Precision Toolzz

Frizz Precision Toolzz Solid Carbide Drills

Bestell-Nr. 89410-HB

3 x D

Für lang- und kurzspanende Werkstoffe wie Bau- und Einsatzstähle, Stahlguss, Vergütungsstähle und legierte Stähle mit Festigkeiten bis ca. 1200 N/mm², aber auch für Kohlenstoffstähle, Bronze, Guss und hochlegierte AlSi-Legierungen.
Geeignet für Bohrtiefen ≤ 3 x D.

Vorteile

Anwendung höchster Schnittwerte*. Fluchtungsgenaue Bohrungen mit engen Durchmesser-Toleranzen und guten Oberflächen. Gutes Eigenzentrierverhalten sowie Erzeugung kurzer Späne durch gerade Schneidengeometrie mit Spezialanschliff und -ausspitzung.

Voraussetzungen, Hinweis für den Einsatz:

Leistungsstarke Maschinen. Spielarme Spindeln. Fluchtungsgenaue Werkzeugaufnahme. Rundlauffehler des Werkzeugs in eingespanntem Zustand max. 0,02 mm. Ratterfreie, definierte Vorschübe. Für den Einsatz im Schrumpf-/Hydro-Dehnspannfutter liefern wir die Werkzeuge mit zylindrischem Schaft ohne Spannfläche.

Spezifikationen

Norm	DIN 6537K
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

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* Siehe Seite 24: *Einsatzempfehlungen für VHM-Bohrer*

Bestell-Nr. 89413-HB

3 x D

Für lang- und kurzspanende Werkstoffe wie Bau-und Einsatzstähle, Stahlguss, Vergütungsstähle und legierte Stähle mit Festigkeiten bis ca. 1200 N/mm², aber auch für Kohlenstoffstähle, Bronze, Guss und hochlegierte AlSi-Legierungen.
Geeignet für Bohrtiefen ≤ 3 x D.

Vorteile

Anwendung höchster Schnittwerte*. Fluchtungsgenaue Bohrungen mit engen Durchmesser-Toleranzen und guten Oberflächen. Gutes Eigenzentrierverhalten sowie Erzeugung kurzer Späne durch gerade Schneidengeometrie mit Spezialanschliff und -ausspitzung.

Voraussetzungen, Hinweis für den Einsatz:
Leistungsstarke Maschinen. Spielarme Spindeln. Fluchtungsgenaue Werkzeugauf-nahme. Rundlauffehler des Werkzeugs in eingespanntem Zustand max. 0,02 mm.
Ratterfreie, definierte Vorschübe. Für den Einsatz im Schrumpf-/Hydro-Dehnspannfutter liefern wir die Werkzeuge mit zylindrischem Schaft ohne Spannfläche.

Spezifikationen

Norm	DIN 6537K
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

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* Siehe Seite 24: *Einsatzempfehlungen für VHM-Bohrer*

Bestell-Nr. 89411-HB

5 x D

Für lang- und kurzspanende Werkstoffe wie Bau- und Einsatzstähle, Stahlguss, Vergütungsstähle und legierte Stähle mit Festigkeiten bis ca. 1200 N/mm², aber auch für Kohlenstoffstähle, Bronze, Guss und hochlegierte AlSi-Legierungen.
Geeignet für Bohrtiefen ≤ 5 x D.

Vorteile

Anwendung höchster Schnittwerte*. Fluchtungsgenaue Bohrungen mit engen Durchmesser-Toleranzen und guten Oberflächen. Gutes Eigenzentrierverhalten sowie Erzeugung kurzer Späne durch gerade Schneidengeometrie mit Spezial-anschliff und -ausspitzung.

Voraussetzungen, Hinweis für den Einsatz:

Leistungsstarke Maschinen. Spielarme Spindeln. Fluchtungsgenaue Werkzeugauf-nahme. Rundlauffehler des Werkzeugs in eingespanntem Zustand max. 0,02 mm.
Ratterfreie, definierte Vorschübe. Für den Einsatz im Schrumpf-/Hydro-Dehnspannfutter liefern wir die Werkzeuge mit zylindrischem Schaft ohne Spannfläche.

Spezifikationen

Norm	DIN 6537K
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

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* Siehe Seite 24: *Einsatzempfehlungen für VHM-Bohrer*

Bestell-Nr. 89414-HB

5 x D

Für lang- und kurzspanende Werkstoffe wie Bau- und Einsatzstähle, Stahlguss, Vergütungsstähle und legierte Stähle mit Festigkeiten bis ca. 1200 N/mm², aber auch für Kohlenstoffstähle, Bronze, Guss und hochlegierte AlSi-Legierungen.
Geeignet für Bohrtiefen ≤ 5 x D.

Vorteile

Anwendung höchster Schnittwerte*. Fluchtungsgenaue Bohrungen mit engen Durchmesser-Toleranzen und guten Oberflächen. Gutes Eigenzentrierverhalten sowie Erzeugung kurzer Späne durch gerade Schneidengeometrie mit Spezial-anschliff und -ausspitzung.

Voraussetzungen, Hinweis für den Einsatz:
Leistungsstarke Maschinen. Spielarme Spindeln. Fluchtungsgenaue Werkzeugauf-nahme. Rundlauffehler des Werkzeugs in eingespanntem Zustand max. 0,02 mm.
Ratterfreie, definierte Vorschübe. Für den Einsatz im Schrumpf-/Hydro-Dehnspannfutter liefern wir die Werkzeuge mit zylindrischem Schaft ohne Spannfläche.

Spezifikationen

Norm	DIN 6537L
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

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Bestell-Nr. 89247-HB

5 x D

Alu 3-schneidig

Zum Bohren ins Volle für positions- und formgenaue Bohrungen. Kann auch zum Anbohren auf schrägen Flächen und zum Ausbohren bei unterbrochenem Schnitt verwendet werden. Maßgenauigkeit und Oberflächengüte entsprechen der Aufbohrqualität. Anzentrieren kann in der Regel entfallen. Für Guss und langspanende Al-Legierungen.
Geeignet für Bohrtiefen ≤ 5 x D.

