

Dehnbarkeit:

Extensibilité

Extensibility

- Ø 2 - 5.5 mm = 0.1 mm
- Ø 6 - 12 mm = 0.2 mm
- Ø 13 - 20 mm = 0.3 mm
- Ø 21 - 35 mm = 0.4 mm
- Ø 36 - 45 mm = 0.5 mm
- Ø 46 - 55 mm = 0.6 mm

Läpppaste zu Läppahlen

- in verschiedenen Körnungen und Mengen in gebrauchsfertigem Zustand erhältlich
- Körnung von 60 - 1000 in Tuben zu 150 Gramm oder Dosen zu 350 Gramm und 1 kg
- Empfohlene Körnung für 4387.. (Feinläppen): 400, 500 oder 600

Pâte à roder pour rodoir

- livrable en différents grains et quantités, prête à l'emploi
- Grains 60 à 1000 en tubes de 150 gr. ou en boîtes de 350 gr et 1 kg
- Pour les rodoir art. 4.387 l'emploi des grains 400/500 ou 600 est recommandé

Lapping paste

- in various grains and volumes ready to use available
- grain sizes from 60 - 1000 in tubes of 150 grams or cans of 350 gramm or 1 kg available
- recommended grain sizes for 4387.. (precision lapping): 400, 500 or 600

4388..

| 4.388118 | Best Nr./no.cde order no. 4388,15 | Best Nr./no.cde order no. 4388,35 | Best Nr./no.cde order no. 4388,1 | Best Nr./no.cde order no. 4388,15 | Best Nr./no.cde order no. 4388,35 | Best Nr./no.cde order no. 4388,1 | |
|--------------|---|---|--|---|---|--|------------------|
| Korn | Tube 150 gr. | Dose 350 gr. | Dose 1 kg | Korn | Tube 150 gr. | Dose 350 gr. | Dose 1 kg |
| grain | tube 150 gr. | dose 350 gr. | dose 1 kg | grain | tube 150 gr. | dose 350 gr. | dose 1 kg |
| | CHF | CHF | CHF | | CHF | CHF | CHF |
| 60 | 8,30 | 15,80 | 36,90 | 250 | 8,90 | 17,00 | 41,90 |
| 80 | 8,30 | 15,80 | 36,90 | 300 | 8,90 | 17,00 | 41,90 |
| 100 | 8,30 | 15,80 | 36,90 | 350 | 9,90 | 18,40 | 44,30 |
| 120 | 8,30 | 15,80 | 36,90 | 400 | 10,50 | 19,80 | 48,80 |
| 150 | 8,30 | 15,80 | 36,90 | 500 | 10,70 | 20,50 | 57,00 |
| 180 | 8,30 | 15,80 | 36,90 | 600 | 11,10 | 22,70 | 62,00 |
| 200 | 8,90 | 17,00 | 41,90 | 800 | 12,00 | 23,80 | 69,50 |
| 220 | 8,90 | 17,00 | 41,90 | 1000 | 13,10 | 25,30 | 75,30 |



Handreibahlen

- nach DIN 206 aus HSS
- Spiralgezahnt mit Linksdrall 8°
- Toleranz H7, Schaft mit Vierkant

Alésoirs à main

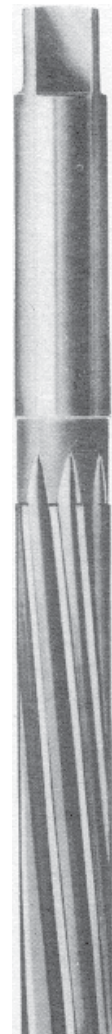
- selon DIN 206 en acier HSS
- hélice à gauche 8°
- tolérance H7, queue cyl.avec carré

Hand reamers

- acc.DIN 206 from HSS
- twisted leftwise, helix 8°
- tolerance H7, shank with square

4385..

| D | Schnittlänge | | Gesamtlänge | Best.Nr. | Katalog | | Aktion | D | Schnittlänge | | Gesamtlänge | Best.Nr. | Katalog | | Aktion |
|----------|---------------|--------------|-------------|----------|-----------|-------------|--------------|---------|---------------|-------------|-------------|----------|-----------|--------|--------|
| | long. de cpe. | long.totale | | | catalogue | action | | | long. de cpe. | long.totale | | | catalogue | action | |
| 4.385217 | cutt.length | total length | no.cde. | CHF | CHF | cutt.length | total length | no.cde. | CHF | CHF | | | | | |
| mm | mm | mm | order no. | | | mm | mm | mm | order no. | | | | | | |
| 1,50 | 20 | 41 | 4385. 0150 | 70,30 | 58,50 | 18,00 | 93 | 188 | 4385. 1800 | 153,00 | 127,50 | | | | |
| 1,60* | 20 | 41 | 4385. 0160 | 80,80 | 84,10 | 18,50 | 93 | 188 | 4385. 1850 | 184,20 | 153,50 | | | | |
| 2,00 | 25 | 50 | 4385. 0200 | 48,50 | 40,50 | 19,00 | 93 | 188 | 4385. 1900 | 165,20 | 137,70 | | | | |
| 2,20 | 25 | 50 | 4385. 0220 | 37,10 | 30,90 | 19,50 | 93 | 188 | 4385. 1950 | 181,32 | 151,10 | | | | |
| 2,50 | 29 | 58 | 4385. 0250 | 47,80 | 39,80 | 20,00 | 100 | 201 | 4385. 2000 | 162,20 | 135,10 | | | | |
| 2,80 | 29 | 58 | 4385. 0280 | 37,10 | 30,90 | 21,00 | 100 | 201 | 4385. 2100 | 136,60 | 113,80 | | | | |
| 3,00 | 31 | 62 | 4385. 0300 | 50,20 | 41,90 | 21,50 | 100 | 201 | 4385. 2150 | 229,00 | 197,50 | | | | |
| 3,20 | 31 | 62 | 4385. 0320 | 37,10 | 30,90 | 22,00 | 107 | 215 | 4385. 2200 | 188,40 | 157,00 | | | | |
| 3,50 | 35 | 71 | 4385. 0350 | 59,00 | 49,10 | 23,00 | 107 | 215 | 4385. 2300 | 162,20 | 135,10 | | | | |
| 4,00 | 38 | 76 | 4385. 0400 | 42,40 | 35,40 | 24,00 | 115 | 231 | 4385. 2400 | 216,10 | 180,10 | | | | |
| 4,50 | 41 | 81 | 4385. 0450 | 52,00 | 43,40 | 25,00 | 115 | 231 | 4385. 2500 | 222,40 | 185,30 | | | | |
| 5,00 | 44 | 87 | 4385. 0500 | 50,20 | 41,90 | 26,00 | 115 | 231 | 4385. 2600 | 234,80 | 195,60 | | | | |
| 5,50 | 47 | 93 | 4385. 0550 | 53,90 | 44,90 | 27,00 | 124 | 247 | 4385. 2700 | 125,00 | 187,50 | | | | |
| 6,00 | 50 | 100 | 4385. 0600 | 48,50 | 40,50 | 28,00 | 124 | 247 | 4385. 2800 | 302,60 | 252,20 | | | | |
| 6,50 | 50 | 100 | 4385. 0650 | 49,50 | 43,50 | 29,00 | 124 | 247 | 4385. 2900 | 270,00 | 225,00 | | | | |
| 7,00 | 54 | 107 | 4385. 0700 | 52,50 | 43,80 | 30,00 | 124 | 247 | 4385. 3000 | 319,60 | 266,40 | | | | |
| 7,50 | 54 | 107 | 4385. 0750 | 53,00 | 46,80 | 31,00 | 133 | 265 | 4385. 3100 | 276,60 | 238,80 | | | | |
| 8,00 | 58 | 115 | 4385. 0800 | 55,30 | 46,20 | 32,00 | 133 | 265 | 4385. 3200 | 333,60 | 277,90 | | | | |
| 8,50 | 58 | 115 | 4385. 0850 | 58,50 | 49,90 | 33,00 | 133 | 265 | 4385. 3300 | 315,00 | 262,50 | | | | |
| 9,00 | 62 | 124 | 4385. 0900 | 62,20 | 51,90 | 34,00 | 142 | 284 | 4385. 3400 | 393,00 | 327,50 | | | | |
| 9,50 | 62 | 124 | 4385. 0950 | 63,60 | 53,00 | 35,00 | 142 | 284 | 4385. 3500 | 409,20 | 341,00 | | | | |
| 10,00 | 66 | 133 | 4385. 1000 | 62,20 | 51,90 | 36,00 | 142 | 284 | 4385. 3600 | 440,10 | 366,80 | | | | |
| 10,50 | 66 | 133 | 4385. 1050 | 71,70 | 59,90 | 37,00 | 142 | 284 | 4385. 3700 | 397,60 | 331,30 | | | | |
| 11,00 | 71 | 142 | 4385. 1100 | 68,90 | 57,40 | 38,00 | 152 | 305 | 4385. 3800 | 459,50 | 416,30 | | | | |
| 11,50 | 71 | 142 | 4385. 1150 | 80,20 | 66,90 | 39,00 | 152 | 305 | 4385. 3900 | 429,00 | 357,50 | | | | |
| 12,00 | 76 | 152 | 4385. 1200 | 73,90 | 61,50 | 40,00 | 152 | 305 | 4385. 4000 | 537,30 | 447,70 | | | | |
| 12,50 | 76 | 152 | 4385. 1250 | 105,70 | 88,10 | 41,00 | 152 | 305 | 4385. 4100 | 496,00 | 413,80 | | | | |
| 13,00 | 76 | 152 | 4385. 1300 | 108,80 | 90,60 | 42,00 | 152 | 305 | 4385. 4200 | 606,80 | 505,70 | | | | |
| 13,50 | 76 | 152 | 4385. 1350 | 125,50 | 104,60 | 43,00 | 163 | 326 | 4385. 4300 | 622,60 | 518,80 | | | | |
| 14,00 | 81 | 163 | 4385. 1400 | 119,20 | 99,30 | 44,00 | 163 | 326 | 4385. 4400 | 600,00 | 500,00 | | | | |
| 14,50 | 81 | 163 | 4385. 1450 | 125,50 | 104,60 | 45,00 | 163 | 326 | 4385. 4500 | 679,40 | 566,10 | | | | |
| 15,00 | 81 | 163 | 4385. 1500 | 125,10 | 104,30 | 46,00 | 163 | 326 | 4385. 4600 | 676,60 | 563,80 | | | | |
| 15,50 | 81 | 163 | 4385. 1550 | 175,50 | 146,30 | 47,00 | 163 | 326 | 4385. 4700 | 718,60 | 598,80 | | | | |
| 16,00 | 87 | 175 | 4385. 1600 | 131,20 | 109,20 | 48,00 | 174 | 347 | 4385. 4800 | 763,50 | 636,30 | | | | |
| 16,50 | 87 | 175 | 4385. 1650 | 150,00 | 125,00 | 49,00 | 174 | 347 | 4385. 4900 | 819,00 | 682,50 | | | | |
| 17,00 | 87 | 175 | 4385. 1700 | 137,50 | 114,60 | 50,00 | 174 | 347 | 4385. 5000 | 785,80 | 654,90 | | | | |
| 17,50 | 87 | 175 | 4385. 1750 | 181,55 | 151,30 | | | | | | | | | | |



4386..

DIN 859

Nachstellbare Handreibahlen *Alésours extensibles à main*

- Aus HSS, DIN 859
- Spiralgezahnt, Toleranz H7

- en HSS, selon DIN 859
- taille hélicoïdale, tolérance H7

Ajustable hand reamers

- from HSS, acc.DIN 859
- Spiralgezhant, Toleranz H7



| 4386217 | Schnitt- Schnittlänge D Long.de couy cutt. Length | Gesamt- Totallänge Long totale total length | Best.Nr. no.cde. order no. | Katalog catalogue catalogue | Aktion action promotion | Schnitt- Schnittlänge D Long.de coupe cutt. Length | Gesamt- Totallänge Long totale total length | Best.Nr. no.cde. order no. | Katalog catalogue catalogue | Aktion action promotion | |
|---------|--|--|----------------------------------|-----------------------------------|-------------------------------|---|--|----------------------------------|-----------------------------------|-------------------------------|---------|
| mm | mm | mm | | CHF | CHF | mm | mm | mm | CHF | CHF | |
| 4,00 | 38 | 90 | 4386. 0400 | 82,40 | 62,40 | 26,00 | 95 | 250 | 4386. 2600 | 333,60 | 251,90 |
| 4,50 | 25 | 80 | 4386. 0450 | 120,00 | 79,00 | 27,00 | 105 | 270 | 4386. 2700 | 446,00 | 336,70 |
| 5,00 | 38 | 95 | 4386. 0500 | 82,40 | 62,40 | 28,00 | 105 | 270 | 4386. 2800 | 351,80 | 565,60 |
| 6,00 | 40 | 115 | 4386. 0600 | 88,60 | 71,30 | 29,00 | 110 | 280 | 4386. 2900 | 504,00 | 380,50 |
| 7,00 | 45 | 120 | 4386. 0700 | 103,20 | 77,90 | 30,00 | 110 | 280 | 4386. 3000 | 367,00 | 277,10 |
| 8,00 | 50 | 125 | 4386. 0800 | 101,60 | 76,70 | 31,00 | 110 | 285 | 4386. 3100 | 532,00 | 401,70 |
| 9,00 | 50 | 130 | 4386. 0900 | 108,00 | 81,50 | 32,00 | 115 | 290 | 4386. 3200 | 495,00 | 373,70 |
| 10,00 | 55 | 140 | 4386. 1000 | 115,50 | 87,20 | 34,00 | 120 | 295 | 4386. 3400 | 586,00 | 442,40 |
| 11,00 | 55 | 145 | 4386. 1100 | 135,00 | 101,90 | 35,00 | 120 | 295 | 4386. 3500 | 540,00 | 407,70 |
| 12,00 | 55 | 155 | 4386. 1200 | 127,00 | 95,90 | 36,00 | 125 | 300 | 4386. 3600 | 688,00 | 519,40 |
| 13,00 | 60 | 160 | 4386. 1300 | 153,10 | 122,50 | 37,00 | 125 | 300 | 4386. 3700 | 844,00 | 637,20 |
| 14,00 | 65 | 170 | 4386. 1400 | 156,40 | 129,00 | 38,00 | 130 | 305 | 4386. 3800 | 737,00 | 566,40 |
| 15,00 | 70 | 175 | 4386. 1500 | 155,20 | 117,20 | 40,00 | 135 | 310 | 4386. 4000 | 737,00 | 556,40 |
| 16,00 | 70 | 180 | 4386. 1600 | 204,10 | 154,10 | 42,00 | 140 | 325 | 4386. 4200 | 834,00 | 629,70 |
| 17,00 | 70 | 190 | 4386. 1700 | 240,40 | 181,50 | 44,00 | 145 | 340 | 4386. 4400 | 1198,00 | 904,50 |
| 18,00 | 75 | 195 | 4386. 1800 | 203,40 | 153,60 | 45,00 | 150 | 350 | 4386. 4500 | 1198,00 | 504,50 |
| 19,00 | 75 | 205 | 4386. 1900 | 208,00 | 157,00 | 46,00 | 150 | 355 | 4386. 4600 | 1306,00 | 986,00 |
| 20,00 | 80 | 210 | 4386. 2000 | 216,00 | 163,10 | 48,00 | 160 | 365 | 4386. 4800 | 1246,00 | 940,70 |
| 21,00 | 85 | 215 | 4386. 2100 | 279,00 | 210,70 | 50,00 | 165 | 375 | 4386. 5000 | 1320,00 | 996,60 |
| 22,00 | 85 | 225 | 4386. 2200 | 256,40 | 193,60 | 52,00 | 170 | 380 | 4386. 5200 | 1498,00 | 1108,30 |
| 23,00 | 90 | 230 | 4386. 2300 | 310,00 | 234,10 | 55,00 | 170 | 400 | 4386. 5500 | 1541,40 | 1163,70 |
| 24,00 | 90 | 240 | 4386. 2400 | 282,60 | 213,40 | 58,00 | 175 | 415 | 4386. 5800 | 1870,00 | 1411,90 |
| 25,00 | 95 | 245 | 4386. 2500 | 282,60 | 231,40 | 60,00 | 180 | 425 | 4386. 6000 | 1785,00 | 1347,70 |

Verstellbarkeit E *Expansibilité E* *Ajustability E*

4.386A210

| Ø mm | 3 - 5.5 | 6 - 10 | 11 - 15 | 16 - 22 | 23 - 30 | 31 - 45 | 46 - 60 |
|------|---------|--------|---------|---------|---------|---------|---------|
| E mm | 0,03 | 0.1 | 0.15 | 0.20 | 0.30 | 0.40 | 0.50 |

4389..

