM890010	RO.5	1.0	4	8	45	1°
EM890916	RO.5	1.0	4	12	45	1°
EM890917	RO.5	1.0	4	8	45	1° 30'
EM890919	RO.5	1.0	4	12	45	1° 30'
EM890920	RO.5	1.0	4	8	45	2°
EM890922	RO.5	1.0	4	12	45	2°
EM890923	RO.6	1.2	4	8	45	30'
EM890925	RO.6	1.2	4	12	45	30'
EM890012	RO.6	1.2	4	8	45	1°
EM890932	RO.6	1.2	4	12	45	1°
EM890934	RO.6	1.2	4	8	45	1° 30'
EM890936	RO.6	1.2	4	12	45	1° 30'
EM890938	RO.6	1.2	4	8	45	2°
EM890940	RO.6	1.2	4	12	45	2°
EM890942	RO.75	1.5	4	8	45	30'
EM890944	RO.75	1.5	4	12	45	30'
EM890945	RO.75	1.5	4	16	50	30'
EM890015	RO.75	1.5	4	8	45	1°
EM890953	RO.75	1.5	4	12	45	1°
EM890954	RO.75	1.5	4	16	50	1°
EM890956	RO.75	1.5	4	8	45	1° 30'
EM890958	RO.75	1.5	4	12	45	1° 30'
EM890959	RO.75	1.5	4	16	50	1° 30'
EM890961	RO.75	1.5	4	8	45	2°
EM890963	RO.75	1.5	4	12	45	2°
EM890964	RO.75	1.5	4	16	50	2°

◎ : 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 FLUTE 25° HELIX TAPER BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH STIRNRADIUS für SCHMALE RIPPEN


Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
PLAIN	R (±0.01)					
EM890816	R1.0	2.0	4	12	45	30'
EM890817	R1.0	2.0	4	16	50	30'
EM890825	R1.0	2.0	4	12	45	1°
EM890826	R1.0	2.0	4	16	50	1°
EM890830	R1.0	2.0	4	12	45	1° 30'
EM890831	R1.0	2.0	4	16	50	1° 30'
EM890835	R1.0	2.0	4	12	45	2°
EM890836	R1.0	2.0	4	16	50	2°

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~-0.015	0~-0.008	±5'

◎ : 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							
○	◎	◎	◎	○				○				

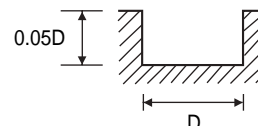
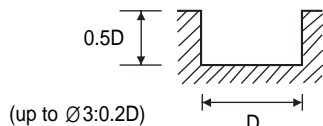


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE SHORT - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN KURZ - NUTENFRÄSEN

EM810, EM820 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	9250	190	6050	120	5050	90	4030	35		
3.0	7150	210	4450	140	3700	120	2690	40	1900	40
4.0	6050	300	3700	180	3100	150	2350	40	1480	40
5.0	5050	320	3020	190	2530	160	1860	50	1260	40
6.0	4450	350	2690	220	2270	180	1600	55	1100	40
8.0	3360	380	2020	200	1680	180	1350	75	840	40
10.0	2600	330	1600	160	1350	160	1090	60	680	35
12.0	2200	280	1350	130	1090	130	930	55	560	35
16.0	1760	220	1090	110	850	110	720	40	440	20
20.0	1350	170	850	80	670	80	550	30	320	20
25.0	1090	130	670	70	550	60	430	20	260	15



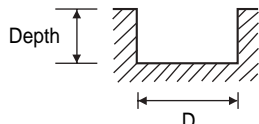
RPM = rev./min.
FEED = mm/min.

CARBIDE, 2 FLUTE MINIATURE - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN MINI - NUTENFRÄSEN

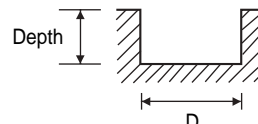
EM810 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	HRC30 ~ HRC45		HRC45 ~ HRC55	
STRENGTH	1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED
0.4	30000	90	23000	50
0.8	24000	150	18000	65
1.0	20000	160	15000	75
1.2	16000	160	12000	75
1.5	12000	150	9000	70

D < 1
Depth=0.15 × D
D ≥ 1
Depth=0.25 × D



D < 1
Depth=0.02 × D
D ≥ 1
Depth=0.05 × D

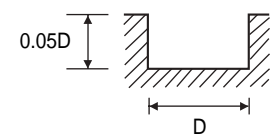
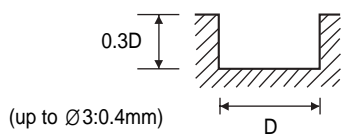


RPM = rev./min.
FEED = mm/min.

CARBIDE, 2 FLUTE LONG - SLOTTING VOLLHARTMETALL, 2 SCHNEIDEN LANG - NUTENFRÄSEN

EM816, EM826 SERIES

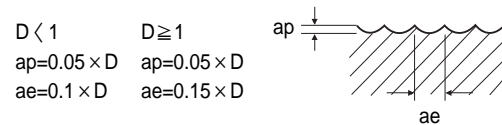
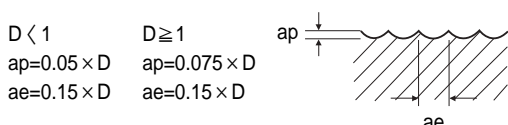
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7560	70	6050	60	3780	30
3.0	5290	85	4280	70	2640	35
4.0	4280	100	3410	85	2150	40
5.0	3660	125	2900	100	1900	45
6.0	3160	150	2520	125	1640	60
8.0	2400	160	1900	125	1260	60
10.0	2020	160	1640	125	1010	60
12.0	1640	125	1390	115	840	45
16.0	1390	115	1070	90	670	40
20.0	1010	85	820	60	500	30


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

CARBIDE, 2 FLUTE MINIATURE BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS

EM865 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	HRC30 ~ HRC45		HRC45 ~ HRC55	
STRENGTH	1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED
R0.3 × 0.6	30000	510	30000	360
R0.4 × 0.8	27000	560	27000	330
R0.5 × 1.0	25000	560	25000	340
R0.6 × 1.2	24000	570	24000	350
R0.75 × 1.5	23000	600	23000	370
R1.0 × 2.0	19000	570	19000	320
R1.5 × 3.0	14000	480	14000	280


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

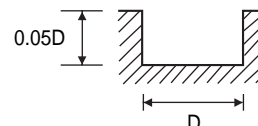
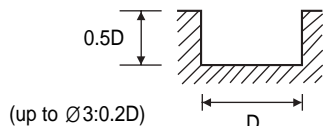


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE - SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN - NUTENFRÄSEN

EM895, EM896, EM836, EM846 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	170	7560	110	6300	80	5040	30		
3.0	8920	190	5560	130	4620	110	3360	35	1900	40
4.0	7560	270	4620	160	3880	130	2940	35	1480	35
5.0	6300	280	3780	170	3160	140	2320	45	1260	35
6.0	5560	310	3360	200	2840	160	2000	50	1100	35
8.0	4200	340	2520	180	2100	160	1680	65	840	35
10.0	3260	300	2000	140	1680	145	1360	55	680	30
12.0	2740	250	1680	120	1360	120	1160	50	560	30
16.0	2200	200	1360	100	1060	100	900	35	440	20
18.0	1940	175	1210	85	950	85	790	30	380	20
20.0	1680	150	1060	70	840	70	680	25	320	20



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

CARBIDE, 3 FLUTE - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN - SEITENFRÄSEN

EM895, EM896, EM836, EM846 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	210	7560	140	6300	115	5040	30		
3.0	8920	240	5560	150	4620	125	3360	40	1900	45
4.0	7560	430	4620	260	3880	210	2940	45	1480	45
5.0	6300	450	3780	270	3160	230	2320	55	1260	45
6.0	5560	500	3360	310	2840	250	2000	60	1100	45
8.0	4200	530	2520	290	2100	265	1680	80	840	45
10.0	3260	460	2000	230	1680	230	1360	70	680	35
12.0	2740	390	1680	190	1360	180	1160	60	560	35
16.0	2200	310	1360	150	1060	150	900	45	440	20
18.0	1940	280	1210	135	950	130	790	35	380	20
20.0	1680	240	1060	120	840	115	680	30	320	20

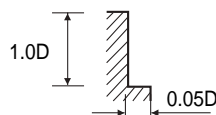


RPM = rev./min.
FEED = mm/min.

CARBIDE, 4 FLUTE SHORT - SIDE CUTTING VOLLHARTMETALL, 4 SCHNEIDEN KURZ - SEITENFRÄSEN

EM811, EM821 SERIES

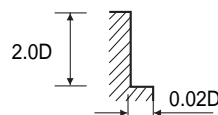
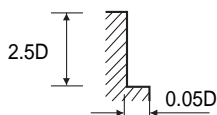
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	280	7560	170	6300	140	5040	50		
3.0	8920	320	5560	200	4620	170	3360	60	1900	50
4.0	7560	570	4620	350	3880	280	2940	60	1480	50
5.0	6300	600	3780	360	3160	300	2320	70	1260	50
6.0	5560	660	3360	410	2840	330	2000	80	1100	50
8.0	4200	710	2520	380	2100	350	1680	110	840	50
10.0	3260	610	2000	300	1680	300	1360	90	680	40
12.0	2740	520	1680	250	1360	240	1160	80	560	40
16.0	2200	410	1360	200	1100	200	900	60	440	25
20.0	1680	320	1060	160	840	150	680	40	320	25
25.0	1360	250	840	130	680	120	540	30	260	20


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

CARBIDE, 4 FLUTE LONG - SIDE CUTTING VOLLHARTMETALL, 4 SCHNEIDEN LANG - SEITENFRÄSEN

EM817, EM827 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	8820	200	5040	80	3150	45		
3.0	6170	230	3570	100	2200	55	1890	30
4.0	5000	280	2840	115	1790	60	1470	35
5.0	4270	360	2420	140	1580	70	1260	40
6.0	3680	430	2100	180	1370	90	1160	50
8.0	2800	460	1580	180	1050	90	840	50
10.0	2350	460	1370	180	840	90	670	50
12.0	1920	360	1160	160	700	70	560	40
16.0	1620	320	890	125	560	60	440	35
20.0	1180	230	680	90	420	45	340	25


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



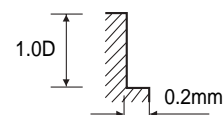
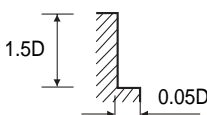
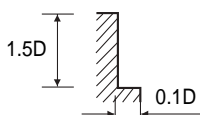
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 6&8 FLUTE 45° HELIX LONG - SIDE CUTTING
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG - SEITENFRÄSEN

EM812, EM822 SERIES

■ NORMAL SPEED

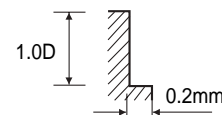
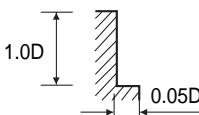
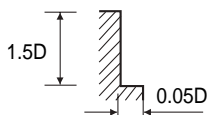
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
	~ HRC30		HRC30 ~ HRC50		HRC50 ~ HRC60		HRC60 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1750N/mm ²		1750 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	5560	2000	3880	1370	1580	210	1100	130
8.0	4200	2000	2940	1370	1160	210	840	130
10.0	3360	2000	2320	1370	1000	210	680	130
12.0	2840	1680	2000	1160	840	180	560	110
16.0	2100	1260	1480	880	640	130	420	70
20.0	1680	1010	1160	690	500	110	320	60
25.0	1500	900	1100	600	430	90	260	50