Spezifikationen

Norm	DIN 6537L
Schneidstoff	VHM
Oberfläche	unbeschichtet
Typ	TS 3 G
Schaft	HA
Schneidrichtung	rechts
Anschliff	Spiropointanschliff
Spitzenwinkel °	130
ø-Toleranz	m7

P	M	K	N	S	H
		●	●		

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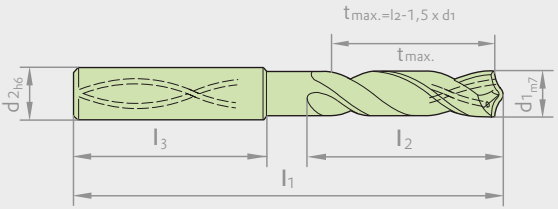
* Siehe Seite 24: *Einsatzempfehlungen für VHM-Bohrer*

3 x D – mit Innenkühlung



Mit Whistle Notch oder Weldon Spannfläche auf Anfrage erhältlich

Spezifikationen	
Norm	DIN 6537K
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	l_1	l_2	l_3	89410-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
3,000		6,000	62,000	20,000	36,000	●
3,100		6,000	62,000	20,000	36,000	●
3,170	1/8	6,000	62,000	20,000	36,000	●
3,200		6,000	62,000	20,000	36,000	●
3,250		6,000	62,000	20,000	36,000	●
3,300		6,000	62,000	20,000	36,000	●
3,400		6,000	62,000	20,000	36,000	●
3,500		6,000	62,000	20,000	36,000	●
3,570	9/64	6,000	62,000	20,000	36,000	●
3,600		6,000	62,000	20,000	36,000	●
3,700		6,000	62,000	20,000	36,000	●
3,800		6,000	66,000	24,000	36,000	●
3,900		6,000	66,000	24,000	36,000	●
3,970	5/32	6,000	66,000	24,000	36,000	●
4,000		6,000	66,000	24,000	36,000	●
4,100		6,000	66,000	24,000	36,000	●
4,200		6,000	66,000	24,000	36,000	●
4,300		6,000	66,000	24,000	36,000	●
4,370	11/64	6,000	66,000	24,000	36,000	●
4,400		6,000	66,000	24,000	36,000	●
4,500		6,000	66,000	24,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89410-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
4,600		6,000	66,000	24,000	36,000	●
4,650		6,000	66,000	24,000	36,000	●
4,700		6,000	66,000	24,000	36,000	●
4,760	3/16	6,000	66,000	28,000	36,000	●
4,800		6,000	66,000	28,000	36,000	●
4,900		6,000	66,000	28,000	36,000	●
5,000		6,000	66,000	28,000	36,000	●
5,100		6,000	66,000	28,000	36,000	●
5,160	13/64	6,000	66,000	28,000	36,000	●
5,200		6,000	66,000	28,000	36,000	●
5,300		6,000	66,000	28,000	36,000	●
5,400		6,000	66,000	28,000	36,000	●
5,500		6,000	66,000	28,000	36,000	●
5,550		6,000	66,000	28,000	36,000	●
5,560	7/32	6,000	66,000	28,000	36,000	●
5,600		6,000	66,000	28,000	36,000	●
5,700		6,000	66,000	28,000	36,000	●
5,800		6,000	66,000	28,000	36,000	●
5,900		6,000	66,000	28,000	36,000	●
5,950	15/64	6,000	66,000	28,000	36,000	●
6,000		6,000	66,000	28,000	36,000	●
6,100		8,000	79,000	34,000	36,000	●
6,200		8,000	79,000	34,000	36,000	●
6,300		8,000	79,000	34,000	36,000	●
6,350	1/4	8,000	79,000	34,000	36,000	●
6,400		8,000	79,000	34,000	36,000	●
6,500		8,000	79,000	34,000	36,000	●
6,600		8,000	79,000	34,000	36,000	●
6,700		8,000	79,000	34,000	36,000	●
6,750	17/64	8,000	79,000	34,000	36,000	●
6,800		8,000	79,000	34,000	36,000	●
6,900		8,000	79,000	34,000	36,000	●
7,000		8,000	79,000	34,000	36,000	●

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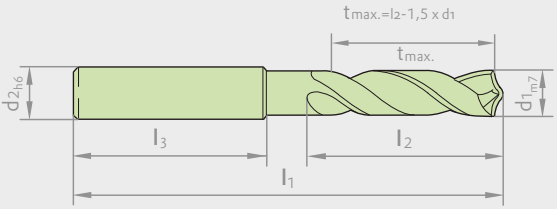
Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89410-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
7,100		8,000	79,000	41,000	36,000	●
7,140	9/32	8,000	79,000	41,000	36,000	●
7,200		8,000	79,000	41,000	36,000	●
7,300		8,000	79,000	41,000	36,000	●
7,400		8,000	79,000	41,000	36,000	●
7,500		8,000	79,000	41,000	36,000	●
7,540	19/64	8,000	79,000	41,000	36,000	●
7,600		8,000	79,000	41,000	36,000	●
7,700		8,000	79,000	41,000	36,000	●
7,800		8,000	79,000	41,000	36,000	●
7,900		8,000	79,000	41,000	36,000	●
7,940	5/16	8,000	79,000	41,000	36,000	●
8,000		8,000	79,000	41,000	36,000	●
8,100		10,000	89,000	47,000	40,000	●
8,200		10,000	89,000	47,000	40,000	●
8,300		10,000	89,000	47,000	40,000	●
8,330	21/64	10,000	89,000	47,000	40,000	●
8,400		10,000	89,000	47,000	40,000	●
8,500		10,000	89,000	47,000	40,000	●
8,600		10,000	89,000	47,000	40,000	●
8,700		10,000	89,000	47,000	40,000	●
8,730	11/32	10,000	89,000	47,000	40,000	●
8,800		10,000	89,000	47,000	40,000	●
8,900		10,000	89,000	47,000	40,000	●
9,000		10,000	89,000	47,000	40,000	●
9,100		10,000	89,000	47,000	40,000	●
9,130	23/64	10,000	89,000	47,000	40,000	●
9,200		10,000	89,000	47,000	40,000	●
9,250		10,000	89,000	47,000	40,000	●
9,300		10,000	89,000	47,000	40,000	●
9,400		10,000	89,000	47,000	40,000	●
9,500		10,000	89,000	47,000	40,000	●
9,520	3/8	10,000	89,000	47,000	40,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89410-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
9,600		10,000	89,000	47,000	40,000	●
9,700		10,000	89,000	47,000	40,000	●
9,800		10,000	89,000	47,000	40,000	●
9,900		10,000	89,000	47,000	40,000	●
9,920	25/64	10,000	89,000	47,000	40,000	●
10,000		10,000	89,000	47,000	40,000	●
10,100		12,000	102,000	55,000	45,000	●
10,200		12,000	102,000	55,000	45,000	●
10,300		12,000	102,000	55,000	45,000	●
10,320	13/32	12,000	102,000	55,000	45,000	●
10,400		12,000	102,000	55,000	45,000	●
10,500		12,000	102,000	55,000	45,000	●
10,600		12,000	102,000	55,000	45,000	●
10,700		12,000	102,000	55,000	45,000	●
10,800		12,000	102,000	55,000	45,000	●
10,900		12,000	102,000	55,000	45,000	●
11,000		12,000	102,000	55,000	45,000	●
11,100		12,000	102,000	55,000	45,000	●
11,110	7/16	12,000	102,000	55,000	45,000	●
11,200		12,000	102,000	55,000	45,000	●
11,300		12,000	102,000	55,000	45,000	●
11,400		12,000	102,000	55,000	45,000	●
11,500		12,000	102,000	55,000	45,000	●
11,600		12,000	102,000	55,000	45,000	●
11,700		12,000	102,000	55,000	45,000	●
11,800		12,000	102,000	55,000	45,000	●
11,900		12,000	102,000	55,000	45,000	●
11,910	15/32	12,000	102,000	55,000	45,000	●
12,000		12,000	102,000	55,000	45,000	●
12,200		14,000	107,000	60,000	45,000	●
12,500		14,000	107,000	60,000	45,000	●
12,700	1/2	14,000	107,000	60,000	45,000	●
13,000		14,000	107,000	60,000	45,000	●