Schnellverstellreibahlen

- mit Messern B33
- aus Hochleistungsstahl
- Schnitt auf der Messerkante

Alésours à réglage rapide

- à lames B 33
- en acier super-rapide
- coupe sur l'arête des lames

Rapid adjustable reamers

- with blades B33
- from high performance steel
- cut on the edges of the blades



| Grösse Grandeur size | Bereich Capacité range | Ganze Länge Longueur totale total length | Messerlänge Long. des lames blade length | Best.Nr. no.cde. order no. | Katalog catalogue catalogue | Aktion action promotion |
|----------------------------|------------------------------|--|--|----------------------------------|-----------------------------------|-------------------------------|
| 4.389217 | [mm] | [mm] | [mm] | | CHF | CHF |
| V | 6.35 - 7 | 108 | 35 | 4389. 002 | 162,00 | 135,00 |
| W | 7 - 8 | 108 | 35 | 4389. 004 | 163,00 | 135,80 |
| Z | 8 - 8.75 | 111 | 35 | 4389. 008 | 164,50 | 137,10 |
| Y | 8.75 - 9.5 | 124 | 41 | 4389. 006 | 164,50 | 137,10 |
| 1 | 9.5 - 10.25 | 121 | 38 | 4389. 010 | 166,30 | 138,60 |
| 2 | 10.25 - 11 | 127 | 38 | 4389. 020 | 168,20 | 140,10 |
| 3 | 11 - 12 | 133 | 41 | 4389. 030 | 169,90 | 141,60 |
| 4 | 12 - 13.5 | 140 | 41 | 4389. 040 | 172,40 | 143,60 |
| 5 | 13.5 - 15 | 146 | 46 | 4389. 050 | 175,20 | 146,00 |
| 6 | 15 - 16.75 | 165 | 52 | 4389. 060 | 179,40 | 149,50 |
| 7 | 16.75 - 18.25 | 171 | 56 | 4389. 070 | 183,00 | 152,50 |
| 8 | 18.25 - 19.75 | 178 | 64 | 4389. 080 | 194,80 | 162,40 |
| 9 | 19.75 - 21.5 | 187 | 67 | 4389. 090 | 201,70 | 168,10 |
| 10 | 21.5 - 23.75 | 203 | 16 | 4389. 100 | 216,80 | 180,60 |
| 11 | 23.75 - 27 | 229 | 82 | 4389. 110 | 245,10 | 204,20 |
| 12 | 27 - 30.25 | 254 | 86 | 4389. 120 | 277,50 | 231,20 |
| 13 | 30.25 - 34.25 | 279 | 98 | 4389. 130 | 329,00 | 274,10 |
| 14 | 34.25 - 38 | 305 | 108 | 4389. 140 | 374,30 | 311,90 |
| 15 | 38 - 46 | 356 | 113 | 4389. 150 | 463,40 | 386,20 |
| 16 | 46 - 56 | 406 | 127 | 4389. 160 | 656,00 | 547,40 |
| 17 | 56 - 70 | 457 | 123 | 4389. 170 | 1179,40 | 982,80 |
| 18 | 70 - 85 | 508 | 132 | 4389. 180 | 1645,90 | 1371,60 |

Schnellverstellreibahlen Alésoirs à réglage rapide Ajustable hand reamer

4390..

- Mit Messern B 47-Schnitt auf den Messerrücken aus Hochleistungsstahl
- Für Guss, Messing, Phosphor- und Aluminium-Bronze, auch bei unterbrochenen Bohrungswänden
- à lames B 47 en acier super rapide coupe sur le dos des lames coupe douce pour l'usinage de la fonte du laiton, du bronze etc même dans des trous rainurés
- with blades B 47-cut on the back of the blade, from high speed steel
- for cast iron, brass, phosphor and aluminium bronze, suitable also on discontinued hole walls

| Grösse Grandeur size | Bereich Capacité range [mm] | Ganze Länge Longueur totale total length [mm] | Messerlänge Long. des lames blade length [mm] | Best.Nr. no.cde. order no. | Karalog catalogue catalogue CHF | Aktion action promotion CHF |
|----------------------------|--|--|--|----------------------------------|--|--------------------------------------|
| 4.390217 | | | | | | |
| 1 | 9.5 - 10.25 | 121 | 38 | 4390. 010 | 197,10 | 164,30 |
| 2 | 10.25 - 11 | 127 | 38 | 4390. 020 | 198,60 | 165,50 |
| 3 | 11 - 12 | 133 | 41 | 4390. 030 | 204,10 | 170,10 |
| 4 | 12 - 13.5 | 140 | 41 | 4390. 040 | 209,70 | 174,80 |
| 5 | 13.5 - 15 | 146 | 46 | 4390. 050 | 213,30 | 177,80 |
| 6 | 15 - 16.75 | 165 | 52 | 4390. 060 | 218,20 | 181,80 |
| 7 | 16.75 - 18.25 | 171 | 56 | 4390. 070 | 224,90 | 187,40 |
| 8 | 18.25 - 19.75 | 178 | 64 | 4390. 080 | 237,80 | 198,20 |
| 9 | 19.75 - 21.5 | 187 | 67 | 4390. 090 | 246,00 | 205,00 |
| 10 | 21.5 - 23.75 | 203 | 16 | 4390. 100 | 267,40 | 222,80 |
| 11 | 23.75 - 27 | 229 | 82 | 4390. 110 | 280,70 | 233,90 |
| 12 | 27 - 30.25 | 254 | 86 | 4390. 120 | 326,20 | 271,80 |
| 13 | 30.25 - 34.25 | 279 | 98 | 4390. 130 | 378,80 | 315,60 |
| 14 | 34.25 - 38 | 305 | 108 | 4390. 140 | 465,50 | 387,90 |
| 15 | 38 - 46 | 356 | 113 | 4390. 150 | 565,50 | 471,20 |
| 16 | 46 - 56 | 406 | 127 | 4390. 160 | 832,30 | 693,50 |
| 17 | 56 - 70 | 457 | 123 | 4390. 170 | 1415,00 | 1179,20 |
| 18 | 70 - 85 | 508 | 132 | 4390. 180 | 1883,80 | 1569,60 |



Sätze in Holzetuis und Ersatzmesser auf Anfrage/Sets in wooden box and replacement blades on request/Jeux en étuis de bois et lames de rechange sur demande

Verlängerungen mit Führungsbüchse

Verwandeln die Schnellverstellreibahnen 4398.. oder 4390.. in Führungsbüchsen Ersetzen der Anzugsmutter mit dem gehärteten Ring und Einschrauben der Führung

Pilotes à douille de guidage

pour transformer un alésoir 4398.. ou 4390.. en alésoir à guide Remplacer l'écrou en bout par la bague trempée et visser la rallonge

Screw on extension pilots

The pilots transform the rapid adjustable handreamers 4398.. or 4390.. in guided reamers. Replacement of the tightening nut with the hardened ring and screw the pilot in.

4393..

| Grösse Grandeur size | Bereich Capacité range [mm] | Länge der Führ. Long. du pilote length of pilots [mm] | Best.Nr. no.cde. order no. | Karalog catalogue catalogue CHF | Aktion action promotion CHF |
|----------------------------|--|--|----------------------------------|--|--------------------------------------|
| 4393217 | | | | | |
| W | 6.35 - 7 | 89 | 4393. 002 | 113,40 | 94,50 |
| Z | 7 - 8 | 89 | 4393. 004 | 113,40 | 94,50 |
| Y | 8 - 8.75 | 89 | 4393. 008 | 113,40 | 94,50 |
| | 8.75 - 9.5 | 89 | 4393. 006 | 113,40 | 94,50 |
| 1 | 9.5 - 10.25 | 127 | 4393. 010 | 121,00 | 100,80 |
| 2 | 10.25 - 11 | 127 | 4393. 020 | 121,00 | 100,80 |
| 3 | 11 - 12 | 127 | 4393. 030 | 121,00 | 100,80 |
| 4 | 12 - 13.5 | 127 | 4393. 040 | 126,00 | 105,00 |
| 5 | 13.5 - 15 | 127 | 4393. 050 | 126,00 | 105,00 |
| 6 | 15 - 16.75 | 127 | 4393. 060 | 131,00 | 109,20 |
| 7 | 16.75 - 18.25 | 150 | 4393. 070 | 136,10 | 113,40 |
| 8 | 18.25 - 19.75 | 150 | 4393. 080 | 201,60 | 168,00 |
| 9 | 19.75 - 21.5 | 150 | 4393. 090 | 221,90 | 184,80 |
| 10 | 21.5 - 23.75 | 150 | 4393. 100 | 234,40 | 195,30 |
| 11 | 23.75 - 27 | 150 | 4393. 110 | 247,00 | 205,80 |
| 12 | 27 - 30.25 | 150 | 4393. 120 | 264,60 | 220,50 |
| 13 | 30.25 - 34.25 | 150 | 4393. 130 | 277,20 | 231,00 |
| 14 | 34.25 - 38 | 150 | 4393. 140 | 302,40 | 252,00 |
| 15 | 38 - 46 | 150 | 4393. 150 | 340,20 | 283,50 |
| 16 | 46 - 56 | 150 | 4393. 160 | 423,40 | 262,80 |
| 17 | 56 - 70 | 178 | 4393. 170 | 630,00 | 525,00 |
| 18 | 70 - 85 | 178 | 4393. 180 | 743,40 | 619,50 |

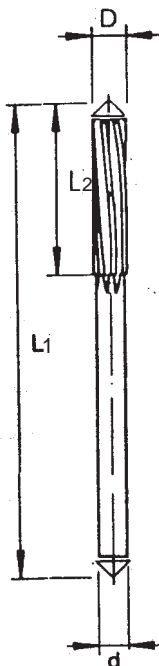


4396..(HSS-E) Maschinen-Reibahlen
4396TIN.. Toleranz H6 in HSS-E
 nach DIN212
 (TIAlN)
 DIN212

Alésoirs à machine
Tolérance H 6 en HSS-E
 selon DIN212

Machine reamers
tolerance H6 in HSS-E
 acc. DIN212

- in **0.01mm** Steigung ab Lager ● *en pas de 0.01mm du stock* ● in **0.01mm** steps from stock
- Herstell-Tol.: +0.003mm / Schaft h6 ● *tolérance: + 0.003 mm / queue h6* ● manufact.-tol.:+0.003mm/shank h6
- spiralförmig linksgenut., rechtschn. ● *hélice à gauche, coupe à droite* ● left hand twisted., right hand cutt.
- Spiralnut 7-8°, Lippenzahl Z 6 ● *degré d'hélice 7-8°, 6 lèvres Z* ● helix 7-8°, number of flutes Z 6
- Bis Ø 2.65 mm mit Aussenzentren, ab ● *jusqu'au Ø 2.65 mm centres ex-tér.,* ● til Ø 2.65 mm with outside centers,
- Ø 2.66 mm mit Innenzentren ● *dès Ø 2.66 mm centres intér.* ● from Ø 2.66 mm with inside centres
- Für Sack- u. Durchgangsbohrungen ● *pour trous bornes et transversaux* ● for blind and trough holes
- **CrN-Beschichtung** für höhere ● *revêtement CrN pour une plus grande* ● **CrN-coating** for higher wear
- Verschleißfestigkeit bei höherer ● *résistance à l'usure avec vitesse de* ● resistance at higher cutting speeds
- Schnittgeschwindigkeit und starkem ● *coupe plus élevée et avance plus* ● and increased feeds
- Vorschub
- *rapide*

