



# FM - LINE

DS  $\geq$   $\varnothing$  0.2 mm

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

**Übersicht**

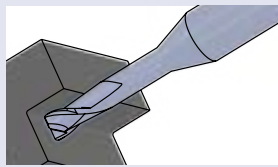
summary



Allgemeine Beschreibung

general instructions

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**VHM - Mikrofräser**

solid carbide  
micro end mills

Maße  
dimensions  
[mm]

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page

**Typ FM ... .R ...**

VHM - Mikro - Torusfräser  
mit Radius

solid carbide micro torus end mill  
with radius

Ø DS 0.2 - 6.0

... 6

**Typ FM ... .F ...**

VHM - Mikro - Schaftfräser  
mit Fase 45°

solid carbide micro end mill  
with chamfer 45°

Ø DS 0.2 - 3.0

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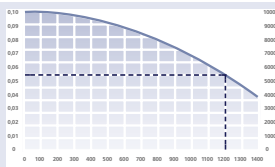
**Typ FM ... .VR**

VHM - Mikro - Vollradiusfräser

solid carbide micro ball nose end mill

Ø DS 0.2 - 3.0

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**Technische Hinweise**

Technical instructions

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## FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

## Impressionen

impressions



## FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

## Allgemeine Beschreibung

general instruction

### FM-LINE:

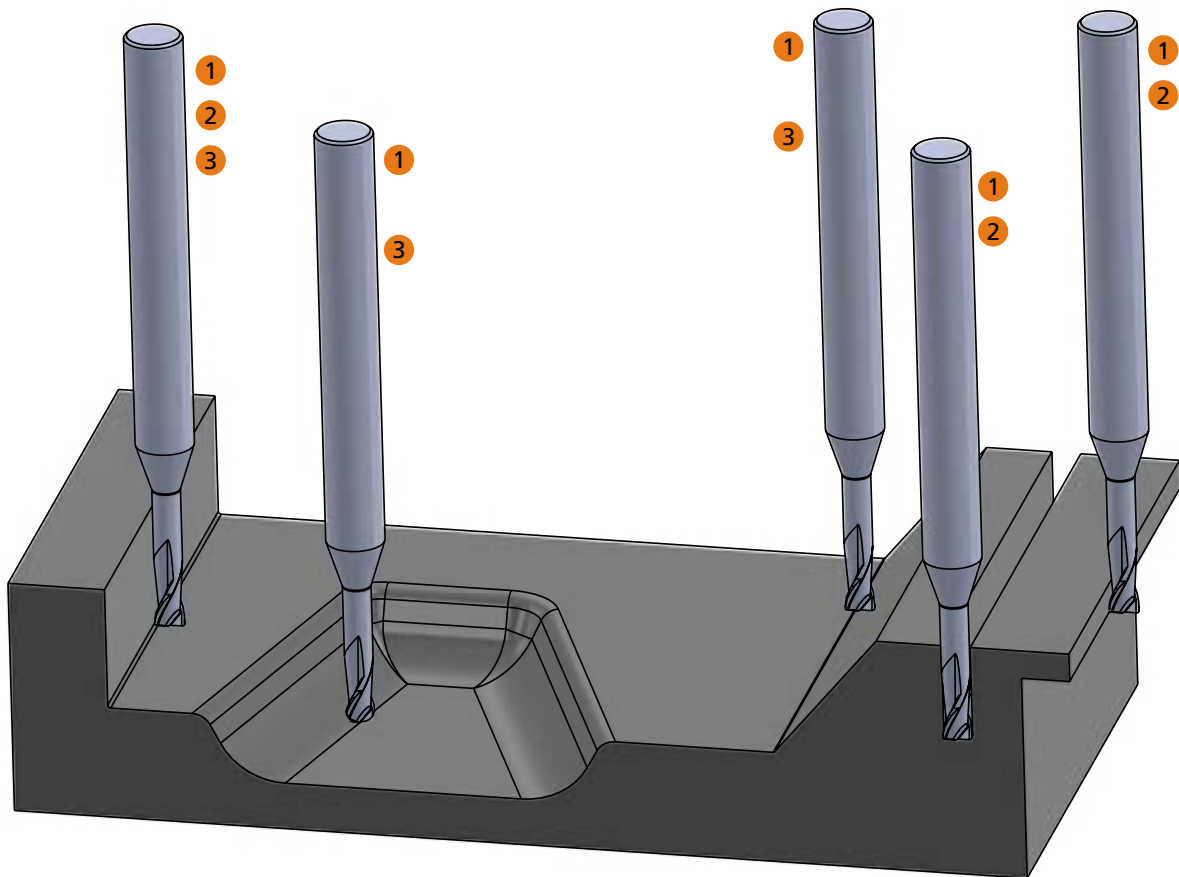
Vollhartmetall Mikrofräser für den breiten Einsatz. Egal ob besäumen oder planfräsen, nutenfräsen oder 3D-Konturen abzeilen, diese Mikrofräser sind vielseitig einsetzbar.

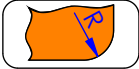


Die FM-Line Werkzeuge sind in 3 Ausführungen ab Ø0.2 vorrätig. Als Torusfräser mit Radius bis Ø6, mit kleiner Fase bis Ø3 und als Vollradiusfräser bis Ø3.

### FM-LINE:

Solid carbide micro end mills for a wide range of applications. Whether side or face milling, groove milling or 3D contours multipass milling, these micro end mills are versatile.

The FM-Line tools are available in 3 versions from Ø0.2. As a torus end mill with a radius up to Ø6, with a small chamfer up to Ø3 and as a full radius cutter up to Ø3.



- 1  VHM - Mikro - Torusfräser mit Radius / solid carbide micro torus end mill with radius
- 2  VHM - Mikro - Schaftfräser mit Fase 45° / solid carbide micro end mill with chamfer 45°
- 3  VHM - Mikro - Vollradiusfräser (mit Vollradius) / solid carbide micro ball nose end mill (with full radius)

Anwendungsbeispiel  
application example

## FM-LINE


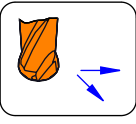
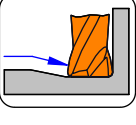
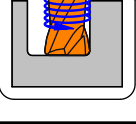
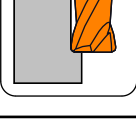
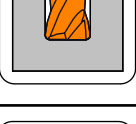
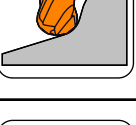

VHM - Mikrofräser

solid carbide micro end mills

## Allgemeine Beschreibung

general instruction

### Erklärung Symbole / Explanation of symbols

	Anzahl Schneiden / number of cutting edges
	Schneidrichtung / cutting direction: 1) Besäumen / slicing 2) Rampe / ramping 3) Bohrfräsen / bore milling (helical milling)
	Schneidrichtung / cutting direction: 1) Besäumen / slicing 2) Rampe, Kontur oder 3D Fräsen / ramping, contour or 3D milling
	Rampe / ramping
	Helikalfräsen / helical milling
	Besäumen, Trochoidales Fräsen / slicing, trochoidal milling
	Stirnfräsen / face milling
	Vollnutfräsen / groove milling
	Kontur oder 3D Fräsen / contour or 3D milling
	Besäumen, Kontur / slicing, contour milling



**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

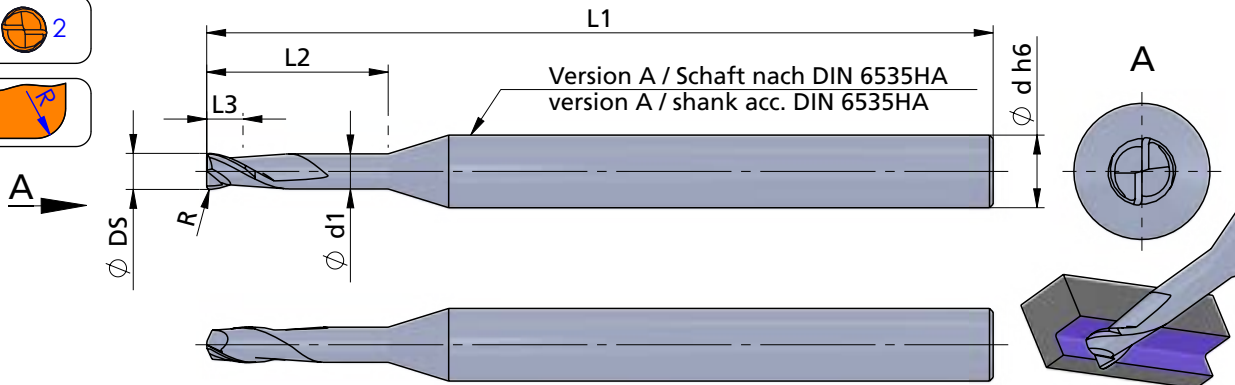
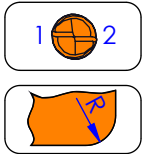
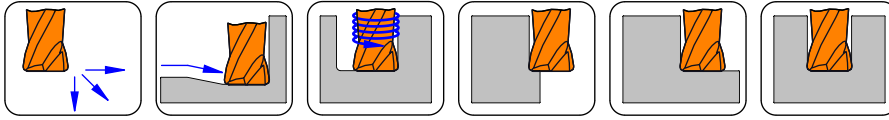
**Typ FM ... .R ...**

