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**SANDHOG®**  
 CUTTING TOOLS 刀具

**SANDHOG NEW VALUE FRONTIER**

Insertable  
**High speed drills**

**2011-2012**

**SH-UD01**



**The special steel**

**Provid rigidity and stability**



### How to clamp the drill into the side lock arbor



The stable clamping method for the best hole drilling

① Insert the drill into the side lock arbor and the side lock part of drill.

② Keep the clamp tightly close between the inner face of drill and the arbor.

③ Wipe the oil on the side of the drill.

④ Then, make tight to the side lock.

### Setting of drill in turning machine



① The cutting edge of insert should be parallel to X-axis to make it possible to do offset cutting. So, be careful not to check for side lock clamping has been made parallel with the cutting edge line of insert, operator can use the drill as per flat on the X-axis.

② The center part should be located in the direction (-) of X-axis to do low offset cutting, and then the inner insert should face the operator.

③ To check the setting of drill, before use, test it by drilling about 5mm depth and then measure the core size. If it is around 0.020mm.

※ Please check the side lock position when you clamp.

### Machined hole tolerance as per D.O.C

| D.O.C | Dimensional Hole Tolerance                 | Test Cutting Condition                                                                                                        |
|-------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 0XD   | $\begin{matrix} +0.1 \\ -0.1 \end{matrix}$ | <ul style="list-style-type: none"> <li>Material: C45, S45C</li> <li>Vc=127~636 (mm)</li> <li>Fz=0.0015~0.0037 (ip)</li> </ul> |
| 0XD   | $\begin{matrix} +0.1 \\ -0.1 \end{matrix}$ | <ul style="list-style-type: none"> <li>Vc=127~636 (mm)</li> <li>Fz=0.0015~0.0047 (ip)</li> </ul>                              |
| 0XD   | $\begin{matrix} +0.1 \\ -0.1 \end{matrix}$ | <ul style="list-style-type: none"> <li>Vc=127~636 (mm)</li> <li>Fz=0.0015~0.0037 (ip)</li> </ul>                              |

### How to calculate machining power of drill:P(kw)

$$P(kw) = 425 \times \frac{Fz \times Vc \times D}{1000} \times 10^{-3}$$

Fz: Spindle cutting force (N)

Vc: Cutting speed (m/min)

D: Drill diameter (mm)

Example

• Workpiece: S45C • Vc=127 m/min

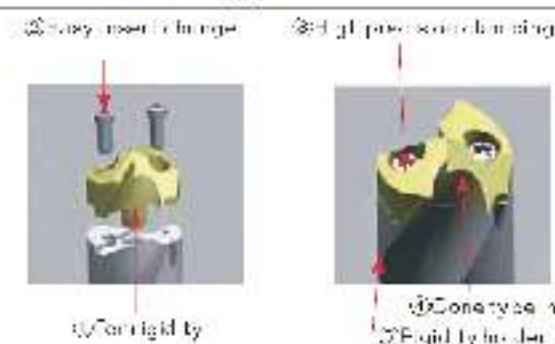
• Fz=25.4N • D=10mm

• D=10mm

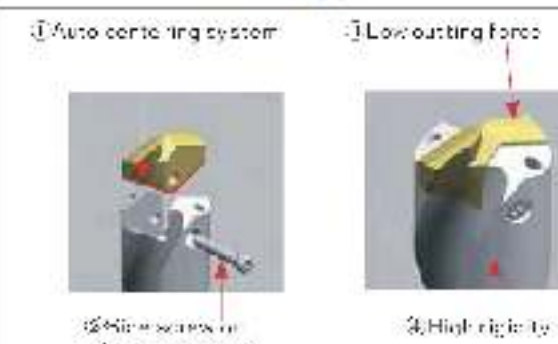
• P(kw) =  $425 \times \frac{25.4 \times 127 \times 10}{1000} \times 10^{-3} = 2.139$  kw

### User Guide

#### Cone Type



#### Blade Type



| Dr. Dia | DxD    |          |               | DxD    |          |               |
|---------|--------|----------|---------------|--------|----------|---------------|
|         | Normal | Standard | Max. Hole Dia | Normal | Standard | Max. Hole Dia |
| 10      | 13.18  | +0.5     | 14.0          | 13.22  | +0.5     | 14.0          |
| 12      | 14.12  | +0.5     | 15.0          | 14.15  | +0.5     | 15.0          |
| 15      | 15.12  | +0.5     | 16.0          | 15.17  | +0.5     | 16.0          |
| 16      | 16.07  | +0.5     | 17.0          | 16.08  | +0.5     | 17.0          |
| 17      | 17.08  | +0.5     | 18.0          | 17.13  | +0.5     | 18.0          |
| 18      | 18.05  | +0.5     | 19.0          | 18.05  | +0.5     | 19.0          |
| 19      | 19.08  | +0.5     | 20.0          | 19.18  | +0.5     | 20.0          |
| 20      | 20.05  | +0.5     | 21.0          | 20.05  | +0.5     | 21.0          |
| 21      | 21.07  | +0.25    | 21.5          | 21.00  | +0.25    | 21.5          |
| 22      | 21.94  | +0.5     | 22.0          | 22.01  | +0.5     | 23.0          |
| 25      | 23.12  | +0.5     | 24.0          | 23.1   | +0.5     | 24.0          |
| 27      | 24.12  | +0.5     | 25.0          | 24.15  | +0.5     | 25.0          |
| 28      | 25.08  | +0.5     | 26.0          | 25.15  | +0.5     | 26.0          |
| 26      | 26.08  | +0.25    | 26.5          | 26.09  | +0.25    | 26.5          |
| 27      | 27.05  | +0.25    | 27.5          | 27.00  | +0.25    | 27.5          |
| 29      | 28.11  | +0.5     | 29.0          | 28.07  | +0.5     | 29.0          |
| 29      | 29.51  | +0.5     | 30.0          | 29.07  | +0.5     | 30.0          |
| 30      | 30.05  | +0.5     | 31.0          | 30.15  | +0.5     | 31.0          |
| 31      | 31.07  | +0.25    | 31.5          | 31.10  | +0.25    | 31.5          |
| 32      | 32.08  | +0.25    | 32.5          | 32.11  | +0.25    | 32.5          |
| 33      | 33.12  | +0.25    | 33.5          | 33.17  | +0.25    | 33.5          |
| 34      | 34.12  | +0.5     | 35.0          | 34.15  | +0.5     | 35.0          |
| 35      | 35.07  | +0.5     | 36.0          | 35.12  | +0.5     | 36.0          |
| 36      | 36.08  | +0.5     | 37.0          | 36.08  | +0.5     | 37.0          |
| 37      | 37.14  | +0.5     | 38.0          | 37.18  | +0.5     | 38.0          |
| 38      | 38.05  | +0.5     | 39.0          | 38.08  | +0.5     | 39.0          |
| 39      | 39.02  | +0.5     | 40.0          | 39.00  | +0.5     | 40.0          |
| 40      | 40.02  | +0.25    | 40.5          | 40.03  | +0.25    | 40.5          |
| 41      | 41.03  | +0.25    | 41.5          | 41.04  | +0.25    | 41.5          |
| 42      | 42.08  | +0.5     | 43.0          | 42.08  | +0.5     | 43.0          |
| 43      | 43.08  | +0.5     | 44.0          | 43.04  | +0.5     | 44.0          |
| 44      | 44.17  | +0.5     | 45.0          | 44.09  | +0.5     | 45.0          |
| 45      | 45.21  | +0.5     | 46.0          | 45.05  | +0.5     | 46.0          |
| 46      | 46.17  | +0.5     | 47.0          | 46.05  | +0.5     | 47.0          |
| 47      | 47.15  | +0.5     | 48.0          | 47.00  | +0.5     | 48.0          |
| 48      | 48.12  | +0.25    | 48.5          | 48.17  | +0.25    | 48.5          |
| 49      | 49.02  | +0.25    | 49.5          | 49.03  | +0.25    | 49.5          |
| 50      | 50.02  | +0.25    | 50.5          | 50.07  | +0.25    | 50.5          |



# Insertable High Speed Drills

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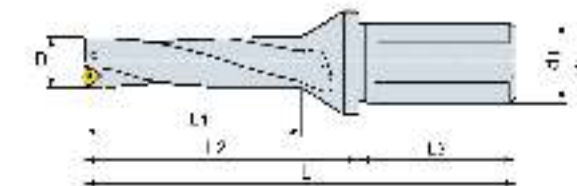
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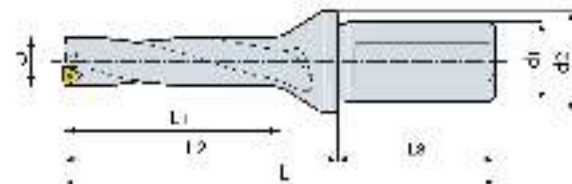
### WCM- 2xDiameter Drilling Depth



| Designation       | CD   | L  | L1 | L2 | CD  | ØD2 | P  | Applicable<br>Insert | Grade     | Material |
|-------------------|------|----|----|----|-----|-----|----|----------------------|-----------|----------|
| H-SDR2140-25T2-03 | 14.0 | 14 | 28 | 58 |     |     |    |                      |           |          |
| H-SDR2145-25T2-03 | 14.5 | 15 | 29 | 59 |     |     |    |                      |           |          |
| H-SDR2150-25T2-03 | 15.0 | 16 | 30 | 60 |     |     |    |                      |           |          |
| H-SDR2155-25T2-03 | 15.5 | 17 | 31 | 61 |     |     |    |                      |           |          |
| H-SDR2160-25T2-03 | 16.0 | 18 | 32 | 62 |     |     |    |                      |           |          |
| H-SDR2165-25T2-03 | 16.5 | 19 | 33 | 63 |     |     |    |                      |           |          |
| H-SDR2170-25T2-03 | 17.0 | 20 | 34 | 64 |     |     |    | WCMX30203            |           |          |
| H-SDR2175-25T2-03 | 17.5 | 21 | 35 | 65 | 1/8 | 20  | 38 | 1/8                  | M2.5*5    |          |
| H-SDR2180-25T2-03 | 18.0 | 22 | 36 | 66 |     |     |    |                      |           |          |
| H-SDR2185-25T2-03 | 18.5 | 23 | 37 | 67 |     |     |    | WCMX30203            |           | 1.8      |
| H-SDR2190-25T2-03 | 19.0 | 24 | 38 | 68 |     |     |    |                      |           |          |
| H-SDR2195-25T2-03 | 19.5 | 25 | 39 | 69 |     |     |    |                      |           |          |
| H-SDR2200-25T2-03 | 20.0 | 26 | 40 | 70 |     |     |    |                      |           |          |
| H-SDR2205-25T2-03 | 20.5 | 27 | 41 | 71 |     |     |    |                      |           |          |
| H-SDR2210-25T2-04 | 21.0 | 28 | 42 | 72 |     |     |    |                      |           |          |
| H-SDR2215-25T2-04 | 21.5 | 29 | 43 | 73 |     |     |    | WCMX40203            |           |          |
| H-SDR2220-32T2-04 | 22.0 | 30 | 44 | 74 |     |     |    |                      |           |          |
| H-SDR2225-32T2-04 | 22.5 | 31 | 45 | 75 |     |     |    |                      |           |          |
| H-SDR2230-32T2-04 | 23.0 | 32 | 46 | 76 |     |     |    |                      |           |          |
| H-SDR2235-32T2-04 | 23.5 | 33 | 47 | 77 |     |     |    |                      |           |          |
| H-SDR2240-32T2-04 | 24.0 | 34 | 48 | 78 | 60  | 32  | 40 | 1/4                  | WCMX40204 | M2.5*5   |
| H-SDR2245-32T2-04 | 24.5 | 35 | 49 | 79 |     |     |    |                      |           |          |
| H-SDR2250-32T2-04 | 25.0 | 36 | 50 | 80 |     |     |    | WCMX40204            |           |          |

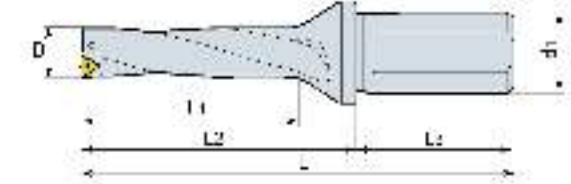


### WCM- 2xDiameter Drilling Depth



| Description                | ØD   | L   | L1 | L2 | Ød1 | Ød2 | Appl. code | Insert | Work. m. |
|----------------------------|------|-----|----|----|-----|-----|------------|--------|----------|
| H-SDR2210-3212-04 25.0 142 | 25.0 | 142 | 50 | 52 |     |     | WCMX04C208 |        |          |
| H-SDR2214-3212-04 25.0 143 | 25.0 | 143 | 51 | 54 |     |     | WCMX04C208 | M2.5x8 | T3       |
| H-SDR2260-02T2-05 26.0 144 | 26.0 | 144 | 52 | 54 |     |     | WCM 04C208 |        |          |
| H-SDR2265-02T2-05 26.5 145 | 26.5 | 145 | 53 | 55 |     |     | WCMX05C006 |        |          |
| H-SDR2270-02T2-05 27.0 146 | 27.0 | 146 | 54 | 56 |     |     |            |        |          |
| H-SDR2275-32T2-05 27.5 147 | 27.5 | 147 | 55 | 57 |     |     |            |        |          |
| H-SDR2280-32T2-05 28.0 148 | 28.0 | 148 | 56 | 58 |     |     | WCGX05C006 | M3.0x7 | T10      |
| H-SDR2285-02T2-05 28.5 149 | 28.5 | 149 | 57 | 59 |     |     |            |        |          |
| H-SDR2290-02T2-05 29.0 150 | 29.0 | 150 | 58 | 60 |     |     |            |        |          |
| H-SDR2295-02T2-05 29.5 151 | 29.5 | 151 | 59 | 61 |     |     |            |        |          |
| H-SDR2300-32T2-05 30.0 152 | 30.0 | 152 | 60 | 62 | 60  | 32  | WCM 06C005 |        |          |
| H-SDR2310-02T2-05 31.0 153 | 31.0 | 153 | 61 | 63 |     |     |            |        |          |
| H-SDR2320-32T2-05 32.0 154 | 32.0 | 154 | 62 | 64 |     |     |            |        |          |
| H-SDR2330-32T2-05 33.0 155 | 33.0 | 155 | 63 | 65 |     |     | WCMX06C004 |        |          |
| H-SDR2340-02T2-05 34.0 156 | 34.0 | 156 | 64 | 66 |     |     |            |        |          |
| H-SDR2350-02T2-05 35.0 157 | 35.0 | 157 | 65 | 67 |     |     |            |        |          |
| H-SDR2360-32T2-05 36.0 158 | 36.0 | 158 | 66 | 68 |     |     | WCGX06C008 | M3.5x8 | T15      |
| H-SDR2370-32T2-05 37.0 159 | 37.0 | 159 | 67 | 69 |     |     |            |        |          |
| H-SDR2380-32T2-05 38.0 160 | 38.0 | 160 | 68 | 70 |     |     |            |        |          |
| H-SDR2390-02T2-05 39.0 161 | 39.0 | 161 | 69 | 71 |     |     | WCM10W004  |        |          |
| H-SDR2400-40T2-05 40.0 162 | 40.0 | 162 | 70 | 72 | 70  | 40  |            |        |          |
| H-SDR2410-40T2-05 41.0 163 | 41.0 | 163 | 71 | 73 |     |     |            |        |          |