3 x D – ohne Innenkühlung



Mit Whistle Notch oder Weldon Spannfläche auf Anfrage erhältlich

Spezifikationen	
Norm	DIN 6537K
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

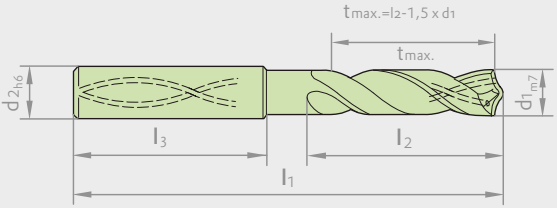
Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	l_1	l_2	l_3	89413-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
3,000		6,000	62,000	20,000	36,000	●
3,100		6,000	62,000	20,000	36,000	●
3,170	1/8	6,000	62,000	20,000	36,000	●
3,200		6,000	62,000	20,000	36,000	●
3,250		6,000	62,000	20,000	36,000	●
3,300		6,000	62,000	20,000	36,000	●
3,400		6,000	62,000	20,000	36,000	●
3,500		6,000	62,000	20,000	36,000	●
3,570	9/64	6,000	62,000	20,000	36,000	●
3,600		6,000	62,000	20,000	36,000	●
3,700		6,000	62,000	20,000	36,000	●
3,800		6,000	66,000	24,000	36,000	●
3,900		6,000	66,000	24,000	36,000	●
3,970	5/32	6,000	66,000	24,000	36,000	●
4,000		6,000	66,000	24,000	36,000	●
4,100		6,000	66,000	24,000	36,000	●
4,200		6,000	66,000	24,000	36,000	●
4,300		6,000	66,000	24,000	36,000	●
4,370	11/64	6,000	66,000	24,000	36,000	●
4,400		6,000	66,000	24,000	36,000	●
4,500		6,000	66,000	24,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89413-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
4,600		6,000	66,000	24,000	36,000	●
4,650		6,000	66,000	24,000	36,000	●
4,700		6,000	66,000	24,000	36,000	●
4,760	3/16	6,000	66,000	28,000	36,000	●
4,800		6,000	66,000	28,000	36,000	●
4,900		6,000	66,000	28,000	36,000	●
5,000		6,000	66,000	28,000	36,000	●
5,100		6,000	66,000	28,000	36,000	●
5,160	13/64	6,000	66,000	28,000	36,000	●
5,200		6,000	66,000	28,000	36,000	●
5,300		6,000	66,000	28,000	36,000	●
5,400		6,000	66,000	28,000	36,000	●
5,500		6,000	66,000	28,000	36,000	●
5,550		6,000	66,000	28,000	36,000	●
5,560	7/32	6,000	66,000	28,000	36,000	●
5,600		6,000	66,000	28,000	36,000	●
5,700		6,000	66,000	28,000	36,000	●
5,800		6,000	66,000	28,000	36,000	●
5,900		6,000	66,000	28,000	36,000	●
5,950	15/64	6,000	66,000	28,000	36,000	●
6,000		6,000	66,000	28,000	36,000	●
6,100		8,000	79,000	34,000	36,000	●
6,200		8,000	79,000	34,000	36,000	●
6,300		8,000	79,000	34,000	36,000	●
6,350	1/4	8,000	79,000	34,000	36,000	●
6,400		8,000	79,000	34,000	36,000	●
6,500		8,000	79,000	34,000	36,000	●
6,600		8,000	79,000	34,000	36,000	●
6,700		8,000	79,000	34,000	36,000	●
6,750	17/64	8,000	79,000	34,000	36,000	●
6,800		8,000	79,000	34,000	36,000	●
6,900		8,000	79,000	34,000	36,000	●
7,000		8,000	79,000	34,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89413-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
7,100		8,000	79,000	41,000	36,000	●
7,140	9/32	8,000	79,000	41,000	36,000	●
7,200		8,000	79,000	41,000	36,000	●
7,300		8,000	79,000	41,000	36,000	●
7,400		8,000	79,000	41,000	36,000	●
7,500		8,000	79,000	41,000	36,000	●
7,540	19/64	8,000	79,000	41,000	36,000	●
7,600		8,000	79,000	41,000	36,000	●
7,700		8,000	79,000	41,000	36,000	●
7,800		8,000	79,000	41,000	36,000	●
7,900		8,000	79,000	41,000	36,000	●
7,940	5/16	8,000	79,000	41,000	36,000	●
8,000		8,000	79,000	41,000	36,000	●
8,100		10,000	89,000	47,000	36,000	●
8,200		10,000	89,000	47,000	40,000	●
8,300		10,000	89,000	47,000	40,000	●
8,330	21/64	10,000	89,000	47,000	40,000	●
8,400		10,000	89,000	47,000	40,000	●
8,500		10,000	89,000	47,000	40,000	●
8,600		10,000	89,000	47,000	40,000	●
8,700		10,000	89,000	47,000	40,000	●
8,730	11/32	10,000	89,000	47,000	40,000	●
8,800		10,000	89,000	47,000	40,000	●
8,900		10,000	89,000	47,000	40,000	●
9,000		10,000	89,000	47,000	40,000	●
9,100		10,000	89,000	47,000	40,000	●
9,130	23/64	10,000	89,000	47,000	40,000	●
9,200		10,000	89,000	47,000	40,000	●
9,250		10,000	89,000	47,000	40,000	●
9,300		10,000	89,000	47,000	40,000	●
9,400		10,000	89,000	47,000	40,000	●
9,500		10,000	89,000	47,000	40,000	●
9,520	3/8	10,000	89,000	47,000	40,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	l_1	l_2	l_3	89413-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
9,600		10,000	89,000	47,000	40,000	●
9,700		10,000	89,000	47,000	40,000	●
9,800		10,000	89,000	47,000	40,000	●
9,900		10,000	89,000	47,000	40,000	●
9,920	25/64	10,000	89,000	47,000	40,000	●
10,000		10,000	89,000	47,000	40,000	●
10,100		12,000	102,000	55,000	45,000	●
10,200		12,000	102,000	55,000	45,000	●
10,300		12,000	102,000	55,000	45,000	●
10,320	13/32	12,000	102,000	55,000	45,000	●
10,400		12,000	102,000	55,000	45,000	●
10,500		12,000	102,000	55,000	45,000	●
10,600		12,000	102,000	55,000	45,000	●
10,700		12,000	102,000	55,000	45,000	●
10,800		12,000	102,000	55,000	45,000	●
10,900		12,000	102,000	55,000	45,000	●
11,000		12,000	102,000	55,000	45,000	●
11,100		12,000	102,000	55,000	45,000	●
11,110	7/16	12,000	102,000	55,000	45,000	●
11,200		12,000	102,000	55,000	45,000	●
11,300		12,000	102,000	55,000	45,000	●
11,400		12,000	102,000	55,000	45,000	●
11,500		12,000	102,000	55,000	45,000	●
11,600		12,000	102,000	55,000	45,000	●
11,700		12,000	102,000	55,000	45,000	●
11,800		12,000	102,000	55,000	45,000	●
11,900		12,000	102,000	55,000	45,000	●
11,910	15/32	12,000	102,000	55,000	45,000	●
12,000		12,000	102,000	55,000	45,000	●
12,200		14,000	107,000	60,000	45,000	●
12,500		14,000	107,000	60,000	45,000	●
12,700	1/2	14,000	107,000	60,000	45,000	●
13,000		14,000	107,000	60,000	45,000	●

