

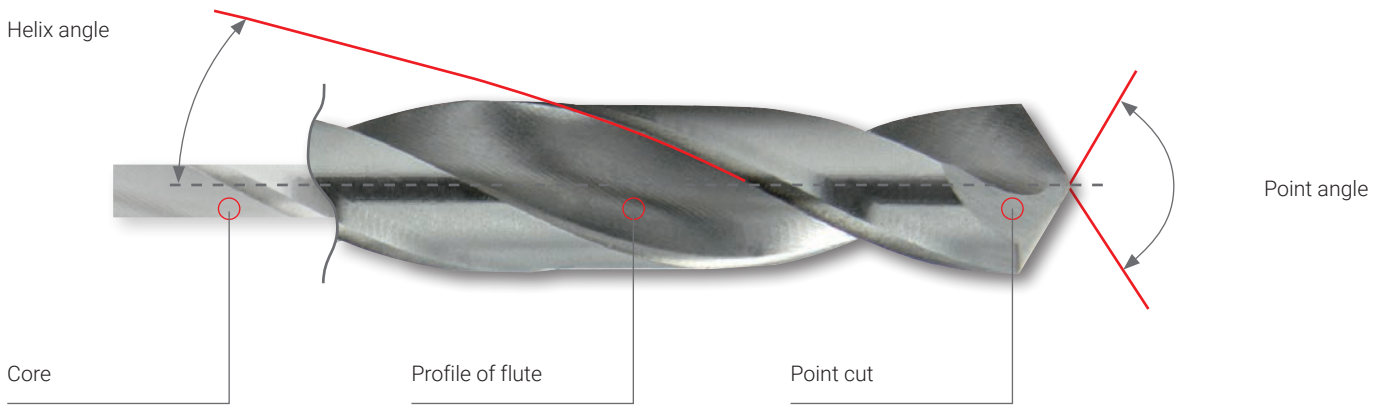


**TWIST DRILLS**

FASCINATION  PRECISION®

# Overview of symbols

|                 |   |                 |  |
|-----------------|---|-----------------|--|
| <b>N</b>        | Helix angle: 25-30°<br>Profile of flute: normal<br>Core: normal<br>Point angle: 118°  | <b>DIN 333</b>  | Centre drills 60° - shape A and R            |
| <b>TL 3000</b>  | Helix angle: 40°<br>Profile of flute: wide with rounded rear edges<br>Core: thick<br>Point angle: 130°<br>Point cut: shape C      | <b>DIN 345</b>  | Twist drills with morse taper shank          |
| <b>UTL 3000</b> | Helix angle: 40°<br>Profile of flute: wide with rounded rear edges<br>Core: very thick<br>Point angle: 130°<br>Point cut: shape U | <b>DIN 338</b>  | Short twist drills with straight shank       |
| <b>TURBO</b>    | Helix angle: 36°<br>Profile of flute: normal thickened<br>Core: 130°<br>Point angle: shape C                                      | <b>DIN 1869</b> | Extra long twist drills with straight shank  |
| <b>UNI</b>      | Helix angle: 40°<br>Profile of flute: wide, for better chip removal<br>Core: normal<br>Point angle: 135°<br>Point cut: shape C    | <b>DIN 340</b>  | Long twist drills with straight shank        |
| <b>VA</b>       | Helix angle: 36°<br>Profile of flute: normal thickened<br>Core: 130°<br>Point angle: shape C                                      | <b>DIN 1897</b> | Extra short twist drills with straight shank |
| <b>KV</b>       | Helix angle: 25-30°<br>Profile of flute: normal<br>Core: normal<br>Point angle: 130°<br>Point cut: shape C                        |                 |  |



## Point cuts in accordance with DIN 1412



### Shape N: Helical point normal ground

Applications: for all normal drilling work in steel, non-ferrous metal and plastic. The point angles depend on the ease with which the materials can be cut. Advantages: powerful main cut, resistant to impact and lateral forces. Simple manual grinding possible. Disadvantages: broad cutting edge requires considerable pressure.



### Shape A: Cut chisel edge

Applications: for all normal drilling work using drills with a strong core, for drilling into solid materials with larger drill diameters. Advantages: good centring when starting to drill, as the length of the chisel edge is reduced to 1/10 of the drill diameter, and fewer pressure is required. Disadvantages: additional regrinding work.



### Shape B: Cut chisel edge with corrected major cutting edge

Applications: for drilling high-density steel, for manganese steel with over 10 % Mn, for hard spring steel and for drilling out. Advantages: resistant to impact, one-way load and lateral forces. Does not catch in thin workpieces. Disadvantages: high pressure required, tendency to slip, extra work involved in regrinding.



### Shape C: Split point

Applications: for drills with very strong cores, for particularly tough, hard materials and for deep-hole drills. Advantages: good centring, little pressure required. Chip spreading improves chip removal. Disadvantages: perfect grinding only possible by machine.



### Shape D: Ground for grey cast iron

Applications: for drilling grey cast iron, malleable cast iron and forgings. Advantages: wear on cutting corners is reduced by extended major cutting edges, resistant to impact, good heat conductivity, all giving improved tool life. Disadvantages: extra work involved in regrinding.



### Shape E: Centre point

Applications: for drilling sheet-metal and soft materials, for blind holes with flat bottoms. Advantages: good centring, minimal formation of burrs when through-drilling, precise drilling in thin sheets and pipes, does not catch. Available in diameters of 2.5 mm upwards. Disadvantages: sensitive to impact and one-way loading. Can only be ground to perfection by machine.

## Other point cuts













### Shape U: Special ground

Applications: for drills with sturdy profiles suitable for use in automated processing, with narrow grooves and strong cores. Advantages: extremely good self-centring behaviour when maximum cutting valuminiumes are employed. Concave cutting produces short metal chips. Disadvantages: extra work involved in regrinding.

# Range and applications overview:













|  | Material  | Surface | DIN     | Shape    | Point cuts | Point angle | Helix angle | Shank | Ø mm        | Article no.                   | Page    |
|--|-----------|---------|---------|----------|------------|-------------|-------------|-------|-------------|-------------------------------|---------|
|  | HSSE Co 8 |         | DIN 338 | VA       |            |             |             |       | 1,0 - 16,0  | 281 010 E<br>-<br>281 160 E   | 22 - 25 |
|  | HSSE Co 8 | TiAlN   | DIN 338 | VA       |            |             |             |       | 1,0 - 16,0  | 281 010 EF<br>-<br>281 160 EF | 22 - 25 |
|  | HSSE Co 5 |         | DIN 338 | UTL 3000 |            |             |             |       | 1,0 - 16,0  | 229 010<br>-<br>229 160       | 26 - 29 |
|  | HSSE Co 5 | TiAlN   | DIN 338 | UTL 3000 |            |             |             |       | 1,0 - 16,0  | 229 010 F<br>-<br>229 160 F   | 26 - 29 |
|  | HSSE Co 5 |         | DIN 338 | VA       |            |             |             |       | 1,0 - 20,0  | 215 010<br>-<br>215 210       | 30 - 31 |
|  | HSSE Co 5 |         | DIN 338 | VA       |            |             |             |       | 1,0 - 14,0  | 215 010 Z<br>-<br>215 140 Z   | 32 - 33 |
|  | HSSE Co 5 | TiAlN   | DIN 338 | VA       |            |             |             |       | 1,0 - 14,0  | 215 010 F<br>-<br>215 140 F   | 32 - 33 |
|  | HSSE Co 5 |         | DIN 338 | UNI      |            |             |             |       | 1,0 - 13,0  | 228 010<br>-<br>228 130       | 34 - 35 |
|  | HSS-G     |         | DIN 338 | TL 3000  |            |             |             |       | 1,0 - 16,0  | 258 010<br>-<br>258 160       | 36 - 38 |
|  | HSS-G     | TiN     | DIN 338 | TL 3000  |            |             |             |       | 1,0 - 16,0  | 258 010 T<br>-<br>258 160 T   | 36 - 38 |
|  | HSS-G     | TiAlN   | DIN 338 | TL 3000  |            |             |             |       | 1,0 - 16,0  | 258 010 F<br>-<br>258 160 F   | 36 - 38 |
|  | HSS-G     |         | DIN 338 | TURBO    |            |             |             |       | 1,0 - 13,0  | 2146 010<br>-<br>2146 130     | 39 - 40 |
|  | HSS-G     |         | DIN 338 | N        |            |             |             |       | 0,3 - 20,0  | 214 003<br>-<br>214 201       | 41 - 44 |
|  | HSS-G     |         | DIN 338 | N        |            |             |             |       | 0,3 - 16,0  | 214 003 S<br>-<br>214 160 S   | 41 - 44 |
|  | HSS-G     | TiN     | DIN 338 | N        |            |             |             |       | 0,3 - 16,0  | 250 003 T<br>-<br>250 160 T   | 41 - 44 |
|  | HSS-G     |         | DIN 338 | N        |            |             |             |       | 1,0 - 13,0  | 214 010 Li<br>-<br>214 130 Li | 45      |
|  | HSS-G     |         | DIN 338 | N        |            |             |             |       | 1,0 - 13,0  | 2501 010 T<br>-<br>2501 130 T | 46      |
|  | HSS-R     |         | DIN 338 | N        |            |             |             |       | 0,3 - 20,0  | 201 003<br>-<br>201 200       | 48 - 49 |
|  | HSS-R     |         | DIN 338 | N        |            |             |             |       | 10,5 - 25,0 | 200 105<br>-<br>200 250       | 50      |
|  | HSS-G     |         | DIN 338 | N        |            |             |             |       | 10,5 - 20,0 | 200 4 105<br>-<br>200 4 200   | 50      |
|  | HSSE Co 5 |         | DIN 338 | N        |            |             |             |       | 10,5 - 20,0 | 200 5 105<br>-<br>200 5 200   | 50      |
|  | TC        | TiAlN   | DIN 338 | N        |            |             |             |       | 3,0 - 13,0  | 814 030<br>-<br>814 130       | 51      |

| Steel (N/mm <sup>2</sup> )<br>< 900<br> | Steel (N/mm <sup>2</sup> )<br>< 1100<br> | Steel (N/mm <sup>2</sup> )<br>< 1300<br> | Stainless steel<br> | Aluminium<br> | Brass<br> | Bronze<br> | Plastics<br> | Cast iron<br> | Titanium alloyed<br> |
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# Range and applications overview:



|  | Material  | Surface | DIN      | Shape    | Point cuts | Point angle        | Helix angle | Shank | Ø mm        | Article no.                 | Page    |
|--|-----------|---------|----------|----------|------------|--------------------|-------------|-------|-------------|-----------------------------|---------|
|  | TC        |         | DIN 338  | N        |            | 120°               | 25-30°      |       | 2,0 - 13,0  | 815 020<br>-<br>815 130     | 52 - 53 |
|  | TC        | Tecrona | DIN 338  | N        |            | 120°               | 25-30°      |       | 2,0 - 13,0  | 815 020 C<br>-<br>815 130 C | 52 - 53 |
|  | HSS-G     |         | DIN 338  | TL 3000  |            | 130°               | 40°         |       | 1/16 - 1/2  | 258 801<br>-<br>258 829     | 54      |
|  | HSS-G     | TIN     | DIN 338  | TL 3000  |            | 130°               | 40°         |       | 1/16 - 1/2  | 258 801 T<br>-<br>258 829 T | 54      |
|  | HSS-G     | TiAIN   | DIN 338  | TL 3000  |            | 130°               | 40°         |       | 1/16 - 1/2  | 258 801 F<br>-<br>258 829 F | 54      |
|  | HSSE Co 5 |         | DIN 338  | UTL 3000 |            | 130°               | 40°         |       | 1/16 - 1/2  | 229 801<br>-<br>229 829     | 55      |
|  | HSSE Co 5 |         | DIN 338  | VA       |            | ≥ Ø 2,0 mm<br>130° | 36°         |       | 1/16 - 1/2  | 215 801<br>-<br>215 829     | 56      |
|  | HSS-G     |         | DIN 338  | N        |            | ≥ Ø 2,0 mm<br>118° | 25-30°      |       | 1/16 - 1/2  | 214 801<br>-<br>214 829     | 57      |
|  | HSS-G     | TIN     | DIN 338  | N        |            | ≥ Ø 2,0 mm<br>118° | 25-30°      |       | 1/16 - 1/2  | 250 801 T<br>-<br>250 829 T | 57      |
|  | HSSE Co 5 |         | DIN 340  | TL 3000  |            | 130°               | 40°         |       | 2,5 - 13,0  | 253 025<br>-<br>253 130     | 58 - 59 |
|  | HSSE Co 5 | TiAIN   | DIN 340  | TL 3000  |            | 130°               | 40°         |       | 2,5 - 13,0  | 253 025 F<br>-<br>253 130 F | 58 - 59 |
|  | HSS-G     |         | DIN 340  | N        |            | 118°               | 25-30°      |       | 2,5 - 13,0  | 203 025<br>-<br>203 130     | 60 - 61 |
|  | HSS-G     | TIN     | DIN 340  | N        |            | 118°               | 25-30°      |       | 2,5 - 13,0  | 203 025 T<br>-<br>203 130 T | 60 - 61 |
|  | HSS-G     |         | DIN 1869 | TL 3000  |            | 130°               | 40°         |       | 2,0 - 13,0  | 254 020<br>-<br>254 130     | 62 - 63 |
|  | HSS-G     |         | DIN 1869 | TL 3000  |            | 130°               | 40°         |       | 3,0 - 13,0  | 255 030<br>-<br>255 130     | 62 - 63 |
|  | HSS-G     |         | DIN 1869 | TL 3000  |            | 130°               | 40°         |       | 3,5 - 13,0  | 256 035<br>-<br>256 130     | 62 - 63 |
|  | HSS       |         | DIN 345  | N        |            | 118°               | 20-30°      |       | 10,0 - 60,0 | 204 100<br>-<br>204 600     | 64 - 65 |
|  | HSSE Co 5 |         | DIN 345  | N        |            | 118°               | 20-30°      |       | 10,0 - 30,0 | 204 100 E<br>-<br>204 300 E | 64 - 65 |
|  | HSSE Co 5 | TIN     | DIN 345  | N        |            | 118°               | 20-30°      |       | 10,0 - 30,0 | 204 100 T<br>-<br>204 300 T | 64 - 65 |
|  | HSS-G     |         | DIN 1897 | N        |            | 118°               | 25-30°      |       | 2,0 - 13,0  | 202 020<br>-<br>202 130     | 66 - 67 |
|  | HSS-G     | TIN     | DIN 1897 | N        |            | 118°               | 25-30°      |       | 2,0 - 13,0  | 202 020 T<br>-<br>202 130 T | 66 - 67 |
|  | HSS       |         | DIN 333  | A        |            | 120°               | 60°         |       | 0,8 - 6,3   | 217 008<br>-<br>217 063     | 67      |











| Steel (N/mm <sup>2</sup> )<br>< 900<br> | Steel (N/mm <sup>2</sup> )<br>< 1100<br> | Steel (N/mm <sup>2</sup> )<br>< 1300<br> | Stainless steel<br> | Aluminium<br>für / for<br>ALU<br> | Brass<br> | Bronze<br> | Plastics<br> | Cast iron<br> | Titanium alloyed<br>Ti<br> |
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# Range and applications overview:



| Material     | Surface | DIN      | Shape | Point cuts | Point angle | Helix angle | Shank | Ø mm       | Article no.                   | Page |
|--------------|---------|----------|-------|------------|-------------|-------------|-------|------------|-------------------------------|------|
| HSS          |         | DIN 333  | A+    |            | 120°        | 60°         |       | 0,8 - 6,3  | 217 1 008<br>-<br>217 1 063   | 67   |
| HSS          |         | DIN 333  | R     |            | 120°        | 60°         |       | 0,8 - 6,3  | 217 2 008<br>-<br>217 2 063   | 67   |
| HSSE<br>Co 5 |         | DIN 1897 | N     |            | 130°        | 25-30°      |       | 2,0 - 13,0 | 202 020 E<br>-<br>202 130 E   | 68   |
| HSSE<br>Co 5 | TiAIN   | DIN 1897 | N     |            | 130°        | 25-30°      |       | 2,0 - 13,0 | 202 020 EF<br>-<br>202 130 EF | 68   |
| HSS-G        |         |          | N     |            | 118°        | 25-30°      |       | 4,9 - 5,8  | 257 515<br>-<br>257 583       | 69   |
| HSS-G        |         |          | N     |            | 130°        | 25-30°      |       | 2,5 - 6,5  | 251 025<br>-<br>251 065       | 70   |
| HSS-G        |         |          | KV    |            | 130°        | 25-30°      |       | 2,5 - 8,0  | 252 025<br>-<br>252 065       | 71   |

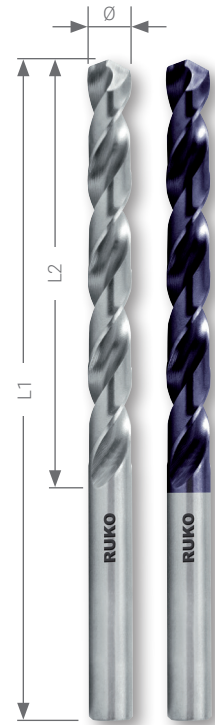


| Steel (N/mm <sup>2</sup> )<br>< 900<br> | Steel (N/mm <sup>2</sup> )<br>< 1100<br> | Steel (N/mm <sup>2</sup> )<br>< 1300<br> | Stainless steel<br> | Aluminium<br>für / for<br>ALU<br> | Brass<br> | Bronze<br> | Plastics<br> | Cast iron<br> | Titanium alloyed<br>Ti<br> |
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## Twist drills DIN 338 type VA, HSSE-Co 8 ground





Powerful special drill that should ideally be used for titanium base alloys as well as stainless, acid-resistant and heat-resistant austenitic steels. It is also suitable for high strength steels with low ductility. Under certain conditions, these drills can be used for special alloys such as hastelloy, inconel and nimonic etc.



Packing unit: in plastic box

| Steel (N/mm2) < 900  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |
|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Steel (N/mm2) < 1100 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Steel (N/mm2) < 1300 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Rust-resistant steel | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Aluminium            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
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| Brass                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Bronze               | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Plastics             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cast iron            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Titanium alloyed     | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

| Ø<br>mm | L1<br>mm | L2<br>mm | HSSE Co 8                           |                                     |  | HSSE Co 8 TiAIN                     |                                     |  |
|---------|----------|----------|-------------------------------------|-------------------------------------|--|-------------------------------------|-------------------------------------|--|
|         |          |          |                                     |                                     |  |                                     |                                     |  |
| 1,00    | 34,0     | 12,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,10    | 36,0     | 14,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,20    | 38,0     | 16,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,30    | 38,0     | 16,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,40    | 40,0     | 18,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,50    | 40,0     | 18,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,60    | 43,0     | 20,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,70    | 43,0     | 20,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,80    | 46,0     | 22,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 1,90    | 46,0     | 22,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,00    | 49,0     | 24,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,10    | 49,0     | 24,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,20    | 53,0     | 27,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,30    | 53,0     | 27,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,40    | 57,0     | 30,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,50    | 57,0     | 30,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,60    | 57,0     | 30,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,70    | 61,0     | 33,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,80    | 61,0     | 33,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 2,90    | 61,0     | 33,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,00    | 61,0     | 33,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,10    | 65,0     | 36,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,20    | 65,0     | 36,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,30    | 65,0     | 36,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,40    | 70,0     | 39,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,50    | 70,0     | 39,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,60    | 70,0     | 39,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,70    | 70,0     | 39,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,80    | 75,0     | 43,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 3,90    | 75,0     | 43,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,00    | 75,0     | 43,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,10    | 75,0     | 43,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,20    | 75,0     | 43,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,30    | 80,0     | 47,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,40    | 80,0     | 47,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,50    | 80,0     | 47,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,60    | 80,0     | 47,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,70    | 80,0     | 47,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,80    | 86,0     | 52,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| 4,90    | 86,0     | 52,0     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |

| Ø<br>mm | L1<br>mm | L2<br>mm | HSSE Co 8   |  | HSSE TIAN  |  |
|---------|----------|----------|---|--|--|--|
|         |          |          |  |  |  |  |
| 5,00    | 86,0     | 52,0     | 281 050 E   | 10   | 281 050 EF   | 10   |
| 5,10    | 86,0     | 52,0     | 281 051 E   | 10   | 281 051 EF   | 10   |
| 5,20    | 86,0     | 52,0     | 281 052 E   | 10   | 281 052 EF   | 10   |
| 5,30    | 86,0     | 52,0     | 281 053 E   | 10   | 281 053 EF   | 10   |
| 5,40    | 93,0     | 57,0     | 281 054 E   | 10   | 281 054 EF   | 10   |
| 5,50    | 93,0     | 57,0     | 281 055 E   | 10   | 281 055 EF   | 10   |
| 5,60    | 93,0     | 57,0     | 281 056 E   | 10   | 281 056 EF   | 10   |
| 5,70    | 93,0     | 57,0     | 281 057 E   | 10   | 281 057 EF   | 10   |
| 5,80    | 93,0     | 57,0     | 281 058 E   | 10   | 281 058 EF   | 10   |
| 5,90    | 93,0     | 57,0     | 281 059 E   | 10   | 281 059 EF   | 10   |
| 6,00    | 93,0     | 57,0     | 281 060 E   | 10   | 281 060 EF   | 10   |
| 6,10    | 101,0    | 63,0     | 281 061 E   | 10   | 281 061 EF   | 10   |
| 6,20    | 101,0    | 63,0     | 281 062 E   | 10   | 281 062 EF   | 10   |
| 6,30    | 101,0    | 63,0     | 281 063 E   | 10   | 281 063 EF   | 10   |
| 6,40    | 101,0    | 63,0     | 281 064 E   | 10   | 281 064 EF   | 10   |
| 6,50    | 101,0    | 63,0     | 281 065 E   | 10   | 281 065 EF   | 10   |
| 6,60    | 101,0    | 63,0     | 281 066 E   | 10   | 281 066 EF   | 10   |
| 6,70    | 101,0    | 63,0     | 281 067 E   | 10   | 281 067 EF   | 10   |
| 6,80    | 109,0    | 69,0     | 281 068 E   | 10   | 281 068 EF   | 10   |
| 6,90    | 109,0    | 69,0     | 281 069 E   | 10   | 281 069 EF   | 10   |
| 7,00    | 109,0    | 69,0     | 281 070 E   | 10   | 281 070 EF   | 10   |
| 7,10    | 109,0    | 69,0     | 281 071 E   | 10   | 281 071 EF   | 10   |
| 7,20    | 109,0    | 69,0     | 281 072 E   | 10   | 281 072 EF   | 10   |
| 7,30    | 109,0    | 69,0     | 281 073 E   | 10   | 281 073 EF   | 10   |
| 7,40    | 109,0    | 69,0     | 281 074 E   | 10   | 281 074 EF   | 10   |
| 7,50    | 109,0    | 69,0     | 281 075 E   | 10   | 281 075 EF   | 10   |
| 7,60    | 117,0    | 75,0     | 281 076 E   | 10   | 281 076 EF   | 10   |
| 7,70    | 117,0    | 75,0     | 281 077 E   | 10   | 281 077 EF   | 10   |
| 7,80    | 117,0    | 75,0     | 281 078 E   | 10   | 281 078 EF   | 10   |
| 7,90    | 117,0    | 75,0     | 281 079 E   | 10   | 281 079 EF   | 10   |
| 8,00    | 117,0    | 75,0     | 281 080 E   | 10   | 281 080 EF   | 10   |
| 8,10    | 117,0    | 75,0     | 281 081 E   | 10   | 281 081 EF   | 10   |
| 8,20    | 117,0    | 75,0     | 281 082 E   | 10   | 281 082 EF   | 10   |
| 8,30    | 117,0    | 75,0     | 281 083 E   | 10   | 281 083 EF   | 10   |
| 8,40    | 117,0    | 75,0     | 281 084 E   | 10   | 281 084 EF   | 10   |
| 8,50    | 117,0    | 75,0     | 281 085 E   | 10   | 281 085 EF   | 10   |
| 8,60    | 125,0    | 81,0     | 281 086 E   | 10   | 281 086 EF   | 10   |
| 8,70    | 125,0    | 81,0     | 281 087 E   | 10   | 281 087 EF   | 10   |
| 8,80    | 125,0    | 81,0     | 281 088 E   | 10   | 281 088 EF   | 10   |
| 8,90    | 125,0    | 81,0     | 281 089 E   | 10   | 281 089 EF   | 10   |
| 9,00    | 125,0    | 81,0     | 281 090 E   | 10   | 281 090 EF   | 10   |
| 9,10    | 125,0    | 81,0     | 281 091 E   | 10   | 281 091 EF   | 10   |
| 9,20    | 125,0    | 81,0     | 281 092 E   | 10   | 281 092 EF   | 10   |
| 9,30    | 125,0    | 81,0     | 281 093 E   | 10   | 281 093 EF   | 10   |
| 9,40    | 125,0    | 81,0     | 281 094 E   | 10   | 281 094 EF   | 10   |
| 9,50    | 125,0    | 81,0     | 281 095 E   | 10   | 281 095 EF   | 10   |
| 9,60    | 133,0    | 87,0     | 281 096 E   | 10   | 281 096 EF   | 10   |
| 9,70    | 133,0    | 87,0     | 281 097 E   | 10   | 281 097 EF   | 10   |
| 9,80    | 133,0    | 87,0     | 281 098 E   | 10   | 281 098 EF   | 10   |
| 9,90    | 133,0    | 87,0     | 281 099 E   | 10   | 281 099 EF   | 10   |
| 10,00   | 133,0    | 87,0     | 281 100 E   | 10   | 281 100 EF   | 10   |
| 10,20   | 133,0    | 87,0     | 281 102 E   | 10   | 281 102 EF   | 10   |
| 10,50   | 133,0    | 87,0     | 281 105 E   | 5  | 281 105 EF   | 5  |
| 11,00   | 142,0    | 94,0     | 281 110 E   | 5  | 281 110 EF   | 5  |
| 11,50   | 142,0    | 94,0     | 281 115 E   | 5  | 281 115 EF   | 5  |
| 12,00   | 151,0    | 101,0    | 281 120 E   | 5  | 281 120 EF   | 5  |
| 12,50   | 151,0    | 101,0    | 281 125 E   | 5  | 281 125 EF   | 5  |
| 13,00   | 151,0    | 101,0    | 281 130 E   | 5  | 281 130 EF   | 5  |
| 13,50   | 160,0    | 108,0    | 281 135 E   | 5  | 281 135 EF   | 5  |
| 14,00   | 160,0    | 108,0    | 281 140 E   | 5  | 281 140 EF   | 5  |
| 14,50   | 169,0    | 114,0    | 281 145 E   | 5  | 281 145 EF   | 5  |
| 15,00   | 169,0    | 114,0    | 281 150 E   | 5  | 281 150 EF   | 5  |
| 15,50   | 178,0    | 120,0    | 281 155 E   | 5  | 281 155 EF   | 5  |
| 16,00   | 178,0    | 120,0    | 281 160 E   | 5  | 281 160 EF   | 5  |



## Twist drill sets DIN 338 type VA, HSSE-Co 8 ground

|  | HSSE Co 8   | HSSE Co 8 TiAIN |
|--|-------------|-----------------|
| 19-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 281 214 E   | 281 214 EF      |
| 25-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 281 215 E   | 281 215 EF      |
| 19-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 281 214 ERO | 281 214 EFRO    |
| 25-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 281 215 ERO | 281 215 EFRO    |



### i

## Coolants and lubricants

RUKO high performance coolants and lubricants with outstanding cooling and anti-separation qualities. Increases tool life even with hard and brittle materials. High heat resistance ensures good lubrication and cooling, even at high temperatures. Good adhesion quality improves lubrication.

For all standard metal working processes, such as drilling, thread cutting, countersinking, deburring, sawing, turning, milling, grinding.

Perfectly matched for use with RUKO metal working tools.  
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DIN 338 · VA

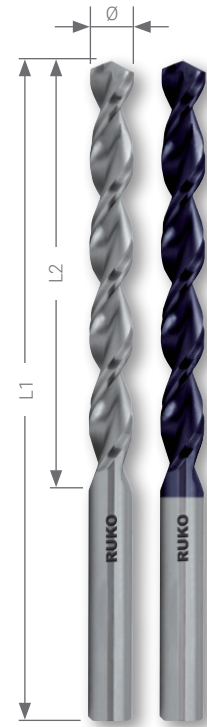




## Twist drills DIN 338 UTL 3000, HSSE-Co 5 ground

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials.





Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.