VHM - Mikro - Torusfräser  
mit Radius

solid carbide micro torus end mill  
with radius

Fräser - Ø DS  $\triangleq$  0.2 - 6.0 mm

mill - Ø DS  $\triangleq$  0.2 - 6.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
FM0020.006.R02	0.2	0.02	6.0	0.18	55	0.6	0.2	●
FM0020.010.R02	0.2	0.02	6.0	0.18	55	1.0	0.2	●
FM0020.016.R02	0.2	0.02	6.0	0.18	55	1.6	0.5	●
FM0020.020.R02	0.2	0.02	6.0	0.18	55	2.0	0.5	●
FM0030.009.R03	0.3	0.03	6.0	0.28	55	0.9	0.5	●
FM0030.015.R03	0.3	0.03	6.0	0.28	55	1.5	0.5	●
FM0030.024.R03	0.3	0.03	6.0	0.28	55	2.4	1.2	●
FM0030.030.R03	0.3	0.03	6.0	0.28	55	3.0	1.2	●
FM0040.012.R04	0.4	0.04	6.0	0.37	55	1.2	0.5	●
FM0040.020.R04	0.4	0.04	6.0	0.37	55	2.0	1.2	●
FM0040.032.R04	0.4	0.04	6.0	0.37	55	3.2	1.2	●
FM0040.040.R04	0.4	0.04	6.0	0.37	55	4.0	1.2	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe  
Technische Hinweise.

Informations about **ap max.** and **ae** look at  
the technical informations.

order-example:  
grade P04C:  
FM0020.006.R02/P04C

Bestellbeispiel:  
für Sorte P04C:  
FM0020.006.R02/P04C

# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

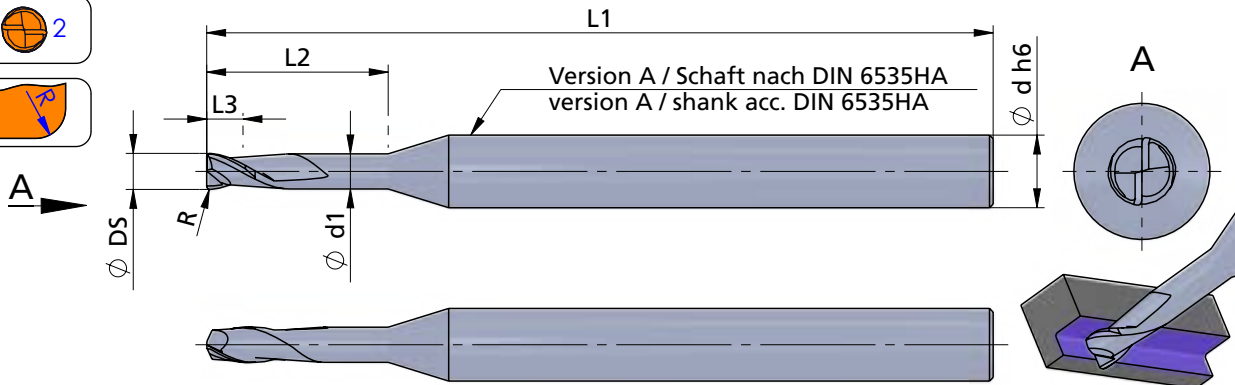
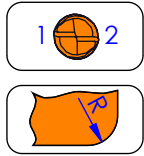
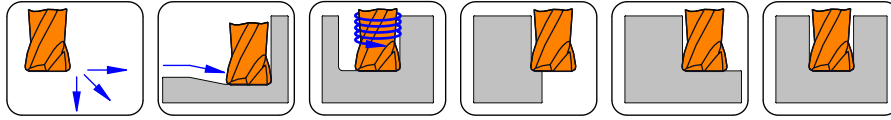
# Typ FM ... .R ...

VHM - Mikro - Torusfräser mit Radius

solid carbide micro torus end mill with radius

Fräser - Ø DS  $\triangleq$  0.2 - 6.0 mm

mill - Ø DS  $\triangleq$  0.2 - 6.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
...								
FM0050.015.R05	0.5	0.05	6.0	0.45	55	1.5	0.5	●
FM0050.025.R05	0.5	0.05	6.0	0.45	55	2.5	1.2	●
FM0050.040.R05	0.5	0.05	6.0	0.45	55	4.0	1.2	●
FM0050.050.R05	0.5	0.05	6.0	0.45	55	5.0	1.2	●
FM0060.020.R06	0.6	0.06	6.0	0.58	55	2.0	1.2	●
FM0060.030.R06	0.6	0.06	6.0	0.58	55	3.0	1.2	●
FM0060.050.R06	0.6	0.06	6.0	0.58	65	5.0	1.2	●
FM0060.060.R06	0.6	0.06	6.0	0.58	65	6.0	1.2	●
FM0080.025.R08	0.8	0.08	6.0	0.77	55	2.5	1.2	●
FM0080.040.R08	0.8	0.08	6.0	0.77	55	4.0	1.2	●
FM0080.065.R08	0.8	0.08	6.0	0.77	65	6.5	1.2	●
FM0080.080.R08	0.8	0.08	6.0	0.77	65	8.0	1.2	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0050.015.R05/P04C

order-example:  
grade P04C:  
FM0050.015.R05/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

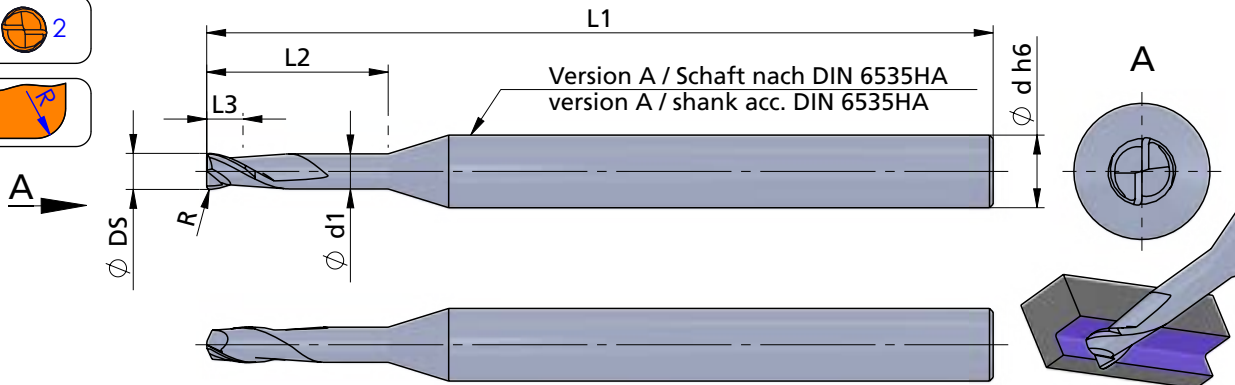
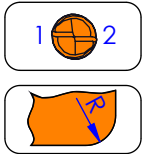
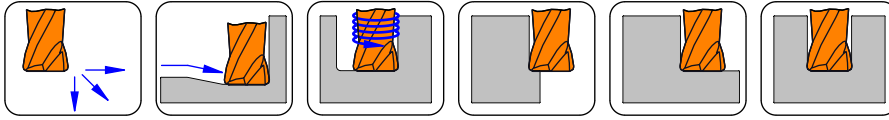
**Typ FM ... .R ...**

VHM - Mikro - Torusfräser  
mit Radius

solid carbide micro torus end mill  
with radius

Fräser - Ø DS  $\triangleq$  0.2 - 6.0 mm

mill - Ø DS  $\triangleq$  0.2 - 6.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
...								
FM0100.030.R10	1.0	0.10	6.0	0.95	55	3.0	1.5	●
FM0100.050.R10	1.0	0.10	6.0	0.95	55	5.0	1.5	●
FM0100.080.R10	1.0	0.10	6.0	0.95	65	8.0	1.5	●
FM0100.100.R10	1.0	0.10	6.0	0.95	65	10.0	1.5	●
FM0100.120.R10	1.0	0.10	6.0	0.95	65	12.0	1.5	●
FM0120.030.R12	1.2	0.12	6.0	1.15	55	3.0	1.6	●
FM0120.060.R12	1.2	0.12	6.0	1.15	55	6.0	1.6	●
FM0120.100.R12	1.2	0.12	6.0	1.15	65	10.0	1.6	●
FM0120.120.R12	1.2	0.12	6.0	1.15	65	12.0	1.6	●
FM0130.040.R13	1.3	0.13	6.0	1.25	55	4.0	1.7	●
FM0130.070.R13	1.3	0.13	6.0	1.25	55	7.0	1.7	●
FM0130.110.R13	1.3	0.13	6.0	1.25	65	11.0	1.7	●
FM0130.120.R13	1.3	0.13	6.0	1.25	65	12.0	1.7	●
FM0130.130.R13	1.3	0.13	6.0	1.25	65	13.0	1.7	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe  
Technische Hinweise.