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

■ HIGH SPEED

MATERIAL	HEAT RESISTANT STEELS HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
	~ HRC50		HRC50 ~ HRC60		HRC60 ~ HRC65	
STRENGTH	~ 1750N/mm ²		1750 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
6.0	16800	6090	8400	3050	4200	1470
8.0	12600	6090	6300	3050	3160	1470
10.0	9980	5990	5040	3050	2520	1470
12.0	8400	5040	4200	2520	2100	1260
16.0	6300	3780	3160	1890	1580	950
20.0	5040	3050	2520	1470	1260	760
25.0	4500	2700	2200	1300	1120	670

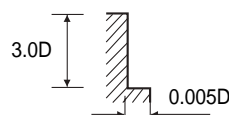
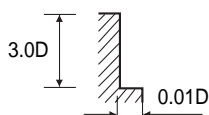


RPM = rev./min.
FEED = mm/min.

CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG - SIDE CUTTING
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG - SEITENFRÄSEN

EM834, EM844 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc60		HRc60 ~ HRc65	
STRENGTH	~ 1250N/mm ²		1250 ~ 1750N/mm ²		1750 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	2230	470	1670	350	1390	250	1110	200
8.0	1670	450	1250	330	1050	240	840	180
10.0	1330	440	1000	300	840	230	680	160
12.0	1110	400	840	270	690	210	560	150
16.0	840	330	630	230	530	170	420	130
20.0	670	280	500	200	420	150	320	120
25.0	540	240	400	170	340	130	270	95



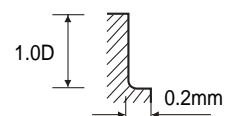
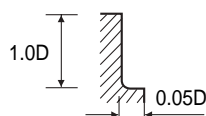
RPM = rev./min.
FEED = mm/min.

CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS - SEITENFRÄSEN

EM835, EM845 SERIES

HIGH SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc50		HRc50 ~ HRc60		HRc60 ~ HRc65	
STRENGTH	~ 1750N/mm ²		1750 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
6.0	16800	6090	8400	3050	4200	1470
8.0	12600	6090	6300	3050	3150	1470
10.0	9980	5990	5040	3050	2520	1470
12.0	8400	5040	4200	2520	2100	1260
16.0	6300	3780	3150	1890	1580	950
20.0	5040	3050	2520	1470	1260	760



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



RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

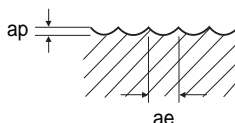
CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

EM876, EM877, EM813, EM823, EM878, EM879 SERIES

■ **NORMAL SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	15760	250	12720	200	5800	90
R0.75 × 1.5	15760	350	12140	270	5320	120
R1.0 × 2.0	14400	750	10700	490	4680	150
R1.25 × 2.5	14400	750	10700	490	4680	150
R1.5 × 3.0	13100	680	10000	460	4520	150
R2.0 × 4.0	10500	740	8400	530	4200	180
R2.5 × 5.0	9140	820	7300	580	3680	180
R3.0 × 6.0	8490	1020	6900	830	3180	190
R4.0 × 8.0	7160	1290	5770	920	2470	220
R5.0 × 10.0	6370	1530	5090	1020	2040	225
R6.0 × 12.0	5840	1750	4640	1110	1750	245
R8.0 × 16.0	4770	1720	3780	1060	1350	245
R10.0 × 20.0	4140	1660	3260	1040	1110	250

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2 × D



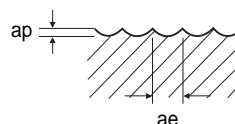
ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1 × D

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

■ **HIGH SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
	~ HRC45		HRC45 ~ HRC65	
STRENGTH	~ 1500N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED
R0.5 × 1.0	25000	1300	25000	800
R0.75 × 1.5	23000	1400	23000	860
R1.0 × 2.0	21000	1480	21000	940
R1.25 × 2.5	21000	1760	19000	980
R1.5 × 3.0	21000	2000	17000	1040
R2.0 × 4.0	21000	2940	13660	1160
R2.5 × 5.0	21000	3600	12000	1200
R3.0 × 6.0	21000	4000	10500	1250
R4.0 × 8.0	16700	4000	8360	1250
R5.0 × 10.0	14000	3900	7000	1200
R6.0 × 12.0	12200	3900	6100	1160
R8.0 × 16.0	9550	3450	4770	1000
R10.0 × 20.0	7960	3180	3980	920

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.05 × D



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

CARBIDE, 2 FLUTE BALL NOSE

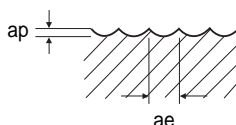
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

EM899, EM900 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	15760	250	12720	200	5800	90
R0.75 × 1.5	15760	350	12140	270	5320	120
R1.0 × 2.0	14400	750	10700	490	4680	150
R1.25 × 2.5	14400	750	10700	490	4680	150
R1.5 × 3.0	13100	680	10000	460	4520	150
R2.0 × 4.0	10500	740	8400	530	4200	180
R2.5 × 5.0	9140	820	7300	580	3680	180
R3.0 × 6.0	8490	1020	6900	830	3180	190
R4.0 × 8.0	7160	1290	5770	920	2470	220
R5.0 × 10.0	6370	1530	5090	1020	2040	225
R6.0 × 12.0	5840	1750	4640	1110	1750	245
R8.0 × 16.0	4770	1720	3780	1060	1350	245
R10.0 × 20.0	4140	1660	3260	1040	1110	250

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2 × D



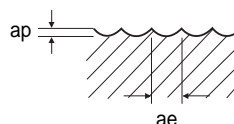
ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1 × D

