



90° Countersinks, spiral-fluted

Series 5501

DIN 335

Tool material Coating

HSCO TiAIN (A)

Shank form

tri-flat

Material Suitability P Stainless steel M K Cast iron N Aluminum 0 S Ni / Ti alloys 0 Hardened steel Н ●=Optimal ○=Secondary

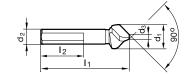
Operating parameters pg. 22

• 3 different convex cutting edges • tri-flat shank prevents slipping in the chuck

• perfect for hand drills

• low-vibration cutting processes

for round and chatter-free countersinking
 considerably lower feed force required
 for universal application





| 14 | 10 | 10 | | 10 | | | |
|--------|--------|--------|--------|--------|---|----------|---------------|
| d1 | d2 | d3 | l1 | l2 | Z | Code no. | EDP Number |
| mm | mm | mm | mm | mm | | 00001101 | 221 110201 |
| 6.300 | 5.000 | 1.500 | 45.000 | 30.000 | 3 | 6.300 | 9055010063000 |
| 8.000 | 6.000 | 2.000 | 50.000 | 30.000 | 3 | 8.000 | 9055010080000 |
| 8.300 | 6.000 | 2.000 | 50.000 | 30.000 | 3 | 8.300 | 9055010083000 |
| 10.000 | 6.000 | 2.500 | 50.000 | 30.000 | 3 | 10.000 | 9055010100000 |
| 10.400 | 6.000 | 2.500 | 50.000 | 30.000 | 3 | 10.400 | 9055010104000 |
| 11.500 | 8.000 | 2.800 | 56.000 | 30.000 | 3 | 11.500 | 9055010115000 |
| 12.400 | 8.000 | 2.800 | 56.000 | 30.000 | 3 | 12.400 | 9055010124000 |
| 15.000 | 10.000 | 3.200 | 60.000 | 30.000 | 3 | 15.000 | 9055010150000 |
| 16.500 | 10.000 | 3.200 | 60.000 | 30.000 | 3 | 16.500 | 9055010165000 |
| 19.000 | 10.000 | 3.500 | 63.000 | 30.000 | 3 | 19.000 | 9055010190000 |
| 20.500 | 10.000 | 3.500 | 63.000 | 30.000 | 3 | 20.500 | 9055010205000 |
| 23.000 | 10.000 | 3.800 | 67.000 | 30.000 | 3 | 23.000 | 9055010230000 |
| 25.000 | 10.000 | 3.800 | 67.000 | 30.000 | 3 | 25.000 | 9055010250000 |
| 31.000 | 12.000 | 4.200 | 71.000 | 30.000 | 3 | 31.000 | 9055010310000 |
| 40.000 | 12.000 | 10.000 | 75.000 | 30.000 | 3 | 40.000 | 9055010400000 |
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| | | | | | | | |