Informations about **ap max.** and **ae** look at  
the technical informations.

order-example:  
grade P04C:  
FM0100.030.R10/P04C

Bestellbeispiel:  
für Sorte P04C:  
FM0100.030.R10/P04C



# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

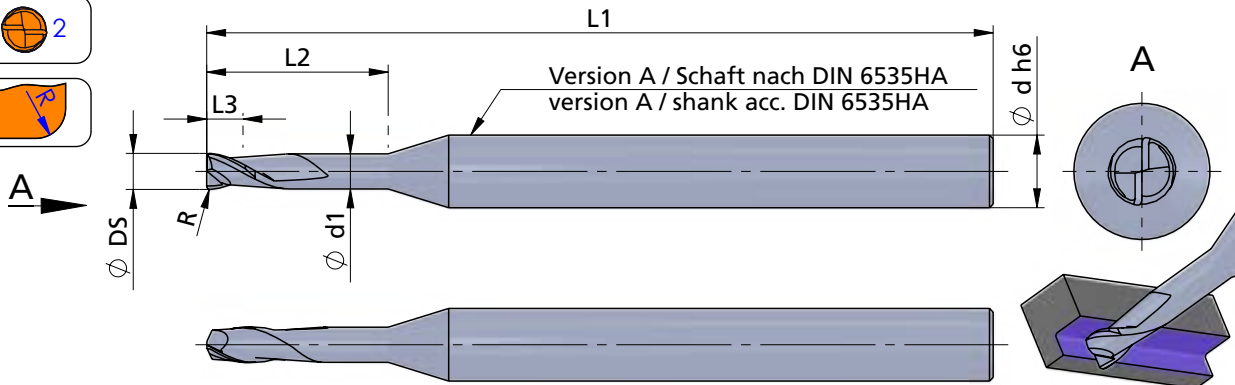
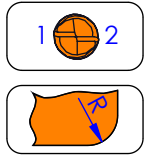
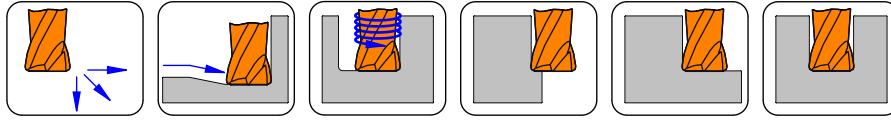
# Typ FM ... .R ...

VHM - Mikro - Torusfräser mit Radius

solid carbide micro torus end mill with radius

Fräser - Ø DS  $\triangleq$  0.2 - 6.0 mm

mill - Ø DS  $\triangleq$  0.2 - 6.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
...								
FM0150.050.R15	1.5	0.15	6.0	1.44	55	5.0	1.8	●
FM0150.075.R15	1.5	0.15	6.0	1.44	55	7.5	1.8	●
FM0150.120.R15	1.5	0.15	6.0	1.44	65	12.0	1.8	●
FM0150.150.R15	1.5	0.15	6.0	1.44	65	15.0	1.8	●
FM0160.050.R16	1.6	0.16	6.0	1.52	55	5.0	1.8	●
FM0160.080.R16	1.6	0.16	6.0	1.52	55	8.0	1.8	●
FM0160.130.R16	1.6	0.16	6.0	1.52	65	13.0	1.8	●
FM0160.160.R16	1.6	0.16	6.0	1.52	65	16.0	1.8	●
FM0180.055.R18	1.8	0.18	6.0	1.72	55	5.5	1.8	●
FM0180.090.R18	1.8	0.18	6.0	1.72	55	9.0	1.8	●
FM0180.145.R18	1.8	0.18	6.0	1.72	65	14.5	1.8	●
FM0180.180.R18	1.8	0.18	6.0	1.72	65	18.0	1.8	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0150.050.R15/P04C

order-example:  
grade P04C:  
FM0150.050.R15/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

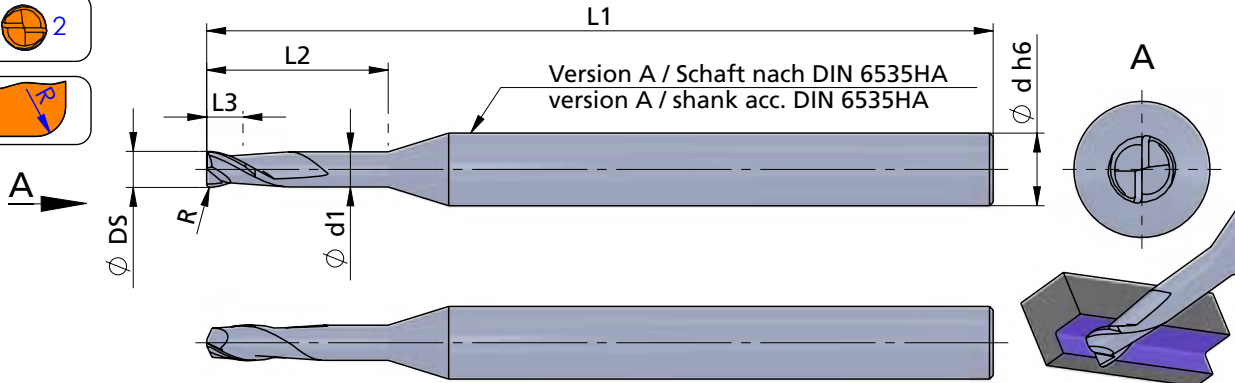
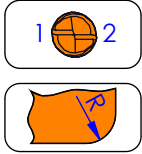
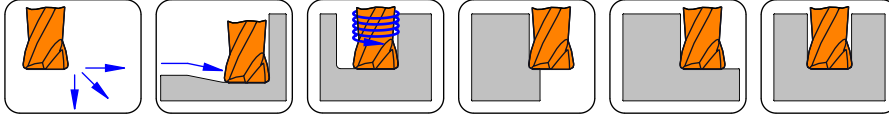
**Typ FM ... .R ...**

VHM - Mikro - Torusfräser  
mit Radius

solid carbide micro torus end mill  
with radius

Fräser - Ø DS  $\triangleq$  0.2 - 6.0 mm

mill - Ø DS  $\triangleq$  0.2 - 6.0 mm



Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidenlänge cutting length	P04C
...								
FM0200.060.R20	2.0	0.20	6.0	1.92	55	6.0	2.0	●
FM0200.100.R20	2.0	0.20	6.0	1.92	55	10.0	2.0	●
FM0200.140.R20	2.0	0.20	6.0	1.92	55	14.0	2.0	●
FM0200.160.R20	2.0	0.20	6.0	1.92	65	16.0	2.0	●
FM0200.200.R20	2.0	0.20	6.0	1.92	65	20.0	2.0	●
FM0230.070.R23	2.3	0.23	6.0	2.22	55	7.0	2.3	●
FM0230.115.R23	2.3	0.23	6.0	2.22	55	11.5	2.3	●
FM0230.185.R23	2.3	0.23	6.0	2.22	65	18.5	2.3	●
FM0230.200.R23	2.3	0.23	6.0	2.22	65	20.0	2.3	●
FM0230.230.R23	2.3	0.23	6.0	2.22	65	23.0	2.3	●
FM0300.090.R30	3.0	0.30	6.0	2.90	65	9.0	3.0	●
FM0300.150.R30	3.0	0.30	6.0	2.90	65	15.0	3.0	●
FM0300.240.R30	3.0	0.30	6.0	2.90	100	24.0	3.0	●
FM0300.300.R30	3.0	0.30	6.0	2.90	100	30.0	3.0	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

order-example:  
grade P04C:  
FM0200.060.R20/P04C

# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

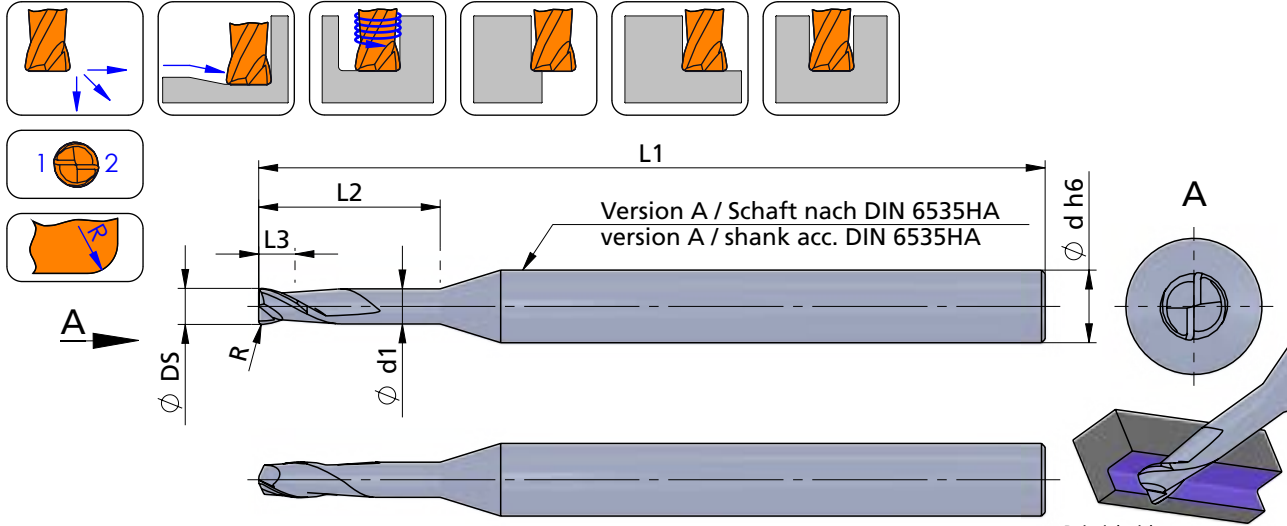
# Typ FM ... .R ...