5 x D – mit Innenkühlung



Mit Whistle Notch oder Weldon Spannfläche auf Anfrage erhältlich

Spezifikationen	
Norm	DIN 6537L
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

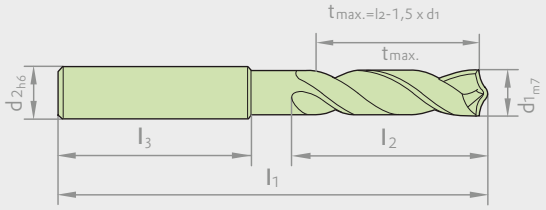
Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	l_1	l_2	l_3	89411-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
3,000		6,000	66,000	28,000	36,000	●
3,100		6,000	66,000	28,000	36,000	●
3,170	1/8	6,000	66,000	28,000	36,000	●
3,200		6,000	66,000	28,000	36,000	●
3,250		6,000	66,000	28,000	36,000	●
3,300		6,000	66,000	28,000	36,000	●
3,400		6,000	66,000	28,000	36,000	●
3,500		6,000	66,000	28,000	36,000	●
3,570	9/64	6,000	66,000	28,000	36,000	●
3,600		6,000	66,000	28,000	36,000	●
3,700		6,000	66,000	28,000	36,000	●
3,800		6,000	74,000	36,000	36,000	●
3,900		6,000	74,000	36,000	36,000	●
3,970	5/32	6,000	74,000	36,000	36,000	●
4,000		6,000	74,000	36,000	36,000	●
4,100		6,000	74,000	36,000	36,000	●
4,200		6,000	74,000	36,000	36,000	●
4,300		6,000	74,000	36,000	36,000	●
4,370	11/64	6,000	74,000	36,000	36,000	●
4,400		6,000	74,000	36,000	36,000	●
4,500		6,000	74,000	36,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89411-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
4,600		6,000	74,000	36,000	36,000	●
4,650		6,000	74,000	36,000	36,000	●
4,700		6,000	74,000	36,000	36,000	●
4,760	3/16	6,000	82,000	44,000	36,000	●
4,800		6,000	82,000	44,000	36,000	●
4,900		6,000	82,000	44,000	36,000	●
5,000		6,000	82,000	44,000	36,000	●
5,100		6,000	82,000	44,000	36,000	●
5,160	13/64	6,000	82,000	44,000	36,000	●
5,200		6,000	82,000	44,000	36,000	●
5,300		6,000	82,000	44,000	36,000	●
5,400		6,000	82,000	44,000	36,000	●
5,500		6,000	82,000	44,000	36,000	●
5,550		6,000	82,000	44,000	36,000	●
5,560	7/32	6,000	82,000	44,000	36,000	●
5,600		6,000	82,000	44,000	36,000	●
5,700		6,000	82,000	44,000	36,000	●
5,800		6,000	82,000	44,000	36,000	●
5,900		6,000	82,000	44,000	36,000	●
5,950	15/64	6,000	82,000	44,000	36,000	●
6,000		6,000	82,000	44,000	36,000	●
6,100		8,000	91,000	53,000	36,000	●
6,200		8,000	91,000	53,000	36,000	●
6,300		8,000	91,000	53,000	36,000	●
6,350	1/4	8,000	91,000	53,000	36,000	●
6,400		8,000	91,000	53,000	36,000	●
6,500		8,000	91,000	53,000	36,000	●
6,600		8,000	91,000	53,000	36,000	●
6,700		8,000	91,000	53,000	36,000	●
6,750	17/64	8,000	91,000	53,000	36,000	●
6,800		8,000	91,000	53,000	36,000	●
6,900		8,000	91,000	53,000	36,000	●
7,000		8,000	91,000	53,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89411-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
7,100		8,000	91,000	53,000	36,000	●
7,140	9/32	8,000	91,000	53,000	36,000	●
7,200		8,000	91,000	53,000	36,000	●
7,300		8,000	91,000	53,000	36,000	●
7,400		8,000	91,000	53,000	36,000	●
7,500		8,000	91,000	53,000	36,000	●
7,540	19/64	8,000	91,000	53,000	36,000	●
7,600		8,000	91,000	53,000	36,000	●
7,700		8,000	91,000	53,000	36,000	●
7,800		8,000	91,000	53,000	36,000	●
7,900		8,000	91,000	53,000	36,000	●
7,940	5/16	8,000	91,000	53,000	36,000	●
8,000		8,000	91,000	53,000	36,000	●
8,100		10,000	103,000	61,000	40,000	●
8,200		10,000	103,000	61,000	40,000	●
8,300		10,000	103,000	61,000	40,000	●
8,330	21/64	10,000	103,000	61,000	40,000	●
8,400		10,000	103,000	61,000	40,000	●