GUHRING 9



Series # 5500, 5501, 5538, 5539, 5674, 5675, 5676, 5677

| Marche March Mar | | Haro | dness | | | Feed Rate - IPR | | | | | | | |
|---|---------------------------------|------|-------|-----|-----------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Comment estructural alteries | Material group | | | | 6.30 mm | 6.30 mm 8.00 mm 10.00 mm 12.50 mm 16.00 mm 20.00 mm 25.00 mm 31.50 mm 4 | | | | | 41.00 mm | | |
| Part | | HRc | Bhn | SFM | 0.248 In. | 0.315 ln. | 0.394 In. | 0.492 In. | 0.630 In. | 0.787 In. | 0.984 In. | 1.240 In. | 1.614 ln. |
| Free cutting steels | Common structural steels | - | ≤ 150 | 135 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Challegued head tweatable steels | | ≤ 32 | ≤ 301 | 130 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Unauthyword heads feedated esteels | Free-cutting steels | ≤ 25 | ≤ 255 | 135 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| 28 255 130 0.0045 0.0050 0.0055 0.0080 0.0040 0.0045 0.0070 0.0085 0.0080 0.0085 0. | | ≤ 32 | ≤ 301 | 130 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Alloyed heath-free lateles steels | Unalloyed heat-treatable steels | ≤ 20 | ≤ 220 | 135 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Alloyed reset harderied steels \$2 \$207 \$40 \$0.0045 \$0.0055 \$0.0040 \$0.0045 \$0.0070 \$0.0070 \$0.0085 \$0. | | ≤ 25 | ≤ 255 | 130 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Company classes handwared states | | ≤ 32 | ≤ 301 | 80 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Unalloyed case hardward steels | Alloyed heat-treatable steels | ≤ 32 | ≤ 301 | 60 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Alloyed case hardered steels | | ≤ 43 | ≤ 402 | 50 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Mindring steels | Unalloyed case hardened steels | ≤ 25 | ≤ 255 | 105 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Nerriding steels | Alloyed case hardened steels | ≤ 32 | ≤ 301 | 60 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Control of the lease | | ≤ 43 | ≤ 402 | 45 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Tool steels | Nitriding steels | ≤ 32 | ≤ 301 | 60 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Second Services Second | | ≤ 43 | ≤ 402 | 50 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| High speed ateels | Tool steels | ≤ 25 | ≤ 255 | 70 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Spring steeles | | ≤ 43 | ≤ 402 | 60 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Hardsmed steels | High speed steels | ≤ 43 | ≤ 402 | 60 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Stainless steels, sulphured | Spring steels | ≤ 38 | ≤ 354 | 45 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Stainless steels, sulphured \$28 \$273 65 0.0030 0.0030 0.0035 0.0040 0.0065 0.0060 0.0065 | Hardened steels | ≤ 48 | ≤ 460 | | | | | | | | | | |
| austentic ≤ 36 ≤ 337 50 0.0015 0.0020 0.0025 0.0025 0.0030 0.0030 0.0035 0.0045 0.0055 Cast iron ≤ 48 ≤ 49 10 0.0045 0.0085 0.0085 0.0085 0.0030 0.0030 0.0035 0.0045 0.0056 Cast iron ≤ 23 ≤ 241 105 0.0045 0.0085 0.0085 0.0086 0.0070 0.0085 0.0085 0.0070 0.0085 0.0085 0.0086 0.0070 0.0085 0.0085 0.0086 0.0070 0.0085 0.0085 0.0085 0.0070 0.0085 0.0095 0.0110 Spherical praphite iron and ≤ 23 ≤ 34 80 0.0045 0.0050 0.0055 0.0080 0.0070 0.0085 0.0095 0.0110 Inalidable cast iron ≤ 38 ≤ 384 35 0.0045 0.0050 0.0055 0.0080 0.0070 0.0033 0.0033 0.0033 0.0035 0.0011 Inalidable cast iron <td></td> <td>≤ 66</td> <td>-</td> <td></td> | | ≤ 66 | - | | | | | | | | | | |
| Martensitic | Stainless steels, sulphured | ≤ 28 | ≤ 273 | 65 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Cast iron ≤ 23 ≤ 242 105 0.0045 0.0050 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Spheroidal graphite iron and maleable cast iron ≤ 23 ≤ 242 90 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Chilled cast iron ≤ 38 ≤ 354 80 0.0045 0.0050 0.0065 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Chilled cast iron ≤ 38 ≤ 354 35 0.0015 0.0020 0.0025 0.0025 0.0030 0.0030 0.0035 0.0095 0.0110 New cast materials GGV ≤ 20 90 0.0045 0.0050 0.0065 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 New cast materials ADI ≤ 32 ≤ 301 50 0.0045 0.0050 0.0065 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 New cast materials ADI <td>austenitic</td> <td>≤ 36</td> <td>≤ 337</td> <td>50</td> <td>0.0015</td> <td>0.0020</td> <td>0.0025</td> <td>0.0025</td> <td>0.0030</td> <td>0.0030</td> <td>0.0035</td> <td>0.0045</td> <td>0.0055</td> | austenitic | ≤ 36 | ≤ 337 | 50 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Special algraphite iron and ≤28 | martensitic | ≤ 46 | ≤ 435 | 60 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Spheroidal graphite iron and maleable cast iron ≤ 23 ≤ 242 90 0.0045 0.0050 0.0055 0.0065 0.0070 0.0085 0.0095 0.0110 Chilled cast iron ≤ 38 ≤ 354 35 0.0015 0.0020 0.0025 