VHM - Mikro - Torusfräser mit Radius

solid carbide micro torus end mill with radius

Fräser - Ø DS  $\triangleq$  0.2 - 6.0 mm

mill - Ø DS  $\triangleq$  0.2 - 6.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidenlänge cutting length	P04C
...								
FM0400.120.R40	4.0	0.40	6.0	3.90	65	12.0	4.0	●
FM0400.200.R40	4.0	0.40	6.0	3.90	65	20.0	4.0	●
FM0400.320.R40	4.0	0.40	6.0	3.90	100	32.0	4.0	●
FM0400.400.R40	4.0	0.40	6.0	3.90	100	40.0	4.0	●
FM0500.150.R50	5.0	0.50	6.0	4.90	65	15.0	5.0	●
FM0500.250.R50	5.0	0.50	6.0	4.90	65	25.0	5.0	●
FM0500.400.R50	5.0	0.50	6.0	4.90	100	40.0	5.0	●
FM0500.500.R50	5.0	0.50	6.0	4.90	100	50.0	5.0	●
FM0600.180.R60	6.0	0.60	6.0	5.90	65	18.0	6.0	●
FM0600.300.R60	6.0	0.60	6.0	5.90	100	30.0	6.0	●
FM0600.480.R60	6.0	0.60	6.0	5.90	100	48.0	6.0	●
FM0600.600.R60	6.0	0.60	6.0	5.90	100	60.0	6.0	●

Bestellbeispiel:  
für Sorte P04C:  
FM0400.120.R40/P04C

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

order-example:  
grade P04C:  
FM0400.120.R40/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

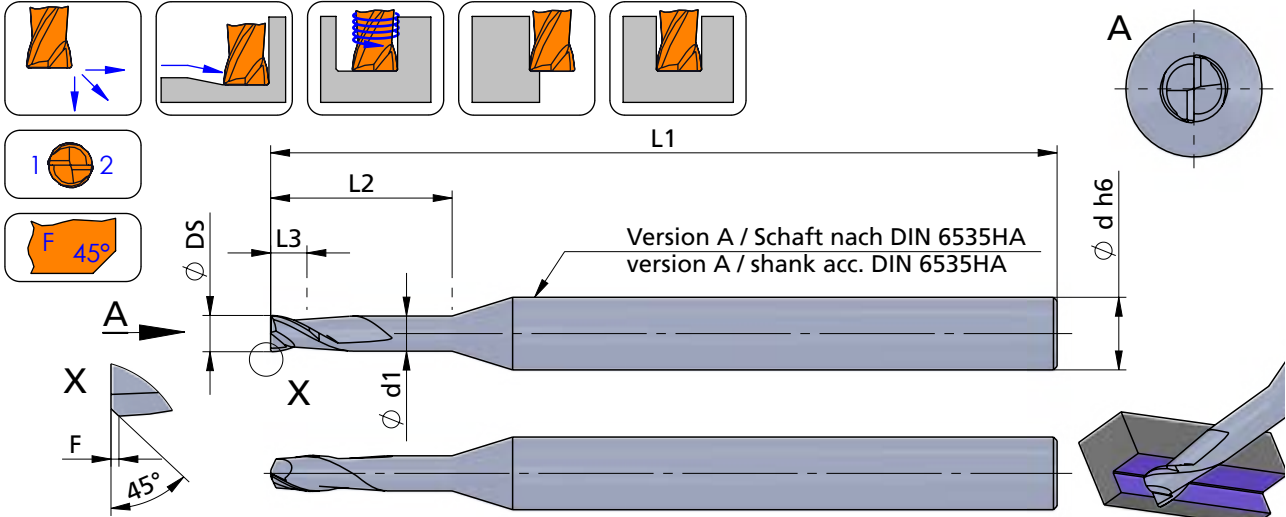
**Typ FM ... .F ...**

VHM - Mikro - Schaftfräser  
mit Fase 45°

solid carbide micro end mill  
with chamfer 45°

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	F	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
FM0020.006.F02	0.2	0.02	6.0	0.18	55	0.6	0.2	●
FM0020.010.F02	0.2	0.02	6.0	0.18	55	1.0	0.2	●
FM0020.016.F02	0.2	0.02	6.0	0.18	55	1.6	0.5	●
FM0020.020.F02	0.2	0.02	6.0	0.18	55	2.0	0.5	●
FM0030.009.F03	0.3	0.03	6.0	0.28	55	0.9	0.5	●
FM0030.015.F03	0.3	0.03	6.0	0.28	55	1.5	0.5	●
FM0030.024.F03	0.3	0.03	6.0	0.28	55	2.4	1.2	●
FM0030.030.F03	0.3	0.03	6.0	0.28	55	3.0	1.2	●
FM0040.012.F04	0.4	0.04	6.0	0.37	55	1.2	0.5	●
FM0040.020.F04	0.4	0.04	6.0	0.37	55	2.0	1.2	●
FM0040.032.F04	0.4	0.04	6.0	0.37	55	3.2	1.2	●
FM0040.040.F04	0.4	0.04	6.0	0.37	55	4.0	1.2	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe  
Technische Hinweise.

Informations about **ap max.** and **ae** look at  
the technical informations.

order-example:  
grade P04C:  
FM0020.006.F02/P04C

# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

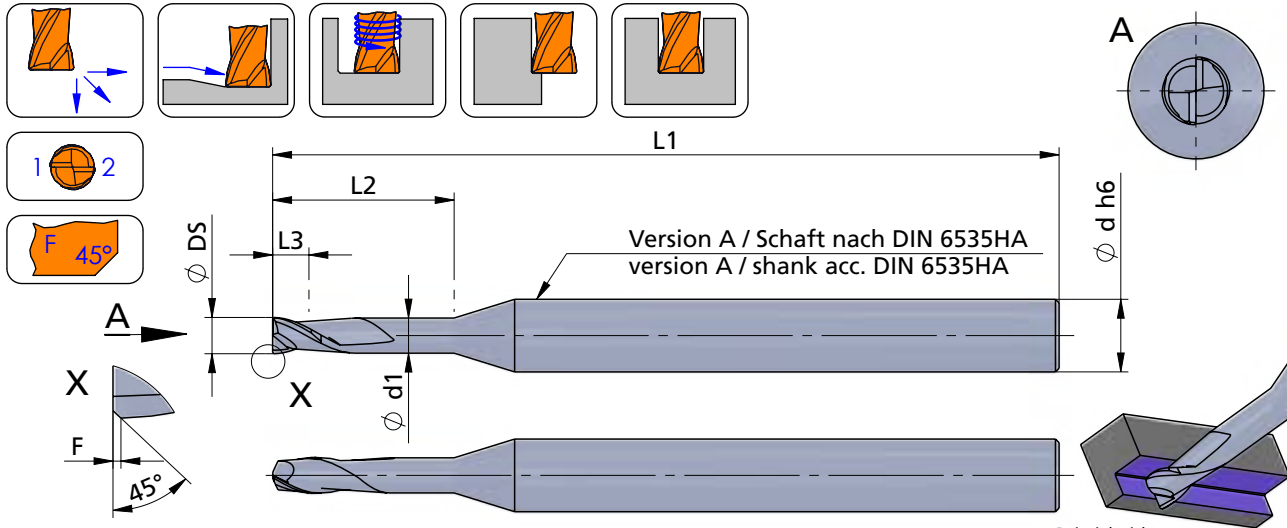
# Typ FM ... .F ...

VHM - Mikro - Schaftfräser  
mit Fase 45°

solid carbide micro end mill  
with chamfer 45°

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	F	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
... ↴								
FM0050.015.F05	0.5	0.05	6.0	0.45	55	1.5	0.5	●
FM0050.025.F05	0.5	0.05	6.0	0.45	55	2.5	1.2	●
FM0050.040.F05	0.5	0.05	6.0	0.45	55	4.0	1.2	●
FM0050.050.F05	0.5	0.05	6.0	0.45	55	5.0	1.2	●
FM0060.020.F06	0.6	0.06	6.0	0.58	55	2.0	1.2	●
FM0060.030.F06	0.6	0.06	6.0	0.58	55	3.0	1.2	●
FM0060.050.F06	0.6	0.06	6.0	0.58	65	5.0	1.2	●
FM0060.060.F06	0.6	0.06	6.0	0.58	65	6.0	1.2	●
FM0080.025.F08	0.8	0.08	6.0	0.77	55	2.5	1.2	●
FM0080.040.F08	0.8	0.08	6.0	0.77	55	4.0	1.2	●
FM0080.065.F08	0.8	0.08	6.0	0.77	65	6.5	1.2	●
FM0080.080.F08	0.8	0.08	6.0	0.77	65	8.0	1.2	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Information about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0050.015.F05/P04C

order-example:  
grade P04C:  
FM0050.015.F05/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