Packing unit: in plastic box

|                                   |   |   |   |
|-----------------------------------|---|---|---|
|                                   |   |   |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 | ■ | ■ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | □ |   |
| Rust-resistant steel              | ■ | ■ | ■ |
| Aluminium                         | ■ | ■ | ■ |
|                                   |   |   |   |
| Brass                             | ■ | ■ | ■ |
| Bronze                            | □ | ■ | ■ |
| Plastics                          | ■ | ■ | ■ |
| Cast iron                         | □ | □ | □ |
| Titanium alloyed                  |   |   | □ |

| Ø mm | L1 mm | L2 mm |         |    |           |  |    |
|------|-------|-------|---------|----|-----------|--|----|
| 1,00 | 34,0  | 12,0  | 229 010 | 10 | 229 010 F |  | 10 |
| 1,50 | 40,0  | 18,0  | 229 015 | 10 | 229 015 F |  | 10 |
| 2,00 | 49,0  | 24,0  | 229 020 | 10 | 229 020 F |  | 10 |
| 2,10 | 49,0  | 24,0  | 229 021 | 10 | 229 021 F |  | 10 |
| 2,20 | 53,0  | 27,0  | 229 022 | 10 | 229 022 F |  | 10 |
| 2,30 | 53,0  | 27,0  | 229 023 | 10 | 229 023 F |  | 10 |
| 2,40 | 57,0  | 30,0  | 229 024 | 10 | 229 024 F |  | 10 |
| 2,50 | 57,0  | 30,0  | 229 025 | 10 | 229 025 F |  | 10 |
| 2,60 | 57,0  | 30,0  | 229 026 | 10 | 229 026 F |  | 10 |
| 2,70 | 61,0  | 33,0  | 229 027 | 10 | 229 027 F |  | 10 |
| 2,80 | 61,0  | 33,0  | 229 028 | 10 | 229 028 F |  | 10 |
| 2,90 | 61,0  | 33,0  | 229 029 | 10 | 229 029 F |  | 10 |
| 3,00 | 61,0  | 33,0  | 229 030 | 10 | 229 030 F |  | 10 |
| 3,10 | 65,0  | 36,0  | 229 031 | 10 | 229 031 F |  | 10 |
| 3,20 | 65,0  | 36,0  | 229 032 | 10 | 229 032 F |  | 10 |
| 3,30 | 65,0  | 36,0  | 229 033 | 10 | 229 033 F |  | 10 |
| 3,40 | 70,0  | 39,0  | 229 034 | 10 | 229 034 F |  | 10 |
| 3,50 | 70,0  | 39,0  | 229 035 | 10 | 229 035 F |  | 10 |
| 3,60 | 70,0  | 39,0  | 229 036 | 10 | 229 036 F |  | 10 |
| 3,70 | 70,0  | 39,0  | 229 037 | 10 | 229 037 F |  | 10 |
| 3,80 | 75,0  | 43,0  | 229 038 | 10 | 229 038 F |  | 10 |
| 3,90 | 75,0  | 43,0  | 229 039 | 10 | 229 039 F |  | 10 |
| 4,00 | 75,0  | 43,0  | 229 040 | 10 | 229 040 F |  | 10 |
| 4,10 | 75,0  | 43,0  | 229 041 | 10 | 229 041 F |  | 10 |
| 4,20 | 75,0  | 43,0  | 229 042 | 10 | 229 042 F |  | 10 |
| 4,30 | 80,0  | 47,0  | 229 043 | 10 | 229 043 F |  | 10 |
| 4,40 | 80,0  | 47,0  | 229 044 | 10 | 229 044 F |  | 10 |
| 4,50 | 80,0  | 47,0  | 229 045 | 10 | 229 045 F |  | 10 |
| 4,60 | 80,0  | 47,0  | 229 046 | 10 | 229 046 F |  | 10 |
| 4,70 | 80,0  | 47,0  | 229 047 | 10 | 229 047 F |  | 10 |
| 4,80 | 86,0  | 52,0  | 229 048 | 10 | 229 048 F |  | 10 |
| 4,90 | 86,0  | 52,0  | 229 049 | 10 | 229 049 F |  | 10 |
| 5,00 | 86,0  | 52,0  | 229 050 | 10 | 229 050 F |  | 10 |
| 5,10 | 86,0  | 52,0  | 229 051 | 10 | 229 051 F |  | 10 |
| 5,20 | 86,0  | 52,0  | 229 052 | 10 | 229 052 F |  | 10 |
| 5,30 | 86,0  | 52,0  | 229 053 | 10 | 229 053 F |  | 10 |
| 5,40 | 93,0  | 57,0  | 229 054 | 10 | 229 054 F |  | 10 |
| 5,50 | 93,0  | 57,0  | 229 055 | 10 | 229 055 F |  | 10 |
| 5,60 | 93,0  | 57,0  | 229 056 | 10 | 229 056 F |  | 10 |
| 5,70 | 93,0  | 57,0  | 229 057 | 10 | 229 057 F |  | 10 |

| Ø<br>mm | L1<br>mm | L2<br>mm | HSSE Co 5   |  | TAIN   |  |
|---------|----------|----------|---|--|--|--|
|         |          |          |  |  |  |  |
| 5,80    | 93,0     | 57,0     | 229 058   | 10   | 229 058 F  | 10   |
| 5,90    | 93,0     | 57,0     | 229 059   | 10   | 229 059 F  | 10   |
| 6,00    | 93,0     | 57,0     | 229 060   | 10   | 229 060 F  | 10   |
| 6,10    | 101,0    | 63,0     | 229 061   | 10   | 229 061 F  | 10   |
| 6,20    | 101,0    | 63,0     | 229 062   | 10   | 229 062 F  | 10   |
| 6,30    | 101,0    | 63,0     | 229 063   | 10   | 229 063 F  | 10   |
| 6,40    | 101,0    | 63,0     | 229 064   | 10   | 229 064 F  | 10   |
| 6,50    | 101,0    | 63,0     | 229 065   | 10   | 229 065 F  | 10   |
| 6,60    | 101,0    | 63,0     | 229 066   | 10   | 229 066 F  | 10   |
| 6,70    | 101,0    | 63,0     | 229 067   | 10   | 229 067 F  | 10   |
| 6,80    | 109,0    | 69,0     | 229 068   | 10   | 229 068 F  | 10   |
| 6,90    | 109,0    | 69,0     | 229 069   | 10   | 229 069 F  | 10   |
| 7,00    | 109,0    | 69,0     | 229 070   | 10   | 229 070 F  | 10   |
| 7,10    | 109,0    | 69,0     | 229 071   | 10   | 229 071 F  | 10   |
| 7,20    | 109,0    | 69,0     | 229 072   | 10   | 229 072 F  | 10   |
| 7,30    | 109,0    | 69,0     | 229 073   | 10   | 229 073 F  | 10   |
| 7,40    | 109,0    | 69,0     | 229 074   | 10   | 229 074 F  | 10   |
| 7,50    | 109,0    | 69,0     | 229 075   | 10   | 229 075 F  | 10   |
| 7,60    | 117,0    | 75,0     | 229 076   | 10   | 229 076 F  | 10   |
| 7,70    | 117,0    | 75,0     | 229 077   | 10   | 229 077 F  | 10   |
| 7,80    | 117,0    | 75,0     | 229 078   | 10   | 229 078 F  | 10   |
| 7,90    | 117,0    | 75,0     | 229 079   | 10   | 229 079 F  | 10   |
| 8,00    | 117,0    | 75,0     | 229 080   | 10   | 229 080 F  | 10   |
| 8,10    | 117,0    | 75,0     | 229 081   | 10   | 229 081 F  | 10   |
| 8,20    | 117,0    | 75,0     | 229 082   | 10   | 229 082 F  | 10   |
| 8,30    | 117,0    | 75,0     | 229 083   | 10   | 229 083 F  | 10   |
| 8,40    | 117,0    | 75,0     | 229 084   | 10   | 229 084 F  | 10   |
| 8,50    | 117,0    | 75,0     | 229 085   | 10   | 229 085 F  | 10   |
| 8,60    | 125,0    | 81,0     | 229 086   | 10   | 229 086 F  | 10   |
| 8,70    | 125,0    | 81,0     | 229 087   | 10   | 229 087 F  | 10   |
| 8,80    | 125,0    | 81,0     | 229 088   | 10   | 229 088 F  | 10   |
| 8,90    | 125,0    | 81,0     | 229 089   | 10   | 229 089 F  | 10   |
| 9,00    | 125,0    | 81,0     | 229 090   | 10   | 229 090 F  | 10   |
| 9,10    | 125,0    | 81,0     | 229 091   | 10   | 229 091 F  | 10   |
| 9,20    | 125,0    | 81,0     | 229 092   | 10   | 229 092 F  | 10   |
| 9,30    | 125,0    | 81,0     | 229 093   | 10   | 229 093 F  | 10   |
| 9,40    | 125,0    | 81,0     | 229 094   | 10   | 229 094 F  | 10   |
| 9,50    | 125,0    | 81,0     | 229 095   | 10   | 229 095 F  | 10   |
| 9,60    | 133,0    | 87,0     | 229 096   | 10   | 229 096 F  | 10   |
| 9,70    | 133,0    | 87,0     | 229 097   | 10   | 229 097 F  | 10   |
| 9,80    | 133,0    | 87,0     | 229 098   | 10   | 229 098 F  | 10   |
| 9,90    | 133,0    | 87,0     | 229 099   | 10   | 229 099 F  | 10   |
| 10,00   | 133,0    | 87,0     | 229 100   | 10   | 229 100 F  | 10   |
| 10,10   | 133,0    | 87,0     | 229 101   | 10   | 229 101 F  | 10   |
| 10,20   | 133,0    | 87,0     | 229 102   | 10   | 229 102 F  | 10   |
| 10,30   | 133,0    | 87,0     | 229 103   | 5  | 229 103 F  | 5  |
| 10,40   | 133,0    | 87,0     | 229 104   | 5  | 229 104 F  | 5  |
| 10,50   | 133,0    | 87,0     | 229 105   | 5  | 229 105 F  | 5  |
| 10,60   | 133,0    | 87,0     | 229 106   | 5  | 229 106 F  | 5  |
| 10,70   | 142,0    | 94,0     | 229 107   | 5  | 229 107 F  | 5  |
| 10,80   | 142,0    | 94,0     | 229 108   | 5  | 229 108 F  | 5  |
| 10,90   | 142,0    | 94,0     | 229 109   | 5  | 229 109 F  | 5  |
| 11,00   | 142,0    | 94,0     | 229 110   | 5  | 229 110 F  | 5  |
| 11,10   | 142,0    | 94,0     | 229 111   | 5  | 229 111 F  | 5  |
| 11,20   | 142,0    | 94,0     | 229 112   | 5  | 229 112 F  | 5  |
| 11,30   | 142,0    | 94,0     | 229 113   | 5  | 229 113 F  | 5  |
| 11,40   | 142,0    | 94,0     | 229 114   | 5  | 229 114 F  | 5  |
| 11,50   | 142,0    | 94,0     | 229 115   | 5  | 229 115 F  | 5  |
| 11,60   | 142,0    | 94,0     | 229 116   | 5  | 229 116 F  | 5  |
| 11,70   | 142,0    | 94,0     | 229 117   | 5  | 229 117 F  | 5  |
| 11,80   | 142,0    | 94,0     | 229 118   | 5  | 229 118 F  | 5  |
| 11,90   | 151,0    | 101,0    | 229 119   | 5  | 229 119 F  | 5  |
| 12,00   | 151,0    | 101,0    | 229 120   | 5  | 229 120 F  | 5  |
| 12,10   | 151,0    | 101,0    | 229 121   | 5  | 229 121 F  | 5  |
| 12,20   | 151,0    | 101,0    | 229 122   | 5  | 229 122 F  | 5  |
| 12,30   | 151,0    | 101,0    | 229 123   | 5  | 229 123 F  | 5  |
| 12,40   | 151,0    | 101,0    | 229 124   | 5  | 229 124 F  | 5  |
| 12,50   | 151,0    | 101,0    | 229 125   | 5  | 229 125 F  | 5  |
| 12,60   | 151,0    | 101,0    | 229 126   | 5  | 229 126 F  | 5  |
| 12,70   | 151,0    | 101,0    | 229 127   | 5  | 229 127 F  | 5  |
| 12,80   | 151,0    | 101,0    | 229 128   | 5  | 229 128 F  | 5  |
| 12,90   | 151,0    | 101,0    | 229 129   | 5  | 229 129 F  | 5  |
| 13,00   | 151,0    | 101,0    | 229 130   | 5  | 229 130 F  | 5  |
| 13,50   | 160,0    | 108,0    | 229 135   | 5  | 229 135 F  | 5  |



### Twist drills DIN 338 UTL 3000, HSSE-Co 5 ground

| Ø mm  | L1 mm | L2 mm | HSSE Co 5 |  | HSSE Co 5 | TiAIN |   |
|-------|-------|-------|-----------|--|-----------|-------|---|
| 14,00 | 160,0 | 108,0 |           |  | 229 140   |       | 5 |
| 14,50 | 169,0 | 114,0 |           |  | 229 145   |       | 5 |
| 15,00 | 169,0 | 114,0 |           |  | 229 150   |       | 5 |
| 15,50 | 178,0 | 120,0 |           |  | 229 155   |       | 5 |
| 16,00 | 178,0 | 120,0 |           |  | 229 160   |       | 5 |

### Twist drill sets DIN 338 UTL 3000, HSSE-Co 5 ground

|  | HSSE Co 5 | HSSE Co 5 TiAIN |
|--|-----------|-----------------|
| 19-piece set of twist drills DIN 338 type UTL 3000<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case | 229 214   | 229 214 F       |
| 25-piece set of twist drills DIN 338 type UTL 3000<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case | 229 215   | 229 215 F       |



|  | HSSE Co 5  | HSSE Co 5 TiAIN |
|--|------------|-----------------|
| 19-piece set of twist drills DIN 338 type UTL 3000<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 229 214 RO | 229 214 FRO     |
| 25-piece set of twist drills DIN 338 type UTL 3000<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 229 215 RO | 229 215 FRO     |







DIN 338 · UTL 3000





## Twist drills DIN 338 type VA, HSSE-Co 5 ground

Powerful right-hand cutting high-performance drill with distinctive heat resistance. Ideal for drilling high-strength stainless, acid-resistant and heat-resistant steel.



Packing unit: in plastic box

|                      |   |                  |   |
|----------------------|---|------------------|---|
|                      |   |                  |   |
| Steel (N/mm2) < 900  | ■ | Brass            | ■ |
| Steel (N/mm2) < 1100 | ■ | Bronze           | □ |
| Steel (N/mm2) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel | ■ | Cast iron        | □ |
| Aluminium            | ■ | Titanium alloyed |   |

| Ø mm | L1 mm | L2 mm | HSSE Co 5 |  |    |
|------|-------|-------|-----------|--|----|
| 1,00 | 34,0  | 12,0  | 215 010   |  | 10 |
| 1,10 | 36,0  | 14,0  | 215 011   |  | 10 |
| 1,20 | 38,0  | 16,0  | 215 012   |  | 10 |
| 1,25 | 38,0  | 16,0  | 215 0125  |  | 10 |
| 1,30 | 38,0  | 16,0  | 215 013   |  | 10 |
| 1,40 | 40,0  | 18,0  | 215 014   |  | 10 |
| 1,50 | 40,0  | 18,0  | 215 015   |  | 10 |
| 1,60 | 43,0  | 20,0  | 215 016   |  | 10 |
| 1,70 | 43,0  | 20,0  | 215 017   |  | 10 |
| 1,75 | 46,0  | 22,0  | 215 0175  |  | 10 |
| 1,80 | 46,0  | 22,0  | 215 018   |  | 10 |
| 1,90 | 46,0  | 22,0  | 215 019   |  | 10 |
| 2,00 | 49,0  | 24,0  | 215 020   |  | 10 |
| 2,10 | 49,0  | 24,0  | 215 021   |  | 10 |
| 2,20 | 53,0  | 27,0  | 215 022   |  | 10 |
| 2,25 | 53,0  | 27,0  | 215 0225  |  | 10 |
| 2,30 | 53,0  | 27,0  | 215 023   |  | 10 |
| 2,40 | 57,0  | 30,0  | 215 024   |  | 10 |
| 2,50 | 57,0  | 30,0  | 215 025   |  | 10 |
| 2,60 | 57,0  | 30,0  | 215 026   |  | 10 |
| 2,70 | 61,0  | 33,0  | 215 027   |  | 10 |
| 2,75 | 61,0  | 33,0  | 215 0275  |  | 10 |
| 2,80 | 61,0  | 33,0  | 215 028   |  | 10 |
| 2,90 | 61,0  | 33,0  | 215 029   |  | 10 |
| 3,00 | 61,0  | 33,0  | 215 030   |  | 10 |
| 3,10 | 65,0  | 36,0  | 215 031   |  | 10 |
| 3,20 | 65,0  | 36,0  | 215 032   |  | 10 |
| 3,25 | 65,0  | 36,0  | 215 0325  |  | 10 |
| 3,30 | 65,0  | 36,0  | 215 033   |  | 10 |
| 3,40 | 70,0  | 39,0  | 215 034   |  | 10 |
| 3,50 | 70,0  | 39,0  | 215 035   |  | 10 |
| 3,60 | 70,0  | 39,0  | 215 036   |  | 10 |
| 3,70 | 70,0  | 39,0  | 215 037   |  | 10 |
| 3,75 | 70,0  | 39,0  | 215 0375  |  | 10 |
| 3,80 | 75,0  | 43,0  | 215 038   |  | 10 |
| 3,90 | 75,0  | 43,0  | 215 039   |  | 10 |
| 4,00 | 75,0  | 43,0  | 215 040   |  | 10 |
| 4,10 | 75,0  | 43,0  | 215 041   |  | 10 |
| 4,20 | 75,0  | 43,0  | 215 042   |  | 10 |
| 4,25 | 75,0  | 43,0  | 215 0425  |  | 10 |

| Ø mm | L1 mm | L2 mm | HSSE Co 5 |  |    |
|------|-------|-------|-----------|--|----|
| 4,30 | 80,0  | 47,0  | 215 043   |  | 10 |
| 4,40 | 80,0  | 47,0  | 215 044   |  | 10 |
| 4,50 | 80,0  | 47,0  | 215 045   |  | 10 |
| 4,60 | 80,0  | 47,0  | 215 046   |  | 10 |
| 4,70 | 80,0  | 47,0  | 215 047   |  | 10 |
| 4,75 | 80,0  | 47,0  | 215 0475  |  | 10 |
| 4,80 | 86,0  | 52,0  | 215 048   |  | 10 |
| 4,90 | 86,0  | 52,0  | 215 049   |  | 10 |
| 5,00 | 86,0  | 52,0  | 215 050   |  | 10 |
| 5,10 | 86,0  | 52,0  | 215 051   |  | 10 |
| 5,20 | 86,0  | 52,0  | 215 052   |  | 10 |
| 5,25 | 86,0  | 52,0  | 215 0525  |  | 10 |
| 5,30 | 86,0  | 52,0  | 215 053   |  | 10 |
| 5,40 | 93,0  | 57,0  | 215 054   |  | 10 |
| 5,50 | 93,0  | 57,0  | 215 055   |  | 10 |
| 5,60 | 93,0  | 57,0  | 215 056   |  | 10 |
| 5,70 | 93,0  | 57,0  | 215 057   |  | 10 |
| 5,75 | 93,0  | 57,0  | 215 0575  |  | 10 |
| 5,80 | 93,0  | 57,0  | 215 058   |  | 10 |
| 5,90 | 93,0  | 57,0  | 215 059   |  | 10 |
| 6,00 | 93,0  | 57,0  | 215 060   |  | 10 |
| 6,10 | 101,0 | 63,0  | 215 061   |  | 10 |
| 6,20 | 101,0 | 63,0  | 215 062   |  | 10 |
| 6,25 | 101,0 | 63,0  | 215 0625  |  | 10 |
| 6,30 | 101,0 | 63,0  | 215 063   |  | 10 |
| 6,40 | 101,0 | 63,0  | 215 064   |  | 10 |
| 6,50 | 101,0 | 63,0  | 215 065   |  | 10 |
| 6,60 | 101,0 | 63,0  | 215 066   |  | 10 |
| 6,70 | 101,0 | 63,0  | 215 067   |  | 10 |
| 6,75 | 101,0 | 63,0  | 215 0675  |  | 10 |
| 6,80 | 109,0 | 69,0  | 215 068   |  | 10 |
| 6,90 | 109,0 | 69,0  | 215 069   |  | 10 |
| 7,00 | 109,0 | 69,0  | 215 070   |  | 10 |
| 7,10 | 109,0 | 69,0  | 215 071   |  | 10 |
| 7,20 | 109,0 | 69,0  | 215 072   |  | 10 |
| 7,25 | 109,0 | 69,0  | 215 0725  |  | 10 |
| 7,30 | 109,0 | 69,0  | 215 073   |  | 10 |
| 7,40 | 109,0 | 69,0  | 215 074   |  | 10 |
| 7,50 | 109,0 | 69,0  | 215 075   |  | 10 |
| 7,60 | 117,0 | 75,0  | 215 076   |  | 10 |



## Twist drills DIN 338 type VA, HSSE-Co 5 ground

| Ø mm  | L1 mm | L2 mm | HSSE Co 5 |    | Ø mm  | L1 mm | L2 mm | HSSE Co 5 |   |
|-------|-------|-------|-----------|----|-------|-------|-------|-----------|---|
| 7,70  | 117,0 | 75,0  | 215 077   | 10 | 10,90 | 142,0 | 94,0  | 215 109   | 5 |
| 7,75  | 117,0 | 75,0  | 215 0775  | 10 | 11,00 | 142,0 | 94,0  | 215 110   | 5 |
| 7,80  | 117,0 | 75,0  | 215 078   | 10 | 11,10 | 142,0 | 94,0  | 215 111   | 5 |
| 7,90  | 117,0 | 75,0  | 215 079   | 10 | 11,20 | 142,0 | 94,0  | 215 112   | 5 |
| 8,00  | 117,0 | 75,0  | 215 080   | 10 | 11,30 | 142,0 | 94,0  | 215 113   | 5 |
| 8,10  | 117,0 | 75,0  | 215 081   | 10 | 11,40 | 142,0 | 94,0  | 215 114   | 5 |
| 8,20  | 117,0 | 75,0  | 215 082   | 10 | 11,50 | 142,0 | 94,0  | 215 115   | 5 |
| 8,25  | 117,0 | 75,0  | 215 0825  | 10 | 11,60 | 142,0 | 94,0  | 215 116   | 5 |
| 8,30  | 117,0 | 75,0  | 215 083   | 10 | 11,70 | 142,0 | 94,0  | 215 117   | 5 |
| 8,40  | 117,0 | 75,0  | 215 084   | 10 | 11,80 | 142,0 | 94,0  | 215 118   | 5 |
| 8,50  | 117,0 | 75,0  | 215 085   | 10 | 11,90 | 151,0 | 101,0 | 215 119   | 5 |
| 8,60  | 125,0 | 81,0  | 215 086   | 10 | 12,00 | 151,0 | 101,0 | 215 120   | 5 |
| 8,70  | 125,0 | 81,0  | 215 087   | 10 | 12,10 | 151,0 | 101,0 | 215 121   | 5 |
| 8,75  | 125,0 | 81,0  | 215 0875  | 10 | 12,20 | 151,0 | 101,0 | 215 122   | 5 |
| 8,80  | 125,0 | 81,0  | 215 088   | 10 | 12,30 | 151,0 | 101,0 | 215 123   | 5 |
| 8,90  | 125,0 | 81,0  | 215 089   | 10 | 12,40 | 151,0 | 101,0 | 215 124   | 5 |
| 9,00  | 125,0 | 81,0  | 215 090   | 10 | 12,50 | 151,0 | 101,0 | 215 125   | 5 |
| 9,10  | 125,0 | 81,0  | 215 091   | 10 | 12,60 | 151,0 | 101,0 | 215 126   | 5 |
| 9,20  | 125,0 | 81,0  | 215 092   | 10 | 12,70 | 151,0 | 101,0 | 215 127   | 5 |
| 9,25  | 125,0 | 81,0  | 215 0925  | 10 | 12,80 | 151,0 | 101,0 | 215 128   | 5 |
| 9,30  | 125,0 | 81,0  | 215 093   | 10 | 12,90 | 151,0 | 101,0 | 215 129   | 5 |
| 9,40  | 125,0 | 81,0  | 215 094   | 10 | 13,00 | 151,0 | 101,0 | 215 130   | 5 |
| 9,50  | 125,0 | 81,0  | 215 095   | 10 | 13,50 | 160,0 | 108,0 | 215 135   | 5 |
| 9,60  | 133,0 | 87,0  | 215 096   | 10 | 14,00 | 160,0 | 108,0 | 215 140   | 5 |
| 9,70  | 133,0 | 87,0  | 215 097   | 10 | 14,50 | 169,0 | 114,0 | 215 145   | 5 |
| 9,75  | 133,0 | 87,0  | 215 0975  | 10 | 15,00 | 169,0 | 114,0 | 215 150   | 5 |
| 9,80  | 133,0 | 87,0  | 215 098   | 10 | 15,50 | 178,0 | 120,0 | 215 155   | 5 |
| 9,90  | 133,0 | 87,0  | 215 099   | 10 | 16,00 | 178,0 | 120,0 | 215 160   | 5 |
| 10,00 | 133,0 | 87,0  | 215 100   | 10 | 16,50 | 184,0 | 125,0 | 215 165   | 1 |
| 10,10 | 133,0 | 87,0  | 215 101   | 10 | 17,00 | 184,0 | 125,0 | 215 170   | 1 |
| 10,20 | 133,0 | 87,0  | 215 102   | 10 | 17,50 | 191,0 | 130,0 | 215 175   | 1 |
| 10,30 | 133,0 | 87,0  | 215 103   | 10 | 18,00 | 191,0 | 130,0 | 215 180   | 1 |
| 10,40 | 133,0 | 87,0  | 215 104   | 10 | 18,50 | 198,0 | 135,0 | 215 185   | 1 |
| 10,50 | 133,0 | 87,0  | 215 105   | 5  | 19,00 | 198,0 | 135,0 | 215 190   | 1 |
| 10,60 | 133,0 | 87,0  | 215 106   | 5  | 19,50 | 205,0 | 140,0 | 215 195   | 1 |
| 10,70 | 142,0 | 94,0  | 215 107   | 5  | 20,00 | 205,0 | 140,0 | 215 210   | 1 |
| 10,80 | 142,0 | 94,0  | 215 108   | 5  | —     | —     | —     | —         | — |

## Twist drill sets DIN 338 type VA, HSSE-Co 5 ground

|  | HSSE Co 5  |
|--|------------|
| 19-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 215 214    |
| 25-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 215 215    |
| 41-piece set of twist drills DIN 338 type VA<br>Ø 6,0 mm up to 10,0 mm in increments of 0,1 mm in steel case   | 215 218    |
| 50-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 5,9 mm in increments of 0,1 mm in steel case    | 215 217    |
| 19-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 215 214 RO |
| 25-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 215 215 RO |



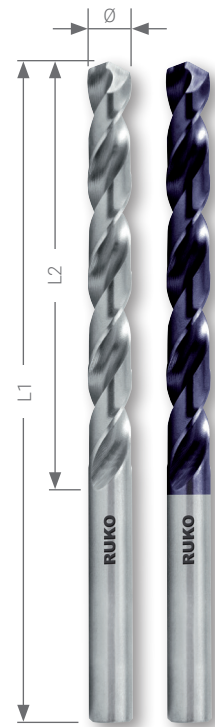


## Twist drills DIN 338 type VA, HSSE-Co 5 ground

Powerful right-hand cutting high-performance drill with distinctive heat resistance and reinforced drill core. Ideal for drilling high-strength stainless, acid-resistant and heat-resistant steel.

Packing unit: in plastic box

|                      |   |   |                  |   |   |
|----------------------|---|---|------------------|---|---|
|                      |   |   |                  |   |   |
| Steel (N/mm2) < 900  | ■ | ■ | Brass            | ■ | ■ |
| Steel (N/mm2) < 1100 | ■ | ■ | Bronze           | □ | ■ |
| Steel (N/mm2) < 1300 |   | □ | Plastics         | ■ | ■ |
| Rust-resistant steel | ■ | ■ | Cast iron        | □ | □ |
| Aluminium            | ■ | ■ | Titanium alloyed |   | □ |



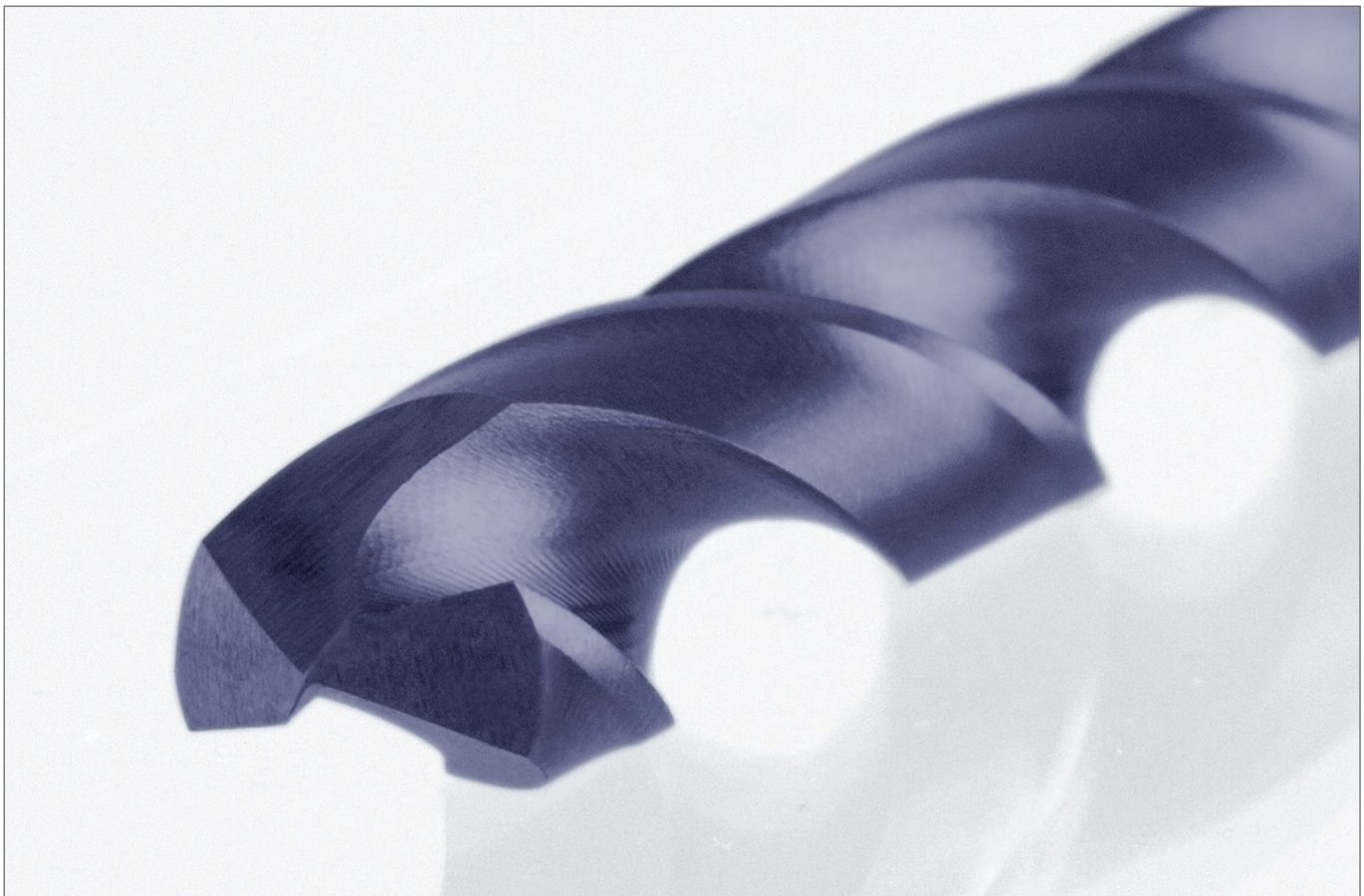
| Ø mm  | L1 mm | L2 mm |           |    |
|-------|-------|-------|-----------|----|
| 1,00  | 34,0  | 12,0  | 215 010 Z | 10 |
| 1,50  | 40,0  | 18,0  | 215 015 Z | 10 |
| 1,90  | 46,0  | 22,0  | 215 019 Z | 10 |
| 2,00  | 49,0  | 24,0  | 215 020 Z | 10 |
| 2,30  | 53,0  | 27,0  | 215 023 Z | 10 |
| 2,50  | 57,0  | 30,0  | 215 025 Z | 10 |
| 2,60  | 57,0  | 30,0  | 215 026 Z | 10 |
| 3,00  | 61,0  | 33,0  | 215 030 Z | 10 |
| 3,20  | 65,0  | 36,0  | 215 032 Z | 10 |
| 3,30  | 65,0  | 36,0  | 215 033 Z | 10 |
| 3,40  | 70,0  | 39,0  | 215 034 Z | 10 |
| 3,50  | 70,0  | 39,0  | 215 035 Z | 10 |
| 4,00  | 75,0  | 43,0  | 215 040 Z | 10 |
| 4,20  | 75,0  | 43,0  | 215 042 Z | 10 |
| 4,30  | 80,0  | 47,0  | 215 043 Z | 10 |
| 4,50  | 80,0  | 47,0  | 215 045 Z | 10 |
| 5,00  | 86,0  | 52,0  | 215 050 Z | 10 |
| 5,10  | 86,0  | 52,0  | 215 051 Z | 10 |
| 5,20  | 86,0  | 52,0  | 215 052 Z | 10 |
| 5,30  | 86,0  | 52,0  | 215 053 Z | 10 |
| 5,50  | 93,0  | 57,0  | 215 055 Z | 10 |
| 6,00  | 93,0  | 57,0  | 215 060 Z | 10 |
| 6,10  | 101,0 | 63,0  | 215 061 Z | 10 |
| 6,20  | 101,0 | 63,0  | 215 062 Z | 10 |
| 6,40  | 101,0 | 63,0  | 215 064 Z | 10 |
| 6,50  | 101,0 | 63,0  | 215 065 Z | 10 |
| 6,80  | 109,0 | 69,0  | 215 068 Z | 10 |
| 7,00  | 109,0 | 69,0  | 215 070 Z | 10 |
| 7,50  | 109,0 | 69,0  | 215 075 Z | 10 |
| 8,00  | 117,0 | 75,0  | 215 080 Z | 10 |
| 8,50  | 117,0 | 75,0  | 215 085 Z | 10 |
| 9,00  | 125,0 | 81,0  | 215 090 Z | 10 |
| 9,50  | 125,0 | 81,0  | 215 095 Z | 10 |
| 9,80  | 133,0 | 87,0  | 215 098 Z | 10 |
| 10,00 | 133,0 | 87,0  | 215 100 Z | 10 |
| 10,50 | 133,0 | 87,0  | 215 105 Z | 5  |
| 11,00 | 142,0 | 94,0  | 215 110 Z | 5  |
| 11,50 | 142,0 | 94,0  | 215 115 Z | 5  |
| 12,00 | 151,0 | 101,0 | 215 120 Z | 5  |
| 12,50 | 151,0 | 101,0 | 215 125 Z | 5  |
| 13,00 | 151,0 | 101,0 | 215 130 Z | 5  |
| 13,50 | 160,0 | 108,0 | 215 135 Z | 5  |
| 14,00 | 160,0 | 108,0 | 215 140 Z | 5  |

| 215 010 F |  | 10 |
|-----------|--|----|
| 215 015 F |  | 10 |
| 215 019 F |  | 10 |
| 215 020 F |  | 10 |
| 215 023 F |  | 10 |
| 215 025 F |  | 10 |
| 215 026 F |  | 10 |
| 215 030 F |  | 10 |
| 215 032 F |  | 10 |
| 215 033 F |  | 10 |
| 215 034 F |  | 10 |
| 215 035 F |  | 10 |
| 215 040 F |  | 10 |
| 215 042 F |  | 10 |
| 215 043 F |  | 10 |
| 215 045 F |  | 10 |
| 215 050 F |  | 10 |
| 215 051 F |  | 10 |
| 215 052 F |  | 10 |
| 215 053 F |  | 10 |
| 215 055 F |  | 10 |
| 215 060 F |  | 10 |
| 215 061 F |  | 10 |
| 215 062 F |  | 10 |
| 215 064 F |  | 10 |
| 215 065 F |  | 10 |
| 215 068 F |  | 10 |
| 215 070 F |  | 10 |
| 215 075 F |  | 10 |
| 215 080 F |  | 10 |
| 215 085 F |  | 10 |
| 215 090 F |  | 10 |
| 215 095 F |  | 10 |
| 215 098 F |  | 10 |
| 215 100 F |  | 10 |
| 215 105 F |  | 5  |
| 215 110 F |  | 5  |
| 215 115 F |  | 5  |
| 215 120 F |  | 5  |
| 215 125 F |  | 5  |
| 215 130 F |  | 5  |
| 215 135 F |  | 5  |
| 215 140 F |  | 5  |



## Twist drill sets DIN 338 type VA, HSSE-Co 5 ground

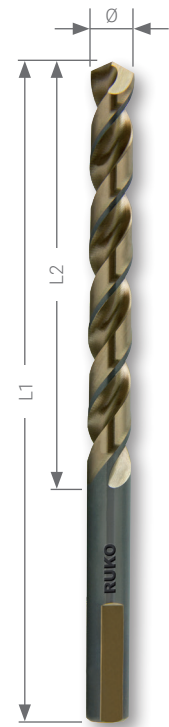
|  | HSSE Co 5   | HSSE Co 5 TiAIN |
|--|-------------|-----------------|
| 19-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 215 214 ZRO | 215 214 FRO     |
| 25-piece set of twist drills DIN 338 type VA<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 215 215 ZRO | 215 215 FRO     |







## Twist drills DIN 338 type UNI, HSSE-Co 5 ground



- » The 3-surface-shank provides an excellent fixing within the drill chuck with little effort. In addition, the shank ensures an ideal power transmission. No spinning of the drill!
- » The 135° high performance cutting edge ensures a very high aligned preciseness, particularly when hand-operated with a cordless drilling machine. The edge prevents sliding off corrugated surfaces whilst spot-drilling.
- » Increased wear resistance of the rechargeable battery due to reduction of cutting forces.
- » The black bevel increases the wear resistance and prevents cold welding and build-up edges.
- » The 40° helix angle enables a perfect and fast chip removal and provides a high cutting speed along with increased stability and accuracy.