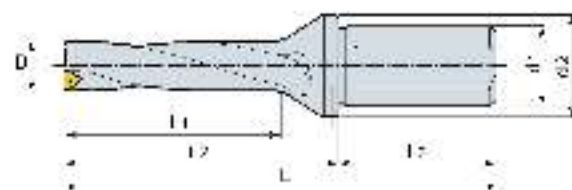
### WCM- 2xDiameter Drilling Depth



| Description                | ØD   | L   | L1 | L2 | Ød1 | Ød2 | Appl. code  | Insert  | Work. m. |
|----------------------------|------|-----|----|----|-----|-----|-------------|---------|----------|
| H-SDR2420-40T2-05 42.0 169 | 42.0 | 169 | 74 | 76 |     |     |             |         |          |
| H-SDR2430-40T2-05 43.0 171 | 43.0 | 171 | 75 | 77 |     |     |             |         |          |
| H-SDR2440-40T2-05 44.0 173 | 44.0 | 173 | 76 | 78 |     |     |             |         |          |
| H-SDR2450-40T2-05 45.0 175 | 45.0 | 175 | 77 | 79 |     |     |             |         |          |
| H-SDR2460-40T2-05 46.0 177 | 46.0 | 177 | 78 | 80 |     |     |             |         |          |
| H-SDR2470-40T2-05 47.0 179 | 47.0 | 179 | 79 | 81 |     |     | WCMX06C012  |         |          |
| H-SDR2480-40T2-05 48.0 181 | 48.0 | 181 | 80 | 82 |     |     |             |         |          |
| H-SDR2490-40T2-05 49.0 183 | 49.0 | 183 | 81 | 83 |     |     |             |         |          |
| H-SDR2500-40T2-05 50.0 185 | 50.0 | 185 | 82 | 84 | 70  | 40  | WCGX06C012  | M4.0x10 | T18      |
| H-SDR2510-40T2-05 51.0 187 | 51.0 | 187 | 83 | 85 |     |     |             |         |          |
| H-SDR2520-40T2-05 52.0 189 | 52.0 | 189 | 84 | 86 |     |     |             |         |          |
| H-SDR2530-40T2-05 53.0 191 | 53.0 | 191 | 85 | 87 |     |     | WCM10C00412 |         |          |
| H-SDR2540-40T2-05 54.0 193 | 54.0 | 193 | 86 | 88 |     |     |             |         |          |
| H-SDR2550-40T2-05 55.0 195 | 55.0 | 195 | 87 | 89 |     |     |             |         |          |
| H-SDR2560-40T2-05 56.0 197 | 56.0 | 197 | 88 | 90 |     |     |             |         |          |
| H-SDR2570-40T2-05 57.0 199 | 57.0 | 199 | 89 | 91 |     |     |             |         |          |
| H-SDR2580-40T2-05 58.0 201 | 58.0 | 201 | 90 | 92 |     |     |             |         |          |
| H-SDR2590-40T2-05 59.0 203 | 59.0 | 203 | 91 | 93 |     |     |             |         |          |
| H-SDR2600-40T2-05 60.0 205 | 60.0 | 205 | 92 | 94 |     |     |             |         |          |

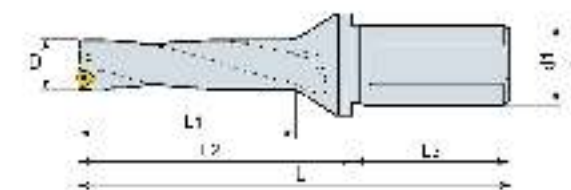


### WCM- 3xDiameter Drilling Depth



| Designation       | D    | L1    | L2   | L     | d  | Appl. Inch | Appl. Metric | Series | Material |
|-------------------|------|-------|------|-------|----|------------|--------------|--------|----------|
| H-SDR3140-25T2-03 | 14.0 | 128   | 42   | 72    |    |            |              |        |          |
| H-SDR3145-25T2-03 | 14.5 | 129.5 | 43.5 | 73.5  |    |            |              |        |          |
| H-SDR3150-25T2-03 | 15.0 | 131   | 45   | 75    |    |            |              |        |          |
| H-SDR3160-25T2-03 | 15.5 | 132.5 | 46.5 | 76.5  |    |            |              |        |          |
| H-SDR3165-25T2-03 | 16.0 | 134   | 48   | 78    |    |            |              |        |          |
| H-SDR3165-25T2-03 | 16.5 | 135.5 | 49.5 | 79.5  |    |            |              |        |          |
| H-SDR3170-25T2-03 | 17.0 | 137   | 51   | 81    |    |            |              |        |          |
| H-SDR3170-25T2-03 | 17.5 | 138.5 | 52.5 | 82.5  | 54 | 25         | 36           | 78     |          |
| H-SDR3180-25T2-03 | 18.0 | 140   | 54   | 84    |    |            |              |        |          |
| H-SDR3180-25T2-03 | 18.5 | 141.5 | 55.5 | 85.5  |    |            |              |        |          |
| H-SDR3190-25T2-03 | 19.0 | 143   | 57   | 87    |    |            |              |        |          |
| H-SDR3190-25T2-03 | 19.5 | 144.5 | 58.5 | 88.5  |    |            |              |        |          |
| H-SDR3200-25T2-03 | 20.0 | 146   | 60   | 90    |    |            |              |        |          |
| H-SDR3205-25T2-03 | 20.5 | 147.5 | 61.5 | 91.5  |    |            |              |        |          |
| H-SDR3210-25T2-03 | 21.0 | 149   | 63   | 93    |    |            |              |        |          |
| H-SDR3210-25T2-03 | 21.5 | 150.5 | 64.5 | 94.5  |    |            |              |        |          |
| H-SDR3220-25T2-03 | 22.0 | 152   | 66   | 96    |    |            |              |        |          |
| H-SDR3225-25T2-03 | 22.5 | 153.5 | 67.5 | 97.5  |    |            |              |        |          |
| H-SDR3230-25T2-03 | 23.0 | 155   | 69   | 99    | 60 | 25         | 43           | 78     |          |
| H-SDR3235-25T2-03 | 23.5 | 156.5 | 70.5 | 100.5 |    |            |              |        |          |
| H-SDR3240-25T2-03 | 24.0 | 158   | 72   | 102   |    |            |              |        |          |
| H-SDR3245-25T2-03 | 24.5 | 159.5 | 73.5 | 103.5 |    |            |              |        |          |

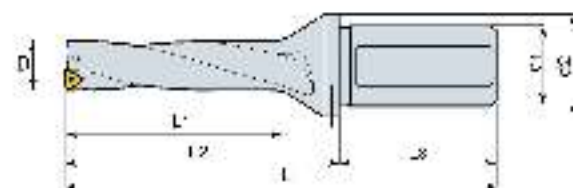
### WCM- 3xDiameter Drilling Depth



| Designation       | D    | L1    | L2   | L     | d  | Appl. Inch | Appl. Metric | Series | Material |
|-------------------|------|-------|------|-------|----|------------|--------------|--------|----------|
| H-SDR3250-25T2-03 | 25.0 | 167   | 75   | 107   |    |            |              |        |          |
| H-SDR3255-25T2-03 | 25.5 | 168.5 | 76.5 | 108.5 |    |            |              |        |          |
| H-SDR3260-25T2-03 | 26.0 | 170   | 78   | 110   |    |            |              |        |          |
| H-SDR3265-25T2-03 | 26.5 | 171.5 | 79.5 | 111.5 |    |            |              |        |          |
| H-SDR3270-25T2-03 | 27.0 | 173   | 81   | 113   |    |            |              |        |          |
| H-SDR3275-25T2-03 | 27.5 | 174.5 | 82.5 | 114.5 |    |            |              |        |          |
| H-SDR3280-25T2-03 | 28.0 | 176   | 84   | 116   |    |            |              |        |          |
| H-SDR3285-25T2-03 | 28.5 | 177.5 | 85.5 | 117.5 |    |            |              |        |          |
| H-SDR3290-25T2-03 | 29.0 | 179   | 87   | 119   |    |            |              |        |          |
| H-SDR3295-25T2-03 | 29.5 | 180.5 | 88.5 | 120.5 | 60 | 25         | 43           | 78     |          |
| H-SDR3300-25T2-03 | 30.0 | 182   | 90   | 122   |    |            |              |        |          |
| H-SDR3310-25T2-03 | 31.0 | 185   | 92   | 125   |    |            |              |        |          |
| H-SDR3320-25T2-03 | 32.0 | 188   | 95   | 128   |    |            |              |        |          |
| H-SDR3330-25T2-03 | 33.0 | 191   | 97   | 131   |    |            |              |        |          |
| H-SDR3340-25T2-03 | 34.0 | 194   | 100  | 134   |    |            |              |        |          |
| H-SDR3350-25T2-03 | 35.0 | 197   | 103  | 137   |    |            |              |        |          |
| H-SDR3360-25T2-03 | 36.0 | 200   | 106  | 140   |    |            |              |        |          |
| H-SDR3370-25T2-03 | 37.0 | 203   | 111  | 143   |    |            |              |        |          |
| H-SDR3380-25T2-03 | 38.0 | 206   | 114  | 146   |    |            |              |        |          |
| H-SDR3390-25T2-03 | 39.0 | 209   | 117  | 149   |    |            |              |        |          |
| H-SDR3400-25T2-03 | 40.0 | 212   | 120  | 152   | 70 | 25         | 43           | 78     |          |
| H-SDR3410-25T2-03 | 41.0 | 215   | 123  | 155   |    |            |              |        |          |

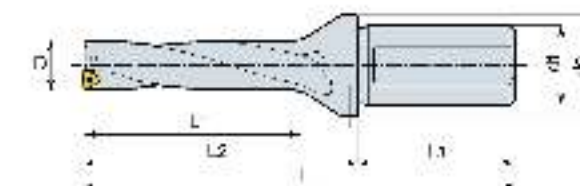


### WCM- 3xDiameter Drilling Depth



| Designation           | HT  | L1  | L2  | D | Q32 | P | Application (Feed) | Series | Wrench |
|-----------------------|-----|-----|-----|---|-----|---|--------------------|--------|--------|
| LSDR3490-40T2-06 42.0 | 93° | 126 | 161 |   |     |   |                    |        |        |
| LSDR3490-40T2-06 43.0 | 93° | 129 | 161 |   |     |   |                    |        |        |
| HSDR3410-40T2-06 41.0 | 93° | 132 | 167 |   |     |   |                    |        |        |
| HSDR3450-40T2-06 43.0 | 93° | 135 | 170 |   |     |   |                    |        |        |
| LSDR3460-40T2-06 46.0 | 93° | 138 | 173 |   |     |   |                    |        |        |
| LSDR3470-40T2-06 47.0 | 93° | 141 | 176 |   |     |   |                    |        |        |
| LSDR3480-40T2-06 48.0 | 93° | 144 | 179 |   |     |   |                    |        |        |
| HSDR3490-40T2-06 49.0 | 93° | 147 | 182 |   |     |   |                    |        |        |
| HSDR3500-40T2-06 50.0 | 93° | 150 | 185 |   |     |   |                    |        |        |
| LSDR3510-40T2-06 51.0 | 93° | 153 | 188 |   |     |   |                    |        |        |
| LSDR3520-40T2-06 52.0 | 93° | 156 | 191 |   |     |   |                    |        |        |
| HSDR3530-40T2-06 53.0 | 93° | 159 | 194 |   |     |   |                    |        |        |
| HSDR3540-40T2-06 54.0 | 93° | 162 | 197 |   |     |   |                    |        |        |
| LSDR3550-40T2-06 55.0 | 93° | 165 | 200 |   |     |   |                    |        |        |
| HSDR3560-40T2-06 56.0 | 93° | 168 | 203 |   |     |   |                    |        |        |
| LSDR3570-40T2-06 57.0 | 93° | 171 | 206 |   |     |   |                    |        |        |
| LSDR3580-40T2-06 58.0 | 93° | 174 | 209 |   |     |   |                    |        |        |
| HSDR3590-40T2-06 59.0 | 93° | 177 | 212 |   |     |   |                    |        |        |
| HSDR3600-40T2-06 60.0 | 93° | 180 | 215 |   |     |   |                    |        |        |

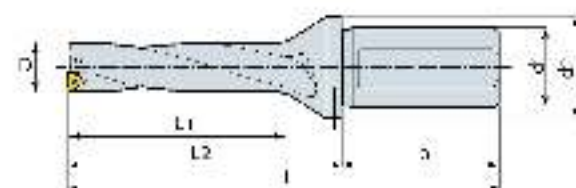
### WCM- 4xDiameter Drilling Depth



| Designation           | HT   | L1 | L2  | D | Q32 | P | Application (Feed) | Series | Wrench |
|-----------------------|------|----|-----|---|-----|---|--------------------|--------|--------|
| HSDR4110-25T2-03 11.0 | 142° | 56 | 86  |   |     |   |                    |        |        |
| HSDR4143-25T2-03 14.5 | 144  | 58 | 88  |   |     |   |                    |        |        |
| LSDR4150-25T2-03 15.0 | 146  | 60 | 90  |   |     |   |                    |        |        |
| HSDR4153-25T2-03 15.3 | 148  | 62 | 92  |   |     |   |                    |        |        |
| HSDR4160-25T2-03 16.0 | 150  | 64 | 94  |   |     |   |                    |        |        |
| HSDR4163-25T2-03 16.3 | 152  | 66 | 96  |   |     |   |                    |        |        |
| LSDR4170-25T2-03 17.0 | 154  | 68 | 98  |   |     |   |                    |        |        |
| LSDR4175-25T2-03 17.5 | 156  | 70 | 100 |   |     |   |                    |        |        |
| HSDR4180-25T2-03 18.0 | 158  | 72 | 102 |   |     |   |                    |        |        |
| HSDR4183-25T2-03 18.3 | 160  | 74 | 104 |   |     |   |                    |        |        |
| HSDR4190-25T2-03 19.0 | 162  | 76 | 106 |   |     |   |                    |        |        |
| HSDR4195-25T2-03 19.5 | 164  | 78 | 108 |   |     |   |                    |        |        |
| LSDR4200-25T2-03 20.0 | 166  | 80 | 110 |   |     |   |                    |        |        |
| HSDR4203-25T2-03 20.3 | 168  | 82 | 112 |   |     |   |                    |        |        |
| HSDR4210-25T2-03 21.0 | 170  | 84 | 114 |   |     |   |                    |        |        |
| LSDR4215-25T2-03 21.5 | 172  | 86 | 116 |   |     |   |                    |        |        |
| HSDR4220-25T2-03 22.0 | 174  | 88 | 118 |   |     |   |                    |        |        |
| LSDR4225-25T2-03 22.5 | 176  | 90 | 120 |   |     |   |                    |        |        |
| HSDR4230-25T2-03 23.0 | 178  | 92 | 122 |   |     |   |                    |        |        |
| HSDR4235-25T2-03 23.5 | 180  | 94 | 124 |   |     |   |                    |        |        |
| LSDR4240-25T2-03 24.0 | 182  | 96 | 126 |   |     |   |                    |        |        |
| LSDR4245-25T2-03 24.5 | 184  | 98 | 128 |   |     |   |                    |        |        |