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

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRC45		HRC45 ~ HRC65	
STRENGTH	~ 1500N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED
R0.5 × 1.0	25000	1300	25000	800
R0.75 × 1.5	23000	1400	23000	860
R1.0 × 2.0	21000	1480	21000	940
R1.25 × 2.5	21000	1760	19000	980
R1.5 × 3.0	21000	2000	17000	1040
R2.0 × 4.0	21000	2940	13660	1160
R2.5 × 5.0	21000	3600	12000	1200
R3.0 × 6.0	21000	4000	10500	1250
R4.0 × 8.0	16700	4000	8360	1250
R5.0 × 10.0	14000	3900	7000	1200
R6.0 × 12.0	12200	3900	6100	1160
R8.0 × 16.0	9550	3450	4770	1000
R10.0 × 20.0	7960	3180	3980	920

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.05 × D



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



RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

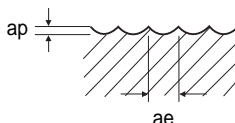
CARBIDE, 2 FLUTE LONG REACH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS

EM838, EM848 SERIES

■ **NORMAL SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
HARDNESS						
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	12600	200	10180	160	4640	70
R0.75 × 1.5	12600	280	9710	220	4250	95
R1.0 × 2.0	12600	420	9250	260	3870	90
R1.25 × 2.5	11520	600	8560	390	3740	120
R1.5 × 3.0	10500	540	8000	370	3620	120
R2.0 × 4.0	8400	590	6720	420	3360	140
R2.5 × 5.0	7310	660	5840	460	2940	140
R3.0 × 6.0	6800	820	5500	600	2550	150
R4.0 × 8.0	5700	1030	4600	740	2000	175
R5.0 × 10.0	5100	1220	4070	820	1650	180
R6.0 × 12.0	4700	1400	3700	890	1400	195
R8.0 × 16.0	3800	1380	3000	850	1100	195
R10.0 × 20.0	3300	1330	2600	830	890	200

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2 × D



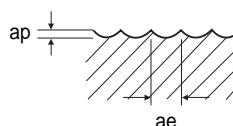
ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1 × D

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

■ **HIGH SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
	~ HRc45		HRc45 ~ HRc65	
HARDNESS				
STRENGTH	~ 1500N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED
R0.5 × 1.0	20000	1040	20000	640
R0.75 × 1.5	18400	1100	18400	690
R1.0 × 2.0	16800	1200	16800	750
R1.25 × 2.5	16800	1400	15200	780
R1.5 × 3.0	16800	1600	13600	830
R2.0 × 4.0	16800	2350	10930	930
R2.5 × 5.0	16800	2880	9600	960
R3.0 × 6.0	16800	3200	8400	1000
R4.0 × 8.0	13400	3200	6700	1000
R5.0 × 10.0	11200	3100	5600	960
R6.0 × 12.0	9800	3100	4900	930
R8.0 × 16.0	7600	2750	3800	800
R10.0 × 20.0	6400	2550	3200	740

ap: D1~D6 =0.2mm
D8~D20=0.3mm
ae: 0.05 × D



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

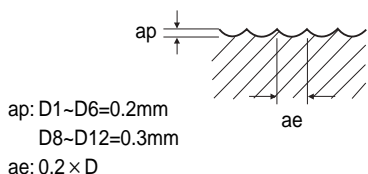
CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL

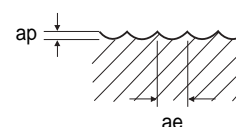
EM902, EM904 SERIES

■ NORMAL SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55	
STRENGTH	1000 ~ 1250N/mm ²		1250 ~ 1750N/mm ²		1750 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	10180	160	16000	370	16000	320
R1.0 × 2.0	9250	260	11500	640	11300	590
R1.5 × 3.0	8000	370	10200	880	9800	850
R2.0 × 4.0	6720	420	8500	880	8200	850
R2.5 × 5.0	5840	460	7500	880	7200	850
R3.0 × 6.0	5500	660	6900	920	6500	880
R4.0 × 8.0	4600	740	5600	840	5300	800
R5.0 × 10.0	4070	820	4850	800	4650	770
R6.0 × 12.0	3700	890	4350	800	4150	770



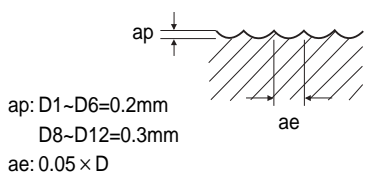
ap: D1~D4=0.05 × D
D5~D8=0.25mm
D10~D12=0.30mm
ae: 0.1 × D



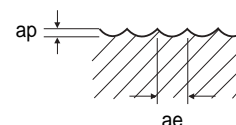
RPM = rev./min.
FEED = mm/min.

■ HIGH SPEED

MATERIAL	NON-ALLOY STEELS ALLOY STEELS CAST IRON		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC45		HRC45 ~ HRC50		HRC50 ~ HRC55	
STRENGTH	~ 1500N/mm ²		1250 ~ 1750N/mm ²		1750 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	20000	1040	16000	620	16000	550
R1.0 × 2.0	16800	1200	11500	850	11400	980
R1.5 × 3.0	16800	1600	10200	1400	9800	1300
R2.0 × 4.0	16800	2350	8500	1350	8200	1300
R2.5 × 5.0	16800	2880	7500	1320	7200	1250
R3.0 × 6.0	16800	3200	6900	1400	6600	1350
R4.0 × 8.0	13400	3200	5600	1250	5300	1150
R5.0 × 10.0	11200	3100	4800	1150	4600	1100
R6.0 × 12.0	9800	3100	4350	1130	4150	1050



ap: D1~D4=0.05 × D
D5~D8=0.25mm
D10~D12=0.30mm
ae: 0.05 × D



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



RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

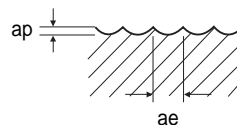
CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE for OVER HRc55
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS EXTRA KURZ für ÜBER HRc55