 High performance twist drill for all-purpose use in drilling machines and cordless drills. (Materials up to 5,0 mm thickness) 


|                      |   |                  |   |
|----------------------|---|------------------|---|
|                      |  |                  |  |
| Steel (N/mm2) < 900  | ■   | Brass            | ■   |
| Steel (N/mm2) < 1100 | ■   | Bronze           | □   |
| Steel (N/mm2) < 1300 |   | Plastics         | ■   |
| Rust-resistant steel | ■   | Cast iron        | □   |
| Aluminium            | ■   | Titanium alloyed |   |

Packing unit: in plastic box

| Ø mm | L1 mm | L2 mm |  |  |
|------|-------|-------|---|---|
| 1,00 | 34,0  | 12,0  | 228 010   | 10  |
| 1,50 | 40,0  | 18,0  | 228 015   | 10  |
| 2,00 | 49,0  | 24,0  | 228 020   | 10  |
| 2,50 | 57,0  | 30,0  | 228 025   | 10  |
| 3,00 | 61,0  | 33,0  | 228 030   | 10  |
| 3,30 | 65,0  | 36,0  | 228 033   | 10  |
| 3,50 | 70,0  | 39,0  | 228 035   | 10  |
| 4,00 | 75,0  | 43,0  | 228 040   | 10  |
| 4,20 | 75,0  | 43,0  | 228 042   | 10  |
| 4,50 | 80,0  | 47,0  | 228 045   | 10  |
| 5,00 | 86,0  | 52,0  | 228 050   | 10  |
| 5,50 | 93,0  | 57,0  | 228 055   | 10  |
| 6,00 | 93,0  | 57,0  | 228 060   | 10  |
| 6,50 | 101,0 | 63,0  | 228 065   | 10  |
| 6,80 | 109,0 | 69,0  | 228 068   | 10  |

| Ø mm  | L1 mm | L2 mm |  |  |
|-------|-------|-------|---|---|
| 7,00  | 109,0 | 69,0  | 228 070   | 10  |
| 7,50  | 109,0 | 69,0  | 228 075   | 10  |
| 8,00  | 117,0 | 75,0  | 228 080   | 10  |
| 8,50  | 117,0 | 75,0  | 228 085   | 10  |
| 9,00  | 125,0 | 81,0  | 228 090   | 10  |
| 9,50  | 125,0 | 81,0  | 228 095   | 10  |
| 10,00 | 133,0 | 87,0  | 228 100   | 10  |
| 10,20 | 133,0 | 87,0  | 228 102   | 10  |
| 10,50 | 133,0 | 87,0  | 228 105   | 5   |
| 11,00 | 142,0 | 94,0  | 228 110   | 5   |
| 11,50 | 142,0 | 94,0  | 228 115   | 5   |
| 12,00 | 151,0 | 101,0 | 228 120   | 5   |
| 12,50 | 151,0 | 101,0 | 228 125   | 5   |
| 13,00 | 151,0 | 101,0 | 228 130   | 5   |

## Twist drill sets DIN 338 type UNI, HSSE-Co 5 ground

|   |  |
|---|---|
| 19-piece set of twist drills DIN 338 type UNI<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 228 214   |
| 25-piece set of twist drills DIN 338 type UNI<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 228 215   |
| 19-piece set of twist drills DIN 338 type UNI<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 228 214 RO  |
| 25-piece set of twist drills DIN 338 type UNI<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 228 215 RO  |



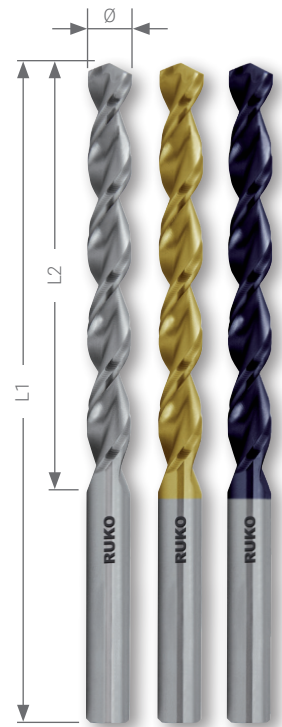


**RUKO**



## Twist drills DIN 338 TL 3000, HSS ground

Stable multirange drill with reinforced drill core and parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.









Packing unit: in plastic box

| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | ■ |
|-----------------------------------|---|---|---|
| Steel (N/mm <sup>2</sup> ) < 1100 |   | □ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   |   |   |
| Rust-resistant steel              |   | □ | ■ |
| Aluminium                         | ■ |   | ■ |

| Brass            | ■ | ■ | ■ |
|------------------|---|---|---|
| Bronze           | □ | □ | ■ |
| Plastics         | ■ | ■ | ■ |
| Cast iron        | □ | □ | □ |
| Titanium alloyed |   |   |   |

| Ø mm | L1 mm | L2 mm | HSS-G   |    | HSS-G TIN |    | HSS-G TITAN |    |
|------|-------|-------|---------|----|-----------|----|-------------|----|
|      |       |       |         |    |           |    |             |    |
| 1,00 | 34,0  | 12,0  | 258 010 | 10 | 258 010 T | 10 | 258 010 F   | 10 |
| 1,10 | 36,0  | 14,0  | 258 011 | 10 | 258 011 T | 10 | 258 011 F   | 10 |
| 1,20 | 38,0  | 16,0  | 258 012 | 10 | 258 012 T | 10 | 258 012 F   | 10 |
| 1,30 | 38,0  | 16,0  | 258 013 | 10 | 258 013 T | 10 | 258 013 F   | 10 |
| 1,40 | 40,0  | 18,0  | 258 014 | 10 | 258 014 T | 10 | 258 014 F   | 10 |
| 1,50 | 40,0  | 18,0  | 258 015 | 10 | 258 015 T | 10 | 258 015 F   | 10 |
| 1,60 | 43,0  | 20,0  | 258 016 | 10 | 258 016 T | 10 | 258 016 F   | 10 |
| 1,70 | 43,0  | 20,0  | 258 017 | 10 | 258 017 T | 10 | 258 017 F   | 10 |
| 1,80 | 46,0  | 22,0  | 258 018 | 10 | 258 018 T | 10 | 258 018 F   | 10 |
| 1,90 | 46,0  | 22,0  | 258 019 | 10 | 258 019 T | 10 | 258 019 F   | 10 |
| 2,00 | 49,0  | 24,0  | 258 020 | 10 | 258 020 T | 10 | 258 020 F   | 10 |
| 2,10 | 49,0  | 24,0  | 258 021 | 10 | 258 021 T | 10 | 258 021 F   | 10 |
| 2,20 | 53,0  | 27,0  | 258 022 | 10 | 258 022 T | 10 | 258 022 F   | 10 |
| 2,30 | 53,0  | 27,0  | 258 023 | 10 | 258 023 T | 10 | 258 023 F   | 10 |
| 2,40 | 57,0  | 30,0  | 258 024 | 10 | 258 024 T | 10 | 258 024 F   | 10 |
| 2,50 | 57,0  | 30,0  | 258 025 | 10 | 258 025 T | 10 | 258 025 F   | 10 |
| 2,60 | 57,0  | 30,0  | 258 026 | 10 | 258 026 T | 10 | 258 026 F   | 10 |
| 2,70 | 61,0  | 33,0  | 258 027 | 10 | 258 027 T | 10 | 258 027 F   | 10 |
| 2,80 | 61,0  | 33,0  | 258 028 | 10 | 258 028 T | 10 | 258 028 F   | 10 |
| 2,90 | 61,0  | 33,0  | 258 029 | 10 | 258 029 T | 10 | 258 029 F   | 10 |
| 3,00 | 61,0  | 33,0  | 258 030 | 10 | 258 030 T | 10 | 258 030 F   | 10 |
| 3,10 | 65,0  | 36,0  | 258 031 | 10 | 258 031 T | 10 | 258 031 F   | 10 |
| 3,20 | 65,0  | 36,0  | 258 032 | 10 | 258 032 T | 10 | 258 032 F   | 10 |
| 3,30 | 65,0  | 36,0  | 258 033 | 10 | 258 033 T | 10 | 258 033 F   | 10 |
| 3,40 | 70,0  | 39,0  | 258 034 | 10 | 258 034 T | 10 | 258 034 F   | 10 |
| 3,50 | 70,0  | 39,0  | 258 035 | 10 | 258 035 T | 10 | 258 035 F   | 10 |
| 3,60 | 70,0  | 39,0  | 258 036 | 10 | 258 036 T | 10 | 258 036 F   | 10 |
| 3,70 | 70,0  | 39,0  | 258 037 | 10 | 258 037 T | 10 | 258 037 F   | 10 |
| 3,80 | 75,0  | 43,0  | 258 038 | 10 | 258 038 T | 10 | 258 038 F   | 10 |
| 3,90 | 75,0  | 43,0  | 258 039 | 10 | 258 039 T | 10 | 258 039 F   | 10 |
| 4,00 | 75,0  | 43,0  | 258 040 | 10 | 258 040 T | 10 | 258 040 F   | 10 |
| 4,10 | 75,0  | 43,0  | 258 041 | 10 | 258 041 T | 10 | 258 041 F   | 10 |
| 4,20 | 75,0  | 43,0  | 258 042 | 10 | 258 042 T | 10 | 258 042 F   | 10 |
| 4,30 | 80,0  | 47,0  | 258 043 | 10 | 258 043 T | 10 | 258 043 F   | 10 |
| 4,40 | 80,0  | 47,0  | 258 044 | 10 | 258 044 T | 10 | 258 044 F   | 10 |
| 4,50 | 80,0  | 47,0  | 258 045 | 10 | 258 045 T | 10 | 258 045 F   | 10 |
| 4,60 | 80,0  | 47,0  | 258 046 | 10 | 258 046 T | 10 | 258 046 F   | 10 |
| 4,70 | 80,0  | 47,0  | 258 047 | 10 | 258 047 T | 10 | 258 047 F   | 10 |
| 4,80 | 86,0  | 52,0  | 258 048 | 10 | 258 048 T | 10 | 258 048 F   | 10 |
| 4,90 | 86,0  | 52,0  | 258 049 | 10 | 258 049 T | 10 | 258 049 F   | 10 |



| Ø<br>mm | L1<br>mm | L2<br>mm | HSS-G  |  | HSS-G TIN   |  | HSS-G TiAIN  |  |
|---------|----------|----------|--|--|---|--|--|--|
|         |          |          |  |  |  |  |  |  |
| 5,00    | 86,0     | 52,0     | 258 050  | 10   | 258 050 T   | 10   | 258 050 F  | 10   |
| 5,10    | 86,0     | 52,0     | 258 051  | 10   | 258 051 T   | 10   | 258 051 F  | 10   |
| 5,20    | 86,0     | 52,0     | 258 052  | 10   | 258 052 T   | 10   | 258 052 F  | 10   |
| 5,30    | 86,0     | 52,0     | 258 053  | 10   | 258 053 T   | 10   | 258 053 F  | 10   |
| 5,40    | 93,0     | 57,0     | 258 054  | 10   | 258 054 T   | 10   | 258 054 F  | 10   |
| 5,50    | 93,0     | 57,0     | 258 055  | 10   | 258 055 T   | 10   | 258 055 F  | 10   |
| 5,60    | 93,0     | 57,0     | 258 056  | 10   | 258 056 T   | 10   | 258 056 F  | 10   |
| 5,70    | 93,0     | 57,0     | 258 057  | 10   | 258 057 T   | 10   | 258 057 F  | 10   |
| 5,80    | 93,0     | 57,0     | 258 058  | 10   | 258 058 T   | 10   | 258 058 F  | 10   |
| 5,90    | 93,0     | 57,0     | 258 059  | 10   | 258 059 T   | 10   | 258 059 F  | 10   |
| 6,00    | 93,0     | 57,0     | 258 060  | 10   | 258 060 T   | 10   | 258 060 F  | 10   |
| 6,10    | 101,0    | 63,0     | 258 061  | 10   | 258 061 T   | 10   | 258 061 F  | 10   |
| 6,20    | 101,0    | 63,0     | 258 062  | 10   | 258 062 T   | 10   | 258 062 F  | 10   |
| 6,30    | 101,0    | 63,0     | 258 063  | 10   | 258 063 T   | 10   | 258 063 F  | 10   |
| 6,40    | 101,0    | 63,0     | 258 064  | 10   | 258 064 T   | 10   | 258 064 F  | 10   |
| 6,50    | 101,0    | 63,0     | 258 065  | 10   | 258 065 T   | 10   | 258 065 F  | 10   |
| 6,60    | 101,0    | 63,0     | 258 066  | 10   | 258 066 T   | 10   | 258 066 F  | 10   |
| 6,70    | 101,0    | 63,0     | 258 067  | 10   | 258 067 T   | 10   | 258 067 F  | 10   |
| 6,80    | 109,0    | 69,0     | 258 068  | 10   | 258 068 T   | 10   | 258 068 F  | 10   |
| 6,90    | 109,0    | 69,0     | 258 069  | 10   | 258 069 T   | 10   | 258 069 F  | 10   |
| 7,00    | 109,0    | 69,0     | 258 070  | 10   | 258 070 T   | 10   | 258 070 F  | 10   |
| 7,10    | 109,0    | 69,0     | 258 071  | 10   | 258 071 T   | 10   | 258 071 F  | 10   |
| 7,20    | 109,0    | 69,0     | 258 072  | 10   | 258 072 T   | 10   | 258 072 F  | 10   |
| 7,30    | 109,0    | 69,0     | 258 073  | 10   | 258 073 T   | 10   | 258 073 F  | 10   |
| 7,40    | 109,0    | 69,0     | 258 074  | 10   | 258 074 T   | 10   | 258 074 F  | 10   |
| 7,50    | 109,0    | 69,0     | 258 075  | 10   | 258 075 T   | 10   | 258 075 F  | 10   |
| 7,60    | 117,0    | 75,0     | 258 076  | 10   | 258 076 T   | 10   | 258 076 F  | 10   |
| 7,70    | 117,0    | 75,0     | 258 077  | 10   | 258 077 T   | 10   | 258 077 F  | 10   |
| 7,80    | 117,0    | 75,0     | 258 078  | 10   | 258 078 T   | 10   | 258 078 F  | 10   |
| 7,90    | 117,0    | 75,0     | 258 079  | 10   | 258 079 T   | 10   | 258 079 F  | 10   |
| 8,00    | 117,0    | 75,0     | 258 080  | 10   | 258 080 T   | 10   | 258 080 F  | 10   |
| 8,10    | 117,0    | 75,0     | 258 081  | 10   | 258 081 T   | 10   | 258 081 F  | 10   |
| 8,20    | 117,0    | 75,0     | 258 082  | 10   | 258 082 T   | 10   | 258 082 F  | 10   |
| 8,30    | 117,0    | 75,0     | 258 083  | 10   | 258 083 T   | 10   | 258 083 F  | 10   |
| 8,40    | 117,0    | 75,0     | 258 084  | 10   | 258 084 T   | 10   | 258 084 F  | 10   |
| 8,50    | 117,0    | 75,0     | 258 085  | 10   | 258 085 T   | 10   | 258 085 F  | 10   |
| 8,60    | 125,0    | 81,0     | 258 086  | 10   | 258 086 T   | 10   | 258 086 F  | 10   |
| 8,70    | 125,0    | 81,0     | 258 087  | 10   | 258 087 T   | 10   | 258 087 F  | 10   |
| 8,80    | 125,0    | 81,0     | 258 088  | 10   | 258 088 T   | 10   | 258 088 F  | 10   |
| 8,90    | 125,0    | 81,0     | 258 089  | 10   | 258 089 T   | 10   | 258 089 F  | 10   |
| 9,00    | 125,0    | 81,0     | 258 090  | 10   | 258 090 T   | 10   | 258 090 F  | 10   |
| 9,10    | 125,0    | 81,0     | 258 091  | 10   | 258 091 T   | 10   | 258 091 F  | 10   |
| 9,20    | 125,0    | 81,0     | 258 092  | 10   | 258 092 T   | 10   | 258 092 F  | 10   |
| 9,30    | 125,0    | 81,0     | 258 093  | 10   | 258 093 T   | 10   | 258 093 F  | 10   |
| 9,40    | 125,0    | 81,0     | 258 094  | 10   | 258 094 T   | 10   | 258 094 F  | 10   |
| 9,50    | 125,0    | 81,0     | 258 095  | 10   | 258 095 T   | 10   | 258 095 F  | 10   |
| 9,60    | 133,0    | 87,0     | 258 096  | 10   | 258 096 T   | 10   | 258 096 F  | 10   |
| 9,70    | 133,0    | 87,0     | 258 097  | 10   | 258 097 T   | 10   | 258 097 F  | 10   |
| 9,80    | 133,0    | 87,0     | 258 098  | 10   | 258 098 T   | 10   | 258 098 F  | 10   |
| 9,90    | 133,0    | 87,0     | 258 099  | 10   | 258 099 T   | 10   | 258 099 F  | 10   |
| 10,00   | 133,0    | 87,0     | 258 100  | 10   | 258 100 T   | 10   | 258 100 F  | 10   |
| 10,10   | 133,0    | 87,0     | 258 101  | 10   | 258 101 T   | 10   | 258 101 F  | 10   |
| 10,20   | 133,0    | 87,0     | 258 102  | 10   | 258 102 T   | 10   | 258 102 F  | 10   |
| 10,30   | 133,0    | 87,0     | 258 103  | 10   | 258 103 T   | 10   | 258 103 F  | 10   |
| 10,40   | 133,0    | 87,0     | 258 104  | 10   | 258 104 T   | 10   | 258 104 F  | 10   |
| 10,50   | 133,0    | 87,0     | 258 105  | 5  | 258 105 T   | 5  | 258 105 F  | 5  |
| 10,60   | 133,0    | 87,0     | 258 106  | 5  | 258 106 T   | 5  | 258 106 F  | 5  |
| 10,70   | 142,0    | 94,0     | 258 107  | 5  | 258 107 T   | 5  | 258 107 F  | 5  |
| 10,80   | 142,0    | 94,0     | 258 108  | 5  | 258 108 T   | 5  | 258 108 F  | 5  |
| 10,90   | 142,0    | 94,0     | 258 109  | 5  | 258 109 T   | 5  | 258 109 F  | 5  |
| 11,00   | 142,0    | 94,0     | 258 110  | 5  | 258 110 T   | 5  | 258 110 F  | 5  |
| 11,10   | 142,0    | 94,0     | 258 111  | 5  | 258 111 T   | 5  | 258 111 F  | 5  |
| 11,20   | 142,0    | 94,0     | 258 112  | 5  | 258 112 T   | 5  | 258 112 F  | 5  |
| 11,30   | 142,0    | 94,0     | 258 113  | 5  | 258 113 T   | 5  | 258 113 F  | 5  |
| 11,40   | 142,0    | 94,0     | 258 114  | 5  | 258 114 T   | 5  | 258 114 F  | 5  |
| 11,50   | 142,0    | 94,0     | 258 115  | 5  | 258 115 T   | 5  | 258 115 F  | 5  |
| 11,60   | 142,0    | 94,0     | 258 116  | 5  | 258 116 T   | 5  | 258 116 F  | 5  |
| 11,70   | 142,0    | 94,0     | 258 117  | 5  | 258 117 T   | 5  | 258 117 F  | 5  |
| 11,80   | 142,0    | 94,0     | 258 118  | 5  | 258 118 T   | 5  | 258 118 F  | 5  |
| 11,90   | 151,0    | 101,0    | 258 119  | 5  | 258 119 T   | 5  | 258 119 F  | 5  |
| 12,00   | 151,0    | 101,0    | 258 120  | 5  | 258 120 T   | 5  | 258 120 F  | 5  |
| 12,10   | 151,0    | 101,0    | 258 121  | 5  | 258 121 T   | 5  | 258 121 F  | 5  |
| 12,20   | 151,0    | 101,0    | 258 122  | 5  | 258 122 T   | 5  | 258 122 F  | 5  |
| 12,30   | 151,0    | 101,0    | 258 123  | 5  | 258 123 T   | 5  | 258 123 F  | 5  |



### Twist drills DIN 338 TL 3000, HSS ground

| Ø mm  | L1 mm | L2 mm | HSS-G   |      | HSS-G TIN |      | HSS-G TiAIN |   |
|-------|-------|-------|---------|------|-----------|------|-------------|---|
|       |       |       | Icon    | Icon | Icon      | Icon |             |   |
| 12,40 | 151,0 | 101,0 | 258 124 | 5    | 258 124 T | 5    | 258 124 F   | 5 |
| 12,50 | 151,0 | 101,0 | 258 125 | 5    | 258 125 T | 5    | 258 125 F   | 5 |
| 12,60 | 151,0 | 101,0 | 258 126 | 5    | 258 126 T | 5    | 258 126 F   | 5 |
| 12,70 | 151,0 | 101,0 | 258 127 | 5    | 258 127 T | 5    | 258 127 F   | 5 |
| 12,80 | 151,0 | 101,0 | 258 128 | 5    | 258 128 T | 5    | 258 128 F   | 5 |
| 12,90 | 151,0 | 101,0 | 258 129 | 5    | 258 129 T | 5    | 258 129 F   | 5 |
| 13,00 | 151,0 | 101,0 | 258 130 | 5    | 258 130 T | 5    | 258 130 F   | 5 |
| 13,50 | 160,0 | 108,0 | 258 135 | 5    | 258 135 T | 5    | 258 135 F   | 5 |
| 14,00 | 160,0 | 108,0 | 258 140 | 5    | 258 140 T | 5    | 258 140 F   | 5 |
| 14,50 | 169,0 | 114,0 | 258 145 | 5    | 258 145 T | 5    | 258 145 F   | 5 |
| 15,00 | 169,0 | 114,0 | 258 150 | 5    | 258 150 T | 5    | 258 150 F   | 5 |
| 15,50 | 178,0 | 120,0 | 258 155 | 5    | 258 155 T | 5    | 258 155 F   | 5 |
| 16,00 | 178,0 | 120,0 | 258 160 | 5    | 258 160 T | 5    | 258 160 F   | 5 |

### Twist drill sets DIN 338 TL 3000, HSS ground

|   | HSS-G      | HSS-G TIN   | HSS-G TiAIN |
|---|------------|-------------|-------------|
| 19-piece set of twist drills DIN 338 type TL 3000<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 258 214    | 258 214 T   | 258 214 F   |
| 25-piece set of twist drills DIN 338 type TL 3000<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 258 215    | 258 215 T   | 258 215 F   |
| 19-piece set of twist drills DIN 338 type TL 3000<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 258 214 RO | 258 214 TRO | 258 214 FRO |
| 25-piece set of twist drills DIN 338 type TL 3000<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 258 215 RO | 258 215 TRO | 258 215 FRO |



258 214



258 214 T



258 214 FRO



## Twist drills DIN 338 type TURBO, HSS ground

Ground twist drill in high-performance high-speed steel. Drills very cleanly with burr-free hole edges. Immediate drilling start after insertion as no prepunching is necessary. Shatter stability is increased by up to 50 % as the core diameter increases constantly in the direction of the shank (from Ø 3,2 mm). Triple milled clamping areas prevent the drill from spinning in the machine (from Ø 5,0 mm).

For use on: non-alloy and alloy steel (up to grade of approx. 900 N/mm<sup>2</sup>), for drilling thin-walled profiles and sheeting up to 5,0 mm, plastics and wood.



High performance twist drill for all-purpose use in drilling machines and cordless drills. (Materials up to 5,0 mm thickness)


Packing unit: in plastic box

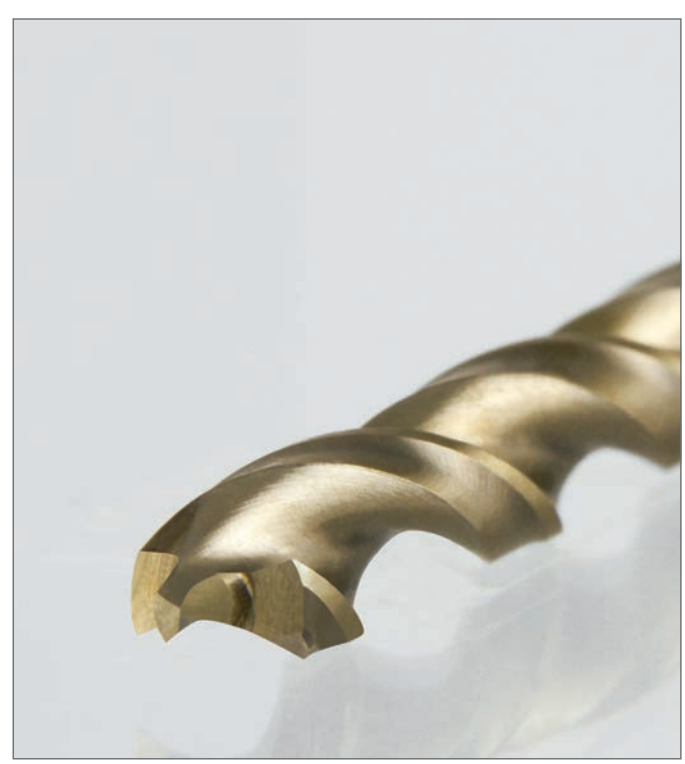
|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | Bronze           | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              |   | Cast iron        |   |
| Aluminium                         | ■ | Titanium alloyed |   |

| Ø mm  | L1 mm | L2 mm | HSS-G    |    |
|-------|-------|-------|----------|----|
| 1,00  | 34,0  | 12,0  | 2146 010 | 10 |
| 1,50  | 40,0  | 18,0  | 2146 015 | 10 |
| 2,00  | 49,0  | 24,0  | 2146 020 | 10 |
| 2,50  | 57,0  | 30,0  | 2146 025 | 10 |
| 3,00  | 61,0  | 33,0  | 2146 030 | 10 |
| 3,20  | 65,0  | 36,0  | 2146 032 | 10 |
| 3,30  | 65,0  | 36,0  | 2146 033 | 10 |
| 3,50  | 70,0  | 39,0  | 2146 035 | 10 |
| 4,00  | 75,0  | 43,0  | 2146 040 | 10 |
| 4,10  | 75,0  | 43,0  | 2146 041 | 10 |
| 4,20  | 75,0  | 43,0  | 2146 042 | 10 |
| 4,50  | 80,0  | 46,0  | 2146 045 | 10 |
| 4,80  | 86,0  | 46,0  | 2146 048 | 10 |
| 5,00  | 86,0  | 46,0  | 2146 050 | 10 |
| 5,10  | 86,0  | 46,0  | 2146 051 | 10 |
| 5,20  | 86,0  | 46,0  | 2146 052 | 10 |
| 5,40  | 93,0  | 52,0  | 2146 054 | 10 |
| 5,50  | 93,0  | 52,0  | 2146 055 | 10 |
| 6,00  | 93,0  | 57,0  | 2146 060 | 10 |
| 6,50  | 101,0 | 58,0  | 2146 065 | 10 |
| 6,80  | 109,0 | 66,0  | 2146 068 | 10 |
| 7,00  | 109,0 | 66,0  | 2146 070 | 10 |
| 7,50  | 109,0 | 66,0  | 2146 075 | 10 |
| 8,00  | 117,0 | 72,0  | 2146 080 | 10 |
| 8,50  | 117,0 | 72,0  | 2146 085 | 10 |
| 9,00  | 125,0 | 78,0  | 2146 090 | 10 |
| 9,50  | 125,0 | 78,0  | 2146 095 | 10 |
| 10,00 | 133,0 | 84,0  | 2146 100 | 10 |
| 10,50 | 133,0 | 84,0  | 2146 105 | 5  |
| 11,00 | 142,0 | 91,0  | 2146 110 | 5  |
| 11,50 | 142,0 | 91,0  | 2146 115 | 5  |
| 12,00 | 151,0 | 98,0  | 2146 120 | 5  |
| 12,50 | 151,0 | 98,0  | 2146 125 | 5  |
| 13,00 | 151,0 | 98,0  | 2146 130 | 5  |



## Twist drill sets DIN 338 type TURBO, HSS ground

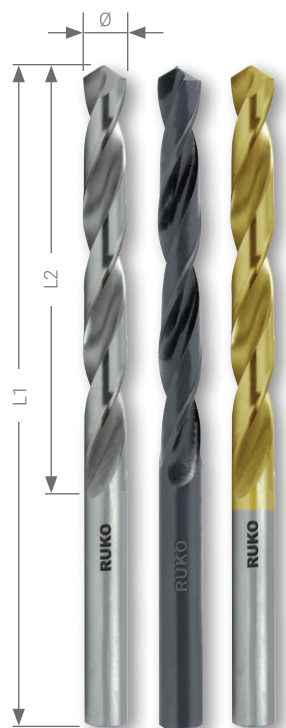
|   | HSS-G  |
|---|---|
| 19-piece set of twist drills DIN 338 type TURBO<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 214 614   |
| 25-piece set of twist drills DIN 338 type TURBO<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 214 615   |
| 19-piece set of twist drills DIN 338 type TURBO<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 214 614 RO  |
| 25-piece set of twist drills DIN 338 type TURBO<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 214 615 RO  |





## Twist drills DIN 338 type N, HSS ground

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity. Thanks to the split point, this drill has good centring properties and requires little pressure.