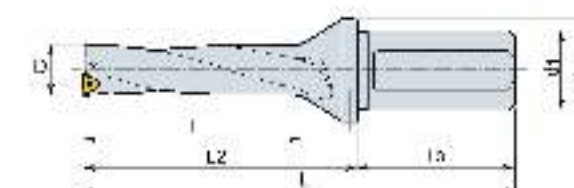


### WCM- 4xDiameter Drilling Depth



| Designation       | φD   | L1  | L2  | L3  | φD1 | φD2 | PT | Applicable Insert | Screw      | Shank |
|-------------------|------|-----|-----|-----|-----|-----|----|-------------------|------------|-------|
| H-SDR4250-32T2-01 | 25.0 | 142 | 100 | 132 |     |     |    | WCMX040206        |            |       |
| H-SDR4255-32T2-01 | 25.5 | 124 | 82  | 112 |     |     |    | WCMX040208        | M3.6*5     | T8    |
| H-SDR4260-32T2-03 | 26.0 | 126 | 104 | 136 |     |     |    | WCMT010208        |            |       |
| H-SDR4265-32T2-03 | 26.5 | 128 | 86  | 118 |     |     |    | WCMX050306        |            |       |
| H-SDR4270-32T2-03 | 27.0 | 200 | 108 | 140 |     |     |    |                   |            |       |
| H-SDR4275-32T2-03 | 27.5 | 202 | 110 | 142 |     |     |    |                   |            |       |
| H-SDR4280-32T2-03 | 28.0 | 204 | 112 | 144 |     |     |    |                   |            |       |
| H-SDR4285-32T2-03 | 28.5 | 206 | 114 | 146 |     |     |    |                   |            |       |
| H-SDR4290-32T2-03 | 29.0 | 208 | 116 | 148 |     |     |    |                   |            |       |
| H-SDR4295-32T2-03 | 29.5 | 210 | 118 | 150 |     |     |    |                   |            |       |
| H-SDR4300-32T2-03 | 30.0 | 212 | 120 | 152 | 40  | 30  | 41 | 14                | WCMT050306 |       |
| H-SDR4310-32T2-03 | 31.0 | 216 | 124 | 156 |     |     |    |                   |            |       |
| H-SDR4320-32T2-03 | 32.0 | 220 | 128 | 160 |     |     |    |                   |            |       |
| H-SDR4330-32T2-03 | 33.0 | 224 | 132 | 164 |     |     |    |                   |            |       |
| H-SDR4340-32T2-03 | 34.0 | 228 | 136 | 168 |     |     |    |                   |            |       |
| H-SDR4350-32T2-03 | 35.0 | 232 | 140 | 172 |     |     |    |                   |            |       |
| H-SDR4360-32T2-03 | 36.0 | 236 | 144 | 176 |     |     |    |                   |            |       |
| H-SDR4370-32T2-03 | 37.0 | 240 | 148 | 180 |     |     |    |                   |            |       |
| H-SDR4380-32T2-03 | 38.0 | 244 | 152 | 184 |     |     |    |                   |            |       |
| H-SDR4390-32T2-03 | 39.0 | 248 | 156 | 188 |     |     |    |                   |            |       |
| H-SDR4400-32T2-03 | 40.0 | 252 | 160 | 192 | 70  | 40  | 54 |                   |            |       |
| H-SDR4410-32T2-03 | 41.0 | 256 | 164 | 196 |     |     |    |                   |            |       |

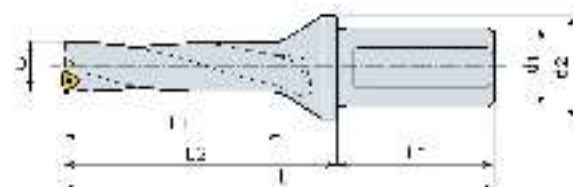
### WCM- 4xDiameter Drilling Depth



| Designation       | φD   | L1  | L2  | L3  | φD1 | φD2 | PT | Applicable Insert | Screw | Shank |
|-------------------|------|-----|-----|-----|-----|-----|----|-------------------|-------|-------|
| H-SDR4420-40T2-05 | 42.0 | 273 | 68  | 203 |     |     |    |                   |       |       |
| H-SDR4430-40T2-05 | 43.0 | 277 | 70  | 207 |     |     |    |                   |       |       |
| H-SDR4440-40T2-05 | 44.0 | 281 | 72  | 211 |     |     |    |                   |       |       |
| H-SDR4450-40T2-05 | 45.0 | 285 | 74  | 215 |     |     |    |                   |       |       |
| H-SDR4460-40T2-05 | 46.0 | 289 | 76  | 219 |     |     |    |                   |       |       |
| H-SDR4470-40T2-05 | 47.0 | 293 | 78  | 223 |     |     |    |                   |       |       |
| H-SDR4480-40T2-05 | 48.0 | 297 | 80  | 227 |     |     |    |                   |       |       |
| H-SDR4490-40T2-05 | 49.0 | 301 | 82  | 231 |     |     |    |                   |       |       |
| H-SDR4500-40T2-05 | 50.0 | 305 | 84  | 235 | 70  | 40  | 54 |                   |       |       |
| H-SDR4510-40T2-05 | 51.0 | 309 | 86  | 239 |     |     |    |                   |       |       |
| H-SDR4520-40T2-05 | 52.0 | 313 | 88  | 243 |     |     |    |                   |       |       |
| H-SDR4530-40T2-05 | 53.0 | 317 | 90  | 247 |     |     |    |                   |       |       |
| H-SDR4540-40T2-05 | 54.0 | 321 | 92  | 251 |     |     |    |                   |       |       |
| H-SDR4550-40T2-05 | 55.0 | 325 | 94  | 255 |     |     |    |                   |       |       |
| H-SDR4560-40T2-05 | 56.0 | 329 | 96  | 259 |     |     |    |                   |       |       |
| H-SDR4570-40T2-05 | 57.0 | 333 | 98  | 263 |     |     |    |                   |       |       |
| H-SDR4580-40T2-05 | 58.0 | 337 | 100 | 267 |     |     |    |                   |       |       |
| H-SDR4590-40T2-05 | 59.0 | 341 | 102 | 271 |     |     |    |                   |       |       |
| H-SDR4600-40T2-05 | 60.0 | 345 | 104 | 275 |     |     |    |                   |       |       |

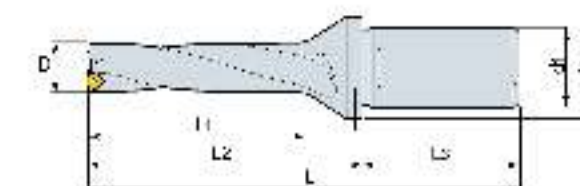


**WCM- 5xDiameter Drilling Depth**



| Designation       | Wt   | L   | B   | W   | H  | Vol | Grp | Pl  | Applicable<br>Index | Score   | Weight |
|-------------------|------|-----|-----|-----|----|-----|-----|-----|---------------------|---------|--------|
| H-SDR5150-25T2-00 | 15.0 | 161 | 75  | 105 |    |     |     |     |                     |         |        |
| I-SDR5150-25T2-00 | 16.0 | 166 | 80  | 110 |    |     |     |     |                     |         |        |
| F-SDR5170-25T2-00 | 17.0 | 171 | 85  | 115 |    |     |     |     | WCMX00C0208         |         |        |
| F-SDR5180-25T2-00 | 18.0 | 176 | 90  | 120 | 56 | 25  | 00  | 1/0 | WCMX00C0208         | W2.5-15 |        |
| I-SDR5190-25T2-00 | 19.0 | 181 | 95  | 125 |    |     |     |     |                     |         |        |
| I-SDR5200-25T2-00 | 20.0 | 186 | 100 | 130 |    |     |     |     |                     |         |        |
| I-SDR5210-25T2-04 | 21.0 | 191 | 105 | 135 |    |     |     |     | WCMX00C0208         |         |        |
| F-SDR5220-32T2-04 | 22.0 | 200 | 110 | 140 |    |     |     |     |                     |         |        |
| F-SDR5250-32T2-04 | 23.0 | 205 | 115 | 145 |    |     |     |     | WCMX00C0208         | W2.5-16 |        |
| I-SDR5240-32T2-04 | 24.0 | 210 | 120 | 150 |    |     |     |     |                     |         |        |
| F-SDR5250-32T2-04 | 25.0 | 215 | 125 | 155 |    |     |     |     | WCMX00C0208         |         |        |
| H-SD-6260-32T2-00 | 26.0 | 220 | 130 | 160 |    |     |     |     | WCMX00C0208         |         |        |
| H-SD-6370-32T2-05 | 27.0 | 225 | 135 | 165 |    |     |     |     |                     |         |        |
| I-SD-6380-32T2-05 | 28.0 | 230 | 140 | 170 | 60 | 32  | 43  | 1/4 | WCMX00C0208         | W3.0-17 | T-10   |
| H-SD-6270-32T2-00 | 29.0 | 235 | 145 | 175 |    |     |     |     |                     |         |        |
| H-SD-6300-32T2-00 | 30.0 | 240 | 150 | 180 |    |     |     |     | WCMX00C0208         |         |        |
| H-SD-6310-32T2-06 | 31.0 | 245 | 155 | 185 |    |     |     |     | WCMX00C0208         |         |        |
| I-SD-6320-32T2-06 | 32.0 | 250 | 160 | 190 |    |     |     |     |                     |         |        |
| I-SD-6330-32T2-06 | 33.0 | 255 | 165 | 195 |    |     |     |     |                     |         |        |
| H-SD-6340-32T2-06 | 34.0 | 260 | 170 | 200 |    |     |     |     | WCMX00C0208         | W3.0-18 | T-15   |
| H-SD-6350-32T2-06 | 35.0 | 265 | 175 | 205 |    |     |     |     | WCMX00C0208         |         |        |
| I-SD-6360-32T2-06 | 36.0 | 270 | 180 | 210 |    |     |     |     |                     |         |        |

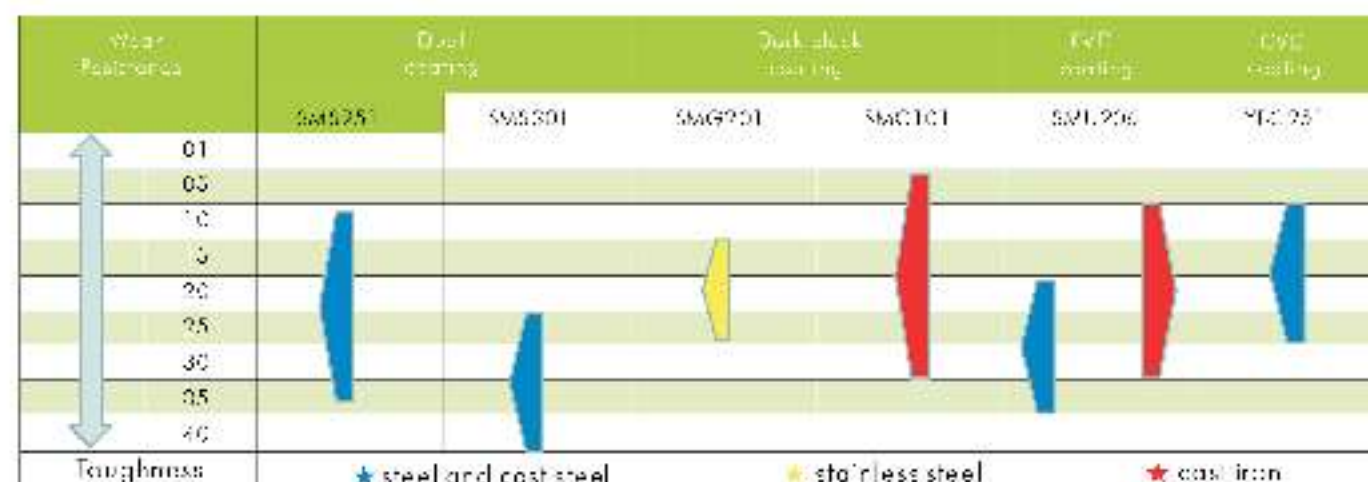
**WCM- 5xDiameter Drilling Depth**



| Designation            | QD  | L1  | L2  | L3 | Ref. 1 | Ref. 2 | Ref. 3 | Ref. 4 | Asphalte (mm) | Revêtement | Remarque |
|------------------------|-----|-----|-----|----|--------|--------|--------|--------|---------------|------------|----------|
| H-SDR5370-32T2-06 32 0 | 275 | 125 | 215 |    |        |        |        |        | WCMX06T306    |            |          |
| H-SDR5380-32T2-06 38 0 | 280 | 190 | 290 | 60 | 32     | 40     |        |        | WCMX06T306    | 20 510     |          |
| H-SDR5390-32T2-06 39 0 | 285 | 195 | 295 |    |        |        |        |        | WCMX06T308    |            |          |
| H-SDR5400-40T2-08 40 0 | 300 | 200 | 300 |    |        |        |        |        |               |            |          |
| H-SDR5410-40T2-08 41 0 | 305 | 205 | 305 |    |        |        |        |        |               |            |          |
| H-SDR5420-40T2-08 42 0 | 310 | 210 | 310 |    |        |        |        |        |               |            |          |
| H-SDR5430-40T2-08 43 0 | 315 | 215 | 315 |    |        |        |        |        |               |            |          |
| H-SDR5440-40T2-08 44 0 | 320 | 220 | 320 |    |        |        |        |        |               |            |          |
| H-SDR5450-40T2-08 45 0 | 325 | 225 | 325 |    |        |        |        |        |               |            |          |
| H-SDR5460-40T2-08 46 0 | 330 | 230 | 330 |    |        |        |        |        |               |            |          |
| H-SDR5470-40T2-08 47 0 | 335 | 235 | 335 |    |        |        |        |        | WCMX06T412    |            |          |
| H-SDR5480-40T2-08 48 0 | 340 | 240 | 340 |    |        |        |        |        |               |            |          |
| H-SDR5490-40T2-08 49 0 | 345 | 245 | 345 |    |        |        |        |        |               |            |          |
| I-SDR5500-40T2-08 50 0 | 350 | 250 | 350 | 70 | 10     |        |        |        | WCMX06T412    | 54 510     |          |
| I-SDR5510-40T2-08 51 0 | 355 | 255 | 355 |    |        |        |        |        |               |            |          |
| H-SDR5520-40T2-08 52 0 | 360 | 260 | 360 |    |        |        |        |        |               |            |          |
| H-SDR5530-40T2-08 53 0 | 365 | 265 | 365 |    |        |        |        |        | WCMX06T412    |            |          |
| I-SDR5540-40T2-08 54 0 | 370 | 270 | 370 |    |        |        |        |        |               |            |          |
| H-SDR5550-40T2-08 55 0 | 375 | 275 | 375 |    |        |        |        |        |               |            |          |
| I-SDR5560-40T2-08 56 0 | 380 | 280 | 380 |    |        |        |        |        |               |            |          |
| I-SDR5570-40T2-08 57 0 | 385 | 285 | 385 |    |        |        |        |        |               |            |          |
| I-SDR5580-40T2-08 58 0 | 390 | 290 | 390 |    |        |        |        |        |               |            |          |
| H-SDR5590-40T2-08 59 0 | 395 | 295 | 395 |    |        |        |        |        |               |            |          |
| H-SDR5600-40T2-08 60 0 | 400 | 300 | 400 |    |        |        |        |        |               |            |          |



### GRADE INFORMATION



SM5251, SM5301, new dual coating, TiN on flanks, Al2O3 black on smooth and cutting faces and MCr-OSi on intermediate layer. It is good for steel and cast steel.