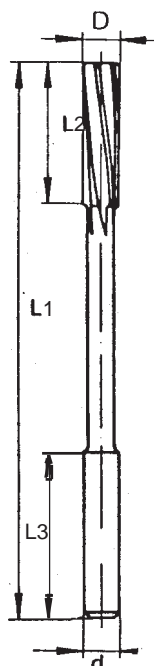


| 4.396118 | | | | | | | | | | Anschnitt- winkel angle d'entrée | | Best.Nr. / no.cde | |
|-----------------------------|-----------------------|----|----|----|------|---|--|-----|--|---|-------------------------|-------------------|--|
| Durchmesser Diamètre[mm] | Toleranz tolérance | L1 | L2 | L3 | d | Z | | | | HSS 4396.. CHF | CrN 4396TIN.. CHF | | |
| 0,59 - 0,79 | -0/+0.003 | 35 | 10 | | 1,20 | 4 | | 60° | | 26,80 | 36,40 | | |
| 0,80 - 0,85 | -0/+0.003 | 40 | 15 | | 1,20 | 4 | | 60° | | 26,80 | 36,40 | | |
| 0,86 - 1,05 | -0/+0.003 | 40 | 15 | | 1,20 | 4 | | 60° | | 25,00 | 34,00 | | |
| 1,06 - 1,18 | -0/+0.003 | 40 | 15 | | 1,20 | 4 | | 60° | | 23,40 | 32,30 | | |
| 1,19 - 1,32 | -0/+0.003 | 40 | 15 | | 1,20 | 4 | | 60° | | 23,40 | 32,30 | | |
| 1,33 - 1,50 | -0/+0.003 | 40 | 15 | | 1,50 | 4 | | 60° | | 23,40 | 32,30 | | |
| 1,51 - 1,70 | -0/+0.003 | 50 | 20 | | 2,00 | 4 | | 60° | | 23,40 | 32,30 | | |
| 1,71 - 1,90 | -0/+0.003 | 50 | 20 | | 2,00 | 4 | | 60° | | 23,40 | 32,30 | | |
| 1,91 - 2,05 | -0/+0.003 | 50 | 20 | | 2,00 | 4 | | 60° | | 23,40 | 32,30 | | |
| 2,06 - 2,12 | -0/+0.003 | 50 | 20 | | 2,00 | 4 | | 60° | | 21,30 | 31,40 | | |
| 2,13 - 2,36 | -0/+0.003 | 50 | 20 | | 2,50 | 4 | | 60° | | 21,30 | 30,20 | | |
| 2,37 - 2,65 | -0/+0.003 | 50 | 20 | | 2,50 | 4 | | 60° | | 21,30 | 30,20 | | |
| 2,66 - 2,75 | -0/+0.003 | 61 | 20 | | 2,50 | 6 | | 45° | | 21,30 | 30,20 | | |
| 2,76 - 2,90 | -0/+0.003 | 61 | 20 | | 2,50 | 6 | | 45° | | 21,30 | 28,40 | | |
| 2,91 - 3,05 | -0/+0.003 | 61 | 20 | | 2,50 | 6 | | 45° | | 21,30 | 28,40 | | |
| 3,06 - 3,20 | -0/+0.003 | 65 | 20 | | 3,00 | 6 | | 45° | | 21,30 | 33,60 | | |
| 3,21 - 3,35 | -0/+0.003 | 65 | 25 | | 3,00 | 6 | | 45° | | 21,30 | 33,60 | | |
| 3,36 - 3,55 | -0/+0.003 | 70 | 25 | | 3,00 | 6 | | 45° | | 21,30 | 33,60 | | |
| 3,56 - 3,75 | -0/+0.003 | 70 | 25 | | 3,50 | 6 | | 45° | | 21,30 | 33,60 | | |

Anschnittwinkel 45°
Toleranz -0/+0,004
Innenzentren

angle d'entrée 45°
tolérance -0/+0,004
centres intérieurs

Input angle 45°
tolerance -0/+0,004
internal centres



| 4.3961118 | | | | | | | | | | Anschnitt- winkel angle d'entrée | | Best.Nr. / no.cde | |
|-----------------------------|-----------------------|-----|----|----|------|---|--|-----|--|---|-------------------------|-------------------|--|
| Durchmesser Diamètre[mm] | Toleranz tolérance | L1 | L2 | L3 | dh6 | Z | | | | HSS-E 4396.. CHF | CRN 4396TIN.. CHF | | |
| 3,76 - 4,05 | -0/+0.004 | 75 | 25 | 32 | 4,0 | 6 | | 45° | | 21,30 | 33,60 | | |
| 4,06 - 4,25 | -0/+0.004 | 75 | 25 | 32 | 4,0 | 6 | | 45° | | 21,30 | 39,00 | | |
| 4,26 - 4,55 | -0/+0.004 | 80 | 28 | 32 | 4,5 | 6 | | 45° | | 21,30 | 39,00 | | |
| 4,56 - 4,75 | -0/+0.004 | 86 | 28 | 32 | 4,5 | 6 | | 45° | | 21,30 | 39,00 | | |
| 4,76 - 5,05 | -0/+0.004 | 86 | 28 | 34 | 5,0 | 6 | | 45° | | 21,30 | 39,00 | | |
| 5,06 - 5,30 | -0/+0.004 | 86 | 32 | 38 | 6,0 | 6 | | 45° | | 23,20 | 39,70 | | |
| 5,31 - 5,55 | -0/+0.004 | 93 | 32 | 36 | 5,5 | 6 | | 45° | | 23,60 | 39,70 | | |
| 5,56 - 6,05 | -0/+0.004 | 93 | 32 | 36 | 5,5 | 6 | | 45° | | 23,60 | 39,70 | | |
| 6,06 - 6,70 | -0/+0.004 | 101 | 32 | 38 | 6,0 | 6 | | 45° | | 26,60 | 45,90 | | |
| 6,71 - 7,05 | -0/+0.004 | 109 | 32 | 40 | 7,0 | 6 | | 45° | | 26,60 | 45,90 | | |
| 7,06 - 7,55 | -0/+0.004 | 109 | 32 | 40 | 7,0 | 6 | | 45° | | 29,30 | 49,10 | | |
| 7,56 - 8,05 | -0/+0.004 | 117 | 33 | 42 | 8,0 | 6 | | 45° | | 29,30 | 49,10 | | |
| 8,06 - 8,50 | -0/+0.004 | 117 | 33 | 42 | 8,0 | 6 | | 45° | | 30,30 | 52,90 | | |
| 8,51 - 9,05 | -0/+0.004 | 125 | 36 | 42 | 9,0 | 6 | | 45° | | 30,30 | 52,90 | | |
| 9,06 - 9,50 | -0/+0.004 | 125 | 36 | 42 | 9,0 | 6 | | 45° | | 33,70 | 56,20 | | |
| 9,51 - 10,05 | -0/+0.004 | 133 | 38 | 44 | 10,0 | 6 | | 45° | | 33,70 | 56,20 | | |
| 10,06 - 10,60 | -0/+0.004 | 133 | 38 | 44 | 10,0 | 6 | | 45° | | 37,10 | 63,00 | | |
| 10,61 - 11,05 | -0/+0.004 | 142 | 41 | 44 | 10,0 | 6 | | 45° | | 37,10 | 63,00 | | |
| 11,06 - 11,80 | -0/+0.004 | 142 | 41 | 44 | 10,0 | 6 | | 45° | | 39,40 | 65,30 | | |
| 11,81 - 12,05 | -0/+0.004 | 151 | 44 | 44 | 10,0 | 6 | | 45° | | 39,40 | 65,30 | | |
| 12,06 - 13,20 | -0/+0.004 | 151 | 44 | 44 | 10,0 | 6 | | 45° | | 45,30 | 74,10 | | |
| 13,21 - 14,05 | -0/+0.004 | 160 | 47 | 50 | 12,5 | 8 | | 45° | | 65,20 | 111,80 | | |
| 14,06 - 15,05 | -0/+0.004 | 162 | 50 | 50 | 12,5 | 8 | | 45° | | 68,40 | 117,80 | | |
| 15,06 - 16,05 | -0/+0.004 | 170 | 52 | 50 | 12,5 | 8 | | 45° | | 69,70 | 118,60 | | |
| 16,06 - 17,05 | -0/+0.004 | 175 | 54 | 52 | 14,0 | 8 | | 45° | | 73,90 | 129,80 | | |
| 17,06 - 18,05 | -0/+0.004 | 182 | 56 | 52 | 14,0 | 8 | | 45° | | 81,10 | 136,70 | | |
| 18,06 - 19,05 | -0/+0.004 | 189 | 58 | 58 | 16,0 | 8 | | 45° | | 88,00 | 193,40 | | |
| 19,06 - 20,05 | -0/+0.004 | 195 | 60 | 58 | 16,0 | 8 | | 45° | | 90,30 | 199,40 | | |

Reibahlensätze

- In plastik-oder Holzkasten übersichtlich geordnet
- Alle Masse beschriftet, **sowohl auf Schaft wie im Holzkasten**
- Preise für **HSS-E** und **TIAIN-** Beschichtung

Jeux d'alésoirs

- *etui de plastique ou de bois bien arrangé*
- *Toutes dimensions marquées sur les tiges et dans l'étuis en bois*
- prix pour matériel **HSS-E** et revêtement **TIAIN**

Reamer sets

- in plastic or wooden box clearly arranged
- all dimensions described, **as well on the shank as in the box**
- prices are for **HSS-E** and for coating with **TIALN**

4396S..

DIN 212

| Zusammensetzung/composition | | | HSS-E | | TIAIN | |
|-----------------------------|------------|-----------------------|----------------|---------|----------------|---------|
| Durchmesser | Schritt | Stückzahl | Best.Nr. | | Best.Nr. | |
| <i>diamètre</i> | <i>pas</i> | <i>nombre de pcs.</i> | <i>no.cde.</i> | | <i>no.cde.</i> | |
| diameter[mm] | step | number of pcs. | order no. | CHF | order no. | CHF |
| 0.60 - 1.01 | 0.10 | 42 | 4396S. 05 | 1024.00 | 2396S. 06 | 1249.00 |
| 0,98 - 2,01 | 0.01 | 104 | 4396S. 10 | 2079.00 | 4396S. 11 | 2623.00 |
| 1,98 - 3.01 | 0.01 | 104 | 4396S. 15 | 1906.00 | 4396S. 16 | 2463.00 |
| 2,98 - 4,01 | 0.01 | 104 | 4396S. 20 | 1894.00 | 4396S. 21 | 2759.00 |
| 3,98 - 5,01 | 0.01 | 104 | 4396S. 25 | 1956.18 | 4396S. 26 | 3178.00 |
| 4,98 - 6,01 | 0.01 | 104 | 4396S. 30 | 2026.00 | 4396S. 31 | 3273.00 |
| 6.01 - 6.50 | 0.01 | 50 | 4396S. 32 | 1163.00 | 4396S. 33 | 1862.00 |
| 6.51 - 7.00 | 0.01 | 50 | 4396S. 36 | 1163.00 | 4396S. 37 | 1862.00 |
| 7.01 - 7.50 | 0.01 | 50 | 4396S. 38 | 1272.00 | 4396S. 39 | 1962.00 |
| 7.51 - 8.00 | 0.01 | 50 | 4396S. 42 | 1272.00 | 4396S. 43 | 1962.00 |
| 8.01 - 8.50 | 0.01 | 50 | 4396S. 48 | 1318.00 | 4396S. 49 | 2108.00 |
| 8.51 - 9.00 | 0.01 | 50 | 4396S. 52 | 1322.00 | 4396S. 53 | 2118.00 |
| 9.01 - 9.50 | 0.01 | 50 | 4396S. 54 | 1446.00 | 4396S. 57 | 2234.00 |
| 9.51 - 10.00 | 0.01 | 50 | 4396S. 58 | 1461.00 | 4396S. 59 | 2243.86 |
| 10.01 - 10.50 | 0.01 | 50 | 4396S. 62 | 1579.00 | 4396S. 63 | 2487.00 |
| 10.51 - 11.00 | 0.01 | 50 | 4396S. 66 | 1610.00 | 4396S. 67 | 2517.00 |
| 11.01 - 11.50 | 0.01 | 50 | 4396S. 68 | 1713.00 | 4396S. 69 | 2613.00 |
| 11.51 - 12.00 | 0.01 | 50 | 4396S. 72 | 1713.00 | 4396S. 73 | 2613.00 |
| 12.01 - 12.50 | 0.01 | 50 | 4396S. 74 | 1966.00 | 4396S. 75 | 2956.00 |
| 12.51 - 13.00 | 0.01 | 50 | 4396S. 76 | 1965.00 | 4396S. 77 | 2961.00 |
| 0.90 - 6.00 | 0.10 | 63 | 4396S. 50 | 1229.00 | 4396S. 51 | 1756.00 |
| 6.10 - 10.00 | 0.10 | 40 | 4396S. 55 | 1061.01 | 4396S. 56 | 1649.00 |



Lieferung in Plastik-etuis, Holzetuis auf Anfrage
 Livraison boîte en plastique
 Boîte en bois sur demande
 Delivery in plastic box. wooden box on request.

Reibahlensätze

Sätze mit ausgewählten Dimensionsbereichen

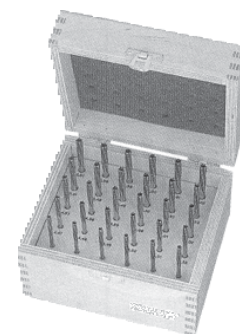
Jeux d'alésoirs

Jeux selectionés dans le domaine dimensions choisies

Sets of reamers

Sets of reamers of choosen dimension ranges

| Zusammensetzung/composition | | | HSS-E | | TIALN | |
|---|------------|---------------------|----------------|--------|----------------|---------|
| Durchmesser | Schritt | Stückzahl | Best.Nr. | | Best.Nr. | |
| <i>diamètre</i> | <i>pas</i> | <i>Nb.de pièces</i> | <i>no.cde.</i> | CHF | <i>no.cde.</i> | CHF |
| diameter[mm] | step | number of pcs. | order no. | | order no. | |
| 0,97-1.02,1.47-1.52,1.97-2.02, 2.47-2.52,2.97-3.02 | 0.01 | 30 | 4396S. 35 | 633.00 | 4396S. 34 | 798.00 |
| 1,97-2.02,2.97-3.02,3.97-4.02, 4.97-5.02,5.97-6.02, 7.97-8.02 | 0.01 | 36 | 4396S. 60 | 732.00 | 4396S. 61 | 1070.00 |
| 3,47-3.52,3.97-4.02,4.47-4.52, 4.97-5.02.5.47-5.52 | 0.01 | 30 | 4396S. 40 | 613.00 | 4396S. 41 | 928.00 |
| 5,97-6.02,6.97-7.02,7.97-8.02, | 0.01 | 30 | 4396S. 45 | 772.00 | 4396S. 46 | 1120.00 |
| 4.396SII210 | | | | | | |