G4953, G4954 SERIES

■ **NORMAL SPEED**

MATERIAL	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm ²		1750 ~ 2000N/mm ²		2000 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	20000	460	20000	400	20000	350	20000	240
R0.75 × 1.5	16300	640	16100	580	16000	570	14200	360
R1.0 × 2.0	14500	800	14200	740	13850	760	11300	465
R1.25 × 2.5	13400	950	13000	890	12600	920	9600	560
R1.5 × 3.0	12700	1100	12300	1050	11800	1000	8400	660
R2.0 × 4.0	10600	1100	10300	1050	9800	1000	6650	650
R2.5 × 5.0	9400	1100	9050	1050	8600	950	5600	680
R3.0 × 6.0	8600	1150	8250	1100	7850	950	4850	700
R4.0 × 8.0	7000	1050	6700	1000	6350	950	3800	650
R5.0 × 10.0	6050	1000	5800	960	5450	900	3200	620
R6.0 × 12.0	5450	1000	5200	960	4900	900	2750	610
R8.0 × 16.0	4350	870	4150	830	3900	820	2150	265
R10.0 × 20.0	3500	690	3300	650	3150	630	1700	220

ap: D1~D4 = 0.05 × D
 D5~D8 = 0.25mm
 D10~D20 = 0.30mm
 ae: D1~D20 = 0.1 × D

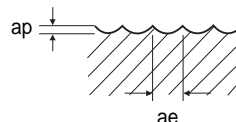


RPM = rev./min.
FEED = mm/min.

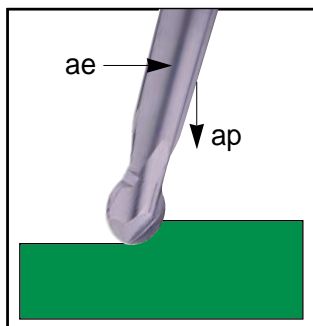
■ **HIGH SPEED**

MATERIAL	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm ²		1750 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	20000	770	20000	700	20000	410
R0.75 × 1.5	16300	1050	16100	980	16000	580
R1.0 × 2.0	14500	1300	14200	1230	13850	700
R1.25 × 2.5	13400	1500	13000	1430	12600	780
R1.5 × 3.0	12700	1750	12300	1670	11800	860
R2.0 × 4.0	10600	1700	10300	1620	9800	860
R2.5 × 5.0	9400	1650	9050	1570	8600	860
R3.0 × 6.0	8600	1750	8250	1670	7850	865
R4.0 × 8.0	7000	1550	6700	1460	6350	890
R5.0 × 10.0	6050	1450	5800	1360	5450	870
R6.0 × 12.0	5450	1420	5200	1330	4900	785
R8.0 × 16.0	4350	1230	4150	1130	3900	485
R10.0 × 20.0	3500	1000	3300	900	3150	410

ap: D1~D4 = 0.05 × D
 D5~D8 = 0.25mm
 D10~D20 = 0.30mm
 ae: D1~D20 = 0.05 × D



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

CARBIDE, 2 FLUTE BALL NOSE MMC
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS MMC


▶ $ap = 0.05 \times D$
▶ $ae = 0.02 \times D$

EM669, EM863 SERIES
■ NORMAL SPEED

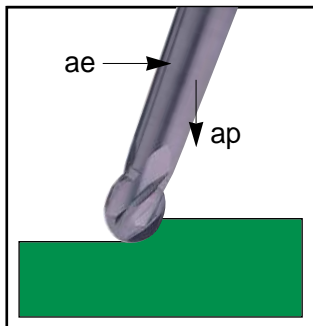
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1.5 × 3.0	35000	2800	33000	2600	12000	900
R2.0 × 4.0	26000	2300	25000	2200	9000	800
R2.5 × 5.0	21000	2100	20000	2000	7000	700
R3.0 × 6.0	17000	1900	16000	1800	6000	650
R4.0 × 8.0	13000	1700	12000	1600	4500	550
R5.0 × 10.0	10500	1450	10000	1400	3500	500
R6.0 × 12.0	9000	1400	8000	1300	3000	450
R8.0 × 16.0	6000	1200	5500	1100	2000	400

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

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1.5 × 3.0	47000	3700	44000	3500	17000	1400
R2.0 × 4.0	35000	3200	33000	3000	13000	1200
R2.5 × 5.0	28000	2800	27000	2600	10000	1100
R3.0 × 6.0	23000	2600	22000	2400	8000	950
R4.0 × 8.0	18000	2300	17000	2100	6000	850
R5.0 × 10.0	14000	2000	13000	1900	5000	750
R6.0 × 12.0	12000	1800	11000	1800	4000	700
R8.0 × 16.0	9000	1600	8000	1500	3300	600

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


**CARBIDE, 4 FLUTE BALL NOSE MMC
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS MMC**


- ▶ $ap = 0.05 \times D$
- ▶ $ae = 0.02 \times D$

EM673, EM864 SERIES
■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R2.5 × 5.0	21000	4000	20000	4000	7000	1400
R3.0 × 6.0	17000	4000	16000	3500	6000	1300
R4.0 × 8.0	13000	3500	12000	3000	4500	1100
R5.0 × 10.0	10500	3000	10000	2500	3500	1000
R6.0 × 12.0	9000	2800	8000	2500	3000	950
R8.0 × 16.0	6000	2800	5500	2200	2000	800

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

■ HIGH SPEED

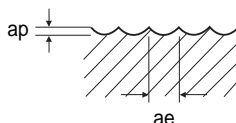
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R2.5 × 5.0	28000	5600	27000	5300	11000	2100
R3.0 × 6.0	23000	5100	22000	4900	9000	1900
R4.0 × 8.0	18000	4600	17000	4300	7000	1700
R5.0 × 10.0	14000	3900	13000	3700	5000	1400
R6.0 × 12.0	12000	3700	11000	3500	4500	1300
R8.0 × 16.0	9000	3100	8000	3000	3300	1100