8,500		10,000	103,000	61,000	40,000	●
8,600		10,000	103,000	61,000	40,000	●
8,700		10,000	103,000	61,000	40,000	●
8,730	11/32	10,000	103,000	61,000	40,000	●
8,800		10,000	103,000	61,000	40,000	●
8,900		10,000	103,000	61,000	40,000	●
9,000		10,000	103,000	61,000	40,000	●
9,100		10,000	103,000	61,000	40,000	●
9,130	23/64	10,000	103,000	61,000	40,000	●
9,200		10,000	103,000	61,000	40,000	●
9,250		10,000	103,000	61,000	40,000	●
9,300		10,000	103,000	61,000	40,000	●
9,400		10,000	103,000	61,000	40,000	●
9,500		10,000	103,000	61,000	40,000	●
9,520	3/8	10,000	103,000	61,000	40,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89411-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
9,600		10,000	103,000	61,000	40,000	●
9,700		10,000	103,000	61,000	40,000	●
9,800		10,000	103,000	61,000	40,000	●
9,900		10,000	103,000	61,000	40,000	●
9,920	25/64	10,000	103,000	61,000	40,000	●
10,000		10,000	103,000	61,000	40,000	●
10,100		12,000	118,000	71,000	45,000	●
10,200		12,000	118,000	71,000	45,000	●
10,300		12,000	118,000	71,000	45,000	●
10,320	13/32	12,000	118,000	71,000	45,000	●
10,400		12,000	118,000	71,000	45,000	●
10,500		12,000	118,000	71,000	45,000	●
10,600		12,000	118,000	71,000	45,000	●
10,700		12,000	118,000	71,000	45,000	●
10,800		12,000	118,000	71,000	45,000	●
10,900		12,000	118,000	71,000	45,000	●
11,000		12,000	118,000	71,000	45,000	●
11,100		12,000	118,000	71,000	45,000	●
11,110	7/16	12,000	118,000	71,000	45,000	●
11,200		12,000	118,000	71,000	45,000	●
11,300		12,000	118,000	71,000	45,000	●
11,400		12,000	118,000	71,000	45,000	●
11,500		12,000	118,000	71,000	45,000	●
11,600		12,000	118,000	71,000	45,000	●
11,700		12,000	118,000	71,000	45,000	●
11,800		12,000	118,000	71,000	45,000	●
11,900		12,000	118,000	71,000	45,000	●
11,910	15/32	12,000	118,000	71,000	45,000	●
12,000		12,000	118,000	71,000	45,000	●
12,200		14,000	124,000	77,000	45,000	●
12,500		14,000	124,000	77,000	45,000	●
12,700	1/2	14,000	124,000	77,000	45,000	●
13,000		14,000	124,000	77,000	45,000	●

5 x D – ohne Innenkühlung



Mit Whistle Notch oder Weldon Spannfläche auf Anfrage erhältlich

Spezifikationen	
Norm	DIN 6537L
Schneidstoff	VHM
Oberfläche	beschichtet
Typ	TS 100 U
Schaft	HA
Schneidrichtung	rechts
Anschliff	Flächenanschliff
Spitzenwinkel °	140
ø-Toleranz	m7

P	M	K	N	S	H
●	○	●	○	○	○

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	l1	l2	l3	89414-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
3,000		6,000	66,000	28,000	36,000	●
3,100		6,000	66,000	28,000	36,000	●
3,170	1/8	6,000	66,000	28,000	36,000	●
3,200		6,000	66,000	28,000	36,000	●
3,250		6,000	66,000	28,000	36,000	●
3,300		6,000	66,000	28,000	36,000	●
3,400		6,000	66,000	28,000	36,000	●
3,500		6,000	66,000	28,000	36,000	●
3,570	9/64	6,000	66,000	28,000	36,000	●
3,600		6,000	66,000	28,000	36,000	●
3,700		6,000	66,000	28,000	36,000	●
3,800		6,000	74,000	36,000	36,000	●
3,900		6,000	74,000	36,000	36,000	●
3,970	5/32	6,000	74,000	36,000	36,000	●
4,000		6,000	74,000	36,000	36,000	●
4,100		6,000	74,000	36,000	36,000	●
4,200		6,000	74,000	36,000	36,000	●
4,300		6,000	74,000	36,000	36,000	●
4,370	11/64	6,000	74,000	36,000	36,000	●
4,400		6,000	74,000	36,000	36,000	●
4,500		6,000	74,000	36,000	36,000	●