Lieferung in Holzetuis
 Livraison boîte en bois
 Delivery in wooden box

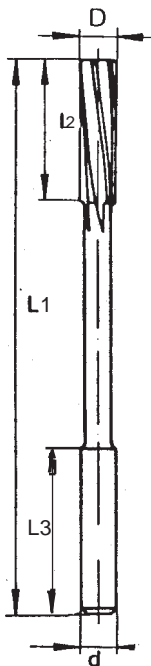
4396V..
DIN 8093

Maschinen-Reibahlen
Toleranz H6 in Hartmetall
ähnlich DIN 8093 ab **0.30mm**

Alésoirs à machine
Tolérance H 6 en métal dur
similaire DIN8093 dès **0.30 mm**

Carbide machine reamers
tolerance H6 similar DIN
8093 from **Ø 0.30mm onwards**

- in **0.01mm** Steigung, Microgr. K10 ● *pas de 0.01mm en m.grain K10* ● in **steps of 0.01mm**, microgr. K10
- Herstelltoleranz: +0.003mm/Schaft h6 ● *tolérance: +0.003mm / queue h6* ● manufacturing tol. +0.003mm/shank h6
- spiralförm. linksgenutet rechtschneid. ● *hélice à gauche, coupe à droite* ● left hand spirals, right hand cutting
- Spiralnut 12°, Lippenzahl Z 3-6, unglei- ● *degré d'hélice 12°, 3-6 lèvres Z,* ● helix 12°, no. of flutes Z 3- 6, uneven
- che Teilung, Ansnittwinkel 45° *division unégale, angle d'entrée 45°* pitch, input cutting angle 45°
- Für Sack- und Durchgangsbohrungen ● *pour trous bornes et transversaux* ● for blind and trough holes
- andere Spezialbeschichtungen und - ● *autres revêtements et dimensions* ● other coating types and dimensions on
- Dimensionen auf Anfrage *spéciales sur demande* request



| 4.396V214 | | | | | | | | Ansnittwinkel | | Art.Nr./no.cat./order no. | |
|---------------|-----------|-----|----|----|-------|---|----|-------------------|---------|---------------------------|--|
| Durchmesser | Toleranz | | | | | | | angle d'entrée | 4396V.. | 4396V10.. | |
| diamètre | tolérance | | | | | | | input cutt. angle | HM | TIALN | |
| diameter [mm] | tolerance | L1 | L2 | L3 | d | Z | ° | CHF | CHF | | |
| 0.30 - 0.49 | -0/+0,003 | 50 | 2 | - | 2.00 | 3 | 45 | 96.70 | 106.70 | | |
| 0.40 - 0.49 | -0/+0,003 | 50 | 3 | - | 2.00 | 3 | 45 | 96.70 | 106.70 | | |
| 0.50 - 0.69 | -0/+0,003 | 50 | 4 | - | 2.00 | 3 | 45 | 91.30 | 101.30 | | |
| 0.70 - 0.79 | -0/+0,003 | 50 | 6 | - | 2.00 | 3 | 45 | 82.80 | 92.80 | | |
| 0.80 - 0.96 | -0/+0,003 | 50 | 8 | - | 2.00 | 3 | 45 | 79.90 | 89.90 | | |
| 0.97 - 1.47 | -0/+0,003 | 50 | 8 | - | 2.00 | 3 | 45 | 79.90 | 89.90 | | |
| 1.47 - 1.96 | -0/+0,003 | 50 | 10 | - | 2.00 | 3 | 45 | 50.30 | 60.30 | | |
| 1.97 - 2.46 | -0/+0,003 | 50 | 10 | 25 | 2.50 | 3 | 45 | 50.30 | 60.30 | | |
| 2.47 - 2.96 | -0/+0,003 | 60 | 15 | 30 | 3.00 | 4 | 45 | 51.50 | 61.50 | | |
| 2.97 - 3.46 | -0/+0,003 | 60 | 15 | 30 | 3.50 | 4 | 45 | 51.50 | 61.50 | | |
| 3.47 - 3.96 | -0/+0,003 | 60 | 18 | 33 | 4.00 | 4 | 45 | 57.60 | 67.60 | | |
| 3.97 - 4.46 | -0/+0,003 | 60 | 20 | 35 | 4.50 | 4 | 45 | 60.00 | 70.00 | | |
| 4.47 - 4.96 | -0/+0,003 | 75 | 20 | 45 | 5.00 | 6 | 45 | 68.60 | 78.60 | | |
| 4.97 - 5.46 | -0/+0,003 | 75 | 23 | 45 | 5.50 | 6 | 45 | 71.50 | 81.50 | | |
| 5.47 - 5.96 | -0/+0,003 | 75 | 23 | 45 | 6.00 | 6 | 45 | 74.20 | 84.20 | | |
| 5.97 - 6.46 | -0/+0,003 | 75 | 23 | 45 | 6.50 | 6 | 45 | 79.90 | 89.90 | | |
| 6.47 - 6.96 | -0/+0,003 | 75 | 23 | 45 | 6.50 | 6 | 45 | 91.40 | 101.40 | | |
| 6.97 - 7.46 | -0/+0,003 | 100 | 30 | 45 | 7.50 | 6 | 45 | 100.50 | 110.50 | | |
| 7.47 - 7.96 | -0/+0,003 | 100 | 30 | 45 | 8.00 | 6 | 45 | 104.20 | 114.20 | | |
| 7.97 - 8.46 | -0/+0,003 | 100 | 30 | 45 | 8.50 | 6 | 45 | 104.20 | 114.20 | | |
| 8.47 - 8.96 | -0/+0,003 | 100 | 30 | 45 | 9.00 | 6 | 45 | 122.80 | 132.80 | | |
| 8.97 - 9.46 | -0/+0,003 | 100 | 30 | 45 | 9.50 | 6 | 45 | 123.40 | 133.40 | | |
| 9.47 - 9.96 | -0/+0,003 | 100 | 30 | 45 | 10.00 | 6 | 45 | 130.20 | 140.20 | | |
| 9.97 - 10.46 | -0/+0,003 | 100 | 30 | 45 | 10.50 | 6 | 45 | 132.00 | 142.00 | | |
| 10.47 - 10.96 | -0/+0,003 | 100 | 30 | 45 | 11.00 | 6 | 45 | 148.80 | 158.80 | | |
| 10.97 - 11.46 | -0/+0,003 | 100 | 30 | 45 | 11.50 | 6 | 45 | 162.80 | 172.80 | | |
| 11.47 - 11.96 | -0/+0,003 | 100 | 30 | 45 | 12.00 | 6 | 45 | 169.30 | 179.30 | | |
| 11.97 - 12.46 | -0/+0,003 | 100 | 30 | 45 | 12.50 | 6 | 45 | 177.60 | 187.60 | | |
| 12.47 - 12.96 | -0/+0,003 | 100 | 30 | 45 | 13.00 | 6 | 45 | 196.20 | 206.20 | | |
| 12.97 - 13.03 | -0/+0,003 | 100 | 30 | 45 | 13.50 | 6 | 45 | 206.50 | 216.50 | | |

Maschinenreibahlen H7

- Aus HSS-E,
- mit zylindrischem Schaft
- Toleranz H7
- Beschichtung CRN 439705..
- Sonderabmessungen auf Anfrage

Alésoirs à machine H7

- en HSS-E
- avec queue cylindrique
- Tolérance H7
- revêtement CRN
- dimensions spéciales sur demande

Maschine reamers H7

- from HSS-E,
- with straight shank
- tolerance H7
- coating CRN 439705..
- special dimensions on request

4397..
HSS-E
439705..
CRN
DIN 212

| | | | HSS-E | CRN | | | | HSS-E | CRN |
|-------|--|--|---------------|-----------------|-------|--|--|---------------|-----------------|
| d[mm] | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4397.. CHF | 439705.. CHF | d[mm] | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4397.. CHF | 439705.. CHF |
| 1,0 | 6 | 34 | 23,40 | 31,80 | 10,0 | 38 | 133 | 31,60 | 52,60 |
| 1,5 | 8 | 40 | 21,90 | 30,20 | 10,5 | 38 | 133 | 34,70 | 59,00 |
| 1,6 | 9 | 43 | 21,90 | 30,20 | 11,0 | 41 | 142 | 34,70 | 59,00 |
| 2,0 | 11 | 49 | 21,90 | 30,20 | 11,5 | 41 | 142 | 36,90 | 61,00 |
| 2,5 | 14 | 57 | 19,90 | 28,30 | 12,0 | 44 | 151 | 36,90 | 61,00 |
| 2,8 | 15 | 61 | 19,90 | 28,30 | 12,5 | 44 | 151 | 42,60 | 69,50 |
| 3,0 | 15 | 61 | 19,90 | 28,30 | 13,0 | 44 | 151 | 42,60 | 69,50 |
| 3,5 | 18 | 70 | 19,90 | 31,40 | 13,5 | 47 | 160 | 61,10 | 104,90 |
| 4,0 | 19 | 75 | 19,90 | 31,40 | 14,0 | 47 | 160 | 61,10 | 104,90 |
| 4,5 | 21 | 80 | 20,70 | 36,50 | 14,5 | 50 | 162 | 64,10 | 110,00 |
| 5,0 | 23 | 86 | 20,70 | 36,50 | 15,0 | 50 | 162 | 64,10 | 110,00 |
| 5,5 | 26 | 93 | 21,70 | 37,10 | 15,5 | 52 | 170 | 65,30 | 110,80 |
| 6,0 | 26 | 93 | 21,70 | 37,10 | 16,0 | 52 | 170 | 65,30 | 110,80 |
| 6,5 | 28 | 101 | 24,90 | 43,10 | 16,5 | 54 | 175 | 69,20 | 121,00 |
| 7,0 | 31 | 109 | 24,90 | 43,10 | 17,0 | 54 | 175 | 69,20 | 121,00 |
| 7,5 | 31 | 109 | 27,40 | 46,00 | 17,5 | 56 | 182 | 76,00 | 127,80 |
| 8,0 | 33 | 117 | 27,40 | 46,00 | 18,0 | 56 | 182 | 76,00 | 127,80 |
| 8,5 | 33 | 117 | 28,30 | 49,60 | 18,5 | 58 | 189 | 82,40 | 181,00 |
| 9,0 | 36 | 125 | 28,30 | 49,60 | 19,0 | 58 | 189 | 82,40 | 181,00 |
| 9,5 | 36 | 125 | 31,60 | 52,60 | 19,5 | 60 | 195 | 84,60 | 187,00 |
| | | | | | 20,0 | 60 | 195 | 84,60 | 187,00 |

4.397117



Maschinen-Schälreibahlen H7 Alésoirs à machine à coupe descendante H7

- HSS-E, zylindrischer Schaft
- Drall 45°, Toleranz H7
- Anwendung: zum Reiben durchgehender Bohrungen in langspannende Werkstoffe

- en HSS-E, queue cylindrique
- hélice 45°, tolérance H7
- Application : pour l'alésage des trous traversants avec des copeaux longs

Maschine chucking reamer H7

- HSS-E, straight shank
- helix 45°, tolerance H7
- application: reaming through holes in long chip materials

4397S..
DIN 212

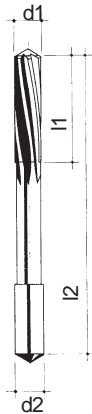
| | | | | 4.397S210 | | | |
|-------|--|--|-------|-----------|--|--|--------|
| d[mm] | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | CHF | d[mm] | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | CHF |
| 1,0 | 5,5 | 34 | 38,30 | 9,0 | 36 | 125 | 60,10 |
| 1,5 | 8 | 40 | 29,40 | 10,0 | 38 | 133 | 48,90 |
| 2,0 | 11 | 49 | 26,80 | 11,0 | 41 | 142 | 81,70 |
| 2,5 | 14 | 57 | 28,50 | 12,0 | 44 | 151 | 59,10 |
| 3,0 | 15 | 61 | 31,80 | 13,0 | 44 | 151 | 105,30 |
| 3,5 | 18 | 70 | 37,00 | 14,0 | 47 | 160 | 77,30 |
| 4,0 | 19 | 75 | 31,80 | 15,0 | 50 | 162 | 78,50 |
| 4,5 | 21 | 80 | 37,00 | 16,0 | 52 | 170 | 83,00 |
| 5,0 | 23 | 86 | 35,30 | 17,0 | 54 | 175 | 124,60 |
| 5,5 | 26 | 93 | 37,50 | 18,0 | 56 | 182 | 113,30 |
| 6,0 | 26 | 93 | 34,70 | 19,0 | 58 | 189 | 127,70 |
| 7,0 | 31 | 109 | 38,70 | 20,0 | 60 | 195 | 124,60 |
| 8,0 | 33 | 117 | 38,70 | | | | |



4398V..
DIN 212

Vollhartmetall-Maschinen-Reibahlen H7

- Ausführung nach DIN 212,
- rechts schneidend Zylinderschaft: für d1=1.4÷6.5 Vollhartmetall, für d1=6.5 ÷ 20.0 Stahlschaft mit Vollhartmetallkopf
- h6 präzisionsgeschliffen
- Linksdrall, Hartmetallsorte K10 Micrograin



Alésoir à machine métal dur tolérance H7

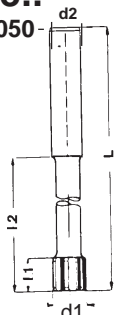
- Exécution selon DIN 212,
- coupe à droite Queue cylindrique: pour d1=1.4÷6.5 carbure monobloc, pour d1=6.5÷20.0 manche acier avec tête en carbure monobloc,
- rectifiée haute précision h6
- Hélice à gauche, nuance métal dur K10 micrograin

Carbide machine reamers H7

- acc.DIN 212,
- right hand cutting, straight shank: for d1=1.4÷6.5 carbide, for d1=6.5 ÷ 20.0 steel shank with carbide head
- h6 precision ground
- left twisted, carbide: K10 micrograin

| d1 | d2 | l1 | l2 | Z | CHF | d1 | d2 | l1 | l2 | Z | Fr. | d1 | d2 | l1 | l2 | Z | CHF |
|------|-----|----|----|---|-----------|------|-----|----|-----|---|-------|-------|------|----|-----|---|--------|
| 1.40 | 1.5 | 8 | 40 | 4 | 27.20 | 3.00 | 3.0 | 15 | 61 | 4 | 36.90 | 7.50 | 7.1 | 31 | 109 | 6 | 87.40 |
| 1.50 | 1.5 | 8 | 40 | 4 | 27.20 | 3.20 | 3.2 | 16 | 65 | 4 | 30.40 | 8.00 | 8.0 | 33 | 117 | 6 | 91.30 |
| 1.60 | 1.6 | 9 | 43 | 4 | 27.20 | 3.50 | 3.5 | 18 | 70 | 4 | 42.70 | 8.50 | 8.0 | 33 | 117 | 6 | 103.00 |
| 1.80 | 1.8 | 10 | 46 | 4 | 27.20 | 4.00 | 4.0 | 19 | 75 | 4 | 45.70 | 9.00 | 9.0 | 36 | 125 | 6 | 109.00 |
| 2.00 | 2.0 | 11 | 49 | 4 | 31.10 | 4.50 | 4.5 | 21 | 80 | 4 | 58.30 | 9.50 | 9.0 | 36 | 125 | 6 | 119.00 |
| 2.20 | 2.2 | 12 | 53 | 4 | 31.50 | 4.50 | 4.5 | 21 | 80 | 4 | 53.50 | 10.00 | 10.0 | 38 | 133 | 6 | 127.00 |
| 2.50 | 2.5 | 14 | 57 | 4 | 34.00 | 5.00 | 5.0 | 23 | 86 | 6 | 55.40 | 10.50 | 10.0 | 38 | 133 | 6 | 134.00 |
| 2.70 | 2.7 | 15 | 61 | 4 | 34.90 | 5.50 | 5.6 | 26 | 93 | 6 | 63.10 | 11.00 | 10.0 | 41 | 142 | 6 | 139.00 |
| 2.80 | 2.8 | 15 | 61 | 4 | 34.90 | 6.00 | 5.6 | 26 | 93 | 6 | 67.10 | 11.50 | 10.0 | 41 | 142 | 6 | 151.00 |
| 2.90 | 2.9 | 15 | 61 | 4 | 33.90 | 6.50 | 6.3 | 28 | 101 | 6 | 73.50 | 11.98 | 10.0 | 44 | 151 | 6 | 135.00 |
| | | | | | 4.398V210 | 7.00 | 7.1 | 31 | 109 | 6 | 77.70 | 12.00 | 10.0 | 44 | 151 | 6 | 157.00 |