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

CARBIDE, 4 FLUTE LONG BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS
EM815, EM825 SERIES
■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R0.5 × 1.0	15760	380	12720	300	5800	130
R0.75 × 1.5	15760	530	12140	410	5320	180
R1.0 × 2.0	15760	800	11560	480	4840	160
R1.5 × 3.0	13100	1020	10000	690	4520	220
R2.0 × 4.0	10500	1110	8400	800	4200	270
R2.5 × 5.0	9140	1230	7300	870	3680	270
R3.0 × 6.0	8490	1530	6900	1250	3180	280
R4.0 × 8.0	7160	1950	5770	1380	2470	330
R5.0 × 10.0	6370	2300	5090	1530	2040	340
R6.0 × 12.0	5840	2600	4640	1650	1750	370
R8.0 × 16.0	4770	2600	3780	1600	1350	370
R10.0 × 20.0	4140	2500	3260	1560	1110	375

ap: D1~D6=0.2mm
 D8~D20=0.3mm
 ae: 0.2 × D



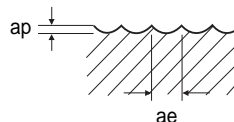
ap: D1~D6=0.2mm
 D8~D20=0.3mm
 ae: 0.1 × D

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

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRC45		HRC45 ~ HRC65	
STRENGTH	~ 1500N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED
R0.5 × 1.0	25000	1950	25000	1200
R0.75 × 1.5	23000	2100	23000	1290
R1.0 × 2.0	21000	2200	21000	1400
R1.5 × 3.0	21000	3000	17000	1560
R2.0 × 4.0	21000	4400	13660	1740
R2.5 × 5.0	21000	5400	12000	1800
R3.0 × 6.0	21000	6000	10500	1880
R4.0 × 8.0	16700	6000	8360	1880
R5.0 × 10.0	14000	5850	7000	1800
R6.0 × 12.0	12200	5850	6100	1740
R8.0 × 16.0	9550	5180	4770	1500
R10.0 × 20.0	7960	4770	3980	1380

ap: D1~D6=0.2mm
 D8~D20=0.3mm
 ae: 0.05 × D



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

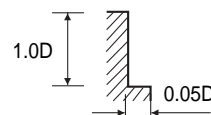
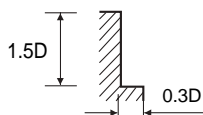


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, MULTI FLUTE 20° HELIX ROUGHING - SIDE CUTTING
VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE SCHRUPPFÄRER - SEITENFRÄSEN

EM832, EM842, EM814, EM824 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC38		HRC38 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1200N/mm ²		1200 ~ 1400N/mm ²		1400 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	15600	2320	12400	840	8400	570	3400	260	2400	190
8.0	11600	2320	9200	840	6300	570	2400	240	1800	180
10.0	9200	2320	7600	840	5100	570	2000	290	1300	190
12.0	8000	2400	6000	800	4200	570	1680	260	1200	190
14.0	6800	2400	5200	840	3600	570	1400	200	900	130
16.0	6000	2400	4800	760	3300	510	1200	160	800	110
18.0	5200	2320	4400	720	2700	420	1100	150	700	100
20.0	4800	2160	3600	560	2400	360	1000	150	660	100
25.0	4300	2150	3200	620	2160	410	900	160	600	100

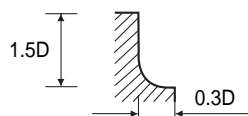


RPM = rev./min.
FEED = mm/min.

CARBIDE, 3&4 FLUTE 20° HELIX ROUGHING BALL NOSE - SIDE CUTTING
VOLLHARTMETALL, 3&4 SCHNEIDEN 20° RECHTSSPIRALE SCHRUPPFÄRER STIRNRADIUS - SEITENFRÄSEN

EM833, EM843 SERIES

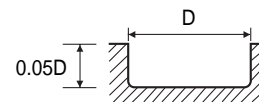
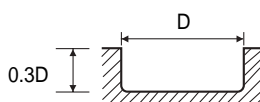
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC38		HRC38 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1200N/mm ²		1200 ~ 1400N/mm ²		1400 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R3.0 × 6.0	15600	2320	12400	840	8400	570	3400	260	2400	190
R4.0 × 8.0	11600	2320	9200	840	6300	570	2400	240	1800	180
R5.0 × 10.0	9200	2320	7600	840	5100	570	2000	290	1300	190
R6.0 × 12.0	8000	2400	6000	800	4200	570	1680	260	1200	190
R7.0 × 14.0	6800	2400	5200	840	3600	570	1400	200	900	130
R8.0 × 16.0	6000	2400	4800	760	3300	510	1200	160	800	110
R9.0 × 18.0	5200	2320	4400	720	2700	420	1100	150	700	100
R10.0 × 20.0	4800	2160	3600	560	2400	360	1000	150	660	100



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

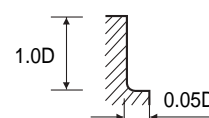
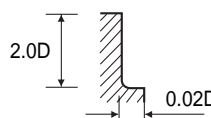
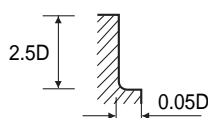
CARBIDE, 2 FLUTE LONG CORNER RADIUS - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS - NUTENFRÄSEN
EM818, EM828 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	140	4280	70	2640	35	1870	18
4.0	5360	170	3410	85	2150	40	1470	20
5.0	4580	210	2900	100	1900	50	1260	25
6.0	3950	250	2520	125	1640	60	1160	35
8.0	3000	270	1900	125	1260	60	840	35
10.0	2520	270	1640	125	1010	60	670	35
12.0	2060	210	1390	115	840	50	550	25
16.0	1740	190	1070	90	670	40	440	20
20.0	1260	140	820	60	500	30	340	15