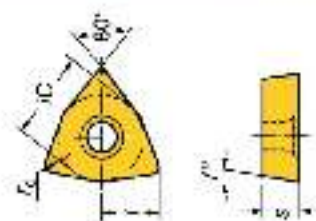
### Insert for WCM Drills



| Designation | Coated |        |        |        |        |         |
|-------------|--------|--------|--------|--------|--------|---------|
|             | SM5251 | SM5301 | SM6701 | SM0101 | SM1206 | PFC 251 |
| WCMX050206  | ○      |        |        |        | ●      |         |
| WCMX040206  | ○      |        |        |        | ●      |         |
| WCMX050306  | ○      |        |        |        | ●      |         |
| WCMX061306  | ○      |        |        |        | ●      |         |
| WCMX080412  | ○      |        |        |        | ●      |         |
| WCMT040206  |        |        |        |        |        | ●       |
| WCMT050306  |        |        |        |        |        | ●       |
| WCMT061306  |        |        |        |        |        | ●       |
| WCMT080412  |        |        |        |        |        | ●       |

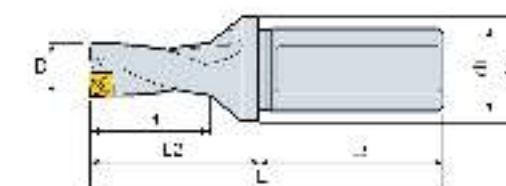


### Insert for wcm drills



| Insert Designation | L   | W    | H   | R   | PC    | Applicable Drill Size      |
|--------------------|-----|------|-----|-----|-------|----------------------------|
| WCMR1021H          | 3.8 | 2.38 | 2.5 | 0.8 | 5.36  | HSDR from 4.0mm to 20.0mm  |
| WCMR240208         | 4.5 | 2.54 | 3   | 0.8 | 5.35  | HSDR from 21.0mm to 24.0mm |
| WCMR50308          | 5.4 | 3.18 | 3.2 | 0.8 | 7.94  | HSDR from 26.5mm to 30.0mm |
| WCMR06T000         | 6.5 | 3.97 | 3.7 | 0.8 | 9.525 | HSDR from 31.0mm to 41.0mm |
| WCMR080112         | 8.7 | 4.75 | 4.3 | 1.2 | 12.7  | HSDR from 42.0mm to 50.0mm |
| WCGT000200         | 3.8 | 2.38 | 2.6 | 0.4 | 5.36  | HSDR from 11.0mm to 20.0mm |
| WCGT010208         | 4.3 | 2.38 | 3   | 0.4 | 5.35  | HSDR from 21.0mm to 25.5mm |
| WCGT000308         | 5.4 | 3.18 | 3.2 | 0.4 | 7.94  | HSDR from 26.0mm to 30.0mm |
| WCGT000408         | 6.5 | 3.97 | 3.7 | 0.8 | 9.525 | HSDR from 31.0mm to 38.0mm |
| WCGT000412         | 6.7 | 4.75 | 4.3 | 0.8 | 12.7  | HSDR from 40.0mm to 50.0mm |
| WCMT040208         | 4.3 | 2.38 | 3.1 | 0.8 | 6.35  | HSDR from 21.0mm to 25.5mm |
| WCMT050308         | 5.4 | 3.18 | 3.2 | 0.8 | 7.94  | HSDR from 26.0mm to 30.0mm |
| WCMT06T008         | 6.5 | 3.97 | 3.7 | 0.8 | 9.525 | HSDR from 31.0mm to 38.0mm |
| WCMT080112         | 8.7 | 4.75 | 4.3 | 1.2 | 12.7  | HSDR from 40.0mm to 50.0mm |

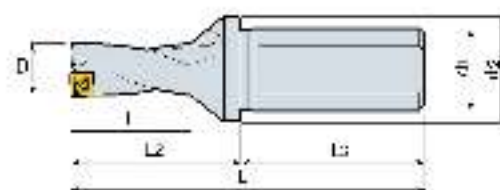
### SPMG- 2xDiameter Drilling Depth



| Designation           | QT   | L  | L1 | L2 | PC | PC2 | PT | Applicable Insert | Grade  | Weight |
|-----------------------|------|----|----|----|----|-----|----|-------------------|--------|--------|
| H-MDR2125-2572-0512.5 | 9.4  | 25 | 44 |    |    |     |    | SPMG090204        | M2 175 | 1.4    |
| H-MDR2130-2572-0513.0 | 9.5  | 26 | 45 |    |    |     |    |                   |        |        |
| H-MDR2135-2572-0513.5 | 9.6  | 27 | 46 |    |    |     |    |                   |        |        |
| H-MDR2140-2572-0514.0 | 9.7  | 28 | 47 |    |    |     |    |                   |        |        |
| H-MDR2145-2572-0514.5 | 9.8  | 29 | 48 |    |    |     |    |                   |        |        |
| H-MDR2150-2572-0515.0 | 9.9  | 30 | 49 |    |    |     |    | SPMG090204        | M2 245 | 1.7    |
| H-MDR2155-2572-0515.5 | 10.0 | 31 | 50 |    |    |     |    |                   |        |        |
| H-MDR2160-2572-0516.0 | 10.1 | 32 | 51 |    |    |     |    |                   |        |        |
| H-MDR2165-2572-0516.5 | 11.0 | 33 | 51 |    |    |     |    |                   |        |        |
| H-MDR2170-2572-0517.0 | 11.1 | 34 | 55 |    |    |     |    |                   |        |        |
| H-MDR2175-2572-0517.5 | 11.2 | 35 | 56 |    |    |     |    |                   |        |        |
| H-MDR2180-2572-0518.0 | 11.3 | 36 | 57 |    |    |     |    |                   |        |        |
| H-MDR2185-2572-0518.5 | 11.4 | 37 | 58 |    |    |     |    |                   |        |        |
| H-MDR2190-2572-0519.0 | 11.5 | 38 | 59 |    |    |     |    |                   |        |        |
| H-MDR2195-2572-0519.5 | 11.6 | 39 | 60 |    |    |     |    |                   |        |        |
| H-MDR2200-2572-0520.0 | 11.7 | 40 | 6  |    |    |     |    |                   |        |        |
| H-MDR2205-2572-0520.5 | 11.8 | 41 | 62 |    |    |     |    |                   |        |        |
| H-MDR2210-2572-0521.0 | 11.9 | 42 | 63 |    |    |     |    |                   |        |        |
| H-MDR2215-2572-0521.5 | 12.0 | 43 | 64 |    |    |     |    |                   |        |        |
| H-MDR2220-2572-0522.0 | 12.1 | 44 | 65 |    |    |     |    | SPMG11308         | M2 375 | 2      |

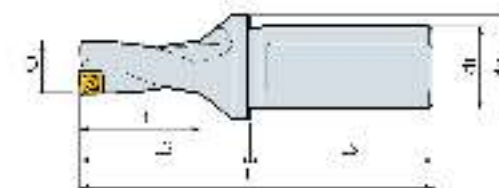


### SPMG- 2xDiameter Drilling Depth



| Designation            | ØD  | L  | L1 | L2 | F1 | ØF1 | ØF2 | DT | Application Insert | Screw | Wrench |
|------------------------|-----|----|----|----|----|-----|-----|----|--------------------|-------|--------|
| H-MDR2220-32 2-Ø/ 22.0 | 130 | 15 | 70 |    |    |     |     |    |                    |       |        |
| H-MDR2220-32 2-Ø/ 23.0 | 131 | 16 | 71 |    |    |     |     |    |                    |       |        |
| H-MDR2225-32 2-Ø/ 23.5 | 132 | 47 | 72 |    |    |     |     |    |                    |       |        |
| H-MDR2240-32 2-Ø/ 24.0 | 133 | 48 | 73 |    |    |     |     |    |                    |       |        |
| H-MDR2245-32 2-Ø/ 24.5 | 134 | 47 | 74 |    |    |     |     |    |                    |       |        |
| H-MDR2250-32 2-Ø/ 25.0 | 135 | 50 | 75 |    |    |     |     |    |                    |       |        |
| H-MDR2255-32 2-Ø/ 25.5 | 136 | 51 | 76 |    |    |     |     |    |                    |       |        |
| H-MDR2260-32 2-Ø/ 26.0 | 137 | 52 | 77 |    |    |     |     |    |                    |       |        |
| H-MDR2265-32 2-Ø/ 26.5 | 138 | 53 | 78 |    |    |     |     |    |                    |       |        |
| H-MDR2270-32 2-Ø/ 27.0 | 139 | 54 | 79 |    |    |     |     |    |                    |       |        |
| H-MDR2275-32 2-Ø/ 27.5 | 140 | 55 | 80 |    | 60 | 30  | 12  | 12 |                    |       |        |
| H-MDR2280-32 2-Ø/ 28.0 | 141 | 56 | 81 |    |    |     |     |    |                    |       |        |
| H-MDR2285-32 2-Ø/ 28.5 | 142 | 57 | 82 |    |    |     |     |    |                    |       |        |
| H-MDR2290-32 2-Ø/ 29.0 | 143 | 58 | 83 |    |    |     |     |    |                    |       |        |
| H-MDR2295-32 2-Ø/ 29.5 | 144 | 59 | 84 |    |    |     |     |    |                    |       |        |
| H-MDR2300-32 2-Ø/ 30.0 | 145 | 60 | 85 |    |    |     |     |    |                    |       |        |
| H-MDR2305-32 2-Ø/ 30.5 | 146 | 61 | 86 |    |    |     |     |    |                    |       |        |
| H-MDR2310-32 2-Ø/ 31.0 | 147 | 62 | 87 |    |    |     |     |    |                    |       |        |
| H-MDR2315-32 2-Ø/ 31.5 | 148 | 63 | 88 |    |    |     |     |    |                    |       |        |
| H-MDR2320-32 2-Ø/ 32.0 | 149 | 64 | 89 |    |    |     |     |    |                    |       |        |

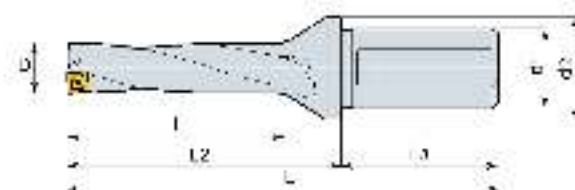
### SPMG- 2xDiameter Drilling Depth



| Designation            | ØD  | L   | L1  | L2 | F1 | ØF1 | ØF2 | DT | Application Insert | Screw | Wrench |
|------------------------|-----|-----|-----|----|----|-----|-----|----|--------------------|-------|--------|
| H-MDR2425-32 2-Ø/ 32.5 | 150 | 55  | 90  |    |    |     |     |    |                    |       |        |
| H-MDR2430-32 2-Ø/ 33.0 | 151 | 56  | 91  |    |    |     |     |    |                    |       |        |
| H-MDR2435-32 2-Ø/ 33.5 | 152 | 57  | 92  |    |    |     |     |    |                    |       |        |
| H-MDR2440-32 2-Ø/ 34.0 | 153 | 58  | 93  |    |    |     |     |    |                    |       |        |
| H-MDR2450-32 2-Ø/ 35.0 | 155 | 70  | 95  |    |    |     |     |    |                    |       |        |
| H-MDR2460-32 2-Ø/ 36.0 | 157 | 72  | 97  |    |    |     |     |    |                    |       |        |
| H-MDR2470-32 2-Ø/ 37.0 | 159 | 74  | 99  |    |    |     |     |    |                    |       |        |
| H-MDR2480-32 2-Ø/ 38.0 | 161 | 76  | 101 |    |    |     |     |    |                    |       |        |
| H-MDR2490-32 2-Ø/ 39.0 | 162 | 78  | 103 |    |    |     |     |    |                    |       |        |
| H-MDR2500-32 2-Ø/ 40.0 | 163 | 80  | 105 |    |    |     |     |    |                    |       |        |
| H-MDR2410-40 2-Ø/ 41.0 | 191 | 92  | 121 |    |    |     |     |    |                    |       |        |
| H-MDR2420-40 2-Ø/ 42.0 | 193 | 94  | 123 |    |    |     |     |    |                    |       |        |
| H-MDR2430-40 2-Ø/ 43.0 | 195 | 96  | 125 |    |    |     |     |    |                    |       |        |
| H-MDR2440-40 2-Ø/ 44.0 | 197 | 98  | 127 |    |    |     |     |    |                    |       |        |
| H-MDR2450-40 2-Ø/ 45.0 | 199 | 100 | 129 |    |    |     |     |    |                    |       |        |
| H-MDR2460-40 2-Ø/ 46.0 | 201 | 102 | 131 |    |    |     |     |    |                    |       |        |
| H-MDR2470-40 2-Ø/ 47.0 | 203 | 104 | 133 |    |    |     |     |    |                    |       |        |
| H-MDR2480-40 2-Ø/ 48.0 | 205 | 106 | 135 |    |    |     |     |    |                    |       |        |
| H-MDR2490-40 2-Ø/ 49.0 | 207 | 108 | 137 |    |    |     |     |    |                    |       |        |
| H-MDR2500-40 2-Ø/ 50.0 | 209 | 110 | 139 |    |    |     |     |    |                    |       |        |