Packing unit: in plastic box





|                                   |   |   |   |                  |   |   |   |
|-----------------------------------|---|---|---|------------------|---|---|---|
|                                   |   |   |   |                  |   |   |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | ■ | Brass            | ■ | ■ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   |   | □ | Bronze           | □ | □ | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   |   |   | Plastics         | ■ | ■ | ■ |
| Rust-resistant steel              |   |   | □ | Cast iron        | □ | □ | □ |
| Aluminium                         | ■ | ■ |   | Titanium alloyed |   |   |   |

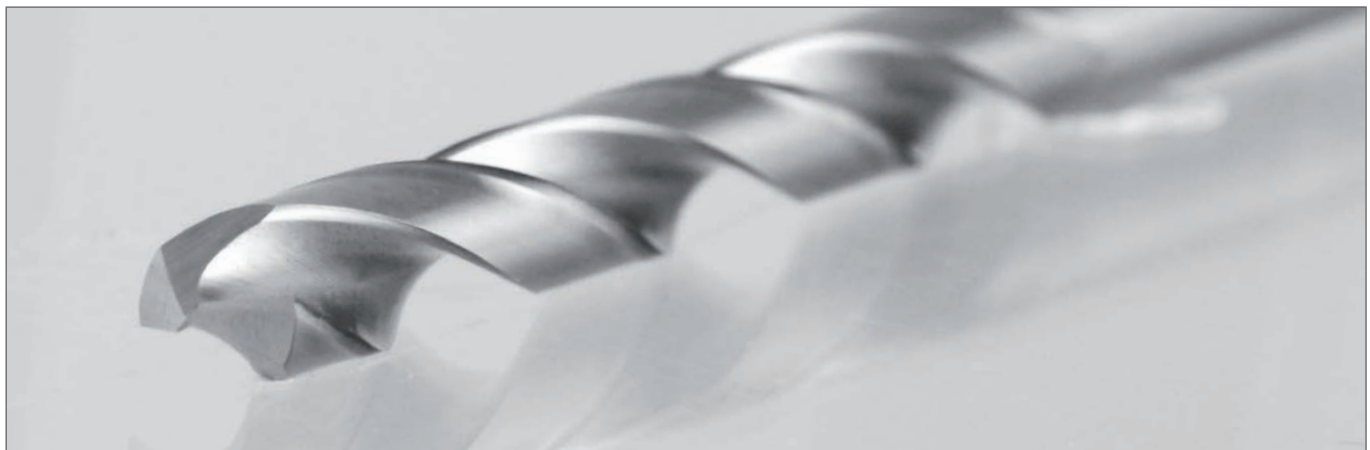
| Ø mm | L1 mm | L2 mm | HSS-G    |      | HSS-G      |      | HSS-G      |      |
|------|-------|-------|----------|------|------------|------|------------|------|
|      |       |       | Part No. | Pack | Part No.   | Pack | Part No.   | Pack |
| 0,30 | 19,0  | 3,0   | 214 003  | 10   | 214 003 S  | 10   | 250 003 T  | 10   |
| 0,40 | 20,0  | 5,0   | 214 004  | 10   | 214 004 S  | 10   | 250 004 T  | 10   |
| 0,50 | 22,0  | 6,0   | 214 005  | 10   | 214 005 S  | 10   | 250 005 T  | 10   |
| 0,60 | 24,0  | 7,0   | 214 006  | 10   | 214 006 S  | 10   | 250 006 T  | 10   |
| 0,70 | 28,0  | 9,0   | 214 007  | 10   | 214 007 S  | 10   | 250 007 T  | 10   |
| 0,80 | 30,0  | 10,0  | 214 008  | 10   | 214 008 S  | 10   | 250 008 T  | 10   |
| 0,90 | 32,0  | 11,0  | 214 009  | 10   | 214 009 S  | 10   | 250 009 T  | 10   |
| 1,00 | 34,0  | 12,0  | 214 010  | 10   | 214 010 S  | 10   | 250 010 T  | 10   |
| 1,10 | 36,0  | 14,0  | 214 011  | 10   | 214 011 S  | 10   | 250 011 T  | 10   |
| 1,20 | 38,0  | 16,0  | 214 012  | 10   | 214 012 S  | 10   | 250 012 T  | 10   |
| 1,25 | 38,0  | 16,0  | 214 0125 | 10   | 214 0125 S | 10   | 250 0125 T | 10   |
| 1,30 | 38,0  | 16,0  | 214 013  | 10   | 214 013 S  | 10   | 250 013 T  | 10   |
| 1,40 | 40,0  | 18,0  | 214 014  | 10   | 214 014 S  | 10   | 250 014 T  | 10   |
| 1,50 | 40,0  | 18,0  | 214 015  | 10   | 214 015 S  | 10   | 250 015 T  | 10   |
| 1,60 | 43,0  | 20,0  | 214 016  | 10   | 214 016 S  | 10   | 250 016 T  | 10   |
| 1,70 | 43,0  | 20,0  | 214 017  | 10   | 214 017 S  | 10   | 250 017 T  | 10   |
| 1,75 | 46,0  | 20,0  | 214 0175 | 10   | 214 0175 S | 10   | 250 0175 T | 10   |
| 1,80 | 46,0  | 22,0  | 214 018  | 10   | 214 018 S  | 10   | 250 018 T  | 10   |
| 1,90 | 46,0  | 22,0  | 214 019  | 10   | 214 019 S  | 10   | 250 019 T  | 10   |
| 2,00 | 49,0  | 24,0  | 214 020  | 10   | 214 020 S  | 10   | 250 020 T  | 10   |
| 2,10 | 49,0  | 24,0  | 214 021  | 10   | 214 021 S  | 10   | 250 021 T  | 10   |
| 2,20 | 53,0  | 27,0  | 214 022  | 10   | 214 022 S  | 10   | 250 022 T  | 10   |
| 2,25 | 53,0  | 27,0  | 214 0225 | 10   | 214 0225 S | 10   | 250 0225 T | 10   |
| 2,30 | 53,0  | 27,0  | 214 023  | 10   | 214 023 S  | 10   | 250 023 T  | 10   |
| 2,40 | 57,0  | 30,0  | 214 024  | 10   | 214 024 S  | 10   | 250 024 T  | 10   |
| 2,50 | 57,0  | 30,0  | 214 025  | 10   | 214 025 S  | 10   | 250 025 T  | 10   |
| 2,60 | 57,0  | 30,0  | 214 026  | 10   | 214 026 S  | 10   | 250 026 T  | 10   |
| 2,70 | 61,0  | 33,0  | 214 027  | 10   | 214 027 S  | 10   | 250 027 T  | 10   |
| 2,75 | 61,0  | 33,0  | 214 0275 | 10   | 214 0275 S | 10   | 250 0275 T | 10   |
| 2,80 | 61,0  | 33,0  | 214 028  | 10   | 214 028 S  | 10   | 250 028 T  | 10   |
| 2,90 | 61,0  | 33,0  | 214 029  | 10   | 214 029 S  | 10   | 250 029 T  | 10   |
| 3,00 | 61,0  | 33,0  | 214 030  | 10   | 214 030 S  | 10   | 250 030 T  | 10   |
| 3,10 | 65,0  | 36,0  | 214 031  | 10   | 214 031 S  | 10   | 250 031 T  | 10   |
| 3,20 | 65,0  | 36,0  | 214 032  | 10   | 214 032 S  | 10   | 250 032 T  | 10   |
| 3,25 | 65,0  | 36,0  | 214 0325 | 10   | 214 0325 S | 10   | 250 0325 T | 10   |
| 3,30 | 65,0  | 36,0  | 214 033  | 10   | 214 033 S  | 10   | 250 033 T  | 10   |
| 3,40 | 70,0  | 39,0  | 214 034  | 10   | 214 034 S  | 10   | 250 034 T  | 10   |
| 3,50 | 70,0  | 39,0  | 214 035  | 10   | 214 035 S  | 10   | 250 035 T  | 10   |
| 3,60 | 70,0  | 39,0  | 214 036  | 10   | 214 036 S  | 10   | 250 036 T  | 10   |
| 3,70 | 70,0  | 39,0  | 214 037  | 10   | 214 037 S  | 10   | 250 037 T  | 10   |



## Twist drills DIN 338 type N, HSS ground




| Ø<br>mm | L1<br>mm | L2<br>mm | HSS-G    |    | HSS-G      |    | HSS-G TIN  |    |
|---------|----------|----------|----------|----|------------|----|------------|----|
|         |          |          |          |    |            |    |            |    |
| 3,75    | 70,0     | 39,0     | 214 0375 | 10 | 214 0375 S | 10 | 250 0375 T | 10 |
| 3,80    | 75,0     | 43,0     | 214 038  | 10 | 214 038 S  | 10 | 250 038 T  | 10 |
| 3,90    | 75,0     | 43,0     | 214 039  | 10 | 214 039 S  | 10 | 250 039 T  | 10 |
| 4,00    | 75,0     | 43,0     | 214 040  | 10 | 214 040 S  | 10 | 250 040 T  | 10 |
| 4,10    | 75,0     | 43,0     | 214 041  | 10 | 214 041 S  | 10 | 250 041 T  | 10 |
| 4,20    | 75,0     | 43,0     | 214 042  | 10 | 214 042 S  | 10 | 250 042 T  | 10 |
| 4,25    | 75,0     | 43,0     | 214 0425 | 10 | 214 0425 S | 10 | 250 0425 T | 10 |
| 4,30    | 80,0     | 47,0     | 214 043  | 10 | 214 043 S  | 10 | 250 043 T  | 10 |
| 4,40    | 80,0     | 47,0     | 214 044  | 10 | 214 044 S  | 10 | 250 044 T  | 10 |
| 4,50    | 80,0     | 47,0     | 214 045  | 10 | 214 045 S  | 10 | 250 045 T  | 10 |
| 4,60    | 80,0     | 47,0     | 214 046  | 10 | 214 046 S  | 10 | 250 046 T  | 10 |
| 4,70    | 80,0     | 47,0     | 214 047  | 10 | 214 047 S  | 10 | 250 047 T  | 10 |
| 4,75    | 80,0     | 47,0     | 214 0475 | 10 | 214 0475 S | 10 | 250 0475 T | 10 |
| 4,80    | 86,0     | 52,0     | 214 048  | 10 | 214 048 S  | 10 | 250 048 T  | 10 |
| 4,90    | 86,0     | 52,0     | 214 049  | 10 | 214 049 S  | 10 | 250 049 T  | 10 |
| 5,00    | 86,0     | 52,0     | 214 050  | 10 | 214 050 S  | 10 | 250 050 T  | 10 |
| 5,10    | 86,0     | 52,0     | 214 051  | 10 | 214 051 S  | 10 | 250 051 T  | 10 |
| 5,20    | 86,0     | 52,0     | 214 052  | 10 | 214 052 S  | 10 | 250 052 T  | 10 |
| 5,25    | 86,0     | 52,0     | 214 0525 | 10 | 214 0525 S | 10 | 250 0525 T | 10 |
| 5,30    | 86,0     | 52,0     | 214 053  | 10 | 214 053 S  | 10 | 250 053 T  | 10 |
| 5,40    | 93,0     | 57,0     | 214 054  | 10 | 214 054 S  | 10 | 250 054 T  | 10 |
| 5,50    | 93,0     | 57,0     | 214 055  | 10 | 214 055 S  | 10 | 250 055 T  | 10 |
| 5,60    | 93,0     | 57,0     | 214 056  | 10 | 214 056 S  | 10 | 250 056 T  | 10 |
| 5,70    | 93,0     | 57,0     | 214 057  | 10 | 214 057 S  | 10 | 250 057 T  | 10 |
| 5,75    | 93,0     | 57,0     | 214 0575 | 10 | 214 0575 S | 10 | 250 0575 T | 10 |
| 5,80    | 93,0     | 57,0     | 214 058  | 10 | 214 058 S  | 10 | 250 058 T  | 10 |
| 5,90    | 93,0     | 57,0     | 214 059  | 10 | 214 059 S  | 10 | 250 059 T  | 10 |
| 6,00    | 93,0     | 57,0     | 214 060  | 10 | 214 060 S  | 10 | 250 060 T  | 10 |
| 6,10    | 101,0    | 63,0     | 214 061  | 10 | 214 061 S  | 10 | 250 061 T  | 10 |
| 6,20    | 101,0    | 63,0     | 214 062  | 10 | 214 062 S  | 10 | 250 062 T  | 10 |
| 6,25    | 101,0    | 63,0     | 214 0625 | 10 | 214 0625 S | 10 | 250 0625 T | 10 |
| 6,30    | 101,0    | 63,0     | 214 063  | 10 | 214 063 S  | 10 | 250 063 T  | 10 |
| 6,40    | 101,0    | 63,0     | 214 064  | 10 | 214 064 S  | 10 | 250 064 T  | 10 |
| 6,50    | 101,0    | 63,0     | 214 065  | 10 | 214 065 S  | 10 | 250 065 T  | 10 |
| 6,60    | 101,0    | 63,0     | 214 066  | 10 | 214 066 S  | 10 | 250 066 T  | 10 |
| 6,70    | 101,0    | 63,0     | 214 067  | 10 | 214 067 S  | 10 | 250 067 T  | 10 |
| 6,75    | 101,0    | 63,0     | 214 0675 | 10 | 214 0675 S | 10 | 250 0675 T | 10 |
| 6,80    | 109,0    | 69,0     | 214 068  | 10 | 214 068 S  | 10 | 250 068 T  | 10 |
| 6,90    | 109,0    | 69,0     | 214 069  | 10 | 214 069 S  | 10 | 250 069 T  | 10 |
| 7,00    | 109,0    | 69,0     | 214 070  | 10 | 214 070 S  | 10 | 250 070 T  | 10 |
| 7,10    | 109,0    | 69,0     | 214 071  | 10 | 214 071 S  | 10 | 250 071 T  | 10 |
| 7,20    | 109,0    | 69,0     | 214 072  | 10 | 214 072 S  | 10 | 250 072 T  | 10 |
| 7,25    | 109,0    | 69,0     | 214 0725 | 10 | 214 0725 S | 10 | 250 0725 T | 10 |
| 7,30    | 109,0    | 69,0     | 214 073  | 10 | 214 073 S  | 10 | 250 073 T  | 10 |
| 7,40    | 109,0    | 69,0     | 214 074  | 10 | 214 074 S  | 10 | 250 074 T  | 10 |
| 7,50    | 109,0    | 69,0     | 214 075  | 10 | 214 075 S  | 10 | 250 075 T  | 10 |
| 7,60    | 117,0    | 75,0     | 214 076  | 10 | 214 076 S  | 10 | 250 076 T  | 10 |
| 7,70    | 117,0    | 75,0     | 214 077  | 10 | 214 077 S  | 10 | 250 077 T  | 10 |
| 7,75    | 117,0    | 75,0     | 214 0775 | 10 | 214 0775 S | 10 | 250 0775 T | 10 |
| 7,80    | 117,0    | 75,0     | 214 078  | 10 | 214 078 S  | 10 | 250 078 T  | 10 |
| 7,90    | 117,0    | 75,0     | 214 079  | 10 | 214 079 S  | 10 | 250 079 T  | 10 |
| 8,00    | 117,0    | 75,0     | 214 080  | 10 | 214 080 S  | 10 | 250 080 T  | 10 |
| 8,10    | 117,0    | 75,0     | 214 081  | 10 | 214 081 S  | 10 | 250 081 T  | 10 |
| 8,20    | 117,0    | 75,0     | 214 082  | 10 | 214 082 S  | 10 | 250 082 T  | 10 |
| 8,25    | 117,0    | 75,0     | 214 0825 | 10 | 214 0825 S | 10 | 250 0825 T | 10 |
| 8,30    | 117,0    | 75,0     | 214 083  | 10 | 214 083 S  | 10 | 250 083 T  | 10 |
| 8,40    | 117,0    | 75,0     | 214 084  | 10 | 214 084 S  | 10 | 250 084 T  | 10 |
| 8,50    | 117,0    | 75,0     | 214 085  | 10 | 214 085 S  | 10 | 250 085 T  | 10 |
| 8,60    | 125,0    | 81,0     | 214 086  | 10 | 214 086 S  | 10 | 250 086 T  | 10 |
| 8,70    | 125,0    | 81,0     | 214 087  | 10 | 214 087 S  | 10 | 250 087 T  | 10 |
| 8,75    | 125,0    | 81,0     | 214 0875 | 10 | 214 0875 S | 10 | 250 0875 T | 10 |
| 8,80    | 125,0    | 81,0     | 214 088  | 10 | 214 088 S  | 10 | 250 088 T  | 10 |
| 8,90    | 125,0    | 81,0     | 214 089  | 10 | 214 089 S  | 10 | 250 089 T  | 10 |
| 9,00    | 125,0    | 81,0     | 214 090  | 10 | 214 090 S  | 10 | 250 090 T  | 10 |
| 9,10    | 125,0    | 81,0     | 214 091  | 10 | 214 091 S  | 10 | 250 091 T  | 10 |
| 9,20    | 125,0    | 81,0     | 214 092  | 10 | 214 092 S  | 10 | 250 092 T  | 10 |

| Ø<br>mm | L1<br>mm | L2<br>mm | HSS-G  |    |  |    | HSS-G  TiN  |    |
|---------|----------|----------|--|----|--|----|---|----|
|         |          |          |  |    |  |    |   |    |
| 9,25    | 125,0    | 81,0     | 214 0925   | 10 | 214 0925 S   | 10 | 250 0925 T  | 10 |
| 9,30    | 125,0    | 81,0     | 214 093  | 10 | 214 093 S  | 10 | 250 093 T   | 10 |
| 9,40    | 125,0    | 81,0     | 214 094  | 10 | 214 094 S  | 10 | 250 094 T   | 10 |
| 9,50    | 125,0    | 81,0     | 214 095  | 10 | 214 095 S  | 10 | 250 095 T   | 10 |
| 9,60    | 133,0    | 87,0     | 214 096  | 10 | 214 096 S  | 10 | 250 096 T   | 10 |
| 9,70    | 133,0    | 87,0     | 214 097  | 10 | 214 097 S  | 10 | 250 097 T   | 10 |
| 9,75    | 133,0    | 87,0     | 214 0975   | 10 | 214 0975 S   | 10 | 250 0975 T  | 10 |
| 9,80    | 133,0    | 87,0     | 214 098  | 10 | 214 098 S  | 10 | 250 098 T   | 10 |
| 9,90    | 133,0    | 87,0     | 214 099  | 10 | 214 099 S  | 10 | 250 099 T   | 10 |
| 10,00   | 133,0    | 87,0     | 214 100  | 10 | 214 100 S  | 10 | 250 100 T   | 10 |
| 10,10   | 133,0    | 87,0     | 214 101  | 10 | 214 101 S  | 10 | 250 101 T   | 10 |
| 10,20   | 133,0    | 87,0     | 214 102  | 10 | 214 102 S  | 10 | 250 102 T   | 10 |
| 10,30   | 133,0    | 87,0     | 214 103  | 10 | 214 103 S  | 10 | 250 103 T   | 10 |
| 10,40   | 133,0    | 87,0     | 214 104  | 10 | 214 104 S  | 10 | 250 104 T   | 10 |
| 10,50   | 133,0    | 87,0     | 214 105  | 5  | 214 105 S  | 5  | 250 105 T   | 5  |
| 10,60   | 133,0    | 87,0     | 214 106  | 5  | 214 106 S  | 5  | 250 106 T   | 5  |
| 10,70   | 142,0    | 94,0     | 214 107  | 5  | 214 107 S  | 5  | 250 107 T   | 5  |
| 10,80   | 142,0    | 94,0     | 214 108  | 5  | 214 108 S  | 5  | 250 108 T   | 5  |
| 10,90   | 142,0    | 94,0     | 214 109  | 5  | 214 109 S  | 5  | 250 109 T   | 5  |
| 11,00   | 142,0    | 94,0     | 214 110  | 5  | 214 110 S  | 5  | 250 110 T   | 5  |
| 11,10   | 142,0    | 94,0     | 214 111  | 5  | 214 111 S  | 5  | 250 111 T   | 5  |
| 11,20   | 142,0    | 94,0     | 214 112  | 5  | 214 112 S  | 5  | 250 112 T   | 5  |
| 11,30   | 142,0    | 94,0     | 214 113  | 5  | 214 113 S  | 5  | 250 113 T   | 5  |
| 11,40   | 142,0    | 94,0     | 214 114  | 5  | 214 114 S  | 5  | 250 114 T   | 5  |
| 11,50   | 142,0    | 94,0     | 214 115  | 5  | 214 115 S  | 5  | 250 115 T   | 5  |
| 11,60   | 142,0    | 94,0     | 214 116  | 5  | 214 116 S  | 5  | 250 116 T   | 5  |
| 11,70   | 142,0    | 94,0     | 214 117  | 5  | 214 117 S  | 5  | 250 117 T   | 5  |
| 11,80   | 142,0    | 94,0     | 214 118  | 5  | 214 118 S  | 5  | 250 118 T   | 5  |
| 11,90   | 151,0    | 101,0    | 214 119  | 5  | 214 119 S  | 5  | 250 119 T   | 5  |
| 12,00   | 151,0    | 101,0    | 214 120  | 5  | 214 120 S  | 5  | 250 120 T   | 5  |
| 12,10   | 151,0    | 101,0    | 214 121  | 5  | 214 121 S  | 5  | 250 121 T   | 5  |
| 12,20   | 151,0    | 101,0    | 214 122  | 5  | 214 122 S  | 5  | 250 122 T   | 5  |
| 12,30   | 151,0    | 101,0    | 214 123  | 5  | 214 123 S  | 5  | 250 123 T   | 5  |
| 12,40   | 151,0    | 101,0    | 214 124  | 5  | 214 124 S  | 5  | 250 124 T   | 5  |
| 12,50   | 151,0    | 101,0    | 214 125  | 5  | 214 125 S  | 5  | 250 125 T   | 5  |
| 12,60   | 151,0    | 101,0    | 214 126  | 5  | 214 126 S  | 5  | 250 126 T   | 5  |
| 12,70   | 151,0    | 101,0    | 214 127  | 5  | 214 127 S  | 5  | 250 127 T   | 5  |
| 12,80   | 151,0    | 101,0    | 214 128  | 5  | 214 128 S  | 5  | 250 128 T   | 5  |
| 12,90   | 151,0    | 101,0    | 214 129  | 5  | 214 129 S  | 5  | 250 129 T   | 5  |
| 13,00   | 151,0    | 101,0    | 214 130  | 5  | 214 130 S  | 5  | 250 130 T   | 5  |
| 13,50   | 160,0    | 108,0    | 214 135  | 5  | 214 135 S  | 5  | 250 135 T   | 5  |
| 14,00   | 160,0    | 108,0    | 214 140  | 5  | 214 140 S  | 5  | 250 140 T   | 5  |
| 14,50   | 169,0    | 114,0    | 214 145  | 5  | 214 145 S  | 5  | 250 145 T   | 5  |
| 15,00   | 169,0    | 114,0    | 214 150  | 5  | 214 150 S  | 5  | 250 150 T   | 5  |
| 15,50   | 178,0    | 120,0    | 214 155  | 5  | 214 155 S  | 5  | 250 155 T   | 5  |
| 16,00   | 178,0    | 120,0    | 214 160  | 5  | 214 160 S  | 5  | 250 160 T   | 5  |
| 16,50   | 184,0    | 125,0    | 214 165  | 1  | —  | —  | —   | —  |
| 17,00   | 184,0    | 125,0    | 214 170  | 1  | —  | —  | —   | —  |
| 17,50   | 191,0    | 130,0    | 214 175  | 1  | —  | —  | —   | —  |
| 18,00   | 191,0    | 130,0    | 214 180  | 1  | —  | —  | —   | —  |
| 18,50   | 198,0    | 135,0    | 214 185  | 1  | —  | —  | —   | —  |
| 19,00   | 198,0    | 135,0    | 214 190  | 1  | —  | —  | —   | —  |
| 19,50   | 205,0    | 140,0    | 214 195  | 1  | —  | —  | —   | —  |
| 20,00   | 205,0    | 140,0    | 214 201  | 1  | —  | —  | —   | —  |








## Twist drill sets DIN 338 type N, HSS ground

|   | HSS-G  | HSS-G  | HSS-G TIN  |
|---|--|---|---|
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case | 214 214  | 214 214 S   | 250 214 T   |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case | 214 215  | 214 215 S   | 250 215 T   |
| 41-piece set of twist drills DIN 338 type N<br>Ø 6,0 mm up to 10,0 mm in increments of 0,1 mm in steel case | 214 218  | –   | –   |
| 50-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 5,9 mm in increments of 0,1 mm in steel case  | 214 217  | –   | –   |



|   | HSS-G  | HSS-G  | HSS-G TIN  |
|---|---|---|---|
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 214 214 RO  | 214 214 SRO   | 250 214 TRO   |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 214 215 RO  | 214 215 SRO   | 250 215 TRO   |







## Twist drills DIN 338 type N, HSS ground - left hand cutting

High-performance ground twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity.



Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | Bronze           | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              |   | Cast iron        | □ |
| Aluminium                         | ■ | Titanium alloyed |   |

| Ø mm | L1 mm | L2 mm | HSS-G      |    |  |
|------|-------|-------|------------|----|--|
| 1,00 | 34,0  | 12,0  | 214 010 Li | 10 |  |
| 1,50 | 40,0  | 18,0  | 214 015 Li | 10 |  |
| 2,00 | 49,0  | 24,0  | 214 020 Li | 10 |  |
| 2,50 | 57,0  | 30,0  | 214 025 Li | 10 |  |
| 3,00 | 61,0  | 33,0  | 214 030 Li | 10 |  |
| 3,20 | 65,0  | 36,0  | 214 032 Li | 10 |  |
| 3,50 | 70,0  | 39,0  | 214 035 Li | 10 |  |
| 4,00 | 75,0  | 43,0  | 214 040 Li | 10 |  |
| 4,20 | 75,0  | 43,0  | 214 042 Li | 10 |  |
| 4,50 | 80,0  | 47,0  | 214 045 Li | 10 |  |
| 4,80 | 86,0  | 52,0  | 214 048 Li | 10 |  |
| 5,00 | 86,0  | 52,0  | 214 050 Li | 10 |  |
| 5,50 | 93,0  | 57,0  | 214 055 Li | 10 |  |
| 6,00 | 93,0  | 57,0  | 214 060 Li | 10 |  |

| Ø mm  | L1 mm | L2 mm | HSS-G      |    |  |
|-------|-------|-------|------------|----|--|
| 6,50  | 101,0 | 63,0  | 214 065 Li | 10 |  |
| 7,00  | 109,0 | 69,0  | 214 070 Li | 10 |  |
| 7,50  | 109,0 | 69,0  | 214 075 Li | 10 |  |
| 8,00  | 117,0 | 75,0  | 214 080 Li | 10 |  |
| 8,50  | 117,0 | 75,0  | 214 085 Li | 10 |  |
| 9,00  | 125,0 | 81,0  | 214 090 Li | 10 |  |
| 9,50  | 125,0 | 81,0  | 214 095 Li | 10 |  |
| 10,00 | 133,0 | 87,0  | 214 100 Li | 10 |  |
| 10,50 | 133,0 | 87,0  | 214 105 Li | 5  |  |
| 11,00 | 142,0 | 94,0  | 214 110 Li | 5  |  |
| 11,50 | 142,0 | 94,0  | 214 115 Li | 5  |  |
| 12,00 | 151,0 | 101,0 | 214 120 Li | 5  |  |
| 12,50 | 151,0 | 101,0 | 214 125 Li | 5  |  |
| 13,00 | 151,0 | 101,0 | 214 130 Li | 5  |  |

## Twist drill sets DIN 338 type N, HSS ground - left hand cutting

|   | HSS-G         |
|---|---------------|
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 214 214 Li    |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 214 215 Li    |
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 214 214 Li RO |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 214 215 Li RO |





## Twist drill DIN 338 type N, HSS-G with TiN-coated tips

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity. Thanks to the split point, this drill has good centring properties and requires little pressure.

The titanium nitride coating is a universally usable standard coating. It has a 300-400 % longer service life than non-coated materials. Cooling is recommended.



Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 | □ | Bronze           | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              | □ | Cast iron        | □ |
| Aluminium                         |   | Titanium alloyed |   |

| Ø mm | L1 mm | L2 mm | HSS-G      |    |
|------|-------|-------|------------|----|
| 1,00 | 34,0  | 12,0  | 2501 010 T | 10 |
| 1,50 | 40,0  | 18,0  | 2501 015 T | 10 |
| 1,60 | 43,0  | 20,0  | 2501 016 T | 10 |
| 2,00 | 49,0  | 24,0  | 2501 020 T | 10 |
| 2,10 | 49,0  | 24,0  | 2501 021 T | 10 |
| 2,50 | 57,0  | 30,0  | 2501 025 T | 10 |
| 3,00 | 61,0  | 33,0  | 2501 030 T | 10 |
| 3,30 | 65,0  | 36,0  | 2501 033 T | 10 |
| 3,50 | 70,0  | 39,0  | 2501 035 T | 10 |
| 4,00 | 75,0  | 43,0  | 2501 040 T | 10 |
| 4,20 | 75,0  | 43,0  | 2501 042 T | 10 |
| 4,50 | 80,0  | 47,0  | 2501 045 T | 10 |
| 5,00 | 86,0  | 52,0  | 2501 050 T | 10 |
| 5,50 | 93,0  | 57,0  | 2501 055 T | 10 |
| 6,00 | 93,0  | 57,0  | 2501 060 T | 10 |
| 6,50 | 101,0 | 63,0  | 2501 065 T | 10 |

| Ø mm  | L1 mm | L2 mm | HSS-G      |    |
|-------|-------|-------|------------|----|
| 6,80  | 109,0 | 69,0  | 2501 068 T | 10 |
| 7,00  | 109,0 | 69,0  | 2501 070 T | 10 |
| 7,50  | 109,0 | 69,0  | 2501 075 T | 10 |
| 8,00  | 117,0 | 75,0  | 2501 080 T | 10 |
| 8,50  | 117,0 | 75,0  | 2501 085 T | 10 |
| 9,00  | 125,0 | 81,0  | 2501 090 T | 10 |
| 9,50  | 125,0 | 81,0  | 2501 095 T | 10 |
| 10,00 | 133,0 | 87,0  | 2501 100 T | 10 |
| 10,20 | 133,0 | 87,0  | 2501 102 T | 10 |
| 10,50 | 133,0 | 87,0  | 2501 105 T | 5  |
| 11,00 | 142,0 | 94,0  | 2501 110 T | 5  |
| 11,50 | 142,0 | 94,0  | 2501 115 T | 5  |
| 12,00 | 151,0 | 101,0 | 2501 120 T | 5  |
| 12,50 | 151,0 | 101,0 | 2501 125 T | 5  |
| 13,00 | 151,0 | 101,0 | 2501 130 T | 5  |

## Twist drill sets DIN 338 type N, HSS-G with TiN-coated tips

|   | HSS-G        |
|---|--------------|
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 2501 214 T   |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 2501 215 T   |
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 2501 214 TRO |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 2501 215 TRO |





## Twist drill sets, DIN 338 type N and type VA in bench stand

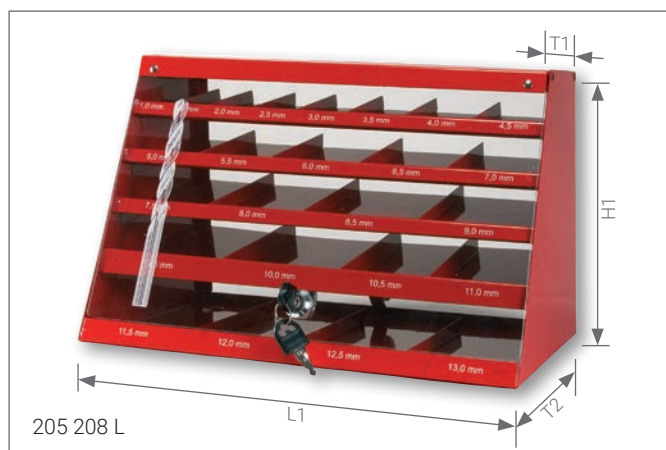
|  | HSS-R   | HSS-G   | HSSE Co 5 |
|--|---------|---------|-----------|
| 91-piece set of twist drills DIN 338<br>Ø 1,0 mm up to 10,0 mm in increments of 0,1 mm | 205 223 | 214 223 | 215 223   |

## Twist drill sets, DIN 338 type N and type VA in magazine

|  | HSS-G   | HSSE Co 5 |
|--|---------|-----------|
| Consisting of 170 twist drills DIN 338<br>10 pcs, Ø 1,0 - 8,0 mm in increments of 0,5 mm<br>5 pcs, Ø 8,5 - 10,0 mm in increments of 0,5 mm | 214 200 | 215 200   |

## Twist drill cabinet, DIN 338 type N and type VA

|   | HSS-R     | HSS-G   | HSSE Co 5 |
|---|-----------|---------|-----------|
| Drill cabinet consisting of 570 twist drills DIN 338<br>50 pcs Ø 1,0 - 2,5 mm in increments of 0,5 mm<br>30 pcs Ø 3,0 - 5,5 mm in increments of 0,5 mm<br>20 pcs Ø 6,0 - 7,5 mm in increments of 0,5 mm<br>10 pcs Ø 8,0 - 13,0 mm in increments of 0,5 mm | 205 208   | 214 208 | 215 208   |
| Drill cabinet empty<br>Measurements: H1: 46,5 cm, L1: 39,0 cm, T1: 9,5 cm, T2: 20,0 cm<br>Ø 1,0 mm up to 10,0 mm in increments of 0,1 mm<br>Ø 10,5 mm up to 13,0 mm in increments of 0,5 mm   | 205 208 L |         |           |
| Drill cabinet empty<br>Measurements: H1: 23,0 cm, L1: 37,0 cm, T1: 9,5 cm, T2: 20,0 cm<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm  | 205 208 L |         |           |





## Twist drills DIN 338 type N, HSS rolled

High-performance rolled, steam-treated twist drill made from heavy-duty high speed steel. The manufacturing procedure (no structural disruption) solidifies the material making it more elasticated. This makes it more resistant to fracture and suitable for robust drilling units. (e.g. hand-held drilling machines)