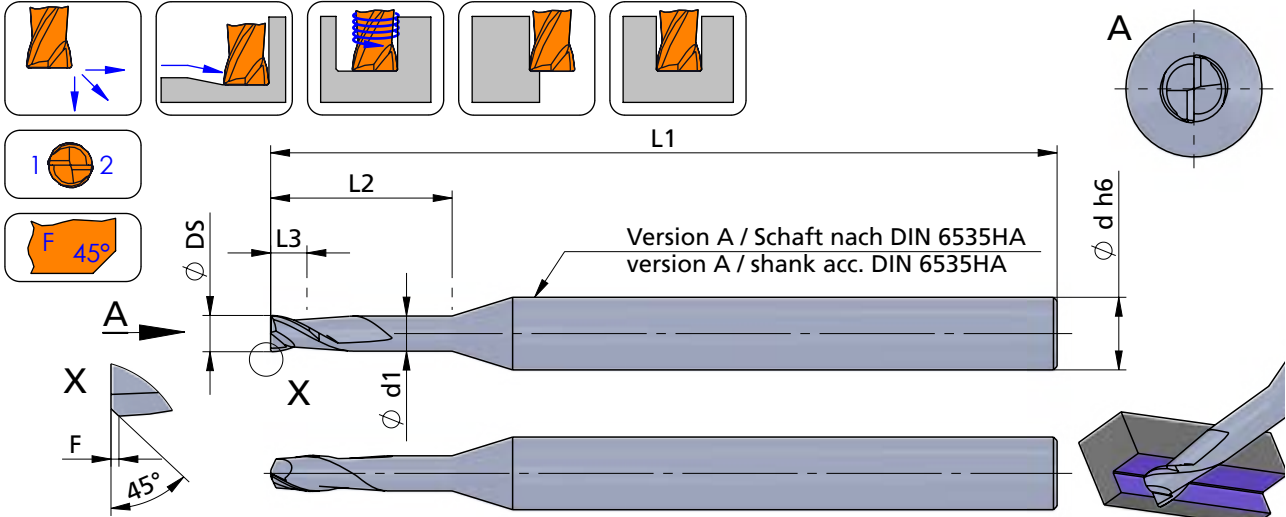
**Typ FM ... .F ...**

VHM - Mikro - Schaftfräser  
mit Fase 45°

solid carbide micro end mill  
with chamfer 45°

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	F	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
... ↘								
FM0100.030.F10	1.0	0.10	6.0	0.95	55	3.0	1.5	●
FM0100.050.F10	1.0	0.10	6.0	0.95	55	5.0	1.5	●
FM0100.080.F10	1.0	0.10	6.0	0.95	65	8.0	1.5	●
FM0100.100.F10	1.0	0.10	6.0	0.95	65	10.0	1.5	●
FM0100.120.F10	1.0	0.10	6.0	0.95	65	12.0	1.5	●
FM0120.030.F10	1.2	0.10	6.0	1.15	55	3.0	1.6	●
FM0120.060.F10	1.2	0.10	6.0	1.15	55	6.0	1.6	●
FM0120.100.F10	1.2	0.10	6.0	1.15	65	10.0	1.6	●
FM0120.120.F10	1.2	0.10	6.0	1.15	65	12.0	1.6	●
FM0130.040.F10	1.3	0.10	6.0	1.25	55	4.0	1.7	●
FM0130.070.F10	1.3	0.10	6.0	1.25	55	7.0	1.7	●
FM0130.110.F10	1.3	0.10	6.0	1.25	65	11.0	1.7	●
FM0130.130.F10	1.3	0.10	6.0	1.25	65	13.0	1.7	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe  
Technische Hinweise.

Information about **ap max.** and **ae** look at  
the technical informations.

order-example:  
grade P04C:  
FM0100.030.F10/P04C

# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

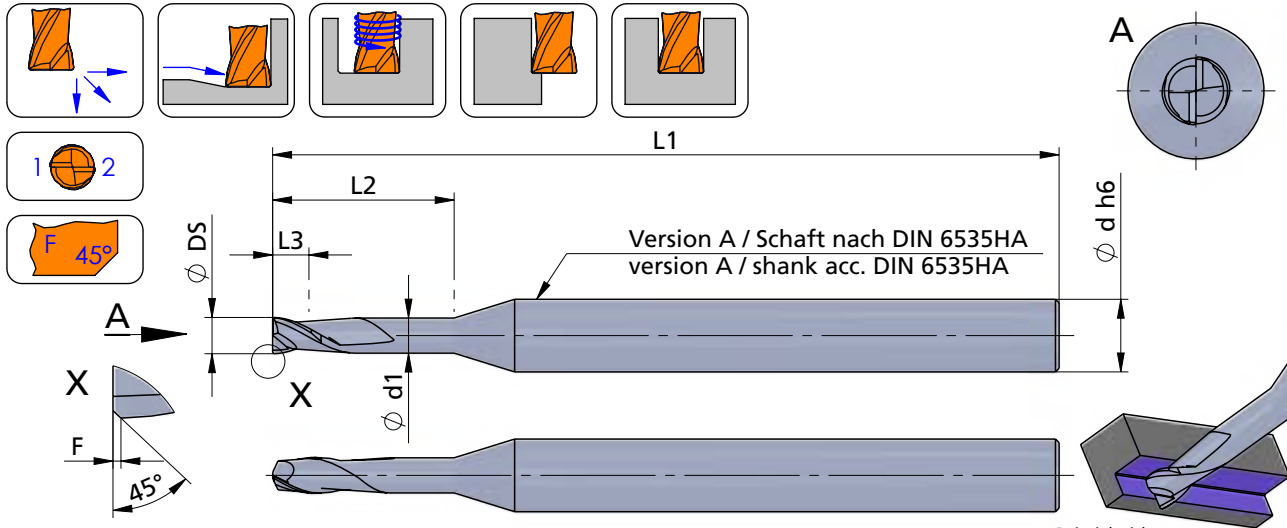
# Typ FM ... .F ...

VHM - Mikro - Schaftfräser  
mit Fase 45°

solid carbide micro end mill  
with chamfer 45°

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	F	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
... ↴								
FM0150.050.F10	1.5	0.10	6.0	1.44	55	5.0	1.8	●
FM0150.075.F10	1.5	0.10	6.0	1.44	55	7.5	1.8	●
FM0150.120.F10	1.5	0.10	6.0	1.44	65	12.0	1.8	●
FM0150.150.F10	1.5	0.10	6.0	1.44	65	15.0	1.8	●
FM0160.050.F10	1.6	0.10	6.0	1.52	55	5.0	1.8	●
FM0160.080.F10	1.6	0.10	6.0	1.52	55	8.0	1.8	●
FM0160.130.F10	1.6	0.10	6.0	1.52	65	13.0	1.8	●
FM0160.160.F10	1.6	0.10	6.0	1.52	65	16.0	1.8	●
FM0180.055.F10	1.8	0.10	6.0	1.72	55	5.5	1.8	●
FM0180.090.F10	1.8	0.10	6.0	1.72	55	9.0	1.8	●
FM0180.145.F10	1.8	0.10	6.0	1.72	65	14.5	1.8	●
FM0180.180.F10	1.8	0.10	6.0	1.72	65	18.0	1.8	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Information about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0150.050.F10/P04C

order-example:  
grade P04C:  
FM0150.050.F10/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

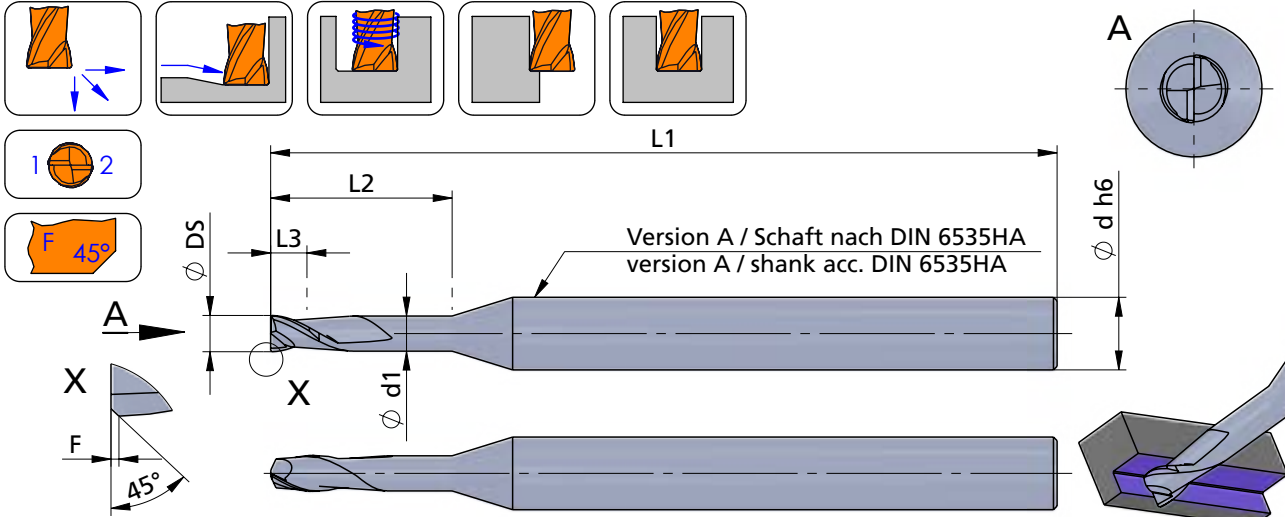
**Typ FM ... .F ...**

VHM - Mikro - Schaftfräser  
mit Fase 45°

solid carbide micro end mill  
with chamfer 45°

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	F	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidenlänge cutting length	P04C
...								
FM0200.060.F10	2.0	0.10	6.0	1.92	55	6.0	2.0	●
FM0200.100.F10	2.0	0.10	6.0	1.92	55	10.0	2.0	●
FM0200.140.F10	2.0	0.10	6.0	1.92	55	14.0	2.0	●
FM0200.160.F10	2.0	0.10	6.0	1.92	65	16.0	2.0	●
FM0200.200.F10	2.0	0.10	6.0	1.92	65	20.0	2.0	●
FM0230.070.F10	2.3	0.10	6.0	2.22	55	7.0	2.3	●
FM0230.115.F10	2.3	0.10	6.0	2.22	55	11.5	2.3	●
FM0230.185.F10	2.3	0.10	6.0	2.22	65	18.5	2.3	●
FM0230.230.F10	2.3	0.10	6.0	2.22	65	23.0	2.3	●
FM0300.090.F10	3.0	0.10	6.0	2.90	65	9.0	3.0	●
FM0300.150.F10	3.0	0.10	6.0	2.90	65	15.0	3.0	●
FM0300.240.F10	3.0	0.10	6.0	2.90	100	24.0	3.0	●
FM0300.300.F10	3.0	0.10	6.0	2.90	100	30.0	3.0	●