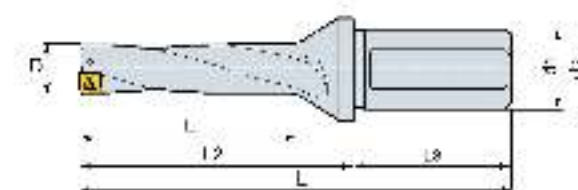


### SPMG- 3xDiameter Drilling Depth



| Designation       | ØD   | L     | L1    | L2   | L3 | ØD1 | F | Applicable Insert | Screw | Wrench |
|-------------------|------|-------|-------|------|----|-----|---|-------------------|-------|--------|
| H-MDR3125-25T2-05 | 12.5 | 103.5 | 97.5  | 55.5 |    |     |   |                   |       |        |
| H-MDR3130-25T2-05 | 13.0 | 107   | 97    | 57   |    |     |   |                   |       |        |
| H-MDR3135-25T2-05 | 13.5 | 108.5 | 100.5 | 58.5 |    |     |   |                   |       |        |
| H-MDR3140-25T2-05 | 14.0 | 110   | 102   | 60   |    |     |   |                   |       |        |
| H-MDR3145-25T2-05 | 14.5 | 111.5 | 103.5 | 61.5 |    |     |   |                   |       |        |
| H-MDR3150-25T2-05 | 15.0 | 113   | 105   | 63   |    |     |   |                   |       |        |
| H-MDR3155-25T2-05 | 15.5 | 122.5 | 116.5 | 65.5 |    |     |   |                   |       |        |
| H-MDR3160-25T2-05 | 16.0 | 124   | 117   | 68   |    |     |   |                   |       |        |
| H-MDR3165-25T2-05 | 16.5 | 126.5 | 119.5 | 69.5 |    |     |   |                   |       |        |
| H-MDR3170-25T2-05 | 17.0 | 127   | 120   | 71   |    |     |   |                   |       |        |
| H-MDR3175-25T2-06 | 17.5 | 128.5 | 122.5 | 72.5 |    |     |   |                   |       |        |
| H-MDR3180-25T2-06 | 18.0 | 132   | 124   | 74   |    |     |   |                   |       |        |
| H-MDR3185-25T2-06 | 18.5 | 131.5 | 125.5 | 75.5 |    |     |   |                   |       |        |
| H-MDR3190-25T2-06 | 19.0 | 133   | 127   | 77   |    |     |   |                   |       |        |
| H-MDR3195-25T2-06 | 19.5 | 134.5 | 128.5 | 78.5 |    |     |   |                   |       |        |
| H-MDR3200-25T2-06 | 20.0 | 135   | 130   | 80   |    |     |   |                   |       |        |
| H-MDR3205-25T2-06 | 20.5 | 137.5 | 132.5 | 81.5 |    |     |   |                   |       |        |
| H-MDR3210-25T2-06 | 21.0 | 139   | 134   | 83   |    |     |   |                   |       |        |
| H-MDR3215-25T2-06 | 21.5 | 140.5 | 135.5 | 84.5 |    |     |   |                   |       |        |
| H-MDR3220-25T2-07 | 22.0 | 142   | 136   | 86   |    |     |   |                   |       |        |

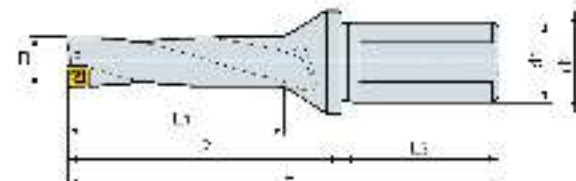
### SPMG- 3xDiameter Drilling Depth



| Designation       | ØD   | L     | L1    | L2    | L3 | ØD1 | F | Applicable Insert | Screw | Wrench |
|-------------------|------|-------|-------|-------|----|-----|---|-------------------|-------|--------|
| H-MDR3225-32T2-07 | 22.5 | 152.5 | 147.5 | 92.5  |    |     |   |                   |       |        |
| H-MDR3230-32T2-07 | 23.0 | 151   | 149   | 94    |    |     |   |                   |       |        |
| H-MDR3235-32T2-07 | 23.5 | 155.5 | 150.5 | 95.5  |    |     |   |                   |       |        |
| H-MDR3240-32T2-07 | 24.0 | 157   | 152   | 97    |    |     |   |                   |       |        |
| H-MDR3245-32T2-07 | 24.5 | 158.5 | 153.5 | 98.5  |    |     |   |                   |       |        |
| H-MDR3250-32T2-07 | 25.0 | 160   | 155   | 100   |    |     |   |                   |       |        |
| H-MDR3255-32T2-07 | 25.5 | 161.5 | 156.5 | 101.5 |    |     |   |                   |       |        |
| H-MDR3260-32T2-07 | 26.0 | 163   | 158   | 103   |    |     |   |                   |       |        |
| H-MDR3265-32T2-07 | 26.5 | 164.5 | 159.5 | 104.5 |    |     |   |                   |       |        |
| H-MDR3270-32T2-07 | 27.0 | 166   | 161   | 106   |    |     |   |                   |       |        |
| H-MDR3275-32T2-07 | 27.5 | 167.5 | 162.5 | 107.5 |    |     |   |                   |       |        |
| H-MDR3280-32T2-08 | 28.0 | 169   | 164   | 109   |    |     |   |                   |       |        |
| H-MDR3285-32T2-08 | 28.5 | 170.5 | 165.5 | 110.5 |    |     |   |                   |       |        |
| H-MDR3290-32T2-07 | 29.0 | 172   | 167   | 112   |    |     |   |                   |       |        |
| H-MDR3295-32T2-07 | 29.5 | 173.5 | 168.5 | 113.5 |    |     |   |                   |       |        |
| H-MDR3300-32T2-08 | 30.0 | 175   | 170   | 115   |    |     |   |                   |       |        |
| H-MDR3305-32T2-08 | 30.5 | 176.5 | 171.5 | 116.5 |    |     |   |                   |       |        |
| H-MDR3310-32T2-08 | 31.0 | 178   | 173   | 118   |    |     |   |                   |       |        |
| H-MDR3315-32T2-07 | 31.5 | 179.5 | 174.5 | 119.5 |    |     |   |                   |       |        |
| H-MDR3320-32T2-07 | 32.0 | 181   | 176   | 121   |    |     |   |                   |       |        |

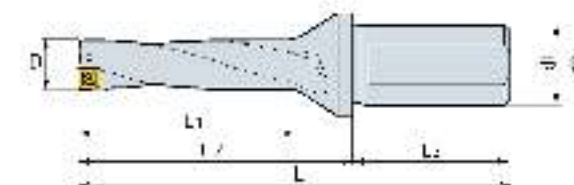


### SPMG- 3xDiameter Drilling Depth



| Description       | ØD   | L1   | L2    | L3   | Ind | ØC2 | H | Applicable Insert | Spindle | Weight |
|-------------------|------|------|-------|------|-----|-----|---|-------------------|---------|--------|
| H-MDR3075-20-2-09 | 32.5 | 82.5 | 97.5  | 22.5 |     |     |   | SPMG090408        | M3.5x8  | T.15   |
| H-MDR3030-50-2-09 | 33.0 | 84   | 99    | 24   |     |     |   |                   |         |        |
| H-MDR3035-50-2-09 | 33.5 | 84.5 | 100.5 | 24.5 |     |     |   |                   |         |        |
| H-MDR3040-50-2-11 | 34.0 | 87   | 102   | 27   |     |     |   |                   |         |        |
| H-MDR3050-50-2-11 | 35.0 | 90   | 105   | 30   |     |     |   |                   |         |        |
| H-MDR3060-50-2-11 | 36.0 | 93   | 108   | 33   |     |     |   |                   |         |        |
| H-MDR3070-50-2-11 | 37.0 | 96   | 111   | 36   |     |     |   | SPMG110408        | M4.0x10 | T.15   |
| H-MDR3080-50-2-11 | 38.0 | 99   | 114   | 39   |     |     |   |                   |         |        |
| H-MDR3090-50-2-11 | 39.0 | 102  | 117   | 42   |     |     |   |                   |         |        |
| H-MDR3040-50-2-11 | 40.0 | 105  | 120   | 45   |     |     |   |                   |         |        |
| H-MDR3040-40T2-11 | 41.0 | 112  | 121   | 152  |     |     |   |                   |         |        |
| H-MDR3040-40T2-14 | 42.0 | 135  | 126   | 155  |     |     |   |                   |         |        |
| H-MDR3030-40T2-14 | 43.0 | 138  | 129   | 158  |     |     |   | SPMG140512        | M4.0x11 | T.20   |
| H-MDR3010-40T2-14 | 44.0 | 141  | 132   | 171  |     |     |   |                   |         |        |
| H-MDR3050-40T2-14 | 45.0 | 144  | 135   | 174  |     |     |   |                   |         |        |
| H-MDR3060-40T2-14 | 46.0 | 147  | 138   | 177  |     |     |   |                   |         |        |
| H-MDR3070-40T2-14 | 47.0 | 150  | 141   | 180  |     |     |   |                   |         |        |
| H-MDR3080-40T2-14 | 48.0 | 153  | 144   | 183  |     |     |   |                   |         |        |
| H-MDR3090-40T2-14 | 49.0 | 156  | 147   | 186  |     |     |   | SPMG160512        | M4.0x11 | T.20   |
| H-MDR3000-40T2-14 | 50.0 | 159  | 150   | 189  |     |     |   |                   |         |        |

### SPMG- 4xDiameter Drilling Depth



| Description      | ØD   | L1  | L2 | L3  | Ind | ØC2 | H | Applicable Insert | Spindle | Weight |
|------------------|------|-----|----|-----|-----|-----|---|-------------------|---------|--------|
| H-MDR125-20-2-09 | 12.5 | 115 | 50 | 63  |     |     |   | SPMG052204        | M2.0x5  | T.6    |
| H-MDR130-20-2-09 | 13.0 | 120 | 52 | 70  |     |     |   |                   |         |        |
| H-MDR135-20-2-09 | 13.5 | 122 | 54 | 72  |     |     |   |                   |         |        |
| H-MDR140-20-2-09 | 14.0 | 124 | 56 | 74  |     |     |   |                   |         |        |
| H-MDR145-20-2-09 | 14.5 | 126 | 58 | 76  |     |     |   |                   |         |        |
| H-MDR150-20-2-09 | 15.0 | 128 | 60 | 78  |     |     |   |                   |         |        |
| H-MDR155-20-2-09 | 15.5 | 133 | 62 | 82  |     |     |   | SPMG062204        | M2.2x5  | T.7    |
| H-MDR160-20-2-09 | 16.0 | 140 | 64 | 84  |     |     |   |                   |         |        |
| H-MDR165-20-2-09 | 16.5 | 142 | 66 | 86  |     |     |   |                   |         |        |
| H-MDR170-20-2-09 | 17.0 | 144 | 68 | 88  |     |     |   |                   |         |        |
| H-MDR175-20-2-09 | 17.5 | 146 | 70 | 90  |     |     |   |                   |         |        |
| H-MDR180-20-2-09 | 18.0 | 148 | 72 | 92  |     |     |   |                   |         |        |
| H-MDR185-25T2-09 | 18.5 | 150 | 74 | 94  |     |     |   | SPMG080204        | M2.2x5  | T.7    |
| H-MDR190-25T2-09 | 19.0 | 152 | 76 | 96  |     |     |   |                   |         |        |
| H-MDR195-25T2-09 | 19.5 | 154 | 78 | 98  |     |     |   |                   |         |        |
| H-MDR200-25T2-09 | 20.0 | 156 | 80 | 100 |     |     |   |                   |         |        |
| H-MDR205-25T2-09 | 20.5 | 158 | 82 | 102 |     |     |   |                   |         |        |
| H-MDR210-25T2-09 | 21.0 | 160 | 84 | 104 |     |     |   |                   |         |        |
| H-MDR215-25T2-09 | 21.5 | 162 | 86 | 106 |     |     |   | SPMG1071805       | M2.5x4  | T.8    |
| H-MDR220-25T2-09 | 22.0 | 164 | 88 | 108 |     |     |   |                   |         |        |





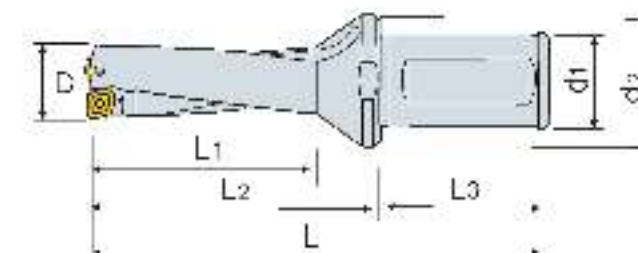


### Insert for SPMG Drill



| Insert designation | d     | L    | R   | d    | ISO 1336 | Applicable drill size         |
|--------------------|-------|------|-----|------|----------|-------------------------------|
| SPMG050204         | 5.00  | 2.05 | 0.4 | 2.25 | ●        | H-MDR from 12.5 mm to 13.0 mm |
| SPMG060204         | 6.00  | 2.05 | 0.4 | 2.67 | ●        | H-MDR from 15.5 mm to 21.5 mm |
| SPMG071308         | 7.94  | 3.97 | 0.8 | 2.86 | ●        | H-MDR from 22.0 mm to 27.5 mm |
| SPMG090408         | 9.50  | 4.30 | 0.8 | 4.05 | ●        | H-MDR from 28.0 mm to 33.5 mm |
| SPMG110408         | 11.50 | 4.50 | 0.8 | 4.45 | ●        | H-MDR from 34.0 mm to 41.0 mm |
| SPMG140512         | 14.50 | 5.20 | 1.2 | 5.75 | ●        | H-MDR from 42.0 mm to 50.0 mm |