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

CARBIDE, 4 FLUTE LONG CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS - SEITENFRÄSEN
EM819, EM829 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	170	4280	130	2640	65	1870	30
4.0	5360	210	3410	150	2150	70	1470	35
5.0	4580	215	2900	180	1900	85	1260	40
6.0	3950	215	2520	180	1640	85	1160	50
8.0	3000	230	1900	180	1260	85	840	50
10.0	2520	230	1640	180	1010	85	670	50
12.0	2060	180	1390	160	840	70	550	40
16.0	1740	160	1070	125	670	60	440	35
20.0	1260	115	820	90	500	45	340	25


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

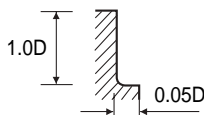


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE STUB CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS - SEITENFRÄSEN

EM839, EM849 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	13870	340	9070	205	6050	60		
2.5	12290	360	7870	220	5040	65		
3.0	10700	385	6670	240	4030	70	2280	70
3.5	9890	535	6100	330	3780	70	2030	70
4.0	9070	685	5540	420	3530	70	1780	70
5.0	7560	720	4540	430	2780	85	1510	70
6.0	6670	790	4030	490	2400	95	1320	70
8.0	5040	850	3020	455	2020	130	1010	70
10.0	3910	730	2400	360	1630	110	820	60
12.0	3290	625	2020	300	1390	95	670	60
16.0	2640	490	1630	240	1080	70	530	35

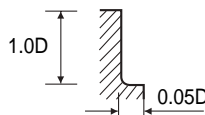


RPM = rev./min.
FEED = mm/min.

CARBIDE, 6 FLUTE STUB CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 6 SCHNEIDEN EXTRA KURZ ECKENRADIUS - SEITENFRÄSEN

EM897, EM898 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	6670	790	4030	490	2400	95	1320	70
8.0	5040	850	3020	455	2020	130	1010	70
10.0	3910	730	2400	360	1630	110	820	60
12.0	3290	625	2020	300	1390	95	670	60



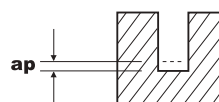
RPM = rev./min.
FEED = mm/min.

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

EM883 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ Hrc30			Hrc30 ~ Hrc45			Hrc45 ~ Hrc55		
STRENGTH	~ 1000N/mm ²			1000 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
0.4	31000~40000	200~440	0.007~0.018	22500~28000	85~340	0.007~0.018	14300~17000	30~90	0.004~0.008
0.5	31000~40000	200~440	0.009~0.022	22500~28000	85~340	0.009~0.022	14300~17000	30~90	0.004~0.009
0.6	31000~40000	250~570	0.011~0.026	22500~28000	110~430	0.011~0.026	14300~17000	40~110	0.005~0.011
0.7	31000~40000	250~570	0.012~0.031	22500~28000	110~430	0.012~0.031	14300~17000	40~110	0.006~0.013
0.8	27000~35000	280~630	0.014~0.035	19500~24500	120~480	0.014~0.035	12500~14800	45~125	0.007~0.015
0.9	25000~31500	280~720	0.030~0.060	17500~22500	160~540	0.030~0.060	11000~12500	55~130	0.008~0.016
1.0	22500~28000	280~810	0.045~0.090	15700~20000	190~600	0.045~0.090	10000~12500	65~130	0.009~0.018
1.2	18500~22500	280~900	0.055~0.100	13000~16500	190~600	0.055~0.100	8300~10500	65~130	0.010~0.022
1.4	16000~20000	280~900	0.062~0.125	11500~14000	190~600	0.062~0.125	7200~9000	65~130	0.012~0.025
1.5	14500~18500	280~900	0.070~0.135	10500~13500	190~600	0.070~0.135	6700~8200	65~130	0.014~0.028
1.6	14000~18000	280~900	0.075~0.145	10200~12800	190~600	0.075~0.145	6400~8000	65~130	0.015~0.030
1.8	13000~16500	280~900	0.080~0.160	9200~11500	190~600	0.080~0.160	5700~7200	65~130	0.016~0.032
2.0	12000~14500	280~900	0.090~0.180	8300~10500	190~600	0.090~0.180	5300~6600	65~130	0.018~0.035
2.5	9500~12000	280~900	0.112~0.235	6700~8500	190~600	0.112~0.235	4300~5300	65~130	0.022~0.045
3.0	8000~10000	280~900	0.135~0.270	5500~7000	190~600	0.135~0.270	3500~4400	65~130	0.028~0.055
2.0	6000~7500	280~900	0.180~0.36	4100~5300	190~600	0.180~0.36	2600~3300	65~130	0.036~0.072
5.0	4800~6000	280~900	0.225~0.450	3300~4200	190~600	0.225~0.450	2100~2600	65~130	0.045~0.090
6.0	4000~5000	280~900	0.270~0.540	2800~3500	190~600	0.270~0.540	1750~2600	65~130	0.054~0.108

(Depth of Cut per one pass)



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



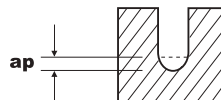
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