Packing unit: in plastic box

|                      |  |                  |  |
|----------------------|--|------------------|--|
|                      |  |                  |  |
| Steel (N/mm2) < 900  |  | Brass            |  |
| Steel (N/mm2) < 1100 |  | Bronze           |  |
| Steel (N/mm2) < 1300 |  | Plastics         |  |
| Rust-resistant steel |  | Cast iron        |  |
| Aluminium            |  | Titanium alloyed |  |

| Ø mm | L1 mm | L2 mm | HSS-R    |    |
|------|-------|-------|----------|----|
| 0,30 | 19,0  | 3,0   | 201 003  | 10 |
| 0,40 | 20,0  | 5,0   | 201 004  | 10 |
| 0,50 | 22,0  | 6,0   | 201 005  | 10 |
| 0,60 | 24,0  | 7,0   | 201 006  | 10 |
| 0,70 | 28,0  | 9,0   | 201 007  | 10 |
| 0,80 | 30,0  | 10,0  | 201 008  | 10 |
| 0,90 | 32,0  | 11,0  | 201 009  | 10 |
| 1,00 | 34,0  | 12,0  | 201 010  | 10 |
| 1,10 | 36,0  | 14,0  | 201 011  | 10 |
| 1,20 | 38,0  | 16,0  | 201 012  | 10 |
| 1,25 | 38,0  | 16,0  | 201 0125 | 10 |
| 1,30 | 38,0  | 16,0  | 201 013  | 10 |
| 1,40 | 40,0  | 18,0  | 201 014  | 10 |
| 1,50 | 40,0  | 18,0  | 201 015  | 10 |
| 1,60 | 43,0  | 20,0  | 201 016  | 10 |
| 1,70 | 43,0  | 20,0  | 201 017  | 10 |
| 1,75 | 46,0  | 20,0  | 201 0175 | 10 |
| 1,80 | 46,0  | 22,0  | 201 018  | 10 |
| 1,90 | 46,0  | 22,0  | 201 019  | 10 |
| 2,00 | 49,0  | 24,0  | 201 020  | 10 |
| 2,10 | 49,0  | 24,0  | 201 021  | 10 |
| 2,20 | 53,0  | 27,0  | 201 022  | 10 |
| 2,25 | 53,0  | 27,0  | 201 0225 | 10 |
| 2,30 | 53,0  | 27,0  | 201 023  | 10 |
| 2,40 | 57,0  | 30,0  | 201 024  | 10 |
| 2,50 | 57,0  | 30,0  | 201 025  | 10 |
| 2,60 | 57,0  | 30,0  | 201 026  | 10 |
| 2,70 | 61,0  | 33,0  | 201 027  | 10 |
| 2,75 | 61,0  | 33,0  | 201 0275 | 10 |
| 2,80 | 61,0  | 33,0  | 201 028  | 10 |
| 2,90 | 61,0  | 33,0  | 201 029  | 10 |
| 3,00 | 61,0  | 33,0  | 201 030  | 10 |
| 3,10 | 65,0  | 36,0  | 201 031  | 10 |
| 3,20 | 65,0  | 36,0  | 201 032  | 10 |
| 3,25 | 65,0  | 36,0  | 201 0325 | 10 |
| 3,30 | 65,0  | 36,0  | 201 033  | 10 |
| 3,40 | 70,0  | 39,0  | 201 034  | 10 |
| 3,50 | 70,0  | 39,0  | 201 035  | 10 |
| 3,60 | 70,0  | 39,0  | 201 036  | 10 |
| 3,70 | 70,0  | 39,0  | 201 037  | 10 |

| Ø mm | L1 mm | L2 mm | HSS-R    |    |
|------|-------|-------|----------|----|
| 3,75 | 70,0  | 39,0  | 201 0375 | 10 |
| 3,80 | 75,0  | 43,0  | 201 038  | 10 |
| 3,90 | 75,0  | 43,0  | 201 039  | 10 |
| 4,00 | 75,0  | 43,0  | 201 040  | 10 |
| 4,10 | 75,0  | 43,0  | 201 041  | 10 |
| 4,20 | 75,0  | 43,0  | 201 042  | 10 |
| 4,25 | 75,0  | 43,0  | 201 0425 | 10 |
| 4,30 | 80,0  | 47,0  | 201 043  | 10 |
| 4,40 | 80,0  | 47,0  | 201 044  | 10 |
| 4,50 | 80,0  | 47,0  | 201 045  | 10 |
| 4,60 | 80,0  | 47,0  | 201 046  | 10 |
| 4,70 | 80,0  | 47,0  | 201 047  | 10 |
| 4,75 | 80,0  | 47,0  | 201 0475 | 10 |
| 4,80 | 86,0  | 52,0  | 201 048  | 10 |
| 4,90 | 86,0  | 52,0  | 201 049  | 10 |
| 5,00 | 86,0  | 52,0  | 201 050  | 10 |
| 5,10 | 86,0  | 52,0  | 201 051  | 10 |
| 5,20 | 86,0  | 52,0  | 201 052  | 10 |
| 5,25 | 86,0  | 52,0  | 201 0525 | 10 |
| 5,30 | 86,0  | 52,0  | 201 053  | 10 |
| 5,40 | 93,0  | 57,0  | 201 054  | 10 |
| 5,50 | 93,0  | 57,0  | 201 055  | 10 |
| 5,60 | 93,0  | 57,0  | 201 056  | 10 |
| 5,70 | 93,0  | 57,0  | 201 057  | 10 |
| 5,75 | 93,0  | 57,0  | 201 0575 | 10 |
| 5,80 | 93,0  | 57,0  | 201 058  | 10 |
| 5,90 | 93,0  | 57,0  | 201 059  | 10 |
| 6,00 | 93,0  | 57,0  | 201 060  | 10 |
| 6,10 | 101,0 | 63,0  | 201 061  | 10 |
| 6,20 | 101,0 | 63,0  | 201 062  | 10 |
| 6,25 | 101,0 | 63,0  | 201 0625 | 10 |
| 6,30 | 101,0 | 63,0  | 201 063  | 10 |
| 6,40 | 101,0 | 63,0  | 201 064  | 10 |
| 6,50 | 101,0 | 63,0  | 201 065  | 10 |
| 6,60 | 101,0 | 63,0  | 201 066  | 10 |
| 6,70 | 101,0 | 63,0  | 201 067  | 10 |
| 6,75 | 101,0 | 63,0  | 201 0675 | 10 |
| 6,80 | 109,0 | 69,0  | 201 068  | 10 |
| 6,90 | 109,0 | 69,0  | 201 069  | 10 |
| 7,00 | 109,0 | 69,0  | 201 070  | 10 |

| Ø mm  | L1 mm | L2 mm | HSS-R    |  |
|-------|-------|-------|----------|--|
| 7,10  | 109,0 | 69,0  | 201 071  | 10   |
| 7,20  | 109,0 | 69,0  | 201 072  | 10   |
| 7,25  | 109,0 | 69,0  | 201 0725 | 10   |
| 7,30  | 109,0 | 69,0  | 201 073  | 10   |
| 7,40  | 109,0 | 69,0  | 201 074  | 10   |
| 7,50  | 109,0 | 69,0  | 201 075  | 10   |
| 7,60  | 117,0 | 75,0  | 201 076  | 10   |
| 7,70  | 117,0 | 75,0  | 201 077  | 10   |
| 7,75  | 117,0 | 75,0  | 201 0775 | 10   |
| 7,80  | 117,0 | 75,0  | 201 078  | 10   |
| 7,90  | 117,0 | 75,0  | 201 079  | 10   |
| 8,00  | 117,0 | 75,0  | 201 080  | 10   |
| 8,10  | 117,0 | 75,0  | 201 081  | 10   |
| 8,20  | 117,0 | 75,0  | 201 082  | 10   |
| 8,25  | 117,0 | 75,0  | 201 0825 | 10   |
| 8,30  | 117,0 | 75,0  | 201 083  | 10   |
| 8,40  | 117,0 | 75,0  | 201 084  | 10   |
| 8,50  | 117,0 | 75,0  | 201 085  | 10   |
| 8,60  | 125,0 | 81,0  | 201 086  | 10   |
| 8,70  | 125,0 | 81,0  | 201 087  | 10   |
| 8,75  | 125,0 | 81,0  | 201 0875 | 10   |
| 8,80  | 125,0 | 81,0  | 201 088  | 10   |
| 8,90  | 125,0 | 81,0  | 201 089  | 10   |
| 9,00  | 125,0 | 81,0  | 201 090  | 10   |
| 9,10  | 125,0 | 81,0  | 201 091  | 10   |
| 9,20  | 125,0 | 81,0  | 201 092  | 10   |
| 9,25  | 125,0 | 81,0  | 201 0925 | 10   |
| 9,30  | 125,0 | 81,0  | 201 093  | 10   |
| 9,40  | 125,0 | 81,0  | 201 094  | 10   |
| 9,50  | 125,0 | 81,0  | 201 095  | 10   |
| 9,60  | 133,0 | 87,0  | 201 096  | 10   |
| 9,70  | 133,0 | 87,0  | 201 097  | 10   |
| 9,75  | 133,0 | 87,0  | 201 0975 | 10   |
| 9,80  | 133,0 | 87,0  | 201 098  | 10   |
| 9,90  | 133,0 | 87,0  | 201 099  | 10   |
| 10,00 | 133,0 | 87,0  | 201 100  | 10   |
| 10,10 | 133,0 | 87,0  | 201 101  | 10   |
| 10,20 | 133,0 | 87,0  | 201 102  | 10   |
| 10,30 | 133,0 | 87,0  | 201 103  | 10   |
| 10,40 | 133,0 | 87,0  | 201 104  | 10   |

| Ø mm  | L1 mm | L2 mm | HSS-R   |  |
|-------|-------|-------|---------|--|
| 10,50 | 133,0 | 87,0  | 201 105 | 5  |
| 10,60 | 133,0 | 87,0  | 201 106 | 5  |
| 10,70 | 142,0 | 94,0  | 201 107 | 5  |
| 10,80 | 142,0 | 94,0  | 201 108 | 5  |
| 10,90 | 142,0 | 94,0  | 201 109 | 5  |
| 11,00 | 142,0 | 94,0  | 201 110 | 5  |
| 11,10 | 142,0 | 94,0  | 201 111 | 5  |
| 11,20 | 142,0 | 94,0  | 201 112 | 5  |
| 11,30 | 142,0 | 94,0  | 201 113 | 5  |
| 11,40 | 142,0 | 94,0  | 201 114 | 5  |
| 11,50 | 142,0 | 94,0  | 201 115 | 5  |
| 11,60 | 142,0 | 94,0  | 201 116 | 5  |
| 11,70 | 142,0 | 94,0  | 201 117 | 5  |
| 11,80 | 142,0 | 94,0  | 201 118 | 5  |
| 11,90 | 151,0 | 101,0 | 201 119 | 5  |
| 12,00 | 151,0 | 101,0 | 201 120 | 5  |
| 12,10 | 151,0 | 101,0 | 201 121 | 5  |
| 12,20 | 151,0 | 101,0 | 201 122 | 5  |
| 12,30 | 151,0 | 101,0 | 201 123 | 5  |
| 12,40 | 151,0 | 101,0 | 201 124 | 5  |
| 12,50 | 151,0 | 101,0 | 201 125 | 5  |
| 12,60 | 151,0 | 101,0 | 201 126 | 5  |
| 12,70 | 151,0 | 101,0 | 201 127 | 5  |
| 12,80 | 151,0 | 101,0 | 201 128 | 5  |
| 12,90 | 151,0 | 101,0 | 201 129 | 5  |
| 13,00 | 151,0 | 101,0 | 201 130 | 5  |
| 13,50 | 160,0 | 108,0 | 201 135 | 5  |
| 14,00 | 160,0 | 108,0 | 201 140 | 5  |
| 14,50 | 169,0 | 114,0 | 201 145 | 5  |
| 15,00 | 169,0 | 114,0 | 201 150 | 5  |
| 15,50 | 178,0 | 120,0 | 201 155 | 5  |
| 16,00 | 178,0 | 120,0 | 201 160 | 5  |
| 16,50 | 184,0 | 125,0 | 201 165 | 1  |
| 17,00 | 184,0 | 125,0 | 201 170 | 1  |
| 17,50 | 191,0 | 130,0 | 201 175 | 1  |
| 18,00 | 191,0 | 130,0 | 201 180 | 1  |
| 18,50 | 198,0 | 135,0 | 201 185 | 1  |
| 19,00 | 198,0 | 135,0 | 201 190 | 1  |
| 19,50 | 205,0 | 140,0 | 201 195 | 1  |
| 20,00 | 205,0 | 140,0 | 201 200 | 1  |

## Twist drill sets DIN 338 type N, HSS rolled

|   | HSS-R      |
|---|------------|
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 205 212    |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 205 213    |
| 41-piece set of twist drills DIN 338 type N<br>Ø 6,0 mm up to 10,0 mm in increments of 0,1 mm in steel case   | 205 218    |
| 50-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 5,9 mm in increments of 0,1 mm in steel case    | 205 217    |
| 19-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 205 212 RO |
| 25-piece set of twist drills DIN 338 type N<br>Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 205 213 RO |



205 212



# Twist drills DIN 338 type N, with reduced shank

Ideal solution for larger diameter hole drilling in all commonly used drilling machines.



|                                   |   |   |   |
|-----------------------------------|---|---|---|
|                                   |   |   |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   |   | ■ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   |   |   |
| Rust-resistant steel              |   | □ | ■ |
| Aluminium                         | ■ | ■ | ■ |

|                  |   |   |   |
|------------------|---|---|---|
|                  |   |   |   |
| Brass            | ■ | ■ | ■ |
| Bronze           |   | □ |   |
| Plastics         | ■ | ■ | ■ |
| Cast iron        | □ | □ | □ |
| Titanium alloyed |   |   |   |

| Ø1 mm | L1 mm | Ø2 mm | L2 mm | HSS-R   | N | 118° |
|-------|-------|-------|-------|---------|---|------|
| 10,50 | 133,0 | 10,0  | 30,0  | 200 105 |   | 1    |
| 11,00 | 142,0 | 10,0  | 30,0  | 200 110 |   | 1    |
| 11,50 | 142,0 | 10,0  | 30,0  | 200 115 |   | 1    |
| 12,00 | 151,0 | 10,0  | 30,0  | 200 120 |   | 1    |
| 12,50 | 151,0 | 10,0  | 30,0  | 200 125 |   | 1    |
| 13,00 | 151,0 | 10,0  | 30,0  | 200 130 |   | 1    |
| 13,50 | 160,0 | 10,0  | 30,0  | 200 135 |   | 1    |
| 14,00 | 160,0 | 10,0  | 30,0  | 200 140 |   | 1    |
| 14,50 | 169,0 | 10,0  | 30,0  | 200 145 |   | 1    |
| 15,00 | 169,0 | 10,0  | 30,0  | 200 150 |   | 1    |
| 15,50 | 178,0 | 10,0  | 30,0  | 200 155 |   | 1    |
| 16,00 | 178,0 | 10,0  | 30,0  | 200 160 |   | 1    |
| 16,50 | 184,0 | 13,0  | 35,0  | 200 165 |   | 1    |
| 17,00 | 184,0 | 13,0  | 35,0  | 200 170 |   | 1    |
| 17,50 | 191,0 | 13,0  | 35,0  | 200 175 |   | 1    |
| 18,00 | 191,0 | 13,0  | 35,0  | 200 180 |   | 1    |
| 18,50 | 198,0 | 13,0  | 35,0  | 200 185 |   | 1    |
| 19,00 | 198,0 | 13,0  | 35,0  | 200 190 |   | 1    |
| 19,50 | 205,0 | 13,0  | 35,0  | 200 195 |   | 1    |
| 20,00 | 205,0 | 13,0  | 35,0  | 200 200 |   | 1    |
| 22,00 | 205,0 | 13,0  | 35,0  | 200 220 |   | 1    |
| 24,00 | 205,0 | 13,0  | 35,0  | 200 240 |   | 1    |
| 25,00 | 205,0 | 13,0  | 35,0  | 200 250 |   | 1    |

| HSS-G     | 118° | 130° |
|-----------|------|------|
| 200 4 105 | 1    |      |
| 200 4 110 | 1    |      |
| 200 4 115 | 1    |      |
| 200 4 120 | 1    |      |
| 200 4 125 | 1    |      |
| 200 4 130 | 1    |      |
| 200 4 135 | 1    |      |
| 200 4 140 | 1    |      |
| 200 4 145 | 1    |      |
| 200 4 150 | 1    |      |
| 200 4 155 | 1    |      |
| 200 4 160 | 1    |      |
| 200 4 165 | 1    |      |
| 200 4 170 | 1    |      |
| 200 4 175 | 1    |      |
| 200 4 180 | 1    |      |
| 200 4 185 | 1    |      |
| 200 4 190 | 1    |      |
| 200 4 195 | 1    |      |
| 200 4 200 | 1    |      |
| —         | —    |      |
| —         | —    |      |
| —         | —    |      |

| HSSE Co 5 | 130° |
|-----------|------|
| 200 5 105 | 1    |
| 200 5 110 | 1    |
| 200 5 115 | 1    |
| 200 5 120 | 1    |
| 200 5 125 | 1    |
| 200 5 130 | 1    |
| 200 5 135 | 1    |
| 200 5 140 | 1    |
| 200 5 145 | 1    |
| 200 5 150 | 1    |
| 200 5 155 | 1    |
| 200 5 160 | 1    |
| 200 5 165 | 1    |
| 200 5 170 | 1    |
| 200 5 175 | 1    |
| 200 5 180 | 1    |
| 200 5 185 | 1    |
| 200 5 190 | 1    |
| 200 5 195 | 1    |
| 200 5 200 | 1    |
| —         | —    |
| —         | —    |
| —         | —    |



## Solid TC twist drills DIN 338 type N

High performance solid carbide K 20 twist drill, especially well suited for high strength steels at high cutting speeds.



Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 | ■ | Bronze           | ■ |
| Steel (N/mm <sup>2</sup> ) < 1300 | ■ | Plastics         | ■ |
| Rust-resistant steel              | ■ | Cast iron        | ■ |
| Aluminium                         | ■ | Titanium alloyed | ■ |

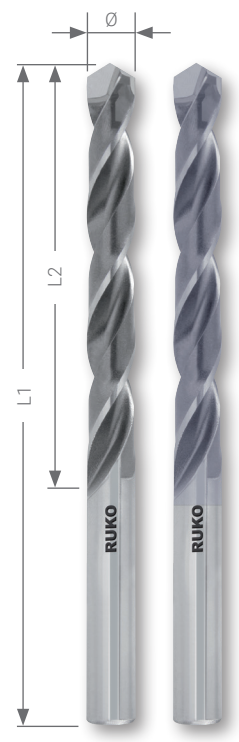
| Ø mm  | L1 mm | L2 mm |         |  |   |
|-------|-------|-------|---------|--|---|
| 3,00  | 61,0  | 33,0  | 814 030 |  | 1 |
| 3,50  | 70,0  | 39,0  | 814 035 |  | 1 |
| 4,00  | 75,0  | 43,0  | 814 040 |  | 1 |
| 4,50  | 80,0  | 47,0  | 814 045 |  | 1 |
| 5,00  | 86,0  | 52,0  | 814 050 |  | 1 |
| 5,50  | 93,0  | 57,0  | 814 055 |  | 1 |
| 6,00  | 93,0  | 57,0  | 814 060 |  | 1 |
| 6,50  | 101,0 | 63,0  | 814 065 |  | 1 |
| 7,00  | 109,0 | 69,0  | 814 070 |  | 1 |
| 7,50  | 109,0 | 69,0  | 814 075 |  | 1 |
| 8,00  | 117,0 | 75,0  | 814 080 |  | 1 |
| 8,50  | 117,0 | 75,0  | 814 085 |  | 1 |
| 9,00  | 125,0 | 81,0  | 814 090 |  | 1 |
| 9,50  | 125,0 | 81,0  | 814 095 |  | 1 |
| 10,00 | 133,0 | 87,0  | 814 100 |  | 1 |
| 10,50 | 133,0 | 87,0  | 814 105 |  | 1 |
| 11,00 | 142,0 | 94,0  | 814 110 |  | 1 |
| 11,50 | 142,0 | 94,0  | 814 115 |  | 1 |
| 12,00 | 151,0 | 101,0 | 814 120 |  | 1 |
| 12,50 | 151,0 | 101,0 | 814 125 |  | 1 |
| 13,00 | 151,0 | 101,0 | 814 130 |  | 1 |





## Twist drill DIN 338 Type N, with brazed-on TC cutting inserts

High-performance twist drill with brazed-on HM cutting inserts made from K20 fine grained material. It is suited for universal applications and for high-strength steel. Continuous cooling is required when drilling into high-strength steel. Highly recommended for machining cast iron.



Packing unit: in plastic box

|                      |   |   |                  |   |   |
|----------------------|---|---|------------------|---|---|
|                      |   |   |                  |   |   |
| Steel (N/mm2) < 900  | ■ | ■ | Brass            | ■ | ■ |
| Steel (N/mm2) < 1100 | ■ | ■ | Bronze           | □ | ■ |
| Steel (N/mm2) < 1300 | □ | □ | Plastics         | ■ | ■ |
| Rust-resistant steel | ■ | ■ | Cast iron        | ■ | ■ |
| Aluminium            | ■ | ■ | Titanium alloyed | □ | ■ |



| Ø mm  | L1 mm | L2 mm |         |   |
|-------|-------|-------|---------|---|
| 2,00  | 49,0  | 24,0  | 815 020 | 1 |
| 2,50  | 57,0  | 30,0  | 815 025 | 1 |
| 3,00  | 61,0  | 33,0  | 815 030 | 1 |
| 3,30  | 65,0  | 36,0  | 815 033 | 1 |
| 3,50  | 70,0  | 39,0  | 815 035 | 1 |
| 4,00  | 75,0  | 43,0  | 815 040 | 1 |
| 4,20  | 75,0  | 43,0  | 815 042 | 1 |
| 4,50  | 80,0  | 47,0  | 815 045 | 1 |
| 5,00  | 86,0  | 52,0  | 815 050 | 1 |
| 5,50  | 93,0  | 57,0  | 815 055 | 1 |
| 6,00  | 93,0  | 57,0  | 815 060 | 1 |
| 6,50  | 101,0 | 63,0  | 815 065 | 1 |
| 6,80  | 109,0 | 69,0  | 815 068 | 1 |
| 7,00  | 109,0 | 69,0  | 815 070 | 1 |
| 7,50  | 109,0 | 69,0  | 815 075 | 1 |
| 8,00  | 117,0 | 75,0  | 815 080 | 1 |
| 8,50  | 117,0 | 75,0  | 815 085 | 1 |
| 9,00  | 125,0 | 81,0  | 815 090 | 1 |
| 9,50  | 125,0 | 81,0  | 815 095 | 1 |
| 10,00 | 133,0 | 87,0  | 815 100 | 1 |
| 10,20 | 133,0 | 87,0  | 815 102 | 1 |
| 10,50 | 133,0 | 87,0  | 815 105 | 1 |
| 11,00 | 142,0 | 94,0  | 815 110 | 1 |
| 11,50 | 142,0 | 94,0  | 815 115 | 1 |
| 12,00 | 151,0 | 101,0 | 815 120 | 1 |
| 12,50 | 151,0 | 101,0 | 815 125 | 1 |
| 13,00 | 151,0 | 101,0 | 815 130 | 1 |

| 815 020 C |  | 1 |
|-----------|--|---|
| 815 025 C |  | 1 |
| 815 030 C |  | 1 |
| 815 033 C |  | 1 |
| 815 035 C |  | 1 |
| 815 040 C |  | 1 |
| 815 042 C |  | 1 |
| 815 045 C |  | 1 |
| 815 050 C |  | 1 |
| 815 055 C |  | 1 |
| 815 060 C |  | 1 |
| 815 065 C |  | 1 |
| 815 068 C |  | 1 |
| 815 070 C |  | 1 |
| 815 075 C |  | 1 |
| 815 080 C |  | 1 |
| 815 085 C |  | 1 |
| 815 090 C |  | 1 |
| 815 095 C |  | 1 |
| 815 100 C |  | 1 |
| 815 102 C |  | 1 |
| 815 105 C |  | 1 |
| 815 110 C |  | 1 |
| 815 115 C |  | 1 |
| 815 120 C |  | 1 |
| 815 125 C |  | 1 |
| 815 130 C |  | 1 |

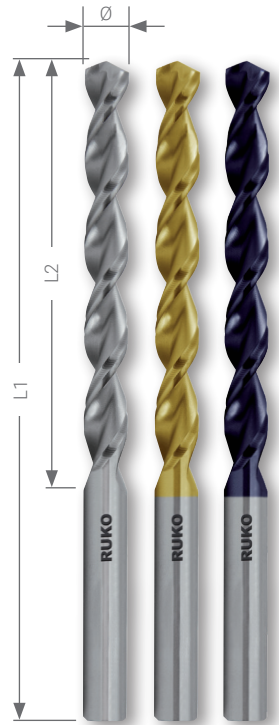




## Twist drill sets DIN 338 Type N, with brazed-on TC cutting inserts

|   |  TC |  TC |
|---|--|--|
| 17-piece set of twist drills DIN 338 type N<br>Ø 2,0 mm up to 10,0 mm in increments of 0,5 mm in steel case   | 815 214  | 815 214 C  |
| 23-piece set of twist drills DIN 338 type N<br>Ø 2,0 mm up to 13,0 mm in increments of 0,5 mm in steel case   | 815 215  | 815 215 C  |
| 17-piece set of twist drills DIN 338 type N<br>Ø 2,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case | 815 214 RO   | 815 214 CRO  |
| 23-piece set of twist drills DIN 338 type N<br>Ø 2,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case | 815 215 RO   | 815 215 CRO  |





## Twist drills DIN 338 TL 3000, in fractional sizes

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.

Packing unit: in plastic box

|                                   |   |   |   |                  |   |   |   |
|-----------------------------------|---|---|---|------------------|---|---|---|
|                                   |   |   |   |                  |   |   |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | ■ | Brass            | ■ | ■ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | □ | ■ | Bronze           | □ | □ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   |   |   | Plastics         | ■ | ■ | ■ |
| Rust-resistant steel              |   | □ | ■ | Cast iron        | □ | □ | □ |
| Aluminium                         | ■ |   | ■ | Titanium alloyed |   |   |   |

| Ø inch | Ø mm  | L1 inch | L2 inch | HSS-G   |    | HSS-G TiN |    | HSS-G TiAlN |    |
|--------|-------|---------|---------|---------|----|-----------|----|-------------|----|
| 1/16   | 1,59  | 1 7/8   | 7/8     | 258 801 | 10 | 258 801 T | 10 | 258 801 F   | 10 |
| 5/64   | 1,98  | 2       | 1       | 258 802 | 10 | 258 802 T | 10 | 258 802 F   | 10 |
| 3/32   | 2,38  | 2 1/4   | 1 1/4   | 258 803 | 10 | 258 803 T | 10 | 258 803 F   | 10 |
| 7/64   | 2,78  | 2 5/8   | 1 1/2   | 258 804 | 10 | 258 804 T | 10 | 258 804 F   | 10 |
| 1/8    | 3,18  | 2 3/4   | 1 5/8   | 258 805 | 10 | 258 805 T | 10 | 258 805 F   | 10 |
| 9/64   | 3,57  | 2 7/8   | 1 3/4   | 258 806 | 10 | 258 806 T | 10 | 258 806 F   | 10 |
| 5/32   | 3,97  | 3 1/8   | 2       | 258 807 | 10 | 258 807 T | 10 | 258 807 F   | 10 |
| 11/64  | 4,37  | 3 1/4   | 2 1/8   | 258 808 | 10 | 258 808 T | 10 | 258 808 F   | 10 |
| 3/16   | 4,76  | 3 1/2   | 2 5/16  | 258 809 | 10 | 258 809 T | 10 | 258 809 F   | 10 |
| 13/64  | 5,16  | 3 5/8   | 2 7/16  | 258 810 | 10 | 258 810 T | 10 | 258 810 F   | 10 |
| 7/32   | 5,56  | 3 3/4   | 2 1/2   | 258 811 | 10 | 258 811 T | 10 | 258 811 F   | 10 |
| 15/64  | 5,95  | 3 7/8   | 2 5/8   | 258 812 | 10 | 258 812 T | 10 | 258 812 F   | 10 |
| 1/4    | 6,35  | 4       | 2 3/4   | 258 813 | 10 | 258 813 T | 10 | 258 813 F   | 10 |
| 17/64  | 6,75  | 4 1/8   | 2 7/8   | 258 814 | 10 | 258 814 T | 10 | 258 814 F   | 10 |
| 9/32   | 7,14  | 4 1/4   | 2 15/16 | 258 815 | 10 | 258 815 T | 10 | 258 815 F   | 10 |
| 19/64  | 7,54  | 4 3/8   | 3 1/16  | 258 816 | 10 | 258 816 T | 10 | 258 816 F   | 10 |
| 5/16   | 7,94  | 4 1/2   | 3 3/16  | 258 817 | 10 | 258 817 T | 10 | 258 817 F   | 10 |
| 21/64  | 8,33  | 4 5/8   | 3 5/16  | 258 818 | 10 | 258 818 T | 10 | 258 818 F   | 10 |
| 11/32  | 8,73  | 4 3/4   | 3 7/16  | 258 819 | 10 | 258 819 T | 10 | 258 819 F   | 10 |
| 23/64  | 9,13  | 4 7/8   | 3 1/2   | 258 820 | 10 | 258 820 T | 10 | 258 820 F   | 10 |
| 3/8    | 9,53  | 5       | 3 5/8   | 258 821 | 10 | 258 821 T | 10 | 258 821 F   | 10 |
| 25/64  | 9,92  | 5 1/8   | 3 3/4   | 258 822 | 10 | 258 822 T | 10 | 258 822 F   | 10 |
| 13/32  | 10,32 | 5 1/4   | 3 7/8   | 258 823 | 10 | 258 823 T | 10 | 258 823 F   | 10 |
| 27/64  | 10,72 | 5 3/8   | 3 15/16 | 258 824 | 5  | 258 824 T | 5  | 258 824 F   | 5  |
| 7/16   | 11,11 | 5 1/2   | 4 1/16  | 258 825 | 5  | 258 825 T | 5  | 258 825 F   | 5  |
| 29/64  | 11,51 | 5 5/8   | 4 3/16  | 258 826 | 5  | 258 826 T | 5  | 258 826 F   | 5  |
| 15/32  | 11,91 | 5 3/4   | 4 5/16  | 258 827 | 5  | 258 827 T | 5  | 258 827 F   | 5  |
| 31/64  | 12,30 | 5 7/8   | 4 3/8   | 258 828 | 5  | 258 828 T | 5  | 258 828 F   | 5  |
| 1/2    | 12,70 | 6       | 4 1/2   | 258 829 | 5  | 258 829 T | 5  | 258 829 F   | 5  |

## Twist drill sets DIN 338 TL 3000, in fractional sizes

|  | HSS-G   | HSS-G TiN | HSS-G TiAlN |
|--|---------|-----------|-------------|
| 21-piece set of twist drills DIN 338 TL 3000, in fractional sizes<br>Ø 1/16" up to 3/8" in increments of 1/64" in steel case | 258 850 | 258 850 T | 258 850 F   |
| 29-piece set of twist drills DIN 338 TL 3000, in fractional sizes<br>Ø 1/16" up to 1/2" in increments of 1/64" in steel case | 258 851 | 258 851 T | 258 851 F   |



## Twist drills DIN 338 UTL 3000, in fractional sizes

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.

Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 | ■ | Bronze           | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              | ■ | Cast iron        | □ |
| Aluminium                         | ■ | Titanium alloyed |   |

| Ø inch | Ø mm  | L1 inch | L2 inch | HSSE Co 5 |    |
|--------|-------|---------|---------|-----------|----|
| 1/16   | 1,59  | 1 7/8   | 7/8     | 229 801   | 10 |
| 5/64   | 1,98  | 2       | 1       | 229 802   | 10 |
| 3/32   | 2,38  | 2 1/4   | 1 1/4   | 229 803   | 10 |
| 7/64   | 2,78  | 2 5/8   | 1 1/2   | 229 804   | 10 |
| 1/8    | 3,18  | 2 3/4   | 1 5/8   | 229 805   | 10 |
| 9/64   | 3,57  | 2 7/8   | 1 3/4   | 229 806   | 10 |
| 5/32   | 3,97  | 3 1/8   | 2       | 229 807   | 10 |
| 11/64  | 4,37  | 3 1/4   | 2 1/8   | 229 808   | 10 |
| 3/16   | 4,76  | 3 1/2   | 2 5/16  | 229 809   | 10 |
| 13/64  | 5,16  | 3 5/8   | 2 7/16  | 229 810   | 10 |
| 7/32   | 5,56  | 3 3/4   | 2 1/2   | 229 811   | 10 |
| 15/64  | 5,95  | 3 7/8   | 2 5/8   | 229 812   | 10 |
| 1/4    | 6,35  | 4       | 2 3/4   | 229 813   | 10 |
| 17/64  | 6,75  | 4 1/8   | 2 7/8   | 229 814   | 10 |
| 9/32   | 7,14  | 4 1/4   | 2 15/16 | 229 815   | 10 |
| 19/64  | 7,54  | 4 3/8   | 3 1/16  | 229 816   | 10 |
| 5/16   | 7,94  | 4 1/2   | 3 3/16  | 229 817   | 10 |
| 21/64  | 8,33  | 4 5/8   | 3 5/16  | 229 818   | 10 |
| 11/32  | 8,73  | 4 3/4   | 3 7/16  | 229 819   | 10 |
| 23/64  | 9,13  | 4 7/8   | 3 1/2   | 229 820   | 10 |
| 3/8    | 9,53  | 5       | 3 5/8   | 229 821   | 10 |
| 25/64  | 9,92  | 5 1/8   | 3 3/4   | 229 822   | 10 |
| 13/32  | 10,32 | 5 1/4   | 3 7/8   | 229 823   | 10 |
| 27/64  | 10,72 | 5 3/8   | 3 15/16 | 229 824   | 5  |
| 7/16   | 11,11 | 5 1/2   | 4 1/16  | 229 825   | 5  |
| 29/64  | 11,51 | 5 5/8   | 4 3/16  | 229 826   | 5  |
| 15/32  | 11,91 | 5 3/4   | 4 5/16  | 229 827   | 5  |
| 31/64  | 12,30 | 5 7/8   | 4 3/8   | 229 828   | 5  |
| 1/2    | 12,70 | 6       | 4 1/2   | 229 829   | 5  |

## Twist drill sets DIN 338 UTL 3000, in fractional sizes

|  | HSSE Co 5 |
|--|-----------|
| 21-piece set of twist drills DIN 338 UTL 3000, in fractional sizes Ø 1/16" up to 3/8" in increments of 1/64" in steel case | 229 850   |
| 29-piece set of twist drills DIN 338 UTL 3000, in fractional sizes Ø 1/16" up to 1/2" in increments of 1/64" in steel case | 229 851   |





## Twist drills DIN 338 type VA, in fractional sizes

Powerful right-hand cutting high-performance drill with distinctive heat resistance and reinforced drill core. Ideal for drilling high-strength stainless, acid-resistant and heat-resistant steel.