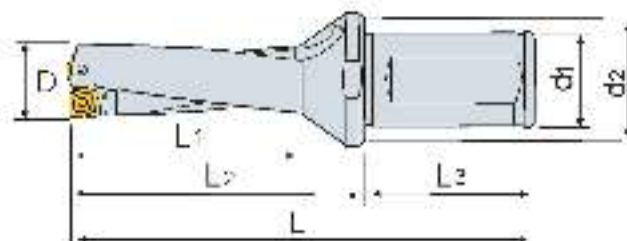
### GPM- 2xDiameter Drilling Depth



| Designation            | H-E | L  | L1 | L2 | d  | φs1 | φs2 | φs3 | Applicable<br>Speed | Feed   | Work |
|------------------------|-----|----|----|----|----|-----|-----|-----|---------------------|--------|------|
| H-GDR2 20-20T2-07 12.0 | 82  | 24 | 39 |    | 40 | 20  | 35  |     | GCM7040204          | M2.0*5 | 7.5  |
| H-GDR2 25-25T2-07 12.5 | 83  | 25 | 40 |    |    |     |     |     |                     |        |      |
| H-GDR2 30-20T2-04 13.0 | 84  | 26 | 41 |    |    |     |     |     |                     |        |      |
| H-GDR2 35-20 2-04 13.5 | 85  | 27 | 42 |    |    |     |     |     |                     |        |      |
| H-GDR2 40-20 2-04 14.0 | 86  | 28 | 43 |    |    |     |     |     |                     |        |      |
| H-GDR2 45-25T2-07 14.5 | 87  | 29 | 44 |    |    |     |     |     |                     |        |      |
| H-GDR2 50-25T2-06 15.0 | 105 | 30 | 55 |    | 50 | 25  | 35  | 74  | GCM 050207          | M2.2*5 | 7    |
| H-GDR2 55-25 2-06 15.5 | 106 | 31 | 56 |    |    |     |     |     |                     |        |      |
| H-GDR2 60-25 2-06 16.0 | 107 | 32 | 57 |    |    |     |     |     |                     |        |      |
| H-GDR2 65-25 2-06 16.5 | 108 | 33 | 58 |    |    |     |     |     |                     |        |      |
| H-GDR2 70-25T2-04 17.0 | 109 | 34 | 59 |    |    |     |     |     |                     |        |      |
| H-GDR2 75-25T2-06 17.5 | 110 | 35 | 60 |    |    |     |     |     |                     |        |      |
| H-GDR2 80-25T2-07 18.0 | 111 | 36 | 61 |    |    |     |     |     | GPM1070204          | M2.5*5 | 8    |
| H-GDR2 85-25T2-07 18.5 | 112 | 37 | 62 |    |    |     |     |     |                     |        |      |
| H-GDR2 90-20T2 07 19.0 | 113 | 38 | 63 |    |    |     |     |     |                     |        |      |
| H-GDR2 95-20T2 07 19.5 | 114 | 39 | 64 |    |    |     |     |     |                     |        |      |
| H-GDR2200-25T2-07 20.0 | 115 | 40 | 65 |    |    |     |     |     |                     |        |      |
| H-GDR2205-25T2-07 20.5 | 116 | 41 | 66 |    |    |     |     |     |                     |        |      |
| H-GDR2210-25T2-07 21.0 | 117 | 42 | 67 |    |    |     |     |     |                     |        |      |
| H-GDR2215-20T2 07 21.5 | 118 | 43 | 68 |    |    |     |     |     |                     |        |      |

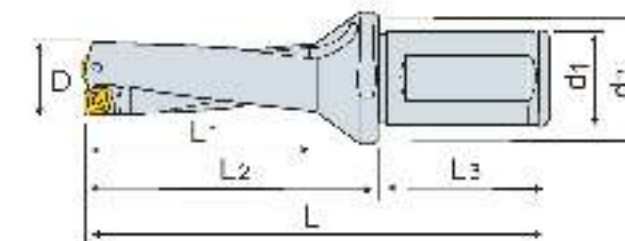


### GPM- 2xDiameter Drilling Depth



| Designation           | ØD   | L1  | L2  | L3 | ØD1 | ØD2 | PT  | Applicable Feed | Speed | Material |
|-----------------------|------|-----|-----|----|-----|-----|-----|-----------------|-------|----------|
| H-GD2220-20T2-07-22-0 | 11.9 | 44  | 69  |    |     |     |     |                 |       |          |
| H-GD2220-20T2-07-22-0 | 14.0 | 45  | 70  |    |     |     |     |                 |       |          |
| H-GD2220-20T2-09-23-0 | 2    | 46  | 71  |    |     |     |     |                 |       |          |
| H-GD2220-20T2-09-23-0 | 22   | 47  | 72  |    | 20  | 30  | 1/8 |                 |       |          |
| H-GD2220-20T2-09-24-0 | 23   | 48  | 73  |    |     |     |     |                 |       |          |
| H-GD2220-20T2-09-24-0 | 24   | 49  | 74  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-23-0 | 30   | 50  | 75  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-23-0 | 3    | 51  | 76  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-26-0 | 32   | 52  | 77  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-26-0 | 33   | 53  | 78  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 34   | 54  | 79  |    | 32  | 42  |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 35   | 55  | 80  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 36   | 56  | 81  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 37   | 57  | 82  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 38   | 58  | 83  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 39   | 59  | 84  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 40   | 60  | 85  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 41   | 61  | 86  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 42   | 62  | 87  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 43   | 63  | 88  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 44   | 64  | 89  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 45   | 65  | 90  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 46   | 66  | 91  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 47   | 67  | 92  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 48   | 68  | 93  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 49   | 69  | 94  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 50   | 70  | 95  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 51   | 71  | 96  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 52   | 72  | 97  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 53   | 73  | 98  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 54   | 74  | 99  |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 55   | 75  | 100 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 56   | 76  | 101 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 57   | 77  | 102 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 58   | 78  | 103 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 59   | 79  | 104 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 60   | 80  | 105 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 61   | 81  | 106 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 62   | 82  | 107 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 63   | 83  | 108 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 64   | 84  | 109 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 65   | 85  | 110 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 66   | 86  | 111 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 67   | 87  | 112 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 68   | 88  | 113 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 69   | 89  | 114 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 70   | 90  | 115 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 71   | 91  | 116 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 72   | 92  | 117 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 73   | 93  | 118 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 74   | 94  | 119 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 75   | 95  | 120 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 76   | 96  | 121 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 77   | 97  | 122 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 78   | 98  | 123 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 79   | 99  | 124 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 80   | 100 | 125 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 81   | 101 | 126 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 82   | 102 | 127 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 83   | 103 | 128 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 84   | 104 | 129 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 85   | 105 | 130 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 86   | 106 | 131 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 87   | 107 | 132 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 88   | 108 | 133 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 89   | 109 | 134 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 90   | 110 | 135 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 91   | 111 | 136 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 92   | 112 | 137 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 93   | 113 | 138 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 94   | 114 | 139 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 95   | 115 | 140 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 96   | 116 | 141 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 97   | 117 | 142 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 98   | 118 | 143 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 99   | 119 | 144 |    |     |     |     |                 |       |          |
| H-GD2230-32T2-09-27-0 | 100  | 120 | 145 |    |     |     |     |                 |       |          |

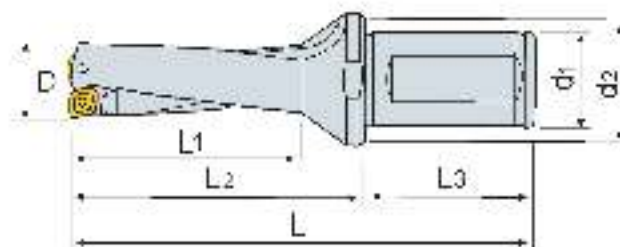
### GPM- 2xDiameter Drilling Depth



| Designation      | ØD   | L1  | L2  | L3  | ØD1 | ØD2 | PT           | Applicable Feed | Speed    | Material |
|------------------|------|-----|-----|-----|-----|-----|--------------|-----------------|----------|----------|
| H-GD2330-40T2-14 | 34.0 | 157 | 68  | 68  | 63  | 10  | 50           | 0.00117000      | 50.0-60  | T-15     |
| H-GD2330-40T2-14 | 35.0 | 158 | 70  | 70  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 36.0 | 159 | 72  | 72  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 37.0 | 159 | 74  | 74  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 38.0 | 171 | 76  | 76  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 39.0 | 173 | 78  | 78  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 40.0 | 175 | 80  | 80  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 41.0 | 177 | 82  | 82  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 42.0 | 179 | 84  | 84  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 43.0 | 181 | 86  | 86  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 44.0 | 182 | 88  | 118 | 63  | 10  | 54           | 0.00140000      | 50.0-110 | T-20     |
| H-GD2330-40T2-14 | 45.0 | 185 | 90  | 90  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 46.0 | 187 | 92  | 92  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 47.0 | 189 | 94  | 94  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 48.0 | 191 | 96  | 120 |     |     |              |                 |          |          |
| H-GD2330-40T2-09 | 49.0 | 193 | 98  | 130 |     |     |              |                 |          |          |
| H-GD2330-40T2-09 | 50.0 | 200 | 100 | 135 |     |     |              |                 |          |          |
| H-GD2330-40T2-09 | 51.0 | 202 | 102 | 32  |     |     |              |                 |          |          |
| H-GD2330-40T2-09 | 52.0 | 204 | 104 | 39  |     |     |              |                 |          |          |
| H-GD2330-40T2-09 | 53.0 | 205 | 106 | 41  |     |     |              |                 |          |          |
| H-GD2330-40T2-09 | 54.0 | 208 | 108 | 140 | 63  | 58  | 0.0010900014 | 50.0-110        | T-8      |          |
| H-GD2330-40T2-14 | 55.0 | 210 | 110 | 45  |     |     |              |                 |          |          |
| H-GD2330-40T2-14 | 56.0 | 210 | 110 | 45  |     |     |              |                 |          |          |

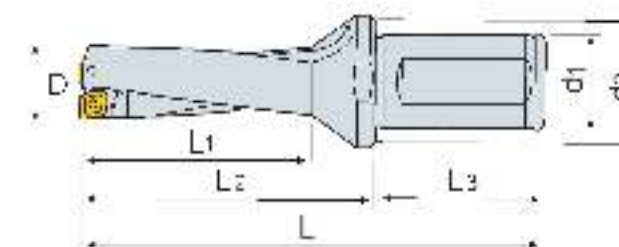


### GPM- 3xDiameter Drilling Depth



| Designation       | ΦD   | L     | L1   | L2   | L3 | Φd1 | Φd2 | Fl | Applicable Feed | Spindle | Wrench |
|-------------------|------|-------|------|------|----|-----|-----|----|-----------------|---------|--------|
| H-GDR3120-25-2-01 | 12.0 | 91    | 35   | 8    |    |     |     |    |                 |         |        |
| H-GDR3125-25T2-04 | 12.5 | 95.5  | 37.5 | 50.5 |    |     |     |    |                 |         |        |
| H-GDR3130-25T2-04 | 13.0 | 97    | 39   | 54   |    |     |     |    |                 |         |        |
| H-GDR3135-25T2-04 | 13.5 | 99.5  | 40.5 | 55.5 |    |     |     |    |                 |         |        |
| H-GDR3140-25T2-01 | 14.0 | 100   | 42   | 57   |    |     |     |    |                 |         |        |
| H-GDR3145-25-2-01 | 14.5 | 101.5 | 43.5 | 58.5 |    |     |     |    |                 |         |        |
| H-GDR3150-25T2-04 | 15.0 | 104   | 45   | 64   |    |     |     |    |                 |         |        |
| H-GDR3155-25T2-04 | 15.5 | 105.5 | 46.5 | 65.5 |    |     |     |    |                 |         |        |
| H-GDR3160-25T2-04 | 16.0 | 108   | 48   | 70   |    |     |     |    |                 |         |        |
| H-GDR3165-25T2-04 | 16.5 | 121.5 | 49.5 | 71.5 |    |     |     |    |                 |         |        |
| H-GDR3170-25T2-04 | 17.0 | 126   | 51   | 76   |    |     |     |    |                 |         |        |
| H-GDR3175-25T2-04 | 17.5 | 127.5 | 52.5 | 77.5 |    |     |     |    |                 |         |        |
| H-GDR3180-25T2-07 | 18.0 | 129   | 54   | 79   |    |     |     |    |                 |         |        |
| H-GDR3185-25-2-07 | 18.5 | 130.5 | 55.5 | 80.5 |    |     |     |    |                 |         |        |
| H-GDR3190-25-2-07 | 19.0 | 137   | 57   | 87   |    |     |     |    |                 |         |        |
| H-GDR3195-25T2-07 | 19.5 | 131.5 | 58.5 | 88.5 |    |     |     |    |                 |         |        |
| H-GDR3200-25T2-07 | 20.0 | 133   | 60   | 89   |    |     |     |    |                 |         |        |
| H-GDR3205-25T2-07 | 20.5 | 134.5 | 61.5 | 89.5 |    |     |     |    |                 |         |        |
| H-GDR3210-25T2-07 | 21.0 | 136   | 63   | 89.5 |    |     |     |    |                 |         |        |
| H-GDR3215-25T2-07 | 21.5 | 139.5 | 64.5 | 89.5 |    |     |     |    |                 |         |        |

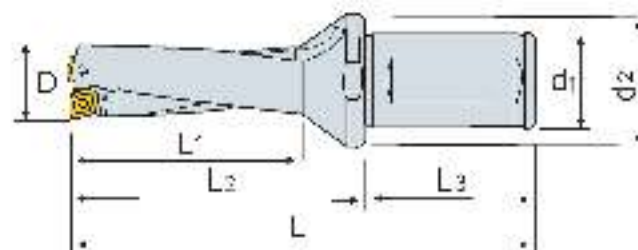
### GPM- 3xDiameter Drilling Depth



| Designation       | ΦD   | L     | L1   | L2    | L3 | Φd1 | Φd2 | Fl | Applicable Feed | Spindle | Wrench |
|-------------------|------|-------|------|-------|----|-----|-----|----|-----------------|---------|--------|
| H-GDR3220-25-2-07 | 22.0 | 141   | 66   | 91    |    |     |     |    |                 |         |        |
| H-GDR3225-25T2-07 | 22.5 | 142.5 | 67.5 | 92.5  |    |     |     |    |                 |         |        |
| H-GDR3230-25T2-09 | 23.0 | 144   | 69   | 94    |    |     |     |    |                 |         |        |
| H-GDR3235-25-2-09 | 23.5 | 145.5 | 70.5 | 95.5  |    |     |     |    |                 |         |        |
| H-GDR3240-25-2-09 | 24.0 | 147   | 72   | 97    |    |     |     |    |                 |         |        |
| H-GDR3245-25-2-09 | 24.5 | 148.5 | 73.5 | 98.5  |    |     |     |    |                 |         |        |
| H-GDR3250-25T2-09 | 25.0 | 155   | 75   | 100   |    |     |     |    |                 |         |        |
| H-GDR3255-25T2-09 | 25.5 | 156.5 | 76.5 | 101.5 |    |     |     |    |                 |         |        |
| H-GDR3260-32-2-09 | 26.0 | 158   | 78   | 100   |    |     |     |    |                 |         |        |
| H-GDR3265-32T2-09 | 26.5 | 159.5 | 79.5 | 101.5 |    |     |     |    |                 |         |        |
| H-GDR3270-32T2-09 | 27.0 | 161   | 81   | 106   |    |     |     |    |                 |         |        |
| H-GDR3275-32T2-09 | 27.5 | 162.5 | 82.5 | 107.5 |    |     |     |    |                 |         |        |
| H-GDR3280-32T2-11 | 28.0 | 164   | 84   | 109   |    |     |     |    |                 |         |        |
| H-GDR3285-32T2-11 | 28.5 | 165.5 | 85.5 | 110.5 |    |     |     |    |                 |         |        |
| H-GDR3290-32T2-11 | 29.0 | 167   | 87   | 112   |    |     |     |    |                 |         |        |
| H-GDR3295-32T2-11 | 29.5 | 168.5 | 88.5 | 113.5 |    |     |     |    |                 |         |        |
| H-GDR3300-40T2-11 | 30.0 | 170   | 90   | 120   |    |     |     |    |                 |         |        |
| H-GDR3305-40T2-11 | 30.5 | 170   | 90   | 120   |    |     |     |    |                 |         |        |
| H-GDR3310-40T2-11 | 31.0 | 170   | 90   | 120   |    |     |     |    |                 |         |        |
| H-GDR3315-40T2-11 | 31.5 | 171   | 90   | 120   |    |     |     |    |                 |         |        |
| H-GDR3320-40T2-11 | 32.0 | 174   | 95   | 129   |    |     |     |    |                 |         |        |

