

VOLLHARTMETALL REIBAHLEN · MICROREIBBAHLEN

SOLID CARBIDE REAMERS · MICRO REAMERS



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KONTAKT | CONTACT

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INHALTSVERZEICHNIS · TABLE OF CONTENTS

Art.	Vollhartmetall Reibahlen / Solid carbide reamers	Material			HSC High-Speed Cutting	HRC < 45	HRC < 50
							
P	22 1450 Ø 0,200 - 0,595 	302					
P	22 1452 Ø 0,60 - 3,50 	303					
H	22 1490 Ø 1,0 - 12,0 	304					

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- Lagerware / Stock tool
- Keine Lagerware, Lieferzeit und Preis auf Anfrage
No stock tool. Price and delivery on request
- ◻ Lieferzeit kurzfristig da Rohlinglager vorhanden
Short delivery deadline possible then blanks are on stock available

- 🏷 Sonderpreis. Solange Vorrat reicht. Rückgabe nicht möglich.
Special price. While stocks last. Return not possible.
- 📅 2-3 Arbeitstage Lieferzeit / 2-3 work days delivery time

HRC < 55	HRC < 60	HRC < 65	HRC < 70	STAHL <small>stahl</small> <small>< 800 N/mm²</small>	INOX Edelstahl <small>STAINLESS STEEL</small>	INCONEL HASTELLOY TITANIUM	GJL	GJS	GTW GTS	NE METALLE <small>non-ferrous</small>	kurz- spanend <small>short chip</small>	lang- spanend <small>long chip</small>	MIT INNEN- KÜHLUNG <small>with internal cooling</small>	OHNE INNEN- KÜHLUNG <small>without internal cooling</small>	DIN 6535 Form HA	DIN 6535 Form HE	DIN 6535 Form HAK	DIN 6535 Form HEK
H	H	H	H	P	M	S	K	K	K	N								
				✓	✓	✓	✓	✓		✓	✓	✓		✓	✓			
				✓	✓		✓	✓		✓	✓	✓		✓	✓			
✓	✓	✓	✓				✓	✓			✓			✓	✓			

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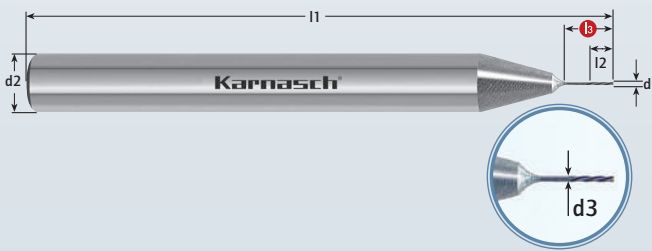
Index

22 1450

Miniatur-Vollhartmetall-High-Speed-Präzisionsreibahlen HSR. Linksspirale, rechtsschneidend
 Miniature Micro Grain high-speed reamers / HSR. Left hand spiral fluted, right hand cutting



HRC < 45	Alu-minium
INOX stainless steel < 900 N/mm ² ferritic	MESSING brass
INOX stainless steel > 900 N/mm ² martensitic	Kupfer copper
INOX stainless steel < 900 N/mm ² austenitic	kurz-spanend short chip
GG/G cast iron	lang-spanend long chip
TITAN TITANIUM < 1100 N/mm ²	