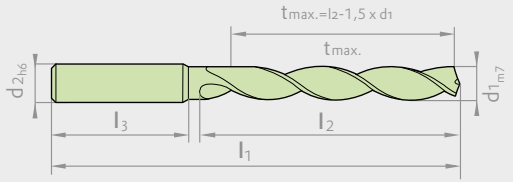
Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89414-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
4,600		6,000	74,000	36,000	36,000	●
4,650		6,000	74,000	36,000	36,000	●
4,700		6,000	74,000	36,000	36,000	●
4,760	3/16	6,000	82,000	44,000	36,000	●
4,800		6,000	82,000	44,000	36,000	●
4,900		6,000	82,000	44,000	36,000	●
5,000		6,000	82,000	44,000	36,000	●
5,100		6,000	82,000	44,000	36,000	●
5,160	13/64	6,000	82,000	44,000	36,000	●
5,200		6,000	82,000	44,000	36,000	●
5,300		6,000	82,000	44,000	36,000	●
5,400		6,000	82,000	44,000	36,000	●
5,500		6,000	82,000	44,000	36,000	●
5,550		6,000	82,000	44,000	36,000	●
5,560	7/32	6,000	82,000	44,000	36,000	●
5,600		6,000	82,000	44,000	36,000	●
5,700		6,000	82,000	44,000	36,000	●
5,800		6,000	82,000	44,000	36,000	●
5,900		6,000	82,000	44,000	36,000	●
5,950	15/64	6,000	82,000	44,000	36,000	●
6,000		6,000	82,000	44,000	36,000	●
6,100		8,000	91,000	53,000	36,000	●
6,200		8,000	91,000	53,000	36,000	●
6,300		8,000	91,000	53,000	36,000	●
6,350	1/4	8,000	91,000	53,000	36,000	●
6,400		8,000	91,000	53,000	36,000	●
6,500		8,000	91,000	53,000	36,000	●
6,600		8,000	91,000	53,000	36,000	●
6,700		8,000	91,000	53,000	36,000	●
6,750	17/64	8,000	91,000	53,000	36,000	●
6,800		8,000	91,000	53,000	36,000	●
6,900		8,000	91,000	53,000	36,000	●
7,000		8,000	91,000	53,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89414-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
7,100		8,000	91,000	53,000	36,000	●
7,140	9/32	8,000	91,000	53,000	36,000	●
7,200		8,000	91,000	53,000	36,000	●
7,300		8,000	91,000	53,000	36,000	●
7,400		8,000	91,000	53,000	36,000	●
7,500		8,000	91,000	53,000	36,000	●
7,540	19/64	8,000	91,000	53,000	36,000	●
7,600		8,000	91,000	53,000	36,000	●
7,700		8,000	91,000	53,000	36,000	●
7,800		8,000	91,000	53,000	36,000	●
7,900		8,000	91,000	53,000	36,000	●
7,940	5/16	8,000	91,000	53,000	36,000	●
8,000		8,000	91,000	53,000	36,000	●
8,100		10,000	103,000	61,000	40,000	●
8,200		10,000	103,000	61,000	40,000	●
8,300		10,000	103,000	61,000	40,000	●
8,330	21/64	10,000	103,000	61,000	40,000	●
8,400		10,000	103,000	61,000	40,000	●
8,500		10,000	103,000	61,000	40,000	●
8,600		10,000	103,000	61,000	40,000	●
8,700		10,000	103,000	61,000	40,000	●
8,730	11/32	10,000	103,000	61,000	40,000	●
8,800		10,000	103,000	61,000	40,000	●
8,900		10,000	103,000	61,000	40,000	●
9,000		10,000	103,000	61,000	40,000	●
9,100		10,000	103,000	61,000	40,000	●
9,130	23/64	10,000	103,000	61,000	40,000	●
9,200		10,000	103,000	61,000	40,000	●
9,250		10,000	103,000	61,000	40,000	●
9,300		10,000	103,000	61,000	40,000	●
9,400		10,000	103,000	61,000	40,000	●
9,500		10,000	103,000	61,000	40,000	●
9,520	3/8	10,000	103,000	61,000	40,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89414-HB
mm	inch	mm	mm	mm	mm	Zylinderschaft
9,600		10,000	103,000	61,000	40,000	●
9,700		10,000	103,000	61,000	40,000	●
9,800		10,000	103,000	61,000	40,000	●
9,900		10,000	103,000	61,000	40,000	●
9,920	25/64	10,000	103,000	61,000	40,000	●
10,000		10,000	103,000	61,000	40,000	●
10,100		12,000	118,000	71,000	45,000	●
10,200		12,000	118,000	71,000	45,000	●
10,300		12,000	118,000	71,000	45,000	●
10,320	13/32	12,000	118,000	71,000	45,000	●
10,400		12,000	118,000	71,000	45,000	●
10,500		12,000	118,000	71,000	45,000	●
10,600		12,000	118,000	71,000	45,000	●
10,700		12,000	118,000	71,000	45,000	●
10,800		12,000	118,000	71,000	45,000	●
10,900		12,000	118,000	71,000	45,000	●
11,000		12,000	118,000	71,000	45,000	●
11,100		12,000	118,000	71,000	45,000	●
11,110	7/16	12,000	118,000	71,000	45,000	●
11,200		12,000	118,000	71,000	45,000	●
11,300		12,000	118,000	71,000	45,000	●
11,400		12,000	118,000	71,000	45,000	●
11,500		12,000	118,000	71,000	45,000	●
11,600		12,000	118,000	71,000	45,000	●
11,700		12,000	118,000	71,000	45,000	●
11,800		12,000	118,000	71,000	45,000	●
11,900		12,000	118,000	71,000	45,000	●
11,910	15/32	12,000	118,000	71,000	45,000	●
12,000		12,000	118,000	71,000	45,000	●
12,200		14,000	124,000	77,000	45,000	●
12,500		14,000	124,000	77,000	45,000	●
12,700	1/2	14,000	124,000	77,000	45,000	●
13,000		14,000	124,000	77,000	45,000	●