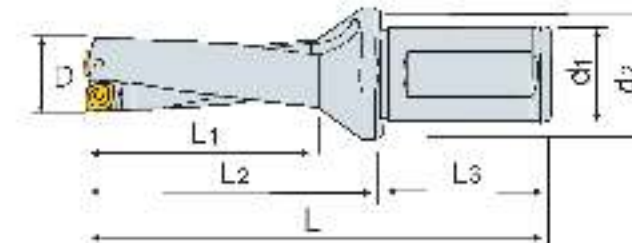


### GPM- 3xDiameter Drilling Depth



| Designation        | ØD   | L1  | L2  | L3  | L | Ød1 | Ød2 | FT | Appl. Hole Insert | Series  | Warranty |
|--------------------|------|-----|-----|-----|---|-----|-----|----|-------------------|---------|----------|
| L-GP121140-40T2-11 | 14.0 | 197 | 102 | 132 |   |     |     |    | GPM11T30E         | M3.5x8  | T-15     |
| F-GP130350-40T2-14 | 35.0 | 200 | 106 | 136 |   |     |     |    |                   |         |          |
| F-GP130360-40T2-14 | 36.0 | 205 | 108 | 138 |   |     |     |    |                   |         |          |
| L-GP143170-40T2-14 | 17.0 | 205 | 111 | 141 |   |     |     |    |                   |         |          |
| F-GP143380-40T2-11 | 38.0 | 209 | 114 | 144 |   |     |     |    |                   |         |          |
| F-GP143390-40T2-14 | 39.0 | 212 | 117 | 147 |   |     |     |    |                   |         |          |
| F-GP130400-40T2-14 | 40.0 | 215 | 120 | 150 |   |     |     |    | GPM11-0400        | M5.0x10 | T-20     |
| F-GP130410-40T2-14 | 41.0 | 218 | 123 | 153 |   |     |     |    |                   |         |          |
| F-GP13120-40T2-11  | 12.0 | 221 | 126 | 156 |   |     |     |    |                   |         |          |
| F-GP13130-40T2-11  | 13.0 | 224 | 129 | 159 |   |     |     |    |                   |         |          |
| F-GP13140-40T2-11  | 14.0 | 227 | 132 | 162 |   |     |     |    |                   |         |          |
| F-GP1450-40T2-14   | 45.0 | 230 | 135 | 165 |   |     |     |    |                   |         |          |
| L-GP143460-40T2-14 | 46.0 | 233 | 138 | 168 |   |     |     |    |                   |         |          |
| F-GP143470-40T2-11 | 47.0 | 236 | 141 | 171 |   |     |     |    |                   |         |          |
| L-GP143480-40T2-14 | 48.0 | 239 | 144 | 174 |   |     |     |    |                   |         |          |
| F-GP13190-40T2-19  | 19.0 | 247 | 147 | 182 |   |     |     |    |                   |         |          |
| F-GP130500-40T2-09 | 50.0 | 250 | 150 | 185 |   |     |     |    |                   |         |          |
| L-GP143510-40T2-09 | 51.0 | 253 | 153 | 188 |   |     |     |    |                   |         |          |
| F-GP143020-40T2-09 | 20.0 | 256 | 156 | 191 |   |     |     |    | GPM-09030E        | M3.0x7  | T-8      |
| F-GP143030-40T2-09 | 21.0 | 259 | 159 | 194 |   |     |     |    |                   |         |          |
| F-GP130540-40T2-09 | 54.0 | 262 | 162 | 197 |   |     |     |    |                   |         |          |
| F-GP130550-40T2-11 | 55.0 | 265 | 165 | 200 |   |     |     |    |                   |         |          |
|                    |      |     |     |     |   |     |     |    |                   |         |          |
|                    |      |     |     |     |   |     |     |    |                   |         |          |

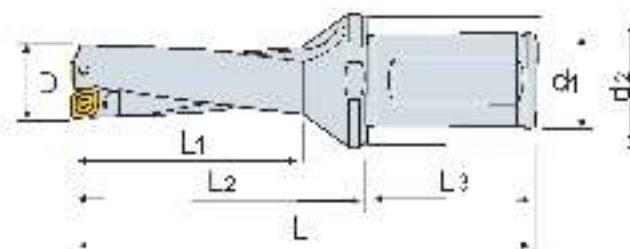
### GPM- 4xDiameter Drilling Depth



| Designation       | ØD   | L1  | L2  | L3  | L  | Ød1 | Ød2 | FT | Appl. Hole Insert | Series  | Warranty |
|-------------------|------|-----|-----|-----|----|-----|-----|----|-------------------|---------|----------|
| L-GDR4150-25T2-06 | 5.0  | 139 | 64  | 89  |    |     |     |    | GPM1060201        | M2.2x5  | T-7      |
| F-GDR4170-25T2-06 | 7.0  | 143 | 68  | 93  |    |     |     |    |                   |         |          |
| F-GDR4180-25T2-07 | 8.0  | 147 | 72  | 97  |    |     |     |    |                   |         |          |
| F-GDR4190-25T2-07 | 9.0  | 151 | 76  | 101 |    |     |     |    |                   |         |          |
| F-GDR4200-25T2-07 | 20.0 | 155 | 80  | 105 | 50 | 25  | 35  | 18 | GPM1070204        | M2.5x6  | T-8      |
| F-GDR4210-25T2-07 | 21.0 | 159 | 84  | 109 |    |     |     |    |                   |         |          |
| L-GDR4220-25T2-07 | 22.0 | 163 | 88  | 113 |    |     |     |    |                   |         |          |
| L-GDR4230-25T2-09 | 23.0 | 167 | 92  | 117 |    |     |     |    |                   |         |          |
| F-GDR4240-25T2-09 | 24.0 | 171 | 96  | 121 |    |     |     |    | GPM1090304        | M3.0x7  |          |
| F-GDR4250-32T2-09 | 25.0 | 160 | 100 | 125 |    |     |     |    |                   |         |          |
| L-GDR4260-32T2-09 | 26.0 | 164 | 104 | 129 |    |     |     |    |                   |         |          |
| F-GDR4270-32T2-09 | 27.0 | 168 | 108 | 133 | 55 | 30  | 42  | 21 |                   |         |          |
| F-GDR4280-32T2-11 | 28.0 | 192 | 112 | 137 |    |     |     |    |                   |         |          |
| F-GDR4290-32T2-11 | 29.0 | 196 | 116 | 141 |    |     |     |    |                   |         |          |
| L-GDR4300-40T2-11 | 30.0 | 223 | 120 | 168 |    |     |     |    |                   |         |          |
| L-GDR4310-40T2-11 | 31.0 | 227 | 124 | 172 |    |     |     |    |                   |         |          |
| F-GDR4020-40T2-11 | 32.0 | 231 | 128 | 176 | 55 | 30  | 30  |    | GPM11T30E         | M3.5x8  | T-15     |
| F-GDR4030-40T2-11 | 33.0 | 235 | 132 | 180 |    |     |     |    |                   |         |          |
| F-GDR4310-40T2-11 | 34.0 | 239 | 136 | 184 |    |     |     |    | GPM-40408         | M5.0x10 | T-20     |
| F-GDR4320-40T2-11 | 35.0 | 243 | 140 | 188 |    |     |     |    |                   |         |          |

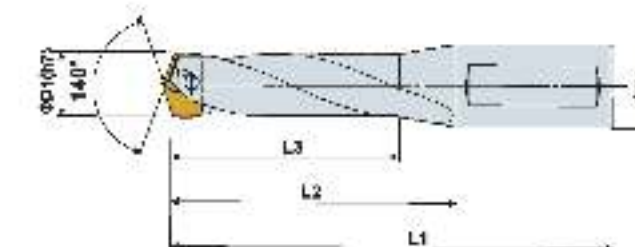


### GPM- 4xDiameter Drilling Depth



| Designation        | OD   | L   | L1  | L2  | L3 | L | Applicable<br>material | Series | Wear |
|--------------------|------|-----|-----|-----|----|---|------------------------|--------|------|
| H-GDR1350-40T2-14  | 33.0 | 247 | 44  | 152 |    |   |                        |        |      |
| HL-GDR4370-40T2-14 | 37.0 | 251 | 145 | 166 |    |   |                        |        |      |
| HL-GDR4380-40T2-14 | 38.0 | 255 | 152 | 140 |    |   |                        |        |      |
| H-GDR1350-40T2     | 33.0 | 237 | 46  | 174 |    |   |                        |        |      |
| H-GDR1400-40T2     | 34.0 | 243 | 60  | 175 |    |   |                        |        |      |
| H-GDR1410-40T2     | 34.0 | 247 | 64  | 202 |    |   |                        |        |      |
| HL-GDR4420-40T2-14 | 42.0 | 271 | 68  | 206 |    |   |                        |        |      |
| HL-GDR4430-40T2-14 | 43.0 | 275 | 79  | 210 |    |   |                        |        |      |
| H-GDR1410-40T2     | 34.0 | 277 | 76  | 214 |    |   |                        |        |      |
| H-GDR2450-40T2-14  | 45.0 | 283 | 150 | 215 |    |   |                        |        |      |
| H-GDR1450-40T2-14  | 46.0 | 287 | 181 | 222 |    |   |                        |        |      |
| HL-GDR4470-40T2-14 | 47.0 | 291 | 166 | 225 |    |   |                        |        |      |
| HL-GDR4480-40T2-14 | 48.0 | 295 | 192 | 230 |    |   |                        |        |      |
| HL-GDR4490-40T2-09 | 49.0 | 308 | 175 | 243 |    |   |                        |        |      |
| H-GDR4500-40T2-09  | 50.0 | 312 | 203 | 247 |    |   |                        |        |      |
| H-GDR4510-40T2-09  | 51.0 | 316 | 204 | 251 |    |   |                        |        |      |
| HL-GDR4620-40T2-09 | 62.0 | 320 | 208 | 255 |    |   |                        |        |      |
| HL-GDR4630-40T2-09 | 63.0 | 324 | 212 | 259 |    |   |                        |        |      |
| H-GDR4610-40T2-09  | 64.0 | 328 | 215 | 263 |    |   |                        |        |      |
| H-GDR4550-40T2-11  | 55.0 | 332 | 223 | 267 |    |   |                        |        |      |

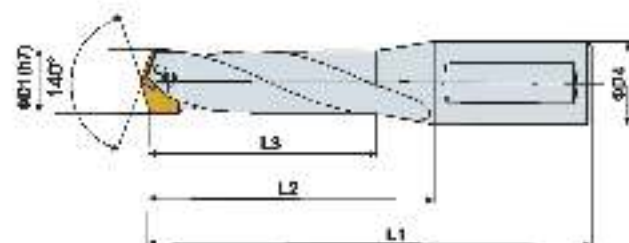
### SPADE DRILL



| Designation    | OD   | OD1 | L1  | L2  | L3  | L | Applicable<br>material | Series | Wear |
|----------------|------|-----|-----|-----|-----|---|------------------------|--------|------|
| F-AW1400-25.3  | 14.0 | 16  | 115 | 57  | 5   | 3 |                        |        |      |
| F-AW1400-25.5  | 14.0 | 16  | 115 | 57  | 60  | 5 |                        |        |      |
| F-AW1400-25.8  | 14.0 | 16  | 85  | 37  | 122 | 8 |                        |        |      |
| F-TAW1500-20.3 | 15.0 | 20  | 125 | 75  | 54  | 3 |                        |        |      |
| F-TAW1500-20.5 | 15.0 | 20  | 155 | 105 | 55  | 5 |                        |        |      |
| F-AW1600-20.3  | 16.0 | 20  | 190 | 140 | 130 | 0 |                        |        |      |
| F-TAW1600-20.5 | 16.0 | 20  | 130 | 80  | 55  | 3 |                        |        |      |
| F-AW1600-20.8  | 16.0 | 20  | 60  | 15  | 9   | 5 |                        |        |      |
| F-TAW1600-20.8 | 16.0 | 20  | 200 | 150 | 148 | 0 |                        |        |      |
| F-TAW1700-20.3 | 17.0 | 20  | 135 | 85  | 6   | 1 |                        |        |      |
| F-AW1700-20.5  | 17.0 | 20  | 70  | 120 | 96  | 5 |                        |        |      |
| F-TAW1700-20.8 | 17.0 | 20  | 215 | 165 | 146 | 0 |                        |        |      |
| F-TAW1800-20.3 | 18.0 | 20  | 140 | 90  | 65  | 3 |                        |        |      |
| F-TAW1800-20.5 | 18.0 | 20  | 175 | 125 | 122 | 5 |                        |        |      |
| F-TAW1800-20.8 | 18.0 | 20  | 224 | 174 | 54  | 8 |                        |        |      |
| F-TAW1900-25.3 | 19.0 | 25  | 135 | 59  | 64  | 1 |                        |        |      |
| F-TAW1900-25.5 | 19.0 | 25  | 190 | 134 | 107 | 5 |                        |        |      |
| F-TAW1900-25.8 | 19.0 | 25  | 241 | 185 | 162 | 0 |                        |        |      |
| F-TAW2000-25.3 | 20.0 | 25  | 155 | 99  | 72  | 3 |                        |        |      |
| F-TAW2000-25.5 | 20.0 | 25  | 195 | 139 | 113 | 5 |                        |        |      |
| F-TAW2000-25.8 | 20.0 | 25  | 249 | 193 | 170 | 8 |                        |        |      |