MICRO GRAIN	KARNASCH NORM
SPEZIAL SPECIAL	DIN 6535 Form HA
	HSR HIGH SPEED REAMERS
	POLIERT POLISHED

Schnittdaten
Cutting data

Zeichnungen
Drawings



Art.	d1 ± 0,001	l3	d2 h6	l1	l2 /- 0,1	d3 -0,001	Z	€
22 1450 0200	0,200	2,0	3,0	40	1,0	0,199	4	69,30
22 1450 0205	0,205	2,0	3,0	40	1,0	0,204	4	69,30
22 1450 0210	0,210	2,0	3,0	40	1,0	0,209	4	69,30
22 1450 0215	0,215	2,0	3,0	40	1,0	0,214	4	69,30
22 1450 0220	0,220	2,0	3,0	40	1,0	0,219	4	69,30
22 1450 0225	0,225	2,0	3,0	40	1,0	0,224	4	69,30
22 1450 0230	0,230	2,0	3,0	40	1,0	0,229	4	69,30
22 1450 0235	0,235	2,0	3,0	40	1,0	0,234	4	69,30
22 1450 0240	0,240	2,0	3,0	40	1,0	0,239	4	69,30
22 1450 0245	0,245	2,0	3,0	40	1,0	0,244	4	69,30
22 1450 0250	0,250	2,5	3,0	40	1,2	0,249	4	68,70
22 1450 0255	0,255	2,5	3,0	40	1,2	0,254	4	68,70
22 1450 0260	0,260	2,5	3,0	40	1,2	0,259	4	68,70
22 1450 0265	0,265	2,5	3,0	40	1,2	0,264	4	68,70
22 1450 0270	0,270	2,5	3,0	40	1,2	0,269	4	68,70
22 1450 0275	0,275	2,5	3,0	40	1,2	0,274	4	68,70
22 1450 0280	0,280	2,5	3,0	40	1,2	0,279	4	68,70
22 1450 0285	0,285	2,5	3,0	40	1,2	0,284	4	68,70
22 1450 0290	0,290	2,5	3,0	40	1,2	0,289	4	68,70
22 1450 0295	0,295	2,5	3,0	40	1,2	0,294	4	68,70
22 1450 0300	0,300	3,0	3,0	40	1,5	0,299	4	67,80
22 1450 0305	0,305	3,0	3,0	40	1,5	0,304	4	67,80
22 1450 0310	0,310	3,0	3,0	40	1,5	0,309	4	67,80
22 1450 0315	0,315	3,0	3,0	40	1,5	0,314	4	67,80
22 1450 0320	0,320	3,0	3,0	40	1,5	0,319	4	67,80
22 1450 0325	0,325	3,0	3,0	40	1,5	0,324	4	67,80
22 1450 0330	0,330	3,0	3,0	40	1,5	0,329	4	67,80
22 1450 0335	0,335	3,0	3,0	40	1,5	0,334	4	67,80
22 1450 0340	0,340	3,0	3,0	40	1,5	0,339	4	67,80
22 1450 0345	0,345	3,0	3,0	40	1,5	0,344	4	67,80
22 1450 0350	0,350	3,5	3,0	40	1,8	0,349	4	67,20
22 1450 0355	0,355	3,5	3,0	40	1,8	0,354	4	67,20
22 1450 0360	0,360	3,5	3,0	40	1,8	0,359	4	67,20
22 1450 0365	0,365	3,5	3,0	40	1,8	0,364	4	67,20
22 1450 0370	0,370	3,5	3,0	40	1,8	0,369	4	67,20
22 1450 0375	0,375	3,5	3,0	40	1,8	0,374	4	67,20
22 1450 0380	0,380	3,5	3,0	40	1,8	0,379	4	67,20
22 1450 0385	0,385	3,5	3,0	40	1,8	0,384	4	67,20
22 1450 0390	0,390	3,5	3,0	40	1,8	0,389	4	67,20
22 1450 0395	0,395	3,5	3,0	40	1,8	0,394	4	67,20