4398..
DIN 8050

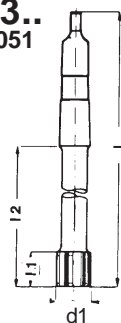


Maschinenreibahlen hartmetallbest. H7, zyl. Schaft

Alésoir à machine MD brasés, Masch. reamers, H7 brased tolér. H7, à queue cylindrique carbide inserts, straight shank

| d1 | d2 | l1 | l2 | L | Z | CHF | d1 | d2 | l1 | l2 | L | Z | CHF | d1 | d2 | l1 | l2 | L | Z | CHF |
|----|----|----|----|-----|----------|--------|----|----|----|-----|-----|---|--------|----|----|----|-----|-----|---|--------|
| 5 | 5 | 12 | 70 | 100 | 4 | 85.40 | 10 | 10 | 20 | 90 | 132 | 4 | 102.00 | 15 | 16 | 20 | 115 | 170 | 6 | 112.00 |
| 6 | 6 | 12 | 70 | 100 | 4 | 85.40 | 11 | 12 | 20 | 90 | 132 | 4 | 104.00 | 16 | 16 | 25 | 120 | 180 | 6 | 124.00 |
| 7 | 8 | 16 | 70 | 100 | 4 | 89.50 | 12 | 12 | 20 | 100 | 150 | 6 | 106.00 | 17 | 18 | 25 | 130 | 190 | 6 | 131.00 |
| 8 | 8 | 16 | 85 | 118 | 4 | 89.50 | 13 | 14 | 20 | 110 | 160 | 6 | 108.00 | 18 | 18 | 25 | 130 | 190 | 6 | 131.00 |
| 9 | 10 | 20 | 85 | 125 | 4 | 102.00 | 14 | 14 | 20 | 115 | 170 | 6 | 108.00 | 19 | 20 | 25 | 130 | 200 | 6 | 136.00 |
| | | | | | 4.398210 | | | | | | | | | 20 | 20 | 25 | 130 | 200 | 6 | 140.00 |

4403..
DIN 8051



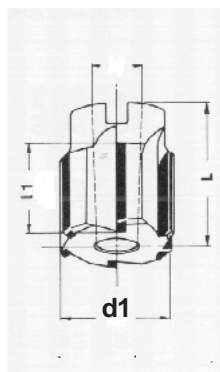
Maschinenreibahlen HM bestückt, H7, Morsekegel

Alésoir à machines MD brasés, H7, à queue cône morse

Masch. reamers, H7 brased carbide inserts, straight shank

| d1 | L | l1 | l2 | CM | Z | CHF | d1 | L | l1 | l2 | CM | Z | CHF | d1 | L | l1 | l2 | CM | Z | CHF | |
|----|-----|----|-----|----|----------|--------|----|-----|----|-----|----|---|--------|----|-----|----|-----|----|---|--------|--|
| 5 | 170 | 12 | 104 | 1 | 4 | 91.60 | 16 | 210 | 25 | 130 | 2 | 6 | 111.50 | 27 | 277 | 30 | 178 | 3 | 8 | 182.00 | |
| 6 | 170 | 12 | 104 | 1 | 4 | 91.60 | 17 | 214 | 25 | 134 | 2 | 6 | 123.00 | 28 | 277 | 30 | 178 | 3 | 8 | 140.00 | |
| 7 | 170 | 16 | 104 | 1 | 4 | 91.60 | 18 | 219 | 25 | 139 | 2 | 6 | 124.00 | 29 | 281 | 30 | 182 | 3 | 8 | 183.00 | |
| 8 | 170 | 16 | 104 | 1 | 4 | 93.80 | 19 | 223 | 25 | 143 | 2 | 6 | 136.00 | 30 | 281 | 30 | 182 | 3 | 8 | 183.00 | |
| 9 | 170 | 20 | 104 | 1 | 4 | 93.80 | 20 | 228 | 25 | 148 | 2 | 6 | 136.00 | 32 | 281 | 30 | 182 | 3 | 8 | 202.00 | |
| 10 | 170 | 20 | 104 | 1 | 4 | 93.80 | 21 | 228 | 25 | 148 | 2 | 6 | 110.00 | 33 | 281 | 30 | 182 | 3 | 8 | 283.00 | |
| 11 | 170 | 20 | 104 | 1 | 4 | 95.90 | 22 | 237 | 25 | 157 | 2 | 6 | 148.00 | 34 | 310 | 30 | 186 | 4 | 8 | 283.00 | |
| 12 | 182 | 20 | 116 | 1 | 6 | 108.00 | 23 | 237 | 25 | 157 | 2 | 6 | 151.00 | 35 | 310 | 30 | 186 | 4 | 8 | 291.00 | |
| 13 | 182 | 20 | 116 | 1 | 6 | 108.00 | 24 | 268 | 25 | 169 | 3 | 6 | 157.00 | 36 | 310 | 30 | 186 | 4 | 8 | 291.00 | |
| 14 | 189 | 20 | 123 | 1 | 6 | 108.00 | 25 | 268 | 25 | 169 | 3 | 6 | 157.00 | 38 | 310 | 30 | 186 | 4 | 8 | 302.00 | |
| 15 | 204 | 20 | 124 | 2 | 6 | 110.00 | 26 | 273 | 25 | 174 | 3 | 6 | 161.00 | 40 | 310 | 30 | 186 | 4 | 8 | 302.00 | |
| | | | | | 4.403210 | | | | | | | | | | | | | | | | |

4408..



Aufsteckreibahle HM bestückt H7 mit Bohrung 1:30, DIN 8054 Alésoirs creux MD brasés, H7 Plug in brased carbide reamer heads H7 bore 1:30, DIN 8054

| d1 | L | l1 | d | Z | CHF | d1 | L | l1 | d | Z | CHF | d1 | L | l1 | d | Z | CHF |
|----|----|----|----|---|---------|----|----|----|----|----|--------|-----|----|----|----|----|--------|
| 30 | 45 | 30 | 16 | 6 | 151.00 | 44 | 50 | 30 | 19 | 8 | 194.00 | 65 | 71 | 30 | 27 | 10 | 283.00 |
| 31 | 45 | 30 | 16 | 6 | 151.00 | 45 | 50 | 30 | 19 | 8 | 204.00 | 68 | 71 | 30 | 27 | 10 | 309.00 |
| 32 | 45 | 30 | 16 | 6 | 153.00 | 46 | 56 | 30 | 19 | 8 | 207.00 | 70 | 71 | 30 | 27 | 10 | 309.00 |
| 33 | 45 | 30 | 16 | 6 | 163.00 | 47 | 56 | 30 | 19 | 8 | 212.00 | 72 | 71 | 30 | 32 | 12 | 332.00 |
| 34 | 45 | 30 | 16 | 6 | 163.00 | 48 | 56 | 30 | 19 | 8 | 213.00 | 75 | 71 | 30 | 32 | 12 | 332.00 |
| 35 | 45 | 30 | 16 | 6 | 163.00 | 49 | 56 | 30 | 19 | 8 | 213.00 | 80 | 71 | 30 | 32 | 12 | 356.00 |
| 36 | 50 | 30 | 16 | 6 | 173.00 | 50 | 56 | 30 | 19 | 8 | 213.00 | 85 | 71 | 30 | 32 | 12 | 396.00 |
| 37 | 50 | 30 | 16 | 6 | 173.00 | 52 | 56 | 30 | 22 | 10 | 225.00 | 90 | 71 | 40 | 40 | 12 | 426.00 |
| 38 | 50 | 30 | 16 | 6 | 173.00 | 54 | 63 | 30 | 22 | 10 | 225.00 | 95 | 71 | 40 | 40 | 12 | 447.00 |
| 39 | 50 | 30 | 16 | 6 | 178.00 | 55 | 63 | 30 | 22 | 10 | 225.00 | 100 | 71 | 40 | 40 | 12 | 500.00 |
| 40 | 50 | 30 | 16 | 6 | 178.00 | 58 | 63 | 30 | 22 | 10 | 251.00 | 105 | 71 | 40 | 40 | 14 | 541.00 |
| 42 | 50 | 30 | 19 | 8 | 194.00 | 60 | 63 | 30 | 22 | 10 | 251.00 | 110 | 71 | 40 | 40 | 14 | 603.00 |
| 43 | 50 | 30 | 19 | 8 | 194.00 | 62 | 63 | 30 | 27 | 10 | 283.00 | 115 | 71 | 40 | 40 | 14 | 645.00 |
| | | | | | 4.40828 | | | | | | | 120 | 71 | 40 | 40 | 14 | 686.00 |

Maschinenreibahlen H7 mit Morsekegelschaft

Alésoirs à machine H7 à cône morse

Machine reamers H7 with tapered shank

4399..
DIN 208

- Aus HSS-E, nach DIN 208
- mit Morsekegel-Schaft
- Toleranz H7
- Spiralgezahnt

- en HSS-E, selon DIN 208
- avec cône morse
- tolérance H7
- hélicoïdaux

- from HSS-E, acc. DIN 208
- with tapered morse shank
- tolerance H7
- twisted

| d[mm] | MK | Schnittlänge | Gesamtlänge | CHF |
|-------|----|---------------|--------------|--------|
| | CM | long. de cpe. | long.totale | |
| | MS | cutt.length | total length | |
| 3.0 | 1 | 15 | 113 | 49.40 |
| 4.0 | 1 | 19 | 124 | 48.40 |
| 4.5 | 1 | 23 | 133 | 51.40 |
| 5.0 | 1 | 23 | 133 | 71.10 |
| 5.5 | 1 | 26 | 138 | 52.40 |
| 6.0 | 1 | 26 | 138 | 71.10 |
| 6.5 | 1 | 28 | 144 | 53.00 |
| 7.0 | 1 | 31 | 150 | 71.10 |
| 7.5 | 1 | 31 | 150 | 59.20 |
| 8.0 | 1 | 33 | 156 | 71.10 |
| 8.5 | 1 | 33 | 156 | 56.10 |
| 9.0 | 1 | 36 | 162 | 84.80 |
| 9.5 | 1 | 36 | 162 | 66.40 |
| 10.0 | 1 | 38 | 168 | 63.80 |
| 10.5 | 1 | 38 | 168 | 66.40 |
| 11.0 | 1 | 41 | 175 | 71.10 |
| 11.5 | 1 | 41 | 175 | 68.20 |
| 12.0 | 1 | 44 | 182 | 64.20 |
| 12.5 | 1 | 44 | 182 | 68.20 |
| 13.0 | 1 | 44 | 182 | 74.80 |
| 14.0 | 1 | 47 | 189 | 74.80 |
| 14.5 | 1 | 47 | 189 | 29.70 |
| 15.0 | 2 | 50 | 204 | 91.10 |
| 16.0 | 2 | 52 | 210 | 93.00 |
| 17.0 | 2 | 54 | 214 | 100.20 |
| 18.0 | 2 | 56 | 219 | 102.10 |
| 19.0 | 2 | 58 | 223 | 109.50 |

| d[mm] | MK | Schnittlänge | Gesamtlänge | 4.399210 | CHF |
|-------|----|---------------|--------------|----------|--------|
| | CM | long. de cpe. | long.totale | | |
| | MS | cutt.length | total length | | |
| 20 | 2 | 60 | 228 | | 109.50 |
| 21 | 2 | 62 | 232 | | 121.40 |
| 22 | 2 | 64 | 237 | | 121.40 |
| 23 | 2 | 66 | 241 | | 141.80 |
| 24 | 3 | 68 | 268 | | 141.80 |
| 25 | 3 | 68 | 268 | | 150.90 |
| 26 | 3 | 70 | 273 | | 160.00 |
| 27 | 3 | 71 | 277 | | 133.70 |
| 28 | 3 | 71 | 277 | | 178.20 |
| 29 | 3 | 73 | 281 | | 151.70 |
| 30 | 3 | 73 | 281 | | 183.90 |
| 31 | 3 | 75 | 285 | | 181.10 |
| 32 | 4 | 77 | 317 | | 241.60 |
| 33 | 4 | 77 | 317 | | 204.50 |
| 34 | 4 | 78 | 321 | | 272.30 |
| 35 | 4 | 78 | 321 | | 272.30 |
| 36 | 4 | 79 | 325 | | 295.00 |
| 37 | 4 | 79 | 325 | | 236.00 |
| 38 | 4 | 81 | 329 | | 322.20 |
| 40 | 4 | 81 | 329 | | 322.20 |
| 42 | 4 | 82 | 333 | | 242.00 |
| 44 | 4 | 83 | 336 | | 284.00 |
| 45 | 4 | 83 | 336 | | 285.00 |
| 46 | 4 | 84 | 240 | | 339.00 |
| 48 | 4 | 86 | 344 | | 361.00 |
| 50 | 4 | 86 | 344 | | 361.00 |