Informationen zu **ap max.** und **ae** siehe  
Technische Hinweise.

Information about **ap max.** and **ae** look at  
the technical informations.

order-example:  
grade P04C:  
FM0200.060.F10/P04C



# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

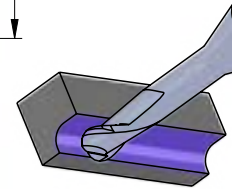
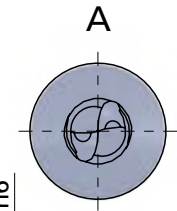
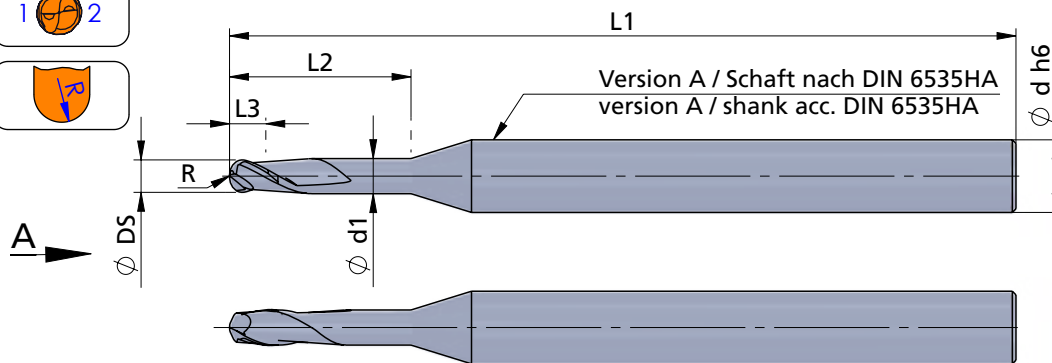
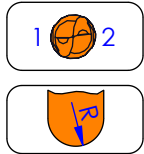
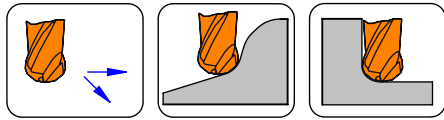
# Typ FM ... .VR ...

VHM - Mikro - Vollradiusfräser

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

solid carbide micro ball nose end mill

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
FM0020.006.VR	0.2	0.10	6.0	0.18	55	0.6	0.2	●
FM0020.010.VR	0.2	0.10	6.0	0.18	55	1.0	0.2	●
FM0020.016.VR	0.2	0.10	6.0	0.18	55	1.6	0.5	●
FM0020.020.VR	0.2	0.10	6.0	0.18	55	2.0	0.5	●
FM0030.009.VR	0.3	0.15	6.0	0.28	55	0.9	0.5	●
FM0030.015.VR	0.3	0.15	6.0	0.28	55	1.5	0.5	●
FM0030.024.VR	0.3	0.15	6.0	0.28	55	2.4	1.2	●
FM0030.030.VR	0.3	0.15	6.0	0.28	55	3.0	1.2	●
FM0040.012.VR	0.4	0.20	6.0	0.37	55	1.2	0.5	●
FM0040.020.VR	0.4	0.20	6.0	0.37	55	2.0	1.2	●
FM0040.032.VR	0.4	0.20	6.0	0.37	55	3.2	1.2	●
FM0040.040.VR	0.4	0.20	6.0	0.37	55	4.0	1.2	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0020.006.VR/P04C

order-example:  
grade P04C:  
FM0020.006.VR/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

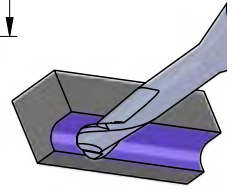
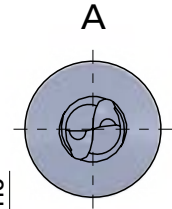
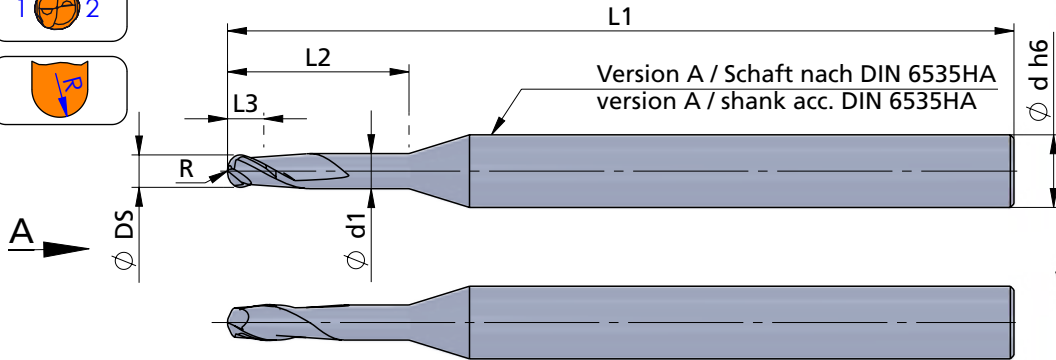
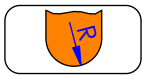
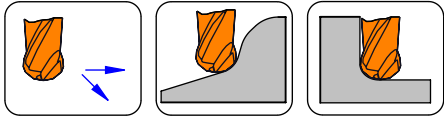
**Typ FM ... .VR ...**

VHM - Mikro - Vollradiusfräser

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

solid carbide micro ball nose end mill

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
... ↴								
FM0050.015.VR	0.5	0.25	6.0	0.45	55	1.5	0.5	●
FM0050.025.VR	0.5	0.25	6.0	0.45	55	2.5	1.2	●
FM0050.040.VR	0.5	0.25	6.0	0.45	55	4.0	1.2	●
FM0050.050.VR	0.5	0.25	6.0	0.45	55	5.0	1.2	●
FM0060.020.VR	0.6	0.30	6.0	0.58	55	2.0	1.2	●
FM0060.030.VR	0.6	0.30	6.0	0.58	55	3.0	1.2	●
FM0060.050.VR	0.6	0.30	6.0	0.58	65	5.0	1.2	●
FM0060.060.VR	0.6	0.30	6.0	0.58	65	6.0	1.2	●
FM0080.025.VR	0.8	0.40	6.0	0.77	55	2.5	1.2	●
FM0080.040.VR	0.8	0.40	6.0	0.77	55	4.0	1.2	●
FM0080.065.VR	0.8	0.40	6.0	0.77	65	6.5	1.2	●
FM0080.080.VR	0.8	0.40	6.0	0.77	65	8.0	1.2	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Information about **ap max.** and **ae** look at the technical informations.

order-example:  
grade P04C:  
FM0050.015.VR/P04C

Bestellbeispiel:  
für Sorte P04C:  
FM0050.015.VR/P04C

# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

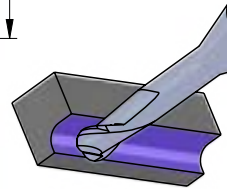
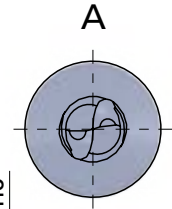
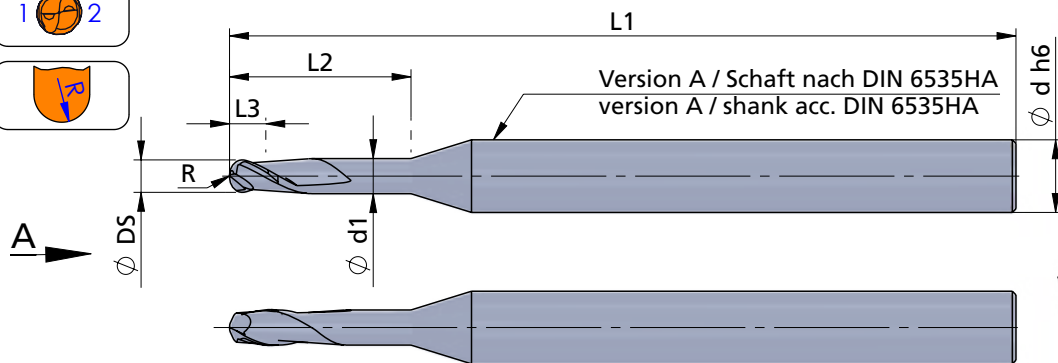
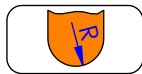
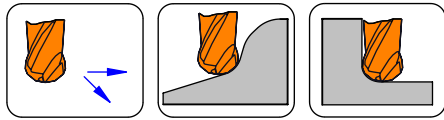
# Typ FM ... .VR ...