Art.	d1 ± 0,001	l3	d2 h6	l1	l2 /- 0,1	d3 -0,001	Z	€
22 1450 0400	0,400	4,0	3,0	40	2,0	0,399	4	66,60
22 1450 0405	0,405	4,0	3,0	40	2,0	0,404	4	66,60
22 1450 0410	0,410	4,0	3,0	40	2,0	0,409	4	66,60
22 1450 0415	0,415	4,0	3,0	40	2,0	0,414	4	66,60
22 1450 0420	0,420	4,0	3,0	40	2,0	0,419	4	66,60
22 1450 0425	0,425	4,0	3,0	40	2,0	0,424	4	66,60
22 1450 0430	0,430	4,0	3,0	40	2,0	0,429	4	66,60
22 1450 0435	0,435	4,0	3,0	40	2,0	0,434	4	66,60
22 1450 0440	0,440	4,0	3,0	40	2,0	0,439	4	66,60
22 1450 0445	0,445	4,0	3,0	40	2,0	0,444	4	66,60
22 1450 0450	0,450	4,0	3,0	40	2,0	0,449	4	66,60
22 1450 0455	0,455	4,0	3,0	40	2,0	0,454	4	66,60
22 1450 0460	0,460	4,0	3,0	40	2,0	0,459	4	66,60
22 1450 0465	0,465	4,0	3,0	40	2,0	0,464	4	66,60
22 1450 0470	0,470	4,0	3,0	40	2,0	0,469	4	66,60
22 1450 0475	0,475	4,0	3,0	40	2,0	0,474	4	66,60
22 1450 0480	0,480	4,0	3,0	40	2,0	0,479	4	66,60
22 1450 0485	0,485	4,0	3,0	40	2,0	0,484	4	66,60
22 1450 0490	0,490	4,0	3,0	40	2,0	0,489	4	66,60
22 1450 0495	0,495	4,0	3,0	40	2,0	0,494	4	66,60
22 1450 0500	0,500	5,0	3,0	40	2,4	0,499	4	66,00
22 1450 0505	0,505	5,0	3,0	40	2,4	0,504	4	66,00
22 1450 0510	0,510	5,0	3,0	40	2,4	0,509	4	66,00
22 1450 0515	0,515	5,0	3,0	40	2,4	0,514	4	66,00
22 1450 0520	0,520	5,0	3,0	40	2,4	0,519	4	66,00
22 1450 0525	0,525	5,0	3,0	40	2,4	0,524	4	66,00
22 1450 0530	0,530	5,0	3,0	40	2,4	0,529	4	66,00
22 1450 0535	0,535	5,0	3,0	40	2,4	0,534	4	66,00
22 1450 0540	0,540	5,0	3,0	40	2,4	0,539	4	66,00
22 1450 0545	0,545	5,0	3,0	40	2,4	0,544	4	66,00
22 1450 0550	0,550	5,0	3,0	40	2,4	0,549	4	66,00
22 1450 0555	0,555	5,0	3,0	40	2,4	0,554	4	66,00
22 1450 0560	0,560	5,0	3,0	40	2,4	0,559	4	66,00
22 1450 0565	0,565	5,0	3,0	40	2,4	0,564	4	66,00
22 1450 0570	0,570	5,0	3,0	40	2,4	0,569	4	66,00
22 1450 0575	0,575	5,0	3,0	40	2,4	0,574	4	66,00
22 1450 0580	0,580	5,0	3,0	40	2,4	0,579	4	66,00
22 1450 0585	0,585	5,0	3,0	40	2,4	0,584	4	66,00
22 1450 0590	0,590	5,0	3,0	40	2,4	0,589	4	66,00
22 1450 0595	0,595	5,0	3,0	40	2,4	0,594	4	66,00

% Sonderpreis / Sale Artikel. Lieferbar solange Vorrat.
 Special price / sale article. While stocks last.

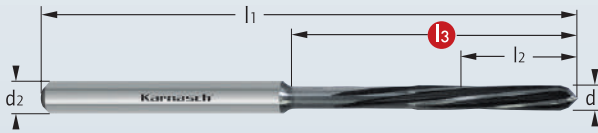


Miniatur- Vollhartmetall- Präzisionsreibahlen HPC. Linksspirale, rechtsschneidend
 Miniature Micro Grain high-speed reamers / HPC. Left hand spiral fluted, right hand cutting



22 1452

- HRC < 45** MESSING brass
- INOX** stainless steel < 900 N/mm² ferritic KUPFER copper
- INOX** stainless steel > 900 N/mm² martensitic Gold gold
- INOX** stainless steel < 900 N/mm² austenitic kurzspanend short chip
- GG/G** cast iron langspanend long chip
- Aluminium**



Zwischenabmessungen und Sondertoleranzen sind auf Anfrage kurzfristig Lieferbar.

Intermediate sizes and special tolerances are available at short notice on request.

MICRO GRAIN	KARNASCH NORM
SPEZIAL SPECIAL	Form HA
	30° 7°
	HPC
	POLIERT POLISHED

Schnittdaten
Cutting data

1389

Art.	d1	+0,003	l3	d2	l1	l2	Z	€
22 1452 0080	0,80	+0,003	10	0,80	34	7	4	37,20
22 1452 0090	0,90	+0,003	10	0,90	34	7	4	37,20
22 1452 0098	0,98	+0,004	21	4,0	50	6	3	36,60
22 1452 0101	1,01	+0,004	21	4,0	50	6	3	36,60
22 1452 0102	1,02	+0,004	21	4,0	50	6	3	36,60
22 1452 0103	1,03	+0,004	21	4,0	50	6	3	36,60
22 1452 0148	1,48	+0,004	21	4,0	50	9	3	36,60
22 1452 0160	1,60 H7		21	4,0	50	12	3	40,80
22 1452 0201	2,01	+0,004	21	4,0	50	12	4	36,60
22 1452 0248	2,48	+0,004	31	4,0	60	16	4	36,60
22 1452 0249	2,49	+0,004	31	4,0	60	16	4	36,60
22 1452 0250	2,50 H7		31	4,0	60	16	4	36,60
22 1452 0280	2,80 H7		35	4,0	63	16	6	42,00
22 1452 0297	2,97	+0,004	35	4,0	63	16	6	38,40
22 1452 0298	2,98	+0,004	35	4,0	63	16	6	38,40
22 1452 0302	3,02	+0,004	35	4,0	63	16	6	38,40
22 1452 0303	3,03	+0,004	35	4,0	63	16	6	38,40

% Sonderpreis / Sale Artikel. Lieferbar solange Vorrat.
 Special price / sale article. While stocks last.