0.0026 0.0030 0.0030 0.0035 0.0045 0.0050 New cast materials GGV ≤ 20 ≤ 220 90 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 New cast materials ADI ≤ 32 ≤ 301 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 402 ≤ 400 0.0025 0.0025 0.0030 0.0030 0.0055 0.0066 0.0030 0.0035 0.0025 0.0030 0.0030 0.0055 0.0026 0.0030 0.0030 0.0025 0.0025 0.0030 0.0030 0.0055 0.0085 0.0030 0.0065 0 | Cast iron | ≤ 23 | ≤ 242 | 105 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| malleable cast iron ≤ 38 ≤ 354 80 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Chilled cast iron ≤ 38 ≤ 354 35 0.0015 0.0020 0.0025 0.0065 0.0030 0.0035 0.0095 0.0015 New cast materials GGV ≤ 20 90 0.0045 0.0050 0.0065 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 New cast materials ADI ≤ 32 ≤ 301 5 0.0015 0.0020 0.0025 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Special alloys ≤ 54 ≤ 549 35 0.0015 0.0020 0.0025 0.0025 0.0030 0.0030 0.0035 0.0065 0.0065 0.0030 0.0035 0.0040 0.0035 0.0030 0.0035 0.0040 0.0030 0.0035 0.0040 0.0035 0.0030 0.0035 0.0045 0.0065 0.0065 0.0065 < | | ≤ 38 | ≤ 354 | 65 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Chilled cast iron \$\begin{array}{c} \lequiv{200} \lequi | Spheroidal graphite iron and | ≤ 23 | ≤ 242 | 90 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| New cast materials GGV | malleable cast iron | ≤ 38 | ≤ 354 | 80 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Sa2 Sa31 60 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 | Chilled cast iron | ≤ 38 | ≤ 354 | 35 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| New cast materials ADI | New cast materials GGV | ≤ 20 | ≤ 220 | 90 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Special alloys ≤ 54 ≤ 549 35 0.0015 0.0020 0.0025 0.0025 0.0030 0.0030 0.0035 0.0045 0.0055 TI and Ti-alloys ≤ 25 ≤ 255 60 0.0030 0.0030 0.0025 0.0025 0.0030 0.0050 0.0060 0.0065 0.0085 Aluminium and Al-alloys - ≤ 120 375 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0125 Al wrought alloys - ≤ 120 375 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al wrought alloys - ≤ 180 185 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al cast alloys ≤ 10 % Si - ≤ 180 185 0.0045 0.0050 0.0065 0.0065 0.0065 0.0070 0.0085 0.0095 0.0110 Magnesium alloys - | | ≤ 32 | ≤ 301 | 60 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Special alloys ≤ 54 ≤ 549 35 0.0015 0.0020 0.0025 0.0030 0.0030 0.0035 0.0045 0.0055 Ti and Ti-alloys ≤ 25 ≤ 255 60 0.0030 0.0030 0.0035 0.0040 0.0050 0.0060 0.0065 0.0085 Aluminium and Al-alloys - ≤ 120 375 0.0060 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al wrought alloys - ≤ 200 290 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al wrought alloys - ≤ 200 290 0.0060 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al cast alloys ≤ 10 % Si - ≤ 180 185 0.0045 0.0050 0.0065 0.0065 0.0070 0.0085 0.0095 0.0110 Al cast alloys ≤ 10 % Si - ≤ 180 130 0.0065 0.0 | New cast materials ADI | ≤ 32 | ≤ 301 | | | | | | | | | | |
| Ti and Ti-alloys | | ≤ 43 | ≤ 402 | | | | | | | | | | |
| ≤ 43 ≤ 402 45 0.0015 0.0020 0.0025 0.0025 0.0030 0.0030 0.0035 0.0045 0.0055 Aluminium and Al-alloys - ≤ 120 375 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al wrought alloys - ≤ 200 290 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al cast alloys ≤ 10 % Si - ≤ 180 165 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Al cast alloys ≤ 10 % Si - ≤ 180 130 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Magnesium alloys - ≤ 120 415 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Copper, low-alloyed - | Special alloys | ≤ 54 | ≤ 549 | 35 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Aluminium and Al-alloys | Ti and Ti-alloys | ≤ 25 | ≤ 255 | 60 | 0.0030 | 0.0030 | 0.0035 | 0.0040 | 0.0045 | 0.0050 | 0.0060 | 0.0065 | 0.0085 |
| Al wrought alloys - ≤200 290 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Al cast alloys ≤ 10 % Si - ≤180 165 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 > 10 % Si - ≤180 130 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.0085 0.0095 0.0110 Magnesium alloys - ≤120 415 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Copper, low-alloyed - ≤150 250 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Brass, short-chipping - ≤180 330 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 long-chipping - ≤180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping - ≤180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤25 ≤255 110 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤25 ≤255 100 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Duroplastics 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Thermoplastics Reinforced plastics - Kevlar | | ≤ 43 | ≤ 402 | 45 | 0.0015 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0045 | 0.0055 |