VHM - Mikro - Vollradiusfräser

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

solid carbide micro ball nose end mill

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
...								
FM0100.030.VR	1.0	0.50	6.0	0.95	55	3.0	1.5	●
FM0100.050.VR	1.0	0.50	6.0	0.95	55	5.0	1.5	●
FM0100.080.VR	1.0	0.50	6.0	0.95	65	8.0	1.5	●
FM0100.100.VR	1.0	0.50	6.0	0.95	65	10.0	1.5	●
FM0100.120.VR	1.0	0.50	6.0	0.95	65	12.0	1.5	●
FM0120.030.VR	1.2	0.60	6.0	1.15	55	3.0	1.6	●
FM0120.060.VR	1.2	0.60	6.0	1.15	55	6.0	1.6	●
FM0120.100.VR	1.2	0.60	6.0	1.15	65	10.0	1.6	●
FM0120.120.VR	1.2	0.60	6.0	1.15	65	12.0	1.6	●
FM0130.040.VR	1.3	0.65	6.0	1.25	55	4.0	1.7	●
FM0130.070.VR	1.3	0.65	6.0	1.25	55	7.0	1.7	●
FM0130.110.VR	1.3	0.65	6.0	1.25	65	11.0	1.7	●
FM0130.120.VR	1.3	0.65	6.0	1.25	65	12.0	1.7	●
FM0130.130.VR	1.3	0.65	6.0	1.25	65	13.0	1.7	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0100.030.VR/P04C

order-example:  
grade P04C:  
FM0100.030.VR/P04C

**FM-LINE**

VHM - Mikrofräser

solid carbide micro end mills

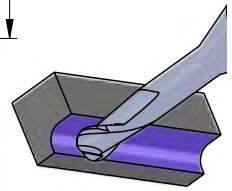
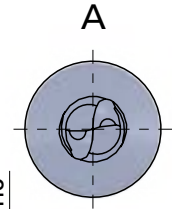
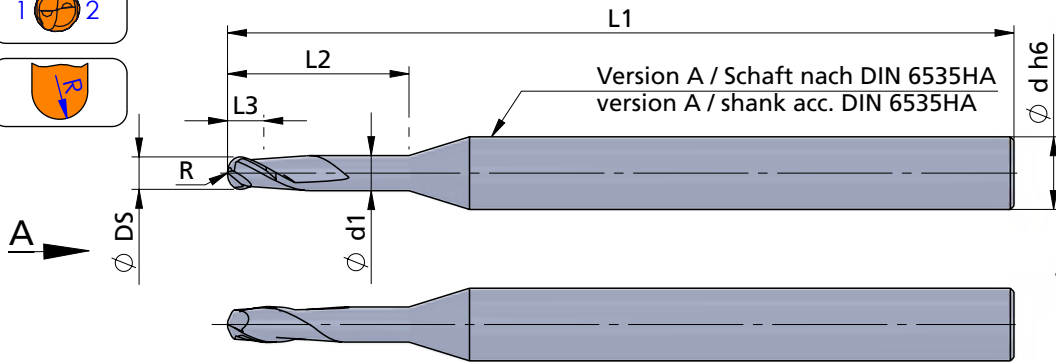
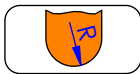
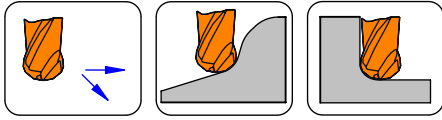
**Typ FM ... .VR ...**

VHM - Mikro - Vollradiusfräser

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

solid carbide micro ball nose end mill

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

Schneidrichtung (R):  
wie gezeichnet

cutting direction (R): as shown

Abmessungen in mm

dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidlänge cutting length	P04C
... ↘								
FM0150.050.VR	1.5	0.75	6.0	1.44	55	5.0	1.8	●
FM0150.075.VR	1.5	0.75	6.0	1.44	55	7.5	1.8	●
FM0150.120.VR	1.5	0.75	6.0	1.44	65	12.0	1.8	●
FM0150.150.VR	1.5	0.75	6.0	1.44	65	15.0	1.8	●
FM0160.050.VR	1.6	0.80	6.0	1.52	55	5.0	1.8	●
FM0160.080.VR	1.6	0.80	6.0	1.52	55	8.0	1.8	●
FM0160.130.VR	1.6	0.80	6.0	1.52	65	13.0	1.8	●
FM0160.160.VR	1.6	0.80	6.0	1.52	65	16.0	1.8	●
FM0180.055.VR	1.8	0.90	6.0	1.72	55	5.5	1.8	●
FM0180.090.VR	1.8	0.90	6.0	1.72	55	9.0	1.8	●
FM0180.145.VR	1.8	0.90	6.0	1.72	65	14.5	1.8	●
FM0180.180.VR	1.8	0.90	6.0	1.72	65	18.0	1.8	●
↳ ...								

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

order-example:  
grade P04C:  
FM0150.050.VR/P04C

Bestellbeispiel:  
für Sorte P04C:  
FM0150.050.VR/P04C

# FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

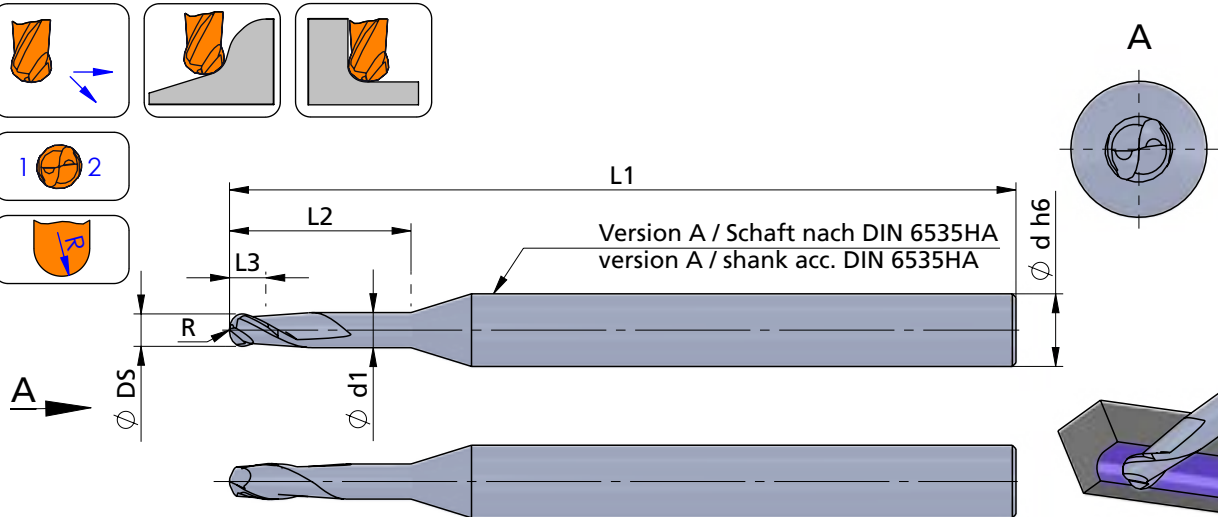
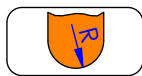
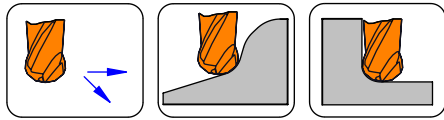
# Typ FM ... .VR ...

VHM - Mikro - Vollradiusfräser

Fräser - Ø DS  $\triangleq$  0.2 - 3.0 mm

solid carbide micro ball nose end mill

mill - Ø DS  $\triangleq$  0.2 - 3.0 mm



Beispielzeichnung  
exemplary application

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dimensions in mm

Bestellnummer part number	Ø DS	R	Ø d h6	Ø d1	L1	L2 Bearbeitungslänge processing length	L3 Schneidenlänge cutting length	P04C
...								
FM0200.060.VR	2.0	1.00	6.0	1.92	55	6.0	2.0	●
FM0200.100.VR	2.0	1.00	6.0	1.92	55	10.0	2.0	●
FM0200.140.VR	2.0	1.00	6.0	1.92	55	14.0	2.0	●
FM0200.160.VR	2.0	1.00	6.0	1.92	65	16.0	2.0	●
FM0200.200.VR	2.0	1.00	6.0	1.92	65	20.0	2.0	●
FM0230.070.VR	2.3	1.15	6.0	2.22	55	7.0	2.3	●
FM0230.115.VR	2.3	1.15	6.0	2.22	55	11.5	2.3	●
FM0230.185.VR	2.3	1.15	6.0	2.22	65	18.5	2.3	●
FM0230.200.VR	2.3	1.15	6.0	2.22	65	20.0	2.3	●
FM0230.230.VR	2.3	1.15	6.0	2.22	65	23.0	2.3	●
FM0300.090.VR	3.0	1.50	6.0	2.90	65	9.0	3.0	●
FM0300.150.VR	3.0	1.50	6.0	2.90	65	15.0	3.0	●
FM0300.240.VR	3.0	1.50	6.0	2.90	100	24.0	3.0	●
FM0300.300.VR	3.0	1.50	6.0	2.90	100	30.0	3.0	●

Informationen zu **ap max.** und **ae** siehe Technische Hinweise.