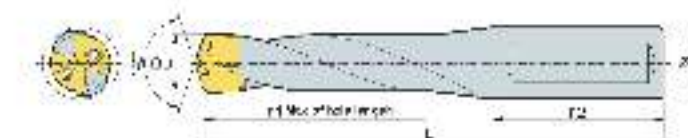


### SPADE DRILL



| Designation    | ØD   | ØD1 | L   | L1  | L3  | L3 | Appl. to do<br>Feed | In. rev. | Remarks |
|----------------|------|-----|-----|-----|-----|----|---------------------|----------|---------|
| H-TAW2100-25-3 | 21.0 | 25  | 155 | 99  | 75  | 3  | TAWNH2100T          | FTH00316 | T-10    |
| H-TAW2100-25-5 | 21.0 | 25  | 155 | 104 | 116 | 5  | TAWNH2100T          |          |         |
| H-TAW2100-25-8 | 21.0 | 25  | 255 | 200 | 175 | 8  | TAWKH2100TG         |          |         |
| H-TAW2200-25-3 | 22.0 | 25  | 160 | 104 | 77  | 3  | TAWN2200T           | FTH00322 | T-10    |
| H-TAW2200-25-5 | 22.0 | 25  | 200 | 144 | 124 | 5  | TAWN2200T           |          |         |
| H-TAW2200-25-6 | 22.0 | 25  | 266 | 210 | 186 | 8  | TAWKH2200TG         |          |         |
| H-TAW2300-25-3 | 23.0 | 25  | 160 | 104 | 82  | 3  | TAWN2300T           | FTH00322 | T-10    |
| H-TAW2300-25-5 | 23.0 | 25  | 210 | 154 | 125 | 5  | TAWN2300T           |          |         |
| H-TAW2300-25-8 | 23.0 | 25  | 272 | 222 | 194 | 8  | TAWKH2300TG         |          |         |
| H-TAW2400-32-3 | 24.0 | 32  | 170 | 110 | 85  | 3  | TAWN2400T           | FTH00322 | T-10    |
| H-TAW2400-32-5 | 24.0 | 32  | 220 | 160 | 135 | 5  | TAWN2400T           |          |         |
| H-TAW2400-32-6 | 24.0 | 32  | 252 | 192 | 167 | 8  | TAWKH2400TG         |          |         |
| H-TAW2500-32-3 | 25.0 | 32  | 170 | 110 | 88  | 3  | TAWN2500T           | FTH00322 | T-10    |
| H-TAW2500-32-5 | 25.0 | 32  | 225 | 165 | 140 | 5  | TAWN2500T           |          |         |
| H-TAW2500-32-6 | 25.0 | 32  | 300 | 240 | 210 | 8  | TAWKH2500TG         |          |         |
| H-TAW2600-32-3 | 26.0 | 32  | 175 | 115 | 92  | 3  | TAWN2600T           | FTH00322 | T-10    |
| H-TAW2600-32-5 | 26.0 | 32  | 230 | 170 | 146 | 5  | TAWN2600T           |          |         |
| H-TAW2600-32-6 | 26.0 | 32  | 308 | 248 | 218 | 8  | TAWKH2600TG         |          |         |
| H-TAW2700-32-3 | 27.0 | 32  | 175 | 115 | 94  | 3  | TAWN2700T           | FTH00322 | T-10    |
| H-TAW2700-32-5 | 27.0 | 32  | 205 | 145 | 151 | 5  | TAWN2700T           |          |         |
| H-TAW2700-32-6 | 27.0 | 32  | 266 | 206 | 226 | 8  | TAWKH2700TG         |          |         |
| H-TAW2800-32-3 | 28.0 | 32  | 180 | 120 | 97  | 3  | TAWN2800T           | FTH00322 | T-10    |
| H-TAW2800-32-5 | 28.0 | 32  | 240 | 180 | 157 | 5  | TAWN2800T           |          |         |
| H-TAW2800-32-6 | 28.0 | 32  | 302 | 242 | 212 | 8  | TAWKH2800TG         |          |         |
| H-TAW2900-32-3 | 29.0 | 32  | 185 | 125 | 104 | 3  | TAWN2900T           | FTH00322 | T-10    |
| H-TAW2900-32-5 | 29.0 | 32  | 245 | 185 | 162 | 5  | TAWN2900T           |          |         |
| H-TAW2900-32-6 | 29.0 | 32  | 302 | 242 | 212 | 8  | TAWKH2900TG         |          |         |
| H-TAW3000-32-3 | 30.0 | 32  | 195 | 135 | 104 | 3  | TAWN3000T           | FTH00322 | T-10    |
| H-TAW3000-32-5 | 30.0 | 32  | 255 | 195 | 167 | 5  | TAWN3000T           |          |         |
| H-TAW3000-32-6 | 30.0 | 32  | 345 | 285 | 250 | 8  | TAWKH3000TG         |          |         |

### Cone type Spade Drill



| ØD | 30             |     |     |                | 50          |     |                |     | 70          |    |    |   | ØD | L |
|----|----------------|-----|-----|----------------|-------------|-----|----------------|-----|-------------|----|----|---|----|---|
|    | Designation    |     | L   | I              | Designation |     | L              | I   | Designation |    | L  | I |    |   |
| 12 | H-TFDC120-16-3 | 102 | 45  | H-TFDC120-16-5 | 26          | 69  | H-TFDC120-16-7 | 150 | 93          | 14 | 40 |   |    |   |
| 10 | H-TFDC130-16-3 | 107 | 50  | H-TFDC130-16-5 | 105         | 75  | H-TFDC130-16-7 | 157 | 102         | 16 | 48 |   |    |   |
| 14 | H-TFDC110-16-3 | 111 | 53  | H-TFDC110-16-5 | 108         | 61  | H-TFDC110-16-7 | 167 | 109         | 18 | 58 |   |    |   |
| 8  | H-TFDC150-20-3 | 114 | 57  | H-TFDC150-20-5 | 48          | 87  | H-TFDC150-20-7 | 178 | 121         | 20 | 60 |   |    |   |
| 6  | H-TFDC160-20-3 | 122 | 61  | H-TFDC160-20-5 | 54          | 93  | H-TFDC160-20-7 | 186 | 125         | 20 | 60 |   |    |   |
| 7  | H-TFDC170-20-3 | 127 | 65  | H-TFDC170-20-5 | 161         | 99  | H-TFDC170-20-7 | 195 | 133         | 20 | 60 |   |    |   |
| 16 | H-TFDC180-25-3 | 137 | 69  | H-TFDC180-25-5 | 72          | 105 | H-TFDC180-25-7 | 207 | 141         | 25 | 56 |   |    |   |
| 9  | H-TFDC190-25-3 | 142 | 72  | H-TFDC190-25-5 | 80          | 110 | H-TFDC190-25-7 | 213 | 145         | 25 | 56 |   |    |   |
| 20 | H-TFDC200-25-3 | 146 | 76  | H-TFDC200-25-5 | 86          | 115 | H-TFDC200-25-7 | 226 | 156         | 25 | 66 |   |    |   |
| 2  | H-TFDC210-25-3 | 151 | 80  | H-TFDC210-25-5 | 153         | 122 | H-TFDC210-25-7 | 235 | 164         | 30 | 66 |   |    |   |
| 22 | H-TFDC220-25-3 | 156 | 84  | H-TFDC220-25-5 | 179         | 128 | H-TFDC220-25-7 | 243 | 172         | 25 | 66 |   |    |   |
| 25 | H-TFDC230-25-3 | 160 | 88  | H-TFDC230-25-5 | 238         | 134 | H-TFDC230-25-7 | 252 | 180         | 25 | 66 |   |    |   |
| 24 | H-TFDC240-32-3 | 168 | 91  | H-TFDC240-32-5 | 216         | 137 | H-TFDC240-32-7 | 264 | 187         | 32 | 60 |   |    |   |
| 25 | H-TFDC250-32-3 | 173 | 95  | H-TFDC250-32-5 | 223         | 145 | H-TFDC250-32-7 | 273 | 195         | 32 | 60 |   |    |   |
| 26 | H-TFDC260-32-3 | 177 | 99  | H-TFDC260-32-5 | 229         | 151 | H-TFDC260-32-7 | 281 | 203         | 32 | 60 |   |    |   |
| 27 | H-TFDC270-32-3 | 182 | 105 | H-TFDC270-32-5 | 236         | 157 | H-TFDC270-32-7 | 290 | 211         | 32 | 60 |   |    |   |
| 28 | H-TFDC280-32-3 | 186 | 107 | H-TFDC280-32-5 | 240         | 160 | H-TFDC280-32-7 | 296 | 219         | 32 | 60 |   |    |   |
| 29 | H-TFDC290-32-3 | 191 | 110 | H-TFDC290-32-5 | 249         | 166 | H-TFDC290-32-7 | 307 | 228         | 32 | 60 |   |    |   |
| 30 | H-TFDC300-32-3 | 195 | 114 | H-TFDC300-32-5 | 255         | 174 | H-TFDC300-32-7 | 315 | 234         | 32 | 60 |   |    |   |
| 3  | H-TFDC310-32-3 | 200 | 118 | H-TFDC310-32-5 | 262         | 180 | H-TFDC310-32-7 | 327 | 242         | 32 | 60 |   |    |   |
| 32 | H-TFDC320-32-3 | 204 | 122 | H-TFDC320-32-5 | 268         | 186 | H-TFDC320-32-7 | 333 | 250         | 32 | 60 |   |    |   |

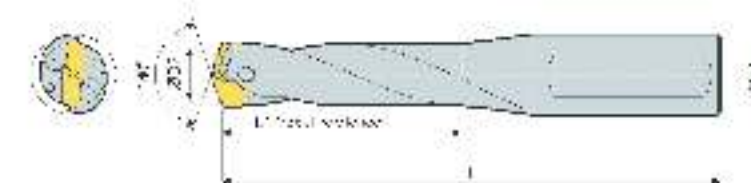


### Applicable Insert and Spare Parts

| Applicable HSC  | SCREW    | Material |
|-----------------|----------|----------|
| TPD120C~TPD130C | HTC02510 | T-6      |
| TPD140C~TPD150C | HTC02510 | T-6      |
| TPD180C~TPD210C | HTC0311  | T-8      |
| TPD240C~TPD270C | HTC0312  | T-8      |
| TPD280C~TPD290C | HTC0413  | T-15     |
| TPD280C~TPD320C | HTC0413  | T-20     |



### Blade type Spade Drill



| CD | SD             |     |     | SD             |     |     | HSC | L  | D | Applicable HSC | Screw  | Material |
|----|----------------|-----|-----|----------------|-----|-----|-----|----|---|----------------|--------|----------|
|    | Designation    | L   | D   | Designation    | L   | D   |     |    |   |                |        |          |
| 12 | H-TPDB120-16-3 | 102 | 45  | H-TPDB120-16-3 | 128 | 69  | 16  | 45 |   | TPD120C        | HTC025 |          |
| 13 | H-TPDB130-16-3 | 107 | 50  | H-TPDB130-16-3 | 134 | 76  | 16  | 45 |   | TPD130C        | HTC025 |          |
| 14 | H-TPDB140-16-3 | 111 | 55  | H-TPDB140-16-3 | 139 | 81  | 16  | 45 |   | TPD140C        | HTC025 | T-6      |
| 15 | H-TPDB150-25-3 | 118 | 57  | H-TPDB150-25-3 | 146 | 87  | 20  | 50 |   | TPD150C        | HTC025 |          |
| 16 | H-TPDB160-25-3 | 122 | 61  | H-TPDB160-25-3 | 154 | 90  | 20  | 50 |   | TPD160C        | HTC025 | T-6      |
| 17 | H-TPDB170-25-3 | 127 | 66  | H-TPDB170-25-3 | 161 | 99  | 20  | 50 |   | TPD170C        | HTC025 |          |
| 18 | H-TPDB180-25-3 | 137 | 68  | H-TPDB180-25-3 | 173 | 105 | 25  | 56 |   | TPD180C        | HTC025 |          |
| 19 | H-TPDB190-25-3 | 142 | 72  | H-TPDB190-25-3 | 180 | 110 | 25  | 56 |   | TPD190C        | HTC025 |          |
| 20 | H-TPDB200-25-3 | 146 | 76  | H-TPDB200-25-3 | 186 | 116 | 25  | 56 |   | TPD200C        | HTC025 | T-10     |
| 21 | H-TPDB210-25-3 | 150 | 80  | H-TPDB210-25-3 | 190 | 122 | 25  | 56 |   | TPD210C        | HTC025 |          |
| 22 | H-TPDB220-25-3 | 155 | 84  | H-TPDB220-25-3 | 195 | 128 | 25  | 56 |   | TPD220C        | HTC025 |          |
| 23 | H-TPDB230-32-3 | 160 | 88  | H-TPDB230-32-3 | 206 | 134 | 32  | 60 |   | TPD230C        | HTC025 |          |
| 24 | H-TPDB240-32-3 | 165 | 91  | H-TPDB240-32-3 | 216 | 139 | 32  | 60 |   | TPD240C        | HTC025 |          |
| 25 | H-TPDB250-32-3 | 170 | 95  | H-TPDB250-32-3 | 220 | 145 | 32  | 60 |   | TPD250C        | HTC025 |          |
| 26 | H-TPDB260-32-3 | 177 | 99  | H-TPDB260-32-3 | 229 | 151 | 32  | 60 |   | TPD260C        | HTC025 | T-15     |
| 27 | H-TPDB270-32-3 | 182 | 103 | H-TPDB270-32-3 | 236 | 157 | 32  | 60 |   | TPD270C        | HTC025 |          |
| 28 | H-TPDB280-32-3 | 186 | 107 | H-TPDB280-32-3 | 242 | 163 | 32  | 60 |   | TPD280C        | HTC025 |          |
| 29 | H-TPDB290-32-3 | 191 | 110 | H-TPDB290-32-3 | 249 | 168 | 32  | 60 |   | TPD290C        | HTC025 |          |
| 30 | H-TPDB300-32-3 | 195 | 114 | H-TPDB300-32-3 | 255 | 174 | 32  | 60 |   | TPD300C        | HTC025 |          |
| 31 | H-TPDB310-32-3 | 200 | 118 | H-TPDB310-32-3 | 262 | 180 | 32  | 60 |   | TPD310C        | HTC025 | T-20     |
| 32 | H-TPDB320-32-3 | 204 | 122 | H-TPDB320-32-3 | 268 | 186 | 32  | 60 |   | TPD320C        | HTC025 |          |