5 x D – ohne Innenkühlung

Alu 3-schneidig



Spezifikationen	
Norm	DIN 6537L
Schneidstoff	VHM
Oberfläche	unbeschichtet
Typ	TS 3 G
Schaft	HA
Schneidrichtung	rechts
Anschliff	Spiropointanschliff
Spitzenwinkel °	130
ø-Toleranz	m7

P	M	K	N	S	H
		●	●		

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	l1	l2	l3	89247-HB
mm	inch	mm	mm	mm	mm	
3,000		6,000	66,000	28,000	36,000	●
3,100		6,000	66,000	28,000	36,000	●
3,200		6,000	66,000	28,000	36,000	●
3,300		6,000	66,000	28,000	36,000	●
3,500		6,000	66,000	28,000	36,000	●
3,700		6,000	66,000	28,000	36,000	●
3,800		6,000	74,000	36,000	36,000	●
4,000		6,000	74,000	36,000	36,000	●
4,100		6,000	74,000	36,000	36,000	●
4,200		6,000	74,000	36,000	36,000	●
4,500		6,000	74,000	36,000	36,000	●
4,800		6,000	82,000	44,000	36,000	●
5,000		6,000	82,000	44,000	36,000	●
5,100		6,000	82,000	44,000	36,000	●
5,200		6,000	82,000	44,000	36,000	●
5,300		6,000	82,000	44,000	36,000	●
5,500		6,000	82,000	44,000	36,000	●
5,800		6,000	82,000	44,000	36,000	●
6,000		6,000	82,000	44,000	36,000	●
6,100		8,000	91,000	53,000	36,000	●
6,200		8,000	91,000	53,000	36,000	●

Geometriedaten						Verfügbarkeit
$d1_{m7}$		$d2_{h6}$	$l1$	$l2$	$l3$	89247-HB
mm	inch	mm	mm	mm	mm	
6,400		8,000	91,000	53,000	36,000	●
6,500		8,000	91,000	53,000	36,000	●
6,700		8,000	91,000	53,000	36,000	●
6,800		8,000	91,000	53,000	36,000	●
7,000		8,000	91,000	53,000	36,000	●
7,100		8,000	91,000	53,000	36,000	●
7,400		8,000	91,000	53,000	36,000	●
7,500		8,000	91,000	53,000	36,000	●
7,800		8,000	91,000	53,000	36,000	●
8,000		8,000	91,000	53,000	36,000	●
8,100		10,000	103,000	61,000	40,000	●
8,200		10,000	103,000	61,000	40,000	●
8,400		10,000	103,000	61,000	40,000	●
8,500		10,000	103,000	61,000	40,000	●
8,600		10,000	103,000	61,000	40,000	●
8,700		10,000	103,000	61,000	40,000	●
8,800		10,000	103,000	61,000	40,000	●
9,000		10,000	103,000	61,000	40,000	●
9,100		10,000	103,000	61,000	40,000	●
9,500		10,000	103,000	61,000	40,000	●
9,800		10,000	103,000	61,000	40,000	●
10,000		10,000	103,000	61,000	40,000	●
10,100		12,000	118,000	71,000	45,000	●
10,200		12,000	118,000	71,000	45,000	●
10,300		12,000	118,000	71,000	45,000	●
10,500		12,000	118,000	71,000	45,000	●
11,000		12,000	118,000	71,000	45,000	●
11,200		12,000	118,000	71,000	45,000	●
11,500		12,000	118,000	71,000	45,000	●
11,800		12,000	118,000	71,000	45,000	●
12,000		12,000	118,000	71,000	45,000	●
12,100		14,000	124,000	77,000	45,000	●
12,500		14,000	124,000	77,000	45,000	●
13,000		14,000	124,000	77,000	45,000	●

Allgemeine Hinweise

Bohrer-Ø (in mm)	Vorschubreihen-Code								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
3,000	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,000	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,000	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,300	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,000	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,000	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,000	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500

Werkzeuge mit **fett** gesetzter Vorschubreihen-Nr. sind bevorzugt auszuwählen.

Werkstoffgruppe	Werkstoffbeispiele *Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN 10 027*	Zugfestigkeit Härte N/mm²	Kühl-mittel
Allgemeine Baustähle	**1.0035** S185, **1.0486** P275N, **1.0345** P235GH, **1.0425** P265GH **1.0050** E295, **1.0070** E360, **1.8937** P500NH	≤ 500 ≤ 1000	● ●
Automatenstähle	**1.0718** 11SMnPb30, **1.0736** 11SMn37, **1.0727** 46 S20, **1.0728** 60 S20, **1.0757** 46SPb20	≤ 850 ≤ 1000	● ●
Unlegierte Vergütungsstähle	**1.0402** C22, **1.1178** C30E **1.0503** C45, **1.1191** C45E **1.0601** C60, **1.1221** C60E	≤ 700 ≤ 850 ≤ 1000	● ● ●
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤ 1000 ≤ 1400	● ●
Unlegierte Einsatzstähle	**1.0301** C10, **1.1121** C10E	≤ 850	●
Legierte Einsatzstähle	**1.7043** 38Cr4 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤ 1000 ≤ 1400	● ●
Nitrierstähle	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤ 1000 ≤ 1400	● ●
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤ 850 ≤ 1400	● ●
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤ 1400	●
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4	≤ 350 HB	●

	Bohrtiefe	≤ 3 x D	≤ 3 x D	≤ 5 x D	≤ 5 x D	≤ 5 x D
	Schneidmittel	VHM	VHM	VHM	VHM	VHM
	Hartmetall-Anwendungsgruppe	K / P	K / P	K / P	K / P	K
	Hartmetallsorte	HM-UF	HM-UF	HM-UF	HM-UF	HM-UF
	Oberfläche	F	F	F	F	☐
	Typ	TS 100 U	TS 100 U	TS 100 U	TS 100 U	TS 3 G
	Kühlkanäle	■	-	■	-	-
Artikel-Nr.						
DIN 6537	Form HA, glatt	89410-HB	89413-HB	89411-HB	89414-HB	89247-HB