Packing unit: in plastic box

|                      |   |                  |   |
|----------------------|---|------------------|---|
|                      |   |                  |   |
| Steel (N/mm2) < 900  | ■ | Brass            | ■ |
| Steel (N/mm2) < 1100 | ■ | Bronze           | □ |
| Steel (N/mm2) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel | ■ | Cast iron        | □ |
| Aluminium            | ■ | Titanium alloyed |   |



| Ø inch | Ø mm  | L1 inch | L2 inch |         |    |
|--------|-------|---------|---------|---------|----|
| 1/16   | 1,59  | 1 7/8   | 7/8     | 215 801 | 10 |
| 5/64   | 1,98  | 2       | 1       | 215 802 | 10 |
| 3/32   | 2,38  | 2 1/4   | 1 1/4   | 215 803 | 10 |
| 7/64   | 2,78  | 2 5/8   | 1 1/2   | 215 804 | 10 |
| 1/8    | 3,18  | 2 3/4   | 1 5/8   | 215 805 | 10 |
| 9/64   | 3,57  | 2 7/8   | 1 3/4   | 215 806 | 10 |
| 5/32   | 3,97  | 3 1/8   | 2       | 215 807 | 10 |
| 11/64  | 4,37  | 3 1/4   | 2 1/8   | 215 808 | 10 |
| 3/16   | 4,76  | 3 1/2   | 2 5/16  | 215 809 | 10 |
| 13/64  | 5,16  | 3 5/8   | 2 7/16  | 215 810 | 10 |
| 7/32   | 5,56  | 3 3/4   | 2 1/2   | 215 811 | 10 |
| 15/64  | 5,95  | 3 7/8   | 2 5/8   | 215 812 | 10 |
| 1/4    | 6,35  | 4       | 2 3/4   | 215 813 | 10 |
| 17/64  | 6,75  | 4 1/8   | 2 7/8   | 215 814 | 10 |
| 9/32   | 7,14  | 4 1/4   | 2 15/16 | 215 815 | 10 |
| 19/64  | 7,54  | 4 3/8   | 3 1/16  | 215 816 | 10 |
| 5/16   | 7,94  | 4 1/2   | 3 3/16  | 215 817 | 10 |
| 21/64  | 8,33  | 4 5/8   | 3 5/16  | 215 818 | 10 |
| 11/32  | 8,73  | 4 3/4   | 3 7/16  | 215 819 | 10 |
| 23/64  | 9,13  | 4 7/8   | 3 1/2   | 215 820 | 10 |
| 3/8    | 9,53  | 5       | 3 5/8   | 215 821 | 10 |
| 25/64  | 9,92  | 5 1/8   | 3 3/4   | 215 822 | 10 |
| 13/32  | 10,32 | 5 1/4   | 3 7/8   | 215 823 | 10 |
| 27/64  | 10,72 | 5 3/8   | 3 15/16 | 215 824 | 5  |
| 7/16   | 11,11 | 5 1/2   | 4 1/16  | 215 825 | 5  |
| 29/64  | 11,51 | 5 5/8   | 4 3/16  | 215 826 | 5  |
| 15/32  | 11,91 | 5 3/4   | 4 5/16  | 215 827 | 5  |
| 31/64  | 12,30 | 5 7/8   | 4 3/8   | 215 828 | 5  |
| 1/2    | 12,70 | 6       | 4 1/2   | 215 829 | 5  |

## Twist drill sets DIN 338 type VA, in fractional sizes

|  |         |
|--|---------|
|  |         |
| 21-piece set of twist drills DIN 338 type VA, in fractional sizes<br>Ø 1/16" up to 3/8" in increments of 1/64" in steel case | 215 850 |
| 29-piece set of twist drills DIN 338 type VA, in fractional sizes<br>Ø 1/16" up to 1/2" in increments of 1/64" in steel case | 215 851 |





## Twist drills DIN 338 type N, in fractional sizes

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity. Thanks to the split point, this drill has good centring properties and requires little pressure.

Packing unit: in plastic box

|                      |                                     |                                     |
|----------------------|-------------------------------------|-------------------------------------|
|                      |                                     |                                     |
| Steel (N/mm2) < 900  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Steel (N/mm2) < 1100 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Steel (N/mm2) < 1300 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Rust-resistant steel | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Aluminium            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

|                  |                                     |                                     |
|------------------|-------------------------------------|-------------------------------------|
|                  |                                     |                                     |
| Brass            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Bronze           | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Plastics         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cast iron        | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Titanium alloyed | <input type="checkbox"/>            | <input type="checkbox"/>            |



| Ø inch | Ø mm  | L1 inch | L2 inch | HSS-G   |    |
|--------|-------|---------|---------|---------|----|
| 1/16   | 1,59  | 1 7/8   | 7/8     | 214 801 | 10 |
| 5/64   | 1,98  | 2       | 1       | 214 802 | 10 |
| 3/32   | 2,38  | 2 1/4   | 1 1/4   | 214 803 | 10 |
| 7/64   | 2,78  | 2 5/8   | 1 1/2   | 214 804 | 10 |
| 1/8    | 3,18  | 2 3/4   | 1 5/8   | 214 805 | 10 |
| 9/64   | 3,57  | 2 7/8   | 1 3/4   | 214 806 | 10 |
| 5/32   | 3,97  | 3 1/8   | 2       | 214 807 | 10 |
| 11/64  | 4,37  | 3 1/4   | 2 1/8   | 214 808 | 10 |
| 3/16   | 4,76  | 3 1/2   | 2 5/16  | 214 809 | 10 |
| 13/64  | 5,16  | 3 5/8   | 2 7/16  | 214 810 | 10 |
| 7/32   | 5,56  | 3 3/4   | 2 1/2   | 214 811 | 10 |
| 15/64  | 5,95  | 3 7/8   | 2 5/8   | 214 812 | 10 |
| 1/4    | 6,35  | 4       | 2 3/4   | 214 813 | 10 |
| 17/64  | 6,75  | 4 1/8   | 2 7/8   | 214 814 | 10 |
| 9/32   | 7,14  | 4 1/4   | 2 15/16 | 214 815 | 10 |
| 19/64  | 7,54  | 4 3/8   | 3 1/16  | 214 816 | 10 |
| 5/16   | 7,94  | 4 1/2   | 3 3/16  | 214 817 | 10 |
| 21/64  | 8,33  | 4 5/8   | 3 5/16  | 214 818 | 10 |
| 11/32  | 8,73  | 4 3/4   | 3 7/16  | 214 819 | 10 |
| 23/64  | 9,13  | 4 7/8   | 3 1/2   | 214 820 | 10 |
| 3/8    | 9,53  | 5       | 3 5/8   | 214 821 | 10 |
| 25/64  | 9,92  | 5 1/8   | 3 3/4   | 214 822 | 10 |
| 13/32  | 10,32 | 5 1/4   | 3 7/8   | 214 823 | 10 |
| 27/64  | 10,72 | 5 3/8   | 3 15/16 | 214 824 | 5  |
| 7/16   | 11,11 | 5 1/2   | 4 1/16  | 214 825 | 5  |
| 29/64  | 11,51 | 5 5/8   | 4 3/16  | 214 826 | 5  |
| 15/32  | 11,91 | 5 3/4   | 4 5/16  | 214 827 | 5  |
| 31/64  | 12,30 | 5 7/8   | 4 3/8   | 214 828 | 5  |
| 1/2    | 12,70 | 6       | 4 1/2   | 214 829 | 5  |

| HSS-G     | TIN |  |
|-----------|-----|--|
| 250 801 T | 10  |  |
| 250 802 T | 10  |  |
| 250 803 T | 10  |  |
| 250 804 T | 10  |  |
| 250 805 T | 10  |  |
| 250 806 T | 10  |  |
| 250 807 T | 10  |  |
| 250 808 T | 10  |  |
| 250 809 T | 10  |  |
| 250 810 T | 10  |  |
| 250 811 T | 10  |  |
| 250 812 T | 10  |  |
| 250 813 T | 10  |  |
| 250 814 T | 10  |  |
| 250 815 T | 10  |  |
| 250 816 T | 10  |  |
| 250 817 T | 10  |  |
| 250 818 T | 10  |  |
| 250 819 T | 10  |  |
| 250 820 T | 10  |  |
| 250 821 T | 10  |  |
| 250 822 T | 10  |  |
| 250 823 T | 10  |  |
| 250 824 T | 5   |  |
| 250 825 T | 5   |  |
| 250 826 T | 5   |  |
| 250 827 T | 5   |  |
| 250 828 T | 5   |  |
| 250 829 T | 5   |  |

## Twist drill sets DIN 338 type N, in fractional sizes

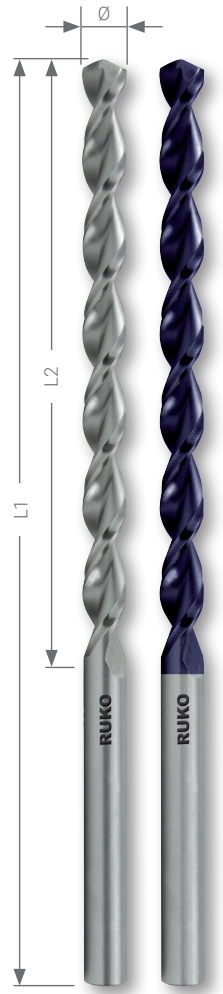
|  | HSS-G   | HSS-G TIN |
|--|---------|-----------|
| 21-piece set of twist drills DIN 338 type N, in fractional sizes Ø 1/16" up to 3/8" in increments of 1/64" in steel case | 214 850 | 250 850 T |
| 29-piece set of twist drills DIN 338 type N, in fractional sizes Ø 1/16" up to 1/2" in increments of 1/64" in steel case | 214 851 | 250 851 T |





## Twist drills DIN 340 TL 3000, HSSE-Co 5 ground

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.







Packing unit: in plastic box

|                      |   |   |                  |   |   |
|----------------------|---|---|------------------|---|---|
|                      |   |   |                  |   |   |
| Steel (N/mm2) < 900  | ■ | ■ | Brass            | ■ | ■ |
| Steel (N/mm2) < 1100 | □ | ■ | Bronze           | □ | ■ |
| Steel (N/mm2) < 1300 |   | □ | Plastics         | ■ | ■ |
| Rust-resistant steel | ■ | ■ | Cast iron        | □ | □ |
| Aluminium            | ■ | ■ | Titanium alloyed |   |   |

| Ø mm | L1 mm | L2 mm | HSSE Co 5 |    |
|------|-------|-------|-----------|----|
| 2,50 | 95,0  | 62,0  | 253 025   | 10 |
| 3,00 | 100,0 | 66,0  | 253 030   | 10 |
| 3,10 | 106,0 | 69,0  | 253 031   | 10 |
| 3,20 | 106,0 | 69,0  | 253 032   | 10 |
| 3,30 | 106,0 | 69,0  | 253 033   | 10 |
| 3,40 | 112,0 | 73,0  | 253 034   | 10 |
| 3,50 | 112,0 | 73,0  | 253 035   | 10 |
| 3,60 | 112,0 | 73,0  | 253 036   | 10 |
| 3,70 | 112,0 | 73,0  | 253 037   | 10 |
| 3,80 | 119,0 | 78,0  | 253 038   | 10 |
| 3,90 | 119,0 | 78,0  | 253 039   | 10 |
| 4,00 | 119,0 | 78,0  | 253 040   | 10 |
| 4,10 | 119,0 | 78,0  | 253 041   | 10 |
| 4,20 | 119,0 | 78,0  | 253 042   | 10 |
| 4,30 | 126,0 | 82,0  | 253 043   | 10 |
| 4,40 | 126,0 | 82,0  | 253 044   | 10 |
| 4,50 | 126,0 | 82,0  | 253 045   | 10 |
| 4,60 | 126,0 | 82,0  | 253 046   | 10 |
| 4,70 | 126,0 | 82,0  | 253 047   | 10 |
| 4,80 | 132,0 | 87,0  | 253 048   | 10 |
| 4,90 | 132,0 | 87,0  | 253 049   | 10 |
| 5,00 | 132,0 | 87,0  | 253 050   | 10 |
| 5,10 | 132,0 | 87,0  | 253 051   | 10 |
| 5,20 | 132,0 | 87,0  | 253 052   | 10 |
| 5,30 | 132,0 | 87,0  | 253 053   | 10 |
| 5,40 | 139,0 | 91,0  | 253 054   | 10 |
| 5,50 | 139,0 | 91,0  | 253 055   | 10 |
| 5,60 | 139,0 | 91,0  | 253 056   | 10 |
| 5,70 | 139,0 | 91,0  | 253 057   | 10 |
| 5,80 | 139,0 | 91,0  | 253 058   | 10 |
| 5,90 | 139,0 | 91,0  | 253 059   | 10 |
| 6,00 | 139,0 | 91,0  | 253 060   | 10 |
| 6,10 | 148,0 | 97,0  | 253 061   | 10 |
| 6,20 | 148,0 | 97,0  | 253 062   | 10 |
| 6,30 | 148,0 | 97,0  | 253 063   | 10 |

| HSSE Co 5 | TITAN |    |
|-----------|-------|----|
| 253 025 F |       | 10 |
| 253 030 F |       | 10 |
| 253 031 F |       | 10 |
| 253 032 F |       | 10 |
| 253 033 F |       | 10 |
| 253 034 F |       | 10 |
| 253 035 F |       | 10 |
| 253 036 F |       | 10 |
| 253 037 F |       | 10 |
| 253 038 F |       | 10 |
| 253 039 F |       | 10 |
| 253 040 F |       | 10 |
| 253 041 F |       | 10 |
| 253 042 F |       | 10 |
| 253 043 F |       | 10 |
| 253 044 F |       | 10 |
| 253 045 F |       | 10 |
| 253 046 F |       | 10 |
| 253 047 F |       | 10 |
| 253 048 F |       | 10 |
| 253 049 F |       | 10 |
| 253 050 F |       | 10 |
| 253 051 F |       | 10 |
| 253 052 F |       | 10 |
| 253 053 F |       | 10 |
| 253 054 F |       | 10 |
| 253 055 F |       | 10 |
| 253 056 F |       | 10 |
| 253 057 F |       | 10 |
| 253 058 F |       | 10 |
| 253 059 F |       | 10 |
| 253 060 F |       | 10 |
| 253 061 F |       | 10 |
| 253 062 F |       | 10 |
| 253 063 F |       | 10 |

| Ø<br>mm | L1<br>mm | L2<br>mm | HSSE Co 5   |  | HSSE TAIN  |  |
|---------|----------|----------|---|--|--|--|
|         |          |          |  |  |  |  |
| 6,40    | 148,0    | 97,0     | 253 064   | 10   | 253 064 F  | 10   |
| 6,50    | 148,0    | 97,0     | 253 065   | 10   | 253 065 F  | 10   |
| 6,60    | 148,0    | 97,0     | 253 066   | 10   | 253 066 F  | 10   |
| 6,70    | 148,0    | 97,0     | 253 067   | 10   | 253 067 F  | 10   |
| 6,80    | 156,0    | 102,0    | 253 068   | 10   | 253 068 F  | 10   |
| 6,90    | 156,0    | 102,0    | 253 069   | 10   | 253 069 F  | 10   |
| 7,00    | 156,0    | 102,0    | 253 070   | 10   | 253 070 F  | 10   |
| 7,10    | 156,0    | 102,0    | 253 071   | 10   | 253 071 F  | 10   |
| 7,20    | 156,0    | 102,0    | 253 072   | 10   | 253 072 F  | 10   |
| 7,30    | 156,0    | 102,0    | 253 073   | 10   | 253 073 F  | 10   |
| 7,40    | 156,0    | 102,0    | 253 074   | 10   | 253 074 F  | 10   |
| 7,50    | 156,0    | 102,0    | 253 075   | 10   | 253 075 F  | 10   |
| 7,60    | 165,0    | 109,0    | 253 076   | 10   | 253 076 F  | 10   |
| 7,70    | 165,0    | 109,0    | 253 077   | 10   | 253 077 F  | 10   |
| 7,80    | 165,0    | 109,0    | 253 078   | 10   | 253 078 F  | 10   |
| 7,90    | 165,0    | 109,0    | 253 079   | 10   | 253 079 F  | 10   |
| 8,00    | 165,0    | 109,0    | 253 080   | 10   | 253 080 F  | 10   |
| 8,10    | 165,0    | 109,0    | 253 081   | 10   | 253 081 F  | 10   |
| 8,20    | 165,0    | 109,0    | 253 082   | 10   | 253 082 F  | 10   |
| 8,30    | 165,0    | 109,0    | 253 083   | 10   | 253 083 F  | 10   |
| 8,40    | 165,0    | 109,0    | 253 084   | 10   | 253 084 F  | 10   |
| 8,50    | 165,0    | 109,0    | 253 085   | 10   | 253 085 F  | 10   |
| 8,60    | 175,0    | 115,0    | 253 086   | 10   | 253 086 F  | 10   |
| 8,70    | 175,0    | 115,0    | 253 087   | 10   | 253 087 F  | 10   |
| 8,80    | 175,0    | 115,0    | 253 088   | 10   | 253 088 F  | 10   |
| 8,90    | 175,0    | 115,0    | 253 089   | 10   | 253 089 F  | 10   |
| 9,00    | 175,0    | 115,0    | 253 090   | 10   | 253 090 F  | 10   |
| 9,10    | 175,0    | 115,0    | 253 091   | 10   | 253 091 F  | 10   |
| 9,20    | 175,0    | 115,0    | 253 092   | 10   | 253 092 F  | 10   |
| 9,30    | 175,0    | 115,0    | 253 093   | 10   | 253 093 F  | 10   |
| 9,40    | 175,0    | 115,0    | 253 094   | 10   | 253 094 F  | 10   |
| 9,50    | 175,0    | 115,0    | 253 095   | 10   | 253 095 F  | 10   |
| 9,60    | 184,0    | 121,0    | 253 096   | 10   | 253 096 F  | 10   |
| 9,70    | 184,0    | 121,0    | 253 097   | 10   | 253 097 F  | 10   |
| 9,80    | 184,0    | 121,0    | 253 098   | 10   | 253 098 F  | 10   |
| 9,90    | 184,0    | 121,0    | 253 099   | 10   | 253 099 F  | 10   |
| 10,00   | 184,0    | 121,0    | 253 100   | 10   | 253 100 F  | 10   |
| 10,50   | 184,0    | 121,0    | 253 105   | 5  | 253 105 F  | 5  |
| 11,00   | 195,0    | 128,0    | 253 110   | 5  | 253 110 F  | 5  |
| 11,50   | 195,0    | 128,0    | 253 115   | 5  | 253 115 F  | 5  |
| 12,00   | 205,0    | 134,0    | 253 120   | 5  | 253 120 F  | 5  |
| 12,50   | 205,0    | 134,0    | 253 125   | 5  | 253 125 F  | 5  |
| 13,00   | 205,0    | 134,0    | 253 130   | 5  | 253 130 F  | 5  |





## Twist drills DIN 340 type N, HSS ground

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity.



Packing unit: in plastic box

|                                   |   |   |                  |   |   |
|-----------------------------------|---|---|------------------|---|---|
|                                   |   |   |                  |   |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | Brass            | ■ | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | □ | Bronze           | □ | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   |   | Plastics         | ■ | ■ |
| Rust-resistant steel              |   | □ | Cast iron        | □ | □ |
| Aluminium                         | ■ |   | Titanium alloyed |   |   |

| Ø mm | L1 mm | L2 mm | HSS-G   |    |
|------|-------|-------|---------|----|
| 2,50 | 95,0  | 62,0  | 203 025 | 10 |
| 3,00 | 100,0 | 66,0  | 203 030 | 10 |
| 3,10 | 106,0 | 69,0  | 203 031 | 10 |
| 3,20 | 106,0 | 69,0  | 203 032 | 10 |
| 3,30 | 106,0 | 69,0  | 203 033 | 10 |
| 3,40 | 112,0 | 73,0  | 203 034 | 10 |
| 3,50 | 112,0 | 73,0  | 203 035 | 10 |
| 3,60 | 112,0 | 73,0  | 203 036 | 10 |
| 3,70 | 112,0 | 73,0  | 203 037 | 10 |
| 3,80 | 119,0 | 78,0  | 203 038 | 10 |
| 3,90 | 119,0 | 78,0  | 203 039 | 10 |
| 4,00 | 119,0 | 78,0  | 203 040 | 10 |
| 4,10 | 119,0 | 78,0  | 203 041 | 10 |
| 4,20 | 119,0 | 78,0  | 203 042 | 10 |
| 4,30 | 126,0 | 82,0  | 203 043 | 10 |
| 4,40 | 126,0 | 82,0  | 203 044 | 10 |
| 4,50 | 126,0 | 82,0  | 203 045 | 10 |
| 4,60 | 126,0 | 82,0  | 203 046 | 10 |
| 4,70 | 126,0 | 82,0  | 203 047 | 10 |
| 4,80 | 132,0 | 87,0  | 203 048 | 10 |
| 4,90 | 132,0 | 87,0  | 203 049 | 10 |
| 5,00 | 132,0 | 87,0  | 203 050 | 10 |
| 5,10 | 132,0 | 87,0  | 203 051 | 10 |
| 5,20 | 132,0 | 87,0  | 203 052 | 10 |
| 5,30 | 132,0 | 87,0  | 203 053 | 10 |
| 5,40 | 139,0 | 91,0  | 203 054 | 10 |
| 5,50 | 139,0 | 91,0  | 203 055 | 10 |
| 5,60 | 139,0 | 91,0  | 203 056 | 10 |
| 5,70 | 139,0 | 91,0  | 203 057 | 10 |
| 5,80 | 139,0 | 91,0  | 203 058 | 10 |
| 5,90 | 139,0 | 91,0  | 203 059 | 10 |
| 6,00 | 139,0 | 91,0  | 203 060 | 10 |
| 6,10 | 148,0 | 97,0  | 203 061 | 10 |
| 6,20 | 148,0 | 97,0  | 203 062 | 10 |
| 6,30 | 148,0 | 97,0  | 203 063 | 10 |

| HSS-G     | TIN |    |
|-----------|-----|----|
| 203 025 T |     | 10 |
| 203 030 T |     | 10 |
| 203 031 T |     | 10 |
| 203 032 T |     | 10 |
| 203 033 T |     | 10 |
| 203 034 T |     | 10 |
| 203 035 T |     | 10 |
| 203 036 T |     | 10 |
| 203 037 T |     | 10 |
| 203 038 T |     | 10 |
| 203 039 T |     | 10 |
| 203 040 T |     | 10 |
| 203 041 T |     | 10 |
| 203 042 T |     | 10 |
| 203 043 T |     | 10 |
| 203 044 T |     | 10 |
| 203 045 T |     | 10 |
| 203 046 T |     | 10 |
| 203 047 T |     | 10 |
| 203 048 T |     | 10 |
| 203 049 T |     | 10 |
| 203 050 T |     | 10 |
| 203 051 T |     | 10 |
| 203 052 T |     | 10 |
| 203 053 T |     | 10 |
| 203 054 T |     | 10 |
| 203 055 T |     | 10 |
| 203 056 T |     | 10 |
| 203 057 T |     | 10 |
| 203 058 T |     | 10 |
| 203 059 T |     | 10 |
| 203 060 T |     | 10 |
| 203 061 T |     | 10 |
| 203 062 T |     | 10 |
| 203 063 T |     | 10 |



| Ø<br>mm | L1<br>mm | L2<br>mm | HSS-G   |          | HSS-G TiN |          |
|---------|----------|----------|---------|----------|-----------|----------|
|         |          |          | Icon    | Quantity | Icon      | Quantity |
| 6,40    | 148,0    | 97,0     | 203 064 | 10       | 203 064 T | 10       |
| 6,50    | 148,0    | 97,0     | 203 065 | 10       | 203 065 T | 10       |
| 6,60    | 148,0    | 97,0     | 203 066 | 10       | 203 066 T | 10       |
| 6,70    | 148,0    | 97,0     | 203 067 | 10       | 203 067 T | 10       |
| 6,80    | 156,0    | 102,0    | 203 068 | 10       | 203 068 T | 10       |
| 6,90    | 156,0    | 102,0    | 203 069 | 10       | 203 069 T | 10       |
| 7,00    | 156,0    | 102,0    | 203 070 | 10       | 203 070 T | 10       |
| 7,10    | 156,0    | 102,0    | 203 071 | 10       | 203 071 T | 10       |
| 7,20    | 156,0    | 102,0    | 203 072 | 10       | 203 072 T | 10       |
| 7,30    | 156,0    | 102,0    | 203 073 | 10       | 203 073 T | 10       |
| 7,40    | 156,0    | 102,0    | 203 074 | 10       | 203 074 T | 10       |
| 7,50    | 156,0    | 102,0    | 203 075 | 10       | 203 075 T | 10       |
| 7,60    | 165,0    | 109,0    | 203 076 | 10       | 203 076 T | 10       |
| 7,70    | 165,0    | 109,0    | 203 077 | 10       | 203 077 T | 10       |
| 7,80    | 165,0    | 109,0    | 203 078 | 10       | 203 078 T | 10       |
| 7,90    | 165,0    | 109,0    | 203 079 | 10       | 203 079 T | 10       |
| 8,00    | 165,0    | 109,0    | 203 080 | 10       | 203 080 T | 10       |
| 8,10    | 165,0    | 109,0    | 203 081 | 10       | 203 081 T | 10       |
| 8,20    | 165,0    | 109,0    | 203 082 | 10       | 203 082 T | 10       |
| 8,30    | 165,0    | 109,0    | 203 083 | 10       | 203 083 T | 10       |
| 8,40    | 165,0    | 109,0    | 203 084 | 10       | 203 084 T | 10       |
| 8,50    | 165,0    | 109,0    | 203 085 | 10       | 203 085 T | 10       |
| 8,60    | 175,0    | 115,0    | 203 086 | 10       | 203 086 T | 10       |
| 8,70    | 175,0    | 115,0    | 203 087 | 10       | 203 087 T | 10       |
| 8,80    | 175,0    | 115,0    | 203 088 | 10       | 203 088 T | 10       |
| 8,90    | 175,0    | 115,0    | 203 089 | 10       | 203 089 T | 10       |
| 9,00    | 175,0    | 115,0    | 203 090 | 10       | 203 090 T | 10       |
| 9,10    | 175,0    | 115,0    | 203 091 | 10       | 203 091 T | 10       |
| 9,20    | 175,0    | 115,0    | 203 092 | 10       | 203 092 T | 10       |
| 9,30    | 175,0    | 115,0    | 203 093 | 10       | 203 093 T | 10       |
| 9,40    | 175,0    | 115,0    | 203 094 | 10       | 203 094 T | 10       |
| 9,50    | 175,0    | 115,0    | 203 095 | 10       | 203 095 T | 10       |
| 9,60    | 184,0    | 121,0    | 203 096 | 10       | 203 096 T | 10       |
| 9,70    | 184,0    | 121,0    | 203 097 | 10       | 203 097 T | 10       |
| 9,80    | 184,0    | 121,0    | 203 098 | 10       | 203 098 T | 10       |
| 9,90    | 184,0    | 121,0    | 203 099 | 10       | 203 099 T | 10       |
| 10,00   | 184,0    | 121,0    | 203 100 | 10       | 203 100 T | 10       |
| 10,50   | 184,0    | 121,0    | 203 105 | 5        | 203 105 T | 5        |
| 11,00   | 195,0    | 128,0    | 203 110 | 5        | 203 110 T | 5        |
| 11,50   | 195,0    | 128,0    | 203 115 | 5        | 203 115 T | 5        |
| 12,00   | 205,0    | 134,0    | 203 120 | 5        | 203 120 T | 5        |
| 12,50   | 205,0    | 134,0    | 203 125 | 5        | 203 125 T | 5        |
| 13,00   | 205,0    | 134,0    | 203 130 | 5        | 203 130 T | 5        |





# Twist drills DIN 1869 TL 3000, HSS ground - extra long

Stable special drill. Ideally suitable for deep holes under difficult conditions, e.g. bad chipping materials.

Suitable for all usual drilling work in all normal materials. High rotational precision. For drilling deep holes please use small feed and remove chips frequently.

Packing unit: in plastic box

|                      |   |
|----------------------|---|
|                      |   |
| Steel (N/mm2) < 900  | ■ |
| Steel (N/mm2) < 1100 |   |
| Steel (N/mm2) < 1300 |   |
| Rust-resistant steel |   |
| Aluminium            | ■ |

|                  |   |
|------------------|---|
|                  |   |
| Brass            | ■ |
| Bronze           | □ |
| Plastics         | ■ |
| Cast iron        | □ |
| Titanium alloyed |   |

| Ø mm | L1 mm | L2 mm | HSS-G   |   |
|------|-------|-------|---------|---|
| 2,00 | 125,0 | 85,0  | 254 020 | 1 |
| 2,50 | 140,0 | 95,0  | 254 025 | 1 |
| 3,00 | 150,0 | 100,0 | 254 030 | 1 |
| 3,20 | 155,0 | 105,0 | 254 032 | 1 |
| 3,30 | 155,0 | 105,0 | 254 033 | 1 |
| 3,50 | 165,0 | 115,0 | 254 035 | 1 |
| 4,00 | 175,0 | 120,0 | 254 040 | 1 |
| 4,20 | 175,0 | 120,0 | 254 042 | 1 |
| 4,50 | 185,0 | 125,0 | 254 045 | 1 |
| 5,00 | 195,0 | 135,0 | 254 050 | 1 |
| 5,50 | 205,0 | 140,0 | 254 055 | 1 |
| 6,00 | 205,0 | 140,0 | 254 060 | 1 |
| 6,50 | 215,0 | 150,0 | 254 065 | 1 |

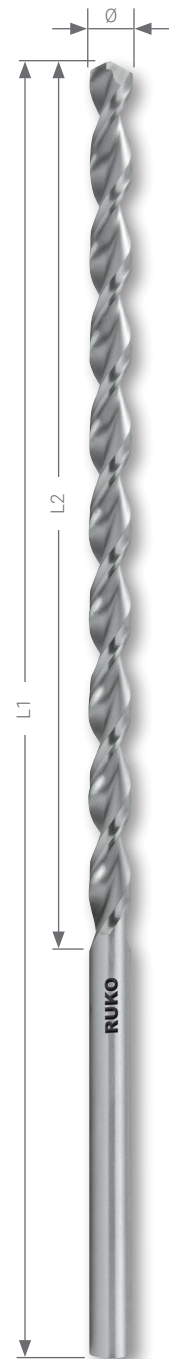
| Ø mm  | L1 mm | L2 mm | HSS-G   |   |
|-------|-------|-------|---------|---|
| 7,00  | 225,0 | 155,0 | 254 070 | 1 |
| 7,50  | 225,0 | 155,0 | 254 075 | 1 |
| 8,00  | 240,0 | 165,0 | 254 080 | 1 |
| 8,50  | 240,0 | 165,0 | 254 085 | 1 |
| 9,00  | 250,0 | 175,0 | 254 090 | 1 |
| 9,50  | 250,0 | 175,0 | 254 095 | 1 |
| 10,00 | 265,0 | 185,0 | 254 100 | 1 |
| 10,50 | 265,0 | 185,0 | 254 105 | 1 |
| 11,00 | 280,0 | 195,0 | 254 110 | 1 |
| 11,50 | 280,0 | 195,0 | 254 115 | 1 |
| 12,00 | 295,0 | 205,0 | 254 120 | 1 |
| 12,50 | 295,0 | 205,0 | 254 125 | 1 |
| 13,00 | 295,0 | 205,0 | 254 130 | 1 |

|      |       |       |         |   |
|------|-------|-------|---------|---|
| 3,00 | 190,0 | 130,0 | 255 030 | 1 |
| 3,20 | 200,0 | 135,0 | 255 032 | 1 |
| 3,30 | 200,0 | 135,0 | 255 033 | 1 |
| 3,50 | 210,0 | 145,0 | 255 035 | 1 |
| 4,00 | 220,0 | 150,0 | 255 040 | 1 |
| 4,20 | 220,0 | 150,0 | 255 042 | 1 |
| 4,50 | 235,0 | 160,0 | 255 045 | 1 |
| 5,00 | 245,0 | 170,0 | 255 050 | 1 |
| 5,50 | 260,0 | 180,0 | 255 055 | 1 |
| 6,00 | 260,0 | 180,0 | 255 060 | 1 |
| 6,50 | 275,0 | 190,0 | 255 065 | 1 |
| 7,00 | 290,0 | 200,0 | 255 070 | 1 |

|       |       |       |         |   |
|-------|-------|-------|---------|---|
| 7,50  | 290,0 | 200,0 | 255 075 | 1 |
| 8,00  | 305,0 | 210,0 | 255 080 | 1 |
| 8,50  | 305,0 | 210,0 | 255 085 | 1 |
| 9,00  | 320,0 | 220,0 | 255 090 | 1 |
| 9,50  | 320,0 | 220,0 | 255 095 | 1 |
| 10,00 | 340,0 | 235,0 | 255 100 | 1 |
| 10,50 | 340,0 | 235,0 | 255 105 | 1 |
| 11,00 | 365,0 | 250,0 | 255 110 | 1 |
| 11,50 | 365,0 | 250,0 | 255 115 | 1 |
| 12,00 | 375,0 | 260,0 | 255 120 | 1 |
| 12,50 | 375,0 | 260,0 | 255 125 | 1 |
| 13,00 | 375,0 | 260,0 | 255 130 | 1 |

|      |       |       |         |   |
|------|-------|-------|---------|---|
| 3,50 | 265,0 | 180,0 | 256 035 | 1 |
| 4,00 | 280,0 | 190,0 | 256 040 | 1 |
| 4,20 | 280,0 | 190,0 | 256 042 | 1 |
| 4,50 | 295,0 | 200,0 | 256 045 | 1 |
| 5,00 | 315,0 | 210,0 | 256 050 | 1 |
| 5,50 | 330,0 | 225,0 | 256 055 | 1 |
| 6,00 | 330,0 | 225,0 | 256 060 | 1 |
| 6,50 | 350,0 | 235,0 | 256 065 | 1 |
| 7,00 | 370,0 | 250,0 | 256 070 | 1 |
| 7,50 | 370,0 | 250,0 | 256 075 | 1 |
| 8,00 | 390,0 | 265,0 | 256 080 | 1 |

|       |       |       |         |   |
|-------|-------|-------|---------|---|
| 8,50  | 390,0 | 265,0 | 256 085 | 1 |
| 9,00  | 410,0 | 280,0 | 256 090 | 1 |
| 9,50  | 410,0 | 280,0 | 256 095 | 1 |
| 10,00 | 430,0 | 295,0 | 256 100 | 1 |
| 10,50 | 430,0 | 295,0 | 256 105 | 1 |
| 11,00 | 455,0 | 310,0 | 256 110 | 1 |
| 11,50 | 455,0 | 310,0 | 256 115 | 1 |
| 12,00 | 480,0 | 330,0 | 256 120 | 1 |
| 12,50 | 480,0 | 330,0 | 256 125 | 1 |
| 13,00 | 480,0 | 330,0 | 256 130 | 1 |
| —     | —     | —     | —       | — |





DIN 1869 · TL 3000









## Twist drills DIN 345 type N, HSS and HSSE-Co 5

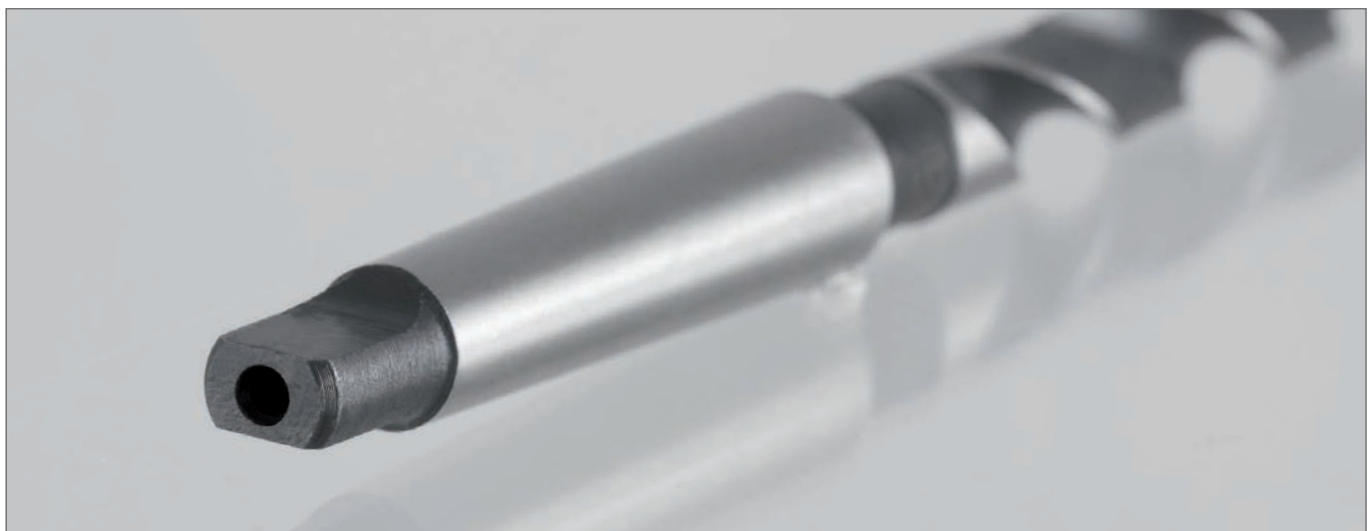
Performance standard drills with a morse taper shank.  
Suitable for drilling steel, cast steel and cast iron – alloyed and unalloyed. Resistant to fracture.