Maschinen-Schälreibahlen H7 mit Konus-Schaft

Alésoirs à machine à cpe. descend.H7 à cône morse

Machine chucking reamers H7 with tapered morse shank

4399S..
DIN 208

- aus HSS-E, nach DIN 208
- mit Morsekegel-Schaft
- Drall 45°, Toleranz H7

- en HSS-E, selon DIN 208
- avec cône morse
- hélice 45°, tolérance H7

- from HSS-E, acc. DIN 208
- with tapered morse shank
- helix 45°, tolerance H7

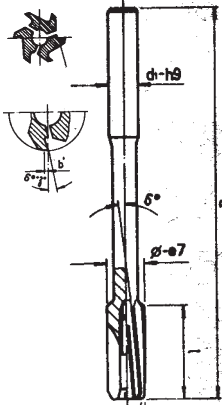
| d[mm] | MK | Schnittlänge | Gesamtlänge | CHF |
|-------|----|---------------|--------------|-------|
| | CM | long. de cpe. | long.totale | |
| | MS | cutt.length | total length | |
| 3.0 | 1 | 15 | 113 | 63.20 |
| 4.0 | 1 | 19 | 124 | 63.90 |
| 4.5 | 1 | 23 | 133 | 67.30 |
| 5.0 | 1 | 23 | 133 | 70.60 |
| 5.5 | 1 | 26 | 138 | 62.20 |
| 6.0 | 1 | 26 | 138 | 72.70 |
| 6.5 | 1 | 28 | 144 | 62.20 |
| 7.0 | 1 | 31 | 150 | 81.80 |
| 7.5 | 1 | 31 | 150 | 57.70 |
| 8.0 | 1 | 33 | 156 | 77.40 |
| 8.5 | 1 | 33 | 156 | 63.70 |
| 9.0 | 1 | 36 | 162 | 88.70 |
| 9.5 | 1 | 36 | 162 | 63.70 |
| 10.0 | 1 | 38 | 168 | 64.70 |
| 10.5 | 1 | 38 | 168 | 67.50 |
| 11.0 | 1 | 41 | 175 | 72.10 |
| 11.5 | 1 | 41 | 175 | 89.20 |
| 12.0 | 1 | 44 | 182 | 68.30 |
| 12.5 | 1 | 44 | 182 | 67.50 |
| 13.0 | 1 | 44 | 182 | 78.50 |

| d[mm] | MK | Schnittlänge | Gesamtlänge | 4.399S210 | CHF |
|-------|----|---------------|--------------|-----------|--------|
| | CM | long. de cpe. | long.totale | | |
| | MS | cutt.length | total length | | |
| 14 | 1 | 47 | 189 | | 78.50 |
| 15 | 2 | 50 | 204 | | 85.30 |
| 16 | 2 | 52 | 210 | | 85.30 |
| 17 | 2 | 54 | 214 | | 93.10 |
| 18 | 2 | 56 | 219 | | 93.10 |
| 19 | 2 | 58 | 223 | | 104.00 |
| 20 | 2 | 60 | 228 | | 96.60 |
| 21 | 2 | 62 | 232 | | 109.20 |
| 22 | 2 | 64 | 237 | | 112.30 |
| 23 | 2 | 66 | 241 | | 127.70 |
| 24 | 3 | 68 | 268 | | 140.10 |
| 25 | 3 | 68 | 268 | | 140.10 |
| 26 | 3 | 70 | 273 | | 129.80 |
| 27 | 3 | 71 | 277 | | 119.00 |
| 28 | 3 | 71 | 277 | | 157.00 |
| 29 | 3 | 73 | 281 | | 135.00 |
| 30 | 3 | 73 | 281 | | 162.00 |
| 31 | 3 | 75 | 285 | | 161.00 |
| 32 | 4 | 77 | 317 | | 213.00 |



4400ZYL..

DIN 212



Masch.-Spreitz- Reibahlen

- nach DIN 212 ,rechtsschneid.
- mit Zylinder- u.Morsekegel
- spiralgenutet

Alésoirs à machine extensibles Ajustable machine reamers

- selon DIN 212, coupe à droite
- Queue cylindrique et cône morse
- hélicoïdaux
- acc. DIN 212 , right hand cutting
- straight and tapered shank
- twisted

| Schnittlänge | | | | Gesamtlänge | | 4.400ZYL210 | | | |
|--------------|---------------|--------------|-------|-------------|---------------|--------------|--------|--|--|
| d[mm] | long. de cpe. | long.totale | CHF | d[mm] | long. de cpe. | long.totale | CHF | | |
| | cutt. Length | total length | | | cutt. Length | total length | | | |
| 6 | 26 | 93 | 69.60 | 14 | 47 | 160 | 84.50 | | |
| 7 | 31 | 109 | 66.70 | 15 | 50 | 162 | 87.40 | | |
| 8 | 33 | 117 | 68.10 | 16 | 52 | 170 | 91.80 | | |
| 9 | 36 | 125 | 71.10 | 17 | 54 | 175 | 151.00 | | |
| 10 | 38 | 133 | 74.10 | 18 | 56 | 182 | 151.00 | | |
| 11 | 41 | 142 | 74.10 | 19 | 58 | 189 | 179.00 | | |
| 12 | 44 | 151 | 78.50 | 20 | 60 | 195 | 179.00 | | |
| 13 | 44 | 151 | 81.50 | | | | | | |

4400MK..

DIN 212



| Schnittlänge | | | | Gesamtlänge | | 4.400MK210 | | | |
|--------------|----|---------------|--------------|-------------|-------|------------|---------------|--------------|--------|
| d[mm] | MK | long. de cpe. | long.totale | CHF | d[mm] | MK | long. de cpe. | long.totale | CHF |
| | CM | cutt.length | total length | | | CM | cutt.length | total length | |
| 8 | 1 | 33 | 156 | 92.60 | 22 | 3 | 64 | 237 | 142.00 |
| 9 | 1 | 36 | 162 | 96.80 | 23 | 3 | 66 | 241 | 135.00 |
| 10 | 1 | 38 | 168 | 67.50 | 24 | 3 | 68 | 268 | 178.00 |
| 11 | 1 | 41 | 175 | 78.60 | 25 | 3 | 68 | 268 | 187.00 |
| 12 | 2 | 44 | 182 | 80.10 | 26 | 3 | 70 | 273 | 205.00 |
| 13 | 2 | 44 | 182 | 80.10 | 27 | 3 | 71 | 277 | 205.00 |
| 14 | 2 | 47 | 189 | 86.20 | 28 | 3 | 71 | 277 | 237.00 |
| 15 | 2 | 50 | 204 | 92.50 | 30 | 3 | 73 | 281 | 240.00 |
| 16 | 2 | 52 | 210 | 119.10 | 32 | 3 | 77 | 317 | 276.00 |
| 17 | 2 | 54 | 214 | 101.00 | 34 | 4 | 78 | 321 | 291.00 |
| 18 | 2 | 56 | 219 | 104.00 | 35 | 4 | 78 | 321 | 300.00 |
| 19 | 2 | 58 | 223 | 109.00 | 36 | 4 | 79 | 325 | 300.00 |
| 20 | 2 | 60 | 228 | 114.00 | 38 | 4 | 81 | 329 | 305.00 |
| 21 | 2 | 62 | 232 | 132.00 | 40 | 4 | 81 | 329 | 335.00 |

| Verstellbarkeit E | | Expansibilité E | | Adjustability E | | 4.400MKVERST210 | |
|-------------------|--------|-----------------|---------|-----------------|---------|-----------------|--|
| Ø mm | 6 - 10 | 11 - 15 | 16 - 25 | 26 - 40 | 41 - 60 | | |
| E mm | 0.03 | 0.05 | 0.08 | 0.12 | 0.18 | | |

4401..

DIN 1420



Maschinen-Stirnreibahlen

- Aus HSS-E, nach DIN 1420
- mit Zylinder- u. Morsenschaft,
- rechtschn. geradegenutet
- Toleranz H7

Alésoir à machine à coupe frontale

- en HSS-E, selon DIN 1420
- queue cylindrique et morse
- à rainures droites
- tolérance H7

Frontal machine reamers

- from HSS-E acc. DIN 1420
- straight and tapered shank
- straight flute
- tolerance H7

| Schnittlänge | | | | Gesamtlänge | | 4.401210 | | | |
|--------------|---------------|--------------|-------|-------------|---------------|--------------|-------|--|--|
| d[mm] | long. de cpe. | long.totale | CHF | d[mm] | long. de cpe. | long.totale | CHF | | |
| | cutt.length | total length | | | cutt.length | total length | | | |
| 2.5 | 12 | 57 | 63.10 | 7.0 | 31 | 150 | 71.90 | | |
| 3.0 | 12 | 61 | 49.10 | 8.0 | 33 | 156 | 69.50 | | |
| 3.5 | 12 | 70 | 50.10 | 9.0 | 36 | 162 | 79.40 | | |
| 4.0 | 16 | 75 | 50.10 | 10.0 | 38 | 168 | 76.90 | | |
| 4.5 | 16 | 80 | 54.20 | 11.0 | 41 | 175 | 96.70 | | |
| 5.0 | 20 | 86 | 54.20 | 12.0 | 44 | 182 | 94.20 | | |
| 6.0 | 26 | 138 | 55.80 | | | | | | |

4401K..

DIN 1420



| Schnittlänge | | | | Gesamtlänge | | 4.401K210 | | | |
|--------------|----|---------------|--------------|-------------|-------|-----------|---------------|--------------|--------|
| d[mm] | MK | long. de cpe. | long.totale | CHF | d[mm] | MK | long. de cpe. | long.totale | CHF |
| | CM | cutt.length | total length | | | CM | cutt.length | total length | |
| 8.0 | 1 | 31 | 156 | 96.20 | 15.0 | 2 | 50 | 204 | 124.80 |
| 10.0 | 1 | 38 | 168 | 104.60 | 16.0 | 2 | 50 | 210 | 130.40 |
| 12.0 | 1 | 44 | 182 | 99.50 | 18.0 | 2 | 56 | 219 | 149.50 |
| 13.0 | 1 | 44 | 182 | 107.30 | 20.0 | 2 | 60 | 228 | 163.10 |
| 14.0 | 1 | 44 | 189 | 114.60 | | | | | |

Aufsteckreibahlen HSS

- Aus HSS, nach DIN 219/B
- Toleranz H7
- mit Bohrung d1 1: 30, spiralgezahnt

Alésoirs creux en HSS

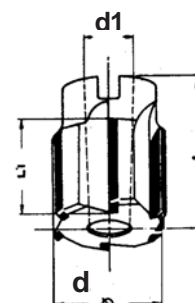
- en HSS-E, selon DIN 219/B
- tolérance H7
- alésage d1 1:30, hélicoïdaux

Plug in reamer heads

- from HSS, acc. DIN 219/B
- tolerance H7
- with bore d1 1: 30, twisted

**4407..
DIN 219**

| Ø | Gesamtlänge | Schnittlänge | Ø | | Ø | Gesamtlänge | Schnittlänge | Ø | 4.407210 |
|----|--------------|---------------|----|--------|-----|--------------|---------------|----|----------|
| H7 | long.totale | long. de cpe. | d1 | CHF | H7 | long.totale | long. de cpe. | d1 | CHF |
| | total length | cutt.length | | | | total length | cutt.length | | |
| 20 | 50 | 40 | 10 | 169.00 | 44 | 63 | 45 | 22 | 168.10 |
| 21 | 50 | 40 | 10 | 169.00 | 45 | 63 | 45 | 22 | 175.20 |
| 22 | 50 | 40 | 10 | 163.00 | 46 | 63 | 45 | 22 | 175.20 |
| 24 | 50 | 40 | 10 | 169.00 | 48 | 63 | 45 | 22 | 187.40 |
| 25 | 45 | 32 | 13 | 84.60 | 50 | 63 | 45 | 22 | 196.40 |
| 26 | 45 | 32 | 13 | 93.00 | 52 | 71 | 50 | 27 | 601.50 |
| 27 | 45 | 32 | 13 | 221.60 | 55 | 71 | 50 | 27 | 653.80 |
| 28 | 45 | 32 | 13 | 99.80 | 58 | 71 | 50 | 27 | 655.40 |
| 29 | 45 | 32 | 16 | 222.00 | 60 | 71 | 50 | 27 | 697.40 |
| 30 | 45 | 32 | 13 | 105.00 | 62 | 80 | 56 | 32 | 615.30 |
| 31 | 50 | 36 | 16 | 228.00 | 65 | 80 | 56 | 32 | 621.90 |
| 32 | 50 | 36 | 16 | 109.70 | 68 | 80 | 56 | 32 | 725.60 |
| 34 | 50 | 36 | 16 | 120.30 | 70 | 120 | 90 | 40 | 687.80 |
| 35 | 50 | 36 | 16 | 121.60 | 72 | 120 | 90 | 40 | 930.70 |
| 36 | 56 | 40 | 19 | 126.60 | 75 | 120 | 90 | 40 | 930.70 |
| 37 | 56 | 40 | 19 | 267.00 | 80 | 120 | 90 | 40 | 1056.70 |
| 38 | 56 | 40 | 19 | 133.30 | 85 | 130 | 100 | 50 | 1270.60 |
| 39 | 56 | 40 | 19 | 235.00 | 90 | 130 | 100 | 50 | 1326.40 |
| 40 | 56 | 40 | 19 | 139.90 | 95 | 130 | 100 | 50 | 1665.30 |
| 42 | 56 | 40 | 19 | 166.00 | 100 | 130 | 100 | 50 | 1771.10 |



Aufsteck-Schälreibahlen

- aus HSS-E, nach DIN 219/C spiralverzahnt, Drall 45°
- mit Bohrung d1: 1: 30, Toleranz H7
- Für langspanende Materialien

Alésoirs creux à coupe descendante

- en HSS-E, selon DIN 219/C hélice 45°
- alésage d1 : 1:30, tolérance H7
- Pour des matériaux avec des copeaux longs

plug in chucking reamer heads

- from HSS-E, acc. DIN 219/C twisted, helix 45°
- with bore d1: 1: 30, tolerance H7
- for materials with long chips

**4407S..
DIN 219**

| Ø | Gesamtlänge | Schnittlänge | Ø | | Ø | Gesamtlänge | Schnittlänge | Ø | 4.407S210 |
|----|--------------|---------------|----|--------|-----|--------------|---------------|----|-----------|
| H7 | long.totale | long. de cpe. | d1 | CHF | H7 | long.totale | long. de cpe. | d1 | CHF |
| | total length | cutt. length | | | | total length | cutt. length | | |
| 24 | 45 | 32 | 10 | 188.00 | 44 | 63 | 45 | 22 | 362.00 |
| 25 | 45 | 32 | 13 | 197.40 | 45 | 63 | 45 | 22 | 330.80 |
| 26 | 45 | 32 | 13 | 197.40 | 46 | 63 | 45 | 22 | 363.00 |
| 27 | 45 | 32 | 13 | 247.80 | 47 | 63 | 45 | 22 | 381.10 |
| 28 | 45 | 32 | 13 | 200.50 | 48 | 63 | 45 | 22 | 388.50 |
| 29 | 45 | 32 | 13 | 266.00 | 50 | 63 | 45 | 22 | 388.50 |
| 30 | 45 | 32 | 13 | 200.50 | 52 | 71 | 50 | 27 | 490.40 |
| 31 | 50 | 36 | 16 | 261.00 | 55 | 71 | 50 | 27 | 490.40 |
| 32 | 50 | 36 | 16 | 215.20 | 56 | 71 | 50 | 27 | 571.00 |
| 33 | 50 | 36 | 16 | 221.00 | 58 | 71 | 50 | 27 | 599.50 |
| 34 | 50 | 36 | 16 | 232.10 | 60 | 71 | 50 | 27 | 507.10 |
| 35 | 50 | 36 | 16 | 232.10 | 62 | 80 | 56 | 32 | 635.20 |
| 36 | 56 | 40 | 19 | 266.70 | 65 | 80 | 56 | 32 | 635.20 |
| 37 | 56 | 40 | 19 | 302.00 | 68 | 80 | 56 | 32 | 635.20 |
| 38 | 56 | 40 | 19 | 266.70 | 85 | 130 | 100 | 50 | 1052.00 |
| 39 | 56 | 40 | 19 | 254.00 | 88 | 130 | 100 | 50 | 1489.00 |
| 40 | 56 | 40 | 19 | 266.70 | 95 | 130 | 100 | 50 | 1440.00 |
| 42 | 56 | 30 | 22 | 323.40 | 100 | 130 | 100 | 50 | 1474.00 |



4406..