| Al cast alloys ≤ 10 % Si | Aluminium and Al-alloys | - | ≤ 120 | 375 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| > 10 % Si - ≤ 180 130 0.0045 0.0050 0.0055 0.0060 0.0065 0.0070 0.085 0.0095 0.0110 Magnesium alloys - ≤ 120 415 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Copper, low-alloyed - ≤ 150 250 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Brass, short-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chip | Al wrought alloys | - | ≤ 200 | 290 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Magnesium alloys - ≤ 120 415 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Copper, low-alloyed - ≤ 150 250 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Brass, short-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping - ≤ 255 110 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronz | Al cast alloys ≤ 10 % Si | - | ≤ 180 | 165 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Copper, low-alloyed - ≤ 150 250 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Brass, short-chipping - ≤ 180 330 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping - ≤ 255 110 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 100 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 < | > 10 % Si | - | ≤ 180 | 130 | 0.0045 | 0.0050 | 0.0055 | 0.0060 | 0.0065 | 0.0070 | 0.0085 | 0.0095 | 0.0110 |
| Brass, short-chipping - ≤ 180 330 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 110 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 100 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 100 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 | Magnesium alloys | - | ≤ 120 | 415 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| long-chipping - ≤ 180 210 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, short-chipping - ≤ 180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 110 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 100 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Duroplastics 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Thermoplastics 165 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Reinforced plastics - Kevlar - - - <t< td=""><td>Copper, low-alloyed</td><td>-</td><td>≤ 150</td><td>250</td><td>0.0060</td><td>0.0065</td><td>0.0065</td><td>0.0075</td><td>0.0085</td><td>0.0090</td><td>0.0100</td><td>0.0120</td><td>0.0135</td></t<> | Copper, low-alloyed | - | ≤ 150 | 250 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Bronze, short-chipping - ≤ 180 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 110 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Bronze, long-chipping ≤ 25 ≤ 255 100 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Surpliantics 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Thermoplastics 165 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Reinforced plastics - Kevlar 165 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 | Brass, short-chipping | - | ≤ 180 | 330 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Service Se | long-chipping | - | ≤ 180 | 210 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Bronze, long-chipping ≤ 25 ≤ 255 ≤ 301 0.0060 0.0065 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0120 0.0135 ≥ 32 ≤ 301 80 0.0060 0.0065 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Duroplastics 130 0.0060 0.0065 0.0065 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0120 0.0135 Thermoplastics Reinforced plastics - Kevlar 165 0.0060 0.0065 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0120 0.0135 | Bronze, short-chipping | - | ≤ 180 | 130 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Surplication ≤ 32 ≤ 301 80 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Duroplastics 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Thermoplastics 165 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Reinforced plastics - Kevlar 165 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 | | ≤ 25 | ≤ 255 | 110 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Duroplastics 130 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0120 0.0120 0.0135 Thermoplastics 165 0.0060 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 Reinforced plastics - Kevlar 0.0065 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 | Bronze, long-chipping | ≤ 25 | ≤ 255 | 100 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Thermoplastics 165 0.0060 0.0065 0.0075 0.0085 0.0090 0.0100 0.0120 0.0135 0.0090 0.0100 0.0120 0.0135 | | ≤ 32 | ≤ 301 | 80 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Reinforced plastics - Kevlar | Duroplastics | | | 130 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| | Thermoplastics | | | 165 | 0.0060 | 0.0065 | 0.0065 | 0.0075 | 0.0085 | 0.0090 | 0.0100 | 0.0120 | 0.0135 |
| Reinforced plastics - GFK / CFK | Reinforced plastics - Kevlar | | | | | | | | | | | | |
| | Reinforced plastics - GFK / CFK | | | | | | | | | | | | |