22 1490

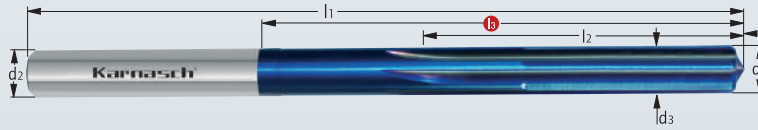
Vollhartmetall Maschinenreibahle für die Hartbearbeitung HHC, < 67 HRC, gerade genutet, rechtsschneidend
Micro grain machine reamers for high hard material HHC < 67 HRC straight fluted, right hand cut



HRC 55-67

GJL

GJS



MICRO GRAIN	KARNASCH NORM
SPEZIAL SPECIAL	DIN 6535 Form HA
	30° 0°
	HHC
	FX-70

Art.	d1 H7	l3	d2 h7	l2	l1	Z	€
22 1490 0297	2,97	30	4	16	65	4	92,00
22 1490 0298	2,98	30	4	16	65	4	92,00
22 1490 0299	2,99	30	4	16	65	4	92,00
22 1490 0300	3,00	30	4	16	65	4	92,00
22 1490 0301	3,01	30	4	16	65	4	92,00
22 1490 0302	3,02	30	4	16	65	4	92,00
22 1490 0303	3,03	30	4	16	65	4	92,00
22 1490 0397	3,97	40	4	20	75	4	92,00
22 1490 0398	3,98	40	4	20	75	4	92,00
22 1490 0399	3,99	40	4	20	75	4	92,00
22 1490 0400	4,00	40	4	20	75	4	92,00
22 1490 0401	4,01	40	4	20	75	4	92,00
22 1490 0402	4,02	40	4	20	75	4	92,00
22 1490 0403	4,03	40	4	20	75	4	92,00
22 1490 0497	4,97	50	6	25	92	6	114,00
22 1490 0498	4,98	50	6	25	92	6	114,00
22 1490 0499	4,99	50	6	25	92	6	114,00
22 1490 0500	5,00	50	6	25	92	6	114,00
22 1490 0501	5,01	50	6	25	92	6	114,00
22 1490 0502	5,02	50	6	25	92	6	114,00
22 1490 0503	5,03	50	6	25	92	6	114,00
22 1490 0597	5,97	50	6	25	92	6	114,00
22 1490 0598	5,98	50	6	25	92	6	114,00
22 1490 0599	5,99	50	6	25	92	6	114,00
22 1490 0600	6,00	50	6	25	92	6	114,00
22 1490 0601	6,01	50	6	25	92	6	114,00
22 1490 0602	6,02	50	6	25	92	6	114,00
22 1490 0603	6,03	50	6	25	92	6	114,00
22 1490 0797	7,97	75	8	30	115	6	142,00
22 1490 0798	7,98	75	8	30	115	6	142,00
22 1490 0799	7,99	75	8	30	115	6	142,00
22 1490 0800	8,00	75	8	30	115	6	142,00
22 1490 0801	8,01	75	8	30	115	6	142,00
22 1490 0802	8,02	75	8	30	115	6	142,00
22 1490 0803	8,03	75	8	30	115	6	142,00
22 1490 0997	9,97	85	10	40	130	6	173,00
22 1490 0998	9,98	85	10	40	130	6	173,00
22 1490 0999	9,99	85	10	40	130	6	173,00
22 1490 1000	10,00	85	10	40	130	6	173,00
22 1490 1001	10,01	85	10	40	130	6	173,00
22 1490 1002	10,02	85	10	40	130	6	173,00
22 1490 1003	10,03	85	10	40	130	6	173,00
22 1490 1197	11,97	100	12	45	150	6	227,00
22 1490 1198	11,98	100	12	45	150	6	227,00
22 1490 1199	11,99	100	12	45	150	6	227,00
22 1490 1200	12,00	100	12	45	150	6	227,00
22 1490 1201	12,01	100	12	45	150	6	227,00
22 1490 1202	12,02	100	12	45	150	6	227,00
22 1490 1203	12,03	100	12	45	150	6	227,00

Schnittdaten Cutting data

Zeichnungen Drawings

1389

DXF/STEP

Zwischenabmessungen auf Anfrage lieferbar / Intermediate dimensions available on request