Nachstellbare Aufsteckgrundreibahlen

- Schräge Messer aus HSS-E
- Verschiebung der Messer nach vorn zum Vergrössern

Alésoir réglables creux en bout

- lames en biais en HSS-E
- glissement des lames vers le bout pour agrandir le diamètre

Adjustable plug in base reamer heads

- oblique blades from HSS-E
- displacement of the blades frontwise to increase diam.



| 4.406210 | Nachstellbarkeit ajustage ajustability | Schnittlänge long. de cpe. cutt. length | Gesamtlänge long. Totale total length | Bohrung konisch 1:30 alésage conique 1:30 conical bore 1:30 | CHF |
|----------|--|---|---|---|--------|
| d[mm] | mm | mm | mm | mm | |
| 33.0 | 1.1 | 32 | 60 | 13 | 83.00 |
| 44.0 | 1.1 | 32 | 65 | 16 | 173.00 |
| 62.0 | 1.4 | 40 | 76 | 22 | 179.00 |
| 82.0 | 1.4 | 46 | 90 | 32 | 185.00 |
| 90.0 | 1.9 | 60 | 108 | 40 | 189.00 |
| 95.0 | 1.9 | 60 | 108 | 40 | 195.00 |

4412..

DIN 217

**Aufsteck-Halter für Reib-
ahlen und Aufbohrer**

**Arbres p. alésoirs creux
et aléseurs-ebaucheurs**

Plug in holder for reamer heads & rebores



| Ø | Gesamtlänge | Morsekonus | CHF | Ø | Gesamtlänge | Morsekonus | CHF | 4.412210 |
|-------|--------------|-------------|--------|-------|--------------|-------------|--------|----------|
| d[mm] | long. totale | Cône morse | | d[mm] | long. totale | Cône morse | | |
| | total length | morse taper | | | total length | morse taper | | |
| 10 | 185 | 2 | 92.00 | 27 | 359 | 4 | 235.20 | |
| 13 | 250 | 3 | 182.70 | 27 | 359 | 5 | 476.30 | |
| 16 | 261 | 3 | 211.10 | 32 | 376 | 4 | 267.00 | |
| 19 | 298 | 3 | 285.00 | 32 | 376 | 5 | 503.60 | |
| 19 | 298 | 4 | 243.50 | 40 | 396 | 5 | 663.90 | |
| 22 | 312 | 3 | 142.00 | 50 | 416 | 5 | 830.00 | |
| 22 | 312 | 4 | 319.00 | | | | | |

Ersatzmitnehmer, Keil und Abdrückmutter auf Anfrage Entraineur, clavette et ecrou sur demande
Replacement driver, wedge and nut on request

4413ZYL..

Kegelreibahlen 1:10

- Aus HSS
- mit Zylinderschaft,
- rechtschneidend
- gerade genutet, Vierkant

Alésoirs coniques 1:10

- en HSS
- avec queue cylindrique
- coupe à droite
- à rainures droites, carré

Tapered reamers 1:10

- from HSS
- cylindrical shank
- RH cutting,
- straight flutes, square



| Kleinster | Grösster | Schnittlänge | Gesamtlänge | CHF | Kleinster | Grösster | Schnittlänge | Gesamtlänge | CHF | 4.413ZYL210 |
|------------|------------|---------------|--------------|--------|------------|------------|---------------|--------------|---------|-------------|
| plus petit | plus grand | long. de cpe. | long. totale | | plus petit | plus grand | long. de cpe. | long. totale | | |
| smallest | highest | cutt. length | total length | | smallest | highest | cutt. length | total length | | |
| Ø | Ø | mm | mm | | Ø | Ø | mm | mm | | |
| 3 | 10 | 70 | 100 | 80.40 | 23 | 45 | 220 | 275 | 637.30 | |
| 5 | 15 | 100 | 140 | 112.30 | 30 | 55 | 250 | 310 | 962.00 | |
| 10 | 25 | 150 | 195 | 237.30 | 37 | 65 | 280 | 345 | 1764.00 | |
| 15 | 35 | 200 | 250 | 470.40 | 45 | 75 | 300 | 370 | 2586.20 | |

4401K..

**Maschinen-Stirnreib-
ahlen**

- Aus HSS-E, nach DIN 1420
- mit Morsekegelschaft,
- rechtschneidend
- geradegenutet Toleranz H7

**Alésoirs à machine à
coupe frontale**

- en HSS-E, selon DIN 1420
- avec cône morse
- à rainures droites
- tolérance H7

**Machine reamers with
active front**

- from HSS-E, acc. DIN 1420
- with tapered morse shank
- right hand cutting
- straight flutes tol. H7



| d[mm] | MK | Schnittlänge | Gesamtlänge | CHF | d[mm] | MK | Schnittlänge | Gesamtlänge | CHF | 4.401K210 |
|-------|----|---------------|--------------|--------|-------|----|---------------|--------------|--------|-----------|
| | CM | long. de cpe. | long. totale | | | CM | long. de cpe. | long. totale | | |
| | MS | cutt. length | total length | | | MS | cutt. length | total length | | |
| 8.0 | 1 | 31 | 156 | 96.20 | 15.0 | 2 | 50 | 204 | 124.80 | |
| 10.0 | 1 | 38 | 168 | 104.60 | 16.0 | 2 | 50 | 210 | 130.40 | |
| 12.0 | 1 | 44 | 182 | 99.50 | 18.0 | 2 | 56 | 219 | 149.50 | |
| 13.0 | 1 | 44 | 182 | 107.30 | 20.0 | 2 | 60 | 228 | 163.10 | |
| 14.0 | 1 | 44 | 189 | 114.60 | | | | | | |

Kegelreibbahlen für Morsekegelschaft

- Aus HSS, nach DIN 204
- Vorreibbahlen 4414VR..mit Spanbrecher, geradegenutet
- Fertigreibbahlen 4414FR..Spiral.nuten
- Zylinderschaft

Alésoirs pour cône morse

- en HSS, selon DIN 204
- Ebaucheurs 4414VR..à brise-copeaux, taille droite
- Finisseur 4414FR..hélicoidal
- Queue cylindrique

Taper shank socket reamer

- From HSS, acc. DIN 204
- rougher 4414VR..with chip breaker, straight flutes
- finisher 4414FR..twisted flutes
- straight shank

**4414VR..
4414FR..
DIN 204**



| 4.414YR210 | Kleinster plus petit smallest | Grösster plus grand highest | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4414VR.. Vorreibbahle ebaucheur rougher CHF | 4414FR.. Fertigreibbahle finisseur CHF |
|------------|-------------------------------|-----------------------------|--|--------------------------------------|---|--|
| Nr./no. | Ø | Ø | mm | mm | | |
| 0 | 6.547 | 9.722 | 61 | 93 | 80.40 | 73.30 |
| 1 | 9.571 | 12.863 | 66 | 102 | 102.50 | 86.80 |
| 2 | 14.733 | 18.679 | 76 | 121 | 136.50 | 112.30 |
| 3 | 20.010 | 24.829 | 96 | 146 | 182.70 | 151.20 |
| 4 | 26.229 | 32.410 | 119 | 179 | 284.60 | 259.40 |
| 5 | 37.873 | 45.767 | 150 | 222 | 574.40 | 489.00 |
| 6 | 54.172 | 65.016 | 208 | 300 | 1573.00 | 1336.00 |

Stiftlochbohrer 1: 50

- Aus HSS, nach DIN 1898
- Zylinderschaft

Meches à goupilles 1:50

- en HSS-E, selon DIN 1898
- Queue cylindrique

Pin hole twist drill 1: 50

- from HSS, acc.DIN 1898
- straight shank

**4415..
DIN 1898**

| 4.415210 | Kleinster plus petit smallest | Grösster plus grand highest | Schaft tiege shank Ø | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4415.. CHF |
|---------------------|-------------------------------|-----------------------------|----------------------|--|--------------------------------------|------------|
| Nenn-Ø Ø nominal mm | Ø | Ø | Ø | mm | mm | |
| 1.00 | 0.98 | 1.40 | 1.30 | 20 | 45 | 60.70 |
| 1.25 | 1.23 | 1.76 | 1.60 | 25 | 45 | 73.50 |
| 1.50 | 1.48 | 2.12 | 1.90 | 32 | 50 | 48.00 |
| 2.00 | 1.98 | 2.84 | 2.70 | 43 | 65 | 48.00 |
| 2.50 | 2.48 | 3.44 | 3.20 | 50 | 75 | 53.90 |
| 3.00 | 2.98 | 4.14 | 3.90 | 60 | 100 | 85.30 |
| 3.50 | 3.48 | 4.98 | 4.80 | 70 | 110 | 81.90 |
| 4.00 | 3.98 | 5.38 | 5.00 | 72 | 115 | 63.20 |
| 4.50 | 4.48 | 6.41 | 6.00 | 90 | 130 | 100.00 |
| 5.00 | 4.98 | 6.62 | 6.00 | 86 | 135 | 74.80 |
| 5.50 | 5.48 | 7.84 | 7.50 | 110 | 150 | 114.00 |
| 6.00 | 5.98 | 8.25 | 8.00 | 117 | 170 | 84.70 |
| 6.50 | 6.48 | 9.27 | 9.00 | 130 | 180 | 205.00 |
| 8.00 | 7.98 | 10.69 | 10.00 | 143 | 205 | 205.80 |
| 10.00 | 9.98 | 13.12 | 13.00 | 165 | 230 | 172.50 |
| 12.00 | 11.98 | 15.70 | 15.00 | 198 | 275 | 229.90 |



Stiftlochbohrer 1: 50

- Aus HSS, nach DIN 1898
- Morsekegel-Schaft

Meches à goupilles 1:50

- en HSS-E, selon DIN 1898
- Queue cône morse

Pin hole twist drill 1: 50

- from HSS, acc.DIN 1898
- tapered shank morse

**4415MK..
DIN 1898**

| 4.415MK210 | Kleinster plus petit smallest | Grösster plus grand highest | Schaft tiege shank MK/CM | Schnittlänge long. de cpe. cutt. length. | Gesamtlänge long.totale total length | 4415MK.. CHF |
|---------------------|-------------------------------|-----------------------------|--------------------------|--|--------------------------------------|--------------|
| Nenn-Ø Ø nominal mm | Ø | Ø | | mm | mm | |
| 5.0 | 4.98 | 6.62 | 1 | 86 | 164 | 140.70 |
| 6.0 | 5.97 | 8.25 | 1 | 117 | 196 | 142.80 |
| 8.0 | 7.97 | 10.69 | 1 | 143 | 222 | 151.20 |
| 10.0 | 9.96 | 13.12 | 1 | 165 | 244 | 184.80 |
| 12.0 | 11.96 | 15.70 | 2 | 198 | 293 | 232.10 |
| 13.0 | 12.96 | 16.70 | 2 | 198 | 293 | 262.50 |
| 14.0 | 13.96 | 17.70 | 2 | 198 | 293 | 287.70 |
| 16.0 | 15.95 | 21.07 | 2 | 267 | 362 | 361.20 |
| 20.0 | 19.95 | 25.15 | 3 | 278 | 393 | 491.40 |
| 25.0 | 24.94 | 30.88 | 3 | 313 | 433 | 765.50 |
| 30.0 | 29.93 | 35.99 | 4 | 327 | 472 | 1162.30 |
| 40.0 | 39.92 | 46.22 | 4 | 348 | 500 | 1397.50 |
| 50.0 | 49.90 | 46.42 | 5 | 368 | 550 | 2184.00 |



4417ZYL..
DIN 2179

**Maschinen-Kegel-Schälreiba-
hahlen 1:50**

**Alésoir coniques à cou-
pe descendante 1: 50**

**Straight chucking
reamers 1:50**

- aus HSS, nach DIN 2179
- mit Zylinderschaft Tol. h9
- mit ca. 45° Linksdrall

- en HSS, selon DIN 2179
- avec queue cylindr. tol. h9
- hélice à gauche env. 45°

- from HSS acc. DIN 2179
- with straight shank
- left hand quick spiral ca. 45°



| 4.417Z210 | Kleinster plus petit Ø nominal | Grösster plus grand Ø | Schaft tiege shank | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4417ZYL.. CHF | |
|-----------|--------------------------------------|-----------------------------|--------------------------|--|--|------------------|--------|
| | mm | Ø | Ø | mm | mm | | |
| | 1.0 | 0.80 | 1.46 | 1.40 | 33 | 60 | 54.50 |
| | 1.25 | 1.20 | 1.76 | 2.00 | 35 | 65 | 50.40 |
| | 1.5 | 1.48 | 2.12 | 2.10 | 37 | 70 | 35.30 |
| | 2.0 | 1.90 | 2.86 | 3.15 | 48 | 86 | 35.60 |
| | 2.5 | 2.40 | 3.36 | 3.15 | 48 | 86 | 41.30 |
| | 3.0 | 2.90 | 4.06 | 4.00 | 58 | 100 | 38.70 |
| | 4.0 | 3.90 | 5.26 | 5.00 | 68 | 112 | 38.70 |
| | 5.0 | 4.90 | 6.36 | 6.30 | 73 | 122 | 41.20 |
| | 6.0 | 5.90 | 8.00 | 8.00 | 105 | 160 | 46.70 |
| | 6.5 | 6.40 | 8.78 | 8.50 | 119 | 187 | 59.10 |
| | 8.0 | 7.90 | 10.80 | 10.00 | 145 | 207 | 70.70 |
| | 10.0 | 9.90 | 13.40 | 12.50 | 175 | 245 | 89.25 |
| | 12.0 | 11.80 | 16.00 | 16.00 | 210 | 290 | 113.60 |
| | 13.0 | 12.80 | 17.30 | 18.00 | 240 | 320 | 205.00 |