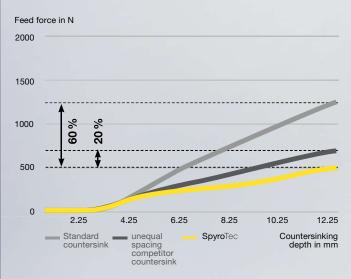
22 GUHRING

SpyroTec

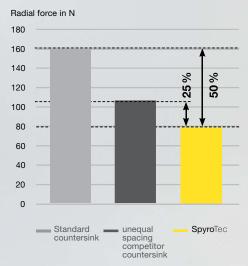
THE INNOVATIVE, TWISTED HSS AND HSCO COUNTERSINK

The axial and radial forces that occur during countersinking operations are significantly reduced due to the unique geometry of the SpyroTec cutting edges. The convex form and variable pitch of the helical cutting edges results in a stable countersinking process with minimal vibration, even when using

a hand drill. Round, precise, chatter-free countersinking is guaranteed. The TiAIN coating ensures higher wear resistance and thermal protection, which guarantees longer tool life in many different materials and applications.



LOWER FEED FORCE BY APPROX. 60%
COMPARED TO STANDARD COUNTERSINKS



LOWER RADIAL FORCE BY APPROX. 50% COMPARED TO STANDARD COUNTERSINKS

- standard program
- 90°, 82°, and 60° countersinks
- round shank version
- tri-flat shank version
- long length round shank version



Countersinking with standard countersink



SpyroTec



CONVEX CUTTING EDGES

Three different convex cutting edges in combination with three unequal helix angles enable extremely stable and low-vibration cutting processes without any chatter marks.

TIAIN COATING

The TiAIN coating provides high hardness and excellent thermal protection.

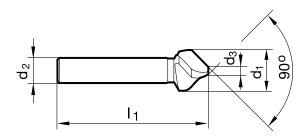
CUTTING MATERIAL

The high-quality HSS and HSCO substrates hold up well in high-temperature applications, providing long tool life in a wide variety of materials.



SPYROTEC - SPIRAL-FLUTED COUNTERSINKS

Suitable for countersinking the smallest allowable hole diameters and screw sizes listed below.



SpyroTec 90°

| d1 | smallest allowable hole Ø | for countersunk screws ISO 2009, 2010, 7046, 7047 | for countersunk screws DIN 7991 |
|--------|---------------------------|--|------------------------------------|
| 6.300 | 2.00 | - | M3 |
| 8.000 | 2.50 | M4 | - |
| 8.300 | 2.50 | - | M4 |
| 10.000 | 3.00 | M5 | - |
| 10.400 | 3.00 | - | M5 |
| 11.500 | 3.30 | M6 | - |
| 12.400 | 3.30 | - | M6 |
| 15.000 | 3.70 | M8 | - |
| 16.500 | 3.70 | - | M8 |
| 19.000 | 4.50 | M10 | - |
| 20.500 | 4.50 | - | M10 |
| 23.000 | 4.80 | M12 | - |
| 25.000 | 4.80 | - | M12 |
| 31.000 | 5.20 | - | M16 |
| 40.000 | 12.00 | - | M24 |

SpyroTec 82°

| - 1- 7 | |
|-------------|--|
| d1 frac. | Smallest hole - Ø to allow countersinking - inch |
| 1/4 | 0.0830 |
| 5/16 | 0.1020 |
| 3/8 | 0.1100 |
| 1/2 | 0.1730 |
| 5/8 | 0.2010 |
| 3/4 | 0.2520 |
| 7/8 | 0.2720 |
| 1 | 0.2910 |
| 1 1/4 | 0.4090 |

SpyroTec 60°

| Spylo 160 (| 30 |
|-------------|--|
| d1 | smallest hole - Ø to allow countersinking - mm |
| 6.300 | 2.10 |
| 8.000 | 2.50 |
| 10.000 | 3.00 |
| 12.500 | 3.70 |
| 16.000 | 4.50 |
| 20.000 | 6.00 |
| 25.000 | 7.30 |
| | |
| | |

GUHRING