Packing unit: in plastic box

|                      |   |   |   |                  |   |   |   |
|----------------------|---|---|---|------------------|---|---|---|
|                      |   |   |   |                  |   |   |   |
| Steel (N/mm2) < 900  | ■ | ■ | ■ | Brass            | ■ | ■ | ■ |
| Steel (N/mm2) < 1100 |   | ■ | ■ | Bronze           | □ | □ | □ |
| Steel (N/mm2) < 1300 |   |   | □ | Plastics         | ■ | ■ | ■ |
| Rust-resistant steel |   | ■ | ■ | Cast iron        | □ | □ | □ |
| Aluminium            | ■ | ■ |   | Titanium alloyed |   |   | □ |

| Ø1 mm | L1 mm | L2 mm |   |         |   |           |   |           |   |   |
|-------|-------|-------|---|---------|---|-----------|---|-----------|---|---|
| 10,00 | 168,0 | 87,0  | 1 | 204 100 | 1 | 204 100 E | 1 | 204 100 T | 1 | 1 |
| 10,50 | 168,0 | 87,0  | 1 | 204 105 | 1 | 204 105 E | 1 | 204 105 T | 1 | 1 |
| 11,00 | 175,0 | 94,0  | 1 | 204 110 | 1 | 204 110 E | 1 | 204 110 T | 1 | 1 |
| 11,50 | 175,0 | 94,0  | 1 | 204 115 | 1 | 204 115 E | 1 | 204 115 T | 1 | 1 |
| 12,00 | 182,0 | 101,0 | 1 | 204 120 | 1 | 204 120 E | 1 | 204 120 T | 1 | 1 |
| 12,50 | 182,0 | 101,0 | 1 | 204 125 | 1 | 204 125 E | 1 | 204 125 T | 1 | 1 |
| 13,00 | 182,0 | 101,0 | 1 | 204 130 | 1 | 204 130 E | 1 | 204 130 T | 1 | 1 |
| 13,50 | 189,0 | 108,0 | 1 | 204 135 | 1 | 204 135 E | 1 | 204 135 T | 1 | 1 |
| 14,00 | 189,0 | 108,0 | 1 | 204 140 | 1 | 204 140 E | 1 | 204 140 T | 1 | 1 |
| 14,50 | 212,0 | 114,0 | 2 | 204 145 | 1 | 204 145 E | 1 | 204 145 T | 1 | 1 |
| 15,00 | 212,0 | 114,0 | 2 | 204 150 | 1 | 204 150 E | 1 | 204 150 T | 1 | 1 |
| 15,50 | 218,0 | 120,0 | 2 | 204 155 | 1 | 204 155 E | 1 | 204 155 T | 1 | 1 |
| 16,00 | 218,0 | 120,0 | 2 | 204 160 | 1 | 204 160 E | 1 | 204 160 T | 1 | 1 |
| 16,50 | 223,0 | 125,0 | 2 | 204 165 | 1 | 204 165 E | 1 | 204 165 T | 1 | 1 |
| 17,00 | 223,0 | 125,0 | 2 | 204 170 | 1 | 204 170 E | 1 | 204 170 T | 1 | 1 |
| 17,50 | 228,0 | 130,0 | 2 | 204 175 | 1 | 204 175 E | 1 | 204 175 T | 1 | 1 |
| 18,00 | 228,0 | 130,0 | 2 | 204 180 | 1 | 204 180 E | 1 | 204 180 T | 1 | 1 |
| 18,50 | 233,0 | 135,0 | 2 | 204 185 | 1 | 204 185 E | 1 | 204 185 T | 1 | 1 |
| 19,00 | 233,0 | 135,0 | 2 | 204 190 | 1 | 204 190 E | 1 | 204 190 T | 1 | 1 |
| 19,50 | 238,0 | 140,0 | 2 | 204 195 | 1 | 204 195 E | 1 | 204 195 T | 1 | 1 |
| 20,00 | 238,0 | 140,0 | 2 | 204 200 | 1 | 204 200 E | 1 | 204 200 T | 1 | 1 |
| 20,50 | 243,0 | 145,0 | 2 | 204 205 | 1 | 204 205 E | 1 | 204 205 T | 1 | 1 |
| 21,00 | 243,0 | 145,0 | 2 | 204 210 | 1 | 204 210 E | 1 | 204 210 T | 1 | 1 |
| 21,50 | 248,0 | 150,0 | 2 | 204 215 | 1 | 204 215 E | 1 | 204 215 T | 1 | 1 |
| 22,00 | 248,0 | 150,0 | 2 | 204 220 | 1 | 204 220 E | 1 | 204 220 T | 1 | 1 |
| 22,50 | 253,0 | 155,0 | 2 | 204 225 | 1 | 204 225 E | 1 | 204 225 T | 1 | 1 |
| 23,00 | 253,0 | 155,0 | 2 | 204 230 | 1 | 204 230 E | 1 | 204 230 T | 1 | 1 |
| 23,50 | 276,0 | 155,0 | 3 | 204 235 | 1 | 204 235 E | 1 | 204 235 T | 1 | 1 |
| 24,00 | 281,0 | 160,0 | 3 | 204 240 | 1 | 204 240 E | 1 | 204 240 T | 1 | 1 |
| 24,50 | 281,0 | 160,0 | 3 | 204 245 | 1 | 204 245 E | 1 | 204 245 T | 1 | 1 |
| 25,00 | 281,0 | 160,0 | 3 | 204 250 | 1 | 204 250 E | 1 | 204 250 T | 1 | 1 |
| 25,50 | 286,0 | 165,0 | 3 | 204 255 | 1 | 204 255 E | 1 | 204 255 T | 1 | 1 |
| 26,00 | 286,0 | 165,0 | 3 | 204 260 | 1 | 204 260 E | 1 | 204 260 T | 1 | 1 |
| 26,50 | 286,0 | 165,0 | 3 | 204 265 | 1 | 204 265 E | 1 | 204 265 T | 1 | 1 |
| 27,00 | 291,0 | 170,0 | 3 | 204 270 | 1 | 204 270 E | 1 | 204 270 T | 1 | 1 |
| 27,50 | 291,0 | 170,0 | 3 | 204 275 | 1 | 204 275 E | 1 | 204 275 T | 1 | 1 |
| 28,00 | 291,0 | 170,0 | 3 | 204 280 | 1 | 204 280 E | 1 | 204 280 T | 1 | 1 |
| 28,50 | 296,0 | 175,0 | 3 | 204 285 | 1 | 204 285 E | 1 | 204 285 T | 1 | 1 |
| 29,00 | 296,0 | 175,0 | 3 | 204 290 | 1 | 204 290 E | 1 | 204 290 T | 1 | 1 |
| 29,50 | 296,0 | 175,0 | 3 | 204 295 | 1 | 204 295 E | 1 | 204 295 T | 1 | 1 |

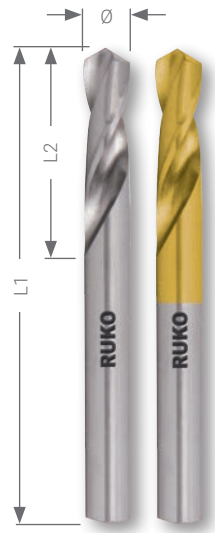
| Ø1<br>mm | L1<br>mm | L2<br>mm | HSS  |  |  | HSSE Co 5   |  | HSSE Co 5 TIN  |  |
|----------|----------|----------|--|--|--|---|--|--|--|
|          |          |          |  |  |  |  |  |  |  |
| 30,00    | 296,0    | 175,0    | 3  | 204 300  | 1  | 204 300 E   | 1  | 204 300 T  | 1  |
| 30,50    | 301,0    | 180,0    | 3  | 204 305  | 1  | —   | —  | —  | —  |
| 31,00    | 301,0    | 180,0    | 3  | 204 310  | 1  | —   | —  | —  | —  |
| 31,50    | 301,0    | 180,0    | 3  | 204 315  | 1  | —   | —  | —  | —  |
| 32,00    | 334,0    | 185,0    | 4  | 204 320  | 1  | —   | —  | —  | —  |
| 32,50    | 334,0    | 185,0    | 4  | 204 325  | 1  | —   | —  | —  | —  |
| 33,00    | 334,0    | 185,0    | 4  | 204 330  | 1  | —   | —  | —  | —  |
| 33,50    | 334,0    | 185,0    | 4  | 204 335  | 1  | —   | —  | —  | —  |
| 34,00    | 339,0    | 190,0    | 4  | 204 340  | 1  | —   | —  | —  | —  |
| 34,50    | 339,0    | 190,0    | 4  | 204 345  | 1  | —   | —  | —  | —  |
| 35,00    | 339,0    | 190,0    | 4  | 204 350  | 1  | —   | —  | —  | —  |
| 35,50    | 339,0    | 190,0    | 4  | 204 355  | 1  | —   | —  | —  | —  |
| 36,00    | 344,0    | 195,0    | 4  | 204 360  | 1  | —   | —  | —  | —  |
| 36,50    | 344,0    | 195,0    | 4  | 204 365  | 1  | —   | —  | —  | —  |
| 37,00    | 344,0    | 195,0    | 4  | 204 370  | 1  | —   | —  | —  | —  |
| 37,50    | 344,0    | 195,0    | 4  | 204 375  | 1  | —   | —  | —  | —  |
| 38,00    | 349,0    | 200,0    | 4  | 204 380  | 1  | —   | —  | —  | —  |
| 38,50    | 349,0    | 200,0    | 4  | 204 385  | 1  | —   | —  | —  | —  |
| 39,00    | 349,0    | 200,0    | 4  | 204 390  | 1  | —   | —  | —  | —  |
| 39,50    | 349,0    | 200,0    | 4  | 204 395  | 1  | —   | —  | —  | —  |
| 40,00    | 349,0    | 200,0    | 4  | 204 400  | 1  | —   | —  | —  | —  |
| 40,50    | 354,0    | 205,0    | 4  | 204 405  | 1  | —   | —  | —  | —  |
| 41,00    | 354,0    | 205,0    | 4  | 204 410  | 1  | —   | —  | —  | —  |
| 41,50    | 354,0    | 205,0    | 4  | 204 415  | 1  | —   | —  | —  | —  |
| 42,00    | 354,0    | 205,0    | 4  | 204 420  | 1  | —   | —  | —  | —  |
| 42,50    | 354,0    | 205,0    | 4  | 204 425  | 1  | —   | —  | —  | —  |
| 43,00    | 359,0    | 210,0    | 4  | 204 430  | 1  | —   | —  | —  | —  |
| 43,50    | 359,0    | 210,0    | 4  | 204 435  | 1  | —   | —  | —  | —  |
| 44,00    | 359,0    | 210,0    | 4  | 204 440  | 1  | —   | —  | —  | —  |
| 44,50    | 359,0    | 210,0    | 4  | 204 445  | 1  | —   | —  | —  | —  |
| 45,00    | 359,0    | 210,0    | 4  | 204 450  | 1  | —   | —  | —  | —  |
| 45,50    | 364,0    | 215,0    | 4  | 204 455  | 1  | —   | —  | —  | —  |
| 46,00    | 364,0    | 215,0    | 4  | 204 460  | 1  | —   | —  | —  | —  |
| 46,50    | 364,0    | 215,0    | 4  | 204 465  | 1  | —   | —  | —  | —  |
| 47,00    | 364,0    | 215,0    | 4  | 204 470  | 1  | —   | —  | —  | —  |
| 47,50    | 364,0    | 215,0    | 4  | 204 475  | 1  | —   | —  | —  | —  |
| 48,00    | 369,0    | 220,0    | 4  | 204 480  | 1  | —   | —  | —  | —  |
| 48,50    | 369,0    | 220,0    | 4  | 204 485  | 1  | —   | —  | —  | —  |
| 49,00    | 369,0    | 220,0    | 4  | 204 490  | 1  | —   | —  | —  | —  |
| 49,50    | 369,0    | 220,0    | 4  | 204 495  | 1  | —   | —  | —  | —  |
| 50,00    | 369,0    | 220,0    | 4  | 204 500  | 1  | —   | —  | —  | —  |
| 51,00    | 412,0    | 225,0    | 5  | 204 510  | 1  | —   | —  | —  | —  |
| 52,00    | 412,0    | 225,0    | 5  | 204 520  | 1  | —   | —  | —  | —  |
| 53,00    | 412,0    | 225,0    | 5  | 204 530  | 1  | —   | —  | —  | —  |
| 54,00    | 417,0    | 230,0    | 5  | 204 540  | 1  | —   | —  | —  | —  |
| 55,00    | 417,0    | 230,0    | 5  | 204 550  | 1  | —   | —  | —  | —  |
| 56,00    | 417,0    | 230,0    | 5  | 204 560  | 1  | —   | —  | —  | —  |
| 57,00    | 422,0    | 235,0    | 5  | 204 570  | 1  | —   | —  | —  | —  |
| 58,00    | 422,0    | 235,0    | 5  | 204 580  | 1  | —   | —  | —  | —  |
| 59,00    | 422,0    | 235,0    | 5  | 204 590  | 1  | —   | —  | —  | —  |
| 60,00    | 422,0    | 235,0    | 5  | 204 600  | 1  | —   | —  | —  | —  |





## Twist drills DIN 1897 type N, HSS-G ground - short

Short and stable twist drill with distinctive heat resistance. Ideally suited for assembly work with thin-walled materials such as sheet steels, flat steels and profile steel in bodysell construction. Use in hand-held drilling machines, with automatic machines and with turret lathes.



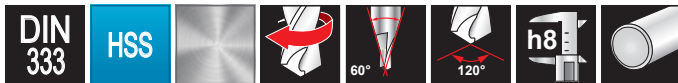
Packing unit: in plastic box

| Steel (N/mm <sup>2</sup> ) < 900  | ■ | ■ | Brass            | ■ | ■ |
|-----------------------------------|---|---|------------------|---|---|
| Steel (N/mm <sup>2</sup> ) < 1100 |   | □ | Bronze           | □ | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   |   | Plastics         | ■ | ■ |
| Rust-resistant steel              |   | □ | Cast iron        | □ | □ |
| Aluminium                         | ■ |   | Titanium alloyed |   |   |

| Ø mm | L1 mm | L2 mm |         |    |
|------|-------|-------|---------|----|
| 2,00 | 38,0  | 12,0  | 202 020 | 10 |
| 2,10 | 38,0  | 12,0  | 202 021 | 10 |
| 2,20 | 40,0  | 13,0  | 202 022 | 10 |
| 2,30 | 40,0  | 13,0  | 202 023 | 10 |
| 2,40 | 43,0  | 14,0  | 202 024 | 10 |
| 2,50 | 43,0  | 14,0  | 202 025 | 10 |
| 2,60 | 43,0  | 14,0  | 202 026 | 10 |
| 2,70 | 46,0  | 16,0  | 202 027 | 10 |
| 2,80 | 46,0  | 16,0  | 202 028 | 10 |
| 2,90 | 46,0  | 16,0  | 202 029 | 10 |
| 3,00 | 46,0  | 16,0  | 202 030 | 10 |
| 3,10 | 49,0  | 18,0  | 202 031 | 10 |
| 3,20 | 49,0  | 18,0  | 202 032 | 10 |
| 3,30 | 49,0  | 18,0  | 202 033 | 10 |
| 3,40 | 52,0  | 20,0  | 202 034 | 10 |
| 3,50 | 52,0  | 20,0  | 202 035 | 10 |
| 3,60 | 52,0  | 20,0  | 202 036 | 10 |
| 3,70 | 52,0  | 20,0  | 202 037 | 10 |
| 3,80 | 55,0  | 22,0  | 202 038 | 10 |
| 3,90 | 55,0  | 22,0  | 202 039 | 10 |
| 4,00 | 55,0  | 22,0  | 202 040 | 10 |
| 4,10 | 55,0  | 22,0  | 202 041 | 10 |
| 4,20 | 55,0  | 22,0  | 202 042 | 10 |
| 4,30 | 58,0  | 24,0  | 202 043 | 10 |
| 4,40 | 58,0  | 24,0  | 202 044 | 10 |
| 4,50 | 58,0  | 24,0  | 202 045 | 10 |
| 4,60 | 58,0  | 24,0  | 202 046 | 10 |
| 4,70 | 58,0  | 24,0  | 202 047 | 10 |
| 4,80 | 62,0  | 26,0  | 202 048 | 10 |
| 4,90 | 62,0  | 26,0  | 202 049 | 10 |
| 5,00 | 62,0  | 26,0  | 202 050 | 10 |
| 5,10 | 62,0  | 26,0  | 202 051 | 10 |
| 5,20 | 62,0  | 26,0  | 202 052 | 10 |
| 5,30 | 62,0  | 26,0  | 202 053 | 10 |
| 5,40 | 66,0  | 28,0  | 202 054 | 10 |
| 5,50 | 66,0  | 28,0  | 202 055 | 10 |
| 5,60 | 66,0  | 28,0  | 202 056 | 10 |
| 5,70 | 66,0  | 28,0  | 202 057 | 10 |
| 5,80 | 66,0  | 28,0  | 202 058 | 10 |
| 5,90 | 66,0  | 28,0  | 202 059 | 10 |

| 202 020 T | 10 |  |
|-----------|----|--|
| 202 021 T | 10 |  |
| 202 022 T | 10 |  |
| 202 023 T | 10 |  |
| 202 024 T | 10 |  |
| 202 025 T | 10 |  |
| 202 026 T | 10 |  |
| 202 027 T | 10 |  |
| 202 028 T | 10 |  |
| 202 029 T | 10 |  |
| 202 030 T | 10 |  |
| 202 031 T | 10 |  |
| 202 032 T | 10 |  |
| 202 033 T | 10 |  |
| 202 034 T | 10 |  |
| 202 035 T | 10 |  |
| 202 036 T | 10 |  |
| 202 037 T | 10 |  |
| 202 038 T | 10 |  |
| 202 039 T | 10 |  |
| 202 040 T | 10 |  |
| 202 041 T | 10 |  |
| 202 042 T | 10 |  |
| 202 043 T | 10 |  |
| 202 044 T | 10 |  |
| 202 045 T | 10 |  |
| 202 046 T | 10 |  |
| 202 047 T | 10 |  |
| 202 048 T | 10 |  |
| 202 049 T | 10 |  |
| 202 050 T | 10 |  |
| 202 051 T | 10 |  |
| 202 052 T | 10 |  |
| 202 053 T | 10 |  |
| 202 054 T | 10 |  |
| 202 055 T | 10 |  |
| 202 056 T | 10 |  |
| 202 057 T | 10 |  |
| 202 058 T | 10 |  |
| 202 059 T | 10 |  |

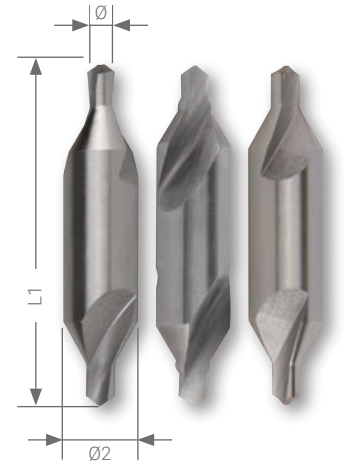
| Ø mm  | L1 mm | L2 mm | HSS-G    |         | HSS-G TiN |         |
|-------|-------|-------|----------|---------|-----------|---------|
|       |       |       | Material | Packing | Material  | Packing |
| 6,00  | 66,0  | 28,0  | 202 060  | 10      | 202 060 T | 10      |
| 6,50  | 70,0  | 31,0  | 202 065  | 10      | 202 065 T | 10      |
| 6,80  | 74,0  | 34,0  | 202 068  | 10      | 202 068 T | 10      |
| 7,00  | 74,0  | 34,0  | 202 070  | 10      | 202 070 T | 10      |
| 7,20  | 74,0  | 34,0  | 202 072  | 10      | 202 072 T | 10      |
| 7,50  | 74,0  | 34,0  | 202 075  | 10      | 202 075 T | 10      |
| 7,80  | 79,0  | 37,0  | 202 078  | 10      | 202 078 T | 10      |
| 8,00  | 79,0  | 37,0  | 202 080  | 10      | 202 080 T | 10      |
| 8,50  | 79,0  | 37,0  | 202 085  | 10      | 202 085 T | 10      |
| 9,00  | 84,0  | 40,0  | 202 090  | 10      | 202 090 T | 10      |
| 9,50  | 84,0  | 40,0  | 202 095  | 10      | 202 095 T | 10      |
| 10,00 | 89,0  | 43,0  | 202 100  | 10      | 202 100 T | 10      |
| 10,20 | 89,0  | 43,0  | 202 102  | 10      | 202 102 T | 10      |
| 10,50 | 89,0  | 43,0  | 202 105  | 5       | 202 105 T | 5       |
| 11,00 | 95,0  | 47,0  | 202 110  | 5       | 202 110 T | 5       |
| 11,50 | 95,0  | 47,0  | 202 115  | 5       | 202 115 T | 5       |
| 12,00 | 102,0 | 51,0  | 202 120  | 5       | 202 120 T | 5       |
| 12,50 | 102,0 | 51,0  | 202 125  | 5       | 202 125 T | 5       |
| 13,00 | 102,0 | 51,0  | 202 130  | 5       | 202 130 T | 5       |



### Centre drills DIN 333, HSS ground

Centre drills for making centre holes according to shape A, shape A with reinforcing bead and shape R.

- A** shape A
- A+** shape A with reinforcing bead
- R** shape R



Packing unit: in plastic box

|                      | A | A+ | R |                  | A | A+ | R |
|----------------------|---|----|---|------------------|---|----|---|
| Steel (N/mm2) < 900  | ■ | ■  | ■ | Brass            | ■ | ■  | ■ |
| Steel (N/mm2) < 1100 |   |    |   | Bronze           | □ | □  | □ |
| Steel (N/mm2) < 1300 |   |    |   | Plastics         | ■ | ■  | ■ |
| Rust-resistant steel |   |    |   | Cast iron        | □ | □  | □ |
| Aluminium            | ■ | ■  | ■ | Titanium alloyed |   |    |   |

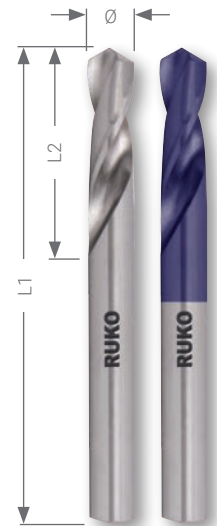
| Ø1 mm | L1 mm | Ø2 mm | HSS A    |         | HSS A+    |         | HSS R     |         |
|-------|-------|-------|----------|---------|-----------|---------|-----------|---------|
|       |       |       | Material | Packing | Material  | Packing | Material  | Packing |
| 0,80  | 20,0  | 3,15  | 217 008  | 1       | —         | 1       | 217 2 008 | 1       |
| 1,00  | 31,5  | 3,15  | 217 010  | 1       | 217 1 010 | 1       | 217 2 010 | 1       |
| 1,60  | 35,5  | 4,00  | 217 016  | 1       | 217 1 016 | 1       | 217 2 016 | 1       |
| 2,00  | 40,0  | 5,00  | 217 020  | 1       | 217 1 020 | 1       | 217 2 020 | 1       |
| 2,50  | 45,0  | 6,30  | 217 025  | 1       | 217 1 025 | 1       | 217 2 025 | 1       |
| 3,15  | 50,0  | 8,00  | 217 315  | 1       | 217 1 315 | 1       | 217 2 315 | 1       |
| 4,00  | 56,0  | 10,00 | 217 040  | 1       | 217 1 040 | 1       | 217 2 040 | 1       |
| 5,00  | 63,0  | 12,50 | 217 050  | 1       | 217 1 050 | 1       | 217 2 050 | 1       |
| 6,30  | 71,0  | 16,00 | 217 063  | 1       | 217 1 063 | 1       | 217 2 063 | 1       |



## Twist drills DIN 1897 type N, HSSE-Co 5 ground - short

Short and stable twist drill with distinctive heat resistance. Ideally suited for assembly work with thin-walled materials such as sheet steels, flat steels and profile steel in bodyshell construction. Use in hand-held drilling machines, with automatic machines and with turret lathes.

Special sizes available on request.



Packing unit: in plastic box

|                                   |                                     |                                     |                  |                                     |                                     |
|-----------------------------------|-------------------------------------|-------------------------------------|------------------|-------------------------------------|-------------------------------------|
|                                   |                                     |                                     |                  |                                     |                                     |
| Steel (N/mm <sup>2</sup> ) < 900  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Brass            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Steel (N/mm <sup>2</sup> ) < 1100 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Bronze           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Steel (N/mm <sup>2</sup> ) < 1300 | <input type="checkbox"/>            | <input type="checkbox"/>            | Plastics         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Rust-resistant steel              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Cast iron        | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Aluminium                         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Titanium alloyed | <input type="checkbox"/>            | <input type="checkbox"/>            |

| Ø<br>mm | L1<br>mm | L2<br>mm | HSSE Co 5  |    | HSSE Co 5 TITAN |    |
|---------|----------|----------|------------|----|-----------------|----|
|         |          |          |            |    |                 |    |
| 2,00    | 38,0     | 12,0     | 202 020 E  | 10 | 202 020 EF      | 10 |
| 2,50    | 43,0     | 14,0     | 202 025 E  | 10 | 202 025 EF      | 10 |
| 3,00    | 46,0     | 16,0     | 202 030 E  | 10 | 202 030 EF      | 10 |
| 3,10    | 49,0     | 18,0     | 202 031 E  | 10 | 202 031 EF      | 10 |
| 3,20    | 49,0     | 18,0     | 202 032 E  | 10 | 202 032 EF      | 10 |
| 3,25    | 49,0     | 18,0     | 202 0325 E | 10 | 202 0325 EF     | 10 |
| 3,30    | 49,0     | 18,0     | 202 033 E  | 10 | 202 033 EF      | 10 |
| 3,50    | 52,0     | 20,0     | 202 035 E  | 10 | 202 035 EF      | 10 |
| 3,60    | 52,0     | 20,0     | 202 036 E  | 10 | 202 036 EF      | 10 |
| 4,00    | 55,0     | 22,0     | 202 040 E  | 10 | 202 040 EF      | 10 |
| 4,10    | 55,0     | 22,0     | 202 041 E  | 10 | 202 041 EF      | 10 |
| 4,20    | 55,0     | 22,0     | 202 042 E  | 10 | 202 042 EF      | 10 |
| 4,50    | 58,0     | 24,0     | 202 045 E  | 10 | 202 045 EF      | 10 |
| 4,80    | 62,0     | 26,0     | 202 048 E  | 10 | 202 048 EF      | 10 |
| 4,90    | 62,0     | 26,0     | 202 049 E  | 10 | 202 049 EF      | 10 |
| 5,00    | 62,0     | 26,0     | 202 050 E  | 10 | 202 050 EF      | 10 |
| 5,10    | 62,0     | 26,0     | 202 051 E  | 10 | 202 051 EF      | 10 |
| 5,20    | 62,0     | 26,0     | 202 052 E  | 10 | 202 052 EF      | 10 |
| 5,50    | 66,0     | 28,0     | 202 055 E  | 10 | 202 055 EF      | 10 |
| 5,70    | 66,0     | 28,0     | 202 057 E  | 10 | 202 057 EF      | 10 |
| 5,80    | 66,0     | 28,0     | 202 058 E  | 10 | 202 058 EF      | 10 |
| 5,90    | 66,0     | 28,0     | 202 059 E  | 10 | 202 059 EF      | 10 |
| 6,00    | 66,0     | 28,0     | 202 060 E  | 10 | 202 060 EF      | 10 |
| 6,30    | 70,0     | 31,0     | 202 063 E  | 10 | 202 063 EF      | 10 |
| 6,50    | 70,0     | 31,0     | 202 065 E  | 10 | 202 065 EF      | 10 |
| 6,80    | 74,0     | 34,0     | 202 068 E  | 10 | 202 068 EF      | 10 |
| 7,00    | 74,0     | 34,0     | 202 070 E  | 10 | 202 070 EF      | 10 |
| 7,50    | 74,0     | 34,0     | 202 075 E  | 10 | 202 075 EF      | 10 |
| 8,00    | 79,0     | 37,0     | 202 080 E  | 10 | 202 080 EF      | 10 |
| 8,50    | 79,0     | 37,0     | 202 085 E  | 10 | 202 085 EF      | 10 |
| 9,00    | 84,0     | 40,0     | 202 090 E  | 10 | 202 090 EF      | 10 |
| 9,50    | 84,0     | 40,0     | 202 095 E  | 10 | 202 095 EF      | 10 |
| 10,00   | 89,0     | 43,0     | 202 100 E  | 10 | 202 100 EF      | 10 |
| 10,50   | 89,0     | 43,0     | 202 105 E  | 5  | 202 105 EF      | 5  |
| 11,00   | 95,0     | 47,0     | 202 110 E  | 5  | 202 110 EF      | 5  |
| 11,50   | 95,0     | 47,0     | 202 115 E  | 5  | 202 115 EF      | 5  |
| 12,00   | 102,0    | 51,0     | 202 120 E  | 5  | 202 120 EF      | 5  |
| 12,50   | 102,0    | 51,0     | 202 125 E  | 5  | 202 125 EF      | 5  |
| 13,00   | 102,0    | 51,0     | 202 130 E  | 5  | 202 130 EF      | 5  |





## Hollow section twist drills type N, HSS ground

Due to the short spiral shape the drill is particularly suitable for the working and fitting of hollow sections. The reduction of the cross cutting edge guarantees an optimized centring and long tool life.

Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | Bronze           |   |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              |   | Cast iron        |   |
| Aluminium                         | ■ | Titanium alloyed |   |



| Ø mm | L1 mm | L2 mm | HSS-G   |    |
|------|-------|-------|---------|----|
| 4,90 | 70,0  | 30,0  | 257 515 | 10 |
| 4,90 | 98,0  | 30,0  | 257 491 | 10 |
| 4,90 | 120,0 | 30,0  | 257 516 | 10 |
| 4,90 | 150,0 | 30,0  | 257 492 | 10 |
| 5,00 | 70,0  | 30,0  | 257 501 | 10 |
| 5,00 | 98,0  | 30,0  | 257 502 | 10 |
| 5,00 | 120,0 | 30,0  | 257 517 | 10 |
| 5,00 | 150,0 | 30,0  | 257 503 | 10 |
| 5,00 | 180,0 | 30,0  | 257 518 | 10 |
| 5,00 | 200,0 | 30,0  | 257 504 | 10 |
| 5,10 | 70,0  | 30,0  | 257 519 | 10 |
| 5,10 | 98,0  | 30,0  | 257 511 | 10 |
| 5,10 | 120,0 | 30,0  | 257 520 | 10 |
| 5,10 | 150,0 | 30,0  | 257 512 | 10 |
| 5,10 | 180,0 | 30,0  | 257 521 | 10 |
| 5,10 | 200,0 | 30,0  | 257 513 | 10 |
| 5,30 | 70,0  | 30,0  | 257 522 | 10 |
| 5,30 | 98,0  | 30,0  | 257 531 | 10 |
| 5,30 | 120,0 | 30,0  | 257 523 | 10 |
| 5,30 | 150,0 | 30,0  | 257 532 | 10 |
| 5,30 | 180,0 | 30,0  | 257 524 | 10 |
| 5,30 | 200,0 | 30,0  | 257 533 | 10 |
| 5,50 | 100,0 | 30,0  | 257 551 | 10 |
| 5,50 | 150,0 | 30,0  | 257 552 | 10 |
| 5,50 | 200,0 | 30,0  | 257 553 | 10 |
| 5,70 | 70,0  | 30,0  | 257 571 | 10 |
| 5,70 | 98,0  | 30,0  | 257 572 | 10 |
| 5,70 | 150,0 | 30,0  | 257 573 | 10 |
| 5,70 | 180,0 | 30,0  | 257 529 | 10 |
| 5,70 | 200,0 | 30,0  | 257 574 | 10 |
| 5,80 | 70,0  | 30,0  | 257 530 | 10 |
| 5,80 | 98,0  | 30,0  | 257 581 | 10 |
| 5,80 | 120,0 | 30,0  | 257 534 | 10 |
| 5,80 | 150,0 | 30,0  | 257 582 | 10 |
| 5,80 | 180,0 | 30,0  | 257 535 | 10 |
| 5,80 | 210,0 | 30,0  | 257 583 | 10 |
|      |       |       |         |    |
|      |       |       |         |    |
|      |       |       |         |    |



## Spot drills type N, HSS ground - extra short

Extra short and stable standard drill. Shorter than DIN 1897. Ideally suitable for assembly work in thin-walled materials such as sheet steels, flat steels and profile steels. Highly secure against fracture. For use in all hand-held drilling machines. Advantages DIN 1412 C: good centring, little pressure required. Chip spreading improves chip removal.



Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | Bronze           | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              |   | Cast iron        | □ |
| Aluminium                         | ■ | Titanium alloyed |   |

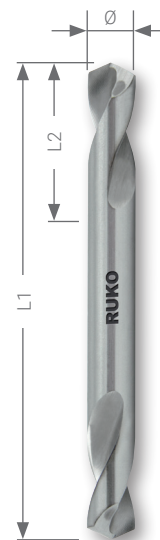
| Ø mm | L1 mm | L2 mm | HSS-G    |    |
|------|-------|-------|----------|----|
| 2,50 | 38,0  | 14,0  | 251 025  | 10 |
| 2,80 | 40,0  | 16,0  | 251 028  | 10 |
| 3,00 | 40,0  | 16,0  | 251 030  | 10 |
| 3,10 | 40,0  | 16,0  | 251 031  | 10 |
| 3,20 | 40,0  | 16,0  | 251 032  | 10 |
| 3,25 | 41,0  | 16,0  | 251 0325 | 10 |
| 3,30 | 41,0  | 16,0  | 251 033  | 10 |
| 3,40 | 42,0  | 16,0  | 251 034  | 10 |
| 3,50 | 42,0  | 16,0  | 251 035  | 10 |
| 4,00 | 42,0  | 16,0  | 251 040  | 10 |
| 4,10 | 44,0  | 18,0  | 251 041  | 10 |
| 4,20 | 44,0  | 18,0  | 251 042  | 10 |
| 4,30 | 44,0  | 18,0  | 251 043  | 10 |
| 4,50 | 48,0  | 20,0  | 251 045  | 10 |
| 4,70 | 48,0  | 20,0  | 251 047  | 10 |
| 4,80 | 48,0  | 20,0  | 251 048  | 10 |
| 4,90 | 50,0  | 22,0  | 251 049  | 10 |
| 5,00 | 52,0  | 24,0  | 251 050  | 10 |
| 5,10 | 52,0  | 24,0  | 251 051  | 10 |
| 5,20 | 52,0  | 24,0  | 251 052  | 10 |
| 5,50 | 52,0  | 24,0  | 251 055  | 10 |
| 6,00 | 55,0  | 26,0  | 251 060  | 10 |
| 6,50 | 60,0  | 26,0  | 251 065  | 10 |



## Double end drills type KV, HSS ground

Extra short and stable standard drill. Shorter than DIN 1897. Ideally suitable for assembly work in thin-walled materials such as sheet steels, flat steels and profile steels. High security against fracture. For use in hand-held drilling machines. Usable at both ends.

Advantages DIN 1412 C: good centring, little pressure required. Chip distribution improves chip removal.



Packing unit: in plastic box

|                                   |   |                  |   |
|-----------------------------------|---|------------------|---|
|                                   |   |                  |   |
| Steel (N/mm <sup>2</sup> ) < 900  | ■ | Brass            | ■ |
| Steel (N/mm <sup>2</sup> ) < 1100 |   | Bronze           | □ |
| Steel (N/mm <sup>2</sup> ) < 1300 |   | Plastics         | ■ |
| Rust-resistant steel              |   | Cast iron        | □ |
| Aluminium                         | ■ | Titanium alloyed |   |

| Ø mm | L1 mm | L2 mm | HSS-G    |    |
|------|-------|-------|----------|----|
| 2,50 | 43,0  | 10,0  | 252 025  | 10 |
| 2,80 | 46,0  | 11,0  | 252 028  | 10 |
| 3,00 | 46,0  | 11,0  | 252 030  | 10 |
| 3,10 | 49,0  | 11,0  | 252 031  | 10 |
| 3,20 | 49,0  | 11,0  | 252 032  | 10 |
| 3,25 | 49,0  | 11,0  | 252 0325 | 10 |
| 3,30 | 49,0  | 11,0  | 252 033  | 10 |
| 3,40 | 52,0  | 14,0  | 252 034  | 10 |
| 3,50 | 52,0  | 14,0  | 252 035  | 10 |
| 4,00 | 55,0  | 14,0  | 252 040  | 10 |
| 4,10 | 55,0  | 14,0  | 252 041  | 10 |
| 4,20 | 55,0  | 14,0  | 252 042  | 10 |
| 4,30 | 58,0  | 17,0  | 252 043  | 10 |
| 4,50 | 58,0  | 17,0  | 252 045  | 10 |
| 4,80 | 62,0  | 17,0  | 252 048  | 10 |
| 4,90 | 62,0  | 17,0  | 252 049  | 10 |
| 5,00 | 62,0  | 17,0  | 252 050  | 10 |
| 5,10 | 62,0  | 17,0  | 252 051  | 10 |
| 5,20 | 62,0  | 17,0  | 252 052  | 10 |
| 5,50 | 66,0  | 20,0  | 252 055  | 10 |
| 6,00 | 66,0  | 20,0  | 252 060  | 10 |
| 6,50 | 70,0  | 20,0  | 252 065  | 10 |

# Table of cutting speeds for twist drills

| Drills<br>Ø mm | Cutting speed Vc = m/min |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
|----------------|--------------------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                | 4                        | 6    | 8    | 10   | 12   | 15   | 18   | 20   | 25   | 30   | 35    | 40    | 50    | 60    | 80    | 100   |
|                | r.p.m.                   |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| 1,0            | 1274                     | 1911 | 2548 | 3185 | 3822 | 4777 | 5732 | 6369 | 7962 | 9554 | 11146 | 12739 | 15924 | 19108 | 25478 | 31847 |
| 1,5            | 849                      | 1274 | 1699 | 2123 | 2548 | 3185 | 3822 | 4246 | 5308 | 6369 | 7431  | 8493  | 10616 | 12739 | 16985 | 21231 |
| 2,0            | 637                      | 955  | 1274 | 1592 | 1911 | 2389 | 2866 | 3185 | 3981 | 4777 | 5573  | 6369  | 7962  | 9554  | 12739 | 15924 |
| 2,5            | 510                      | 764  | 1019 | 1274 | 1529 | 1911 | 2293 | 2548 | 3185 | 3822 | 4459  | 5096  | 6369  | 7643  | 10191 | 12739 |
| 3,0            | 425                      | 637  | 849  | 1062 | 1274 | 1592 | 1911 | 2123 | 2654 | 3185 | 3715  | 4246  | 5308  | 6369  | 8493  | 10616 |
| 3,5            | 364                      | 546  | 728  | 910  | 1092 | 1365 | 1638 | 1820 | 2275 | 2730 | 3185  | 3640  | 4550  | 5460  | 7279  | 9099  |
| 4,0            | 318                      | 478  | 637  | 796  | 955  | 1194 | 1433 | 1592 | 1990 | 2389 | 2787  | 3185  | 3981  | 4777  | 6369  | 7962  |
| 4,5            | 283                      | 425  | 566  | 708  | 849  | 1062 | 1274 | 1415 | 1769 | 2123 | 2477  | 2831  | 3539  | 4246  | 5662  | 7077  |
| 5,0            | 255                      | 382  | 510  | 637  | 764  | 955  | 1146 | 1274 | 1592 | 1911 | 2229  | 2548  | 3185  | 3822  | 5096  | 6369  |
| 5,5            | 232                      | 347  | 463  | 579  | 695  | 869  | 1042 | 1158 | 1448 | 1737 | 2027  | 2316  | 2895  | 3474  | 4632  | 5790  |
| 6,0            | 212                      | 318  | 425  | 531  | 637  | 796  | 955  | 1062 | 1327 | 1592 | 1858  | 2123  | 2654  | 3185  | 4246  | 5308  |
| 6,5            | 196                      | 294  | 392  | 490  | 588  | 735  | 882  | 980  | 1225 | 1470 | 1715  | 1960  | 2450  | 2940  | 3920  | 4900  |
| 7,0            | 182                      | 273  | 364  | 455  | 546  | 682  | 819  | 910  | 1137 | 1365 | 1592  | 1820  | 2275  | 2730  | 3640  | 4550  |
| 7,5            | 170                      | 255  | 340  | 425  | 510  | 637  | 764  | 849  | 1062 | 1274 | 1486  | 1699  | 2123  | 2548  | 3397  | 4246  |
| 8,0            | 159                      | 239  | 318  | 398  | 478  | 597  | 717  | 796  | 995  | 1194 | 1393  | 1592  | 1990  | 2389  | 3185  | 3981  |
| 8,5            | 150                      | 225  | 300  | 375  | 450  | 562  | 674  | 749  | 937  | 1124 | 1311  | 1499  | 1873  | 2248  | 2997  | 3747  |
| 9,0            | 142                      | 212  | 283  | 354  | 425  | 531  | 637  | 708  | 885  | 1062 | 1238  | 1415  | 1769  | 2123  | 2831  | 3539  |
| 9,5            | 134                      | 201  | 268  | 335  | 402  | 503  | 603  | 670  | 838  | 1006 | 1173  | 1341  | 1676  | 2011  | 2682  | 3352  |
| 10,0           | 127                      | 191  | 255  | 318  | 382  | 478  | 573  | 637  | 796  | 955  | 1115  | 1274  | 1592  | 1911  | 2548  | 3185  |
| 11,0           | 116                      | 174  | 232  | 290  | 347  | 434  | 521  | 579  | 724  | 869  | 1013  | 1158  | 1448  | 1737  | 2316  | 2895  |
| 12,0           | 106                      | 159  | 212  | 265  | 318  | 398  | 478  | 531  | 663  | 796  | 929   | 1062  | 1327  | 1592  | 2123  | 2654  |
| 13,0           | 98                       | 147  | 196  | 245  | 294  | 367  | 441  | 490  | 612  | 735  | 857   | 980   | 1225  | 1470  | 1960  | 2450  |
| 14,0           | 91                       | 136  | 182  | 227  | 273  | 341  | 409  | 455  | 569  | 682  | 796   | 910   | 1137  | 1365  | 1820  | 2275  |
| 15,0           | 85                       | 127  | 170  | 212  | 255  | 318  | 382  | 425  | 531  | 637  | 743   | 849   | 1062  | 1274  | 1699  | 2123  |
| 16,0           | 80                       | 119  | 159  | 199  | 239  | 299  | 358  | 398  | 498  | 597  | 697   | 796   | 995   | 1194  | 1592  | 1990  |
| 17,0           | 75                       | 112  | 150  | 187  | 225  | 281  | 337  | 375  | 468  | 562  | 656   | 749   | 937   | 1124  | 1499  | 1873  |
| 18,0           | 71                       | 106  | 142  | 177  | 212  | 265  | 318  | 354  | 442  | 531  | 619   | 708   | 885   | 1062  | 1415  | 1769  |
| 19,0           | 67                       | 101  | 134  | 168  | 201  | 251  | 302  | 335  | 419  | 503  | 587   | 670   | 838   | 1006  | 1341  | 1676  |
| 20,0           | 64                       | 96   | 127  | 159  | 191  | 239  | 287  | 318  | 398  | 478  | 557   | 637   | 796   | 955   | 1274  | 1592  |
| 21,0           | 61                       | 91   | 121  | 152  | 182  | 227  | 273  | 303  | 379  | 455  | 531   | 607   | 758   | 910   | 1213  | 1517  |
| 22,0           | 58                       | 87   | 116  | 145  | 174  | 217  | 261  | 290  | 362  | 434  | 507   | 579   | 724   | 869   | 1158  | 1448  |
| 23,0           | 55                       | 83   | 111  | 138  | 166  | 208  | 249  | 277  | 346  | 415  | 485   | 554   | 692   | 831   | 1108  | 1385  |
| 24,0           | 53                       | 80   | 106  | 133  | 159  | 199  | 239  | 265  | 332  | 398  | 464   | 531   | 663   | 796   | 1062  | 1327  |
| 25,0           | 51                       | 76   | 102  | 127  | 153  | 191  | 229  | 255  | 318  | 382  | 446   | 510   | 637   | 764   | 1019  | 1274  |
| 26,0           | 49                       | 73   | 98   | 122  | 147  | 184  | 220  | 245  | 306  | 367  | 429   | 490   | 612   | 735   | 980   | 1225  |
| 27,0           | 47                       | 71   | 94   | 118  | 142  | 177  | 212  | 236  | 295  | 354  | 413   | 472   | 590   | 708   | 944   | 1180  |
| 28,0           | 45                       | 68   | 91   | 114  | 136  | 171  | 205  | 227  | 284  | 341  | 398   | 455   | 569   | 682   | 910   | 1137  |
| 29,0           | 44                       | 66   | 88   | 110  | 132  | 165  | 198  | 220  | 275  | 329  | 384   | 439   | 549   | 659   | 879   | 1098  |
| 30,0           | 42                       | 64   | 85   | 106  | 127  | 159  | 191  | 212  | 265  | 318  | 372   | 425   | 531   | 637   | 849   | 1062  |
| 31,0           | 41                       | 62   | 82   | 103  | 123  | 154  | 185  | 205  | 257  | 308  | 360   | 411   | 514   | 616   | 822   | 1027  |
| 32,0           | 40                       | 60   | 80   | 100  | 119  | 149  | 179  | 199  | 249  | 299  | 348   | 398   | 498   | 597   | 796   | 995   |
| 33,0           | 39                       | 58   | 77   | 97   | 116  | 145  | 174  | 193  | 241  | 290  | 338   | 386   | 483   | 579   | 772   | 965   |
| 34,0           | 37                       | 56   | 75   | 94   | 112  | 141  | 169  | 187  | 234  | 281  | 328   | 375   | 468   | 562   | 749   | 937   |
| 35,0           | 36                       | 55   | 73   | 91   | 109  | 136  | 164  | 182  | 227  | 273  | 318   | 364   | 455   | 546   | 728   | 910   |
| 36,0           | 35                       | 53   | 71   | 88   | 106  | 133  | 159  | 177  | 221  | 265  | 310   | 354   | 442   | 531   | 708   | 885   |
| 37,0           | 34                       | 52   | 69   | 86   | 103  | 129  | 155  | 172  | 215  | 258  | 301   | 344   | 430   | 516   | 689   | 861   |
| 38,0           | 34                       | 50   | 67   | 84   | 101  | 126  | 151  | 168  | 210  | 251  | 293   | 335   | 419   | 503   | 670   | 838   |
| 39,0           | 33                       | 49   | 65   | 82   | 98   | 122  | 147  | 163  | 204  | 245  | 286   | 327   | 408   | 490   | 653   | 817   |
| 40,0           | 32                       | 48   | 64   | 80   | 96   | 119  | 143  | 159  | 199  | 239  | 279   | 318   | 398   | 478   | 637   | 796   |
| 41,0           | 31                       | 47   | 62   | 78   | 93   | 117  | 140  | 155  | 194  | 233  | 272   | 311   | 388   | 466   | 621   | 777   |
| 42,0           | 30                       | 45   | 61   | 76   | 91   | 114  | 136  | 152  | 190  | 227  | 265   | 303   | 379   | 455   | 607   | 758   |
| 43,0           | 30                       | 44   | 59   | 74   | 89   | 111  | 133  | 148  | 185  | 222  | 259   | 296   | 370   | 444   | 593   | 741   |
| 44,0           | 29                       | 43   | 58   | 72   | 87   | 109  | 130  | 145  | 181  | 217  | 253   | 290   | 362   | 434   | 579   | 724   |
| 45,0           | 28                       | 42   | 57   | 71   | 85   | 106  | 127  | 142  | 177  | 212  | 248   | 283   | 354   | 425   | 566   | 708   |
| 46,0           | 28                       | 42   | 55   | 69   | 83   | 104  | 125  | 138  | 173  | 208  | 242   | 277   | 346   | 415   | 554   | 692   |
| 47,0           | 27                       | 41   | 54   | 68   | 81   | 102  | 122  | 136  | 169  | 203  | 237   | 271   | 339   | 407   | 542   | 678   |
| 48,0           | 27                       | 40   | 53   | 66   | 80   | 100  | 119  | 133  | 166  | 199  | 232   | 265   | 332   | 398   | 531   | 663   |
| 49,0           | 26                       | 39   | 52   | 65   | 78   | 97   | 117  | 130  | 162  | 195  | 227   | 260   | 325   | 390   | 520   | 650   |
| 50,0           | 25                       | 38   | 51   | 64   | 76   | 96   | 115  | 127  | 159  | 191  | 223   | 255   | 318   | 382   | 510   | 637   |

| Material   | Cutting speed Vc m/min | Coolant        | Material                            | Cutting speed Vc m/min | Coolant        |
|--|------------------------|----------------|-------------------------------------|------------------------|----------------|
| High carbon struc. steel < 700 N/mm <sup>2</sup> | 30 - 35                | cutting spray  | CuZn alloy tough                    | 35 - 60                | compressed air |
| High carbon struc. steel > 700 N/mm <sup>2</sup> | 20 - 25                | cutting spray  | Al alloy 11% Si                     | 30 - 50                | cutting spray  |
| Alloyed steel < 1000 N/mm <sup>2</sup>           | 20 - 25                | cutting spray  | Thermoplastics                      | 20 - 40                | water          |
| Cast iron < 250 N/mm <sup>2</sup>                | 15 - 25                | compressed air | Duroplastics with inorganic filling | 15 - 25                | compressed air |
| Cast iron > 250 N/mm <sup>2</sup>                | 10 - 20                | compressed air | Duroplastics with organic filling   | 15 - 35                | compressed air |
| CuZn alloy brittle                               | 60 - 100               | compressed air |                                     |                        |                |

# Table of cutting speeds for twist drills

| Drills<br>Ø inch | Cutting speed Vc = m/min |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |
|------------------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
|                  | 4                        | 6    | 8    | 10   | 12   | 15   | 18   | 20   | 25   | 30   | 35   | 40   | 50   | 60    | 80    | 100   |
|                  | r.p.m.                   |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |
| 1/16             | 800                      | 1190 | 1590 | 1990 | 2390 | 2990 | 3580 | 3980 | 4980 | 5970 | 6970 | 7960 | 9950 | 11940 | 15920 | 19900 |
| 5/64             | 640                      | 960  | 1270 | 1590 | 1910 | 2390 | 2870 | 3180 | 3980 | 4780 | 5570 | 6370 | 7960 | 9550  | 12740 | 15920 |
| 3/32             | 530                      | 800  | 1060 | 1330 | 1590 | 1990 | 2390 | 2650 | 3320 | 3980 | 4640 | 5310 | 6630 | 7960  | 10620 | 13270 |
| 7/64             | 450                      | 680  | 910  | 1140 | 1360 | 1710 | 2050 | 2270 | 2840 | 3410 | 3980 | 4550 | 5690 | 6820  | 9100  | 11370 |
| 1/8              | 400                      | 600  | 800  | 1000 | 1190 | 1490 | 1790 | 1990 | 2490 | 2990 | 3480 | 3980 | 4980 | 5970  | 7960  | 9950  |
| 9/64             | 350                      | 530  | 710  | 880  | 1060 | 1330 | 1590 | 1770 | 2210 | 2650 | 3100 | 3540 | 4420 | 5310  | 7080  | 8850  |
| 5/32             | 320                      | 480  | 640  | 800  | 960  | 1190 | 1430 | 1590 | 1990 | 2390 | 2790 | 3180 | 3980 | 4780  | 6370  | 7960  |
| 11/64            | 290                      | 430  | 580  | 720  | 870  | 1090 | 1300 | 1450 | 1810 | 2170 | 2530 | 2900 | 3620 | 4340  | 5790  | 7240  |
| 3/16             | 270                      | 400  | 530  | 660  | 800  | 1000 | 1190 | 1330 | 1660 | 1990 | 2320 | 2650 | 3320 | 3980  | 5310  | 6630  |
| 13/64            | 240                      | 370  | 490  | 610  | 730  | 920  | 1100 | 1220 | 1530 | 1840 | 2140 | 2450 | 3060 | 3670  | 4900  | 6120  |
| 7/32             | 230                      | 340  | 450  | 570  | 680  | 850  | 1020 | 1140 | 1420 | 1710 | 1990 | 2270 | 2840 | 3410  | 4550  | 5690  |
| 15/64            | 210                      | 320  | 420  | 530  | 640  | 800  | 960  | 1060 | 1330 | 1590 | 1860 | 2120 | 2650 | 3180  | 4250  | 5310  |
| 1/4              | 200                      | 300  | 400  | 500  | 600  | 750  | 900  | 1000 | 1240 | 1490 | 1740 | 1990 | 2490 | 2990  | 3980  | 4980  |
| 17/64            | 190                      | 290  | 380  | 480  | 570  | 710  | 860  | 950  | 1190 | 1430 | 1660 | 1900 | 2380 | 2850  | 3800  | 4750  |
| 9/32             | 180                      | 270  | 360  | 450  | 540  | 670  | 810  | 900  | 1120 | 1350 | 1570 | 1790 | 2240 | 2690  | 3590  | 4490  |
| 19/64            | 170                      | 250  | 340  | 420  | 510  | 640  | 760  | 850  | 1060 | 1270 | 1490 | 1700 | 2120 | 2550  | 3400  | 4250  |
| 5/16             | 160                      | 240  | 320  | 400  | 480  | 600  | 730  | 810  | 1010 | 1210 | 1410 | 1610 | 2020 | 2420  | 3230  | 4030  |
| 21/64            | 150                      | 230  | 310  | 380  | 460  | 580  | 690  | 770  | 960  | 1150 | 1340 | 1530 | 1920 | 2300  | 3070  | 3840  |
| 11/32            | 150                      | 220  | 290  | 370  | 440  | 550  | 660  | 730  | 920  | 1100 | 1280 | 1460 | 1830 | 2200  | 2930  | 3660  |
| 23/64            | 140                      | 210  | 280  | 350  | 420  | 520  | 630  | 700  | 870  | 1050 | 1220 | 1400 | 1750 | 2100  | 2800  | 3500  |
| 3/8              | 130                      | 200  | 270  | 340  | 400  | 500  | 600  | 670  | 840  | 1010 | 1170 | 1340 | 1680 | 2010  | 2680  | 3350  |
| 25/64            | 130                      | 190  | 260  | 320  | 390  | 480  | 580  | 640  | 800  | 970  | 1130 | 1290 | 1610 | 1930  | 2570  | 3220  |
| 13/32            | 120                      | 190  | 250  | 310  | 370  | 460  | 560  | 620  | 770  | 930  | 1080 | 1240 | 1550 | 1860  | 2470  | 3090  |
| 27/64            | 120                      | 180  | 240  | 300  | 360  | 450  | 540  | 600  | 740  | 890  | 1040 | 1190 | 1490 | 1790  | 2380  | 2980  |
| 7/16             | 110                      | 170  | 230  | 290  | 340  | 430  | 520  | 570  | 720  | 860  | 1000 | 1150 | 1430 | 1720  | 2300  | 2870  |
| 29/64            | 110                      | 170  | 220  | 280  | 330  | 420  | 500  | 550  | 690  | 830  | 970  | 1110 | 1380 | 1660  | 2220  | 2770  |
| 15/32            | 110                      | 160  | 210  | 270  | 320  | 400  | 480  | 540  | 670  | 800  | 940  | 1070 | 1340 | 1610  | 2140  | 2680  |
| 31/64            | 110                      | 160  | 210  | 260  | 310  | 390  | 470  | 520  | 650  | 780  | 910  | 1040 | 1290 | 1550  | 2070  | 2590  |
| 1/2              | 110                      | 150  | 200  | 250  | 300  | 380  | 450  | 500  | 630  | 750  | 880  | 1000 | 1250 | 1500  | 2010  | 2510  |

| Material   | Cutting speed<br>Vc m/min | Coolant        | Material                            | Cutting speed<br>Vc m/min | Coolant        |
|--|---------------------------|----------------|-------------------------------------|---------------------------|----------------|
| High carbon struc. steel < 700 N/mm <sup>2</sup> | 30 - 35                   | cutting spray  | CuZn alloy tough                    | 35 - 60                   | compressed air |
| High carbon struc. steel > 700 N/mm <sup>2</sup> | 20 - 25                   |                |                                     |                           |                |
| Alloyed steel < 1000 N/mm <sup>2</sup>           | 20 - 25                   | cutting spray  | Al alloy 11% Si                     | 30 - 50                   | cutting spray  |
| Cast iron < 250 N/mm <sup>2</sup>                | 15 - 25                   | compressed air | Thermoplastics                      | 20 - 40                   | water          |
| Cast iron > 250 N/mm <sup>2</sup>                | 10 - 20                   | compressed air | Duroplastics with inorganic filling | 15 - 25                   | compressed air |
| CuZn alloy brittle                               | 60 - 100                  | compressed air | Duroplastics with organic filling   | 15 - 35                   | compressed air |

# Application of drills and cutting conditions

| Material  | Recommended for use |                     | Cooling | Cutting speed<br>v [m/min] | Drill diameter d [mm]     |        |       |       |       |
|---|---------------------|---------------------|---------|----------------------------|---------------------------|--------|-------|-------|-------|
|   | Main suggestion     | Other suggestion    |         |                            | 2                         | 4      | 6     | 9     | 12    |
|   |                     |                     |         |                            | Feed rate f [mm/rotation] |        |       |       |       |
| Free cutting steel 350-500 N/mm2                              | 214 ...             | 258 ... / 202 ...   | E       | 30-40                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Free cutting steel 500-900 N/mm2                              | 214 ...             | 228 ... / 202 ...   | E       | 25-30                      | 0,04                      | 0,08   | 0,1   | 0,125 | 0,16  |
| Structural steel up to 500 N/mm2                              | 214 ...             | 258 ... / 202 ...   | E       | 30-40                      | 0,04                      | 0,08   | 0,1   | 0,125 | 0,16  |
| Structural steel 500-900 N/mm2                                | 214 ...             | 228 ... / 202 ...   | E       | 20-25                      | 0,032                     | 0,063  | 0,08  | 0,1   | 0,125 |
| Plain carbon case hardening steel up to 600 N/mm2             | 214 ...             | 258 ... / 202 ...   | E       | 25-35                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Alloyed case hardening steel 500-900 N/mm2                    | 214 ...             | 228 ... / 202 ...   | E       | 20-25                      | 0,4                       | 0,08   | 0,1   | 0,125 | 0,16  |
| Alloyed case hardening steel 900-1000 N/mm2                   | 281 ... E           | 202 ... E           | E, O    | 10-15                      | 0,025                     | 0,05   | 0,063 | 0,08  | 0,1   |
| Nitriding steel 700-900 N/mm2                                 | 281 ... E           | 228 ... / 202 ... E | E       | 15-20                      | 0,032                     | 0,063  | 0,08  | 0,1   | 0,125 |
| Heat treated nitriding steel 800-1250 N/mm2                   | 281 ... E           | 228 ...             | E, O    | 8-12                       | 0,025                     | 0,05   | 0,063 | 0,08  | 0,1   |
| Mild steel for heat treatment 500-750 N/mm2                   | 214 ...             | 228 ... / 202 ...   | E       | 25-35                      | 0,04                      | 0,08   | 0,1   | 0,125 | 0,16  |
| Plain carbon steel for heat treatment 700-1000 N/mm2          | 281 ... E           | 228 ...             | E       | 15-20                      | 0,04                      | 0,08   | 0,1   | 0,125 | 0,16  |
| Alloyed steel heat treatment 900-1250 N/mm2                   | 281 ... E           | 228 ...             | E, O    | 10-15                      | 0,032                     | 0,063  | 0,08  | 0,1   | 0,125 |
| Maganese steel with content over 10 % Mn                      | 281 ... E           | 202 ... E           | E, O    | 3-6                        | 0,2                       | 0,04   | 0,063 | 0,08  | 0,1   |
| Plain carbon tool steel 700-900 N/mm2                         | 281 ... E           | 228 ... / 202 ... E | E       | 14-18                      | 0,032                     | 0,063  | 0,08  | 0,1   | 0,12  |
| Alloyed tool steel 850-1250 N/mm2                             | 281 ... E           | 228 ...             | E, O    | 8-12                       | 0,025                     | 0,05   | 0,063 | 0,08  | 0,1   |
| Heat resistant steel 450-600 N/mm2                            | 281 ... E           | 281 ... EF          | O       | 15-20                      | 0,032                     | 0,063  | 0,08  | 0,1   | 0,125 |
| Stainless steel   | 215 ...             | 281 ... E           | E, O    | 6-10                       | 0,02                      | 0,032  | 0,05  | 0,08  | 0,1   |
| Alloys hastelloy, inconel, nimonic                            | 281 ... E           | 281 ... EF          | O       | 3-6                        | 0,02                      | 0,04   | 0,063 | 0,08  | 0,125 |
| Grey cast iron HB 180-240                                     | 214 ...             | 228 ...             | E, CA   | 30-40                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Grey cast iron HB 240-300                                     | 214 ...             | 228 ...             | E, CA   | 20-30                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Malleable cast iron HB 180-240                                | 214 ...             | 228 ...             | CA      | 20-30                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Aluminium   | 258 ... F           | 258 ...             | E       | 50-80                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Aluminium alloys with content up to 10 % Si and 180 N/mm2     | 258 ... F           | 258 ...             | E       | 40-65                      | 0,063                     | 0,1255 | 0,16  | 0,2   | 0,25  |
| Aluminium alloys with content up to 10 % Si and 150-250 N/mm2 | 214 ...             | 202 ...             | E       | 30-50                      | 0,063                     | 0,1255 | 0,16  | 0,2   | 0,25  |
| Copper 200-400 N/mm2  | 258 ... F           | 228 ...             | E, O    | 30-40                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Fragile brass with short chip 350-550 N/mm2                   | 281 ... E           | 281 ... EF          | E, O    | 60-80                      | 0,063                     | 0,1255 | 0,16  | 0,2   | 0,25  |
| Tough brass with long chip 250-550 N/mm2                      | 258 ... F           | 258 ... F           | E, O    | 30-50                      | 0,063                     | 0,1    | 0,125 | 0,16  | 0,2   |
| Bronze 200-500 N/mm2  | 258 ... F           | 258 ... F           | E, O    | 20-40                      | 0,05                      | 0,08   | 0,125 | 0,16  | 0,2   |
| Bronze 500-800 N/mm2  | 214 ...             | 258 ...             | E, O    | 15-30                      | 0,05                      | 0,08   | 0,125 | 0,16  | 0,2   |
| Magnesium alloys-electron                                     | 281 ... E           | 281 ... EF          | -       | 60-100                     | 0,08                      | 0,125  | 0,016 | 0,02  | 0,25  |
| Zinc, zinc alloys   | 214 ...             | 258 ...             | E       | 35-45                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Titanium alloys up to 700 N/mm2                               | 281 ... E           | 281 ... EF          | O       | 3-6                        | 0,03                      | 0,05   | 0,063 | 0,08  | 0,1   |
| Titanium alloys 700-1000 N/mm2                                | 281 ... E           | 281 ... EF          | O       | 3-6                        | 0,02                      | 0,04   | 0,05  | 0,063 | 0,08  |
| Silver  | 214 ...             | 258 ...             | E       | 30-40                      | 0,05                      | 0,08   | 0,1   | 0,125 | 0,16  |
| Duroplastics  | 281 ... E           | 281 ... EF          | CA      | 10-20                      | 0,04                      | 0,08   | 0,1   | 0,125 | 0,16  |
| Thermoplastics  | 258 ... F           | 258 ... F           | W, CA   | 20-40                      | 0,05                      | 0,1    | 0,125 | 0,16  | 0,2   |
| Laminated materials (paper, wood) across layer                | 258 ... F           | 258 ... F           | CA      | 15-25                      | 0,05                      | 0,08   | 0,125 | 0,16  | 0,2   |

E = emulsion / O = cutting oil / CA = compressed air / W = water