EM886 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRC30			HRC30 ~ HRC45			HRC45 ~ HRC55		
STRENGTH	~ 1000N/mm ²			1000 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
R0.2 × 0.4	31000~40000	175~490	0.018~0.036	22500~28500	88~270	0.018~0.036	14300~18000	88~175	0.004~0.007
R0.25 × 0.5	31000~40000	175~490	0.023~0.045	22500~28500	88~270	0.023~0.045	14300~18000	88~175	0.005~0.009
R0.3 × 0.6	31000~40000	225~630	0.027~0.054	22500~28500	110~350	0.027~0.054	14300~18000	110~225	0.005~0.011
R0.4 × 0.8	31000~40000	225~630	0.036~0.072	22500~28500	110~350	0.036~0.072	14300~18000	110~225	0.007~0.014
R0.5 × 1.0	29000~36500	250~700	0.045~0.090	20500~26000	125~390	0.045~0.090	13000~16300	125~250	0.009~0.018
R0.6 × 1.2	24000~30500	250~780	0.055~0.100	17000~21500	125~390	0.055~0.100	10800~13700	125~250	0.010~0.022
R0.7 × 1.4	21000~26000	250~780	0.062~0.125	15000~18000	125~390	0.062~0.125	9400~11700	125~250	0.012~0.025
R0.75 × 1.5	19000~24000	250~780	0.070~0.135	13500~17500	125~390	0.070~0.135	8700~10700	125~250	0.014~0.028
R0.8 × 1.6	18000~23500	250~780	0.075~0.145	13200~16500	125~390	0.075~0.145	8300~10400	125~250	0.015~0.030
R0.9 × 1.8	17000~21500	250~780	0.080~0.160	12000~15000	125~390	0.080~0.160	7400~9400	125~250	0.016~0.032
R1.0 × 2.0	15500~19000	250~780	0.090~0.180	11000~13500	125~390	0.090~0.180	6900~8600	125~250	0.018~0.035
R1.5 × 3.0	10500~13000	250~780	0.135~0.270	7000~9000	125~390	0.135~0.270	4600~5700	125~250	0.028~0.055
R2.0 × 4.0	8500~11000	250~780	0.180~0.360	5800~7800	125~390	0.180~0.360	3900~4900	125~250	0.035~0.070
R2.5 × 5.0	6800~8800	250~780	0.225~0.450	4600~6200	125~390	0.225~0.450	3100~3900	125~250	0.044~0.088
R3.0 × 6.0	5700~7300	250~780	0.270~0.540	3900~5200	125~390	0.270~0.540	2600~3300	125~250	0.053~0.105

(Depth of Cut per one pass)



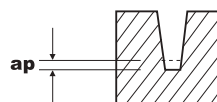
RPM = rev./min.
FEED = mm/min.

CARBIDE, 4 FLUTE TAPER for RIB PROCESSING VOLLHARTMETALL, 4 SCHNEIDEN KONISCH für SCHMALE RIPPEN

EM889 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRC30			HRC30 ~ HRC45			HRC45 ~ HRC55		
STRENGTH	~ 1000N/mm ²			1000 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
1.0	20000	700	0.020~0.040	15000	500	0.020~0.030	10000	300	0.010~0.020
1.2	16000	700	0.025~0.050	13000	500	0.025~0.040	8000	300	0.012~0.025
1.5	13000	700	0.030~0.060	10000	500	0.030~0.050	6500	300	0.015~0.030
2.0	10000	700	0.040~0.080	8000	500	0.040~0.060	5000	300	0.020~0.040

(Depth of Cut per one pass)



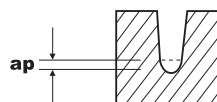
RPM = rev./min.
FEED = mm/min.

CARBIDE, 4 FLUTE TAPER BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 4 SCHNEIDEN KONISCH STIRNRADIUS für SCHMALE RIPPEN

EM890 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRC30			HRC30 ~ HRC45			HRC45 ~ HRC55		
STRENGTH	~ 1000N/mm ²			1000 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
R0.5 × 1.0	20000	700	0.020~0.040	15000	500	0.020~0.030	10000	300	0.010~0.020
R0.6 × 1.2	16000	700	0.025~0.050	13000	500	0.025~0.040	8000	300	0.012~0.025
R0.75 × 1.5	13000	700	0.030~0.060	10000	500	0.030~0.050	6500	300	0.015~0.030
R1.0 × 2.0	10000	700	0.040~0.080	8000	500	0.040~0.060	5000	300	0.020~0.040

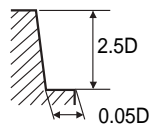
(Depth of Cut per one pass)



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


**CARBIDE, 2 FLUTE TAPER - SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN KONISCH - SEITENFRÄSEN**
EM837, EM847 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED
2.0	8400	170	6300	125
3.0	4410	120	3570	100
4.0	3570	140	2840	115
5.0	3050	180	2410	145
6.0	2630	210	2100	170
8.0	2000	250	1580	180

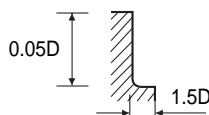


RPM = rev./min.
FEED = mm/min.

CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS - SEITENFRÄSEN

EM905 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
10.0	7690	2000	7690	1220	5680	920	5680	740	3840	480
12.0	5760	2000	5760	1220	4260	920	4260	740	2880	480
14.0	4600	1800	4600	1220	3410	920	3410	740	2300	480
18.0	3850	1530	3850	1220	2840	920	2840	740	1920	480
22.0	3300	1300	3300	1220	2430	920	2430	740	1650	480

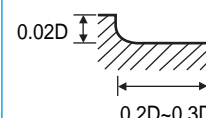
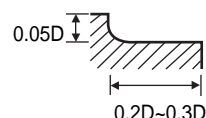
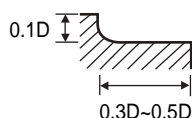


RPM = rev./min.
FEED = mm/min.

CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - CONTOURING VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS

EM905 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
10.0	7690	1150	5680	920	5680	800	5680	460	3840	290
12.0	5760	1150	4260	920	4260	800	4260	460	2880	290
14.0	4600	1150	3410	920	3410	800	3410	460	2300	290
18.0	3850	1150	2840	920	2840	800	2840	460	1920	290
22.0	3300	1150	2430	920	2430	800	2430	460	1650	290



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