Informations about **ap max.** and **ae** look at the technical informations.

Bestellbeispiel:  
für Sorte P04C:  
FM0200.060.VR/P04C

order-example:  
grade P04C:  
FM0200.060.VR/P04C

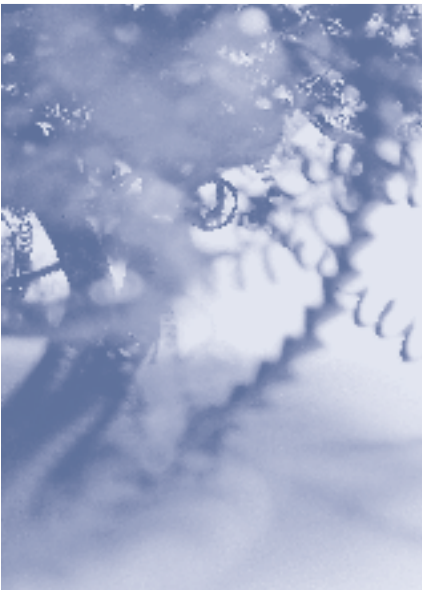
## FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

## Impressionen

impressions



## FM-LINE

VHM - Mikrofräser

solid carbide micro end mills

## Technische Hinweise

Hartmetallsorten und Beschichtungen

Technical instructions,  
carbide grades and coatings

**P04C**

Optimierte, sehr universell einsetzbare TIALN-Beschichtung mit hoher Temperaturbeständigkeit bei hoher Härte. Sehr gut geeignet auch für NE-Metalle.

Optimized TIALN coating - very universal with a high resistance to high temperature and hardness. Very suitable also for non-ferrous metals.



## FM-LINE

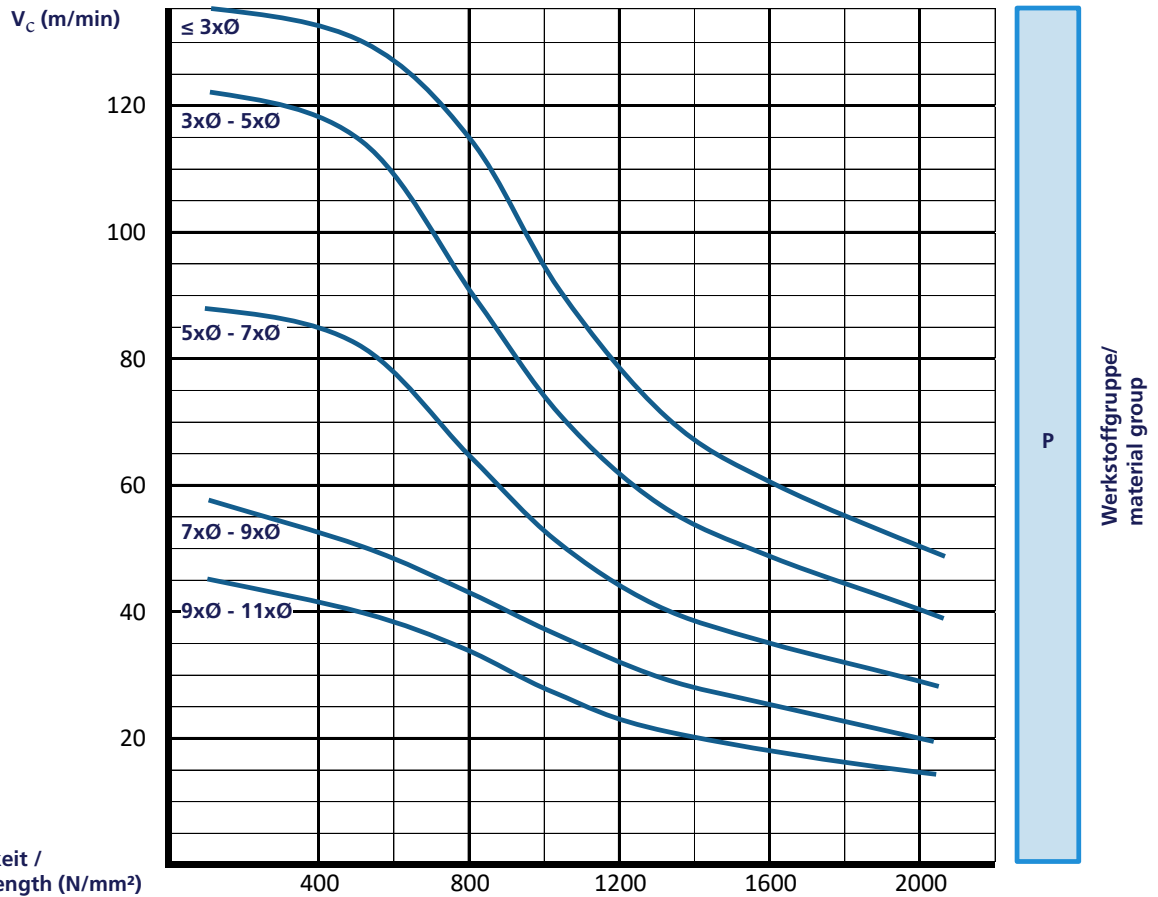
VHM - Mikrofräser

solid carbide micro end mills

## Technische Hinweise

Schnittdatenempfehlung

Technical instructions,  
speed and feed recommendation



Arbeitseingriff / width of cut	ae :	1x Ø
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Länge / length	L2 :	≤ 3x Ø	3x Ø - 5x Ø	5x Ø - 7x Ø	7x Ø - 9x Ø	9x Ø - 11x Ø
Schnitttiefe / depth of cut	ap max. :	0.035x Ø	0.03x Ø	0.025x Ø	0.02x Ø	0.015x Ø



## FM-LINE

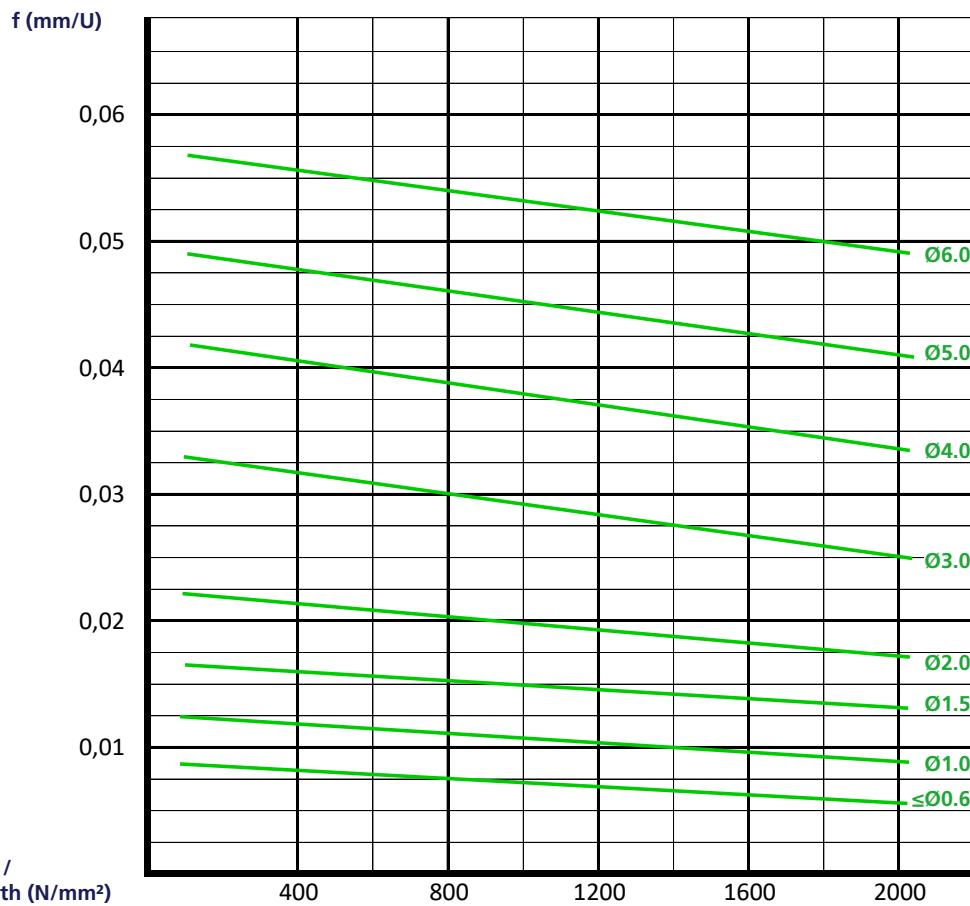
VHM - Mikrofräser

solid carbide micro end mills

## Technische Hinweise

Schnittdatenempfehlung

Technical instructions,  
speed and feed recommendation





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