4417MK ..
DIN 2180

**Maschinen - Kegel-
Schälreiba-
hahlen 1:50**

**Alésoirs coniques à cou-
pe descendante 1: 50**

**Tapered chucking
reamers 1:50**

- aus HSS, nach DIN 2180
- mit Morsekegel-Schaft

- en HSS, selon DIN 2180
- avec queue cône morse

- from HSS, acc. DIN 2180
- with Morse tapered shank



| 4.417MK210 | Kleinster plus petit Ø nominal | Grösster plus grand Ø | MK CM MS | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4417MK.. CHF | |
|------------|--------------------------------------|-----------------------------|----------------|--|--|-----------------|---------|
| | mm | Ø | | mm | mm | | |
| | 4.0 | 3.90 | 5.40 | 1 | 75 | 170 | 84.50 |
| | 5.0 | 4.90 | 6.36 | 1 | 73 | 155 | 72.50 |
| | 6.0 | 5.90 | 8.00 | 1 | 105 | 187 | 75.10 |
| | 6.5 | 6.40 | 8.78 | 1 | 119 | 205 | 116.00 |
| | 8.0 | 7.90 | 10.80 | 1 | 145 | 227 | 98.90 |
| | 10.0 | 9.90 | 13.40 | 1 | 175 | 257 | 98.90 |
| | 12.0 | 11.80 | 16.00 | 2 | 210 | 315 | 131.60 |
| | 13.0 | 12.86 | 16.74 | 2 | 194 | 300 | 143.90 |
| | 14.0 | 13.86 | 17.74 | 2 | 194 | 300 | 151.70 |
| | 16.0 | 15.80 | 20.40 | 2 | 230 | 335 | 185.50 |
| | 20.0 | 19.80 | 24.80 | 3 | 250 | 377 | 329.40 |
| | 25.0 | 24.70 | 30.70 | 3 | 300 | 427 | 508.10 |
| | 30.0 | 29.70 | 36.10 | 4 | 320 | 475 | 702.00 |
| | 40.0 | 39.70 | 46.50 | 4 | 340 | 495 | 1401.00 |
| | 50.0 | 49.70 | 56.90 | 5 | 360 | 550 | 2554.00 |

4418ZYL..
DIN 9

**Kegel-Reiba-
hahlen 1:50**

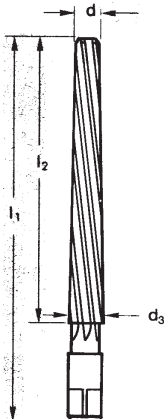
Alésoirs coniques 1: 50

Tapered reamers 1:50

- aus HSS-E, nach DIN 9
- mit Zylinder-Schaft
- Spiralgenutet

- en HSS-E, selon DIN 9
- avec queue cylindrique
- taille hélicoïdale

- from HSS-E, acc. DIN 9
- with cylindrical shank
- twisted



| 4.418ZYL210 | Grösster plus grand Ø | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4418ZYL.. CHF | Nenn-Ø Ø nominal | Grösster grand Ø | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4418ZYL.. CHF |
|-------------|-----------------------------|--|--|------------------|---------------------|------------------------|--|--|------------------|
| | mm | mm | mm | | mm | mm | mm | mm | |
| | 0.6* | 0.88 | 15 | 35 | 6.5 | 8.78 | 100 | 187 | 66.80 |
| | 0.8* | 1.18 | 20 | 40 | 8.0 | 10.80 | 110 | 145 | 68.20 |
| | 1.5 | 2.50 | 37 | 57 | 10.0 | 13.40 | 130 | 170 | 92.40 |
| | 1.6* | 3.00 | 40 | 60 | 12.0 | 16.00 | 145 | 190 | 134.60 |
| | 2.0 | 1.00 | 42 | 67 | 13.0 | 17.00 | 155 | 200 | 165.00 |
| | 2.5 | 3.36 | 48 | 74 | 14.0 | 18.00 | 170 | 215 | 173.00 |
| | 3.0 | 4.06 | 55 | 81 | 16.0 | 20.00 | 180 | 235 | 201.90 |
| | 4.0 | 5.26 | 65 | 90 | 20.0 | 25.00 | 220 | 285 | 287.50 |
| | 5.0 | 6.36 | 75 | 100 | 25.0 | 30.00 | 250 | 325 | 441.40 |
| | 6.0 | 8.00 | 90 | 120 | 30.0 | 35.00 | 260 | 345 | 817.70 |

* Gerade genutet / taille droite / straight flutes

Kegelreibahlen 1:50

- Aus HSS, ähnlich DIN 9
- Mit Morsekegel-Schaft
- Spiralgenutet

Alésoirs conique 1:50

- en HSS-E, simulair DIN 9
- avec queue cône morse
- taille hélicoïdale

Conical reamers 1:50

- from HSS, similar DIN 9
- with morse shank
- twisted

**4418MK..
DIN 9**

| 4.418MK210 | Kleinster plus petit smallest | Grösster plus grand highest | MK CM morse | Schnittlänge long. de cpe. cutt. Length | Gesamtlänge long.totale total length | 4418MK.. CHF |
|---------------------------|-------------------------------------|-----------------------------------|-------------------|---|--|-----------------|
| Nenn-Ø Ø nominal mm | Ø | Ø | | | | |
| 8.0 | 7.90 | 10.80 | 1 | 145 | 227 | 218.00 |
| 10.0 | 9.90 | 13.40 | 1 | 175 | 257 | 251.00 |
| 12.0 | 11.80 | 16.00 | 2 | 210 | 315 | 373.00 |
| 13.0 | 12.86 | 16.74 | 2 | 194 | 300 | 373.00 |
| 14.0 | 13.86 | 17.74 | 2 | 194 | 300 | 451.00 |
| 16.0 | 15.80 | 20.40 | 2 | 230 | 335 | 643.00 |
| 20.0 | 19.80 | 24.80 | 3 | 250 | 377 | 914.00 |
| 25.0 | 24.70 | 30.70 | 3 | 300 | 427 | 1325.00 |
| 30.0 | 29.70 | 36.10 | 4 | 320 | 475 | 1622.00 |
| 40.0 | 39.70 | 46.50 | 4 | 340 | 495 | 2161.00 |
| 50.0 | 49.70 | 56.90 | 5 | 360 | 550 | 2709.00 |



Kegelreibahlen 1:100

- Aus HSS
- Mit Zylinder-Schaft
- rechtsschneidend

Alésoirs conique 1:100

- en HSS
- Queue cylindrique
- coupe à droite

Conical reamers 1:100

- from HSS
- with cylindrical shank
- right hand cutting

4419..

| 4.419210 | Kleinster plus petit smallest | Grösster plus grand highest | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4419.. CHF |
|---------------------------|-------------------------------------|-----------------------------------|--|--|---------------|
| Nenn-Ø Ø nominal mm | Ø | Ø | mm | mm | |
| 1.5 | 1.40 | 1.77 | 37 | 62 | 37.90 |
| 1.75 | 1.65 | 2.08 | 43 | 68 | 43.20 |
| 2.0 | 1.90 | 2.38 | 48 | 73 | 43.20 |
| 2.25 | 2.15 | 2.66 | 51 | 77 | 43.20 |
| 2.50 | 2.40 | 2.93 | 53 | 80 | 43.20 |
| 3.0 | 2.90 | 3.53 | 63 | 91 | 44.50 |
| 3.5 | 3.40 | 4.09 | 69 | 96 | 47.30 |
| 4.0 | 3.90 | 4.65 | 75 | 100 | 54.10 |
| 4.5 | 4.40 | 5.21 | 81 | 108 | 57.50 |
| 5.0 | 4.90 | 5.77 | 87 | 115 | 57.50 |
| 5.5 | 5.40 | 6.43 | 103 | 133 | 68.50 |
| 6.0 | 5.90 | 7.09 | 119 | 150 | 65.70 |
| 7.0 | 6.90 | 8.20 | 130 | 164 | 79.40 |
| 8.0 | 7.90 | 9.31 | 141 | 177 | 105.00 |
| 9.0 | 8.90 | 10.42 | 152 | 190 | 143.00 |
| 10.0 | 9.90 | 11.53 | 163 | 205 | 153.00 |
| 11.0 | 10.90 | 12.63 | 173 | 216 | 183.00 |
| 12.5 | 12.40 | 14.29 | 189 | 234 | 206.00 |
| 14.0 | 13.90 | 15.97 | 207 | 257 | 236.00 |
| 16.0 | 15.90 | 18.24 | 234 | 290 | 280.00 |
| 18.0 | 17.90 | 20.42 | 252 | 325 | 404.00 |
| 20.0 | 19.90 | 22.50 | 270 | 340 | 408.00 |



Kegelreibahlen 1:20

- Aus HSS
- Mit Zylinder-Schaft
- rechtsschneidend

Alésoirs conique 1:20

- en HSS
- Queue cylindrique
- coupe à droite

Conical reamers 1:20

- from HSS
- with cylindrical shank
- right hand cutting

4419A..

| Kleinster plus petit smallest | Grösster plus grand highest | Schaft queue shank | Schnittlänge long. de cpe. cutt.length | Gesamtlänge long.totale total length | 4.419A28 4419A.. Fr. |
|-------------------------------------|-----------------------------------|--------------------------|--|--|----------------------------|
| Ø | Ø | Ø | mm | mm | |
| 2.0 | 5.0 | 5.0 | 60 | 85 | 79.70 |
| 2.50 | 5.5 | 5.5 | 60 | 85 | 81.10 |
| 3.0 | 7.0 | 7.0 | 80 | 110 | 91.40 |
| 3.5 | 7.5 | 7.0 | 80 | 110 | 92.90 |
| 4.0 | 8.0 | 7.0 | 80 | 120 | 97.30 |
| 4.5 | 9.0 | 9.0 | 90 | 130 | 105.00 |
| 5.0 | 9.5 | 9.5 | 90 | 130 | 115.00 |
| 5.5 | 10.0 | 10.0 | 90 | 30 | 127.00 |
| 6.0 | 11.0 | 11.0 | 100 | 140 | 131.00 |
| 7.0 | 12.0 | 12.0 | 100 | 140 | 150.00 |
| 8.0 | 14.0 | 14.0 | 125 | 165 | 174.00 |
| 9.0 | 15.0 | 15.0 | 125 | 165 | 200.00 |
| 10.0 | 16.0 | 16.0 | 125 | 165 | 248.00 |



4420..

DIN 311

Nietlochreibahlen

- aus HSS, nach DIN 311
- mit Morsekegelschaft, rechts-schneidend
- spiralförmig links genutet mit ca. 25°
- Toleranz k 11

Alésoirs de chaudronniers Rivet hole reamers

- en HSS, selon DIN 311
- avec cône morse, coupe à droite
- taille hélicoïdale, hélice à gauche env. 25°
- tolérance k 11
- from HSS, acc.DIN 311
- with morse shank, right hand cutting
- left hand twisted with ca. 25° helix angle of 25°
- tolerance k 11



| 4.420117 | | | | | | | |
|-----------|---------------|--------------|--------|-----------|---------------|--------------|--------|
| Nenn-Ø | Schnittlänge | Gesamtlänge | 4420.. | Nenn-Ø | Schnittlänge | Gesamtlänge | 4420.. |
| Ø nominal | long. de cpe. | long.totale | CHF | Ø nominal | long. de cpe. | long.totale | CHF |
| mm | cutt.length | total length | | mm | cutt.length | total length | |
| 6,4 | 75 | 151 | 83,60 | 21,0 | 155 | 271 | 103,30 |
| 7,4 | 80 | 156 | 86,50 | 22,0 | 165 | 281 | 121,80 |
| 8,4 | 85 | 161 | 67,50 | 23,0 | 165 | 281 | 137,50 |
| 9,5 | 90 | 166 | 68,70 | 24,0 | 180 | 296 | 232,50 |
| 10,0 | 95 | 171 | 69,50 | 25,0 | 180 | 296 | 147,60 |
| 11,0 | 100 | 176 | 79,50 | 26,0 | 180 | 296 | 161,70 |
| 12,0 | 105 | 199 | 78,80 | 27,0 | 195 | 311 | 177,00 |
| 13,0 | 105 | 199 | 79,20 | 28,0 | 195 | 311 | 188,80 |
| 14,0 | 115 | 209 | 119,70 | 30,0 | 195 | 311 | 211,40 |
| 15,0 | 125 | 219 | 80,80 | 31,0 | 195 | 350 | 235,00 |
| 16,0 | 135 | 229 | 86,30 | 32,0 | 195 | 350 | 257,50 |
| 17,0 | 135 | 251 | 90,00 | 33,0 | 195 | 350 | 276,30 |
| 18,0 | 145 | 261 | 96,60 | 34,0 | 210 | 350 | 285,00 |
| 19,0 | 145 | 261 | 101,90 | 37,0 | 235 | 410 | 326,30 |
| 20,0 | 155 | 271 | 134,80 | 40,0 | 235 | 410 | 366,30 |

4ZR01..

Zapfenreibahlen

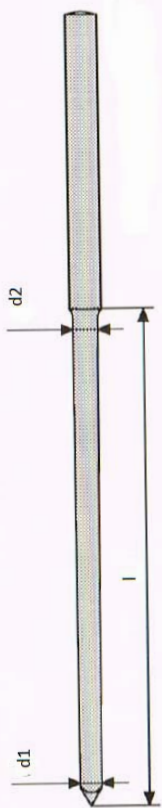
- aus Werkzeugstahl, Werksnorm geschliffen
- mit Zylinderschaft rechts-links schneidend
- 5-seitig und konisch

Équarisseurs

- en acier d'outil, norme usine réctifiés
- avec tige cylindrique, coupe à droite et à gauche
- 5 pans avec conicité

Cannon pinion broaches

- from tool steel factory standard, ground
- with cylindrical shank, right and left hand cutting
- 5 sided and tapered



| d1 | d2 | l | Best. Nr. | CHF* |
|------|------|----|-----------|-----------|
| 0,05 | 0,18 | 13 | 4ZR01.010 | |
| 0,08 | 0,22 | 14 | 4ZR01.020 | |
| 0,10 | 0,24 | 15 | 4ZR01.030 | |
| 0,15 | 0,30 | 16 | 4ZR01.040 | |
| 0,20 | 0,36 | 17 | 4ZR01.050 | |
| 0,25 | 0,42 | 18 | 4ZR01.060 | |
| 0,30 | 0,48 | 19 | 4ZR01.070 | |
| 0,35 | 0,54 | 20 | 4ZR01.080 | |
| 0,40 | 0,60 | 21 | 4ZR01.090 | |
| 0,45 | 0,66 | 22 | 4ZR01.100 | |
| 0,50 | 0,72 | 23 | 4ZR01.110 | |
| 0,55 | 0,78 | 24 | 4ZR01.120 | |
| 0,60 | 0,84 | 25 | 4ZR01.130 | |
| 0,65 | 0,90 | 26 | 4ZR01.140 | |
| 0,70 | 0,96 | 27 | 4ZR01.150 | |
| 0,75 | 1,02 | 28 | 4ZR01.160 | 4.ZR01117 |

* Preise auf Anfrage/prix sur demande/prices on request