UF Ultrafeinkorn
☐ unbeschichtet
F FIRE-beschichtet
■ mit Kühlkanälen





v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
145 *120*	**7** **6**	*130* *110*	**7** **6**	*145* *120*	**7** **6**	*130* *110*	**7** **6**		
170 *145*	**8** **8**	*145* *110*	**8** **7**	*170* *145*	**8** **8**	*145* *110*	**8** **7**		
130 *125* *120*	**8** **7** **7**	*120* *110* *105*	**7** **7** **7**	*130* *125* *120*	**8** **7** **7**	*120* *110* *105*	**7** **7** **7**		
120 *105*	**7** **7**	*105* *100*	**7** **6**	*120* *105*	**7** **7**	*105* *100*	**7** **6**		
145	**8**	*130*	**8**	*145*	**8**	*130*	**8**		
120 *85*	**7** **5**	*120* *85*	**7** **5**	*120* *85*	**7** **5**	*120* *85*	**7** **5**		
110 *105*	7 5	*100* *90*	6 5	*105* *100*	7 5	*100* *90*	6 5		
80 *65*	6 5	*65* *55*	6 5	*70* *55*	6 5	*65* *55*	6 5		
60	4			*60*	5				
60	3	*45*	3	*60*	3	*45*	3		

● Öl
● Emulsion
○ Luft

Weiter auf Seite 26

Allgemeine Hinweise

Fortsetzung von Seite 24

Bohrer-Ø (in mm)	Vorschubreihen-Code								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
3,000	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,000	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,000	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,300	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,000	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,000	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,000	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500

Werkstoffgruppe	Werkstoffbeispiele *Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN 10 027*	Zugfestigkeit Härte N/mm²	Kühl-mittel
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS189	≤ 900	●
austenitisch	**1.4301** X5CrNi18-10, **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17 12 2	≤ 1100	●
martensitisch	**1.4057** X20CrNi17-2, **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤ 1500	●
Gehärtete Stähle	-	≤ 48 HRC ≤ 66 HRC	● ●
Sonderlegierung	Nimonic, Inconel, Monel, Hastelloy	≤ 2000	●
Gusseisen	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)	≤ 240 HB ≤ 350 HB	◐ ○ ◐ ○
Kugelgraphit- und Temperguss	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)	≤ 240 HB ≤ 350 HB	◐ ◐
Hartguss	-	≤ 350 HB	◐
Titan und Titan-Legierungen	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5 –TiAl-8Mo1V1	≤ 850 ≤ 1400	● ●
Aluminium und Al-Legierung	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤ 400	◐
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤ 650	◐
Al-Gusslegierungen ≤ 10 % Si > 10 % Si	 **3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu,-G-AlSi12CuNiMg	 ≤ 600 ≤ 600	 ◐ ◐
Magnesium-Legierung	MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	≤ 400	○
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤ 500	◐
Messing, kurzspanend langspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤ 600 ≤ 600	◐ ◐
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤ 600 ≤ 850	◐ ● ●
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤ 850 ≤ 1000	● ●
Kunststoff, duroplastisch Kunststoff, termoplastisch	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤ 150 ≤ 100	○ ◐ ○
Kunststoff, aramidfaserverstärkt glas-/kohlefaserverst.	Kevlar GFK/CFK	≤ 1000 ≤ 1000	○ ○

	Bohrtiefe	≤ 3 x D	≤ 3 x D	≤ 5 x D	≤ 5 x D	≤ 5 x D
	Schneidmittel	VHM	VHM	VHM	VHM	VHM
	Hartmetall-Anwendungsgruppe	K / P	K / P	K / P	K / P	K
	Hartmetallsorte	HM-UF	HM-UF	HM-UF	HM-UF	HM-UF
	Oberfläche	F	F	F	F	☐
	Typ	TS 100 U	TS 100 U	TS 100 U	TS 100 U	TS 3 G
	Kühlkanäle	■	-	■	-	-
Artikel-Nr.						
DIN 6537	Form HA, glatt	89410-HB	89413-HB	89411-HB	89414-HB	89247-HB

UF Ultrafeinkorn

☐ unbeschichtet

F FIRE-beschichtet

■ mit Kühlkanälen





60	5								
55	5	*55*	4	*60*	5	*55*	4		
45	5	*45*	4	*55*	5	*45*	4		
		45	3	*50*	5	*45*	3		
55	3	*45*	3	*55*	3	*45*	3		
35	2	*25*	2	*35*	2	*25*	2		
35	4	*25*	4	*35*	4	*25*	4		
210	**9**	*210*	**8**	*195*	**9**	*210*	**8**	*100*	**6**
160	**9**	*155*	**8**	*160*	**9**	*155*	**8**	*80*	**6**
140	**9**	*155*	**7**	*140*	**9**	*145*	**7**	*80*	**6**
130	**8**	*125*	**7**	*130*	**8**	*125*	**7**	*70*	**6**
40	**3**	*35*	**3**	*40*	3	*35*	**3**		
45	4	*40*	4	*45*	4	*40*	4		
40	3	*35*	3	*40*	3	*35*	3		
310	**9**	*260*	**9**	*310*	**9**	*260*	**9**	*180*	**7**
310	**9**	*260*	**9**	*310*	**9**	*260*	**9**	*160*	**7**
260	**9**	*220*	**8**	*260*	**9**	*235*	**9**	*150*	**7**
220	**9**	*180*	**8**	*220*	**9**	*170*	**8**	*120*	**6**
280	**8**	*260*	**8**	*280*	**8**	*260*	**8**	*180*	**6**
125	7	*105*	7	*125*	7	*105*	7		
325	8	*270*	8	*325*	8	*270*	**8**	*180*	**6**
220	**7**	*180*	**7**	*220*	**7**	*180*	**7**		
125	**7**	*105*	**6**	*125*	**7**	*105*	**6**		
105	**6**	*85*	**6**	*105*	**6**	*85*	**6**		
90	**6**	*80*	**5**	*90*	**6**	*80*	**5**		
80	**6**	*60*	**5**	*80*	**6**	*60*	**5**		

● Öl

● Emulsion

○ Luft

Precision Toolzz

Produktionsstandort:
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